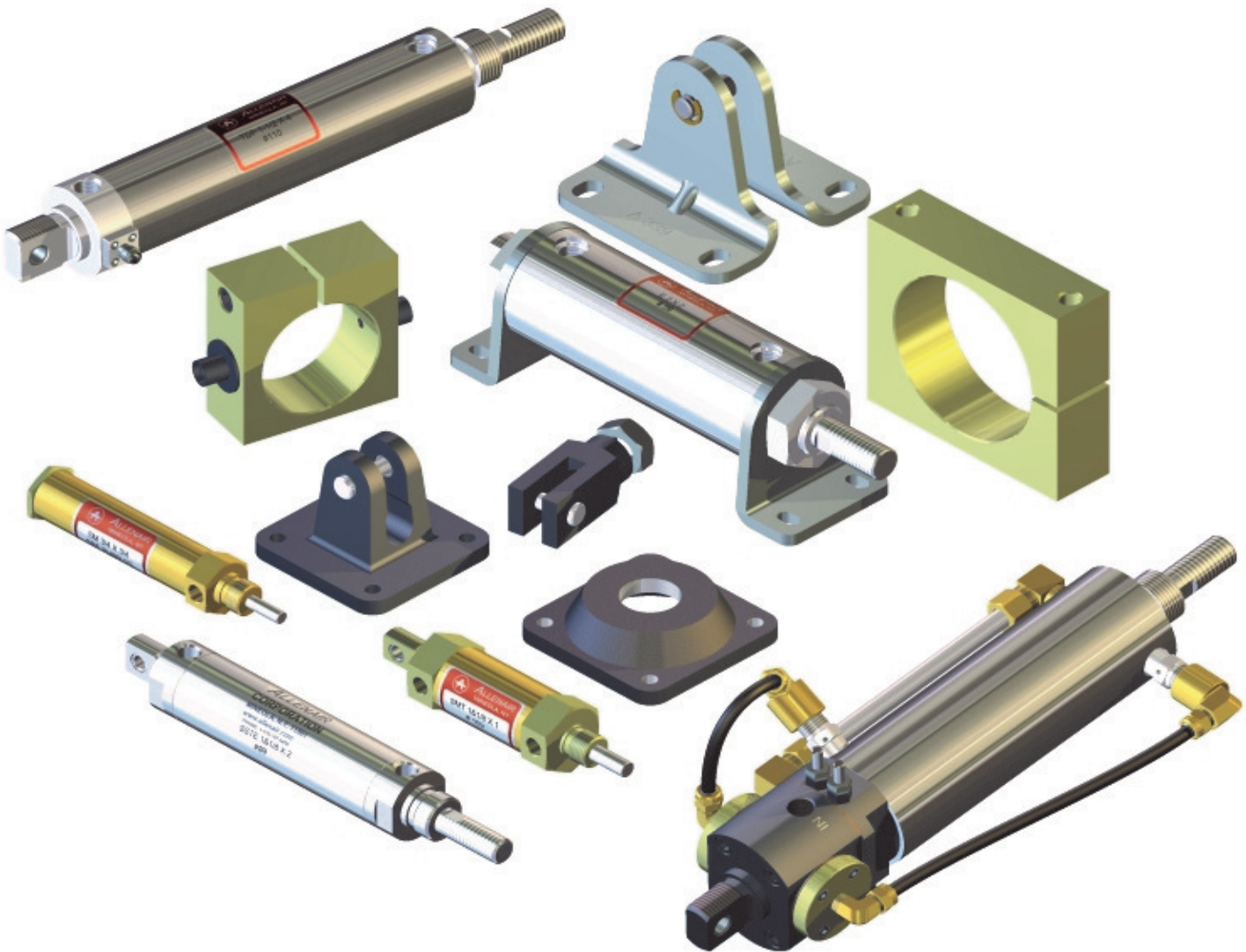
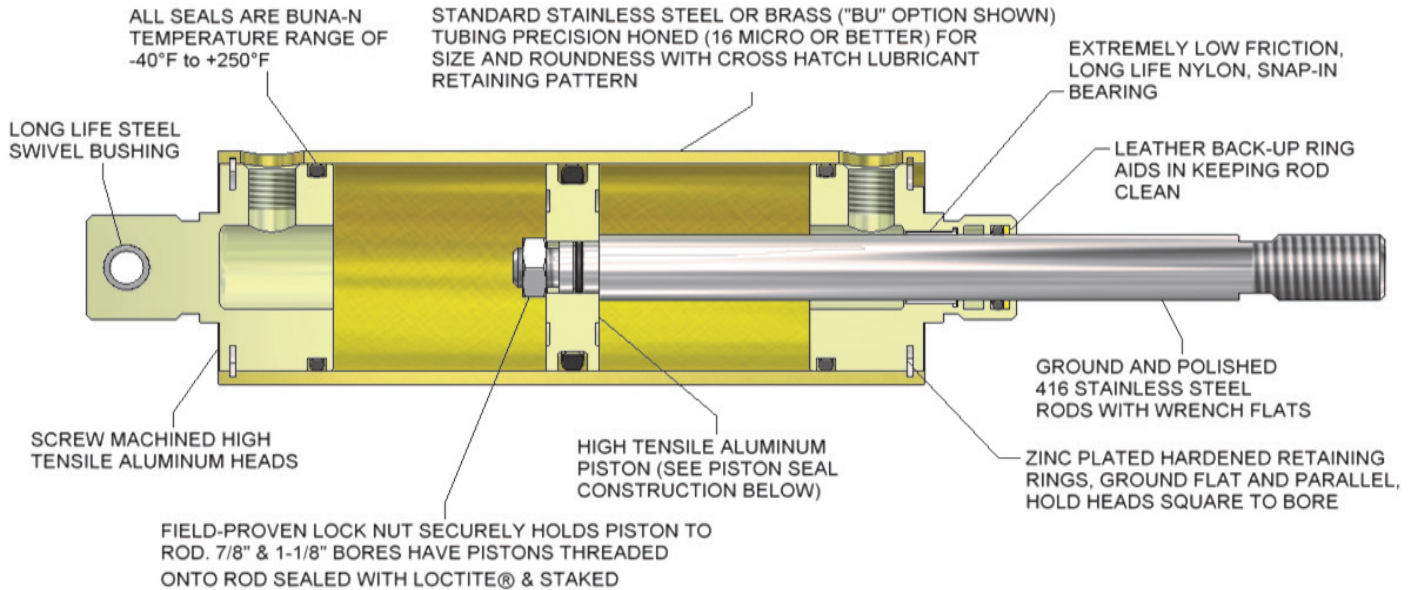


