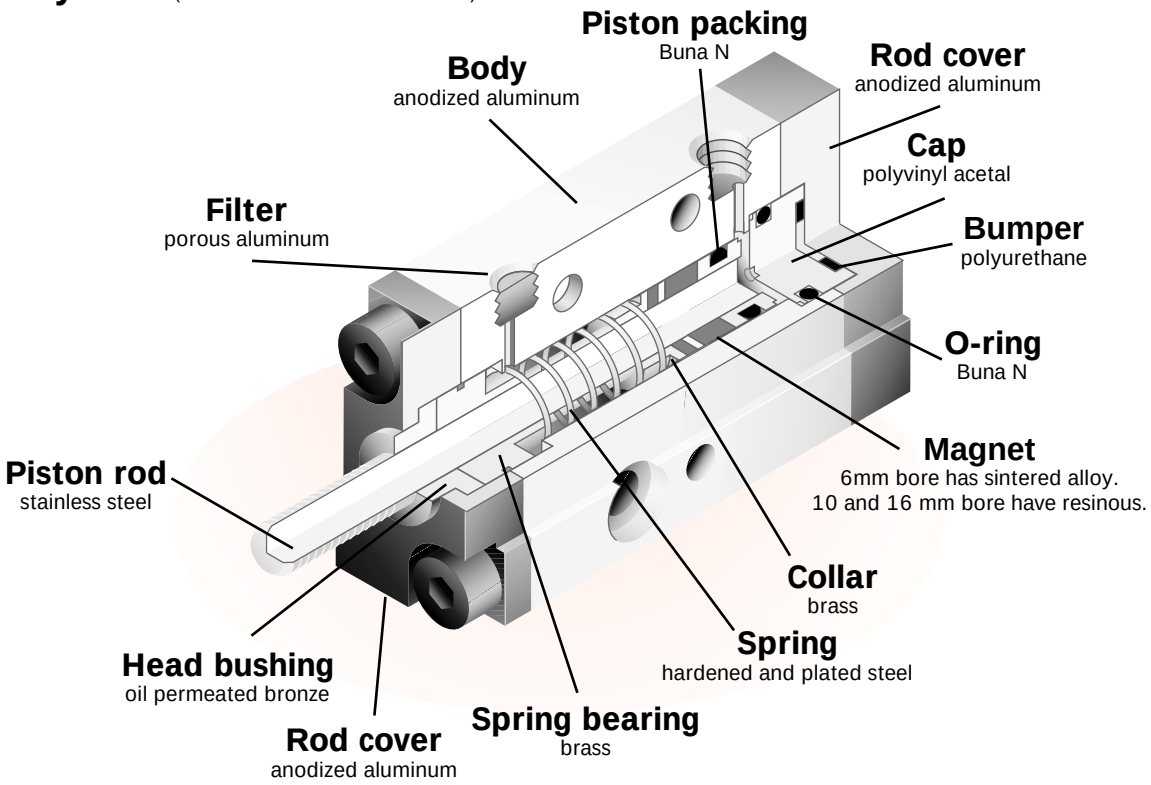
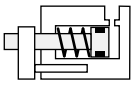
Cutaway and specifications

Cutaway view (HBSAS standard model shown)



See terms and definitions page for more information.

Multi-Mount, non-rotating specifications



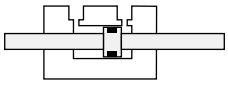
Media	Air			
Temperature ℃ (℉)	0° to 60° (32° to 140°)			
Lubrication	None required. Use only lubrication compatible with materials.			
	Bore mm (in)	**6 (.236)**	**10 (.394)**	**16 (.630)**
Pressure "P" kgf/cm2 (psi)	Double acting	2.0 to 7.0 (30 to 100)	1.5 to 7.0 (20 to 100)	1.0 to 7.0 (20 to 100)
	Double acting, double rod end	2.0 to 7.0 (30 to 100)	1.5 to 7.0 (20 to 100)	1.0 to 7.0 (20 to 100)
	Single acting, push	2.5 to 7.0 (35 to 100)	2.0 to 7.0 (30 to 100)	1.5 to 7.0 (20 to 100)
	Single acting, pull	3.5 to 7.0 (50 to 100)	2.5 to 7.0 (35 to 100)	2.0 to 7.0 (30 to 100)
Piston area "A" mm2 (in2)	Double acting	.212 (.033)	.589 (.091)	1.72 (.267)
	Double acting, double rod end	.212 (.033)	.589 (.091)	1.72 (.267)
	Single acting, push	.282 (.044)	.785 (.122)	2.01 (.312)
	Single acting, pull	.212 (.033)	.589 (.091)	1.72 (.267)
Piston force "F" kgf (lbf)	Single acting	F = [A x P] - Spring force		
	Double rod	F = A x P		
	Double acting, double rod end	F = A x P		

Spring forces "S" kgf (lbf)	**Zero stroke**		**End of stroke**
Bore mm (in) @ stroke	**1/4"**	**1/2"**	**1/4", 1/2"**
6 (.236)	.38 (.84)	.25 (.55)	.51 (1.12)
10 (.394)	.69 (1.52)	.40 (.88)	.98 (2.16)
16 (.630)	1.67 (3.68)	1.18 (2.60)	2.20 (4.85)

Recommended load to be no more than 70% of piston force "F" for normal operation and no more that 50% for high speed cycle rates.

Specifications

Multi-Mount, specifications



Media		Air		
Temperature ℃ (℉)		0° to 60° (32° to 140°)		
Lubrication		None required. Use only lubrication compatible with materials.		
	Bore mm (in)	**6 (.236)**	**10 (.394)**	**16 (.630)**
Pressure "P" kgf/cm2 (psi)	Double acting	1.5 to 7.0 (20 to 100)	1.0 to 7.0 (15 to 100)	0.8 to 7.0 (10 to 100)
	Double acting, double rod end	2.0 to 7.0 (30 to 100)	1.5 to 7.0 (20 to 100)	1.0 to 7.0 (15 to 100)
	Single acting, push	2.0 to 7.0 (30 to 100)	1.5 to 7.0 (20 to 100)	1.5 to 7.0 (20 to 100)
	Single acting, pull	3.0 to 7.0 (45 to 100)	2.0 to 7.0 (30 to 100)	2.0 to 7.0 (30 to 100)
Piston area "A" mm2 (in2)	Double acting	.212 (.033)	.589 (.091)	1.72 (.267)
	Double acting, double rod end	.212 (.033)	.589 (.091)	1.72 (.267)
	Single acting, push	.282 (.044)	.785 (.122)	2.01 (.312)
	Single acting, pull	.212 (.033)	.589 (.091)	1.72 (.267)
Piston force "F" kgf (lbf)	Single acting	F = [A x P] - Spring force		
	Double rod	F = A x P		
	Double acting, double rod end	F = A x P		

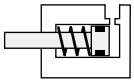
Spring forces "S" kgf (lbf)	**Zero stroke**		**End of stroke**
Bore mm (in) @ stroke	**1/4"**	**1/2"**	**1/4", 1/2"**
6 (.236)	.38 (.84)	.25 (.55)	.51 (1.12)
10 (.394)	.69 (1.52)	.40 (.88)	.98 (2.16)
16 (.630)	1.67 (3.68)	1.18 (2.60)	2.20 (4.85)

Recommended load to be no more than 70% of piston force "F" for normal operation and no more that 50% for high speed cycle rates.

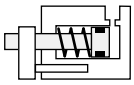
Notes

Stroke and weight charts

Single acting, push (HBSAS) and Single acting, push, non-rotating (HBSALS)



Single acting, push

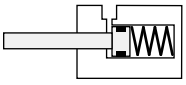


Single acting, push, non-rotating

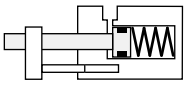
Stroke inches	1/4		1/2		3/4		1		1 1/4	
Bore mm	gm	oz	gm	oz	gm	oz	gm	oz	gm	oz
6	29.0	1.0	33.0	1.2	-	-	-	-	-	-
10	50.0	1.8	55.0	1.9	-	-	-	-	-	-
16	105.0	3.7	114.0	4.0	-	-	-	-	-	-

- Call Humphrey for stroke availability.

