SUPERIOR SERVICE. UNLEASHED.

Title: Twinport Cylinder Product, Accessories, How To Order

ISO Date: April 26, 2004

Don't Take Chances

Compressed air is an extremely powerful medium. Always take maximum precautions when handling any component of a compressed air system. **Never** attempt to construct, replace, operate or service any component of a compressed air system unless you have been specifically and properly trained to do so. **Always** disconnect the supply air and exhaust the air system before attempting to remove or service a component of that system Failure to heed these warnings could result in SERIOUS, EVEN FATAL, PERSONAL INJURY.

Design And Specifications

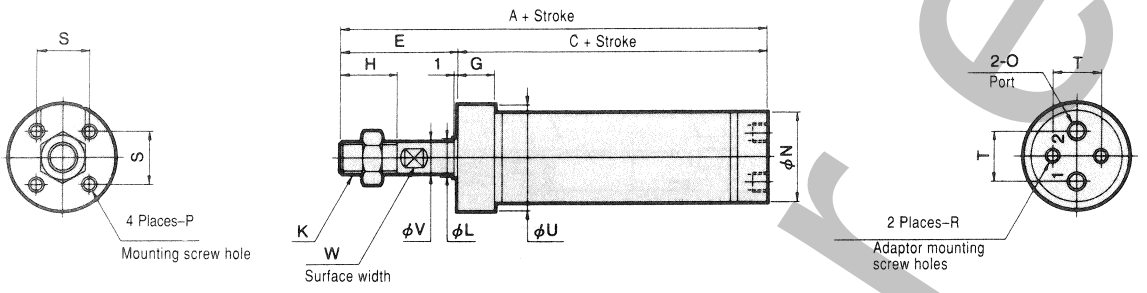
The design and specifications and other product information contained in this catalog is for general reference purposes based upon customary and usual manufacturing standards and product applications. However, it is difficult to predict or to anticipate the functioning or suitability of the product for any particular application or use. Therefore, nothing herein shall be deemed a representation or warranty of the product design or specifications and Buyer shall have the responsibility for investigating and testing the product in any particular application or use and all risks attendant in such use.

Humphrey Products Company
1-800-477-8707
Kalamazoo MI 49003
http://www.humphrey-products.com

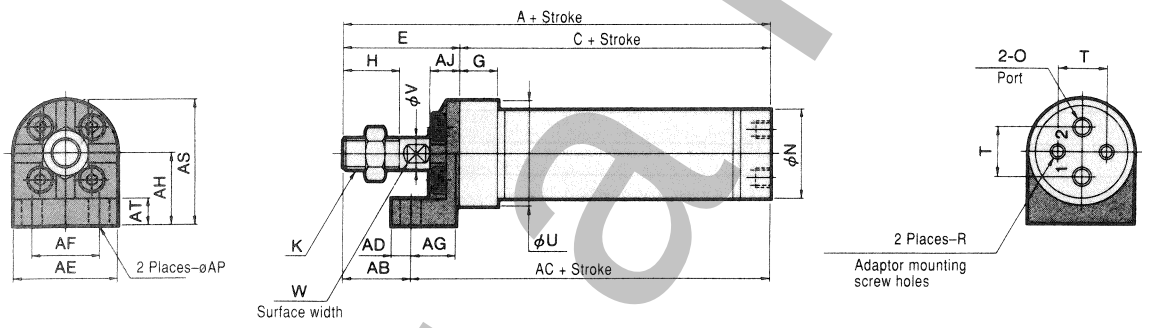
DIMENSION DIAGRAMS – HEAD SIDE PIPING: -HA

in. (mm)

Nose type



Single foot mounted



NOTE: Foot mounts are shipped loose, order separately.

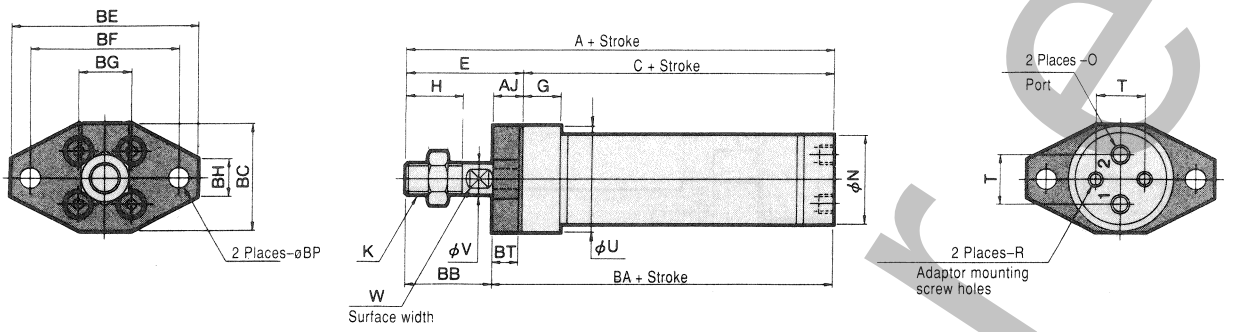
Bore size in. nom. (mm actual)	Code – in. (mm)									
	A	C	E	G	H	K	L NOTE	N	O	P
5/8 (16)	3.031 (77)	2.008 (51)	1.024 (26)	0.315 (8)	0.591 (15)	10-32 UNF	0.315 (8)	0.748 (19)	10-32 UNF	4-40 UNC, depth 0.217 (5.5)
3/4 (20)	3.504 (89)	2.283 (58)	1.220 (31)	0.394 (10)	0.591 (15)	5/16-18 UNC	0.394 (10)	0.929 (23.6)	10-32 UNF	8-32 UNC, depth 0.295 (7.5)
1 (25)	3.780 (96)	2.441 (62)	1.339 (34)	0.394 (10)	0.709 (18)	3/8-16 UNC	0.472 (12)	1.334 (28.8)	1/8" NPT	10-32 UNF, depth 0.295 (7.5)
1 1/4 (32)	4.213 (107)	2.677 (68)	1.535 (39)	0.394 (10)	0.906 (23)	3/8-16 UNC	0.591 (15)	1.433 (36.4)	1/8" NPT	10-32 UNF, depth 0.295 (7.5)
1 1/2 (40)	4.606 (117)	3.031 (77)	1.575 (40)	0.472 (12)	0.906 (23)	1/2-13 UNC	0.787 (20)	1.756 (44.6)	1/8" NPT	1/4-20 UNC, depth 0.374 (9.5)

