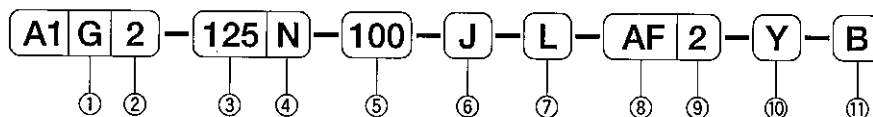


AIR CYLINDER/STANDARD TYPE

A1 series

φ 125, φ 140, φ 160, φ 180, φ 200, φ 250

ORDERING INSTRUCTIONS



① Magnet

G	Aluminium tube with built-in magnet	Cylinder with switch available
CF	Iron tube with without magnet	Cylinder with switch not available

(Note) Models with switch : φ 125 to φ 160 alone

② Action

2	Double acting, single rod
---	---------------------------

③ Bore (mm)

125	φ 125
140	φ 140
160	φ 160
180	φ 180
200	φ 200
250	φ 250

④ Cushion

B	Both-side air cushion
R	Rod side air cushion
H	Head side air cushion
N	No cushion

⑤ Stroke (mm)

Refer to Page 92.

⑥ Dustproof cover

No symbol	No dustproof cover provided (Standard)
J	With bellows (Nylon tarpaulin)
JN	With bellows (Chloroprene)
JK	With bellows (CONEX)

CONEX : Registered trademark of Teijin Ltd.

⑦ Mounting

N	Basic type
L	Axial foot
A	Rod side flange
B	Head side flange
C	Eye
D	Short eye
W	Clevis
E	Short clevis
R	Rod side trunnion
T	Center trunnion

⑧ Type of switch

No symbol	No switch		
AF	AX101	DC5~30V	Reed switch
AG	AX105		
AH	AX111		
AJ	AX115		
AE	AX125	DC5~50V AC5~120V	Reed switch
AK	AX11A	AC5~120V	
AL	AX11B	DC5~30V	
S	SR405	AC80~220V	
BE	AX201	DC5~30V	Solid-state switch
BF	AX205		
BH	AX221		
BJ	AX225		
CE	AX211		
CF	AX215		

⑨ Number of switch

No symbol	No switch
2	With 2 units
1	With 1 unit

⑩ Bracket at rod end

No symbol	No bracket
Y	With rod end clevis
I	With rod end eye

(Note) Y : Provided with pin

⑪ Bracket

No symbol	No bracket
B	With bracket

(Note) Models with bracket : W, E, R and T

Model No. of Mounting Bracket

Bore (mm)	φ 125	φ 140	φ 160	φ 180	φ 200	φ 250
Axial foot mount bracket	A1125-L	A1140-L	A1160-L	A1180-L	A1200-L	A1250-L
Flange mount bracket	A1125-A	A1140-A	A1160-A	A1180-A	A1200-A	A1250-A
Eye mount bracket	A1125-C	A1140-C	A1160-C	A1180-C	A1200-C	A1250-C
Short eye mount bracket	A1125-D	A1140-D	A1160-D	A1180-D	A1200-D	A1250-D
Clevis mount bracket	A1125-W	A1140-W	A1160-W	A1180-W	A1200-W	A1250-W
Short clevis mount bracket	A1125-E	A1140-E	A1160-E	A1180-E	A1200-E	A1250-E
Trunnion mount bracket	A1125-T	A1140-T	A1160-T	A1180-T	A1200-T	A1250-T
Bracket for clevis	A1125-BA	A1140-BA	A1140-BA	A1140-BA	A1140-BA	A1250-BA
Bracket for trunnion	A1125-BC	A1140-BC	A1140-BC	A1140-BC	A1140-BC	A1250-BC

(Note) Bracket for clevis : With pin, snap ring

Model No. of Packing Kit

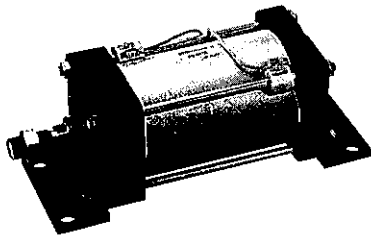
● Iron tube

Bore (mm)	Packing kit
φ 125	A1125-PS
φ 140	A1140-PS
φ 160	A1160-PS
φ 180	A1180-PS
φ 200	A1200-PS
φ 250	A1250-PS

● Aluminium tube

Bore (mm)	Packing kit
φ 125	A1125-PSR
φ 140	A1140-PSR
φ 160	A1160-PSR

AIR CYLINDER/STANDARD TYPE A1 series



SPECIFICATIONS

Action	Unit	Double-acting
Fluid		Non-lubricated air
Pressure range	MPa	0.1~1
Proof pressure	MPa	1.5
Temperature range	°C	-10~70
Piston speed range	mm/s	50~700
Cushion		Air cushion
Piston stroke allowance	mm	~250 : $\begin{smallmatrix} +1.0 \\ 0 \end{smallmatrix}$ 251~1000 : $\begin{smallmatrix} +1.5 \\ 0 \end{smallmatrix}$ 1001~ : $\begin{smallmatrix} +1.8 \\ 0 \end{smallmatrix}$
Mounting		Basic type, Axial foot, Rod side flange, Head side flange, Eye, Short eye, Clevis, Short clevis, Rod side trunnion, Center trunnion

(Note) •When setting a switch at the intermediate position, set the maximum cylinder speed to less than 300 mm/s by reason of the relation with the response speed of relays etc.

•Use the cylinder within a temperature range where it is not frozen.

•When changing the port position and cushion valve position, consult KURODA beforehand.

MAXIMUM STROKE (Unit : mm)

Bore (mm)	Cushion stroke
φ 125	2000
φ 140	
φ 160	
φ 180	
φ 200	
φ 250	

(Note) The above-mentioned values are the maximum strokes of A1 Series Air Cylinders manufactured by KURODA. For strokes exceeding the maximum stroke, consult KURODA.

CUSHION STROKE (Unit : mm)

Bore (mm)	Cushion stroke
φ 125	20
φ 140	23
φ 160	
φ 180	
φ 200	25
φ 250	

CYLINDER FORCE (THEORETICAL OUTPUT)

(Unit : N)

Bore (mm)	Rod outside dia. (mm)	Direction of rod	Operating pressure (MPa)									
			0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
φ 125	φ 32	Out stroke	1227	2454	3682	4909	6136	7363	8590	9817	11045	12272
		In stroke	1147	2294	3440	4587	5734	6881	8027	9174	10321	11468
φ 140	φ 40	Out stroke	1539	3079	4618	6158	7697	9236	10776	12315	13854	15394
		In stroke	1414	2827	4241	5655	7069	8482	9896	11310	12723	14137
φ 160	φ 50	Out stroke	2011	4012	6032	8042	10053	12064	14074	16085	18096	20106
		In stroke	1814	3629	5443	7257	9071	10886	12700	14514	16328	18143
φ 180	φ 50	Out stroke	2545	5089	7634	10179	12723	15268	17813	20358	22902	25447
		In stroke	2348	4697	7045	9393	11742	14090	16438	18787	21135	23483
φ 200	φ 50	Out stroke	3142	6283	9425	12566	15708	18850	21991	25133	28274	31416
		In stroke	2945	5890	8836	11781	14726	17671	20617	23562	26507	29452
φ 250	φ 63	Out stroke	4909	9817	14726	19635	24544	29452	34361	39270	44179	49087
		In stroke	4597	9194	13791	18388	22985	27582	32179	36776	41373	45970

(Note) Cylinder output force (Effective output)=Cylinder force (Theoretical output)×0.85

AIR CYLINDER/STANDARD TYPE A1 series

CYLINDER MASS

●Iron tube

(Unit : kg)

Bore (mm)	Basic mass (Basic type)	Additional mass per stroke of 1 mm	Mounting bracket mass								Rod end bracket mass	
			Axial foot	Flange	Eye	Short eye	Clevis	Short clevis	Rod side trunnion	Center trunnion	Eye	Clevis
φ 125	16.60	0.0242	2.00	2.58	2.59	0.57	2.86	0.76	0.19	2.20	1.24	1.47
φ 140	25.52	0.0398	2.83	4.38	5.05	0.94	5.69	1.72	0.57	5.00	2.40	3.32
φ 160	32.25	0.0421	3.22	4.96	6.18	1.35	6.18	1.35	0.57	4.95	2.40	3.32
φ 180	41.59	0.0549	5.69	6.70	9.04	1.25	9.04	1.25	0.57	6.00	2.40	3.32
φ 200	47.79	0.0591	6.12	7.78	10.18	1.25	10.18	1.25	0.57	6.30	2.40	3.32
φ 250	92.87	0.0755	8.38	14.36	20.10	3.23	20.10	3.23	1.12	10.50	4.62	5.83

●Aluminium tube

(Unit : kg)

Bore (mm)	Basic mass (Basic type)	Additional mass per stroke of 1 mm	Mounting bracket mass								Rod end bracket mass	
			Axial foot	Flange	Eye	Short eye	Clevis	Short clevis	Rod side trunnion	Center trunnion	Eye	Clevis
φ 125	13.94	0.0242	2.00	2.58	2.59	0.57	2.86	0.76	0.19	2.20	1.24	1.47
φ 140	21.49	0.0398	2.83	4.38	5.05	0.94	5.69	1.72	0.57	5.00	2.40	3.32
φ 160	26.38	0.0365	3.22	4.96	6.18	1.35	6.18	1.35	0.57	4.95	2.40	3.32

SWITCH MASS

(Unit : kg)

Bore (mm)	AX type			SR type
	Cord length 1.5m	Cord length 5m	Connector type	Cord length 5m
φ 125	0.07	0.14	0.06	0.22
φ 140		0.15		
φ 160				

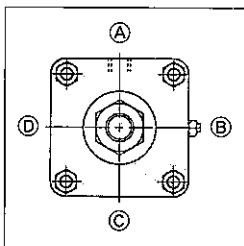
[Example of calculation]

A1G2-125-200-A-AF2

$$13.94 + (0.0242 \times 200) + 2.58 + (0.07 \times 2) = 21.5 \text{ kg}$$

(Note) Switch mass includes the mass of switch mount bracket.

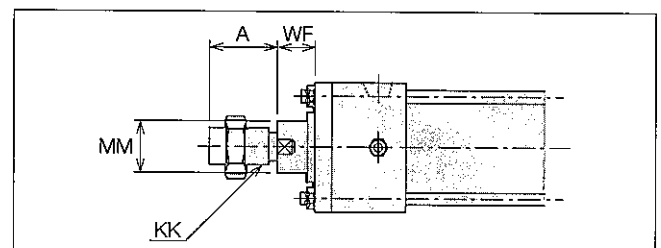
PORT POSITION AND CUSHION VALVE POSITION



- With both side cushions
- Port position ①, cushion valve position ②

PORTIONS THAT CAN BE CHANGED UPON ORDER

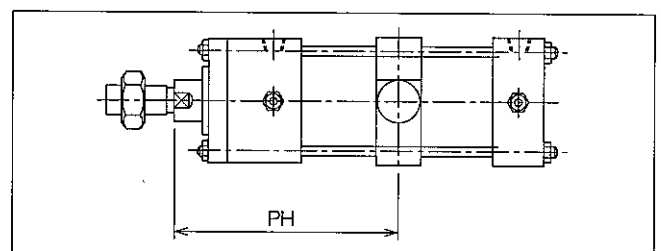
- With dustproof cover
- Change of piston rod end (Symbol of size : MM, WF, A, KK)



CHANGING PORT POSITION AND CUSHION VALVE POSITION

- Standard port position is ① and standard cushion valve position is ②.
- For Rod side trunnion type, the standard port position and cushion valve position ① and ③ on the rod side, and ① and ② on the head side.
- For a cushionless type, cushion valve marking is ③. However, a cushion valve is provided.
- When changing the position, consult KURODA.

- Change of trunnion mount bracket position (Symbol of size : PH)



AIR CYLINDER/STANDARD TYPE A1 series

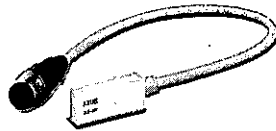
MODEL WITH SWITCH/For detailed specifications, handling precautions and mounting method of switches, refer to Page 116.

•AX Type Switch

•SR Type Switch

Cord type

Connector type



LIST OF SWITCHES

Type	Symbol of switch	Load voltage range	Load current range	Max. switching capacity	Protective circuit	Pilot lamp	Connection	Cord length	Applicable load		
Reed switch	AF AX101	DC5~30V AC5~120V	DC: 5~40mA AC: 5~20mA	DC: 1.5W AC: 2VA	Not provided	LED (Red LED lights up at ON.)	0.3 mm ² 2-core, OD φ 4 mm Cord direction : Axial	1.5m	Miniature relay PLC		
	AG AX105							5m			
	AH AX111				1.5m						
	AJ AX115				5m						
	AE AX125	DC5~50V AC5~120V	5~20mA	2VA	Not provided	Not provided	4-pin connector Cord direction : Axial	5m			
	AK AX11A	AC5~120V						0.5m			
	AL AX11B	DC5~30V			5~40mA	1.5W		Provided		LED (Red LED lights up at ON.)	0.5m
	S SR405	AC80~220V			2~300mA	30VA		Provided		Neon lamp (Red lights up at OFF.)	0.5 mm ² 2-core, OD φ 6 mm Cord direction : Axial
Solid-state switch	BE AX201	DC5~30V	5~40mA	—	Provided	LED (Red LED lights up at ON.)	0.3 mm ² 2-core, OD φ 4 mm Cord direction : Axial	1.5m	Miniature relay PLC		
	BF AX205							5m			
	CE AX211					1.5m					
	CF AX215					5m					
	BH AX221	DC5~30V	Max.200mA NPN open collector output	—	Provided	LED (Red LED lights up at ON.)	0.3 mm ² 3-core, OD φ 4 mm Cord direction : Axial	1.5m			
	BJ AX225							5m			

(Note) •When using inductive load (relay etc.) in a switch without a protective circuit, be sure to fit a protective circuit (SK-100) to the load.
•AX type switch can be mounted on other type than above-mentioned. Refer to Specifications for Switches at the end of this catalog.

