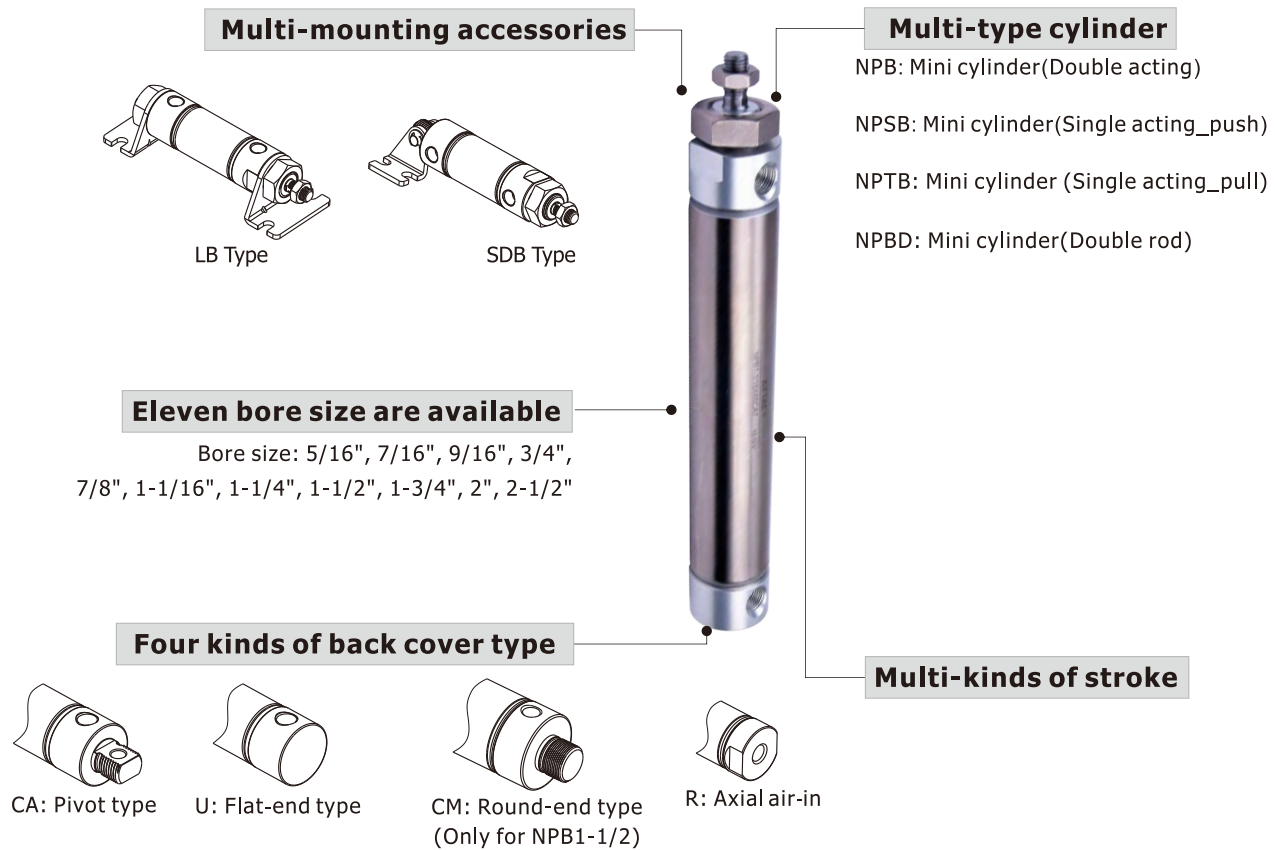


Compendium of NPB Series



Installation and application



1. When load changes in the work, the cylinder with abundant output capacity shall be selected.
2. Relative cylinder with high temperature resistance or corrosion resistance shall be chosen under the condition of high temperature or corrosion.
3. Necessary protection measure shall be taken in the environment with higher humidity, much dust or water drops, oil dust and welding dregs.
4. Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of particles into the cylinder.
5. The medium used by cylinder shall be filtered to 40μm or below.
6. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
7. To avoid side load, otherwise, piston rod will be bent and deformed and damage the thread at the end of the rod.
Single-acting type can not be added in return.
8. If the cylinder is dismantled and stored for a long time, Please to conduct anti-rust treatment to the surface. Anti-dust caps shall be added in air inlet and outlet ports. The front and back cover can not be dismantled, which shall be especially noticed.

Mini cylinder



NPB Series

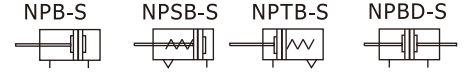
Criteria for selection: Cylinder thrust

Unit: Newton(N)

Bore size(in)	Rod size(in)	Acting type		Pressure area(mm ²)	Operating pressure(psi)						
					15	30	45	60	75	90	105
5/16"	1/8"	Single acting	Push side	50.3	-	3.6	8.6	13.6	18.7	23.7	28.7
			Pull side	42.3	-	2.0	6.2	10.4	14.7	18.9	23.1
		Double acting	Push side	50.3	5.0	10.1	15.1	20.1	25.2	30.2	35.2
			Pull side	42.3	4.2	8.5	12.7	16.9	21.2	25.4	29.6
7/16"	3/16"	Single acting	Push side	96.9	-	10.7	20.4	30.1	39.8	49.4	59.1
			Pull side	79.1	-	7.1	15.0	22.9	30.9	38.8	46.7
		Double acting	Push side	96.9	9.7	19.4	29.1	38.8	48.5	58.1	67.8
			Pull side	79.1	7.9	15.8	23.7	31.6	39.6	47.5	55.4
9/16"	3/16"	Single acting	Push side	160.4	-	17.8	33.8	49.9	65.9	81.9	98
			Pull side	142.6	-	14.2	28.5	42.7	57.0	71.3	85.5
		Double acting	Push side	160.4	16.0	32.1	48.1	64.2	80.2	96.2	112.3
			Pull side	142.6	14.3	28.5	42.8	57.0	71.3	85.6	99.8
3/4"	1/4"	Single acting	Push side	285.0	7.7	36.2	64.7	93.2	121.7	150.2	178.7
			Pull side	253.3	4.5	29.9	55.2	80.5	105.9	131.2	156.5
		Double acting	Push side	285	28.5	57.0	85.5	114.0	142.5	171.0	199.5
			Pull side	253.3	25.3	50.7	76.0	101.3	126.7	152.0	177.3
7/8"	1/4"	Single acting	Push side	388.1	16.3	55.1	93.9	132.7	171.6	210.4	249.2
			Pull side	356.5	13.2	48.8	84.5	120.1	155.8	191.4	227.1
		Double acting	Push side	388.1	38.8	77.6	116.4	155.2	194.1	232.9	271.7
			Pull side	356.5	35.7	71.3	107.0	142.6	178.3	213.9	249.6
1-1/16"	5/16"	Single acting	Push side	572.6	21.5	78.7	136.0	193.2	250.5	307.8	365.0
			Pull side	523.1	16.5	68.8	121.1	173.4	225.8	278.1	330.4
		Double acting	Push side	572.6	57.3	114.5	171.8	229.0	286.3	343.6	400.8
			Pull side	523.1	52.3	104.6	156.9	209.2	261.6	313.9	366.2
1-1/4"	7/16"	Single acting	Push side	791.7	29.1	108.2	187.4	266.6	345.8	424.9	504.1
			Pull side	694.8	19.4	88.9	158.3	227.8	297.3	366.8	436.3
		Double acting	Push side	791.7	79.2	158.3	237.5	316.7	395.9	475.0	554.2
			Pull side	694.8	69.5	139.0	208.4	277.9	347.4	416.9	486.4
1-1/2"	7/16"	Single acting	Push side	1140.1	58.3	172.3	286.3	400.3	514.4	628.4	742.4
			Pull side	1043.2	48.6	152.9	257.3	361.6	465.9	570.2	674.5
		Double acting	Push side	1140.1	114.0	228.0	342.0	456.0	570.1	684.1	798.1
			Pull side	1043.2	104.3	208.6	313.0	417.3	521.6	625.9	730.2
1-3/4"	1/2"	Single acting	Push side	1551.8	72.5	227.7	382.8	538.0	693.2	848.4	1003.6
			Pull side	1425.1	59.8	202.3	344.8	487.3	629.9	772.4	914.9
		Double acting	Push side	1551.8	155.2	310.4	465.5	620.7	775.9	931.1	1086.3
			Pull side	1425.1	142.5	285.0	427.5	570.0	712.6	855.1	997.6
2"	5/8"	Single acting	Push side	2026.8	90.8	293.5	496.1	698.8	901.5	1104.2	1306.9
			Pull side	1828.7	71.0	253.8	436.7	619.6	802.5	985.3	1168.2
		Double acting	Push side	2026.8	202.7	405.4	608.0	810.7	1013.4	1216.1	1418.8
			Pull side	1828.7	182.9	365.7	548.6	731.5	914.4	1097.2	1280.1
2-1/2"	5/8"	Double acting	Push side	3166.9	316.7	633.4	950.1	1266.8	1583.5	1900.1	2216.8
			Pull side	2968.8	296.9	593.8	890.6	1187.5	1484.4	1781.3	2078.2