Bore size in. nom. (mm actual)	Code – in. (mm)											
	R	S	T	U	V	W	AB	AC	AD	AE	AF	AG
5/8 (16)	4-40 UNC, depth 0.236 (6)	0.472 (12)	0.433 (11)	0.866 (22)	0.236 (6)	–	0.591 (15)	2.441 (62)	0.157 (4)	0.866 (22)	0.551 (14)	0.394 (10)
3/4 (20)	8-32 UNC, depth 0.236 (6)	0.551 (14)	0.512 (13)	1.102 (28)	0.315 (8)	0.236 (6)	0.709 (18)	2.795 (71)	0.197 (5)	1.102 (28)	0.709 (18)	0.472 (12)
1 (25)	8-32 UNC, depth 0.236 (6)	0.630 (16)	0.591 (15)	1.260 (32)	0.394 (10)	0.315 (8)	0.748 (19)	3.031 (77)	0.236 (6)	1.260 (32)	0.787 (20)	0.551 (14)
1 1/4 (32)	10-32 UNF, depth 0.276 (7)	0.787 (20)	0.787 (20)	1.575 (40)	0.472 (12)	0.394 (10)	0.945 (24)	3.268 (83)	0.236 (6)	1.575 (40)	1.102 (28)	0.551 (14)
1 1/2 (40)	10-32 UNF, depth 0.276 (7)	1.024 (26)	1.024 (26)	1.969 (50)	0.630 (16)	0.551 (14)	0.827 (21)	3.780 (96)	0.315 (8)	1.969 (50)	1.339 (34)	0.709 (18)

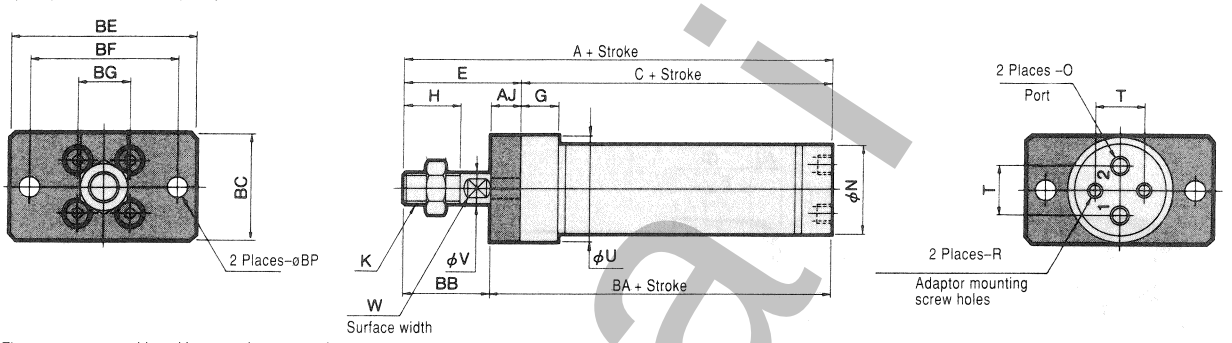
Bore size in. nom. (mm actual)	Code – in. (mm)				
	AH	AJ	AP	AS	AT
5/8 (16)	0.630 (16)	0.276 (7)	0.177 (4.5)	1.063 (27)	0.236 (6)
3/4 (20)	0.748 (19)	0.315 (8)	0.217 (5.5)	1.299 (33)	0.276 (7)
1 (25)	0.827 (21)	0.354 (9)	0.280 (7.1)	1.457 (37)	0.315 (8)
1 1/4 (32)	0.984 (25)	0.354 (9)	0.280 (7.1)	1.772 (45)	0.315 (8)
1 1/2 (40)	1.181 (30)	0.394 (10)	0.354 (9)	2.165 (55)	0.354 (9)

NOTE: $^{0}_{-0.0000}$ ($^{0}_{-0.005}$)

Flange mounted
5/8 (16) ~ 1 (25)

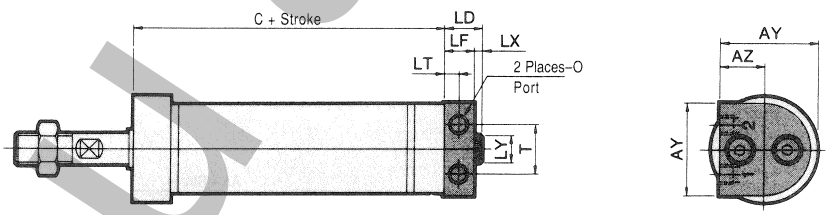


1 1/4 (32) and 1 1/2 (40)