Single acting, pull (HBTAS) and Single acting, pull, non-rotating (HBTALS)



Single acting, pull

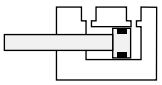


Single acting, pull, non-rotating

Stroke inches	1/4		1/2		3/4		1		1 1/4	
Bore mm	gm	oz	gm	oz	gm	oz	gm	oz	gm	oz
6	31.0	1.1	35.0	1.2	-	-	-	-	-	-
10	53.0	1.9	58.0	2.0	-	-	-	-	-	-
16	115.0	4.1	125.0	4.4	-	-	-	-	-	-

- Call Humphrey for stroke availability.

Double acting (HBDAS) and Double acting, non-rotating (HBDALS)

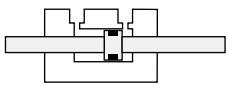


Double acting

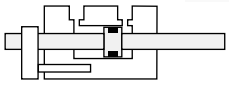
Double acting, non-rotating

Stroke inches	1/4		1/2		3/4		1		1 1/4	
Bore mm	gm	oz	gm	oz	gm	oz	gm	oz	gm	oz
6	25.0	0.9	29.0	1.0	32.0	1.1	36.0	1.3	40.0	1.6
10	44.0	1.6	49.0	1.7	54.0	1.9	59.0	2.1	65.0	2.6
16	94.0	3.3	103.0	3.6	112.0	4.0	121.0	4.3	129.0	4.5

Double acting, double rod end (HBDADS) and Double acting, double rod end, non-rotating (HBDADLS)



Double acting, double rod end



Double acting, double rod end, non-rotating

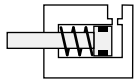
Stroke inches	1/4		1/2		3/4		1		1 1/4		Add for double rods	
Bore mm	gm	oz	gm	oz	gm	oz	gm	oz	gm	oz	gm	oz
6	25.0	0.9	29.0	1.0	32.0	1.1	36.0	1.3	40.0	1.6	4.0	0.1
10	44.0	1.6	49.0	1.7	54.0	1.9	59.0	2.1	65.0	2.6	8.0	0.3
16	94.0	3.3	103.0	3.6	112.0	4.0	121.0	4.3	129.0	4.5	16.0	0.6

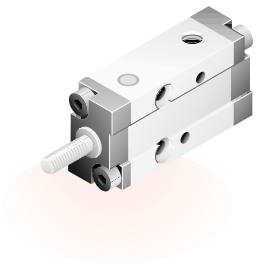
Single acting, push (HBSAS)

Accessories (see pages 15-17)
- Shield plate
- Rod nuts
- Foot mount
- Flange A
- Flange B

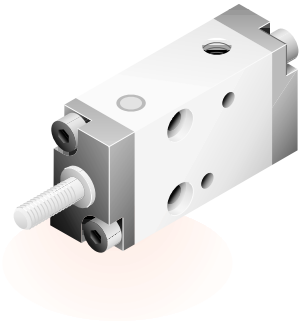
Sensor switches (see Sensor section page 8)

ZC130	CS5T
ZC153	CS11T

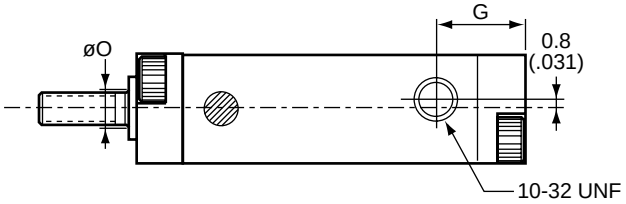


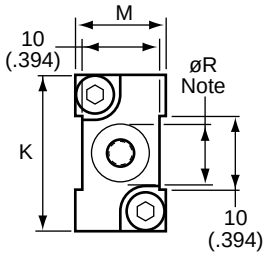


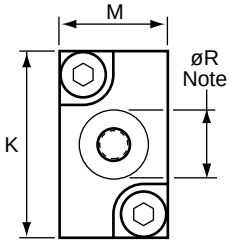
6 mm bore

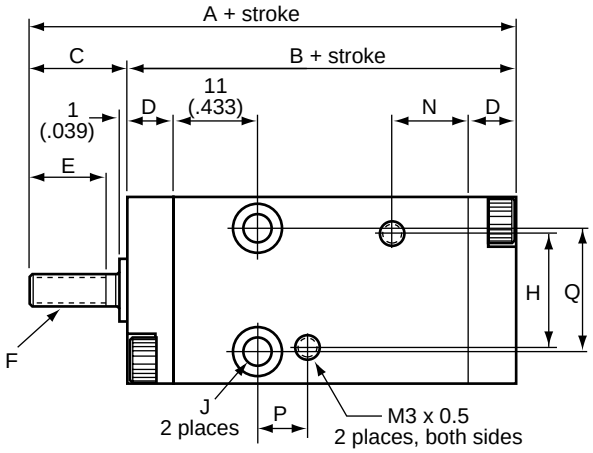


10 mm bore
16 mm bore









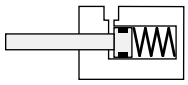
Bore mm (in)	A	B	C	D	E	F	G	H
6 (.236)	48 (1.890)	38 (1.496)	10 (.394)	5 (.197)	7 (.276)	4-40 UNC	10 (.394)	14 (.551)
10 (.394)	53 (2.087)	40 (1.575)	13 (.512)	6 (.236)	10 (.394)	8-32 UNC	11.5 (.453)	15 (.591)
16 (.630)	58 (2.283)	43 (1.693)	15 (.591)	7 (.276)	12 (.472)	10-32 UNF	12.5 (.492)	19 (.748)

Bore mm (in)	J	K	M	N	O	P	Q	R
	size x c'bore x depth							
6 (.236)	3.5 (.138) x 6 (.236) x 4.2 (.165)	20 (.787)	12 (.472)	10.5 (.413)	3 (.118)	6.5 (.256)	12 (.472)	6 (.236)
10 (.394)	3.5 (.138) x 6 (.236) x 3.2 (.126)	24 (.945)	14 (.551)	10.5 (.413)	5 (.197)	6.5 (.256)	16 (.630)	8 (.315)
16 (.630)	4.5 (.177) x 7.6 (.299) x 4.2 (.165)	33 (1.299)	20 (.787)	10.5 (.413)	6 (.236)	7.5 (.295)	24 (.945)	10 (.394)

Tolerances
Note R
+0 +(0)
-.05 (-.002)

General note
6 mm bore is 1/4 inch nominal bore
10 mm bore is 3/8 inch nominal bore
16 mm bore is 5/8 inch nominal bore

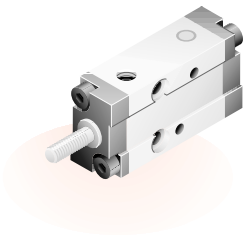
Multi-Mount
Single acting, pull (HBTAS)

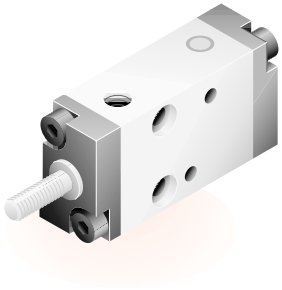


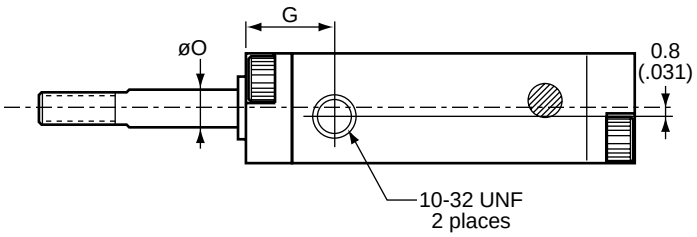
Accessories (see pages 15-17)
- Shield plate
- Rod nuts
- Foot mount
- Flange A
- Flange B

Sensor switches (see Sensor section page 8)

