MCHG2 series

LOWER HEIGHT of THREE JAW GRIPPERS

Features:

- Bore Sizes ϕ 16, 25, 32, 40, 50, 63, 80, 100, 125 mm.
- 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.

Order example:

MCHG2 − 16(M) − RT × 1

- MCHG2 − : MODEL
- 16 : BORE
  - ϕ 16
  - ϕ 25
  - ϕ 32
  - ϕ 40
  - ϕ 50
  - ϕ 63
  - ϕ 80
  - ϕ 100
  - ϕ 125
- (M) : **M**: Magnet
- RT : AUTO SWITCH TYPE

perpendicular	in-line		style
RTV	RT	RK	Reed switch
RTNV	RTN	RKN	NPN
RTPV	RTP	RKP	PNP

  - RK, RKN, RKP: for ϕ 32~125
  - RT, RTN, RTP: for ϕ 16~25
- × 1 : NUMBER of AUTO SWITCH

Specification:

Model		MCHG2-16	MCHG2-25	MCHG2-32	MCHG2-40	MCHG2-50	MCHG2-63	MCHG2-80	MCHG2-100	MCHG2-125
Acting type		Double acting								
Tube I.D. (mm)		16	25	32	40	50	63	80	100	125
Stroke (mm)		4	6	8	8	12	16	20	24	32
Medium		Air								
Operating pressure (kgf/cm^2)		2~6		1~6						
Ambient temperature		−10~+60℃ (No freezing)								
Repeatability		±0.01								
Max.operating frequency(c.p.m)		120		60				30		
Lubrication		Not required								
※Effective gripping force N(lbf) at (5kgf/cm^2)	External	14(3.1)	42(9.4)	74(16.6)	118(26.5)	187(42)	335(75)	500(112)	750(169)	1270(285)
	Internal	16(3.6)	47(10.6)	82(18.4)	130(29)	204(46)	359(81)	525(118)	780(175)	1320(297)
Weight (g)		80	150	240	400	540	1020	1880	3300	6200

※Values for 16 to 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 5 through 6 for the gripping force at each gripping position.

- Open and closeed diameter values apply for extermal gripping of work pieces.

MCHG2 Model Selection Illustration

LOWER HEIGHT of THREE JAW GRIPPERS

Mindman

Multiples of gripping force by work piece weight

Number of fingers: When n=3

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

6.67×work piece weight	13.33×work piece weight
When μ= 0.2 F=（mg/(3×0.2)）×4=6.67×mg	When μ= 0.1 F=（mg/(3×0.1)）×4=13.33×mg

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

It is necessary to allow a greter safety margin for hight accelerations and strong impacts, etc.

Model Selection Illustration

When gripping a work piece as in the figure to the left, and with the following definitions.

n: Number of fingers

F: Gripping force (N)

μ: Coefficient of friction between the attachments and the work piece

m: Work piece mass (Kg)

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

mg: Work piece weight (N)

The conditions under which the work piece will not drop are

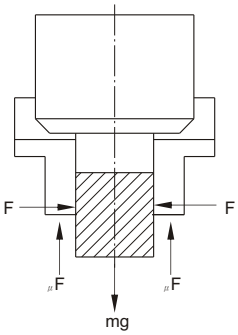
$n \times \mu F > mg$

And therefore,

$F > mg/(n \times \mu)$

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

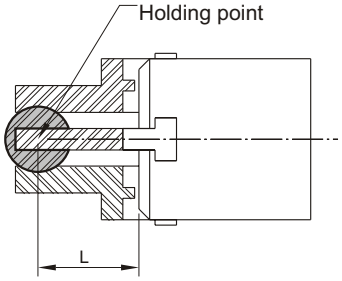
$F = a \times mg/(n \times \mu)$



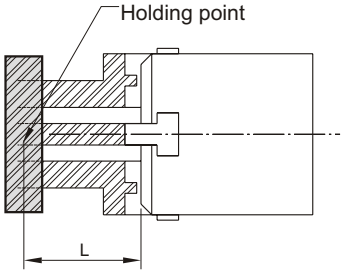
Effective Holding Force:

Holding Point

- Although the condition biffers according to the coefficient of friction between the attachment and work, select a model that can produce a holding force of 10 to 20 times the work.
- Work should be held at a point within the range for a given pressure indicated in the effective holding force holding force table shown below.
- When the work 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 hold

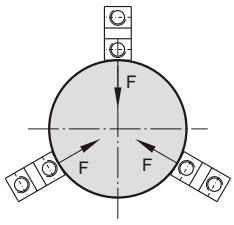


Internal hold

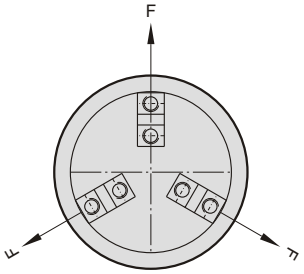
L:Holding point distance

Effective Holding Force

- Indication of effective holding force The holding force shown in the tables represents the holding force of one finger when all fingers and attachments are in contact with the work



External hold



Internal hold

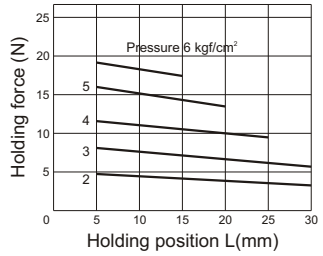
F:Thrust of one finger

MCHG2 Capacity ϕ16~ϕ125

LOWER HEIGHT of THREE JAW GRIPPERS

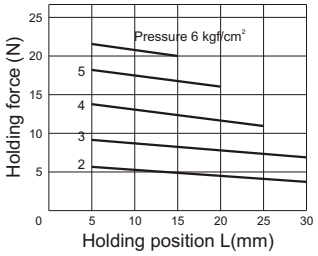
External hold

MCHG2-16



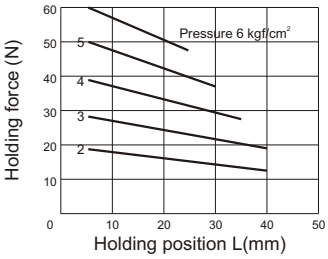
Internal hold

MCHG2-16



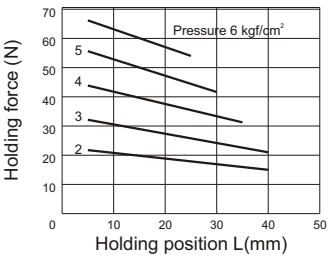
External hold

MCHG2-25

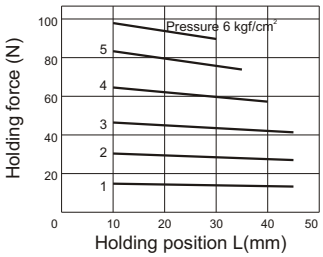


Internal hold

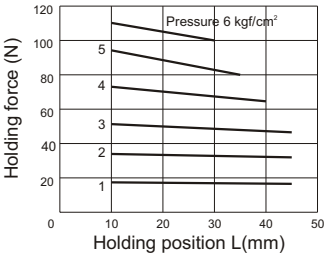
MCHG2-25



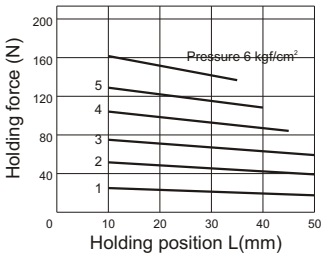
MCHG2-32



MCHG2-32



MCHG2-40



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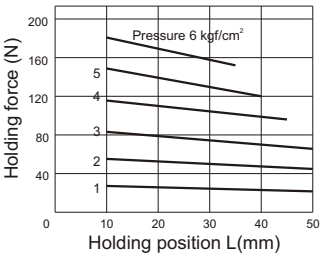
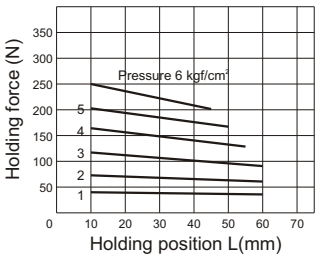


