

## High-power Pneumatic Cylinder conforms to ISO Standards with Non-lubrication System.

- The adoption of steel material made high-power pneumatic cylinder possible.
- Urethane rubber used in dust wiper.
- Conforming to ISO Standards.  
(except as to bore  $\phi 140$  and  $\phi 180$ )
- Cover 12 type of cylinder bore size from  $\phi 32$  to  $\phi 250$ .
- Non-lubrication system.



### SPECIFICATIONS CYLINDER

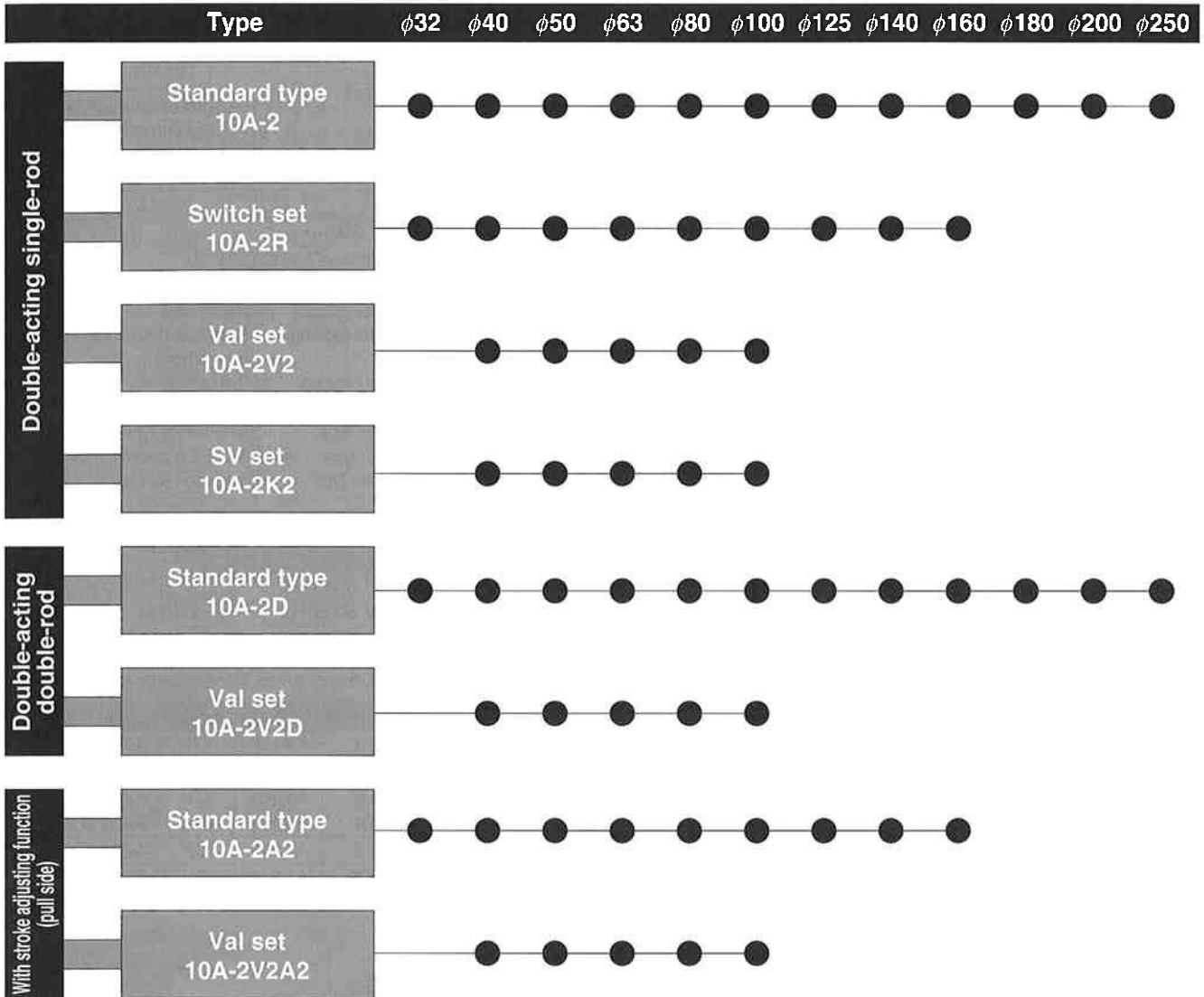
Type	Standard type	Switch set	Val set	SV set	
Series	10A-2	10A-2R	10A-2V2	10A-2K2	
Bore mm	$\phi 32 \cdot \phi 40 \cdot \phi 50 \cdot \phi 63 \cdot \phi 80 \cdot \phi 100 \cdot \phi 125 \cdot \phi 140 \cdot \phi 160 \cdot \phi 180 \cdot \phi 200 \cdot \phi 250$	$\phi 32 \cdot \phi 40 \cdot \phi 50 \cdot \phi 63 \cdot \phi 80 \cdot \phi 100 \cdot \phi 125 \cdot \phi 140 \cdot \phi 160$	$\phi 40 \cdot \phi 50 \cdot \phi 63 \cdot \phi 80 \cdot \phi 100$	$\phi 40 \cdot \phi 50 \cdot \phi 63 \cdot \phi 80 \cdot \phi 100$	
Working fluid	Air				
Lubrication	Not necessary (may be also lubricated)				
Allowable pressure range	0.1 - 1MPa		0.17 - 0.7MPa		
Proof pressure	1.5MPa		1.05MPa		
Allowable speed range	50 - 700mm/s		50 - 500mm/s		
Allowable temperature range	-10 - +70°C		+5 - +50°C		
Structure of cushioning	Both ends cushioned				
Cushion stroke (length of Cushion ring)	$\phi 32 - \phi 63$ : 16mm $\phi 140 - \phi 200$ : 23mm		$\phi 80 - \phi 125$ : 20mm $\phi 250$ : 25mm		
Tolerance for thread	JIS 6g/6H				
Tolerance of stroke	250mm or less $^{+1.0}_0$	251 - 1000mm $^{+1.4}_0$	1001 - 2000mm $^{+1.8}_0$		
Mounting style	SD-LB-FA-FB-CA-CB-CC-CD-TA-TC		SD-LB-FA-FB-CA-CB-TA-TC		
Accessories	Boots	Standard: Nylon tarpaulin		Semi-Standard: Chloroprene-CONEX	
	Rod end accessories	Rod end eye (type-T)·Rod end spherical eye (type-S)·Rod end clevis (type-Y)·Floating joint (type-F)			
	Others	CB/CD bracket (clevis bracket)·TA/TC bracket (trunnion bracket)			

### VALVE

Rated voltage		AC100V		AC200V		DC24V
Operating voltage range		V		90 - 132		180 - 264
Current value (when rated voltage is applied)	Frequency	Hz		50		60
	Starting current	mA (r.m.s)		34		32
	Exciting current	mA (r.m.s)		22		20
Allowable circuit leak current value	mA		4		2	4
Insulation class		Class B				
Insulation resistance		M $\Omega$		100 min.		
Protective circuit		-				Flywheel diode
DIN terminal type	Indicator lamp	Yellow		Green		Red
	Terminal No.	No.1, No.2				No.1(-), No.2(+)
Lead wire type	Lead wire color		Yellow		White	Black(-), Red(+)

Lines

Unit: mm



MAXIMUM ALLOWABLE STROKE

Unit: mm

Type \ Bore	φ32	φ40	φ50-φ63	φ80-φ100	φ125 - φ160	φ180 - φ250
Standard type	800	1200	1400	1800	2000	2000
Switch set	800	1200	1400	1800	2000	-
Val set	-	1200	1400	1800	-	-
SV set	-	1200	1400	1800	-	-

- Notes
- Min. Stroke for cylinder with valve is 50mm. (As for TC Type, is 75mm) The above shows the longest stroke for standard. Consult us if required longer stroke.
  - For the rod buckling, check with the buckling chart to see whether is right or wrong of the selection. If you request the strokes other than in the table as following, please contact us.

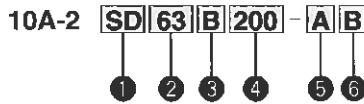
MINIMUM STROKE OF CYLINDER WITH SWITCH

Unit: mm

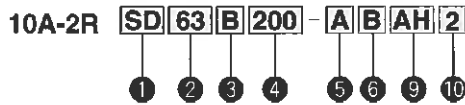
Type	AX Type		SR Type	
	Switch set	SV set	Switch set	SV set
1 Switch mounted	25	50	15	50
2 Switch mounted	25	50	15	50
TC Type	120	120	125	125

## HOW TO ORDER

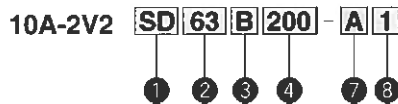
Standard type



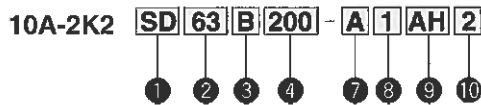
Switch set



Val set



SV set



1. Followings are available as semi-standard.

- With boot
- Proof heat specification
- Adjustable stroke cylinder
- Double rod cylinder
- Modification of TC mountings position (Dimensional symbol : PH)
- Modification of Piston Rod End (Dimensional symbol : W.WF.A.KK)

2. Standard position of Port is (A) while that of cushion valve is (B). Upon the modification of position, indicate Symbol as so referred on Dimensional Table. Without cushion, Indication of cushion valve position is 0.

(The position symbol of port and cushion valve are all clockwise indicated from rod side view.)

①	Mounting Styles (SD·LB·FA·FB·CA·CB·CC·CD·TA·TC)
②	Cylinder bore mm
③	Structure of cushioning ( B : Both ends cushioned H : Cap side cushioned R : Head side cushioned N : No cushion )
④	Cylinder stroke mm
⑤	Position of ports (A·B·C·D)
⑥	Position of cushion valves (A·B·C·D·0)

DIN terminal type	Lead wire type
⑦ <input type="checkbox"/> A Push type during current passing (return type)	<input type="checkbox"/> M Push type during current passing (return type)
<input type="checkbox"/> B Pull type during current passing (return type)	<input type="checkbox"/> N Pull type during current passing (return type)
<input type="checkbox"/> D Self-holding type (detent type)	<input type="checkbox"/> P Self-holding type (detent type)
<input type="checkbox"/> C 3-position closed center type	<input type="checkbox"/> Q 3-position closed center type
<input type="checkbox"/> E 3-position exhaust center type	<input type="checkbox"/> R 3-position exhaust center type

Valve voltages

Symbol	Voltages
⑧ 1	AC100V 50/60Hz
2	AC200V 50/60Hz
8	DC24V

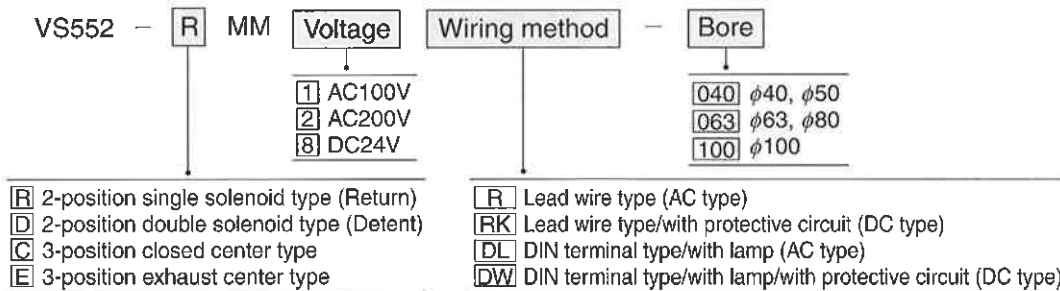
Kind of switch

Symbol	Type	Symbol	Type	Symbol	Type
AF	AX101	AL	AX11B	CT	AX211CE
AG	AX105	S	SR405	CU	SX215CE
⑨ AH	AX111	BE	AX201	CV	AX21BCE
AJ	AX115	BF	AX205	CW	AZ211CE
AE	AX125	CE	AX211	CX	AZ215CE
AK	AX11A	CF	AX215	CY	AZ21BCE

⑩ Number of switches

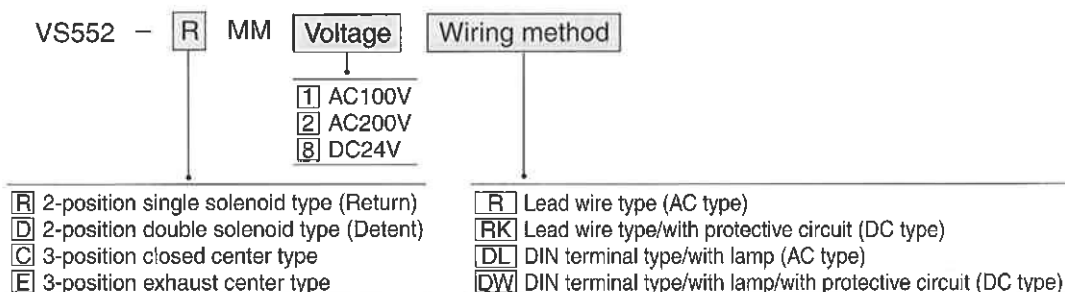
## ORDER KEY FOR VALVE

• Valve assembly kit order (With muffler, block and tube)



Note) The kit includes the valve, muffler, piping block and tube (1m). The valve and the block are not assembled in shipping. Also be careful for the valve direction in mounting on the cylinder at the single solenoid type.

• Valve kit order (With bolt and gasket)



Note) Bolt and gasket attached to the valve order.

## SWITCH LIST

■ Semi-standard components

Kind	Switch symbol	Load voltage range	Load current range	Maximum open/close capacity	Protective circuit	Indicating lamp	Wiring method	Cord length	Applicable load device	
Contact	AF AX101	DC: 5 - 30V AC: 5 - 120V	DC: 5 - 40mA AC: 5 - 20mA	DC: 1.5W AC: 2VA	None	LED (Red light lights up during ON)	Core of 0.3mm <sup>2</sup> , outer diameter of $\phi$ 4mm, cord extended from the rear	1.5m	Small relay, programmable controller	
	AG AX105							5m		
	AH AX111				1.5m					
	AJ AX115				5m					
	AE AX125	DC: 30V or less AC: 120V or less	DC: 40V or less AC: 20V or less	None	None	4-pin connector, type Rear wiring	5m			
	AK AX11A	AC: 5 - 120V	5 - 20mA				2VA	Present		LED (Red light lights up during ON)
	AL AX11B	DC: 5 - 30V	5 - 40mA	1.5W	Present	Neon lamp (Red lamp lights up during ON)	Core of 0.5 mm <sup>2</sup> , outer diameter of $\phi$ 6mm, cord extended from the rear	0.5m		
	S SR405	AC: 80 - 220V	2 - 300mA	30VA				5m		
No contact	BE AX201	DC: 5 - 30V	5 - 40mA	—	Present	LED (Red light lights up during ON)	Core of 0.3mm <sup>2</sup> , outer diameter of $\phi$ 4mm, cord extended from the rear	1.5m	Small relay, programmable controller	
	BF AX205							5m		
	CE AX211							1.5m		
	CF AX215							5m		
No contact (CE coformed)	CT AX211CE	DC: 5 - 30V	5 - 40mA	—	Present	LED (2-lamp type in red/green)	Core of 0.3mm <sup>2</sup> , outer diameter of $\phi$ 4mm, cord extended from the rear	1.5m	Small relay, programmable controller	
	CU SX215CE							5m		
	CV AX21BCE							4-pin connector, type Rear wiring		0.5m
	CW AZ211CE							Core of 0.3mm <sup>2</sup> , outer diameter of $\phi$ 4mm, cord extended from the top		1.5m
	CX AZ215CE							5m		
	CY AZ21BCE							4-pin connector, cord extended from the top		0.5m

Note) For the switches without a protective circuit, be sure to provide the protective circuit (SK-100) with load devices when using induction load devices (relay, etc.).

