



# Round compact cylinder—NACF Series

## Compendium of NACF Series

### Convenient and fast fix sensor switch

Sensor can be directly fixed onto the groover of the cylinder, which is convenient and fast.  
the counterpart sensor type is: CMSH, DMSH, EMSH

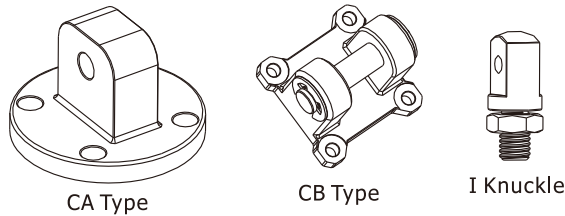
### Two kinds of rod type



### Imperial cylinder

Bore size: 9/16", 3/4", 1-1/16",  
1-1/2", 2", 2-1/2", 3", 4"

### Multi-mounting accessories



### Multi-type cylinder

NACF: Round compact cylinder  
(Double acting)



NASF: Round compact cylinder  
(Single acting-push)



NATF: Round compact cylinder  
(Single acting-pull)



NACFD: Round compact cylinder  
(Double rod)



### Convenient and fast fix sensor switch

Sensor can be directly fixed onto the groover of the cylinder, which is convenient and fast.  
the counterpart sensor type is: CMSH, DMSH, EMSH

## Criteria for selection: Cylinder thrust

Unit: Newton(N)

Bore size(in)	Rod size(in)	Acting type	Pressure area(mm <sup>2</sup> )	Operating pressure(psi)							
				15	30	45	60	75	90	105	
9/16	1/4	Double acting	Push side	160.3	16.6	33.1	49.7	66.3	82.8	99.4	116.0
			Pull side	128.7	13.3	26.6	39.9	53.2	66.5	79.8	93.1
3/4	5/16	Double acting	Push side	285.0	29.5	58.9	88.4	117.8	147.3	176.7	206.2
			Pull side	235.5	24.3	48.7	73.0	97.4	121.7	146.0	170.4
1-1/16	1/2	Double acting	Push side	572.0	59.1	118.2	177.4	236.5	295.6	354.7	413.8
			Pull side	445.3	46.0	92.1	138.1	184.1	230.1	276.2	322.2
1-1/2	5/8	Double acting	Push side	1140.1	117.8	235.7	353.5	471.3	589.1	707.0	824.8
			Pull side	942.0	97.4	194.7	292.1	389.4	486.8	584.2	681.5
2	3/4	Double acting	Push side	2026.8	209.5	418.9	628.4	837.9	1047.4	1256.8	1466.3
			Pull side	1741.8	180.0	360.0	540.0	720.1	900.1	1080.1	1260.1
2-1/2	3/4	Double acting	Push side	3166.9	327.3	654.6	981.9	1309.2	1636.5	1963.8	2291.1
			Pull side	2881.9	297.8	595.7	893.5	1191.4	1489.2	1787.1	2084.9
3	7/8	Double acting	Push side	4560.4	471.3	942.6	1413.9	1885.3	2356.6	2827.9	3299.2
			Pull side	4172.2	431.2	862.4	1293.6	1724.8	2156.0	2587.2	3018.4
4	1	Double acting	Push side	8107.3	837.9	1675.8	2513.7	3351.6	4189.5	5027.3	5865.2
			Pull side	7600.6	785.5	1571.0	2356.6	3142.1	3927.6	4713.1	5498.7

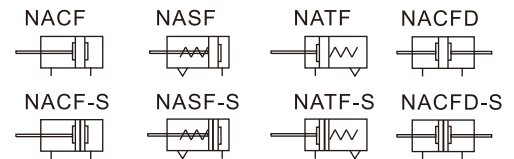
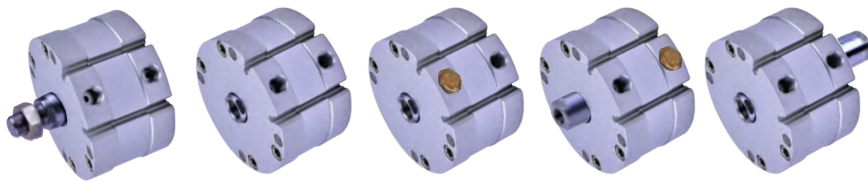
## Installation and application

