

Series **AL/ALX**

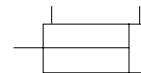
Air Cylinder

Bore size: $\varnothing$ 125, $\varnothing$ 140, $\varnothing$ 160, $\varnothing$ 180, $\varnothing$ 200, $\varnothing$ 250, $\varnothing$ 360

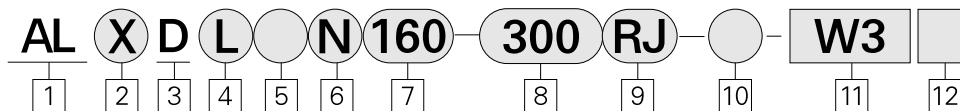


- MAKE A WIDE STROKE AND BORE
- LONG LIFE AND HIGH SPEED OPERATION POSSIBLE
- BUILT-IN AIR CUSHION

Symbol



How to Order



1 Air Cylinder

2 Model Series

Blank : $\varnothing$ 125, $\varnothing$ 140, $\varnothing$ 160,
 $\varnothing$ 180, $\varnothing$ 200, $\varnothing$ 250, $\varnothing$ 300
 X : Nose Separator
 : $\varnothing$ 125, $\varnothing$ 140, $\varnothing$ 160
 : Nose Solid

3 Magnet

Blank : Without Magnet
 D : Built-in Magnet
 (ALX125, 140, 160 only)

4 Mounting

B : Basic
 L : Foot
 F : Rod Side Flange
 G : Head Side Flange
 C : Single Rear Clevis
 D : Double Rear Clevis
 T : Center Trunnion

5 Tube Material

$\varnothing$ 125~ $\varnothing$ 160
 Blank : Aluminum Tube
 F : Iron Tube
 $\varnothing$ 180~ $\varnothing$ 300
 Blank : Iron Tube(Standard)
 * Iron Tube: Not available Auto switch

6 Type

Blank : Lubricated
 N : Non-Lube
 H : Air-Hydro(Except Series ALX)

7 Bore Size

125 : 125mm
 140 : 140mm
 160 : 160mm
 180 : 180mm
 200 : 200mm
 250 : 250mm
 300 : 300mm

8 Stroke (mm)

125 : ~1,000
 140 : ~1,000
 160 : ~1,200
 180~300 : ~2,000

9 Suffix Symbol for Cylinder

Blank : Without Gaiter
 /Both End Air Cushion
 J : Nylon Tarpoulin
 K : Neoprene Cloth
 R : Rod end Air Cusion
 H : Head end Air Cusion
 N : Non-Cushion

10 Series

Blank : Standard Type
 XC16 : Copper-Free

11 Applicable auto switch

Blank : None
 W3 : Reed Switch Type
 (AC110V, 220V, DC24V)

Standard Auto Switch Lead wire Length is 0.5m

12 Number of Switch

Blank : 2 pcs.
 S : 1 pc.
 3 : 3 pcs.
 n : n pcs.

Specification

Type	Lube, Non-Lube	Air-Hydro
Fluid	Air	L.P.Oil
Proof Pressure	16kgf/cm ² {1600kpa}{15.7MPa}	
Max.Operating Pressure	9.9kgf/cm ² {900kPa}{0.97MPa}	
Min.Operating Pressure	0.5kgf/cm ² (0.05MPa)	0.6kgf/cm ² (0.06MPa)
Ambient and Fluid Temperature	5~60℃	
Piston Speed	50~500mm/s	0.5~200mm/s
Cushion	With Cushion	Non Cushion
Stroke Tolerance (mm)	~250 ^{st+1.0} ₀ , 251~1000 ^{st+1.4} ₀ , 1001~1500 ^{st+1.8} ₀	
Mounting	Basic, Foot, Front flange, Rear flange, Single clevis, Double clevis, Center trunnion	

Parts No. of Mounting Bracket

Bore size	ø 125	ø 140	ø 160	ø 180	ø 200	ø 250	ø 300
Foot	TCS1L125	TCS1L140	TCS1L160	TCS1L180	TCS1L200	TCS1L250	TCS1L300
Flange	TCS1F125	TCS1F140	TCS1F160	TCS1F180	TCS1F200	TCS1F250	TCS1F300
Single Clevis	TCS1C125	TCS1C140	TCS1C160	TCS1C180	TCS1C200	TCS1C250	TCS1C300
Double Clevis	TCS1D125	TCS1D140	TCS1D160	TCS1D180	TCS1D200	TCS1D250	TCS1D300

Model

Model	Type	Action	Seal	Bore size(mm)
AL	Lubricated	Double	O-ring	125, 140, 160, 180
ALN	Non-lube type	Double	Special	200, 250, 300
ALH	Air-hydro type	Double	Special	125, 140, 160

※ Series ALX : ø 125, ø 140, ø 160

Weight/Aluminum Tube : Lubricated(Non-Lube, Air-Hydro) (kgf)

Bore Size(mm)		125	140	160
Standard Weight	Basic Type	14.85(13.73)	17.98(16.57)	24.77(23.03)
	Foot Type	16.48(15.36)	20.50(19.09)	27.57(25.83)
	Rod-Side Flange Type	17.53(16.41)	22.98(21.57)	31.16(29.42)
	Head-Side Flange Type	17.53(16.41)	22.98(21.57)	31.16(29.42)
	Single Rear Clevis Type	17.92(16.80)	22.27(20.86)	30.26(28.52)
	Double Rear Clevis Type(With pin)	18.38(17.26)	23.02(21.61)	31.11(29.37)
	Trunnion Type	18.98(17.86)	23.71(22.30)	32.17(30.43)
Extra Weight per 100 Strokes		1.77	1.96	2.39
Accessory Fittings	Single Knuckle	0.91	1.16	1.56
	Double Knuckle(With pin)	1.37	1.81	2.48

※ (): In parentheses are for Non-Lubetype, Air-Hydro Type

Calculation Example : ALL 160-500

- Basic Weight ...27.57 (Foot type, ø 160)
- Additional Weight ...2.39/100 Stroke
- Cylinder Stroke...500stroke
 $27.57 + 2.39 \times 500/100 = 39.52\text{kgf}$

Weight/Iron Tube (kgf)								
Bore size(mm)		125	140	160	180	200	250	300
Standard Weight	Basic Type	15.20	18.38	25.24	34.16	42.66	79.78	115.94
	Foot Type	16.83	20.90	28.04	38.36	47.54	89.28	133.22
	Rod-side Flange Type	17.88	23.38	31.63	43.99	54.57	101.62	146.14
	Head-side Flange Type	17.88	23.38	31.63	43.99	54.57	101.62	146.14
	Single Rear Clevis Type	18.27	22.67	30.73	42.55	52.56	98.17	149.22
	Double rear Clevis Type(With pin)	18.73	23.42	31.58	44.23	54.59	101.36	154.96
	Trunnion Type	19.33	24.11	32.64	44.78	56.65	107.62	156.37
Extra Weight per 100 Strokes		2.66	3.01	3.58	4.95	5.75	9.08	12.15
Accessory Fittings	Single Knuckle	0.91	1.16	1.56	3.07	2.90	5.38	10.82
	Double Knuckle(With pin)	1.37	1.81	2.48	7.47	4.59	9.22	17.17

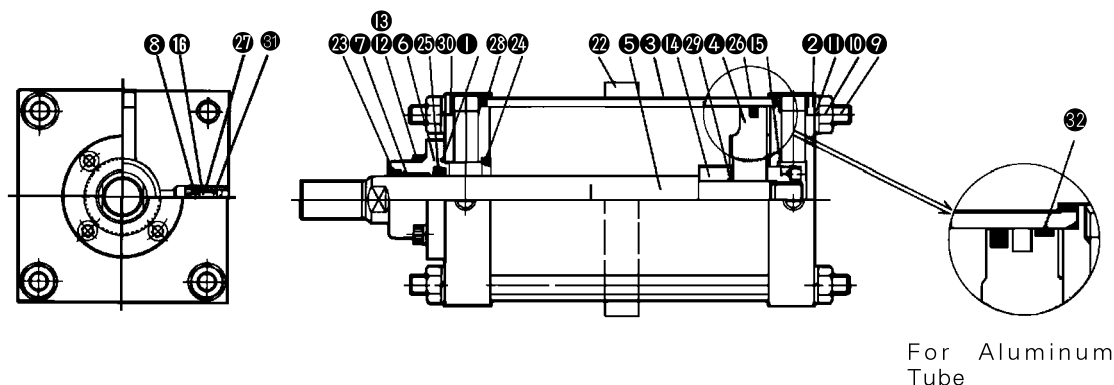
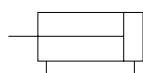
Gaiter/Material		
Symbol	Material	Max. ambient temperature
J	Nylon tarpaulin	60℃
K	Neoprene cloth	※110℃

※ For Rod Boot

Cautions

- (1)When connecting piping,securely flush the piping to eliminate dust and chips from the cylinder
- (2)During operation, load should be applied constantly to the piston rod in the axial direction.
- (3)Don't scratch and hit the sliding section of the piston rod. The damage causes packing damage to induce leakage.
- (4)Use turbine oil No. 1(ISO VG32) for lubrication. Avoid machine oil and spindle oil.