● AX type switch

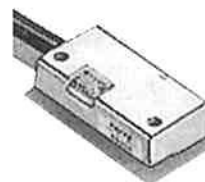
Cord type



Connector type



● SR type switch



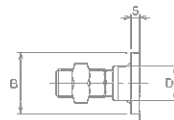
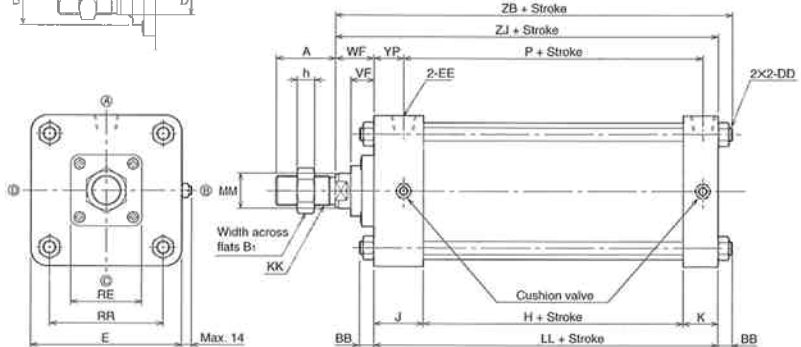
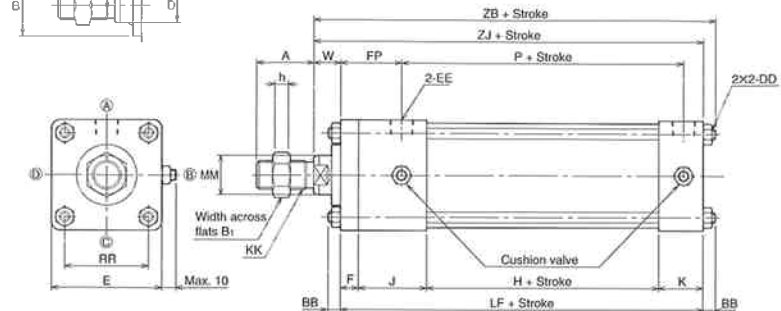
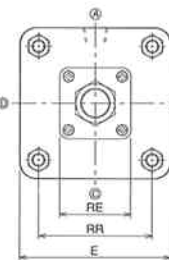
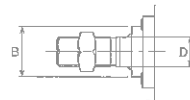
## SD TYPE (HEAD TIE ROD EXTENDED MOUNTING)

- As for cylinder with switch ( $\phi 32 - \phi 160$ ), valve ( $\phi 40 - \phi 100$ ) and switch/valve ( $\phi 40 - \phi 100$ ), dimensions of cylinder body and mountings are exactly same as those of basic.
- As for mounting dimensions of Valve, refer to **Page 7**.
- As for dimensions with boot, refer to **Page 15**.

## COMPARATIVE CHART OF SCREW PITCH OF THE OLD AND NEW TIE ROD

Bore	DD dimension	
	Old	New
$\phi 80$	M10X1.5	M10X1.25
$\phi 100$	M10X1.5	M10X1.25
$\phi 125$	M12X1.75	M12X1.5
$\phi 140$	M16X2	M16X1.5
$\phi 160$	M16X2	M16X1.5
$\phi 180$	M16X2	M16X1.5
$\phi 200$	M16X2	M16X1.5
$\phi 250$	M20X2.5	M20X1.5

Note) The Tie Rod's screw pitch (DD dimension) of the catalogue of 1996 edition is partly changed. The changes is express by \* mark. If you purchased the SD type by directly buy in Tie Rod nut, please order carefully, because it is lack of compability with the old screw pitch. The implement was started from the consignment on 1st December 1995. (Serial No.512)

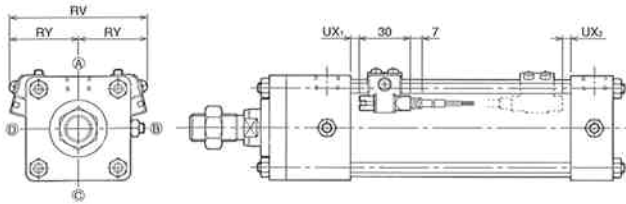
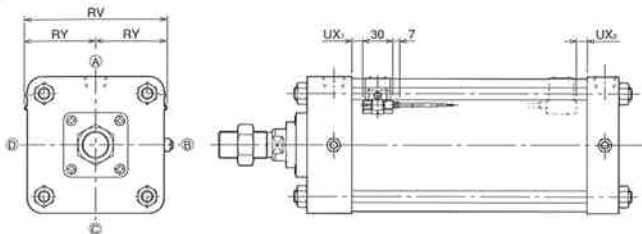
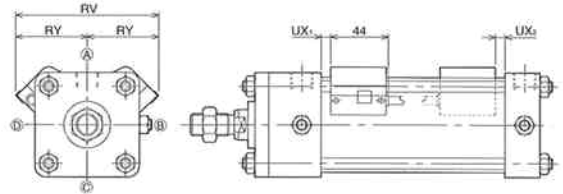
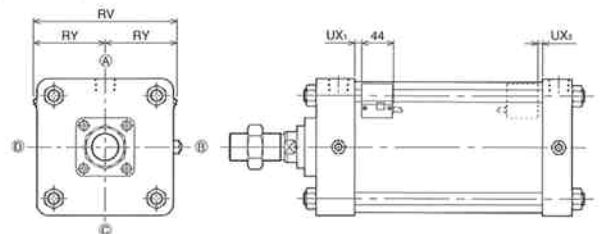
 $\phi 32 - \phi 100$  $\phi 125 - \phi 250$ 

## DIMENSIONAL TABLE

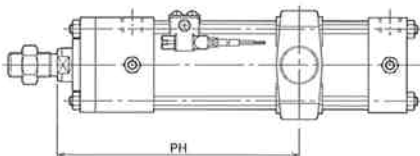
Symbol Bore	A	B	B <sub>1</sub>	BB	D	DD	E	EE	F	FP	H	h	J
$\phi 32$	22(19)	$\phi 24$	17	7	10	M6X1	□44	Rc1/8	10	34	30	6	38
$\phi 40$	24(21)	$\phi 30$	19	7	13	M6X1	□50	Rc1/4	10	34	30	7	38
$\phi 50$	32(28)	$\phi 34$	22	7	19	M6X1	□62	Rc1/4	10	34	30	10	38
$\phi 63$	32(28)	$\phi 34$	22	9	19	M8X1.25	□76	Rc3/8	10	34	33	10	38
$\phi 80$	40(36)	$\phi 39$	27	10	22	*M10X1.25	□94	Rc3/8	16	43	31	12	45
$\phi 100$	40(36)	$\phi 39$	27	10	22	*M10X1.25	□114	Rc1/2	16	43	31	12	45
$\phi 125$	54(49)	$\phi 46$	36	13	27	*M12X1.5	□138	Rc1/2	-	-	37	16	45
$\phi 140$	72(67)	$\phi 55$	50	16	36	*M16X1.5	□156	Rc3/4	-	-	43	20	50
$\phi 160$	72(67)	$\phi 55$	50	16	36	*M16X1.5	□178	Rc3/4	-	-	43	20	50
$\phi 180$	72(67)	$\phi 55$	50	16	36	*M16X1.5	□200	Rc3/4	-	-	43	20	50
$\phi 200$	72(67)	$\phi 55$	50	16	36	*M16X1.5	□216	Rc3/4	-	-	43	20	50
$\phi 250$	84(79)	$\phi 60$	60	19	41	*M20X1.5	□270	Rc1	-	-	55	22	57

Symbol Bore	K	KK	LF	LL	MM	P	RE	RR	VF	W	WF	YP	ZB	ZJ
$\phi 32$	25	M10X1.25	103	-	$\phi 12$	58	-	□33	-	15	-	-	125	118
$\phi 40$	25	M12X1.25	103	-	$\phi 16$	58	-	□37	-	15	-	-	125	118
$\phi 50$	25	M16X1.5	103	-	$\phi 22$	58	-	□47	-	15	-	-	125	118
$\phi 63$	25	M16X1.5	106	-	$\phi 22$	61	-	□56	-	15	-	-	130	121
$\phi 80$	32	M20X1.5	124	-	$\phi 25$	67	-	□70	-	19	-	-	153	143
$\phi 100$	32	M20X1.5	124	-	$\phi 25$	67	-	□84	-	19	-	-	153	143
$\phi 125$	32	M27X2	-	114	$\phi 32$	73	□65	□104	21	-	35	27	162	149
$\phi 140$	38	M36X2	-	131	$\phi 40$	85	□76	□123	25	-	41	29	188	172
$\phi 160$	38	M36X2	-	131	$\phi 40$	85	□76	□134	25	-	41	29	188	172
$\phi 180$	38	M36X2	-	131	$\phi 40$	85	□76	□156	25	-	41	29	188	172
$\phi 200$	38	M36X2	-	131	$\phi 40$	85	□76	□163	25	-	41	29	188	172
$\phi 250$	50	M42X2	-	162	$\phi 45$	109	□90	□202	30	-	48	30	229	210

- Parenthesized figure of A is the dimension of screw length.

**SWITCH SET****AX TYPE SWITCH** $\phi 32 - \phi 100$  $\phi 125 - \phi 160$ **SR TYPE SWITCH** $\phi 32 - \phi 100$  $\phi 125 - \phi 160$ 

- Dimensions of cylinder body and mountings are exactly same as those of basic.
- If trunnion bracket (type-TA) interferes with Switch, mount switch on other side. (Mount upper)

**MINIMUM DIMENSION PH OF SWITCH SET CYLINDER 10S-2R**

In this figure, the dimensions of switches are for AX type.

**MINIMUM STROKE FOR MOUNTING SWITCH**

Sort	AX Type		SR Type	
	Switch set	SV set	Switch set	SV set
With 1 switch mounted	25	50	15	50
With 2 switches mounted	25	50	15	50
In the case of TC mounting	120	120	125	125

**DIMENSIONAL TABLE**

Symbol Bore	RV		RY		UX1		UX2	
	AX	SR	AX	SR	AX	SR	AX	SR
$\phi 32$	68	74	34	37	5	1	5	1
$\phi 40$	72	80	36	40	5	1	5	0
$\phi 50$	82	90	41	45	5	1	5	0
$\phi 63$	94	102	47	51	6	1	6	1
$\phi 80$	110	118	55	59	4	0	4	0
$\phi 100$	120	132	60	66	4	0	4	0
$\phi 125$	146	154	73	77	11	6	7	3
$\phi 140$	162	168	81	84	14	8	11	4
$\phi 160$	178	184	89	92	14	9	11	6

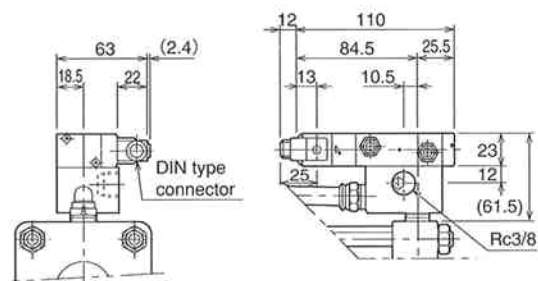
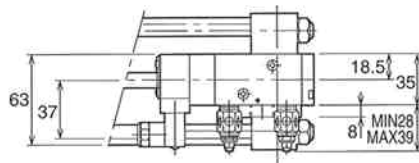
Note) The dimension UX indicates the optimum switch mounting position at the detection of the stroke end.

**WORKING RANGE, DIFFERENCE**

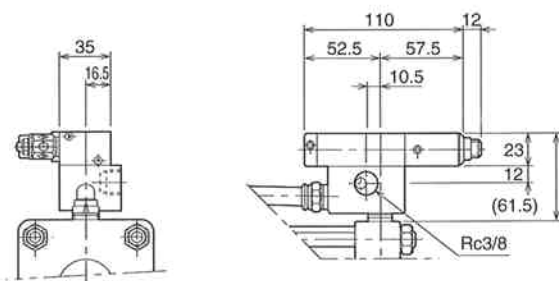
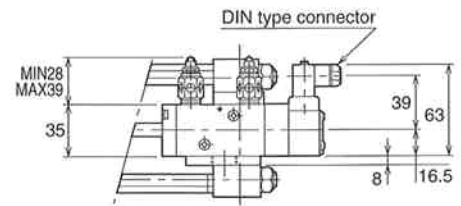
Bore mm	With contact				With no contact		
	AX1 ** Type		SR Type		AX2 ** Type		
	Working range	Difference	Working range	Difference	Working range	Difference	
$\phi 32$			6 - 10		3 - 6		
$\phi 40$	5 - 10	2 or less	9 - 13	3 or less	3 - 6	1 or less	
$\phi 50$							
$\phi 63$	7 - 11				3 - 7		
$\phi 80$							
$\phi 100$	8 - 12				4 - 7		
$\phi 125$							
$\phi 140$	10 - 15				5 - 8		
$\phi 160$							

## EXTERIOR DIMENSION DIAGRAM OF VALVE MOUNTING

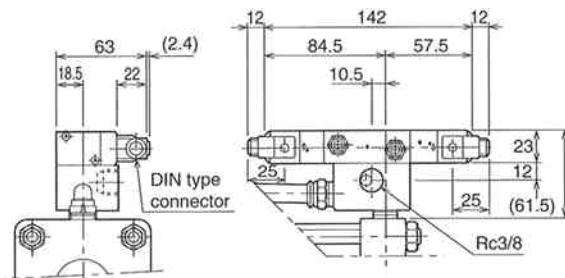
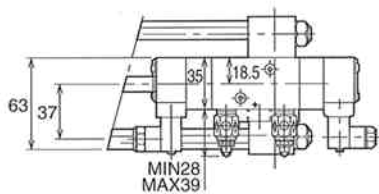
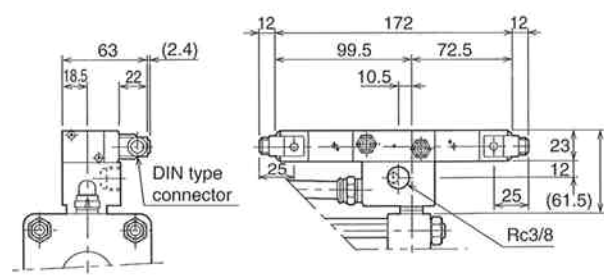
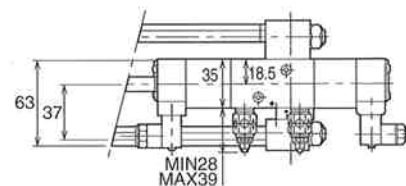
## PUSH WHEN ENERGIZED



## PULL WHEN ENERGIZED

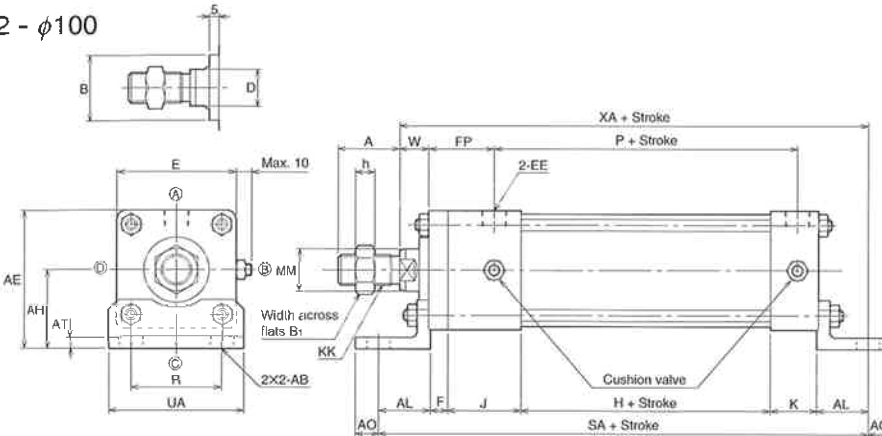


## SELF-HOLDING

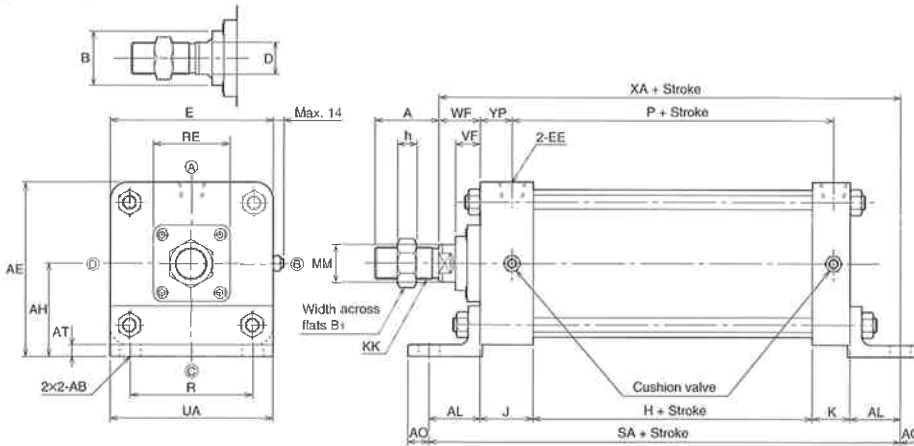
3POSITION CLOSED CENTER  
3POSITION EXHAUST CENTER

## LB TYPE (END ANGLES MOUNTING)

φ32 - φ100



φ125 - φ250



- As for cylinder with switch (φ32 - φ160), valve (φ40 - φ100) and switch/valve (φ40 - φ100), dimensions of cylinder body and mountings are exactly same as those of basic.
- As for mounting dimensions of Valve, refer to **Page 7**.
- As for dimensions with boot, refer to **Page 15**.

