

Humphrey[®]

ACTUATOR CATALOG



www.humphrey-products.com



HUMPHREY PRODUCTS

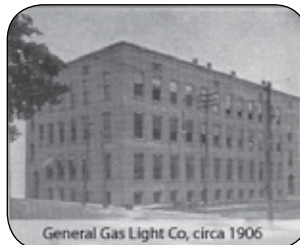


Founded more than 100 years ago, the long history of Humphrey designed and produced innovations date back to the commercialization of gaslight products in 1901. Today, Humphrey is recognized as a leading producer of fluid control products, serving organizations worldwide. Our expertise in a wide range of markets and industries is based on technologies time-tested and proven in our standard products, enabling us to create truly customized solutions for those customers having unique commercial and industrial applications.

Headquartered in Kalamazoo, Michigan, we have an experienced staff at multiple locations of not more than 200 associates at each one in order to serve you with the very best personal service at locations throughout the United States and Canada. We also have a long-standing alliance with the Japan-based Koganei Corporation, one of the largest and highest quality fluid control companies in the world.

More than 50 years ago, Humphrey and Koganei become the first independent North American and Japanese manufacturers of pneumatics to join forces.

We work to solve not only your fluid control challenges, but to also improve the ease and efficiency of your manufacturing processes. This comprehensive approach offers you tremendous outsourcing advantages, significantly reducing your product development cycle and creating vital cost efficiencies. You gain access to our advanced manufacturing technologies, reduced time-to-market, and the ability to reassign critical internal resources to focus on your core competencies. Our purpose is to serve and solve whatever the problem is you face in automating your controls and processes.



General Gas Light Co, circa 1906

Humphrey has a rich history dating back to 1901, when it was General Gas Light Company.

For details and photos reflecting on our history, go to www.humphrey-products.com, select "Our Company" and then click on the photo you see on this page.



Koganei is a top supplier of pneumatic components in Asia, and among the top five in the world. Over the years, we've worked with Koganei to develop products, exchange the latest design and manufacturing technology, and manufacture some of the finest pneumatic actuators and valves in the world. This relationship continues today. With Koganei, we can call on a breadth and depth of experience which crosses continents and industries, helping us create more innovative, inventive solutions which will help you succeed. For more information, go to www.koganei.co.jp.



For a copy of these certificates, please go to www.humphrey-products.com.

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The information in this publication and other information from Humphrey Products and its authorized distributors is intended for use by persons having technical expertise in selecting and using these products. Refer to our website (www.humphrey-products.com) for more information.

All technical and safety requirements of your specific application, including the consequences of any possible failure, should be analyzed prior to selecting and applying the products. These products are not suitable for all applications, such as applications related to or connected with aviation, aircraft or aerospace.

HOW TO USE THIS CATALOG

The Humphrey Actuator Catalog provides basic decision-making information about our broad range of small to miniature size cylinder and actuator products. We recommend you view introductory information on the first page of each cylinder section, then use the index to quickly navigate to the best solution.

Further information, such as detailed specifications, CAD drawings and how to order information, are readily available on our website at www.humphrey-products.com. Specifications listed here and on our website are based on testing data and may vary by environment and application. Dimensions in this catalog are nominal inches or nominal millimeters to capture the overall size of the product. Double-acting models are dimensioned in the retracted position, and single acting models are dimensioned in the "at rest" (spring actuated) position. Consult a factory representative if you cannot find the information you need.

All cylinder and actuator products can be controlled by our comprehensive line of solenoid, air pilot, manual and mechanical valve products. Consult our valve catalog HKV-7A, which can be obtained online or from our global network of authorized stocking distributors.

WHERE TO GET MORE INFORMATION



VISIT WWW.HUMPHREY-PRODUCTS.COM

- **FIND A DISTRIBUTOR**

Humphrey markets its products through its global distribution network. Click FIND A DISTRIBUTOR to locate one in your local area.

- **ENGINEERED SOLUTIONS**

Can't find exactly what you need? Humphrey has produced custom cylinders, some of which have been explained in a downloadable case history PDF found in our ENGINEERED SOLUTIONS section.

- **ONLINE PRODUCT GUIDE**

The ONLINE PRODUCT GUIDE is a comprehensive real time catalog of products – both cylinders and actuators, as well as our broad line valve products.

- Search by spec or model number.
- List prices shown for all products.
- Specification sheets are in PDF format for easy viewing and download.
- Product drawings in several formats for downloading and using in 3D CAD software.
- Configure your product and email the distributor to Request a Quote.



HOW TO CONTACT HUMPHREY PRODUCTS

FACTORY CUSTOMER SERVICE PHONE

1-800-477-8707 or 269-381-5500

FACTORY CUSTOMER SERVICE FAX

269-381-4113

FACTORY CUSTOMER SERVICE EMAIL

webcust@humphrey-products.com

WEBSITE

www.humphrey-products.com

TECHNICAL SUPPORT

webtech@humphrey-products.com

LITERATURE AND MARKETING REQUESTS

websales@humphrey-products.com

GENERAL INFORMATION – AIR CYLINDERS AND ACTUATORS

Air cylinders have an excellent ability to provide fast response and rapid movement from the energy of compressed air. Rapid indexing, stamping, punching, holding, lifting, pushing, part location, etc., are ideally suited to air cylinders.

MOUNTING

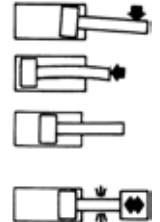
Mount to center line of work to avoid side load on rod. Mount securely, without over-torquing mounting nuts. A secure mount, accurately placed, promotes cylinder performance and endurance. Side load on rod should be eliminated. Severe side load or stress can cause rod breakage, excessive bushing wear, and



scoring of piston and barrel. Consider provisions to minimize side load.

Reduce adverse effect of side load by attaching a universal rod eye, or cylinder joint, to the piston rod. Also, consider utilizing only part of total stroke...keep piston "back" in barrel for greater column strength.

Avoid "bottoming-out" piston on cylinder heads at high pressures. Consider bumpers or our complete line of shock absorbers.

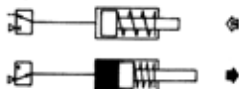


AIR CYLINDER AND ACTUATOR APPLICATION FACTORS

Symbols of typical control valves are shown left of cylinders

SINGLE-ACTING TYPES

Push



- Push: Air pressure produces force in one "pushing" direction only, causing rod to extend.
- Pull: Air pressure produces force in one "pulling" direction only, causing rod to retract.
- Spring returns rod to "normal" position in one quick motion, determined by control valve's flow capability and cylinder volume. Flow control (metering) of exhausting air during return stroke does not provide optimum smoothness of movement (consider double-acting models for smoothest movement).

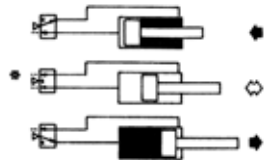
Pull



- Only one 3-way valve is required...less expensive than valving for double-acting cylinders.
- Consider when compressed air supply is limited or must be conserved.
- Mount to ensure that Vent in side of barrel can "breathe" freely.

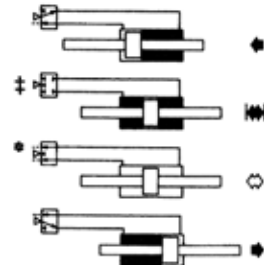
DOUBLE-ACTING TYPES

Double Acting



- Air pressure produces force in either "pushing" or "pulling" direction. Pushing force is greater than pulling force due to smaller effective piston area on rod side of piston.
- Flow control (metering) of exhausting air can be performed in either direction. Air exhausts from the cylinder port opposite the port being pressurized. For smoothest movement, meter the exhausting air. Metering of the incoming pressure may produce erratic, "jumpy" cylinder action.
- "Closed" system...no vent (breather hole) to consider; see above. Consider, when cylinder must operate in dirty ambient conditions.

Double-End Rod



- Air pressure produces equal force in both "pushing" and "pulling" directions due to equal piston area. Pressurizing both sides "locks" cylinder position at any given point.
- Fixed mounting of both rod ends allows movement of barrel only...barrel moves back and forth; rods are stationary. Caution: Do not side load rod (barrel weight, alignment, etc.).
- One rod can be used to perform a work function, second rod:
 - Permits operation of limit switches away from work function.
 - Permits attachment of guiding methods to eliminate rod rotation (alternate to hex rod).
 - Provides additional support to guard against rod deflection.

** Allows cylinder to be manually positioned or † locked in position.*

HUMPHREY STAINLESS STEEL CYLINDER

INTRODUCTION

CONSTRUCTION OF THE HUMPHREY STAINLESS STEEL CYLINDER

1. BARREL Stainless steel (Type 304). Drawn and polished inside diameter provides ideal lube-holding, low friction surface. Matte finish on outside diameter barrel attached to heads by the Humphrey roll-forming process.

2. HEADS Aluminum. Internal face grooved for positive air flow to piston seals.

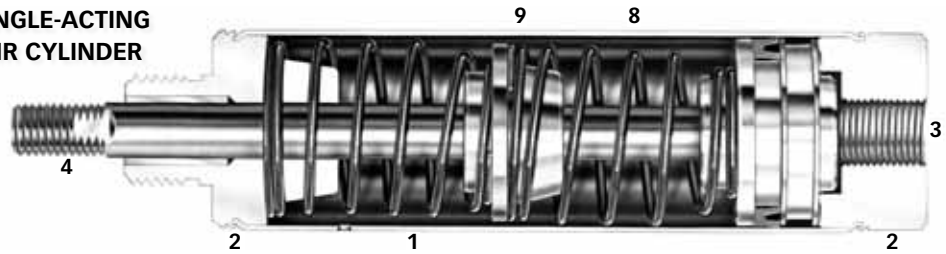
3. PRESSURE PORTS Full, unrestricted porting for maximum air flow; combines with grooved heads to provide fast cylinder response and smooth rod movement.

4. PISTON ROD Accuracy stock, centerless ground and polished Type 303 stainless steel, standard on all models. Wrench flats are standard on most models, chamfered for easy wrench contact without rod damage. Threads are roll formed for strength and durability.

5. PISTON Unique Humphrey piston may be factory assembled in two different ways – same overall dimensions with or without bumpers. Piston threads are roll formed for greater strength and durability.

6. SEALS Buna-N standard on all models. Fluorocarbon (fluoroelastomer Option F) available for high ambient temperatures; for extremely high cycling conditions with limited lubrication; or mild chemical resistance (air supply contaminants and/or lubricants). Seal design ensures constant contact with cylinder barrel, eliminating seal collapse and blow-by.

SINGLE-ACTING AIR CYLINDER



DOUBLE-ACTING AIR CYLINDER



7. ROD BUSHING Oil permeated bronze, ball-sized to close tolerance, provides rod support and smooth, low friction rod movement for longer cylinder life.

8. RETURN SPRINGS High tensile strength music wire, shot peened to relieve stresses for longer life.

9. SPACERS Spacers ensure a uniform spring rate and prohibit collapse of springs, providing maximum life.

ACCESSORIES Steel mounting nuts, mounting brackets, rod clevises, etc., are burnished and are bright zinc-plated (see page 14).

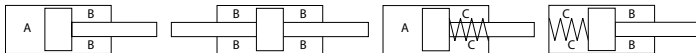
CYLINDER SPECIFICATIONS

- For Compressed Air to 200 PSIG, Hydraulic to 100 PSI (expect rod weep)
- Ambient temperature: -40°F to 160°F as standard
-20°F to 400°F with Viton seals
-10°F to 250°F with ELF seals

Force (F) – Determined by square inches of piston area (A), and pressure (P) in PSIG, $F = A \times P$

Volume (V) in cubic inches – Determined by square inches of piston area (A), and length of stroke (L), $V = A \times L$

Speed – Affected by many variables, including force to move load, cylinder volume, control valve flow capacity, length of supply lines, etc.



Basic Model No.	Bore Size I.D. (inch)	Port Size	Rod Diameter or (Hex)	Piston Area Inch ² and Cylinder Volume (Cubic Inch) per 1" of stroke		Spring Force in Pounds if Cylinder is:	
				A	B - Less Rod	C - Normal	C - Actuated
8	1/2	10-32 UNF	.187 (.187)	.20	.17	1	2
7	3/4	1/8 PIPE	.250 (.250)	.44	.39	1 1/2	5
6	1-1/16		.312 (.375)	.89	.81	4	8
25	1-1/4		.437 (N.A.)	1.23	1.08	7	14
5	1-1/2		.437 (N.A.)	1.77	1.62	6	12
75	1-3/4	1/4 PIPE	.500 (N.A.)	2.41	2.21	12	24
4	2		.625 (N.A.)	3.14	2.84	15	30
3	2-1/2		.625 (N.A.)	4.91	4.60	N.A.	N.A.

* For Volume Chambers, see page 15; For Special Rod Ends, see Deluxe Rod Ends on page 13.

HUMPHREY STAINLESS STEEL CYLINDER

HUMPHREY STAINLESS STEEL CYLINDER

SECTION AND MODEL INDEX

DOUBLE ACTING		Bore Size – inch	(Push Force @100psi-lb)	Std. Stroke Range (inch)	Max. Poss. Stroke (inch)	Page
		1/2	(20)			
		3/4	(44)			
D	Nose Mount	1-1/16	(89)			6
DP	Nose, Pivot or Double-End Mount	1-1/4	(123)	1/2 – 12	44	6
		1-1/2	(177)			
BFD	Block Front Head Mount *	1-3/4	(241)			11
		2	(314)			
		2-1/2	(491)			
DOUBLE ACTING, DOUBLE-END ROD		Bore Size – inch	(Push Force @100psi-lb)	Std. Stroke Range (inch)	Max. Poss. Stroke (inch)	Page
		1/2	(20)			
		3/4	(44)			
		1-1/16	(89)			
D2EY	Nose or Double-End Mount	1-1/4	(123)	1/2 – 12	44	7
		1-1/2	(177)			
		1-3/4	(241)			
		2	(314)			
		2-1/2	(491)			
SINGLE ACTING – PUSH		Bore Size – inch	(Push Force @100psi-lb)	Std. Stroke Range	Max. Poss. Stroke (inch)	Page
		1/2	(18)			
		3/4	(39)			
S	Nose Mount	1-1/16	(81)			8
SP	Nose, Pivot or Double-End Mount	1-1/4	(109)	1/2 - 6	18	8
		1-1/2	(165)			
BFS	Block Front Head Mount *	1-3/4	(201)			11
		2	(284)			
SINGLE ACTING, NON ROTATING – PUSH		Bore Size – inch	(Push Force @100psi-lb)	Std. Stroke Range (inch)	Max. Poss. Stroke (inch)	Page
		1/2	18			
		3/4	39			
SH	Nose Mount	1-1/16	81	1/2 – 6	18	10
SHP	Nose, Pivot or Double-End Mount	1-1/2	165			10
SINGLE ACTING – PULL		Bore Size – inch	(Push Force @100psi-lb)	Std. Stroke Range (inch)	Max. Poss. Stroke (inch)	Page
		1/2	(13)			
		3/4	(31)			
SR	Nose Mount	1-1/16	(69)			9
SRP	Nose, Pivot or Double-End Mount	1-1/4	(87)	1/2 – 4	18	9
		1-1/2	(144)			
BFSR	Block Front Head Mount *	1-3/4	(185)			11
		2	(242)			
ACCESSORIES		Bore Size – inch	N/A	N/A	N/A	Page
		1/2				
BP – ___	Pivot Bracket	3/4				
CT – ___	Rod Clevis	1-1/16				14
		1-1/4				
F – ___	Foot Mount	1-1/2				
JN – ___	Jam Nut	1-3/4				
		2				
VOLUME CHAMBERS		Bore Size – inch	N/A	Std. Stroke Range (inch)	Max. Poss. Stroke (inch)	Page
		1/2				
		3/4				
C	Standard	1-1/16				
CP	End Mount	1-1/4		1 – 12	44	15
		1-1/2				
CPP	Double-End Mount	1-3/4				
		2				

* Block Front Head Bore Sizes Available: 1/2", 3/4", 1-1/16", 1-1/2"

DOUBLE-ACTING CYLINDERS

MODELS D, DP

Low cost and reliable, Humphrey Stainless Steel Double-Acting Air Cylinders are available in eight bore sizes from 1/2" to 2-1/2". Materials include aluminum heads and stainless steel barrel and piston rod. Type Block V piston seal ensures no air blow-by. Rod bearing is oil-permeated bronze, and precision ball sized. Cataloged rod threads are roll formed for strength and durability. Rod-end customization is available with the "Deluxe Rod End" program (see page 13). Sensor switch option also available for stroke position signaling to PLCs.

