

# Roundline Plus Stainless Steel Actuators

5/16" to 3" bore

Single and Double acting actuators

Full range of bore sizes

All essential models

Optional Ecology seal

## Technical data

Medium:

Filtered, lubricated or non-lubricated, compressed air

Maximum Operating

Pressure:

250 psig (17.2 bar)

Temperature Range\*:

Standard Nitrile Seals:

-20° to 200°F (-29° to 93°C)

High temp Seals:

-20° to 400°F (-29° to 205°C)

\*With dew point of supply air less than air temperature below 35°F (2°C)

Lubrication:

All Roundline Plus cylinders are pre-lubricated during assembly with a Teflon® based grease for non-lube service and long life.

## Materials

Cylinder Body:

304 Stainless Steel

Head and Cap:

Aluminum Alloy

Piston Rod:

Stainless steel in double rod cylinders, and 5/16", 7/16", and 9/16" bores. Chrome plated steel in all other bore sizes

Rod Bearing: Oil Impregnated Sintered Bronze

Piston: Aluminum Alloy or stainless steel

Rod & Piston Seals: Nitrile

Pivot Bracket, Rod Clevis, Foot

Bracket, Mounting Nut: Bright Zinc Plated Carbon Steel



## Options selector

RP 075 x 2.50 - DAN - PS

Series	
Roundline Plus	RP
Roundline Plus with Ecology seals*	*ERP

Bore Size	
5/16"	031
7/16"	043
9/16"	056
3/4" (E)	075
7/8"	087
1-1/16" (E)	106
1-1/4" (E)	125
1-1/2" (E)	150
1-3/4"	175
2" (E)	200
2-1/2" (E)	250
3" (E)	300
E - Available with Ecology Seals	

Stroke	
Increments of 1/16" up to a maximum. See table	

Mounting Options	
Single Acting Nose	SAN
Single Acting Pivot	SAP
Single Acting Front Block	SBF
Single Acting Rear Block	SBR
Single Acting Front Trunnion	STF
Single Acting Rear Trunnion	STR
Single Acting Non-Rotating Nose	NRN
Single Acting Non-Rotating Pivot	NRP
Reverse Acting Nose	RAN
Reverse Acting Pivot	RAP
Reverse Acting Front Block (available in 3/4" & 1-1/16" only)	RAF
Reverse Acting Rear Block	RAR
Double Acting Nose	DAN
Double Acting Pivot	DAP
Double Acting Double End Mount	DAD
Double Acting Front Block	DAF
Double Acting Rear Block	DAR
Double Acting Front Trunnion	DFT
Double Acting Rear Trunnion	DRT
Double Acting Double Rod End	DRD

Mounting Options	
Adjustable Cushion Head End	CH
Adjustable Cushion Cap End	CC
Adjustable Cushion Both Ends	CB
Bumpers (not available with HT)	UB
Alternate Port Location	PL( )
Side Ported End Cap (DAN and SAN models only, note length adder)	PC
Magnetic Piston	PS
Switch Rail and location	M1,M2, M3,M4
Non-Adjustable cushion head end	NH*
Non-Adjustable cushion cap end	NC*
Non-Adjustable cushions both ends	NB*
No Flats (no plain rod stick out)	NF**
No Rod Thread	PR
Pivot Bushing (no pin)	PO
Non-Standard Male Thread	TM( )
Non-Standard Female Thread	FT( )
Thread extension over standard (specify additional length)	TX†( )
Rod extension over standard (specify additional length)	RX†( )
Stainless Steel piston rod (standard on certain models)	SS
High Temperature Seals	HT
Rod Wiper (not available with HT)	RW

\* ERP, ecology cylinders come complete with non-adjustable cushions both ends (NH, NC, NB, options not required in model number of ERP cylinder). ERP on DAP, DAD, and DAN models only (add PC option length adder to DAN models)

\*\* Available only on 1-1/16" bore - RAN and RAP, mounts.

† Male thread extension only. Consult factory for negative thread or rod extensions.

## Maximum Stroke Lengths††

Bore	Single & Reverse Acting	Double Acting
5/16"	4	12
7/16"-9/16"	6	36
3/4"-1-3/4"	6	36
2"	4	36
2-1/2"-3"	-	36

†† Consult factory for longer stroke lengths.

## Roundline Plus Stainless Steel Actuators

- 1** Oil impregnated sintered bronze Rod Bearing provides exceptional rod support, and optimal cycle life
- 2** Chrome plated carbon steel Piston Rod for strength, smooth operation, and long life (stainless steel Piston Rod on 5/16, 7/16, 9/16 and all Double Rod cylinders)
- 3** Lip-Type nitrile Rod Seal, pressure energized and wear compensating
- 4** Head and Cap are solid aluminum alloy for strength and durability
- 5** Solid aluminum Piston is strong yet lightweight for low inertia
- 6** Lip-type nitrile Piston Seals are wear compensating for long life
- 7** 304 stainless steel Cylinder Body with polished I.D. ensures smooth performance and outstanding life cycle



\*Note: Single acting cylinders (not shown) use springs manufactured from music wire to provide millions of trouble free cycles.

## Ecology Roundline Plus - ERP Model

The ERP model is the cost effective answer to load deceleration and faster through cushion performance.

- 1** IMPACT DAMPENING ECOLOGY PISTON SEALS
  - » Increased load capabilities and cycle rates
  - » Vibration and noise reduction
- 2** PRE-ENGINEERED NON-ADJUSTABLE CUSHION
  - » Tamper resistant
  - » Increased performance



### Roundline Ecology Piston Seal Option (ERP)

The Ecology (Impact Dampening) Piston Seal option is available on select inch bore size Roundline cylinders in DAP, DAD, and DAN configurations. This option includes non-adjustable air cushions on both the extend and retract stroke of the cylinder. By including the Ecology Piston Seal option, cylinders can be specified based on weights of load being carried and speed of load. This is shown in the table below.

### Energy Absorption Capacity of the Impact Dampening Piston Seal

This chart represents the energy absorption capacity of the Impact Dampening piston seals with standard Non-Adjustable air cushions. The values given are usable pounds stoppable at stated piston speeds.

In/Sec	Cylinder Bore					
	3/4	1-1/16	1-1/4	1-1/2	2	2-1/2
6	36.6	62.3	74.5	115.5	258.9	421.1
12	5.6	15.6	18.6	28.9	64.7	105.3
18	2.5	6.9	8.3	12.8	28.8	46.8
24	1.4	3.9	4.7	7.2	16.2	26.3
30	0.9	2.5	3.0	4.6	10.4	16.8
36	0.6	1.7	2.1	3.2	7.2	11.7
42	0.5	1.3	1.5	2.4	5.3	8.6
48	0.3	1.0	1.2	1.8	4.0	6.6
54	0.3	0.8	0.9	1.4	3.2	5.2
60	0.2	0.6	0.7	1.2	2.6	4.2

PSI	Effect of Impact Dampening Seals on Total Stroke of Cylinders					
	Cylinder Bore					
	3/4	1-1/16	1-1/4	1-1/2	2	2-1/2
0	.11	.12	.12	.14	.15	.17
20	.08	.09	.09	.10	.10	.12
40	.05	.06	.06	.07	.07	.08
60	.03	.04	.04	.04	.04	.05
80	.01	.02	.02	.02	.02	.02
100	0	0	0	0	0	0

The figure above represents total stroke loss (both ends) for the pressure indicated for new cylinders. The impact dampening seals will take some compression set during operation of the cylinder and the stroke loss will decrease. To determine stroke loss for either head or cap divide the value shown by 2.

# Roundline Plus Stainless Steel Actuators

Dimensions in inches

Option Combination Availability Chart																					
✓ = Option combination available											X = Option combination not available										
	ERP (prefix)	CH	CC	CB	UB	PL( )	PC	PS	M1,M2, M,M4	NH	NC	NB	PR	PO	TM( )	FT( )	TX( )	RX( )	SS	HT	RW
ERP (prefix)	✓	✓	✓	✓	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	x	✓
CH	✓	✓	x	x	x	✓	✓	✓	✓	x	✓	x	✓	✓	✓	✓	✓	✓	✓	✓	✓
CC	✓	x	✓	x	x	✓	✓	✓	✓	✓	x	x	✓	✓	✓	✓	✓	✓	✓	✓	✓
CB	✓	x	x	✓	x	✓	✓	✓	✓	x	x	x	✓	✓	✓	✓	✓	✓	✓	✓	✓
UB	x	x	x	x	✓	✓	✓	✓	✓	x	x	x	✓	✓	✓	✓	✓	✓	✓	✓	✓
PL( )	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
PC	✓	✓	✓	✓	✓	✓	✓	✓	✓	x	x	x	✓	x	✓	✓	✓	✓	✓	✓	✓
PS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
M1,M2, M,M4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
NH	✓	x	✓	x	x	✓	x	✓	✓	✓	x	x	✓	✓	✓	✓	✓	✓	✓	✓	✓
NC	✓	✓	x	x	x	✓	x	✓	✓	x	✓	x	✓	✓	✓	✓	✓	✓	✓	✓	✓
NB	✓	x	x	x	x	✓	x	✓	✓	x	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
PR	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	x	x	x	✓	✓	✓	✓
PO	✓	✓	✓	✓	✓	✓	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
TM( )	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	x	✓	✓	✓	✓	✓	✓	✓	✓
FT( )	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	x	✓	x	✓	✓	✓	✓	✓	✓
TX( )	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	x	✓	✓	x	✓	✓	✓	✓	✓
RX( )	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
HT	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	x
RW	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	x	✓

## Force Factor Data

Bore	Code	Force Factor (Area)	
		Extend	Retract
5/16"	(031)	0.077	0.064
7/16"	(043)	0.15	0.12
9/16"	(056)	0.25	0.22
3/4"	(075)	0.44	0.39
7/8"	(087)	0.6	0.55
1-1/16"	(106)	0.89	0.61
1-1/4"	(125)	1.23	1.08
1-1/2"	(150)	1.77	1.62
1-3/4"	(175)	2.41	2.21
2"	(200)	3.14	2.84
2-1/2"	(250)	4.91	4.61
3"	(300)	7.07	6.63

### Force Output Formula

Cylinder Output Force = Force Factor (area) x Air Line Pressure (psi)

Ex: 1-1/16" bore cylinder operating at 80 psi:

Force exerted on the extend:  $0.89 \times 80 = 71.2$  lbs.

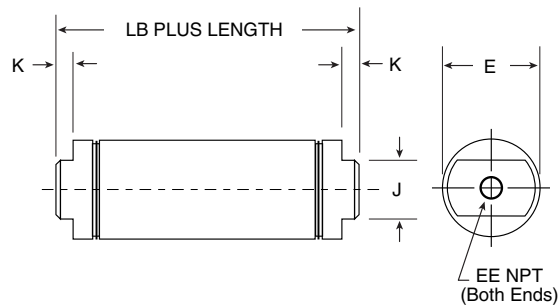
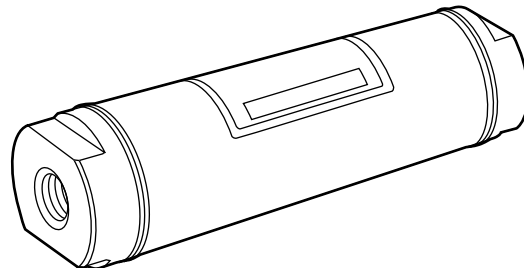
Force exerted on the retract:  $0.69 \times 80 = 55.2$  lbs.