NOTE: Flange mounts are shipped loose, order separately.

w/pipe adaptor mounted



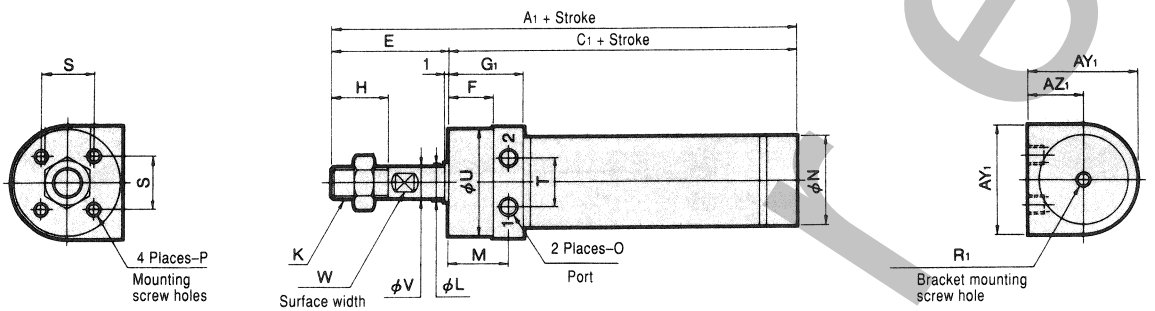
NOTE: Pipe adaptors are shipped loose, order separately.

Bore Size in nom. (mm actual)	Code - in. (mm)									
	A	C	E	G	H	K	N	O	R	T
5/8 (16)	3.031 (77)	2.008 (51)	1.024 (26)	0.315 (8)	0.591 (15)	10-32 UNF	0.748 (19)	10-32 UNF	4-40 UNC, depth 0.236(6)	0.433 (11)
3/4 (20)	3.504 (89)	2.283 (58)	1.220 (31)	0.394 (10)	0.591 (15)	5/16-18 UNC	0.929 (23.6)	10-32 UNF	8-32 UNC, depth 0.236 (6)	0.512 (13)
1 (25)	3.780 (96)	2.441 (62)	1.339 (34)	0.394 (10)	0.709 (18)	3/8-16 UNC	1.334 (28.8)	1/8" NPT	8-32 UNC, depth 0.236 (6)	0.512 (13)
1 1/4 (32)	4.213 (107)	2.677 (68)	1.535 (39)	0.394 (10)	0.906 (23)	3/8-16 UNC	1.433 (36.4)	1/8" NPT	10-32 UNC, depth 0.276 (7)	0.787 (20)
1 1/2 (40)	4.606 (117)	3.031 (77)	1.575 (40)	0.472 (12)	0.906 (23)	1/2-13 UNC	1.756 (44.6)	1/8" NPT	10-32 UNF, depth 0.276 (7)	1.024 (26)

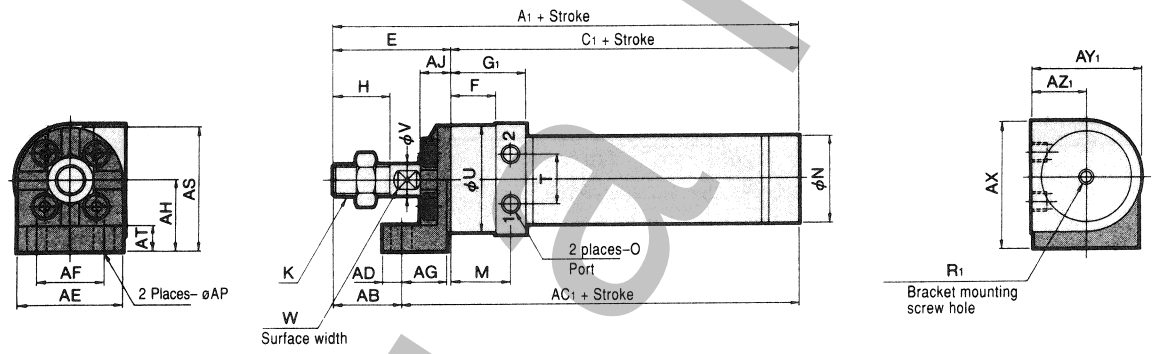
Bore size in. nom. (mm actual)	Code – in. (mm)												
	U	V	W	AJ	AY	AZ	BA	BB	BC	BE	BF	BG	BH
5/8 (16)	0.866 (22)	0.236 (6)	–	0.276 (7)	0.787 (20)	0.394 (10)	2.283 (58)	0.748 (19)	0.866 (22)	1.575 (40)	1.260 (32)	0.472 (12)	0.315 (8)
3/4 (20)	1.102 (28)	0.315 (8)	0.236 (6)	0.315 (8)	0.969 (24.6)	0.484 (12.3)	2.598 (66)	0.906 (23)	1.102 (28)	1.969 (50)	1.575 (40)	0.551 (14)	0.394 (10)
1 (25)	1.260 (32)	0.394 (10)	0.315 (8)	0.354 (9)	1.173 (29.8)	0.587 (14.9)	2.795 (71)	0.984 (25)	1.260 (32)	2.205 (56)	1.732 (44)	0.630 (16)	0.472 (12)
1 1/4 (32)	1.575 (40)	0.472 (12)	0.394 (10)	0.354 (9)	1.614 (41)	0.807 (20.5)	3.031 (77)	1.181 (30)	1.575 (40)	2.598 (66)	2.126 (54)	0.787 (20)	–
1 1/2 (40)	1.969 (50)	0.630 (16)	0.551 (14)	0.394 (10)	2.008 (51)	1.004 (25.5)	3.425 (87)	1.181 (30)	1.969 (50)	3.307 (84)	2.677 (68)	1.024 (26)	–

