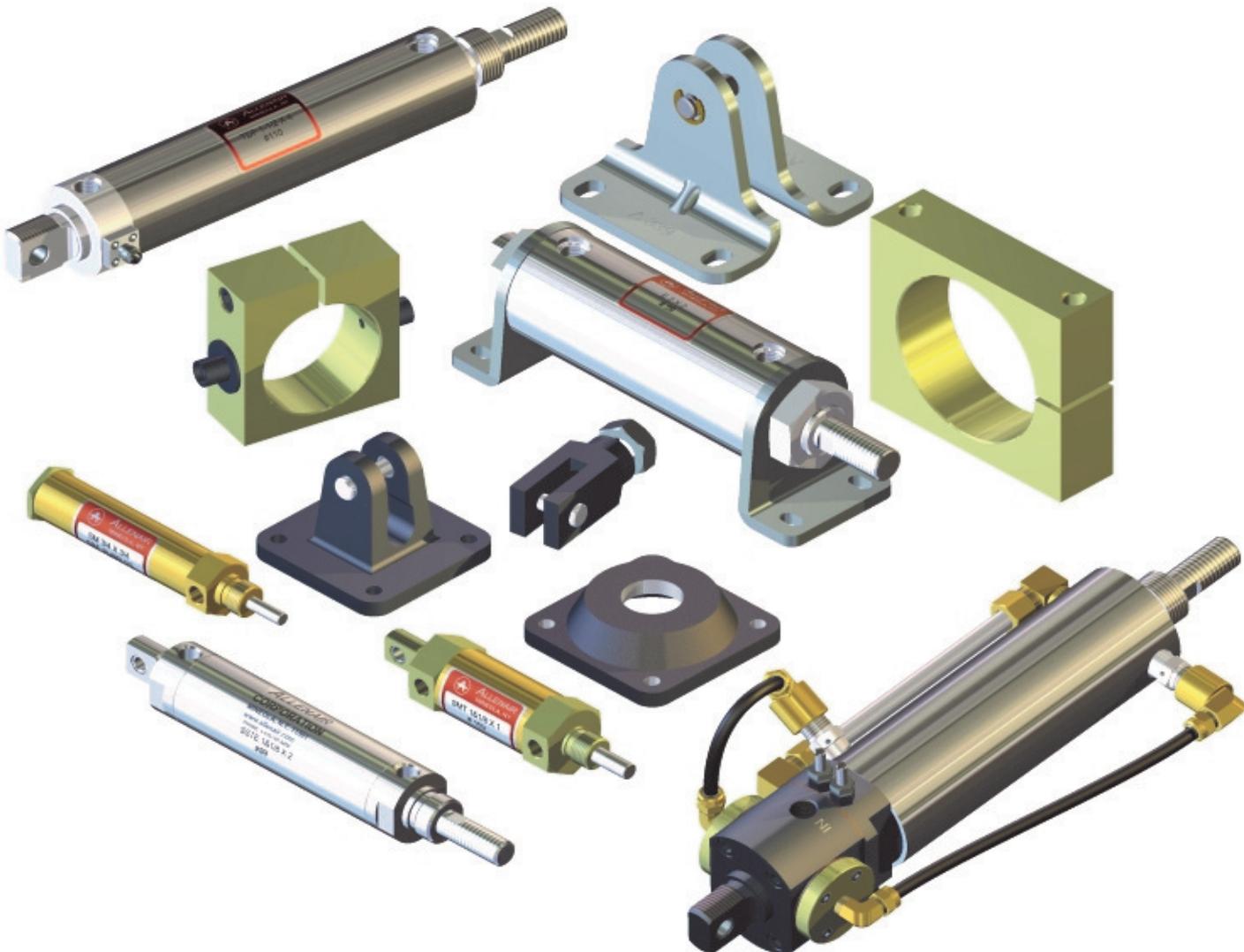


# CYLINDERS

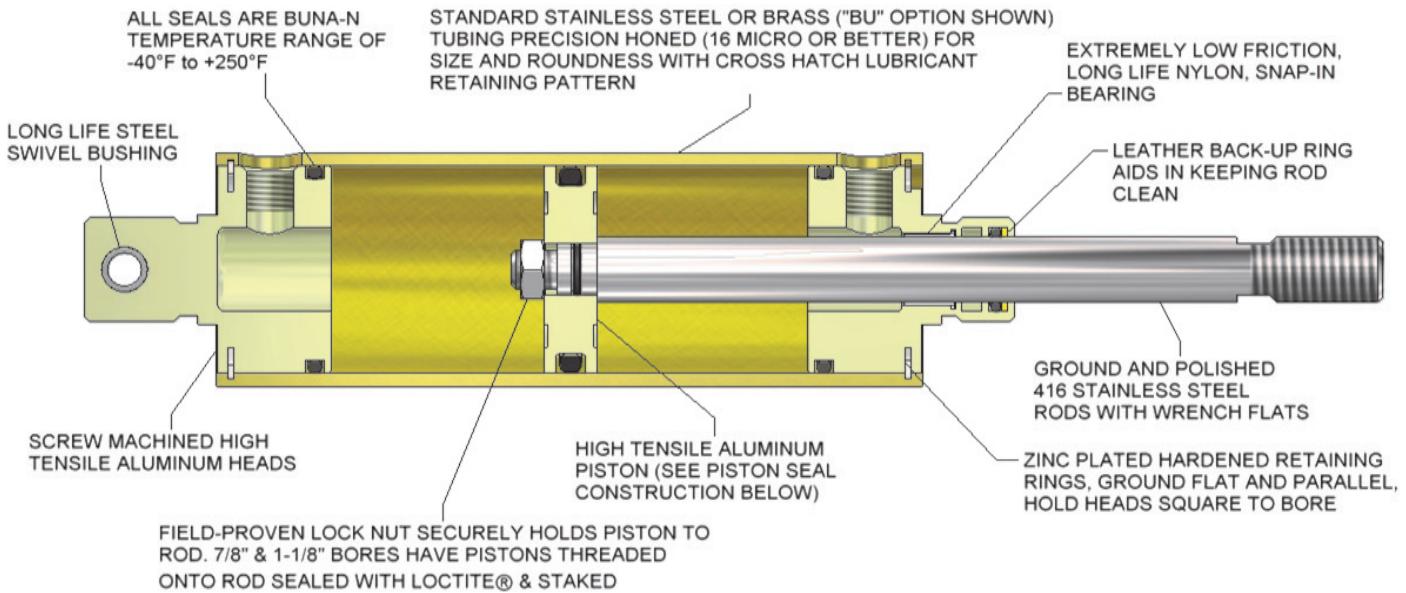
## CYLINDERS



**ALLENAIR Cylinders may be used in place of other Manufacturers cylinders.**

**Please consult factory for “Drop In” or “Cross Over information”**

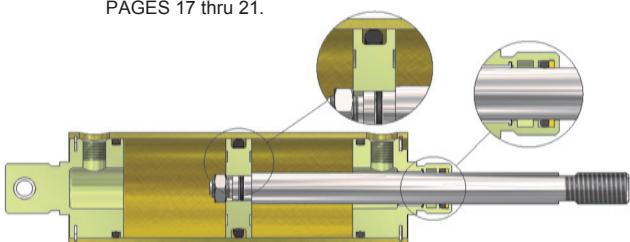
## DESIGN FEATURES & MATERIALS



**STANDARD STROKE LENGTHS: WHOLE-INCH INCREMENTS FROM 1" THROUGH 20" AND 1/2", 1-1/2", 2-1/2" & 3-1/2".  
SPECIAL STROKES AVAILABLE FROM 1/8" TO 130".**

## BASIC CONSTRUCTION (DOUBLE ACTING)

FOR DIMENSIONS AND MOUNTS SEE  
PAGES 17 thru 21.



**TYPE A SINGLE ENDED :** All Type "A" Cylinders, with the exception of the 4" bore, are constructed using "O"- Ring Seals. The 4" bore uses "O"- Ring Rod Seals and "U"- Cup Piston seals. These all-purpose units are used for most pneumatic applications. Optional Double Rod Packings are recommended for heavy-duty and hydraulic applications, not available on 7/8" & 1-1/8" Bores.

**Pressure Rating:** 150 P.S.I. Pneumatic, 350 P.S.I. Hydraulic.

**Breakaway:** Approximately 5 to 8 P.S.I.

**Bore Sizes Available:** 7/8", 1-1/8", 1-1/2", 2", 2-1/2", 3 & 4".

**TYPE C SINGLE ENDED :** Type "C" Cylinders are constructed using low friction "U"- Cup Seals and include a wear strip on the piston with the exception of the 4" bore (it has no wear strip). These Cylinders are primarily used for low pressure applications and where low minimum breakaway is required.

**Pressure Rating:** 150 P.S.I. Pneumatic only.

**Breakaway:** Approximately 2 to 3 P.S.I.

**Bore Sizes Available:** 7/8", 1-1/8", 1-1/2", 2", 2-1/2" & 3".

**TYPE E SINGLE ENDED :** Type "E" Cylinders are constructed using Block-Vee Seals and include double rod seals in the front head except on the 7/8" & 1-1/8" Bores. A heavy-duty wear strip (bearing) on the piston minimizes friction and piston seal wear, and side load conditions prevents metal-to-metal contact. These Cylinders are generally used on low pressure hydraulics and where side load conditions are present.