Construction/Parts List (AL)



Main Parts

No.	Description	Material	Note
1	Rod Cover	#Rolled Steel	≡Black paint
2	Head Cover	#Rolled Steel	≡Black paint
3	Cylinder	Aluminum Alloy	Hard alumite
	Tube	Carbon Steel	Hard chrome plated
4	Piston	Cast Iron	
5	Piston Rod	Carbon Steel	Hard chrome plated
6	Nose	Cast Iron	
7	Bush	Lead Bronze Casting	
8	Valve Guide	Brass	
9	Tie Rod	Carbon Steel	Uni-chromate
10	Tie Rod Nut		
11	Spring Washer	Steel Wire	Black zinc chromate
12	Nose Cap Screw	Chrome-Moly bdeum Steel	Black zinc chromate
13	Spring Washer	Steel Wire	Black zinc chromate
14	Cushion Piece A	Rolled Steel	Kani-zen plated
15	Cushion Piece B	Rolled Steel	Kani-zen plated
16	Cushion Needle	Rolled Steel	Kani-zen plated
17	※ Space A	Rolled Steel	Zinc chromate
18	※ Space B	Rolled Steel	Zinc chromate
19	※Air Exhaust Valve A	Rolled Steel	Zinc chromate
20	※Air Exhaust Valve B	Chrome-molybdenum Steel	
21	※Check Ball	Chrome Bearing Steel	
22	Tie rod Reinforcing Ring	Rolled Steel	Black paint
32	Wear Ring	Resin	

#For AL series : Aluminum alloy
 ≡ For AL seeries : Silver paint
 ※ For Air-hydro type
 ★ Available only for long stroke

Seals

No.	Description	Material	Parts No.						
			125	140	160	180	200	250	300

Lube Type

23	Wiper Ring	NBR	SDR-36	SDR-36	SDR-36	SDR-36	SDR-36	SDR-36	SDR-36
24	Cushion Seal		DSM-50	DSM-50	DSM-50	DSM-60	SMS-36	DSM-75	DSM-85
25	Rod Seal		PNY-36	PNY-36	PNY-40	PNY-45	PNY-50	PNY-60	PNY-70
26	Piston Seal		P115	P130	P150	P165	P185	P235	P238
27	Cushion Valve Seal		P7	P7	P7	P7	P7	P7	P7
28	Tube Gasket		C120	C130	C155	C175	C195	CS160-168-64	CS160-168
29	Piston Gasket		G25	G25	G25	G35	G35	G45	G45
30	Nose Gasket		G55	G55	G55	G65	G65	G80	G90
31	Guide Gasket		CA60-1670	CA60-1670	CA60-1670	CA60-1670	CA60-1670	CA60-1670	CA60-1670

Non-Lube Type

Same as lube type except 25 and 26

25	Description	NBR	PNY-36	PNY-36	PNY-40	PNY-45	PNY-50	PNY-60	PNY-70
26	Piston Seal		NLP-125A	NLP-140A	NLP-160A	NLP-180A	NLP-200A	NLP-250A	NLP-300A

Air-Hydro Type

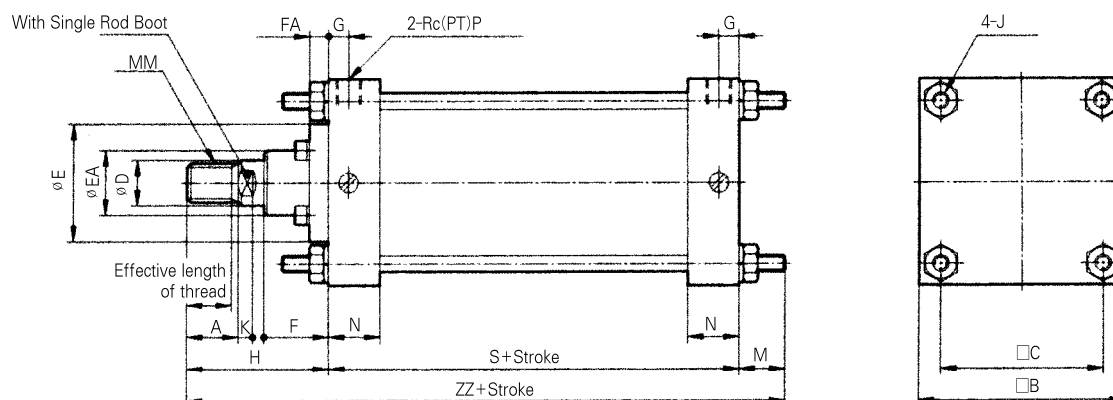
Same as lube type except 25 and 26

No.	Description	Material	Parts. No.		
			125	140	160
25	Rod Seal	NBR	SKY-36	SKY-36	SKY-40
26	Piston Seal		RPS-125	RPS-140	RPS-160

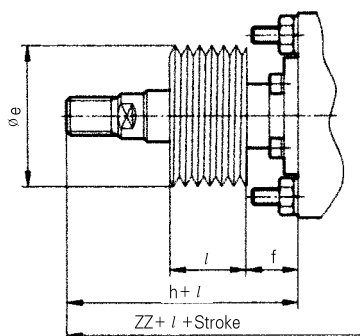
Series AL/ALX

Basic Type/(ALB)

Lube Type(ALB), Non-Lube Type(ALBN), Air-Hydro Type(ALBH)



With Single Rod Boot



(mm)

Type	Bore size (mm)	Stroke range (mm)	Effective length thread	A	B	C	øD	øE	øEA	F	FA	G	J	K	M	MM	N	P	S
Lube	125	~1,000	47	50	145	115	36	90	59	43	14	16	M14×1.5	15	27	M30×1.5	35	1/2	98
Non-Lube	140	~1,000	47	50	161	128	36	90	59	43	14	16	M14×1.5	15	27	M30×1.5	35	1/2	98
Air-Hydro	160	~1,200	53	56	182	144	40	90	59	43	14	18.5	M16×1.5	17	30.5	M36×1.5	39	3/4	106
Lube Non-Lube	180	~1,200	60	63	204	162	45	115	70	48	17	18.5	M18×1.5	20	35	M40×1.5	39	3/4	111
	200	~1,200	60	63	226	182	50	115	74	48	17	18.5	M20×1.5	20	35	M45×1.5	39	3/4	111
	250	~1,200	67	71	277	225	60	140	86	60	20	23	M24×1.5	25	41.5	M56×2	49	1	141
	300	~1,200	76	80	330	270	70	140	96	60	20	23	M30×1.5	30	51.5	M64×2	49	1	146

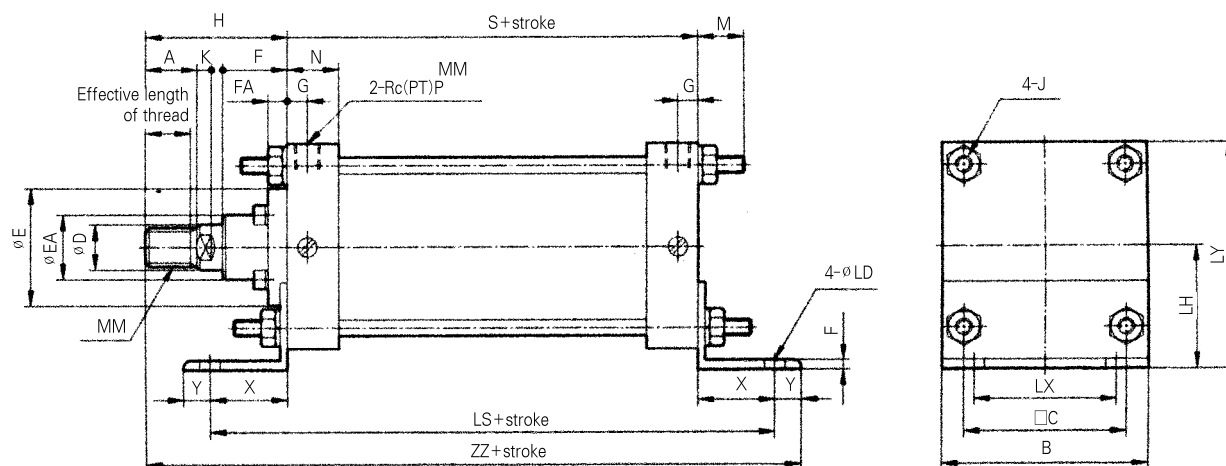
Type	Bore size (mm)	Without Rod Boot		With Rod Boot				With Access Flange	
		H	ZZ	ø e	f	h	l		ZZ ₁
Lube	125	110	235	★75	40	133	0.2Stroke	258	31
Non-Llube	140	110	235	★75	40	133		258	31
Air-Hydro	160	120	256.5	★75	40	141		277.5	36
Lube	180	135	281	85	45	153	0.2Stroke	299	41
	200	135	281	90	45	153		299	46
Non-lube	250	160	342.5	105	55	176	0.17Stroke	358.5	56
	300	175	372.5	115	55	190		387.5	65

※ Minimum stroke sith Rod Boot:30mm or more

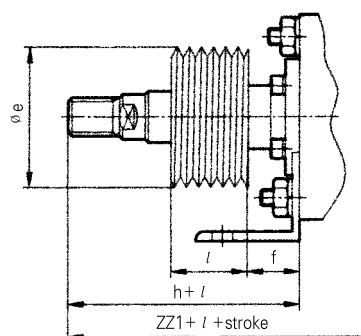
★ Rod Boot material: neoprene cloth-80mm or more