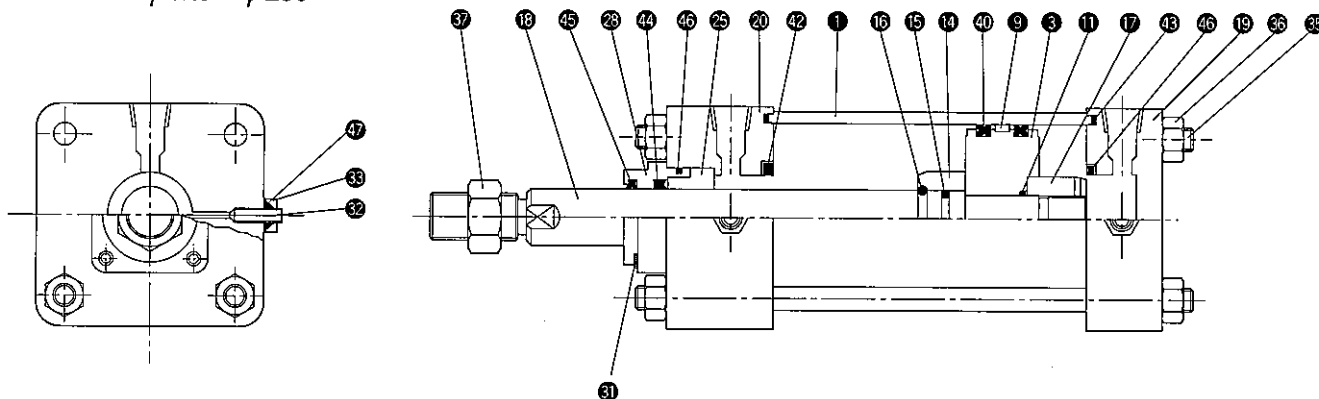
MINIMUM STROKE FOR AIR CYLINDER WITH SWITCH (Unit : mm)

Type	AX type	SR type
1 unit mounted	25	15
2 units mounted on same surface	25	15
2 units mounted on opposite surface	25	15
Center trunnion type (T)	120	120

AIR CYLINDER/STANDARD TYPE A1 series

CONSTRUCTIONS AND PARTS LIST

Iron tube $\phi 125 \sim \phi 250$



No.	Description	Material
1	Cylinder tube	Carbon steel for machine structure tube (Hard chromium plating)
3	Piston	Carbon steel for machine structure
9	Wear ring	Synthetic resins
11	O-ring for piston rod	Nitril rubber
14	Cushion ring	Rolled steel for general structure
15	O-ring for cushion ring	Nitril rubber
16	Stop ring	Piano wire
17	Piston nut	Rolled steel for general structure
18	Piston rod	Carbon steel for machine structure (Hard chromium plating)
19	Head cover	Rolled steel for general structure
20	Rod cover	Rolled steel for general structure
25	Bushing	$\phi 125 \sim 160$: Sintered oil-impregnated bearing $\phi 180 \sim 250$: Oil-impregnated alloy
28	Packing housing	$\phi 125 \sim 200$: Carbon steel for machine structure $\phi 250$: Rolled steel for general structure
30	Hold-down plate	Carbon steel for machine structure
31	Packing housing set screw	Chromium molybdenum steel
32	Cushion needle	Chromium molybdenum steel
33	Cushion locknut	Rolled steel for general structure
35	Tie rod	Carbon steel for machine structure
36	Tie rod nut	Rolled steel for general structure
37	Rod end nut	$\phi 125 \sim 160, 250$: Rolled steel for general structure $\phi 180, 250$: Carbon steel for machine structure

PACKING LIST

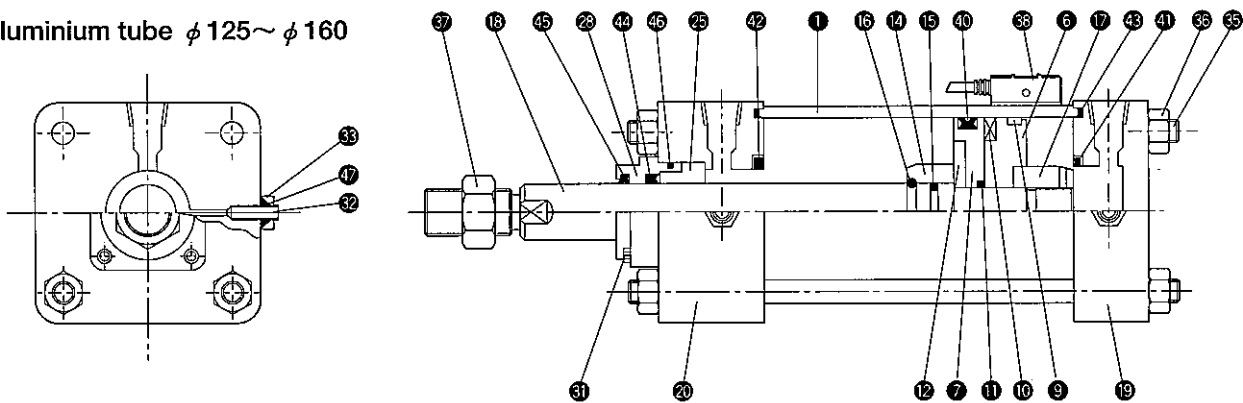
No.	Description	Material	Q'ty	Model No.					
				$\phi 125$	$\phi 140$	$\phi 160$	$\phi 180$	$\phi 200$	$\phi 250$
40	Piston packing	Nitril rubber	2	PNU-115	PNU-125	PNU-145	PNU-165	PNU-185	PNU-230
41	Cushion packing H	Metal ring+Nitril rubber	1	PCS-40	PCS-50	PCS-50	PCS-50	PCS-50	PCS-60
42	Cushion packing R	Metal ring+Nitril rubber	1	PCS-45	PCS-55	PCS-65	PCS-65	PCS-65	PCS-75
43	Tube end seal	Nitril rubber	2	TX-125	TO-140	TO-160	TO-180	TO-200	TO-250
44	Rod packing	Nitril rubber	1	PNU-32	PNU-40	PNU-50	PNU-50	PNU-50	PNU-63
45	Dustwiper	Urethane rubber	1	DA-32	DA-40	DA-50	DA-50	DA-50	DA-63
46	O-ring for packing housing	Nitril rubber	1	G-45	G-55	G-65	G-65	G-65	G-80
47	Cushion valve seal	Fluorocarbon resin	2	SF-8	SF-10	SF-10	SF-10	SF-10	SF-10

(Note) O-ring : JIS B 2401-1A

AIR CYLINDER/STANDARD TYPE A1 series

CONSTRUCTIONS AND PARTS LIST

Aluminium tube ϕ 125~ ϕ 160



No.	Description	Material
1	Cylinder tube	Aluminium alloy tube
6	Piston A	Aluminium alloy
7	Piston B	Aluminium alloy
9	Wear ring	Synthetic resins
10	Magnet	Plastic
11	O-ring for piston rod	Nitril rubber
12	Piston washer	Rolled steel for general structure
14	Cushion ring	Rolled steel for general structure
15	O-ring for cushion ring	Nitril rubber
16	Stop ring	Piano wire
17	Piston nut	Rolled steel for general structure
18	Piston rod	Carbon steel for machine structure (Hard chromium plating)
19	Head cover	Rolled steel for general structure
20	Rod cover	Rolled steel for general structure
25	Bushing	Sintered oil-impregnated bearing
28	Packing housing	Carbon steel for machine structure
30	Hold-down plate	Carbon steel for machine structure
31	Packing housing set screw	Chromium molybdenum steel
32	Cushion needle	Chromium molybdenum steel
33	Cushion locknut	Rolled steel for general structure
35	Tie rod	Carbon steel for machine structure
36	Tie rod nut	Rolled steel for general structure
37	Rod end nut	Rolled steel for general structure
38	Switch	—

PACKING LIST

No.	Description	Material	Q'ty	Model No.		
				ϕ 125	ϕ 140	ϕ 160
40	Piston packing	Nitril rubber	1	PNX-125	PNX-140	PNX-160
41	Cushion packing H	Metal ring+Nitril rubber	1	PCS-40	PCS-50	PCS-50
42	Cushion packing R	Metal ring+Nitril rubber	1	PCS-45	PCS-55	PCS-60
43	Tube end seal	Nitril rubber	2	TX-125	TO-140	TO-160
44	Rod packing	Nitril rubber	1	PNU-32	PNU-40	PNU-50
45	Dustwiper	Urethane rubber	1	DA-32	DA-40	DA-50
46	O-ring for packing housing	Nitril rubber	1	G-45	G-55	G-65
47	Cushion valve seal	Fluorocarbon resin	2	SF-8	SF-10	SF-10

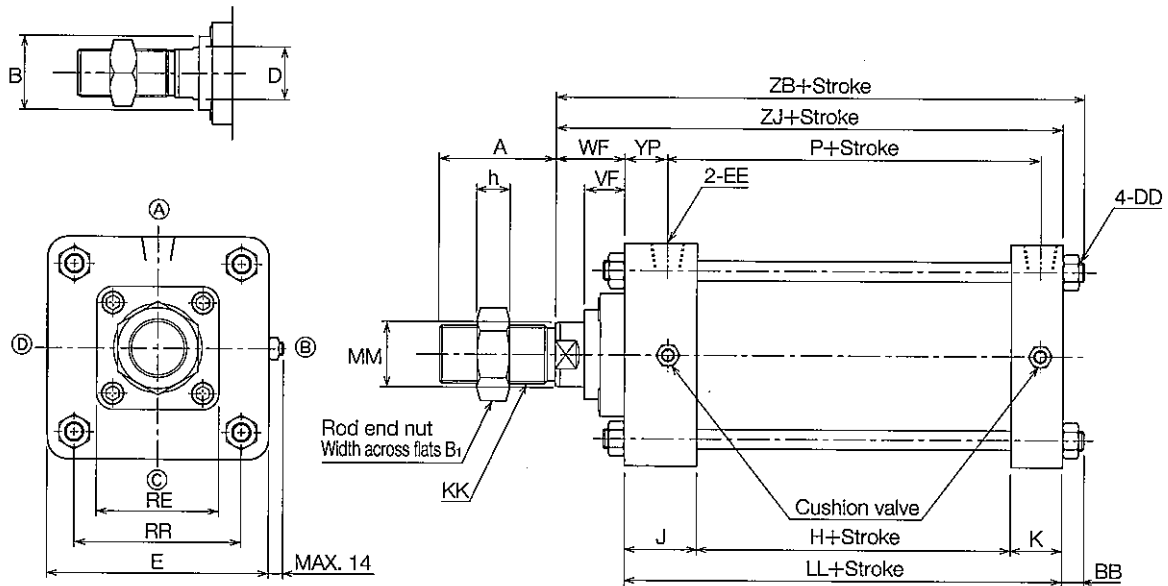
(Note) O-ring : JIS B 2401-1A

AIR CYLINDER/STANDARD TYPE A1 series

DIMENSIONS

(Unit : mm)

Basic type/N



Bore	A	B	B1	BB	D	DD	E	EE	H	h	J	K	KK	LL	MM	P
φ 125	40 (36)	φ 46	46	13	27	M12×1.5	□138	Rc½	37	18	45	32	M30×1.5	114	φ 32	73
φ 140	40 (36)	φ 55	46	16	36	M16×1.5	□156	Rc¾	43	18	50	38	M30×1.5	131	φ 40	85
φ 160	55 (51)	φ 65	60	16	46	M16×1.5	□178	Rc¾	43	23	50	38	M40×1.5	131	φ 50	85
φ 180	55 (51)	φ 65	60	16	46	M16×1.5	□200	Rc¾	43	23	50	38	M40×1.5	131	φ 50	85
φ 200	60 (56)	φ 65	70	16	46	M16×1.5	□216	Rc¾	43	27	50	38	M45×1.5	131	φ 50	85
φ 250	112 (107)	φ 85	85	19	55	M20×1.5	□270	Rc1	55	34	57	50	M56×2	162	φ 63	109

Bore	RE	RR	VF	WF	YP	ZB	ZJ
φ 125	□65	□104	21	35	27	162	149
φ 140	□76	□123	25	41	29	188	172
φ 160	□94	□134	30	52	29	199	183
φ 180	□94	□156	30	52	29	199	183
φ 200	□94	□163	30	52	29	199	183
φ 250	□125	□202	33	60	30	241	222

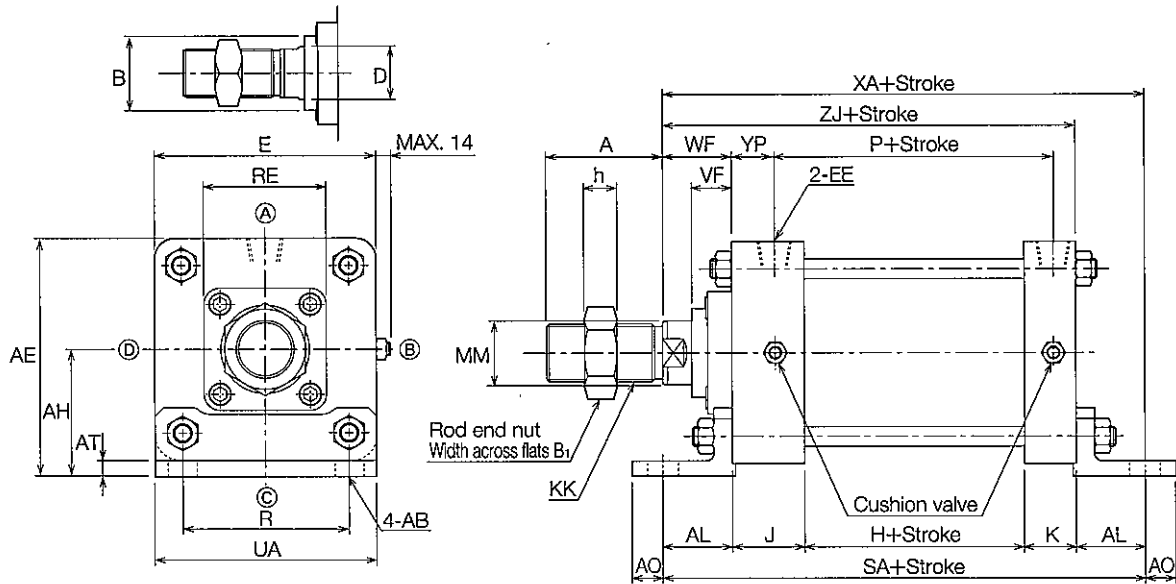
(Note) Bracketed figures in size A columns are thread lengths.