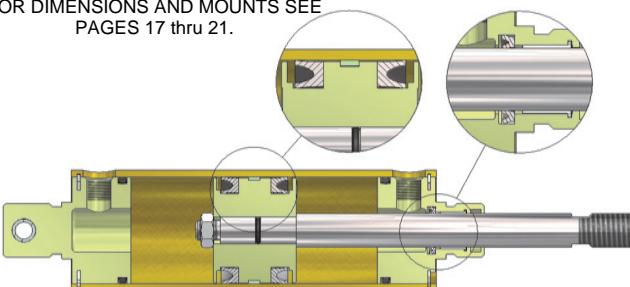
**Pressure Rating:** 200 P.S.I. Pneumatic, 500 P.S.I. Hydraulic.

**Breakaway:** Approximately 10 to 15 P.S.I.

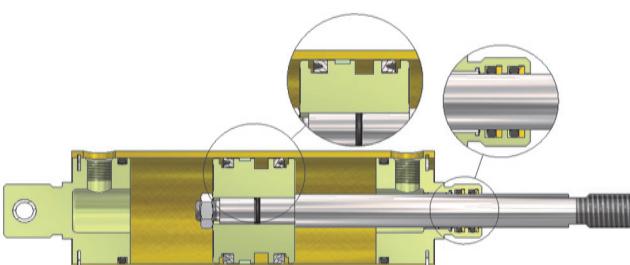
**Bore Sizes Available:** 7/8", 1-1/8", 1-1/2", 2", 2-1/2", 3", 4" & 5\*.

\* 5" BORE AVAILABLE-Consult Factory for Details.

FOR DIMENSIONS AND MOUNTS SEE  
PAGES 17 thru 21.



FOR DIMENSIONS AND MOUNTS SEE  
PAGES 17 thru 21.



# CYLINDERS

## DOUBLE ACTING & SPRING RETURN CYLINDERS

### STANDARD VARIATIONS OF TYPES A, C & E

The basic construction of these cylinder variations are identical to Types "A", "C" or "E", except where noted.

**DOUBLE ENDED: TYPES AD, CD & ED** Cylinders are constructed with a common single rod, which protrudes from both ends. As one end retracts, the other extends.

**Bore Sizes Available:** 7/8", 1-1/8", 1-1/2", 2", 2-1/2", 3" & 4".

**Maximum Stroke Available:** 65".

**NOTE:** Due to piston construction, 3/32" of stroke is lost on Type AD 1-1/2", 2", 2-1/2" and 3" bore sizes.



FOR DIMENSIONS AND MOUNTS SEE  
PAGES 17 thru 21.

**BACK-TO-BACK: TYPES ABB, CBB & EBB** Units consist of two separate single ended Cylinders, joined together by a common rear head. Their strokes can be either identical or different. By fastening one rod end to a fixed object, these units can perform as 3 and 4 position Cylinders.

**Bore Sizes Available:** 7/8", 1-1/8", 1-1/2", 2", 2-1/2", 3" & 4".

**NOTE:** Options must be indicated for each stroke.



FOR DIMENSIONS AND MOUNTS SEE  
PAGES 17 thru 21.

**INTEGRAL REAR SWIVEL: TYPES AN, CN & EN** Cylinders are constructed with a female clevis end, including clevis pin.

**Bore Sizes Available:** 7/8", 1-1/8", 1-1/2", 2", 2-1/2", 3" & 4".



FOR DIMENSIONS AND MOUNTS SEE  
PAGES 17 thru 21.

#### SQUARE HEAD:

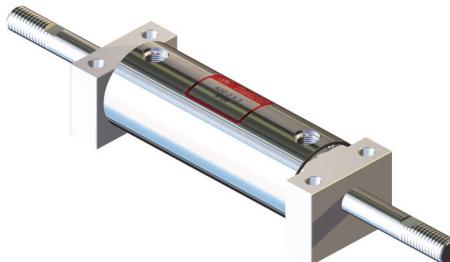
**TYPES AS, CS & ES**

**TYPES ASD, CSD & ESD**

Units incorporate the use of square heads, thus eliminating the need for separate Foot Mounts.

**Bore Sizes Available:** 7/8", 1-1/8", 1-1/2" & 2".

**NOTE:** Due to piston construction, 3/32" of stroke is lost on Type ASD 1-1/2" and 2" bore sizes.



FOR DIMENSIONS AND MOUNTS SEE  
PAGES 17 thru 21.

# CYLINDERS

## DOUBLE ACTING & SPRING RETURN: 7/8" - 5" BORES

### THREE POSITION:

**TYPES: AP, CP & EP SINGLE ENDED**

**TYPES: APD, CPD & EPD DOUBLE ENDED**

Cylinders feature two separate piston rod assemblies which provide three definite and positive positions. Any combination of first stroke and total stroke is available. Both rods fully retracted are first position.

**Port #1 Extends rod first stroke to second position.**

**Port #2 Extends rod full stroke to third position.**

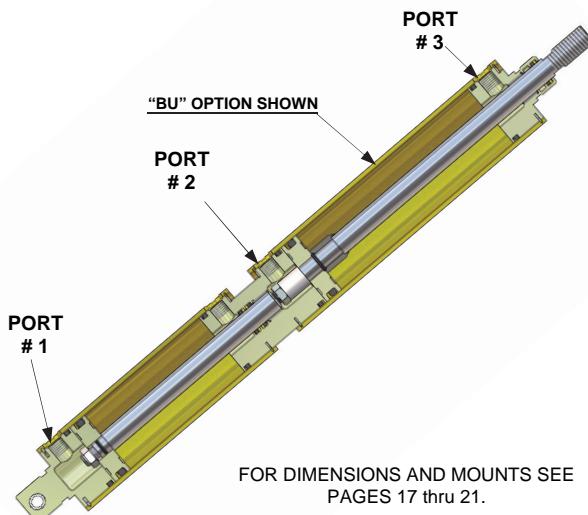
**Port #3 Retracts both rods to first position.**

When ordering, second stroke must be specified as total stroke, as second Cylinder rod moves through both strokes. For example, if first stroke required is 4" and second stroke is 2", order should read: **AP- 3 X 4 X 6.**

6" being the total stroke (4+2).

**Bore Sizes Available:** 1-1/2", 2", 2-1/2", 3" & 4".

NOTE: Options must be indicated for each stroke.



FOR DIMENSIONS AND MOUNTS SEE  
PAGES 17 thru 21.

### TANDEM:

**TYPE: ET SINGLE ENDED**

**TYPE: ETD DOUBLE ENDED**

The basic construction of these Cylinders is identical to Type "E" and feature two Cylinders in tandem having two pistons mounted on one common rod. Pneumatic operation with hydraulic control can be obtained by operating the rear Cylinder pneumatically and filling the front Cylinder with oil and piping its ports in series using a flow control valve. The output force of a single Cylinder can be almost doubled using a Tandem Cylinder and piping both rear ports together and both front ports together, which will apply the working pressure to both Cylinders at the same time. This is particularly useful when space limitations preclude the use of large bore Cylinders, and the force required is greater than that supplied by smaller bore units.

**Bore Sizes Available:** 1-1/2", 2", 2-1/2", 3" & 4".

### Maximum Stroke Available:

Type "ET" : 60".

Type "ETD": 40".



FOR DIMENSIONS AND MOUNTS SEE  
PAGES 17 thru 21.

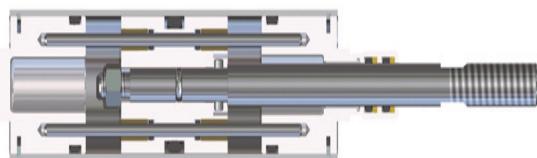
### NON-ROTATING:

**TYPE: AR, ARD**

The Piston Rod Assembly of conventional double acting air and hydraulic cylinder will rotate a few degrees with each operation of the cylinder. Where this is objectionable and where the piston rod cannot be guided externally, A NON-ROTATING CYLINDER should be used.

ALLENAIR TYPES "AR" and "ARD" CYLINDERS are built with two (2) guide rods extending between cylinder heads and thru piston guide rod bearings. This prevents piston rod rotation completely. Service life of these cylinders is excellent, in no way different from our conventional construction. All other construction features are the same as our cylinders.

**BORE SIZES: 2", 3" & 4" STROKES:** Same as for other Allenair Cylinders up to 20" Maximum.



FOR DIMENSIONS AND MOUNTS SEE  
PAGES 17 thru 21.

