CTLB

CTLB HIGH PRESSURE HYDRAULIC SWING CLAMP

FEATURES

Excellent structural design, greatly expand the use of the length of the plate, suitable for high-speed action durability, With excellent anti-coolant intrusion structure, speed control valves can be installed directly.

Max.operating pressure:350kgf/cm²
Min.operating pressure:70kgf/cm²

NOTE

The action and the speed of clamping/unclampingneeds to be slowed down approiately.The size of the press arm is shown in thepress arm parameters atthe back.

ORDERING INDICATION

CTLB-0402CR

CTLB	Series	CTLB	
0402	Body size	0402: ΦD=32mm 0602: ΦD=36mm 0802: ΦD=39mm 1002: ΦD=46.5mm 1602: ΦD=53mm 2502: ΦD=71mm 4002: ΦD=90mm	(Outer diameter (∅D) of the cylinder)
C	Piping Method	C:Gasket Option(With G Thread Plug)	
R	Swing direction when Clamping	R:Turn right L:Turn left	

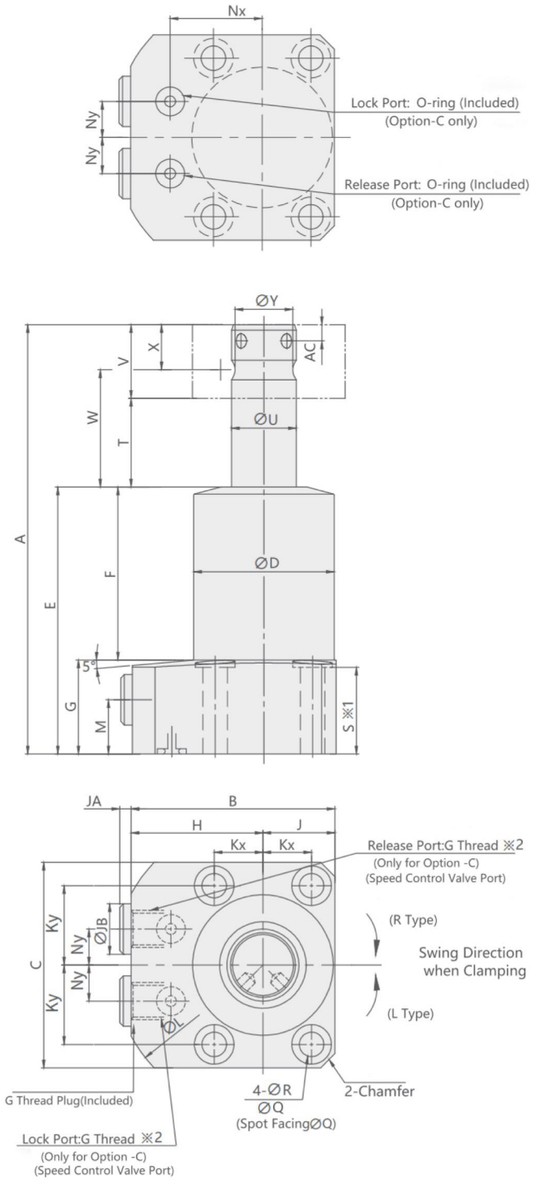
Note:Speed control valve(CZT) is sold separately.

SPECIFICATIONS

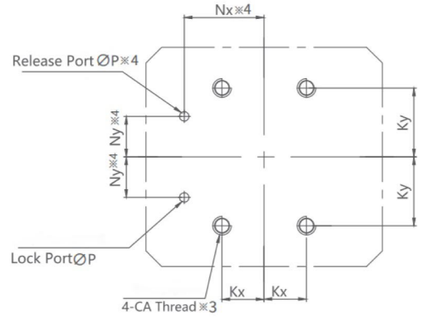
MODEL	CLAMPING FORCEAT 350kgf/cm²(kgf)	CLAMPING STROKE(mm)	EXTRA STROKE(mm)	TOTAL STROKE(mm)	CYLINDER CAPACITY UNCLAMP(cm³)	CYLINDER CAPACITY CLAMP(cm³)	EFF.PISTON AREA UNCLAMP(cm²)	EFF.PISTON AREA CLAMP(cm²)	RANGE OF TEMPERATURE(°C)
CTLB-0402	350	8	6	14	3.6	1.4	2.545	1.005	0~+70°c
CTLB-0602	508	8	7	15	5.2	2.2	3.463	1.453	0~+70°c
CTLB-0802	690	10	8	18	8.1	3.6	4.524	1.979	0~+70°c
CTLB-1002	980	10	9.5	19.5	12.9	5.5	6.605	2.804	0~+70°c
CTLB-1602	1459	13	11	24	21.8	10	9.079	4.170	0~+70°c
CTLB-2502	2869	16	16	32	57.9	26.2	18.096	8.198	0~+70°c
CTLB-4002	4329	16	19.5	35.5	100.4	43.9	28.274	12.370	0~+70°c