## Approximate Spring Forces (lbs.)

Bore	Code	Relaxed (lbs)	Compressed (lbs)
5/16"	(031)	0.5	1
7/16"	(043)	1	2
9/16"	(056)	2	4
3/4"	(075)	3	6
7/8"	(087)	3	6
1-1/16"	(106)	3	6
1-1/4"	(125)	7.5	15
1-1/2"	(150)	7	14
1-3/4"	(175)	11	24
2"	(200)	15	30

## Air Reservoir

Air Reservoirs are made of the same high-quality stainless steel as the Series RP Cylinders.



### Dimensions — All Dimensions in Inches

Bore	E	EE	J	K	LB	Standard Internal Lengths
3/4"	0.813	1/8"	0.625	0.187	1.938	1" increments thru 4"
1-1/16"	1.125	1/8"	0.875	0.187	2.375	1" increments thru 8"
1-1/2"	1.562	1/8"	0.875	0.250	2.250	1" increments thru 16"
2"	2.080	1/4"	1.250	0.312	2.875	1" increments thru 16"
2-1/2"	2.610	1/4"	1.750	0.312	2.875	1" increments thru 24"

### How to Order

Example:

1-1/16" bore air reservoir with a 3" internal length would be ordered as follows: AR-1-1/16 x 3

# Roundline Plus Stainless Steel Actuators

## CH,CC,CB - Adjustable Cushions

Available only on DAN, DAP, and DAD models.

## UB - Bumpers

Bumpers are standard on 5/16", 7/8", 1-1/4", and 1-3/4" bores - when the HT high temperature option is ordered, the bumpers are omitted and the overall length may decrease (except 5/16" bore). Single acting models will have one bumper on the piston side opposite the spring. (see chart for changes in overall length due to bumper, or bumper omission.)

NOTE: Bumpers are not included with the Ecology Seal model.

Bore	Increase in cylinder length due to the UB option			
	Single Acting	Reverse Acting	Double Acting	Double Rod End
5/16"	Std	Std	Std	Std
7/16"	0.062	0.125	0.188	0.25
9/16"	0.062	0.062	0.125	0.125
3/4"	0.125	0.125	0	0
7/8"	Std	Std	Std	Std
1-1/16"	0.125	0.125	0.125	0.5*
1-1/4"	Std	Std	Std	Std
1-1/2"	0.125	0.125	0.125	0.125
1-3/4"	Std	Std	Std	Std
2"	0.125	0.125	0.250	0.250
2-1/2"	0.125	0.125	0.250	0.250
3"	0.125	0.125	0.250	0.250

\* When the UB and PS options are in combination on an 1-1/16" bore, double rod end, only the bumper length should be added. All other models and bore sizes should add the UB length and the PS length together.

## HT - High Temperature Seals

For service up to 400°F.

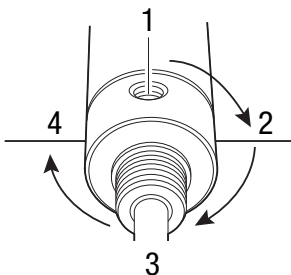
Not available with RW rod wiper option. When ordered with the UB bumper option, cylinder will only be rated to 200°F - as this is the temperature limitation of the bumpers.

For cylinders where bumpers are standard, opting for High Temperature seals will omit the bumpers and may decrease the overall length of the cylinder (except the 5/16" bore). See below for length changes.

Bore	Decrease in Overall length due to HT option (in.)			
	Single Acting	Reverse Acting	Double Acting	Double Rod End
5/16"	0.000	0.000	0.000	0.000
7/8"	0.090	0.125	0.220	0.250
1-1/4"	0.125	0.125	0.190	0.250
1-3/4"	0.125	0.125	0.250	0.250

## PL( ) - Alternate Port Location

Designate location on head and cap respectively. For example: L(12) = Head port location 1, and Cap port location 2.



## PC - Side ported end cap (DAN and SAN models only)

Port will be on the side of the end cap and in line with the head end port. Overall length of the cylinder will increase.

Change in overall length due to the PC option.

Bore	Length Increase
5/16"	0.2
7/16"	0.19
9/16"	0.03
3/4"	0.44
7/8"	0.28
1-1/16"	0.25
1-1/4"	0.31
1-1/2"	0.19
1-3/4"	0.56
2"	0.38
2-1/2"	0.38
3"	0.44

## PS - Magnetic Piston

A magnet on the piston may increase the length of the cylinder. See chart below for length adders.

Bore	Increase in cylinder length with the PS option		
	Single & Reverse Acting	Double Acting	Double Rod End
5/16"	0.150	0.150	N/A
7/16"	0.200	0.250	0.250
9/16"	0.125	0	0
3/4"	0.125	0	0
7/8"	0.125	0.125	0.125
1-1/16"	0.125	0	0.125**
1-1/4"	0.125	0	0
1-1/2"	0.125	0	0
1-3/4"	0.125	0	0
2"	0.125	0	0
2-1/2"	-	0	0
3"	-	0	0

\* When the UB and PS options are in combination on an 1-1/16" bore, double rod end, only the bumper length should be added. All other models and bore sizes should add the UB length and the PS length together.

\*\* Ecology piston seal adds .375" to the overall length when combined with PS option on the 1-1/16" bore DRD model only.



Rail shown at position M2

## M1,M2,M3,M4 - Switch rail mounted and position

Switch rail will be mounted in position #1 for M1 option, Position #2 for M2 option, etc. Must also reference the PS option in the cylinder model number to receive a magnet on the piston.

A band style switch bracket can be ordered as a separate item instead of the switch rail. See switch section for band style bracket information.

Switches ordered as separate items.

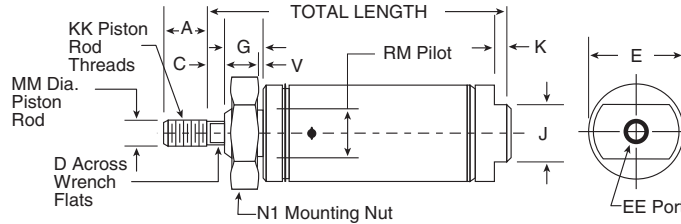
## FT( ) - Female thread

Specify thread type in parentheses. Female rod thread available on 1-3/4", 2", 2-1/2", 3" bores.

# Roundline Plus Stainless Steel Actuators

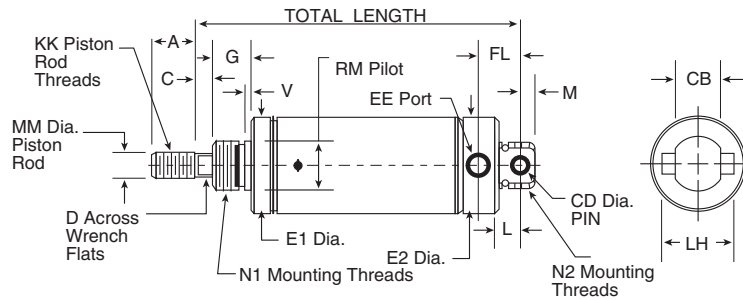
Dimensions in inches

## Single Acting Spring Return (SAN) — Nose Mount



Bore	A	C	D	E	EE	G	J	K	KK	MM	N1	RM	V	Total Length
5/16"	0.38	N/A	N/A	0.36	10-32	0.25	N/A	N/A	5-40	0.125	1/4-28	.309/.312	0.03	1.12 + (0.75 per 1/2" of stroke)
7/16"	0.50	N/A	N/A	0.50	10-32	0.31	0.38	0.19	10-32	0.187	3/8-24	.369/.373	0.05	1.31 + (0.94 per 1/2" of stroke)
9/16"	0.50	N/A	N/A	0.62	10-32	0.38	0.50	0.19	10-32	0.187	7/16-20	.434/.437	0.06	1.53 + (1.62 per 1" of stroke)
3/4"	0.50	N/A	N/A	0.81	1/8 NPT	0.44	0.62	0.19	1/4-28	0.250	1/2-20	.494/.498	0.08	1.50 + (1.69 per 1" of stroke)
7/8"	0.50	N/A	N/A	0.94	1/8 NPT	0.50	0.62	0.19	1/4-28	0.250	5/8-18	.621/.624	0.09	1.84 + (1.56 per 1" of stroke)
1-1/16"	0.50	N/A	N/A	1.12	1/8 NPT	0.50	0.88	0.19	5/16-24	0.312	5/8-18	.621/.624	0.07	1.94 + (1.56 per 1" of stroke)
1-1/4"	0.75	0.25	0.38	1.34	1/8 NPT	0.63	0.88	0.25	7/16-20	0.437	3/4-16	.746/.749	0.09	2.66 + (1.81 per 1" of stroke)
1-1/2"	0.75	0.25	0.38	1.56	1/8 NPT	0.63	0.88	0.25	7/16-20	0.437	3/4-16	.746/.749	0.09	2.44 + (1.69 per 1" of stroke)
1-3/4"	0.88	0.31	0.44	1.84	1/4 NPT	0.75	1.25	0.25	1/2-20	0.500	1-14	1.029/1.032	0.09	2.97 + (2.00 per 1" of stroke)
2"	0.88	0.38	0.50	2.08	1/4 NPT	0.81	1.25	0.31	1/2-20	0.625	1-1/4-12	1.372/1.375	0.12	Consult Factory