### ORDERING PROCEDURE

TYPE SEE PAGES 9, 10, 11 & 12	BORE SIZE SPECIFY	STROKE SPECIFY	OPTIONS SEE PAGES 13 thru 16
----------------------------------	----------------------	-------------------	---------------------------------

**EXAMPLE: E 3 x 4 BC BU HTP IB OS RG**

- BC.....Cushion Both Ends
- BU.....Brass Tube
- HTP.....High Temperature (Viton) Seals
- IB .....AB Accessory Pin installed in both ends
- OS .....Oversized Rod
- RG .....Outboard Rod Guide installed

**NOTE:** When ordering back-to-back and three position cylinders, options must be specified for each cylinder.  
All mounts are ordered separately. See pages 20 & 21.

# STAINLESS STEEL CYLINDERS

DOUBLE ACTING & SPRING RETURN: 7/8"- 4" BORES

## ALL STAINLESS STEEL CYLINDERS



DESIGNED TO SOLVE CORROSION & ENVIRONMENTAL PROBLEMS  
BY MANUFACTURING ALL METAL PARTS FROM 300 SERIES STAINLESS STEEL  
**TYPES : SSA, SSE, SSAN, SSEN, SSAP, SSEP, SSABB, SSEBB, SSET SINGLE ENDED**  
**TYPES : SSAD, SSED, SSAPD, SSEPD, SSETD DOUBLE ENDED**

**ALL** Cylinder parts are manufactured from 300 series stainless steel. Otherwise, the dimensions are identical in construction to our standard Types "A", "AD", "E" & "ED" Cylinders. Units are particularly recommended for use in the food and dairy industries and in highly corrosive atmospheres, as found in the marine and chemical field.

**Maximum Stroke Available: 130"**

**Bore Sizes Available:** 7/8", 1-1/8", 1-1/2", 2", 2-1/2", 3" & 4".

For Stainless Steel Cylinders, Mounts and Nuts Use Prefix **SS**.

FOR DIMENSIONS AND MOUNTS SEE PAGES 17 thru 21.

**REQUEST A COPY OF CATALOG NUMBER SS200 COVERING OUR COMPLETE LINE OF 300 SERIES STAINLESS STEEL CYLINDERS.**

### CUSHIONS

SPECIFY:

**FC** FRONT CUSHION

**RC** REAR CUSHION

**BC** CUSHION BOTH ENDS

### SPRING RETURN

SPECIFY:

**SRF** INDICATES SPRING IN FRONT END (AIR PUSH)  
ROD NORMALLY RETRACTED

**SRR** INDICATES SPRING IN REAR END (AIR PULL)  
ROD NORMALLY EXTENDED

**HTP** HIGH TEMPERATURE SEALS

# CYLINDER OPTIONS

DOUBLE ACTING & SPRING RETURN: 7/8" - 5" BORES

## FAIL SAFE • SPRING RETURN - SINGLE ACTING

Available in all models except Types "ET" & "ETD". MAXIMUM STROKE AVAILABLE IS 10". Cylinders can be supplied with the rods either normally retracted or extended by the spring. On SRF models, Front Head Rod Seals are normally not provided, but can be if requested.

### SPECIFY:

**SRF** INDICATES SPRING IN FRONT END (AIR PUSH) ROD NORMALLY RETRACTED

**SRR** INDICATES SPRING IN REAR END (AIR PULL) ROD NORMALLY EXTENDED

**SRFW** INDICATES OPTIONAL STRONGER SPRING (For heavy-duty applications only.)

**SRRW** INDICATES OPTIONAL STRONGER SPRING (For heavy-duty applications only.)

## APPROXIMATE SPRING FORCES IN POUNDS

Bore Sizes	Piston Rod	AT REST		FULL STROKE	
		Std. Spring	Stronger Spring	Std. Spring	Stronger Spring
7/8"	STD	9	X	24	X
1-1/8"	STD	17	29	40	58
	*OS	19	30	45	60
1-1/2"	STD	17	30	41	58
	*OS	18	52	45	100
2"	STD	17	52	42	100
	*OS	21	77	47	125
2-1/2"	STD	25	77	55	125
	*OS	30	X	75	X
3"	STD	23	77	50	125
	*OS	31	X	73	X
4"	STD	57	X	123	X
	*OS	75	X	175	X

\*NOTE Applies to SRF and SRFW models only

LAST 1/2 INCH OF STROKE IS EFFECTIVELY CUSHIONED TO REDUCE SHOCK & NOISE.  
FULL REVERSE FLOW PROVIDED. CYLINDER LENGTH NOT AFFECTED.

## CUSHIONS

### SPECIFY:

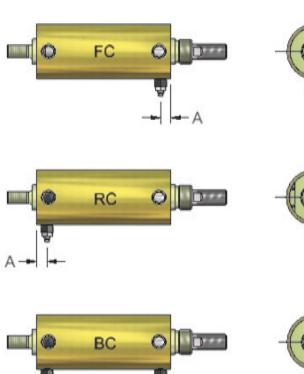
**FC** (FRONT CUSHION)

**RC** (REAR CUSHION)

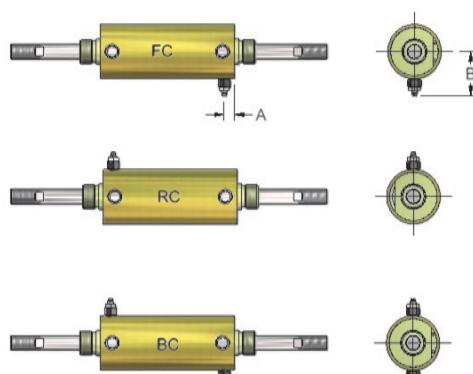
**BC** (CUSHION BOTH ENDS)

## CUSHION ADJUSTING SCREW LOCATIONS

### SINGLE ENDED



### DOUBLE ENDED



## BORE SIZES

DIM.	BORE SIZES				
	1-1/2"	2"	2-1/2"	3"	4"
A	1/2	7/16	1/2	1/2	13/16
B	1-3/4	2"	2-5/16	2-5/8	3-1/16

### NOTES:

- 1) Dim. B cushion screw shown fully closed.
- 2) Available on Spring Return Cylinders  
Opposite the spring side only.
- 3) Non-Standard Cushion Adjusting Screw  
locations available at slight additional cost.

## AVAILABILITY AND TYPES

CUSHION LOCATION	CYLINDER TYPES	BORE SIZES									
		7/8"	1-1/8"	1-1/8" OS	1-1/2"	1-1/2" OS	2"	2" OS	2-1/2"	2-1/2" OS	3" thru 4"-OS
FRONT	ALL TYPES (Except those below)	NA	FX	NA	ADJ	FX	ADJ	FX	ADJ	ADJ	ADJ
	TYPES AN, CN, & EN ONLY	NA	FX	NA	FX	NA	ADJ	FX	ADJ	ADJ	ADJ
REAR	ALL TYPES (Except those below)	NA	FX	FX	ADJ	FX	ADJ	ADJ	ADJ	ADJ	ADJ
	TYPES AN, CN, & EN ONLY	NA	FX	FX	FX	NA	ADJ	ADJ	ADJ	ADJ	ADJ
	TYPE CD ONLY	NA	FX	NA	ADJ	NA	NA	NA	NA	NA	ADJ

### NOTES:

- 1) Fixed Cushions are INTERNALLY CONSTRUCTED.
- 2) Tandem Cylinders - Cushions installed on Rear Cylinder Only.
- 3) Three Position Cylinders - Rear Cushion of Front Cylinder not available.

**ADJ** = ADJUSTABLE CUSHION AVAILABLE

**FX** = FIXED CUSHION ONLY AVAILABLE

**NA** = CUSHION NOT AVAILABLE

# CYLINDER OPTIONS

## DOUBLE ACTING & SPRING RETURN: 7/8" - 5" CYLINDERS

### DOUBLE ROD PACKING

SPECIFY: DRP Two sets of rod seals in "A" Type cylinders - except 7/8" and 1-1/8" bore sizes.

### FAIL SAFE

SPECIFY: FS Spring installed in front of cylinder to retract rod should there be an air failure.

Dimensions are those of a Single Acting Cylinder.

### HIGH TEMPERATURE SEALS

SPECIFY: HTP Fluorocarbon compound (Viton) seals, temperature range of +10°F to +350°F .

### HOLLOW RODS

SPECIFY: M Hole thru rod available up to 12" stroke.

ROD DIA.	3/8"	1/2"	5/8"	3/4"	1"	1-1/4"
HOLE SIZE	3/16"	1/4"	5/16"	7/16"	9/16"	5/8"

### NO TANG

SPECIFY: NT Cylinders available without Tang section (covered by dimension "E" minus "N" Page 17).

### OVERSIZED ROD

SPECIFY: OS Larger diameter rod for column loading. Not available on Type ETD 1-1/2" bore.

BORE SIZE	7/8"	1-1/8"	1-1/2"	2"	2-1/2"	3"	4"
ROD DIA.	N/A	1/2"	5/8"	3/4"	1"	1"	1-1/4"

### LOW FRICTION CYLINDER

SPECIFY: LF Available in "A" Type cylinders only. For extremely low friction at medium to high pressure.

### MAGNETIC PISTON

SPECIFY: RM To signal Hall Effect or Reed switches. Available on Types "A", "E" & "SM" 1-1/8" cylinders.

