※ Bore Sizes Ø16, 20, 25, 32, 40, 50, 63, 80, 100, 125mm
※ Pinholes are incorporated as standard, facilitating accurate mounting which is achieved through either body tapped or through hole mounting.
※ Auto switches can be simply attached via the standard built-in grooves.
※ The 3-jaw grippers is designed in lower height with long stroke.

How to order

CG2-16 — Type

RT — Auto switch type

1 — Number of auto switch

Perpendicular	In-line		Style
RTV	RT	RK	Reed switch
RTNV	RTN	RKN	NPN
RTPV	RTP	RKP	PNP

RKP: for CG2 32 to 125
RT / RTP: for CG2 16 to 25

(Refer to P.77 and P.79 for detailed auto switch specifications)

Specifications

Model		CG2-16	CG2-20	CG2-25	CG2-32	CG2-40	CG2-50	CG2-63	CG2-80	CG2-100	CG2-125
Stroke mm (dia.) Opening / Closing		4	4	6	8	8	12	16	20	24	32
Cylinder bore(mm)		16	20	25	32	40	50	63	80	100	125
Fluid		Air									
Operating pressure MPa		0.2~0.6									
Ambient and fluid temperature °C (°F)		-10~60 (14 to 140)									
Repeatability(mm)		±0.01									
Max. operating frequency(c.p.m)		120			60				30		
Lubrication		No Lubrication									
Action		Double acting									
Effective gripping force N at pressure of 0.5MPa	External gripping force	14	25	42	74	118	187	335	500	750	1270
	Internal gripping force	16	28	47	82	130	204	359	525	780	1320
Weight (g)		80	120	150	240	400	540	1020	1880	3300	6200

Values for 16 and 25 are with gripping point L=20mm, for 32 to 63 with gripping point L=30mm, and for 80 to 125 with gripping point L=50mm.
Refer to the "Effective Holding Force" data on pages 13 through 14 for the gripping force at each gripping position.
Open and closed diameter values apply for external gripping of workpieces.

Model Selection Illustration

When griping a work piece as in the drawing to the right, and with the following definitions.

n : Number of fingers

F : Gripping force (N)

μ : Coefficient of friction between attachments and workpiece

m: Workpiece mass (Kg)

g : Gravitational acceleration(=9.8m/s^2)

mg: Workpiece weight (N)

The conditions under which the workpiece will not drop are

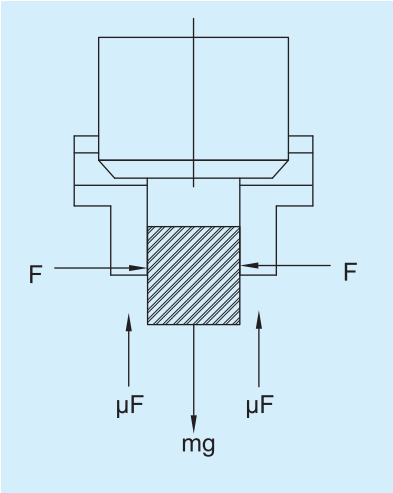
n x μF > mg

And therefore,

F > mg / (n x μ)

With "a" representing the extra margin, F is determined by the following formula:

F = a x mg / (n x μ)



Multiples of gripping force by work piece weight
Number of fingers: When n = 3

If OKINA performs calculations allowing for impacts which occur during normal transfer, etc., using a safety margin of a = 4.

6.67 x workpiece weight	13.33 x workpiece weight
↓	↓
When μ= 0.2	When μ= 0.1
F = [mg / (3x0.2)] x 4 = 6.67 x mg	F = [mg / (3x0.1)] x 4 = 13.33 x mg

(Note)

※Even in cases where the coefficient of friction is greater than μ= 0.2, for safety reasons, OKINA recommends selecting a gripping force which is at least 6.67 to 13.33 times the work piece weight.

※If high acceleration, deceleration or impact forces are encountered during motion, a further margin of safety should be considered.

