

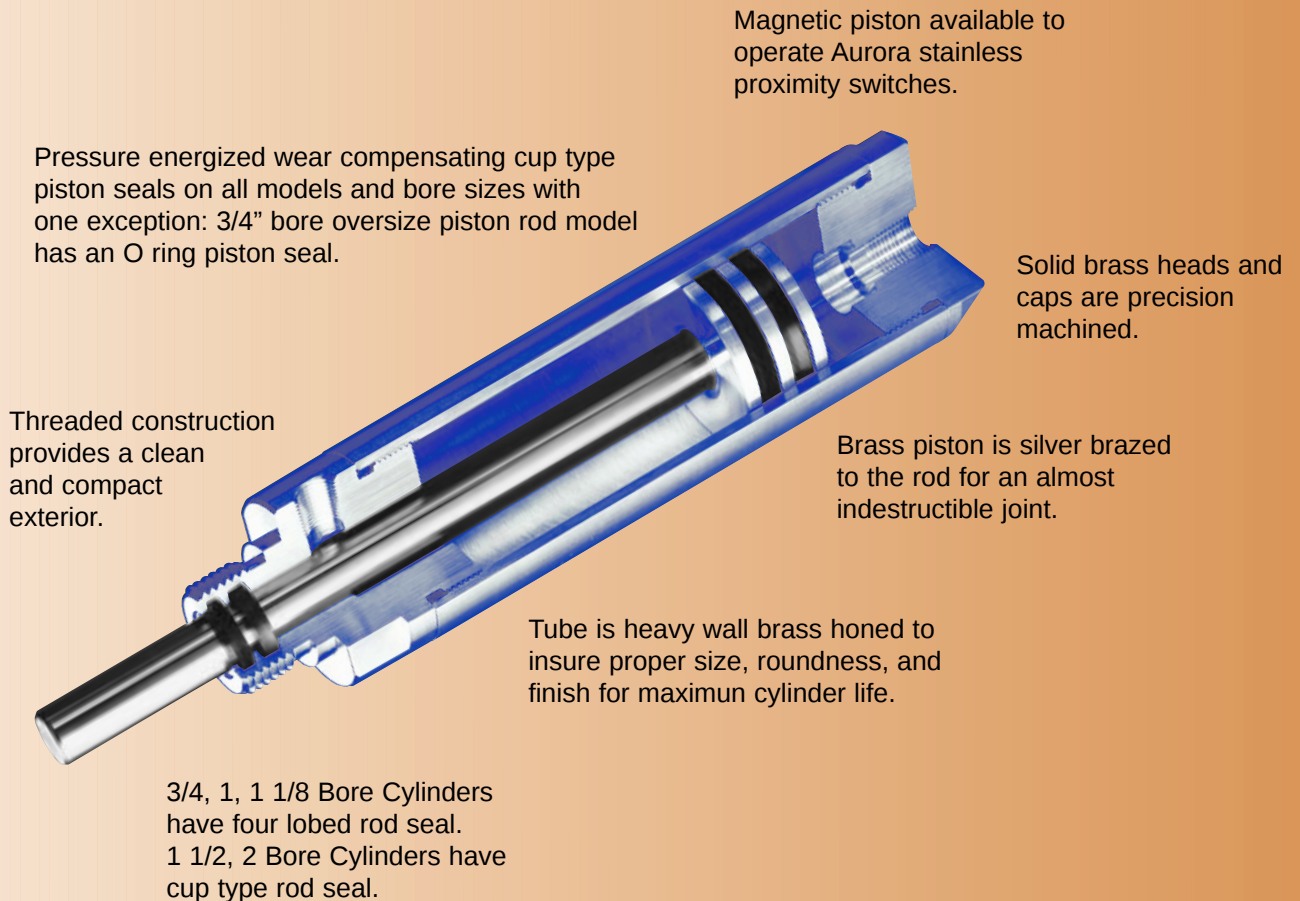
Series HB Solid Brass Cylinders

For General Industrial Use in most Environments

200 PSI Pneumatic

500 PSI Hydraulic Non shock

3/4", 1", 1 1/8", 1 1/2", 2" Bores



A natural choice where moisture is a problem .

ADDITIONAL DESIGN FEATURES

SHOCK PADS

Reduce noise and fatigue problems such as rod breakage with energy absorbing shock pads. Add 1/4" to the cylinder length for each pad. For pneumatic use only to 180°F.

ROD WIPERS

Prolong the life of cylinders operating in dirty environments by adding rod wipers. Polyurethane or Viton wipers are wear compensating and effectively prevent damaging contaminants from entering the critical rod seal/rod bushing area. Limited availability.

SEAL COMPOUNDS

Standard cylinders contain buna n (nitrile) seals and polyurethane wipers which are compatible with most lubricants and fluids, and can withstand temperatures from -40° to +200°F.

Viton seals and wipers may be ordered for temperatures ranging from -10° to +400°F and for added chemical resistance.

"Long Life" seals will provide significantly increased service life due to their excellent abrasion resistance. Fluid compatibility is identical to buna n seals and their effective temperature range is +20° - +200°F. Long life rod seals are standard on all 3/4, 1, 1 1/8" bore cylinders.

HYDRAULIC SEALS

Rod seal weepage can be substantially reduced by specifying polypak* rod seals. They are available on all 1 1/2 and 2" bore cylinders. For availability on other bore sizes consult factory.

HARD CHROMED PISTON ROD

The standard rod in all HB cylinders is ground and polished type 303 stainless steel. Hard chrome plated steel rods are available. The plating gives the rod a very hard scratch resistant surface which increases the wear life of the rod, rod bushing, and rod seal. The result is increased cycle life on all cylinders and improved sealability on hydraulic cylinders.

PISTON ROD THREADS

Rods are stocked with both fine and coarse male threads as listed in the ordering procedure. Almost any special thread – female, metric, etc. – can be produced to customer requirements in just a day or so for a modest extra charge.

- Female thread depth: #10, 1/4, 5/16, 3/8 threads are 5/8 deep.
1/2, 5/8, 3/4 threads are 1 1/4 deep.
- Threads smaller than the nominal rod diameter will be per the photo unless otherwise noted.

PIVOT BUSHING

All HB2 caps have a stainless steel pivot bushing.

STOP TUBE

Stop tubes are spacers between the piston and the cylinder head which prevent the piston from fully extending. This will reduce the bearing loads by increasing the distance between bearing points. Stop tubes should be used on long stroke cylinders and on cylinders where side load is a concern. See ordering procedure for available lengths. Also consider SMA aluminum cylinders for long strokes and side load conditions.

ADJUSTABLE CUSHIONS

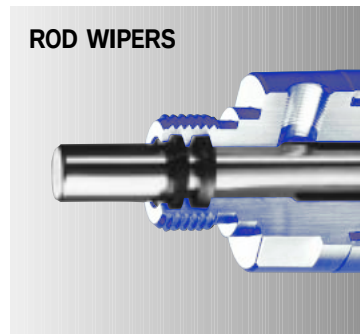
Reduce noise and decelerate the piston at the end of stroke. Aurora's cup type cushion seal provides positive cushioning yet allows a high flow rate when reversing for minimum cycle time. A stainless steel metering screw offers simple adjustment of the cushion rate. The adjusting screw is fully recessed and self locking on 1 1/2 and 2" bore cylinders. The adjusting screw on 1 1/8" bore cylinders is locked in place by a low profile nut.

* Polypak is a registered trademark of Parker Hannifin

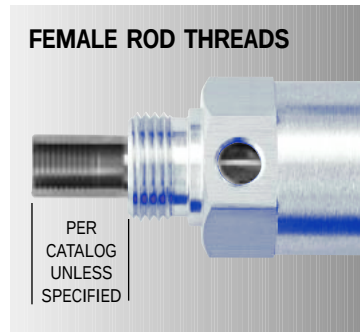
SHOCK PADS



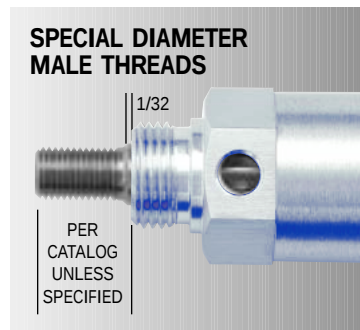
ROD WIPERS



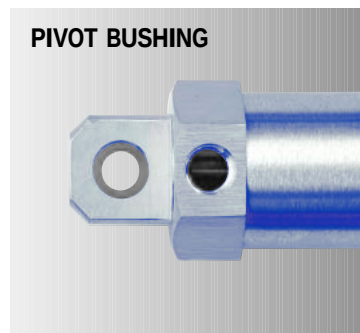
FEMALE ROD THREADS



SPECIAL DIAMETER MALE THREADS

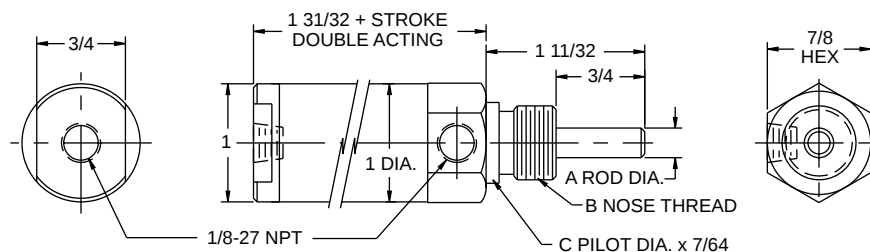


PIVOT BUSHING

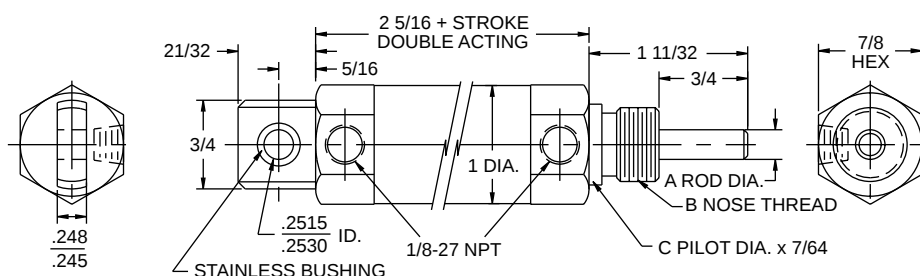


3/4" BORE HB BRASS

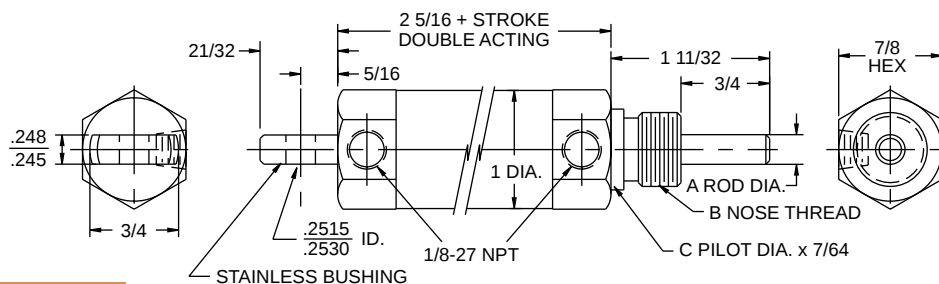
200 PSI MAX. AIR
500 PSI MAX. HYD. Non shock



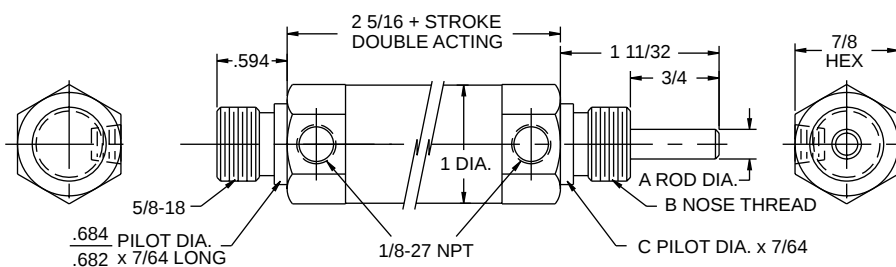
HB1



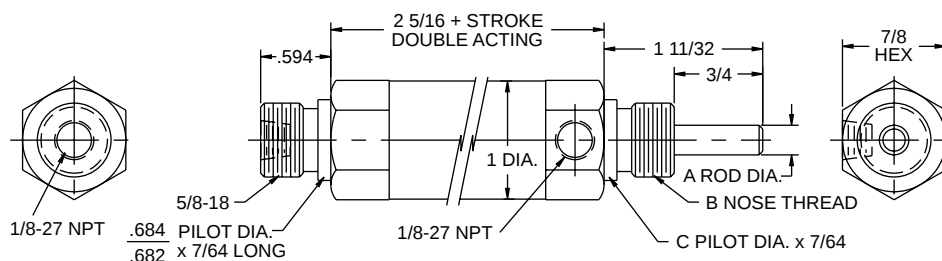
HB2



HB29



HB3



HB4

A ROD DIA.	B NOSE THREAD	C PILOT DIA. COMBINATIONS	Part No. Code
1/4	5/8 -18	.684/.682	D
5/16	5/8 -18	.684/.682	E

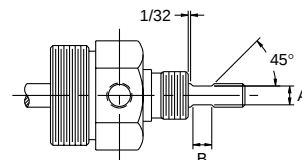
Single Acting Cylinders

Pneumatic only Adds to cylinder length

TYPE	STROKE	cyl. O.A.L.	STROKE	cyl. O.A.L.
Spring return	0-1 3/4"	1"	1 7/8"-3 1/2"	2"
Spring extend	0-1 3/4"	1"	Not available over 1 3/4" stroke	

Spring Force: Spring fully extended approx. 4#
Spring fully compressed approx. 9#

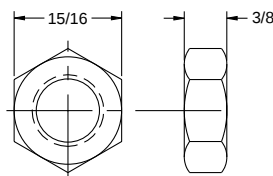
Wrench Flats Optional



ROD DIA.	A	B
1/4	.187	1/4
5/16	.250	1/4

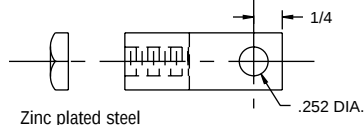
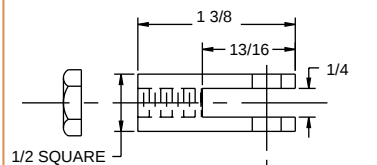
Nose Mounting Nut

Included with Cylinder Zinc plated steel



Thread 5/8 -18

HB-250 1/4-28 Thread HB-312 5/16-18 Thread Rod Clevis and Nut



HB-200 Clevis Pin Assembly

Used on HB-250, 312



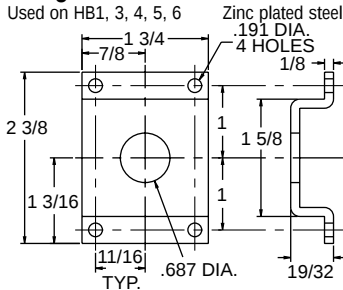
HB Options

- Shock Pads
- Wrench Flats
- Viton or Long Life Seals
- Chrome Rod
- Magnetic Piston
- Hollow Rod 5/16 ONLY