NPB Series



Ordering code

NPB 1-1/2×4 S □ □ T

① ② ③ ④ ⑤ ⑥ ⑦

① Model	
NPB: Mini cylinder(Double acting)	
NPSB: Mini cylinder(Single acting_push)	
NPTB: Mini cylinder (Single acting_pull)	
NPBD: Mini cylinder(Double rod)	

⑦ Thread type	
No this code [Note]	5/16" 7/16" 9/16"
T: NPT	Others

[Note] Φ5/16"~Φ9/16" thread are #10-32 UNF.

② Bore size	
5/16"	NPB NPSB NPTB
7/16"	NPB NPBD
9/16"	
3/4"	
7/8"	
1-1/16"	NPSB NPTB
1-1/4"	
1-1/2"	
1-3/4"	
2"	NPB NPBD
2-1/2"	

③ Stroke
Refer to stroke table for details

④ Magnet
S: With magnet

⑤ Back cover	
CA: Pivot type	NPB/NPSB/NPTB
U: Flat-end type	
R: Axial air-in	NPB/NPSB
CM: Round-end type	NPB1-1/2
No this code	NPBD

⑥ Mounting type	
Blank: No accessories	NPB/NPSB/NPTB
LB: LB type	
SDB: SDB typecode	
Blank: No accessories	NPBD
LB: LB type	

Stroke

Bore size(in)		Standard stroke (in)	Max.Std stroke (in)	Max. stroke (in)
NPB	5/16"	1/2 1 1-1/2 2 2-1/2 3 4 5 6	6	8
	7/16"	1/2 1 1-1/2 2 2-1/2 3 4 5 6 7 8	8	8
	9/16"	1/2 1 1-1/2 2 2-1/2 3 4 5 6 7 8 9 10 11 12	12	12
	3/4" ~ 2-1/2"	1/2 1 1-1/2 2 2-1/2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	20	32
NPBD	7/16"	1/2 1 1-1/2 2 2-1/2 3 4	4	-
	9/16"	1/2 1 1-1/2 2 2-1/2 3 4 5 6 7 8	8	-
	3/4" ~ 1-1/16"	1/2 1 1-1/2 2 2-1/2 3 4 5 6 7 8 9 10 11 12	12	-
	1-1/4" ~ 2-1/2"	1/2 1 1-1/2 2 2-1/2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	20	-
NPSB NPTB	5/16"~9/16"	1/2 1 1-1/2 2	-	-
	3/4" ~ 2"	1/2 1 1-1/2 2 2-1/2 3 4	-	-

[Note] Consult us for non-standard stroke.

Product feature

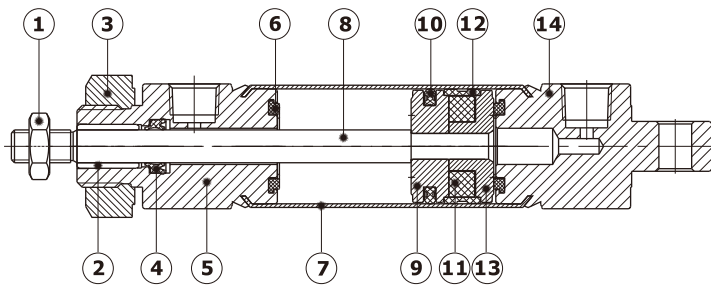
1. It belongs to mini cylinder that has compact structure, small volume and light weight.
2. Cylinder is pre-lube and no additional lubricant needed.
3. Stainless steel barrel to adapt various working environments.
4. There are cylinders and accessories with several specifications for installation for your choice.
5. It has small cylinder diameter and quick reaction, suitable for the working environment with higher frequency.

NPB Series

Specification

Bore size(in)		5/16	7/16	9/16	3/4	7/8	1-1/16	1-1/4	1-1/2	1-3/4	2	2-1/2	
Acting type	NPSB/NPTB	Single acting										-	
	NPB	Double acting											
	NPBD	-	Double acting										
Fluid		Air(to be filtered by 40µm filter element)											
Operating pressure	Double acting	22~145psi(0.15~1.0MPa)											
	Single acting	28~145psi(0.2~1.0MPa)											
Proof pressure		215psi(1.5MPa)											
Temperature		-5°F~160°F(-20°C~70°C)											
Speed range inch/s		2~32											
Stroke tolerance inch		0~6 ^{+0.04} ₀ >6 ^{+0.06} ₀											
Cushion type		Bumper											
Port size		#10-32UNF					NPT1/8			NPT1/4			

Inner structure

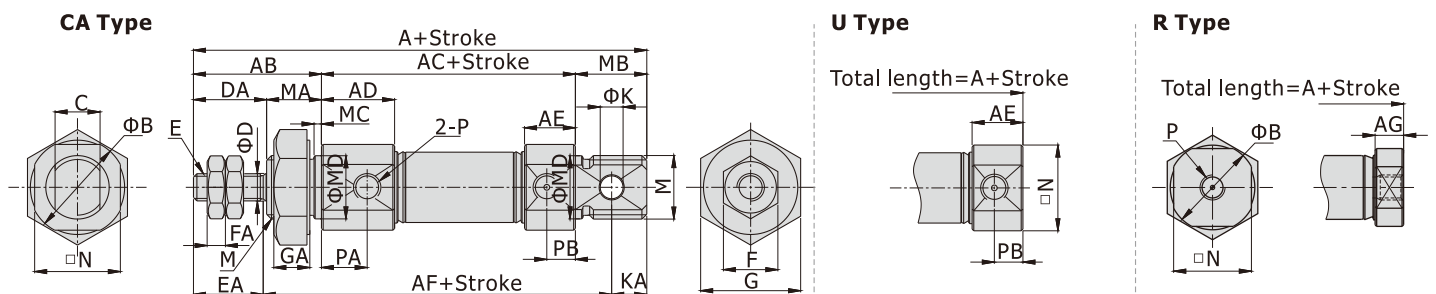


NO.	Item	NO.	Item
1	Rod nut	8	Piston rod
2	Bushing	9	Piston
3	Front cover nut	10	Piston seal
4	Front cover O-ring	11	Magnet
5	Front cover	12	Wear ring
6	Bumper	13	Magnet holder
7	Barrel	14	Back cover

Note: 1.The piston rod material is stainless steel(Φ5/16"~Φ7/8"), and carbon steel(Φ1-1/16"~Φ2-1/2").
2.Barrel material: Stainless steel.