CYLINDERS



**ALLENAIR Cylinders may be used in place of other
Manufactures 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)

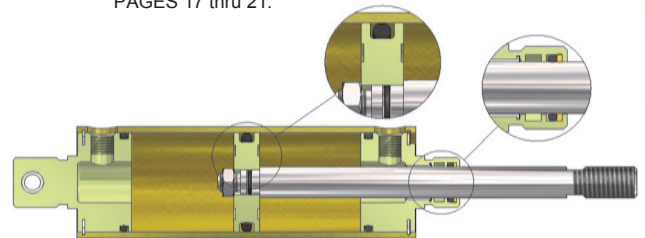
TYPE A SINGLE ENDED : All Type "A" Cylinders, with the exception of the 4" bore, are constructed using "O"- Ring Rod Seals. The 4" bore uses "O"- Ring Rod Seals and "U"- Cup Piston seals. These all-purpose units are used for most pneumatic applications. Optional Double Rod Packings are recommended for 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".

FOR DIMENSIONS AND MOUNTS SEE
PAGES 17 thru 21.



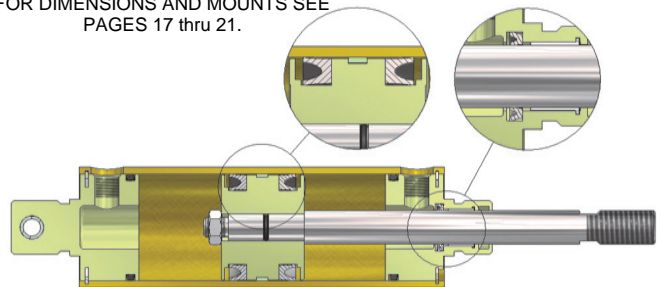
TYPE C SINGLE ENDED : Type "C" Cylinders are constructed using low friction "U"- Cup Seals and include a wear strip on the piston with the exception of the 4" bore (it has no wear strip). These Cylinders are primarily used for low pressure applications and where low minimum breakaway is required.

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".

FOR DIMENSIONS AND MOUNTS SEE
PAGES 17 thru 21.



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.

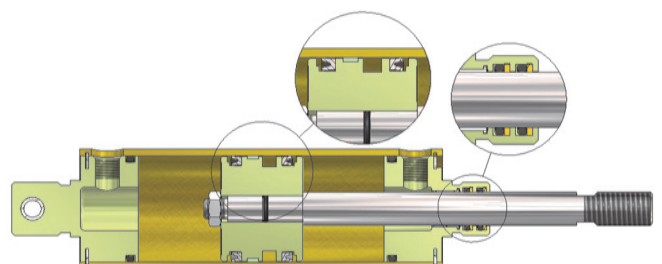
Pressure Rating: 200 P.S.I. Pneumatic, 500 P.S.I. Hydraulic.

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.



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.

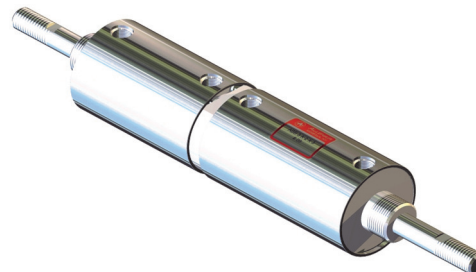


FOR DIMENSIONS AND MOUNTS SEE
PAGES 17 thru 21.

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:

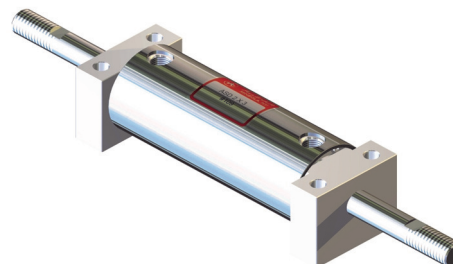
TYPES AS, CS & ES

TYPES ASD, CSD & ESD

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

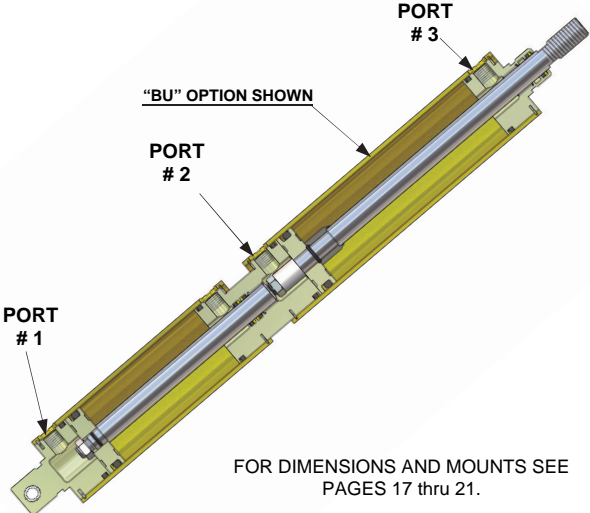
Bore Sizes Available: 7/8", 1-1/8", 1-1/2" & 2".

