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**





YRG-2020FS/YRG-2840FS



YRG-2020FT/YRG-2840FT



YRG-2004T



YRG-2013T

YRG-2820T

YRG-4230T

■ 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



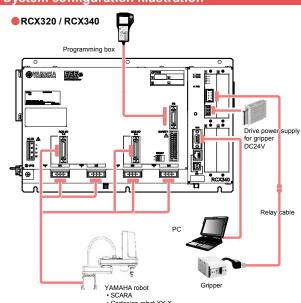
Belt-driven ground ball screw delivers a long stroke with high efficiency and high precision.

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



Compact single cam type

G-2005SS



Basic specifications

Model n	ame	YRG-2005SS
Model n	umber	KCF-M2010-A0
11.12.	Max. continuous rating (N)	5
Holding	Min. setting (% (N))	30 (1.5)
power	Resolution (% (N))	1 (0.05)
Open/cl	ose stroke (mm)	3.2
	Max. rating (mm/sec)	100
Spood	Min. setting (% (mm/sec))	20 (20)
Speed	Resolution (% (mm/sec))	1 (1)
	Holding speed (Max.) (%)	50
Repetitiv	ve positioning accuracy (mm)	+/-0.02
Guide m	nechanism	Linear guide
Max. ho	lding weight Note 1 (kg)	0.05
Weight ((g)	90

- Hoding power control: 3 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.

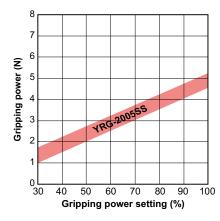
Note. Set the parameters and holding power (%) of the holding movement command so that any excessive shock is not applied to the finger during operation.

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.)

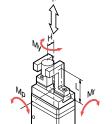
■ Gripping power vs. gripping power setting (%)



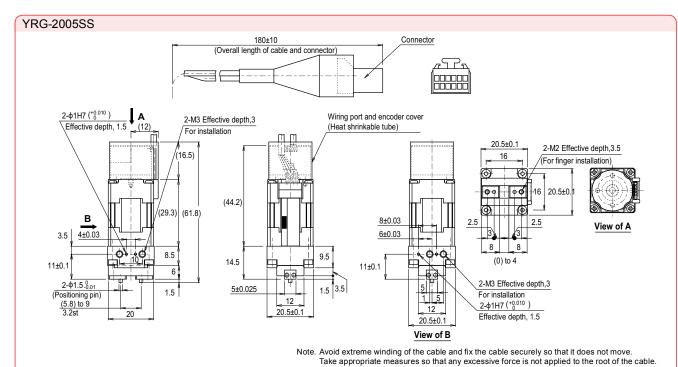
· Graph shows a general guide to gripping power versus gripping power setting (%). Variations will appear in the actual gripping power.

Allowable load and load moment

	Allowable load	F	N	12	
Guide	Allowable pitching moment	Мр	N•m	0.04	
	Allowable yawing moment	Му	N•m	0.04	
	Allowable rolling moment	Mr	N•m	0.08	
	Max. weight (1 pair)		g	10	
Finger	Max. holding position	L	mm	20	
	Max. overhang	Н	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.



Single cam type RG-2010S/2815S/4225S



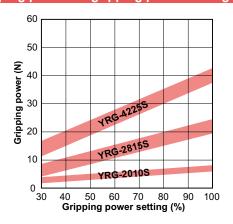
Bas	■ Basic specifications					
Model r	ame	VPG-2010S	YRG-2815S	VPG-4225S		
Model r		KCF-M2011-A0 KCF-M2011-B0 KCF-M20				
	Max. continuous rating (N)	6	22	40		
Holding	Min. setting (% (N))	30 (1.8)	30 (6.6)	30 (12)		
power	Resolution (% (N))	1 (0.06)	1 (0.22)	1 (0.4)		
Open/cl	ose stroke (mm)	7.6	14.3	23.5		
	Max. rating (mm/sec)	100				
Speed	Min. setting (% (mm/sec))	20 (20)				
Speeu	Resolution (% (mm/sec))	1 (1)				
	Holding speed (Max.) (%)	50				
Repetitiv	e positioning accuracy (mm)		+/-0.02			
Guide mechanism		Linear guide				
Max. holding weight Note 1 (kg) 0.06		0.22	0.4			
Weight	<u>(g)</u>	160	300	580		

- Hoding power control: 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.)