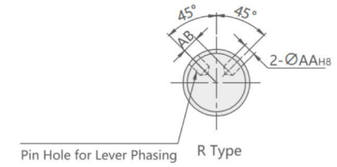
External Dimensions

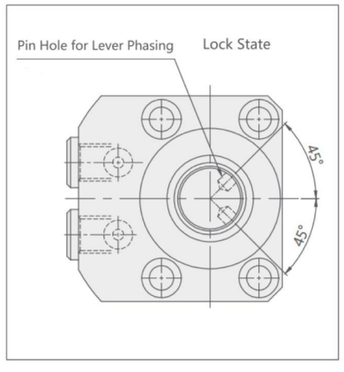
C: Gasket Option(With G Thread Plug)
※The drawing shows the released state of CTLB-2CL.



Machining Dimensions of Mounting Area







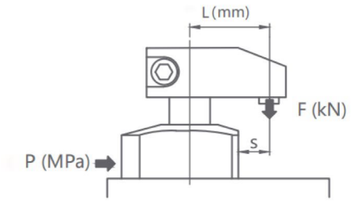
NOTE

※1.Mounting bolts are not provided . Please prepare them according to the mounting height referring to dimension"S".
※2.Speed control valve is sold separately.
※3.CA tapping depth of the mounting bolt should be decided according to the mounting height referring to dimension'S'.
※4.The machining dimension is for -C:Gasket option.

Unit:mm

MODEL NO	CTLB-0402□□	CTLB-0602□□	CTLB-0802□□	CTLB-1002□□	CTLB-1602□□	CTLB-2502□□	CTLB-4002□□
Full Stroke	14	15	18	19.5	24	32	35.5
Swing Stroke	6	7	8	9.5	11	16	19.5
Lock Stroke	8	8	10	10	13	16	16
A	97.5	105	119	134.5	159.5	211	241
B	49.5	53.5	56.5	64	71.5	99.5	118
C	47	55	57	70	71	84	102
D	32	36	39	46.5	53	71	90
E	62.5	66	74	83	99.5	131	148.5
F	36.5	40	48	57	72.5	101	112.5
G	26	26	26	26	27	30	36
H	33	35	36.5	40	43.5	57.5	67
J	16.5	18.5	20	24	28	42	51
Kx	11	12	13.5	16	20	32	40
Ky	18	21	22	27	27.5	32	40
L	76	78	83	93	98	132	148
M	15	15	15	15	16	16.5	22.5
Nx	22	24	25.5	29	32.5	43.5	53
Ny	9	9	10	12	14	19	20
P	3	3	3	3	3	5	5
Q	9	11	11	14	14	17.5	20
R	5.5	6.8	6.8	9	9	11	14
S	24	24	24	24	25	28	33
T	16	17	20	21.5	26	34	37.5
U	14	16	18	22	25	35.5	45
V	19	22	25	30	34	46	55
W	25.5	28	32.5	36.5	43	57	65
X	9.5	11	12.5	15	17	23	27.5
Y	12.5	14	16	19.5	22	31	39.5
AA	$3^{+0.014}_{0}$	$4^{+0.018}_{0}$	$4^{+0.018}_{0}$	$4^{+0.018}_{0}$	$4^{+0.018}_{0}$	$6^{+0.018}_{0}$	$8^{+0.018}_{0}$
AB	4	4	5	7	8.5	11.75	14.5
AC	3.5	4.5	4.5	4.5	5	6.5	9
CA	M5X0.8	M6	M6	M8	M8	M10	M12
JA	4	4	4	4	4	4.5	4.5
JB	14	14	14	14	14	19	19
Chamfer	3	4	4	4	4	6	6
G Thread	G1/8	G1/8	G1/8	G1/8	G1/8	G1/4	G1/4
0-ring(Option-C)	1BP5	1BP5	1BP5	1BP5	1BP5	1BP7	1BP7
(Lever Phasing Pin (Included)	Ø3x6	Ø4x8	Ø4x8	Ø4x8	Ø4x8	Ø6x12	Ø8x16