HB-10

Flange Bracket

Used on HB1, 3, 4, 5, 6

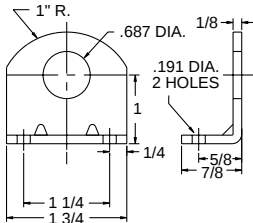


HB-20

Foot Bracket

Used on HB1, 3, 4, 5, 6

Zinc plated steel

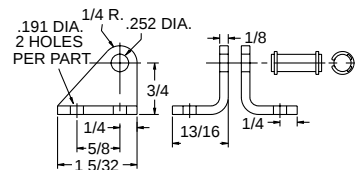


HB-30

Clevis Bracket

Used on HB2, 29

Zinc plated steel

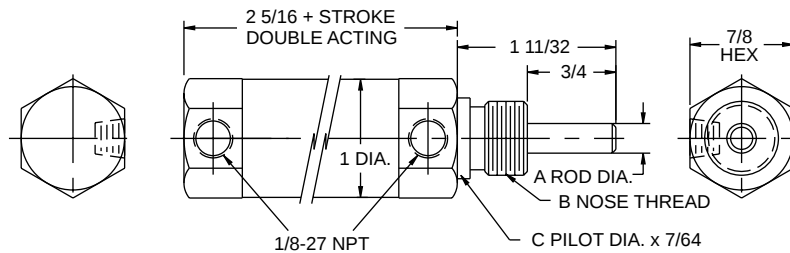
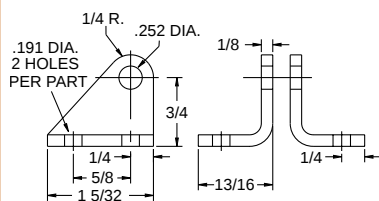


HB-30T

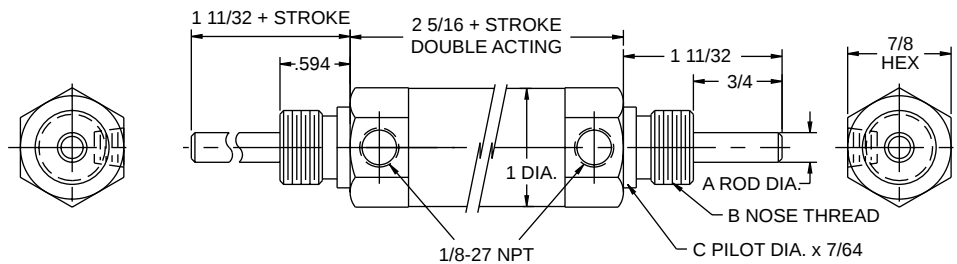
Trunnion Bracket

Used on HB7, 8, 9

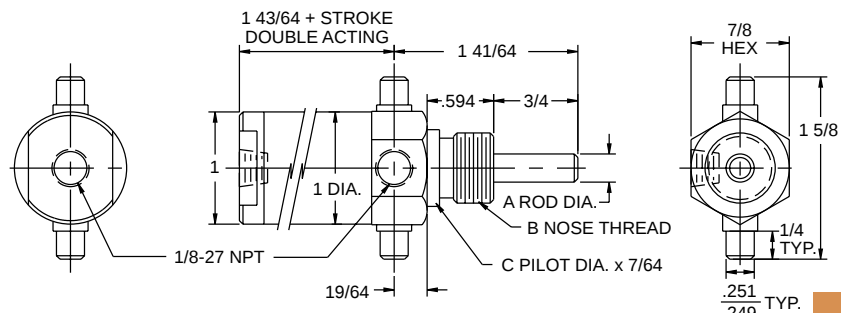
Zinc plated steel



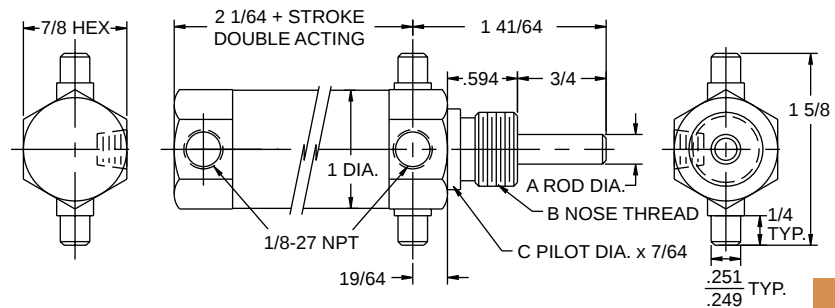
HB5



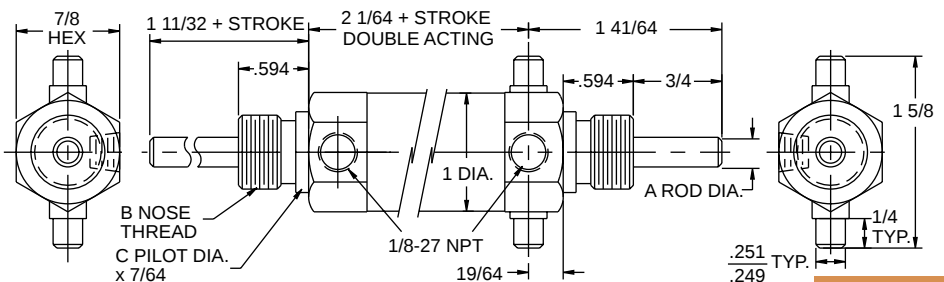
HB6



HB7



HB8

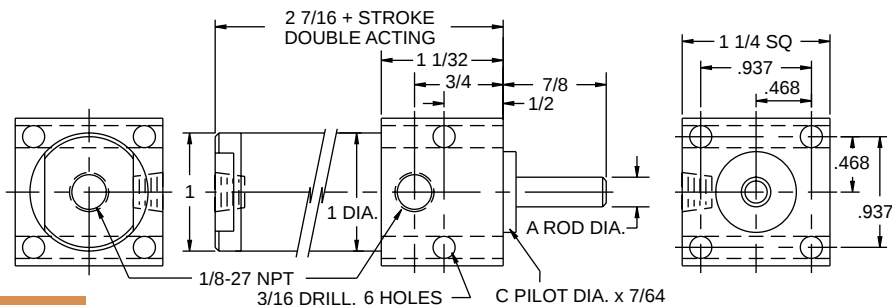


HB9

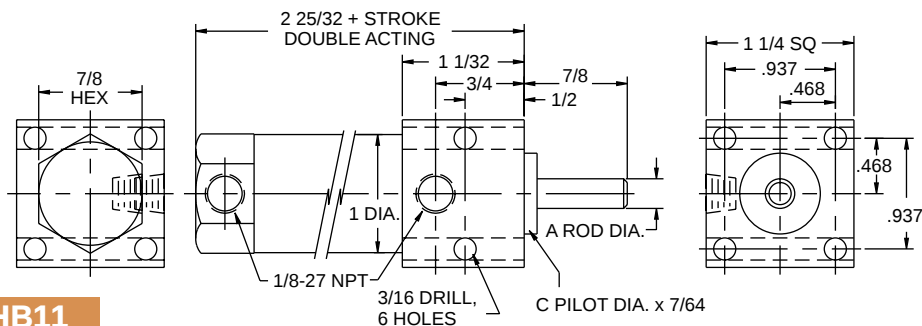
A ROD DIA.	B NOSE THREAD	C PILOT DIA. COMBINATIONS	Part No. Code
1/4	5/8 -18	.684/.682	D
5/16	5/8 -18	.684/.682	E

3/4" BORE HB BRASS

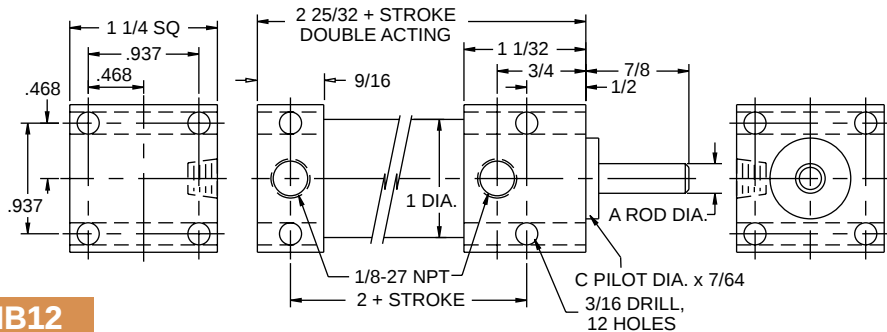
200 PSI MAX. AIR
500 PSI MAX. HYD. Non shock



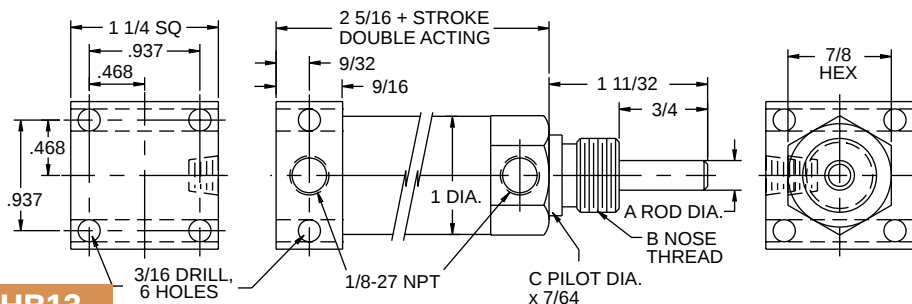
HB10



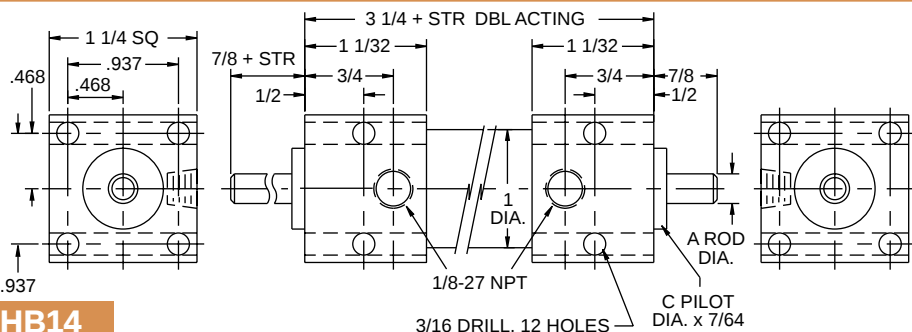
HB11



HB12



HB13



HB14

A ROD DIA.	B NOSE THREAD	C PILOT DIA. COMBINATIONS	Part No. Code
1/4	5/8 -18	.684/.682	D
5/16	5/8 -18	.684/.682	E

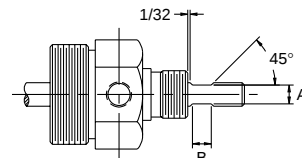
Single Acting Cylinders

Pneumatic only Adds to cylinder length

TYPE	STROKE	cyl. O.A.L.	STROKE	cyl. O.A.L.
Spring return	0-1 3/4"	1"	1 7/8"-3 1/2"	2"
Spring extend	0-1 3/4"	1"	Not available over 1 3/4" stroke	

Spring Force: Spring fully extended approx. 4#
Spring fully compressed approx. 9#

Wrench Flats Optional

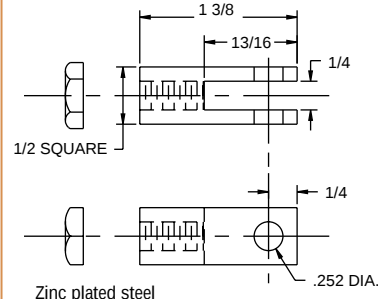


ROD DIA.	A	B
1/4	.187	1/4
5/16	.250	1/4

HB-250 1/4-28 Thread

HB-312 5/16-18 Thread

Rod Clevis and Nut



HB-200

Clevis Pin Assembly

Used on HB-250, 312



**For Higher
Cycle Life
Add Chrome Rod
& Long Life Seal
Options. . . or
Switch to Series
SMA**

1" BORE HB BRASS

200 PSI MAX. AIR
500 PSI MAX. HYD. Non shock



Single Acting Cylinders

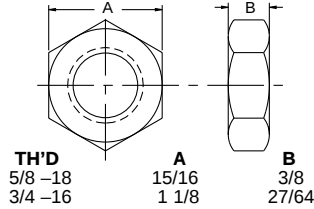
Pneumatic only Adds to cylinder length

TYPE	STROKE	Add to cyl. O.A.L.	STROKE	Add to cyl. O.A.L.
Spring return	0-2"	1"	2 1/8"-4"	2"
Spring extend	0-2"	1"	Not available over 2" stroke	

Spring Force: Spring fully extended approx. 4#
 Spring fully compressed approx. 13#

