K□L Series

Air cylinder/With fall prevention device
∅40, ∅50, ∅63, ∅80, ∅100

Ordering Instructions

K G L H 2 - 40 N - 100 - L - MA 2 - Y

① G, ② H, ③ 2, ④ 40, ⑤ N, ⑥ 100, ⑦ L, ⑧ MA, ⑨ 2, ⑩ Y

① Magnet
G : Cylinder with switch available (With built-in magnet)

② Lock Position
H : Rod side lock
R : Head side lock

③ Action
2 : Double acting, single rod

④ Bore(mm)
40 : ∅40
50 : ∅50
63 : ∅63
80 : ∅80
100 : ∅100

⑤ Cushion
No symbol : Both-side air cushion (Standard)
R : Rod side air cushion
H : Head side air cushion
N : No cushion
F : Cushion on the other side (R)

⑥ Stroke (mm)
Refer to Standard Stroke Table

⑦ Mounting
N : Standard type
L : Axial foot
A : Rod side flange
B : Head side flange
C : Eye
W : Clevis
T : Center trunnion

⑧ Sensor switch type

No symbol	No switch	
MA	MA-1 (AC110V, DC24V)	M type reed switch
MB	MD-1 (DC24V)	
MC	MD-3 (DC5, 6V)	
MD	MR (AC, DC5~110V)	
ME	MA-2L (AC110V)	
MF	MA-2H (AC220V)	
MG	MT-3 (DC5~30V)	M type proximity switch
MH	MT-3U (DC5~30V)	
MJ	MT-2 (DC24V)	
MK	MT-2U (DC24V)	

⑨ Number of switchs
No symbol : No switch
2 : With 2 units
1 : With 1 unit

⑩ Accessories
No symbol : Rod end nut
Y : With rod end clevis
I : With rod end eye
(note) Y : Provided with pin

Model No. of Mounting Bracket

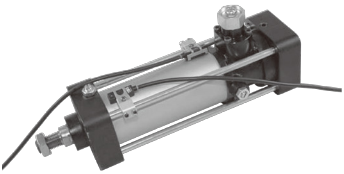
Bore (mm)	∅40	∅50	∅63	∅80	∅100
Axial foot mount bracket	K40-L	K50-L	K63-L	K80-L	K100-L
Flange mount bracket	K40-A	K50-A	K63-A	K80-A	K100-A
Eye mount bracket	K40-C	K50-C	K63-C	K80-C	K100-C
Clevis mount bracket	K40-W	K50-W	K63-W	K80-W	K100-W
Trunnion mount bracket	K40-T	K50-T	K63-T	K80-T	K100-T

Model No. of Sensor Switch Mounting Bracket

Bore (mm)	M type sensor switch	
	Reed	Proximity
∅40	K40-MJ	K40-MTJ
∅50		
∅63		
∅80	K80-MJ	K80-MTJ
∅100		

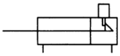
Model No. of Packing

Bore (mm)	Packing
∅40	KL40-PS
∅50	KL50-PS
∅63	KL63-PS
∅80	KL80-PS
∅100	KS100-PS



The built-in magnet is provided by default. Pneumatic cylinders of K, A Series provide a locking device (so-called fall prevention device). When a starting point or an end point of the stroke is reached, air supply will be terminated and the locking device will thus be activated. This device helps prevent cylinder from falling and related hazards from happening.

JIS Label



Double acting

Value shown in this catalog is shown in SI unit. However, value within this output table is in generic unit. Use the following formula to convert to SI unit:

Pressure Y(MPa) = X(kgf/cm^2)×9.80665×10^{-2}

Force Y(N)=X(kgf)×9.80665

Specifications

Action	Unit	Double-acting
Fluid		Non-lubricated air/Lubricated air
Pressure range	MPa(kgf/cm^2)	0.15~1(1.5~10.7)
Temperature range	°C	5~60
Piston speed range	mm/s	50~500
Cushion		Standard
Piston stroke allowance	mm	~250: $^{+1.0}_{0}$ 251~1000: $^{+1.4}_{0}$
Mounting		Standard type, Axial foot, Rod side flange , Head side flange, Eye, Clevis, Center trunnion
Locking position		Back end, Rod end
Piston stroke when locking	mm	5
Manual unlock		∅40: Non-locking type ∅50~ ∅100: Locking type

Standard Stroke

(Unit: mm)

Bore	Standard Stroke	Max. Stroke
∅40	50, 75, 100, 150, 200, 250, 300, 350, 400, 450, 500	600
∅50		800
∅63		
∅80		1000
∅100		

Cushion Stroke

(Unit: mm)

Bore	Cushion Stroke
∅40	16
∅50	
∅63	
∅80	20
∅100	

Maximum Load Weight

(Unit: mm)

Bore	Maximum Load Weight
∅40	125
∅50	195
∅63	310
∅80	500
∅100	775

Accessories

Name		Standard type	Axial foot	Rod side flange	Head side flange	Eye	Clevis	Center trunnion
Standard	Rod end nut	○	○	○	○	○	○	○
	Clevis fixed shaft type	—	—	—	—	—	○	—
Optional	With rod end clevis	○	○	○	○	○	○	○
	With rod end eye	○	○	○	○	○	○	○

Model With Switch

M Type Reed Switch

Lead With Wire

Model No.	Rated voltage(V)	Rated current(mA)	Pilot lamp (Lights up at ON)	Application
MA-1	AC110	5~45	○	Relay PLC
	DC24	5~45		
MD-1	DC24	25~65	○	Relay
MD-3	DC5, 6	Max.50 (Inductive load) Max.300 (Resistive load)	○	IC circuit
MR	AC DC 5~110	Max.50 (Inductive load) Max.300 (Resistive load)	No indicator	Relay PLC
MA-2L	AC110	5~150	○	Relay
MA-2H	AC220	5~150	○	Relay

(Note) The MA-2L is the same as the MA-1 except that MA-2H is also equipped with protective circuit SS-2L.
The MA-2H is the same as the MA-1 except that MA-2H is also equipped with protective circuit SS-2H.