Clamping Force Curve

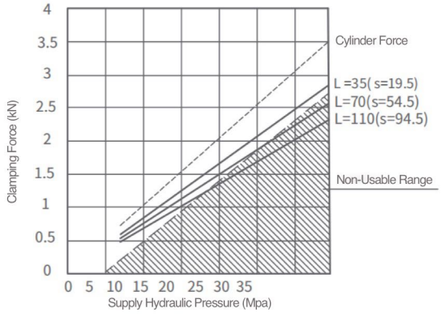


※CTLA-□□-P
CTLB-□□-P
When using the double-press arm type, it does not comply with the performance curve of this chart.
Please calculate it separately using the specification's calculation formula.

(Ex.)In case of TLB1602□□ :
When supply hydraulic pressure P is 25.0MPa and lever length L is 50mm, clamping force becomes about 8.9 kN.

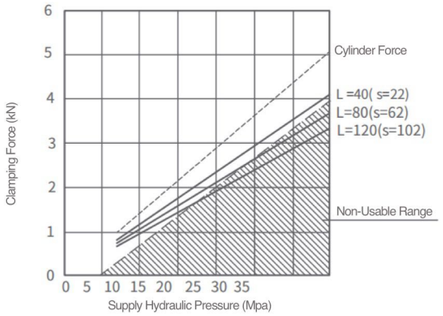
CTLA-0402□□ / CTLB-0402□□ Clamping Force Calculation Formula※1(kN) F=P/(10.94+0.036×L)

Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Length L (mm) L=35	L=40	L=50	L=60	L=70	L=80	L=90	L=100	max. Lever length (L) (mm)
35	3.52	2.9	2.9							48
32.5	3.27	2.7	2.7	2.6						52
30	3.02	2.5	2.5	2.4						57
27.5	2.77	23	2.3	2.2						63
25	2.52	2.1	2.1	2.0	2.0	1.9				71
22.5	2.27	1.9	1.9	1.8	1.8	1.7	1.7			81
20	2.01	1.7	1.7	1.6	1.6	1.5	1.5	1.5		95
17.5	1.76	1.5	1.5	1.4	1.4	1.4	1.3	1.3	1.2	110
15	1.51	1.3	13	1.2	1.2	1.2	1.1	1.1	1.1	130
12.5	1.26	1.1	1.1	1.0	1.0	1.0	1.0	0.9	0.9	140
10	1.01	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.7	140
7	0.71	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	140
Max. Operating Pressure (MPa)		35	35	33.6	28.8	25.4	22.8	20.8	17.9	



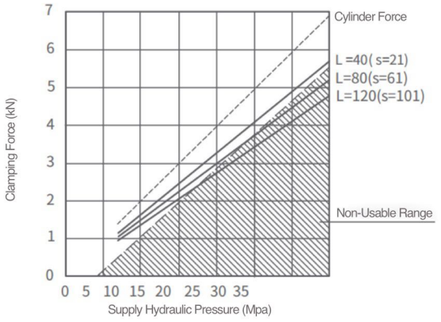
CTLA-0602□□ / CTLB-0602□□ Clamping Force Calculation Formula※1(kN) F=P/(7.57+0.024×L)

Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Length L (mm) L=40	L=50	L=60	L=70	L=80	L=90	L=100	L=120	max. Lever length (L) (mm)
35	5.09	4.2								49
32.5	4.73	3.9	3.8							54
30	4.36	3.6	3.5							59
27.5	4.00	3.3	3.2	3.1						66
25	3.64	3.0	2.9	2.8	2.8					74
22.5	3.27	2.7	2.6	2.5	2.5	2.4				84
20	2.91	2.4	2.3	2.3	2.2	2.2	2.1			98
17.5	2.55	2.1	2.0	2.0	1.9	1.9	1.8	1.8		117
15	2.18	1.8	1.8	1.7	1.7	1.6	1.6	1.6	1.5	135
12.5	1.82	1.5	1.5	1.4	1.4	1.4	1.3	1.3	1.2	170
10	1.46	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.0	180
7	1.02	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.7	180
Max. Operating Pressure (MPa)		35	34.6	29.6	26.0	23.4	21.3	19.6	17.2	



