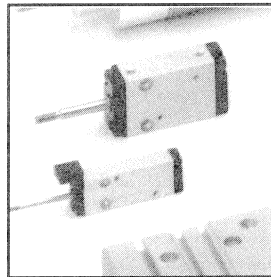
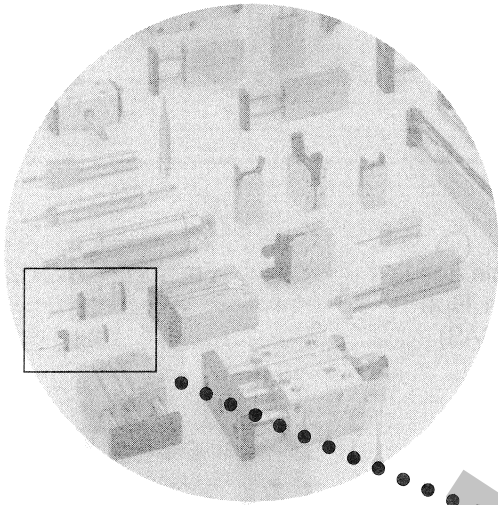


Multi-Mount Cylinders



Pneumatic

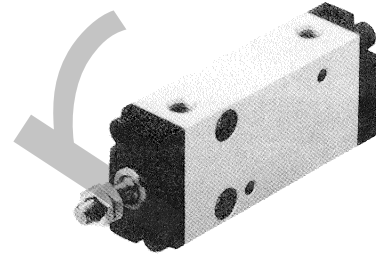
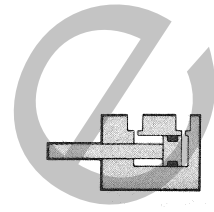
HUMPHREY MULTI-MOUNT CYLINDERS

FEATURES AT A GLANCE

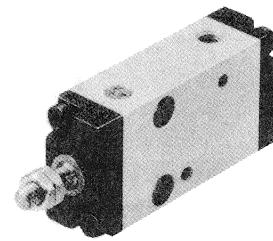
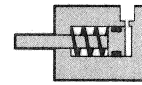
- Small size saves space and weight.
- Rectangular design provides mounting accuracy for precise installation.
- Heavy duty, oil-permeated bronze piston rod bushings, stainless steel piston rods, and custom piston seals provide smooth performance and long cycle life.
- Several mounting bracket styles provide great application versatility.
- Non-rotating piston rod models are designed for high precision applications.
- Cylinder bumpers are standard and provide quiet operation and shock absorption.
- All models have integral magnets for operation of electronic sensor switches.
- Sensor switches have LEDs and include Hall Effect models. Optional Shield Plates prevent unintended actuation of neighboring cylinders in highly compact applications.

STANDARD TYPE

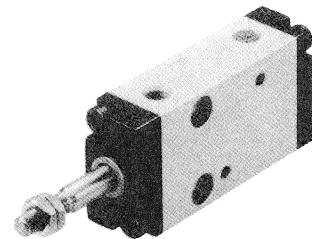
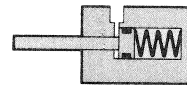
Double Acting
(HBDAS)



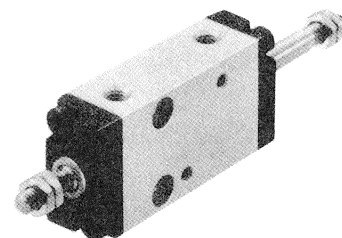
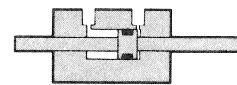
Single Acting
Push Type
(HBSAS)



Single Acting
Pull Type
(HBTAS)



Double Acting
Double End Rod
(HBDADS)