Dimensions

NPB Φ5/16" Φ7/16"



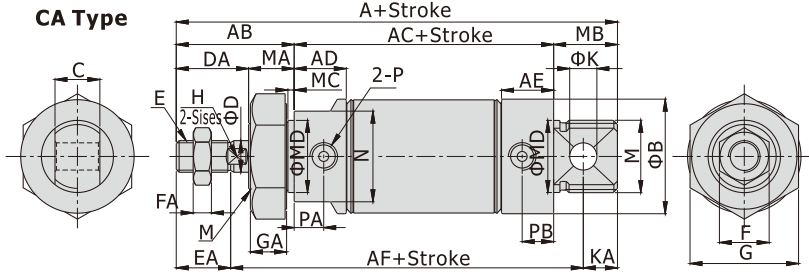
Bore size\Item	A			AB	AC			AD	AE	AF	AG	B	C	D	DA	E	EA	F
	CA	U	R		CA	U	R											
5/16"	2.57	2.22	2.11	0.69	1.53	1.53	1.42	0.38	0.31	2.03	0.20	0.58	1/4	1/8	0.38	#5-40UNC	0.38	1/4
7/16"	3.31	2.81	2.63	0.88	1.93	1.93	1.75	0.48	0.39	2.55	0.22	0.67	5/16	3/16	0.50	#10-32UNF	0.50	3/8

Bore size\Item	FA	G	GA	H	K	KA	M	MA	MB	MC	MD	N	P	PA	PB
5/16"	0.11	9/16	0.22	-	1/8	0.16	3/8-24UNF	0.31	0.35	-	-	1/2	#10-32UNF	0.24	0.16
7/16"	0.13	11/16	0.25	-	5/32	0.25	7/16-20UNF	0.38	0.50	0.05	0.437 ⁰ _{-0.004}	3/5	#10-32UNF	0.28	0.20

Mini cylinder

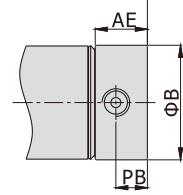
NPB Series

NPB $\Phi 9/16'' \sim \Phi 1-1/4''$ $\Phi 1-3/4'' \sim \Phi 2-1/2''$



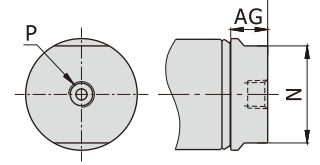
U Type

Total length=A+Stroke



R Type

Total length=A+Stroke

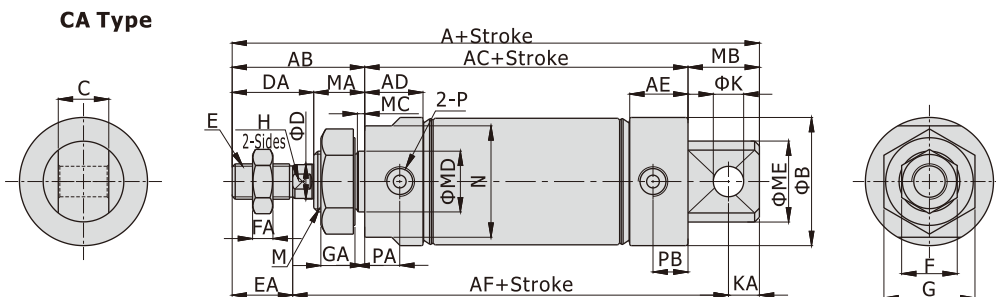


[Unit:inch]

Bore size\Item	A			AB	AC			AD	AE	AF	AG	B	C	D	DA	E	EA	F
	CA	U	R		CA	U	R											
9/16"	3.25	2.81	2.70	0.88	1.93	1.82	0.47	0.38	2.55	0.27	0.67	5/16	3/16	0.50	#10-32UNF	0.50	3/8	
3/4"	4.53	3.91	3.52	1.00	2.91	2.52	0.69	0.69	3.75	0.27	0.86	3/8	1/4	0.50	1/4-28UNF	0.50	7/16	
7/8"	4.34	3.72	3.45	1.00	2.72	2.45	0.66	0.66	3.56	0.39	0.95	3/8	1/4	0.50	1/4-28UNF	0.50	7/16	
1-1/16"	4.62	4.00	3.75	1.12	2.88	2.63	0.70	0.70	3.85	0.45	1.14	3/8	5/16	0.62	5/16-24UNF	0.50	1/2	
1-1/4"	5.88	5.06	4.76	1.63	3.43	3.13	0.77	0.77	4.73	0.47	1.34	1/2	7/16	1.00	7/16-20UNF	0.75	11/16	
1-3/4"	7.13	6.13	5.57	1.94	4.19	3.63	1.02	1.02	5.74	0.47	1.83	5/8	1/2	1.19	1/2-20UNF	0.88	3/4	
2"	6.94	5.94	5.56	2.07	3.87	3.49	0.96	0.96	5.61	0.59	2.10	3/4	5/8	1.26	1/2-20UNF	0.88	3/4	
2-1/2"	6.94	5.94	5.56	2.07	3.87	3.49	0.96	0.96	5.61	0.59	2.60	3/4	5/8	1.26	1/2-20UNF	0.88	3/4	

Bore size\Item	Back cover type	FA	G	GA	H	K	KA	M	MA	MB	MC	MD	N	P	PA	PB
9/16"		0.13	11/16	0.25	-	5/32	0.19	7/16-20UNF	0.38	0.44	0.06	0.437 ⁰ _{-0.004}	9/16	#10-32UNF	0.28	0.20
3/4"		0.16	15/16	0.37	-	1/4	0.28	5/8-18UNF	0.50	0.62	0.09	0.624 ⁰ _{-0.004}	3/4	NPT1/8	0.37	0.37
7/8"		0.16	15/16	0.37	-	1/4	0.28	5/8-18UNF	0.50	0.62	0.09	0.624 ⁰ _{-0.004}	13/16	NPT1/8	0.37	0.37
1-1/16"		0.19	15/16	0.37	1/4	1/4	0.28	5/8-18UNF	0.50	0.62	0.09	0.624 ⁰ _{-0.004}	1	NPT1/8	0.39	0.39
1-1/4"		0.25	1-1/8	0.42	3/8	1/4	0.41	3/4-16UNF	0.63	0.82	0.09	0.750 ⁰ _{-0.004}	1-1/8	NPT1/8	0.43	0.43
1-3/4"		0.31	1-1/2	0.50	7/16	3/8	0.50	1-14UNS	0.75	1.00	0.09	1.032 ⁰ _{-0.004}	1-5/8	NPT1/4	0.51	0.51
2"		0.31	1-7/8	0.50	1/2	3/8	0.44	1-1/4-12UNF	0.81	1.00	0.12	1.375 ⁰ _{-0.004}	1-7/8	NPT1/4	0.51	0.51
2-1/2"		0.31	2-1/16	0.50	1/2	3/8	0.44	1-3/8-12UNF	0.81	1.00	0.12	1.500 ⁰ _{-0.004}	2-3/8	NPT1/4	0.51	0.51