AIR CYLINDER/STANDARD TYPE A1 series

DIMENSIONS

(Unit : mm)

Axial foot mounting/L



Bore	A	AB	AE	AH	AL	AO	AT	B	B1	D	E	EE	H	h	J	K	KK
φ 125	40 (36)	φ 18	148	79	43	18	10	φ 46	46	27	□138	Rc½	37	18	45	32	M30×1.5
φ 140	40 (36)	φ 22	171	93	50	22	10	φ 55	46	36	□156	Rc¾	43	18	50	38	M30×1.5
φ 160	55 (51)	φ 22	187	98	50	22	10	φ 65	60	46	□178	Rc¾	43	23	50	38	M40×1.5
φ 180	55 (51)	φ 22	215	115	55	22	15	φ 65	60	46	□200	Rc¾	43	23	50	38	M40×1.5
φ 200	60 (56)	φ 22	226	118	55	22	15	φ 65	70	46	□216	Rc¾	43	27	50	38	M45×1.5
φ 250	112 (107)	φ 26	276	141	60	24	15	φ 85	85	55	□270	Rc1	55	34	57	50	M56×2

Bore	MM	P	R	RE	SA	UA	VF	WF	XA	YP	ZJ
φ 125	φ 32	73	134	□65	200	156	21	35	222	27	149
φ 140	φ 40	85	134	□76	231	178	25	41	222	29	172
φ 160	φ 50	85	134	□94	231	178	30	52	233	29	183
φ 180	φ 50	85	156	□94	241	200	30	52	238	29	183
φ 200	φ 50	85	163	□94	241	216	30	52	238	29	183
φ 250	φ 63	109	202	□125	282	270	33	60	282	30	222

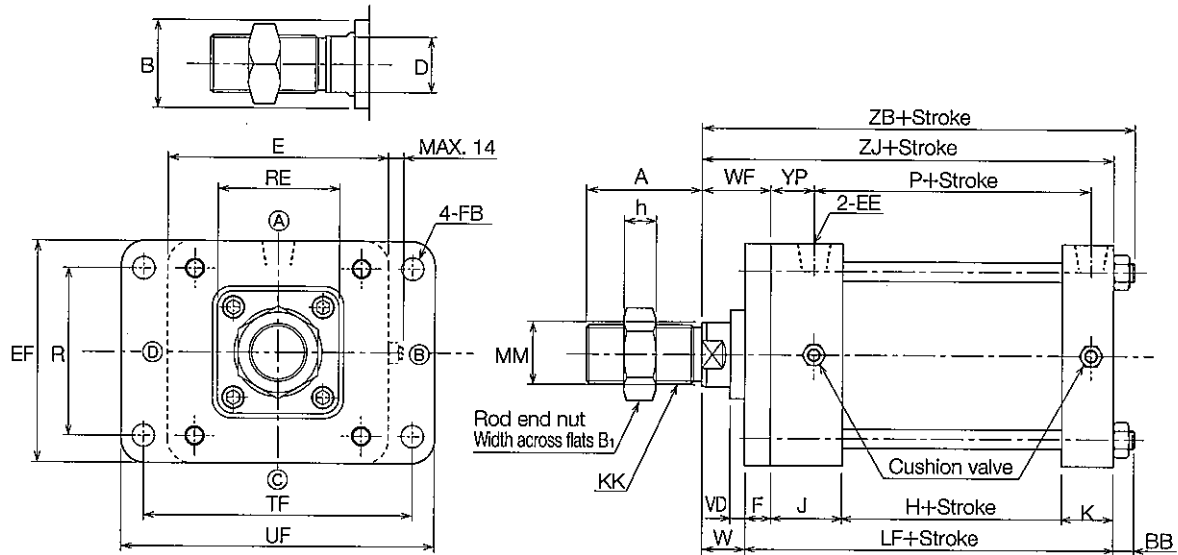
(Note) Bracketed figures in size A columns are thread lengths.

AIR CYLINDER/STANDARD TYPE A1 series

DIMENSIONS

(Unit : mm)

Rod side flange mounting/A



Bore	A	B	B1	BB	D	E	EE	EF	F	FB	H	h	J	K	KK	LF	MM
φ 125	40 (36)	φ 46	46	13	27	□138	Rc1/2	138	16	φ 14	37	18	45	32	M30×1.5	130	φ 32
φ 140	40 (36)	φ 55	46	16	36	□156	Rc3/4	156	20	φ 18	43	18	50	38	M30×1.5	151	φ 40
φ 160	55 (51)	φ 65	60	16	46	□178	Rc3/4	178	20	φ 18	43	23	50	38	M40×1.5	151	φ 50
φ 180	55 (51)	φ 65	60	16	46	□200	Rc3/4	200	20	φ 18	43	23	50	38	M40×1.5	151	φ 50
φ 200	60 (56)	φ 65	70	16	46	□216	Rc3/4	216	20	φ 18	43	27	50	38	M45×1.5	151	φ 50
φ 250	112 (107)	φ 85	85	19	55	□270	Rc1	270	25	φ 22	55	34	57	50	M56×2	187	φ 63

Bore	P	R	RE	TF	UF	VD	W	WF	YP	ZB	ZJ
φ 125	73	104	□65	168	196	5	19	35	27	162	149
φ 140	85	123	□76	190	226	5	21	41	29	188	172
φ 160	85	134	□94	212	248	10	32	52	29	199	183
φ 180	85	156	□94	234	270	10	32	52	29	199	183
φ 200	85	163	□94	250	286	10	32	52	29	199	183
φ 250	109	201	□125	312	356	8	35	60	30	241	222

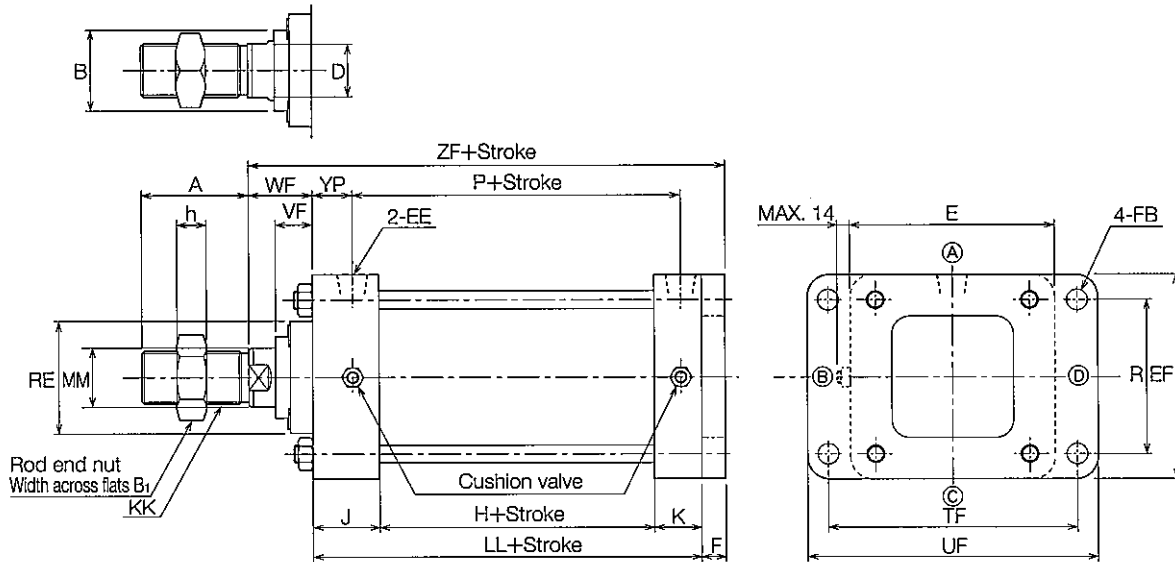
(Note) Bracketed figures in size A columns are thread lengths.

AIR CYLINDER/STANDARD TYPE A1 series

DIMENSIONS

(Unit : mm)

Head side flange mounting/B



Bore	A	B	B1	D	E	EE	EF	F	FB	H	h	J	K	KK	LF	MM	P
φ 125	40 (36)	φ 46	46	27	□138	Rc1/2	138	16	φ 14	37	18	45	32	M30×1.5	114	φ 32	73
φ 140	40 (36)	φ 55	46	36	□156	Rc3/4	156	20	φ 18	43	18	50	38	M30×1.5	131	φ 40	85
φ 160	55 (51)	φ 65	60	46	□178	Rc3/4	178	20	φ 18	43	23	50	38	M40×1.5	131	φ 50	85
φ 180	55 (51)	φ 65	60	46	□200	Rc3/4	200	20	φ 18	43	23	50	38	M40×1.5	131	φ 50	85
φ 200	60 (56)	φ 65	70	46	□216	Rc3/4	216	20	φ 18	43	27	50	38	M45×1.5	131	φ 50	85
φ 250	112 (107)	φ 85	85	55	□270	Rc1	270	25	φ 22	55	34	57	50	M56×2	162	φ 63	109

Bore	R	RE	TF	UF	VF	WF	YP	ZF
φ 125	104	□65	168	196	21	35	27	165
φ 140	123	□76	190	226	25	41	29	192
φ 160	134	□94	212	248	30	52	29	203
φ 180	156	□94	234	270	30	52	29	203
φ 200	163	□94	250	286	30	52	29	203
φ 250	201	□125	312	356	33	60	30	247

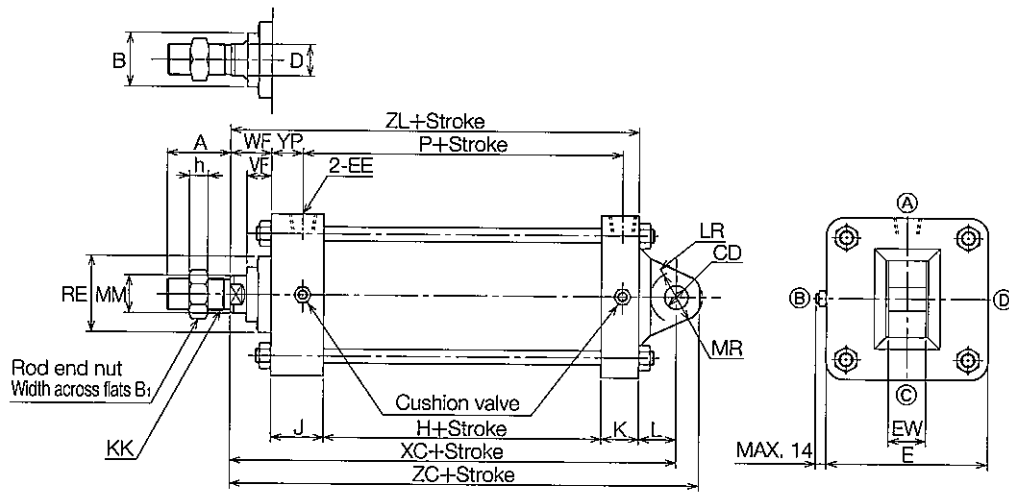
(Note) Bracketed figures in size A columns are thread lengths.

AIR CYLINDER/STANDARD TYPE A1 series

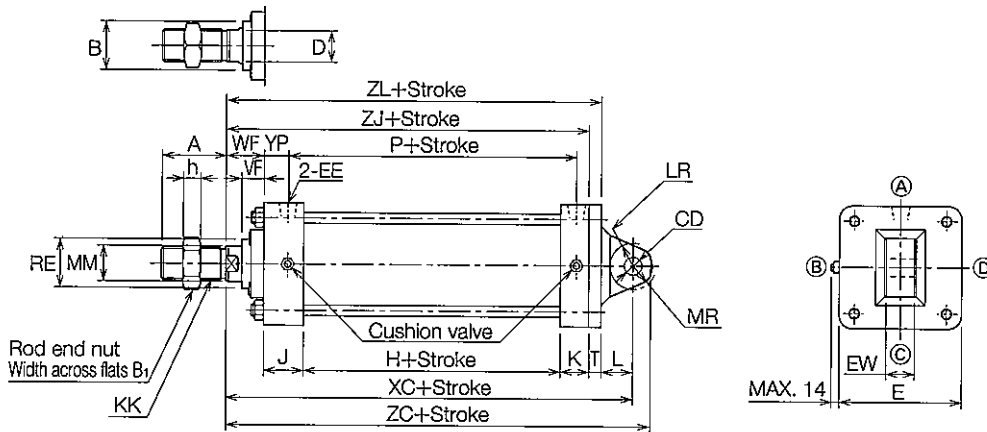
DIMENSIONS

(Unit : mm)

Short eye mounting/D



Eye mounting/C



Bore	A	B	B1	CD	D	E	EE	EW	H	h	J	K	KK	L		LR	
														D type	C type	D type	C type
φ 125	40 (36)	φ 46	46	φ 20 ^{H9}	27	□138	Rc½	32 ⁰ _{-0.1}	37	18	45	32	M30×1.5	32	36	R22	R26
φ 140	40 (36)	φ 55	46	φ 28 ^{H9}	36	□156	Rc¾	40 ⁰ _{-0.1}	43	18	50	38	M30×1.5	38	44	R30	R32
φ 160	55 (51)	φ 65	60	φ 28 ^{H9}	46	□178	Rc¾	40 ⁰ _{-0.1}	43	23	50	38	M40×1.5	38	44	R30	R32
φ 180	55 (51)	φ 65	60	φ 28 ^{H9}	46	□200	Rc¾	40 ⁰ _{-0.1}	43	23	50	38	M40×1.5	38	44	R30	R32
φ 200	60 (56)	φ 65	70	φ 28 ^{H9}	46	□216	Rc¾	40 ⁰ _{-0.1}	43	27	50	38	M45×1.5	38	44	R30	R32
φ 250	112 (107)	φ 85	85	φ 36 ^{H9}	55	□270	Rc1	50 ⁰ _{-0.1}	55	34	57	50	M56×2	54	58	R42	R46

Bore	MM	MR	P	RE	T	VF	WF	XC		YP	ZC		ZJ	ZL
								D type	C type		D type	C type		
φ 125	φ 32	R22	73	□65	14	21	35	181	199	27	201	219	149	163
φ 140	φ 40	R30	85	□76	20	25	41	210	236	29	238	264	172	192
φ 160	φ 50	R30	85	□94	20	30	52	221	247	29	249	275	183	203
φ 180	φ 50	R30	85	□94	25	30	52	221	252	29	249	280	183	208
φ 200	φ 50	R30	85	□94	25	30	52	221	252	29	249	280	183	208
φ 250	φ 63	R42	109	□125	30	33	60	276	310	30	312	346	222	252

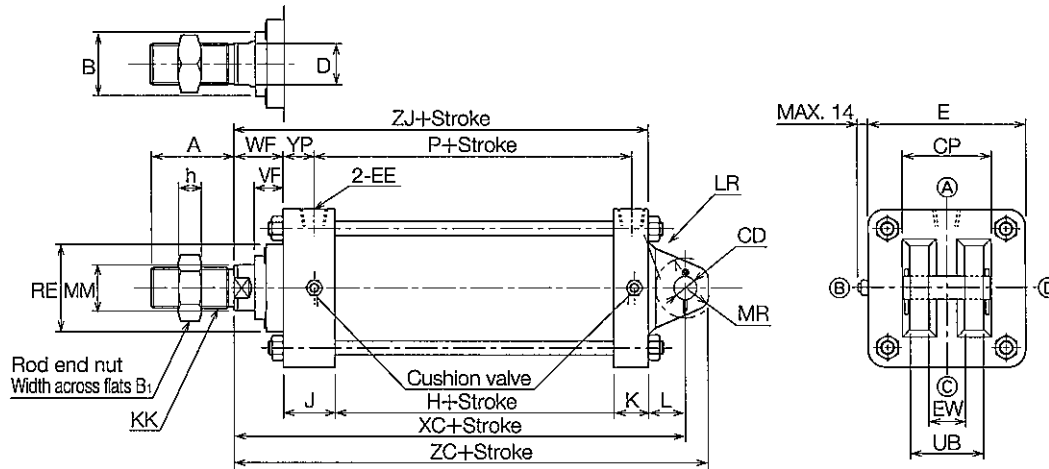
(Note) Bracketed figures in size A columns are thread lengths.