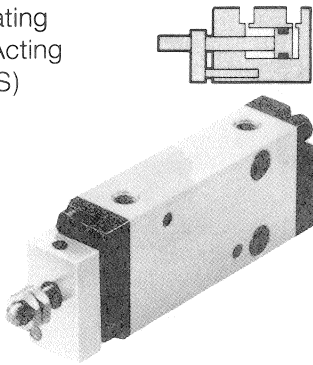


HUMPHREY

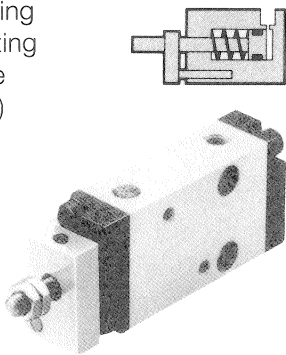
MOUNTING CONFIGURATIONS

NON-ROTATING TYPE

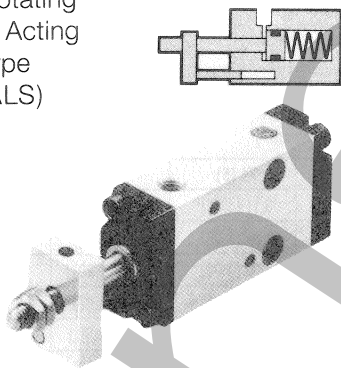
Non-rotating
Double Acting
(HBDALS)



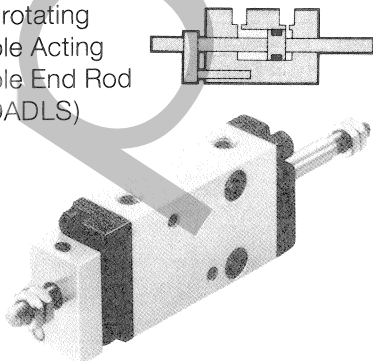
Non-rotating
Single Acting
Push Type
(HBSALS)



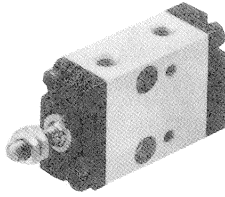
Non-rotating
Single Acting
Pull Type
(HBTALS)



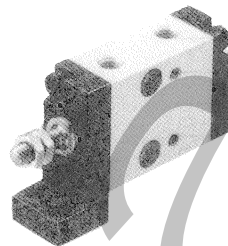
Non-rotating
Double Acting
Double End Rod
(HBDADLS)



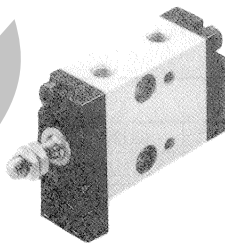
Side Mount
(Standard)



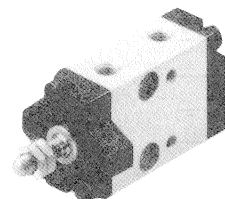
Foot Mount



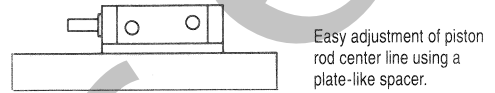
Flange A Mount



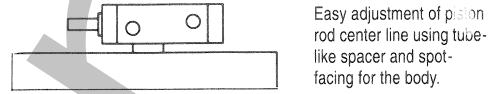
Flange B Mount



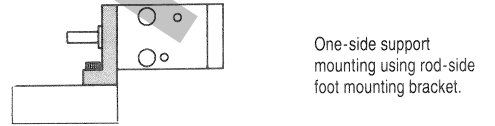
Direct mounting using mounting thru holes.



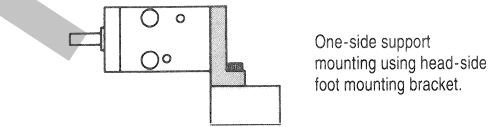
Easy adjustment of piston rod center line using a plate-like spacer.



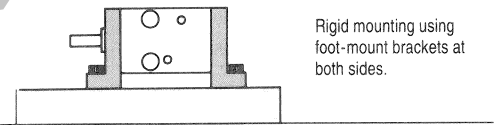
Easy adjustment of piston rod center line using tube-like spacer and spot-facing for the body.