MCHG2-50



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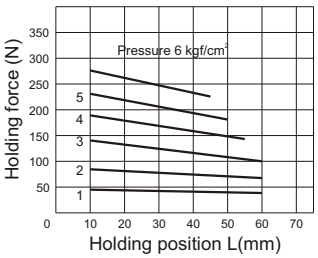
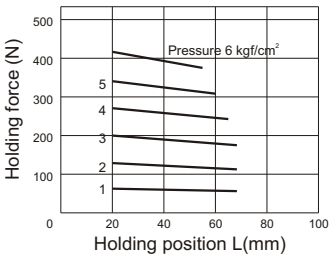


MCHG2-63



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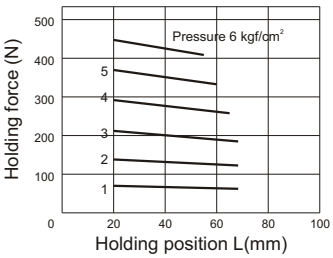
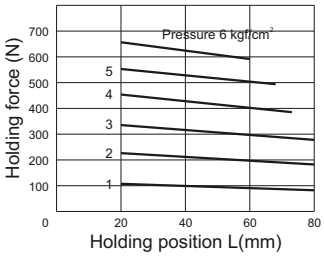


MCHG2-80



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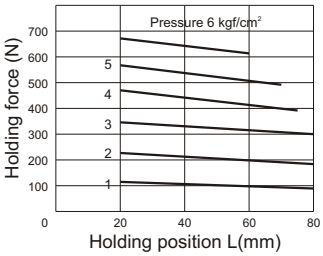
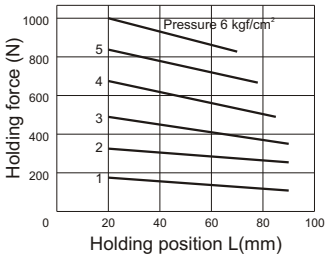


MCHG2-100



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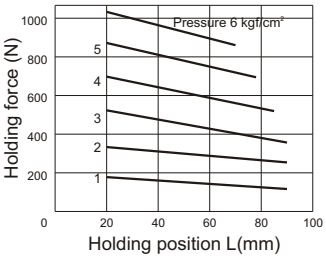

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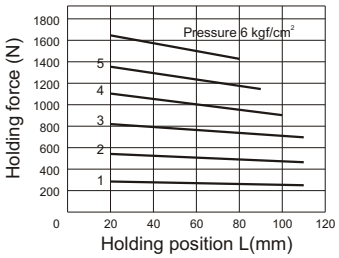
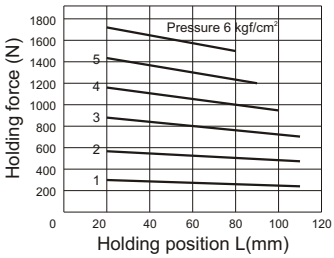
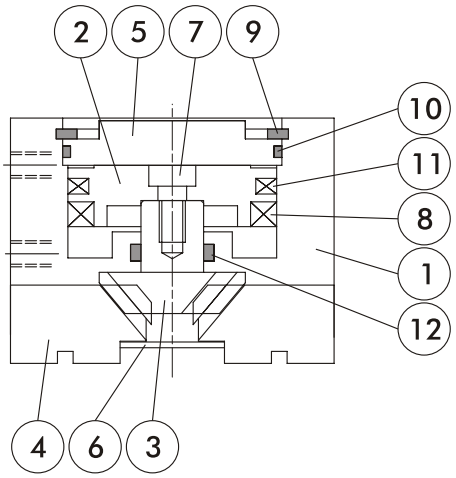