AIR CYLINDER/STANDARD TYPE A1 series

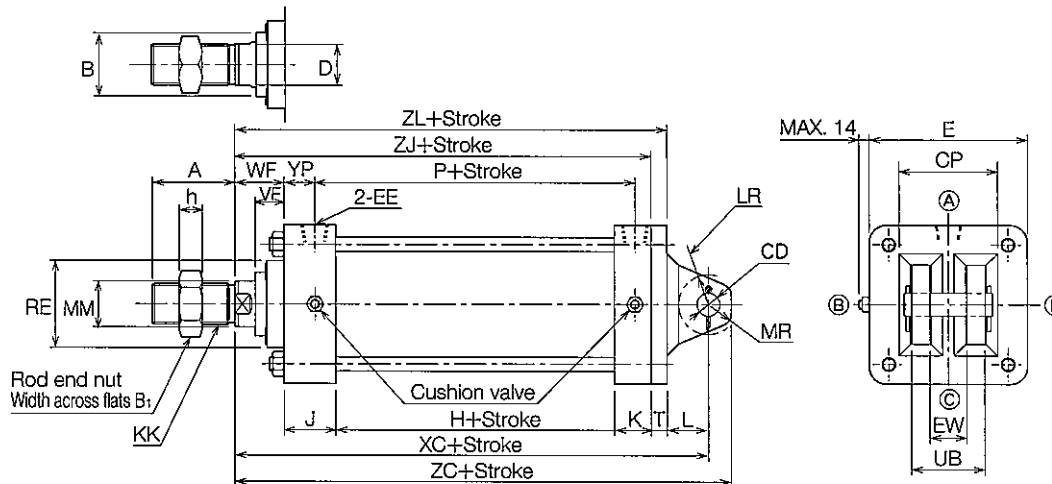
DIMENSIONS

(Unit : mm)

Short clevis mounting/E



Clevis mounting/W



Bore	A	B	B1	CD		CP	D	E	EE	EW	H	h	J	K	KK
				E type	W type										
φ 125	40 (36)	φ 46	46	φ 20 ^{H9/18}	φ 20 ^{H9}	78	27	□138	Rc1/2	32 ^{+0.7/+0.5}	37	18	45	32	M30×1.5
φ 140	40 (36)	φ 55	46	φ 28 ^{H9/18}	φ 28 ^{H9}	97	36	□156	Rc3/4	40 ^{+0.8/+0.5}	43	18	50	38	M30×1.5
φ 160	55 (51)	φ 65	60	φ 28 ^{H9/18}	φ 28 ^{H9}	97	46	□178	Rc3/4	40 ^{+0.8/+0.5}	43	23	50	38	M40×1.5
φ 180	55 (51)	φ 65	60	φ 28 ^{H9/18}	φ 28 ^{H9}	97	46	□200	Rc3/4	40 ^{+0.8/+0.5}	43	23	50	38	M40×1.5
φ 200	60 (56)	φ 65	70	φ 28 ^{H9/18}	φ 28 ^{H9}	97	46	□216	Rc3/4	40 ^{+0.8/+0.5}	43	27	50	38	M45×1.5
φ 250	112 (107)	φ 85	85	φ 36 ^{H9/18}	φ 36 ^{H9}	117	55	□270	Rc1	50 ^{+0.8/+0.5}	55	34	57	50	M56×2

Bore	L		LR	MM	MR	P	RE	T	UB	VF	WF	XC		YP	ZC		ZJ	ZL
	E type	W type										E type	W type		E type	W type		
φ 125	32	36	R26	φ 32	R22	73	□65	14	64	21	35	181	199	27	201	219	149	163
φ 140	38	44	R32	φ 40	R30	85	□76	20	80	25	41	210	236	29	238	264	172	192
φ 160	38	44	R32	φ 50	R30	85	□94	20	80	30	52	221	247	29	249	275	183	203
φ 180	38	44	R32	φ 50	R30	85	□94	25	80	30	52	221	252	29	249	280	183	208
φ 200	38	44	R32	φ 50	R30	85	□94	25	80	30	52	221	252	29	249	280	183	208
φ 250	54	58	R46	φ 63	R42	109	□125	30	100	33	60	276	310	30	312	346	222	252

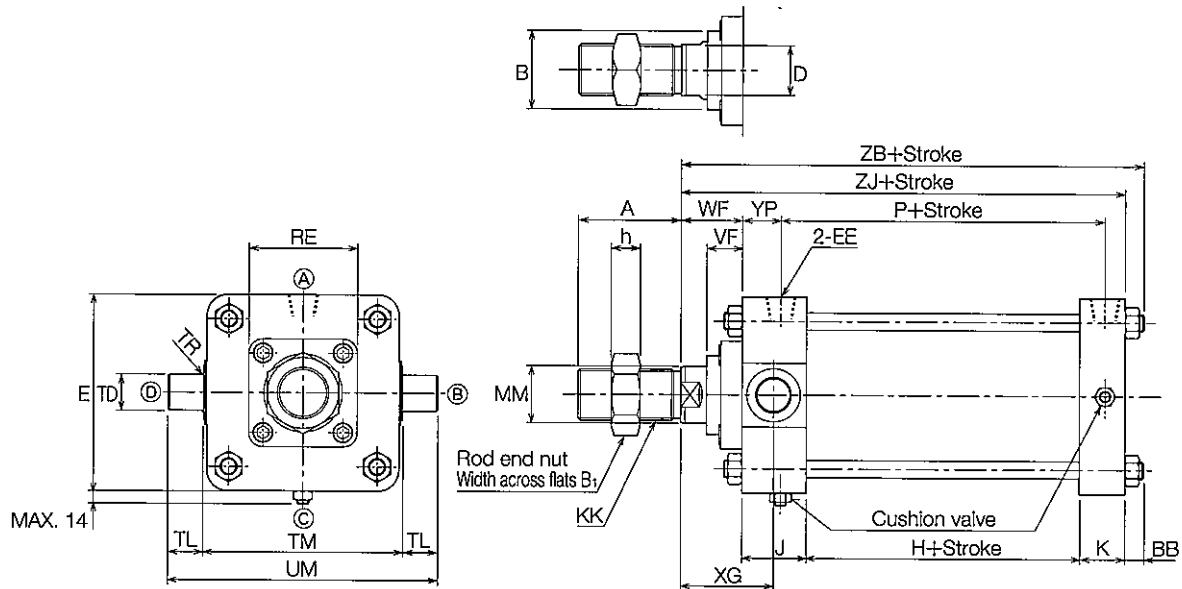
(Note) Bracketed figures in size A columns are thread lengths.

AIR CYLINDER/STANDARD TYPE A1 series

DIMENSIONS

(Unit : mm)

Rod side trunnion mounting/R



Bore	A	B	B1	BB	D	E	EE	H	h	J	K	KK	MM	P	RE	TD
φ 125	40 (36)	φ 46	46	13	27	□138	Rc½	37	18	45	32	M30×1.5	φ 32	73	□65	φ 25 ^{ø9}
φ 140	40 (36)	φ 55	46	16	36	□156	Rc¾	43	18	50	38	M30×1.5	φ 40	85	□76	φ 36 ^{ø9}
φ 160	55 (51)	φ 65	60	16	46	□178	Rc¾	43	23	50	38	M40×1.5	φ 50	85	□94	φ 36 ^{ø9}
φ 180	55 (51)	φ 65	60	16	46	□200	Rc¾	43	23	50	38	M40×1.5	φ 50	85	□94	φ 36 ^{ø9}
φ 200	60 (56)	φ 65	70	16	46	□216	Rc¾	43	27	50	38	M45×1.5	φ 50	85	□94	φ 36 ^{ø9}
φ 250	112 (107)	φ 85	85	19	55	□270	Rc1	55	34	57	50	M56×2	φ 63	109	□125	φ 45 ^{ø9}

Bore	TL	TM	TR	UM	VF	WF	XG	YP	ZB	ZJ
φ 125	25	139	R2	189	21	35	57	27	162	149
φ 140	25	156	R2.5	228	25	41	66	29	188	172
φ 160	36	178	R2.5	250	30	52	77	29	199	183
φ 180	36	200	R2.5	272	30	52	77	29	199	183
φ 200	36	216	R2.5	288	30	52	77	29	199	183
φ 250	45	270	R3	360	33	60	88	30	241	222

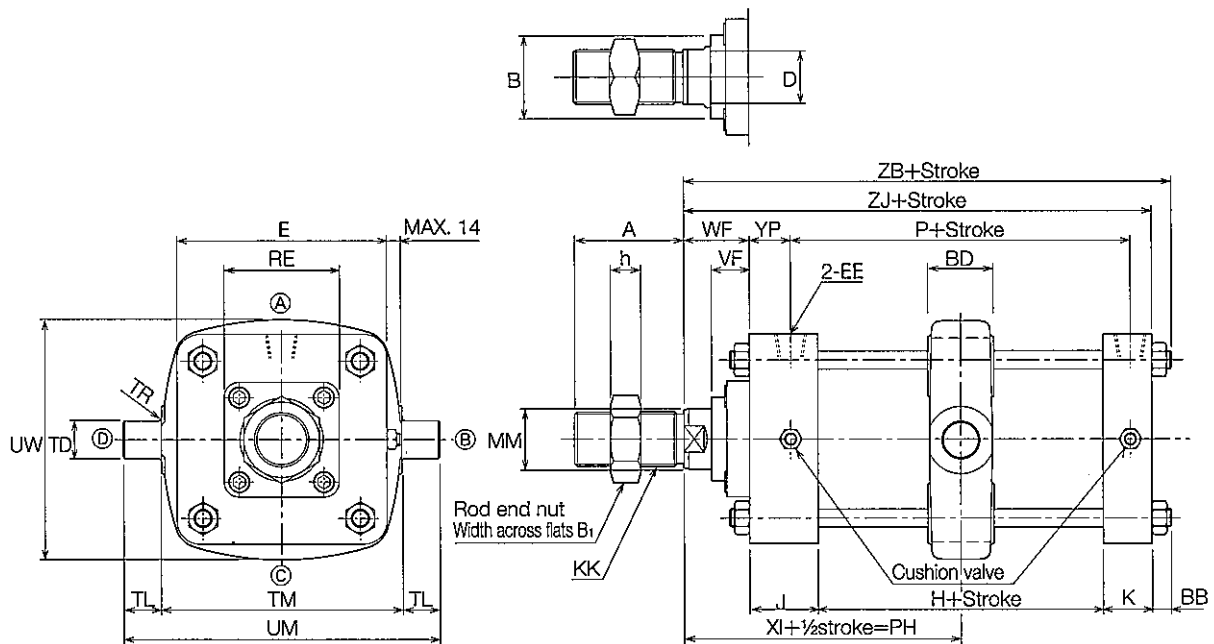
(Note) Bracketed figures in size A columns are thread lengths.

AIR CYLINDER/STANDARD TYPE A1 series

DIMENSIONS

(Unit : mm)

Rod side trunnion mounting/R



Bore	A	B	B1	BB	BD	D	E	EE	H	h	J	K	KK	MM	P	PH (min)	RE
φ 125	40 (36)	φ 46	46	13	43	27	□138	Rc1/2	37	18	45	32	M30×1.5	φ 32	73	102	□65
φ 140	40 (36)	φ 55	46	16	53	36	□156	Rc3/4	43	18	50	38	M30×1.5	φ 40	85	119	□76
φ 160	55 (51)	φ 65	60	16	53	46	□178	Rc3/4	43	23	50	38	M40×1.5	φ 50	85	129	□94
φ 180	55 (51)	φ 65	60	16	53	46	□200	Rc3/4	43	23	50	38	M40×1.5	φ 50	85	129	□94
φ 200	60 (56)	φ 65	70	16	53	46	□216	Rc3/4	43	27	50	38	M45×1.5	φ 50	85	129	□94
φ 250	112 (107)	φ 85	85	19	55	55	□270	Rc1	55	34	57	50	M56×2	φ 63	109	146	□125

Bore	TD	TL	TM	TR	UM	UW	VF	WF	XI	YP	ZB	ZJ
φ 125	φ 25 ^{e9}	25	158	R2	208	158	21	35	98.5	27	162	149
φ 140	φ 36 ^{e9}	25	183	R2.5	255	183	25	41	112.5	29	188	172
φ 160	φ 36 ^{e9}	36	200	R2.5	272	200	30	52	112.5	29	199	183
φ 180	φ 36 ^{e9}	36	228	R2.5	300	228	30	52	123.5	29	199	183
φ 200	φ 36 ^{e9}	36	246	R2.5	318	246	30	52	123.5	29	199	183
φ 250	φ 45 ^{e9}	45	304	R3	394	304	33	60	144.5	30	241	222

(Note) Bracketed figures in size A columns are thread lengths.

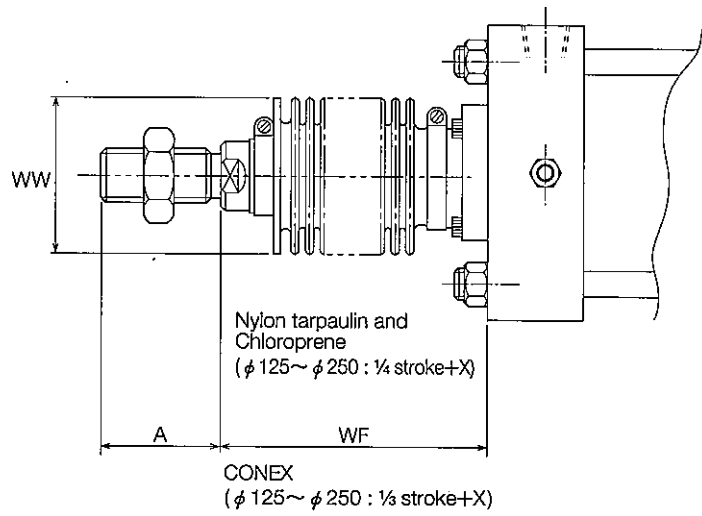
AIR CYLINDER/STANDARD TYPE A1 series

DIMENSIONS

(Unit : mm)

With dustproof cover

Bore	A	X	WW
φ 125	54	71	φ 71
φ 140	72	75	φ 80
φ 160	84	85	φ 100
φ 180	84	85	φ 100
φ 200	84	85	φ 100
φ 250	112	90	φ 125



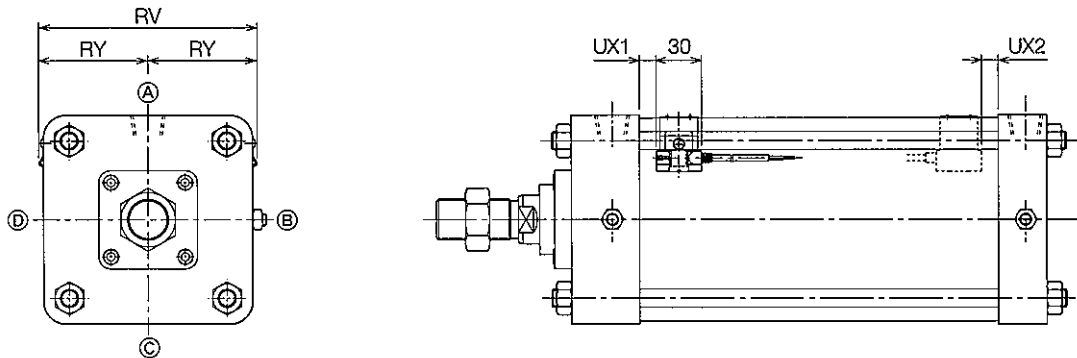
	Standard	Custom-made	
Material	Nylon tarpaulin	Chloroprene	CONEX
Heat resistance temp.	80°C	100°C	200°C

- (Note) • CONEX is a registered trademark of Teijin Ltd.
 • Heat resistance temperature is not that of the cylinder body but that of the dustproof cover.
 • Round off fractions below the decimal point.
 • WF size means size from the cover end. Pay attention to it for an air cylinder with flange mount bracket.