M Type Proximity Switch

Lead With Wire

Model No.	Rated voltage (V)	Rated current range(mA)	Pilot lamp (Lights up at CN)	Application
MT-2 MT-2U	DC24 (DC10~30)	5~100	○	Relay PLC
MT-3 MT-3U	DC5~30	5~200	○	Relay PLC IC circulit

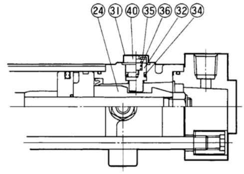
Minimum Stroke with M Type Switch

(Unit: mm)

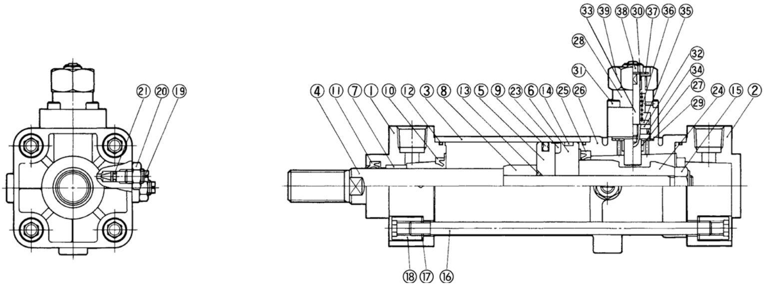
Bore	Number of switchs			
	Aside from center trunnion			Center trunnion
	With 2 units (on the same surface)	With 2 units (on different surfaces)	With 1 unit	With 2 units (on the same surface)
∅40	10	10	5	75
∅50				85
∅63				
∅80				95
∅100				100

Construction

ϕ40



ϕ50～ϕ100



Parts List

No.	Description	No.	Description
1	Front cover	21	Cushion needle packing
2	End cover	22	Rod end nut
3	Outer tube	23	Magnet
4	Piston rod	24	Sleeve B
5	Piston A	25	Cushion packing B
6	Piston B	26	ML base
7	Bearing	27	Bearing A
8	Cushion sleeve	28	Locking body
9	Piston packing	29	Gasket A
10	Cushion packing	30	Bearing B
11	Rod packing	31	Hexagon socket screw
12	O-ring for cover	32	Locking piston
13	Sleeve gasket	33	Locking rod
14	Wear ring	34	Locking rod packing
15	U-shaped nut	35	Gasket B
16	Tie rod	36	Locking spring
17	Washer	37	Braking device
18	Tie rod nut	38	U-shaped nut
19	Cushion needle	39	Release knob
20	Cushion locking nut	40	Locking cap

Packing List

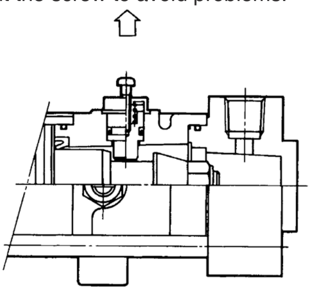
Bore(mm)	9.Piston packing		10.Cushion packing		11.Rod packing		12.O-ring for cover	
	Model No.	Amount	Model No.	Amount	Model No.	Amount	Model No.	Amount
∅40	PSD-40	1	CP-18	1	PDU-16	1	KG40	3
∅50	PSD-50	1	CP-24	1	PDU-20	1	KG50	3
∅63	PSD-63	1	CP-24	1	PDU-20	1	KG63	3
∅80	PSD-80	1	CP-30	1	PDU-25	1	KG80	3
∅100	PSD-100	1	CP-35	1	PDU-30	1	KG100	3

Bore(mm)	13.Sleeve gasket		21.Cushion needle packing		25.Cushion packing B		34.Locking rod packing	
	Model No.	Amount	Model No.	Amount	Model No.	Amount	Model No.	Amount
∅40	IN-11.2	1	P3	2	CP-24	1	NY-9N	1
∅50	P12	1	P3	2	CP-30	1	NY-16N	1
∅63	P12	1	P3	2	CP-30	1	NY-16N	1
∅80	P16	1	P3	2	CP-40	1	NY-21N	1
∅100	P20	1	P3	2	CP-45	1	NY-21N	1

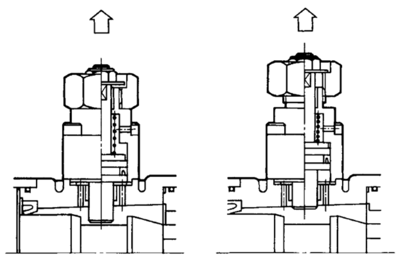
(Note) Packing repair and assembly kits are also available for purchase.