Foot Type/(ALL)

Lube Type(ALL), Non-Lube Type(ALLN), Air-Hydro Type(ALLH)



With Single Rod Boot



(mm)

Type	Bore size (mm)	Stroke range (mm)	Effective length thread	A	B	C	øD	øE	øEA	F	FA	G	J	K	MM	N	P	S
Lube	125	~1,400	47	50	145	115	36	90	59	43	14	16	M14×1.5	15	M30×1.5	35	1/2	98
Non-Lube	140	~1,400	47	50	161	128	36	90	59	43	14	16	M14×1.5	15	M30×1.5	35	1/2	98
Air-Hydro	160	~1,400	53	56	182	144	40	90	59	43	14	18.5	M16×1.5	17	M36×1.5	39	3/4	106
Lube	180	~1,800	60	63	204	162	45	115	70	48	17	18.5	M18×1.5	20	M40×1.5	39	3/4	111
Non-Lube	200	~1,800	60	63	226	182	50	115	74	48	17	18.5	M20×1.5	20	M45×1.5	39	3/4	111
	250	~2,000	67	71	277	225	60	140	86	60	20	23	M24×1.5	25	M56×2	49	1	141
	300	~2,000	76	80	330	270	70	140	96	60	20	23	M30×1.5	30	M64×2	49	1	146

Type	Bore size (mm)	X	Y	øLD	LH	LS	LT	LX	LY	Without Rod Boot		With Rod Boot					
										H	ZZ	øe	f	h	l	ZZ ₁	
Lube	125	45	20	19	85	188	8	100	157.5	110	273	★75	40	133		296	
Non-Lube	140	45	30	19	100	188	9	112	180.5	110	283	★75	40	133	0.2Stroke	306	
Air-Hydro	160	50	25	19	106	206	9	118	197	120	301	★75	40	141		322	
Lube	180	60	30	24	125	231	10	132	227	135	336	85	45	153	0.2Stroke	354	
Non-Lube	200	60	30	24	132	231	10	150	245	135	336	90	45	153		354	
	250	80	40	29	160	301	12	180	298.5	160	421	105	55	176	0.17Stroke	437	
	300	90	40	33	200	326	15	212	365	175	451	115	55	190		466	

※ Minimum stroke with Rod Boot: 30mm or more

★ Rod Boot material: neoprene cloth-80mm

ACP

AX

AS

AM

AM2

AL
ALX

ARD

AJ

AQ

AG

AGX
GX

ADM

ADR

AMR

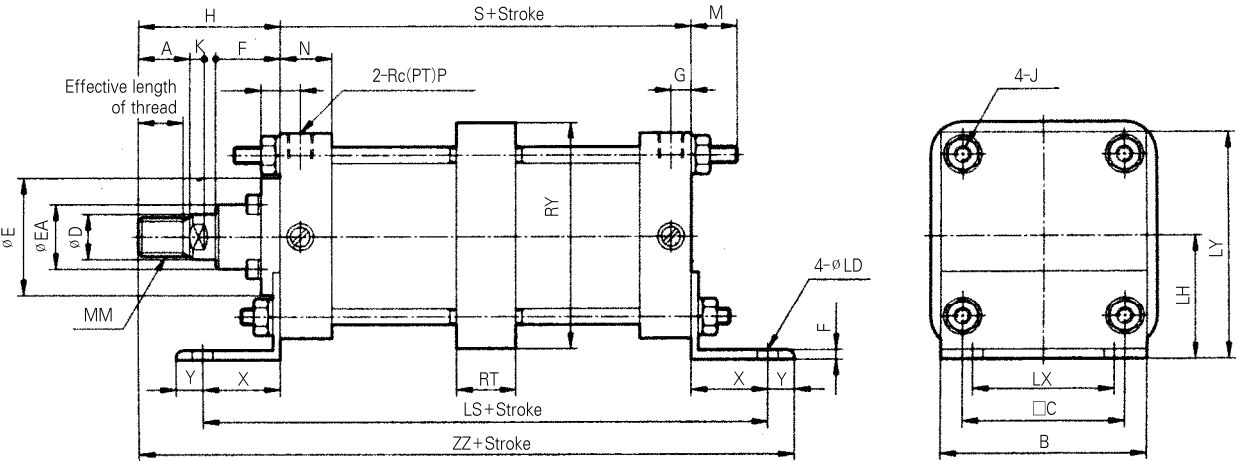
AST

NLCD

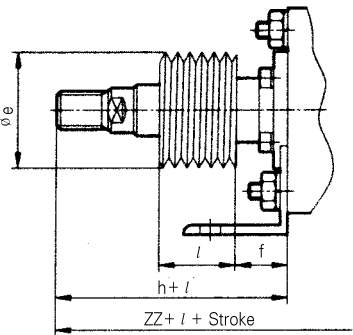
Series AL/ALX

Long Stroke:Front Flange Type(ALL)

Lube(ALF), NON-Lube(ALFN)Air-Hydro(ALFH)



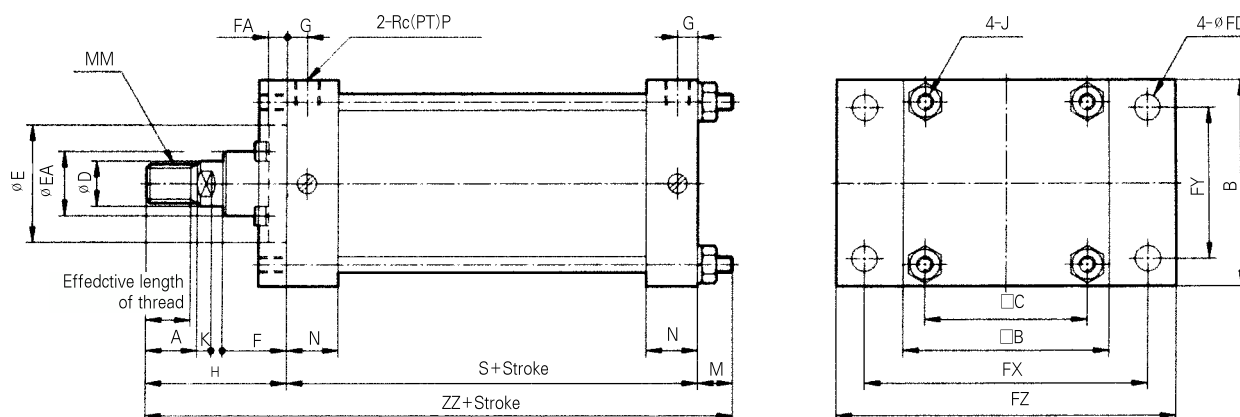
With Single Rod Boot



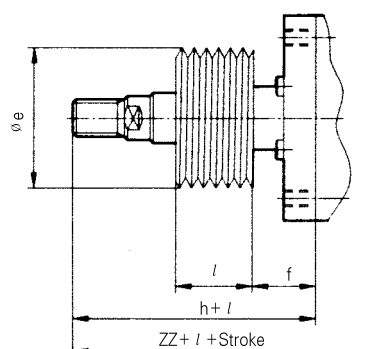
(mm)																		
Type	Bore size (mm)	Stroke range	Effective length thread	A	B	□C	∅ D	∅ E	∅ EA	F	FA	G	J	K	MM	N	P	S
Lube	125	1,401~1,600	47	50	145	115	36	90	59	43	14	16	M14×1.5	15	M30×1.5	35	1/2	98
Non-Lube	140	1,401~1,600	47	50	161	128	36	90	59	43	14	16	M14×1.5	15	M30×1.5	35	1/2	98
Air-Hydro	160	1,401~1,600	53	56	182	144	40	90	59	43	14	18.5	M16×1.5	17	M36×1.5	39	3/4	106
Lube Non-Lube	180	1,801~2,000	60	63	204	162	45	115	70	48	17	18.5	M18×1.5	20	M40×1.5	39	3/4	111
	200	1,801~2,000	60	63	226	182	50	115	74	48	17	18.5	M20×1.5	20	M45×1.5	39	3/4	111
	250	2,001~2,400	67	71	277	225	60	140	86	60	20	23	M24×1.5	25	M56×2	49	1	141
	300	2,001~2,400	76	80	330	270	70	140	96	60	20	23	M30×1.5	30	M64×2	49	1	146
Type	Bore size (mm)	Stroke range	Y	∅ LD	LH	LS	LT	LX	LY	RT	RY	Without Rod Boot		With Rod Boot				
												H	ZZ	∅ e	f	h	l	ZZ ₁
Lube	125	45	20	19	85	188	8	100	157.5	50	164	110	273	★75	40	133	0.2Stroke	296
Non-Lube	140	45	30	19	100	188	9	112	180.5	55	184	110	283	★75	40	133		306
Air-Hydro	160	50	25	19	106	206	9	118	197	60	204	120	301	★75	40	141		322
Lube Non-Lube	180	60	30	24	125	231	10	132	227	59	228	135	336	85	45	153	0.2Stroke	354
	200	60	30	24	132	231	10	150	245	59	257	135	336	90	45	153		354
	250	80	40	29	160	301	12	180	298.5	69	325	160	421	105	55	176	0.17Stroke	437
	300	90	40	33	200	326	15	212	365	79	390	175	451	115	55	190		466