- When load changes in the work, the cylinder with abundant output capacity shall be selected.
- Relative cylinder with high temperature resistance or corrosion resistance shall be chosen under the condition of high temperature or corrosion.
- Necessary protection measure shall be taken in the environment with higher humidity, much dust or water drops, oil dust and welding dregs.
- Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of particles into the cylinder.
- The medium used by cylinder shall be filtered to 40μm or below.
- As both of the front cover and piston of the cylinder are short, typically too large stroke can not be selected.
- Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
- The cylinder shall avoid the influence of side load in operation to maintain the normal work of cylinder and extend the service life.
- If the cylinder is dismantled and stored for a long time, please 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.



# Round compact cylinder

## NACF Series



### Ordering code

**NACF 2 X3/8 S B □ T**



① Model	② Bore size	③ Stroke	④ Magnet	⑤ Rod type	⑥ Mounting type	⑦ Thread type
NACF: Round compact cylinder (Double acting)	9/16" 3/4"	Refer to stroke table for details	Blank: Without magnet S: With magnet	Blank: Female thread B: Male thread	Blank: No accessories CA: CA type	T: NPT [Note1]
NASF: Round compact cylinder (Single acting-push)	1-1/16" 1-1/2"					
NATF: Round compact cylinder (Single acting-pull)	2" 2-1/2"					
NACFD: Round compact cylinder (Double rod)	3" 4"				Blank: No accessories	

[Note1]  $\Phi 9/16"$  and  $\Phi 3/4"$  thread are #10-32UNF and is blank here.

### Stroke

Bore size (inch)	Standard stroke (inch)															
9/16", 3/4", 1-1/16", 1-1/2", 2", 2-1/2", 3", 4"	Double acting	1/4	3/8	1/2	5/8	3/4	7/8	1	1-1/4	1-1/2	1-3/4	2	2-1/2	3	3-1/2	4
	Single acting	1/4	3/8	1/2	5/8	3/4	7/8	1	1-1/4	1-1/2	1-3/4	2				

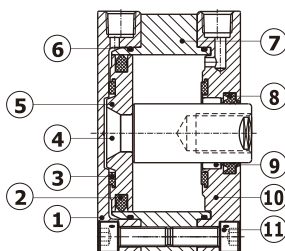
### Specification

Bore size (inch)	9/16"	3/4"	1-1/16"	1-1/2"	2"	2-1/2"	3"	4"
Acting type	Double acting, Single acting_Push type, Single acting_Pull type							
Fluid	Air (to be filtered by 40 $\mu$ m 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 $^{\circ}$ ~160 $^{\circ}$ F (-20~70 $^{\circ}$ C)							
Speed range inch/s	Double acting: 1.2~20 Single acting: 2~20							
Stroke tolerance inch	$\begin{matrix} +0.04 \\ 0 \end{matrix}$							
Cushion type	Bumper							
Port size	#10-32UNF		NPT1/8			NPT1/4		NPT3/8

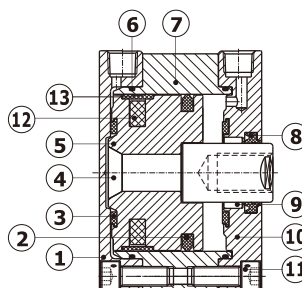
Add) Refer to P535 for detail of sensor switch.

### Inner structure

**NACF**



**NACF-S**



NO.	Item	NO.	Item
1	Back cover	8	Front cover packing
2	Piston seal	9	Bushing
3	Bumper	10	Front cover
4	Piston rod	11	Bolt
5	Piston	12	Magnet
6	O-ring	13	Wear ring
7	Body		

Note: The piston rod material is stainless steel ( $\Phi 9/16"$ ,  $\Phi 3/4"$ ), and carbon steel (others).