NPB $\Phi 1-1/2''$



[Unit:inch]

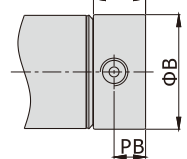
Bore size\Item	A				AB	AC		AD	AE	AF	AG	B	C	D
	CM	CA	U	R		CA/CM/U	R							
1-1/2"	5.26	5.51	4.63	4.37	1.63	3.00	2.74	0.72	0.72	4.39	0.47	1.58	5/8	7/16

Bore size\Item	Back cover type	DA	E	EA	F	FA	G	GA	H	K	KA	M	MA

Bore size\Item	MB		MC	MD	ME		N	P	PA	PB
	CM	CA			CM	CA				
1-1/2"	0.63	0.88	0.09	0.75 ⁰ _{-0.004}	0.75 ⁰ _{-0.004}	1.00 ⁰ _{-0.004}	1-3/8	NPT1/8	0.43	0.43

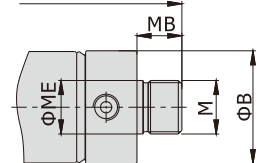
U Type

Total length=A+Stroke



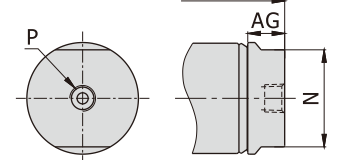
CM Type

Total length=A+Stroke



R Type

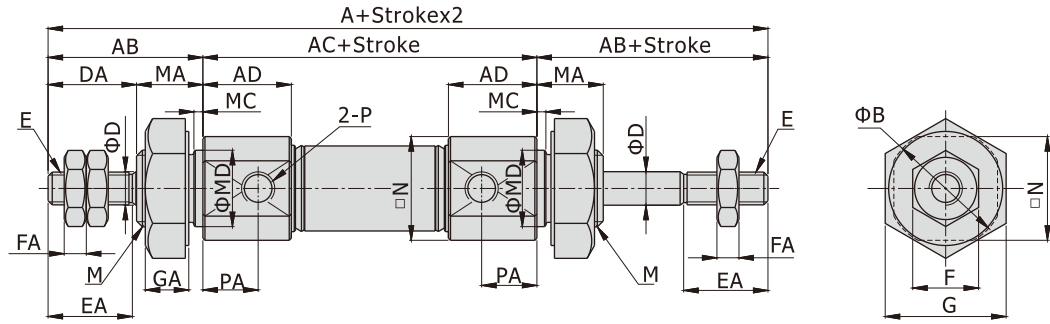
Total length=A+Stroke



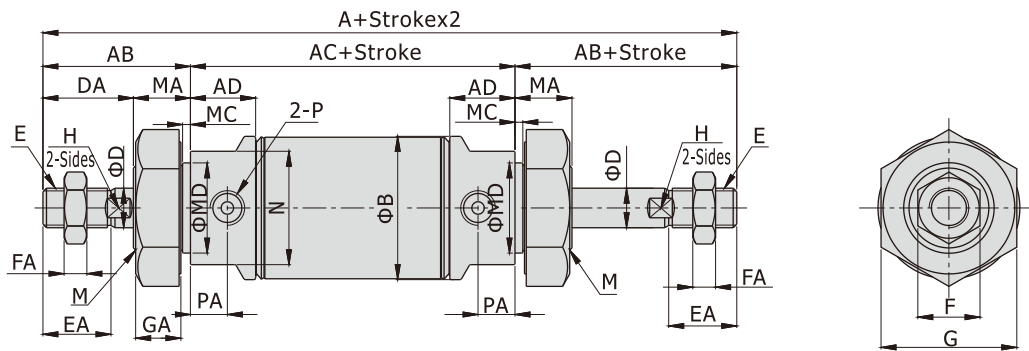
Mini cylinder

NPB Series

NPBD $\Phi 7/16''$



NPBD $\Phi 9/16'' \sim \Phi 2-1/2''$



[Unit:inch]

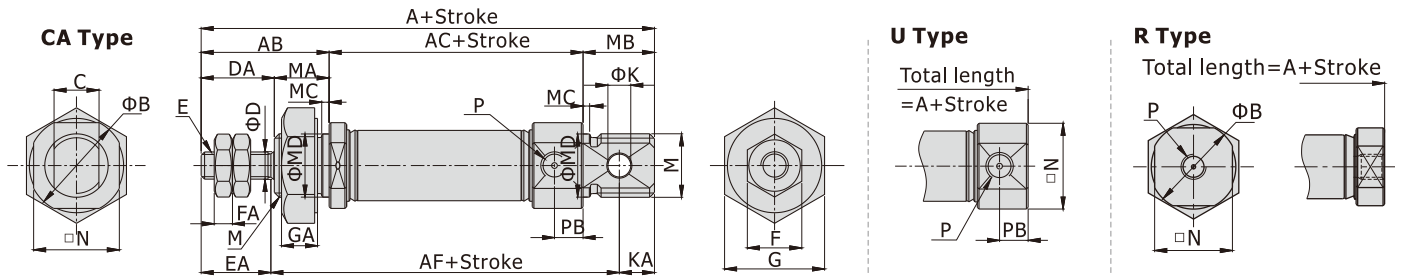
Bore size\Item	A	AB	AC	AD	B	D	DA	E	EA	F	FA	G	GA	H
7/16"	3.75	0.88	2.00	0.48	0.67	3/16	0.50	#10-32UNF	0.50	3/8	0.13	11/16	0.25	-
9/16"	3.78	0.88	2.02	0.47	0.67	3/16	0.50	#10-32UNF	0.50	3/8	0.13	11/16	0.25	-
3/4"	4.91	1.00	2.91	0.69	0.86	1/4	0.50	1/4-28UNF	0.50	7/16	0.16	15/16	0.37	-
7/8"	4.72	1.00	2.72	0.66	0.95	1/4	0.50	1/4-28UNF	0.50	7/16	0.16	15/16	0.37	-
1-1/16"	5.12	1.12	2.88	0.70	1.14	5/16	0.62	5/16-24UNF	0.50	1/2	0.19	15/16	0.37	1/4
1-1/4"	6.69	1.63	3.43	0.77	1.34	7/16	1.00	7/16-20UNF	0.75	11/16	0.25	1-1/8	0.42	3/8
1-1/2"	6.26	1.63	3.00	0.72	1.58	7/16	1.00	7/16-20UNF	0.75	11/16	0.25	1-1/8	0.42	3/8
1-3/4"	8.07	1.94	4.19	1.02	1.83	1/2	1.19	1/2-20UNF	0.88	3/4	0.31	1-1/2	0.50	7/16
2"	8.02	2.07	3.87	0.96	2.10	5/8	1.26	1/2-20UNF	0.88	3/4	0.31	1-7/8	0.50	1/2
2-1/2"	8.02	2.07	3.87	0.96	2.60	5/8	1.26	1/2-20UNF	0.88	3/4	0.31	2-1/16	0.50	1/2