AIR CYLINDER/STANDARD TYPE A1 series

SWITCH SET POSITION

(Unit : mm)



(Note) The above drawing shows an air cylinder with AX type switch.

Bore	RY		RV		UX1		UX2	
	AX type	SR type	AX type	SR type	AX type	SR type	AX type	SR type
φ 125	73	77	146	154	11	6	7	3
φ 140	81	84	162	168	14	8	11	4
φ 160	89	92	178	184	14	9	11	6

HYSTERESIS AND RESPONSE RANGE OF SWITCHES (Unit : mm)

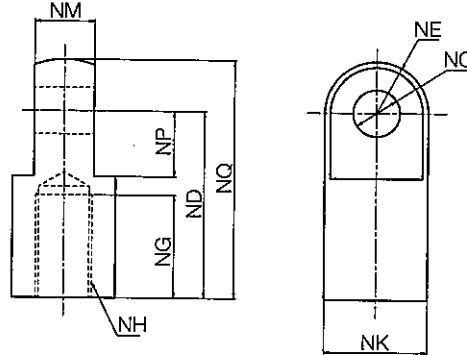
Bore	Reed switch				Solid-state switch	
	AX1□□ type		SR type		AX2□□ type	
	Response range	Hysteresis	Response range	Hysteresis	Response range	Hysteresis
φ 125	10~15	Below 2	9~13	Below 3	5~8	Below 1
φ 140						
φ 160						

AIR CYLINDER/STANDARD TYPE A1 series

ACCESSORIES

Rod end eye

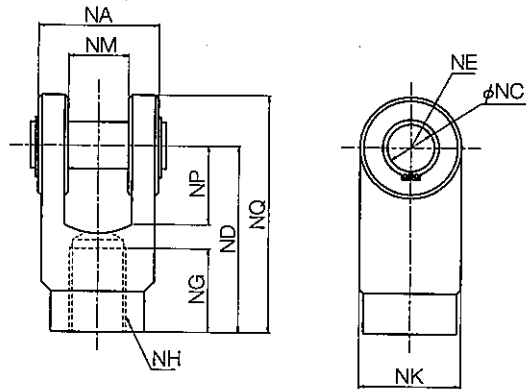
(Unit : mm)



Model No.	Applicable bore	NC	ND	NE	NG	NH	NK	NM	NP	NQ	Mass (kg)
A1125-I	φ 125	φ 25 H10	100	R27.5	55	M30×1.5	φ 55	32 ^{-0.1} _{-0.4}	35	127.5	1.5
A1140-I	φ 140	φ 28 H10	105	R30	55	M30×1.5	φ 60	36 ^{-0.1} _{-0.4}	40	135	1.9
A1160-I	φ 160	φ 40 H10	125	R40	65	M40×1.5	φ 70	50 ^{-0.1} _{-0.4}	50	165	3.9
	φ 180	φ 40 H10	125	R40	65	M40×1.5	φ 80	50 ^{-0.1} _{-0.4}	50	165	3.9
A1200-I	φ 200	φ 40 H10	125	R40	65	M45×1.5	φ 80	50 ^{-0.1} _{-0.4}	50	165	4.0
A1250-I	φ 250	φ 40 H10	125	R40	46	M56×2	φ 80	50 ^{-0.1} _{-0.4}	50	165	4.0

Rod end clevis

(Unit : mm)



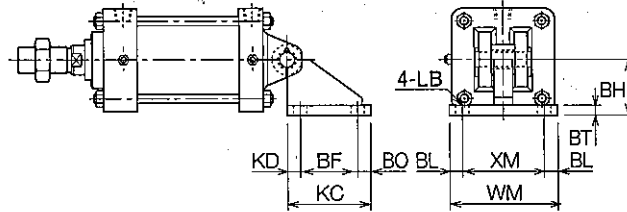
Model No.	Applicable bore	NA	NC	ND	NE	NG	NH	NK	NM	NP	NQ	Mass (kg)
A1125-I	φ 125	64	25 ^{H10} _{f8}	100	R27.5	58	M30×1.5	55	32 ^{+0.4} _{+0.1}	42	127.5	1.5
A1140-I	φ 140	72	28 ^{H10} _{f8}	105	R27.5	58	M30×1.5	55	36 ^{+0.4} _{+0.1}	45	132.5	1.9
A1160-I	φ 160	100	32 ^{H10} _{f8}	125	R35	60	M40×1.5	70	50 ^{+0.4} _{+0.1}	54	160	3.9
	φ 180	100	40 ^{H10} _{f8}	125	R35	71	M40×1.5	70	50 ^{+0.4} _{+0.1}	54	160	3.9
A1200-I	φ 200	100	40 ^{H10} _{f8}	125	R40	71	M45×1.5	70	50 ^{+0.4} _{+0.1}	54	160	4.0
A1250-I	φ 250	100	40 ^{H10} _{f8}	125	R40	75	M56×2	90	50 ^{+0.4} _{+0.1}	50	170	4.0

AIR CYLINDER/STANDARD TYPE A1 series

ACCESSORIES

Bracket for clevis

(Unit : mm)

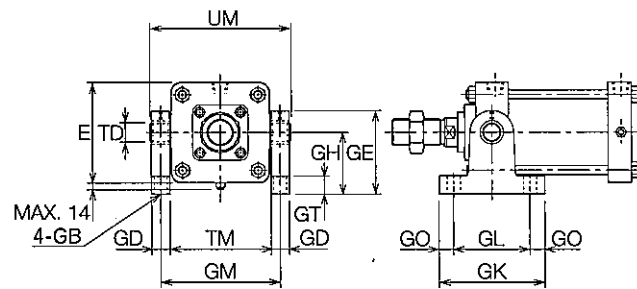


Model No.	Applicable bore	BF	BH	BL	BO	BT	KC	KD	LB	WM	XM
A1125-BA	φ 125	77	75	17.5	17.5	14	112	17.5	φ 18	145	110
A1140-BA	φ 140	120	115	22.5	22.5	23	165	22.5	φ 22	175	130
	φ 160										
	φ 180										
	φ 200										
A1250-BA	φ 250	165	140	25	25	28	215	25	φ 26	220	170

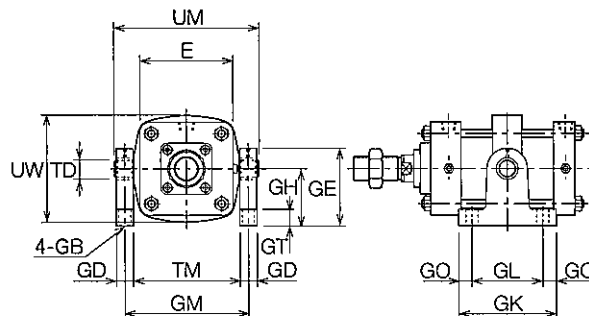
Bracket for clevis

(Unit : mm)

Rod side trunnion/R



Center trunnion/T



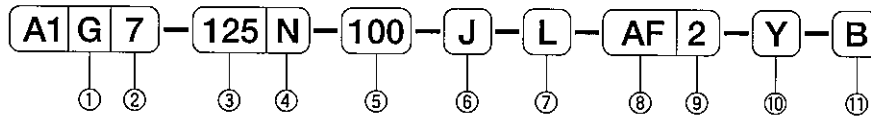
Model No.	Applicable bore	E	GB	GD	GE	GH	GK	GL	GM		GO	GT	TD	TM		UM		UW
									R type	T type				R type	T type	R type	T type	
A1125-BC	φ 125	□138	φ 18	25	115	085	145	105	164	183	20	25	φ 25 ^{H9} _{e9}	139	158	189	208	158
A1140-BC	φ 140	□156	φ 22	36	170	130	185	140	192	219	22.5	25	φ 36 ^{H9} _{e9}	156	183	228	255	183
	φ 160	□178							214	236				178	200	250	272	200
	φ 180	□200							236	264				200	228	272	300	228
	φ 200	□216							252	282				216	246	288	318	246
A1250-BC	φ 250	□270	φ 26	45	210	160	215	165	315	349	25	32	φ 45 ^{H9} _{e9}	270	304	360	394	304

AIR CYLINDER/DOUBLE ROD TYPE

A1○7 series (CUSTOM-MADE)

φ 125, φ 140, φ 160, φ 180, φ 200, φ 250

ORDERING INSTRUCTIONS



① Magnet

G	Aluminium tube with built-in magnet	Cylinder with switch available
CF	Iron tube with without magnet	Cylinder with switch not available

(Note) Models with switch : φ 125 to φ 160 alone

② Action

7	Double acting, single rod
---	---------------------------

③ Bore (mm)

125	φ 125
140	φ 140
160	φ 160
180	φ 180
200	φ 200
250	φ 250

④ Cushion

B	Both-side air cushion
R	Rod side air cushion
H	Head side air cushion
N	No cushion

⑤ Stroke (mm)

Refer to Page 110

⑥ Dustproof cover

No symbol	No dustproof cover provided (Standard)
J	With bellows on one side (Nylon tarpaulin)
JN	With bellows on one side (Chloroprene)
JK	With bellows on one side (CONEX)
JJ	With bellows on both side (Nylon tarpaulin)
JJN	With bellows on both side (Chloroprene)
JJK	With bellows on both side (CONEX)

CONEX : Registered trademark of Teijin Ltd.

⑦ Mounting

N	Basic type
L	Axial foot
A	Rod side flange
R	Rod side trunnion
T	Center trunnion

Model No. of Mounting Bracket

Bore (mm)	φ 125	φ 140	φ 160	φ 180	φ 200	φ 250
Axial foot mount bracket	A1125-L	A1140-L	A1160-L	A1180-L	A1200-L	A1250-L
Flange mount bracket	A1125-A	A1140-A	A1160-A	A1180-A	A1200-A	A1250-A
Trunnion mount bracket	A1125-T	A1140-T	A1160-T	A1180-T	A1200-T	A1250-T
Bracket for trunnion	A1125-BC	A1140-BC	A1140-BC	A1140-BC	A1140-BC	A1250-BC

(Note) Bracket for clevis : With pin, snap ring

⑧ Type of switch

No symbol	No switch		
AF	AX101	DC5~30V AC5~120V	Reed switch
AG	AX105		
AH	AX111		
AJ	AX115		
AE	AX125	DC5~50V AC5~120V	Solid-state switch
AK	AX11A	AC5~120V	
AL	AX11B	DC5~30V	
S	SR405	AC80~220V	
BE	AX201	DC5~30V	
BF	AX205		
BH	AX221		
BJ	AX225		
CE	AX211		
CF	AX215		

(Note) Models with switch : φ 125 to φ 160 alone

⑨ Number of switch

No symbol	No switch
2	With 2 units
1	With 1 unit

⑩ Bracket at rod end

No symbol	No bracket
Y	With rod end clevis
I	With rod end eye
YY	With two rod end clevis
II	With two rod end eye

⑪ Bracket

No symbol	No bracket
B	With bracket

(Note) Models with bracket : R and T

Model No. of Packing Kit

● Iron tube

Bore (mm)	Packing kit
φ 125	A1125-PSD
φ 140	A1140-PSD
φ 160	A1160-PSD
φ 180	A1180-PSD
φ 200	A1200-PSD
φ 250	A1250-PSD

AIR CYLINDER/DOUBLE ROD TYPE A1○7 series

SPECIFICATIONS

Action	Unit	Double-acting
Fluid		Non-lubricated air
Pressure range	MPa	0.1~1
Proof pressure	MPa	1.5
Temperature range	°C	-10~70
Piston speed range	mm/s	50~700
Cushion		Air cushion
Piston stroke allowance	mm	~250 : ${}^{+1.0}_0$ 251~1000 : ${}^{+1.4}_0$ 1001~ : ${}^{+1.8}_0$
Mounting		Basic type, Axial foot, Rod side flange, Rod side trunnion, Center trunnion

(Note) •When setting a switch at the intermediate position, set the maximum cylinder speed to less than 300 mm/s by reason of the relation with the response speed of relays etc.

•Use the cylinder within a temperature range where it is not frozen.

•When changing the port position and cushion valve position, consult KURODA beforehand.

MAXIMUM STROKE (Unit : mm)

Bore	Maximum stroke
φ 125	1200
φ 140	
φ 160	
φ 180	
φ 200	
φ 250	

(Note) The above-mentioned values are the maximum strokes of A1 Series Air Cylinders manufactured by KURODA. For strokes exceeding the maximum stroke, consult KURODA.

CUSHION STROKE (Unit : mm)

Bore (mm)	Cushion stroke
φ 125	19.5
φ 140	
φ 160	
φ 180	
φ 200	21.5
φ 250	

AIR CYLINDER/DOUBLE ROD TYPE A1○7 series

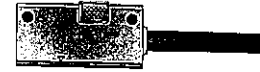
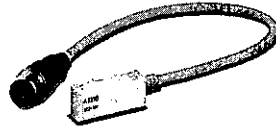
MODEL WITH SWITCH/For detailed specifications, handling precautions and mounting method of switches, refer to Page 116.