MCHG2-125



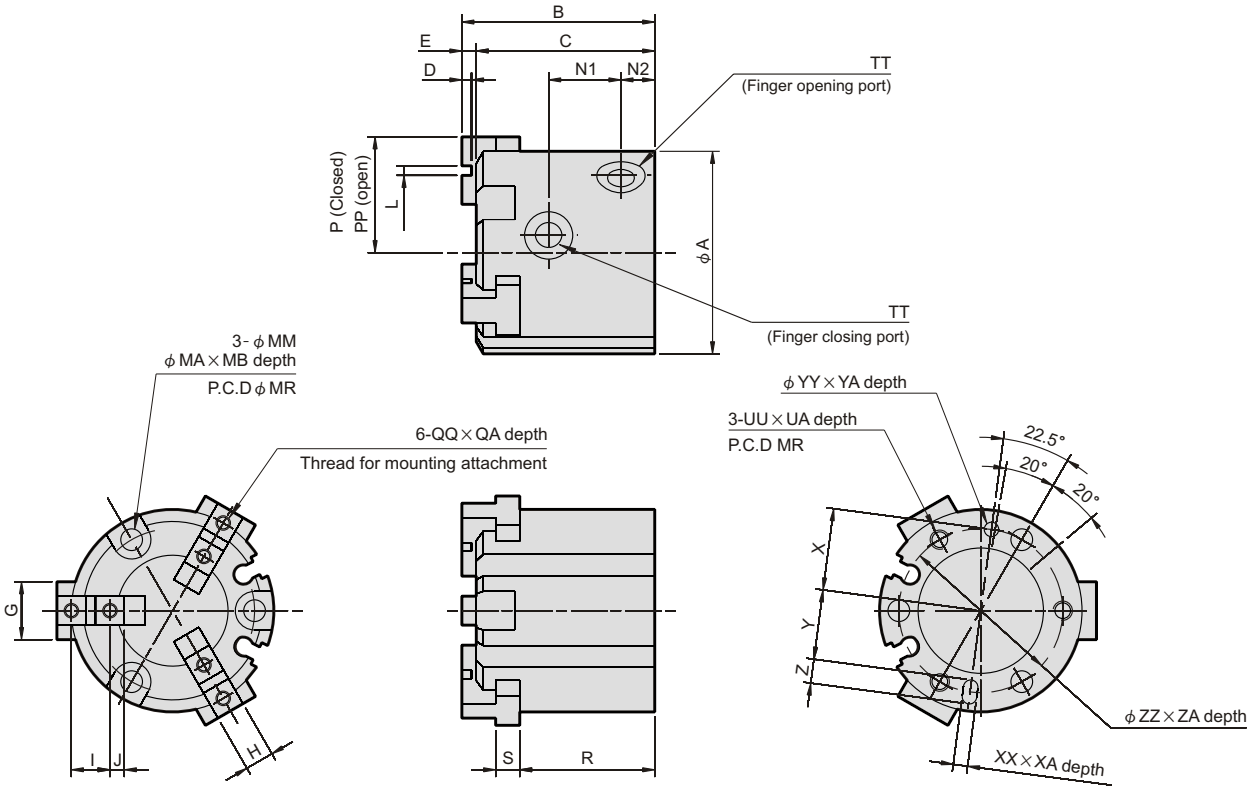


Material

No.	Part name	Material
1	Body	Aluminum alloy
2	Piston	Aluminum alloy
3	Cam	Carbon steel
4	Finger	Carbon steel
5	Cap	Aluminum alloy
6	End plate	Stainless steel
7	Piston bolt	Stainless steel
8	Magnet ring	Magnet material
9	Snap ring	Carbon steel
10	Cover ring	NBR
11	Piston packing	NBR
12	Rod packing	NBR