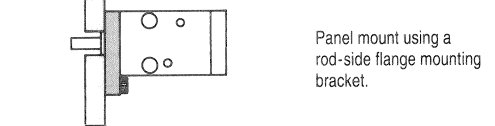
One-side support mounting using rod-side foot mounting bracket.



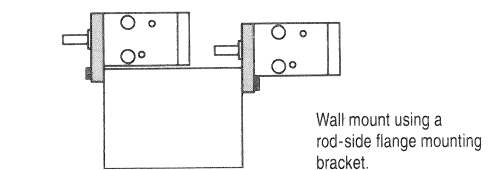
One-side support mounting using head-side foot mounting bracket.



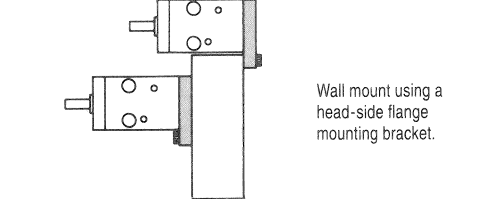
Rigid mounting using foot-mount brackets at both sides.



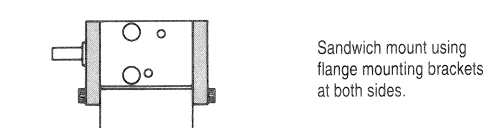
Panel mount using a rod-side flange mounting bracket.



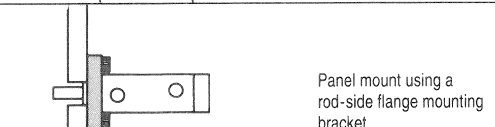
Wall mount using a rod-side flange mounting bracket.



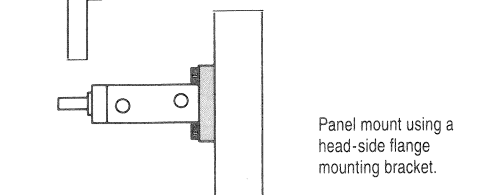
Wall mount using a head-side flange mounting bracket.



Sandwich mount using flange mounting brackets at both sides.



Panel mount using a rod-side flange mounting bracket.



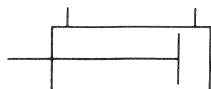
Panel mount using a head-side flange mounting bracket.

MULTI-MOUNT CYLINDERS

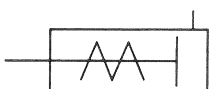
STANDARD TYPE

SYMBOLS

Double Acting (HBDAS)



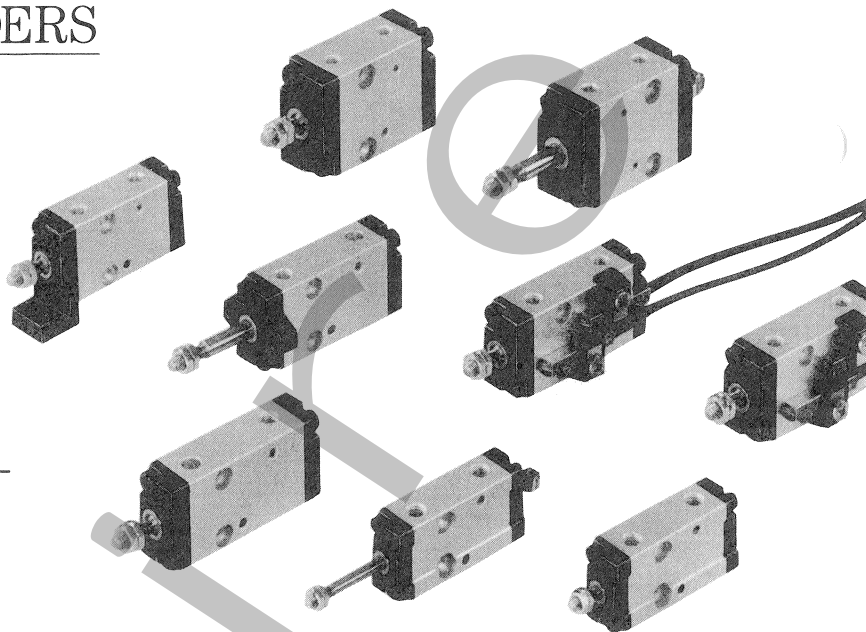
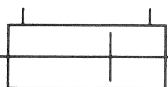
Single Acting, Push Type (HBSAS)