Bore size in. nom. (mm actual)	Code – in. (mm)						
	BP	BT	LD	LF	LT	LX	LY
5/8 (16)	0.177 (4.5)	0.236 (6)	0.354 (9)	0.315 (8)	0.157 (4)	0.039 (1)	0.217 (5.5)
3/4 (20)	0.217 (5.5)	0.276 (7)	0.394 (10)	0.315 (8)	0.157 (4)	0.079 (2)	0.276 (7)
1 (25)	0.256 (6.5)	0.315 (8)	0.748 (19)	0.630 (16)	0.315 (8)	0.118 (3)	0.276 (7)
1 1/4 (32)	0.256 (6.5)	–	0.748 (19)	0.630 (16)	0.315 (8)	0.118 (3)	0.335 (8.5)
1 1/2 (40)	0.354 (9)	–	0.748 (19)	0.630 (16)	0.315 (8)	0.118 (3)	0.335 (8.5)

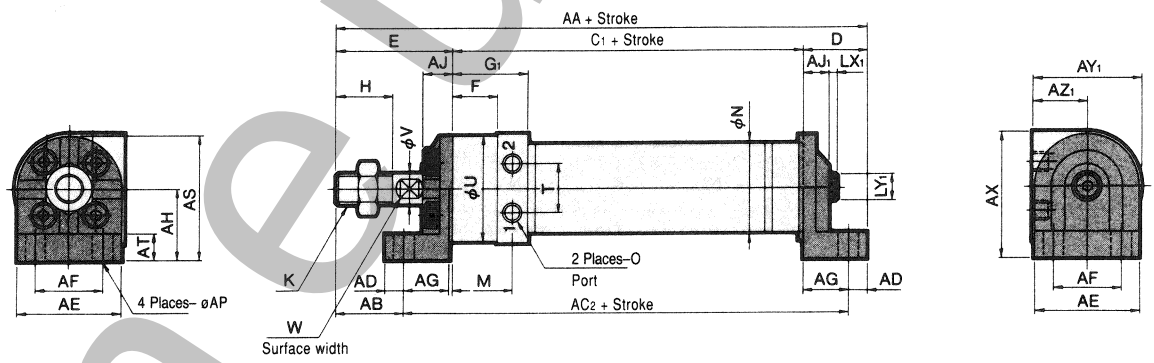
Nose type



Single foot mounted



Double foot mounted



NOTE: Foot mounts are shipped loose, order separately.

Bore size in. nom. (mm actual)	Code – in. (mm)											
	A_1	C_1	D	E	F	G_1	H	K	L[NOTE]	M	N	O
5/8 (16)	3.425 (87)	2.402 (61)	0.551 (14)	1.024 (26)	0.394 (10)	0.709 (18)	0.591 (15)	10-32 UNF	0.315 (8)	0.551 (14)	0.748 (19)	10-32 UNF
3/4 (20)	3.898 (99)	2.677 (68)	0.669 (17)	1.220 (31)	0.472 (12)	0.787 (20)	0.591 (15)	5/16-18 UNC	0.394 (10)	0.630 (16)	0.929 (23.6)	10-32 UNF
1 (25)	4.370 (111)	3.031 (77)	0.787 (20)	1.339 (34)	0.433 (11)	0.984 (25)	0.709 (18)	3/8-16 UNC	0.472 (12)	0.709 (18)	1.334 (28.8)	1/8" NPT
1 1/4 (32)	5.000 (127)	3.465 (88)	0.787 (20)	1.535 (39)	0.630 (16)	1.181 (30)	0.906 (23)	3/8-16 UNC	0.591 (15)	0.906 (23)	1.433 (36.4)	1/8" NPT
1 1/2 (40)	5.591 (142)	4.016 (102)	1.024 (26)	1.575 (40)	0.906 (23)	1.457 (37)	0.906 (23)	1/2-13 UNC	0.787 (20)	1.181 (30)	1.756 (44.6)	1/8" NPT

Bore size in. nom. (mm actual)	Code – in. (mm)									
	P	R_1	S	T	U	V	W	AA	AB	AC_1
5/8 (16)	4-40 UNC, depth 0.216 (5.5)	4-40 UNC, depth 0.236 (6)	0.472 (12)	0.433 (11)	0.866 (22)	0.236 (6)	–	3.976 (101)	0.591 (15)	2.835 (72)
3/4 (20)	8-32 UNC, depth 0.295 (7.5)	8-32 UNC, depth 0.236 (6)	0.551 (14)	0.512 (13)	1.102 (28)	0.315 (8)	0.236 (6)	4.567 (116)	0.709 (18)	3.189 (81)
1 (25)	10-32 UNF, depth 0.295 (7.5)	10-32 UNF, depth 0.276 (7)	0.630 (16)	0.591 (15)	1.260 (32)	0.394 (10)	0.315 (8)	5.157 (131)	0.748 (19)	3.622 (92)
1 1/4 (32)	10-32 UNF, depth 0.295 (7.5)	10-32 UNF, depth 0.276 (7)	0.787 (20)	0.787 (20)	1.575 (40)	0.472 (12)	0.394 (10)	5.787 (147)	0.945 (24)	4.055 (103)
1 1/2 (40)	1/4-20 UNC, depth 0.374 (9.5)	1/4-20 UNC, depth 0.354 (9)	1.024 (26)	1.024 (26)	1.969 (50)	0.630 (16)	0.551 (14)	6.614 (168)	0.827 (21)	4.764 (121)