Wrench Flat Chart - Pg 68

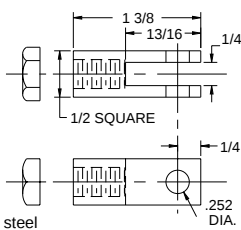
Nose Mounting Nut



HB-312 5/16 -18 Thread

HB-375 3/8 -24 Thread

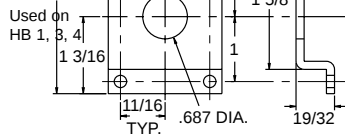
Rod Clevis & Nut



HB-200 Clevis Pin

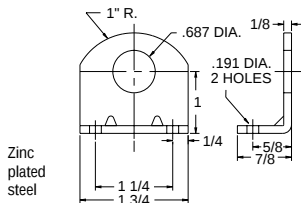
Used on HB 312, 375

HB-10 Flange Brk't



Zinc plated steel

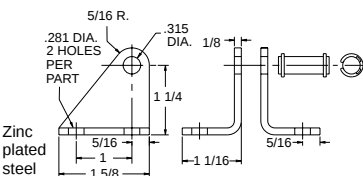
HB-20 Foot Brk't Used on HB 1, 3, 4



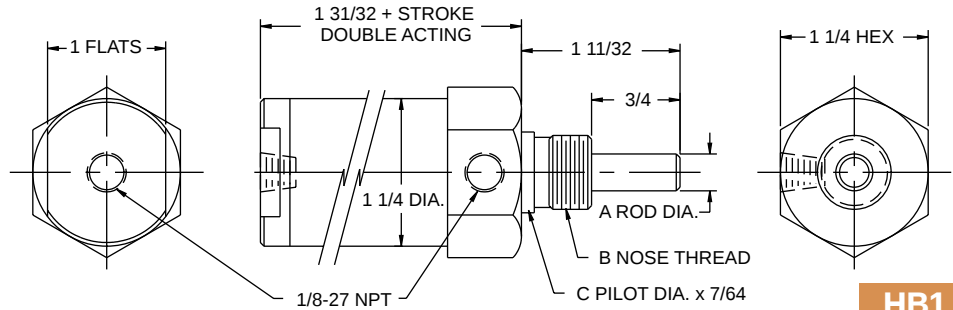
Zinc plated steel

HB-40 Clevis Brk't

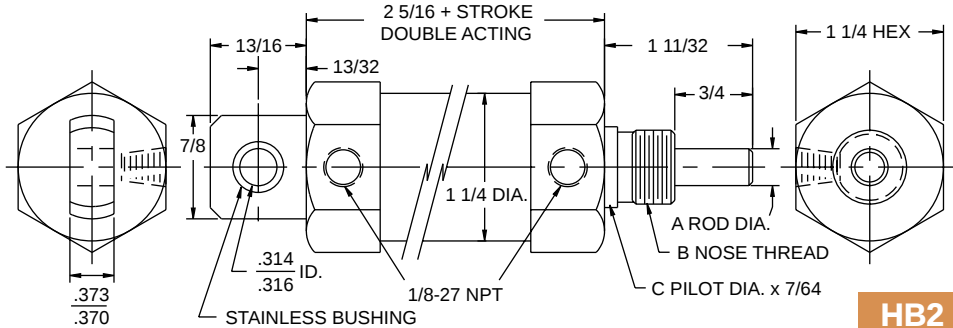
Used on HB 2, 29



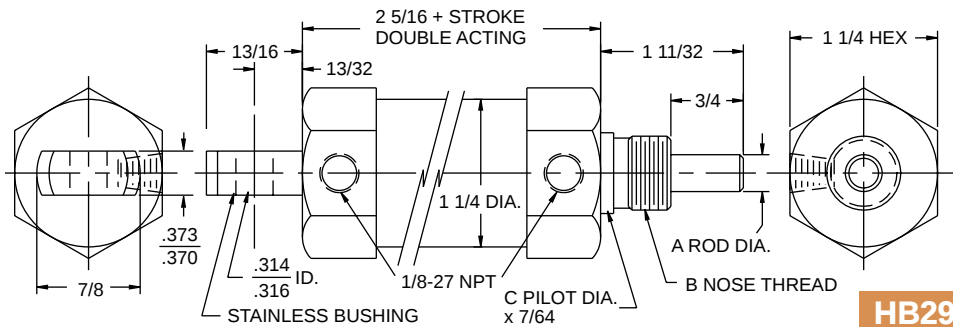
Zinc plated steel



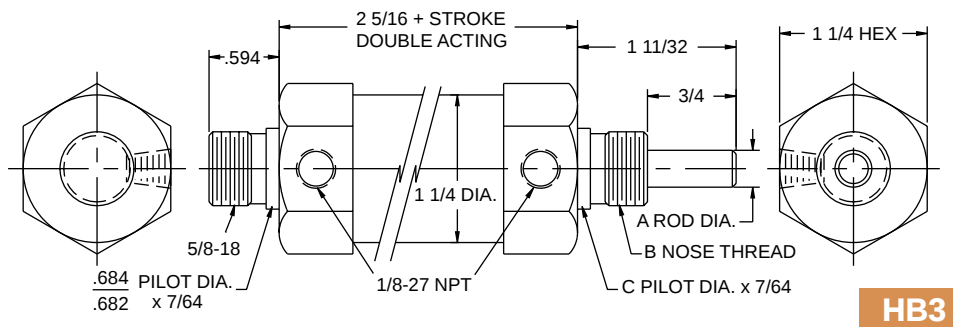
HB1



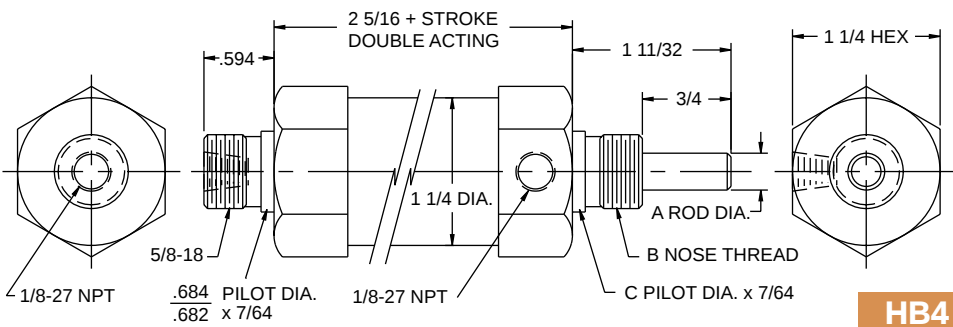
HB2



HB29



HB3

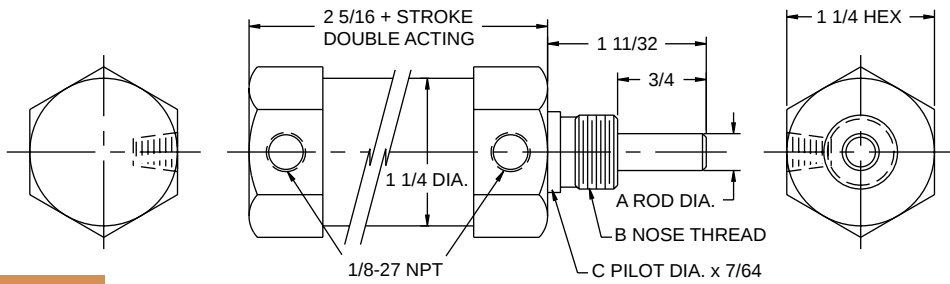


HB4

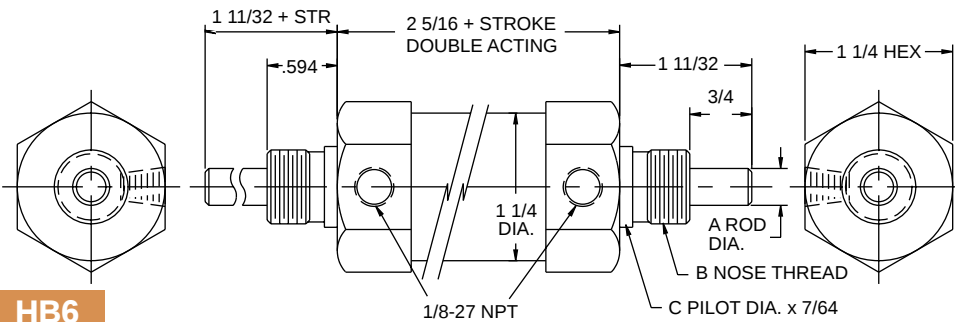
A ROD DIA.	B NOSE THREAD	C PILOT DIA. COMBINATIONS	Part No. Code
5/16 Standard	5/8 -18	.684/.682	D
3/8 Oversize	5/8 -18	.684/.682	E
3/8 Oversize	3/4 -16	.747/.745	F

1" BORE HB BRASS

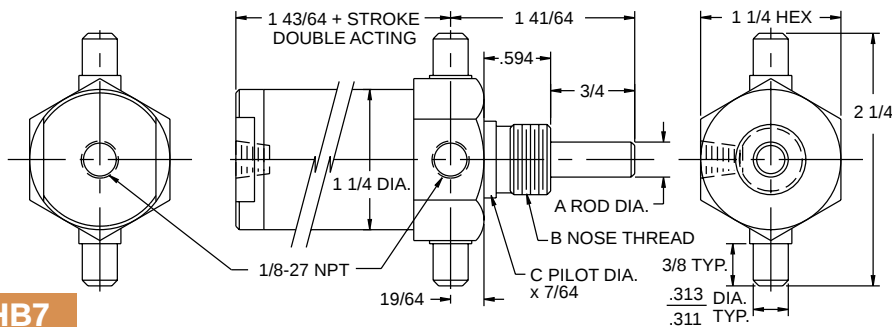
200 PSI MAX. AIR
500 PSI MAX. HYD. Non shock



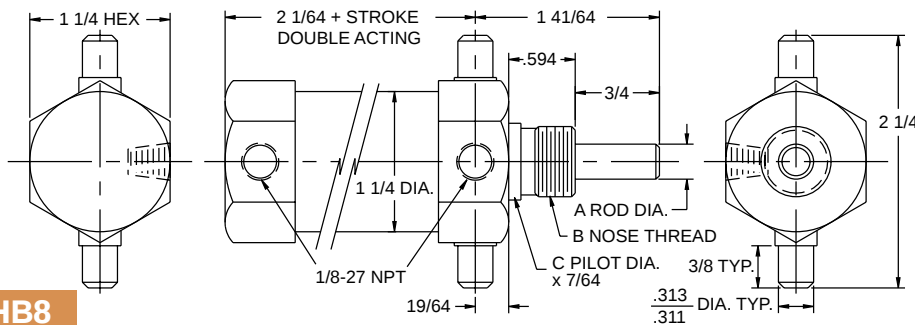
HB5



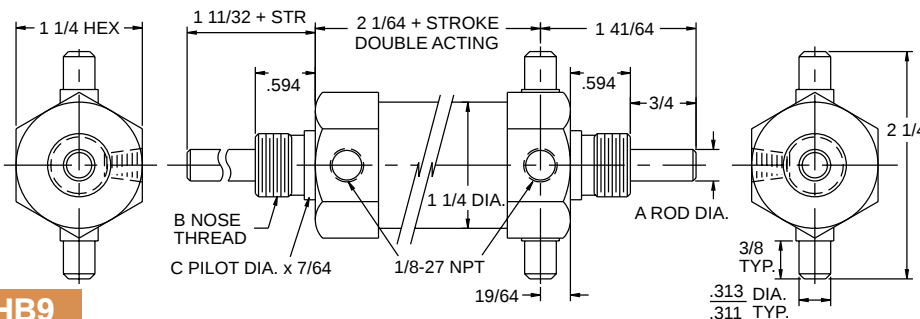
HB6



HB7



HB8



HB9

A ROD DIA.	B NOSE THREAD	C PILOT DIA. COMBINATIONS	Part No. Code
5/16 Standard	5/8 -18	.684/.682	D
3/8 Oversize	5/8 -18	.684/.682	E
3/8 Oversize	3/4 -16	.747/.745 HB5, 6 ONLY	F

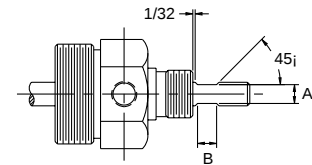
Single Acting Cylinders

Pneumatic only Adds to cylinder length

TYPE	STROKE	Add to cyl. O.A.L.	STROKE	Add to cyl. O.A.L.
Spring return	0-2"	1"	2 1/8"-4"	2"
Spring extend	0-2"	1"	Not available over 2" stroke	

Spring Force: Spring fully extended approx. 4#
Spring fully compressed approx. 13#

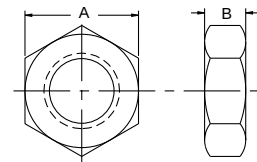
Wrench Flats Optional



ROD DIA.	A	B
5/16	.250	1/4
3/8	.312	1/4

Nose Mounting Nut

Included with Cylinder Zinc plated steel

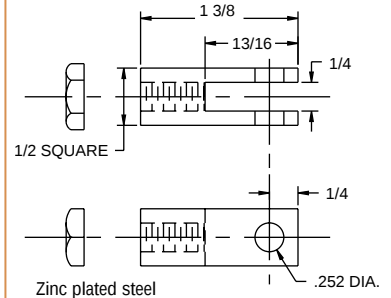


TH'D	A	B
5/8 -18	15/16	3/8
3/4 -16	1 1/8	27/64

HB-250 1/4-28 Thread

HB-312 5/16-18 Thread

Rod Clevis and Nut



HB-200

Clevis Pin



Used on HB 312, 375

For Improved Hydraulic Service Upgrade to Series SMA with U Cup Piston

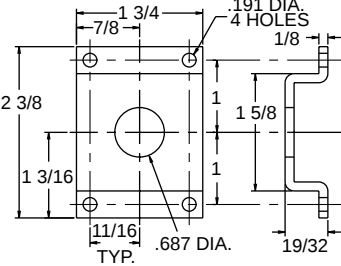


HB Options

- Shock Pads
- Wrench Flats
- Viton or Long Life Seals
- Chrome Rod
- Hollow Rod

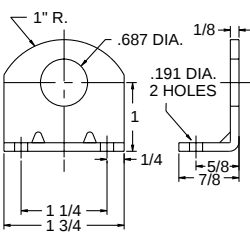
HB-10
Flange Bracket

Used on HB1, 3, 4, 5, 6
Zinc plated steel



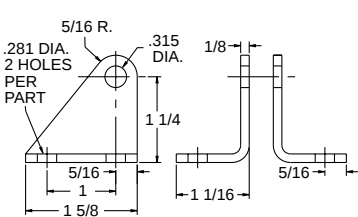
HB-20
Foot Bracket

Used on HB1, 3, 4, 5, 6
Zinc plated steel



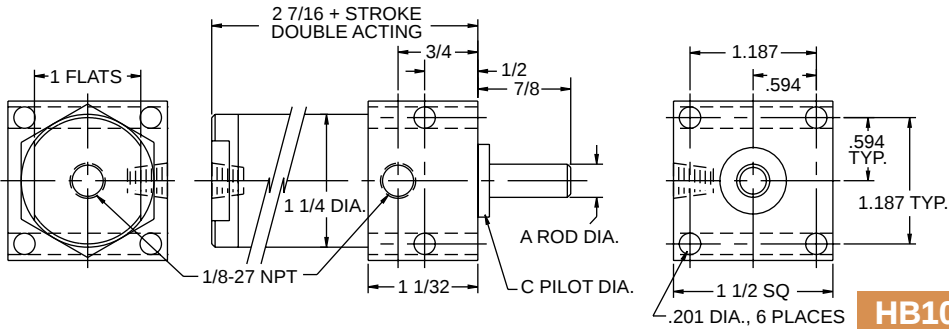
HB-40T
Trunnion Bracket

Used on HB7, 8, 9
Zinc plated steel

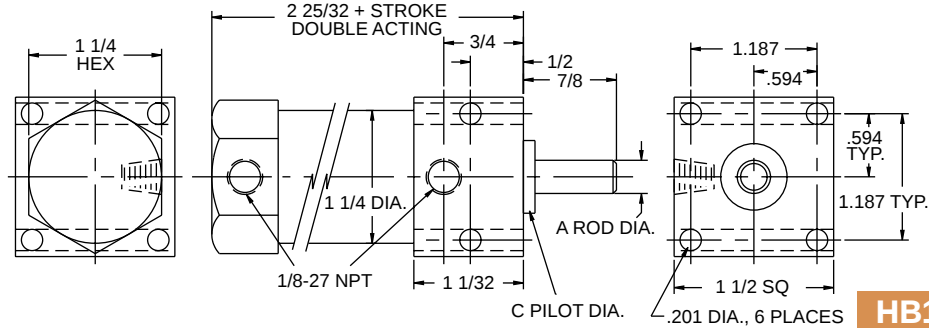


Don't Guess-
Call Us to
Review Your
Application

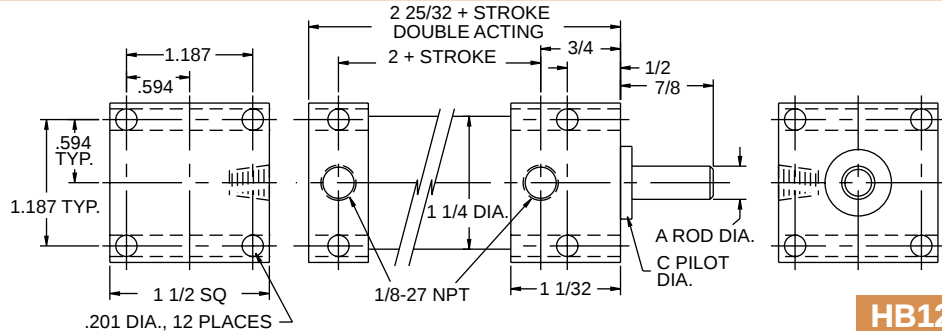
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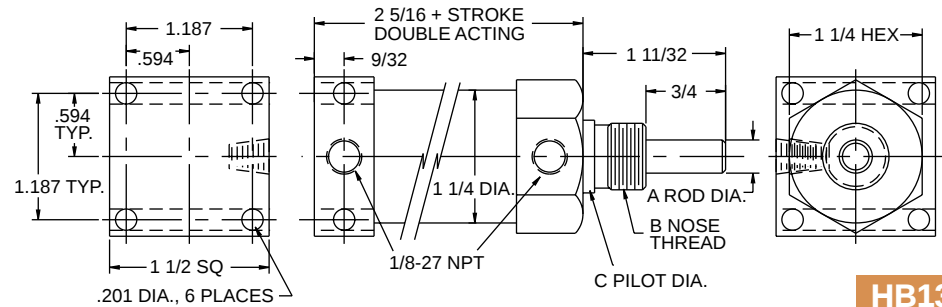
HB10