### ROD WIPER

SPECIFY: WR Teflon wiper replaces the standard leather back-up ring in Types "A" "E" cylinders only.

### POLYURETHANE BUMPERS

SPECIFY: PUBF

PUBR

PUBB

For use on high speed Cylinder applications to reduce shock and noise where standard cushions cannot be used. Made of 1/2" thick Polyurethane and press fit between the head and piston

### PUBF BUMPER INSTALLED IN FRONT • PUBR BUMPER INSTALLED IN REAR

### PUBB BUMPER INSTALLED BOTH ENDS

Available on all Cylinders and Bore sizes except Spring Return Cylinders and Cylinders having Accessory Pins, Bleeder Valves or Cushions. Adds 1/2" of length for each bumper.

ACCESSORIES: For accessories used with Allenair Cylinders see pages 49 - 52.

### HALL EFFECT SWITCHES (CSA "NRTL/C" Listed):

ALLENAIR Hall Effect switches are designed to be used with our type "A" & "E" 1-1/8" thru 4" bore cylinders. The cylinders must be ordered with the "RM" option (adds 1" O.A.L. to "A" type). All switches have an LED indicator light, nine (9) foot leads, a mounting bracket P/N RMB2 and an operating temperature range of -22°F to +176°F.

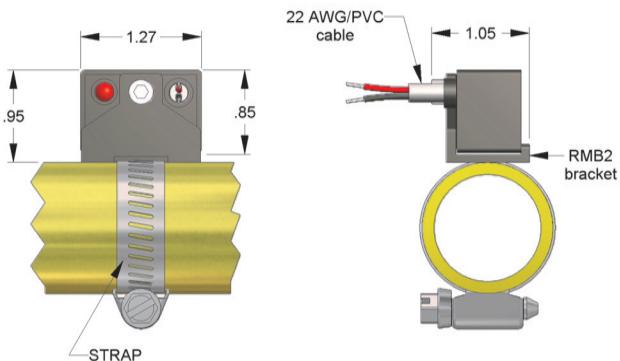
TECHNICAL DATA						
MODEL	FUNCTION	SWITCHING VOLTAGE	SWITCHING CURRENT	SWITCHING POWER	SWITCHING SPEED	VOLTAGE DROP
HO1	NORMALLY OPEN PNP Output	6-24/DC	1 Amp max.	24 watts max.	1.5 µs operate 0.5 µs release	0.5 Volts
HO2	NORMALLY OPEN NPN Output	6-24/DC	1 Amp max.	24 watts max.	1.5 µs operate 0.5 µs release	0.5 Volts
HO3	NORMALLY OPEN TRIAC output	12-24-50/60	0.6 Amp max. 5 Amp inrush	15 watts max.	1.5 µs operate 0.5 µs release	1 Volt
HO4	NORMALLY OPEN TRIAC output	120-50/60	0.6 Amp max. 5 Amp inrush	72 watts max.	1.5 µs operate 0.5 µs release	1 Volt

#### NOTES:

- 1) PNP output is Sourcing
- 2) NPN output is Sinking

All models require a mounting strap purchased as a separate item based on the cylinder bore size.

CYLINDER BORE SIZE	STRAP PART NO.
1-1/8" & 1-1/2"	RMS1
2" & 2-1/2"	RMS2
3"	RMS3
4"	RMS4



### REED SWITCHES (CSA "NRTL/C" Listed)

ALLENAIR Reed switches are designed to be used with our "A" & "E" type 1-1/8" thru 4" bore cylinders. Cylinders must be ordered with the "RM" option (adds 1" O.A.L. to "A" type). All switches have nine (9) foot hook up cable. Operating temperature range is -22°F to +176°F. Models R02, R04 and R05 have an LED indicator light. Models R02, R03, R04 and R05 have MOV surge suppression

TECHNICAL DATA						
MODEL	FUNCTION	SWITCHING VOLTAGE	SWITCHING CURRENT	SWITCHING POWER	SWITCHING SPEED	VOLTAGE DROP
RO1	NORMALLY OPEN SPST	0-240/DC 0-240-50/60	1 Amp max.	30 watts max.	0.6 ms operate 0.05 ms release	0 Volts
RO2	NORMALLY OPEN SPST	5-240/DC 5-240-50/60	1 Amp max. .005 Amp min.	30 watts max.	0.6 ms operate 0.05 ms release	3 Volts
RO3	NORMALLY OPEN TRIAC output	10-240-50/60	4 Amp max. 50 Amp Inrush	100 watts max.	0.6 ms operate 0.05 ms release	1 Volt
RO4	NORMALLY OPEN TRIAC output	24-240-50/60	4 Amp max. 50 Amp Inrush 0.005 Amp min.	100 watts max.	0.6 ms operate 0.05 ms release	1 Volt
RO5	NORMALLY OPEN SPST	5-120/DC 5-120-50/60	0.5 Amp max. 0.005 Amp min.	10 watts max.	0.5 ms operate 0.1 ms release	3.5 Volts

Models R01 - R04 include mounting bracket P/N RMB2.  
Order mounting strap based on cylinder bore size as shown below.

CYLINDER BORE SIZE	1-1/8" & 1-1/2"	2" & 2-1/2"	3"	4"
STRAP PART NO.	RMS1	RMS2	RMS3	RMS4

Model R05 is supplied with a universal mounting bracket and strap covering all bore sizes (1-1/8" thru 4") P/N RMB1

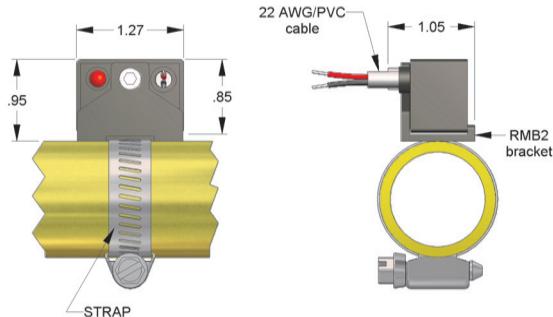
STANDARD OPTIONS FOR ALL BORE SIZES EXCEPT WHERE NOTED, AVAILABLE AT EXTRA COST.

# CYLINDER OPTIONS

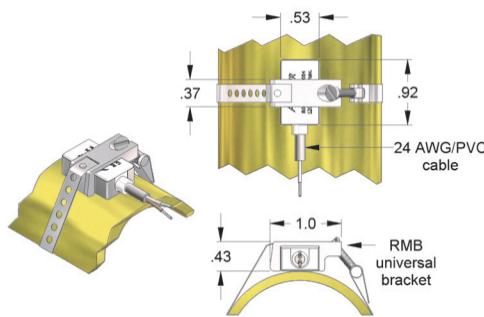
## CYLINDER OPTIONS

### REED SWITCHES

Models R01 - R04



Model R05



### MODIFICATIONS

#### RODS:

- Non-Standard Rod Extensions ("H" Dim.)
- Non-Standard Rod Threads ("CC" Dim.)
- Non-Standard Rod Thread Length ("J" Dim.)
- Female Threads In Rod
- No Threads on Rod
- Complete Special Rod End
- Non-Standard Wrench Flats
- Special Rod Material

#### HEADS:

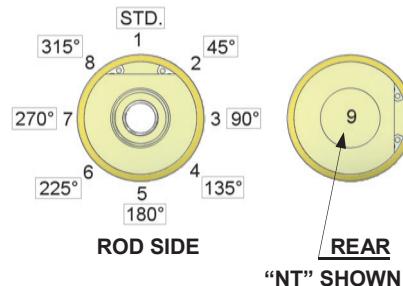
- Non-Standard Port Location (s)
- Non-Standard Cushion Screw Location (s)
- Extra Ports
- Non-Standard Hole In Tang

**NOTE: The Port Sizes shown in the dimension drawings are the largest available.**

#### SPECIFY

- Length Required
- Size Required
- Length Required
- Size & Depth Required
- No Threads
- Print Required
- Location & Size
- Material Required

#### STANDARD & OPTIONAL PORT LOCATIONS



#### STANDARD & OPTIONAL PORT LOCATIONS

To determine port and option locations, we will always look at the front of the cylinder (Rod Side) with the tail section in the vertical plane. Square head units will be sitting on the base of the heads, and No Tail units will have the ports on the top at position #1. (Position #1 is standard) Position #9 is in the center of the rear head.

There are eight possible positions for ports and options, all others are special and will be treated as special units.

**EXAMPLE: A 1-1/2 X 6 BC3 FP7**

**BC3** = Cushions Front & Rear at Position 3  
**FP7** = Front Port at Position 7  
 Rear Port remains at standard position.