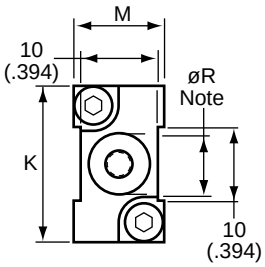
ZC130	CS5T
ZC153	CS11T



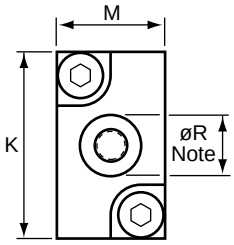


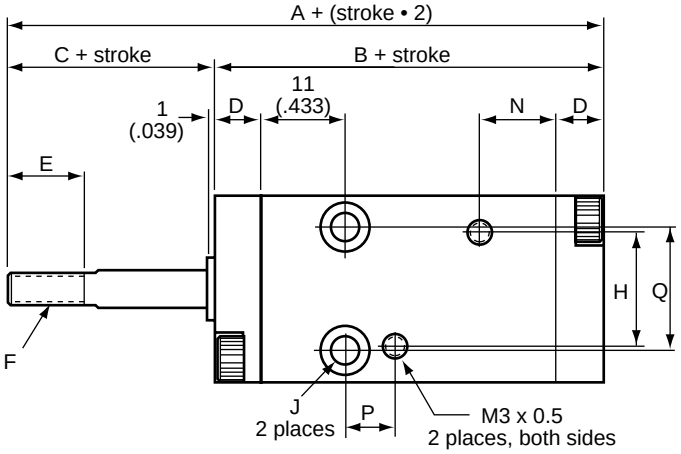


6 mm bore



10 mm bore
16 mm bore





Bore mm (in)	A	B	C	D	E	F	G	H
6 (.236)	48 (1.890)	38 (1.496)	10 (.394)	5 (.197)	7 (.276)	4-40 UNC	10 (.394)	14 (.551)
10 (.394)	53 (2.087)	40 (1.575)	13 (.512)	6 (.236)	10 (.394)	8-32 UNC	11.5 (.453)	15 (.591)
16 (.630)	58 (2.283)	43 (1.693)	15 (.591)	7 (.276)	12 (.472)	10-32 UNF	12.5 (.492)	19 (.748)

Bore mm (in)	J	K	M	N	O	P	Q	R
	size x c'bore x depth							
6 (.236)	3.5 (.138) x 6 (.236) x 4.2 (.165)	20 (.787)	12 (.472)	10.5 (.413)	3 (.118)	6.5 (.256)	12 (.472)	6 (.236)
10 (.394)	3.5 (.138) x 6 (.236) x 3.2 (.126)	24 (.945)	14 (.551)	10.5 (.413)	5 (.197)	6.5 (.256)	16 (.630)	8 (.315)
16 (.630)	4.5 (.177) x 7.6 (.299) x 4.2 (.165)	33 (1.299)	20 (.787)	10.5 (.413)	6 (.236)	7.5 (.295)	24 (.945)	10 (.394)

General note
6 mm bore is 1/4 inch nominal bore
10 mm bore is 3/8 inch nominal bore
16 mm bore is 5/8 inch nominal bore

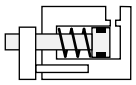
Tolerances
Note R
+0 +(0)
-.05 (-.002)

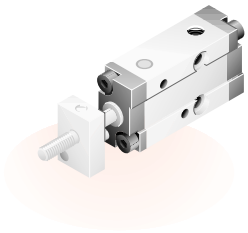
Single acting, push, non-rotating (HBSALS)

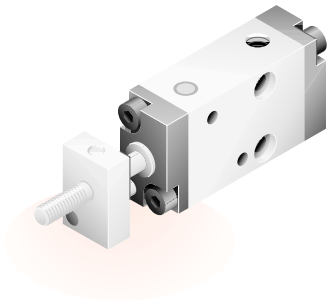
Accessories (see pages 15-17)
- Shield plate
- Rod nuts
- Foot mount
- Flange A
- Flange B

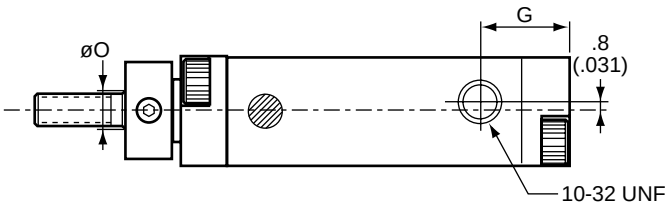
Sensor switches (see Sensor section page 8)

ZC130	CS5T
ZC153	CS11T

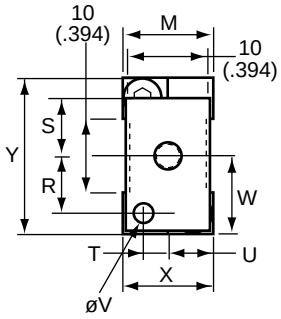




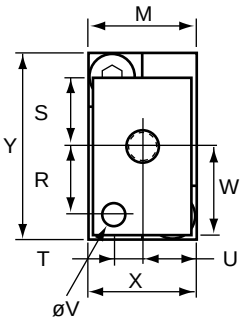


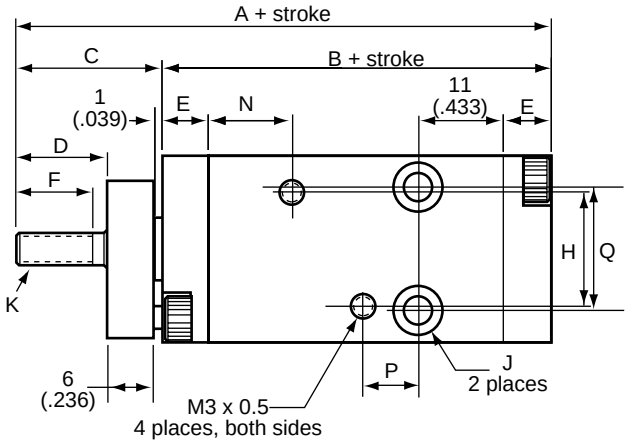


6 mm bore



10 mm bore
16 mm bore





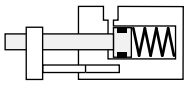
Bore mm (in)	A	B	C	D	E	F	G	H
6 (.236)	53 (2.087)	38 (1.496)	15 (.591)	7.5 (.295)	5 (.197)	7 (.276)	10 (.394)	14 (.551)
10 (.394)	58 (2.283)	40 (1.575)	18 (.709)	10.5 (.413)	6 (.236)	10 (.394)	11.5 (.453)	15 (.591)
16 (.630)	63 (2.480)	43 (1.693)	20 (.787)	12.5 (.492)	7 (.276)	12 (.472)	12.5 (.492)	19 (.748)

Bore mm (in)	K	J	M	N	O	P
		size x c'bore x depth				
6 (.236)	4-40 UNC	3.5 (.138) x 6 (.236) x 4.2 (.165)	12 (.472)	10.5 (.413)	3 (.118)	6.5 (.256)
10 (.394)	8-32 UNC	3.5 (.138) x 6 (.236) x 3.2 (.126)	14 (.551)	10.5 (.413)	5 (.197)	6.5 (.256)
16 (.630)	10-32 UNF	4.5 (.177) x 7.6 (.299) x 4.2 (.165)	20 (.787)	10.5 (.413)	6 (.236)	7.5 (.295)

Bore mm (in)	Q	R	S	T	U	V	W	X	Y
6 (.236)	12 (.472)	7.5 (.295)	7.5 (.295)	3.5 (.138)	5.5 (.217)	2.5 (.098)	9.5 (.374)	11 (.433)	20 (.787)
10 (.394)	16 (.630)	9 (.354)	8.5 (.335)	4 (.157)	6.5 (.256)	3 (.118)	11.5 (.453)	13 (.512)	24 (.945)
16 (.630)	24 (.945)	12.5 (.492)	9 (.354)	6 (.236)	9.5 (.374)	4 (.157)	16 (.630)	19 (.748)	33 (1.299)

General note
6 mm bore is 1/4 inch nominal bore
10 mm bore is 3/8 inch nominal bore
16 mm bore is 5/8 inch nominal bore

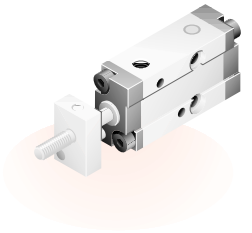
Multi-Mount
Single acting, pull, non-rotating (HBTALS)



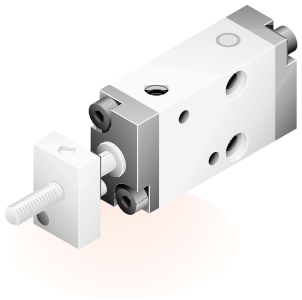
Accessories (see pages 15-17)
- Shield plate
- Rod nuts
- Foot mount
- Flange A
- Flange B

Sensor switches (see Sensor section page 8)