Single Acting, Pull Type (HBTAS)



Double Acting, Double End Rod (HBDADS)



SPECIFICATIONS

Item	Bore size I.D. - inch nominal (mm actual)			
	1/4 (6)	3/8 (10)	5/8 (16)	
Media	Air			
Pressure - PSI (kgf/cm ²)	Double acting	20 ~ 100 (1.5 ~ 7)	15 ~ 100 (1 ~ 7)	10 ~ 100 (0.8 ~ 7)
	Single push	30 ~ 100 (2 ~ 7)	20 ~ 100 (1.5 ~ 7)	20 ~ 100 (1.5 ~ 7)
	Single pull	45 ~ 100 (3 ~ 7)	30 ~ 100 (2 ~ 7)	30 ~ 100 (2 ~ 7)
	Double acting Double rod	30 ~ 100 (2 ~ 7)	20 ~ 100 (1.5 ~ 7)	15 ~ 100 (1 ~ 7)
Temperature °F (°C)	32 ~ 140 (0 ~ 60)			
Operating speeds in./sec. (mm/sec.)	2 ~ 20 (50 ~ 500)			
Bumpers	Buna			
Lubrication	Not required			
Port size	10-32 UNF			
Stroke tolerance - in. (mm)	+0.039 (+1) 0.000 (0)			

THRUST FORCE

lbs. (kgf)

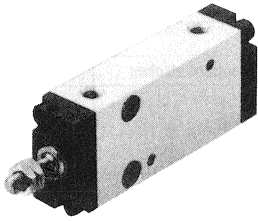
Bore size (I.D.) in. nom. (mm actual)	Rod Size Inch nom. (mm actual)	Type	Pressure area Inch ² (cm ²)	Air Pressure psig (kg/cm ²)							
				14 (1)	28 (2)	43 (3)	57 (4)	71 (5)	85 (6)	100 (7)	
1/4 (6)	1/8 (3)	Double acting	Push	0.044 (0.282)	-	1.23 (0.56)	1.85 (0.84)	2.49 (1.13)	3.11 (1.41)	3.73 (1.69)	4.34 (1.97)
			Pull	0.033 (0.212)	-	0.93 (0.42)	1.39 (0.63)	1.85 (0.84)	2.34 (1.06)	2.80 (1.27)	3.26 (1.48)
		Single acting	Push	0.044 (0.282)	-	0.35 (0.16)	0.97 (0.44)	1.59 (0.72)	2.23 (1.01)	2.84 (1.29)	3.46 (1.57)
			Pull	0.033 (0.212)	-	-	0.51 (0.23)	0.97 (0.44)	1.45 (0.66)	1.92 (0.87)	2.38 (1.08)
3/8 (10)	3/16 (5)	Double acting	Push	0.122 (0.785)	1.72 (0.78)	3.46 (1.57)	5.18 (2.35)	6.92 (3.14)	8.64 (3.92)	10.39 (4.71)	12.12 (5.49)
			Pull	0.091 (0.589)	1.28 (0.58)	2.58 (1.17)	3.88 (1.76)	5.18 (2.35)	6.48 (2.94)	7.78 (3.53)	9.08 (4.12)
		Single acting	Push	0.122 (0.785)	-	1.70 (0.77)	3.42 (1.55)	5.16 (2.34)	6.88 (3.12)	8.62 (3.91)	10.34 (4.69)
			Pull	0.091 (0.589)	-	0.82 (0.37)	2.12 (0.96)	3.42 (1.55)	4.72 (2.14)	6.02 (2.73)	7.32 (3.32)
5/8 (16)	1/4 (6)	Double acting	Push	0.312 (2.01)	4.41 (2.0)	8.8 (4.0)	13.2 (6.0)	17.6 (8.0)	22.1 (10.0)	26.4 (12.0)	30.9 (14.0)
			Pull	0.267 (1.72)	3.75 (1.7)	7.5 (3.4)	11.2 (5.1)	15.0 (6.8)	19.0 (8.6)	22.7 (10.3)	26.5 (12.0)
		Single acting	Push	0.312 (2.01)	-	4.0 (1.8)	8.3 (3.8)	12.8 (5.8)	17.2 (7.8)	21.6 (9.8)	26.0 (11.8)
			Pull	0.267 (1.72)	-	2.6 (1.2)	6.6 (3.0)	10.4 (4.7)	14.3 (6.5)	18.1 (8.2)	21.8 (9.9)