Manual unlock

(∅40)
When unlocking, insert the screw to the hole of in the tip-top of locking cover and pull the screw upward to unlock the piston. The piston will automatically lock up after resetting. The above-mentioned screw (M3X0.5X12ℓ) comes with the cylinder set. However, during regular operation, please take out the screw to avoid problems.



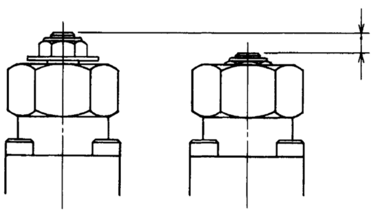
(∅50～∅100)
When turning the knob counter-clockwise all the way down, the cylinder will be unlocked (in this circumstance, cylinder will continue to remain at unlock state). If locking device is needed, simply turning the knob clockwise to activate the locking state.



K, A Series

Locking indications for bore size of 50mm~100mm

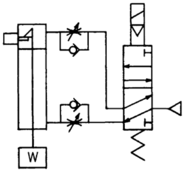
When the position of majority of the U-shaped nut exceeds over the release knob, it means the cylinder is at unlock state (unlocked by the air during cylinder acting). When cylinder is manually locked, the U-shaped nut should only expose minimally, as the graph suggest.



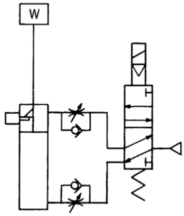
Operational Prevention Measure

Pneumatic circuit recommended

Fall prevention device set at the rod end



Fall prevention device set at the head center

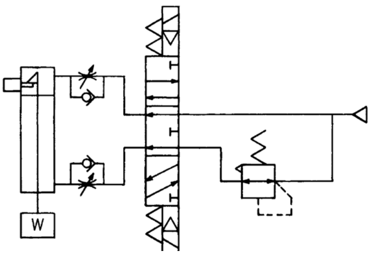


Precautions with regard to control circuit selection

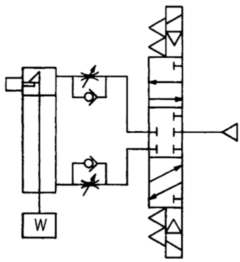
Do not operate the control circuit of a pneumatic cylinder as the graph shown below. If a three-position solenoid is used, it cannot be locked because there is residual pressure at the port of locking device. In addition, air leakage from the solenoid will enter into a pneumatic cylinder, locking will be removed as time goes by.

This circuit may not be used.

Connect ABR port, P port closed type.



All ports closed type.



Before operation, check whether air for the control circuit is prioritized to supply ports without locking devices. (Please refer to the above circuit recommended).

Operating pressure

Please operate at the port with a locking device under pneumatic pressure over 0.15MPa{1.5kgf/cm2}. If the pneumatic pressure falls below above-mentioned pressure, it will not be unlocked.

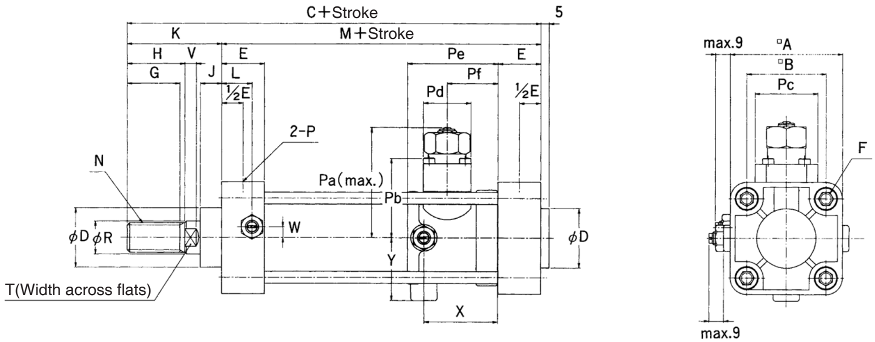
Unlocking

When unlocking is needed, first check that air supply is provided to the port of the non-locking side to avoid loading on the locking device. If unlocking is conducted simultaneously with air discharge to the port of the non-locking side, excessive force may cause damages to locking devices or sudden movement.

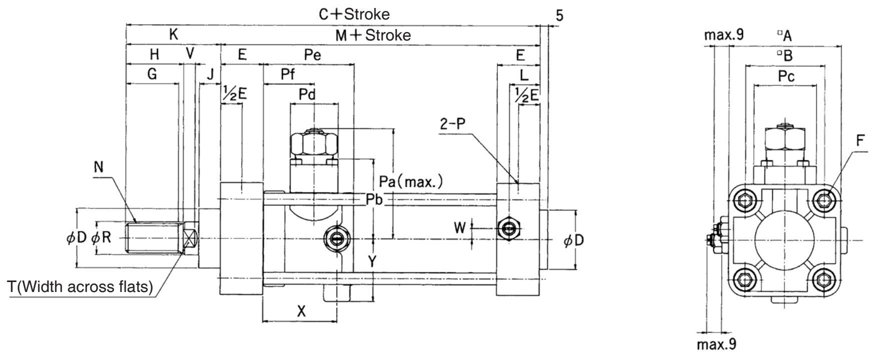
Standard type/N

(Unit: mm)

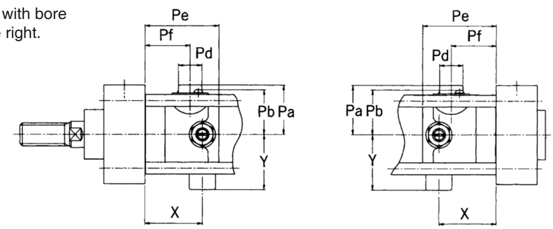
Lock setting on head side/KGLH2



Lock setting on rod side/KGLR2



Locking mechanism of cylinder with bore size of 40mm are shown on the right.