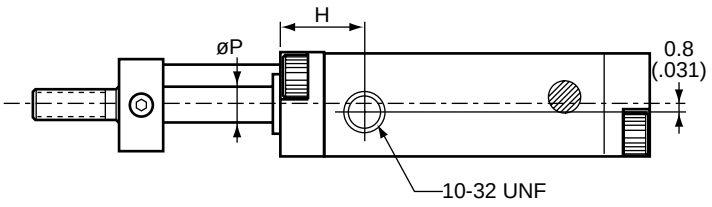
ZC130	CS5T
ZC153	CS11T

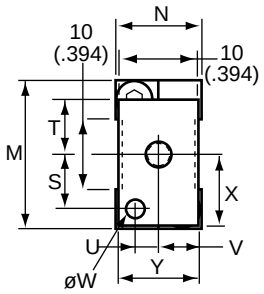


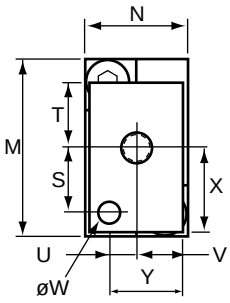
6 mm bore

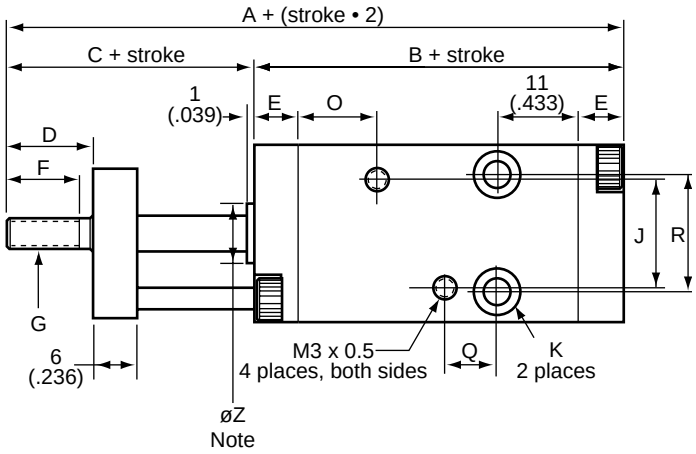


10 mm bore
16 mm bore









Bore mm (in)	A	B	C	D	E	F	G	H	J
6 (.236)	53 (2.087)	38 (1.496)	15 (.591)	7.5 (.295)	5 (.197)	7 (.276)	4-40 UNC	10 (.394)	14 (.551)
10 (.394)	58 (2.283)	40 (1.575)	18 (.709)	10.5 (.413)	6 (.236)	10 (.394)	8-32 UNC	11.5 (.453)	15 (.591)
16 (.630)	63 (2.480)	43 (1.693)	20 (.787)	12.5 (.492)	7 (.276)	12 (.472)	10-32 UNF	12.5 (.492)	19 (.748)

Bore mm (in)	K	M	N	O	P	Q	R
	size x c'bore x depth						
6 (.236)	3.5 (.138) x 6 (.236) x 4.2 (.165)	20 (.787)	12 (.472)	10.5 (.416)	3 (.118)	6.5 (.256)	12 (.472)
10 (.394)	3.5 (.138) x 6 (.236) x 3.2 (.126)	24 (.945)	14 (.551)	10.5 (.416)	5 (.197)	6.5 (.256)	16 (.630)
16 (.630)	4.5 (.177) x 7.6 (.299) x 4.2 (.165)	33 (1.299)	20 (.787)	10.5 (.416)	6 (.236)	7.5 (.295)	24 (.945)

Bore mm (in)	S	T	U	V	W	X	Y	Z
6 (.236)	7.5 (.295)	7.5 (.295)	3.5 (.138)	5.5 (.217)	2.5 (.098)	9.5 (.374)	11 (.433)	6 (.236)
10 (.394)	9 (.354)	8.5 (.335)	4 (.157)	6.5 (.256)	3 (.118)	11.5 (.453)	13 (.512)	8 (.315)
16 (.630)	12.5 (.492)	9 (.354)	6 (.236)	9.5 (.374)	4 (.157)	16 (.630)	19 (.748)	10 (.394)

General note
6 mm bore is 1/4 inch nominal bore
10 mm bore is 3/8 inch nominal bore
16 mm bore is 5/8 inch nominal bore

Tolerances
Note Z
+0 +(0)
-.05 (-.002)

Multi-Mount
How to Order

Cylinder

Model	Type	Operation		Bore	Stroke
HB			–	x	

HB	**DA**	**Blank**	**S**	**6**	6 mm (.236 inch) (1/4 inch nominal diameter)	Maximum strokes
Multi-mount	Double acting	Standard	Magnet	**10**	10 mm (.394 inch) (3/8 inch nominal diameter)	**DA** 1 1/4 inch
	SA Single acting, spring return, push	**L** Non-rotate		**16**	16 mm (.630 inch) (5/8 inch nominal diameter)	**SA** 1/2 inch
	TA Single acting, spring return, pull					**TA** 1/2 inch
	DAD Double acting, double end rod					**DAD** 1 1/4 inch

Example: HBDALS–6x3/4

Accessories
Mounting bracket

Model	Bore	Type
HD –	–	

HD Rod end (has hole for rod)	**B6** 6 mm (.236 inch) (1/4 inch nominal diameter)	**1A** Foot mount (not available for non-rotating rod end)
HB Head end (does not have hole for rod)	**B10** 10 mm (.394 inch) (3/8 inch nominal diameter)	**3A** Flange A mount
HL Non-rotating rod end	**B16** 16 mm (.630 inch) (5/8 inch nominal diameter)	**3B** Flange B mount

Example: HD-B6–1A

Model	Size
RN –	

RN Rod nut	**1** 6 mm (.236) 1/4 inch nominal diameter bore
	3 10 mm (.394) 3/8 inch nominal diameter bore
	5 16 mm (.630) 5/8 inch nominal diameter bore

Example: RN–3

Shield plate

Model
HBS

HBS Shield plate

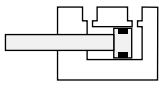
Sensor
See Sensor section at back of catalog for order information.

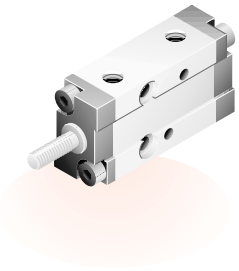
Double acting (HBDAS)

Accessories (see pages 15-17)
- Shield plate
- Rod nuts
- Foot mount
- Flange A
- Flange B

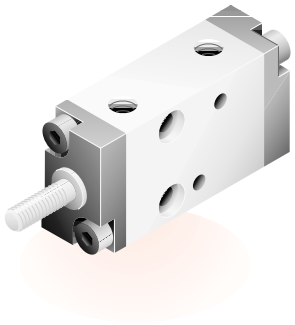
Sensor switches (see Sensor section page 8)

ZC130	CS5T
ZC153	CS11T

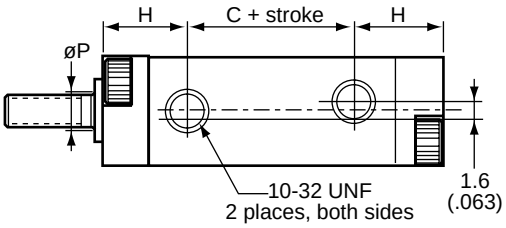


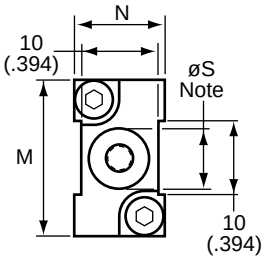


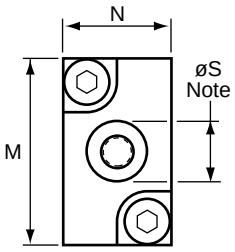
6 mm bore

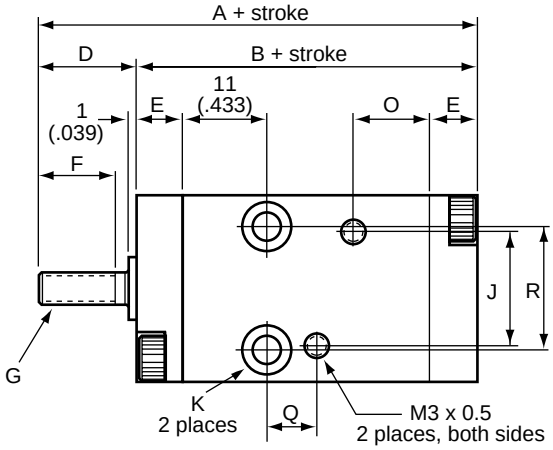


10 mm bore
16 mm bore









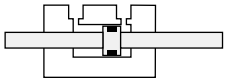
Bore mm (in)	A	B	C	D	E	F	G	H	J
6 (.236)	43 (1.693)	33 (1.299)	13 (.512)	10 (.394)	5 (.197)	7 (.276)	4-40 UNC	10 (.394)	14 (.551)
10 (.394)	48 (1.890)	35 (1.378)	12 (.472)	13 (.512)	6 (.236)	10 (.394)	8-32 UNC	11.5 (.453)	15 (.591)
16 (.630)	53 (2.087)	38 (1.496)	13 (.512)	15 (.591)	7 (.276)	12 (.472)	10-32 UNC	12.5 (.492)	19 (.748)