**LISTED BELOW ARE SPECIAL CODES WE USE WHENEVER A SPECIAL CYLINDER IS ORDERED.  
NOT ALL CODES ARE LISTED - ONLY THE MOST COMMON**

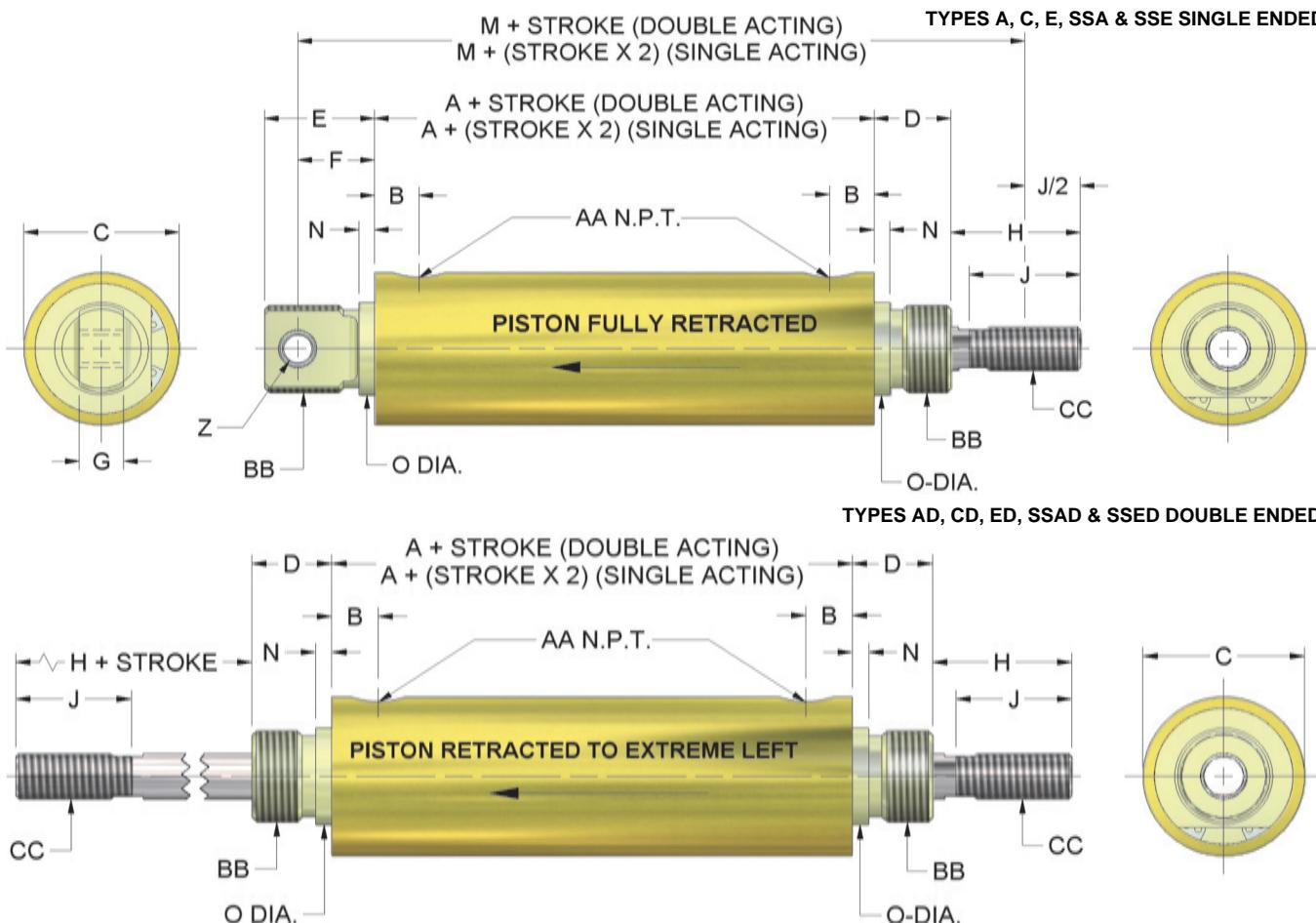
CODE	DESCRIPTION	CODE	DESCRIPTION	CODE	DESCRIPTION
B	Sp. "H" Dimension	G	No Rod Threads	L	303 Stainless Steel Rod
BU	Brass Tube	GB	No Rod Threads Both Ends	LF	Low Friction Cylinder
C	Sp. "J" Dimension	GF	No Rod Threads Front End	M	Hollow Rod
CB	Sp. "H" & "J" Dimensions	GR	No Rod Threads Rear End	NT	NoTang
CH	Sp. "H" & "J" For Cyl_Check	H	Sp. Per Customers Drawing	Q	Stainless Steel Snap Ring
CS	Sp. Per Customers Specs.	HTP	Hi_Temp. Packings	RB	Bleeder Valve Both Ends
D	Sp. "CC" Dimension	IB	"AB" Pin Both Ends	RF	Bleeder Valve Front End
DRP	Double Rod Packing	IF	"AB" Pin Front End	RM	Magnet On Piston
EPF	Extra port in Front	IR	"AB" Pin Rear End	RR	Bleeder Valve Rear End
EPR	Extra port in Rear	J	Special Tail	RG	Sp. "H" For Rod Guide
EPB	Extra port Both Ends	J2	Flange Mount Tail	U	Steel Tube
F	Non-standard Port Location	K	Female Thread In Rod	W	Stronger Spring
FS	Fail Safe W/Spring In Front	KR	Sp. "H" & "J" For K & KR Kits	WR	Rod Wiper

**MATERIALS:** Special seal compounds are available for a wide range of fluid media and environments. Tubes, Heads, Pistons and Rods can be supplied plated, hardcoated or in other materials. Please consult the factory for special requirements, stating quantity required.

**SPECIAL DESIGNS:** Many times Allenaire is able to change the standard configuration of our Cylinders to meet Customer's special requirements. A print from the Customer is needed so we can evaluate and properly quote such specials.  
**PLEASE CONSULT FACTORY ON THE ABOVE SPECIALS STATING QUANTITIES REQUIRED.**

# CYLINDER DIMENSIONS

## DOUBLE ACTING & SPRING RETURN: 7/8" - 5" BORES

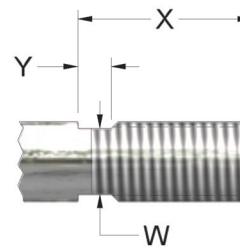


CYL. BORE SIZES	A		B	C	D		E	F	G	H	J	M				N	O		Z
	TYPE A	TYPE C & E			Std	OS (Front Only)						TYPE A	TYPE C & E	Std	OS		Std	OS (Front only)	
7/8"	2-1/16	3-1/16	3/8	♦1-1/16	5/8	X	1"	11/16	3/8	1"	7/8	3-15/16	X	4-15/16	X	1/8	3/4	X	1/4
1-1/8"	2-1/16	3-1/16	3/8	♦1-5/16	5/8	5/8	1"	11/16	3/8	1"**	7/8**	3-15/16	4-1/8	4-15/16	5-1/8	1/8	3/4***	7/8	1/4
1-1/2"	2-5/8	3-5/8	1/2	♦1-11/16	7/8	7/8	1-1/4	7/8	1/2	1-7/16	1-1/4	5-3/16	5-3/16	6-3/16	6-3/16	3/16	1-1/16	1-1/16	5/16
2"	2-5/8	3-5/8	1/2	♦2-3/16	7/8	7/8	1-1/4	7/8	1/2	1-7/16	1-1/4	5-3/16	5-3/16	6-3/16	6-3/16	3/16	1-1/16	1-3/8	5/16
2-1/2"	2-7/8	3-7/8	9/16	♦2-11/16	1"	1"	2"	1-3/8	5/8	1-11/16	1-1/2	6-3/16	6-3/16	7-3/16	7-3/16	1/4	1-3/8	1-1/2	7/16
3"	2-7/8	3-7/8	9/16	♦3-3/16	1"	1"	2"	1-3/8	5/8	1-11/16	1-1/2	6-3/16	6-3/16	7-3/16	7-3/16	1/4	1-3/8	1-1/2	7/16
4"	*4-7/8	*4-7/8	13/16	4-3/8	1-1/8	1-7/8	2-3/16	1-7/16	3/4	2-1/4	1-7/8	9-1/4	10"	9-1/4	10"	3/16	1-3/4	2-1/4	1/2
5"	4-7/8	4-7/8	13/16	5-3/8	1-7/8	N/A	1-7/8	N/A	N/A	2-1/4	1-7/8	N/A	N/A	N/A	N/A	3/16	2-1/4	N/A	N/A

CYL. BORE SIZES	AA	BB		CC		ROD DIA.	
		Std	OS (Front Only)	Std	OS	Std	OS
7/8"	1/8	3/4-16	X	3/8-16	X	3/8	X
1-1/8"	1/8	3/4-16***	7/8-14	3/8-16	1-2-13	3/8	1/2
1-1/2"	1/4	1"-14	1"-14	1/2-13	5/8-11	1/2	5/8
2"	1/4	1"-14	1-3/8-12	5/8-11	3/4-10	5/8	3/4
2-1/2"	3/8	1-3/8-12	1-1/2-12	3/4-10	1"-14	3/4	1"
3"	3/8	1-3/8-12	1-1/2-12	3/4-10	1"-14	3/4	1"
4"	1/2	1-3/4-12	2-1/4-12	1"-14	1-1/4-12	1"	1-1/4
5"	1/2	2-1/4-12	N/A	1-1/4-12	N/A	1-1/4	N/A

### STANDARD WRENCH FLATS

ROD DIA.	W	X	Y
3/8"	5/16	15/16	5/16
1/2"	7/16	1-3/8	5/16
5/8"	1/2	1-3/8	5/16
3/4"	5/8	1-5/8	5/16
1"	7/8	2-1/8	3/8
1-1/4"	1-1/8	2-1/8	3/8



\*5-3/8" on Single Ended Cylinders having Tang section, except types "AN", "CN" & "EN".