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

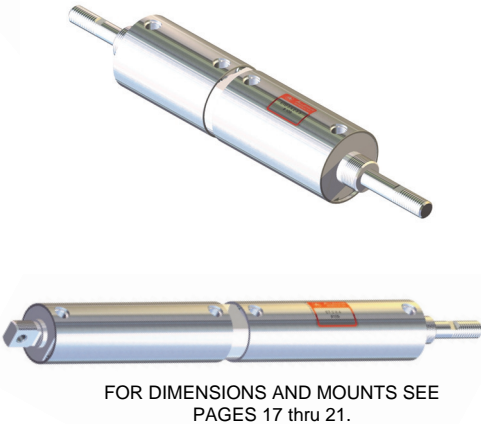


FOR DIMENSIONS AND MOUNTS SEE
PAGES 17 thru 21.

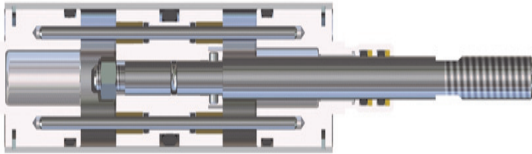
THREE POSITION:
TYPES: AP, CP & EP SINGLE ENDED
TYPES: APD, CPD & EPD DOUBLE ENDED
 Cylinders feature two separate piston rod assemblies which provide three definite and positive positions. Any combination of first stroke and total stroke is available. **Both rods fully retracted are first position.**
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.



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".



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.
 ALLEN-AIR 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.



ORDERING PROCEDURE

TYPE SEE PAGES 9, 10, 11 & 12	BORE SIZE SPECIFY	STROKE SPECIFY	OPTIONS SEE PAGES 13 thru 16
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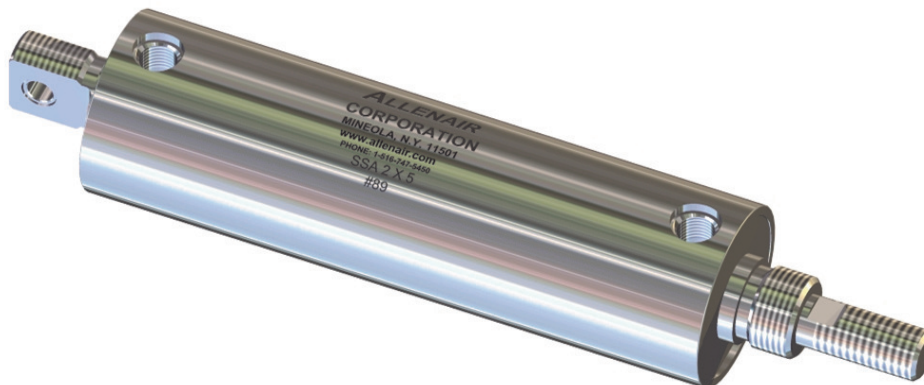
EXAMPLE: **E 3 x 4 BC BU HTP IB OS RG**
 BC..... Cushion Both Ends
 BU..... Brass Tube
 HTP..... High Temperature (Viton) Seals
 IB AB Accessory Pin installed in both ends
 OS Oversized Rod
 RG Outboard Rod Guide installed

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, SSER, 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

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)

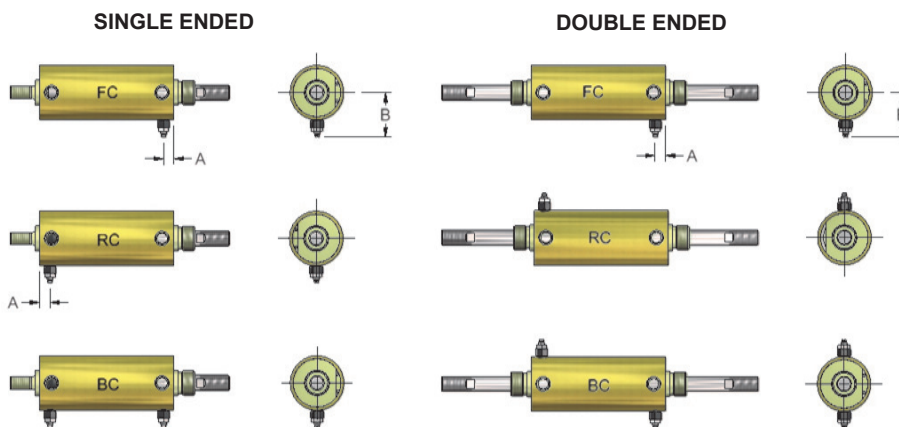
BC (CUSHION BOTH ENDS)

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.