## Single Acting Spring Return (SAP) — Pivot Mount

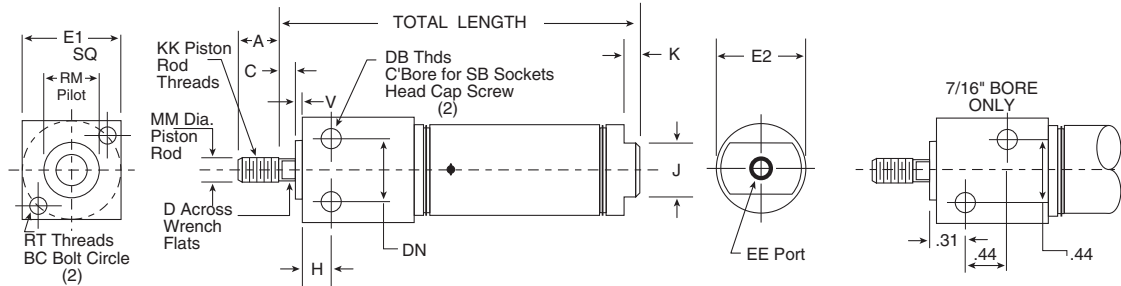


Bore	A	CB	C	CD	D	E1	E2	EE	FL	G	KK	L	LH	M	MM	N1	N2	V	RM	Total Length
5/16"	0.38	0.25	N/A	0.125	N/A	0.36	0.36	10-32	0.34	0.25	5-40	0.19	N/A	0.16	0.125	1/4-28	3/8-24	0.03	.245/.249	1.52 + (.75 per 1/2" of stroke)
7/16"	0.50	0.31	N/A	0.156	N/A	0.50	0.74	10-32	0.44	0.31	10-32	0.25	0.50	0.25	0.187	3/8-24	7/16-20	0.05	.369/.373	1.75 + (.94 per 1/2" of stroke)
9/16"	0.50	0.31	N/A	0.156	N/A	0.62	0.62	10-32	0.38	0.38	10-32	0.25	N/A	0.19	0.187	7/16-20	7/16-20	0.06	.434/.437	1.81 + (1.62 per 1" of stroke)
3/4"	0.50	0.38	N/A	0.250	N/A	0.81	0.86	1/8 NPT	0.62	0.44	1/4-28	0.34	0.75	0.28	0.250	1/2-20	5/8-18	0.08	.494/.498	2.28 + (1.69 per 1" of stroke)
7/8"	0.50	0.38	N/A	0.250	N/A	0.94	0.94	1/8 NPT	0.62	0.50	1/4-28	0.34	0.75	0.28	0.250	5/8-18	5/8-18	0.09	.621/.624	2.47 + (1.56 per 1" of stroke)
1-1/16"	0.50	0.38	0.12	0.250	0.25	1.12	1.12	1/8 NPT	0.62	0.50	5/16-24	0.34	0.75	0.28	0.312	5/8-18	5/8-18	0.07	.621/.624	2.66 + (1.56 per 1" of stroke)
1-1/4"	0.75	0.50	0.25	0.250	0.38	1.34	1.34	1/8 NPT	0.78	0.63	7/16-20	0.41	N/A	0.40	0.437	3/4-16	3/4-16	0.09	.746/.749	3.38 + (1.81 per 1" of stroke)
1-1/2"	0.75	0.62	0.25	0.375	0.38	1.56	1.56	1/8 NPT	0.81	0.63	7/16-20	0.50	N/A	0.38	0.437	3/4-16	3/4-16	0.09	.746/.749	3.12 + (1.69 per 1" of stroke)
1-3/4"	0.88	0.62	0.31	0.375	0.44	1.84	1.84	1/4 NPT	1.12	1.06	1/2-20	0.50	N/A	0.50	0.500	1-14	1-14	0.09	1.029/1.032	4.03 + (2.00 per 1" of stroke)
2"	0.88	0.75	0.38	0.375	0.50	2.08	2.08	1/4 NPT	1.03	0.81	1/2-20	0.56	N/A	0.44	0.625	1-1/4-12	1-1/4-12	0.12	1.372/1.375	Consult Factory

# Roundline Plus Stainless Steel Actuators

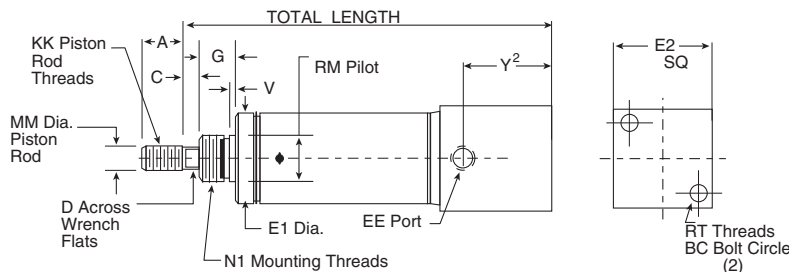
Dimensions in inches

## Single Acting Spring Return (SBF) — Front Block Mount



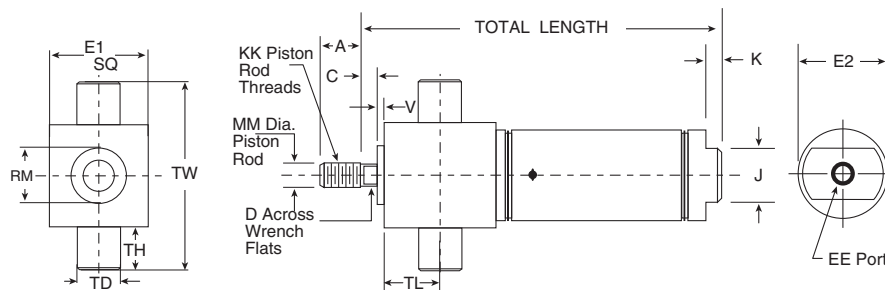
Bore	A	BC	C	D	DB	DN	E1	E2	EE	H	J	K	KK	MM	RM	RT	SB	V	Total Length
7/16"	0.50	0.75	N/A	N/A	8-32	N/A	0.75	0.50	10-32	N/A	0.38	0.19	10-32	0.187	0.44	8-32	N/A	0.06	1.94 + (.94 per 1/2" of stroke)
3/4"	0.75	1.00	0.25	0.22	1/4-20	0.62	1.00	0.81	1/8 NPT	0.38	0.62	0.19	1/4-28	0.250	0.63	10-32	#10	0.09	2.66 + (1.69 per 1" of stroke)
1-1/16"	0.75	1.25	0.38	0.25	1/4-20	0.81	1.25	1.12	1/8 NPT	0.62	0.88	0.19	5/16-24	0.312	0.75	10-32	#10	0.09	3.38 + (1.81 per 1" of stroke)
1-1/2"	1.25	1.75	0.25	0.38	5/16-18	1.12	1.75	1.56	1/4 NPT	0.88	0.88	0.25	7/16-20	0.437	1.00	1/4-20	1/4	0.13	3.69 + (2.00 per 1" of stroke)

## Single Acting Spring Return (SBR) — Rear Block Mount



Bore	A	BC	C	D	E1	E2	EE	G	KK	MM	N1	RM	RT	V	Y2	Total Length
7/16"	0.50	0.75	N/A	N/A	0.50	0.75	10-32	0.31	10-32	0.187	3/8-24	.369/.373	8-32	0.05	0.34	1.62 + (0.94 per 1/2" of stroke)
3/4"	0.75	1.00	0.25	0.22	0.81	1.00	1/8 NPT	0.44	1/4-28	0.250	1/2-20	.494/.498	10-32	0.08	0.44	2.31 + (1.69 per 1" of stroke)
1-1/16"	0.75	1.25	0.25	0.25	1.12	1.25	1/8 NPT	0.50	5/16-24	0.312	5/8-18	.621/.624	10-32	0.07	0.44	2.81 + (1.81 per 1" of stroke)
1-1/2"	1.25	1.75	0.25	0.38	1.56	1.75	1/8 NPT	0.63	7/16-20	0.437	3/4-16	.746/.749	1/4-20	0.09	0.62	3.06 + (2.00 per 1" of stroke)

## Single Acting Spring Return (STF) — Front Trunnion Mount

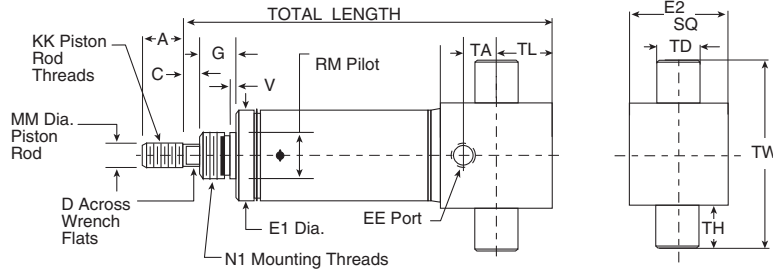


Bore	A	C	D	E1	E2	EE	J	K	KK	MM	RM	TD	TH	TL	TW	V	Total Length
7/16"	0.50	N/A	N/A	0.75	0.50	10-32	0.38	0.19	10-32	0.187	0.44	0.37	0.25	0.31	1.25	0.05	1.94 + (0.94 per 1/2" of stroke)
3/4"	0.75	0.25	0.22	1.00	0.81	1/8 NPT	0.62	0.19	1/4-28	0.250	0.62	0.50	0.38	0.69	1.75	0.09	2.66 + (1.69 per 1" of stroke)
1-1/16"	0.75	0.25	0.25	1.25	1.12	1/8 NPT	0.88	0.19	5/16-24	0.312	0.75	0.50	0.38	1.09	2.00	0.09	3.38 + (1.81 per 1" of stroke)
1-1/2"	1.25	0.25	0.38	1.75	1.56	1/8 NPT	0.88	0.25	7/16-20	0.437	1.00	0.50	0.38	1.31	2.50	0.12	3.69 + (2.00 per 1" of stroke)

# Roundline Plus Stainless Steel Actuators

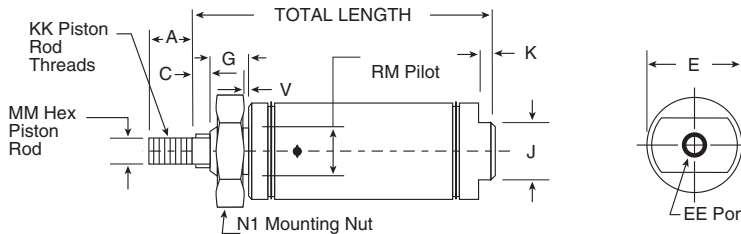
Dimensions in inches

## Single Acting Spring Return (STR) — Rear Trunion Mount



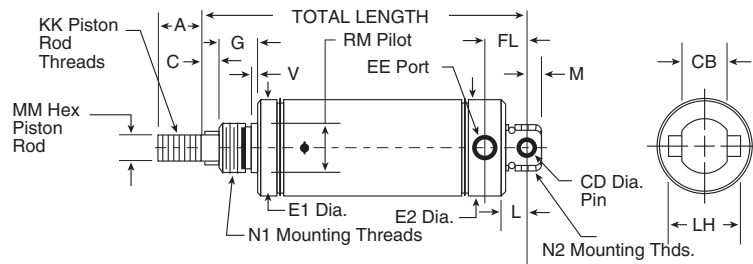
Bore	A	C	D	E1	E2	EE	G	KK	MM	N1	RM	TA	TD	TH	TL	TW	V	Total Length
7/16"	0.50	N/A	N/A	0.50	0.75	10-32	0.31	10-32	0.187	3/8-24	.370/.375	0.09	0.37	0.25	0.25	1.25	0.05	1.62 + (0.94 per 1/2" of stroke)
3/4"	0.75	0.25	0.22	0.81	1.00	1/8 NPT	0.69	1/4-28	0.250	1/2-20	.494/.498	0.06	0.50	0.38	0.38	1.75	0.08	2.31 + (1.69 per 1" of stroke)
1-1/16"	0.75	0.25	0.25	1.12	1.25	1/8 NPT	0.75	5/16-24	0.312	5/8-18	.621/.624	0.06	0.50	0.38	0.38	2.00	0.07	2.81 + (1.81 per 1" of stroke)
1-1/2"	1.25	0.25	0.38	1.56	1.75	1/8 NPT	0.88	7/16-20	0.437	3/4-16	.746/.749	0.12	0.50	0.38	0.50	2.50	0.06	3.06 + (2.00 per 1" of stroke)