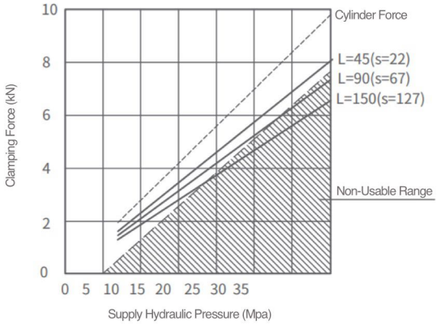
CTLA-0802□□ / CTLB-0802□□ Clamping Force Calculation Formula※1(kN) F=P/(5.53+0.0147×L)

Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Length L (mm) L=40	L=50	L=60	L=70	L=80	L=90	L=100	L=120	max. Lever length (L) (mm)
35	6.93	5.8	5.6							50
32.5	6.44	5.4	5.2							55
30	5.94	5.0	4.8	4.7						60
27.5	5.45	4.5	4.4	4.3						66
25	4.95	4.1	4.0	3.9	3.9					74
22.5	4.46	3.7	3.6	3.6	3.5	3.4				84
20	3.96	3.3	3.2	3.2	3.1	3.0	3.0			98
17.5	3.47	2.9	2.8	2.8	2.7	2.7	2.6	2.5		116
15	2.97	2.5	2.4	2.4	2.3	2.3	2.2	2.2	2.1	135
12.5	2.48	2.1	2.0	2.0	2.0	1.9	1.9	1.8	1.8	170
10	1.98	1.7	1.6	1.6	1.6	1.5	1.5	1.5	1.4	210
7	1.39	1.2	1.2	1.1	1.1	1.1	1.1	1.0	1.0	210
Max. Operating Pressure (MPa)		35	35	30.0	26.3	23.5	21.4	19.6	17.1	



CTLA-1002□□ / CTLB-1002□□ Clamping Force Calculation Formula※1(kN) F=P/(3.91+0.049×L)

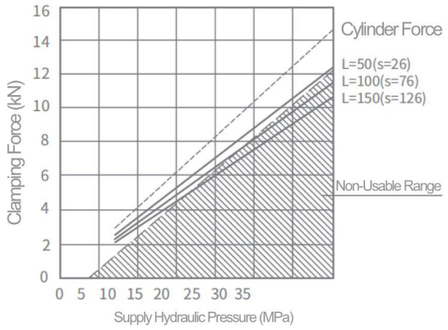
Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Length L (mm) L=45	L=50	L=60	L=70	L=90	L=110	L=130	L=150	max. Lever length (L) (mm)
35	9.82	8.1	8.0	7.9						66
32.5	9.12	7.6	7.5	7.3	7.2					72
30	8.42	7.0	6.9	6.8	6.6					80
27.5	7.72	6.4	6.3	6.2	6.1					88
25	7.01	5.8	5.8	5.6	5.5	5.3				99
22.5	6.31	5.2	5.2	5.1	5.0	4.8	4.6			113
20	5.61	4.7	4.6	4.5	4.4	4.3	4.1	3.9		132
17.5	4.91	4.1	4.0	4.0	3.9	3.7	3.6	3.5	3.3	145
15	4.21	3.5	3.5	3.4	3.3	3.2	3.1	3.0	2.9	175
12.5	3.51	2.9	2.9	2.8	2.8	2.7	2.6	2.5	2.4	230
10	2.81	2.4	2.3	2.3	2.2	2.2	2.1	2.0	1.9	230
7	1.97	1.7	1.6	1.6	1.6	1.5	1.5	1.4	1.4	230
Max. Operating Pressure (MPa)		35	35	35	33.4	27.1	23.0	20.2	18.2	



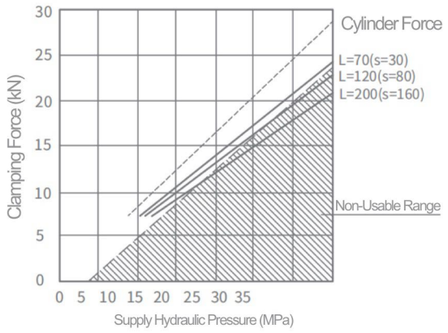
NOTES :

1. Tables and graphs show the relationship between the clamping force (kN) and supply hydraulic pressure (MPa).
2. The cylinder force (L=0) cannot be calculated using the clamping force calculation formula.
3. Levers with a high inertia may sometimes fail to operate depending on the supply hydraulic pressure, lever mounting position, etc.
4. Values in the charts below indicate the clamping force when the lever clamps a workpiece in the horizontal position.
5. The clamping force varies depending on the lever length. Set the appropriate supply hydraulic pressure based on the lever length.
6. Using the product outside the allowable operating range may cause deformation, jamming, and fluid leakage.
7. The tables and graphs are for reference only. For exact values, please calculate them based on the clamping force calculation formula.
   ※ In the clamping force calculation formula: F: Clamping Force (kN), P: Supply Hydraulic Pressure (MPa), L: Lever Lengthmm).