Bore mm (in)	K	M	N	O	P	Q	R	S
	size x c'bore x depth							
6 (.236)	3.5 (.138) x 6 (.236) x 4.2 (165)	20 (.787)	12 (.472)	10.5 (.413)	3 (.118)	6.5 (.256)	12 (.472)	6 (.236)
10 (.394)	3.5 (.138) x 6 (.236) x 3.2 (.126)	24 (.945)	14 (.551)	10.5 (.413)	5 (.197)	6.5 (.256)	16 (.630)	8 (.315)
16 (.630)	4.5 (.177) x 7.6 (.299) x 4.2 (.165)	33 (1.299)	20 (.787)	10.5 (.413)	6 (.236)	7.5 (.295)	24 (.945)	10 (.394)

Tolerances
Note W
+0 +(0)
-.05 (-.002)

General note
6 mm bore is 1/4 inch nominal bore
10 mm bore is 3/8 inch nominal bore
16 mm bore is 5/8 inch nominal bore

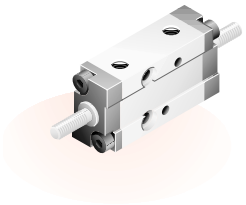
Double acting, double rod end (HBDADS)



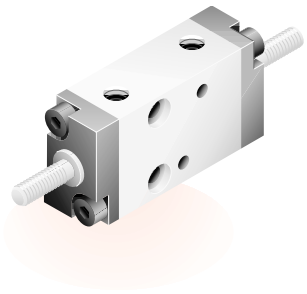
Accessories (see pages 15-17)
- Shield plate
- Rod nuts
- Foot mount
- Flange A
- Flange B

Sensor switches (see Sensor section page 8)

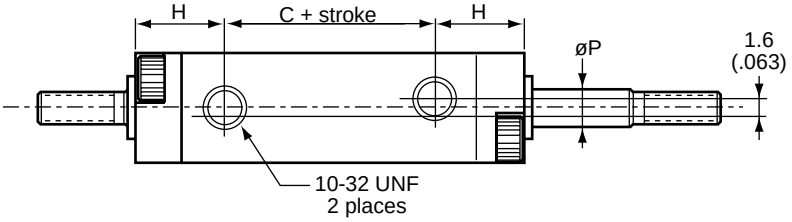
ZC130	CS5T
ZC153	CS11T

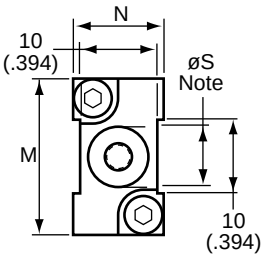


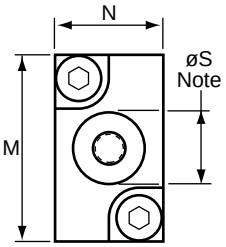
6 mm bore

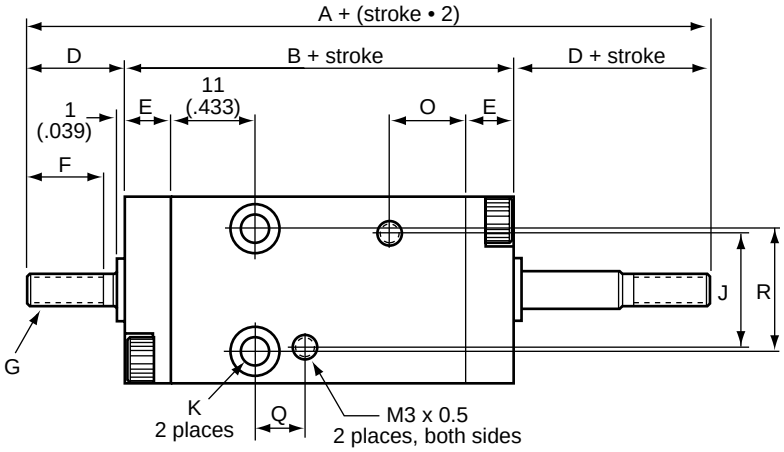


10 mm bore
16 mm bore









Bore mm (in)	A	B	C	D	E	F	G	H	J
6 (.236)	53 (2.087)	33 (1.299)	13 (.512)	10 (.394)	5 (.197)	7 (.276)	4-40 UNC	10 (.394)	14 (.551)
10 (.394)	61 (2.402)	35 (1.378)	12 (.472)	13 (.512)	6 (.236)	10 (.394)	8-32 UNC	11.5 (.453)	15 (.591)
16 (.630)	68 (2.677)	38 (1.496)	13 (.512)	15 (.591)	7 (.276)	12 (.472)	10-32 UNF	12.5 (.492)	19 (.748)

Bore mm (in)	K	M	N	O	P	Q	R	S
	size x c'bore x depth							
6 (.236)	3.5 (.138) x 6 (.236) x 4.2 (.165)	20 (.787)	12 (.472)	10.5 (.413)	3 (.118)	6.5 (.256)	12 (.472)	6 (.236)
10 (.394)	3.5 (.138) x 6 (.236) x 3.2 (.126)	24 (.945)	14 (.551)	10.5 (.413)	5 (.197)	6.5 (.256)	16 (.630)	8 (.315)
16 (.630)	4.5 (.177) x 7.6 (.299) x 4.2 (.165)	33 (1.299)	20 (.787)	10.5 (.413)	6 (.236)	7.5 (.295)	24 (.945)	10 (.394)

General note
6 mm bore is 1/4 inch nominal bore
10 mm bore is 3/8 inch nominal bore
16 mm bore is 5/8 inch nominal bore

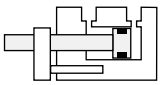
Tolerances
Note S
+0 +(0)
-.05 (-.002)

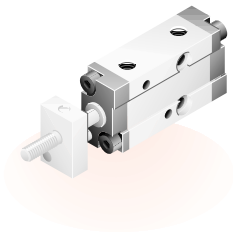
Double acting, non-rotating (HBDALS)

Accessories (see page 15-17)
- Shield plate
- Rod nuts
- Foot mount
- Flange A
- Flange B

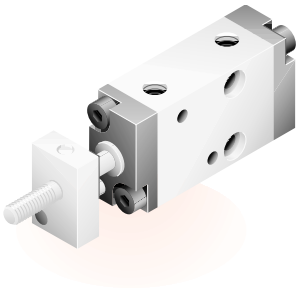
Sensor switches (see Sensor section page 8)