## Single Acting Non-Rotating (NRN) — Nose Mount



Bore	A	C	E	EE	G	J	K	KK	MM (hex)	N1	RM	V	Total Length
7/16"	0.50	0.25	0.50	10-32	0.31	0.38	0.19	10-32	0.187	3/8-24	.369/.373	0.05	1.56 + (.94 per 1/2" of stroke)
9/16"	0.50	0.25	0.62	10-32	0.38	0.50	0.19	10-32	0.187	7/16-20	.434/.437	0.06	1.78 + (1.62 per 1" of stroke)
3/4"	0.50	0.25	0.81	1/8 NPT	0.44	0.62	0.19	1/4-28	0.250	1/2-20	.494/.498	0.08	1.75 + (1.69 per 1" of stroke)
7/8"	0.50	0.25	0.94	1/8 NPT	0.50	0.62	0.19	1/4-28	0.250	5/8-18	.621/.624	0.09	2.09 + (1.56 per 1" of stroke)
1-1/16"	0.50	0.25	1.12	1/8 NPT	0.50	0.88	0.19	5/16-24	0.375	5/8-18	.621/.624	0.07	2.19 + (1.56 per 1" of stroke)
1-1/4"	0.88	0.25	1.34	1/8 NPT	0.63	0.88	0.25	7/16-20	0.437	3/4-16	.746/.749	0.09	2.66 + (1.81 per 1" of stroke)
1-1/2"	0.88	0.25	1.56	1/8 NPT	0.63	0.88	0.25	7/16-20	0.437	3/4-16	.746/.749	0.09	2.44 + (1.69 per 1" of stroke)
1-3/4"	0.88	0.38	1.84	1/4 NPT	0.74	1.25	0.25	1/2-20	0.500	1-14	1.029/1.032	0.09	3.03 + (2.00 per 1" of stroke)

## Single Acting Non-Rotating (NRP) — Pivot Mount

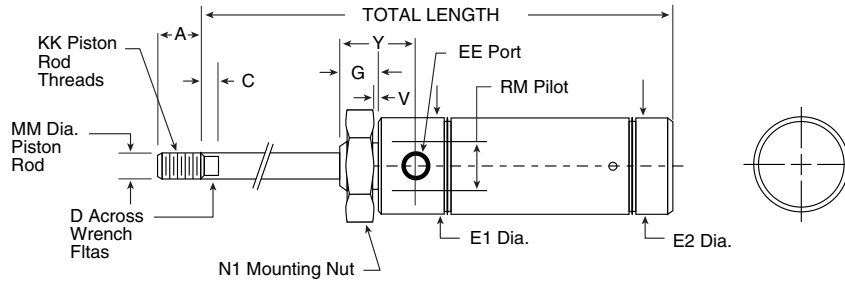


Bore	A	C	CB	CD	E1	E2	EE	FL	G	KK	L	LH	M	MM (hex)	N1	N2	RM	V	Total Length
7/16"	0.50	0.25	0.31	0.156	0.50	0.74	10-32	0.44	0.31	10-32	0.25	0.50	0.25	0.187	3/8-24	7/16-20	.369/.373	0.05	2.25 + (.94 per 1/2" of stroke)
9/16"	0.50	0.25	0.31	0.156	0.62	0.62	10-32	0.38	0.38	10-32	0.25	N/A	0.19	0.187	7/16-20	7/16-20	.434/.437	0.06	2.06 + (1.62 per 1" of stroke)
3/4"	0.50	0.25	0.38	0.250	0.81	0.86	1/8 NPT	0.62	0.44	1/4-28	0.34	0.75	0.28	0.250	1/2-20	5/8-18	.494/.498	0.08	2.53 + (1.69 per 1" of stroke)
7/8"	0.50	0.25	0.38	0.250	0.94	0.94	1/8 NPT	0.62	0.50	1/4-28	0.34	0.75	0.28	0.250	5/8-18	5/8-18	.621/.624	0.09	2.72 + (1.56 per 1" of stroke)
1-1/16"	0.50	0.25	0.38	0.250	1.12	1.12	1/8 NPT	0.62	0.50	5/16-24	0.34	0.75	0.28	0.375	5/8-18	5/8-18	.621/.624	0.07	2.78 + (1.56 per 1" of stroke)
1-1/4"	0.88	0.25	0.50	0.250	1.34	1.34	1/8 NPT	0.78	0.63	7/16-20	0.41	0.88	0.40	0.437	3/4-16	3/4-16	.746/.749	0.09	3.38 + (1.81 per 1" of stroke)
1-1/2"	0.88	0.38	0.62	0.375	1.56	1.56	1/8 NPT	0.81	0.63	7/16-20	0.50	1.00	0.37	0.437	3/4-16	3/4-16	.746/.749	0.09	3.25 + (1.69 per 1" of stroke)
1-3/4"	0.88	0.38	0.62	0.375	1.84	1.84	1/4 NPT	1.12	0.74	1/2-20	0.50	N/A	0.50	0.500	1-14	1-14	1.029/1.032	0.09	4.09 + (2.00 per 1" of stroke)

# Roundline Plus Stainless Steel Actuators

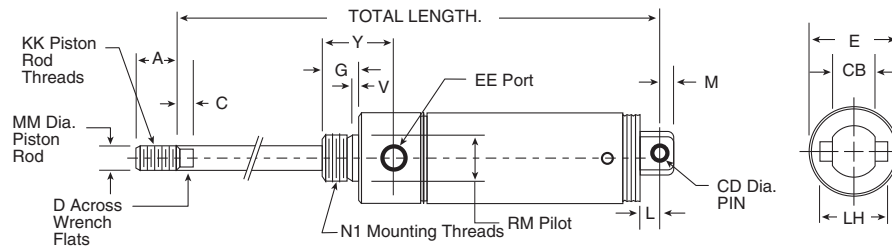
Dimensions in inches

## Reverse Acting Spring Extend (RAN) — Nose Mount



Bore	A	C	D	E1	E2	EE	G	KK	MM	N1	RM	V	Y	Total Length
5/16"	0.38	N/A	N/A	0.61	0.36	10-32	0.31	5-40	0.125	3/8-24	.371/.373	0.03	0.47	1.49 + (1.25 per 1/2" of stroke)
7/16"	0.50	N/A	N/A	0.74	0.50	10-32	0.38	10-32	0.187	7/16-20	.434/.437	0.05	0.72	1.94 + (1.44 per 1/2" of stroke)
9/16"	0.50	N/A	N/A	0.62	0.62	10-32	0.38	10-32	0.187	7/16-20	.434/.437	0.06	0.75	2.00 + (2.62 per 1" of stroke)
3/4"	0.50	N/A	N/A	0.86	0.81	1/8 NPT	0.50	1/4-28	0.250	5/8-18	.621/.624	0.09	0.97	2.31 + (2.69 per 1" of stroke)
7/8"	0.50	N/A	N/A	0.94	0.94	1/8 NPT	0.50	1/4-28	0.250	5/8-18	.621/.624	0.09	0.97	2.31 + (2.56 per 1" of stroke)
1-1/16"	0.50	0.12	0.25	1.12	1.12	1/8 NPT	0.50	5/16-24	0.312	5/8-18	.621/.624	0.09	1.06	2.62 + (2.81 per 1" of stroke)
1-1/4"	0.75	0.25	0.38	1.34	1.34	1/8 NPT	0.63	7/16-20	0.437	3/4-16	.746/.749	0.09	1.37	3.47 + (2.81 per 1" of stroke)
1-1/2"	1.25	0.25	0.38	1.56	1.56	1/8 NPT	0.63	7/16-20	0.437	3/4-16	.746/.749	0.09	1.25	3.19 + (3.00 per 1" of stroke)
1-3/4"	0.88	0.31	0.44	1.84	1.84	1/4 NPT	0.75	1/2-20	0.500	1-14	1.029/1.032	0.09	1.62	4.03 + (3.00 per 1" of stroke)
2"	0.88	0.38	0.50	2.08	2.08	1/4 NPT	0.81	1/2-20	0.625	1-1/4-12	1.372/1.375	0.12	1.46	Consult Factory

## Reverse Acting Spring Extend (RAP) — Pivot Mount



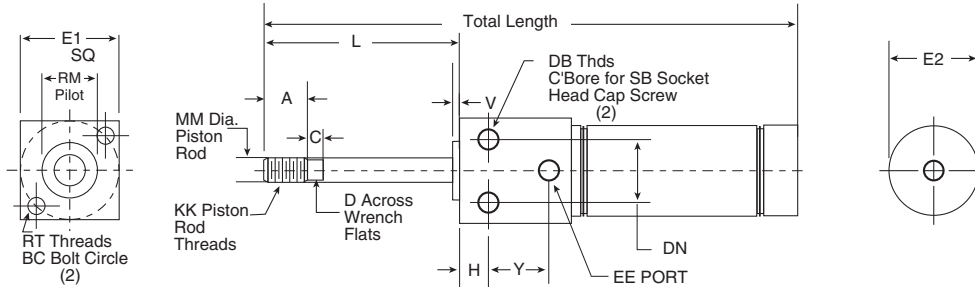
Bore	A	C	CB	CD	D	EE	E	G	KK	L	LH	MM	M	N1	RM	V	Y	Total Length
5/16"	0.38	N/A	0.25	0.125	N/A	10-32	0.61	0.31	5-40	0.19	N/A	0.125	0.16	3/8-24	.371/.373	0.03	0.47	1.88 + (1.25 per 1/2" of stroke)
7/16"	0.50	N/A	0.31	0.156	N/A	10-32	0.74	0.38	10-32	0.25	0.50	0.187	0.25	7/16-20	.434/.437	0.05	0.72	2.38 + (1.44 per 1/2" of stroke)
9/16"	0.50	N/A	0.31	0.156	N/A	10-32	0.62	0.38	10-32	0.25	0.50	0.187	0.19	7/16-20	.434/.437	0.06	0.75	2.28 + (2.62 per 1" of stroke)
3/4"	0.50	N/A	0.38	0.250	N/A	1/8 NPT	0.86	0.50	1/4-28	0.34	0.75	0.250	0.28	5/8-18	.621/.624	0.09	0.97	2.44 + (2.69 per 1" of stroke)
7/8"	0.50	N/A	0.38	0.250	N/A	1/8 NPT	0.94	0.50	1/4-28	0.34	0.75	0.250	0.28	5/8-18	.621/.624	0.09	0.97	2.62 + (2.56 per 1" of stroke)
1-1/16"	0.50	0.12	0.38	0.250	0.25	1/8 NPT	1.12	0.50	5/16-24	0.34	0.75	0.312	0.28	5/8-18	.621/.624	0.09	1.06	2.78 + (2.81 per 1" of stroke)
1-1/4"	0.75	0.25	0.50	0.250	0.38	1/8 NPT	1.34	0.63	7/16-20	0.34	0.88	0.437	0.38	3/4-16	.746/.749	0.09	1.37	3.78 + (2.81 per 1" of stroke)
1-1/2"	1.25	0.25	0.62	0.375	0.38	1/8 NPT	1.56	0.63	7/16-20	0.50	1.00	0.437	0.38	3/4-16	.746/.749	0.09	1.25	3.88 + (3.00 per 1" of stroke)
2"	0.88	0.38	0.75	0.375	0.50	1/4 NPT	2.08	0.81	1/2-20	0.56	1.63	0.625	0.44	1-1/4-12	1.372/1.375	0.12	1.46	Consult Factory