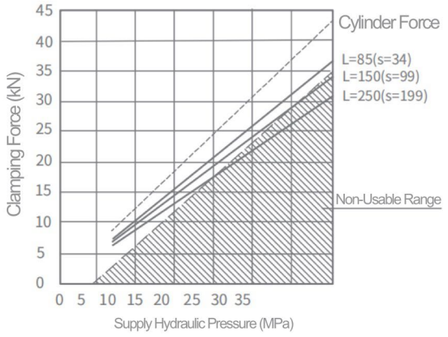
CTLA-1602□□ CTLB-1602□□	Clamping Force Calculation Formula ※1 (kN). F = P/(2.59+0.0046xL)									
Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Lengths L (mm)								Max. Lever Length (L)
		L=50	L=60	L=70	L=80	L=90	L=100	L=120	L=150	(mm)
35	14.60	12.5	12.3							62
32.5	13.56	11.6	11.4							67
30	12.51	10.7	10.5	10.4						73
27.5	11.47	9.8	9.6	9.5	9.3					81
25	10.43	8.9	8.8	8.6	8.5	8.4				90
22.5	9.39	8.0	7.9	7.8	7.7	7.5	7.4			102
20	8.34	7.1	7.0	6.9	6.8	6.7	6.6			118
17.5	7.30	6.3	6.2	6.1	6.0	5.9	5.8	5.6		139
15	6.26	5.4	5.3	5.2	5.1	5.0	5.0	4.8	4.6	150
12.5	5.22	4.5	4.4	4.3	4.3	4.2	4.1	4.0	3.9	195
10	4.17	3.6	3.5	3.5	3.4	3.4	3.3	3.2	3.1	230
7	2.92	2.5	2.5	2.5	2.4	2.4	2.3	2.3	2.2	230
最高使用圧力（MPa）		35	35	31.3	27.8	25.1	22.9	19.7	16.4	



CTLA-2502□□ CTLB-2502□□	Clamping Force Calculation Formula ※1 (kN). F = P/(1.32+0.0018xL)									
Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Lengths L (mm)								Max. Lever Length (L)
		L=70	L=80	L=90	L=100	L=120	L=140	L=160	L=200	(mm)
35	28.70	24.3	24.0	23.7						91
32.5	26.65	22.5	22.2	22.0						99
30	24.60	20.8	20.5	20.3	20.0					109
27.5	22.55	19.1	18.8	18.6	18.4	18.0				120
25	20.50	17.3	17.1	16.9	16.7	16.3				134
22.5	18.45	15.6	15.4	15.2	15.0	14.7	14.4			153
20	16.40	13.9	13.7	13.5	13.4	13.1	12.8	12.5		176
17.5	14.35	12.2	12.0	11.9	11.7	11.4	11.2	10.9	10.5	208
15	12.30	10.4	10.3	10.2	10.0	9.8	9.6	9.4	9.0	240
12.5	10.25	8.7	8.6	8.5	8.4	8.2	8.0	7.8	7.5	280
10	8.20	7.0	6.9	6.8	6.7	6.6	6.4	6.3	6,0	280
7	5.74	4.9	4.8	4.8	4.7	4.6	4.5	4.4	4.2	280
最高使用圧力（MPa）		35	35	35	32.3	27.5	24.2	21.6	18.1	