Bore size\Item	M	MA	MC	MD	N	P	PA
7/16"	7/16-20UNF	0.38	0.05	0.437 ⁰ _{-0.004}	3/5	#10-32UNF	0.28
9/16"	7/16-20UNF	0.38	0.06	0.437 ⁰ _{-0.004}	9/16	#10-32UNF	0.28
3/4"	5/8-18UNF	0.50	0.09	0.624 ⁰ _{-0.004}	3/4	NPT1/8	0.37
7/8"	5/8-18UNF	0.50	0.09	0.624 ⁰ _{-0.004}	13/16	NPT1/8	0.37
1-1/16"	5/8-18UNF	0.50	0.09	0.624 ⁰ _{-0.004}	1	NPT1/8	0.39
1-1/4"	3/4-16UNF	0.63	0.09	0.750 ⁰ _{-0.004}	1-1/8	NPT1/8	0.43
1-1/2"	3/4-16UNF	0.63	0.09	0.750 ⁰ _{-0.004}	1-3/8	NPT1/8	0.43
1-3/4"	1-14UNS	0.75	0.09	1.032 ⁰ _{-0.004}	1-5/8	NPT1/4	0.51
2"	1-1/4-12UNF	0.81	0.12	1.375 ⁰ _{-0.004}	1-7/8	NPT1/4	0.51
2-1/2"	1-3/8-12UNF	0.81	0.12	1.500 ⁰ _{-0.004}	2-3/8	NPT1/4	0.51

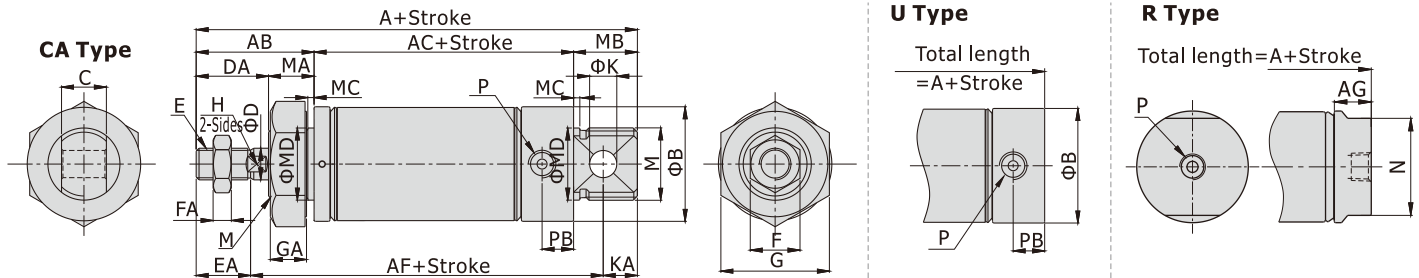
Mini cylinder

NPB Series

NPSB $\Phi 5/16''$ $\Phi 7/16''$



$\Phi 9/16'' \sim \Phi 1-1/4''$ $\Phi 1-3/4'' \sim \Phi 2''$



[Unit:inch]

Bore size \ Item Back cover type	A												AC							
	CA				U				R				CA/U				R			
Stroke	1/2, 1, 1-1/2, 2, 2-1/2, 3, 4	1/2, 1, 1-1/2, 2, 2-1/2, 3, 4	1/2, 1, 1-1/2, 2, 2-1/2, 3, 4	1/2, 1, 1-1/2, 2, 2-1/2, 3, 4	1/2, 1, 1-1/2, 2, 2-1/2, 3, 4	1/2, 1, 1-1/2, 2, 2-1/2, 3, 4	1/2, 1, 1-1/2, 2, 2-1/2, 3, 4	1/2, 1, 1-1/2, 2, 2-1/2, 3, 4	1/2, 1, 1-1/2, 2, 2-1/2, 3, 4	1/2, 1, 1-1/2, 2, 2-1/2, 3, 4	1/2, 1, 1-1/2, 2, 2-1/2, 3, 4	1/2, 1, 1-1/2, 2, 2-1/2, 3, 4	1/2, 1, 1-1/2, 2, 2-1/2, 3, 4	1/2, 1, 1-1/2, 2, 2-1/2, 3, 4	1/2, 1, 1-1/2, 2, 2-1/2, 3, 4	1/2, 1, 1-1/2, 2, 2-1/2, 3, 4	1/2, 1, 1-1/2, 2, 2-1/2, 3, 4	1/2, 1, 1-1/2, 2, 2-1/2, 3, 4	1/2, 1, 1-1/2, 2, 2-1/2, 3, 4	1/2, 1, 1-1/2, 2, 2-1/2, 3, 4
5/16"	3.07	3.32	-	-	2.72	2.97	-	-	2.61	2.86	-	-	2.03	2.28	-	-	1.92	2.17	-	-
7/16"	3.81	4.06	-	-	3.31	3.56	-	-	3.13	3.38	-	-	2.43	2.68	-	-	2.25	2.50	-	-
9/16"	3.75	4.00	-	-	3.31	3.56	-	-	3.20	3.45	-	-	2.43	2.68	-	-	2.32	2.57	-	-
3/4"	4.66	4.91	5.53	5.78	4.04	4.29	4.91	5.16	3.65	3.90	4.52	4.77	3.04	3.29	3.91	4.16	2.65	2.90	3.52	3.77
7/8"	4.47	4.72	5.34	5.59	3.85	4.10	4.72	4.97	3.58	3.83	4.45	4.70	2.85	3.10	3.72	3.97	2.58	2.83	3.45	3.70
1-1/16"	4.75	5.00	5.62	5.87	4.13	4.38	5.00	5.25	3.88	4.13	4.75	5.00	3.01	3.26	3.88	4.13	2.76	3.01	3.63	3.88
1-1/4"	6.00	6.25	6.88	7.13	5.19	5.44	6.06	6.31	4.89	5.14	5.76	6.01	3.56	3.81	4.43	4.68	3.26	3.51	4.13	4.38
1-3/4"	7.26	7.51	8.13	8.38	6.26	6.51	7.13	7.38	5.70	5.95	6.57	6.82	4.32	4.57	5.19	5.44	3.76	4.01	4.63	4.88
2"	7.07	7.32	7.94	8.19	6.07	6.32	6.94	7.19	5.69	5.94	6.56	6.81	4.00	4.25	4.87	5.12	3.62	3.87	4.49	4.74

Bore size \ Item	AB	AF			B	C	D	DA	
Stroke	-	1/2, 1, 1-1/2, 2, 2-1/2, 3, 4	1/2, 1, 1-1/2, 2, 2-1/2, 3, 4	1/2, 1, 1-1/2, 2, 2-1/2, 3, 4	-	-	-	-	
5/16"	0.69	2.53	2.78	-	-	0.58	1/4	1/8	0.38
7/16"	0.88	3.06	3.31	-	-	0.67	5/16	3/16	0.50
9/16"	0.88	3.06	3.31	-	-	0.67	5/16	3/16	0.50
3/4"	1.00	3.88	4.13	4.75	5.00	0.86	3/8	1/4	0.50
7/8"	1.00	3.69	3.94	4.56	4.81	0.95	3/8	1/4	0.50
1-1/16"	1.12	3.97	4.22	4.84	5.09	1.14	3/8	5/16	0.62
1-1/4"	1.63	4.85	5.10	5.72	5.97	1.34	1/2	7/16	1.00
1-3/4"	1.94	5.88	6.13	6.75	7.00	1.83	5/8	1/2	1.19
2"	2.07	5.75	6.00	6.62	6.87	2.10	3/4	5/8	1.26