## DIMENSIONAL TABLE

Symbol Bore	A	AB	AE	AH	AL	AO	AT	B	B <sub>1</sub>	D	E	EE	F	FP
φ32	22(19)	φ9	55	33	23	10	5	φ24	17	10	□44	Rc1/8	10	34
φ40	24(21)	φ12	60	35	25	12	5	φ30	19	13	□50	Rc1/4	10	34
φ50	32(28)	φ12	72	41	26	12	6	φ34	22	19	□62	Rc1/4	10	34
φ63	32(28)	φ12	86	48	28	12	6	φ34	22	19	□76	Rc3/8	10	34
φ80	40(36)	φ14	106	59	34	14	8	φ39	27	22	□94	Rc3/8	16	43
φ100	40(36)	φ14	123	66	34	14	8	φ39	27	22	□114	Rc1/2	16	43
φ125	54(49)	φ18	148	79	43	18	10	φ46	36	27	□138	Rc1/2	-	-
φ140	72(67)	φ22	171	93	50	22	10	φ55	50	36	□156	Rc3/4	-	-
φ160	72(67)	φ22	187	98	50	22	10	φ55	50	36	□178	Rc3/4	-	-
φ180	72(67)	φ22	215	115	55	22	15	φ55	50	36	□200	Rc3/4	-	-
φ200	72(67)	φ22	226	118	55	22	15	φ55	50	36	□216	Rc3/4	-	-
φ250	84(79)	φ26	276	141	60	24	15	φ60	60	41	□270	Rc1	-	-

Symbol Bore	H	h	J	K	KK	MM	P	R	RE	SA	UA	VF	W	WF	XA	YP
φ32	30	6	38	25	M10X1.25	φ12	58	33	-	149	54	-	15	-	141	-
φ40	30	7	38	25	M12X1.25	φ16	58	37	-	153	60	-	15	-	143	-
φ50	30	10	38	25	M16X1.5	φ22	58	47	-	155	70	-	15	-	144	-
φ63	33	10	38	25	M16X1.5	φ22	61	56	-	162	80	-	15	-	149	-
φ80	31	12	45	32	M20X1.5	φ25	67	70	-	192	97	-	19	-	177	-
φ100	31	12	45	32	M20X1.5	φ25	67	84	-	192	114	-	19	-	177	-
φ125	37	16	45	32	M27X2	φ32	73	104	□65	200	138	21	-	35	192	27
φ140	43	20	50	38	M36X2	φ40	85	123	□76	231	156	25	-	41	222	29
φ160	43	20	50	38	M36X2	φ40	85	134	□76	231	178	25	-	41	222	29
φ180	43	20	50	38	M36X2	φ40	85	156	□76	241	200	25	-	41	227	29
φ200	43	20	50	38	M36X2	φ40	85	163	□76	241	216	25	-	41	227	29
φ250	55	22	57	50	M42X2	φ45	109	202	□90	282	270	30	-	48	270	30

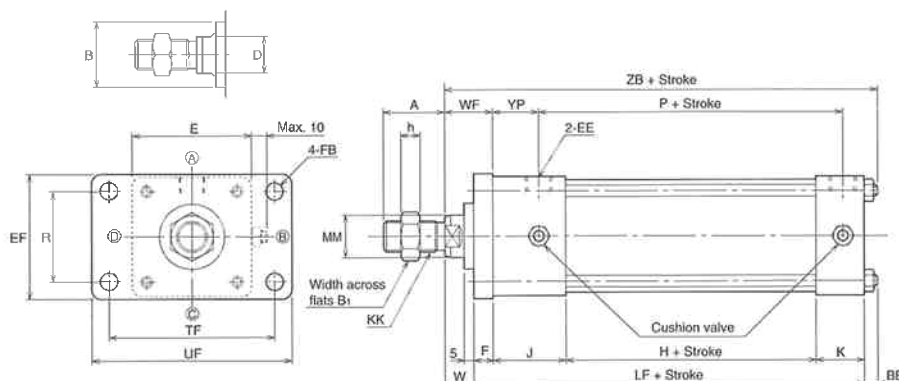
• Parenthesized figure of A is the dimension of screw length.



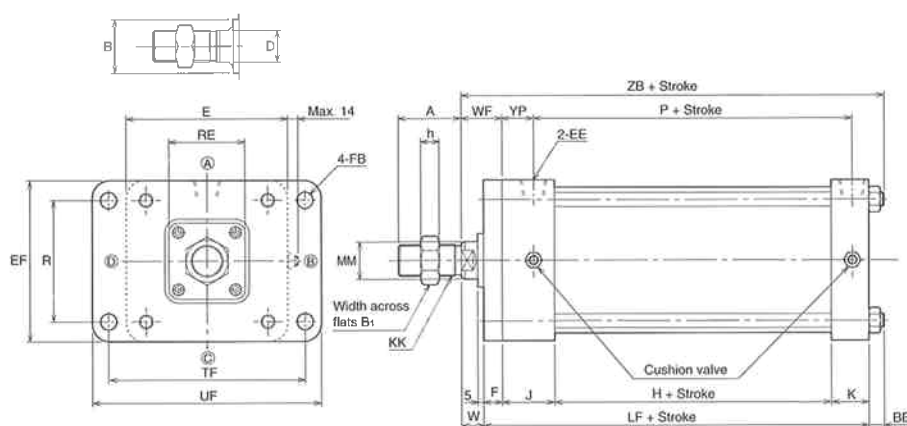
## FA TYPE (HEAD FLANGE MOUNTING)

**ISO** (Cylinders-bores  $\phi 140$  and  $\phi 180$  do not conform to ISO.)

$\phi 32 - \phi 100$



$\phi 125 - \phi 250$



- As for cylinder with switch ( $\phi 32 - \phi 160$ ), valve ( $\phi 40 - \phi 100$ ) and switch/valve ( $\phi 40 - \phi 100$ ), dimensions of cylinder body and mountings are exactly same as those of basic.
- As for mounting dimensions of Valve, refer to **Page 7**.
- As for dimensions with boot, refer to **Page 15. Page 16**.

## DIMENSIONAL TABLE

Symbol Bore	A	B	B <sub>1</sub>	BB	D	E	EE	EF	F	FB	H	h
$\phi 32$	22(19)	$\phi 24$	17	7	10	□44	Rc1/8	47	10	$\phi 7$	30	6
$\phi 40$	24(21)	$\phi 30$	19	7	13	□50	Rc1/4	52	10	$\phi 7$	30	7
$\phi 50$	32(28)	$\phi 34$	22	7	19	□62	Rc1/4	65	10	$\phi 9$	30	10
$\phi 63$	32(28)	$\phi 34$	22	9	19	□76	Rc3/8	76	10	$\phi 9$	33	10
$\phi 80$	40(36)	$\phi 39$	27	10	22	□94	Rc3/8	95	16	$\phi 12$	31	12
$\phi 100$	40(36)	$\phi 39$	27	10	22	□114	Rc1/2	115	16	$\phi 12$	31	12
$\phi 125$	54(49)	$\phi 46$	36	13	27	□138	Rc1/2	138	16	$\phi 14$	37	16
$\phi 140$	72(67)	$\phi 55$	50	16	36	□156	Rc3/4	156	20	$\phi 18$	43	20
$\phi 160$	72(67)	$\phi 55$	50	16	36	□178	Rc3/4	178	20	$\phi 18$	43	20
$\phi 180$	72(67)	$\phi 55$	50	16	36	□200	Rc3/4	200	20	$\phi 18$	43	20
$\phi 200$	72(67)	$\phi 55$	50	16	36	□216	Rc3/4	216	20	$\phi 18$	43	20
$\phi 250$	84(79)	$\phi 60$	60	19	41	□270	Rc1	270	25	$\phi 22$	55	22

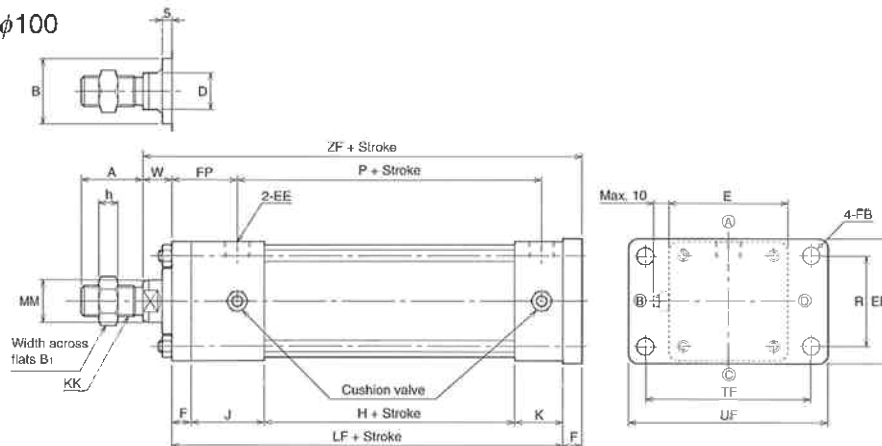
Symbol Bore	J	K	KK	LF	MM	P	R	RE	TF	UF	W	WF	YP	ZB
$\phi 32$	38	25	M10X1.25	103	$\phi 12$	58	33	—	58	72	15	25	24	125
$\phi 40$	38	25	M12X1.25	103	$\phi 16$	58	36	—	70	84	15	25	24	125
$\phi 50$	38	25	M16X1.5	103	$\phi 22$	58	47	—	86	104	15	25	24	125
$\phi 63$	38	25	M16X1.5	106	$\phi 22$	61	56	—	98	116	15	25	24	130
$\phi 80$	45	32	M20X1.5	124	$\phi 25$	67	70	—	119	143	19	35	27	153
$\phi 100$	45	32	M20X1.5	124	$\phi 25$	67	84	—	138	162	19	35	27	153
$\phi 125$	45	32	M27X2	130	$\phi 32$	73	104	□65	168	196	19	35	27	162
$\phi 140$	50	38	M36X2	151	$\phi 40$	85	123	□76	190	226	21	41	29	188
$\phi 160$	50	38	M36X2	151	$\phi 40$	85	134	□76	212	248	21	41	29	188
$\phi 180$	50	38	M36X2	151	$\phi 40$	85	156	□76	234	270	21	41	29	188
$\phi 200$	50	38	M36X2	151	$\phi 40$	85	163	□76	250	286	21	41	29	188
$\phi 250$	57	50	M42X2	187	$\phi 45$	109	201	□90	312	356	23	48	30	229

- Parenthesized figure of A is the dimension of screw length.

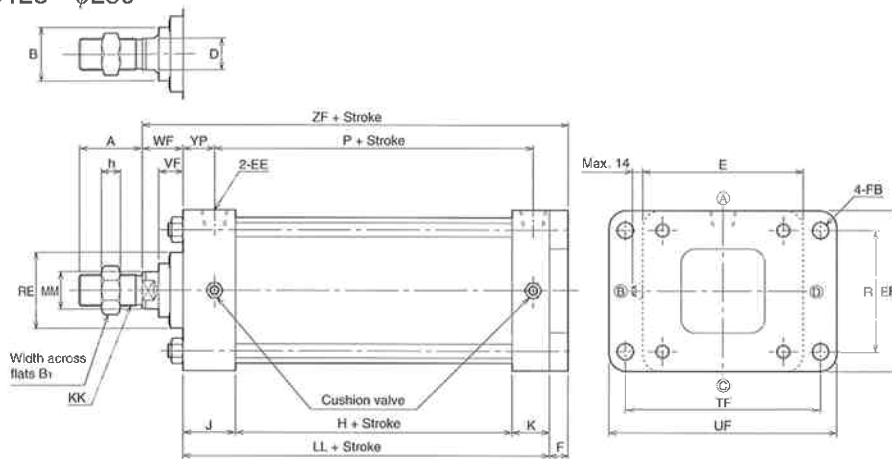
**FB TYPE (CAP FLANGE MOUNTING)**

**ISO** (Cylinders-bores  $\phi 140$  and  $\phi 180$  do not conform to ISO.)

$\phi 32 - \phi 100$



$\phi 125 - \phi 250$



- As for cylinder with switch ( $\phi 32 - \phi 160$ ), valve ( $\phi 40 - \phi 100$ ) and switch/valve ( $\phi 40 - \phi 100$ ), dimensions of cylinder body and mountings are exactly same as those of basic.
- As for mounting dimensions of Valve, refer to **Page 7**.
- As for dimensions with boot, refer to **Page 15**.