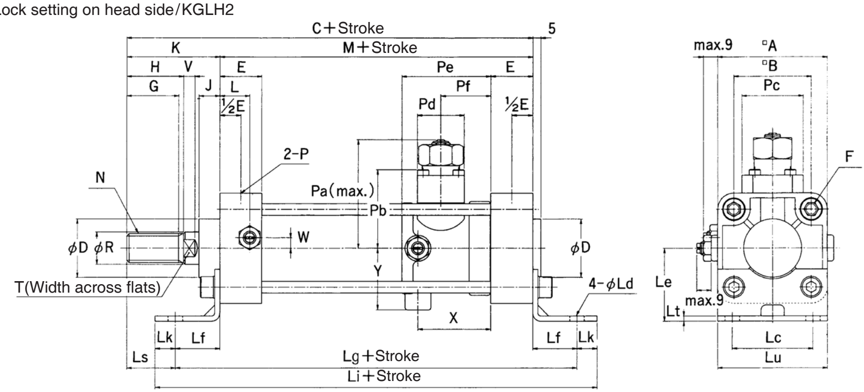
Bore	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	T	V	W
∅40	60	41	180	30	25	M8	27	30	12	51	17	129	M14×1.5	Rc¼	16	14	7	7.5
∅50	68	48	201.5	36	26	M8	32	35	13	57.5	18	144	M18×1.5	Rc⅜	20	17	7	6.5
∅63	78	58	208.5	36	26	M8	32	35	13	60.5	18	148	M18×1.5	Rc⅜	20	17	8	0
∅80	96	72	254	42	32	M10	36	40	16	74	24	180	M22×1.5	Rc½	25	22	13	0
∅100	110	86	261	48	32	M10	36	40	18	79	24	182	M26×1.5	Rc½	30	27	13	0

Bore	X	Y	Pa	Pb	Pc	Pd	Pe	Pf
∅40	36	33.5	30	27	26	14.3	45	27.5
∅50	45	38	76	49	38	29	55	30.5
∅63	45	39	76	49	38	29	55	30.5
∅80	60	47	92	58	48	39	70	38.5
∅100	60	55	94.5	60.5	48	39	70	38.5

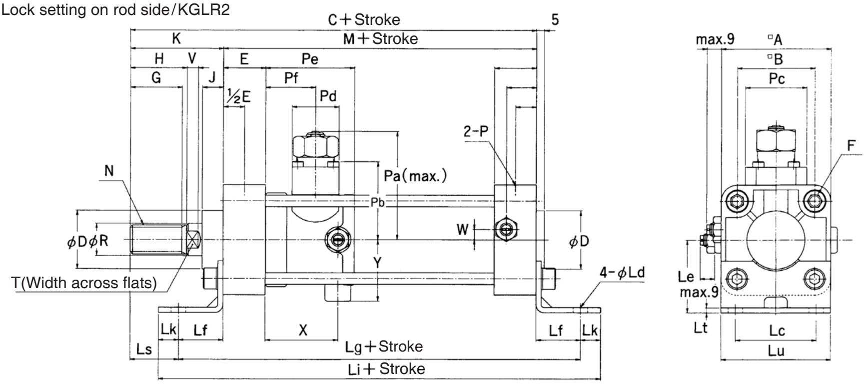
Axial foot mounting/L

(Unit: mm)

Lock setting on head side/KGLH2



Lock setting on rod side/KGLR2



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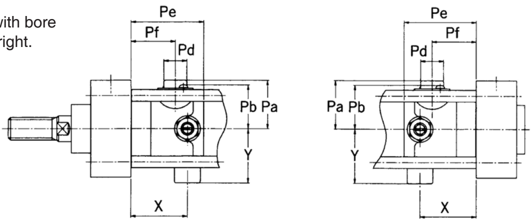

Bore	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	T	V	W
∅40	60	41	180	30	25	M8	27	30	12	51	17	129	M14×1.5	Rc¼	16	14	7	7.5
∅50	68	48	201.5	36	26	M8	32	35	13	57.5	18	144	M18×1.5	Rc⅜	20	17	7	6.5
∅63	78	58	208.5	36	26	M8	32	35	13	60.5	18	148	M18×1.5	Rc⅜	20	17	8	0
∅80	96	72	254	42	32	M10	36	40	16	74	24	180	M22×1.5	Rc½	25	22	13	0
∅100	110	86	261	48	32	M10	36	40	18	79	24	182	M26×1.5	Rc½	30	27	13	0

Bore	Lc	Ld	Le	Lf	Lg	Li	Lk	Ls	Lt	Lu	X	Y	Pa	Pb	Pc	Pd	Pe	Pf
∅40	42	9	40	27	183	207	12	24	3.2	60	36	33.5	30	27	26	14.3	45	27.5
∅50	50	9	45	27.5	199	224	12.5	30	3.2	68	45	38	76	49	38	29	55	30.5
∅63	59	11.5	50	36.5	221	248	13.5	24	3.2	78	45	39	76	49	38	29	55	30.5
∅80	76	13.5	65	47	274	308	17	27	4	100	60	47	92	58	48	39	70	38.5
∅100	92	13.5	75	50	282	316	17	29	4	116	60	55	94.5	60.5	48	39	70	38.5