Bore size \ Item	E	EA	F	FA	G	GA	H	K	KA	M	MA	MB	MC	MD	N	P	PB
5/16"	#5-40UNC	0.38	1/4	0.11	9/16	0.22	-	1/8	0.16	3/8-24UNF	0.31	0.35	-	-	1/2	-	0.16
7/16"	#10-32UNF	0.50	3/8	0.13	11/16	0.25	-	5/32	0.25	7/16-20UNF	0.38	0.50	0.05	0.437 ⁰ _{-0.004}	3/5	#10-32UNF	0.20
9/16"	#10-32UNF	0.50	3/8	0.13	11/16	0.25	-	5/32	0.19	7/16-20UNF	0.38	0.44	0.06	0.437 ⁰ _{-0.004}	-	#10-32UNF	0.20
3/4"	1/4-28UNF	0.50	7/16	0.16	15/16	0.37	-	1/4	0.28	5/8-18UNF	0.50	0.62	0.09	0.624 ⁰ _{-0.004}	-	NPT1/8	0.37
7/8"	1/4-28UNF	0.50	7/16	0.16	15/16	0.37	-	1/4	0.28	5/8-18UNF	0.50	0.62	0.09	0.624 ⁰ _{-0.004}	-	NPT1/8	0.37
1-1/16"	5/16-24UNF	0.50	1/2	0.19	15/16	0.37	1/4	1/4	0.28	5/8-18UNF	0.50	0.62	0.09	0.624 ⁰ _{-0.004}	-	NPT1/8	0.39
1-1/4"	7/16-20UNF	0.75	11/16	0.25	1-1/8	0.42	3/8	1/4	0.41	3/4-16UNF	0.63	0.82	0.09	0.750 ⁰ _{-0.004}	-	NPT1/8	0.43
1-3/4"	1/2-20UNF	0.88	3/4	0.31	1-1/2	0.50	7/16	3/8	0.50	1-14UNS	0.75	1.00	0.09	1.032 ⁰ _{-0.004}	-	NPT1/4	0.51
2"	1/2-20UNF	0.88	3/4	0.31	1-7/8	0.50	1/2	3/8	0.44	1-1/4-12UNF	0.81	1.00	0.12	1.375 ⁰ _{-0.004}	-	NPT1/4	0.51

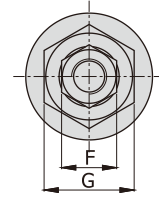
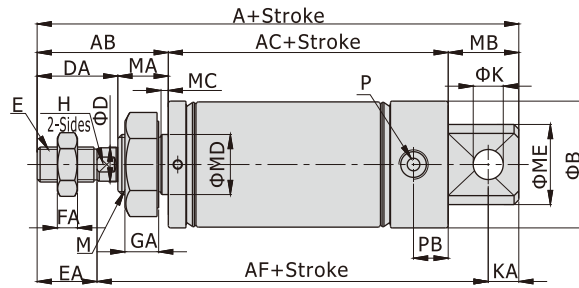
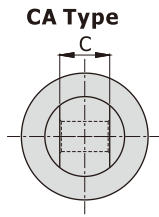


Mini cylinder

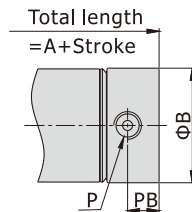
NPB Series

NPSB

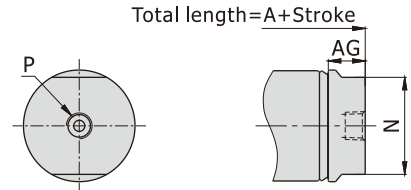
Φ1-1/2"



U Type



R Type



[Unit:inch]

Bore size \ Item	A												AC							
	CA				U				R				CA/U				R			
Stroke	1/2,1	1-1/2,2	2-1/2,3	4	1/2,1	1-1/2,2	2-1/2,3	4	1/2,1	1-1/2,2	2-1/2,3	4	1/2,1	1-1/2,2	2-1/2,3	4	1/2,1	1-1/2,2	2-1/2,3	4
1-1/2"	5.64	5.89	6.51	6.76	4.76	5.01	5.63	5.88	4.50	4.75	5.37	5.62	3.13	3.38	4.00	4.25	2.87	3.12	3.74	3.99

Bore size \ Item	AB	AF				B	C	D	DA
Stroke	-	1/2,1	1-1/2,2	2-1/2,3	4	-	-	-	-
1-1/2"	1.63	4.51	4.76	5.38	5.63	1.58	5/8	7/16	1.00

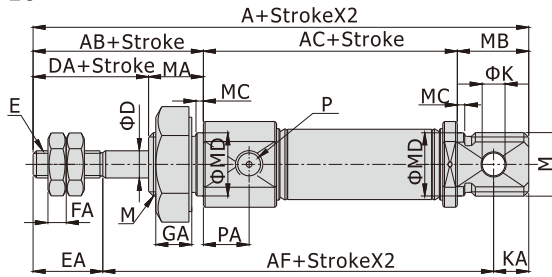
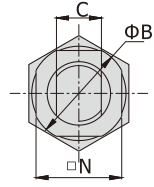
Bore size \ Item	E	EA	F	FA	G	GA	H	K	KA	M	MA	MB	MC	MD	ME	P	PB
1-1/2"	7/16-20UNF	0.75	11/16	0.25	1-1/8	0.42	3/8	3/8	0.38	3/4-16UNF	0.63	0.88	0.09	0.75 _{-0.004}	1.00 _{-0.004}	NPT1/8	0.43

Mini cylinder

NPB Series

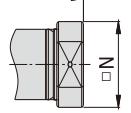
NPTB $\Phi 5/16"$ $\Phi 7/16"$

CA Type



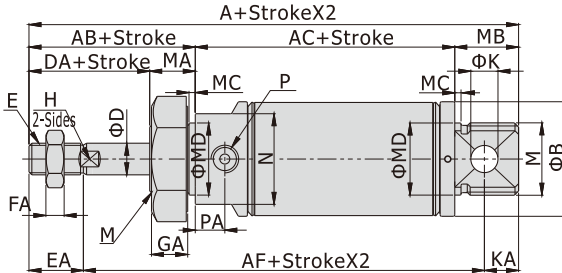
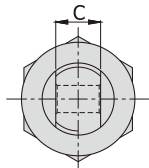
U Type

Total length=A+StrokeX2



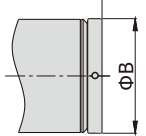
$\Phi 9/16"$ ~ $\Phi 1-1/4"$
 $\Phi 1-3/4"$ ~ $\Phi 2"$

CA Type



U Type

Total length=A+StrokeX2



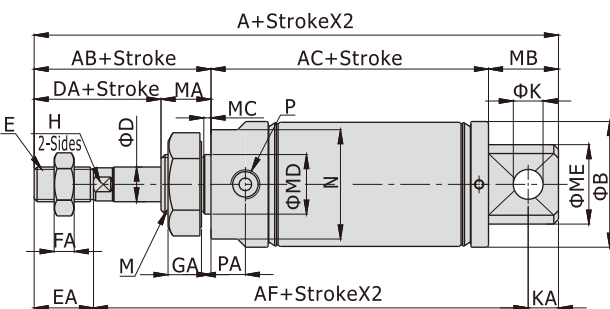
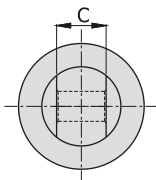
[Unit:inch]