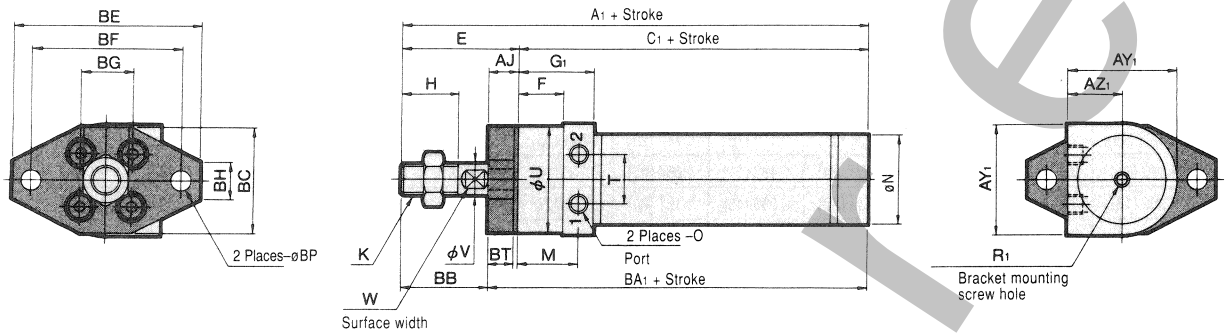
Bore size in. nom. (mm actual)	Code – in. (mm)												
	AC_2	AD	AE	AF	AG	AH	AJ	AJ_1	AP	AS	AT	AX	AY_1
5/8 (16)	3.228 (82)	0.157 (4)	0.866 (22)	0.551 (14)	0.394 (10)	0.630 (16)	0.276 (7)	0.236 (6)	0.177 (4.5)	1.063 (27)	0.236 (6)	1.083 (27.5)	0.906 (23)
3/4 (20)	3.661 (93)	0.197 (5)	1.102 (28)	0.709 (18)	0.472 (12)	0.748 (19)	0.315 (8)	0.276 (7)	0.217 (5.5)	1.299 (33)	0.276 (7)	1.319 (33.5)	1.142 (29)
1 (25)	4.173 (106)	0.236 (6)	1.260 (32)	0.787 (20)	0.551 (14)	0.827 (21)	0.354 (9)	0.315 (8)	0.280 (7.1)	1.457 (37)	0.315 (8)	1.476 (37.5)	1.299 (33)
1 1/4 (32)	4.606 (117)	0.236 (6)	1.575 (40)	1.102 (28)	0.551 (14)	0.984 (25)	0.354 (9)	0.315 (8)	0.280 (7.1)	1.772 (45)	0.315 (8)	1.791 (45.5)	1.614 (41)
1 1/2 (40)	5.472 (139)	0.315 (8)	1.969 (50)	1.339 (34)	0.709 (18)	1.181 (30)	0.394 (10)	0.354 (9)	0.354 (9)	2.165 (55)	0.354 (9)	2.185 (55.5)	2.008 (51)

Bore size in. nom. (mm actual)	Code – in. (mm)		
	AZ_1	LX_1	LY_1
5/8 (16)	0.453 (11.5)	–	–
3/4 (20)	0.571 (14.5)	0.079 (2)	0.276 (7)
1 (25)	0.650 (16.5)	0.039 (1)	0.335 (8.5)
1 1/4 (32)	0.807 (20.5)	0.039 (1)	0.335 (8.5)
1 1/2 (40)	1.004 (25.5)	0.039 (1)	0.394 (10)

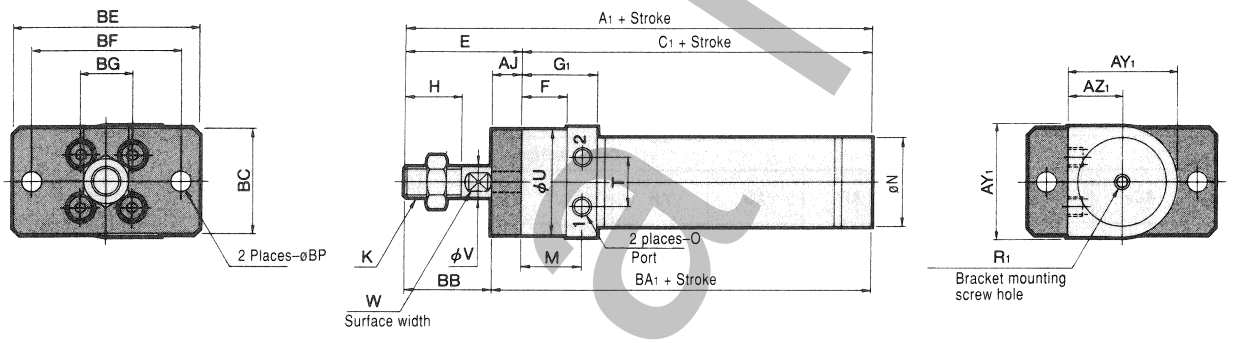
NOTE: $^{0}_{-0.0000}$ ($^{0}_{-0.005}$)

Flange mounted

5/8 (16) ~ 1 (25)



1 1/4 (32) and 1 1/2 (40)



NOTE: Flange mounts are shipped loose, order separately.