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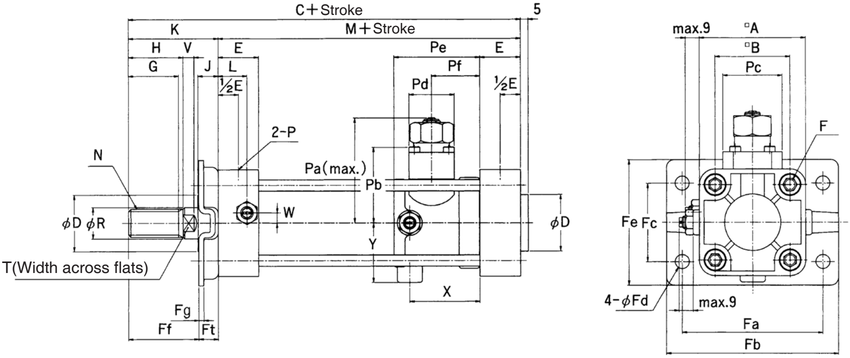
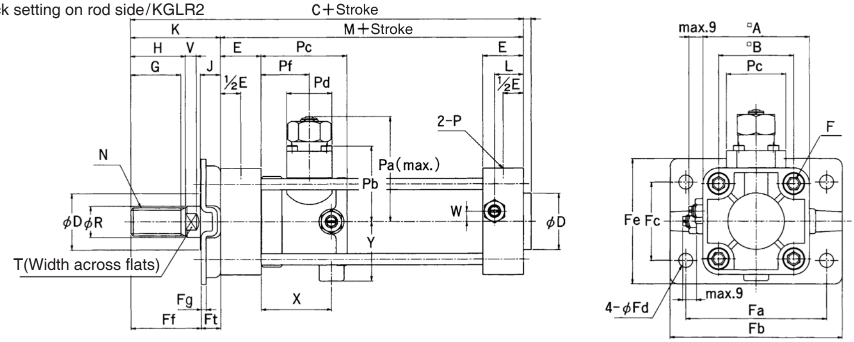
Rod side flange mounting/A

(Unit: mm)

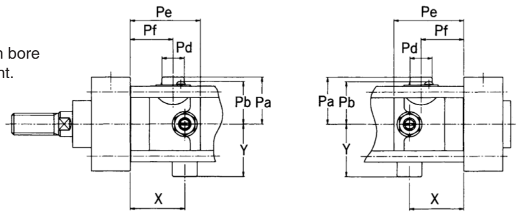
Lock setting on head side/KGLH2



Lock setting on rod side/KGLR2



Locking mechanism of cylinder with bore size of 40mm are shown on the right.



Bore	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	T	V	W
∅40	60	41	180	30	25	M8	27	30	12	51	17	129	M14×1.5	Rc¼	16	14	7	7.5
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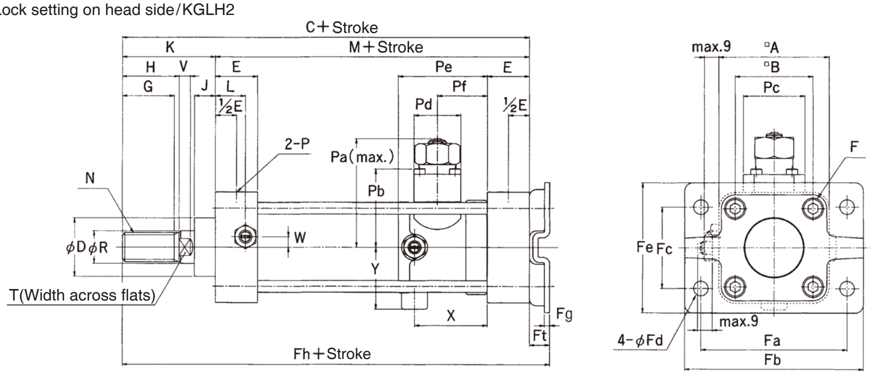
∅63	78	58	208.5	36	26	M8	32	35	13	60.5	18	148	M18×1.5	Rc⅜	20	17	8	0
∅80	96	72	254	42	32	M10	36	40	16	74	24	180	M22×1.5	Rc½	25	22	13	0
∅100	110	86	261	48	32	M10	36	40	18	79	24	182	M26×1.5	Rc½	30	27	13	0

Bore	Fa	Fb	Fc	Fd	Fe	Ff	Fg	Ft	X	Y	Pa	Pb	Pc	Pd	Pe	Pf
∅40	80	100	42	9	70	39	2.3	12	36	33.5	30	27	26	14.3	45	27.5
∅50	90	110	50	9	80	45	3.2	12.5	45	38	76	49	38	29	55	30.5
∅63	105	130	59	11.5	92	43	3.2	17.5	45	39	76	49	38	29	55	30.5
∅80	130	160	76	13.5	114	53	4	21	60	47	92	58	48	39	70	38.5
∅100	150	180	92	13.5	130	54	4	25	60	55	94.5	60.5	48	39	70	38.5