# Roundline Plus Stainless Steel Actuators

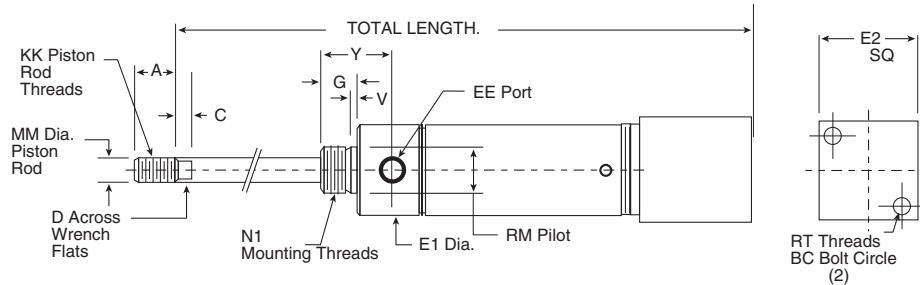
Dimensions in inches

## Reverse Acting Spring (RAF) — Front Block Mount



Bore	A	C	D	DB	DN	SB	E1	E2	EE	H	KK	L	MM	RM	RT	BC	V	Y	Total Length
3/4"	0.75	0.25	0.22	1/4-20	0.63	10-32	1.00	0.81	1/8 NPT	0.38	1/4-28	0.34	0.250	0.62	10-32	1.00	0.09	0.5	2.56 + (2.69 per 1" of stroke)
1-1/16"	0.75	0.25	0.25	1/4-20	0.81	10-32	1.25	1.12	1/8 NPT	0.62	5/16-24	0.47	0.312	0.75	10-32	1.25	0.07	0.54	3.12 + (2.81 per 1" of stroke)
1-1/2"	1.25	0.25	0.38	5/16-18	1.12	0.25	1.75	1.56	1/4 NPT	0.88	7/16-20	0.38	0.437	1.00	1/4-20	1.75	0.12	0.65	3.69 + (3.00 per 1" of stroke)

## Reverse Acting Spring (RAR) — Rear Block Mount

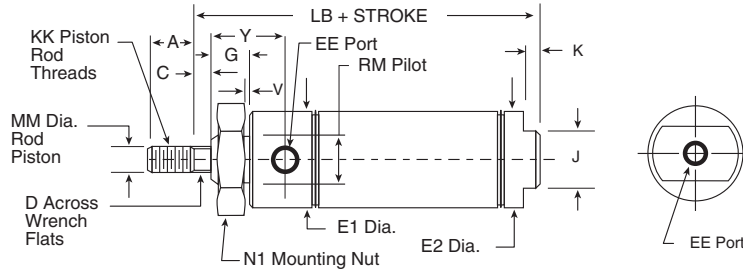


Bore	A	C	D	E1	E2	EE	G	KK	MM	N1	RM	RT	BC	V	Y	Total Length
3/4"	0.75	0.25	0.22	0.86	1.00	1/8 NPT	0.50	1/4-28	0.250	5/8-18	.621/.624	10-32	1.00	0.09	0.97	3.22 + (2.69 per 1" of stroke)
1-1/16"	0.75	0.25	0.25	1.12	1.25	1/8 NPT	0.50	5/16-24	0.312	5/8-18	.621/.624	10-32	1.25	0.09	1.06	3.53 + (2.81 per 1" of stroke)
1-1/2"	1.25	0.25	0.38	1.56	1.75	1/4 NPT	0.62	7/16-20	0.437	3/4-16	.746/.749	1/4-20	1.75	0.09	1.25	3.88 + (3.00 per 1" of stroke)

# Roundline Plus Stainless Steel Actuators

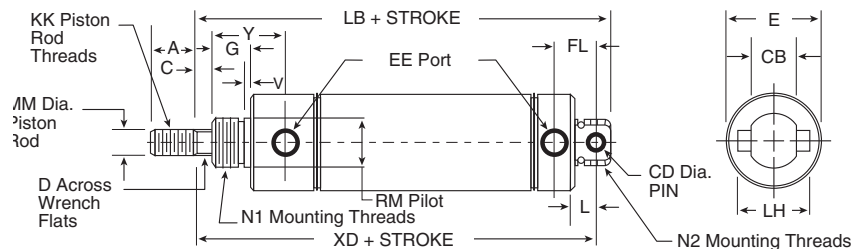
Dimensions in inches

## Double Acting (DAN) — Nose Mount



Bore	A	C	D	EE	E1	E2	G	J	K	KK	LB	MM	N1	RM	Y	V
5/16"	0.38	N/A	N/A	10-32	0.61	0.36	0.31	0.36	N/A	5-40	1.64	0.125	3/8-24	.371/.373	0.47	0.03
7/16"	0.50	N/A	N/A	10-32	0.74	0.50	0.38	0.38	0.19	10-32	2.12	0.187	7/16-20	.434/.437	0.72	0.05
9/16"	0.50	N/A	N/A	10-32	0.62	0.62	0.38	0.50	0.19	10-32	2.28	0.187	7/16-20	.434/.437	0.75	0.06
3/4"	0.50	N/A	N/A	1/8 NPT	0.86	0.81	0.50	0.62	0.19	1/4-28	2.97	0.250	5/8-18	.621/.624	0.97	0.09
7/8"	0.50	N/A	N/A	1/8 NPT	0.94	0.94	0.50	0.62	0.19	1/4-28	2.94	0.250	5/8-18	.621/.624	0.97	0.09
1-1/16"	0.50	N/A	N/A	1/8 NPT	1.12	1.12	0.50	0.88	0.19	5/16-24	3.12	0.312	5/8-18	.621/.624	1.06	0.09
1-1/4"	0.75	0.25	0.38	1/8 NPT	1.34	1.34	0.63	0.88	0.25	7/16-20	4.00	0.437	3/4-16	.746/.749	1.37	0.09
1-1/2"	0.75	0.25	0.38	1/8 NPT	1.56	1.56	0.63	0.88	0.25	7/16-20	3.69	0.437	3/4-16	.746/.749	1.25	0.09
1-3/4"	0.88	0.31	0.44	1/4 NPT	1.84	1.84	0.75	1.25	0.25	1/2-20	4.69	0.500	1-14	1.029/1.032	1.63	0.09
2"	0.88	0.38	0.50	1/4 NPT	2.08	2.08	0.81	1.25	0.31	1/2-20	4.69	0.625	1-1/4-12	1.372/1.375	1.46	0.12
2-1/2"	0.88	0.38	0.50	1/4 NPT	2.62	2.62	0.81	1.75	0.31	1/2-20	4.69	0.625	1-3/8-12	1.497/1.500	1.46	0.12
3"	1.25	0.38	0.63	3/8 NPT	3.12	3.12	1.00	2.00	0.31	5/8-18	5.25	0.750	1-1/2-12	1.622/1.625	1.71	0.19

## Double Acting (DAP) — Pivot Mount

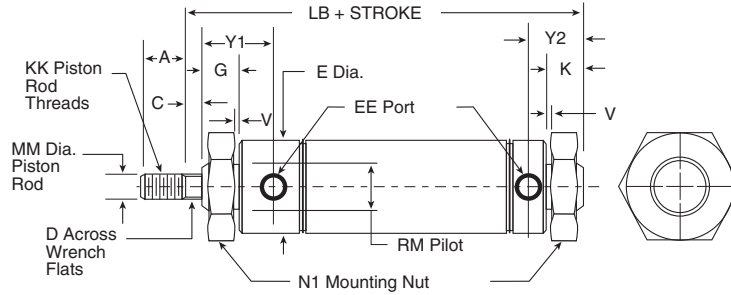


Bore	A	C	CB	CD	D	E	EE	FL	G	KK	L	LB	LH	MM	N1	N2	RM	V	XD	Y
5/16"	0.38	N/A	0.25	0.125	N/A	0.61	10-32	0.34	0.31	5-40	0.19	2.19	0.39	0.125	3/8-24	3/8-24	.371/.373	0.03	2.03	0.47
7/16"	0.50	N/A	0.31	0.156	N/A	0.74	10-32	0.44	0.38	10-32	0.25	2.81	0.50	0.187	7/16-20	7/16-20	.434/.437	0.05	2.56	0.72
9/16"	0.50	N/A	0.31	0.156	N/A	0.62	10-32	0.38	0.38	10-32	0.25	2.75	0.50	0.187	7/16-20	7/16-20	.434/.437	0.06	2.56	0.75
3/4"	0.50	N/A	0.38	0.250	N/A	0.86	1/8 NPT	0.62	0.50	1/4-28	0.34	4.03	0.75	0.250	5/8-18	5/8-18	.621/.624	0.09	3.75	0.97
7/8"	0.50	N/A	0.38	0.250	N/A	0.94	1/8 NPT	0.62	0.50	1/4-28	0.34	3.84	0.75	0.250	5/8-18	5/8-18	.621/.624	0.09	3.56	0.97
1-1/16"	0.50	0.12	0.38	0.250	0.25	1.12	1/8 NPT	0.62	0.50	5/16-24	0.34	4.12	0.75	0.312	5/8-18	5/8-18	.621/.624	0.09	3.84	1.07
1-1/4"	0.75	0.25	0.50	0.250	0.38	1.34	1/8 NPT	0.78	0.63	7/16-20	0.41	5.12	0.88	0.437	3/4-16	3/4-16	.746/.749	0.09	4.72	1.37
1-1/2"	0.75	0.25	0.62	0.375	0.38	1.56	1/8 NPT	0.81	0.63	7/16-20	0.50	4.75	1.00	0.437	3/4-16	3/4-16	.746/.749	0.09	4.38	1.25
1-3/4"	0.88	0.31	0.62	0.376	0.44	1.84	1/4 NPT	1.12	0.75	1/2-20	0.50	6.25	N/A	0.500	1-14	1-14	1.029/1.032	0.09	5.75	1.63
2"	0.88	0.38	0.75	0.375	0.50	2.08	1/4 NPT	1.03	0.81	1/2-20	0.56	6.06	1.63	0.625	1-1/4-12	1-1/4-12	1.372/1.375	0.12	5.62	1.54
2-1/2"	0.88	0.38	0.75	0.375	0.50	2.62	1/4 NPT	1.03	0.81	1/2-20	0.56	6.06	1.63	0.625	1-3/8-12	1-3/8-12	1.497/1.500	0.12	5.62	1.47
3"	1.25	0.38	0.88	0.500	0.63	3.12	3/8 NPT	1.34	1.00	5/8-18	0.81	7.12	N/A	0.750	1-1/2-12	1-1/2-12	1.622/1.625	0.19	6.50	1.71