Example of Model Selection

Step 1 **Confirmation of Gripping Force**

Procedures: Check conditions → Calculate required gripping force → Select model from the holding force graph

Example

Workpiece weight:0.65kg

Gripping method: External gripping

Gripping point: 25 mm

Operating pressure:0.4MPa

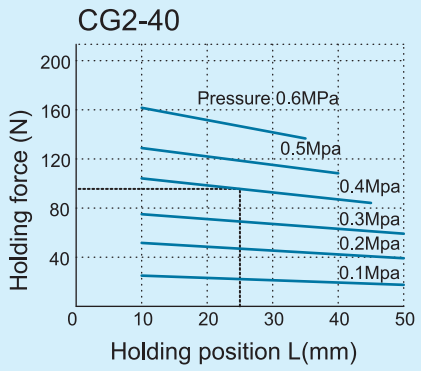
Model selection criteria with respect to workpiece weight

- Although differences will exist depending on the coefficient of friction between attachments and workpieces, select a model which will provide a gripping force.

  Note1)
  Refer to the model selection illustration regarding multiples of the workpiece weight.

- If high acceleration, deceleration or impact forces are encountered during motion, a further margin of safety should be considered.

  Example)
  When it is desired to set the gripping force at 13.33 times or more above the workpiece weight.



- Selecting the CG2-40
  A gripping force of 95 N is obtained from the intersection point of the gripping point distance L = 25 mm and a pressure of 0.4 MPa.

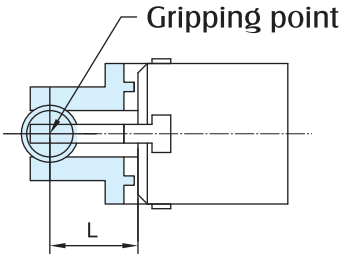
- The gripping force is 14.8 times greater than the workpiece weight, and therefore satisfies a gripping force setting value of 13.33 times or more.

Note) For
Step 2 refer to the gripping point for the effective gripping force of each model.

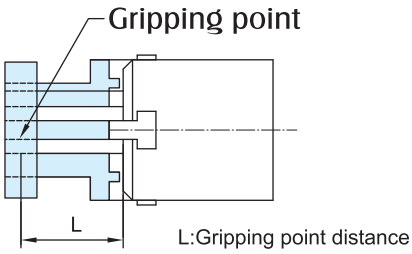
Gripping Point

1.Work piece should be held at a point within the range for a given pressure indicated in the effective gripping force table shown below.

2.When the workpiece is held at a point outside of the recommended range for a give pressure, an excessive unbalanced load is applied to the finger sliding section, causing excessive play of the fingers and may cause premature failure.



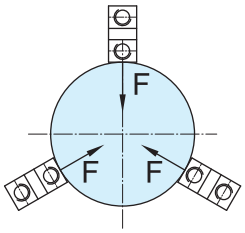
External gripping



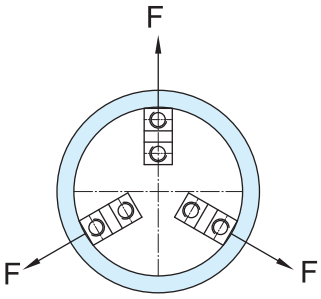
Internal gripping

Effective Gripping Force

The force shown in the tables represents the gripping force of one finger when all fingers and attachments are in contact with the work piece