Bore size in. nom. (mm actual)	Code – in. (mm)									
	A_1	C_1	E	F	G_1	H	K	M	N	O
5/8 (16)	3.425 (87)	2.402 (61)	1.024 (26)	0.394 (10)	0.709 (18)	0.591 (15)	10-32 UNF	0.551 (14)	0.748 (19)	10-32 UNF
3/4 (20)	3.898 (99)	2.677 (68)	1.220 (31)	0.472 (12)	0.787 (20)	0.591 (15)	5/16-18 UNC	0.630 (16)	0.929 (23.6)	10-32 UNF
1 (25)	4.370 (111)	3.031 (77)	1.339 (34)	0.433 (11)	0.984 (25)	0.709 (18)	3/8-16 UNC	0.709 (18)	1.334 (28.8)	1/8" NPT
1 1/4 (32)	5.000 (127)	3.465 (88)	1.535 (39)	0.630 (16)	1.181 (30)	0.906 (23)	3/8-16 UNC	0.906 (23)	1.433 (36.4)	1/8" NPT
1 1/2 (40)	5.591 (142)	4.016 (102)	1.575 (40)	0.906 (23)	1.457 (37)	0.906 (23)	1/2-13 UNC	1.181 (30)	1.756 (44.6)	1/8" NPT

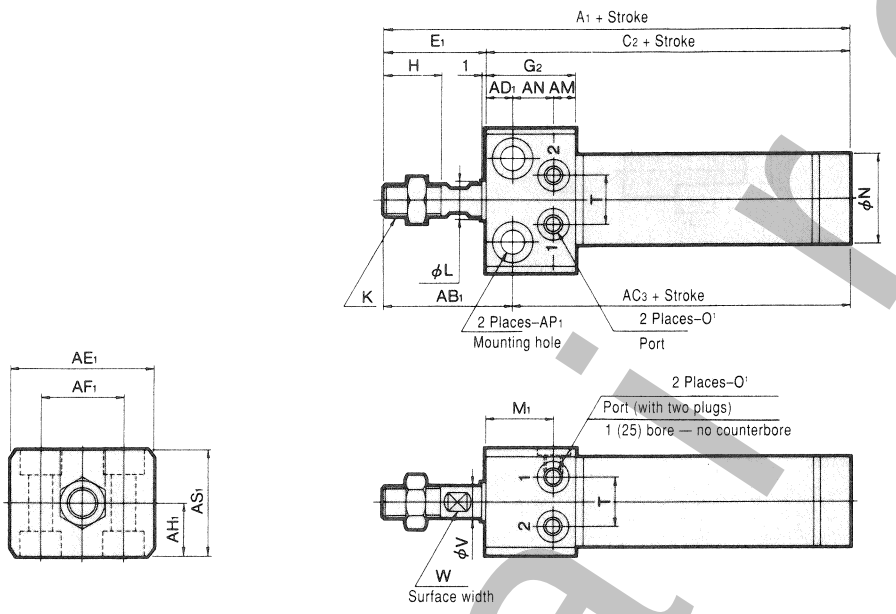
Bore size in. nom. (mm actual)	Code – in. (mm)											
	R	T	U	V	W	AJ	AY_1	AZ_1	BA_1	BB	BC	BE
5/8 (16)	4-40 UNC, depth 0.236 (6)	0.433 (11)	0.866 (22)	0.236 (6)	–	0.276 (7)	0.906 (23)	0.453 (11.5)	2.677 (68)	0.748 (19)	0.866 (22)	1.575 (40)
3/4 (20)	8-32 UNC, depth 0.236 (6)	0.512 (13)	1.102 (28)	0.315 (8)	0.236 (6)	0.315 (8)	1.142 (29)	0.571 (14.5)	2.992 (76)	0.906 (23)	1.102 (28)	1.969 (50)
1 (25)	10-32 UNF, depth 0.276 (7)	0.591 (15)	1.260 (32)	0.394 (10)	0.315 (8)	0.354 (9)	1.299 (33)	0.650 (16.5)	3.386 (86)	0.984 (25)	1.260 (32)	2.205 (56)
1 1/4 (32)	10-32 UNF, depth 0.276 (7)	0.787 (20)	1.575 (40)	0.472 (12)	0.394 (10)	0.354 (9)	1.614 (41)	0.807 (20.5)	3.819 (97)	1.181 (30)	1.575 (40)	2.598 (66)
1 1/2 (40)	1/4-20 UNC, depth 0.354 (9)	1.024 (26)	1.969 (50)	0.630 (16)	0.551 (14)	0.394 (10)	2.008 (51)	1.004 (25.5)	4.409 (112)	1.181 (30)	1.969 (50)	3.307 (84)

Bore size in. nom. (mm actual)	Code – in. (mm)				
	BF	BG	BH	BP	BT
5/8 (16)	1.260 (32)	0.472 (12)	0.315 (8)	0.177 (4.5)	0.236 (6)
3/4 (20)	1.575 (40)	0.551 (14)	0.394 (10)	0.217 (5.5)	0.276 (7)
1 (25)	1.732 (44)	0.630 (16)	0.472 (12)	0.280 (7.1)	0.315 (8)
1 1/4 (32)	2.126 (54)	0.787 (20)	–	0.280 (7.1)	–
1 1/2 (40)	2.677 (68)	1.024 (26)	–	0.354 (9)	–

DIMENSION DIAGRAMS – ROD SIDE PIPING – BLOCK TYPE: -RB

in. (mm)