\*\*On Oversize Models, H=1-3/8" & J=1-1/4"

\*\*\*3/4"-16 both ends on Types "A" & "E"

3/4"-16 Rear and 7/8"-14 Front on Type "C". Omit dimension E when laying out Cylinder with Tang section omitted.

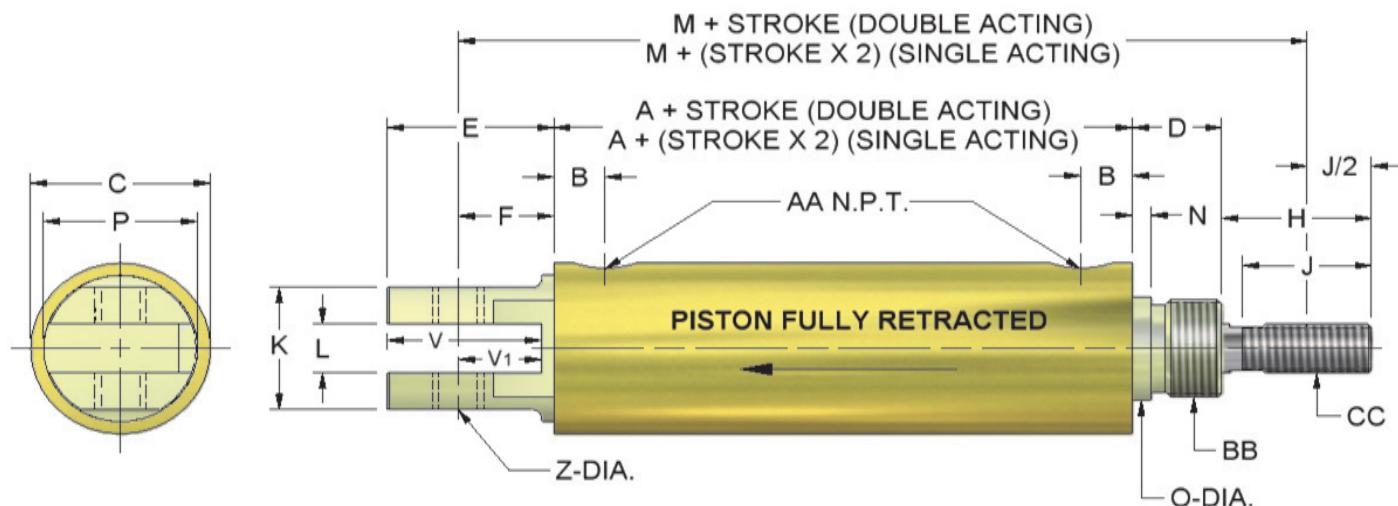
N dimension remains except on 7/8", 1-1/8" and 4" bores.

♦ Add 1/16" to the C dimension for "BU" option. "BU" option = Brass Tube.

# CYLINDER DIMENSIONS

## DOUBLE ACTING & SPRING RETURN CYLINDERS

TYPES AN, CN, EN, SSAN & SSEN INTEGRAL REAR SWIVEL

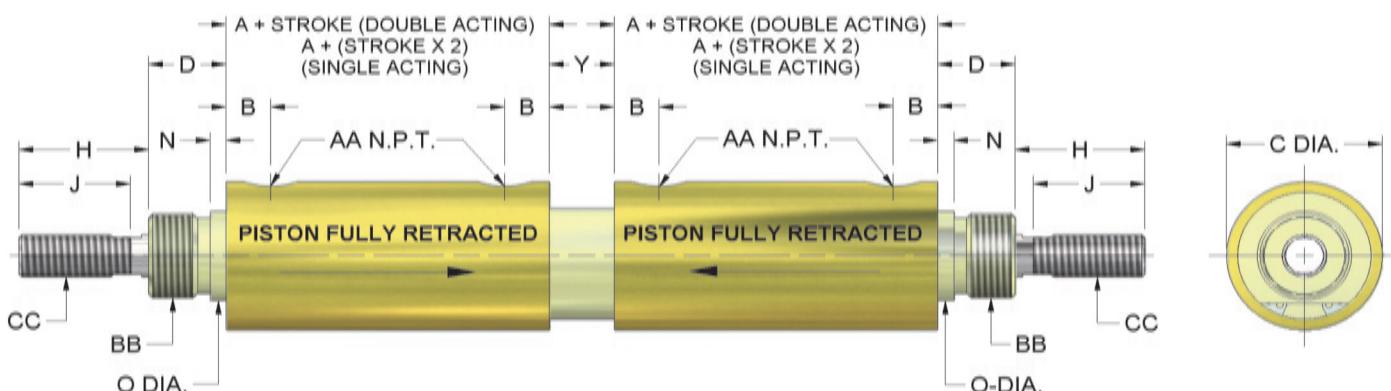


CYL. BORE SIZES	E	F	H		K	L	M				P	V	V-1	Z	CC							
			TYPE AN	TYPES CN & EN			TYP AN		TYPES CN & EN						STD	OS						
							STD	OS	STD	OS												
7/8"	13/16	7/16	1"	1"	7/8	1/4	3-11/16	X	4-11/16	X	7/8	13/16	7/16	1/4	3/8-16	X						
1-1/8"	1"	11/16	1"*	1"*	15/16	3/8	3-15/16	4-1/8	4-15-16	5-1/8	1-1/8	7/8	9/16	3/8	3/8-16	1/2-13						
1-1/2"	1-5/8	15/16	2-7/16	1-7/16	1-1/4	1/2	6-1/4	X	6-1/4	X	1-1/2	1-1/2	13/16	3/8	5/8-11	X						
2"	2-1/4	1-9/16	2-7/16	1-7/16	1-1/2	1/2	6-7/8	6-7/8	6-7/8	6-7/8	2"	1-7/8	1-3/16	1/2	5/8-11	3/4-10						
2-1/2"	1-13/16	1-1/8	3-11/16	2-11/16	1-1/2	1/2	7-15/16	7-15/16	7-15/16	7-15/16	2-1/4	1-11/16	1"	1/2	3/4-10	1"-14						
3"	2-5/16	1-5/8	3-11/16	2-11/16	1-1/2	1/2	8-7/16	8-7/16	8-7/16	8-7/16	2-1/4	1-3/4	1-1/16	1/2	3/4-10	1"-14						
4"	3-3/8	2-3/8	2-1/4	2-1/4	2-1/4	3/4	9-11/16	10-7/16	9-11/16	10-7/16	3"	2-1/2	1-1/2	3/4	1"-14	1-1/4-12						

\* 1-3/8 OVERSIZED MODELS

FOR ALL DIMENSIONS NOT LISTED, SEE TABULATIONS ON PAGE 17

TYPES ABB, CBB, EBB, SSABB & SSEBB BACK-TO-BACK



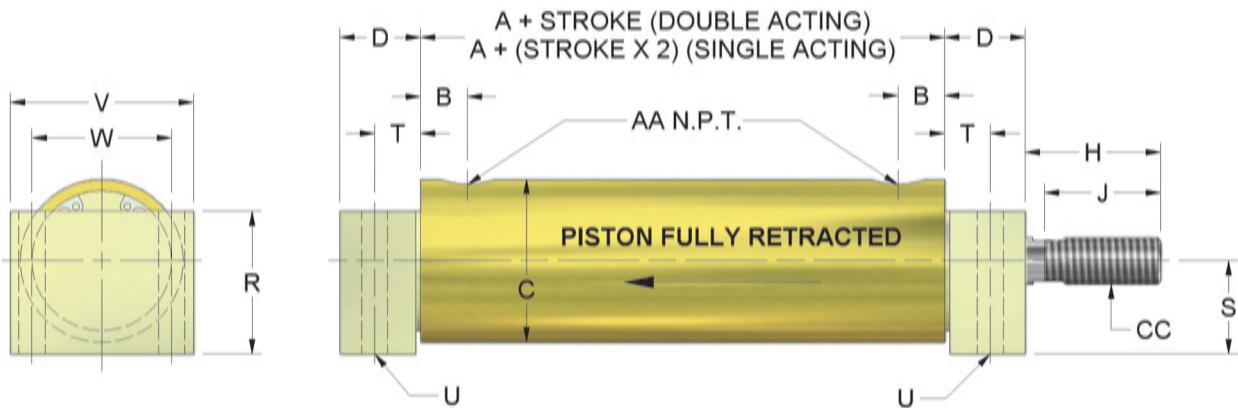
CYL.BORE SIZES	Y
7/8"	1/2
1-1/8"	1/2
1-1/2"	1/2
2"	1/2
2-1/2"	1/2
3"	1/2
4"	1-1/8