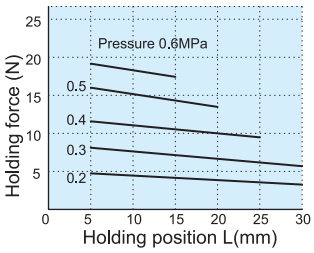
External gripping



Internal gripping

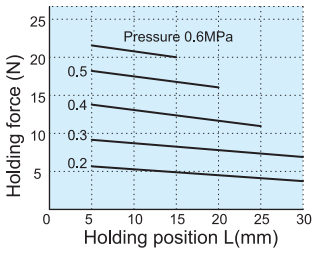
External hold

CG2-16



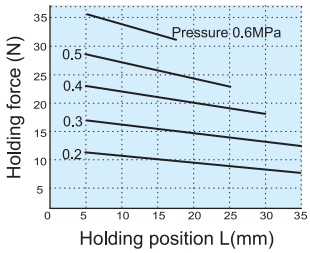
Internal hold

CG2-16



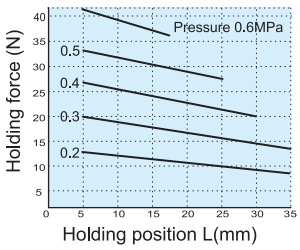
External hold

CG2-20



Internal hold

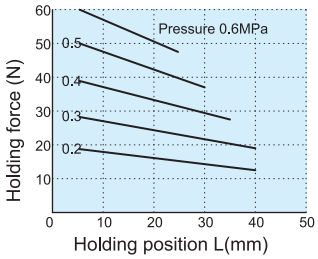
CG2-20



Effective Holding Force

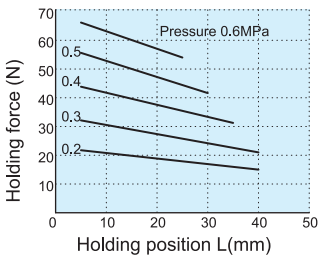
External hold

CG2-25



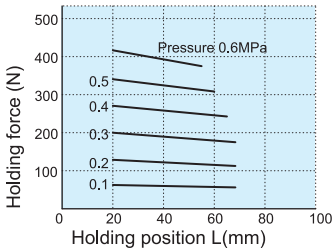