ZC130	CS5T
ZC153	CS11T

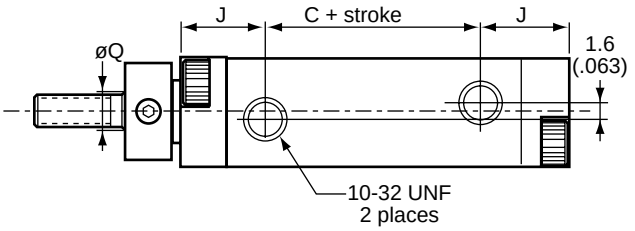


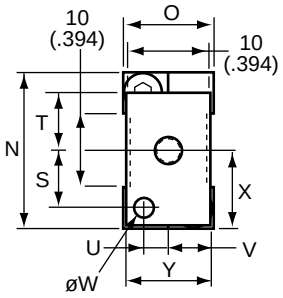


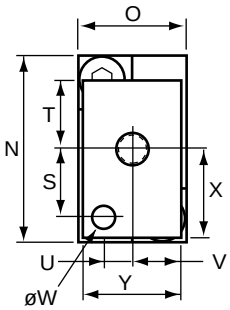
6 mm bore

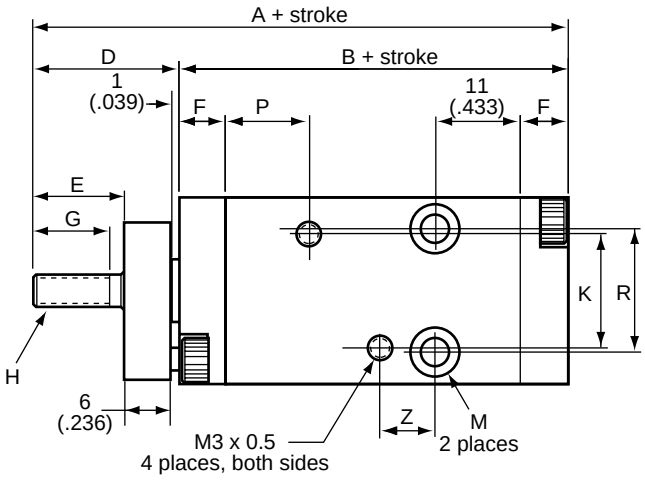


10 mm bore
16 mm bore









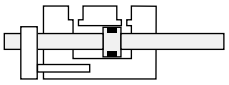
Bore mm (in)	A	B	C	D	E	F	G	H	J
6 (.236)	48 (1.890)	33 (1.299)	13 (.512)	15 (.591)	7.5 (.295)	5 (.197)	7 (.276)	4-40 UNC	10 (.394)
10 (.394)	53 (2.087)	35 (1.378)	12 (.472)	18 (.709)	10.5 (.413)	6 (.236)	10 (.394)	8-32 UNC	11.5 (.453)
16 (.630)	58 (2.283)	38 (1.496)	13 (.512)	20 (.787)	12.5 (.492)	7 (.276)	12 (.472)	10-32 UNF	12.5 (.492)

Bore mm (in)	K	M	N	O	P	Q	R
		size x c'bore x depth					
6 (.236)	14 (.551)	3.5 (.138) x 6 (.236) x 4.2 (.165)	20 (.787)	12 (.472)	10.5 (.413)	3 (.118)	12 (.472)
10 (.394)	15 (.591)	3.5 (.138) x 6 (.236) x 3.2 (.126)	24 (.945)	14 (.551)	10.5 (.413)	5 (.197)	16 (.630)
16 (.630)	19 (.748)	4.5 (.177) x 7.6 (.299) x 4.2 (.165)	33 (1.299)	20 (.787)	10.5 (.413)	6 (.236)	24 (.945)

Bore mm (in)	S	T	U	V	W	X	Y	Z
6 (.236)	7.5 (.295)	7.5 (.295)	3.5 (.138)	5.5 (.217)	2.5 (.098)	9.5 (.374)	11 (.433)	6.5 (.256)
10 (.394)	9 (.354)	8.5 (.335)	4 (.157)	6.5 (.256)	3 (.118)	11.5 (.453)	13 (.512)	6.5 (.256)
16 (.630)	12.5 (.492)	9 (.354)	6 (.236)	9.5 (.374)	4 (.157)	16 (.630)	19 (.748)	7.5 (.295)

General note
6 mm bore is 1/4 inch nominal bore
10 mm bore is 3/8 inch nominal bore
16 mm bore is 5/8 inch nominal bore

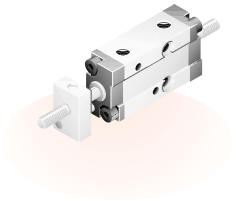
Double acting, double rod end, non-rotating (HBDADLS)



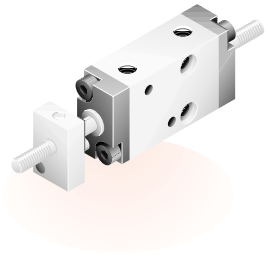
Accessories (see pages 15-17)
- Shield plate
- Rod nuts
- Foot mount
- Flange A
- Flange B

Sensor switches (see Sensor section page 8)

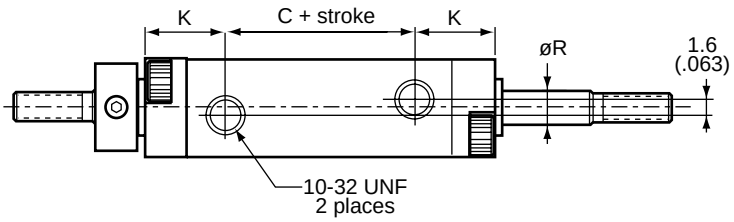
ZC130	CS5T
ZC153	CS11T

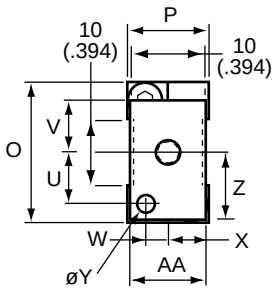


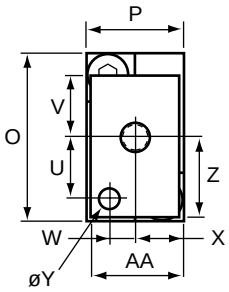
6 mm bore

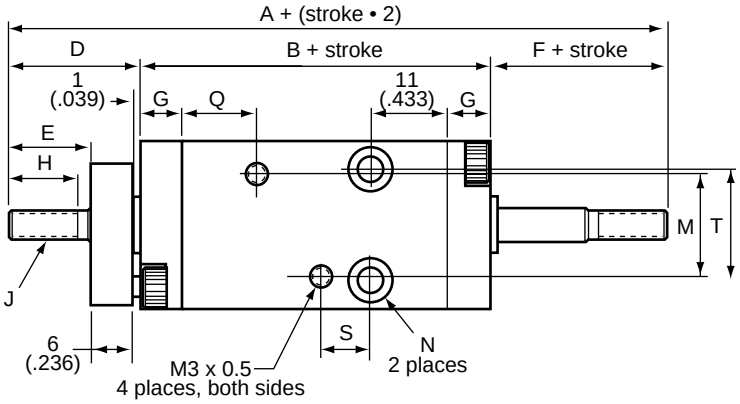


10 mm bore
16 mm bore









Bore mm (in)	A	B	C	D	E	F	G	H	J
6 (.236)	58 (2.283)	33 (1.299)	13 (.512)	15 (.591)	7.5 (.295)	10 (.394)	5 (.197)	7 (.276)	4-40 UNC
10 (.394)	66 (2.598)	35 (1.378)	12 (.472)	18 (.709)	10.5 (.413)	13 (.512)	6 (.236)	10 (.394)	8-32 UNC
16 (.630)	73 (2.874)	38 (1.496)	13 (.512)	20 (.787)	12.5 (.492)	15 (.591)	7 (.276)	12 (.472)	10-32 UNF

Bore mm (in)	K	M	N	O	P	Q	R
			size x c'bore x depth				
6 (.236)	10 (.394)	14 (.551)	3.5 (.138) x 6 (.236) x 4.2 (.165)	20 (.787)	12 (.472)	10.5 (.413)	3 (.118)
10 (.394)	11.5 (.453)	15 (.591)	3.5 (.138) x 6 (.236) x 3.2 (.126)	24 (.945)	14 (.551)	10.5 (.413)	5 (.197)
16 (.630)	12.5 (.492)	19 (.748)	4.5 (.177) x 7.6 (.299) x 4.2 (.165)	33 (1.299)	20 (.787)	10.5 (.413)	6 (.236)

Bore mm (in)	S	T	U	V	W	X	Y	Z	AA
6 (.236)	6.5 (.256)	12 (.472)	7.5 (.295)	7.5 (.295)	3.5 (.138)	5.5 (.217)	2.5 (.098)	9.5 (.374)	11 (.433)
10 (.394)	6.5 (.256)	16 (.630)	9 (.354)	8.5 (.335)	4 (.157)	6.5 (.256)	3 (.118)	11.5 (.453)	13 (.512)
16 (.630)	7.5 (.295)	24 (.945)	12.5 (.492)	9 (.354)	6 (.236)	9.5 (.374)	4 (.157)	16 (.630)	19 (.748)