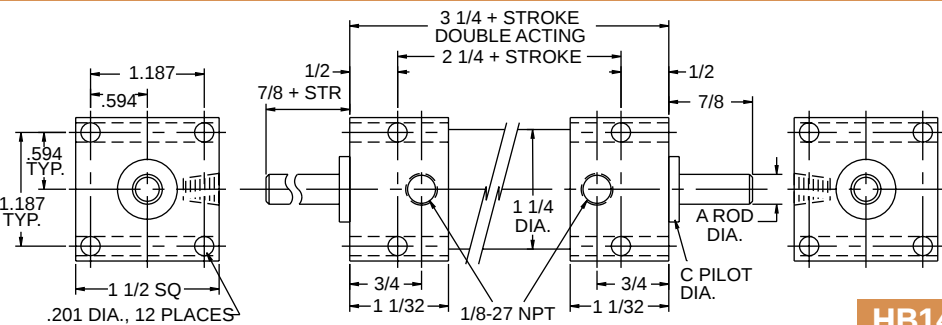
HB11



HB12



HB13

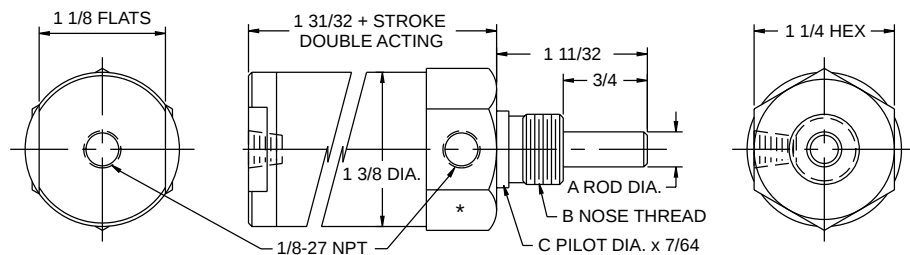


HB14

A ROD DIA.	B NOSE THREAD	C PILOT DIA. COMBINATIONS	Part No. Code
5/16 Standard	5/8 -18	.684/.682	D
3/8 Oversize	5/8 -18	.684/.682 HB13 ONLY	E
3/8 Oversize	3/4 -16	.747/.745	F

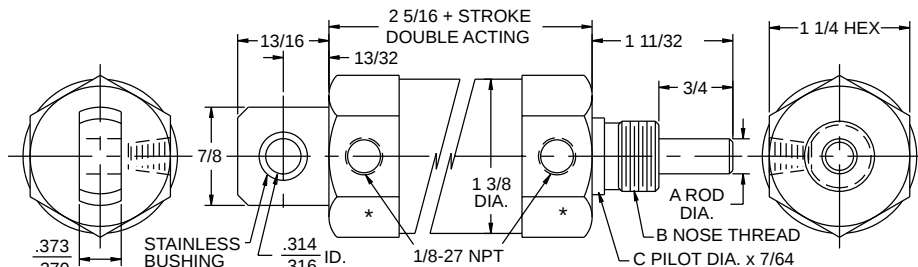
1 1/8" BORE HB BRASS

200 PSI MAX. AIR
500 PSI MAX. HYD. Non shock



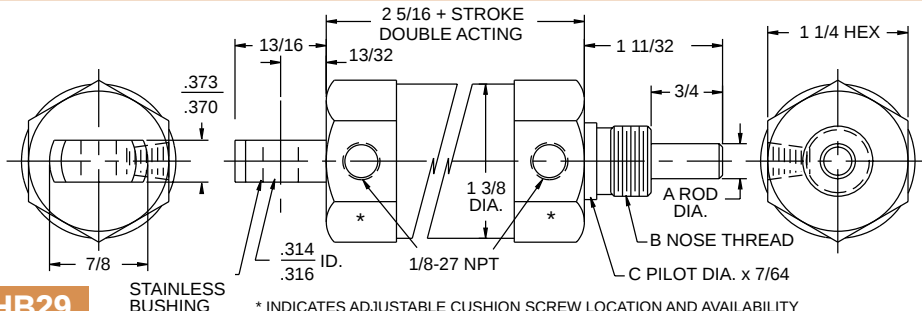
HB1

* INDICATES ADJUSTABLE CUSHION SCREW LOCATION AND AVAILABILITY



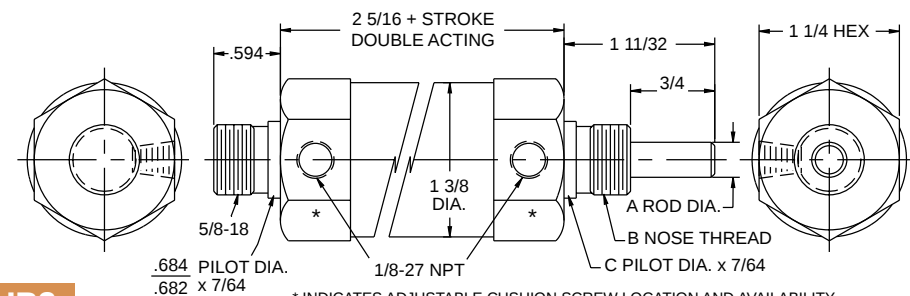
HB2

* INDICATES ADJUSTABLE CUSHION SCREW LOCATION AND AVAILABILITY



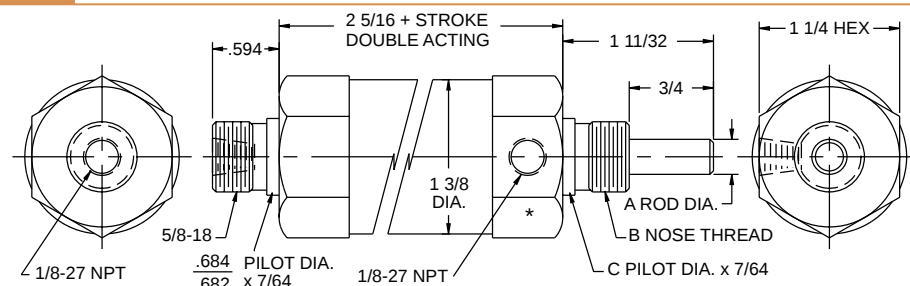
HB29

* INDICATES ADJUSTABLE CUSHION SCREW LOCATION AND AVAILABILITY



HB3

* INDICATES ADJUSTABLE CUSHION SCREW LOCATION AND AVAILABILITY



HB4

* INDICATES ADJUSTABLE CUSHION SCREW LOCATION AND AVAILABILITY

A ROD DIA.	B NOSE THREAD	C PILOT DIA. COMBINATIONS	Part No. Code
5/16 Standard	5/8 -18	.684/.682	D
3/8 Oversize	5/8 -18	.684/.682	E
3/8 Oversize	3/4 -16	.747/.745	F
3/8 Oversize	7/8 -14	.934/.932	G
1/2 Oversize	7/8 -14	.934/.932	H

Single Acting Cylinders

Pneumatic only Adds to cylinder length

TYPE	STROKE	Add to cyl. O.A.L.	STROKE	Add to cyl. O.A.L.
Spring return	0-2"	1"	2 5/8"-4"	2" [†]
Spring extend	0-2 1/2"	1"	Not available over 2 1/2" stroke	

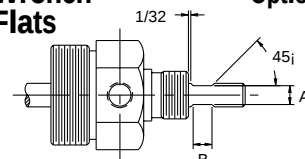
Spring Force: Spring fully extended approx. 4#

Spring fully compressed approx. 20#

[†] Spring fully compressed approx. 13#

Wrench Flats

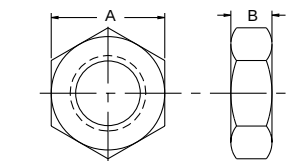
Optional



ROD DIA.	A	B
5/16	.250	1/4
3/8	.312	1/4
1/2	.437	1/4

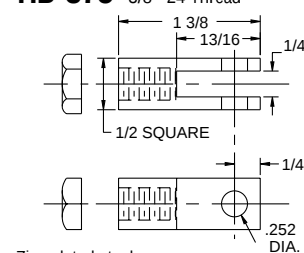
Nose Mounting Nut

Included with Cylinder Zinc plated steel



TH'D	A	B
5/8 -18	15/16	3/8
3/4 -16	1 1/8	27/64
7/8 -14	1 5/16	31/64

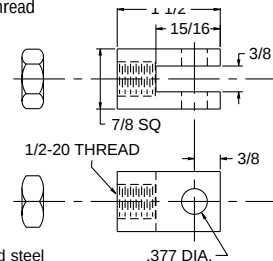
HB-312 5/16 -18 Thread Rod Clevis & Nut



Zinc plated steel

HB-500 Rod Clevis & Nut

1/2 -20 Thread



Zinc plated steel

HB-200 Clevis Pin Used on HB-312, 375

HB-501 Clevis Pin Used on HB-500

303 Stainless



Cushions not available on cylinders with 1/2" diameter rod.

HB Options

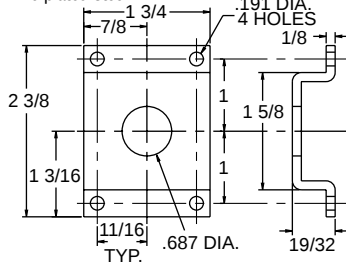
- Shock Pads
- Wrench Flats
- Viton or Long Life Seals
- Chrome Rod
- Magnetic Piston
- Hollow Rod
- Adjustable Cushions

HB-10

Flange Bracket

Used on HB1, 3, 4, 5, 6

Zinc plated steel

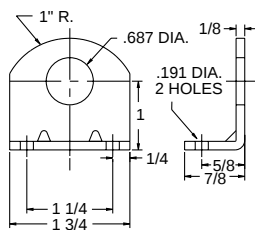


HB-20

Foot Bracket

Used on HB1, 3, 4, 5, 6

Zinc plated steel

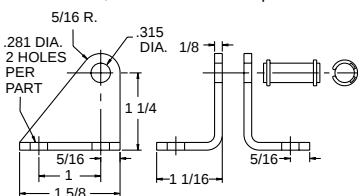


HB-40

Clevis Bracket

Used on HB2, 29

Zinc plated steel

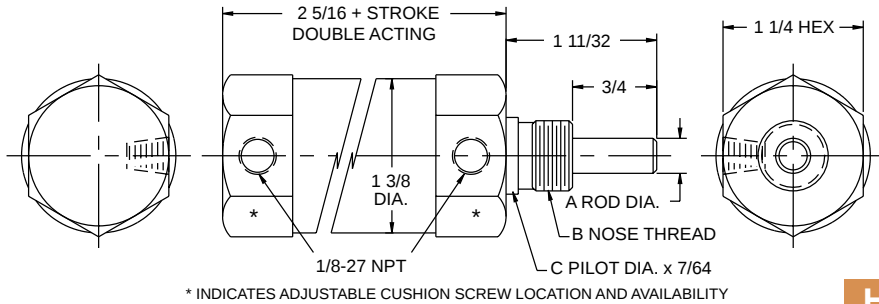
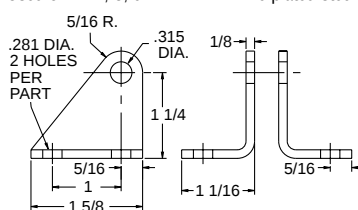


HB-40T

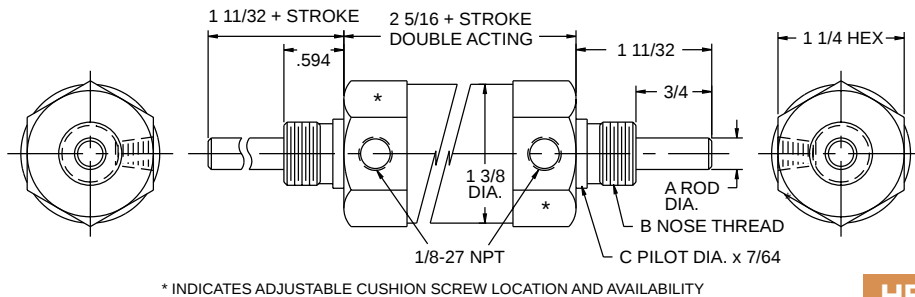
Trunnion Bracket

Used on HB7, 8, 9

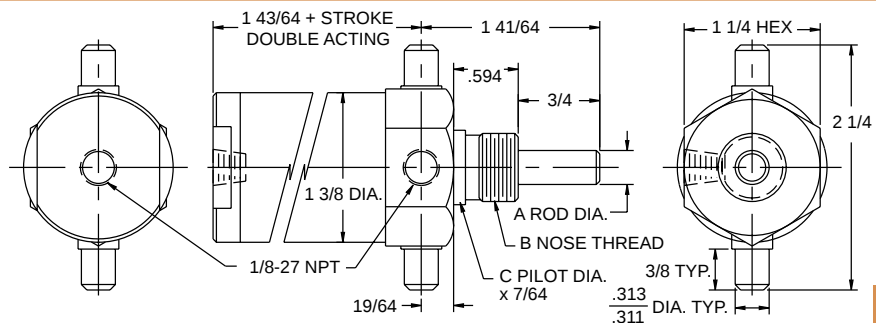
Zinc plated steel



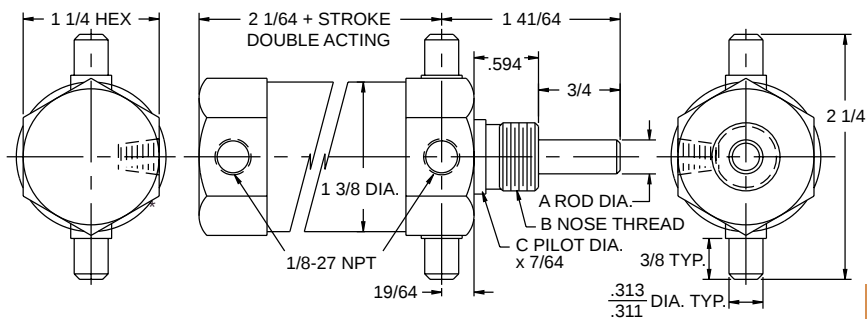
HB5



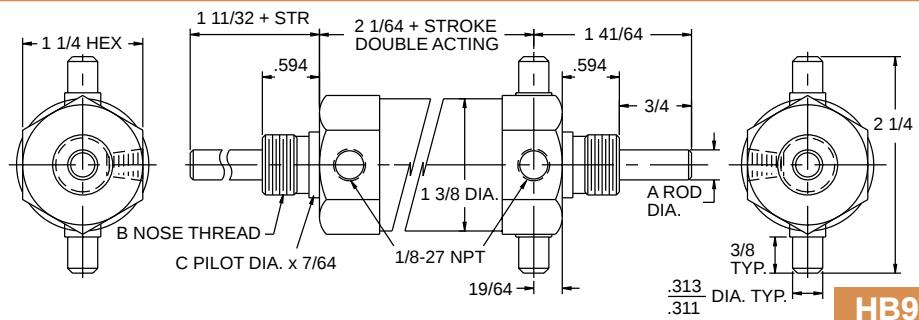
HB6



HB7

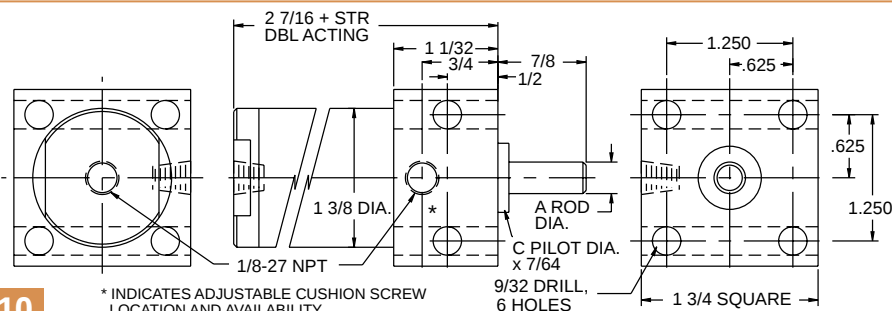


HB8



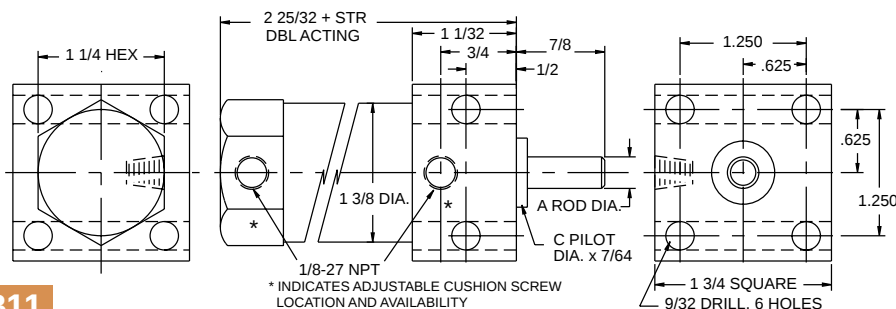
HB9

A ROD DIA.	B NOSE THREAD	C PILOT DIA. COMBINATIONS	Part No. Code
5/16 Standard	5/8 -18	.684/.682	D
3/8 Oversize	5/8 -18	.684/.682	E
3/8 Oversize	3/4 -16	.747/.745 HB5, 6 Only	F
3/8 Oversize	7/8 -14	.934/.932 HB5, 6 Only	G
1/2 Oversize	7/8 -14	.934/.932	H