CUSHION ADJUSTING SCREW LOCATIONS



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 μ s operate 0.5 μ s release	0.5 Volts
HO2	NORMALLY OPEN NPN Output	6-24/DC	1 Amp max.	24 watts max.	1.5 μ s operate 0.5 μ s 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 μ s operate 0.5 μ s release	1 Volt
HO4	NORMALLY OPEN TRIAC output	120-50/60	0.6 Amp max. 5 Amp inrush	72 watts max.	1.5 μ s operate 0.5 μ s release	1 Volt

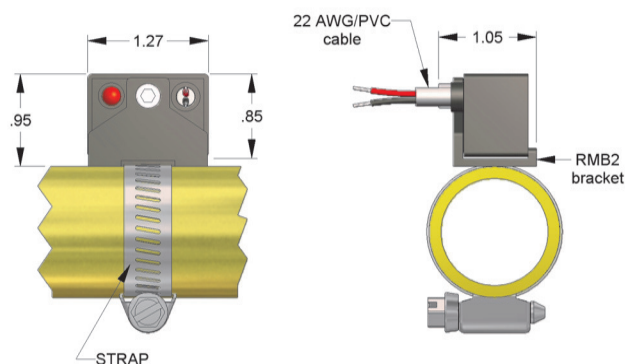
NOTES:

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

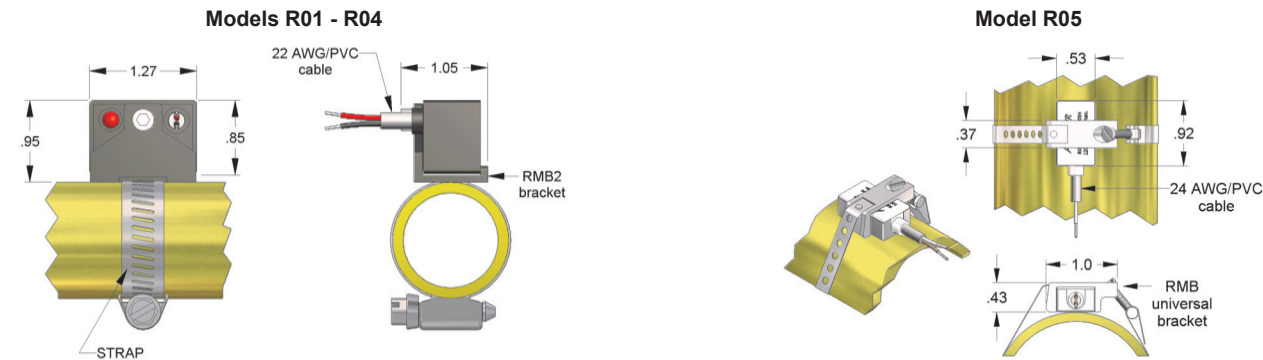
Model R05 is supplied with a universal mounting bracket and strap covering all bore sizes (1-1/8” thru 4”) P/N RMB1

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

CYLINDER
OPTIONS

CYLINDER OPTIONS

REED SWITCHES



MODIFICATIONS

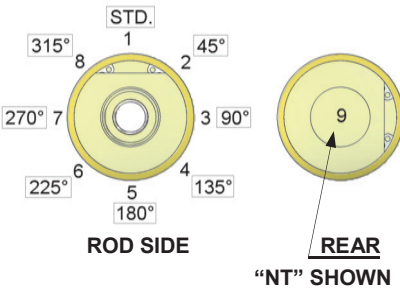
- RODS:**
- Non-Standard Rod Extensions ("H" Dim.)
 - Non-Standard Rod Threads ("CC" Dim.)
 - Non-Standard Rod Thread Length ("J" Dim.)
 - Female Threads In Rod
 - No Threads on Rod
 - Complete Special Rod End
 - Non-Standard Wrench Flats
 - Special Rod Material