Bore size\Item	A				AB	AC				AF				B	C	D	DA				
	CA		U			-				-											
Stroke	1/2,1	1-1/2,2	2-1/2,3	4	1/2,1	1-1/2,2	2-1/2,3	4	-	1/2,1	1-1/2,2	2-1/2,3	4	1/2,1	1-1/2,2	2-1/2,3	4	-	-	-	-
5/16"	3.07	3.32	-	-	2.72	2.97	-	-	0.69	2.03	2.28	-	-	2.53	2.78	-	-	0.58	1/4	1/8	0.38
7/16"	3.81	4.06	-	-	3.31	3.56	-	-	0.88	2.43	2.68	-	-	3.06	3.31	-	-	0.67	5/16	3/16	0.50
9/16"	3.75	4.00	-	-	3.31	3.56	-	-	0.88	2.43	2.68	-	-	3.06	3.31	-	-	0.67	5/16	3/16	0.50
3/4"	4.66	4.91	5.53	5.78	4.04	4.29	4.91	5.16	1.00	3.04	3.29	3.91	4.16	3.88	4.13	4.75	5.00	0.86	3/8	1/4	0.50
7/8"	4.47	4.72	5.34	5.59	3.85	4.10	4.72	4.97	1.00	2.85	3.10	3.72	3.97	3.69	3.94	4.56	4.81	0.95	3/8	1/4	0.50
1-1/16"	4.75	5.00	5.62	5.87	4.13	4.38	5.00	5.25	1.12	3.01	3.26	3.88	4.13	3.97	4.22	4.84	5.09	1.14	3/8	5/16	0.62
1-1/4"	6.00	6.25	6.88	7.13	5.19	5.44	6.06	6.31	1.63	3.56	3.81	4.43	4.68	4.85	5.10	5.72	5.97	1.34	1/2	7/16	1.00
1-3/4"	7.26	7.51	8.13	8.38	6.26	6.51	7.13	7.38	1.94	4.32	4.57	5.19	5.44	5.88	6.13	6.75	7.00	1.83	5/8	1/2	1.19
2"	7.07	7.32	7.94	8.19	6.07	6.32	6.94	7.19	2.07	4.00	4.25	4.87	5.12	5.75	6.00	6.62	6.87	2.10	3/4	5/8	1.26

Bore size\Item	E	EA	F	FA	G	GA	H	K	KA	M	MA	MB	MC	MD	N	P	PA
7/16"	#10-32UNF	0.50	3/8	0.13	11/16	0.25	-	5/32	0.25	7/16-20UNF	0.38	0.50	0.05	0.437 ⁰ _{-0.004}	3/5	#10-32UNF	0.28
9/16"	#10-32UNF	0.50	3/8	0.13	11/16	0.25	-	5/32	0.19	7/16-20UNF	0.38	0.44	0.06	0.437 ⁰ _{-0.004}	9/16	#10-32UNF	0.28
3/4"	1/4-28UNF	0.50	7/16	0.16	15/16	0.37	-	1/4	0.28	5/8-18UNF	0.50	0.62	0.09	0.624 ⁰ _{-0.004}	3/4	NPT1/8	0.37
7/8"	1/4-28UNF	0.50	7/16	0.16	15/16	0.37	-	1/4	0.28	5/8-18UNF	0.50	0.62	0.09	0.624 ⁰ _{-0.004}	13/16	NPT1/8	0.37
1-1/16"	5/16-24UNF	0.50	1/2	0.19	15/16	0.37	1/4	1/4	0.28	5/8-18UNF	0.50	0.62	0.09	0.624 ⁰ _{-0.004}	1	NPT1/8	0.39
1-1/4"	7/16-20UNF	0.75	11/16	0.25	1-1/8	0.42	3/8	1/4	0.41	3/4-16UNF	0.63	0.82	0.09	0.750 ⁰ _{-0.004}	1-1/8	NPT1/8	0.43
1-3/4"	1/2-20UNF	0.88	3/4	0.31	1-1/2	0.50	7/16	3/8	0.50	1-14UNS	0.75	1.00	0.09	1.032 ⁰ _{-0.004}	1-5/8	NPT1/4	0.51
2"	1/2-20UNF	0.88	3/4	0.31	1-7/8	0.50	1/2	3/8	0.44	1-1/4-12UNF	0.81	1.00	0.12	1.375 ⁰ _{-0.004}	1-7/8	NPT1/4	0.51

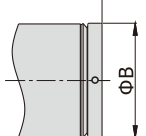
$\Phi 1-1/2"$

CA Type



U Type

Total length=A+StrokeX2



[Unit:inch]

Bore size\Item	A				AB	AC				AF				B	C	D	DA				
	CA		U			-				-											
Stroke	1/2,1	1-1/2,2	2-1/2,3	4	1/2,1	1-1/2,2	2-1/2,3	4	-	1/2,1	1-1/2,2	2-1/2,3	4	1/2,1	1-1/2,2	2-1/2,3	4	-	-	-	-
1-1/2"	5.64	5.89	6.51	6.76	4.76	5.01	5.63	5.88	1.63	3.13	3.38	4.00	4.25	4.51	4.76	5.38	5.63	1.58	5/8	7/16	1.00

Bore size\Item	E	EA	F	FA	G	GA	H	K	KA	M	MA	MB	MC	MD	ME	N	P	PA



NPB Series—Accessories

List for ordering code of accessories

Accessories Bore size	Mounting accessories		Knuckle	Sensor switch				
	LB	SDB	Y	CMSG	DMSG	EMSG		
5/16"	F-NPB5/16LB	F-NPB5/16SDB	F-NPB5/16Y	CMSG	DMSG	EMSG		
7/16"	F-NPB7/16LB	F-NPB7/16SDB	F-NPB7/16Y					
9/16"								
3/4"	F-NPB3/4LB	F-NPB3/4SDB	F-NPB3/4Y					
7/8"			F-NPB1-1/16Y					
1-1/16"			F-NPB1-1/4LB				F-NPB1-1/4SDB	F-NPB1-1/4Y
1-1/4"							F-NPB1-1/2SDB	
1-1/2"	F-NPB1-3/4LB	F-NPB1-3/4SDB	F-NPB1-3/4Y					
1-3/4"								
2"	F-NPB2LB	F-NPB2SDB	F-NPB1-3/4Y					
2-1/2"	F-NPB2-1/2LB							

Accessory selection

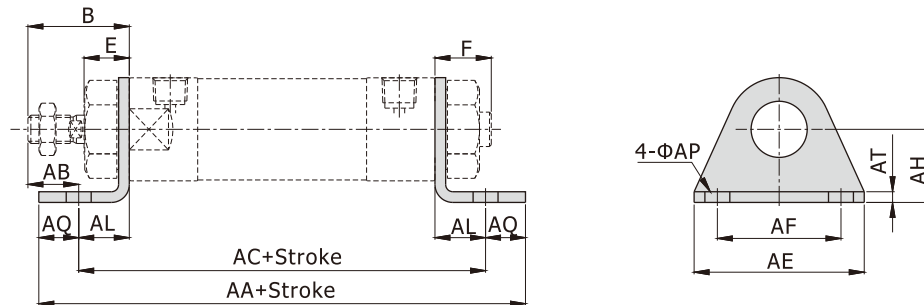
Accessories Cylinder model	Mounting accessories		Knuckle	Sensor switch		
	LB	SDB	Y	CMSG	DMSG	EMSG
NPB	•	•	•	•	•	•
NPSB/NPTB	•	•	•	•	•	•
NPBD	•	×	•	•	•	•

Material of accessories

Accessories Bore size	Mounting accessories		Knuckle
	LB	SDB	Y
5/16"~2-1/2"	□	□	□
□—Steel			

Dimensions

LB



[Unit:inch]