SPRING FORCES

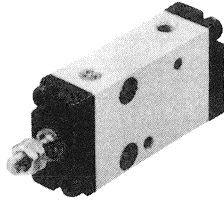
lbs. (kgf)

Bore size in. nom. (mm actual)	Zero stroke		End of stroke
	1/4"	1/2"	1/4", 1/2"
1/4 (6)	0.4 (0.38)	0.6 (0.25)	1.1 (0.51)
3/8 (10)	1.5 (0.69)	0.8 (0.40)	2.2 (0.98)
5/8 (16)	3.7 (1.67)	2.6 (1.18)	4.9 (2.20)

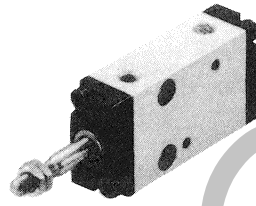
Double acting
(HBDAS)



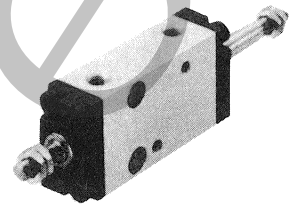
Single acting – Push
(HBSAS)



Single acting – Pull
(HTBAS)



Double Acting – Double End Rod
(HBDADS)



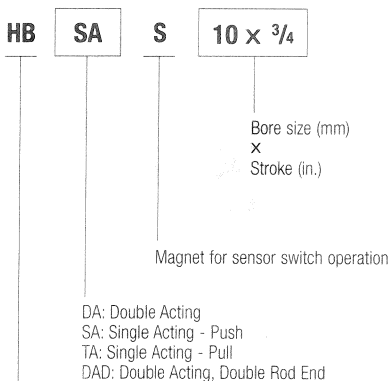
WEIGHT

Operation	Bore in. (nom.) (mm) (actual)	Stroke inch	Added weight								
			Side mount	Double rods	w/one sensor (includes mounting bracket) ZC130, ZC153, CS5T, CS11T	Rod side mounting bracket			Head side mounting bracket		
						Foot	Flange A	Flange B	Foot	Flange A	Flange B
Double acting	1/4 (6)	1/4	0.9 (25)	0.1 (4)	0.7 (20)	0.4 (10)	0.07 (2)	0.07 (2)	0.5 (15)	0.2 (5)	0.2 (5)
		1/2	1.0 (29)								
		3/4	1.1 (32)								
		1	1.3 (36)								
		1 1/4	1.4 (40)								
	3/8 (10)	1/4	1.6 (44)	0.3 (8)	0.7 (20)	0.6 (16)	0.07 (2)	0.07 (2)	0.8 (24)	0.3 (8)	0.3 (8)
		1/2	1.7 (49)								
		3/4	1.9 (54)								
		1	2.1 (59)								
	5/8 (16)	1/4	3.3 (94)	0.6 (16)	0.7 (20)	1.2 (33)	0.4 (10)	0.4 (10)	1.9 (53)	0.6 (17)	0.6 (17)
		1/2	3.6 (103)								
		3/4	3.9 (112)								
1		4.3 (121)									
Single acting push	1/4 (6)	1/4	1.0 (29)	-	0.7 (20)	0.4 (10)	0.07 (2)	0.07 (2)	0.5 (15)	0.2 (5)	0.2 (5)
		1/2	1.2 (33)								
	3/8 (10)	1/4	1.8 (50)	-	0.7 (20)	0.6 (16)	0.1 (4)	0.1 (4)	0.8 (24)	0.3 (8)	0.3 (8)
		1/2	1.9 (55)								
	5/8 (16)	1/4	3.7 (105)	-	0.7 (20)	1.2 (33)	0.4 (10)	0.4 (10)	1.9 (53)	0.6 (17)	0.6 (17)
1/2		4.0 (114)									
Single acting pull	1/4 (6)	1/4	1.1 (31)	-	0.7 (20)	0.4 (10)	0.07 (2)	0.07 (2)	0.5 (15)	0.2 (5)	0.2 (5)
		1/2	1.2 (35)								
	3/8 (10)	1/4	1.9 (53)	-	0.7 (20)	0.6 (16)	0.1 (4)	0.1 (4)	0.8 (24)	0.3 (8)	0.3 (8)