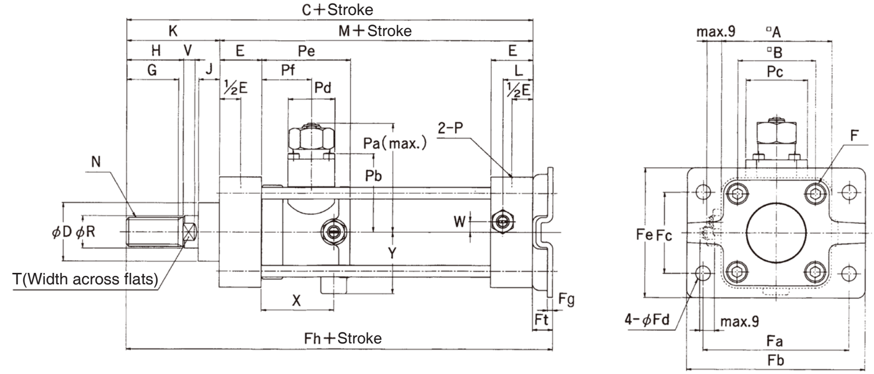
Head side flange mounting/B

(Unit: mm)

Lock setting on head side/KGLH2



Lock setting on rod side/KGLR2



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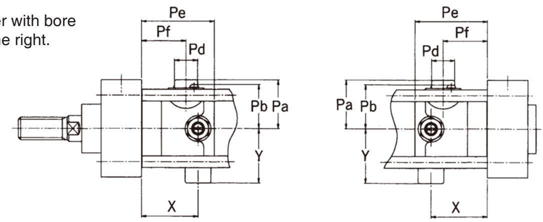

Bore	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	T	V	W
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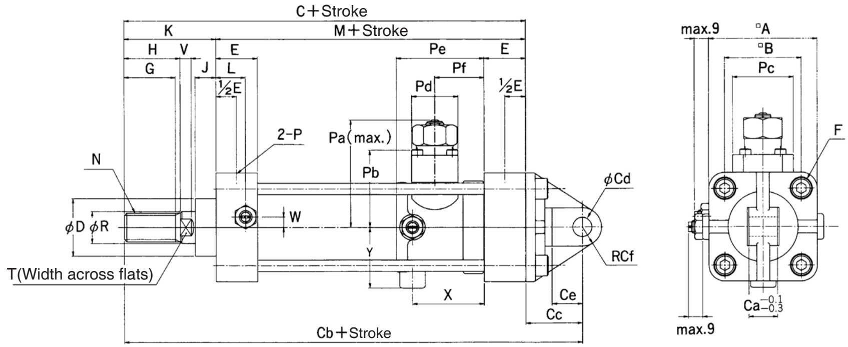
∅80	96	72	254	42	32	M10	36	40	16	74	24	180	M22×1.5	Rc½	25	22	13	0
∅100	110	86	261	48	32	M10	36	40	18	79	24	182	M26×1.5	Rc½	30	27	13	0

Bore	Fa	Fb	Fc	Fd	Fe	Ff	Fg	Ft	X	Y	Pa	Pb	Pc	Pd	Pe	Pf
∅40	80	100	42	9	70	39	2.3	12	36	33.5	30	27	26	14.3	45	27.5
∅50	90	110	50	9	80	45	3.2	12.5	45	38	76	49	38	29	55	30.5
∅63	105	130	59	11.5	92	43	3.2	17.5	45	39	76	49	38	29	55	30.5
∅80	130	160	76	13.5	114	53	4	21	60	47	92	58	48	39	70	38.5
∅100	150	180	92	13.5	130	54	4	25	60	55	94.5	60.5	48	39	70	38.5

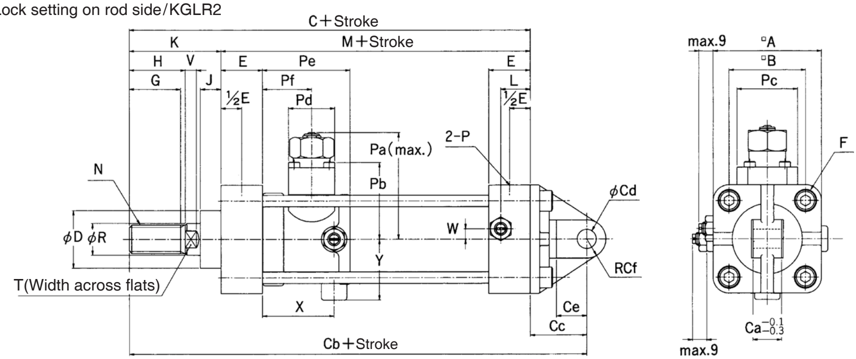
Eye mounting/C

(Unit: mm)

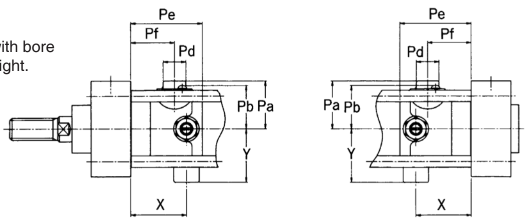
Lock setting on head side/KGLH2



Lock setting on rod side/KGLR2



Locking mechanism of cylinder with bore size of 40mm are shown on the right.