- 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

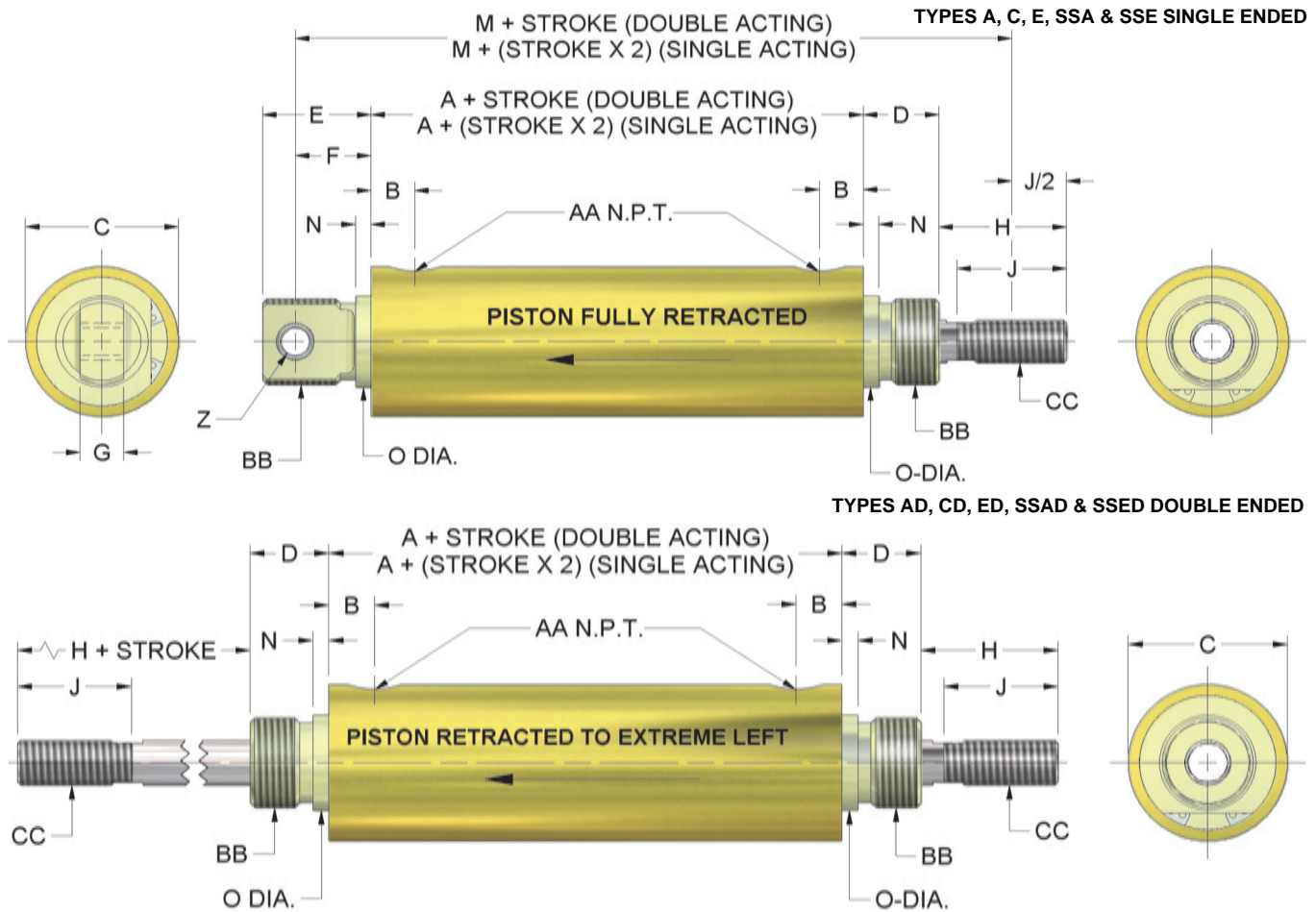
CODE	DESCRIPTION	CODE	DESCRIPTION	CODE	DESCRIPTION
B	Sp. "H" Dimension	G	No Rod Threads	L	303 Stainless Steel Rod
BU	Brass Tube	GB	No Rod Threads Both Ends	LF	Low Friction Cylinder
C	Sp. "J" Dimension	GF	No Rod Threads Front End	M	Hollow Rod
CB	Sp. "H" & "J" Dimensions	GR	No Rod Threads Rear End	NT	NoTang
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 Allenair 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

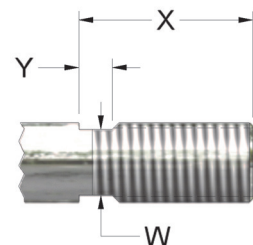


CYL. BORE SIZES	A		B	C	D		E	F	G	H	J	M				N	O		Z
	TYPE A	TYPE C & E			Std	OS (Front Only)						TYPE A		TYPE C & E			Std	OS (Front only)	
7/8"	2-1/16	3-1/16	3/8	1-1-1/16	5/8	X	1"	11/16	3/8	1"	7/8	3-15/16	X	4-15/16	X	1/8	3/4	X	1/4
1-1/8"	2-1/16	3-1/16	3/8	1-1-5/16	5/8	5/8	1"	11/16	3/8	1***	7/8**	3-15/16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

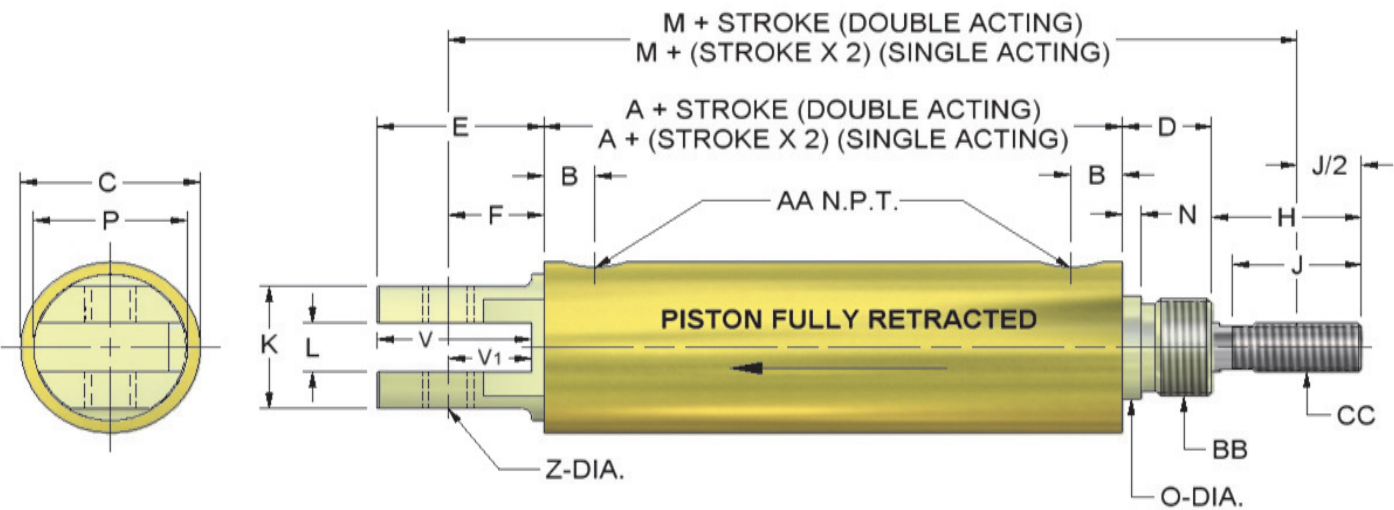
N dimension remains except on 7/8", 1-1/8" and 4" bores.