Internal hold

CG2-25



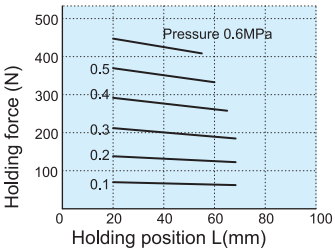
External hold

CG2-63

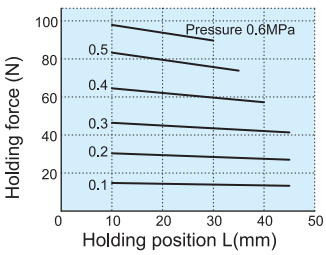


Internal hold

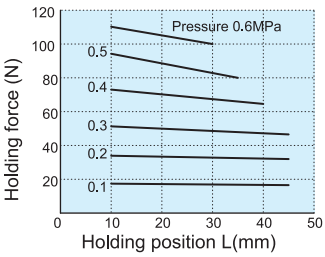
CG2-63



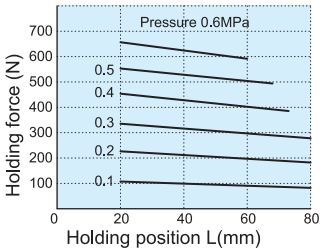
CG2-32



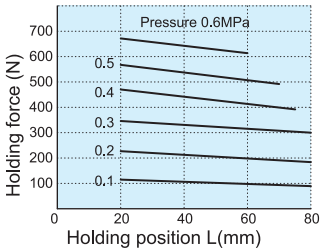
CG2-32



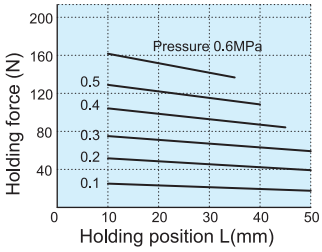
CG2-80



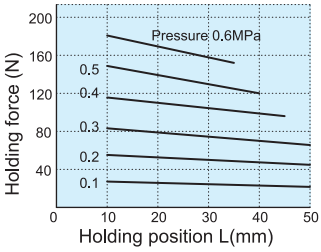
CG2-80



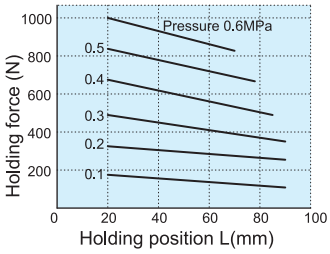
CG2-40



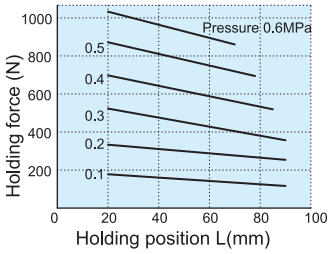