●AX Type Switch

●SR Type Switch

Cord type

Connector type



LIST OF SWITCHES

Type	Symbol of switch	Load voltage range	Load current range	Max. switching capacity	Protective circuit	Pilot lamp	Connection	Cord length	Applicable load	
Reed switch	AF AX101	DC5~30V AC5~120V	DC: 5~40mA AC: 5~20mA	DC: 1.5W AC: 2VA	Not provided	LED (Red LED lights up at ON.)	0.3 mm ² 2-core, OD φ 4 mm Cord direction : Axial	1.5m	Miniature relay PLC	
	AG AX105							5m		
	AH AX111				1.5m					
	AJ AX115				5m					
	AE AX125	DC5~50V AC5~120V	5~20mA	2VA	Not provided	Not provided	5m			
	AK AX11A	AC5~120V					5~20mA	2VA		Provided
	AL AX11B	DC5~30V			5~40mA	1.5W	0.5m			
S SR405	AC80~220V	2~300mA	30VA	Provided	Neon lamp (Red lights up at OFF.)	0.5 mm ² 2-core, OD φ 6 mm Cord direction : Axial	5m			
Solid-state switch	BE AX201	DC5~30V	5~40mA	—	Provided	LED (Red LED lights up at ON.)	0.3 mm ² 2-core, OD φ 4 mm Cord direction : Axial	1.5m	Miniature relay PLC	
	BF AX205							5m		
	CE AX211					1.5m				
	CF AX215					5m				
	BH AX221	DC5~30V	Max.200mA NPN open collector output	—	Provided	LED (Red LED lights up at ON.)	0.3 mm ² 3-core, OD φ 4 mm Cord direction : Axial	1.5m		Miniature relay PLC IC circuit
	BJ AX225							5m		

(Note) •When using inductive load (relay etc.) in a switch without a protective circuit, be sure to fit a protective circuit (SK-100) to the load.
•AX type switch can be mounted on other type than above-mentioned. Refer to Specifications for Switches at the end of this catalog.

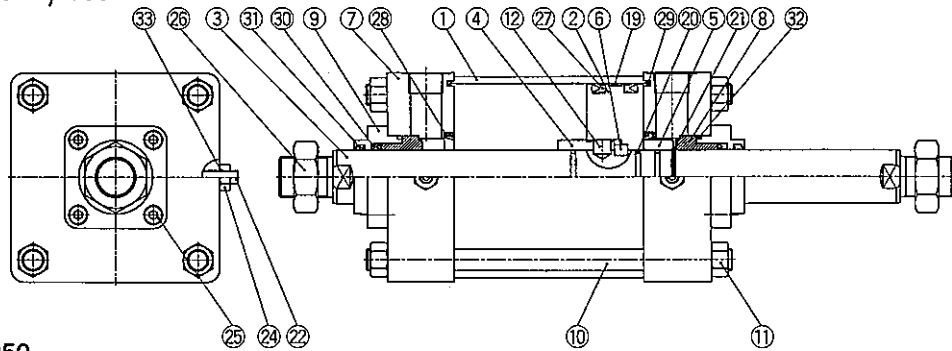
MINIMUM STROKE FOR AIR CYLINDER WITH SWITCH (Unit : mm)

Type	AX type	SR type
1 unit mounted	25	15
2 units mounted on same surface	25	15
2 units mounted on opposite surface	25	15
Center trunnion type (T)	120	120

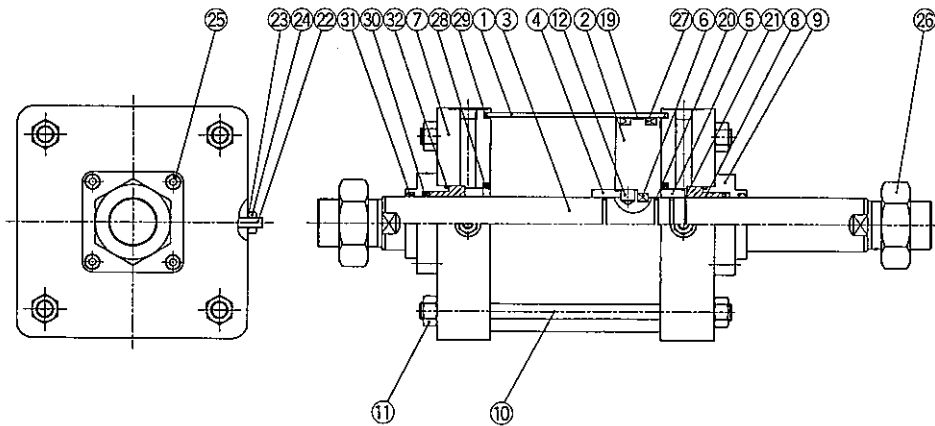
AIR CYLINDER/DOUBLE ROD TYPE A1○7 series

CONSTRUCTIONS AND PARTS LIST

Aluminium tube ϕ 125~ ϕ 160



Iron tube ϕ 125~ ϕ 250



No.	Description	Material	No.	Description	Material
1	Cylinder tube	Carbon steel tube for machine structure	11	Tie rod nut	ϕ 125~160 : Carbon steel for machine structure ϕ 180~250 : Rolled steel for general structure
2	Piston	Carbon steel for machine structure	12	Pin	Steel
3	Piston rod	Carbon steel for machine structure	19	Wear ring	Synthetic resins
4	Cushion ring A	Rolled steel for general structure	20	O-ring for piston rod	Nitril rubber
5	Cushion ring B	Rolled steel for general structure	21	Snap ring	Stainless steel
6	Split ring	Carbon steel for machine structure	22	Cushion valve	Chromium molybdenum steel
7	Rod cover	Rolled steel for general structure	24	Cushion locknut	ϕ 125~160 : Carbon steel for machine structure ϕ 180~250 : Rolled steel for general structure
8	Bushing	ϕ 125~160 : Sintered oil-impregnated bearing ϕ 180~250 : Oil-impregnated alloy	25	Packing housing set screw	Chromium molybdenum steel
9	Packing housing	ϕ 125~160 : Carbon steel for machine structure ϕ 180~250 : Rolled steel for general structure	26	Rod end nut	ϕ 125~160 : Carbon steel for machine structure ϕ 180~250 : Rolled steel for general structure
10	Tie rod	ϕ 125~160 : Carbon steel for machine structure ϕ 180~250 : Rolled steel for general structure			

PACKING LIST

No.	Description	Material	Q'ty	Model No.					
				ϕ 125	ϕ 140	ϕ 160	ϕ 180	ϕ 200	ϕ 250
27	Piston packing	Nitril rubber	2	PNU-115	PNU-125	PNU-145	PNU-165	PNU-185	PNU-230
28	Cushion packing R	Metal ring+Nitril rubber	1	PCS-45	PCS-55	PCS-65	PCS-65	PCS-65	PCS-75
29	Tube end seal	Nitril rubber	2	TX-125	TO-140	TO-160	TO-180	TO-200	TO-250
30	Rod packing	Nitril rubber	1	PNU-32	PNU-40	PNU-50	PNU-50	PNU-50	PNU-63
31	Dustwiper	Urethane rubber	1	DA-32	DA-40	DA-50	DA-50	DA-50	DA-63
32	O-ring for packing housing	Nitril rubber	1	G-45	G-55	G-65	G-65	G-65	G-80
33	Cushion valve seal	Fluorocarbon resin	2	SF-8	SF-10	SF-10	SF-10	SF-10	SF-10

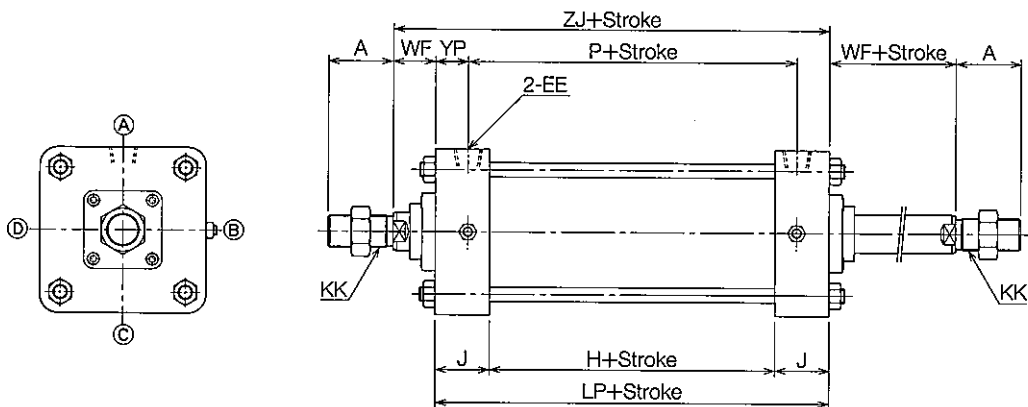
(Note) O-ring : JIS B 2401-1A

AIR CYLINDER/DOUBLE ROD TYPE A1○7 series

DIMENSIONS

(Unit : mm)

Basic type/N



Bore	A	EE	H	J	KK	LP	P	WF	YP	ZJ
φ 125	40 (36)	Rc1/2	37	45	M30×1.5	127	73	35	27	162
φ 140	40 (36)	Rc3/4	43	50	M30×1.5	140	85	41	29	184
φ 160	55 (51)	Rc3/4	43	50	M40×1.5	143	85	48	29	191
φ 180	55 (51)	Rc3/4	43	50	M40×1.5	143	85	52	29	195
φ 200	60 (56)	Rc3/4	43	50	M45×1.5	143	85	52	29	195
φ 250	112 (107)	Rc1	55	57	M56×2	169	109	60	30	229

(Note) • For other sizes than mentioned in this drawing, refer to Double-acting single rod.
 • Bracketed figures in size A columns are thread lengths.

AIR CYLINDER/ADJUSTABLE STROKE CYLINDER (Adjustable stroke with rod retracted)

A1GA2 series (CUSTOM-MADE)

φ 125, φ 140, φ 160

The stroke on the retractable rod side is adjustable within a range of 0 to 50 mm. Stroke adjustment is accomplished with the adjusting bolt fitted on the head side.

ORDERING INSTRUCTIONS

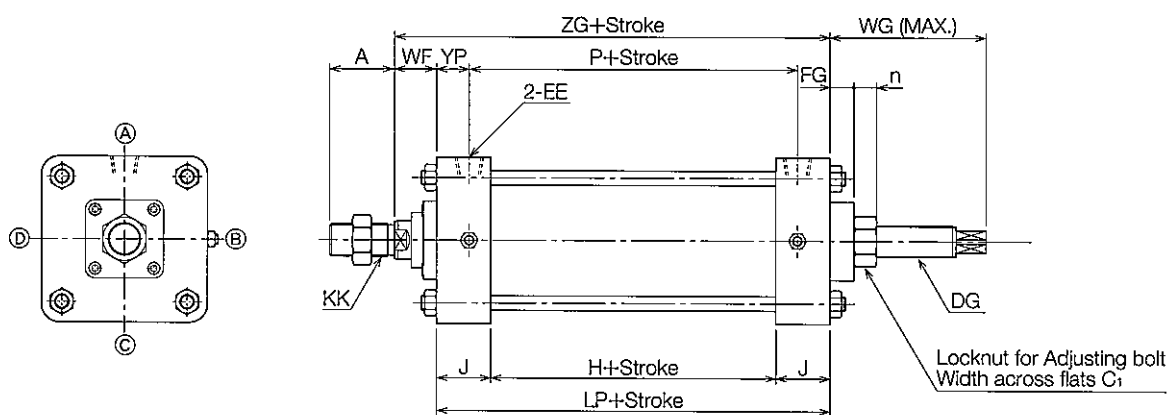
① Bore (mm)
 ② Stroke (mm)
 ③ Mounting

SPECIFICATIONS

Action	Unit	Double-acting
Fluid		Non-lubricated air
Pressure range	MPa	0.1~1
Proof pressure	MPa	1.5
Temperature range	°C	-10~70
Piston speed range	mm/s	50~700
Cushion		Air cushion
Stroke adjustment		Adjustable with adjusting bolt
Adjustable stroke range	mm	0~50
Mounting		Basic type, Axial foot, Rod side flange, Rod side trunnion, Center trunnion

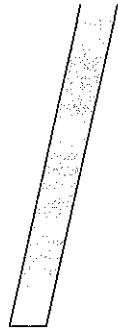
DIMENSIONS

(Unit : mm)



Bore	A	C1	DG	EE	FG	H	J	KK	LP	n	P	WF	WG	YP	ZG
φ 125	40 (36)	36	M24×1.5	Rc½	20	37	45	M30×1.5	127	19	73	35	103	27	162
φ 140	40 (36)	46	M30×2	Rc¾	27	43	50	M30×1.5	143	24	85	41	118	29	184
φ 160	55 (51)	46	M30×2	Rc¾	27	43	50	M40×1.5	143	24	85	48	118	29	191

(Note) •For other sizes than mentioned in this drawing, refer to Standard type A1 series.
 •Bracketed figures in size A columns are thread lengths.



MAGNETIC PROXIMITY SWITCH

FOR CYLINDER

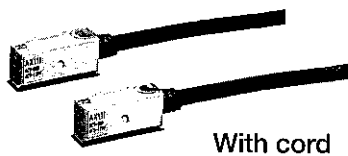
AX Type/AZ Type Switches ————— P.117

SR Type Switch ————— P.126

AX TYPE/AZ TYPE SWITCHES

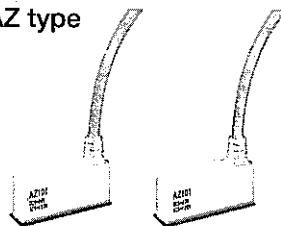
REED SWITCH

AX type



With cord

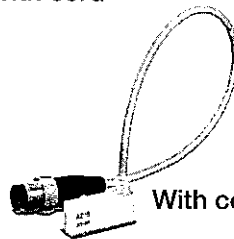
AZ type



With cord



With connector



With connector

Applicable cylinders

Series	Bore (mm)
X1G	φ 125, φ 140, φ 160
J1G	φ 20, φ 25, φ 32, φ 40, φ 50, φ 63
K1G	φ 32, φ 40, φ 50, φ 63, φ 80, φ 125
A1G	φ 125, φ 140, φ 160

(Note) AZ type switch applicable X1G series alone.