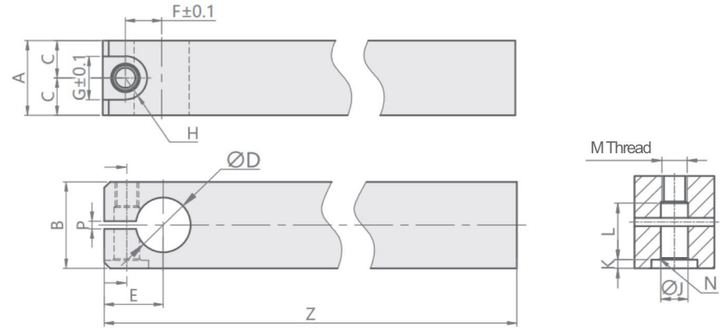


CTLA-4002□□ CTLB-4002□□	Clamping Force Calculation Formula ※1 (kN). F = P/(0.87+0.0011xL)									
Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Lengths L (mm)								Max. Lever Length (L)
		L=85	L=100	L=125	L=150	L=175	L=200	L=225	L=250	(mm)
35	43.30	36.4	35.8	34.8						126
32.5	40.21	33.8	33.2	32.3						138
30	37.11	31.2	30.7	29.8	29.0					151
27.5	34.02	28.6	28.1	27.3	26.6					168
25	30.93	26.0	25.6	24.9	24.2	23.6				189
22.5	27.84	23.4	23.0	22.4	21.8	21.2	20.7			216
20	24.74	20.8	20.5	19.9	19.4	18.9	18.4	17.9	17.5	251
17.5	21.65	18.2	17.9	17.4	17.0	16.5	16.1	15.7	15.3	290
15	18.56	15.6	15.4	14.9	14.5	14.2	13.8	13.5	13.2	330
12.5	15.47	13.0	12.8	12.5	12.1	11.8	11.5	11.2	11.0	330
10	12.37	10.4	10.3	10.0	9.7	9.5	9.2	9.0	8.8	330
7	8.66	7.3	7.2	7.0	6.8	6.6	6.5	6.3	6.2	330
最高使用圧力（MPa）		35	35	35	30.2	26.6	23.9	21.8	20.1	



Accessory : Blank Swing Lever

※ When designing and machining the lever, make sure that the dimensions of the mounting part do not exceed the range specified in the table below. If the dimensions exceed the specified range during manufacturing, it may cause failures such as insufficient clamping force, deformation, jamming, and poor operation.

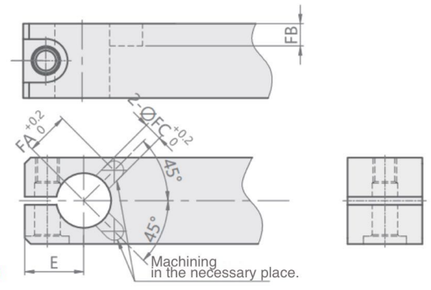


Unit:mm

MODEL	CTLA-0402□□ CTLB-0402□□	CTLA-0602□□ CTLB-0602□□	CTLA-0802□□ CTLB-0802□□	CTLA-1002□□ CTLB-1002□□	CTLA-1602□□ CTLB-1602□□	CTLA-2502□□ CTLB-2502□□	CTLA-4002□□ CTLB-4002□□
A	19	22	25	30	34	46	55
B	22	25	26	32	36	53	70
C	9.5	11	12.5	15	17	23	27.5
D	14 $^{0}_{-0.016}$	16 $^{0}_{-0.016}$	18 $^{0}_{-0.016}$	22 $^{0}_{-0.02}$	25 $^{0}_{-0.02}$	35.5 $^{0}_{-0.025}$	45 $^{0}_{-0.025}$
E	15	18	19	23	26.5	36.5	46
F	9.25	11	12	14.75	17	23.5	29.75
G	11	14	14	17.5	20	26	32
H	5.5	7	7	8.75	10	13	16
J	6.5	8.5	8.5	10.5	12.5	16.5	21
K	2	3	3	4	4	7	9
L	13.5	15.5	16	18	22	31	42
M	M6	M8x1	M8x1	M10x1.25	M12x1.5	M16x1.5	M20x2
N	C0.4	C0.6	C0.6	C0.6	C1	C1	C1
P	2	2	2	2	2	2	2
Z	105	120	145	160	170	185	220

NOTES

1. When it is necessary to adjust the phase of the lever, please perform additional machining by referring to the "(additional machining dimensions for pin hole for phase determination)".
2. The lever mounting bolts must be purchased separately by the user.



Pin Hole for Lever Phasing Additional Machining Dimensions (Reference)

Unit:mm

MODEL	CTLA-0402□□ CTLB-0402□□	CTLA-0602□□ CTLB-0602□□	CTLA-0802□□ CTLB-0802□□	CTLA-1002□□ CTLB-1002□□	CTLA-1602□□ CTLB-1602□□	CTLA-2502□□ CTLB-2502□□	CTLA-4002□□ CTLB-4002□□
E	15	18	19	23	26.5	36.5	46
FA	10.5	12.5	13.5	15.5	17	24.2	31
FB	5.5	7	7	7	7.5	10	13.5
FC	3	4	4	4	4	6	8

NOTES

1. Machine the pin hole for lever phasing in the necessay place referring to the drawing.