**DIMENSIONAL TABLE**

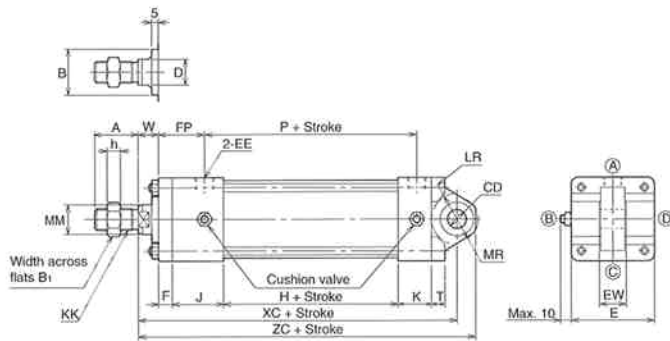
Symbol Bore	A	B	B <sub>1</sub>	D	E	EE	EF	F	FB	FP	H	h	J
$\phi 32$	22(19)	$\phi 24$	17	10	□44	Rc1/8	47	10	$\phi 7$	34	30	6	38
$\phi 40$	24(21)	$\phi 30$	19	13	□50	Rc1/4	52	10	$\phi 7$	34	30	7	38
$\phi 50$	32(28)	$\phi 34$	22	19	□62	Rc1/4	65	10	$\phi 9$	34	30	10	38
$\phi 63$	32(28)	$\phi 34$	22	19	□76	Rc3/8	76	10	$\phi 9$	34	33	10	38
$\phi 80$	40(36)	$\phi 39$	27	22	□94	Rc3/8	95	16	$\phi 12$	43	31	12	45
$\phi 100$	40(36)	$\phi 39$	27	22	□114	Rc1/2	115	16	$\phi 12$	43	31	12	45
$\phi 125$	54(49)	$\phi 46$	36	27	□138	Rc1/2	138	16	$\phi 14$	—	37	16	45
$\phi 140$	72(67)	$\phi 55$	50	36	□156	Rc3/4	156	20	$\phi 18$	—	43	20	50
$\phi 160$	72(67)	$\phi 55$	50	36	□178	Rc3/4	178	20	$\phi 18$	—	43	20	50
$\phi 180$	72(67)	$\phi 55$	50	36	□200	Rc3/4	200	20	$\phi 18$	—	43	20	50
$\phi 200$	72(67)	$\phi 55$	50	36	□216	Rc3/4	216	20	$\phi 18$	—	43	20	50
$\phi 250$	84(79)	$\phi 60$	60	41	□270	Rc1	270	25	$\phi 22$	—	55	22	57

Symbol Bore	K	KK	LF	LL	MM	P	R	RE	TF	UF	VF	W	WF	YP	ZF
$\phi 32$	25	M10X1.25	103	—	$\phi 12$	58	33	—	58	72	—	15	—	—	128
$\phi 40$	25	M12X1.25	103	—	$\phi 16$	58	36	—	70	84	—	15	—	—	128
$\phi 50$	25	M16X1.5	103	—	$\phi 22$	58	47	—	86	104	—	15	—	—	128
$\phi 63$	25	M16X1.5	106	—	$\phi 22$	61	56	—	98	116	—	15	—	—	131
$\phi 80$	32	M20X1.5	124	—	$\phi 25$	67	70	—	119	143	—	19	—	—	159
$\phi 100$	32	M20X1.5	124	—	$\phi 25$	67	84	—	138	162	—	19	—	—	159
$\phi 125$	32	M27X2	—	114	$\phi 32$	73	104	□65	168	196	21	—	35	27	165
$\phi 140$	38	M36X2	—	131	$\phi 40$	85	123	□76	190	226	25	—	41	29	192
$\phi 160$	38	M36X2	—	131	$\phi 40$	85	134	□76	212	248	25	—	41	29	192
$\phi 180$	38	M36X2	—	131	$\phi 40$	85	156	□76	234	270	25	—	41	29	192
$\phi 200$	38	M36X2	—	131	$\phi 40$	85	163	□76	250	286	25	—	41	29	192
$\phi 250$	50	M42X2	—	162	$\phi 45$	109	201	□90	312	356	30	—	48	30	235

● Parenthesized figure of A is the dimension of screw length.

## CA·CC TYPE (CAP EYE MOUNTING)

φ32 - φ100 **ISO**



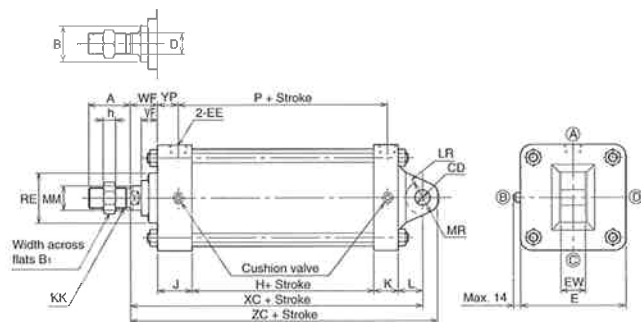
- As for cylinder with switch (φ32 - φ160), valve (φ40 - φ100) and switch/valve (φ40 - φ100), dimensions of cylinder body and mountings are exactly same as those of basic.

- As for mounting dimensions of Valve, refer to **Page 7**.

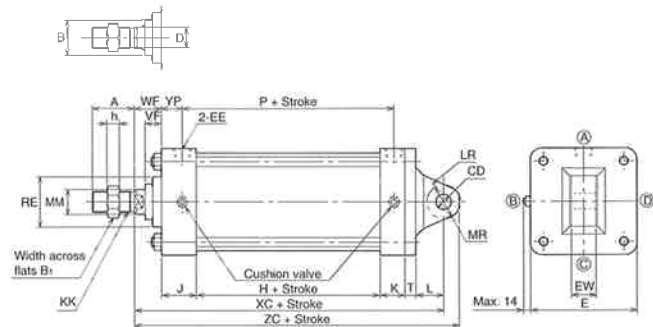
- As for dimensions with boot, refer to **Page 15**.

φ125 - φ250

• CA TYPE (WELDED MOUNTING) **ISO**



• CC TYPE (SEPARATED MOUNTING)



• Cylinders-bores φ140 and φ180 do not conform to **ISO**.

• CC TYPE do not conform to **ISO**.

## DIMENSIONAL TABLE

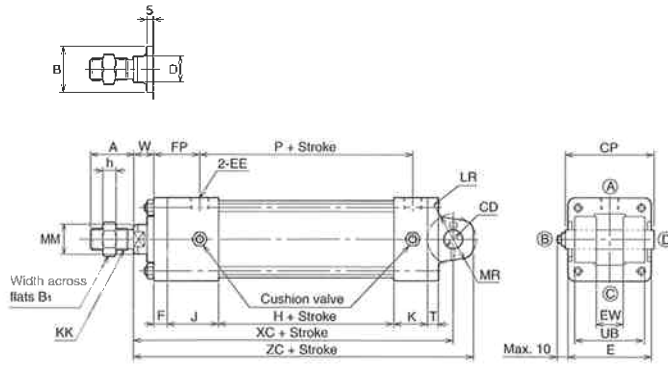
Symbol	A	B	B <sub>1</sub>	CD	D	E	EE	EW	F	FP	H	h	J	K	KK
φ32	22(19)	φ24	17	φ12H9	10	□44	Rc1/8	16 <sup>0</sup> <sub>-0.070</sub>	10	34	30	6	38	25	M10X1.25
φ40	24(21)	φ30	19	φ14H9	13	□50	Rc1/4	20 <sup>0</sup> <sub>-0.084</sub>	10	34	30	7	38	25	M12X1.25
φ50	32(28)	φ34	22	φ14H9	19	□62	Rc1/4	20 <sup>0</sup> <sub>-0.084</sub>	10	34	30	10	38	25	M16X1.5
φ63	32(28)	φ34	22	φ14H9	19	□76	Rc3/8	20 <sup>0</sup> <sub>-0.084</sub>	10	34	33	10	38	25	M16X1.5
φ80	40(36)	φ39	27	φ20H9	22	□94	Rc3/8	32 <sup>0</sup> <sub>-0.100</sub>	16	43	31	12	45	32	M20X1.5
φ100	40(36)	φ39	27	φ20H9	22	□114	Rc1/2	32 <sup>0</sup> <sub>-0.100</sub>	16	43	31	12	45	32	M20X1.5
φ125	54(49)	φ46	36	φ20H9	27	□138	Rc1/2	32 <sup>0</sup> <sub>-0.100</sub>	-	-	37	16	45	32	M27X2
φ140	72(67)	φ55	50	φ28H9	36	□156	Rc3/4	40 <sup>0</sup> <sub>-0.100</sub>	-	-	43	20	50	38	M36X2
φ160	72(67)	φ55	50	φ28H9	36	□178	Rc3/4	40 <sup>0</sup> <sub>-0.100</sub>	-	-	43	20	50	38	M36X2
φ180	72(67)	φ55	50	φ28H9	36	□200	Rc3/4	40 <sup>0</sup> <sub>-0.100</sub>	-	-	43	20	50	38	M36X2
φ200	72(67)	φ55	50	φ28H9	36	□216	Rc3/4	40 <sup>0</sup> <sub>-0.100</sub>	-	-	43	20	50	38	M36X2
φ250	84(79)	φ60	60	φ36H9	41	□270	Rc1	50 <sup>0</sup> <sub>-0.100</sub>	-	-	55	22	57	50	M42X2

Symbol	L		LR		MM	MR	P	RE	T	VF	W	WF	XC		YP	ZC	
	CA TYPE	CC TYPE	CA TYPE	CC TYPE									CA TYPE	CC TYPE		CA TYPE	CC TYPE
φ32	-	-	R17	-	φ12	R14	58	-	8	-	15	-	137	-	-	149	-
φ40	-	-	R17	-	φ16	R16	58	-	8	-	15	-	137	-	-	151	-
φ50	-	-	R19	-	φ22	R17	58	-	10	-	15	-	137	-	-	151	-
φ63	-	-	R19	-	φ22	R17	61	-	13	-	15	-	140	-	-	154	-
φ80	-	-	R26	-	φ25	R22	67	-	18	-	19	-	175	-	-	195	-
φ100	-	-	R27	-	φ25	R22	67	-	18	-	19	-	175	-	-	195	-
φ125	32	36	R22	R26	φ32	R22	73	□65	14	21	-	35	181	199	27	201	219
φ140	38	44	R30	R32	φ40	R30	85	□76	20	25	-	41	210	236	29	238	264
φ160	38	44	R30	R32	φ40	R30	85	□76	20	25	-	41	210	236	29	238	264
φ180	38	44	R30	R32	φ40	R30	85	□76	25	25	-	41	210	241	29	238	269
φ200	38	44	R30	R32	φ40	R30	85	□76	25	25	-	41	210	241	29	238	269
φ250	54	58	R42	R46	φ45	R44	109	□90	30	30	-	48	264	298	30	300	334

• Parenthesized figure of A is the dimension of screw length.

**CB·CD TYPE (CAP CLEVIS MOUNTING)**

φ32 - φ100 **ISO**

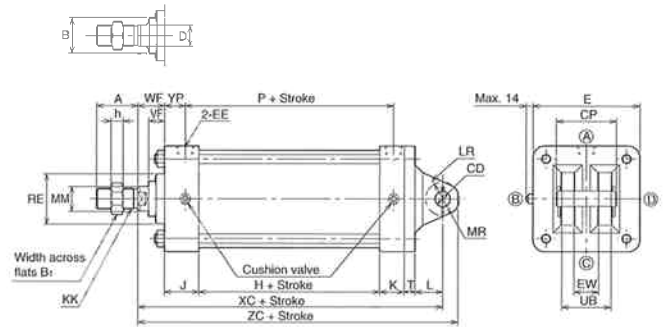
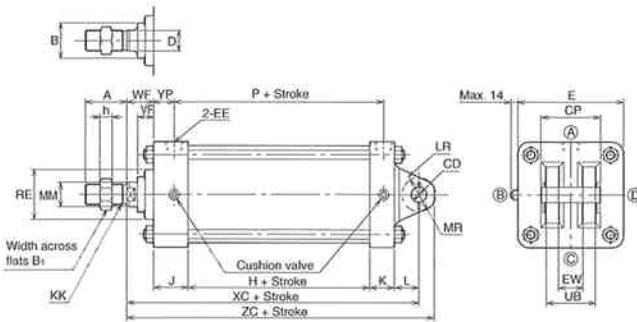


- As for cylinder with switch (φ32 - φ160), valve (φ40 - φ100) and switch/valve (φ40 - φ100), dimensions of cylinder body and mountings are exactly same as those of basic.
- As for mounting dimensions of Valve, refer to **Page 7**.
- As for dimensions with boot, refer to **Page 15**.

φ125 - φ250

• **CB TYPE (WELDED MOUNTING) ISO**

• **CD TYPE (SEPARATED MOUNTING)**



• Cylinders-bores φ140 and φ180 do not conform to **ISO**.

• CD TYPE do not conform to **ISO**.

**DIMENSIONAL TABLE**

Symbol	A	B	B <sub>1</sub>	CD	CP	D	E	EE	EW	F	FP	H	h	J	K	KK
φ32	22(19)	φ24	17	φ12 <sup>H9</sup> / <sub>18</sub>	46	10	□44	Rc1/8	16 <sup>+0.7</sup> / <sub>+0.5</sub>	10	34	30	6	38	25	M10×1.25
φ40	24(21)	φ30	19	φ14 <sup>H9</sup> / <sub>18</sub>	58	13	□50	Rc1/4	20 <sup>+0.7</sup> / <sub>+0.5</sub>	10	34	30	7	38	25	M12×1.25
φ50	32(28)	φ34	22	φ14 <sup>H9</sup> / <sub>18</sub>	66	19	□62	Rc1/4	20 <sup>+0.7</sup> / <sub>+0.5</sub>	10	34	30	10	38	25	M16×1.5
φ63	32(28)	φ34	22	φ14 <sup>H9</sup> / <sub>18</sub>	66	19	□76	Rc3/8	20 <sup>+0.7</sup> / <sub>+0.5</sub>	10	34	33	10	38	25	M16×1.5
φ80	40(36)	φ39	27	φ20 <sup>H9</sup> / <sub>18</sub>	78	22	□94	Rc3/8	32 <sup>+0.7</sup> / <sub>+0.5</sub>	16	43	31	12	45	32	M20×1.5
φ100	40(36)	φ39	27	φ20 <sup>H9</sup> / <sub>18</sub>	78	22	□114	Rc1/2	32 <sup>+0.7</sup> / <sub>+0.5</sub>	16	43	31	12	45	32	M20×1.5
φ125	54(49)	φ46	36	φ20 <sup>H9</sup> / <sub>18</sub>	78	27	□138	Rc1/2	32 <sup>+0.7</sup> / <sub>+0.5</sub>	-	-	37	16	45	32	M27×2
φ140	72(67)	φ55	50	φ28 <sup>H9</sup> / <sub>18</sub>	97	36	□156	Rc3/4	40 <sup>+0.8</sup> / <sub>+0.5</sub>	-	-	43	20	50	38	M36×2
φ160	72(67)	φ55	50	φ28 <sup>H9</sup> / <sub>18</sub>	97	36	□178	Rc3/4	40 <sup>+0.8</sup> / <sub>+0.5</sub>	-	-	43	20	50	38	M36×2
φ180	72(67)	φ55	50	φ28 <sup>H9</sup> / <sub>18</sub>	97	36	□200	Rc3/4	40 <sup>+0.8</sup> / <sub>+0.5</sub>	-	-	43	20	50	38	M36×2
φ200	72(67)	φ55	50	φ28 <sup>H9</sup> / <sub>18</sub>	97	36	□216	Rc3/4	40 <sup>+0.8</sup> / <sub>+0.5</sub>	-	-	43	20	50	38	M36×2
φ250	84(79)	φ60	60	φ36 <sup>H9</sup> / <sub>18</sub>	117	41	□270	Rc1	50 <sup>+0.8</sup> / <sub>+0.5</sub>	-	-	55	22	57	50	M42×2

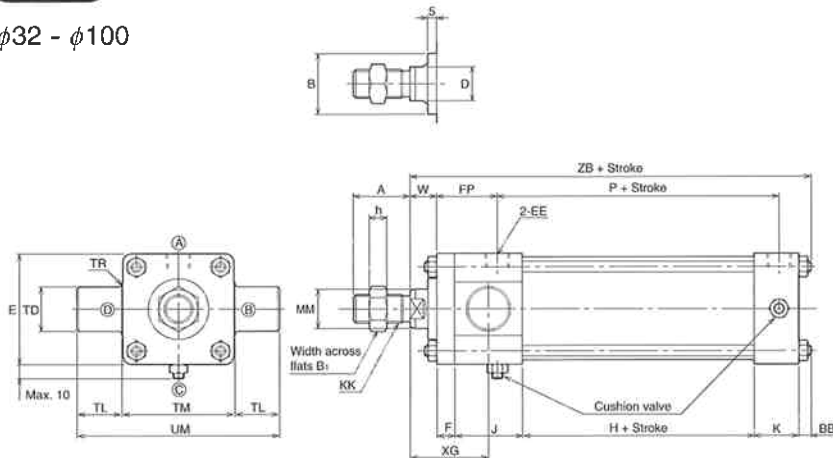
Symbol	L		LR	MM	MR	P	RE	T	UB	VF	W	WF	XC		YP	ZC	
	CB TYPE	CD TYPE											CB TYPE	CD TYPE		CB TYPE	CD TYPE
φ32	-	-	R18	φ12	R15	58	-	8	32	-	15	-	137	-	-	150	-
φ40	-	-	R18	φ16	R15	58	-	8	44	-	15	-	137	-	-	150	-
φ50	-	-	R19	φ22	R18	58	-	8	52	-	15	-	137	-	-	152	-
φ63	-	-	R19	φ22	R18	61	-	8	52	-	15	-	140	-	-	155	-
φ80	-	-	R32	φ25	R23	67	-	11	64	-	19	-	175	-	-	196	-
φ100	-	-	R32	φ25	R23	67	-	11	64	-	19	-	175	-	-	196	-
φ125	32	36	R26	φ32	R22	73	□65	14	64	21	-	35	181	199	27	201	219
φ140	38	44	R32	φ40	R30	85	□76	20	80	25	-	41	210	236	29	238	264
φ160	38	44	R32	φ40	R30	85	□76	20	80	25	-	41	210	236	29	238	264
φ180	38	44	R32	φ40	R30	85	□76	25	80	25	-	41	210	241	29	238	269
φ200	38	44	R32	φ40	R30	85	□76	25	80	25	-	41	210	241	29	238	269
φ250	54	58	R46	φ45	R44	109	□90	30	100	30	-	48	264	298	30	300	334

- LR dimension is the largest dimension of the other mounting or mounting bracket.
- Parenthesized figure of A is the dimension of screw length.