BORE SIZES (inch):

- 1/2, 3/4, 1-1/16, 1-1/4, 1-1/2, 1-3/4, 2, 2-1/2

TYPES:

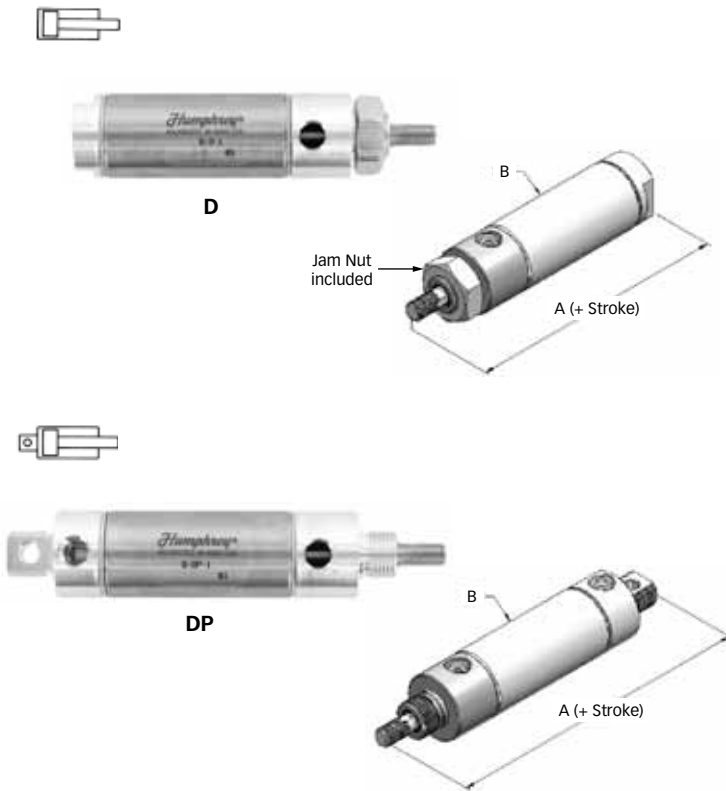
- Nose Mount (model "D")
- Nose, Pivot or Double-End Mount (model "DP")
- Block Front Head Mount (model "BFD", see page 11)

STANDARD STROKES (inch):

- Standard: 1/2 - 12
- Minimum Increment: 1/8
- Maximum Buildable: 44

OPTIONS AND ACCESSORIES (see pages 12-14): Includes rod-end customization, noise reduction and port locations. Provisions offered for alternate media, environment, temperature, or lateral load resistances. Foot or Pivot mounting. For sensor switches, see page 52.

HUMPHREY STAINLESS STEEL CYLINDER



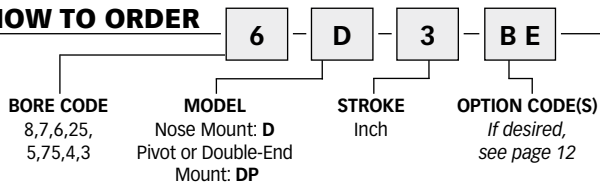
Model	Bore Size – Effective Force		Overall Dimensions		
	Bore Diameter (inch)	Piston Area inch ²	Length A + Stroke (inch)	Diameter – B (inch)	Port Thread
8-D-*	1/2	0.20	2.62	0.62	10-32 UNF
7-D-*	3/4	0.44	3.47	0.88	1/8 PIPE
6-D-*	1-1/16	0.89	3.75	1.12	
25-D-*	1-1/4	1.23	4.75	1.31	
5-D-*	1-1/2	1.77	4.44	1.55	
75-D-*	1-3/4	2.41	5.57	1.81	1/4 PIPE
4-D-*	2	3.14	5.56	2.07	
3-D-*	2-1/2	4.91	5.56	2.62	

* Enter stroke length (inches)

Model	Bore Size – Effective Force		Overall Dimensions		
	Bore Diameter (inch)	Piston Area inch ²	Length A + Stroke (inch)	Diameter – B (inch)	Port Thread
8-DP-*	1/2	0.20	3.31	0.62	10-32 UNF
7-DP-*	3/4	0.44	4.54	0.88	1/8 PIPE
6-DP-*	1-1/16	0.89	4.62	1.12	
25-DP-*	1-1/4	1.23	5.83	1.31	
5-DP-*	1-1/2	1.77	5.50	1.55	
75-DP-*	1-3/4	2.41	7.13	1.81	1/4 PIPE
4-DP-*	2	3.14	6.93	2.07	
3-DP-*	2-1/2	4.91	6.93	2.62	

* Enter stroke length (inches)

HOW TO ORDER



SPECIFICATIONS

Media:	Air
Pressure Range:	0-200 PSIG
Temperature Range:	-40°F to 160°F

HOW TO OBTAIN SPECIFICATIONS FOR CYLINDERS

- Go to www.humphrey-products.com
- Select "Online Product Guide." Follow the steps to get the cylinder you need.
- Once the specifications have been entered, select "Download Spec Sheet" to create a personalized PDF of the cylinder, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

HOW TO ORDER HUMPHREY CYLINDERS AND ACCESSORIES

- Go to www.humphrey-products.com
- Select "Find A Distributor" and input your information to locate a distributor nearest you.
- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.

HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

Low cost and reliable, Humphrey Stainless Steel Double-Acting, Double-End Rod Air Cylinders are available in eight bore sizes from 1/2" to 2-1/2". Materials include aluminum heads and stainless steel barrel and piston rod. Rod threads are roll formed for strength and durability. Type Block V piston seal ensures no air blow-by. Rod bearing is oil-permeated bronze, and precision ball-sized.

BORE SIZES (inch):

- 1/2, 3/4, 1-1/16, 1-1/4, 1-1/2, 1-3/4, 2, 2-1/2

TYPE:

- Nose or Double-End Mount (model "D2EY")

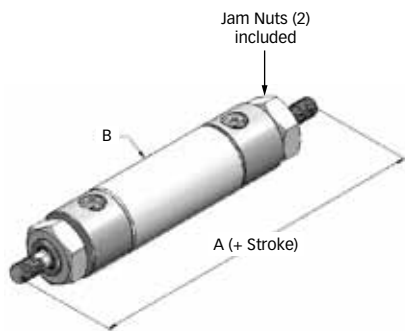
STANDARD STROKES (inch):

- Standard: 1/2 - 12
- Minimum Increment: 1/8
- Maximum Buildable: 44

OPTIONS AND ACCESSORIES (see pages 12-14): Includes port location options. Provisions offered for alternate media, and environment, temperature, or lateral load resistances. Foot or Pivot mounting.



D2EY



Model	Bore Size – Effective Force		Overall Dimensions		
	Bore Diameter (inch)	Piston Area inch ²	Length A + Stroke (inch)	Diameter – B (inch)	Port Thread
8-D2EY-*	1/2	0.20	3.88	0.62	10-32 UNF
7-D2EY-*	3/4	0.44	5.03	0.88	1/8 PIPE
6-D2EY-*	1-1/16	0.89	5.32	1.12	
25-D2EY-*	1-1/4	1.23	6.83	1.31	
5-D2EY-*	1-1/2	1.77	6.63	1.55	
75-D2EY-*	1-3/4	2.41	8.57	1.81	1/4 PIPE
4-D2EY-*	2	3.14	8.31	2.07	
3-D2EY-*	2-1/2	4.91	8.31	2.62	

* Enter stroke length (inches)

HOW TO OBTAIN SPECIFICATIONS FOR CYLINDERS

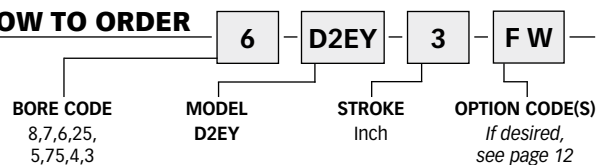
- Go to www.humphrey-products.com
- Select "Online Product Guide." Follow the steps to get the cylinder you need.
- Once the specifications have been entered, select "Download Spec Sheet" to create a personalized PDF of the cylinder, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

HOW TO ORDER HUMPHREY CYLINDERS AND ACCESSORIES

- Go to www.humphrey-products.com
- Select "Find A Distributor" and input your information to locate a distributor nearest you.
- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.

HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

HOW TO ORDER



SPECIFICATIONS

Media:	Air
Pressure Range:	0-200 PSIG
Temperature Range:	-40°F to 160°F

SINGLE-ACTING CYLINDERS – PUSH

MODELS S, SP

Low cost and reliable, Humphrey Stainless Steel, Spring-Return, Single-Acting Air Cylinders are available in seven bore sizes from 1/2" to 2". Materials include aluminum heads and stainless steel barrel and piston rod. Type Block V piston seal ensures no air blow-by. Rod bearing is oil-permeated bronze and precision ball-sized. Cataloged rod threads are roll formed for strength and durability. Rod-end customization is available with the "Deluxe Rod End" program (see page 13).

BORE SIZES (inch):

- 1/2, 3/4, 1-1/16, 1-1/4, 1-1/2, 1-3/4, 2

TYPES:

- Nose Mount (model "S")
- Pivot or Double-End Mount (model "SP")
- Block Front Head Mount (model "BFS", see page 11)

STANDARD STROKES (inch):

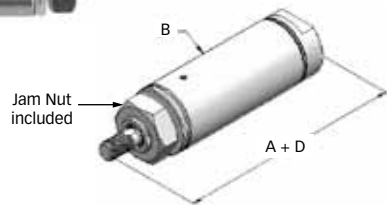
- Standard: 1/2 – 6
- Minimum Increment: 1/8
- Maximum Buildable: 18

OPTIONS AND ACCESSORIES (see pages 12-14): Includes rod-end customization, noise reduction and port locations. Provisions offered for alternate media, environment, temperature, or lateral load resistances. Foot or pivot mounting.

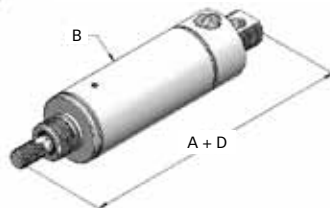
HUMPHREY STAINLESS STEEL CYLINDER



S



SP



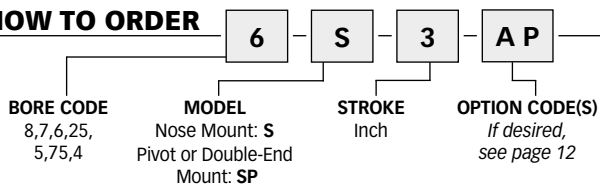
Model	Bore Size – Effective Force		Overall Dimensions			
	Bore Diameter (inch)	Piston Area inch ²	Length (A + D)		Diameter – B (inch)	Port Thread
			Base - A Length	Add'l Length - D for each 1" stroke increment		
8-S-*	1/2	0.20	1.81	1.88	0.56	1/8 PIPE
7-S-*	3/4	0.44	2.00	1.69	0.81	
6-S-*	1-1/16	0.89	2.56	1.56	1.12	
25-S-*	1-1/4	1.23	3.41	1.81	1.31	1/4 PIPE
5-S-*	1-1/2	1.77	3.19	1.69	1.55	
75-S-*	1-3/4	2.41	3.85	2.00	1.81	1/4 PIPE
4-S-*	2	3.14	4.17	2.00	2.07	

* Enter stroke length (inches)

Model	Bore Size – Effective Force		Overall Dimensions			
	Bore Diameter (inch)	Piston Area inch ²	Length (A + D)		Diameter – B (inch)	Port Thread
			Base - A Length	Add'l Length - D for each 1" stroke increment		
8-SP-*	1/2	0.20	2.50	1.88	0.62	1/8 PIPE
7-SP-*	3/4	0.44	3.06	1.69	0.81	
6-SP-*	1-1/16	0.89	3.44	1.56	1.12	
25-SP-*	1-1/4	1.23	4.50	1.81	1.31	1/4 PIPE
5-SP-*	1-1/2	1.77	4.25	1.69	1.55	
75-SP-*	1-3/4	2.41	5.41	2.00	1.81	1/4 PIPE
4-SP-*	2	3.14	5.54	2.00	2.07	

* Enter stroke length (inches)

HOW TO ORDER



SPECIFICATIONS

Media:	Air
Pressure Range:	0-200 PSIG
Temperature Range:	-40°F to 160°F

HOW TO OBTAIN SPECIFICATIONS FOR CYLINDERS

- Go to www.humphrey-products.com
- Select "Online Product Guide." Follow the steps to get the cylinder you need.
- Once the specifications have been entered, select "Download Spec Sheet" to create a personalized PDF of the cylinder, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

HOW TO ORDER HUMPHREY CYLINDERS AND ACCESSORIES

- Go to www.humphrey-products.com
- Select "Find A Distributor" and input your information to locate a distributor nearest you.
- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.

HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

Low cost and reliable, Humphrey Stainless Steel, Spring-Extend, Single-Acting Air Cylinders are available in seven bore sizes from 1/2" to 2". Materials include aluminum heads and stainless steel barrel and piston rod. Type Block V piston seal ensures no air blow-by. Rod-bearing is oil permeated bronze and precision ball-sized. Cataloged rod threads are roll formed for strength and durability. Rod-end customization is available with the "Deluxe Rod End" program (see page 13).