FOR ALL DIMENSIONS NOT LISTED, SEE TABULATIONS ON PAGE 17

# CYLINDER DIMENSIONS

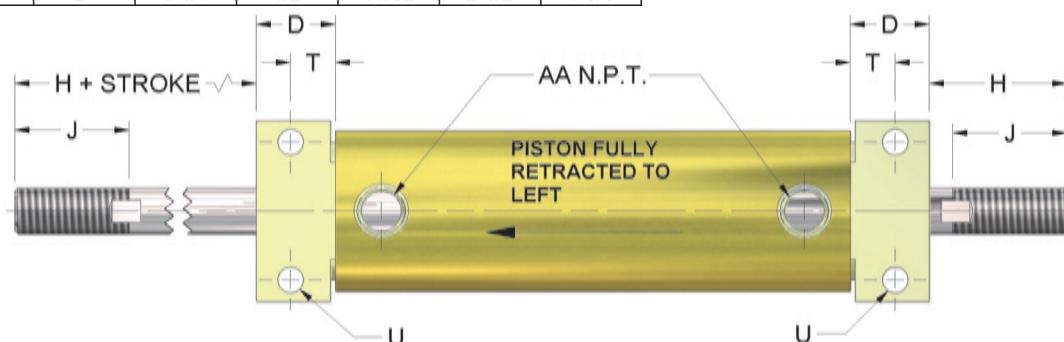
DOUBLE ACTING & SPRING RETURN: 7/8" - 5" BORES

## TYPES AS, CS & ES SINGLE ENDED



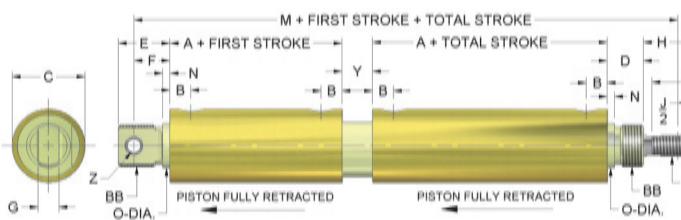
CYL. BORE SIZES	R	S	T	U	V	W
7/8"	1-1/32	3/4	11/32	7/32	1-1/2	1-1/8
1-1/8"	1-1/8	3/4	11/32	7/32	1-1/2	1-1/8
1-1/2"	1-17/32	1"	1/2	9/32	2"	1-1/2
2"	2"	1-1/4	1/2	11/32	2-1/2	1-5/8

## TYPES ASD, CSD & ESD DOUBLE ENDED

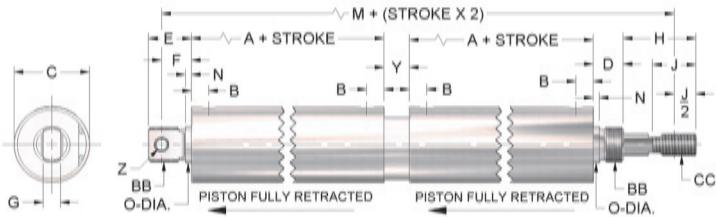


FOR ALL DIMENSIONS NOT LISTED, SEE TABULATIONS ON PAGE 17

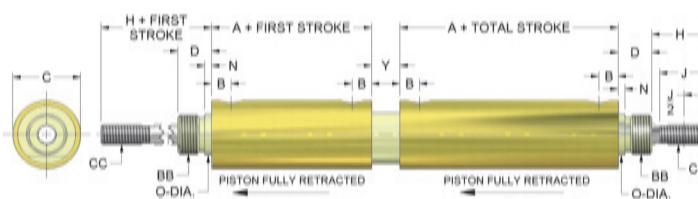
## TYPES AP, CP, EP, SSAP & SSEP



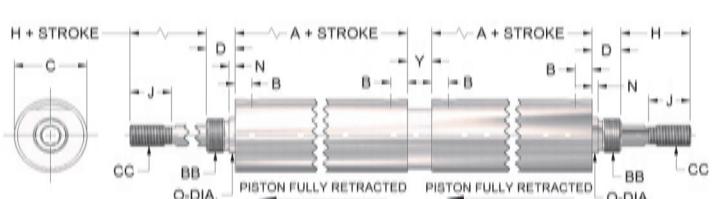
## TYPES ET & SSET



## TYPES APD, CPD, EPD, SSAPD & SSEPD



## TYPES ETD & SSETD



CYL. BORE SIZES	M				Y	
	TYPE AP		TYPES CP & EP			
	STD	OS	STD	OS		
1-1/2"	8-9/16	8-9/16	10-9/16	10-9/16	3/4	
2"	8-9/16	8-9/16	10-9/16	10-9/16	3/4	
2-1/2"	10-3/16	10-3/16	12-3/16	12-3/16	1-1/8	
3"	10-3/16	10-3/16	12-3/16	12-3/16	1-1/8	
4"	15-1/4	16"	15-1/4	16"	1-1/8	

CYL. BORE SIZES	H	M		Y
		STD	OS	
1-1/2"	2-1/16	11-3/16	11-3/16	3/4
2"	2-1/16	11-3/16	11-3/16	3/4
2-1/2"	1-11/16	12-3/16	12-3/16	1-1/8
3"	1-11/16	12-3/16	12-3/16	1-1/8
4"	2-1/4	15-1/4	16"	1-1/8

FOR ALL DIMENSIONS NOT LISTED, SEE TABULATIONS ON PAGE 17

# CYLINDER MOUNTS

## MOUNTING BRACKETS & DIMENSIONS

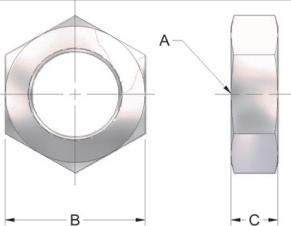
CYL. BORE SIZES	FOOT MOUNT		FLANGE MOUNT		ROD CLEVIS, NUT & PIN		ROD NUT ONLY		SWIVEL BRACKET & PIN	TRUNNION ( BU OPTION )	BLOCK MOUNT ( BU OPTION )	MOUNTING NUTS	
	STD	OS** (Front Only)	STD	OS** (Front Only)	STD	OS	STD	OS				STD	OS** (Front Only)
7/8"	A-132	X	A-129	X	A-145	X	A-126	X	A-139	T-7/8	BM-7/8	A-114	A-114
1-1/8"	A-132 *	A-132-OS	A-129 *	A-129-OS	A-145	A-1545	A-126	A-1526	A-139	T-1	BM-1	A-114*	A-114-OS*
1-1/2"	A-232	A-232	A-229	A-229	A-1545	A-245	A-1526	A-226	A-239	T-1.5	BM-1-1/2	A-214	A-214
2"	A-232	A-232-OS	A-229	A-229-OS	A-245	A-345	A-226	A-326	A-239	T-2	BM-2	A-214	A-314
2-1/2"	A-332	A-332-OS	A-329	A-329-OS	A-345	A-445	A-326	A-426	A-339	T-2.5	X	A-314	A-314-OS
3"	A-332	A-332-OS	A-329	A-329-OS	A-345	A-445	A-326	A-426	A-339	T-3	X	A-314	A-314-OS
4"	A-432	A-432-OS	A-429	A-429-OS	A-445	A-445-OS	A-426	A-526	A-439	T-4	X	A-414	A-414-OS

\*1-1/8" bore Type "C" Cylinders require OS Mount or Mounting Nut on front and standard on rear.

\*\*All Single Ended OS Cylinders take standard Mounts or Mounting Nuts on rear end.

### MOUNTING NUTS

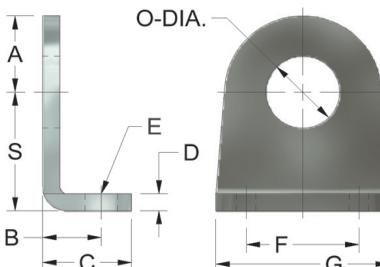
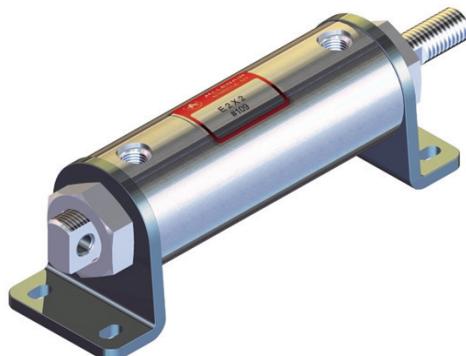
Mounting Nuts are supplied only with Flange or Foot Mounts and are included in the price of those Mounts. However, they may be purchased as a separate item.