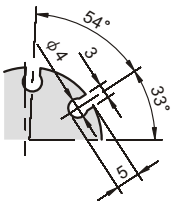
MCHG2 Dimensions ϕ16, ϕ25

LOWER HEIGHT of THREE JAW GRIPPERS

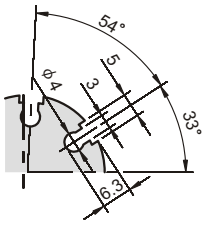


Auto switch mounting groove position

ϕ16



ϕ25

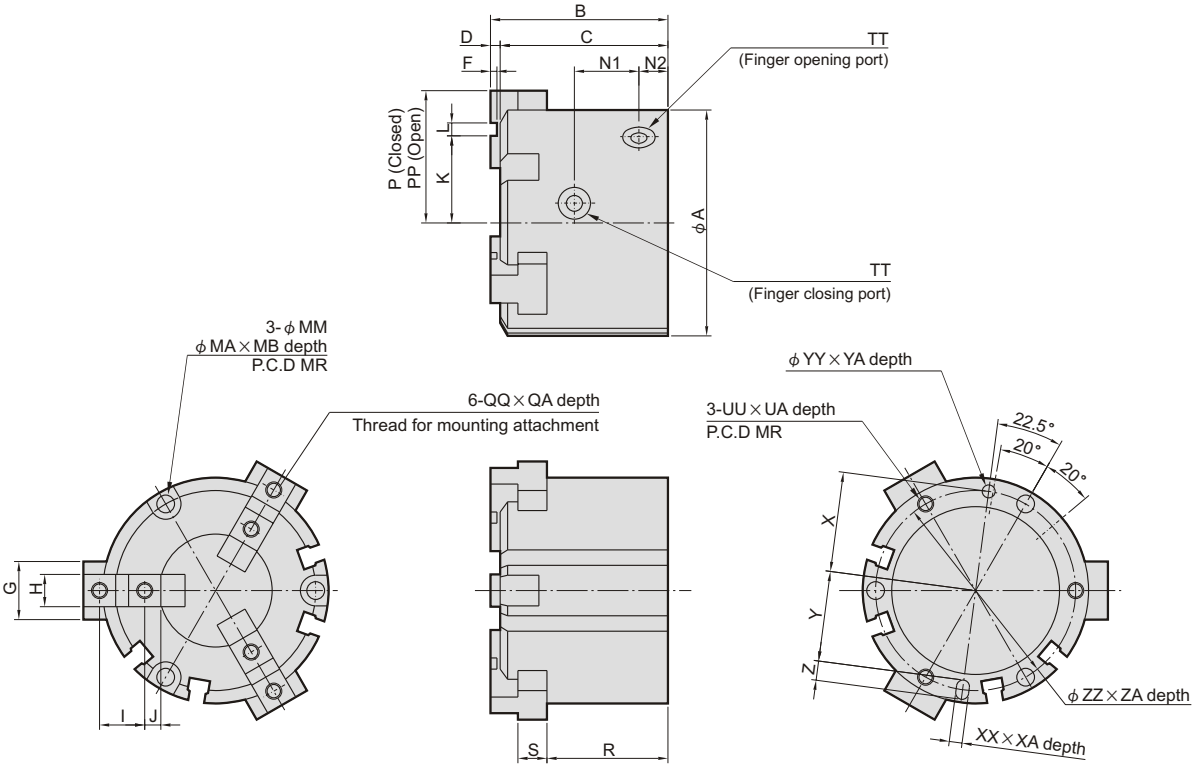


Code / Tube I.D.	A	B	C	D	E	G	H	I	J	L	MA	MB	MM	MR	N1	N2	P	PP	QA	QQ	R	S	TT	UA
16	30	35	32	2	3	8	$5h9^{+0}_{-0.030}$	6	2	$2H9^{+0.025}_{-0}$	6.5	8	3.4	25	11	7	15	17.5	5	M3×0.5	25	4	M3×0.5	4.5
25	42	40	37	2	3	12	$6h9^{+0}_{-0.036}$	8	3	$2H9^{+0.025}_{-0}$	8	10	4.5	34	15	7	21	24	6	M3×0.5	28	5	M5×0.8	6