♦ 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

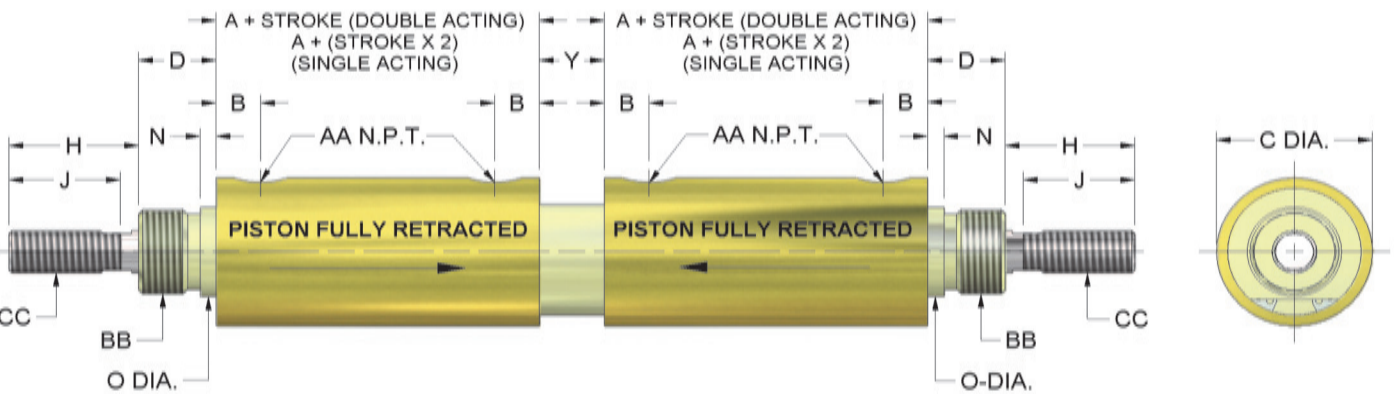


CYL. BORE SIZES	E	F	H		K	L	M				P	V	V-1	Z	CC	
			TYPE AN	TYPES CN & EN			TYP AN		TYPES CN & EN						STD	OS
							STD	OS	STD	OS						
7/8"	13/16	7/16	1"	1"	7/8	1/4	3-11/16	X	4-11/16	X	7/8	13/16	7/16	1/4	3/8-16	X
1-1/8"	1"	11/16	1**	1**	15/16	3/8	3-15/16	4-1/8	4-15-16	5-1/8	1-1/8	7/8	9/16	3/8	3/8-16	1/2-13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



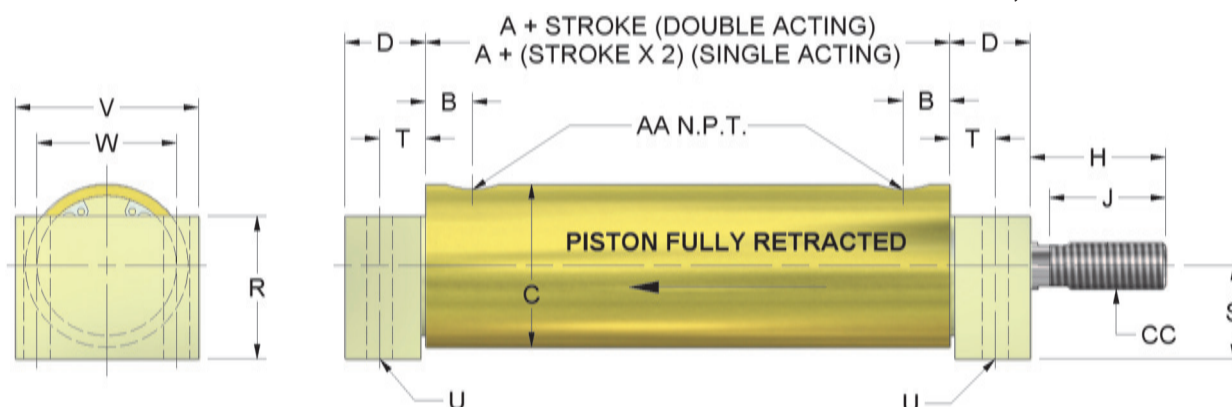
CYL. BORE SIZES	Y
7/8"	1/2
1-1/8"	1/2
1-1/2"	1/2
2"	1/2
2-1/2"	1/2
3"	1/2
4"	1-1/8

FOR ALL DIMENSIONS NOT LISTED, SEE TABULATIONS ON PAGE 17

CYLINDER DIMENSIONS

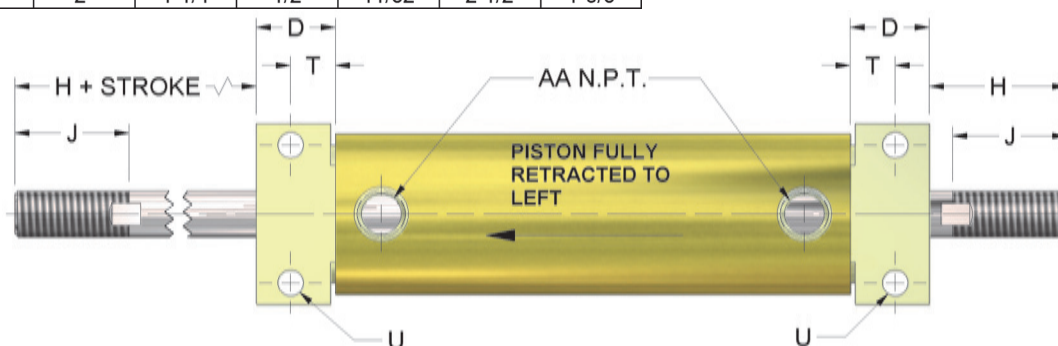
DOUBLE ACTING & SPRING RETURN: 7/8" - 5" BORES