PART No.	A	B	C
A-114	3/4-16	1-1/16	3/8
A-114-OS	7/8-14	1-1/4	25/64
A-214	1"-14	1-1/2	1/2
A-314	1-3/8-12	1-3/4	5/8
A-314-OS	1-1/2-12	1-13/16	5/8
A-414	1-3/4-12	2-1/4	3/4
A-414-OS	2-1/4-12	3"	1"

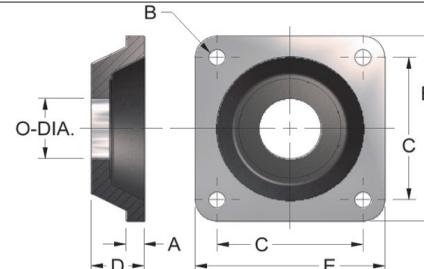
### FOOT MOUNT

### MOUNTING BRACKET DIMENSIONS



DIM.	PART NUMBERS							
	A-132		A-232		A-332		A-432	
STD	OS	STD	OS	STD	OS	STD	OS	
A	11/16	11/16	1-1/8	1-1/8	1-3/8	1-3/8	1-7/8	1-7/8
B	7/8	7/8	7/8	7/8	1-1/4	1-1/4	1-3/4	1-3/4
C	1-3/8	1-3/8	1-9/32	1-9/32	1-29/32	1-29/32	2-17/32	2-17/32
D	3/16	3/16	1/4	1/4	5/16	5/16	1/2	1/2
E	9/32	9/32	9/32	9/32	13/32	13/32	15/32	15/32
F	1-11/16	1-11/16	1-5/8	1-5/8	2-1/4	2-1/4	3-1/4	3-1/4
G	2-1/2	2-1/2	2-1/2	2-1/2	3-1/2	3-1/2	5"	5"
O	3/4	7/8	1-1/16	1-3/8	1-3/8	1-1/2	1-3/4	2-1/4
S	1-9/32	1-9/32	1-3/4	1-3/4	2-3/8	2-3/8	3-3/16	3-3/16

### FLANGE MOUNT Front or Rear



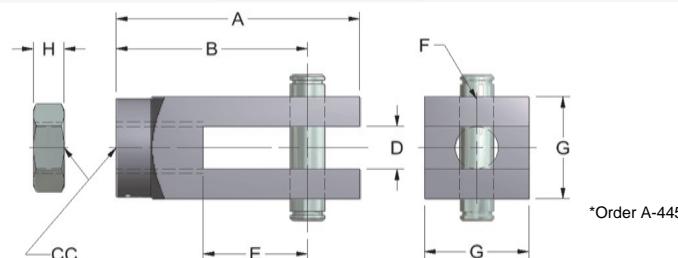
DIM.	PART NUMBERS							
	A-129		A-229		A-329		A-429	
STD	OS	STD	OS	STD	OS	STD	OS	
A	9/32	9/32	11/32	11/32	13/32	13/32	7/16	1-29/32
B	9/32	9/32	9/32	9/32	13/32	13/32	15/32	15/32
C	2"	2"	2-1/2	2-1/2	3-3/8	3-3/8	4"	4"
D	5/8	5/8	7/8	7/8	1"	1"	1-1/8	1-29/32
E	2-1/2	2-1/2	3-1/4	3-1/4	4-1/2	4-1/2	5-1/4	5-1/4
O	3/4	7/8	1-1/16	1-3/8	1-3/8	1-1/2	1-3/4	2-1/4

- NT Option suggested
- J2 Option suggested provides Tang flush with flange mounting surface.

# CYLINDER MOUNTS

DOUBLE ACTING & SPRING RETURN: 7/8" - 5" BORES

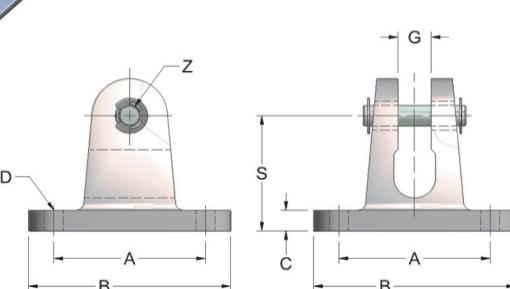
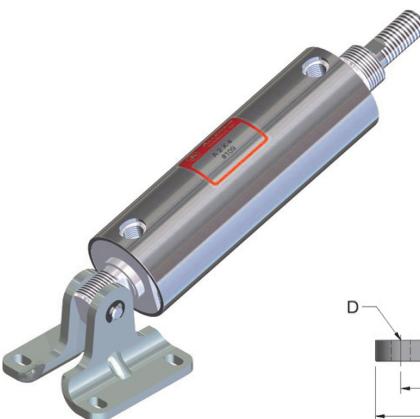
## ROD CLEVIS, NUT & PIN



DIM.	PART NUMBERS									
	A-145		A-1545		A-245		A-345		A-445	
	STD	OS	STD	OS	STD	OS	STD	*OS	STD	OS
A	1-3/4	2-1/4	2-1/4	2-1/4	2-1/4	2-3/8	2-3/8	3-3/8	3-3/8	3-1/2
B	1-3/8	1-3/4	1-3/4	1-3/4	1-3/4	1 13/16	1-13/16	2-5/8	2-5/8	2-5/8
CC	3/8-16	1/2-13	1/2-13	5/8-11	5/8-11	3/4-10	3/4-10	1"-14	1"-14	1-1/4-12
D	5/16	3/8	3/8	3/8	3/8	1/2	1/2	5/8	5/8	3/4
E	3/4	13/16	13/16	13/16	13/16	3/4	3/4	1-1/16	1-1/16	1-1/8
F	1/4	5/16	5/16	5/16	5/16	7/16	7/16	1/2	1/2	3/4
G	3/4	1"	1"	1"	1"	1-1/4	1-1/4	1-1/2	1-1/2	1-3/4
H	7/32	5/16	5/16	3/8	3/8	27/64	27/64	1/2	1/2	23/32

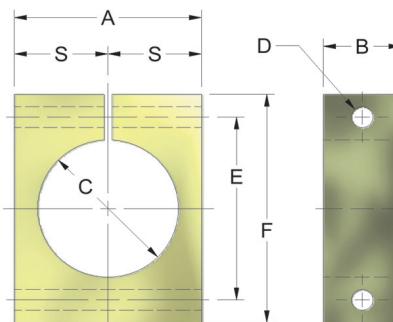
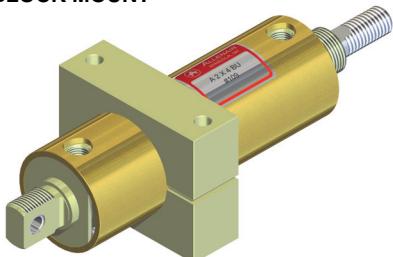
\*Order A-445

## SWIVEL BRACKET & PIN



DIM.	PART NUMBERS			
	A-139	A-239	A-339	A-439
A	1-3/4	2-1/4	3"	3-3/4
B	2-1/4	3"	4"	5"
C	1/4	5/16	5/16	1/2
D	9/32	9/32	13/32	15/32
G	3/8	1/2	5/8	3/4
S	1-9/32	1-3/4	2-3/8	3-3/16
Z	1/4	5/16	7/16	1/2

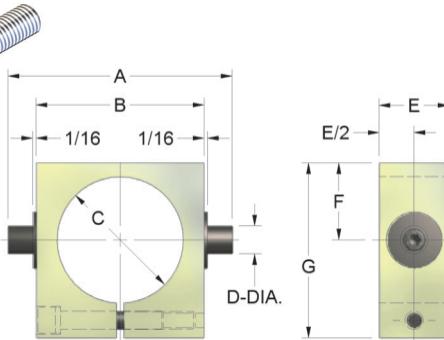
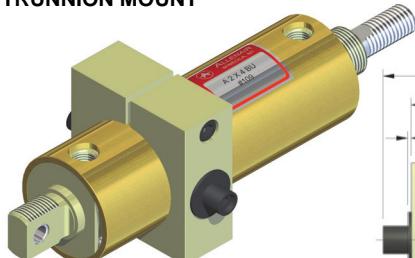
## BLOCK MOUNT



DIM.	PART NUMBERS			
	BM-7/8	BM-1 1/8	BM-1 1/2	BM-2
A	1-1/2	1-3/4	2-1/4	3"
B	1"	1"	1-1/4	1-1/4
C	1-1/8	1-3/8	1-3/4	2-1/4
D	9/32	9/32	9/32	11/32
E	1-5/8	1-7/8	2-3/8	3"
F	2-1/4	2-1/2	3"	3-3/4
S	3/4	7/8	1-1/8	1-3/8

BU OPTION REQUIRED  
NT OPTION SUGGESTED

## TRUNNION MOUNT



DIM.	PART NUMBERS						
	T- 7/8	T- 1	T- 1.5	T- 2	T- 2.5	T- 3	T- 4
A	3-1/2	3-1/2	4"	4"	5-1/2	5-3/4	7"
B	2-1/4	2-1/4	3"	3"	4"	4-1/4	5-1/2
C	1-1/8	1-3/8	1-3/4	2-1/4	2-3/4	3-1/4	4-3/8
D	3/8	3/8	1/2	1/2	3/4	3/4	3/4
E	3/4	3/4	1-1/4	1-1/4	1-1/2	1-1/2	1-1/2
F	7/8	7/8	1-1/8	1-3/8	1-7/8	2-1/8	2-11/16
G	2"	2"	2-5/8	3-1/8	4"	4-1/2	5-3/4

BU OPTION REQUIRED  
NT OPTION SUGGESTED