CG2-40



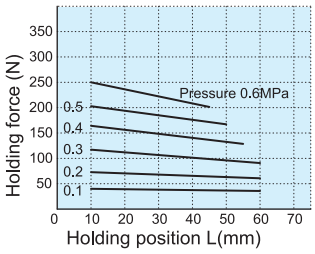
CG2-100



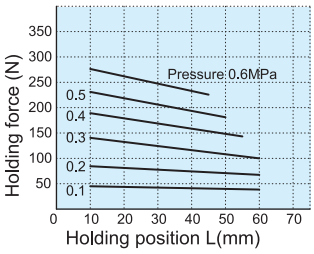
CG2-100



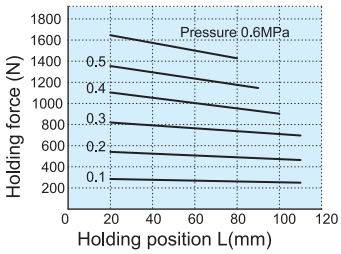
CG2-50



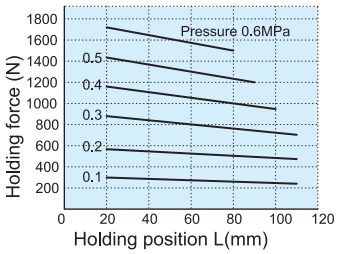
CG2-50



CG2-125

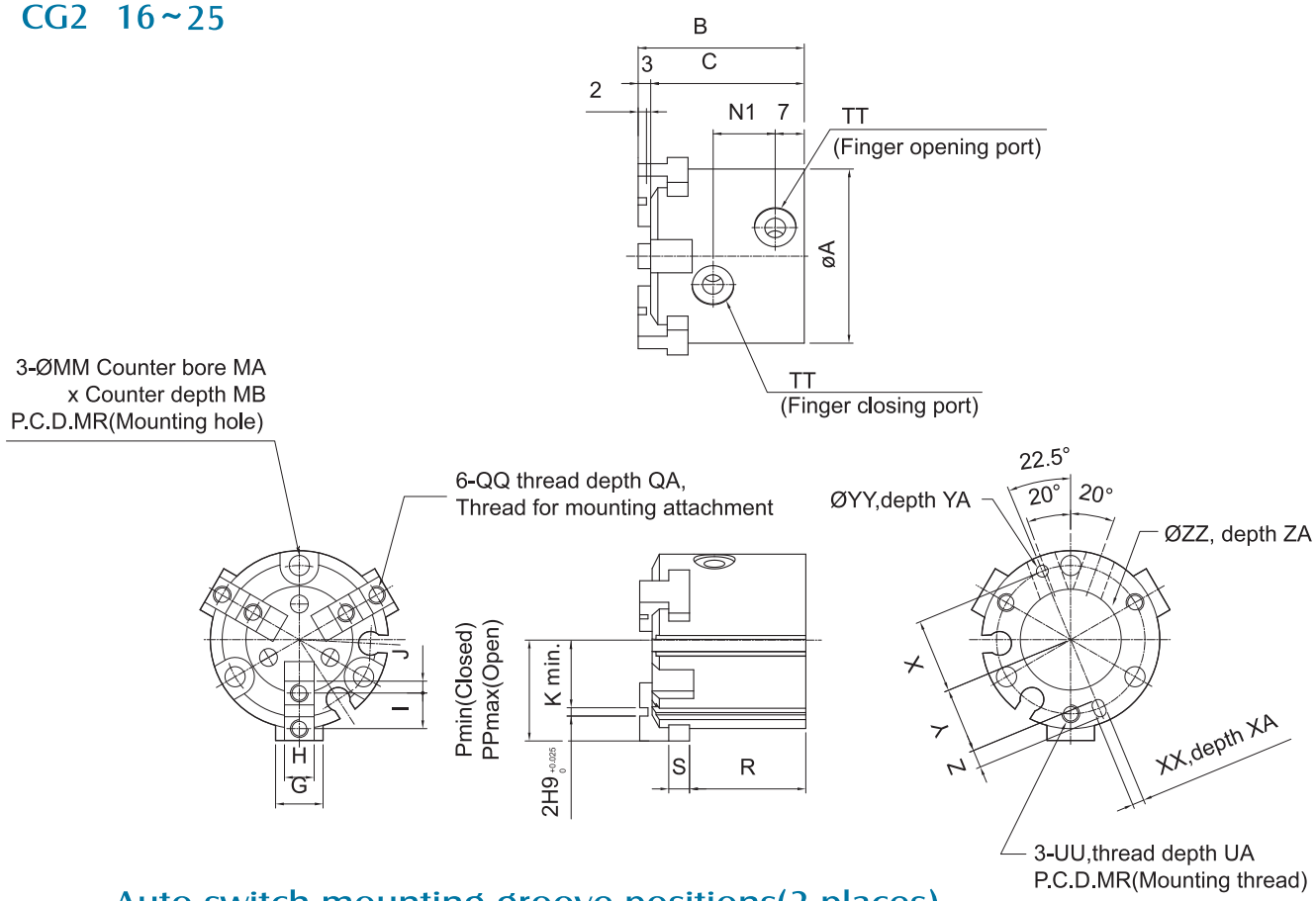


CG2-125

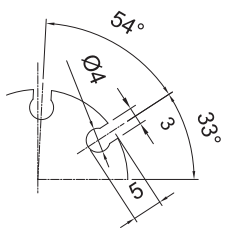


Dimensions

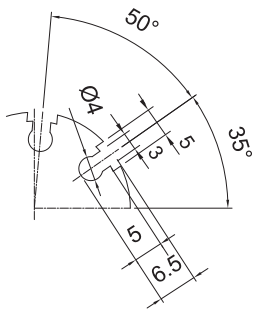
CG2 16~25



Auto switch mounting groove positions(2 places)



CG2-16



CG2-20 CG2-25

(mm)