		1/2	2.0 (58)								
	5/8 (16)	1/4	4.1 (115)	-	0.7 (20)	1.2 (33)	0.4 (10)	0.4 (10)	1.9 (53)	0.6 (17)	0.6 (17)
		1/2	4.4 (125)								

Calculation example: Two sensor switches on double acting cylinder HBDAS 10 x 1 = 2.1 oz. + (0.7 x 2) = 3.5 oz. (99 gf).

ORDER EXAMPLE

Cylinders



Humphrey Multi-Mount Series

NOTE 1: For standard stroke availability, see chart this page.

NOTE 2: To order sensor switches, see sensor section. Humphrey Multi-Mount Cylinders have internal magnets as standard, thus they are ready for use with sensor switches.

NOTE 3: Order Rod Nuts separately; see Accessories this page.

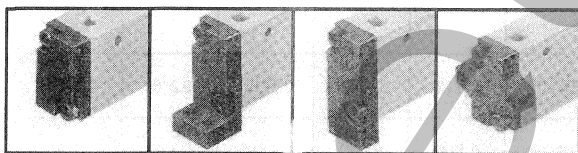
BORE SIZE AND STROKE

in. (mm)

Type of operation	Bore size	Standard strokes	max.
Double acting	1/4 (6)	1/4, 1/2, 3/4, 1, 1 1/4	1 1/4
	3/8 (10)		
	5/8 (16)		
Single - Push Single - Pull	1/4 (6)	1/4, 1/2	1/2
	3/8 (10)		
	5/8 (16)		
Double acting Double rod	1/4 (6)	1/4, 1/2, 3/4, 1, 1 1/4	1 1/4
	3/8 (10)		
	5/8 (16)		

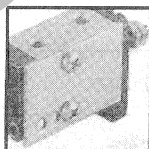
HEAD SIDE MOUNTING BRACKETS AND SHIELD PLATE

Order separately.



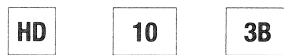
Side Mount Foot Mount Flange A Mount Flange B Mount

Shield Plate



For mounting cylinders with sensor switches in close proximity. Comes with two screws. See page 120.

Mounting Brackets



Type

- 0A: Side Mount End Cap
- 1A: Foot Mount
- 3A: Flange A Mount
- 3B: Flange B Mount

NOTE: Only one sensor switch can be used with Flange B Mount. When Flange B Mount is used on the rod side, mount sensor switch at the head side and vice versa.

Bore size
6: 1/4 (6)
10: 3/8 (10)
16: 5/8 (16)

HD: Rod Side Cap
HB: Rear Head Side Cap

Accessories

- RN-1 Rod Nut for 1/4 (6) bore, bag of two.
- RN-3 Rod Nut for 3/8 (10) bore, bag of two.
- RN-5 Rod Nut for 5/8 (16) bore, bag of two.