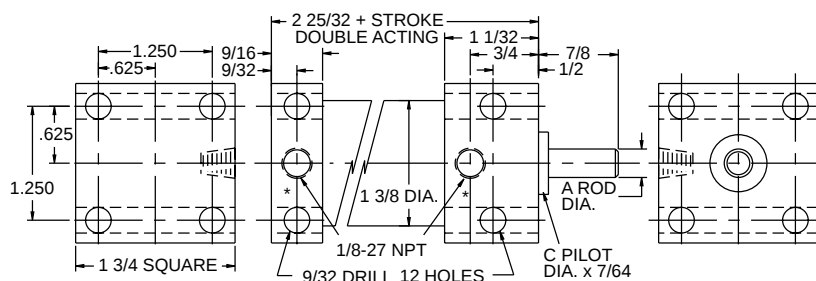
HB10

* INDICATES ADJUSTABLE CUSHION SCREW LOCATION AND AVAILABILITY



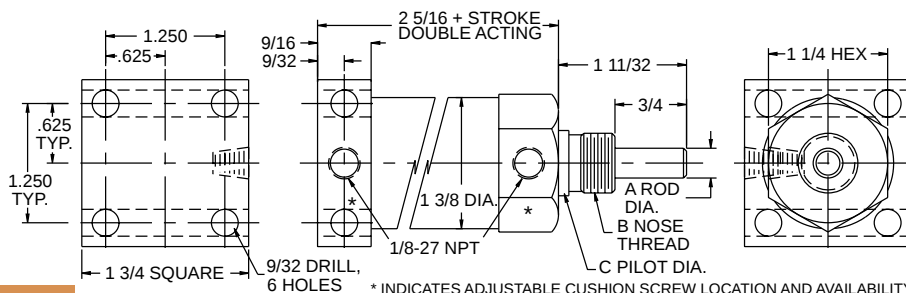
HB11

* INDICATES ADJUSTABLE CUSHION SCREW LOCATION AND AVAILABILITY



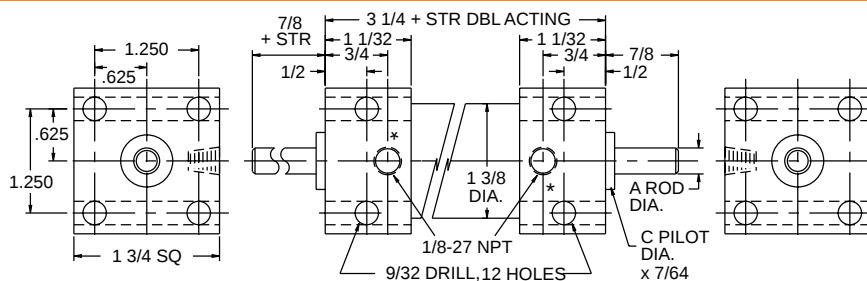
HB12

* INDICATES ADJUSTABLE CUSHION SCREW LOCATION AND AVAILABILITY



HB13

* INDICATES ADJUSTABLE CUSHION SCREW LOCATION AND AVAILABILITY



HB14

* INDICATES ADJUSTABLE CUSHION SCREW LOCATION AND AVAILABILITY

A ROD DIA.	B NOSE THREAD	C PILOT DIA. COMBINATIONS	Part No. Code
5/16 Standard	5/8 -18	.684/.682	D
3/8 Oversize	5/8 -18	.684/.682 HB13 Only	E
3/8 Oversize	3/4 -16	.747/.745	F
3/8 Oversize	7/8 -14	.934/.932 HB13 Only	G
1/2 Oversize	7/8 -14	.934/.932	H

Single Acting Cylinders

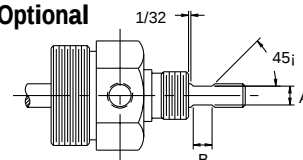
Pneumatic only Adds to cylinder length

TYPE	STROKE	Add to cyl. O.A.L.	STROKE	Add to cyl. O.A.L.
Spring return	0-2 1/2"	1"	2 5/8"-4"	2" [†]
Spring extend	0-2 1/2"	1"	Not available over 2 1/2" stroke	

Spring Force: Spring fully extended approx. 4#
Spring fully compressed approx. 20#
[†] Spring fully compressed approx. 13#

Wrench Flats

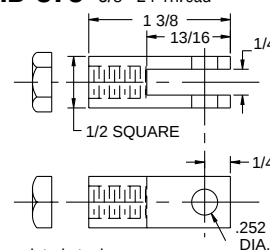
Optional



ROD DIA.	A	B
5/16	.250	1/4
3/8	.312	1/4
1/2	.437	1/4

HB-312 5/16 -18 Thread Rod Clevis & Nut

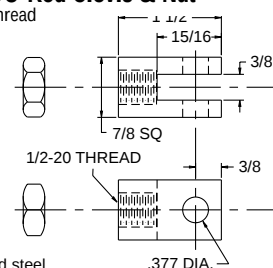
HB-375 3/8 -24 Thread



Zinc plated steel

HB-500 Rod Clevis & Nut

1/2 -20 Thread



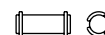
Zinc plated steel

HB-200 Clevis Pin Assembly

Used on HB-312, HB-375

HB-501 Clevis Pin Assembly

Used on HB-500



Cushions not available on cylinders with 1/2" diameter rod.

- Back to Back
- Three Position
- Tandems
- Adjustable Stroke
- Spherical Mount
- Non-Rotate

All from Stock in the SMA Section

1 1/2" BORE HB BRASS

200 PSI MAX. AIR
500 PSI MAX. HYD. Non shock



Single Acting Cylinders

Pneumatic only Adds to cylinder length

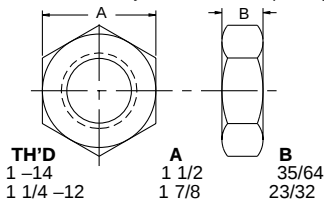
TYPE	STROKE	Add to cyl. O.A.L.	STROKE	Add to cyl. O.A.L.
Spring return	0-2"	1 1/2"	2 1/8"-4"	3"
Spring extend	0-2"	1 1/2"	2 1/8"-4"	3"

Spring Force: Spring fully extended approx. 15#
Spring fully compressed approx. 50#

Wrench Flat chart pg 74

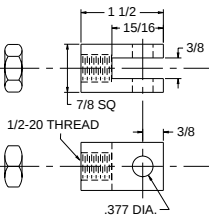
1-14 Nut & 1 1/4-12 Nut

Not included with Cylinder Order separately



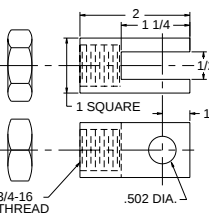
HB-500 Rod Clevis and Nut

Zinc plated steel



HB-750 Rod Clevis and Nut

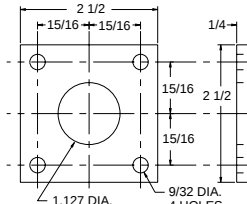
Zinc plated steel



HB-50 Flange Brk't

Order 1"-14 nut separately

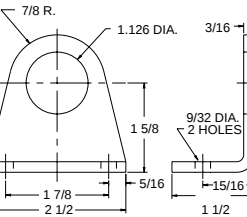
Zinc plated steel



HB-70 Foot Brk't

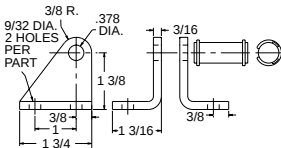
Order 1"-14 nut separately

Zinc plated steel

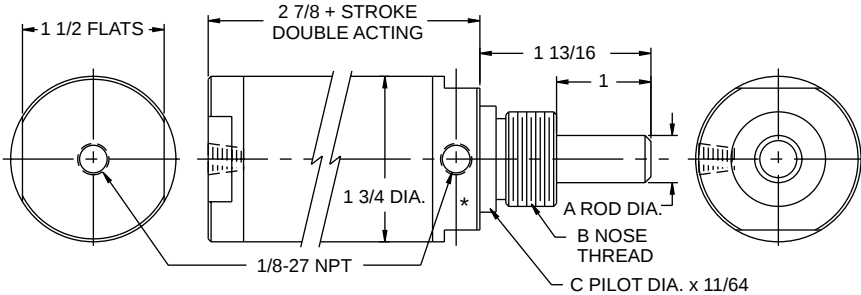


HB-90 St'd Clevis Brk't

Used on HB2, 29 Zinc plated steel

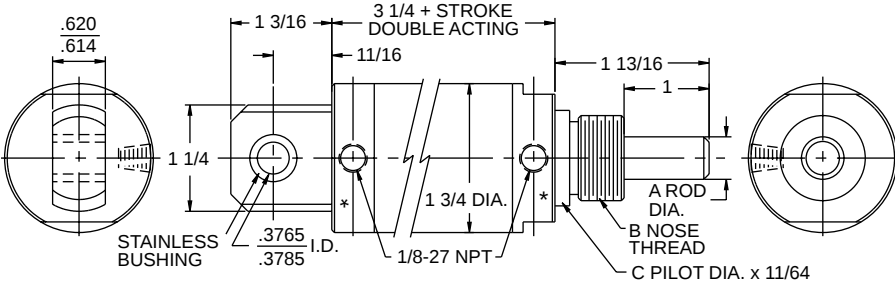


Cushions not available on cylinders with 3/4" diameter rod or oversize 1/4" ports



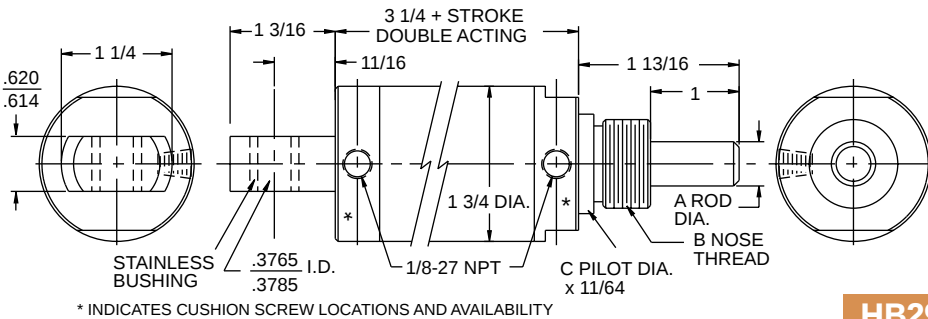
* INDICATES CUSHION SCREW LOCATIONS AND AVAILABILITY

HB1



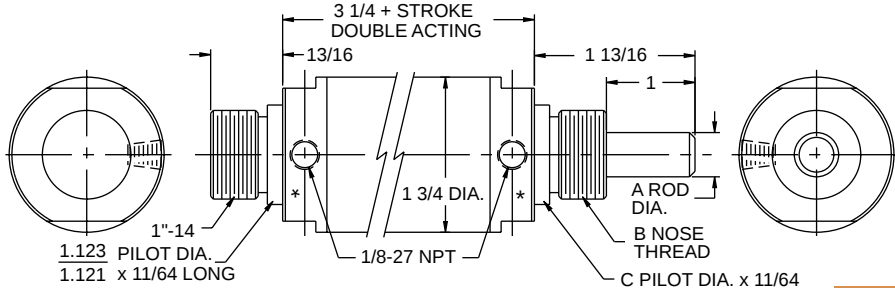
* INDICATES CUSHION SCREW LOCATIONS AND AVAILABILITY

HB2



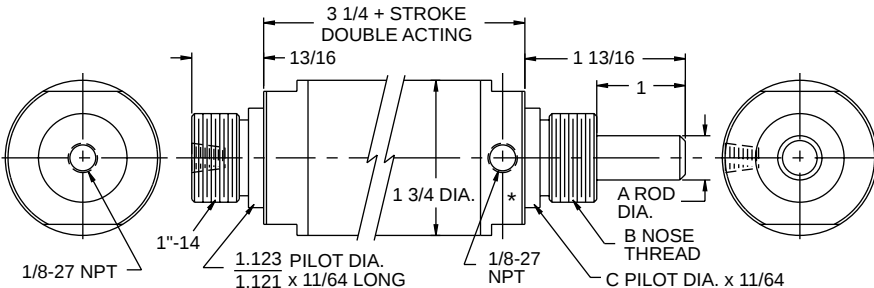
* INDICATES CUSHION SCREW LOCATIONS AND AVAILABILITY

HB29



* INDICATES CUSHION SCREW LOCATIONS AND AVAILABILITY

HB3

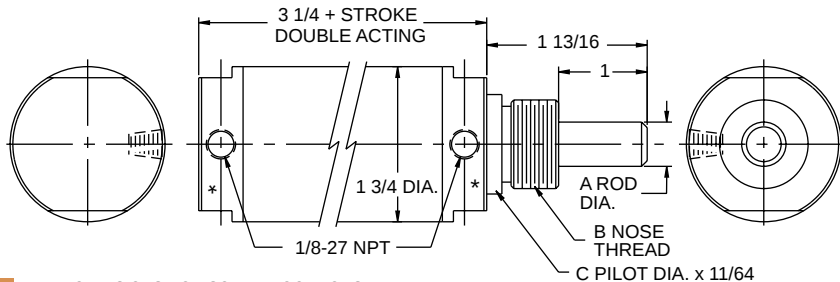


* INDICATES CUSHION SCREW LOCATIONS AND AVAILABILITY

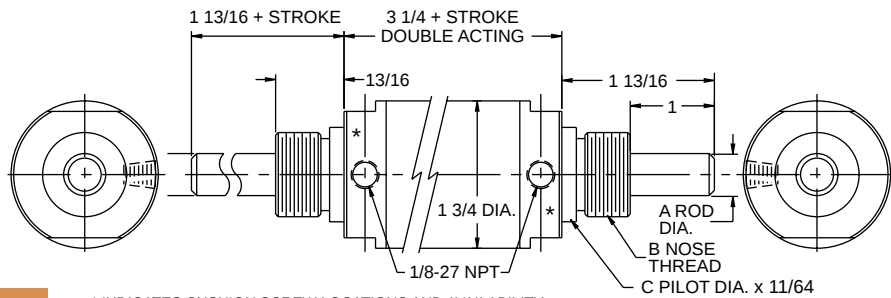
HB4

A ROD DIA.	B NOSE THREAD	C PILOT DIA. COMBINATIONS	Part No. Code
1/2 Standard	1-14	1.123/1.121	D
3/4 Oversize	1 1/4-12	1.373/1.371	E

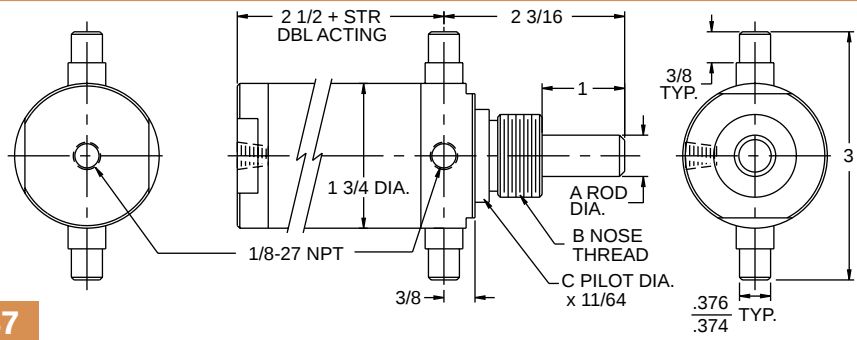
1 1/2" BORE HB BRASS



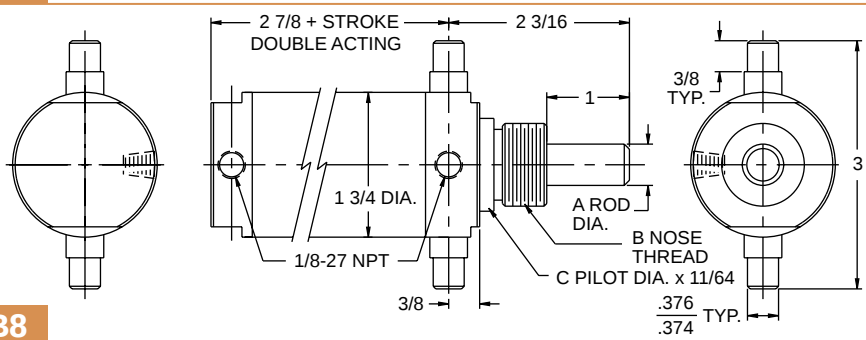
HB5 * INDICATES CUSHION SCREW LOCATIONS AND AVAILABILITY