★ Rod Boot material: neoprene cloth-80mm

Lube Type(ALF), Non-Lube Type(ALFN), Air-Hydro Type(ALFH)



With Single Rod Boot



(mm)

Type	Bore size (mm)	※Stroke range	Effective length thread	A	B	□B	□C	øD	øE	øEA	F	FA	G	J	K	M	MM	N	P	S
Lube	125	~1,400	47	50	145	145	115	36	90	59	43	14	16	M14×1.5	15	30	M30×1.5	35	1/2	98
Non-Lube	140	~1,400	47	50	160	161	128	36	90	59	43	14	16	M14×1.5	15	24	M30×1.5	35	1/2	98
AirHydro	160	~1,400	53	56	180	182	144	40	90	59	43	14	18.5	M16×1.5	17	26	M36×1.5	39	3/4	106
	180	~1,800	60	63	200	204	162	45	115	70	48	17	18.5	M18×1.5	20	31	M40×1.5	39	3/4	111
Lube	200	~1,800	60	63	225	226	182	50	115	74	48	17	18.5	M20×1.5	20	31	M45×1.5	39	3/4	111
Non-Lube	250	~2,000	67	71	275	277	225	60	140	86	60	20	23	M24×1.5	25	35	M56×2	49	1	141
	300	~2,000	76	80	330	330	270	70	140	96	60	20	23	M30×1.5	30	48	M64×2	49	1	146

Type	Bore size (mm)	ø FD	FT	FX	FY	FZ	Without Rod Boot		With Rod Boot					
							H	ZZ	ø e	f	h	l	ZZ	
Lube	125	19	14	190	100	230	110	238	★75	40	133	0.2Stroke	261	
Non-Lube	140	19	20	212	112	255	110	232	★75	40	133		255	
Air-Hydro	160	19	20	236	118	275	120	252	★75	40	141		273	
Lube	180	24	25	265	132	320	135	277	85	45	153	0.2Stroke	295	
	200	24	25	280	150	335	135	277	90	45	153		295	
Non-Lube	250	29	30	355	180	420	160	336	105	55	176	0.17Stroke	352	
	300	33	30	400	212	475	175	369	115	55	190		384	

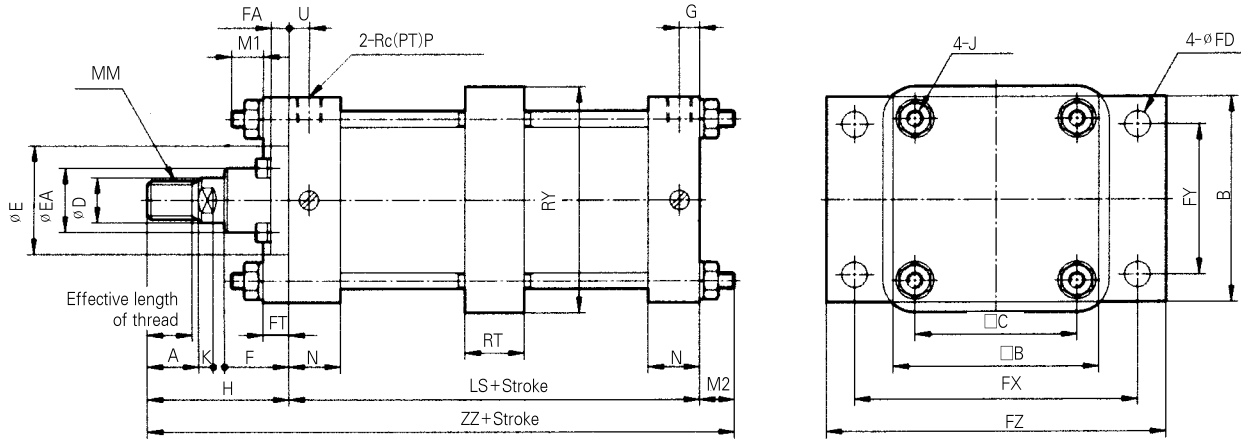
※ Minimum stroke with Rod Boot 30mm or more

★ Rod → Boot material : neoprene cloth-80mm

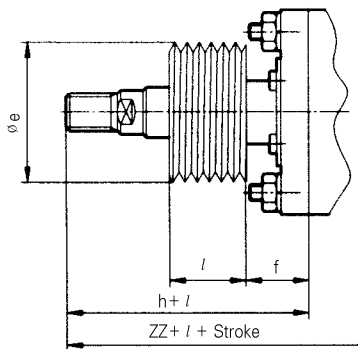
Series AL/ALX

Long Stroke : Foot Flange Type(ALF)

Lube Type(ALF), Non-Lube Type(ALFN), Air-Hydro Type(ALFH)



With Single Rod Boot



(mm)

Type	Bore-size (mm)	Stroke range (mm)	Effective length thread	A	B	□B	□C	ØD	ØE	ØEA	F	FA	G	J	K	M ₁	M ₂	MM	N	P	S
Lube	125	1,401~1,600	47	50	145	145	115	36	90	59	43	14	16	M14×1.5	15	22	22	M30×1.5	35	1/2	98
Non-Lube	140	1,401~1,600	47	50	160	161	128	36	90	59	43	14	16	M14×1.5	15	19	19	M30×1.5	35	1/2	98
Air-Hydro	160	1,401~1,600	53	56	180	182	144	40	90	59	43	14	18.5	M16×1.5	17	22	22	M36×1.5	39	3/4	106
	180	1,801~2,000	60	63	200	204	162	45	115	70	48	17	18.5	M18×1.5	20	26	26	M40×1.5	39	3/4	111
Lube	200	1,801~2,000	60	63	225	226	182	50	115	74	48	17	18.5	M20×1.5	20	26	26	M45×1.5	39	3/4	111
Non-Lube	250	2,001~2,400	67	71	275	277	225	60	140	86	60	20	23	M24×1.5	25	30	30	M56×2	49	1	141
	300	2,001~2,400	76	80	330	330	270	70	140	96	60	20	23	M30×1.5	30	36	36	M64×2	49	1	146

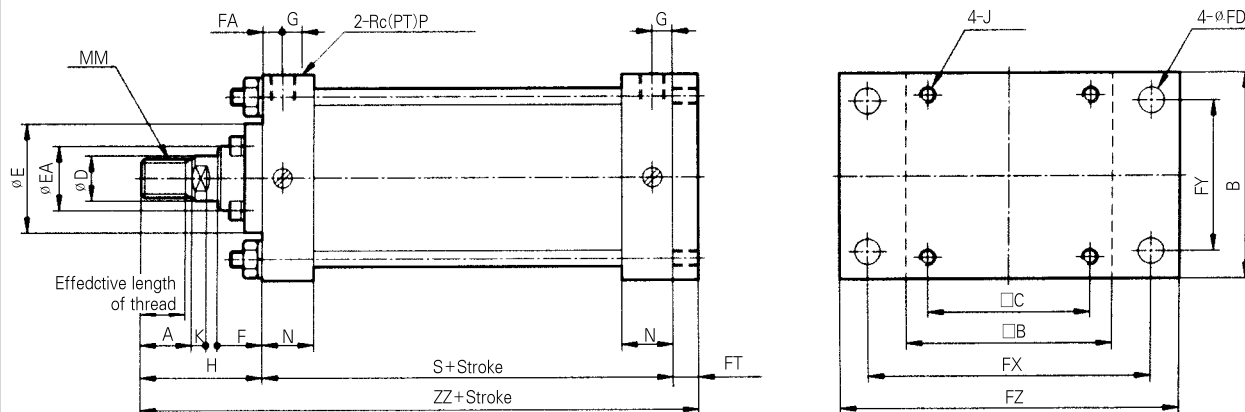
Type	Bore-size (mm)	ØFD	FT	FX	FY	FZ	RT	RY	Without Rod Boot		With Rod Boot				
									H	ZZ	Øe	f	h	l	ZZ ₁
Lube	125	19	14	190	100	230	50	164	110	230	★75	40	133		253
Non-Lube	140	19	20	212	112	255	55	184	110	227	★75	40	133	0.2Stroke	250
Air-Hydro	160	19	20	236	118	275	60	204	120	248	★75	40	141		269
	180	24	25	265	132	320	59	228	135	272	85	45	153	0.2Stroke	290
Lube	200	24	25	280	150	335	59	257	135	272	90	45	153		290
Non-Lube	250	29	30	355	180	420	69	325	160	331	105	55	176	0.17Stroke	347
	300	33	30	400	212	475	79	390	175	357	115	55	190		372

* Rod Boot material :
neoprene cloth-80mm or more

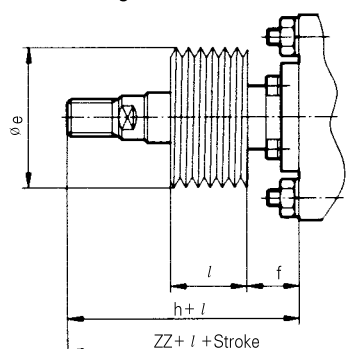
★ Rod Boot material: neoprene cloth-80mm or more

Head Side Flange Type(ALG/ALXG)

Lube Type(ALG), Non-LubeType(ALGN), Air-Hydro Type(ALGH)



With Single Rod Boot



(mm)