BORE SIZES (inch):

- 1/2, 3/4, 1-1/16, 1-1/4, 1-1/2, 1-3/4, 2

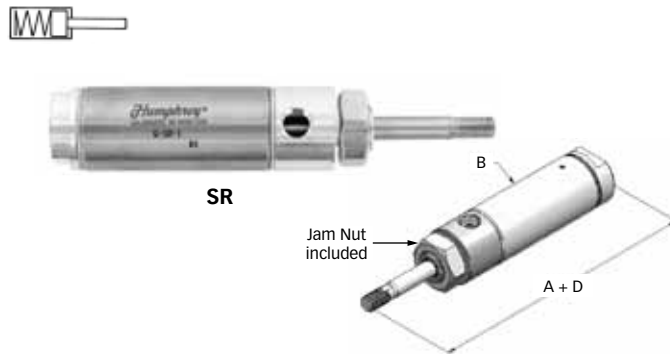
TYPES:

- Nose Mount (model "SR")
- Pivot or Double-End Mount (model "SRP")
- Block Front Head Mount (model "BFSR", see page 11)

STANDARD STROKES (inch):

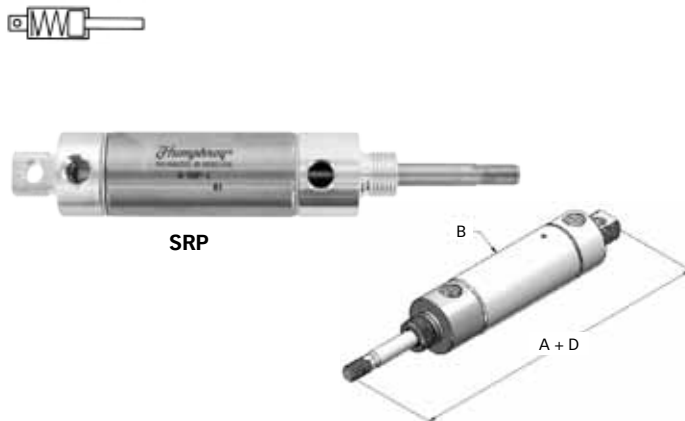
- Standard: 1/2 – 4
- Minimum Increment: 1/8
- Maximum Buildable: 18

OPTIONS AND ACCESSORIES (see pages 12-14): Includes rod-end customization, noise reduction and port locations. Provisions offered for alternate media, environment, temperature, or lateral load resistances. Foot or pivot mounting.



Model	Bore Size – Effective Force		Overall Dimensions			
	Bore Diameter (inch)	Piston Area inch ²	Length (A + D)		Diameter – B (inch)	Port Thread
			Base - A Length	Add'l Length - D for each 1" stroke increment		
8-SR-*	1/2	0.17	2.42	2.88	0.62	10-32 UNF
7-SR-*	3/4	0.39	2.78	2.69	0.81	1/8 PIPE
6-SR-*	1-1/16	0.81	3.28	2.56	1.12	
25-SR-*	1-1/4	1.08	4.25	2.81	1.31	
5-SR-*	1-1/2	1.62	4.00	2.69	1.55	1/4 PIPE
75-SR-*	1-3/4	2.21	5.03	3.00	1.81	
4-SR-*	2	2.84	5.11	3.00	2.07	

* Enter stroke length (inches)



Model	Bore Size – Effective Force		Overall Dimensions			
	Bore Diameter (inch)	Piston Area inch ²	Length (A + D)		Diameter – B (inch)	Port Thread
			Base - A Length	Add'l Length - D for each 1" stroke increment		
8-SRP-*	1/2	0.17	3.12	2.88	0.62	10-32 UNF
7-SRP-*	3/4	0.39	3.84	2.69	0.81	1/8 PIPE
6-SRP-*	1-1/16	0.81	4.15	2.56	1.12	
25-SRP-*	1-1/4	1.08	5.33	2.81	1.31	
5-SRP-*	1-1/2	1.62	5.06	2.69	1.55	1/4 PIPE
75-SRP-*	1-3/4	2.21	6.59	3.00	1.81	
4-SRP-*	2	2.84	6.48	3.00	2.07	

* Enter stroke length (inches)

HOW TO OBTAIN SPECIFICATIONS FOR CYLINDERS

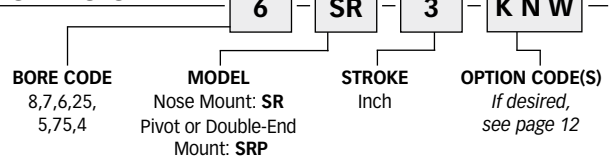
- Go to www.humphrey-products.com
- Select "Online Product Guide." Follow the steps to get the cylinder you need.
- Once the specifications have been entered, select "Download Spec Sheet" to create a personalized PDF of the cylinder, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

HOW TO ORDER HUMPHREY CYLINDERS AND ACCESSORIES

- Go to www.humphrey-products.com
- Select "Find A Distributor" and input your information to locate a distributor nearest you.
- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.

HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

HOW TO ORDER



SPECIFICATIONS

Media:	Air
Pressure Range:	0-200 PSIG
Temperature Range:	-40°F to 160°F

SINGLE-ACTING CYLINDERS – NON-ROTATING

MODELS SH, SHP

Low cost and reliable, Humphrey Stainless Steel, Non-Rotating, Spring-Return, Single-Acting Air Cylinders are available in four bore sizes from 1/2" to 1-1/2". Materials include aluminum heads and stainless steel barrel and hex piston rod. Type Block V piston seal ensures no air blow-by. Cataloged rod threads are roll formed for strength and durability.

BORE SIZES (inch):

- 1/2, 3/4, 1-1/16, 1-1/2

TYPES:

- Nose Mount (model "SH")
- Nose, Pivot or Double-End Mount (model "SHP")

STANDARD STROKES (inch):

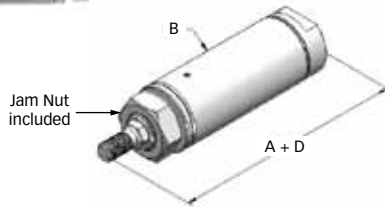
- Standard: 1/2 – 6
- Minimum Increment: 1/8
- Maximum Buildable: 18

OPTIONS AND ACCESSORIES (see pages 12-14): Includes noise reduction and port locations. Provisions offered for alternate media, environment, temperature, or lateral load resistances. Foot or pivot mounting.

HUMPHREY STAINLESS STEEL CYLINDER



SH

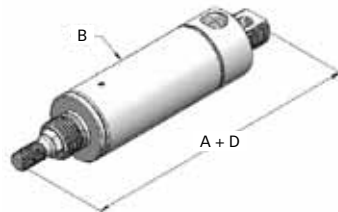


Model	Bore Size – Effective Force		Overall Dimensions			
	Bore Diameter (inch)	Piston Area inch ²	Length (A + D)		Diameter – B (inch)	Port Thread
			Base - A Length	Add'l Length - D for each 1" stroke increment		
8-SH-*	1/2	0.2	2.06	1.88	0.56	10-32 UNF
7-SH-*	3/4	0.44	2.25	1.69	0.81	1/8 PIPE
6-SH-*	1 1/16	0.89	2.68	1.56	1.12	
5-SH-*	1 1/2	1.77	3.44	1.69	1.55	

* Enter stroke length (inches)



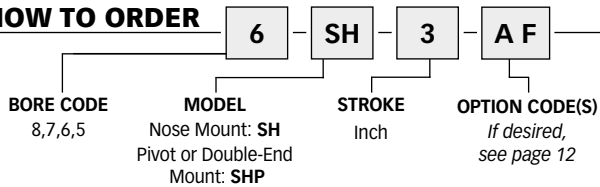
SHP



Model	Bore Size – Effective Force		Overall Dimensions			
	Bore Diameter (inch)	Piston Area inch ²	Length (A + D)		Diameter – B (inch)	Port Thread
			Base - A Length	Add'l Length - D for each 1 stroke increment		
8-SHP-*	1/2	0.2	2.75	1.88	0.56	10-32 UNF
7-SHP-*	3/4	0.44	3.31	1.69	0.81	1/8 PIPE
6-SHP-*	1 1/16	0.89	3.56	1.56	1.12	
5-SHP-*	1 1/2	1.77	4.50	1.69	1.55	

* Enter stroke length (inches)

HOW TO ORDER



SPECIFICATIONS

Media:	Air
Pressure Range:	0-200 PSIG
Temperature Range:	-40°F to 160°F

HOW TO OBTAIN SPECIFICATIONS FOR CYLINDERS

- Go to www.humphrey-products.com
- Select "Online Product Guide." Follow the steps to get the cylinder you need.
- Once the specifications have been entered, select "Download Spec Sheet" to create a personalized PDF of the cylinder, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

HOW TO ORDER HUMPHREY CYLINDERS AND ACCESSORIES

- Go to www.humphrey-products.com
- Select "Find A Distributor" and input your information to locate a distributor nearest you.
- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.



HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

Low cost and reliable, Humphrey Block Front Single- and Double-Acting Air Cylinders are available in four bore sizes from 1/2" to 1-1/2". Materials include aluminum heads and stainless steel barrel and piston rod. Type Block V piston seal ensures no air blow-by. Rod bearing is oil-permeated bronze and precision ball-sized. Rod threads are roll formed for strength and durability. Rod-end customization is available with the "Deluxe Rod End" program (see page 13). On BFD Model, Sensor Switch option is available for stroke position signaling to PLCs.

BORE SIZES (inch):

- 1/2, 3/4, 1-1/16, 1-1/2

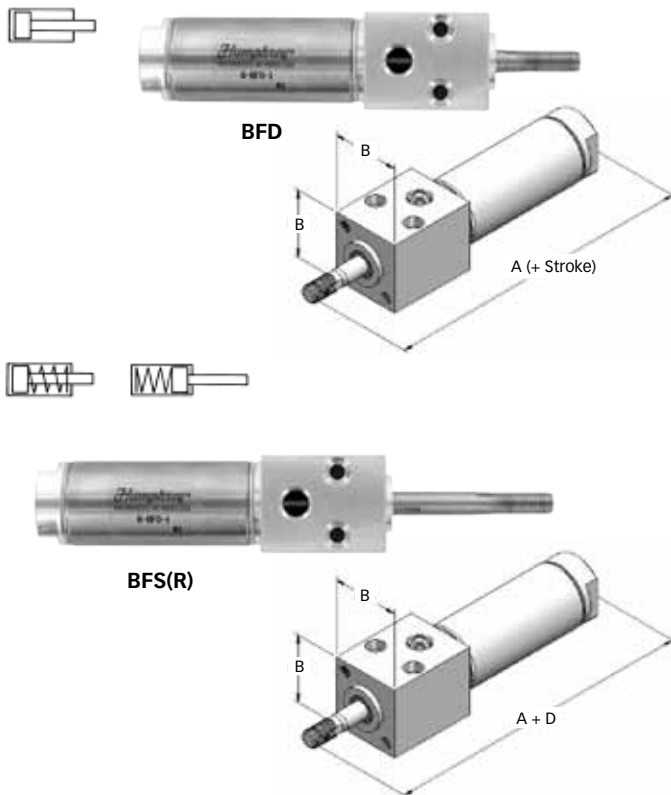
TYPES:

- Double Acting (model "BFD")
- Single Acting – Push (model "BFS")
- Single Acting – Pull (model "BFSR")

STANDARD STROKES (inch):

- Double Acting: 1/2 – 12
- Single Acting – Push: 1/2 – 6
- Single Acting – Pull: 1/2 – 4
- Minimum Increment: 1/8
- Longer strokes: Consult Factory

OPTIONS AND ACCESSORIES (see pages 12-14): Includes rod-end customization and noise-reducing bumpers. Provisions offered for alternate media, environment, temperature, or lateral load resistances. Sensor Switches for BFD model (see page 52).



Double Acting Model	Bore Size – Effective Force		Overall Dimensions		
	Bore Diameter (inch)	Piston Area inch ²	Length A + Stroke (inch)	Diameter – B (inch)	Port Thread
8-BFD-*	1/2	0.2	2.62	0.75	10-32 UNF
7-BFD-*	3/4	0.44	4.03	1.00	1/8 PIPE
6-BFD-*	1 1/16	0.89	4.75	1.25	
5-BFD-*	1 1/2	1.77	5.44	1.75	1/4 PIPE

* Enter stroke length (inches)

Single Acting – Push Model	Bore Size – Effective Force		Overall Dimensions			
	Bore Diameter (inch)	Piston Area inch ²	Length (A + D)		Diameter – B (inch)	Port Thread
			Base - A Length	Add'l Length - D for each 1" stroke increment		
8-BFS-*	1/2	0.2	2.42	1.88	0.75	10-32 UNF
7-BFS-*	3/4	0.44	3.34	1.69	1.00	1/8 PIPE
6-BFS-*	1 1/16	0.89	4.28	1.56	1.25	
5-BFS-*	1 1/2	1.77	5.00	1.69	1.75	1/4 PIPE

* Enter stroke length (inches)

Single Acting – Pull Model	Bore Size – Effective Force		Overall Dimensions			
	Bore Diameter (inch)	Piston Area inch ²	Length (A + D)		Diameter – B (inch)	Port Thread
			Base - A Length	Add'l Length - D for each 1" stroke increment		
8-BFSR-*	1/2	0.17	2.42	2.88	0.75	10-32 UNF
7-BFSR-*	3/4	0.39	3.34	2.69	1.00	1/8 PIPE
6-BFSR-*	1 1/16	0.81	4.28	2.56	1.25	
5-BFSR-*	1 1/2	1.62	5.18	2.69	1.75	1/4 PIPE

* Enter stroke length (inches)

HOW TO OBTAIN SPECIFICATIONS FOR CYLINDERS

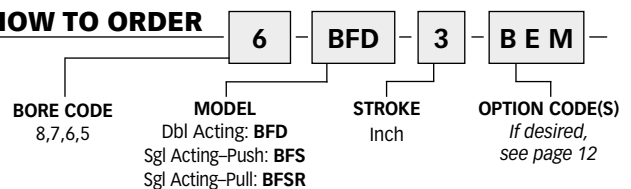
- Go to www.humphrey-products.com
- Select "Online Product Guide." Follow the steps to get the cylinder you need.
- Once the specifications have been entered, select "Download Spec Sheet" to create a personalized PDF of the cylinder, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

HOW TO ORDER HUMPHREY CYLINDERS AND ACCESSORIES

- Go to www.humphrey-products.com
- Select "Find A Distributor" and input your information to locate a distributor nearest you.
- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.

HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

HOW TO ORDER



SPECIFICATIONS

Media:	Air
Pressure Range:	0-200 PSIG
Temperature Range:	-40°F to 160°F

HUMPHREY STAINLESS STEEL CYLINDER

HUMPHREY STAINLESS STEEL CYLINDER

STANDARD MODELS AND OPTIONS

A wide variety of options are available to address most needs. These include provisions for low pressure hydraulic service, alternate port locations, piston magnets for sensor switch operation, noise reduction, and resistance to minor lateral loads and/or harsh ambient conditions.

Please refer to the MODEL and OPTION CODE portion of the "How to Order" section on the previous pages. Multiple option code selections are possible, per cylinder model. Examples of part numbers utilizing codes below are: 25-D-3BF and 4-DP-1EKM.

MODEL REFERENCE CHART

MODEL	PAGE	MODEL	PAGE
S – Single-Acting Nose Mount.....	8	D – Double-Acting Nose Mount.....	6
SP – Single-Acting Pivot Mount.....	8	DP – Double-Acting Pivot/Double-End Mount.....	6
SH – Single-Acting Nose Mount/Hex Rod.....	9	D2EY – Double-Acting Double-End Rod.....	7
SHP – Single-Acting Pivot Mount/Hex Rod.....	9	BFS – Single-Acting Block Front Mount.....	11
SR – Single-Acting Reverse/Nose Mount.....	10	BFSR – Single-Acting Reverse/Block Front Mount.....	11
SRP – Single-Acting Reverse/Pivot Mount.....	10	BFD – Double-Acting Block Front Mount.....	11

HOW TO ORDER OPTIONS – AVAILABLE BY MODEL

OPTIONS	DESCRIPTION	APPLICABLE MODELS
A	SIDE PORTED REAR HEAD Locates rear port at side of body on single- or double-acting types.	S, SH, SR, D, BFS, BFSR, BFD
B	BUMPER Reduce mechanical noise. Absorb Shock. Standard on Model D2EY.	S, SP, SH, SHP, SR, SRP, D, DP, BFS, BFSR, BFD
E	LOW FRICTION SEALS For low breakaway or low pressure applications.	S, SP, SH, SHP, SR, SRP, D, DP, D2EY, BFS, BFSR, BFD
F	FLUOROCARBON SEALS (Fluoroelastomer) For ambient temperatures of -20°F to 400°F. For mild resistance to air line and ambient contaminants, fumes, etc.	S, SP, SH, SHP, SR, SRP, D, DP, D2EY, BFS, BFSR, BFD
J	ROTATE FRONT HEAD 90° Front head is rotated 90 degrees (CW).	SR, SRP, D, DP, D2EY, BFS, BFSR, BFD
K	ROTATE FRONT HEAD 180° Front head is rotated 180 degrees.	SR, SRP, D, DP, D2EY, BFS, BFSR, BFD
L	ROTATE FRONT HEAD 270° Front head is rotated 270 degrees (CW).	SR, SRP, D, DP, D2EY, BFS, BFSR, BFD
M	INTERNAL MAGNET For use with Humphrey Sensors. Available for models D, DP and BFD as a standard.	D, DP, D2EY, BFD
N	WEARSTRIP Protects piston and barrel from wear due to minor rod deflection. Not available on Bore 8.	SR, SRP, D, DP, BFSR, BFD
P	POLYPAK ROD SEAL Provides excellent rod-sealing capabilities at low pressures.	S, SP, SH, SHP, SR, SRP, D, DP, D2EY, BFS, BFSR, BFD
R	ROTATED REAR PIVOT TANG Rotation of rear pivot tang 90 degrees. Port remains in original position.	SRP, DP
T	PIVOT PIN IN REAR TANG Pivot pin pressed into rear tang. No bracket available. Not available with bores 4 and 3.	SP, SHP, SRP, DP
W	ROD WIPER Provides a wiping action to remove most foreign material from exposed rod while maintaining adequate lubricating film. Protect rod and primary rod seal. Available on all D, DP, SR and D2EY models. Not available on Bore 8.	SR, SRP, D, DP, D2EY
U	REAR PIVOT BUSHING Bushing in rear pivot hole. Hole diameter remains the same. Available on models SP, SHP, SRP, and DP bores 7, 6, 25 and 5. Standard on bores 3 and 4.	SP, SHP, SRP, DP

HUMPHREY STAINLESS STEEL CYLINDER

Exclusive with all Humphrey Stainless Steel Cylinders (except SH, SHP and D2EY models), you may choose from 15 unique, custom rod-end design selections, and have us tailor it to your exact requirements.

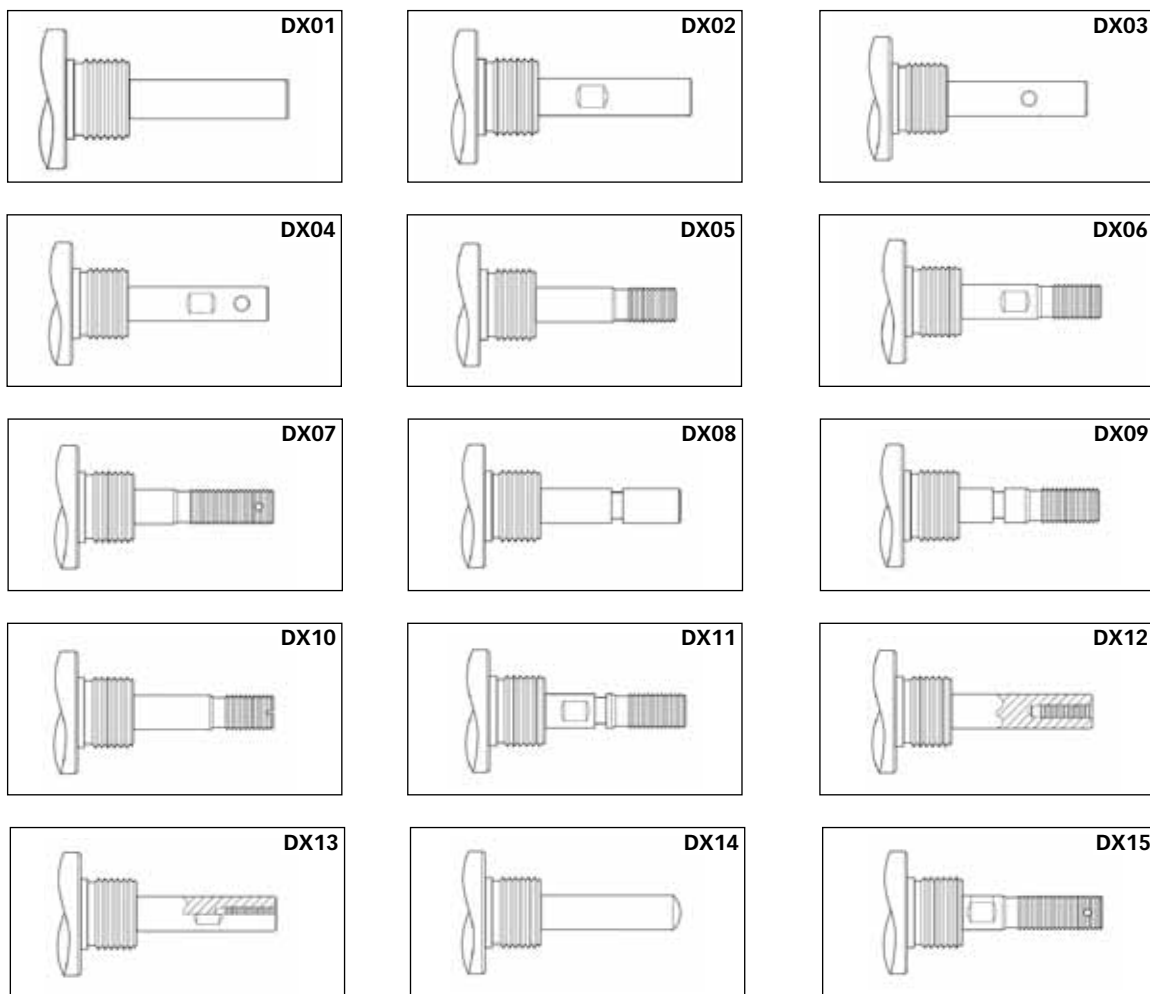
The 15 themes are shown below, and address customizable features such as rod extension length, wrench flat position, male or female rod thread and rod thread length, plain rod end, rounded rod end, ring grooves, rod diameter reductions, and (cotter) pin holes.

Each of the 15 different rod end selections includes

a specific set of user definable dimensions selected from the Deluxe Rod End Workbook.

Expect normal lead times and no minimum order quantities. A unique model number is assigned at the initial build cycle. That part number is permanently available to you for future orders of the same make. Examples of part numbers utilizing codes below are: 7-S-2 DX01-00137 and 5-DP-10N DX12-01098.

Contact your nearest authorized stocking distributor or visit our website for details and to download the Deluxe Rod End Workbook.



HOW TO DESIGN AND SPECIFY A DELUXE ROD END CYLINDER(S)

- Go to www.humphrey-products.com
- Select "List of Cylinders," then "DX Deluxe Rod End Workbook."
- Click on the link to download the workbook pdf, which will assist you in determining what options you will need.
- Or, use this link to take you directly to the workbook pdf: www.humphrey-products.com/?q=content/dx-deluxe-rod-end-workbook

HOW TO ORDER HUMPHREY CYLINDERS AND ACCESSORIES

- Go to www.humphrey-products.com
- Select "Find A Distributor." Input your information to locate a distributor nearest you.
- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.



HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

ACCESSORIES

SENSOR SWITCHES, MOUNTING ACCESSORIES

SENSOR SWITCHES

Humphrey Reed Type and Hall Effect Type Sensor Switches are available for models D, DP and BFD Humphrey Stainless Steel Cylinders ordered with option M, internal magnet (consult factory for other types). Standard lead wires are 24 inches in length (144" also available). Reed Type models RS-2 and RS-4 operate with AC or DC voltages, and Hall Effect Type Model GMR1 operates with DC voltages only.

PSMK mount secures sensor switch to the cylinder. Order with switch or as a mounting kit.



5-DP-4M with two RS-2-PSMK switches

For additional details and specifications, see page 52.

MOUNTING ACCESSORIES

Humphrey Stainless Steel Cylinder Accessories are made of carbon steel, burnished for surface smoothness, and bright zinc plated.



Pivot Brackets

Model	Applicable Cylinder Bore	Cylinder Model	Consists Of...
BP-8-C	8	DP, SP, SRP, SHP	Pivot Bracket, Pivot Pin, Retainer
BP-11-C	7, 6		
BP-25-C	25		
BP-15-C	5, 75		
BP-19-C	4, 3		



Rod Clevis

Model	Applicable Cylinder Bore	Cylinder Model	Consists Of...
CT-8	8	All Models	Locknut, Rod Clevis, Clevis Pin, Retainer
CT-7	7		
CT-11	6		
CT-15	25, 5		
CT-19	75, 4, 3		



Foot Mount

Model	Applicable Cylinder Bore	Cylinder Model	Consists Of...
F-8-S	8	S, SP, SHP, SRP	Foot Mount
F-8	8	D, DP, D2EY	
F-7	7	S, SP, SHP, SRP	
F-11	7	D, DP, D2EY	
F-11	6	All Models	
F-15	25, 5		
F-75	75		
F-19	4		
F-21	3		



Jam Nut*

Model	Applicable Cylinder Bore	Cylinder Model	Consists Of...
JN-8-S	8	S, SP, SHP, SRP	Jam Nut
JN-8	8	D, DP, D2EY	
JN-7	7	S, SP, SHP, SRP	
JN-11	7	D, DP, D2EY	
JN-11	6	All Models	
JN-15	25, 5		
JN-75	75		
JN-19	4		
JN-21	3		

*Note: One supplied with all Type S, SH, SR, D. Two supplied with type D2EY.

HOW TO OBTAIN SPECIFICATIONS FOR PARTICULAR CYLINDER SWITCHES AND ACCESSORIES

- Go to www.humphrey-products.com
- Select "Online Product Guide." Follow the steps to get the items you need.
- Once you have finished entering the specifications, select "Download Spec Sheet." Doing this will create a personalized PDF of the cylinder accessory, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

HOW TO ORDER HUMPHREY CYLINDERS AND ACCESSORIES

- Go to www.humphrey-products.com
- Select "Find A Distributor." Input your information to locate a distributor nearest you.
- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.



HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

HUMPHREY STAINLESS STEEL CYLINDER

Humphrey Volume Chambers are small, cost-effective air reservoirs used for pneumatic automation applications. Specify Volume Chambers to ensure total upstream air supply is adequate for the maximum consumption of the device or system. Available in many bore sizes and up to 216 total cubic inches of internal volume. Aluminum end caps and stainless steel barrel. Select from standard mount, end mount and double-end mount.

BORE SIZES (inch):

- 1/2, 3/4, 1-1/6, 1-1/4, 1-1/2, 2, 2-1/2

TYPE:

- Standard (model "C")
- End Mount (model "CP")
- Double-End Mount (model "CPP")

BARREL INTERNAL LENGTHS (inch):

- Standard: 1 – 12
- Maximum Buildable: 44

OPTIONS AND ACCESSORIES:

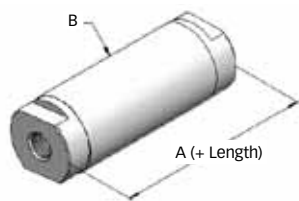
Consult factory for side porting available for CP and CPP models and custom port locations.



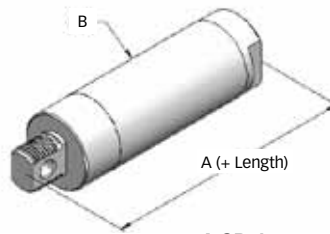
6-C-2

Model	Bore Size - Internal Volume			Overall Dimensions					
	Bore Diameter (inch)	Base Volume inch ³	Add'l Volume per inch	Length A - (inch)			Add'l Length per inch specified	Diameter - B (inch)	Port Thread
				Base Length					
8-C-*	1/2	0.11	0.20	Standard Mount (C)	End Mount (CP)	Double-End Mount (CPP)	1	0.62	10-32 UNF
7-C-*	3/4	0.40	0.44	1.91	3.26	4.61		0.88	
6-C-*	1-1/16	0.88	0.89	2.18	3.06	3.94		1.12	
25-C-*	1-1/4	1.44	1.23	2.67	3.75	4.83		1.31	1/8 PIPE
5-C-*	1-1/2	1.68	1.77	2.26	3.32	4.38		1.55	
75-C-*	1-3/4	3.29	2.41	2.57	4.13	5.69		1.81	1/4 PIPE
4-C-*	2	4.04	3.14	2.81	4.18	5.55		2.07	
3-C-*	2-1/2	6.38	4.91	2.81	4.18	5.55		2.62	

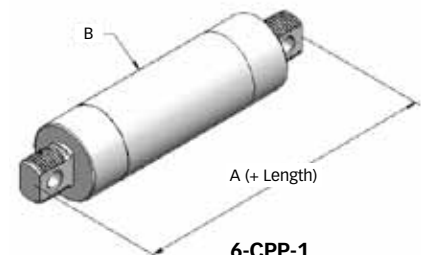
* Enter stroke length (inches)



6-C-1



6-CP-1



6-CPP-1

HOW TO OBTAIN SPECIFICATIONS FOR VOLUME CHAMBERS

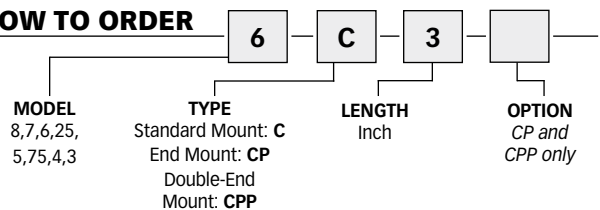
- Go to www.humphrey-products.com
- Select "Online Product Guide." Follow the steps to get the chamber you need.
- Once the specifications have been entered, select "Download Spec Sheet" to create a personalized PDF of the chamber, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

HOW TO ORDER HUMPHREY VOLUME CHAMBERS

- Go to www.humphrey-products.com
- Select "Find A Distributor" and input your information to locate a distributor nearest you.
- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.

HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

HOW TO ORDER



SPECIFICATIONS

Media:	Air or Vacuum
Pressure Range:	0-200 PSIG
Temperature Range:	-40°F to 160°F

LINEAR ACTUATORS

INTRODUCTION

Humphrey Linear Actuators combine the functions of conventional air cylinders with added design and cost considerations, such as miniaturization, mounting and position sensor conveniences, and RoHS compliant materials. Additional non-cataloged products are available including tandem and dual actuators, actuators offering longer strokes, end keep, clean room specifications, and cylinders for slow speed applications.

The lineup includes actuators as small as the subminiature 4.5mm bore Mini-Bit to a robust 100mm bore, the largest of 10 bore sizes available with the Block Cylinder Series.

MINI-BIT SERIES MINIATURE LINEAR ACTUATORS

The Mini-Bit Series is designed to minimize overall size of the linear actuator for applications requiring short, low force pneumatic movements. Rectangular in shape, Mini-Bits reduce design time and minimize mounting complexities, while reducing overall width and length. Standard types are smallest. Sensor types include grooves in the cylinder body to hold switches and a magnetic piston for end-of-stroke position sensing.



MULTI-MOUNT SERIES SMALL ACCURATE LINEAR ACTUATORS

The Multi-Mount Series is designed for small, accurate pneumatic movements when precise mountings may be beneficial. Rectangular in shape, Multi-Mounts are thinner than conventional air cylinders and can reduce design and development costs for complementary tooling. Precision end caps improve perpendicularity. Piston rod and end cap bearing assembly is precise for accurate movements. Optional flange and foot mounts round out the offering.



BLOCK CYLINDER SERIES COMPACT LINEAR ACTUATORS

The Block Cylinder Series is a family of linear pneumatic actuators that minimize overall length. A wide variety of sizes, types, mounts and options make up a broad product offering suitable for virtually any application. Non-rotating "square rod" series is available in some bore sizes. Non-cataloged, tandem type and dual type also available.



KNOCK CYLINDER SERIES CARTRIDGE STYLE LINEAR ACTUATORS

The Knock Cylinders are simple, body-threaded, linear actuators suitable for high precision mounting relative to the center line of the piston rod. Small in size, they are single-acting, spring-return pneumatic actuators. Most popular for precision "insert" style mount applications, Knock Cylinders also have panel or foot mounting accessories. Sensor type is not available.



MINI-BIT



HMBDA

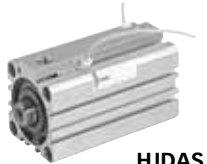
HMBSA

BLOCK



HJDA

HJDAD



HJDAS

KNOCK



HNSA - Insert Mount



HNSA - Foot Mount

MULTI-MOUNT



HBSALS

HBDADS



HBDALS



HBTALS



HMBSAS, HMBDAS

MINI-BIT CYLINDER SERIES					
	Bore Size – mm	(Push Force @100psi-lbs)	Std. Stroke Range (mm)	Max. Poss. Stroke (mm)	Page
HMBDA – Double Acting	4.5	(2.5)			18
HMBDAS – Double Acting, Sensor	6	(4.4)			18
HMBSA – Single Acting	8	(7.7)	5 – 20	20	19
HMBSAS – Single Acting, Sensor	10	(12)			19
MULTI-MOUNT CYLINDER SERIES					
	Bore Size – mm	(Push Force @100psi-lbs)	Std. Stroke Range (inch)	Max. Poss. Stroke (inch)	Page
HBDAS – Double Acting, Sensor					20
HBDADS – Double Acting, Double Rod, Sensor					20
HBDALS – Double Acting, Non-Rotating, Sensor					21
HBDADLS – Double Acting, Non-Rotating, Double Rod, Sensor	6	(4.4)			21
HBSAS – Single Acting – Push, Sensor	10	(12)	1/4 – 1-1/4	1-1/4	22
HBTAS – Single Acting – Pull, Sensor	16	(31)			22
HBSALS – Single Acting – Push, Non-Rotating, Sensor					23
HBTALS – Single Acting – Pull, Non-Rotating, Sensor					23
Mounting Bracket Option/Mounting Bracket Parts		N/A	N/A	N/A	24-25
BLOCK CYLINDER SERIES					
	Bore Size – mm	(Push Force @100psi-lbs)	Std. Stroke Range (inch)	Max. Poss. Stroke (inch)	Page
HJDA – Double Acting	12	(18)			26
HJDAS – Double Acting, Sensor	16	(31)			26
HJSA – Single Acting – Push	20	(49)			27
HJSAS – Single Acting – Push, Sensor	25	(76)			27
HJTA – Single Acting – Pull	32	(125)	1/4 – 4 (varies by bore size)	4 (varies by bore size)	28
HJTAS – Single Acting – Pull, Sensor	40	(195)			28
HJDAD – Double Acting, Double Rod	50	(304)			29
HJDAS – Double Acting, Double Rod, Sensor	63	(483)			29
HJSAD – Single Acting, Double Rod	80	(779)			30
HJSADS – Single Acting, Double Rod, Sensor	100	(1217)			30
KNOCK CYLINDER SERIES					
	Bore Size – mm	(Push Force @100psi-lbs)	Std. Strokes (inch)	Max. Poss. Stroke (inch)	Page
	6	(4.4)			
HNSA – Single Acting – Push	10	(12)	1/4 3/8 1/2	1/2	31
	16	(31)			

MINI-BIT CYLINDERS – DOUBLE ACTING

HMBDA, HMBDAS

The Mini-Bit Double-Acting Cylinders are sub-miniature, square body actuators that dramatically reduce overall volume and length versus comparable actuators. Available in four bore sizes from 4.5 to 10mm. Stroke range is 4 to 20mm, depending on bore size. Sensor cylinder types are available for end-of-stroke position sensor signaling to PLCs.

BORE SIZES (mm):

- 4.5, 6, 8, 10

TYPE:

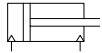
- Double Acting (HMBDA, HMBDAS)

STANDARD STROKES (mm):

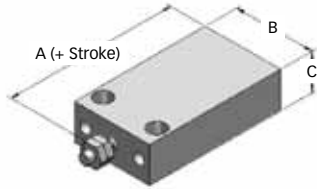
- 4.5 Bore: 4, 6, 8, 10
- 6 Bore: 4, 6, 8, 10, 15
- 8, 10 Bore: 4, 6, 8, 10, 15, 20

OPTIONS AND ACCESSORIES:

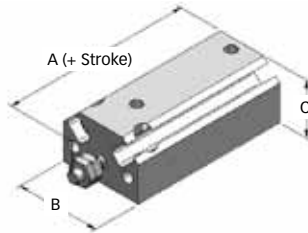
Reed and Non-Contact Sensor Switch options on page 53. Non-threaded, plain rod end. Consult factory for clean room specification types.



HMBDA
(Standard Type)



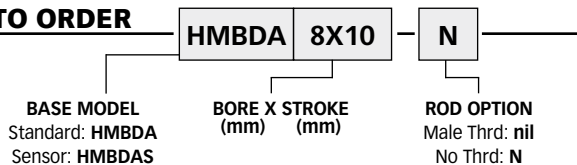
HMBDAS
(Sensor Type)



Standard Type Model	Bore Size - Effective Force		Overall Dimensions			
	Bore Diameter (mm)	Piston Area inch ²	Length A + Stroke (mm)	Width-B (mm)	Depth-C (mm)	Port Thread
HMBDA	4.5	0.02	23	15	6	M3x0.5
	6	0.04	24.5	17	8	
	8	0.08	24.5	21	10	
	10	0.12	27	23	12	

Sensor Type Model	Bore Size - Effective Force		Overall Dimensions			
	Bore Diameter (mm)	Piston Area inch ²	Length A + Stroke (mm)	Width-B (mm)	Depth-C (mm)	Port Thread
HMBDAS	4.5	0.02	27	15	11	M3x0.5
	6	0.04	28	17	12	
	8	0.08	27.5	21	14	
	10	0.12	30	23	16	

HOW TO ORDER



HOW TO OBTAIN SPECIFICATIONS FOR CYLINDERS

- Go to www.humphrey-products.com
- Select "Online Product Guide." Follow the steps to get the cylinder you need.
- Once the specifications have been entered, select "Download Spec Sheet" to create a personalized PDF of the cylinder, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

HOW TO ORDER HUMPHREY CYLINDERS AND ACCESSORIES

- Go to www.humphrey-products.com
- Select "Find A Distributor" and input your information to locate a distributor nearest you.
- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.

HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

SPECIFICATIONS

Media:	Air
Pressure Range:	20-100 PSIG
Temperature Range:	32°F to 140°F

LINEAR ACTUATORS

The Mini-Bit Single-Acting Push Type Cylinders are sub-miniature, square-body actuators that dramatically reduce overall volume and length versus comparable actuators. Available in four bore sizes from 4.5 to 10mm. Stroke range is 4 to 10mm, depending on bore size. Sensor cylinder types are available for end-of-stroke position sensor signaling to PLCs.

BORE SIZES (mm):

- 4.5, 6, 8, 10

TYPE:

- Single Acting – Push (HMBSA, HMBSAS)

STANDARD STROKES (mm):

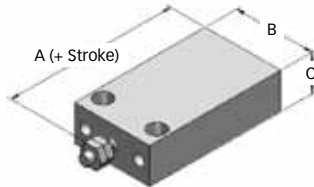
- 4.5, 6 Bore: 4, 6, 8
- 8, 10 Bore: 4, 6, 8, 10

OPTIONS AND ACCESSORIES:

Reed and Non-Contact Sensor Switch options on page 53. Non-threaded, plain rod end.



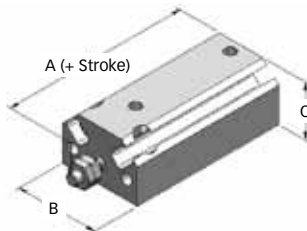
HMBSA
(Standard Type)



Standard Type Model	Bore Size - Effective Force		Overall Dimensions			
	Bore Diameter (mm)	Piston Area inch ²	Length A + Stroke (mm)	Width-B (mm)	Depth-C (mm)	Port Thread
HMBSA	4.5	0.02	25	15	6	M3x0.5
	6	0.04	26.5	17	8	
	8	0.08	26.5	21	10	
	10	0.12	29	23	12	



HMBSAS
(Sensor Type)



Sensor Type Model	Bore Size - Effective Force		Overall Dimensions			
	Bore Diameter (mm)	Piston Area inch ²	Length A + Stroke (mm)	Width-B (mm)	Depth-C (mm)	Port Thread
HMBSAS	4.5	0.02	29	15	11	M3x0.5
	6	0.04	30	17	12	
	8	0.08	29.5	21	14	
	10	0.12	32	23	16	

HOW TO OBTAIN SPECIFICATIONS FOR CYLINDERS

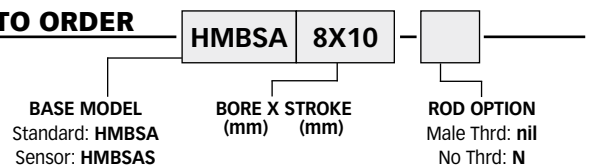
- Go to www.humphrey-products.com
- Select "Online Product Guide." Follow the steps to get the cylinder you need.
- Once the specifications have been entered, select "Download Spec Sheet" to create a personalized PDF of the cylinder, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

HOW TO ORDER HUMPHREY CYLINDERS AND ACCESSORIES

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- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.

HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

HOW TO ORDER



SPECIFICATIONS

Media:	Air
Pressure Range:	45-100 PSIG
Temperature Range:	32°F to 140°F

MULTI-MOUNT CYLINDERS

HBDAS, HBDADS

Humphrey miniature Multi-Mount Cylinders couple precision mounting opportunities with minimal size, in order to fit precise movements in tight spaces. Offered in three bore sizes (single- or double-end rod), Multi-Mount Cylinders feature a rectangular extruded aluminum body and a variety of precision machined mounting caps. Mount through holes on body or through foot mount or choice of two flange mounts. All pistons include noise-reducing bumpers and magnets for sensor switch operation.

BORE SIZES (mm):

- 6, 10, 16

TYPE:

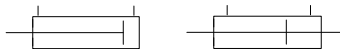
- Double Acting (HBDAS)
- Double Acting, Double-End Rod (HBDADS)

STANDARD STROKES (inch):

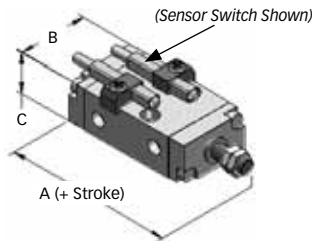
- 1/4, 1/2, 3/4, 1, 1-1/4

OPTIONS AND ACCESSORIES:

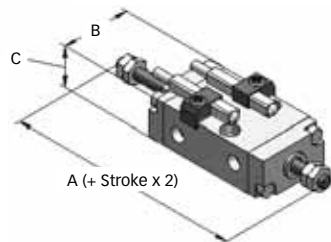
Front or Rear Foot Mount, front or rear Flange A or Flange B Mount (pages 24-25). For Sensor options, see page 53.