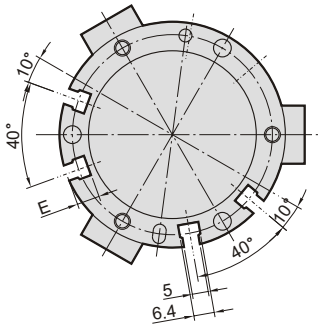
Code / Tube I.D.	UU	X	XA	XX	Y	YY	Z	ZA	ZZ
16	M3×0.5	12.5	2	$2H9^{+0.025}_{-0}$	11	$2H9^{+0.025}_{-0}$	3	1.5	$17H9^{+0.043}_{-0}$
25	M4×0.7	17	3	$2H9^{+0.025}_{-0}$	14.5	$3H9^{+0.025}_{-0}$	5	1.5	$26H9^{+0.052}_{-0}$

MCHG2 Dimensions ϕ32~ϕ80

LOWER HEIGHT of THREE JAW GRIPPERS



Auto switch mounting groove position

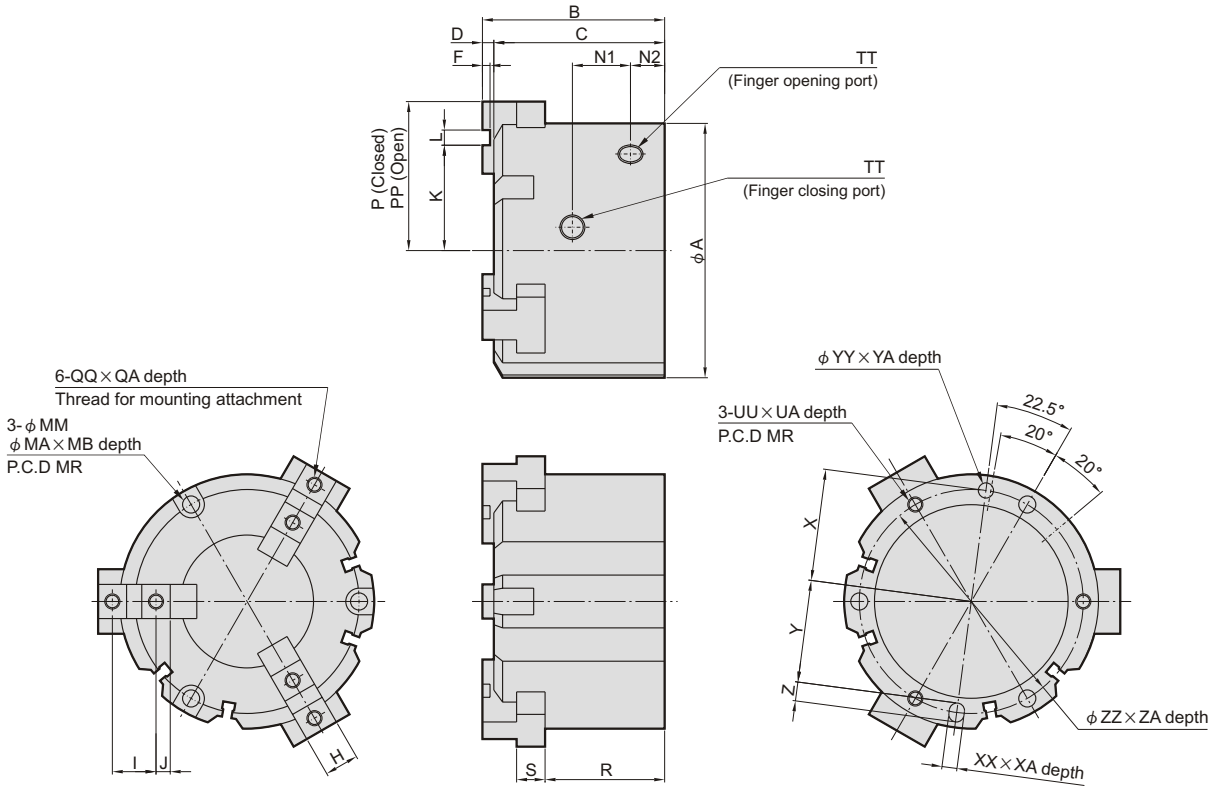


Code / Tube I.D.	A	B	C	D	E	F	G	H	I	J	K	L	MA	MB	MM	MR	N1	N2	P	PP	QA	QQ	R	S	TT
32	52	44	41	3	6	2	14	$8h9^{+0}_{-0.036}$	11	4.5	21	$2H9^{+0.025}_{-0}$	8	9	4.5	44	16	8	28	32	8	M4×0.7	30.5	6	M5×0.8
40	62	47	44	3	8	2	16	$8h9^{+0}_{-0.036}$	12	4.5	23	$3H9^{+0.030}_{-0}$	9.5	9	5.5	53	17	9	31	35	8	M4×0.7	32	7	M5×0.8
50	70	55	52	3	7	2	18	$10h9^{+0}_{-0.043}$	14	5	27	$4H9^{+0.030}_{-0}$	9.5	12	5.5	62	20	9	35	41	10	M5×0.8	37.5	9	M5×0.8
63	86	66	62	4	7.5	3	24	$12h9^{+0}_{-0.043}$	17	5.5	34	$6H9^{+0.036}_{-0}$	11	14	6.6	76	22	12	43	51	10	M5×0.8	44	11	M5×0.8
80	106	82	77	5	9	4	28	$14h9^{+0}_{-0.043}$	20	6	44	$8H9^{+0.036}_{-0}$	11	19	6.6	95	27	13.5	53.5	63.5	12	M6×1	56	12	Rc1/8

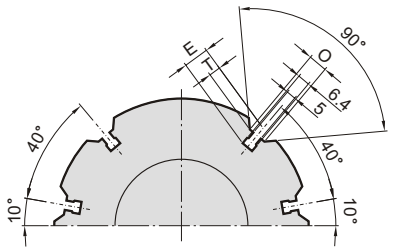
Code / Tube I.D.	UA	UU	X	XA	XX	Y	YY	Z	ZA	ZZ