Type	Bore size (mm)	Stroke range	Effective length thread	A	B	□B	□C	øD	øE	øEA	F	FA	G	J	K	MM	N	P	S
Lube	125	~1000	47	50	145	145	115	36	90	59	43	14	16	M14×1.5	15	M30×1.5	35	1/2	98
Non-Lube	140	~1000	47	50	160	161	128	36	90	59	43	14	16	M14×1.5	15	M30×1.5	35	1/2	98
Air-Hydro	160	~1200	53	56	180	182	144	40	90	59	43	14	18.5	M16×1.5	17	M36×1.5	39	3/4	106
	180	~1200	60	63	200	204	162	45	115	70	48	17	18.5	M18×1.5	20	M40×1.5	39	3/4	111
Lube	200	~1200	60	63	225	226	182	50	115	74	48	17	18.5	M20×1.5	20	M45×1.5	39	3/4	111
Non-Lube	250	~1200	67	71	275	277	225	60	140	86	60	20	23	M24×1.5	25	M56×2	49	1	141
	300	~1200	76	80	330	330	270	70	140	96	60	20	23	M30×1.5	30	M64×2	49	1	146

Type	Bore size (mm)	øFD	FT	FX	FY	FZ	Without Rod Boot		With Rod Boot				
							H	ZZ	øe	f	h	l	ZZ ₁
Lube	125	19	14	190	100	230	110	222	★75	40	133		245
Non-Lube	140	19	20	212	112	255	110	228	★75	40	133	0.2Stroke	251
Air-Hydro	160	19	20	236	118	275	120	246	★75	40	141		267
	180	24	25	265	132	320	135	271	85	45	153		289
Lube	200	24	25	280	150	335	135	271	90	45	153	0.2Stroke	289
Non-Lube	250	29	30	355	180	420	160	331	105	55	176		347
	300	33	30	400	212	475	175	351	115	55	190	0.17Stroke	366

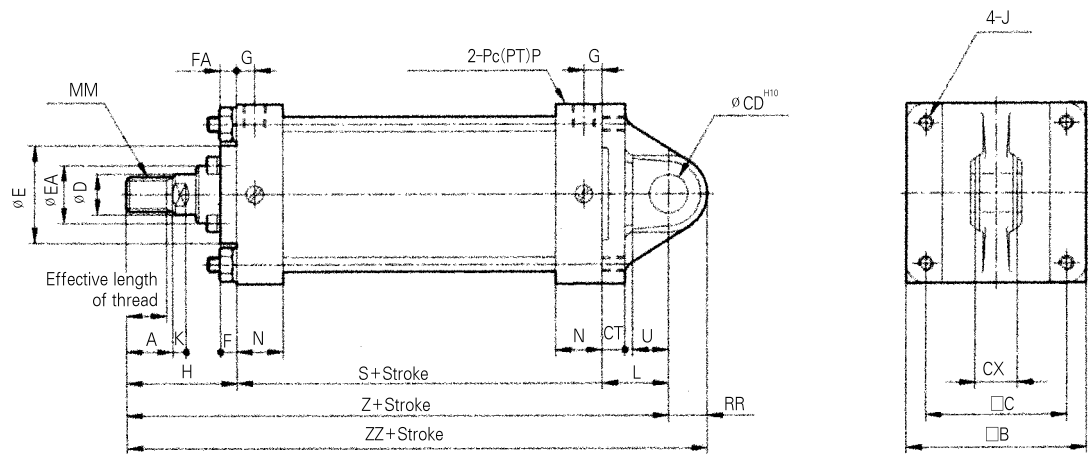
* Rod Boot material :
neoprene cloth-80mm or more

★ Rod Boot Material: neoprene cloth-80mm or more

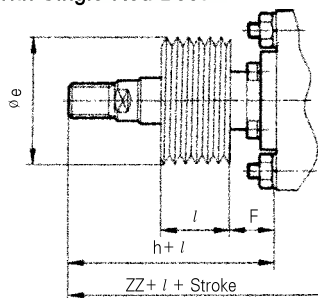
Series AL/ALX

Center Trunnion Type/(ALC)

Lube Type(ALC), Non-Lube Type(ALCN) Air-Hydro Type(ALCH)



With Single Rod Boot



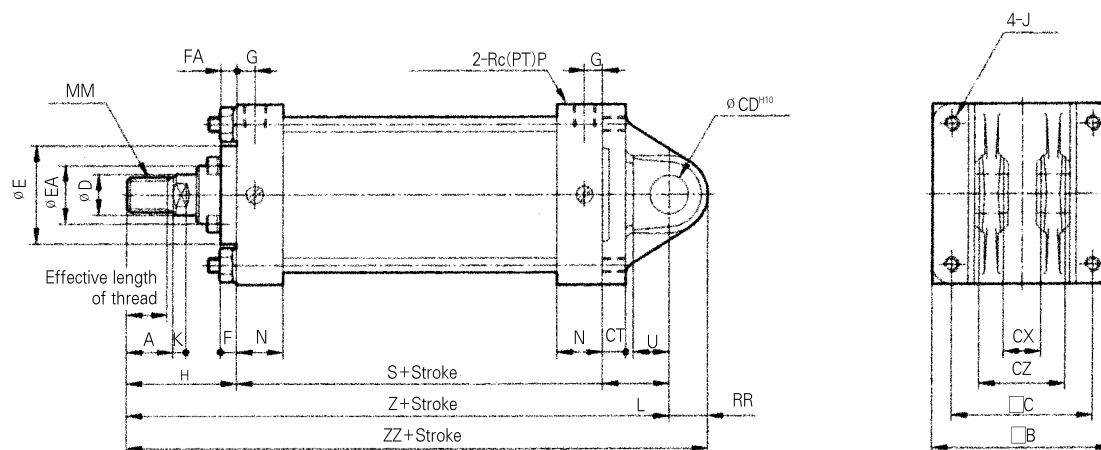
(mm)																				
Type	Bore size (mm)	*Stroke range (mm)	Effective length thread	A	□B	□C	∅D	∅E	∅EA	F	FA	G	J	K	L	MM	N	P	RR	S
Lube	125	~1,000	47	50	145	115	36	90	59	43	14	16	M14×1.5	15	65	M30×1.5	35	1/2	29	98
Non-Lube	140	~1,000	47	50	161	128	36	90	59	43	14	16	M14×1.5	15	75	M30×1.5	35	1/2	32	98
Air-Hydro	160	~1,200	53	56	182	144	40	90	59	43	14	18.5	M16×1.5	17	80	M36×1.5	39	3/4	36	106
Lube Non-Lube	180	~1,200	60	63	204	162	45	115	70	48	17	18.5	M18×1.5	20	90	M40×1.5	39	3/4	44	111
	200	~1,200	60	63	226	182	50	115	74	48	17	18.5	M20×1.5	20	90	M45×1.5	39	3/4	44	111
	250	~1,200	67	71	277	225	60	140	86	60	20	23	M24×1.5	25	110	M56×2	49	1	55	141
	300	~1,200	76	80	330	270	70	140	96	60	20	23	M30×1.5	30	130	M64×2	49	1	68	146

Type	Bore size (mm)	U	ϕCD_{H10}	CT	CX	Without Rod Boot			With Rod Boot						
						H	Z	ZZ	ϕe	f	h	l		Z ₁	ZZ ₁
Lube	125	35	25 ^{+0.084 0}	17	32 ^{-0.1 -0.3}	110	273	302	★75	40	133	0.2Stroke		296	325
Non-Lube	140	40	28 ^{+0.084 0}	17	36 ^{-0.1 -0.3}	110	283	315	★75	40	133			306	338
Air-Hydro	160	45	32 ^{+0.100 0}	20	40 ^{-0.1 -0.3}	120	306	342	★75	40	141			327	363
Lube Non-Lube	180	50	40 ^{+0.100 0}	23	50 ^{-0.1 -0.3}	135	336	380	85	45	153	0.2Stroke		354	398
	200	50	40 ^{+0.100 0}	25	50 ^{-0.1 -0.3}	135	336	380	90	45	153			354	398
	250	65	50 ^{+0.100 0}	30	63 ^{-0.1 -0.3}	160	411	466	105	55	176	0.17Stroke		427	482
	300	80	63 ^{+0.120 0}	37	80 ^{-0.1 -0.3}	175	451	519	115	55	190			466	534

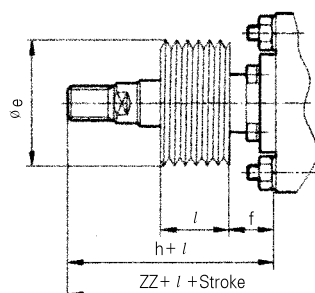
※ Mlimum stroke with Rod Boot:30mm
★ Rod Boot Material:neoprene cloth-80mm or more

Double Clevis Type/(ALD)

Lube Type(ALD), Non-Lube Type(ALDN), Air-Hydro Type(ALDH)