# Roundline Plus Stainless Steel Actuators

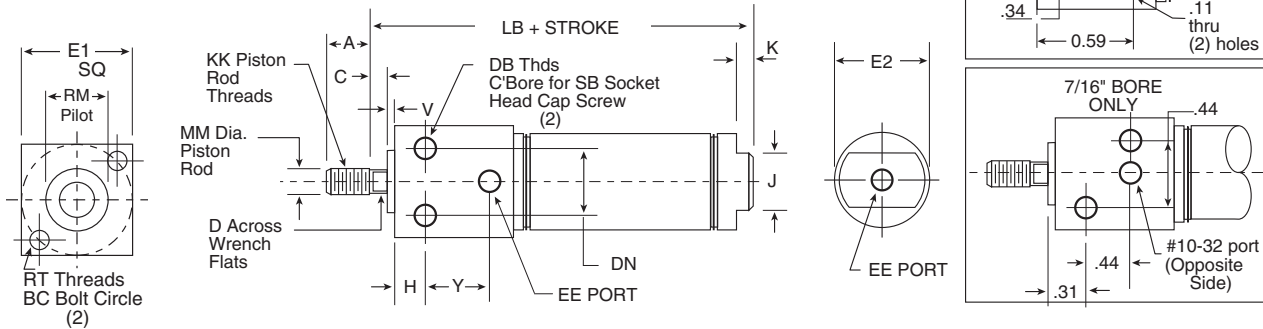
Dimensions in inches

## Double Acting (DAD) — Double End Mount



Bore	A	C	D	E	EE	G	K	KK	LB	MM	N1	RM	V	Y1	Y2
5/16"	0.38	N/A	N/A	0.61	10-32	0.31	0.35	5-40	2.19	0.125	3/8-24	.371/.373	0.03	0.47	0.50
7/16"	0.50	N/A	N/A	0.74	10-32	0.38	0.50	10-32	2.81	0.187	7/16-20	.434/.437	0.05	0.73	0.69
9/16"	0.50	N/A	N/A	0.62	10-32	0.38	0.44	10-32	2.75	0.187	7/16-20	.434/.437	0.06	0.75	0.57
3/4"	0.50	N/A	N/A	0.86	1/8 NPT	0.50	0.62	1/4-28	4.03	0.250	5/8-18	.621/.624	0.09	0.97	0.90
7/8"	0.50	N/A	N/A	0.94	1/8 NPT	0.50	0.62	1/4-28	3.84	0.250	5/8-18	.621/.624	0.09	0.97	0.90
1-1/16"	0.50	0.12	0.25	1.12	1/8 NPT	0.50	0.62	5/16-24	4.12	0.312	5/8-18	.621/.624	0.09	1.07	0.90
1-1/4"	0.75	0.25	0.38	1.34	1/8 NPT	0.63	0.81	7/16-20	5.12	0.437	3/4-16	.746/.749	0.09	1.37	1.18
1-1/2"	0.75	0.25	0.38	1.56	1/8 NPT	0.63	0.62	7/16-20	4.75	0.437	3/4-16	.746/.749	0.09	1.25	0.94
1-3/4"	0.88	0.31	0.44	1.84	1/4 NPT	0.75	1.00	1/2-20	6.25	0.500	1-14	1.029/1.032	0.09	1.63	1.12
2"	0.88	0.38	0.50	2.08	1/4 NPT	0.81	1.00	1/2-20	6.06	0.625	1-1/4-12	1.372/1.375	0.12	1.46	1.47
2-1/2"	0.88	0.38	0.50	2.62	1/4 NPT	0.81	1.00	1/2-20	6.06	0.625	1-3/8-12	1.497/1.500	0.12	1.46	1.47
3"	1.25	0.38	0.63	3.12	3/8 NPT	1.00	1.43	5/8-18	7.12	0.750	1-1/2-12	1.622/1.625	0.19	1.71	1.34

## Double Acting (DAF) — Front Block Mount

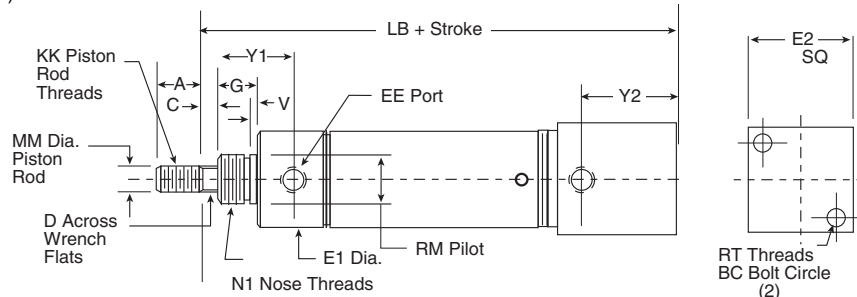


Bore	A	BC	C	D	DB	DN	EE	E1	E2	H	J	K	KK	LB	MM	RM	RT	SB	V	Y
5/16"	0.38	N/A	N/A	N/A	N/A	N/A	N/A	0.50	0.36	N/A	N/A	N/A	5-40	1.72	0.125	N/A	N/A	N/A	N/A	N/A
7/16"	0.50	0.75	N/A	N/A	8-32	N/A	N/A	0.75	0.50	N/A	0.38	0.19	10-32	2.12	0.187	0.437	8-32	N/A	0.06	N/A
3/4"	0.75	1.00	0.25	0.22	1/4-20	0.62	1/8 NPT	1.00	0.81	0.38	0.62	0.19	1/4-28	3.22	0.250	0.625	10-32	#10	0.09	0.50
1-1/16"	0.75	1.25	0.38	0.25	1/4-20	0.81	1/8 NPT	1.25	1.12	0.62	0.88	0.19	5/16-24	3.75	0.312	0.75	10-32	#10	0.09	0.54
1-1/2"	1.25	1.75	0.25	0.38	5-16-18	1.12	1/8 NPT	1.75	1.56	0.88	0.88	0.25	7/16-20	4.19	0.437	1.00	1/4-20	1/4	0.13	0.65

# Roundline Plus Stainless Steel Actuators

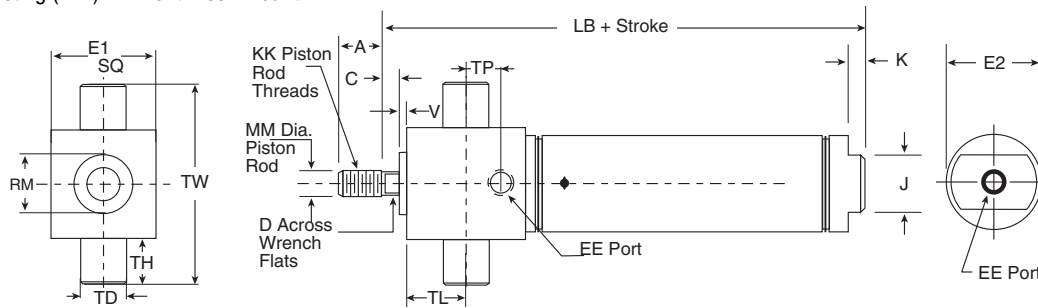
Dimensions in inches

## Double Acting (DAR) — Rear Block Mount



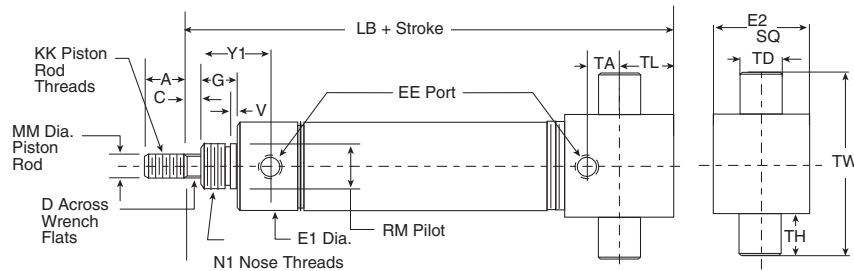
Bore	A	C	D	E1	E2	EE	G	KK	LB	MM	N1	RM	RT	BC	V	Y1	Y2
7/16"	0.50	N/A	N/A	0.75	0.75	10-32	0.38	10-32	2.44	0.187	7/16-20	.433/.437	8-32	0.75	0.05	0.72	0.34
3/4"	0.75	0.25	0.22	0.86	1.00	1/8 NPT	0.50	1/4-28	3.78	0.250	5/8-18	.621/.624	10-32	1.00	0.09	0.97	0.44
1-1/16"	0.75	0.38	0.25	1.12	1.25	1/8 NPT	0.50	5/16-24	4.00	0.312	5/8-18	.621/.624	10-32	1.25	0.09	1.06	1.25
1-1/2"	1.25	0.25	0.38	1.56	1.75	1/4 NPT	0.63	7/16-20	4.38	0.437	3/4-16	.746/.749	1/4-20	1.75	0.09	1.22	0.62

## Double Acting (DFT) — Front Block Mount



Bore	A	C	D	E1	E2	EE	J	K	KK	LB	MM	RM	TD	TH	TL	TP	TW	V
7/16"	0.50	N/A	N/A	0.75	0.50	10-32	0.38	0.19	10-32	2.12	0.187	0.44	0.374	0.25	0.31	0.41	1.25	0.06
3/4"	0.75	0.25	0.22	1.00	0.81	1/8 NPT	0.62	0.19	1/4-28	3.22	0.250	0.62	0.500	0.38	0.69	0.53	1.75	0.09
1-1/16"	0.75	0.38	0.25	1.25	1.12	1/8 NPT	0.88	0.19	5/16-24	3.75	0.312	0.75	0.500	0.38	1.09	0.53	2.00	0.09
1-1/2"	1.25	0.25	0.38	1.75	1.56	1/4 NPT	0.88	0.25	7/16-20	4.19	0.437	1.00	0.500	0.38	1.31	0.59	2.50	0.12

## Double Acting (DRT) — Rear Trunnion

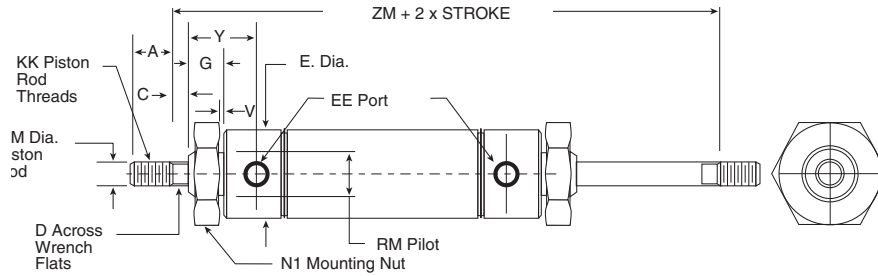


Bore	A	C	D	E1	E2	EE	G	KK	LB	MM	N1	RM	TA	TD	TH	TL	TW	V
7/16"	0.50	N/A	N/A	0.75	0.75	10-32	0.38	10-32	2.44	0.187	7/16-20	.433/.437	0.09	0.374	0.25	0.25	1.25	0.05
3/4"	0.75	0.25	0.22	0.86	1.00	1/8 NPT	0.50	1/4-28	3.78	0.250	5/8-18	.621/.624	0.06	0.500	0.38	0.38	1.75	0.09
1-1/16"	0.75	0.38	0.25	1.12	1.25	1/8 NPT	0.50	5/16-24	4.00	0.312	5/8-18	.621/.624	0.06	0.500	0.38	0.38	2.00	0.07
1-1/2"	1.25	0.25	0.38	1.56	1.75	1/4 NPT	0.63	7/16-20	4.38	0.437	3/4-16	.746/.749	0.12	0.500	0.38	0.50	2.50	0.09