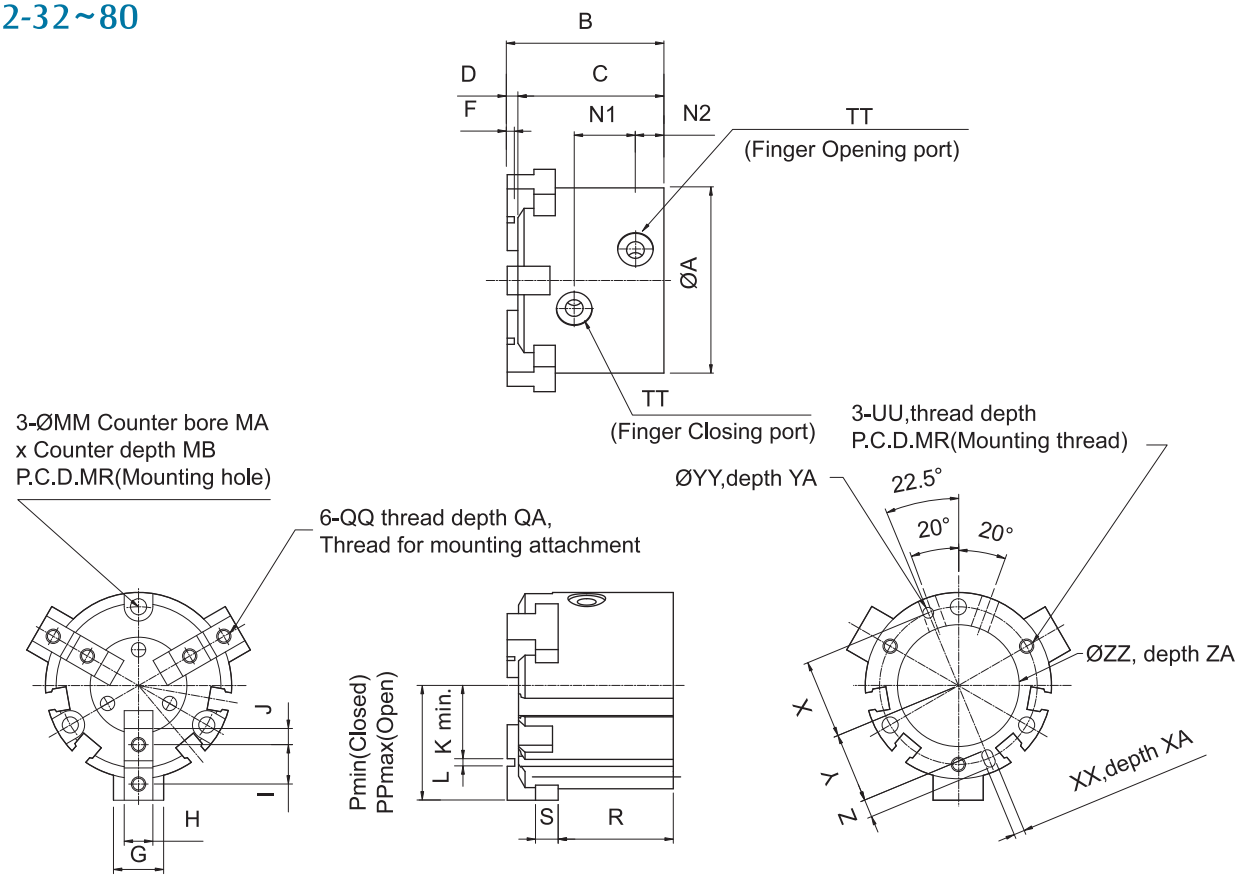
Model	A	B	C	G	H	I	J	K	MA	MB	MM	MR	N1	P	PP	QA	QQ
CG2-16	30	35	32	8	5h9 $^{0}_{-0.030}$	6	2	9	6.5	8	3.4	25	11	15	17	5	M3x0.5
CG2-20	36	38	35	10	6h9 $^{0}_{-0.030}$	7	2.5	11	6.5	9.5	3.4	29	13	18	20	6	M3x0 5
CG2-25	42	40	37	12	6h9 $^{0}_{-0.030}$	8	3	13	8	10	4.5	34	15	21	24	6	M3x0.5

(mm)

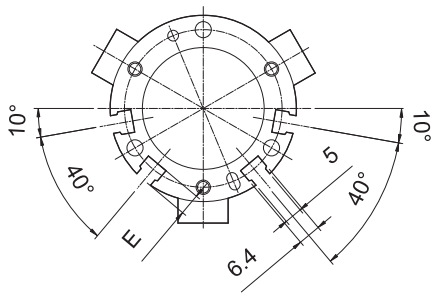
Model	R	S	TT	UA	UU	X	XA	XX	Y	YA	YY	Z	ZA	ZZ
CG2-16	25	4	M3x0.5	4.5	M3x0.5	12.5	2	2H9 $^{+0.025}_{-0}$	11	2	2H9 $^{+0.025}_{-0}$	3	1.5	17H9 $^{+0.043}_{-0}$
CG2-20	27	5	M5x0.8	6	M3x0.5	14.5	2	2H9 $^{+0.025}_{-0}$	13	2	2H9 $^{+0.025}_{-0}$	3	1 5	21H9 $^{+0.052}_{-0}$
CG2-25	28	5	M5x0.8	6	M4x0.7	17	3	3H9 $^{+0.025}_{-0}$	14.5	3	3H9 $^{+0.025}_{-0}$	5	1.5	26H9 $^{+0.052}_{-0}$

Dimension

CG2-32~80



Auto switch mounting groove position



(mm)