TYPES AS, CS & ES SINGLE ENDED



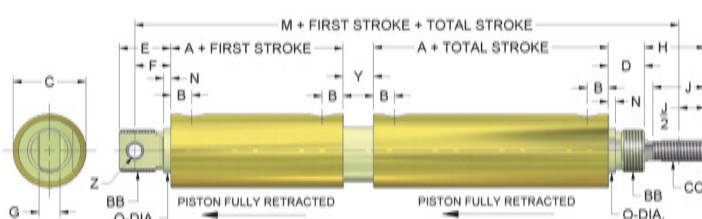
CYL. BORE SIZES	R	S	T	U	V	W
7/8"	1-1/32	3/4	11/32	7/32	1-1/2	1-1/8
1-1/8"	1-1/8	3/4	11/32	7/32	1-1/2	1-1/8
1-1/2"	1-17/32	1"	1/2	9/32	2"	1-1/2
2"	2"	1-1/4	1/2	11/32	2-1/2	1-5/8

TYPES ASD, CSD & ESD DOUBLE ENDED

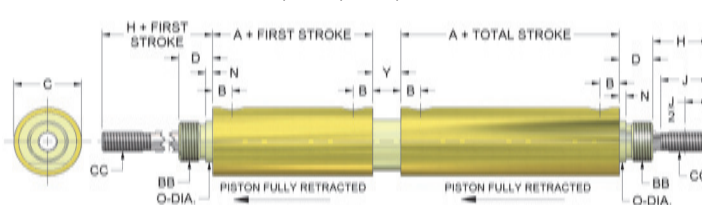


FOR ALL DIMENSIONS NOT LISTED, SEE TABULATIONS ON PAGE 17

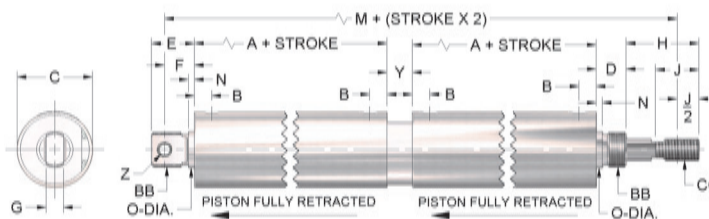
TYPES AP, CP, EP, SSAP & SSEP



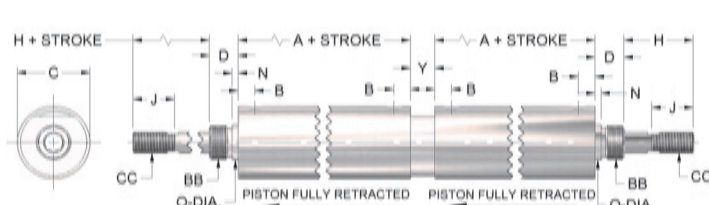
TYPES APD, CPD, EPD, SSAPD & SSEPD



TYPES ET & SSET



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

DOUBLE ACTING & SPRING RETURN CYLINDERS

MOUNTING BRACKETS & DIMENSIONS

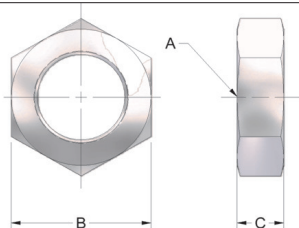
CYL. BORE SIZES	FOOT MOUNT		FLANGE MOUNT		ROD CLEVIS, NUT & PIN		ROD NUT ONLY		SWIVEL BRACKET & PIN	TRUNNION (BU OPTION)	BLOCK MOUNT (BU OPTION)	MOUNTING NUTS	
	STD	OS** (Front Only)	STD	OS** (Front Only)	STD	OS	STD	OS				STD	OS** (Front Only)
7/8"	A-132	X	A-129	X	A-145	X	A-126	X	A-139	T-7/8	BM-7/8	A-114	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.

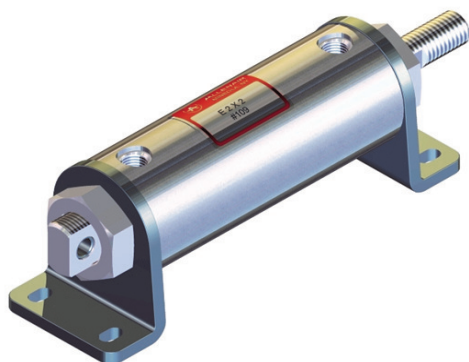
MOUNTING NUTS

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.