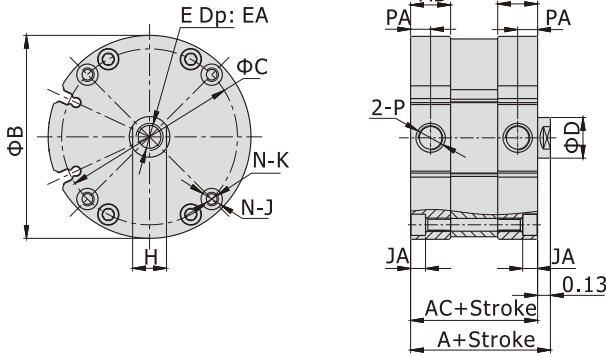


# Round compact cylinder

## NACF Series

### Dimensions

#### NACF

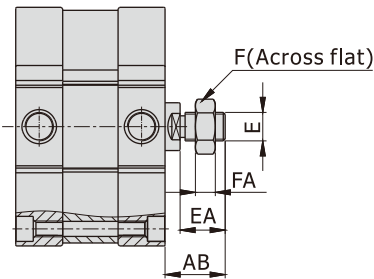


Item Bore size	A		AC	
	No magnet	With magnet	No magnet	With magnet
9/16"	0.69	1.57	0.56	1.44
3/4"	0.69	1.57	0.56	1.44
1-1/16"	1.01	1.89	0.88	1.76
1-1/2"	1.01	1.89	0.88	1.76
2"	1.07	1.95	0.94	1.82
2-1/2"	1.32	2.2	1.19	2.07
3"	1.38	2.26	1.25	2.13
4"	1.69	2.57	1.56	2.44

[Unit: Inch]

Bore size \ Item Stroke	AD		B	C	D	E	EA		H	J	JA	K	N	P	PA	
	1/4	≥3/8					≤3/8	≥1/2							1/4	≥3/8
9/16"	0.39		1.12	0.88	1/4	#8-32 UNC	0.24		7/32	0.20	0.13	#8-32 UNC	2	#10-32 UNF	0.22	
3/4"	0.39		1.50	1.22	5/16	#10-32 UNF	0.31		1/4	0.24	0.15	#10-24 UNC	4	#10-32 UNF	0.22	
1-1/16"	0.55		1.99	1.69	1/2	5/16-24 UNF	0.37		7/16	0.24	0.15	#10-24 UNC	4	NPT1/8	0.30	
1-1/2"	0.55		2.62	2.19	5/8	3/8-24 UNF	0.59		1/2	0.34	0.22	1/4-20 UNC	4	NPT1/8	0.30	
2"	0.55		3.12	2.69	3/4	1/2-20 UNF	0.60	0.70	5/8	0.34	0.22	1/4-20 UNC	4	NPT1/8	0.30	
2-1/2"	0.70	0.75	3.75	3.25	3/4	1/2-20 UNF	0.60	0.70	5/8	0.40	0.27	5/16-18 UNC	4	NPT1/4	0.33	0.41
3"	0.75	0.75	4.25	3.78	7/8	5/8-18 UNF	0.63	0.79	3/4	0.40	0.27	5/16-18 UNC	4	NPT1/4	0.33	0.41
4"	0.89	0.93	5.50	4.94	1	3/4-16 UNF	0.70	1.02	7/8	0.49	0.33	3/8-16 UNC	4	NPT3/8	0.40	0.51

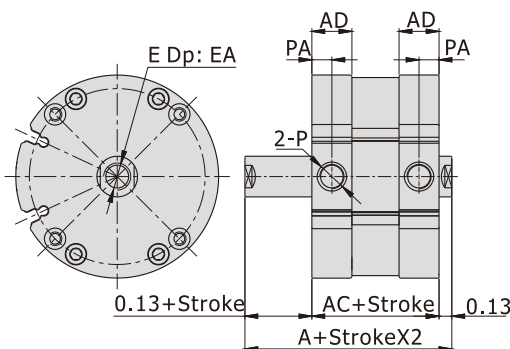
#### Male thread



Bore size \ Item	AB	E	EA	F	FA
9/16"	0.51	#8-32 UNC	0.38	11/32	0.13
3/4"	0.51	#10-32 UNF	0.38	3/8	0.13
1-1/16"	0.63	5/16-24 UNF	0.50	1/2	0.19
1-1/2"	0.63	3/8-24 UNF	0.50	9/16	0.22
2"	0.76	1/2-20 UNF	0.63	3/4	0.31
2-1/2"	0.76	1/2-20 UNF	0.63	3/4	0.31
3"	0.88	5/8-18 UNF	0.75	15/16	0.38
4"	0.88	3/4-16 UNF	0.75	1-1/8	0.42