Side mount



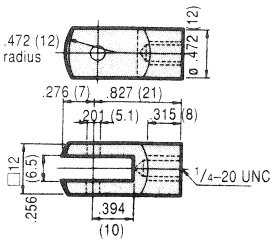
Bore size in. nom. (mm actual)	Code – in. (mm)								
	A_1	C_2	E_1	G_2	H	K	L NOTE	M_1	N
5/8 (16)	3.425 (87)	2.520 (64)	0.906 (23)	0.827 (21)	0.591 (15)	1/4-20 UNC	0.315 (8)	0.591 (15)	0.748 (19)
3/4 (20)	3.898 (99)	2.835 (72)	1.063 (27)	0.945 (24)	0.591 (15)	5/16-18 UNC	0.394 (10)	0.709 (18)	0.929 (23.6)
1 (25)	4.370 (111)	3.228 (82)	1.142 (29)	1.181 (30)	0.709 (18)	3/8-16 UNC	0.472 (12)	0.866 (22)	1.334 (28.8)
1 1/4 (32)	5.000 (127)	3.701 (94)	1.299 (33)	1.417 (36)	0.906 (23)	3/8-16 UNC	0.591 (15)	1.102 (28)	1.433 (36.4)
1 1/2 (40)	5.591 (142)	4.291 (109)	1.299 (33)	1.732 (44)	0.906 (23)	1/2-13 UNC	0.787 (20)	1.417 (36)	1.756 (44.6)

Bore size in. nom. (mm actual)	Code – in. (mm)									
	O_1	T	V	W	AB_1	AC_3	AD_1	AE_1	AF_1	AH_1
5/8 (16)	10-32 UNC, c'bore 0.331 (8.4), depth 0.071 (1.8)	0.433 (11)	0.236 (6)	–	1.102 (28)	2.323 (59)	0.197 (5)	1.181 (30)	0.394 (10)	0.472 (12)
3/4 (20)	10-32 UNC, c'bore 0.331 (8.4), depth 0.071 (1.8)	0.512 (13)	0.315 (8)	0.236 (6)	1.339 (34)	2.559 (65)	0.276 (7)	1.496 (38)	0.866 (22)	0.551 (14)
1 (25)	1/8" NPT, c'bore 0.528 (13.4), depth 0.071 (1.8)	0.591 (15)	0.394 (10)	0.315 (8)	1.496 (38)	2.874 (73)	0.354 (9)	1.654 (42)	1.024 (26)	0.591 (15)
1 1/4 (32)	1/8" NPT, c'bore 0.528 (13.4), depth 0.071 (1.8)	0.787 (20)	0.472 (12)	0.394 (10)	1.772 (45)	3.228 (82)	0.472 (12)	2.126 (54)	1.339 (34)	0.748 (19)
1 1/2 (40)	1/8" NPT, c'bore 0.528 (13.4), depth 0.071 (1.8)	1.024 (26)	0.630 (16)	0.551 (14)	1.890 (48)	3.701 (94)	0.591 (15)	2.677 (68)	1.811 (46)	0.906 (23)

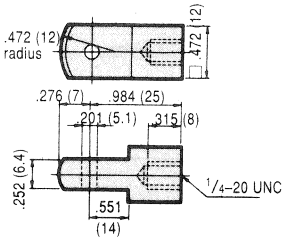
Bore size in. nom. (mm actual)	Code – in. (mm)			
	AM	AN	AP_1	AS_1
5/8 (16)	0.236 (6)	0.394 (10)	ø0.177 (4.5) c'bore 0.315 (8), depth 0.177 (4.5)	0.945 (24)
3/4 (20)	0.236 (6)	0.433 (11)	ø0.280 (7.1) c'bore 0.433 (11), depth 0.256 (6.5)	1.102 (28)
1 (25)	0.315 (8)	0.512 (13)	ø0.280 (7.1) c'bore 0.433 (11), depth 0.256 (6.5)	1.181 (30)
1 1/4 (32)	0.315 (8)	0.630 (16)	ø0.354 (9) c'bore 0.551 (14), depth 0.339 (8.6)	1.496 (38)
1 1/2 (40)	0.315 (8)	0.827 (21)	ø0.433 (11) c'bore 0.689 (17.5), depth 0.425 (10.8)	1.811 (46)