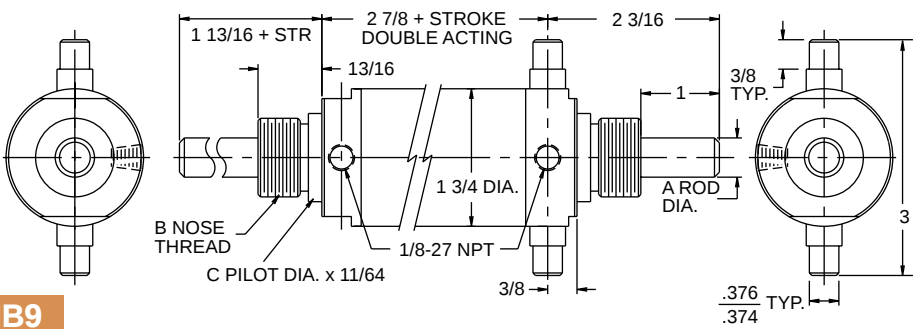
HB6 * INDICATES CUSHION SCREW LOCATIONS AND AVAILABILITY



HB7



HB8



HB9

A ROD DIA.	B NOSE THREAD	C PILOT DIA. COMBINATIONS	Part No. Code
1/2 Standard	1 -14	1.123/1.121	D
3/4 Oversize	1 1/4 -12	1.373/1.371	E

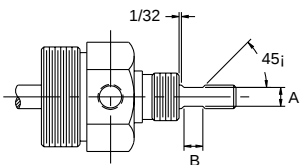
Single Acting Cylinders

Pneumatic only Adds to cylinder length

TYPE	STROKE	Add to cyl. O.A.L.	STROKE	Add to cyl. O.A.L.
Spring return	0-2"	1 1/2"	2 1/8"-4"	3"
Spring extend	0-2"	1 1/2"	2 1/8"-4"	3"

Spring Force: Spring fully extended approx. 15#
Spring fully compressed approx. 50#

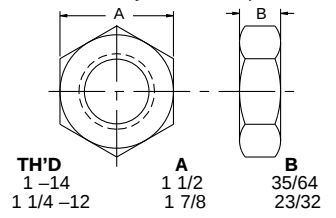
Wrench Flats Optional



ROD DIA.	A	B
1/2	.437	3/8
3/4	.625	3/8

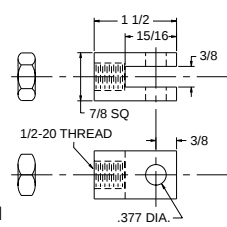
1-14 Nut & 1 1/4-12 Nut Nose Mounting Nut

Included with Cylinder Zinc plated steel



HB-500

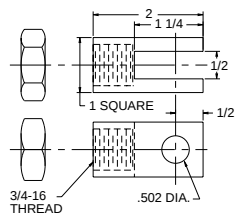
Rod Clevis and Nut



Zinc plated steel

HB-750

Rod Clevis and Nut



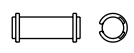
Zinc plated steel

HB-501 Clevis Pin Assembly

Used on HB-500

HB-601 Clevis Pin Assembly

Used on HB-750



1/4" Oversize Ports Available on 1 1/2 Bore Series HB

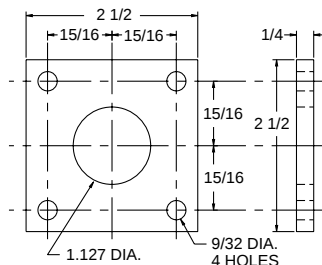
HB Options

- Shock Pads
- Wrench Flats
- Rod Wiper
- Viton or Long Life Seals
- Polypak Rod Seal
- Chrome Rod
- Magnetic Piston
- Hollow Rod (1/2" only)
- Stop Tube
- Oversized Ports
- Adjustable Cushions

HB-50

Flange Bracket

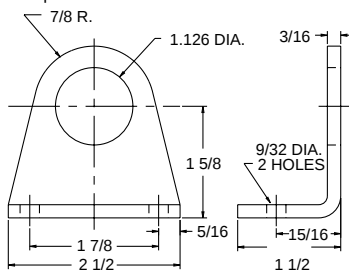
Order 1"-14 Nut separately
Zinc plated steel



HB-70

Foot Bracket

Order 1"-14 Nut separately
Zinc plated steel

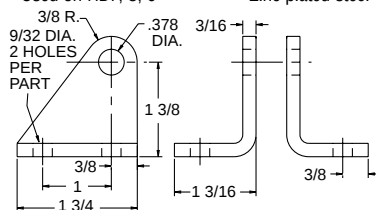


HB-90T

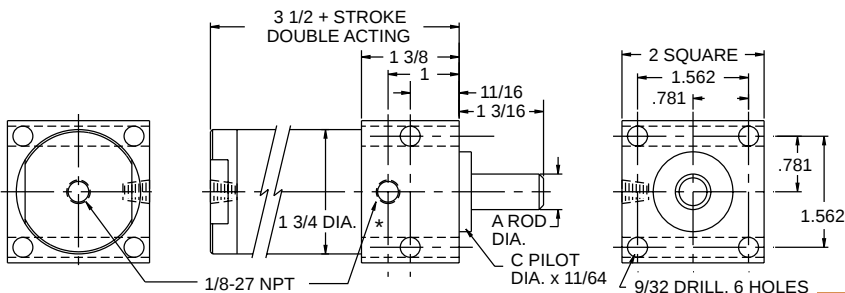
Trunnion Bracket

Used on HB7, 8, 9

Zinc plated steel

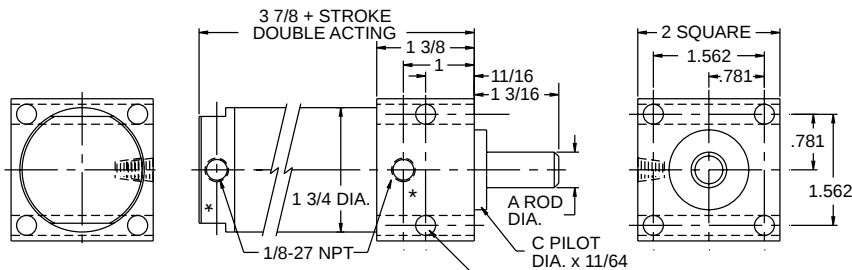


Cushions not available on cylinders with 3/4" diameter rod or oversize 1/4" ports.



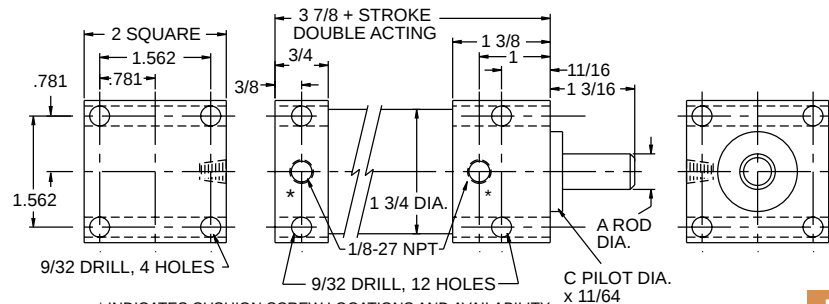
* INDICATES CUSHION SCREW LOCATIONS AND AVAILABILITY

HB10



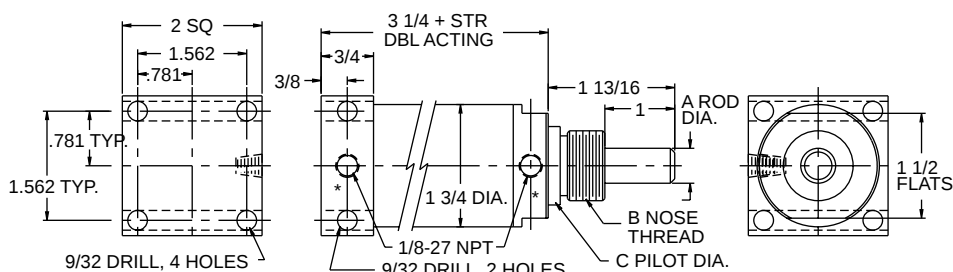
* INDICATES CUSHION SCREW LOCATIONS AND AVAILABILITY

HB11



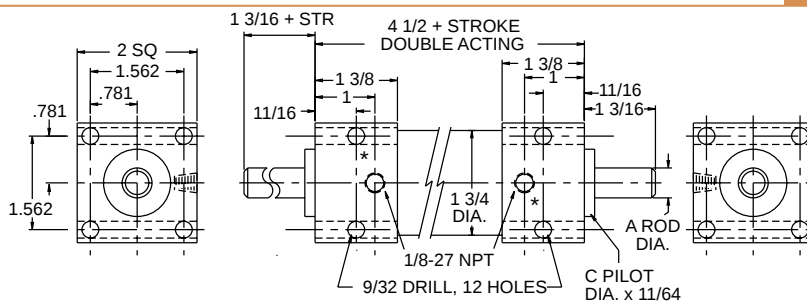
* INDICATES CUSHION SCREW LOCATIONS AND AVAILABILITY

HB12



* INDICATES CUSHION SCREW LOCATIONS AND AVAILABILITY

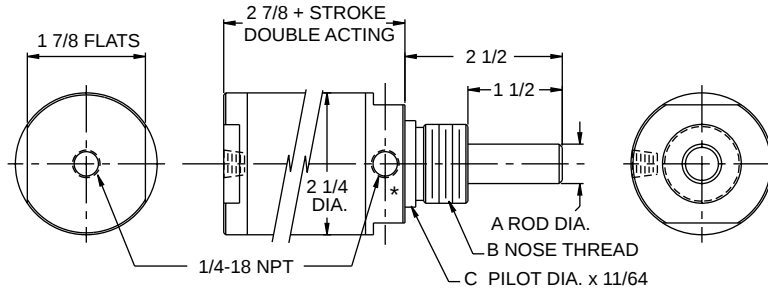
HB13



* INDICATES CUSHION SCREW LOCATIONS AND AVAILABILITY

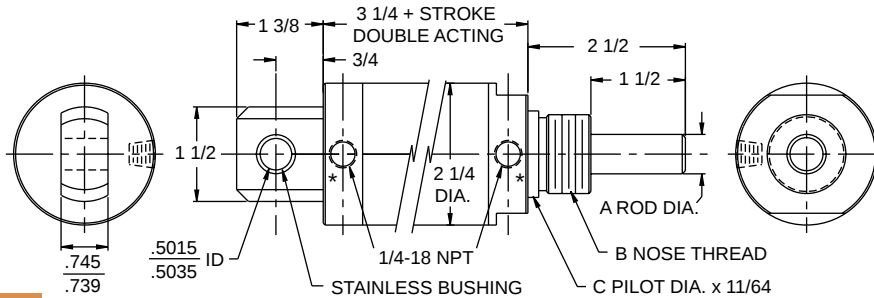
HB14

A ROD DIA.	B NOSE THREAD	C PILOT DIA. COMBINATIONS	Part No. Code
1/2 Standard	1 -14	1.123/1.121	D
3/4 Oversize	—	1.123/1.121	E
3/4 Oversize	1 1/4 -12	1.373/1.371 HB13 Only	E



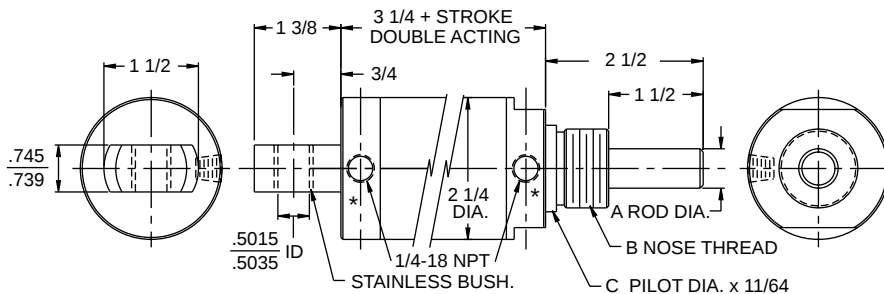
HB1

* INDICATES CUSHION SCREW LOCATION AND AVAILABILITY.



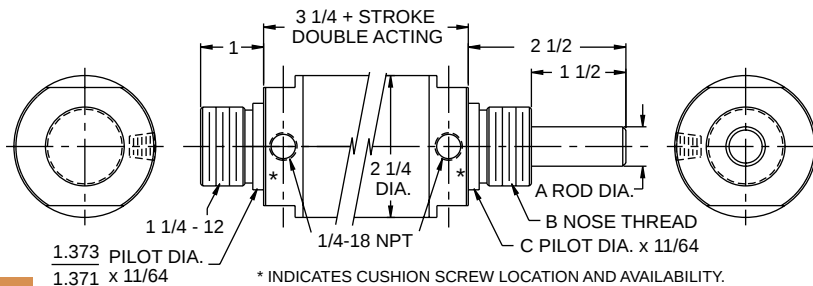
HB2

* INDICATES CUSHION SCREW LOCATION AND AVAILABILITY.



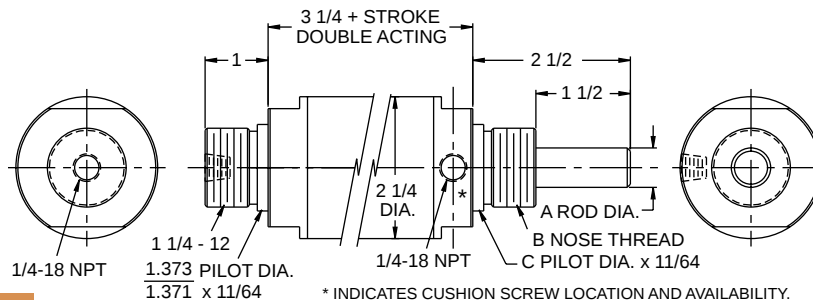
HB29

* INDICATES CUSHION SCREW LOCATION AND AVAILABILITY.



HB3

* INDICATES CUSHION SCREW LOCATION AND AVAILABILITY.



HB4

* INDICATES CUSHION SCREW LOCATION AND AVAILABILITY.