## TA TYPE (HEAD INTEGRAL TRUNNION MOUNTING)

**ISO** (Cylinders-bores  $\phi 140$  and  $\phi 180$  do not conform to ISO.)

$\phi 32 - \phi 100$



● If trunnion bracket (type-TA) interferes with switch, mount Switch on other side (Mount upper).

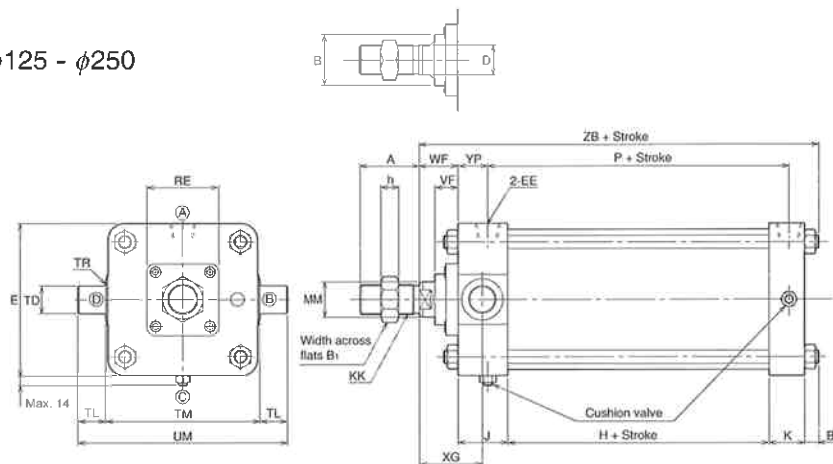
● As for TA Type, head cover cushion needle position is C.

● As for cylinder with switch ( $\phi 32 - \phi 160$ ), valve ( $\phi 40 - \phi 100$ ) and switch/valve ( $\phi 40 - \phi 100$ ), dimensions of cylinder body and mountings are exactly same as those of basic.

● As for mounting dimensions of Valve, refer to **Page 7**.

● As for dimensions with boot, refer to **Page 15**.

$\phi 125 - \phi 250$



## DIMENSIONAL TABLE

Symbol Bore	A	B	B <sub>1</sub>	BB	D	E	EE	F	FP	H	h	J	K
$\phi 32$	22(19)	$\phi 24$	17	7	10	□44	Rc1/8	10	34	30	6	38	25
$\phi 40$	24(21)	$\phi 30$	19	7	13	□50	Rc1/4	10	34	30	7	38	25
$\phi 50$	32(28)	$\phi 34$	22	7	19	□62	Rc1/4	10	34	30	10	38	25
$\phi 63$	32(28)	$\phi 34$	22	9	19	□76	Rc3/8	10	34	33	10	38	25
$\phi 80$	40(36)	$\phi 39$	27	10	22	□94	Rc3/8	16	43	31	12	45	32
$\phi 100$	40(36)	$\phi 39$	27	10	22	□114	Rc1/2	16	43	31	12	45	32
$\phi 125$	54(49)	$\phi 46$	36	13	27	□138	Rc1/2	—	—	37	16	45	32
$\phi 140$	72(67)	$\phi 55$	50	16	36	□156	Rc3/4	—	—	43	20	50	38
$\phi 160$	72(67)	$\phi 55$	50	16	36	□178	Rc3/4	—	—	43	20	50	38
$\phi 180$	72(67)	$\phi 55$	50	16	36	□200	Rc3/4	—	—	43	20	50	38
$\phi 200$	72(67)	$\phi 55$	50	16	36	□216	Rc3/4	—	—	43	20	50	38
$\phi 250$	84(79)	$\phi 60$	60	19	41	□270	Rc1	—	—	55	22	57	50

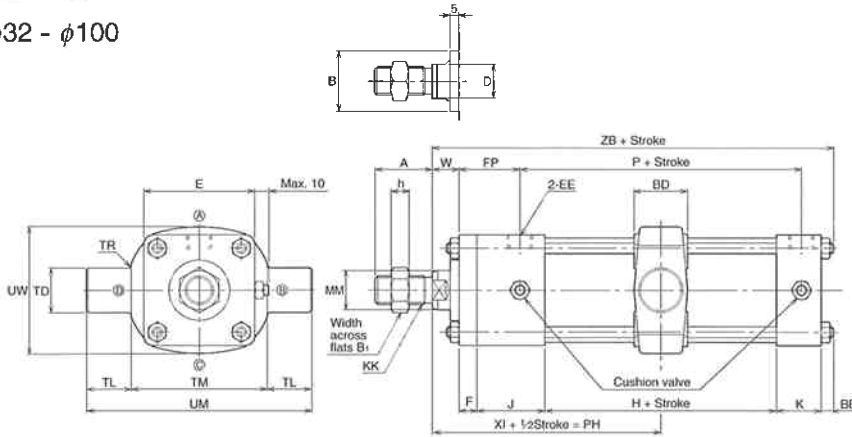
Symbol Bore	KK	MM	P	RE	TD	TL	TM	TR	UM	VF	W	WF	XG	YP	ZB
$\phi 32$	M10×1.25	$\phi 12$	58	—	$\phi 16e9$	16	44	R1	76	—	15	—	44	—	125
$\phi 40$	M12×1.25	$\phi 16$	58	—	$\phi 25e9$	25	50	R1.6	100	—	15	—	44	—	125
$\phi 50$	M16×1.5	$\phi 22$	58	—	$\phi 25e9$	25	63	R1.6	113	—	15	—	44	—	125
$\phi 63$	M16×1.5	$\phi 22$	61	—	$\phi 25e9$	25	76	R1.6	126	—	15	—	44	—	130
$\phi 80$	M20×1.5	$\phi 25$	67	—	$\phi 25e9$	25	95	R1.6	145	—	19	—	57	—	153
$\phi 100$	M20×1.5	$\phi 25$	67	—	$\phi 25e9$	25	114	R2	164	—	19	—	57	—	153
$\phi 125$	M27×2	$\phi 32$	73	□65	$\phi 25e9$	25	139	R2	189	21	—	35	57	27	162
$\phi 140$	M36×2	$\phi 40$	85	□76	$\phi 36e9$	36	156	R2.5	228	25	—	41	66	29	188
$\phi 160$	M36×2	$\phi 40$	85	□76	$\phi 36e9$	36	178	R2.5	250	25	—	41	66	29	188
$\phi 180$	M36×2	$\phi 40$	85	□76	$\phi 36e9$	36	200	R2.5	272	25	—	41	66	29	188
$\phi 200$	M36×2	$\phi 40$	85	□76	$\phi 36e9$	36	216	R2.5	288	25	—	41	66	29	188
$\phi 250$	M42×2	$\phi 45$	109	□90	$\phi 45e9$	45	270	R3	360	30	—	48	76	30	229

● Parenthesized figure of A is the dimension of screw length.

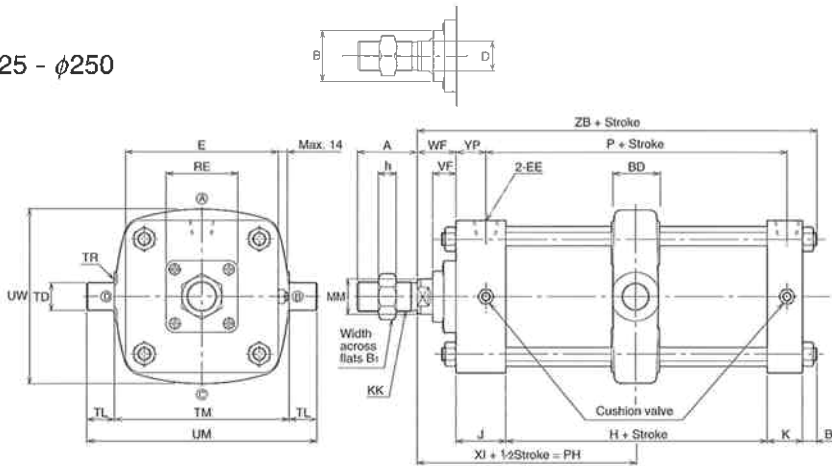
## TC TYPE (INTERMEDIATE TRUNNION MOUNTING)

**ISO** (Cylinders-bores  $\phi 140$  and  $\phi 180$  do not conform to ISO.)

$\phi 32 - \phi 100$



$\phi 125 - \phi 250$



- As for cylinder with switch ( $\phi 32 - \phi 160$ ), with valve ( $\phi 40 - \phi 100$ ) and switch/valve ( $\phi 40 - \phi 100$ ), dimensions of cylinder body and mountings are exactly same as those of basic.
- As for mounting dimensions of Valve, refer to **Page 7**.
- As for dimensions with boot, refer to **Page 15**.

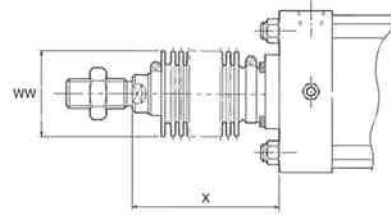
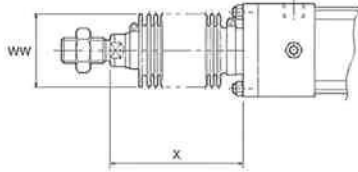
### DIMENSIONAL TABLE

Symbol Bore	A	B	B <sub>1</sub>	BB	BD	D	E	EE	F	FP	H	h	J	K	KK
$\phi 32$	22(19)	$\phi 24$	17	7	30	10	□44	Rc1/8	10	34	30	6	38	25	M10X1.25
$\phi 40$	24(21)	$\phi 30$	19	7	30	13	□50	Rc1/4	10	34	30	7	38	25	M12X1.25
$\phi 50$	32(28)	$\phi 34$	22	7	30	19	□62	Rc1/4	10	34	30	10	38	25	M16X1.5
$\phi 63$	32(28)	$\phi 34$	22	9	30	19	□76	Rc3/8	10	34	33	10	38	25	M16X1.5
$\phi 80$	40(36)	$\phi 39$	27	10	35	22	□94	Rc3/8	16	43	31	12	45	32	M20X1.5
$\phi 100$	40(36)	$\phi 39$	27	10	40	22	□114	Rc1/2	16	43	31	12	45	32	M20X1.5
$\phi 125$	54(49)	$\phi 46$	36	13	43	27	□138	Rc1/2	-	-	37	16	45	32	M27X2
$\phi 140$	72(67)	$\phi 55$	50	16	53	36	□156	Rc3/4	-	-	43	20	50	38	M36X2
$\phi 160$	72(67)	$\phi 55$	50	16	53	36	□178	Rc3/4	-	-	43	20	50	38	M36X2
$\phi 180$	72(67)	$\phi 55$	50	16	53	36	□200	Rc3/4	-	-	43	20	50	38	M36X2
$\phi 200$	72(67)	$\phi 55$	50	16	53	36	□216	Rc3/4	-	-	43	20	50	38	M36X2
$\phi 250$	84(79)	$\phi 60$	60	19	58	41	□270	Rc1	-	-	55	22	57	50	M42X2

Symbol Bore	MM	P	Min. PH	Min. Stroke	RE	TD	TL	TM	TR	UM	UW	VF	W	WF	XI	YP	ZB
$\phi 32$	$\phi 12$	58	78	3	-	$\phi 16e9$	16	55	R1	87	52	-	15	-	78	-	125
$\phi 40$	$\phi 16$	58	78	3	-	$\phi 25e9$	25	63	R1.6	113	59	-	15	-	78	-	125
$\phi 50$	$\phi 22$	58	78	3	-	$\phi 25e9$	25	76	R1.6	126	71	-	15	-	78	-	125
$\phi 63$	$\phi 22$	61	78	0	-	$\phi 25e9$	25	88	R1.6	138	86	-	15	-	79.5	-	130
$\phi 80$	$\phi 25$	67	98	7	-	$\phi 25e9$	25	114	R1.6	164	104	-	19	-	95.5	-	153
$\phi 100$	$\phi 25$	67	100	12	-	$\phi 25e9$	25	132	R2	182	128	-	19	-	95.5	-	153
$\phi 125$	$\phi 32$	73	102	9	□65	$\phi 25e9$	25	158	R2	208	158	21	-	35	98.5	27	162
$\phi 140$	$\phi 40$	85	119	13	□76	$\phi 36e9$	36	183	R2.5	255	183	25	-	41	112.5	29	188
$\phi 160$	$\phi 40$	85	119	13	□76	$\phi 36e9$	36	200	R2.5	272	200	25	-	41	112.5	29	188
$\phi 180$	$\phi 40$	85	119	13	□76	$\phi 36e9$	36	228	R2.5	300	228	25	-	41	112.5	29	188
$\phi 200$	$\phi 40$	85	119	13	□76	$\phi 36e9$	36	246	R2.5	318	246	25	-	41	112.5	29	188
$\phi 250$	$\phi 45$	109	134	6	□90	$\phi 45e9$	45	304	R3	394	304	30	-	48	132.5	30	229

• Parenthesized figure of A is the dimension of screw length.

## EXTERNAL DIMENSIONAL DRAWING/WITH DUST COVER

 $\phi 32 - \phi 100$  $\phi 125 - \phi 250$ 

	Standard	Semi-standard	
Material	Nylon tarpaulin	Chloroprene	Conex
Resistible temperature	80°C	100°C	200°C

- Notes)
- Remember that the resistible temperatures shown in the table above are for the boots, not for the cylinder.
  - Conex is the registered trademark of Teijin Ltd.
  - If decimals are included into the calculation results, raise them to the next whole number.
  - The boots have been mounted at our factory prior to delivery.
  - WF dimension is the dimension from one end of the cover. Please be careful when you request the FA mounting.
  - Minor fraction is to be raised to unit. As for with boot, Seal Housing for  $\phi 32 - \phi 100$  defers a little from standard.