HBDAS



HBDADS

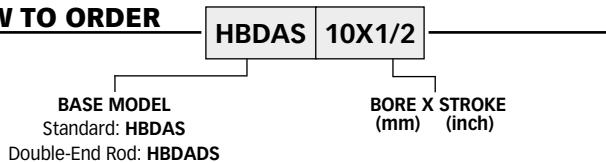


Double Acting Model	Bore Size - Effective Area		Overall Dimensions			
	Bore Diameter (mm)	Piston Area (inch ²)	Length A + Stroke (inch)	Width-B (inch)	Depth-C (inch)	Port Thread
HBDAS	6	0.04	1.69	0.79	0.47	10-32 UNF
	10	0.12	1.89	0.95	0.55	
	16	0.31	2.09	1.30	0.79	

Double-End Rod Model	Bore Size - Effective Area		Overall Dimensions			
	Bore Diameter (mm)	Piston Area (inch ²)	Length A (+ Stroke (inch) x 2)	Width-B (inch)	Depth-C (inch)	Port Thread
HBDADS	6	0.04	2.09	0.79	0.47	10-32 UNF
	10	0.12	2.40	0.95	0.55	
	16	0.31	2.68	1.30	0.79	

LINEAR ACTUATORS

HOW TO ORDER



SPECIFICATIONS

Media:	Air			
Pressure Range (PSIG):		6 Bore	10 Bore	16 Bore
	HBDAS	20-100	15-100	10-100
	HBDADS	30-100	20-100	15-100
Temperature Range:	32°F to 140°F			

HOW TO OBTAIN SPECIFICATIONS FOR CYLINDERS

- Go to www.humphrey-products.com
- Select "Online Product Guide." Follow the steps to get the cylinder you need.
- Once the specifications have been entered, select "Download Spec Sheet" to create a personalized PDF of the cylinder, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

HOW TO ORDER HUMPHREY CYLINDERS AND ACCESSORIES

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- Select "Find A Distributor" and input your information to locate a distributor nearest you.
- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.

HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

Humphrey miniature Multi-Mount Non-Rotating Cylinders couple precision mounting opportunities with minimal size, in order to fit precise movements in tight spaces. Offered in three bore sizes (single- or double-end rod), Multi-Mount Non-Rotating Cylinders feature a rectangular extruded aluminum body and a variety of precision machined mounting caps. Mount through holes on body or through foot mount or choice of two flange mounts. All pistons include noise-reducing bumpers and magnets for sensor switch operation.

BORE SIZES (mm):

- 6, 10, 16

TYPES:

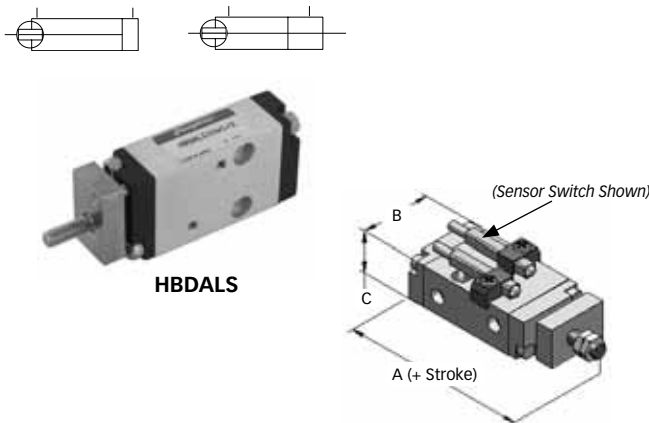
- Double Acting (HBDALS)
- Double Acting, Double-End Rod (HBDADLS)

STANDARD STROKES (inch):

- 1/4, 1/2, 3/4, 1, 1-1/4

OPTIONS AND ACCESSORIES:

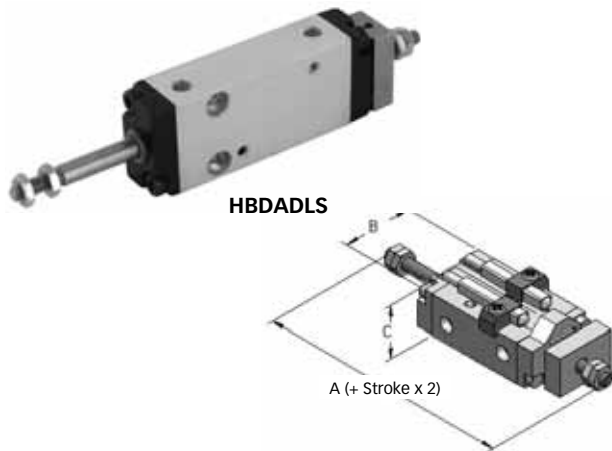
Front or Rear Foot Mount, front or rear Flange A or Flange B Mount (pages 24-25). For Sensor options, see page 53.



HBDALS

(Sensor Switch Shown)

A (+ Stroke)



HBDADLS

A (+ Stroke x 2)

Double Acting Model	Bore Size - Effective Area		Overall Dimensions			
	Bore Diameter (mm)	Piston Area (inch ²)	Length A + Stroke (inch)	Width-B (inch)	Depth-C (inch)	Port Thread
HBDALS	6	0.04	1.89	0.79	0.47	10-32 UNF
	10	0.12	2.09	0.95	0.55	
	16	0.31	2.28	1.30	0.79	

Double-End Rod Model	Bore Size - Effective Area		Overall Dimensions			
	Bore Diameter (mm)	Piston Area (inch ²)	Length A (+ Stroke (inch) x 2)	Width-B (inch)	Depth-C (inch)	Port Thread
HBDADLS	6	0.04	2.28	0.79	0.47	10-32 UNF
	10	0.12	2.60	0.95	0.55	
	16	0.31	2.87	1.30	0.79	

HOW TO OBTAIN SPECIFICATIONS FOR CYLINDERS

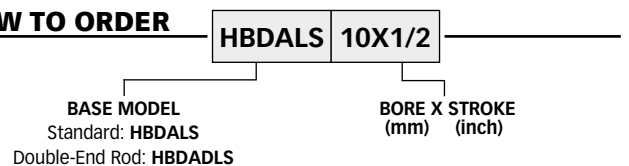
- Go to www.humphrey-products.com
- Select "Online Product Guide." Follow the steps to get the cylinder you need.
- Once the specifications have been entered, select "Download Spec Sheet" to create a personalized PDF of the cylinder, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

HOW TO ORDER HUMPHREY CYLINDERS AND ACCESSORIES

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- Select "Find A Distributor" and input your information to locate a distributor nearest you.
- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.

HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

HOW TO ORDER



SPECIFICATIONS

Media:	Air			
Pressure Range (PSIG):	HBDALS	6 Bore	10 Bore	16 Bore
	HBDADLS	20-100	15-100	10-100
Temperature Range:	32°F to 140°F			

MULTI-MOUNT SINGLE-ACTING CYLINDERS

HBSAS, HBTAS

Humphrey miniature Multi-Mount Single-Acting Cylinders couple precision mounting opportunities with minimal size, in order to fit precise movements in tight spaces. Offered push or pull type (in three bore sizes), Multi-Mount Single-Acting Cylinders feature a rectangular extruded aluminum body and a variety of precision machined mounting caps. Mount through holes on body or through foot mount or choice of two flange mounts. All pistons include noise-reducing bumpers and magnets for sensor switch operation.

BORE SIZES (mm):

- 6, 10, 16

TYPES:

- Single Acting – Push (HBSAS)
- Single Acting – Pull (HBTAS)

STANDARD STROKES (inch):

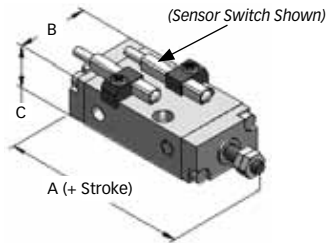
- 1/4, 1/2

OPTIONS AND ACCESSORIES:

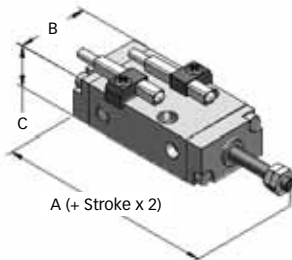
Front or Rear Foot Mount, front or rear Flange A or Flange B Mount (pages 24-25). For Sensor options, see page 53.



HBSAS



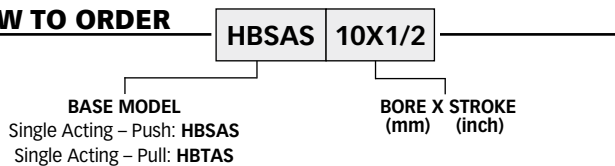
HBTAS



Single Acting - Push Model	Bore Size - Effective Area		Overall Dimensions			
	Bore Diameter (mm)	Piston Area (inch ²)	Length A + Stroke (inch)	Width-B (inch)	Depth-C (inch)	Port Thread
HBSAS	6	0.04	1.89	0.79	0.47	10-32 UNF
	10	0.12	2.09	0.95	0.55	
	16	0.31	2.28	1.30	0.79	

Single Acting - Pull Model	Bore Size - Effective Area		Overall Dimensions			
	Bore Diameter (mm)	Piston Area (inch ²)	Length A (+ Stroke (inch) x 2)	Width-B (inch)	Depth-C (inch)	Port Thread
HBTAS	6	0.04	1.89	0.79	0.47	10-32 UNF
	10	0.12	2.09	0.95	0.55	
	16	0.31	2.28	1.30	0.79	

HOW TO ORDER



SPECIFICATIONS

Media:	Air			
Pressure Range (PSIG):		6 Bore	10 Bore	16 Bore
	HBSAS	30-100	20-100	20-100
HBTAS	45-100	30-100	30-100	
Temperature Range:	32°F to 140°F			

HOW TO OBTAIN SPECIFICATIONS FOR CYLINDERS

- Go to www.humphrey-products.com
- Select "Online Product Guide." Follow the steps to get the cylinder you need.
- Once the specifications have been entered, select "Download Spec Sheet" to create a personalized PDF of the cylinder, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

HOW TO ORDER HUMPHREY CYLINDERS AND ACCESSORIES

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- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.



HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

LINEAR ACTUATORS

Humphrey miniature Multi-Mount Non-Rotating Single-Acting Cylinders couple precision mounting opportunities with minimal size, in order to fit precise movements in tight spaces. Offered push or pull type (in three bore sizes), these non-rotating cylinders feature a rectangular extruded aluminum body and a variety of precision machined mounting caps. Mount through holes on body or through foot mount or choice of two flange mounts. All pistons include noise-reducing bumpers and magnets for sensor switch operation.

BORE SIZES (mm):

- 6, 10, 16

TYPES:

- Single Acting – Push (HBSALS)
- Single Acting – Pull (HBTALS)

STANDARD STROKES (inch):

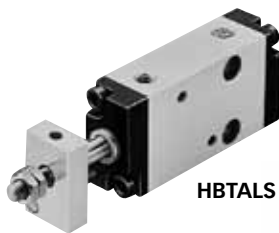
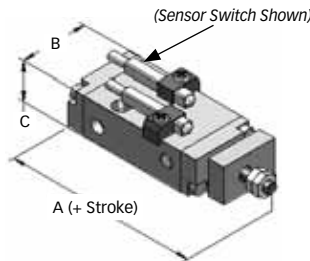
- 1/4, 1/2

OPTIONS AND ACCESSORIES:

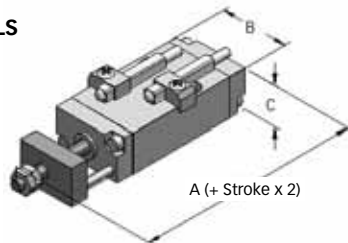
Front or Rear Foot Mount, front or rear Flange A or Flange B Mount (pages 24-25). For Sensor options, see page 53.



HBSALS



HBTALS



Single Acting - Push Model	Bore Size - Effective Area		Overall Dimensions			
	Bore Diameter (mm)	Piston Area inch ²	Length A + Stroke (inch)	Width-B (inch)	Depth-C (inch)	Port Thread
HBSALS	6	0.04	2.09	0.79	0.47	10-32 UNF
	10	0.12	2.28	0.95	0.55	
	16	0.31	2.48	1.30	0.79	

Single Acting - Pull Model	Bore Size - Effective Area		Overall Dimensions			
	Bore Diameter (mm)	Piston Area inch ²	Length A (+ Stroke (inch) x 2)	Width-B (inch)	Depth-C (inch)	Port Thread
HBTALS	6	0.04	2.09	0.79	0.47	10-32 UNF
	10	0.12	2.28	0.95	0.55	
	16	0.31	2.48	1.30	0.79	

HOW TO OBTAIN SPECIFICATIONS FOR CYLINDERS

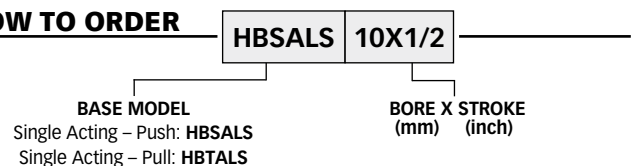
- Go to www.humphrey-products.com
- Select "Online Product Guide." Follow the steps to get the cylinder you need.
- Once the specifications have been entered, select "Download Spec Sheet" to create a personalized PDF of the cylinder, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

HOW TO ORDER HUMPHREY CYLINDERS AND ACCESSORIES

- Go to www.humphrey-products.com
- Select "Find A Distributor" and input your information to locate a distributor nearest you.
- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.

HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

HOW TO ORDER



SPECIFICATIONS

Media:	Air			
Pressure Range (PSIG):	HBSALS	6 Bore	10 Bore	16 Bore
	HBTALS	30-100	20-100	20-100
Temperature Range:	32°F to 140°F			

MULTI-MOUNT CYLINDER SERIES

MOUNTING OPTIONS

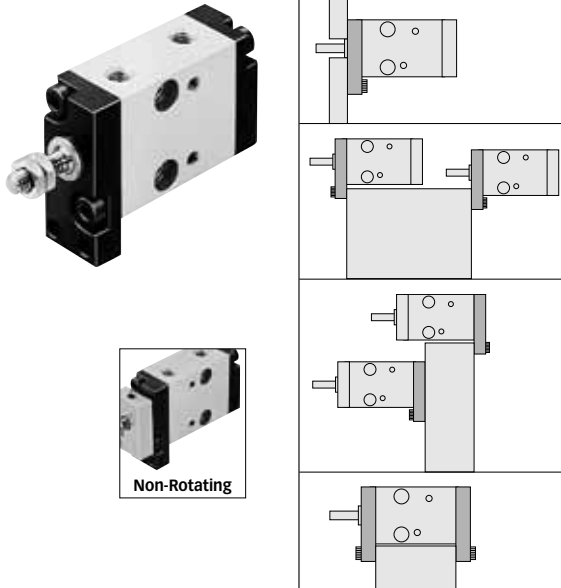
Humphrey Multi-Mount Cylinders secure a high degree of parallel and perpendicular accuracy relative to the piston rod axial center and the mounting surface. Besides the standard "Side Mount" type, there are three types of optional mounting brackets: a foot mount or a choice of two flange mounts to address various mounting requirements. This combination of "squareness" and mounting variety makes the Multi-Mount a popular choice.