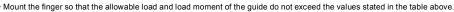
■ Gripping power vs. gripping power setting (%



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

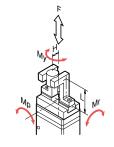
Allowable load and load moment

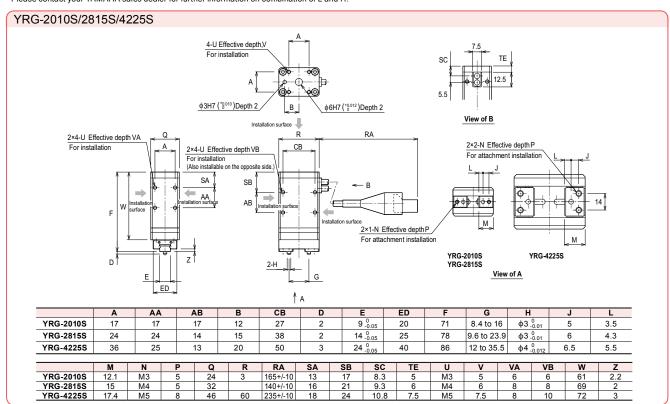
			YRG-2010S	YRG-2815S	YRG-4225S	
Guide	Allowable load	F	N	450	350	600
	Allowable pitching moment	Мр	N•m	0.7	0.5	1.1
	Allowable yawing moment	Му	N•m	0.8	0.6	1.3
	Allowable rolling moment	Mr	N•m	2.3	2.8	8.6
	Max. weight (1 pair)		g	15	30	50
Finger	Max. holding position	L	mm	20	20	25
	Max. overhang	Н	mm	20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



· 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.

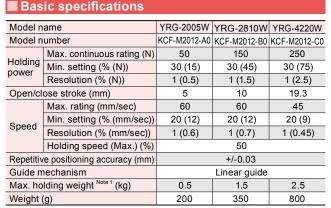




Double cam type

RG-2005W/2810W/4220W





- 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.

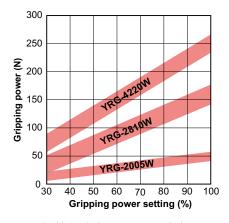
Note. Design the finger as short and lightweight as possible.