SPECIFICATIONS

Model No.	With cord (1.5m)	AX101, AZ101	AX111, AZ111	—	—	—
	With cord (5m)	AX105, AZ105	AX115, AZ115	—	—	AX125, AZ125
	With connector (For AC)	—	—	AX11A, AZ11A	—	—
	With connector (For DC)	—	—	—	AX11B, AZ11B	—
Load voltage	AC5~120V DC5~30V		AC5~120V	DC5~30V	AC5~120V DC5~50V	
Load current	AC : 5~20mA DC : 5~40mA		AC : 5~20mA	DC : 5~40mA	AC : 5~20mA DC : 5~40mA	
Max. Switching capacity	AC : 2VA DC : 1.5W					
Internal voltage drop	TYP : 2V (At 10mA) Below 3V (At 40mA)					0V
Leak current	0mA	Below 10 μA				0mA
Response time	Below 1ms					
Reset time	Below 1ms					
Insulation resistance	100MΩ or more at DC500V megger (Between case and cord)					
Withstand voltage	AC1500V for one minute (Between case and cord)					
Shock resistance	294m/s ² (No repeating)					
Impact resistance	Double amplitude 1.5mm, 10 to 55Hz (One sweep, one minute), 2 hours in each of X, Y, Z directions					
Surrounding temperature	-10~+70°C (No dew condensation shall occur.)					-10~+100°C (No dew condensation shall occur.)
Connection	0.3mm ² , 2-core, OD φ 4mm, oil-resistant cabtyre cord					
Protection grade	IP67 (IEC Standard), JIS C0920 (Dust and water proof type)					
Contact protective circuit	Not provided	Provided				Not provided
Pilot lamp	LED (Red LED lights up at ON)					Not provided
Electric circuit						<p>No positive/negative polarity</p>
Applicable load	Miniature relay, PLC					Miniature, relay, PLC, IC circuit

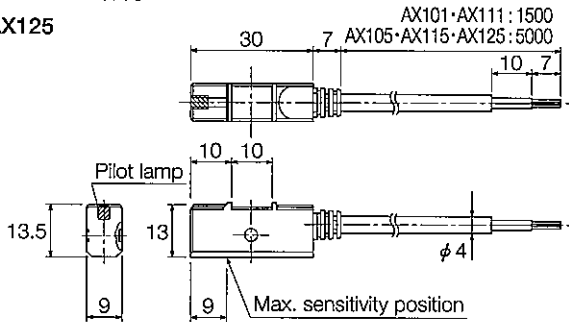
(Note) •When applying inductive load (miniature relay etc.) to a switch without a protective, be sure to fit a protective circuit (SK-100) to the load.
 •For the cord length of a switch with connector and the connector pin arrangement, refer to DIMENSIONS.
 •When using a programmable controller for AC voltage input as load, select a switch with a contact protection circuit.

AX TYPE/AZ TYPE SWITCHES

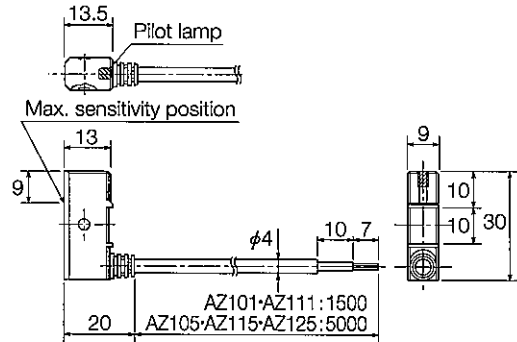
DIMENSIONS

(Unit : mm)

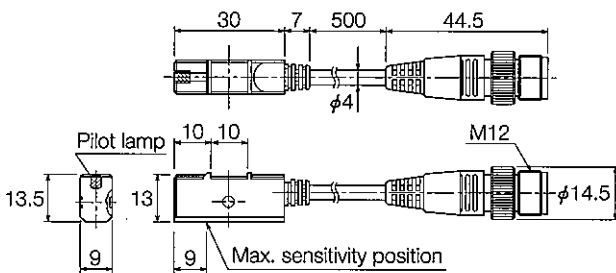
●With cord
AX101 · AX105
AX111 · AX115
AX125



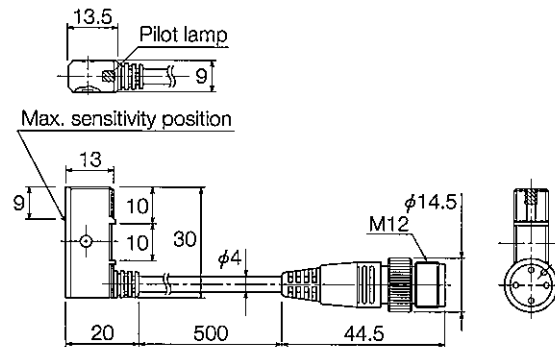
●With cord
AZ101 · AZ105
AZ111 · AZ115
AZ125



●With connector
AX11A · AX11B



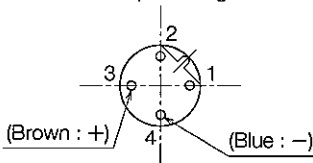
●With connector
AZ11A · AZ11B



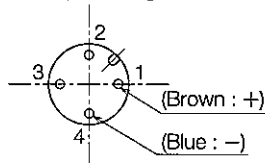
AX11A (For AC)
AZ11A (For AC)

AX11B (For DC)
AZ11B (For DC)

Connector pin arrangement



Connector pin arrangement



Applicable Connectors

Maker	Name of Connector Series	
COHERENCE	VA connector	VA-4DS, VA-4DL
OMRON	XS2 sensor I/O connector	XS2
HIROSE	Connector for FA sensors	HR24

•For detailed information, refer to catalogs supplied from each maker.

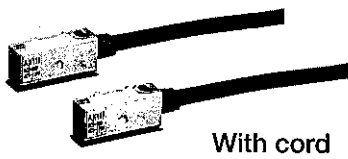
●Standard No. for Connector

- Models M12X1 screw locking
- EIEC 947-5-2
- DIN/VDE 0660 part208 A2
- NECA (Nippon Electric Control Equipment Industries Association) 4202 Connector for FA Sensors

AX TYPE/AZ TYPE SWITCHES

SOLID-STATE PROXIMITY SWITCH (2-wire, one-light type)

AX type

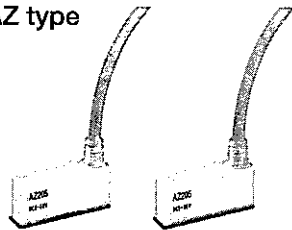


With cord

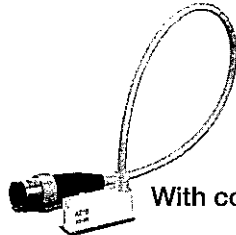


With connector

AZ type



With cord



With connector

Applicable cylinders

Series	Bore (mm)
X1G	ϕ 125, ϕ 140, ϕ 160
J1G	ϕ 20, ϕ 25, ϕ 32, ϕ 40, ϕ 50, ϕ 63
K1G	ϕ 32, ϕ 40, ϕ 50, ϕ 63, ϕ 80, ϕ 125
A1G	ϕ 125, ϕ 140, ϕ 160

(Note) AZ type switch applicable X1G series alone.

SPECIFICATIONS

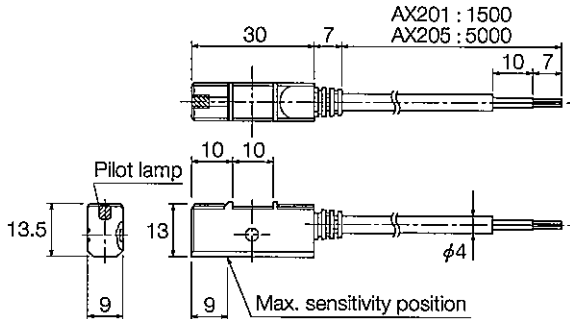
Model No.	With cord (1.5m)	AX201	AZ201
	With cord (5m)	AX205	AZ205
	With connector	AX20B	AZ20B
Wire direction		Axial	Perpendicular to axis
Load voltage	DC5~30V		
Load current	DC : 5~40mA		
Internal voltage drop	Below 3V (At 40mA)		
Leak current	Below 1mA		
Response time	Below 1ms		
Reset time	Below 1ms		
Insulation resistance	100M Ω or more at DC500V megger (Between case and cord)		
Withstand voltage	AC1500V for one minute (Between case and cord)		
Shock resistance	490m/s ² (No repeating)		
Impact resistance	Double amplitude 0.6mm, 10 to 200Hz (log sweep, one hour) in each of X, Y, Z directions		
Surrounding temperature	-10~+70°C (No dew condensation shall occur.)		
Connection	0.3mm ² , 2-core, OD ϕ 4mm, oil-resistant cabtyre cord		
Protection grade	IP67 (IEC Standard), JIS C0920 (Dust and water proof type)		
Output protective circuit	Provided		
Pilot lamp	LED (Red LED lights up at ON)		
Electric circuit			
Applicable load	Miniature relay, PLC		

AX TYPE/AZ TYPE SWITCHES

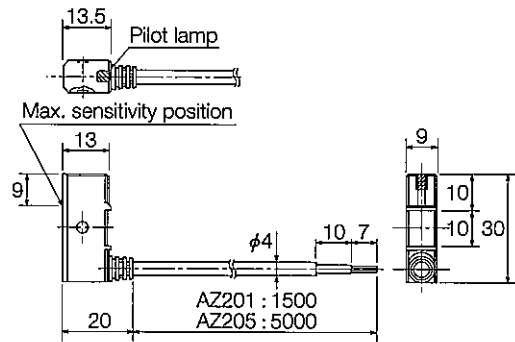
DIMENSIONS

(Unit : mm)

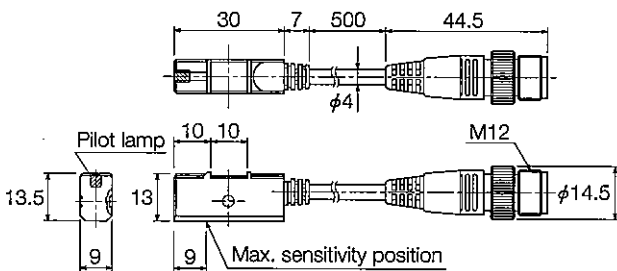
●With cord
AX201 · AX205



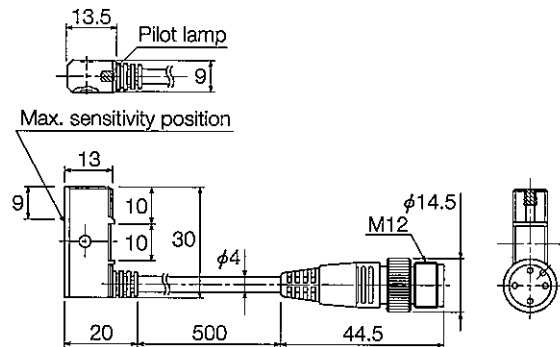
●With cord
AZ201 · AZ205



●With connector
AX20B

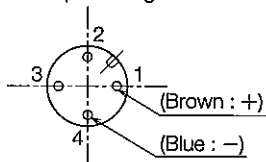


●With connector
AZ20B



AX20B (For DC)
AZ20B (For DC)

Connector pin arrangement



●Standard No. for Connector

Models M12X1 screw locking

- IEC 947-5-2
- DIN/VDE 0660 part208 A2
- NECA (Nippon Electric Control Equipment Industries Association)
4202 Connector for FA Sensors

Applicable Connectors

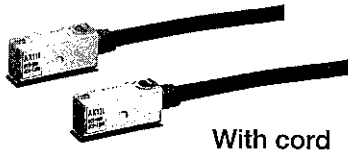
Maker	Name of Connector Series	
COHERENCE	VA connector	VA-4DS, VA-4DL
OMRON	XS2 sensor I/O connector	XS2
HIROSE	Connector for FA sensors	HR24

•For detailed information, refer to catalogs supplied from each maker.

AX TYPE/AZ TYPE SWITCHES

SOLID-STATE PROXIMITY SWITCH (2-wire, dual light type)

AX type

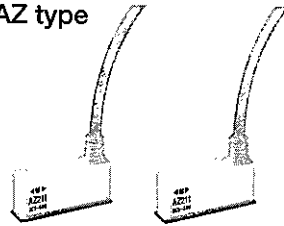


With cord

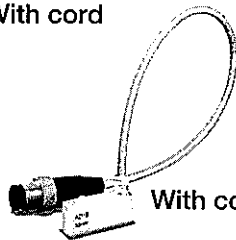


With connector

AZ type



With cord



With connector

Applicable cylinders

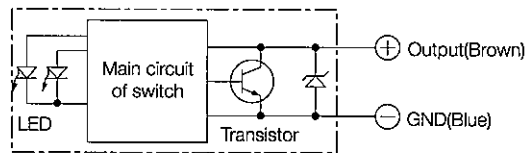
Series	Bore (mm)
X1G	φ 125, φ 140, φ 160
J1G	φ 20, φ 25, φ 32, φ 40, φ 50, φ 63
K1G	φ 32, φ 40, φ 50, φ 63, φ 80, φ 125
A1G	φ 125, φ 140, φ 160

(Note) AZ type switch applicable X1G series alone.

SPECIFICATIONS

Model No.	With cord (1.5m)	AX211, AZ211
	With cord (5m)	AX215, AZ215
	With connector	AX21C, AZ21C
		AX21D, AZ21D
Wire direction	Axial	
Load voltage	DC5~30V	
Load current	DC : 5~40mA	
Internal voltage drop	Below 3V (At 40mA)	
Leak current	Below 1mA	
Response time	Below 1ms	
Reset time	Below 1ms	
Insulation resistance	100MΩ or more at DC500V megger (Between case and cord)	
Withstand voltage	AC1500V for one minute (Between case and cord)	
Shock resistance	490m/s ² (No repeating)	
Impact resistance	Double amplitude 0.6mm, 10 to 200Hz (log sweep, one hour) in each of X, Y, Z directions	
Surrounding temperature	-10~+70°C (No dew condensation shall occur.)	
Connection	0.3mm ² , 2-core, OD φ 4mm, oil-resistant cabtyre cord	
Protection grade	IP67 (IEC Standard), JIS C0920 (Dust and water proof type)	
Output protective circuit	Provided	
Pilot lamp	Switch response range : Red/green LED lights up. Optimum adjusting range : Green LED lights up.	

Electric circuit

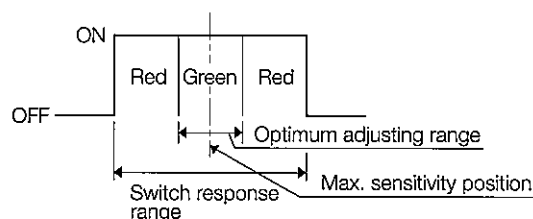


Applicable load

Miniature relay, PLC

(Note) AX211CE, AX215CE and AX21BCE conforming to CE mark are available.