SHIELD PLATES (order code)

in. (mm)

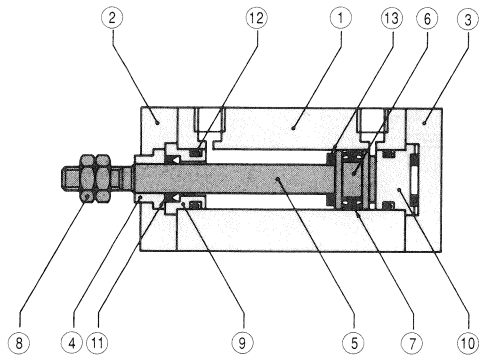
Bore size in. (mm) mm (actual)	Double acting (Including Double end rod)		Single acting-push, pull	
	Strokes			
	<3/4	3/4-1 1/4	1/4	1/2
1/4 (6)	HBS061	HBS062	HBS061	HBS062
3/8 (10)	HBS101	HBS102	HBS101	HBS102
5/8 (16)	HBS161	HBS162	HBS161	HBS162

NOTE 1: Shield plate supplied with two mounting screws.

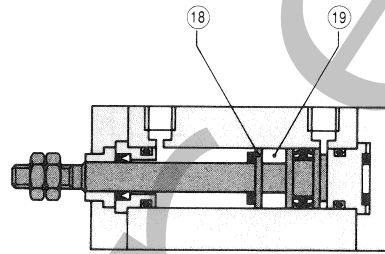
NOTE 2: Shield plates are sold separately.

INNER CONSTRUCTION AND MAJOR PARTS

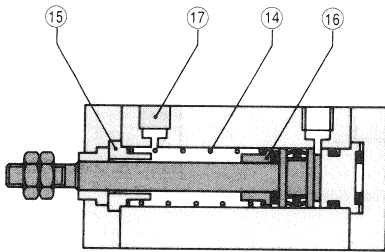
Double acting (HBDAS)



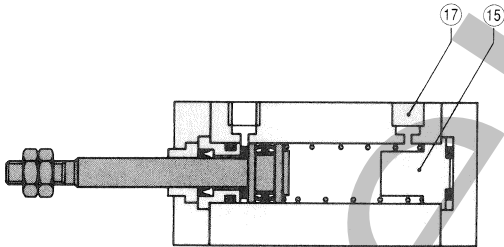
Location of magnet.



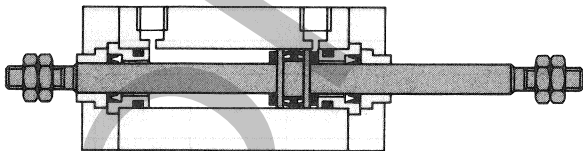
Single acting push type (HBSAS)



Single acting pull type (HBTAS)



Double acting – Double end rod (HBDADS)



MATERIALS OF MAJOR PARTS

No.	Parts	Materials
1	Body	Anodized aluminum
2	Rod cover ^{NOTE}	Anodized aluminum
3	Rod cover ^{NOTE}	Anodized aluminum
4	Head bushing	Oil permeated bronze
5	Piston rod	Stainless steel
6	Piston	Brass
7	Piston packing	Buna
8	Rod end nuts	Hard steel (electroless nickel plated)
9	Packing case	Brass
10	Cap	Polyvinyl acetal
11	Rod packing	Buna
12	O-ring	Buna
13	Bumper	Polyurethane
14	Spring	Hard steel (electroless zinc plated)
15	Spring bearing	Brass
16	Collar	Brass
17	Filter	Porous aluminum
18	Support	Brass
19	Magnet	¹ / ₄ (6): Sintered alloy magnet ³ / ₈ (10), ⁵ / ₈ (16): Resinous magnet

NOTE: Material of Foot Mount is hard steel (black zinc plated). All other mounting brackets are black anodized aluminum.