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

22.5

27.5

М3

M4

М5

5

5

8

2

32

46

46

60

165+/-10

140+/-10

235+/-10

13

16

18

17

21

24

8.3

9.3

10.8

5

6

7.5

М3

M4

M5

5

6

7.5

6

8

8

6

8

10

64

71

76

52

67

96

54

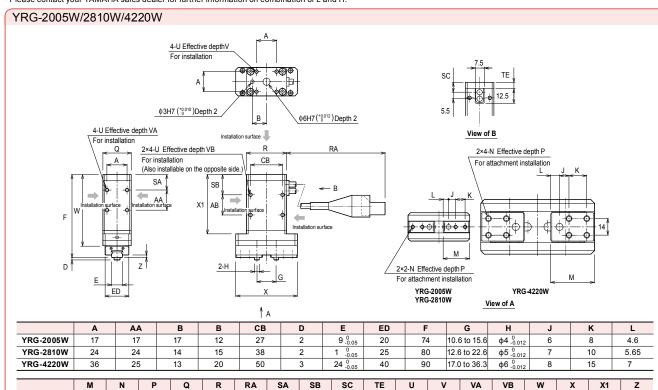
61

63

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



2.2

2

Screw type strait style

RG-2020FS/2840FS



■ Basic specifications

Model n	ame	YRG-2020FS	YRG-2840FS	
Model n	umber	KCF-M2013-A0	KCF-M2013-B0	
	Max. continuous rating (N)	50	150	
Holding	Min. setting (% (N))	30 (15)	30 (45)	
power	Resolution (% (N))	1 (0.5)	1 (1.5)	
Open/cl	ose stroke (mm)	19	38	
	Max. rating (mm/sec)	50	50	
Casad	Min. setting (% (mm/sec))	20 (10)	20 (10)	
Speed	Resolution (% (mm/sec))	1 (0.5)	1 (0.5)	
	Holding speed (Max.) (%)	50	50	
Repetitiv	re positioning accuracy (mm)	+/-0.01	+/-0.01	
Guide mechanism		Linear guide		
Max. ho	lding weight Note 1 (kg)	0.5	1.5	
Weight ((g)	420	880	

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

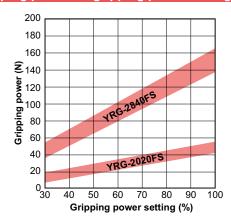
Note. Design the finger as short and lightweight as possible

- 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 (%)



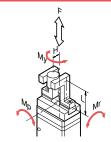
 Graph shows a general guide to gripping power versus gripping power setting (%). Variations will appear in the actual gripping power.

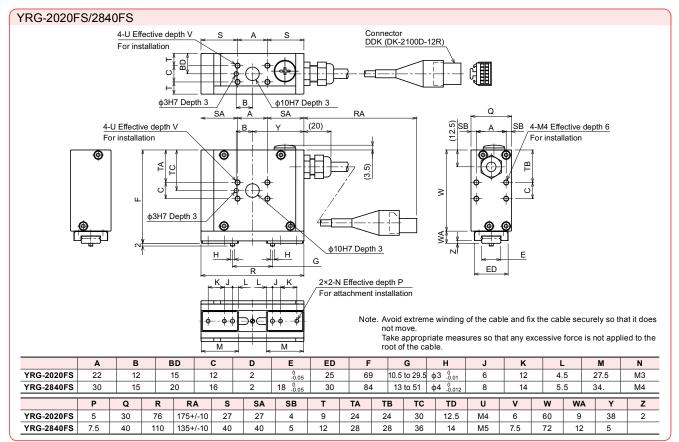
Allowable load and load moment

				YRG-2020FS	YRG-2840FS
Guide	Allowable load	F	N	1000	1300
	Allowable pitching moment	Мр	N•m	3.5	5
	Allowable yawing moment	Му	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	Н	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





Screw type "T" style

RG-2020FT/2840FT



Basic specifications Model name YRG-2020FT YRG-2840FT Model number KCF-M2014-A0 KCF-M2014-B0 Max. continuous rating (N) 50 150 Holding Min. setting (% (N)) 30 (15) 30 (45) power Resolution (% (N)) 1 (0.5) 1 (1.5) Open/close stroke (mm) 19 38 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.

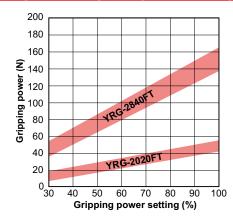
Note. Design the finger as short and lightweight as possible.

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

YRG-2020FT

YRG-2840FT

22

30

Q

30

40

12

15

76

110

12

16

s

27

40

RA

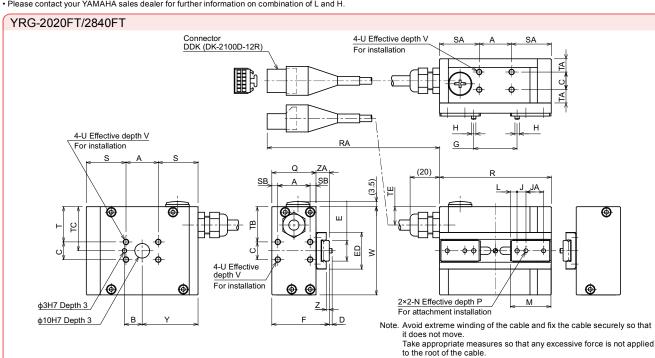
175+/-10

135+/-10

		YRG-2020FT	YRG-2840FT		
	Allowable load	F	N	1000	1300
Guide	Allowable pitching moment	Мр	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	Н	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
- 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.