## DIMENSIONAL TABLE (NYLON TARPULIN·CHLOROPRENE)

Symbol Bore	WW	X (Standard stroke)												X (other than standard stroke)
		50	75	100	125	150	200	250	300	350	400	450	500	Nylon tarpaulin-chloroprene
$\phi 32$	$\phi 36$	67	75	83	92	100	117	133	150	167	183	200	217	1/3 stroke + 50
$\phi 40$	$\phi 40$	67	75	83	92	100	117	133	150	167	183	200	217	
$\phi 50$	$\phi 45$	72	80	88	97	105	122	138	155	172	188	205	222	1/3 stroke + 55
$\phi 63$	$\phi 45$	72	80	88	97	105	122	138	155	172	188	205	222	
$\phi 80$	$\phi 60$	78	84	90	96	103	115	128	140	153	165	178	190	1/4 stroke + 65
$\phi 100$	$\phi 60$	78	84	90	96	103	115	128	140	153	165	178	190	
$\phi 125$	$\phi 71$	84	90	96	102	109	121	134	146	159	171	184	196	1/4 stroke + 71
$\phi 140$	$\phi 80$	88	94	100	106	113	125	138	150	163	175	188	200	
$\phi 160$	$\phi 80$	88	94	100	106	113	125	138	150	163	175	188	200	1/4 stroke + 75
$\phi 180$	$\phi 80$	88	94	100	106	113	125	138	150	163	175	188	200	
$\phi 200$	$\phi 80$	88	94	100	106	113	125	138	150	163	175	188	200	1/4 stroke + 80
$\phi 250$	$\phi 80$	93	99	105	111	118	130	143	155	168	180	193	205	

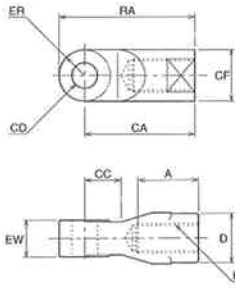
## DIMENSIONAL TABLE (CONEX)

Symbol Bore	WW	X (Standard stroke)												X (other than standard stroke)
		50	75	100	125	150	200	250	300	350	400	450	500	Conex
$\phi 32$	$\phi 61$	70	75	83	92	100	117	133	150	167	183	200	217	1/2.5 stroke + 50
$\phi 40$	$\phi 61$	70	75	83	92	100	117	133	150	167	183	200	217	
$\phi 50$	$\phi 61$	75	85	95	105	115	135	155	175	195	215	235	255	1/2.5 stroke + 55
$\phi 63$	$\phi 61$	75	85	95	105	115	135	155	175	195	215	235	255	
$\phi 80$	$\phi 61$	82	90	98	107	115	132	148	165	182	198	215	232	1/3 stroke + 65
$\phi 100$	$\phi 61$	82	90	98	107	115	132	148	165	182	198	215	232	
$\phi 125$	$\phi 71$	88	96	104	113	121	138	154	171	188	204	221	238	1/3 stroke + 71
$\phi 140$	$\phi 80$	92	100	108	117	125	142	158	175	192	208	225	242	
$\phi 160$	$\phi 80$	92	100	108	117	125	142	158	175	192	208	225	242	1/3 stroke + 75
$\phi 180$	$\phi 80$	92	100	108	117	125	142	158	175	192	208	225	242	
$\phi 200$	$\phi 80$	92	100	108	117	125	142	158	175	192	208	225	242	1/3 stroke + 80
$\phi 250$	$\phi 80$	97	105	113	122	130	147	163	180	197	213	230	247	

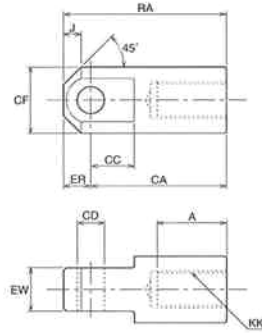
ACCESSORIES

ROD END EYE (TYPE-T)

φ32 - φ100

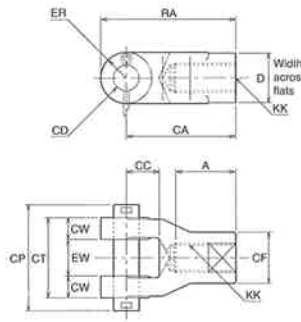


φ125 - φ250

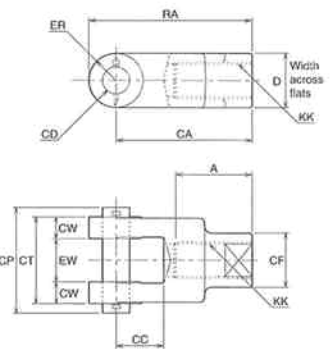


ROD END CLEVIS (TYPE-Y)

φ32 - φ100



φ125 - φ250



DIMENSIONAL TABLE

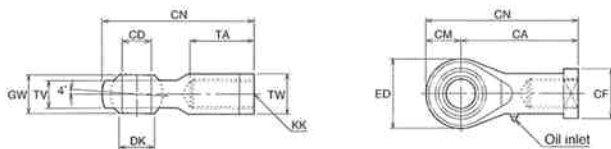
Symbol	A	CA	CC	CD	CF	D	ER	EW	J	KK	RA
φ32	23	55	20	φ12H9	φ24	24	R12	16 <sup>0</sup> <sub>-0.1</sub>	-	M10X1.25	67
φ40	25	60	20	φ14H9	φ24	24	R12	20 <sup>0</sup> <sub>-0.1</sub>	-	M12X1.25	72
φ50	33	60	20	φ14H9	φ28	27	R14	20 <sup>0</sup> <sub>-0.1</sub>	-	M16X1.5	74
φ63	33	60	20	φ14H9	φ28	27	R14	20 <sup>0</sup> <sub>-0.1</sub>	-	M16X1.5	74
φ80	41	85	30	φ20H9	φ36	36	R19	32 <sup>0</sup> <sub>-0.1</sub>	-	M20X1.5	104
φ100	41	85	30	φ20H9	φ36	36	R19	32 <sup>0</sup> <sub>-0.1</sub>	-	M20X1.5	104
φ125	51	100	32	φ20H9	φ49	-	20	32 <sup>0</sup> <sub>-0.1</sub>	13	M27X2	120
φ140	69	125	33	φ28H9	φ62	-	28	40 <sup>0</sup> <sub>-0.1</sub>	18	M36X2	153
φ160	69	125	33	φ28H9	φ62	-	28	40 <sup>0</sup> <sub>-0.1</sub>	18	M36X2	153
φ180	69	125	33	φ28H9	φ62	-	28	40 <sup>0</sup> <sub>-0.1</sub>	18	M36X2	153
φ200	69	125	33	φ28H9	φ62	-	28	40 <sup>0</sup> <sub>-0.1</sub>	18	M36X2	153
φ250	81	144	48	φ36H9	φ79	-	36	50 <sup>0</sup> <sub>-0.1</sub>	20	M42X2	180

DIMENSIONAL TABLE

Symbol	A	CA	CC	CD	CF	CP	CT	CW	D	ER	EW	KK	RA
φ32	23	55	20	φ12 <sup>H9</sup> <sub>18</sub>	φ24	46	32	8	24	R12	16 <sup>+1.5</sup> <sub>-0.5</sub>	M10X1.25	67
φ40	25	60	20	φ14 <sup>H9</sup> <sub>18</sub>	φ24	58	44	12	24	R12	20 <sup>+1.5</sup> <sub>-0.5</sub>	M12X1.25	72
φ50	33	60	18	φ14 <sup>H9</sup> <sub>18</sub>	φ28	58	44	12	27	R14	20 <sup>+1.5</sup> <sub>-0.5</sub>	M16X1.5	74
φ63	33	60	18	φ14 <sup>H9</sup> <sub>18</sub>	φ28	58	44	12	27	R14	20 <sup>+1.5</sup> <sub>-0.5</sub>	M16X1.5	74
φ80	41	85	28	φ20 <sup>H9</sup> <sub>18</sub>	φ36	78	64	16	36	R19	32 <sup>+1.5</sup> <sub>-0.5</sub>	M20X1.5	104
φ100	41	85	28	φ20 <sup>H9</sup> <sub>18</sub>	φ36	78	64	16	36	R19	32 <sup>+1.5</sup> <sub>-0.5</sub>	M20X1.5	104
φ125	56	100	35	φ20 <sup>H9</sup> <sub>18</sub>	φ40	78	64	16	40	R20	32 <sup>+1.5</sup> <sub>-0.5</sub>	M27X2	120
φ140	74	125	36.5	φ28 <sup>H9</sup> <sub>18</sub>	φ55	97	80	20	55	R27.5	40 <sup>+1.5</sup> <sub>-0.5</sub>	M36X2	152.5
φ160	74	125	36.5	φ28 <sup>H9</sup> <sub>18</sub>	φ55	97	80	20	55	R27.5	40 <sup>+1.5</sup> <sub>-0.5</sub>	M36X2	152.5
φ180	74	125	36.5	φ28 <sup>H9</sup> <sub>18</sub>	φ55	97	80	20	55	R27.5	40 <sup>+1.5</sup> <sub>-0.5</sub>	M36X2	152.5
φ200	74	125	36.5	φ28 <sup>H9</sup> <sub>18</sub>	φ55	97	80	20	55	R27.5	40 <sup>+1.5</sup> <sub>-0.5</sub>	M36X2	152.5
φ250	86	144	49	φ36 <sup>H9</sup> <sub>18</sub>	φ70	117	100	25	65	R35	50 <sup>+1.5</sup> <sub>-0.5</sub>	M42X2	179

ROD END SPHERICAL EYE (TYPE-S)

φ32 - φ100

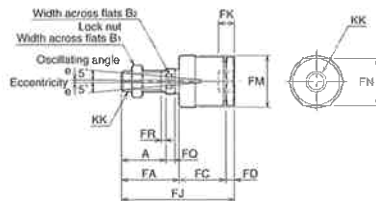


DIMENSIONAL TABLE

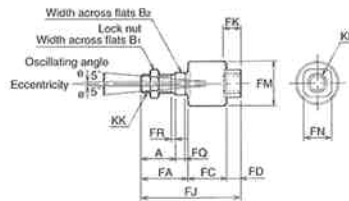
Symbol	CA	CD	CF	CM	CN	DK	ED	GW	KK	TA	TV	TW
φ32	43	φ10H9	φ19	13	56	φ12.9	26	14 <sup>0</sup> <sub>-0.1</sub>	M10X1.25	21	10.5±0.1	17
φ40	50	φ12H9	φ22	15	65	φ15.4	30	16 <sup>0</sup> <sub>-0.1</sub>	M12X1.25	24	12±0.1	19
φ50	64	φ16H9	φ27	19	83	φ19.4	38	21 <sup>0</sup> <sub>-0.1</sub>	M16X1.5	33	15±0.1	22
φ63	64	φ16H9	φ27	19	83	φ19.4	38	21 <sup>0</sup> <sub>-0.1</sub>	M16X1.5	33	15±0.1	22
φ80	77	φ20H9	φ34	23	100	φ24.4	46	25 <sup>0</sup> <sub>-0.1</sub>	M20X1.5	40	18±0.1	30
φ100	77	φ20H9	φ34	23	100	φ24.4	46	25 <sup>0</sup> <sub>-0.1</sub>	M20X1.5	40	18±0.1	30

F-JOINT (TYPE-F)

φ32



φ40 - φ160



- Notes) • Do not turn F-joint into the socket to the dimension larger than the screw bore diameter. (Fix the joint with lock nut by turning it back by 1 - 2 turns after the joint thrust.) Excessive turning-in will cause malfunction of the cylinder.  
 • Do not use the F-joint in combination with CA, CB, CC, CD, TA, TC types.

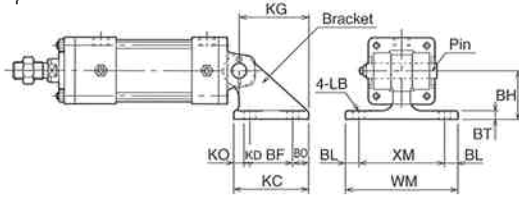
DIMENSIONAL TABLE

Symbol	A	B <sub>1</sub>	B <sub>2</sub>	e	FA	FC	FD	FJ	FK	FM	FN	FQ	FR	KK
φ32	24.5	17	10	1	31	28	4	63	11	φ25	24	4.5	2.5	M10X1.25
φ40	24	19	13	1	33	25.5	11	69.5	13.5	φ32	□19	7	3.5	M12X1.25
φ50-φ63	32	22	17	1.5	43	33	13	89	16	φ40	□24	8	4	M16X1.5
φ80	40	27	22	2	53	42	15	110	22	φ50	□30	9	5	M20X1.5
φ100	40	27	24	2.5	56	49	18	123	24	φ64	□36	12	6	M20X1.5
φ125	54	36	32	2.5	74	62	21	157	30	φ76	□46	14	7	M27X2
φ140-φ160	72	50	36	3	96	80	23	199	36	φ88	□55	18	8	M36X2

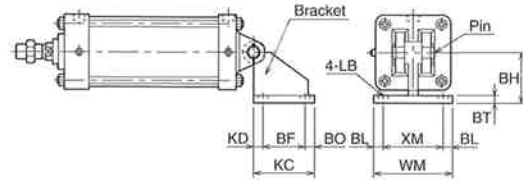


### CB/CD BRACKET (CLEVIS BRACKET)

φ32 - φ100



φ125 - φ250



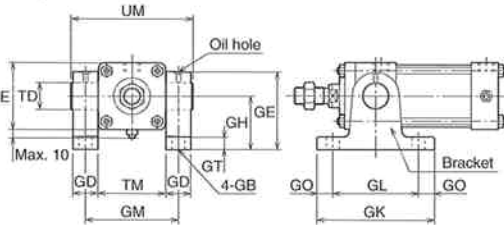
• As for cylinder dimensions, refer to CB and CD type.

### DIMENSIONAL TABLE

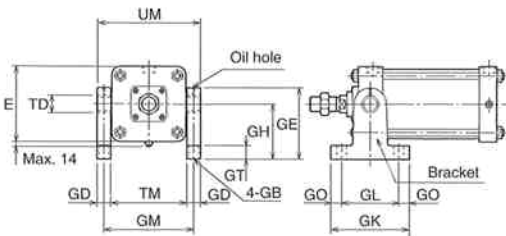
Symbol Bore	BF	BH	BL	BO	BT	KC	KD	KG	KO	LB	WM	XM
φ32	40	35	10	10	8	60	5	55	5	φ9	85	65
φ40	40	45	12.5	15	8	70	10	65	5	φ11	105	80
φ50	40	45	12.5	15	8	70	10	65	5	φ11	105	80
φ63	40	45	12.5	15	8	70	10	65	5	φ11	105	80
φ80	65	60	15	15	12	95	5	85	10	φ14	135	105
φ100	65	60	15	15	12	95	5	85	10	φ14	135	105
φ125	77	75	17.5	17.5	14	112	17.5	-	-	φ18	145	110
φ140	120	115	22.5	22.5	23	165	22.5	-	-	φ22	175	130
φ160	120	115	22.5	22.5	23	165	22.5	-	-	φ22	175	130
φ180	120	115	22.5	22.5	23	165	22.5	-	-	φ22	175	130
φ200	120	115	22.5	22.5	23	165	22.5	-	-	φ22	175	130
φ250	165	140	25	25	28	215	25	-	-	φ26	220	170

### TA BRACKET (TRUNNION BRACKET)

φ32 - φ100



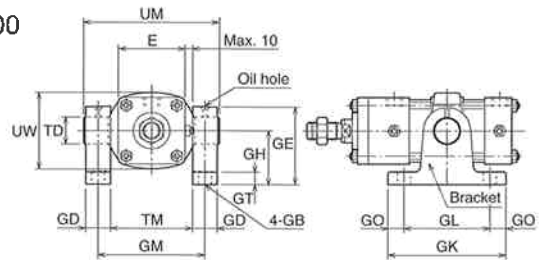
φ125 - φ250



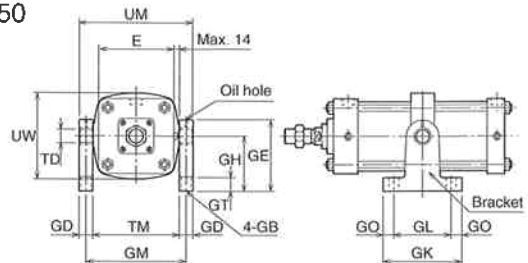
• As for cylinder dimensions, refer to TA type.