# Roundline Plus Stainless Steel Actuators

Dimensions in inches

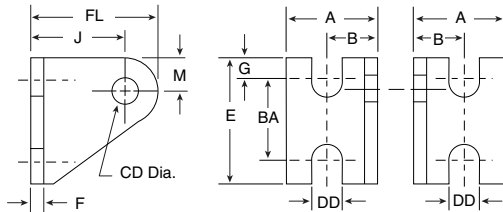
## Double Acting Double Rod End (DRD) — Double End Mount



Bore	A	C	D	E	EE	G	KK	MM	N1	RM	V	Y	ZM
7/16"	0.50	N/A	N/A	0.74	10-32	0.38	10-32	0.187	7/16-20	.434/.437	0.05	0.72	2.81
9/16"	0.50	N/A	N/A	0.62	10-32	0.38	10-32	0.187	7/16-20	.434/.437	0.06	0.75	2.94
3/4"	0.50	N/A	N/A	0.86	1/8 NPT	0.50	1/4-28	0.250	5/8-18	.621/.624	0.09	0.97	4.00
7/8"	0.50	N/A	N/A	0.94	1/8 NPT	0.50	1/4-28	0.250	5/8-18	.621/.624	0.09	0.97	3.91
1-1/16"	0.50	0.12	0.25	1.12	1/8 NPT	0.50	5/16-24	0.312	5/8-18	.621/.624	0.09	1.06	4.00
1-1/4"	0.75	0.25	0.38	1.34	1/8 NPT	0.63	7/16-20	0.437	3/4-16	.746/.749	0.09	1.37	5.56
1-1/2"	0.75	0.25	0.38	1.56	1/8 NPT	0.63	7/16-20	0.437	3/4-16	.746/.749	0.09	1.25	5.12
1-3/4"	0.88	0.31	0.44	1.84	1/4 NPT	0.75	1/2-20	0.500	1-14	1.029/1.032	0.09	1.94	6.56
2"	0.88	0.38	0.50	2.08	1/4 NPT	0.81	1/2-20	0.625	1-1/4-12	1.372/1.375	0.12	1.46	6.56
2-1/2"	0.88	0.38	0.50	2.62	1/4 NPT	0.81	1/2-20	0.625	1-3/8-12	1.497/1.500	0.12	1.46	6.56
3"	1.25	0.38	0.63	3.12	3/8 NPT	1.00	5/8-18	0.750	1-1/2-12	1.622/1.625	0.19	1.71	7.31

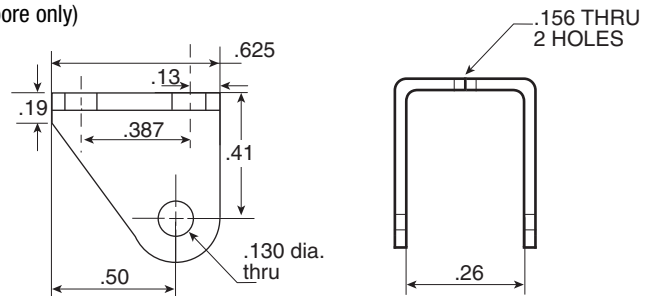
• All accessories are clear zinc plated carbon steel

### Pivot Bracket

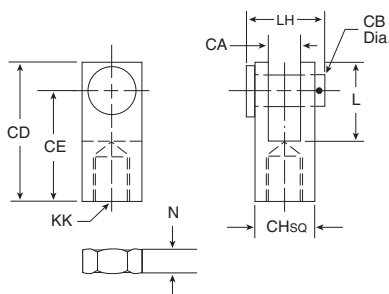


Bore	Part Number	A	B	BA	CD	DD	E	F	FL	G	J	M
7/16", 9/16" 3/4", 7/8"	PB-1	0.50	0.28	0.50	0.16	0.19	0.75	0.06	0.77	0.12	0.56	0.20
1-1/16", 1-1/4"	PB-2	0.81	0.44	0.75	0.25	0.27	1.12	0.12	1.19	0.19	0.88	0.31
1-1/2"	PB-3	1.00	0.62	1.00	0.38	0.27	1.50	0.12	1.75	0.25	1.38	0.38
1-3/4", 2", 2-1/2"	PB-4	1.13	0.68	1.00	0.38	0.26	1.50	0.25	1.75	0.25	1.38	0.38
3"	PB-5	1.44	0.88	1.25	0.50	0.27	1.75	0.25	2.25	0.25	1.75	0.50

### PB-0 (5/16" bore only)



### Rod Clevis (Includes Pin & Jam Nut)

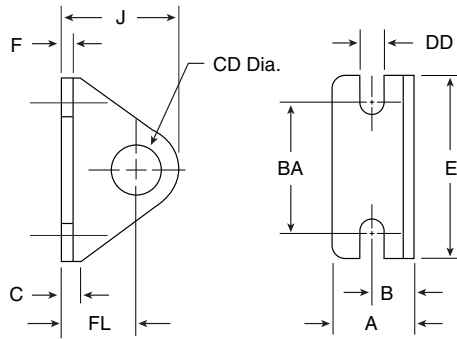


Bore	Part Number	CA	CB dia.	CD	CE	CH	KK	L	LH	N
5/16"	RC-0	0.13	0.13	0.56	0.44	0.31	5-40	0.38	0.5	0.16
7/16", 9/16"	RC-1	0.19	0.19	0.94	0.75	0.38	10-32	0.56	0.66	0.12
3/4", 7/8"	RC-2	0.25	0.25	1.19	0.94	0.50	1/4-28	0.68	0.85	0.16
1-1/16"	RC-3	0.25	0.25	1.19	0.94	0.50	5/16-24	0.69	0.85	0.19
1-1/4", 1-1/2"	RC-4	0.38	0.38	1.69	1.31	0.75	7/16-20	0.94	1.12	0.25
1-3/4", 2", 2-1/2"	RC-5	0.38	0.38	1.69	1.31	0.75	1/2-20	0.94	1.12	0.31
3"	RC-6	0.50	0.50	2.75	2.25	1	5/8-18	1.5	1.41	0.38

# Roundline Plus Stainless Steel Actuators

Dimensions in inches

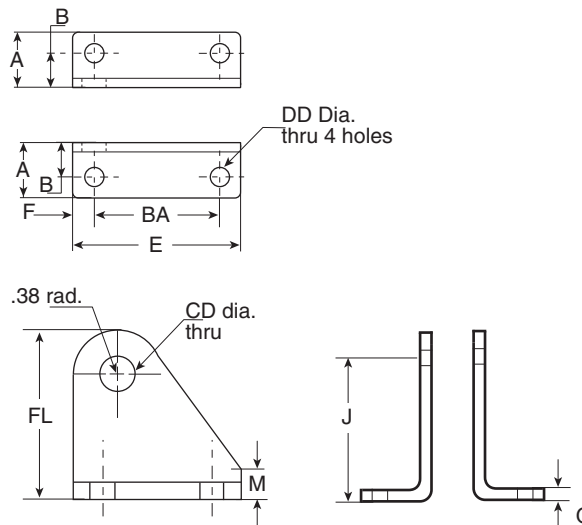
## Foot Bracket



Bore	Part Number	Part									
		A	B	BA	C	CD	DD	E	F	FL	J
5/16"(S)	FB-0S	0.38	0.25	0.75	0.13	0.25	0.13	1.00	0.06	0.44	0.75
5/16"(D)	FB-0D	0.38	0.25	0.75	0.13	0.38	0.13	1.00	0.06	0.44	0.75
7/16"(S)	FB-1	0.62	0.31	1.00	0.12	0.38	0.19	1.38	0.07	0.56	0.88
7/16"(D), 9/16"(S/D)	FB-2	0.69	0.38	1.00	0.12	0.44	0.19	1.38	0.09	0.56	0.83
3/4"(S)	FB-3	0.75	0.44	1.25	0.19	0.50	0.19	1.62	0.10	0.69	1.09
3/4"(D), 7/8"(S/D), 1-1/16"(S/D)	FB-4	1.00	0.56	1.50	0.25	0.62	0.27	1.88	0.12	0.81	1.38
1-1/4"(S/D)	FB-5	1.50	0.75	1.88	0.62	0.75	0.28	2.50	0.12	1.00	1.75
1-3/4"(S/D)	FB-5A	1.50	0.88	2.25	0.75	1.03	0.34	3.00	0.19	1.25	2.13
2"(S/D)	FB-6	1.62	1.00	2.25	0.62	1.38	0.34	3.12	0.25	1.50	2.50
2-1/2"(D)	FB-7	1.62	1.00	2.88	0.75	1.50	0.34	3.75	0.25	1.75	3.00
3"(D)	FB-8	1.62	1.00	3.50	0.89	1.63	0.34	4.38	0.26	1.89	3.14

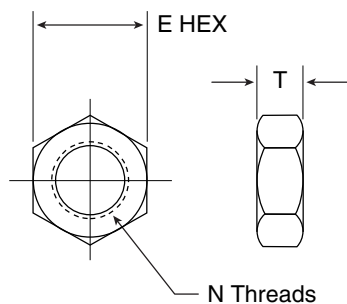
S = Single Acting Models    D = Double Acting Models    S/D = Single and Double Acting Models

## Trunnion Bracket



Bore	Part number	A	B	BA	CD	DD	E	F	FL	G	J	M
7/16"	PB-4	1.13	0.69	1.00	0.38	0.27	1.50	0.25	1.75	0.25	1.38	0.38
3/4", 1-1/16", 1-1/2"	TB-1	1.13	0.69	1.00	0.50	0.27	1.50	0.25	1.75	0.25	1.38	0.38

## Mounting Nut



### Single Acting Spring Return Models

Bore	Part Number	N	E	T
5/16"	MN-0	1/4-28	0.44	0.16
7/16"	MN-1	3/8-24	0.56	0.22
9/16"	MN-2	7/16-20	0.69	0.25
3/4"	MN-3	1/2-20	0.75	0.31
7/8", 1-1/16"	MN-4	5/8-18	0.94	0.38
1-1/4", 1-1/2"	MN-5	3/4-16	1.12	0.42
1-3/4"	MN-5A	1-14	1.50	0.55
2"	MN-6	1-1/4-12	1.88	0.50

### Single Acting Spring Extend & Double Acting Models

Bore	Part Number	N	E	T
5/16"	MN-1	3/8-24	0.56	0.22
7/16", 9/16"	MN-2	7/16-20	0.69	0.25
3/4", 7/8", 1-1/16"	MN-4	5/8-18	0.94	0.38
1-1/4", 1-1/2"	MN-5	3/4-16	1.12	0.42
1-3/4"	MN-5A	1-14	1.50	0.55
2"	MN-6	1-1/4-12	1.88	0.50
2-1/2"	MN-7	1-3/8-12	2.00	0.50
3"	MN-8	1-1/2-12	2.25	0.50

# RT Series Roundline Thrusters

9/16" to 3" bore

Composite and Roller Bearings

## Technical data

Medium:

Filtered, lubricated or non-lubricated, compressed air

Operating Pressure  
250 psig (17.2 Bar) Max.