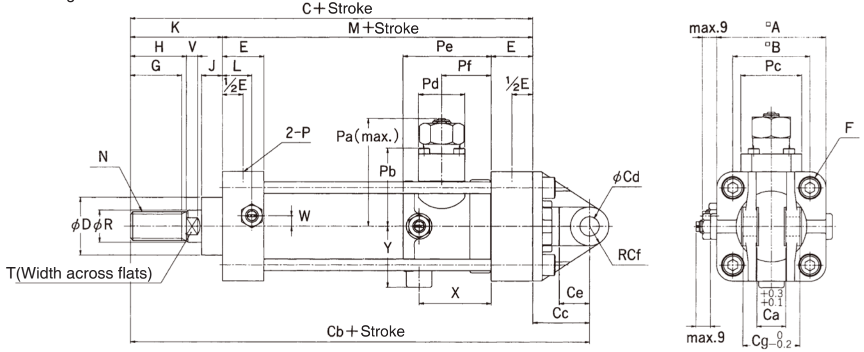
Bore	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	T	V	W
∅40	60	41	180	30	25	M8	27	30	12	51	17	129	M14×1.5	Rc¼	16	14	7	7.5
∅50	68	48	201.5	36	26	M8	32	35	13	57.5	18	144	M18×1.5	Rc⅜	20	17	7	6.5
∅63	78	58	208.5	36	26	M8	32	35	13	60.5	18	148	M18×1.5	Rc⅜	20	17	8	0
∅80	96	72	254	42	32	M10	36	40	16	74	24	180	M22×1.5	Rc½	25	22	13	0
∅100	110	86	261	48	32	M10	36	40	18	79	24	182	M26×1.5	Rc½	30	27	13	0

Bore	Ca	Cc	Cd(H10)	Ce	Cf	Cb	X	Y	Pa	Pb	Pc	Pd	Pe	Pf
∅40	15	30	10	16	10	210	36	33.5	30	27	26	14.3	45	27.5
∅50	18	35.5	12	19	12	237	45	38	76	49	38	29	55	30.5
∅63	25	42.5	16	23	16	251	45	39	76	49	38	29	55	30.5
∅80	31.5	51	20	28	20	305	60	47	92	58	48	39	70	38.5
∅100	35.5	65	25	36	25	326	60	55	94.5	60.5	48	39	70	38.5

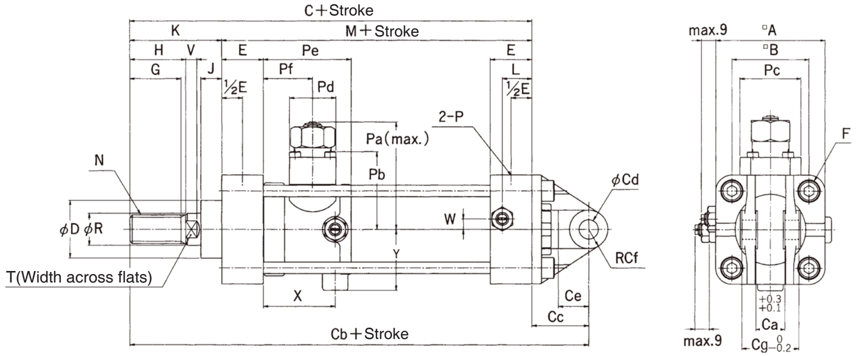
Clevis mounting/W

(Unit: mm)

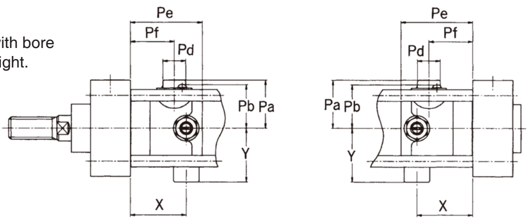
Lock setting on head side/KGLH2



Lock setting on rod side/KGLR2



Locking mechanism of cylinder with bore size of 40mm are shown on the right.



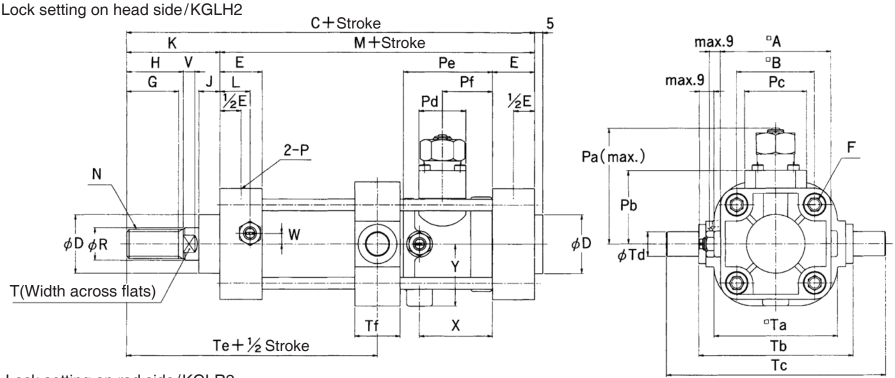
Bore	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	T	V	W
∅40	60	41	180	30	25	M8	27	30	12	51	17	129	M14×1.5	Rc¼	16	14	7	7.5
∅50	68	48	201.5	36	26	M8	32	35	13	57.5	18	144	M18×1.5	Rc⅜	20	17	7	6.5
∅63	78	58	208.5	36	26	M8	32	35	13	60.5	18	148	M18×1.5	Rc⅜	20	17	8	0
∅80	96	72	254	42	32	M10	36	40	16	74	24	180	M22×1.5	Rc½	25	22	13	0
∅100	110	86	261	48	32	M10	36	40	18	79	24	182	M26×1.5	Rc½	30	27	13	0