[Unit: Inch]

#### NACFD

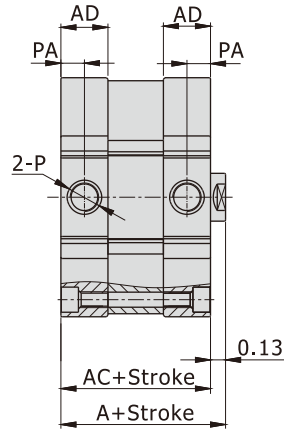


Item Bore size	A		AC		AD	E	EA	PA	P
	No magnet	With magnet	No magnet	With magnet					
9/16"	1.08	1.96	0.82	1.70	0.39	#8-32 UNC	0.24	0.22	#10-32 UNF
3/4"	1.08	1.96	0.82	1.70	0.39	#10-32 UNF	0.30	0.22	#10-32 UNF
1-1/16"	1.4	2.28	1.14	2.02	0.55	5/16-24 UNF	0.37(S≤3/8)/0.5(S>3/8)	0.30	NPT1/8
1-1/2"	1.52	2.4	1.26	2.14	0.55	3/8-24 UNF	0.43(S≤3/8)/0.59(S>3/8)	0.30	NPT1/8
2"	1.58	2.46	1.32	2.2	0.55	1/2-20 UNF	0.30(S=1/4,3/8) 0.47(S=1/2,5/8) 0.70(S>5/8)	0.30	NPT1/8
2-1/2"	1.83	2.71	1.57	2.45	0.75	1/2-20 UNF	0.42(S=1/4,3/8) 0.55(S=1/2) 0.70(S>1/2)	0.41	NPT1/4
3"	1.89	2.77	1.63	2.51	0.75	5/8-18 UNF	0.45(S=1/4,3/8) 0.55(S=1/2) 0.79(S>1/2)	0.41	NPT1/4
4"	2.2	3.08	1.94	2.82	0.93	3/4-16 UNF	0.40(S=1/4,3/8) 0.63(S=1/2~7/8) 1.02(S>7/8)	0.51	NPT3/8

# Round compact cylinder

## NACF Series

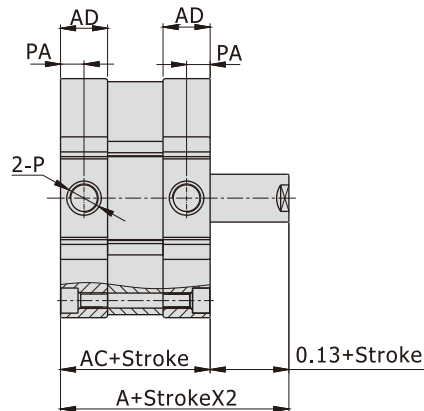
### NASF



[Unit: Inch]

Bore size \ Item	A(No magnet)		A(With magnet)		AC(No magnet)		AC(With magnet)		AD	P	PA	
	Stroke	1/4~1	1.001~2	1/4~1	1.001~2	1/4~1	1.001~2	1/4~1				1.001~2
9/16"		1.19	1.69	2.07	2.57	1.06	1.56	1.94	2.44	0.39	#10-32 UNF	0.22
3/4"		1.19	1.69	2.07	2.57	1.06	1.56	1.94	2.44	0.39	#10-32 UNF	0.22
1-1/16"		1.50	2.00	2.38	2.88	1.38	1.88	2.25	2.75	0.55	NPT1/8	0.30
1-1/2"		1.50	2.00	2.38	2.88	1.38	1.88	2.25	2.75	0.55	NPT1/8	0.30
2"		1.57	2.07	2.45	2.95	1.44	1.94	2.32	2.82	0.55	NPT1/8	0.30
2-1/2"		1.82	2.32	2.70	3.20	1.69	2.19	2.57	3.07	0.75	NPT1/4	0.41
3"		1.88	2.38	2.75	3.26	1.75	2.25	2.63	3.13	0.75	NPT1/4	0.41
4"		2.19	2.69	3.07	3.58	2.06	2.56	2.94	3.44	0.93	NPT3/8	0.51

### NATF



[Unit: Inch]