A ROD DIA.	B NOSE THREAD	C PILOT DIA. COMBINATIONS	Part No. Code
5/8 Standard	1 1/4 -12	1.373/1.371	D
3/4 Oversize	1 1/4 -12	1.373/1.371	E

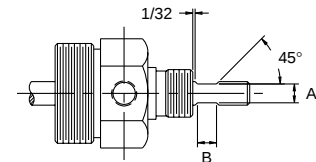
Single Acting Cylinders

Pneumatic only Adds to cylinder length

TYPE	STROKE	Add to cyl. O.A.L.	STROKE	Add to cyl. O.A.L.
Spring return	0-2"	1 1/2"	2 1/8"-4"	3"
Spring extend	0-2"	1 1/2"	2 1/8"-4"	3"

Spring Force: Spring fully extended approx. 20#
Spring fully compressed approx. 75#

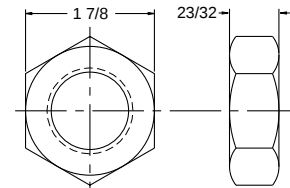
Wrench Flats Optional



ROD DIA.	A	B
5/8	.500	3/8
3/4	.625	3/8

1 1/4-12 Nut Nose Mounting Nut

Not included with Cylinder Order separately



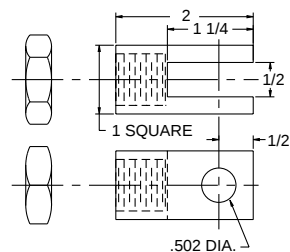
Thread 1 1/4 -12

Zinc plated steel

HB-625 5/8-18 Thread

HB-750 3/4-16 Thread

Rod Clevis and Nut



Zinc plated steel

HB-601

Clevis Pin Assembly

Used on HB-625, 750



Cushions not available on cylinders
with 3/4" diameter rod.



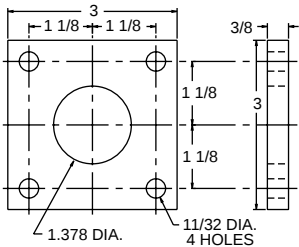
HB Options

- Shock Pads
- Wrench Flats
- Rod Wiper
- Viton or Long Life Seals
- Polypak Rod Seal
- Chrome Rod
- Magnetic Piston
- Stop Tube
- Adjustable Cushions

HB-60

Flange Bracket

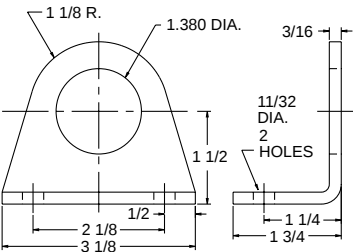
Order 1 1/4-12 nut separately
Zinc plated steel



HB-80

Foot Bracket

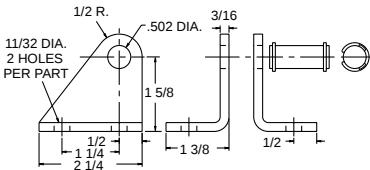
Order 1 1/4-12 nut separately
Zinc plated steel



HB-100

Clevis Bracket

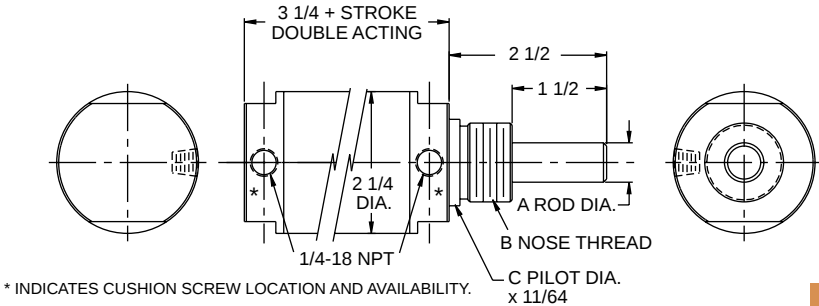
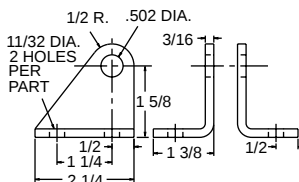
Used on HB2, 29
Zinc plated steel



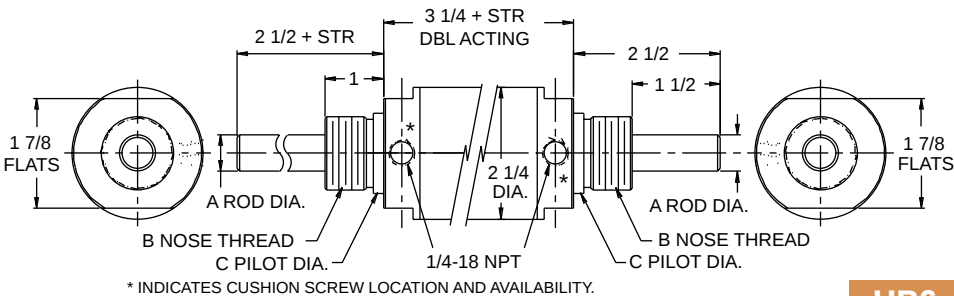
HB-100T

Trunnion Bracket

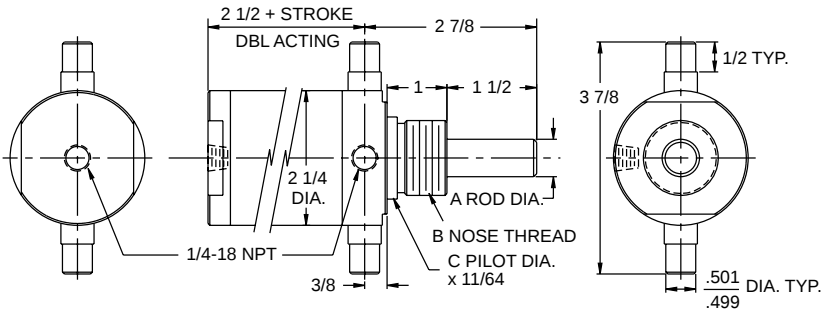
Used on HB7, 8, 9
Zinc plated steel



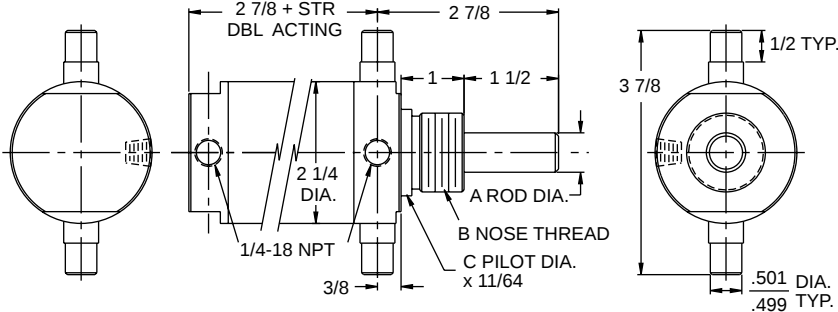
HB5



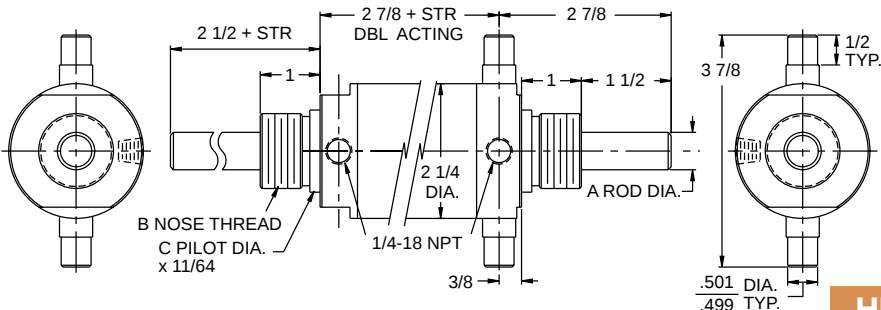
HB6



HB7



HB8

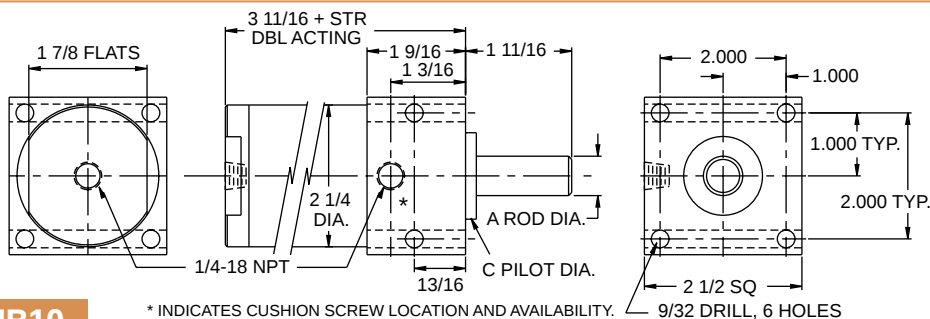


HB9

A ROD DIA.	B NOSE THREAD	C PILOT DIA. COMBINATIONS	Part No. Code
5/8 Standard	1 1/4 -12	1.373/1.371	D
3/4 Oversize	1 1/4 -12	1.373/1.371	E

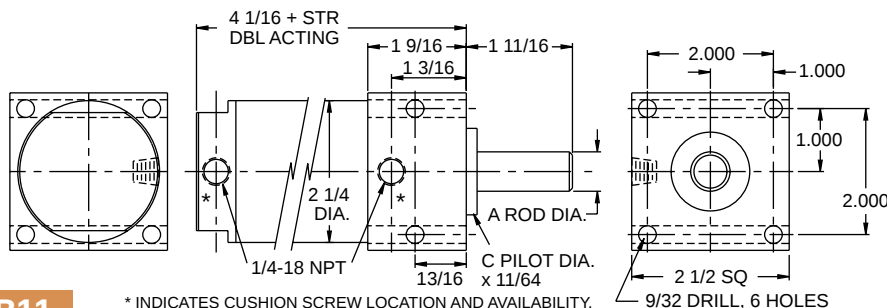
2" BORE HB BRASS

200 PSI MAX. AIR
400 PSI MAX. HYD. Non shock



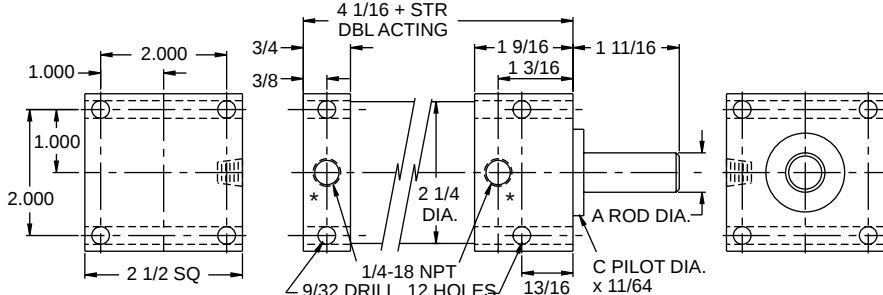
HB10

* INDICATES CUSHION SCREW LOCATION AND AVAILABILITY.



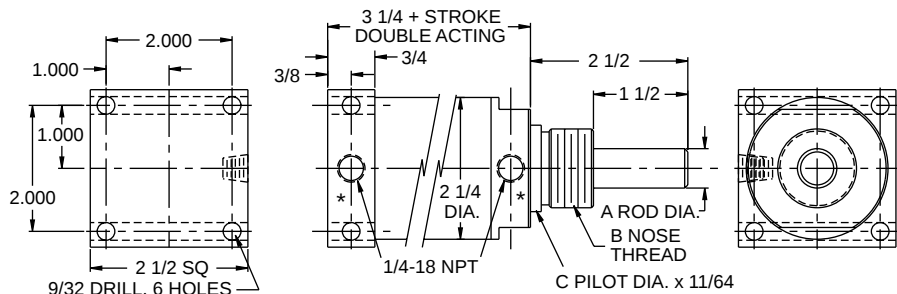
HB11

* INDICATES CUSHION SCREW LOCATION AND AVAILABILITY.



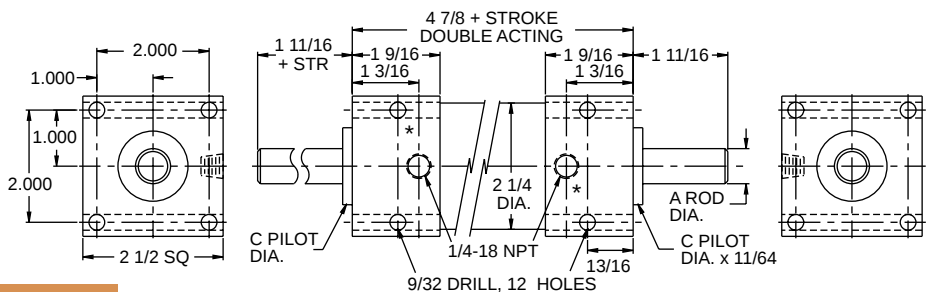
HB12

* INDICATES CUSHION SCREW LOCATION AND AVAILABILITY.



HB13

* INDICATES CUSHION SCREW LOCATION AND AVAILABILITY.



HB14

* INDICATES CUSHION SCREW LOCATION AND AVAILABILITY.

A ROD DIA.	B NOSE THREAD	C PILOT DIA. COMBINATIONS	Part No. Code
5/8 Standard	1 1/4 -12	1.373/1.371	D
3/4 Oversize	1 1/4 -12	1.373/1.371	E

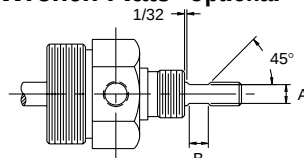
Single Acting Cylinders

Pneumatic only Adds to cylinder length

TYPE	STROKE	Add to cyl. O.A.L.	STROKE	Add to cyl. O.A.L.
Spring return	0-2"	1 1/2"	2 1/8"-4"	3"
Spring extend	0-2"	1 1/2"	2 1/8"-4"	3"

Spring Force: Spring fully extended approx. 20#
Spring fully compressed approx. 75#

Wrench Flats Optional

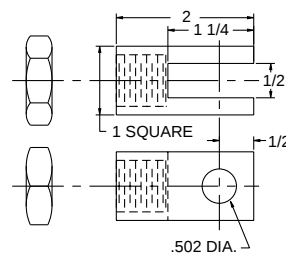


ROD DIA.	A	B
5/8	.500	3/8
3/4	.625	3/8

HB-625 5/8-18 Thread

HB-750 3/4-16 Thread

Rod Clevis and Nut



Zinc plated steel

HB-601

Clevis Pin Assembly

Used on HB-625, 750



Problem: Side Load

Solution: Series SMA with Wear Strip Piston and Teflon Rod Bushing

The cylinder part number is an alpha numeric code.