General note
6 mm bore is 1/4 inch nominal bore
10 mm bore is 3/8 inch nominal bore
16 mm bore is 5/8 inch nominal bore

Multi-Mount
How to Order

Cylinder

Model	Type	Operation		Bore	Stroke
HB			–	x	

HB	**DA**	**Blank**	**S**	**6**	6 mm (.236 inch) (1/4 inch nominal diameter)	Maximum strokes
Multi-mount	Double acting	Standard	Magnet	**10**	10 mm (.394 inch) (3/8 inch nominal diameter)	**DA** 1 1/4 inch
	SA Single acting, spring return, push	**L** Non-rotate		**16**	16 mm (.630 inch) (5/8 inch nominal diameter)	**SA** 1/2 inch
	TA Single acting, spring return, pull					**TA** 1/2 inch
	DAD Double acting, double end rod					**DAD** 1 1/4 inch

Example: HBDALS–6x3/4

Accessories
Mounting bracket

Model	Bore	Type
HD –	–	

HD Rod end (has hole for rod)	**B6** 6 mm (.236 inch) (1/4 inch nominal diameter)	**1A** Foot mount (not available for non-rotating rod end)
HB Head end (does not have hole for rod)	**B10** 10 mm (.394 inch) (3/8 inch nominal diameter)	**3A** Flange A mount
HL Non-rotating rod end	**B16** 16 mm (.630 inch) (5/8 inch nominal diameter)	**3B** Flange B mount

Example: HD-B6–1A

Model	Size
RN –	

RN Rod nut	**1** 6 mm (.236) 1/4 inch nominal diameter bore
	3 10 mm (.394) 3/8 inch nominal diameter bore
	5 16 mm (.630) 5/8 inch nominal diameter bore

Example: RN–3

Shield plate

Model
HBS

HBS Shield plate

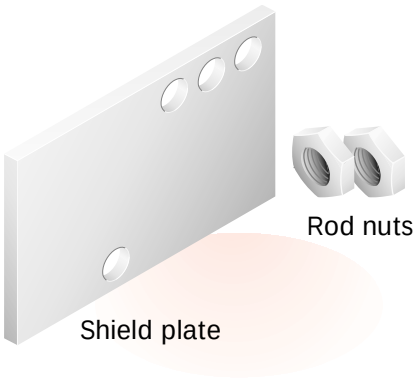
Sensor
See Sensor section at back of catalog for order information.

Shield plate

Shield plates are available for close-proximity mounting of cylinders equipped with sensor switches. The shield plate prevents internal cylinder magnets from unintentional actuation of sensor switches on adjacent cylinders.

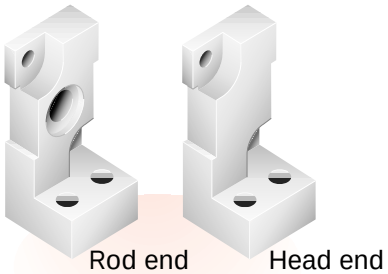
Rod nuts

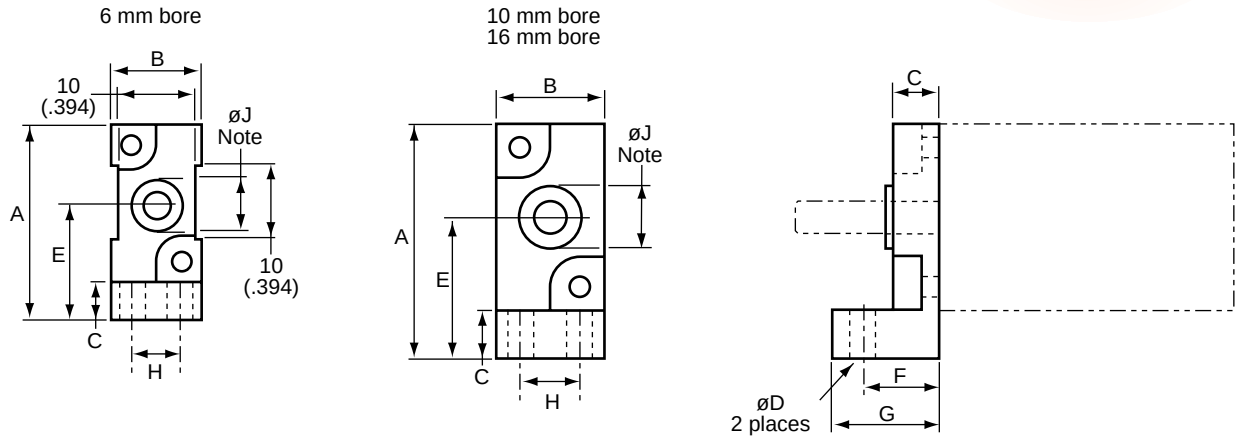
Rod nuts. Order separately.



Foot mount

Foot mounts are available for both ends of the cylinder: rod end and head end. When using foot mounts on a double end rod model, use two rod end foot mounts. Non-rotating models cannot use a rod end foot mount.





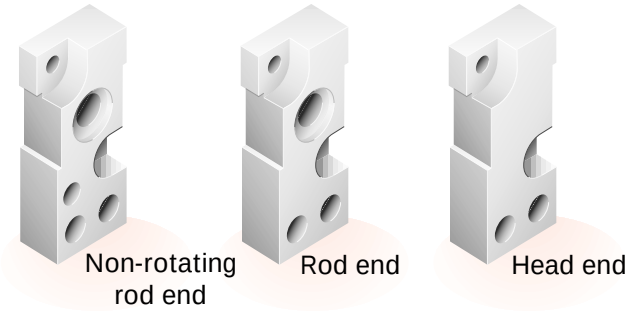
Bore mm (in)	A	B	C	D	E	F	G	H	J
6 (.236)	26 (1.024)	12 (.472)	5 (.197)	3.5 (.138)	16 (.630)	9 (.354)	13 (.512)	6 (.236)	6 (.236)
10 (.394)	31 (1.220)	14 (.551)	6 (.236)	3.5 (.138)	19 (.748)	10 (.394)	14 (.551)	8 (.315)	10 (.394)
16 (.630)	41.5 (1.634)	20 (.787)	7 (.276)	4.5 (.177)	25 (.984)	12 (.472)	17 (.669)	12 (.472)	16 (.630)

Tolerances
Note J
+0 +(0)
-.05 -(.002)

General note
6 mm bore is 1/4 inch nominal bore
10 mm bore is 3/8 inch nominal bore
16 mm bore is 5/8 inch nominal bore

* Head end mounts do not have dimension E or center hole.

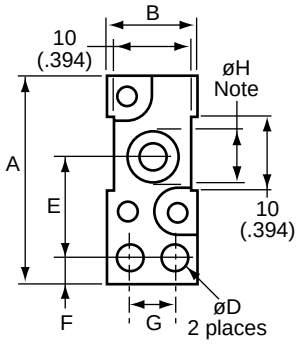
Accessories



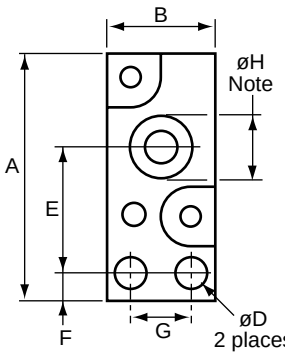
Flange A mount

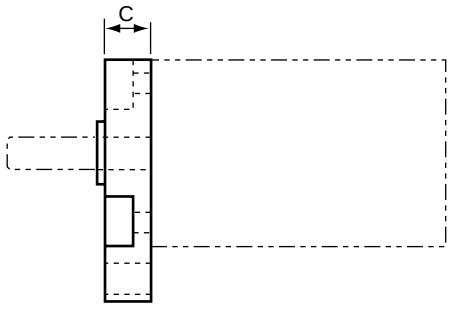
Flange A mounts are available for both ends of the cylinder: rod end and head end. When using the Flange A mount on a double end rod model, use two rod end flange mounts. The non-rotating rod end mount is for non-rotating cylinders only. Use the head end mount for any cylinder head without rod.