Bore size \ Item	A(No magnet)		A(With magnet)		AC(No magnet)		AC(With magnet)		AD	P	PA	
	Stroke	1/4~1	1.001~2	1/4~1	1.001~2	1/4~1	1.001~2	1/4~1				1.001~2
9/16"		1.19	1.69	2.07	2.57	1.06	1.56	1.94	2.44	0.39	#10-32 UNF	0.22
3/4"		1.19	1.69	2.07	2.57	1.06	1.56	1.94	2.44	0.39	#10-32 UNF	0.22
1-1/16"		1.50	2.00	2.38	2.88	1.38	1.88	2.25	2.75	0.55	NPT1/8	0.30
1-1/2"		1.50	2.00	2.38	2.88	1.38	1.88	2.25	2.75	0.55	NPT1/8	0.30
2"		1.57	2.07	2.45	2.95	1.44	1.94	2.32	2.82	0.55	NPT1/8	0.30
2-1/2"		1.82	2.32	2.70	3.20	1.69	2.19	2.57	3.07	0.75	NPT1/4	0.41
3"		1.88	2.38	2.75	3.26	1.75	2.25	2.63	3.13	0.75	NPT1/4	0.41
4"		2.19	2.69	3.07	3.58	2.06	2.56	2.94	3.44	0.93	NPT3/8	0.51

# Round compact cylinder

## NACF Series—Accessories

### List for ordering code of accessories

Accessories Bore size	Mounting accessories		Knuckle	Sensor switch
	CA	CB	I	
9/16"	F-NACF9/16CA	F-NACF9/16CB	F-NACF9/16I	CMSh DMSh EMSh
3/4"	F-NACF3/4CA		F-NACF3/4I	
1-1/16"	F-NACF1-1/16CA		F-NACF1-1/16I	
1-1/2"	F-NACF1-1/2CA	F-NACF1-1/2CB	F-NACF1-1/2I	
2"	F-NACF2CA		F-NACF2I	
2-1/2"	F-NACF2-1/2CA		F-NACF2I	
3"	F-NACF3CA	F-NACF3CB	F-NACF3I	
4"	F-NACF4CA		F-NACF4I	

### Accessory selection

Cylinder model\Accessories			Mounting accessories		Knuckle	Sensor switch		
			CA	CB [1]	I	CMSh	DMSh	EMSh
NACF	Female thread	Without magnet	●	●	●	×	×	×
		With magnet				●	●	●
	Male thread	Without magnet			×	×	×	
		With magnet			●	●	●	
NASF NATF	Female thread	Without magnet	●	●	●	×	×	×
		With magnet				●	●	●
	Male thread	Without magnet			×	×	×	
		With magnet			●	●	●	
NACFD	Female thread	Without magnet	×	●	●	×	×	×
		With magnet				●	●	●
	Male thread	Without magnet			×	×	×	
		With magnet			●	●	●	

[Note1] CB is attached with relevant PIN.

### Material of accessories

Accessories Bore size	Mounting accessories		Knuckle
	CA	CB	I
9/16"~2-1/2"	●	●	□
3", 4"	□	□	□

●—Aluminum alloy ; □—Steel

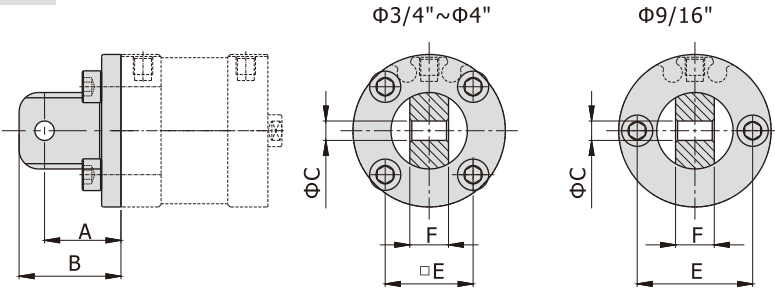
# Round compact cylinder

## NACF Series—Accessories

### Dimensions

#### CA

[Unit: Inch]