### TC BRACKET (TRUNNION BRACKET)

φ32 - φ100



φ125 - φ250



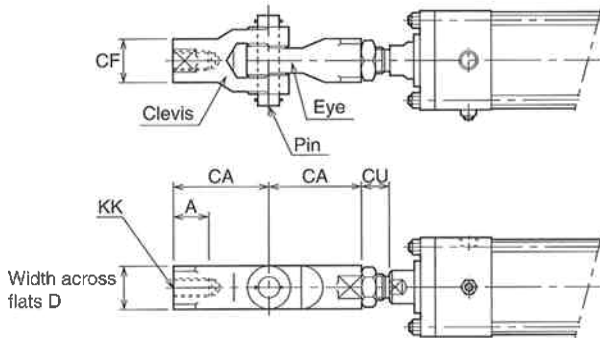
• As for cylinder dimensions, refer to TC type.

### DIMENSIONAL TABLE

Symbol Bore	E	GB	GD	GE	GH	GK	GL	GM		GO	GT	TD	TM		UM		UW
								TA TYPE	TC TYPE				TA TYPE	TC TYPE	TA TYPE	TC TYPE	
φ32	□44	φ9	15	56	40	80	60	59	70	10	12	φ16 <sup>H9/g9</sup>	44	55	76	87	52
φ40	□50	φ12	23	72	50	110	80	73	86	15	12	φ25 <sup>H9/g9</sup>	50	63	100	113	59
φ50	□62	φ12	23	72	50	110	80	86	99	15	12	φ25 <sup>H9/g9</sup>	63	76	113	126	71
φ63	□76	φ12	23	72	50	110	80	99	111	15	12	φ25 <sup>H9/g9</sup>	76	88	126	138	86
φ80	□94	φ14	23	92	70	120	85	118	137	17.5	14	φ25 <sup>H9/g9</sup>	95	114	145	164	104
φ100	□114	φ14	23	92	70	120	85	137	155	17.5	14	φ25 <sup>H9/g9</sup>	114	132	164	182	128
φ125	□138	φ18	25	115	85	145	105	164	183	20	25	φ25 <sup>H9/g9</sup>	139	158	189	208	158
φ140	□156	φ22	36	170	130	185	140	192	219	22.5	25	φ25 <sup>H9/g9</sup>	156	183	228	255	183
φ160	□178	φ22	36	170	130	185	140	214	236	22.5	25	φ36 <sup>H9/g9</sup>	178	200	250	272	200
φ180	□200	φ22	36	170	130	185	140	236	264	22.5	25	φ36 <sup>H9/g9</sup>	200	228	272	300	228
φ200	□216	φ22	36	170	130	185	140	252	282	22.5	25	φ36 <sup>H9/g9</sup>	216	246	288	318	246
φ250	□270	φ26	45	210	160	215	165	315	349	25	32	φ45 <sup>H9/g9</sup>	270	304	360	394	304

Note)  $\phi 125$  up to  $\phi 250$ , similar combinations are practicable, but outside shapes differ.

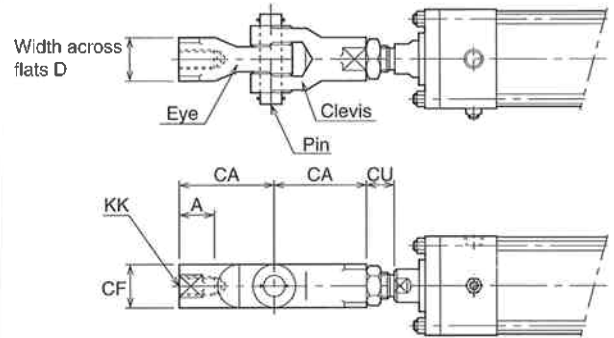
**ROD END EYE-ROD END CLEVIS**



**DIMENSIONAL TABLE**

Symbol Bore	A	CA	CF	CU		D	KK
				Min.	Max.		
$\phi 32$	23	55	$\phi 24$	6	12	24	M10X1.25
$\phi 40$	25	60	$\phi 24$	7	13	24	M12X1.25
$\phi 50$	33	60	$\phi 28$	10	17	27	M16X1.5
$\phi 63$	33	60	$\phi 28$	10	17	27	M16X1.5
$\phi 80$	41	85	$\phi 36$	12	21	36	M20X1.5
$\phi 100$	41	85	$\phi 36$	12	21	36	M20X1.5

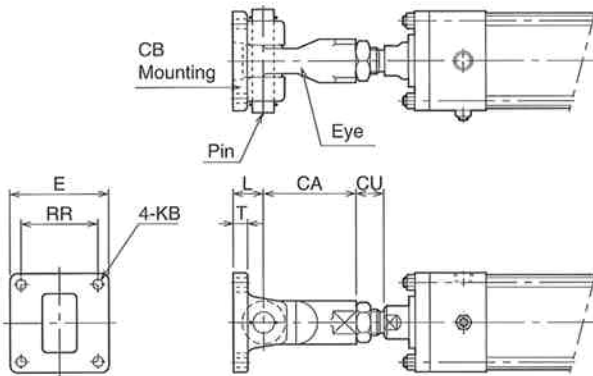
**ROD END CLEVIS-ROD END EYE**



**DIMENSIONAL TABLE**

Symbol Bore	A	CA	CF	CU		D	KK
				Min.	Max.		
$\phi 32$	23	55	$\phi 24$	6	12	24	M10X1.25
$\phi 40$	25	60	$\phi 24$	7	13	24	M12X1.25
$\phi 50$	33	60	$\phi 28$	10	17	27	M16X1.5
$\phi 63$	33	60	$\phi 28$	10	17	27	M16X1.5
$\phi 80$	41	85	$\phi 36$	12	21	36	M20X1.5
$\phi 100$	41	85	$\phi 36$	12	21	36	M20X1.5

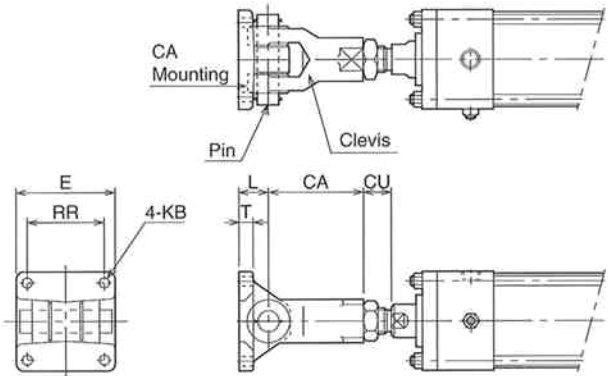
**ROD END EYE-CB MOUNTING**



**DIMENSIONAL TABLE**

Symbol Bore	CA	CU		E	KB	L	RR	T
		Min.	Max.					
$\phi 32$	55	6	12	$\square 43$	M6X1	19	$\square 33$	8
$\phi 40$	60	7	13	$\square 49$	M6X1	19	$\square 37$	8
$\phi 50$	60	10	17	$\square 60$	M6X1	19	$\square 47$	8
$\phi 63$	60	10	17	$\square 74$	M8X1.25	19	$\square 56$	8
$\phi 80$	85	12	21	$\square 93$	M10X1.25	32	$\square 70$	11
$\phi 100$	85	12	21	$\square 110$	M10X1.25	32	$\square 84$	11

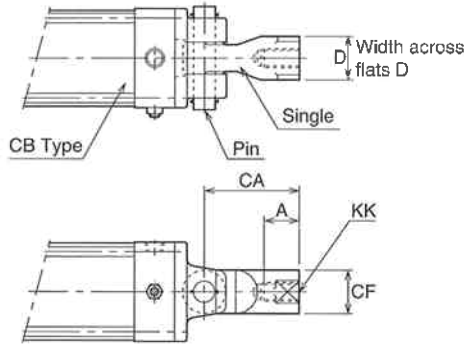
**ROD END CLEVIS-CA MOUNTING**



**DIMENSIONAL TABLE**

Symbol Bore	CA	CU		E	KB	L	RR	T
		Min.	Max.					
$\phi 32$	55	6	12	$\square 43$	M6X1	19	$\square 33$	8
$\phi 40$	60	7	13	$\square 49$	M6X1	19	$\square 37$	8
$\phi 50$	60	10	17	$\square 60$	M6X1	19	$\square 47$	10
$\phi 63$	60	10	17	$\square 74$	M8X1.25	19	$\square 56$	13
$\phi 80$	85	12	21	$\square 93$	M10X1.25	32	$\square 70$	18
$\phi 100$	85	12	21	$\square 110$	M10X1.25	32	$\square 84$	18

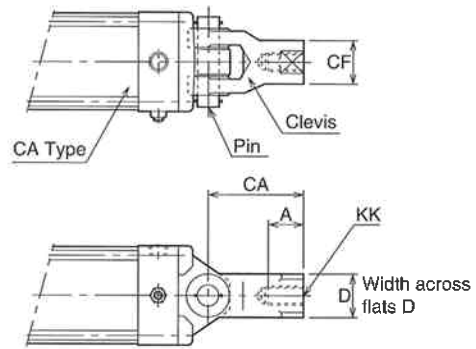
### CB TYPE-ROD END EYE



#### DIMENSIONAL TABLE

Symbol Bore	A	CA	CF	D	KK
φ32	23	55	φ24	24	M10×1.25
φ40	25	60	φ24	24	M12×1.25
φ50	33	60	φ28	27	M16×1.5
φ63	33	60	φ28	27	M16×1.5
φ80	41	85	φ36	36	M20×1.5
φ100	41	85	φ36	36	M20×1.5

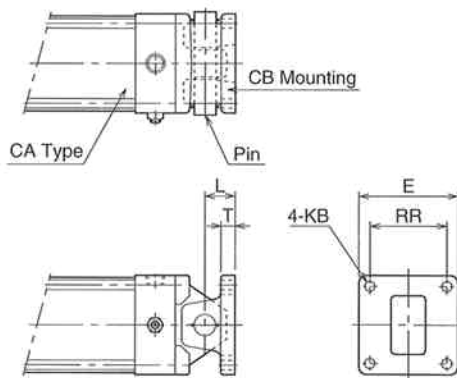
### CA TYPE-ROD END CLEVIS



#### DIMENSIONAL TABLE

Symbol Bore	A	CA	CF	D	KK
φ32	23	55	φ24	24	M10×1.25
φ40	25	60	φ24	24	M12×1.25
φ50	33	60	φ28	27	M16×1.5
φ63	33	60	φ28	27	M16×1.5
φ80	41	85	φ36	36	M20×1.5
φ100	41	85	φ36	36	M20×1.5

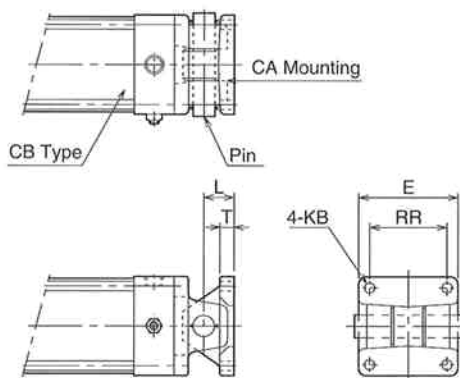
### CA TYPE-CB MOUNTING



#### DIMENSIONAL TABLE

Symbol Bore	E	KB	L	RR	T
φ32	□43	M6×1	19	□33	8
φ40	□49	M6×1	19	□37	8
φ50	□60	M6×1	19	□47	8
φ63	□74	M8×1.25	19	□56	8
φ80	□93	M10×1.25	32	□70	11
φ100	□110	M10×1.25	32	□84	11

### CB TYPE-CA MOUNTING



#### DIMENSIONAL TABLE

Symbol Bore	E	KB	L	RR	T
φ32	□43	M6×1	19	□33	8
φ40	□49	M6×1	19	□37	8
φ50	□60	M6×1	19	□47	10
φ63	□74	M8×1.25	19	□56	13
φ80	□93	M10×1.25	32	□70	18
φ100	□110	M10×1.25	32	□84	18

## WEIGHT TABLE

## BASIC WEIGHT TABLE

Bore mm	Basic weight (SD Type)				Mounting weight									Additional weight per stroke 1mm	
	Standard type	Switch set	Val set	SV set	LB	FA	FB	CA	CC	CB	CD	TA	TC	Standard type Val set	Switch set SV set
φ32	1.28	1.12	—	—	0.19	0.18	0.24	0.12	—	0.12	—	0.05	0.30	0.00345	0.00251
φ40	1.74	1.51	1.95	1.72	0.23	0.25	0.32	0.18	—	0.15	—	0.19	0.48	0.00454	0.00338
φ50	2.78	2.40	2.99	2.61	0.36	0.40	0.50	0.26	—	0.30	—	0.19	0.55	0.00779	0.00534
φ63	4.18	3.55	4.42	3.79	0.46	0.55	0.65	0.42	—	0.39	—	0.19	0.70	0.00945	0.00638
φ80	8.11	7.17	8.35	7.41	0.86	1.38	1.59	1.08	—	0.80	—	0.19	1.16	0.0135	0.00916
φ100	11.94	10.52	12.18	10.76	1.12	1.99	2.20	1.39	—	1.05	—	0.19	1.53	0.0153	0.00984
φ125	16.60	13.94	—	—	2.00	2.58	2.58	0.57	2.59	0.76	2.86	0.19	2.20	0.0242	0.0154
φ140	25.52	21.49	—	—	2.83	4.38	4.38	0.94	5.05	1.72	5.69	0.57	5.00	0.0398	0.0223
φ160	31.36	26.38	—	—	3.22	5.48	5.48	1.35	6.18	1.82	6.73	0.57	4.95	0.0365	0.0222
φ180	40.70	—	—	—	5.69	7.22	7.22	1.25	9.04	1.72	9.73	0.57	6.00	0.0535	—
φ200	46.90	—	—	—	6.12	8.30	8.30	1.25	10.18	1.72	10.86	0.57	6.30	0.0593	—
φ250	90.07	—	—	—	8.38	15.70	15.70	3.23	20.10	4.22	21.30	1.12	10.50	0.0635	—

## ACCESSORIES WEIGHT TABLE

Bore mm	Rod end attachment weight				Additional valve weight			Switch addition weight (1 piece)				
	Rod end spherical eye (Type-S)	Rod end eye (Type-T)	Rod end clevis with pin (Type-Y)	Floating joint (Type-F)	Push Pull	Self-holding	3 position closed center 3 position exhaust center	AX			SR	
								With cord 1.5m	With cord 5m	Connector type	With cord 5m	
φ32	0.08	0.16	0.22	0.10	—	—	—	—	—	—	—	—
φ40	0.11	0.16	0.27	0.10	0.51	0.59	0.63	0.05	0.13	0.04	0.22	
φ50	0.20	0.21	0.34	0.38	0.51	0.59	0.63	—	—	—		
φ63	0.36	0.21	0.34	0.38	0.52	0.60	0.64	0.07	0.13	0.04		
φ80	0.36	0.62	0.87	0.72	0.52	0.60	0.64	0.05	0.13	0.04		
φ100	—	0.62	0.87	1.30	0.55	0.63	0.67	—	—	—		
φ125	—	1.24	1.47	2.47	—	—	—	0.07	0.14	0.06		
φ140	—	2.40	3.32	4.30	—	—	—	—	—	—		
φ160	—	2.40	3.32	4.30	—	—	—	0.07	0.15	0.06		
φ180	—	2.40	3.32	—	—	—	—	—	—	—		
φ200	—	2.40	3.32	—	—	—	—	—	—	—		
φ250	—	4.62	5.93	—	—	—	—	—	—	—		

Note) As for cylinder with valve and with switch/valve, add valve weight according to operating method.