INDICATION BY LED

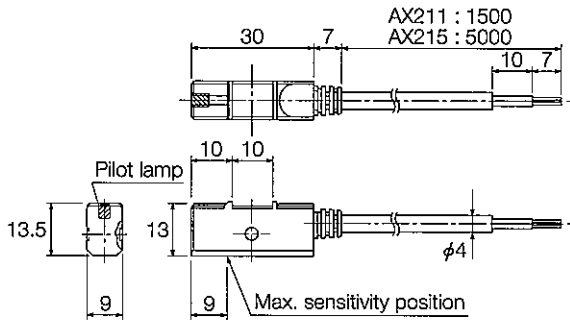


AX TYPE/AZ TYPE SWITCHES

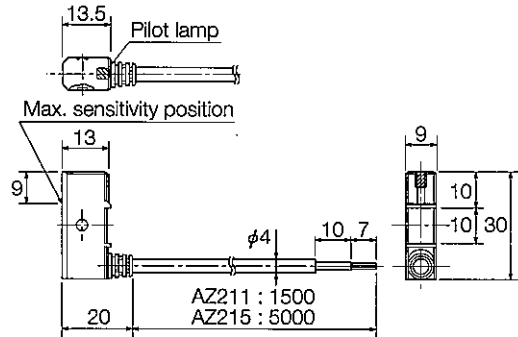
DIMENSIONS

(Unit : mm)

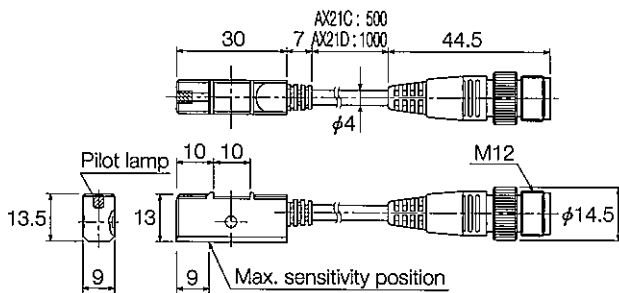
●With cord
AX211 · AX215



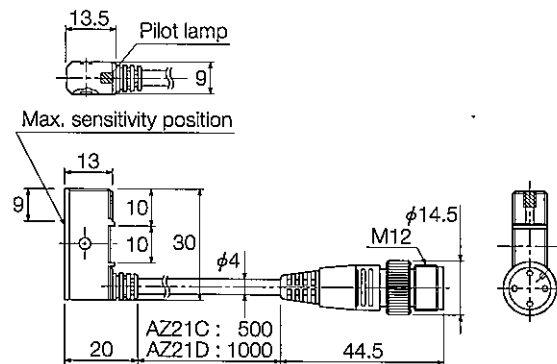
●With cord
AZ211 · AZ215



●With connector
AX21C · AX21D

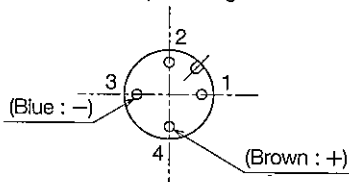


●With connector
AZ21C · AZ21D



AX21C · AX21D (For DC)
AZ21C · AX21D (For DC)

Connector pin arrangement



- As to connector pin arrangement (1 : +, 4 : -) for IEC Standard, contact KURODA.
- AX21B conforming to TMS Standard is also available.

Applicable Connectors

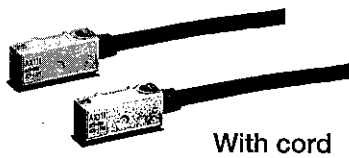
Maker	Name of Connector Series	
COHERENCE	VA connector	VA-4DS, VA-4DL
OMRON	XS2 sensor I/O connector	XS2
HIROSE	Connector for FA sensors	HR24

•For detailed information, refer to catalogs supplied from each maker.

AX TYPE/AZ TYPE SWITCHES

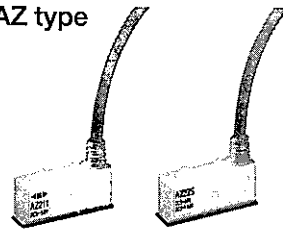
SOLID-STATE PROXIMITY SWITCH (3-wire type)

AX type



With cord

AZ type



With cord

Applicable cylinders

Series	Bore (mm)
X1G	φ 125, φ 140, φ 160
J1G	φ 20, φ 25, φ 32, φ 40, φ 50, φ 63
K1G	φ 32, φ 40, φ 50, φ 63, φ 80, φ 125
A1G	φ 125, φ 140, φ 160

(Note) AZ type switch applicable X1G series alone.

SPECIFICATIONS

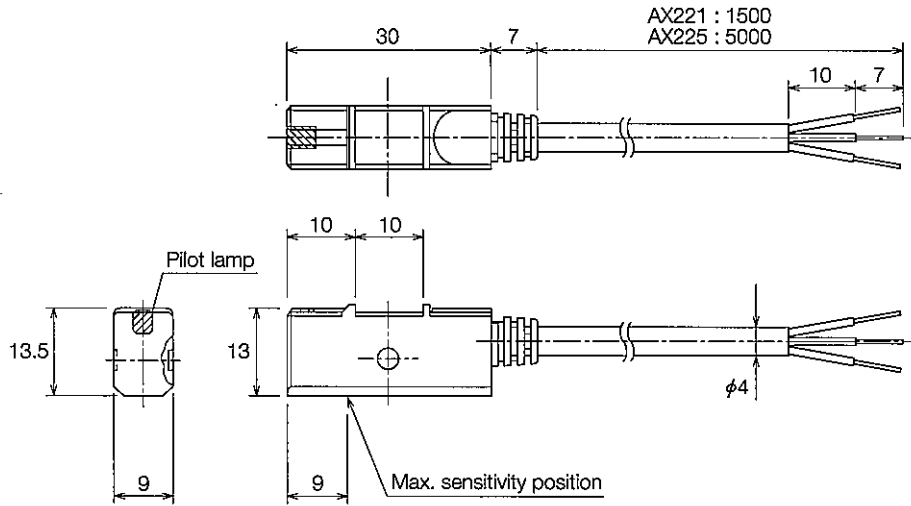
Model No.	With cord (1.5m)	AX221	AZ221
	With cord (5m)	AX225	AZ225
Wire direction	Axial		Perpendicular to axis
Power voltage	DC5~30V		
Load voltage	DC : 5~30V		
Load current	Max. 200mA (NPN open collector output)		
Current consumption	Max. 15mA		
Internal voltage drop	Max. 0.6V at 200mA		
Leak current	Max. 10 μA at DC30V		
Response time	Below 1ms		
Reset time	Below 1ms		
Insulation resistance	100MΩ or more at DC500V megger (Between case and cord)		
Withstand voltage	AC1500V for one minute (Between case and cord)		
Shock resistance	490m/s ² (No repeating)		
Impact resistance	Double amplitude 0.6mm, 10 to 200Hz (log sweep, one hour) in each of X, Y, Z directions		
Surrounding temperature	-10~+70°C (No dew condensation shall occur.)		
Connection	0.3mm ² , 3-core, OD φ 4mm, oil-resistant cabtyre cord		
Protection grade	IP67 (IEC Standard), JIS C0920 (Dust and water proof type)		
Output protective circuit	Provided		
Pilot lamp	LED (Red LED lights up at ON)		
Electric circuit			
Applicable load	Miniature, relay, PLC, IC circuit		

AX TYPE/AZ TYPE SWITCHES

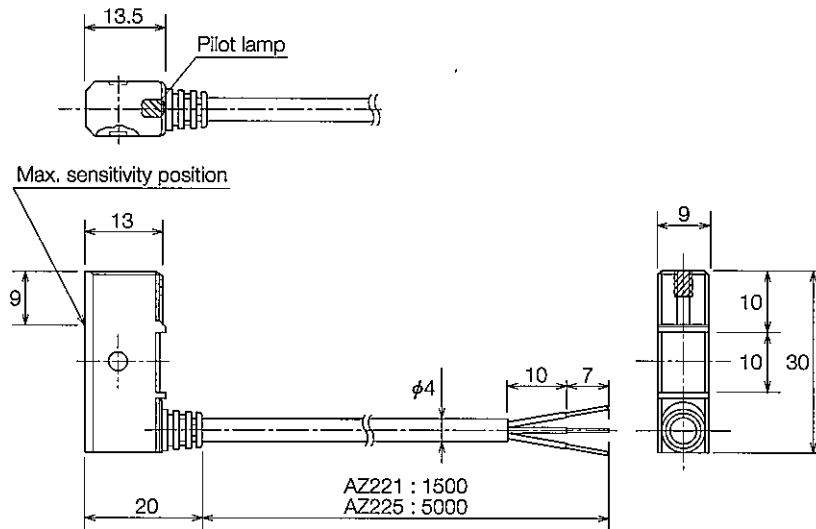
DIMENSIONS

(Unit : mm)

●With cord
AX221 · AX225

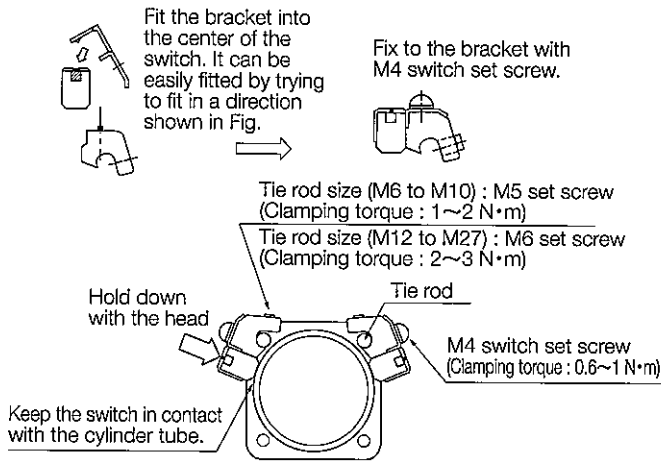


●With cord
AZ221 · AZ225



AX TYPE/AZ TYPE SWITCHES

MOUNTING THE SWITCH



1. Loosen 2 set screws with a hexagonal wrench and move along the tie rod.
2. Set the switch position so that the detecting position (at which green LED is on in case of dual light type) comes 2 to 5 mm on this side (proper range : about half of the operating range) from a position at which the switch pilot lamp is on at the intended position. Then hold down the top of the switch lightly and tighten the set screw at proper clamping torque with the cylinder tube keeping in contact with the detecting surface of the switch.
(Note) Improper clamping torque may shift the switch position.
3. The pilot lamp is on when the switch turns on.
4. The switch can be mounted on any of 4 tie rods. Therefore, it can be repositioned at the most suitable location according to the mounting space and wiring method.
5. For mounting the switch at the most suitable position to detect the stroke end, refer to "Mounting the switch" (UX size).

Model No. of switch mounting bracket for K1 series

Model No. for AX type switch	Applicable bore (mm)
K132-AJ	φ 32
K140-AJ	φ 40
K150-AJ	φ 50
K163-AJ	φ 63
K180-AJ	φ 80
K1100-AJ	φ 100
K1125-AJ	φ 125

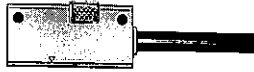
Model No. of switch mounting bracket for A1 series

Model No. for AX type switch	Applicable bore (mm)
A1125-AJ	φ 125
A1140-AJ	φ 140
A1160-AJ	φ 160

(Note) Switch is not available for φ 180 to φ 250 of the A1 series.

SR TYPE SWITCHES

REED SWITCH



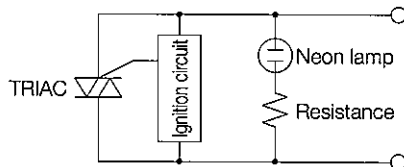
Applicable cylinders

Series	Bore (mm)
J1G	ϕ 20, ϕ 25, ϕ 32, ϕ 40, ϕ 50, ϕ 63
K1G	ϕ 32, ϕ 40, ϕ 50, ϕ 63, ϕ 80, ϕ 100, ϕ 125
A1G	ϕ 125, ϕ 140, ϕ 160

SPECIFICATIONS

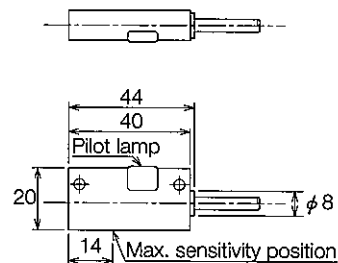
Model No.	SR405 (With cord 5m)
Load voltage	AC80~220V
Load current	2~300mA
Max. Switching capacity	30VA
Internal voltage drop	Below 2V
Leak current	Below 1mA
Response time	Below 1ms
Reset time	Below 11ms
Insulation resistance	100M Ω or more at DC500V megger (Between case and cord)
Withstand voltage	AC1500V for one minute (Between case and cord)
Shock resistance	294m/s ² (No repeating)
Impact resistance	98m/s ² , 10 to 55Hz (log sweep, 10 minutes), 2 hours in each of X, Y, Z directions
Surrounding temperature	-10~+70°C (No dew condensation shall occur.)
Connection	0.5mm ² , 2-core, OD ϕ 6mm, oil-resistant cabtyre cord (Gray)
Protection grade	IP67 (IEC Standard), JIS C0920 (Shock-and vibration-proof type)
Pilot lamp	Neon lamp (Lights up at OFF)
Applicable load	Miniature relay, PLC, Miniature solenoid, Pilot lamp

ELECTRIC CIRCUIT



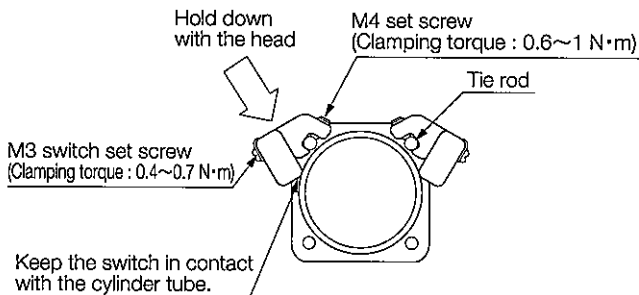
DIMENSIONS

(Unit : mm)



SR TYPE SWITCHES

MOUNTING THE SWITCH



1. Loosen 2 set screws with a hexagonal wrench and move along the tie rod.
2. Set the switch position so that the detecting position (at which green LED is on in case of dual light type) comes 2 to 5 mm on this side (proper range : about half of the operating range) from a position at which the switch pilot lamp is on at the intended position. Then hold down the top of the switch lightly and tighten the set screw at proper clamping torque with the cylinder tube keeping in contact with the detecting surface of the switch.
(Note) Improper clamping torque may shift the switch position.
3. The pilot lamp is off when the switch turns on.
4. The switch can be mounted on any of 4 tie rods. Therefore, it can be repositioned at the most suitable location according to the mounting space and wiring method.
5. For mounting the switch at the most suitable position to detect the stroke end, refer to "Mounting the switch" (UX size).

Model No. of switch mounting bracket for K1 series

Model No. for SR type switch	Applicable bore (mm)
K132-SJ	φ 32
K140-SJ	φ 40
K150-SJ	φ 50
K163-SJ	φ 63
K180-SJ	φ 80
K1100-SJ	φ 100
K1125-SJ	φ 125

Model No. of switch mounting bracket for A1 series

Model No. for SR type switch	Applicable bore (mm)
A1125-SJ	φ 125
A1140-SJ	φ 140
A1160-SJ	φ 160

(Note) Switch is not available for φ 180 to φ 250 of the A1 series.

 **WARNING**

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

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