Bore	Ca	Cc	Cd(H10)	Ce	Cf	Cg	Cb	X	Y	Pa	Pb	Pc	Pd	Pe	Pf
∅40	15	30	10	16	10	30	210	36	33.5	30	27	26	14.3	45	27.5
∅50	18	35.5	12	19	12	35.5	237	45	38	76	49	38	29	55	30.5
∅63	25	42.5	16	23	16	50	251	45	39	76	49	38	29	55	30.5
∅80	31.5	51	20	28	20	63	305	60	47	92	58	48	39	70	38.5
∅100	35.5	65	25	36	25	71	326	60	55	94.5	60.5	48	39	70	38.5

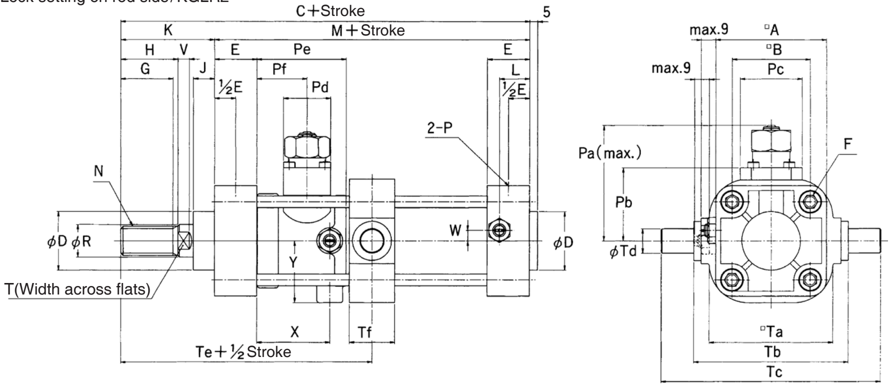
Center trunnion mounting/T

(Unit: mm)

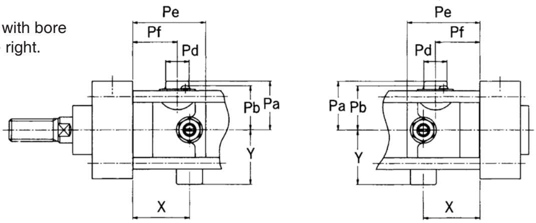
Lock setting on head side/KGLH2



Lock setting on rod side/KGLR2



Locking mechanism of cylinder with bore size of 40mm are shown on the right.



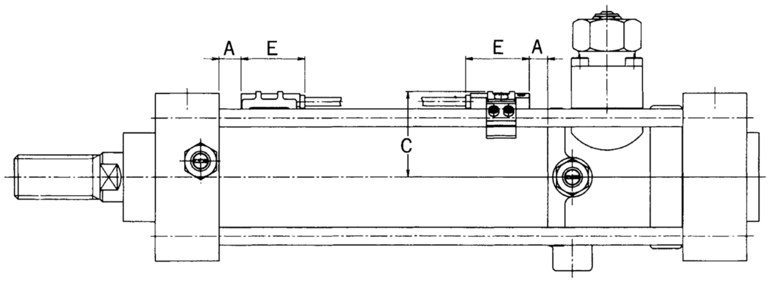
Bore	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	T	V	W
∅40	60	41	180	30	25	M8	27	30	12	51	17	129	M14×1.5	Rc¼	16	14	7	7.5
∅50	68	48	201.5	36	26	M8	32	35	13	57.5	18	144	M18×1.5	Rc⅜	20	17	7	6.5
∅63	78	58	208.5	36	26	M8	32	35	13	60.5	18	148	M18×1.5	Rc⅜	20	17	8	0
∅80	96	72	254	42	32	M10	36	40	16	74	24	180	M22×1.5	Rc½	25	22	13	0
∅100	110	86	261	48	32	M10	36	40	18	79	24	182	M26×1.5	Rc½	30	27	13	0

Bore	Ta	Tb	Tc	Tb(e8)	Te	Tf	X	Y	Pa	Pb	Pc	Pd	Pe	Pf
∅40	64	85	125	15	115.5	28	36	33.5	30	27	26	14.3	45	27.5
∅50	76	95	135	15	129.5	28	45	38	76	49	38	29	55	30.5
∅63	92	110	160	18	134.5	30	45	39	76	49	38	29	55	30.5
∅80	112	140	200	25	164	40	60	47	92	58	48	39	70	38.5
∅100	136	162	222	25	170	45	60	55	94.5	60.5	48	39	70	38.5

Stroke less than 75mm			
Bore		LR	LH
Te	∅40	138	93
	∅50	157	102
	∅63	162	107
	∅80	199	129
	∅100	205	135

Sensor switch setting position-M type sensor switch

(Unit: mm)



Bore	A		C
	Reed	Proximity	
∅40	5.5	11.5	32
∅50	7	13	37
∅63	9	15	42
∅80	11.5	17.5	51
∅100	12.5	18.5	59

Switch	E
M type reed switch	28
M type proximity switch	26.5(24)

(Note) value within bracket is the MT-*U type.