32	6	M4×0.7	22	3	$3H9^{+0.030}_{-0}$	19.5	$3H9^{+0.030}_{-0}$	5	2	$34H9^{+0.062}_{-0}$
40	7.5	M5×0.8	26.5	4	$4H9^{+0.030}_{-0}$	23.5	$4H9^{+0.030}_{-0}$	6	2	$42H9^{+0.062}_{-0}$
50	10	M5×0.8	31	4	$4H9^{+0.030}_{-0}$	28	$4H9^{+0.030}_{-0}$	6	2	$52H9^{+0.074}_{-0}$
63	9	M6×1	38	5	$5H9^{+0.030}_{-0}$	34.5	$5H9^{+0.030}_{-0}$	7	2.5	$65H9^{+0.074}_{-0}$
80	12	M6×1	47.5	6	$6H9^{+0.036}_{-0}$	43.5	$6H9^{+0.036}_{-0}$	8	3	$82H9^{+0.087}_{-0}$

MCHG2 Dimensions ϕ100, ϕ125

LOWER HEIGHT of THREE JAW GRIPPERS



Auto switch mounting groove position (4 places)



Code / Tube I.D.	A	B	C	D	E	F	G	H	I	J	K	L	MA	MB	MM	MR	N1	N2	P	PP	QA	QQ	R	S	T
100	134	96	90	6	13	4	34	$18h9^{+0}_{-0.052}$	23	7.5	42.5	$8H9^{+0.036}_{-0}$	14	21	9	118	30.6	18	66	78	16	M8 × 1.25	63	15	5
125	166	122	114	8	15	6	40	$22h9^{+0}_{-0.052}$	31	10.5	50	$10H9^{+0.043}_{-0}$	17.5	34	11	148	38	23.5	82	98	20	M10 × 1.5	84	18	7

Code / Tube I.D.	TT	UA	UU	X	XA	XX	Y	YA	YY	Z	ZA	ZZ
100	Rc1/4	16	M8 × 1.25	59	6	$8H9^{+0.036}_{-0}$	54	6	$8H9^{+0.036}_{-0}$	10	4	$102H9^{+0.087}_{-0}$
125	Rc3/8	20	M10 × 1.5	74	8	$10H9^{+0.043}_{-0}$	68	8	$10H9^{+0.043}_{-0}$	12	6	$130H9^{+0.100}_{-0}$