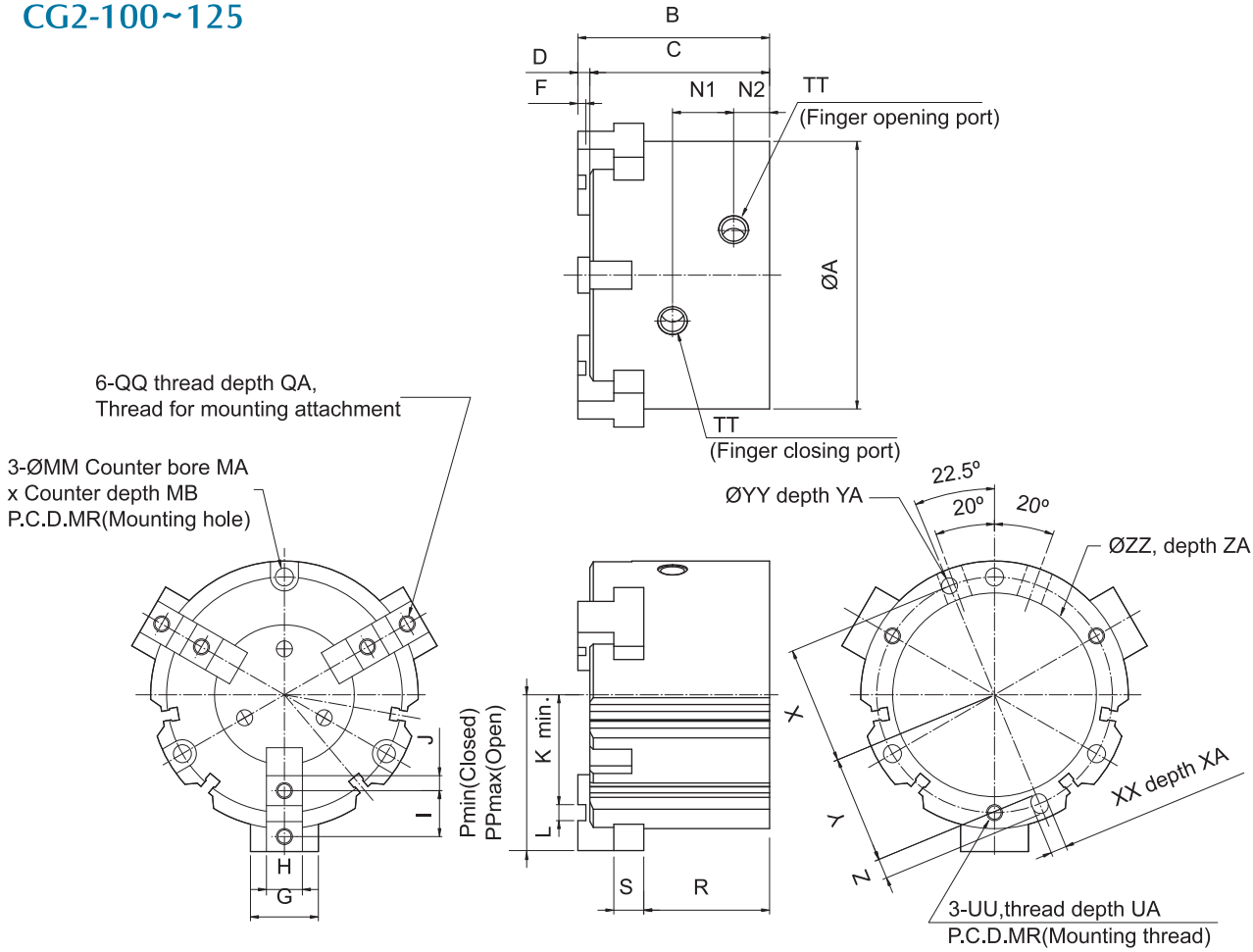
Model	A	B	C	D	E	F	G	H	I	J	K	L	MA	MB	MM	MR	N1	N2	P	PP
CG2-32	52	44	41	3	6	2	14	8h9 $^{0}_{-0.036}$	11	4.5	17	2H9 $^{+0.025}_{-0}$	8	9	4.5	44	16	8	28	32
CG2-40	62	47	44	3	8	2	16	8h9 $^{0}_{-0.036}$	12	4.5	19	3H9 $^{+0.025}_{-0}$	9.5	9	5.5	53	17	9	31	35
CG2-50	70	55	52	3	7	2	18	10h9 $^{0}_{-0.036}$	14	5	21	4H9 $^{+0.030}_{-0}$	9.5	12	5.5	62	20	9	35	41
CG2-63	86	66	62	4	7.5	3	24	12h9 $^{0}_{-0.043}$	17	5.5	26	6H9 $^{+0.030}_{-0}$	11	14	6.6	76	22	12	43	51
CG2-80	106	82	77	5	8	4	28	14h9 $^{0}_{-0.043}$	20	6	33.5	8H9 $^{+0.036}_{-0}$	11	19	6.6	95	27	13.5	53.5	63.5