G

10.5 to 29.5

13 to 51 ф4

ТВ

24

28

ф3 _0_01

TC

30

36

-0.012

6

8

TD

12.5

14

12

14

ΤE

12.5

12

14

U

M4

M5

4.5

5.5

60

72

27.5

34.5

38

55

М3

M4

5

7.5

ZΑ

9

ED

25

30

24

28

SB

14

18

SA

27

40

39

52

12

Three fingers type

YRG-2004T



Bas	ic specifications	
Model n	ame	YRG-2004T
Model n	umber	KCF-M2015-A0
	Max. continuous rating (N)	2.5
Holding	Min. setting (% (N))	30 (0.75)
Resolution (% (N))		1 (0.025)
Open/cl	ose stroke (mm)	3.5
	Max. rating (mm/sec)	100
Casad	Min. setting (% (mm/sec))	20 (20)
Speed	Resolution (% (mm/sec))	1 (1)
	Holding speed (Max.) (%)	50
Repetitiv	e positioning accuracy (mm)	+/-0.03
Guide m	nechanism	Linear guide
Max. ho	Iding weight Note 1 (kg)	0.02

- Hoding power control: 30 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.

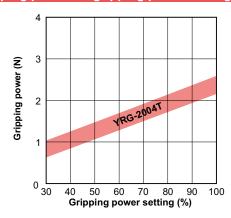
- Note. Set the parameters and holding power (%) of the holding movement command so that any excessive shock is not applied to the finger during operation.

 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		Ν	6
	Allowable pitching moment		N•m	0.02
	Max. weight (1 pair)		g	10
	Max. holding position	L	mm	15

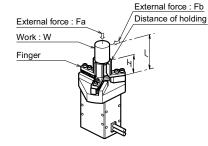
•When the external forces Fa and Fb are applied to a potion the distance (L) apart from the finger installation surface, the load (F) and moment (M) are calculated from the formulas shown below.

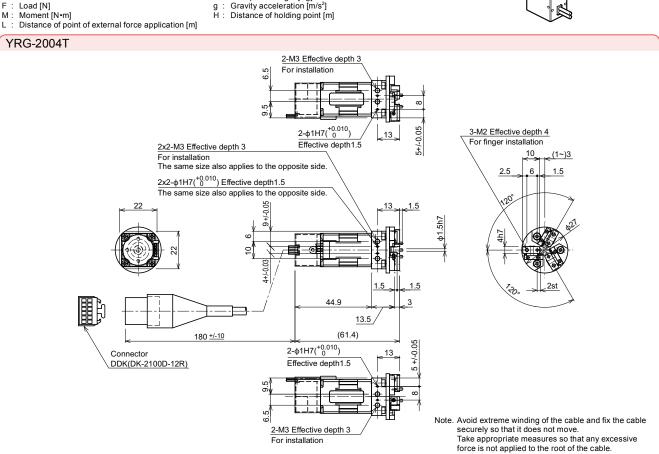
= Fa + W × g

Weight (g)

Load [N] Moment [N·m]

:External force [N] :External force [N] Workpiece weight [Kg] Gravity acceleration [m/s²] W:



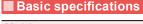


External force: Fb Distance of holding

Three fingers type

RG-2013T/2820T/4230T





Model n	ame	YRG-2013T	YRG-2820T	YRG-4230T		
Model number		KCF-M2015-B0	KCF-M2015-B0 KCF-M2015-C0 KCF-M2			
11.1.2.	Max. continuous rating (N)	2	10	20		
Holding	Min. setting (% (N))	30 (0.6)	30 (3)	30 (6)		
power	Resolution (% (N))	1 (0.02)	1 (0.1)	1 (0.2)		
Open/cl	Open/close stroke (mm)		13 20 30			
	Max. rating (mm/sec)	100				
Spood	Min. setting (% (mm/sec))	20 (20)				
Speed	Resolution (% (mm/sec))	1 (1) 1 (1)		1 (1)		
	Holding speed (Max.) (%)	50 50		50		
Repetitiv	Repetitive positioning accuracy (mm)		+/-0.03			
Guide mechanism		Linear guide				
Max. ho	lding 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.