With Single Rod Boot



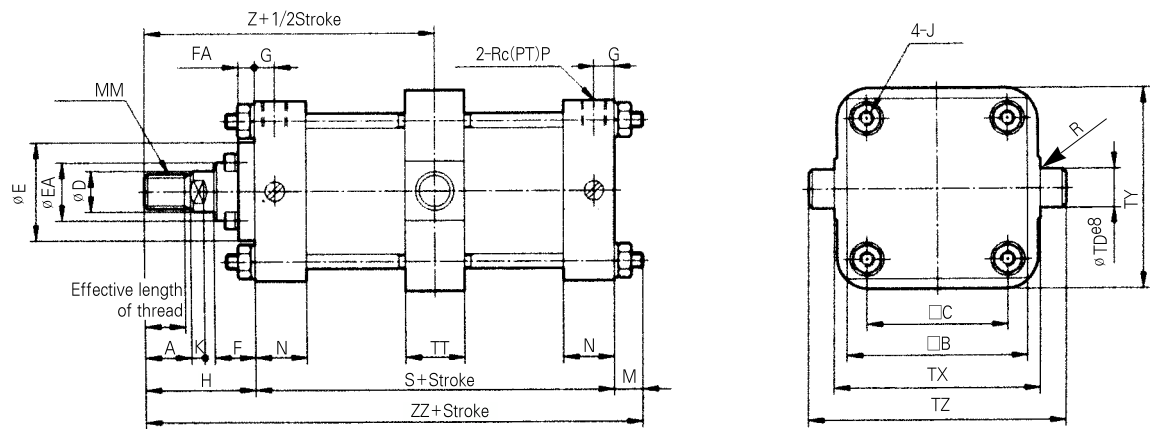
(mm)

Type	Bore size (mm)	Stroke range (mm)	Effective length of thread	A	B	C	ØD	ØE	ØEA	F	FA	G	J	K	L	MM	N	P	RR	S
Lube	125	~1,000	47	50	145	115	36	90	59	43	14	16	M14×1.5	15	65	M30×1.5	35	1/2	29	98
Non-lube	140	~1,000	47	50	161	128	36	90	59	43	14	16	M14×1.5	15	75	M30×1.5	35	1/2	32	98
Air-hydro	160	~1,200	53	56	182	144	40	90	59	43	14	18.5	M16×1.5	17	80	M36×1.5	39	3/4	36	106
	180	~1,200	60	63	204	162	45	115	70	48	17	18.5	M18×1.5	20	90	M40×1.5	39	3/4	44	111
Lube	200	~1,200	60	63	226	182	50	115	74	48	17	18.5	M20×1.5	20	90	M45×1.5	39	3/4	44	111
Non-lube	250	~1,200	67	71	277	225	60	140	86	60	20	23	M24×1.5	25	110	M56×2	49	1	55	141
	300	~1,200	76	80	330	270	70	140	96	60	20	23	M30×1.5	30	130	M64×2	49	1	68	

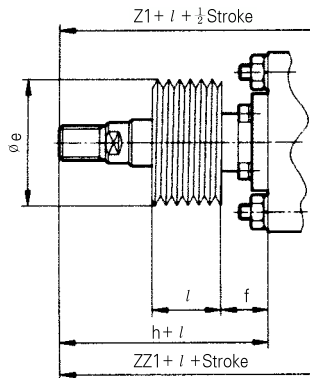
Type	Bore size (mm)	U	ØCDH10	CT	CX	CZ	Without Rod Boot			With Rod Boot						
							H	Z	ZZ	Øe	f	h	l	Z ₁	ZZ ₁	
Lube	125	35	25 ^{+0.084} ₀	17	32 ^{+0.3} _{+0.1}	64 ⁰ _{-0.2}	110	273	302	★75	40	133	0.2 Stroke	296	325	
Non-lube	140	40	28 ^{+0.084} ₀	17	36 ^{+0.3} _{+0.1}	72 ⁰ _{-0.2}	110	283	315	★75	40	133		306	338	
Air-hydro	160	45	32 ^{+0.100} ₀	20	40 ^{+0.3} _{+0.1}	80 ⁰ _{-0.2}	120	306	342	★75	40	141		327	363	
	180	50	40 ^{+0.100} ₀	23	50 ^{+0.3} _{+0.1}	100 ^{-0.1} _{-0.3}	135	336	380	85	45	153	0.2 Stroke	354	398	
Lube	200	50	40 ^{+0.100} ₀	25	50 ^{+0.3} _{+0.1}	100 ^{-0.1} _{-0.3}	135	336	380	90	45	153		354	398	
Non-lube	250	65	50 ^{+0.100} ₀	30	63 ^{+0.3} _{+0.1}	126 ^{-0.1} _{-0.3}	160	411	466	105	55	176		427	482	
	300	80	63 ^{+0.120} ₀	37	80 ^{+0.3} _{+0.1}	160 ^{-0.1} _{-0.3}	175	451	519	115	55	190	0.17Stroke	466	534	

Center Trunnion Type/(ALT/ALXT)

Lube Type(ALT), Non-Lube Type(ALTN) Air-Hydro Type(ALTH)



With Single Rod Boot



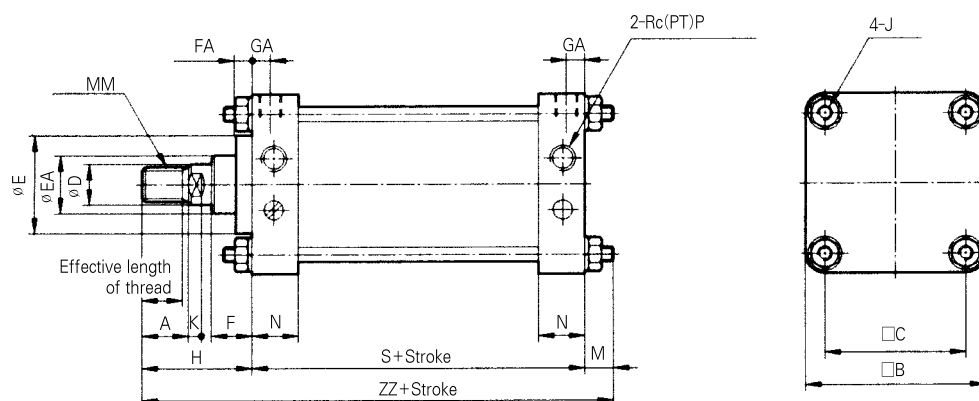
(mm)																				
Type	Bore size (mm)	※Stroke range (mm)	Effective length thread	A	□B	□C	∅D	∅E	∅EA	F	FA	G	J	K	M	MM	N	P	R	S
Lube	125	25~1,000	47	50	145	115	36	90	59	43	14	16	M14×1.5	15	19	M30×1.5	35	1/2	1	98
Non-lube	140	30~1,000	47	50	161	128	36	90	59	43	14	16	M14×1.5	15	19	M30×1.5	35	1/2	1.5	98
Air-hydro	160	35~1,200	53	56	182	144	40	90	59	43	14	18.5	M16×1.5	17	22	M36×1.5	39	3/4	1.5	106
Lube Non-lube	180	30~1,200	60	63	204	162	45	115	70	48	17	18.5	M18×1.5	20	26	M40×1.5	39	3/4	2	111
	200	30~1,200	60	63	226	182	50	115	74	48	17	18.5	M20×1.5	20	26	M45×1.5	39	3/4	2	111
	250	30~1,200	67	71	277	225	60	140	86	60	20	23	M24×1.5	25	30	M56×2	49	1	3	141
	300	35~1,200	76	80	330	270	70	140	96	60	20	23	M30×1.5	30	36	M64×2	49	1	4	146

Type	Bore size (mm)	∅TD _{e8}	TT	TX	TY	TZ	Without Rod Boot			With Rod Boot							
							H	Z	ZZ	∅e	f	h	l	Z ₁	ZZ ₁		
Lube	125	32 _{-0.050 -0.089}	50	170	164	234	110	159	227	★75	40	133	0.2 Stroke	182	250		
Non-lube	140	36 _{-0.050 -0.089}	55	190	184	262	110	159	227	★75	40	133		182	250		
Air-hydro	160	40 _{-0.050 -0.089}	60	212	204	292	120	173	248	★75	40	141		194	269		
Lube Non-lube	180	45 _{-0.050 -0.089}	59	236	228	326	135	190.5	272	85	45	153	0.2	208.5	290		
	200	45 _{-0.050 -0.089}	59	265	257	355	135	190.5	272	90	45	153	Stroke	208.5	290		
	250	56 _{-0.060 -0.106}	69	335	325	447	160	230.5	331	105	55	176	0.17	246.5	347		
	300	67 _{-0.060 -0.106}	79	400	390	534	175	248	357	115	55	190	Stroke	263	372		

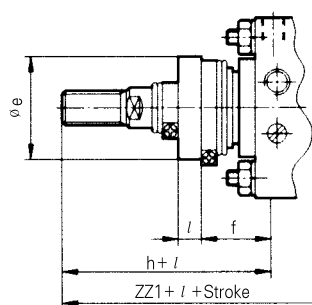
※ Minimum stroke with Rod Boot : 30mm
★ Rod Boot material : neoprene cloth-80mm or more

Basic Type/(ALXB)

Lube Type(ALXB), Non-Lube Type(ALXBN) Air-Hydro Type(ALXBH)



With Single Rod Boot



(mm)