NOTE: $^{0}_{-0.002}$ $\left(^{0}_{-0.05}\right)$

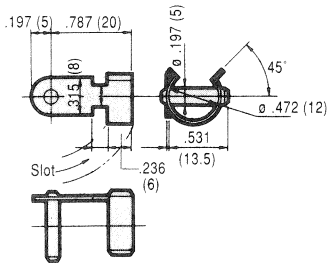
ø5/8 (16) Y type



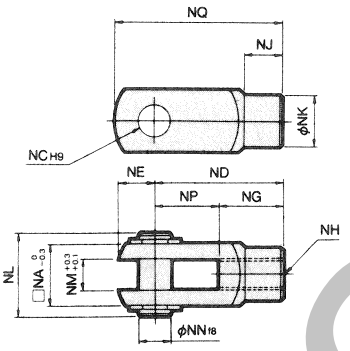
ø5/8 (16) I type



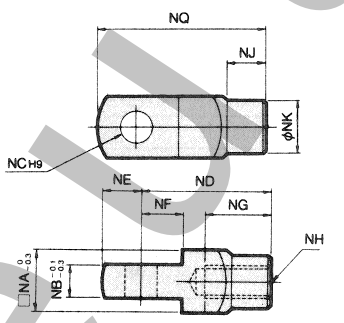
Pin for ø5/8 (16) Y type



ø3/4 (20) ~ 1 1/2 (40) Y type



ø3/4 (20) ~ 1 1/2 (40) Y type



Bore size in. nom. (mm actual)	Code – in. (mm)											
	NA	NB	NC	ND	NE	NF	NG	NH	NJ	NK	NL	NM
3/4 (20)	0.630 (16)	0.315 (8)	0.315 (8)	1.181 (30)	0.394 (10)	0.433 (11)	0.591 (15)	5/16-18 UNC	0.394 (10)	0.551 (14)	0.827 (21)	0.315 (8)
1 (25) • 1 1/4 (32)	0.748 (19)	0.394 (10)	0.394 (10)	1.575 (40)	0.472 (12)	0.512 (13)	0.787 (20)	3/8-16 UNC	0.472 (12)	0.630 (16)	0.984 (25)	0.394 (10)
1 1/2 (40)	0.945 (24)	0.551 (14)	0.394 (10)	1.772 (45)	0.472 (12)	0.512 (13)	0.984 (25)	1/2-13 UNC	0.591 (15)	0.866 (22)	1.181 (30)	0.551 (14)

Bore size in. nom. (mm actual)	Code – in. (mm)		
	NN	NP	NQ
3/4 (20)	0.315 (8)	0.591 (15)	1.575 (40)
1 (25) • 1 1/4 (32)	0.394 (10)	0.787 (20)	2.047 (52)
1 1/2 (40)	0.394 (10)	0.787 (20)	2.244 (57)

THRUST FORCE

lb. (kgf)

Bore Size Inch nom. (mm actual)	Rod size In. (mm)	Type of operation		Pressure area Inch² (cm²)	Air Pressure psig (kgf/cm²)						
					14 (1)	28 (2)	43 (3)	57 (4)	71 (5)	85 (6)	100 (7)
5/8 (16)	0.236 (6)	Double acting	Push	0.31 (2.01)	4.4 (2.0)	8.7 (4.0)	13.4 (6.0)	17.8 (8.0)	22.1 (10.0)	26.5 (12.0)	31.2 (14.0)
			Pull	0.27 (1.72)	3.6 (1.7)	7.5 (3.4)	11.5 (5.1)	15.3 (6.8)	19.0 (8.6)	22.8 (10.3)	26.8 (12.0)
3/4 (20)	0.315 (8)	Double acting	Push	0.49 (3.14)	6.8 (3.1)	13.6 (6.2)	20.9 (9.4)	27.8 (12.5)	34.6 (15.7)	41 (18.8)	49 (21.9)
			Pull	0.41 (2.64)	5.7 (2.6)	11.5 (5.2)	17.6 (7.9)	23.3 (10.5)	29.0 (13.2)	35 (15.8)	41 (18.4)
1 (25)	0.394 (10)	Double acting	Push	0.76 (4.90)	10.7 (4.9)	21 (9.8)	33 (14.7)	43 (19.6)	54 (24.5)	65 (29.4)	76 (34.3)
			Pull	0.64 (4.12)	8.9 (4.1)	18 (8.2)	28 (12.3)	36 (16.4)	45 (20.6)	54 (24.7)	64 (28.8)
1 1/4 (32)	0.472 (12)	Double acting	Push	1.25 (8.04)	17.5 (8.0)	35 (16.0)	54 (24.1)	71 (32.1)	89 (40.2)	106 (48.2)	125 (56.2)
			Pull	1.07 (6.90)	15.0 (6.9)	30 (13.8)	46 (20.7)	61 (27.6)	76 (34.5)	91 (41.4)	107 (48.3)
1 1/2 (40)	0.630 (16)	Double acting	Push	1.95 (12.56)	27.3 (12.5)	55 (25.1)	84 (37.6)	111 (50.2)	138 (62.8)	166 (75.3)	195 (87.9)
			Pull	1.64 (10.55)	22.9 (10.5)	46 (21.1)	70 (31.6)	93 (42.2)	116 (52.7)	139 (63.3)	164 (73.8)

GENERAL TIPS AND POINTS TO BE CONSIDERED

MOUNTING – L-HTWDA-□

Head side piping: By using L-adaptor, piping direction can be changed to right angle (perpendicular). To mount adaptor, insert o-ring to o-ring mounting groove on the adaptor and mount adaptor to cylinder.

GENERAL INFORMATION

CAUTION

Compressed air is powerful and may be dangerous. Before attempting to remove a component from an air line or system, *always* disconnect the supply air and thoroughly exhaust the line or system. *Never* attempt to construct, operate, or service anything using compressed air unless you have been properly trained to do so. Failure to heed this warning could result in SERIOUS, EVEN FATAL, PERSONAL INJURY.

MEDIA

1. Humphrey Twinport Cylinders are designed for use with compressed air at the pressures indicated in the specifications. Consult factory if using any other media.

2. Compressed air should be clean and uncontaminated. When in doubt, install an air filter with filtering capacity of 40 microns. Periodically remove and clean or replace filter element.

LUBRICATION

No lubrication is required when compressed air is dry and free of water and oil. If lubricating oil is used, it must be chemically compatible with Buna N elastomers and of sufficient viscosity to assure adequate lubrication. Thin or low viscosity oils (spindle oil, machine oil, etc.) do not provide a good residual film of lubrication.

AMBIENT CONDITIONS

Do not use Humphrey Twinport Cylinders in the presence of organic solvents, phosphoric acid, ester-type machine oil, sulfurous acid gas, chlorine gas, or acids.