MOUNTING TYPES (applicable models)

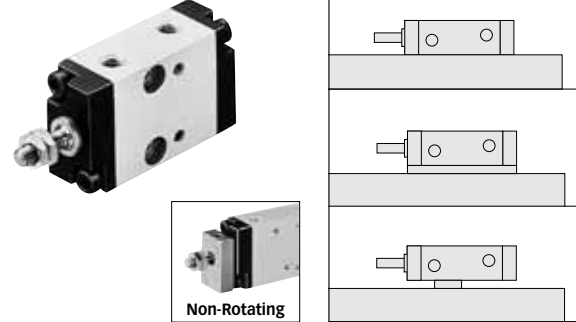
- **Foot A** (HBDAS, HBDADS, HBSAS, HBTAS)
- **Flange A** (HBDAS, HBDALS, HBDADS, HBDADLS, HBSAS, HBSALS, HBTAS, HBTALS)
- **Flange B** (HBDAS, HBDALS, HBDADS, HBDADLS, HBSAS, HBSALS, HBTAS, HBTALS)

LINEAR ACTUATORS

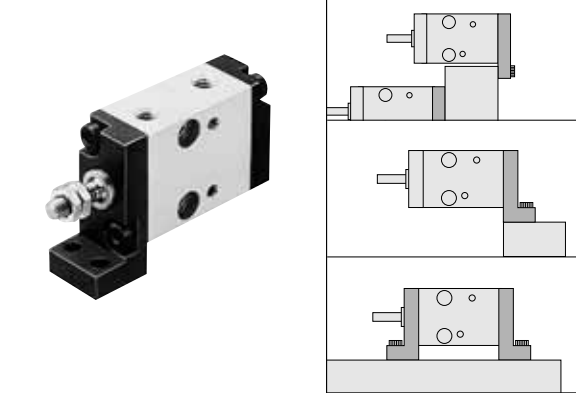
Flange A mount



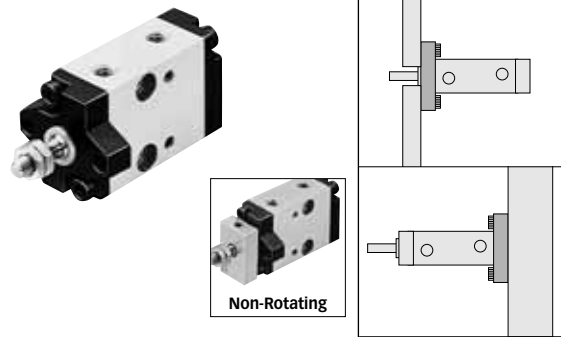
Side mount (Standard)



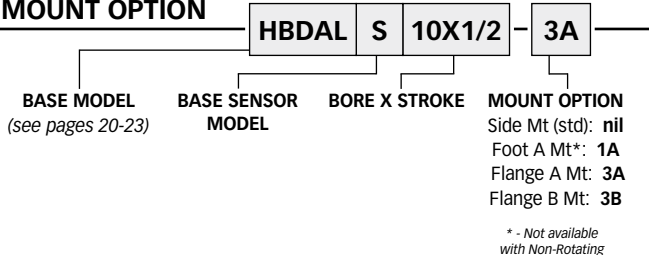
Foot A mount



Flange B mount



HOW TO ORDER . . . WITH FOOT OR FLANGE MOUNT OPTION



HOW TO OBTAIN SPECIFICATIONS FOR CYLINDERS

- ✓ Go to www.humphrey-products.com
- Select "Online Product Guide." Follow the steps to get the cylinder you need.
- Once the specifications have been entered, select "Download Spec Sheet" to create a personalized PDF of the cylinder, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

HOW TO ORDER HUMPHREY CYLINDERS AND ACCESSORIES

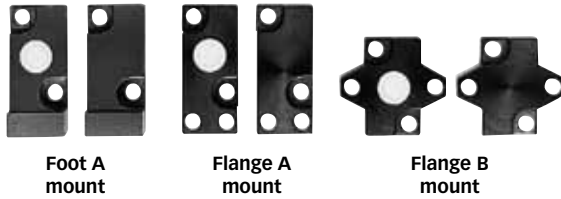
- ✓ Go to www.humphrey-products.com
- Select "Find A Distributor" and input your information to locate a distributor nearest you.
- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.

 **HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS**

Every Multi-Mount Cylinder can be modified to be replaced with these rod side or head side optional mounting brackets.

MOUNTING TYPES (applicable models)

- **Foot A – Rod Side** (HBDAS, HBDADS, HBSAS, HBTAS)
- **Foot A – Head Side** (HBDAS, HBDALS, HBSAS, HBSALS, HBTAS, HBTALS)
- **Flange A – Rod and Head Side types** (HBDAS, HBDALS, HBDADS, HBDADLS, HBSAS, HBSALS, HBTAS, HBTALS)
- **Flange B – Rod and Head Side types** (HBDAS, HBDALS, HBDADS, HBDADLS, HBSAS, HBSALS, HBTAS, HBTALS)



Foot A mount

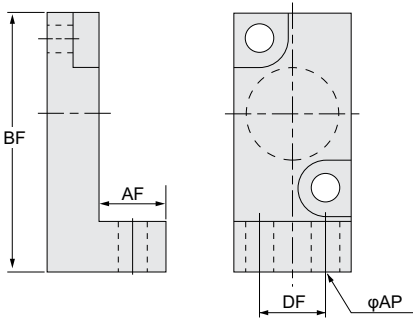
Flange A mount

Flange B mount

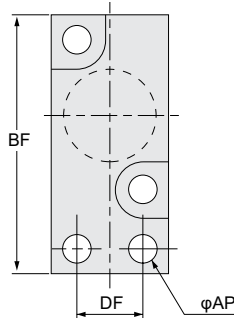
Bore Size (mm)	Mount	Overall Dimensions (mm)**				
		Add'l Length - AF*	New Width - BF	New Depth - CF	Mtg Hole Dim - DF	Mtg Hole Dia - AP
6	Foot A	8	26	N/A	6	3.5
	Flange A	N/A	27.5			
	Flange B		N/A	24	18	
10	Foot A	8	31	N/A	8	3.5
	Flange A	N/A	31.5			
	Flange B		N/A	N/A	26	
16	Foot A	10	41.5	N/A	12	4.5
	Flange A	N/A	42			
	Flange B		N/A	N/A	36	

* Head side mount only. **Overall Dimensions = Cylinder Overall Dimensions (p. 20-23) + Mount Dimensions

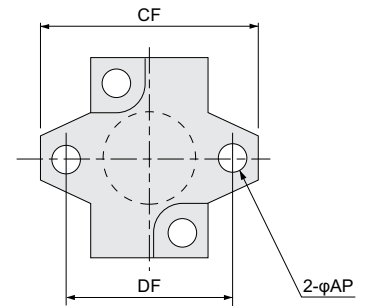
Foot A mount



Flange A mount



Flange B mount



HOW TO OBTAIN SPECIFICATIONS FOR CYLINDERS

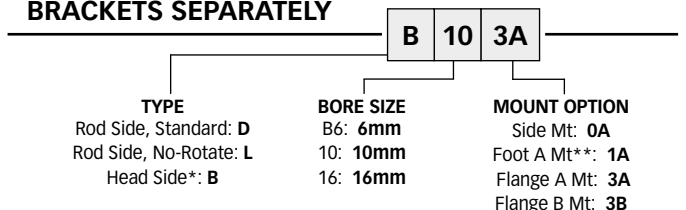
- Go to www.humphrey-products.com
- Select "Online Product Guide." Follow the steps to get the cylinder you need.
- Once the specifications have been entered, select "Download Spec Sheet" to create a personalized PDF of the cylinder, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

HOW TO ORDER HUMPHREY CYLINDERS AND ACCESSORIES

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- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.

HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

HOW TO ORDER . . . FOOT OR FLANGE MOUNT BRACKETS SEPARATELY



* - Not applicable for HBDAD/LS

** - Not available with Non-Rotating

BLOCK CYLINDERS, DOUBLE ACTING

HJDA, HJDAS

Humphrey Block Cylinders minimize overall length, therefore fitting into applications where force is required but space is at a premium. Offered in 10 bore sizes from 12 to 100mm bore, Double-Acting Block Cylinders feature an extruded aluminum body to maximize mounting and option possibilities. Mount via threaded through holes on body, or inquire about foot, flange, and pivot styles. Sensor cylinder types are available for end-of-stroke position sensor signaling to PLCs.

BORE SIZES (mm):

- 12, 16, 20, 25, 32, 40, 50, 63, 80, 100

TYPE:

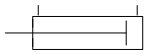
- Double Acting (HJDA, HJDAS)

STANDARD STROKES (inch):

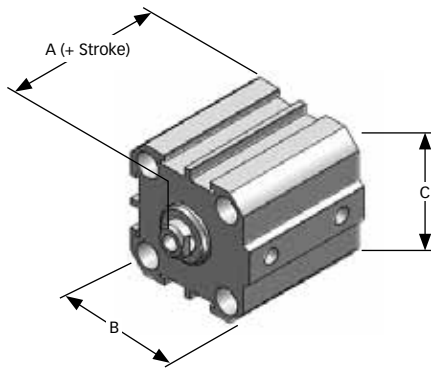
- 12, 16, 20 Bore: 1/2, 5/8, 3/4, 1
- 25, 32, 40 Bore: 1/2, 3/4, 1, 1-1/4, 1-1/2, 2
- 50 Bore: 1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 3, 4
(Consult factory for other strokes.)

OPTIONS AND ACCESSORIES:

FKM seals for temperature resistance. Magnet (S) for sensor switch position sensing. Bumper (R) option for noise reduction. Foot, Flange and Pivot Brackets. For Sensor options, see page 53. Consult factory for non-rotating, square rod type (HJDAL).



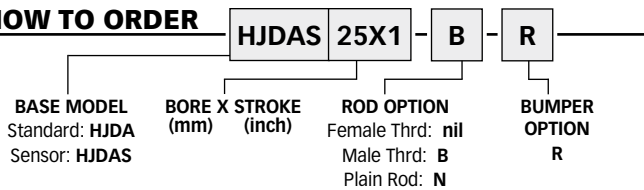
HJDA, HJDAS



Standard Model	Bore Size - Effective Area		Overall Dimensions			
	Bore Diameter (mm)	Piston Area inch ²	Length A + Stroke (inch)	Width-B (inch)	Depth-C (inch)	Port Thread
HJDA	12	0.18	0.87	0.98	0.98	10-32 UNF
	16	0.31	0.95	1.14	1.14	
	20	0.49	0.98	1.34	1.42	
	25	0.76	1.06	1.58	1.65	1/8 PIPE
	32	1.25	1.24	1.73	1.97	
	40	1.95	1.30	2.05	2.30	1/4 PIPE
	50	3.04	1.46	2.44	2.82	
	63	4.83	1.61	2.95	3.33	3/8 PIPE
	80	7.79	2.10	3.70	4.09	
	100	12.17	2.53	4.49	4.88	

Sensor Model	Bore Size - Effective Area		Overall Dimensions			
	Bore Diameter (mm)	Piston Area inch ²	Length A + Stroke (inch)	Width-B (inch)	Depth-C (inch)	Port Thread
HJDAS	12	0.18	1.11	0.98	.98	10-32 UNF
	16	0.31	1.44	1.14	1.14	
	20	0.49	1.36	1.34	1.42	
	25	0.76	1.44	1.58	1.65	1/8 PIPE
	32	1.25	1.61	1.73	1.97	
	40	1.95	1.67	2.05	2.30	1/4 PIPE
	50	3.04	1.83	2.44	2.82	
	63	4.83	1.99	2.95	3.33	3/8 PIPE
	80	7.79	2.47	3.70	4.09	
	100	12.17	2.91	4.49	4.88	

HOW TO ORDER



SPECIFICATIONS

Media:	Air	
Pressure Range (PSIG):	12, 16 Bores	30-100 PSIG
	20, 25, 32 Bores	25-100 PSIG
	40, 50, 63, 80, 100 Bores	15-100 PSIG
Temperature Range:	32°F to 140°F	

HOW TO OBTAIN SPECIFICATIONS FOR CYLINDERS

- Go to www.humphrey-products.com
- Select "Online Product Guide." Follow the steps to get the cylinder you need.
- Once the specifications have been entered, select "Download Spec Sheet" to create a personalized PDF of the cylinder, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

HOW TO ORDER HUMPHREY CYLINDERS AND ACCESSORIES

- Go to www.humphrey-products.com
- Select "Find A Distributor" and input your information to locate a distributor nearest you.
- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.

HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

Humphrey Block Cylinders minimize overall length and fit into applications where force is required but space is at a premium. Offered in seven bore sizes from 12 to 50mm bore, Single-Acting Push Type Block Cylinders feature an extruded aluminum body to maximize mounting and option possibilities. Mount via threaded through holes on body, or inquire about foot, flange, and pivot styles. Sensor cylinder types are available for end-of-stroke position sensor signaling to PLCs.

BORE SIZES (mm):

- 12, 16, 20, 25, 32, 40, 50

TYPE:

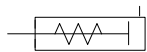
- Single Acting – Push (HJSA, HJSAS)

STANDARD STROKES (inch):

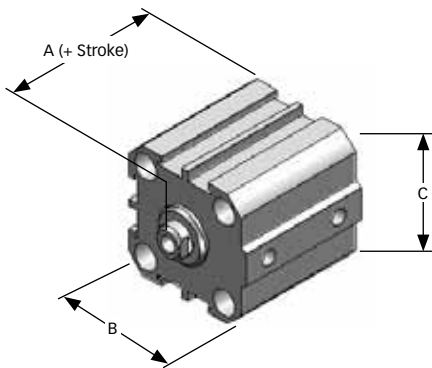
- 12, 16, 20 Bore: 1/2, 5/8, 3/4, 1
- 25, 32, 40 Bore: 1/2, 3/4, 1, 1-1/4
- 50 Bore: 1/2, 3/4, 1, 1-1/4, 1-1/2
(Consult factory for other strokes.)

OPTIONS AND ACCESSORIES:

FKM seals for temperature resistance. Magnet (S) for sensor switch position sensing. Bumper (R) option for noise reduction. Foot, Flange and Pivot Brackets. For Sensor options, see page 53.