Type	Bore-size	Stroke range	Effective length of thread	A	B	C	ϕD	ϕE	ϕEA	F	FA	GA	GB	J	K	M	MM	N	P	S
Lube Non-lube	125	~1,000	47	50	145	115	36	90	59	43	14	16	40	M14×1.5	15	27	M30×1.5	35	1/2	98
	140	~1,000	47	50	161	128	36	90	59	43	14	16	40	M14×1.5	15	27	M30×1.5	35	1/2	98
	160	~1,200	53	56	182	144	40	90	59	43	14	18.5	40	M16×1.5	17	30.5	M36×1.5	39	3/4	106
	180	~1,200	60	63	204	162	45	115	70	48	17	18.5	-	M18×1.5	20	35	M40×1.5	39	3/4	111
	200	~1,200	60	63	226	182	50	115	74	48	17	18.5	-	M20×1.5	20	35	M45×1.5	39	3/4	111
	250	~1,200	67	71	277	225	60	140	86	60	20	23	-	M24×1.5	25	41.5	M56×2	49	1	141
	300	~1,200	76	80	330	270	70	140	96	60	20	23	-	M30×1.5	30	51.5	M64×2	49	1	146

Type	Bore size	Without Rod Boot		With Rod Boot					With
		H	ZZ	ϕe	f	h	l	ZZ ₁	
Lube Non-Lube	125	110	235	★75	40	133		258	31
	140	110	235	★75	40	133	0.2Stroke	258	31
	160	120	256.5	★75	40	141		277.5	36
	180	135	281	85	45	153	0.2Stroke	299	41
	200	135	281	90	45	153		299	46
	250	160	342.5	105	55	176	0.17Stroke	358.5	56
	300	175	372.5	115	55	190		387.5	65

※ Minum stroke with Rod Boot:30mm

★ Rod Boot material: neoprene cloth-80mm

Series *ALW/ALXW*

Air Cylinder

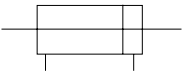
Bore size /ø 125, ø 140, ø 160, ø 180, ø 200, ø 250, ø 300



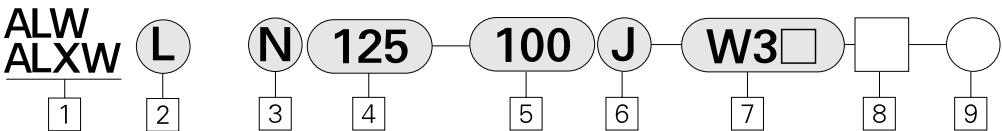
(ALXWB)

- DOUBLE ROD END CYLINDER
- ALUMINUM TUBE : ø 125~ ø 160
- IRON TUBE: ø 180~ ø 300

Symbol



How to Order



- 1 Double Rod End Cylinder
- 2 Mounting
- 3 Type
- 4 Bore Size
- 5 Stroke
- 6 Suffix Symbol for Cylinder
- 7 Applicable Auto Switch
- 8 Number of Switch
- 9 Series

Specifications

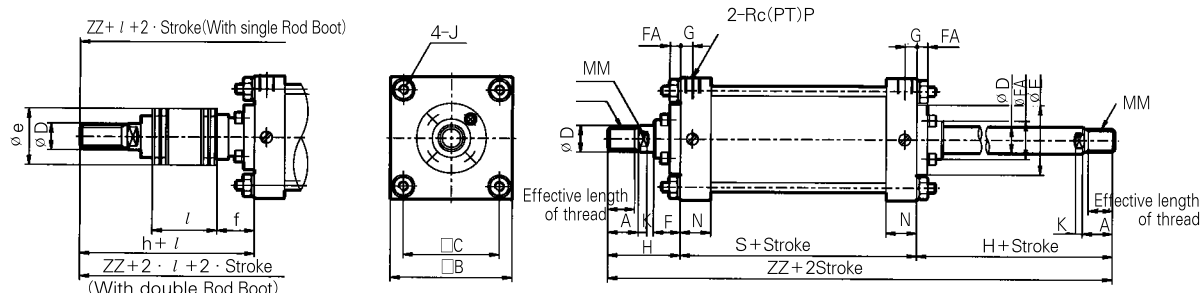
Type	Lube, Non-lube	Air-hydro
Fluid	Air	L.P.Oil
Proof Pressure	16kgf/cm ² {1.6Mpa}	
Max. Operating Pressure	9.9kgf/cm ² {0.9Mpa}	
Min. Operating Pressure	0.5kgf/cm ² {50kPa}	0.6kgf/cm ² {60kPa}
Ambient and fluid temperature	5~60℃	
Piston speed	50~500mm/s	0.5~200mm/s
Cushion	With Air Cushion	Without Cushion
Mounting	Basic, Foot, Flange, Center trunnion	

※ For details, please refer to page A-128

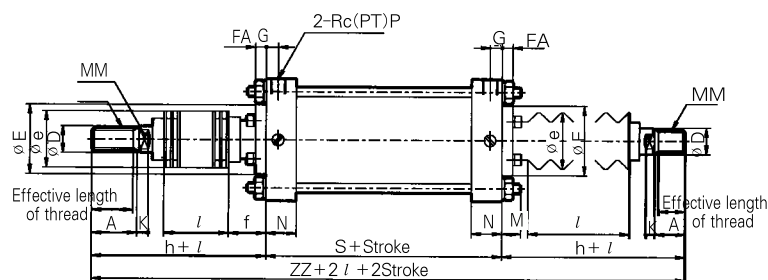
Basic Type (ALWB/ALXWB)

Lube Type (ALWB),
Non-Lube Type (ALWBN)
Air-Hydro Type (ALWBH)

With Single Rod Boot



With Double Rod Boot



(mm)

Type	Bore Size (mm)	Without Rod Boot		With Single Rod Boot							
		H	ZZ	ϕe	f	h	I	ZZ	ZZ		
Lube	125	110	318	★75	40	133	0.2Stroke	341	364		
Non-Lube	140	110	318	★75	40	133		341	364		
Air-Hydro	160	120	346	★75	40	141		367	388		
Lub	180	135	381	85	45	153	0.2Stroke	399	417		
	200	135	381	90	45	153		399	417		
Non-Lube	250	160	461	105	55	176	0.17Stroke	477	493		
	300	175	496	115	55	190		511	526		

Type	Bore Size (mm)	Stroke range		Effective length of thread	A	□ B	□ C	∅ D	∅ E	∅ EA	F	FA	G	J	K	M	MM	N	P	S
		Without	With Rod Boot																	
Lube	125	~1,000	30~1,000	47	50	145	115	36	90	59	43	14	16	M14×1.5	15	27	M30×1.5	25	1/2	98
Non-Lube	140	~1,000	30~1,000	47	50	161	128	36	90	59	43	14	16	M14×1.5	15	27	M30×1.5	35	1/2	98
Air-Hydro	160	~1,200	30~1,200	53	56	182	144	40	90	59	43	14	18.5	M16×1.5	17	30.5	M36×1.5	39	3/4	106
Lub	180	~1,200	30~1,200	60	63	204	162	45	115	70	48	17	18.5	M18×1.5	20	35	M40×1.5	39	3/4	111
	200	~1,200	30~1,200	60	63	226	182	50	115	74	48	17	18.5	M20×1.5	20	35	M45×1.5	39	3/4	111
Non-Lube	250	~1,200	30~1,200	67	71	277	225	60	140	86	60	20	23	M24×1.5	25	41.5	M56×2	49	1	141
	300	~1,200	30~1,200	76	80	330	270	70	140	96	60	20	23	M30×1.5	30	51.5	M64×2	49	1	146

★ Rod Boot material : Neoprene cloth-80mm or more

Series ALW/ALXW

Adjustable Stroke Cylinder/Extension Adjustable Type

AX
ALX

Mounting

Tube material

Type

Bore size

Stroke

Additional symbol

Stroke adjusting symbol

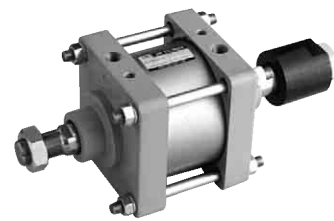
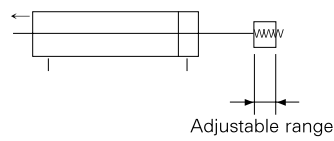
XC8

Additional symbol
●
Blake-With Rod
J-With Rod(Nylon tarpaulin)
K-With Rod(Neoprene cloth)

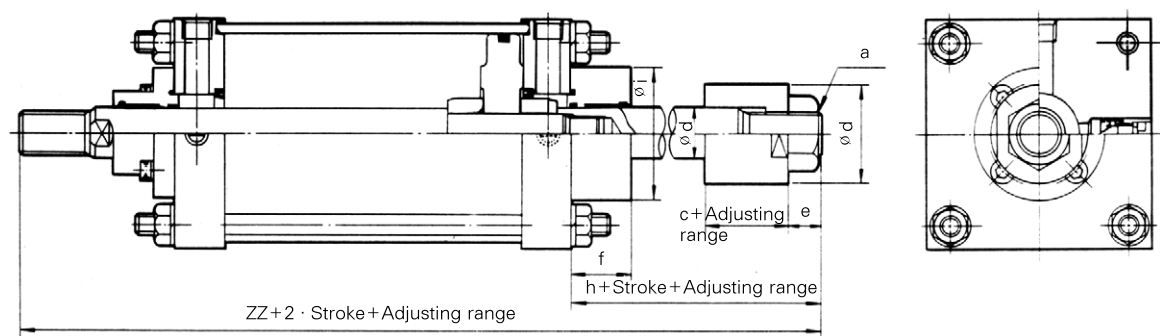
Stroke adjusting symbol
●
A-Stroke adjusting range 0~~25mm
B-Stroke adjusting range 0~~50mm