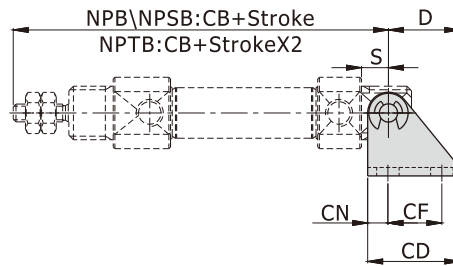
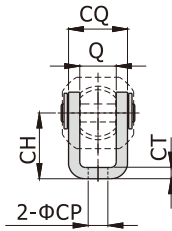
Bore size\Item	AA	AA(NPSB)				AC	AC(NPSB)				B	E	F	AB	AE	AF	AL	AQ	AP	AT	AH
		1/2,1	1-1/2,2	2-1/2,3	4		1/2,1	1-1/2,2	2-1/2,3	4											
Stroke	(NPB)					(NPB)															
5/16"	2.29	2.79	3.04	-	-	2.03	2.53	2.78	-	-	0.69	0.31	0.35	0.44	1.00	0.75	0.25	0.13	0.14	0.08	0.44
7/16"	3.30	3.81	4.06	-	-	2.69	3.19	3.44	-	-	0.88	0.38	0.50	0.50	1.38	1.00	0.38	0.31	0.19	0.10	0.56
9/16"	3.30	3.81	4.06	-	-	2.69	3.19	3.44	-	-	0.88	0.38	0.44	0.50	1.38	1.00	0.38	0.31	0.19	0.10	0.56
3/4"	4.91	5.04	5.29	5.91	6.16	4.03	4.15	4.40	5.03	5.28	1.00	0.50	0.62	0.44	1.89	1.50	0.56	0.44	0.28	0.12	0.81
7/8"	4.72	4.85	5.10	5.72	5.97	3.84	3.96	4.21	4.84	5.09	1.00	0.50	0.62	0.44	1.89	1.50	0.56	0.44	0.28	0.12	0.81
1-1/16"	4.88	5.05	5.26	5.88	6.13	4.00	4.12	4.37	5.00	5.25	1.12	0.50	0.62	0.56	1.89	1.50	0.56	0.44	0.28	0.12	0.81
1-1/4"	6.44	6.56	6.81	7.44	7.69	4.93	5.06	5.31	5.93	6.18	1.63	0.63	0.82	0.88	2.50	1.88	0.75	0.75	0.28	0.14	1.00
1-1/2"	6.00	6.13	6.38	7.00	7.25	4.50	4.63	4.88	5.50	5.75	1.63	0.63	0.63	0.88	2.50	1.88	0.75	0.75	0.28	0.14	1.00
1-3/4"	7.19	7.32	7.57	8.19	8.44	5.94	6.07	6.32	6.95	7.20	1.94	0.75	1.00	1.06	3.00	2.24	0.88	0.62	0.34	0.18	1.25
2"	7.11	7.24	7.49	8.11	8.36	5.87	6.00	6.25	6.87	7.12	2.07	0.81	1.00	1.07	3.13	2.24	1.00	0.62	0.34	0.18	1.50
2-1/2"	7.11	-	-	-	-	5.87	-	-	-	-	2.07	0.81	1.00	1.07	3.75	2.87	1.00	0.62	0.34	0.18	1.75

Mini cylinder

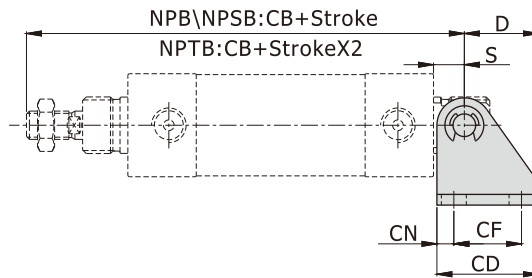
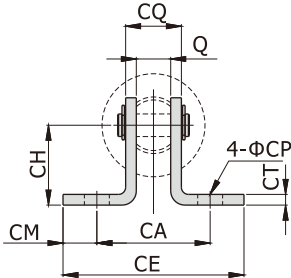
NPB Series—Accessories

SDB

Φ5/16"



Φ7/16"~Φ2-1/2"

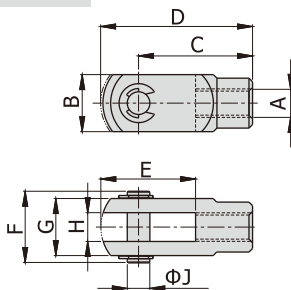


[Unit:inch]

Bore size\Item Stroke	D	S	Q	CA	CB (NPB)	CB(NPSB\NPTB)				CD	CE	CF	CH	CM	CN	CT	CP	CQ
						1/2,1	1-1/2,2	2-1/2,3	4									
5/16"	0.50	0.19	1/4	-	2.41	2.91	3.16	-	-	0.63	-	0.38	0.44	-	0.13	0.08	0.14	0.42
7/16"	0.56	0.25	5/16	0.88	3.05	3.55	3.80	-	-	0.75	1.31	0.50	0.56	0.22	0.13	0.08	0.19	0.47
9/16"	0.56	0.25	5/16	0.88	3.05	3.55	3.80	-	-	0.75	1.31	0.50	0.56	0.22	0.13	0.08	0.19	0.47
3/4"	0.81	0.34	3/8	1.26	4.25	4.38	4.63	5.25	5.50	1.12	2.01	0.75	0.88	0.37	0.19	0.12	0.28	0.63
7/8"	0.81	0.34	3/8	1.26	4.06	4.19	4.44	5.06	5.31	1.12	2.01	0.75	0.88	0.37	0.19	0.12	0.28	0.63
1-1/16"	0.81	0.34	3/8	1.26	4.35	4.48	4.73	5.35	5.60	1.12	2.01	0.75	0.88	0.37	0.19	0.12	0.28	0.63
1-1/4"	0.81	0.41	1/2	1.39	5.48	5.60	5.85	6.48	6.73	1.12	2.13	0.75	0.88	0.37	0.19	0.12	0.28	0.74
1-1/2"	1.13	0.50	5/8	1.75	5.14	5.26	5.51	6.13	6.38	1.50	2.63	1.00	1.38	0.44	0.25	0.12	0.28	0.87
1-3/4"	1.13	0.50	5/8	2.00	6.62	6.75	7.00	7.62	7.87	1.50	2.88	1.00	1.38	0.44	0.25	0.16	0.28	0.95
2"	1.13	0.56	3/4	2.14	6.49	6.62	6.87	7.49	7.74	1.50	3.01	1.00	1.38	0.44	0.25	0.16	0.28	1.08
2-1/2"	1.13	0.56	3/4	2.14	6.49	-	-	-	-	1.50	3.01	1.00	1.38	0.44	0.25	0.16	0.28	1.08

Y Knuckle

[Unit:inch]



Bore size\Item	A	B	C	D	E	F	G	H	J
F-NPB5/16Y	#5-40UNC	0.32	0.44	0.56	0.38	0.50	0.32	1/8	1/8
F-NPB7/16Y	#10-32UNF	0.38	0.75	0.94	0.56	0.56	0.38	3/16	3/16
F-NPB3/4Y	1/4-28UNF	0.50	0.94	1.19	0.69	0.69	0.50	1/4	1/4
F-NPB1-1/16Y	5/16-24UNF	0.50	0.94	1.19	0.69	0.69	0.50	1/4	1/4
F-NPB1-1/4Y	7/16-20UNF	0.75	1.31	1.69	0.94	1.02	0.75	3/8	3/8
F-NPB1-3/4Y	1/2-20UNF	0.75	1.31	1.69	0.94	1.02	0.75	3/8	3/8