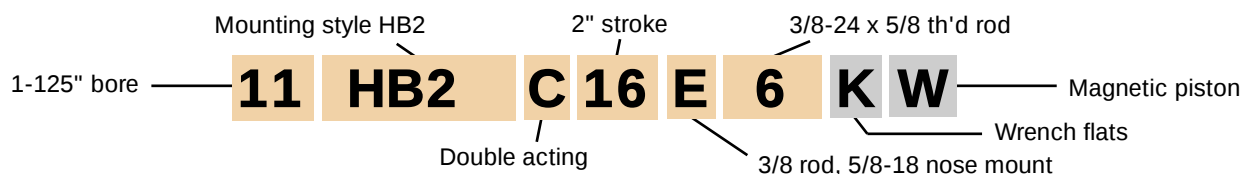


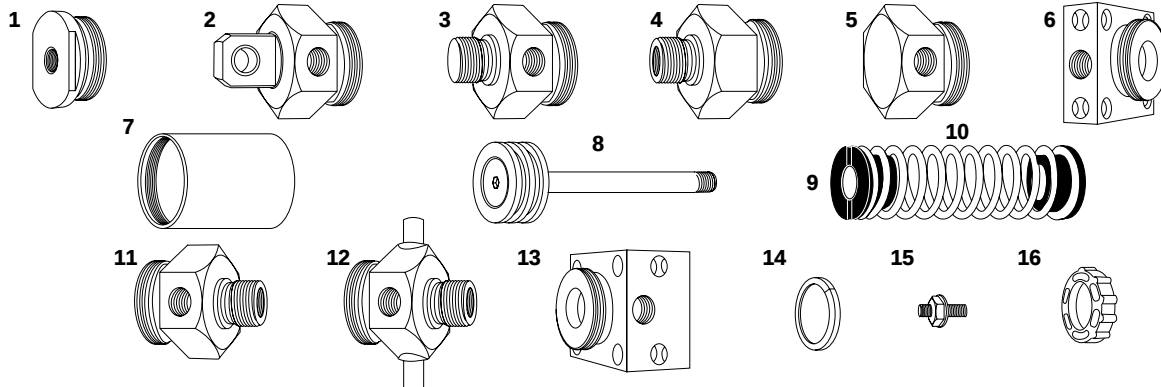
Series HB cylinder options

List codes in the same sequence as they appear below

Option	Description	Code
Extra rod extension	Specify code letter J followed by the extra length as a two place decimal. Example: J.50 = 1/2" extra J1.25 = 1 1/4"extra HB6, 9, 14 double rod cylinders with extra extension cannot be ordered by a standard part number - consult factory for a special part number.	J
Wrench flats	Specify if required If specified will be added to both ends of HB6, HB9, HB14 double rod cylinders	K
Shock pads	Available on both ends of double acting cylinders and the end opposite the spring on single acting cylinders. Each pad adds 1/4" to cylinder length. Pneumatic use only to 180° F	Pad on rod end only L
		Pad on cap end only M
		Pads on both ends N
Rod wiper	3/4", 1" bore - Not available 1 1/8" bore - Available only with 3/8" rod, 7/8 - 14 nose mount 1 1/2, 2" bore - Available all models - standard with trunnion & adj. cushion heads	P
Optional seal compounds	St'd seals are buna (nitrile) and require no code -40 to +200° F Long life available for extended cycle life +10 to +200° F Viton available for temps -10 to +400° F	Q
		R
Polypak rod seal	For optimum sealing on hydraulic cylinders Available only in 1 1/2 and 2" bore sizes	S
Hard chromed rod	Hard chrome plated steel - 100,000 min. yield	T
Magnetic piston	Not available in 1" bore Adds 1/2" to cylinder length	W
Hollow piston rod	Available in 5/16 dia. rod - thru hole .135" Available in 3/8 dia. rod - thru hole .248" Not available on hard chrome rods Available in 1/2 dia. rod - thru hole .313"	X
Stop tube	Available on 1 1/2 & 2" bore only in 2" increments Specify code Y followed by length in inches Example: Y4 = 4" stop tube Adds to cylinder length. An 8" stroke cyl. with 2" stop tube will be as long as a 10" stroke cylinder. Order actual stroke req. (8" above)	Not avail. HB6, 9, 14 or with adj. cushions Y
Oversize ports	1/4 NPT ports on 1 1/2 bore cylinder (both ends)	Z
Adjustable Cushions	Available on 1 1/8, 1 1/2, 2" bore except as follows: Mounting styles HB7, 8, 9 Rear port cap on mt'g styles HB1, 4, 10 Cyl. with 1/2" or 3/4" oversize rods or oversize ports Cylinders with shock pads	Cushion head end only AA
		Cushion cap end only BB
		Cushion both ends CC

Part No. Example:





3 / 4 " B o r e S e r v i c e P a r t s

Key	Description	Part Number
	Seal Kit, Buna	07522-B
	Seal Kit, Long life	07522-LL
	Seal Kit, Viton	07522-V
1	Rear port cap	07503
2	Rear pivot cap	07506
2	90° Rear pivot cap	0750690
3	Rear stud cap	07507
4	Cap	07508
5	Cap	07509
6	Cap	07525
7	Tube - P.N. is T followed by the complete cyl. part no.	
8	Rod - P.N. is PR followed by the complete cyl. part no.	

Key	Description	Part Number
9	Spring stop 1/4" rod pair	07512-250
9	Spring stop 5/16" rod pair	07512-312
10	Spring - Must supply cyl. stroke	07515
11	Head 1/4 rod	07510-250
11	Head 5/16 rod	07510-312
12	Head 1/4 rod	07510-250 TRN
12	Head 5/16 rod	07510-312 TRN
13	Head 1/4 rod	07524-250
13	Head 5/16 rod	07524-312
14	Magnet pair	SS3207
16	Shock pad	75MSP

1 " B o r e S e r v i c e P a r t s

Key	Description	Part Number
	Seal Kit, Buna	10022-B
	Seal Kit, Long life	10022-LL
	Seal Kit, Viton	10022-V
1	Cap	10003
2	Cap	10006
2	90° Cap	1000690
3	Cap	10007
4	Cap	10008
5	Cap	10009
6	Cap	10025
7	Tube - P.N. is T followed by the complete cyl. part no.	
8	Rod - P.N. is PR followed by the complete cyl. part no.	

Key	Description	Part Number
9	Spring stop 5/16" rod pair	10012-312
9	Spring stop 3/8" rod pair	10012-375
10	Spring	10015
11	Head 5/16 rod, 5/8 - 18 nose	10010-312-625
11	Head 3/8 rod, 5/8 - 18 nose	10010-375-625
11	Head 3/8 rod, 3/4 - 16 nose	10010-375-750
12	Head 5/16 rod, 5/8 - 18 nose	10010-312TRN
12	Head 3/8 rod, 5/8 - 18 nose	10010-375TRN
13	Head 5/16 rod	10024-312
13	Head 3/8 rod	10024-375

Key	Description	Part Number
	Seal Kit, Buna, 5/16 rod	11222-312B
	Seal Kit, Buna, 3/8 rod	11222-375B
	Seal Kit, Buna, 1/2 rod	11222-500B
	Seal Kit, Long life, 5/16 rod	11222-312LL
	Seal Kit, Long life, 3/8 rod	11222-375LL
	Seal Kit, Long life, 1/2 rod	11222-500LL
	Seal Kit, Viton, 5/16 rod	11222-312V
	Seal Kit, Viton, 3/8 rod	11222-375V
	Seal Kit, Viton, 1/2 rod	11222-500V
1	Cap	11203
2	Cap Add suffix C for cushion	11206
2	90° Cap Add suffix C for cushion	1120690

Key	Description	Part Number
10	Spring 0 - 2 1/2" Stroke	11215
10	Spring Over - 2 1/2" Stroke	10015
11	Head, 5/16 Rod, 5/8 - 18 Nose	11253-312-625
11	Head, 5/16 Rod, 5/8 - 18 Nose, Cushion	11253-312-625C
11	Head, 3/8 Rod, 5/8 - 18 Nose	11253-375-625
11	Head, 3/8 Rod, 5/8 - 18 Nose, Cushion	11253-375-625C
11	Head, 3/8 Rod, 3/4 - 16 Nose	11253-375-750
11	Head, 3/8 Rod 3/4 - 16 Nose, Cushion	11253-375-750C
11	Head, 3/8 Rod 7/8 - 14 Nose	11253-375-875
11	Head, 3/8 rod, 7/8 - 14 nose, cushion	11253-375-875C
11	Head, 3/8 rod, 7/8 - 14 nose, wiper	11253-375-875W
11	Head, 1/2 rod, 7/8 - 14 nose	11253-500-875

1 1 / 8 " B o r e S e r v i c e P a r t s (Cont.)

Key	Description	Part Number
3	Cap Add suffix C for cushion	11207
4	Cap	11208
5	Cap Add suffix C for cushion	11209
6	Cap Add suffix C for cushion	11225
7	Tube – P.N. is T followed by the complete cyl. P.N.	
8	Rod – P.N. is PR followed by the complete cyl. P.N.	
9	Stop 5/16 rod, 0 – 2 1/2" stroke	11212-312
9	Stop 5/16 rod, over 2 1/2" stroke (pair)	10012-312
9	Stop 3/8 rod, 0 – 2 1/2" stroke	11212-375
9	Stop 3/8 rod, over 2 1/2" stroke (pair)	10012-375
9	Stop 1/2 rod, 0 – 2 1/2" stroke	11212-500
9	Stop 1/2 rod, over 2 1/2" stroke (pair)	10012-500

Key	Description	Part Number
12	Head, 5/16 rod, 5/8 - 18 nose	11253-312TRN
12	Head, 3/8 rod, 5/8 - 18 nose	11253-375TRN
12	Head, 1/2 rod, 7/8 - 14 nose	11253-500 TRN
13	Head, 5/16 rod	11224-312
13	Head, 5/16 rod, cushion	11224-312C
13	Head, 3/8 rod	11224-375
13	Head, 3/8 rod, cushion	11224-375C
13	Head, 1/2 rod	11224-500
14	Magnet pair	SMS5911
15	Screw ass'y Add suffix V for Viton	11227
16	Shock pad	11 MSP

1 1 / 2 " B o r e S e r v i c e P a r t s

Add suffix HYD to seal kit part no. if polypak hyd. rod seal is required		
	Seal Kit, Buna, 1/2 rod	15022-500B
	Seal Kit, Buna, 3/4 rod	15022-750B
	Seal Kit, Longlife, 1/2 rod	15022-500LL
	Seal Kit, Longlife, 3/4 rod	15022-750LL
	Seal Kit, Viton, 1/2 rod	15022-500V
	Seal Kit, Viton, 3/4 rod	15022-750V
1	Cap	15003
1	Cap 1/4" port	15003250
2	Cap add suffix C for cushion	15006
2	Cap 1/4" port	15006250
2	90i Cap add suffix C for cushion	1500690
2	90i Cap 1/4" port	1500690250
3	Cap add suffix C for cushion	15007
3	Cap 1/4" port	15007250
4	Cap	15008
4	Cap 1/4" port	15008250
5	Cap add suffix C for cushion	15009
5	Cap 1/4" port	15009250
6	Cap add suffix C for cushion	15025
6	Cap 1/4" port	15025250
7	Tube - P.N. is T followed by the complete cyl. part no.	
8	Rod - P.N. is PR followed by the complete cyl. part no.	
9	Stop, 1/2 rod, st'd pair	15012-500
9	Stop, 1/2 rod, spring extend over 2" str.	15012-500L
9	Stop 3/4 rod, st'd pair	15012-750
9	Stop 3/4 rod, spring extend over 2" str.	15012-750L

10	St'd spring	15015
10	Spring, over 2" spring extend only	15015L
11	Head, 1/2 rod	15010-500
11	Head, 1/2 rod, 1/4 port	15010-500250
11	Head, 1/2 rod, wiper	15010-500W
11	Head, 1/2 rod, 1/4 port, wiper	15010-500250W
11	Head, 1/2 rod, cushion	15010-500C
11	Head, 3/4 rod	15010-750
11	Head, 3/4 rod, 1/4 port	15010-750250
11	Head, 3/4 rod, wiper	15010-750W
11	Head, 3/4 rod, 1/4 port, wiper	15010-750250W
12	Head, 1/2 rod	15010-500TRN
12	Head, 3/4 rod	15010-750TRN
12	Head, 1/2 rod, 1/4 port	15010-500250TRN
12	Head, 3/4 rod, 1/4 port	15010-750250TRN
13	Head, 1/2 rod	15024-500
13	Head, 1/2 rod, 1/4 port	15024-500250
13	Head, 1/2 rod, wiper	15024-500W
13	Head, 1/2 rod, 1/4 port, wiper	15024-500250W
13	Head, 1/2 rod, cushion	15024-500C
13	Head, 3/4 rod	15024-750
13	Head, 3/4 rod, 1/4 port	15024-750250
13	Head, 3/4 rod, wiper	15024-750W
13	Head, 3/4 rod, 1/4 port, wiper	15024-750250W
14	Magnet pair	SS3215
16	Shock pad	15MSP

2 " B o r e S e r v i c e P a r t s

Add suffix HYD to seal kit part no. if polypak hyd. rod seal is required		
	Seal Kit, Buna, 5/8 rod	20022-625B
	Seal Kit, Buna, 3/4 rod	20022-750B
	Seal Kit, Long life, 5/8 rod	20022-625LL
	Seal Kit, Long life, 3/4 rod	20022-750LL
	Seal Kit, Viton, 5/8 rod	20022-625V
	Seal Kit, Viton, 3/4 rod	20022-750V
1	Cap	20003
2	Cap add suffix C for cushion	20006
2	90i Cap add suffix C for cushion	2000690
3	Cap add suffix C for cushion	20007
4	Cap	20008
5	Cap add suffix C for cushion	20009
6	Cap add suffix C for cushion	20025
7	Tube - P.N. is T followed by the complete cyl. part no.	
8	Rod - P.N. is PR followed by the complete cyl. part no.	
9	Stop, 5/8 rod, st'd pair	20012-625
9	Stop, 5/8 rod, spring extend over 2" str.	20012-625L

9	Stop, 3/4 rod, st'd pair	20012-750
9	Stop, 3/4 rod, spring extend over 2" str.	20012-750L
10	St'd spring	20015
10	Spring Over - 2" spring extend only	20015L
11	Head, 5/8 Rod	20010-625
11	Head, 5/8 Rod, wiper	20010-625W
11	Head, 5/8 Rod, Cushion	20010-625C
11	Head, 3/4	20010-750
11	Head, 3/4 Rod, wiper	20010-750W
12	Head, 5/8 Rod	20010-625TRN
12	Head, 3/4 Rod	20010-750TRN
13	Head, 5/8 Rod, wiper	20024-625
13	Head, 5/8 Rod, wiper	20024-625W
13	Head, 5/8 Rod, cushion	20024-625C
13	Head, 3/4 Rod	20024-750
13	Head, 3/4 Rod, wiper	20024-750W
14	Magnet pair	SS3220
16	Shock pad	2MSP



ORDERING PROCEDURE AND TECHNICAL DATA

1

FILL IN 4 BLANK SPACES TO SELECT A SWITCH AND TO CREATE ITS PART NUMBER

A

S

R	REED SWITCH
H	HALL SWITCH
O	SWITCH with permanent 9 foot cable
3	SWITCH ONLY with 8mm male quick connect

TYPE CODE	DESCRIPTION	FUNCTION	SWITCHING VOLTAGE	SWITCHING CURRENT	SWITCHING POWER	SWITCHING SPEED	VOLTAGE DROP
02	Reed Switch for PLC's w/ LED	SPST Normally Open	5 - 120 VDC/VAC 50/60 Hz	0.03 Amp Max. 0.001 Amp Min.	4 Watts Max.	0.5 ms operate 0.1 ms release	3.5 Volts
31	Electronic Hall Sensor, LED, Sourcing	Normally Open PNP output	6 - 24 VDC	0.5 Amp Max.	12 Watts Max.	1.5 μ s operate 0.5 μ s release	1.0 Volts
32	Electronic Hall Sensor, LED, Sinking	Normally Open NPN output	6 - 24 VDC	0.5 Amp Max.	12 Watts Max.	1.5 μ s operate 0.5 μ s release	1.0 Volts

2

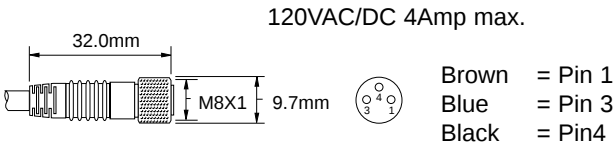
SELECT A SWITCH MOUNTING CLAMP To securely fasten any switch to the cylinder tube choose the proper size stainless steel band clamp from the table below

CYLINDER BORE SIZE	CLAMP PART NUMBER
3/4"	750CLAMP
1 1/8"	112CLAMP
1 1/2"	150CLAMP
2"	200CLAMP
3"	300CLAMP

ORDER SEPARATELY - NOT INCLUDED WITH SWITCH

3

SELECT A QUICK CONNECT CABLE IF REQUIRED Cable part No. ARC130 fits any Aurora switch with 8mm male quick connect and is 16 feet long



Poles -	3 pole	Nominal Volt. Rating -	60 VAC / 75 VDC
Materials -		Environmental Resistance -	IP67
Cable -	Black PUR or PVC	Current Rating -	4 Amps
Housing -	Nylon	Insulation Resistance -	$\geq 10^{10} \Omega$
Contact Finish -	Au	Contact Resistance -	$\leq 5m\Omega$
Male Contact -	Cu Zn	Temperature Rating -	-25° to 85°C
Female Contact -	Cu Sn	Wire Gauge -	.25mm ² wire / 24 AWG

4

SELECT MAGNETIC PISTON When ordering a cylinder along with a switch be sure to include a magnetic piston on the cylinder – see next page.