The stroke at extend of the cylinder can be adjusted by the stopper in the head side from full stroke 0~~25mm or 0~~50mm

Symbol



Construction, Dimensions/Basic Type



Tube Size(mm)	a	ø b	C	ø d	e	f	H	ø l	ZZ
125	M30×1.5	70	43	36	27	40	110	90	318
140	M30×1.5	70	43	36	27	40	110	90	318
160	M30×1.5	70	43	36	27	40	110	90	336
180	M42×1.5	80	50	45	37.5	45	132.5	115	378.5
200	M42×1.5	80	50	45	37.5	45	132.5	115	378.5
250	M56×2	110	70	60	50	55	175	140	476
300	M56×2	110	70	70	50	55	175	140	496

※ Other dimensions are the same as for standard type

Adjustable Stroke Cylinder/Retraction Adjustable Type

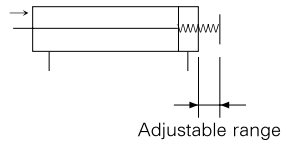
AL
ALX

Mounting Tube material Type Bore size Stroke Additional symbol Stroke adjusting symbol — XC9

Additional symbol
Blank-With gaiter
J-With gaiter(Nylon tarpaulin)
K-With gaiter(Neoprene cloth)

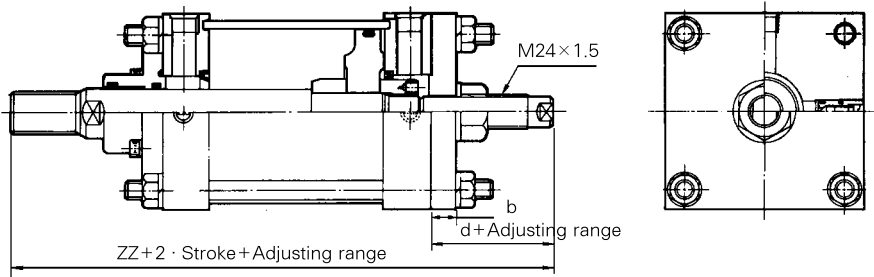
Stroke adjusting symbol
A-Stroke adjusting range 0~25mm
B-Stroke adjusting range 0~50mm

Symbol



The stroke at retraction of the cylinder can be adjusted from 0~25mm or 0~50mm by the adjusting bolt.

Construction, Dimensions/Basic Type



Bore size	b	d	ZZ
125	19	66	274
140	19	66	274
160	22	66	288

※ Other dimensions are the same as for standard type

- ACP
- AX
- AS
- AM
- AM2
- AL
ALX
- ARD
- AJ
- AQ
- AG
- AGX
GX
- ADM
- ADR
- AMR
- AST
- NLCD

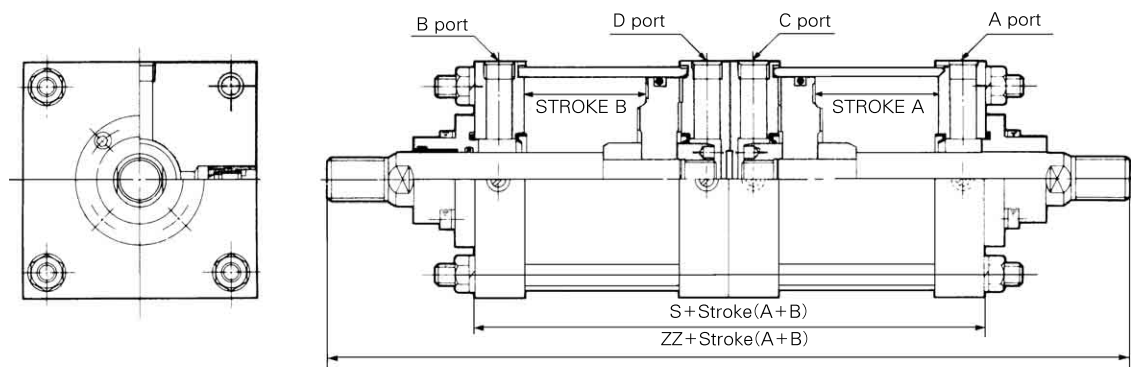
Series ALW/ALXW

Dual Stroke Cylinder/Double Rod Type

AL
ALX **Mounting** **Tube material** **Type** **Bore size** **Stroke A** **Additional symbol** + **Stroke B** **Additional symbol** -XC10

Two cylinders are constructed as one cylinder in a back-to-back configuraton allowing the cylinder stroke to be controlled in three steps.

Construction, Dimensions/Basic Type



Bore size(mm)	S	ZZ
125	196	416
140	196	416
160	212	452
180	212	492
200	222	492
250	283	602
300	292	642

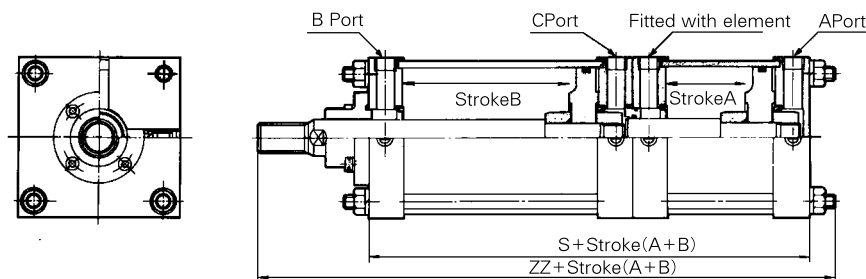
※ Other dimensions are the same as for standard type

Dual Stroke Cylinder/Single Rod Type

AL
ALX **Mounting** **Tube material** **Type** **Bore size** **Stroke A** **Additional symbol** + **Stroke B-A** **Additional symbol** -XC11

Additional Rod Boot
Blank-Without Rod Boot
J-With Rod Boot(Nylon tarpaulin)
K-With Rod Boot(Neoprene cloth)

Construction, Dimensions/Basic Type



Bore size	S	ZZ
125	197	334
140	197	334
160	213	363.5
180	223	393
200	223	393
250	283	484.5
300	293	519.5

※ Other dimensions are the same as for standard type

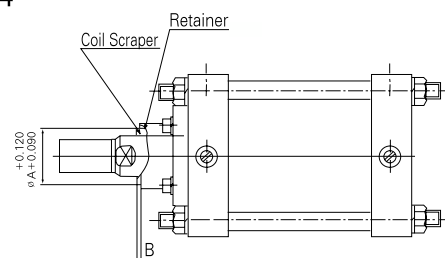
With Coil Scraper

AL (Mounting) (Tube material) (Type) (Bore size) (Stroke) (Suffix) — X104

Suffix

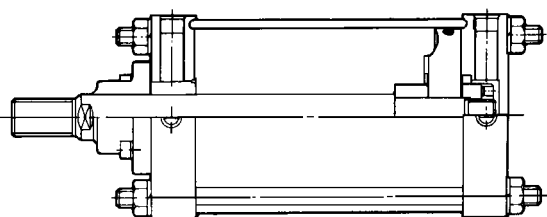
Blank — Standard (Air Cushion)
R — Rod End Air Cushion
H — Head End Air Cushion
N — Non-Cushion

Bore Size	ø A	B	Bore Size	ø A	B
125	ø 50	0.8	200	ø 64	1.8
140	ø 50	0.8	250	ø 78	0.5
160	ø 50	2.8	300	ø 88	5
180	ø 60	1.8			



With Coil Scraper

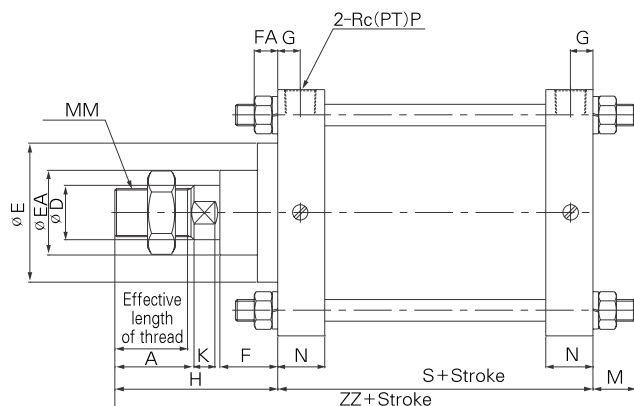
AL (Mounting) (Tube material) (Type) (Bore size) (Stroke) (Additional symbol) — XC4



※ Dimensions are the same as for standard type.

Oversized Rod Cylinder

AL (Mounting) (Type) (Bore size) (Stroke) (Suffix) — XB5



Type	Lube, Non-lube				
Bore size (mm)	125	140	160	180	200
Piston rod diameter (mm)	50	60	60	70	70

Bore Size	A	ø D	ø E	F	K	MM	H	ZZ
125	63	50	115	48	20	M45×1.5	135	260
140	71	60	140	60	25	M56×2	160	285
160	71	60	140	60	25	M56×2	160	296.5
180	80	70	140	60	30	M64×2	175	321
200	80	70	140	60	30	M64×2	175	321

※ Dimensions are the same as for Standard type