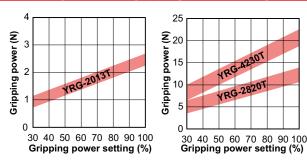
Note. Set the parameters and holding power (%) of the holding movement command so that any excessive shock is not applied to the finger during operation.

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.)

BB

Gripping power vs. gripping power setting



 $\bullet \ \ \text{Graph shows a general guide to gripping power versus gripping power setting (\%)}.$ Variations will appear in the actual gripping power.

> External force: Fa Work: W Finger

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

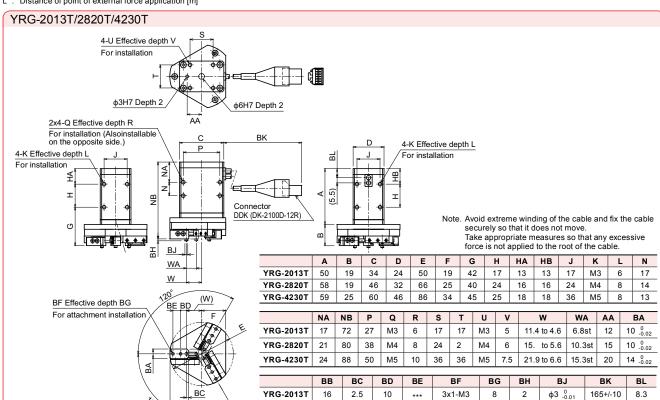
· When the external forces Fa and Fb are applied to a potion the distance (L) apart from the finger installation surface, the load (F) and moment (M) are calculated from the formulas shown below.

 $F = Fa + W \times g$

Load [N]

Distance of point of external force application [m]

:External force [N] :External force [N] Workpiece weight [Kg] Gravity acceleration [m/s²] W g : Gravity acceleration $[m/s^-]$ H : Distance of holding point [m]



19.5

22.5

YRG-4230T

2.5

2.5

6

6

8

10

3x2-M3

x2-M4

6

8

 $\varphi 3\ _{-0.01}^{\ 0}$

 $\varphi4~^0_{-0.012}$

140+/-10

235+/-10

9.3

10.8

Optio

YRG Series

■ Electric gripper basic specifications

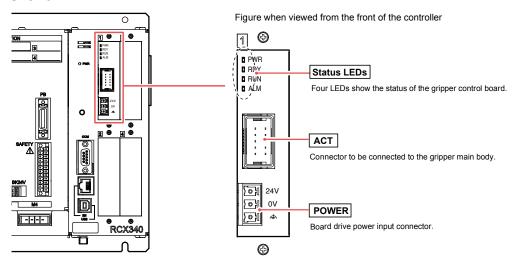
Item		Specifications	
Basic specifications	Applicable controller	RCX320 / RCX340	
	Number of connection grippers	Max. 4 units	
Axis control	Control method	PTP motion	
	Min. setting unit	0.01mm	
	Position indication unit	Pulses, mm (millimeters)	
	Speed setting	20 to 100% (in 1% steps, Changeable by the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

RCX320

Note. This board includes a 24V supply connector.

RCX340

Robot (for gripper) cable



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

RCX320 RCX340

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

Relay cable



	0.5m	KCF-M4811-11
	1m	KCF-M4811-21
	1.5m	KCF-M4811-31
Model	2m	KCF-M4811-41
Model	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