Calculating method: Cylinder weight (kg) = Basic weight + (Additional switch weight) + Additional valve weight  
+ Mountings weight + Additional weight per stroke 1mm × Cylinder stroke mm

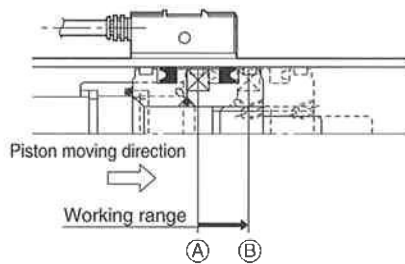
Calculating example: Cylinder with switch/valve, push, 2 pcs. of AX115 (with cord 5m), LB type, Bore 80mm, Cylinder stroke 200mm

$$7.41 + 0.13 \times 2 + 0.52 + 0.86 + 0.00916 \times 200 = 10.882\text{kg}$$

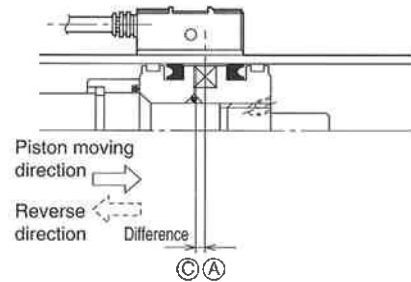
## OPERATION OF CYLINDER WITH SWITCH

### WORKING DESCRIPTION

With the switch, a circuit and an indicating lamp, all set in case, the magnetic proximity switch of resin-mounted structure is mounted in the periphery of cylinder body. When a magnet-integrated piston passes below, the reed switch actuates and the stroke position of cylinder is detected from outside without contact.



When the piston moves in the  $\Rightarrow$  direction and the magnet arrives at position (A), the reed switch actuates. The switch remains on from (A) to (B). This is called the working range.



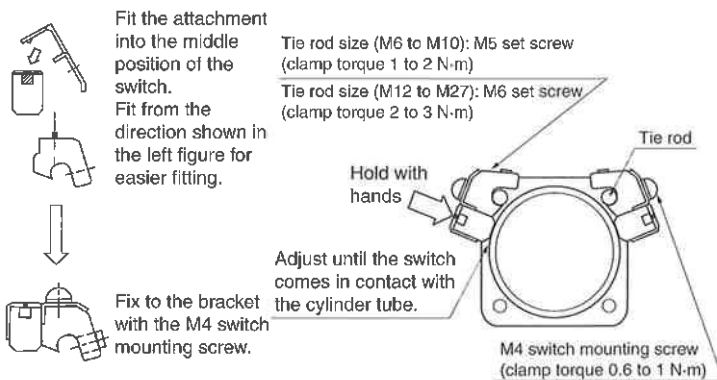
When the piston moves in the  $\Rightarrow$  direction and then reaches position (A) the switch actuates. The switch remains on until the piston reaches position (C) after moving in the reverse direction.

The interval between (A) and (C) is called the difference.

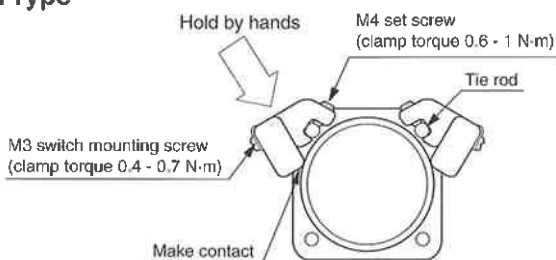
Note) The above drawing of internal structure of YR type switch.

## HOW TO SET SWITCH DETECTING POSITION

### AX Type



### SR Type



1. Loosen the two set screws with an allen wrench, and move them along with the tie rod.
2. Adjust the detecting position (for the 2-LED type, the position that the green lamp lights up) 2 to 5mm (about half of the working range is appropriate) before the required position that the switch indicator lamp starts to light up (ON). Then, gently hold the top of the switch so that the cylinder tube contacts the detecting face of the switch, and clamp the set screw with the appropriate clamp torque.

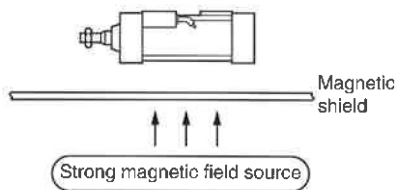
Note) Inappropriate clamp torque may cause the offcenter of the switch position.

3. The indicator lamp lights up when the switch is set to the ON position. (SR405: Goes out when the switch turns ON.)
4. Switches can be mounted to any of four tie rods and on the most suitable position depending on the mounting space of the cylinder and wiring method.
5. Mount a switch to the most suitable position to detect the stroke end with the "Switch mounting dimension" (dimension UX).

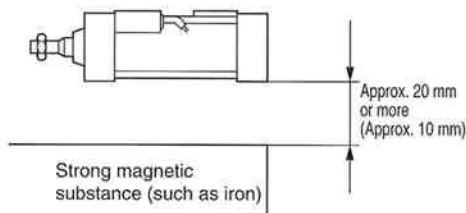
**HANDLING INSTRUCTIONS OF CYLINDER WITH SWITCH**

**PRECAUTIONS FOR INSTALLATION**

1. Do not use in such locations where chips-cutting oil are directly applied to cylinder and switch.
  - The cord is cut off by chips, and cutting oil enters inside of switch, thereby causing the short circuit of electric circuit and the working inferiority of switch.
2. Provide iron plates as magnetic shield in locations with the strong ambient magnetic field.
  - Affected by the magnetic field, the wrong working of switch may be caused.



3. Do not move strong magnetic substances (iron, etc.) near the cylinder body and switch. As a rule, such materials shall be kept over 20mm from the switch. In case of the compact cylinder, it shall be kept over 10mm.
  - Affected by strong magnetic substances, the wrong working of switch may be caused.



**DETECTABLE CYLINDER PISTON SPEED**

- When switch is set at the intermediate position, keep the cylinder speeds lower than 300mm/s to ensure the response of load relay.
- If the piston speed is too fast, the switch actuating time is short and loads of relay may not work although switch will actuate. The detectable cylinder piston speed shall be set with the following formula as reference.

Detectable Piston Speed (mm/s) =

$$\frac{\text{Switch Actuating Range (mm)}}{\text{Load Working Time (ms)}} \times 1000$$

Note) Refer to the load working time of relay of various companies.

## ADJUSTABLE STROKE CYLINDER CYLINDER SPECIFICATIONS

Type	Standard type		Val set
Series	10A-2A2		10A-2V2A2
Cylinder bore mm	$\phi 32 \cdot \phi 40 \cdot \phi 50 \cdot \phi 63 \cdot \phi 80 \cdot \phi 100 \cdot \phi 125 \cdot \phi 140 \cdot \phi 160$		$\phi 40 \cdot \phi 50 \cdot \phi 63 \cdot \phi 80 \cdot \phi 100$
Working fluid	Air · Dry air		
Lubrication	Not necessary (may be also lubricated)		
Allowable pressure range	0.1 - 1MPa		0.17 - 0.7MPa
Proof pressure	1.5MPa		1.05MPa
Allowable speed range	50 - 700mm/s		50 - 500mm/s
Allowable temperature range	-10 - +70°C		+5 - +50°C
Structure of cushioning	Head cover cushioned		
Cushion stroke	$\phi 32 - \phi 63$ : 16mm	$\phi 80 - \phi 125$ : 20mm	$\phi 140 - \phi 160$ : 23mm
Adjustable stroke range	0 - 50mm		
Tolerance for screw	JIS 6g/6H		
Tolerance of stroke	250mm or less $^{+1.0}_0$	251 - 1000mm $^{+1.4}_0$	1001 - 2000mm $^{+1.8}_0$
Mounting style	SD-LB-FA-TA-TC		
Accessories	Boots	Standard : Nylon tarpaulin      Semi-Standard: Chloroprene·CONEX	
	Rod end accessories	Rod end eye (type-T)·Rod end spherical eye (type-S)·Rod end clevis (type-Y)·Floating joint (type-F)	
	Others	TA/TC bracket (trunnion bracket)	

### MAXIMUM ALLOWABLE STROKE

Unit:mm

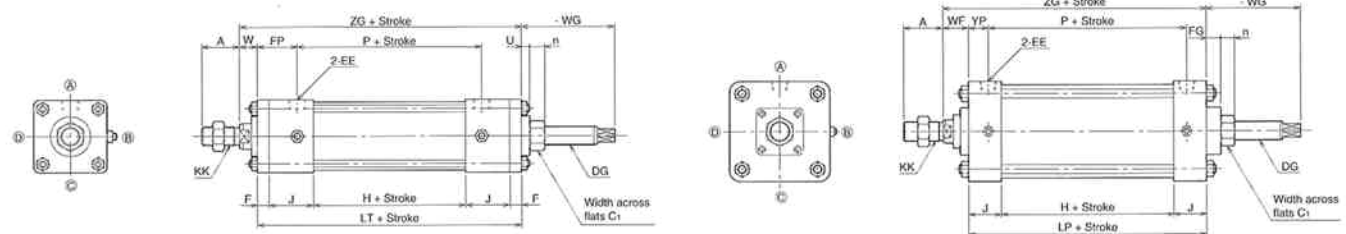
Type \ Bore	$\phi 32$	$\phi 40$	$\phi 50 \cdot \phi 63$	$\phi 80 \cdot \phi 100$	$\phi 125 - \phi 160$
Standard type	800	1200	1400	1800	2000
Val set	-	1200	1400	1800	-

Note) Min. stroke for cylinder with valve is 50mm. (75mm for TC type). Consult us if required longer stroke.

### EXTERIOR DIMENSION DIAGRAM

#### SD TYPE (HEAD TIE ROD EXTENDED MOUNTING)

Unit: mm

 $\phi 32 - \phi 100$  $\phi 125 - \phi 160$ 

● As for dimensions of mounting bracket, refer to the mounting styles.

### DIMENSIONAL TABLE

Symbol Bore	A	C <sub>1</sub>	DG	EE	F	FP	FG	H	J	KK	LP	LT	n	P	U	W	WF	WG	YP	ZG
$\phi 32$	22(19)	19	M12×1.25	Rc1/8	10	34	-	30	38	M10×1.25	-	126	10	58	7	15	-	77	-	141
$\phi 40$	24(21)	19	M12×1.25	Rc1/4	10	34	-	30	38	M12×1.25	-	126	10	58	7	15	-	77	-	141
$\phi 50$	32(28)	29	M16×1.5	Rc1/4	10	34	-	30	38	M16×1.5	-	126	13	58	7	15	-	80	-	141
$\phi 63$	32(28)	29	M16×1.5	Rc3/8	10	34	-	33	38	M16×1.5	-	129	13	61	7	15	-	80	-	144
$\phi 80$	40(36)	32	M20×1.5	Rc3/8	16	43	-	31	45	M20×1.5	-	153	16	67	10	19	-	88	-	172
$\phi 100$	40(36)	32	M20×1.5	Rc1/2	16	43	-	31	45	M20×1.5	-	153	16	67	10	19	-	88	-	172
$\phi 125$	54(49)	36	M24×1.5	Rc1/2	-	-	20	37	45	M27×2	127	-	19	73	-	-	35	103	27	162
$\phi 140$	72(67)	46	M30×2	Rc3/4	-	-	27	43	50	M36×2	143	-	24	85	-	-	41	118	29	184
$\phi 160$	72(67)	46	M30×2	Rc3/4	-	-	27	43	50	M36×2	143	-	24	85	-	-	41	118	29	184

● Parenthesized figure of A is the dimension of screw length.

**DOUBLE ROD CYLINDER  
CYLINDER SPECIFICATIONS**

Type	Standard type		Val set
Series	10A-2D		10A-2V2D
Cylinder bore mm	φ32·φ40·φ50·φ63·φ80·φ100· φ125·φ140·φ160·φ180·φ200·φ250		φ40·φ50·φ63·φ80·φ100
Working fluid	Air · Dry air		
Lubrication	Not necessary (may be also lubricated)		
Allowable pressure range	0.1 - 1MPa		0.17 - 0.7MPa
Proof pressure	1.5MPa		1.05MPa
Allowable speed range	50 - 700mm/s		50 - 500mm/s
Allowable temperature range	-10 - +70°C		+5 - +50°C
Structure of cushioning	Both ends cushioned		
Cushion stroke	φ32 - φ63: 16mm	φ80 - φ125: 19mm	φ140 - φ200: 22mm φ250: 24mm
Tolerance for thread	JIS 6g/6H		
Tolerance of stroke	250mm or less $^{+1.0}_0$	251 - 1000mm $^{+1.4}_0$	1001 - 2000mm $^{+1.8}_0$
Mounting style	SD·LB·FA·TA·TC		
Accessories	Boots	Standard : Nylon tarpoulin      Semi-Standard: Chloroprene·CONEX	
	Rod end accessories	Rod end eye (type-T)·Rod end spherical eye (type-S)·Rod end clevis (type-Y)·Floating joint (type-F)	
	Others	TA/TC bracket (trunnion bracket)	

**MAXIMUM ALLOWABLE STROKE**

Unit:mm

Type \ Bore	φ32	φ40	φ50·φ63	φ80·φ100	φ125 - φ250
Standard type	800	1200	1200	1200	1200
Val set	-	1200	1200	1200	-

Note) Min. stroke for cylinder with valve is 50mm. (75mm for TC type). Consult us if required longer stroke.

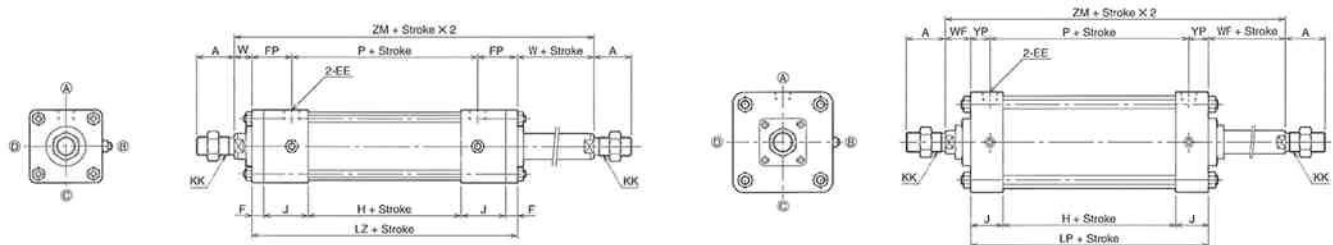
**EXTERIOR DIMENSION DIAGRAM**

**SD TYPE (HEAD TIE ROD EXTENDED MOUNTING)**

Unit: mm

φ32 - φ100

φ125 - φ250



• As for dimensions of mounting bracket, refer to the mounting styles.

**DIMENSIONAL TABLE**

Symbol \ Bore	A	EE	F	FP	H	J	KK	LP	LZ	P	W	WF	YP	ZM
φ32	22(19)	Rc1/8	10	34	30	38	M10X1.25	-	126	58	15	-	-	156
φ40	24(21)	Rc1/4	10	34	30	38	M12X1.25	-	126	58	15	-	-	156
φ50	32(28)	Rc1/4	10	34	30	38	M16X1.5	-	126	58	15	-	-	156
φ63	32(28)	Rc3/8	10	34	33	38	M16X1.5	-	129	61	15	-	-	159
φ80	40(36)	Rc3/8	16	43	31	45	M20X1.5	-	153	67	19	-	-	191
φ100	40(36)	Rc1/2	16	43	31	45	M20X1.5	-	153	67	19	-	-	191
φ125	54(49)	Rc1/2	-	-	37	45	M27X2	127	-	73	-	35	27	197
φ140	72(67)	Rc3/4	-	-	43	50	M36X2	143	-	85	-	41	29	213
φ160	72(67)	Rc3/4	-	-	43	50	M36X2	143	-	85	-	41	29	213
φ180	72(67)	Rc3/4	-	-	43	50	M36X2	143	-	85	-	41	29	213
φ200	72(67)	Rc3/4	-	-	43	50	M36X2	143	-	85	-	41	29	213
φ250	84(79)	Rc1	-	-	55	57	M42X2	169	-	109	-	48	30	247

• Parenthesized figure of A is the dimension of screw length.