Temperature Range:

Standard Nitrile seals:

-20°F to 200°F (-29°C to 93°C)

High Temp seals:

-20°F to 400°F (-29°C to 205°C)

\*With dew point of supply air less than air temperature below 35°F (2°C)

Lubrication:

All Roundline Thruster cylinders are prelubricated at the time of assembly with a Teflon®-Based grease, for non-lube service and long life.

Thruster Materials:

Guide Shafts: 303 stainless steel chrome plated carbon steel 2-1/2" & 3.0" bore case hardend carbon steel with roller bearing option

Body: Anodized aluminum housing and tooling plate composite guide shaft bearings roller bearings optional

Cylinder Materials:

304 Stainless Steel body  
Aluminum alloy head, cap and piston

Oil impregnated sintered bronze rod bearing

Chrome Plated carbon steel piston rod, stainless steel piston rod 9/16" bore only  
Nitrile piston and rod seals



## Options selector

RT 075 C x 4.50 CC

Series	
Roundline Thruster	RT
Roundline Cylinder with *Ecology Seals	ERT*

Bore Size	
9/16"	056
3/4"	075
1-1/16"	106
1-1/2"	150
2"	200
2-1/2"	250
3"	300

Bearing Type	
Composite	C
Roller	R

Maximum Stroke Lengths **	
6.0" Maximum Stroke	056
12.0" Maximum Stroke	075
12.0" Maximum Stroke	106
12.0" Maximum Stroke	150
12.0" Maximum Stroke	200
12.0" Maximum Stroke	250
12.0" Maximum Stroke	300

\* ERT, ecology cylinders come complete with non-adjustable cushions both ends (NH, NC, NB, options not required in model number of ERT cylinder).

\*\*Consult factory for longer stroke lengths.

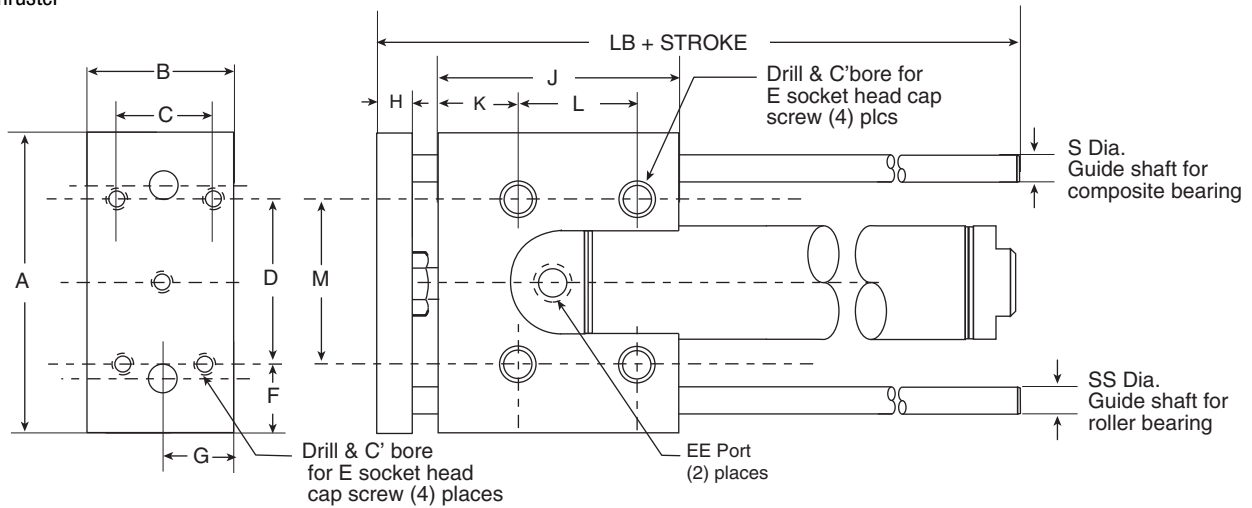
## Options

Stroke Adjustment (Collar & Bumper) Extend	AE
Stroke Adjustment (Collar & Bumper) Retract	AR
Adjustable Cushion Head End (Extend)	CH
Adjustable Cushion Cap End (Retract)	CC
Adjustable Cushion Both Ends	CB
Non-Adjustable cushion head end (Extend)*	NH
Non-Adjustable cushion cap end (Retract)*	NC
Non-Adjustable cushions both ends*	NB
Magnetic Piston	PS
Switch Rail and location	M1, M3
External Bumper Extend	BE
External Bumper Retract	BF
External Bumper Both End	BG
Internal Bumpers (not available with HT)	UB
Shock Absorber Extend	SG
Shock Absorber Retract	SH
Shock Absorber Both	SJ
High Temperature Seals	HT
Tapped Mounting Holes	TH

Thrusters available Quarter 3, 2008

# RT Series Roundline Thrusters

Thruster



Bore	Code	A	B	C	D	E	EE	F	G	H	J	K	L	LB	M	S	SS
9/16"	056	2.50	0.90	0.60	1.25	#8	#10-32	0.63	0.45	0.38	2.25	1.25	0.75	3.50	1.00	0.38	0.25
3/4"	075	3.00	1.15	0.75	1.50	#10	1/8 NPT	0.75	0.58	0.50	2.50	0.78	0.94	4.25	1.25	0.50	0.38
1-1/16"	106	4.25	1.75	1.00	2.00	1/4"	1/8 NPT	1.12	0.88	0.62	3.00	0.81	1.38	5.00	1.88	0.62	0.50
1-1/2"	150	5.50	2.25	1.50	3.00	5/16"	1/8 NPT	1.25	1.12	0.75	4.00	1.12	1.75	6.38	2.38	0.75	0.62
2.0"	200	6.00	2.75	2.00	3.00	5/16"	1/4 NPT	1.50	1.38	1.00	4.00	1.00	2.00	7.12	2.70	0.88	0.75
2-1/2"	250	7.50	3.25	2.25	3.75	3/8"	1/4 NPT	1.88	1.63	1.25	6.00	1.75	2.50	9.75	3.50	1.13	1.00
3.0"	300	9.00	4.00	2.75	4.50	1/2"	3/8 NPT	2.25	2.00	1.50	7.00	2.00	3.00	11.50	4.20	1.38	1.25

**Thrusters available Quarter 3, 2008**

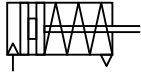


# RM/59100/C

## Miniature Roundline cylinders

Single acting, spring return

Ø 2.5 & 4 mm



**Ideal for very light load applications such as function testing mobile phones and keyboards**

**Low friction characteristics mean high speeds**

**No fittings required - all types feature one integral push on barbed connector**

**Long service life and corrosion resistant materials mean low cost of ownership**

### Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Operating pressure:

50.75 to 101.5 psig  
(3.5 to 7 bar)

Operating temperature:

32°F to 140°F (0°C to 60°C)

\* Air supply must be dry enough to avoid ice formation at temperatures below 35°F (2°C)

Cylinder diameters:

2.5 and 4 mm

Strokes:

5, 10 mm - Ø 2.5 mm

5, 10, 15, 20 mm - Ø 4 mm

Materials

Barrel: stainless steel

End caps: aluminum alloy

Piston rod: stainless steel

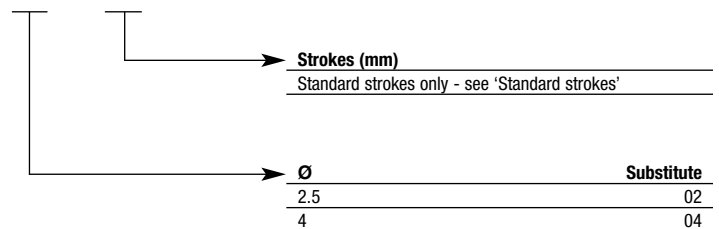
Elastomers: nitrile

### Standard strokes

Cylinder Ø mm	Strokes (mm)			
	5	10	15	20
2.5	●	●		
4	●	●	●	●

### Options selector

RM/591\*\*/C/\*\*



### Actuator selection

To order a basic 2.5 mm diameter cylinder, sprung in with a 10mm stroke quote: **RM/59102/C/10**

# RM/59100/C

## Miniature Roundline cylinders

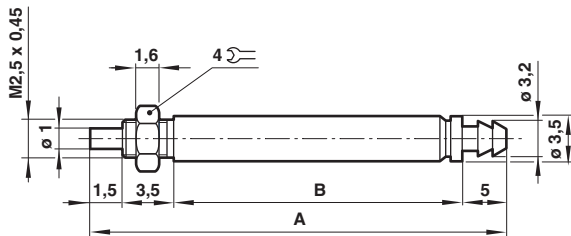
Single acting  
 Ø 2.5 & 4 mm

### Theoretical forces / Air consumption / Weight of cylinders

Ø mm	Theoretical forces N at 6 bar		Air consumption l/cm at 6 bar		Weight kg by stroke length			
	Outstroke	F1	Instroke	Outstroke	5 mm	10 mm	15 mm	20 mm
2.5	2.9	0.7	0.001	0.001	0.002	0.002	-	-
4	7.6	1.2	0.003	0.003	0.003	0.004	0.005	0.006

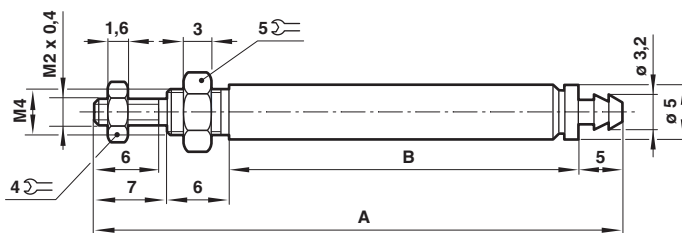
F1 = Return force

### Basic dimensions in mm RM/59102/C



	Ø	A	B
RM/59102/C/5	2.5	26.5	16.5
RM/59102/C/10	2.5	35.5	25.5
RM/59104/C/5	4	37	19
RM/59104/C/10	4	46	28
RM/59104/C/15	4	55	37
RM/59104/C/20	4	64	46

### RM/59104/C



Note: push-on connector is suitable for 4mm O/D, 2.5 mm I/D polyurethane tubing