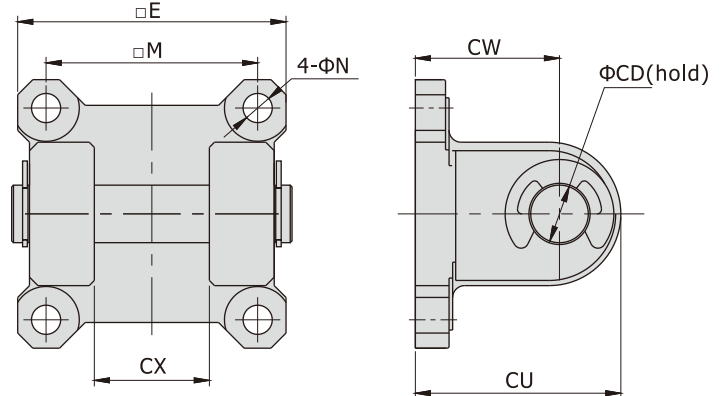
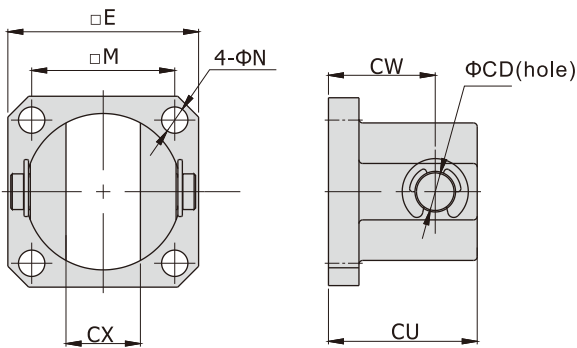


Bore size\Item	A	B	C	E	F
9/16"	0.75	1.00	3/16	0.88	3/8
3/4"	0.75	1.00	3/16	0.84	3/8
1-1/16"	0.81	1.06	3/16	1.19	3/8
1-1/2"	1.19	1.63	3/8	1.55	3/4
2"	1.25	1.69	3/8	1.90	3/4
2-1/2"	1.31	1.75	3/8	2.30	3/4
3"	1.69	2.25	5/8	2.67	1
4"	1.75	2.31	5/8	3.49	1

#### CB

Φ9/16"~Φ1-1/16"

Φ1-1/2"~Φ4"

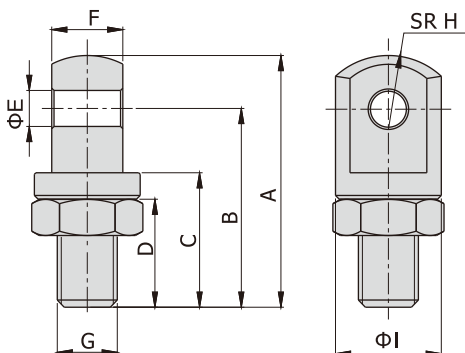


[Unit: Inch]

Type\Item	Bore size	E	CX	CD	CW	CU	M	N
F-NACF9/16CB	9/16"	1.00	25/64	3/16	0.56	0.78	0.75	0.16
	3/4"							
	1-1/16"							
F-NACF1-1/2CB	1-1/2"	1.75	3/4	3/8	0.94	1.34	1.38	0.21
	2"							
	2-1/2"							
F-NACF3CB	3"	2.50	1	5/8	1.25	1.81	2.00	0.27
	4"							

#### I Knuckle

[Unit: Inch]



Bore size\Item	A	B	C	D	E	F	G	H	I
9/16"	1.13	0.85	0.51	0.38	3/16	3/8	#8-32 UNC	0.41	0.55
3/4"	1.13	0.85	0.51	0.38	3/16	3/8	#10-32 UNF	0.41	0.55
1-1/16"	1.38	1.00	0.77	0.63	3/16	3/8	5/16-24 UNF	0.41	0.55
1-1/2"	1.89	1.35	0.77	0.63	3/8	3/4	3/8-24 UNF	0.59	0.98
2"	2.01	1.47	0.88	0.75	3/8	3/4	1/2-20 UNF	0.59	0.98
2-1/2"	2.01	1.47	0.88	0.75	3/8	3/4	1/2-20 UNF	0.59	0.98
3"	2.68	1.88	1.08	0.88	5/8	1	5/8-18 UNF	0.79	1.50
4"	2.68	1.88	1.08	0.88	5/8	1	3/4-16 UNF	0.79	1.50