6 mm bore



10 mm bore
16 mm bore





Bore mm (in)	A	B	C	D	E	F	G	H
6 (.236)	27.5 (1.083)	12 (.472)	5 (.197)	3.5 (.138)	14 (.551)	3.5 (.138)	6 (.236)	6 (.236)
10 (.394)	31.5 (1.240)	14 (.551)	6 (.236)	3.5 (.138)	16 (.630)	3.5 (.138)	8 (.315)	10 (.394)
16 (.630)	42 (1.654)	20 (.787)	7 (.276)	4.5 (.177)	21 (.827)	4.5 (.177)	12 (.472)	16 (.630)

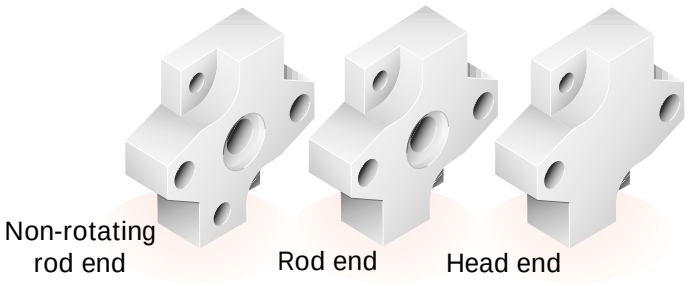
General note
6 mm bore is 1/4 inch nominal bore
10 mm bore is 3/8 inch nominal bore
16 mm bore is 5/8 inch nominal bore

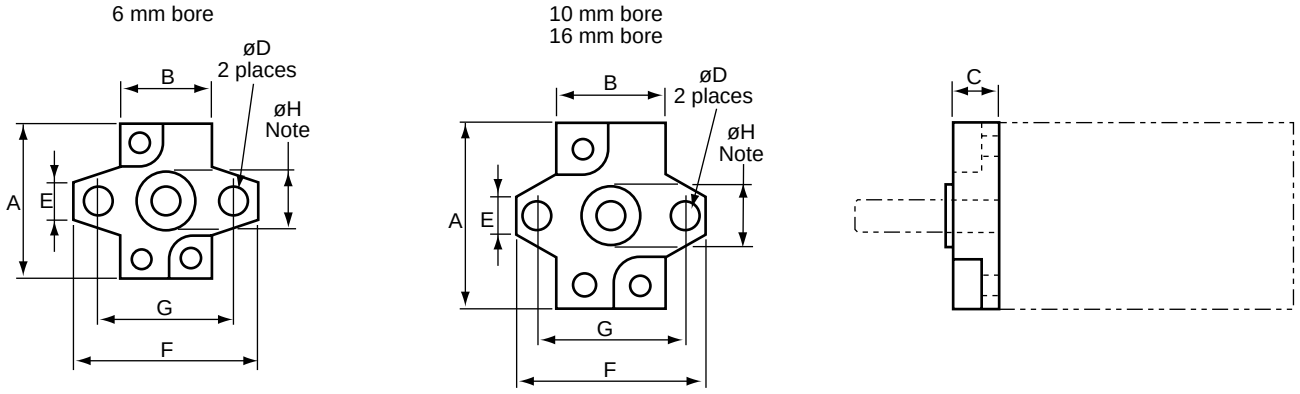
Tolerances
Note H
+0 +(0)
-.05 -(.002)

Guide pin hole is on non-rotating models only. Head end mounts do not have dimension E or center hole.

Flange B mount

Flange B mounts are available for both ends of the cylinder: rod end and head end. When using the Flange B mount on a double end rod model, use two rod end flange mounts. The non-rotating rod end mounts is for non-rotating cylinders only. Use the head end for any cylinder head without a rod.





Bore mm (in)	A	B	C	D	E	F	G	H
6 (.236)	20 (.787)	12 (.472)	5 (.197)	3.5 (.138)	5 (.197)	24 (.945)	18 (.709)	6 (.236)
10 (.394)	24 (.945)	14 (.551)	6 (.236)	3.5 (.138)	5 (.197)	26 (1.024)	20 (.787)	10 (.394)
16 (.630)	33 (1.299)	20 (.787)	7 (.276)	4.5 (.177)	6 (.236)	36 (1.417)	28 (1.102)	16 (.630)

Tolerances
Note H
+0 +(0)
-.05 -(.002)

General note
6 mm bore is 1/4 inch nominal bore
10 mm bore is 3/8 inch nominal bore
16 mm bore is 5/8 inch nominal bore

Guide pin hole is on non-rotating models only. Head end mounts do not have dimension E or center hole.

Multi-Mount
How to Order

Cylinder

Model	Type	Operation		Bore	Stroke
HB			–	x	

HB	**DA**	**Blank**	**S**	**6**	6 mm (.236 inch) (1/4 inch nominal diameter)	Maximum strokes
Multi-mount	Double acting	Standard	Magnet	**10**	10 mm (.394 inch) (3/8 inch nominal diameter)	**DA** 1 1/4 inch
	SA Single acting, spring return, push	**L** Non-rotate		**16**	16 mm (.630 inch) (5/8 inch nominal diameter)	**SA** 1/2 inch
	TA Single acting, spring return, pull					**TA** 1/2 inch
	DAD Double acting, double end rod					**DAD** 1 1/4 inch

Example: HBDALS–6x3/4

Accessories
Mounting bracket

Model	Bore	Type
HD –	–	

HD Rod end (has hole for rod)	**B6** 6 mm (.236 inch) (1/4 inch nominal diameter)	**1A** Foot mount (not available for non-rotating rod end)
HB Head end (does not have hole for rod)	**B10** 10 mm (.394 inch) (3/8 inch nominal diameter)	**3A** Flange A mount
HL Non-rotating rod end	**B16** 16 mm (.630 inch) (5/8 inch nominal diameter)	**3B** Flange B mount

Example: HD-B6–1A

Model	Size
RN –	

RN Rod nut	**1** 6 mm (.236) 1/4 inch nominal diameter bore
	3 10 mm (.394) 3/8 inch nominal diameter bore
	5 16 mm (.630) 5/8 inch nominal diameter bore

Example: RN–3

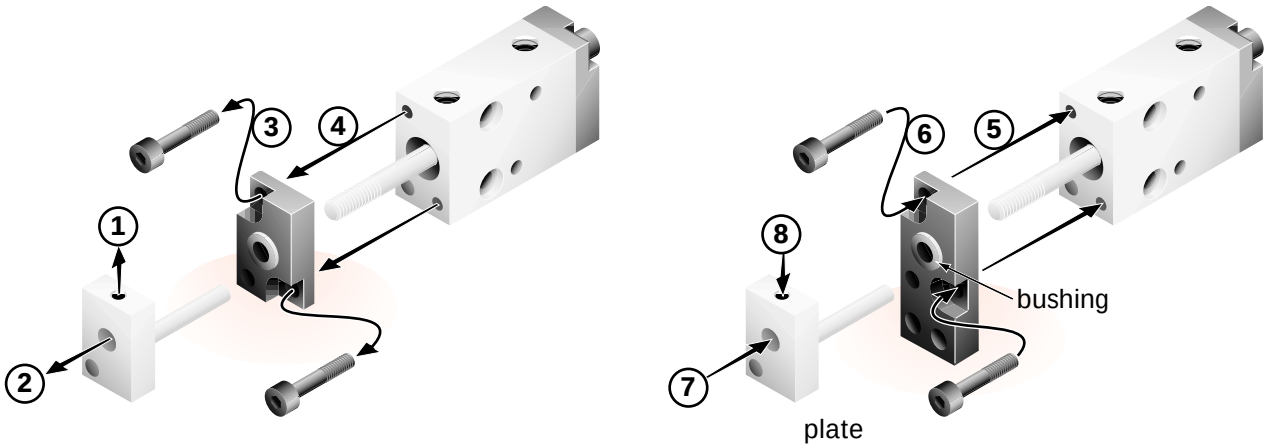
Shield plate

Model
HBS

HBS Shield plate

Sensor
See Sensor section at back of catalog for order information.

Mounting bracket change



To change mounting bracket

(Non-rotating rod shown. For standard cylinder omit steps 1, 2, 7, and 8.)

1. Loosen set screw.

2. Remove plate assembly.

3. Remove mounting screws.

4. Remove mounting bracket.

5. Install mounting bracket.

6. Install mounting screws.

7. Install plate assembly.

8. Tighten set screw (maintain a .05 mm (002 inch) between plate and bushing.)