(mm)

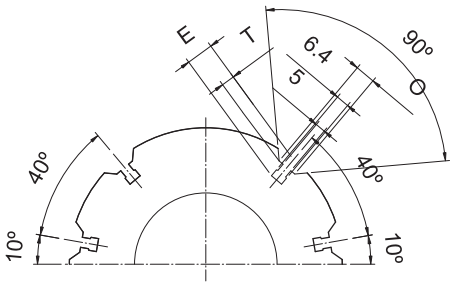
Model	QA	QQ	R	S	TT	UA	UU	X	XA	XX	Y	YA	YY	Z	ZA	ZZ
CG2-32	8	M4x0.7	30.5	6	M5x0.8	6	M4x0.7	22	3	3H9 $^{+0.025}_{-0}$	19.5	3	3H9 $^{+0.025}_{-0}$	5	2	34H9 $^{+0.062}_{-0}$
CG2-40	8	M4x0.7	32	7	M5x0.8	7.5	M5x0.8	26.5	4	4H9 $^{+0.030}_{-0}$	23.5	4	4H9 $^{+0.030}_{-0}$	6	2	42H9 $^{+0.062}_{-0}$
CG2-50	10	M5x0.8	37.5	9	M5x0.8	10	M5x0.8	31	4	4H9 $^{+0.030}_{-0}$	28	4	4H9 $^{+0.030}_{-0}$	6	2	52H9 $^{+0.074}_{-0}$
CG2-63	10	M5x0.8	44	11	M5x0.8	9	M6x1	38	5	5H9 $^{+0.030}_{-0}$	34.5	5	5H9 $^{+0.030}_{-0}$	7	2.5	65H9 $^{+0.074}_{-0}$
CG2-80	12	M6x1	56	12	Rc 1/8	12	M6x1	47.5	6	6H9 $^{+0.030}_{-0}$	43.5	6	6H9 $^{+0.030}_{-0}$	8	3	82H9 $^{+0.087}_{-0}$

Dimension

CG2-100~125



Auto switch mounting groove positions (4 places)



(mm)

Model	A	B	C	D	E	F	G	H	I	J	K	L	MA	MB	MM	MR	N1	N2	O
CG2-100	134	96	90	6	13	4	34	18h9 $^{0}_{-0.043}$	23	7.5	43	8H9 $^{+0.036}_{-0}$	14	21	9	118	30.6	18	10
CG2-125	166	122	114	8	15	6	40	22h9 $^{0}_{-0.052}$	31	10.5	51	10H9 $^{+0.036}_{-0}$	17.5	34	11	148	38	23.5	12

(mm)

Model	P	PP	QA	QQ	R	S	T	TT	UA	UU	X	XA	XX	Y	YA	YY	Z	ZA	ZZ
CG2-100	66	78	16	M8x1.25	63	15	5	Rc1/4	16	M8x1.25	59	6	8H9 $^{+0.036}_{-0}$	54	6	8H9 $^{+0.036}_{-0}$	10	4	102H9 $^{+0.087}_{-0}$
CG2-125	82	98	20	M10x1.5	84	18	7	Rc3/8	20	M10x1.5	74	8	10H9 $^{+0.036}_{-0}$	68	8	10H9 $^{+0.036}_{-0}$	12	6	130H9 $^{+0.100}_{-0}$