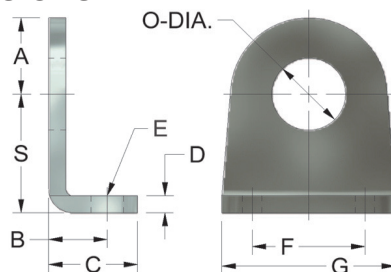


PART No.	A	B	C
A-114	3/4-16	1-1/16	3/8
A-114-OS	7/8-14	1-1/4	25/64
A-214	1"-14	1-1/2	1/2
A-314	1-3/8-12	1-3/4	5/8
A-314-OS	1-1/2-12	1-13/16	5/8
A-414	1-3/4-12	2-1/4	3/4
A-414-OS	2-1/4-12	3"	1"

FOOT MOUNT



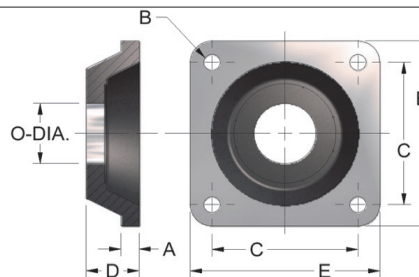
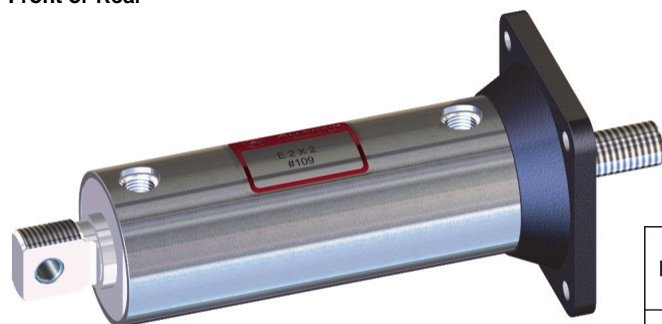
MOUNTING BRACKET DIMENSIONS



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

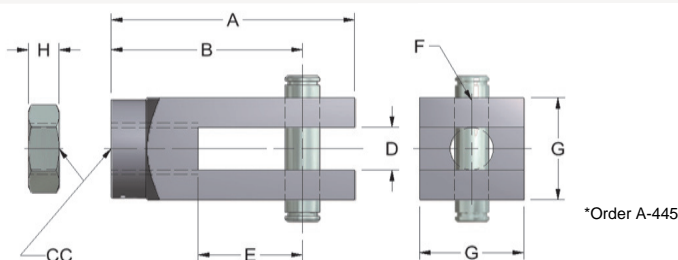
Front or Rear



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.

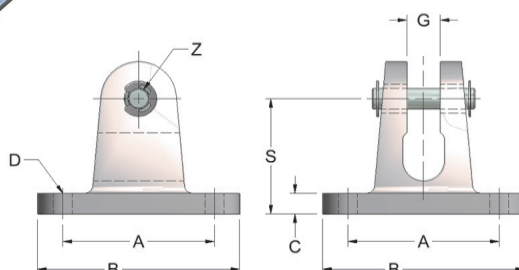
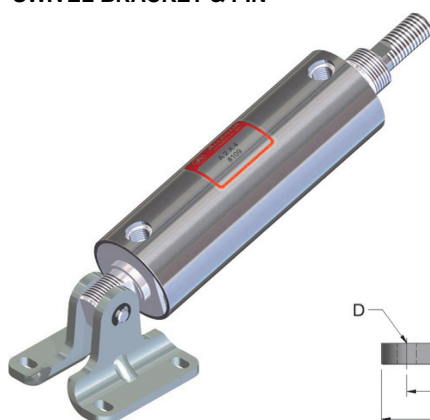
ROD CLEVIS, NUT & PIN



*Order A-445

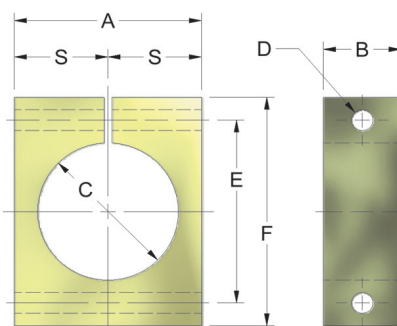
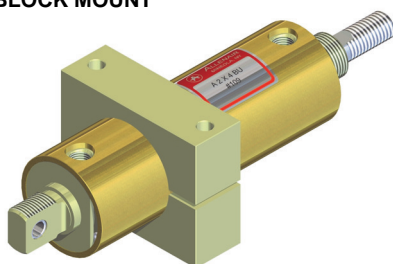
DIM.	PART NUMBERS									
	A-145		A-1545		A-245		A-345		A-445	
	STD	OS	STD	OS	STD	OS	STD	*OS	STD	OS
A	1-3/4	2-1/4	2-1/4	2-1/4	2-1/4	2-3/8	2-3/8	3-3/8	3-3/8	3-1/2
B	1-3/8	1-3/4	1-3/4	1-3/4	1-3/4	1 13/16	1-13/16	2-5/8	2-5/8	2-5/8
CC	3/8-16	1/2-13	1/2-13	5/8-11	5/8-11	3/4-10	3/4-10	1"-14	1"-14	1-1/4-12
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

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

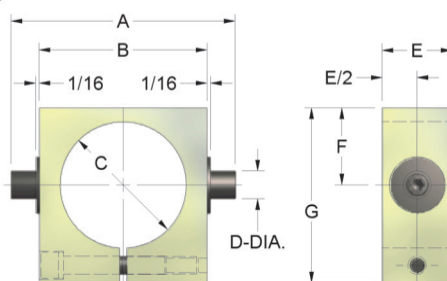
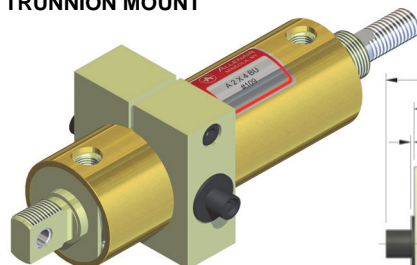
BLOCK MOUNT



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