HJSA, HJSAS



Standard Model	Bore Size - Effective Area		Overall Dimensions				Port Thread
	Bore Diameter (mm)	Piston Area inch ²	Nominal Length A + Stroke		Width-B (inch)	Depth-C (inch)	
			≤ 1/2" Stroke*	≥ 5/8" Stroke**			
HJSA	12	0.18	1.11	1.49	0.98	0.98	10-32 UNF
	16	0.31	1.19	1.57	1.14	1.14	
	20	0.49	0.98	1.48	1.34	1.42	
	25	0.76	1.06	1.56	1.56	1.65	1/8 PIPE
	32	1.25	1.24	1.74	1.73	1.97	
	40	1.95	1.30	1.92	2.05	2.30	
50	3.04	1.46	2.08	2.44	2.82	1/4 PIPE	

*For HJSA50 (50 Bore) – 1/2, 3/4 strokes
**For HJSA50 (50 Bore) – 1, 1-1/4, 1-1/2 strokes

Sensor Model	Bore Size - Effective Area		Overall Dimensions				Port Thread
	Bore Diameter (mm)	Piston Area inch ²	Nominal Length A + Stroke		Width-B (inch)	Depth-C (inch)	
			≤ 1/2" Stroke*	≥ 5/8" Stroke**			
HJSAS	12	0.18	1.36	1.74	0.98	.98	10-32 UNF
	16	0.31	1.44	1.82	1.14	1.14	
	20	0.49	1.36	1.86	1.34	1.42	
	25	0.76	1.44	1.94	1.56	1.65	1/8 PIPE
	32	1.25	1.61	2.11	1.73	1.97	
	40	1.95	1.67	2.29	2.05	2.30	
50	3.04	1.83	2.45	2.44	2.82	1/4 PIPE	

*For HJSAS50 (50 Bore) – 1/2, 3/4 strokes
**For HJSAS50 (50 Bore) – 1, 1-1/4, 1-1/2 strokes

HOW TO OBTAIN SPECIFICATIONS FOR CYLINDERS

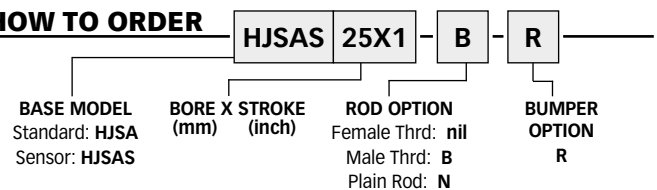
- ☞ Go to www.humphrey-products.com
- Select "Online Product Guide." Follow the steps to get the cylinder you need.
- Once the specifications have been entered, select "Download Spec Sheet" to create a personalized PDF of the cylinder, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

HOW TO ORDER HUMPHREY CYLINDERS AND ACCESSORIES

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- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.

HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

HOW TO ORDER



SPECIFICATIONS

Media:	Air	
Pressure Range (PSIG):	12, 16 Bores	30-100 PSIG
	20, 25, 32 Bores	25-100 PSIG
	40, 50 Bores	15-100 PSIG
Temperature Range:	32°F to 140°F	

BLOCK CYLINDERS, SINGLE ACTING – PULL

HJTA, HJTAS

Humphrey Block Cylinders minimize overall length and fit into applications where force is required but space is at a premium. Offered in seven bore sizes from 12 to 50mm bore, Single-Acting Pull Type Block Cylinders feature an extruded aluminum body to maximize mounting and option possibilities. Mount via threaded through holes on body, or inquire about foot, flange, and pivot styles. Sensor cylinder types are available for end-of-stroke position sensor signaling to PLCs.

BORE SIZES (mm):

- 12, 16, 20, 25, 32, 40, 50

TYPE:

- Single Acting – Pull (HJTA, HJTAS)

STANDARD STROKES (inch):

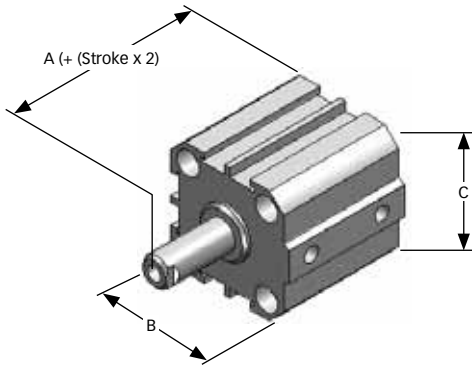
- 12, 16, 20 Bore: 1/2, 5/8, 3/4, 1
- 25, 32, 40 Bore: 1/2, 3/4, 1, 1-1/4
- 50 Bore: 1/2, 3/4, 1, 1-1/4, 1-1/2
(Consult factory for other strokes.)

OPTIONS AND ACCESSORIES:

FKM seals for temperature resistance. Magnet (S) for sensor switch position sensing. Bumper (R) option for noise reduction. Foot, Flange and Pivot Brackets. For Sensor options, see page 53.



HJTA, HJTAS



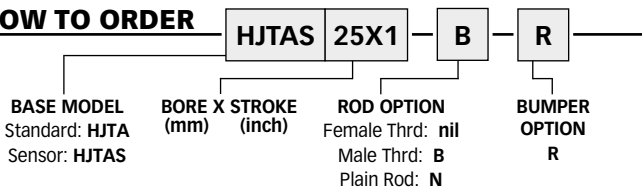
Standard Model	Bore Size - Effective Area		Overall Dimensions (without magnet)				Port Thread
	Bore Diameter (mm)	Piston Area inch ²	Nominal Length A (+ Stroke x 2)		Width-B (inch)	Depth-C (inch)	
			≤ 1/2" Stroke*	≥ 5/8" Stroke**			
HJTA	12	0.18	1.11	3.49	0.98	0.98	10-32 UNF
	16	0.31	1.19	3.57	1.14	1.14	
	20	0.49	0.98	3.48	1.34	1.42	
	25	0.76	1.06	3.57	1.58	1.65	1/8 PIPE
	32	1.25	1.24	3.74	1.73	1.97	
	40	1.95	1.30	3.92	2.05	2.30	
50	3.04	1.46	4.08	2.44	2.82	1/4 PIPE	

*For HJTAS50 (50 Bore) – 1/2, 3/4 strokes
**For HJTAS50 (50 Bore) – 1, 1-1/4, 1-1/2 strokes

Sensor Model	Bore Size - Effective Area		Overall Dimensions with magnet				Port Thread
	Bore Diameter (mm)	Piston Area inch ²	Nominal Length A (+ Stroke x 2)		Width-B (inch)	Depth-C (inch)	
			≤ 1/2" Stroke*	≥ 5/8" Stroke**			
HJTAS	12	0.18	1.36	3.74	0.98	0.98	10-32 UNF
	16	0.31	1.44	3.82	1.14	1.14	
	20	0.49	1.36	3.86	1.34	1.42	
	25	0.76	1.44	3.94	1.58	1.65	1/8 PIPE
	32	1.25	1.61	4.11	1.73	1.97	
	40	1.95	1.67	4.30	2.05	2.30	
50	3.04	1.83	4.45	2.44	2.82	1/4 PIPE	

*For HJTAS50 (50 Bore) – 1/2, 3/4 strokes
**For HJTAS50 (50 Bore) – 1, 1-1/4, 1-1/2 strokes

HOW TO ORDER



SPECIFICATIONS

Media:	Air	
Pressure Range (PSIG):	12, 16 Bores	30-100 PSIG
	20, 25, 32 Bores	25-100 PSIG
	40, 50 Bores	15-100 PSIG
Temperature Range:	32°F to 140°F	

HOW TO OBTAIN SPECIFICATIONS FOR CYLINDERS

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- Select "Online Product Guide." Follow the steps to get the cylinder you need.
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HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

Humphrey Double-Acting, Double-End Rod Block Cylinders minimize overall length and fit into applications where force is required but space is at a premium. Offered in 10 bore sizes from 12 to 100mm bore, Block Cylinders feature an extruded aluminum body to maximize mounting and option possibilities. Mount via threaded through holes on body, or inquire about foot, flange, and pivot styles. Sensor cylinder types are available for end-of-stroke position sensor signaling to PLCs.

BORE SIZES (mm):

- 12, 16, 20, 25, 32, 40, 50, 63, 80, 100

TYPE:

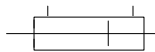
- Double Acting (HJDAD, HJDADS)

STANDARD STROKES (inch):

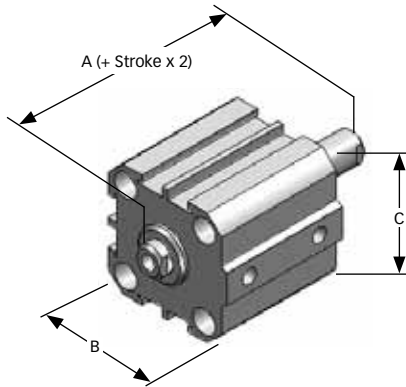
- 12, 16, 20 Bore: 1/2, 5/8, 3/4, 1
- 25, 32, 40 Bore: 1/2, 3/4, 1, 1-1/4, 1-1/2, 2
- 50 Bore: 1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 3, 4
(Consult factory for other strokes.)

OPTIONS AND ACCESSORIES:

Fluoroelastomer option not available with Magnet (S) and Bumper (R) options. Rod nuts sold separately. For Sensor options, see page 53.



HJDAD, HJDADS



Standard Model	Bore Size - Effective Area		Overall Dimensions w/out magnet			
	Bore Diameter (mm)	Piston Area (inch ²)	Length A (+ Stroke (inch) x 2)	Width-B (inch)	Depth-C (inch)	Port Thread
HJDAD	12	0.18	1.06	0.98	0.98	10-32 UNF
	16	0.31	1.16	1.14	1.14	
	20	0.49	1.20	1.34	1.42	
	25	0.76	1.30	1.56	1.65	
	32	1.25	1.52	1.73	1.97	1/8 PIPE
	40	1.95	1.58	2.05	2.30	
	50	3.04	1.81	2.44	2.82	1/4 PIPE
	63	4.83	1.97	2.95	3.33	
	80	7.79	2.78	3.70	4.09	3/8 PIPE
	100	12.17	3.25	4.49	4.88	

Sensor Model	Bore Size - Effective Area		Overall Dimensions with magnet			
	Bore Diameter (mm)	Piston Area (inch ²)	Length A (+ Stroke (inch) x 2)	Width-B (inch)	Depth-C (inch)	Port Thread
HJDADS	12	0.18	1.31	0.98	0.98	10-32 UNF
	16	0.31	1.66	1.14	1.14	
	20	0.49	1.58	1.34	1.42	
	25	0.76	1.67	1.56	1.65	
	32	1.25	1.89	1.73	1.97	1/8 PIPE
	40	1.95	1.95	2.05	2.30	
	50	3.04	2.19	2.44	2.82	1/4 PIPE
	63	4.83	2.34	2.95	3.33	
	80	7.79	3.10	3.70	4.09	3/8 PIPE
	100	12.17	3.58	4.49	4.88	

HOW TO OBTAIN SPECIFICATIONS FOR CYLINDERS

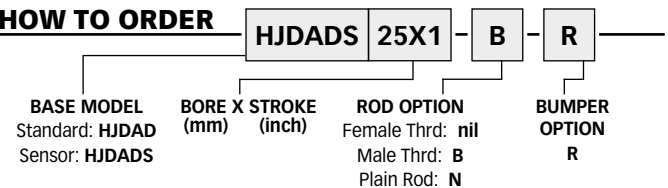
- Go to www.humphrey-products.com
- Select "Online Product Guide." Follow the steps to get the cylinder you need.
- Once the specifications have been entered, select "Download Spec Sheet" to create a personalized PDF of the cylinder, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

HOW TO ORDER HUMPHREY CYLINDERS AND ACCESSORIES

- Go to www.humphrey-products.com
- Select "Find A Distributor" and input your information to locate a distributor nearest you.
- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.

HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

HOW TO ORDER



SPECIFICATIONS

Media:	Air	
Pressure Range (PSIG):	12, 16 Bores	30-100 PSIG
	20, 25, 32 Bores	25-100 PSIG
	40, 50, 63, 80, 100 Bores	15-100 PSIG
Temperature Range:	32°F to 140°F	

BLOCK CYLINDERS, SINGLE ACTING – DOUBLE-END ROD

HJSAD, HJSADS

Humphrey Block Cylinders minimize overall length and fit into applications where force is required but space is at a premium. Offered in seven bore sizes from 12mm to 50mm bore, Single-Acting Double-End Rod Spring-Return Block Cylinders feature an extruded aluminum body to maximize mounting and option possibilities. Mount via threaded through holes on body, or inquire about foot, flange, and pivot styles. Sensor cylinder types are available for end-of-stroke position sensor signaling to PLCs.

BORE SIZES (mm):

- 12, 16, 20, 25, 32, 40, 50

TYPE:

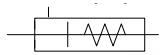
- Single Acting – Pull (HJSAD, HJSADS)

STANDARD STROKES (inch):

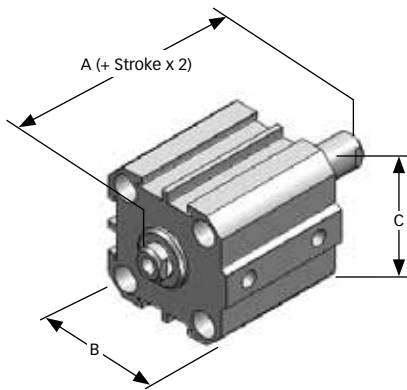
- 12, 16, 20 Bore: 1/2, 5/8, 3/4, 1
- 25, 32, 40 Bore: 1/2, 3/4, 1, 1-1/4
- 50 Bore: 1/2, 3/4, 1, 1-1/4, 1-1/2
(Consult factory for other strokes.)

OPTIONS AND ACCESSORIES:

Fluoroelastomer option not available with Magnet (S) and Bumper (R) options. Rod nuts sold separately. For Sensor options, see page 53.



HJSAD, HJSADS



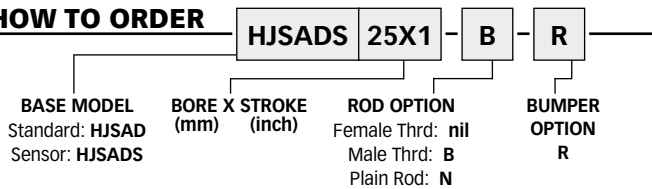
Standard Model	Bore Size - Effective Area		Overall Dimensions				
	Bore Diameter (mm)	Piston Area inch ²	Nominal Length A (+ Stroke x 2)		Width-B (inch)	Depth-C (inch)	Port Thread
			≤1/2" Stroke*	≥5/8" Stroke**			
HJSAD	12	0.18	1.31	1.69	0.98	0.98	10-32 UNF
	16	0.31	1.41	1.78	1.14	1.14	
	20	0.49	1.20	1.70	1.34	1.42	
	25	0.76	1.30	1.80	1.58	1.65	1/8 PIPE
	32	1.25	1.52	2.02	1.73	1.97	
	40	1.95	1.58	2.20	2.05	2.30	
	50	3.04	1.81	2.43	2.44	2.82	1/4 PIPE

*For HJSAD50 (50 Bore) – 1/2, 3/4 strokes
**For HJSAD50 (50 Bore) – 1, 1-1/4, 1-1/2 strokes

Sensor Model	Bore Size - Effective Area		Overall Dimensions				
	Bore Diameter (mm)	Piston Area inch ²	Nominal Length A (+ Stroke x 2)		Width-B (inch)	Depth-C (inch)	Port Thread
			≤1/2" Stroke*	≥5/8" Stroke**			
HJSADS	12	0.18	1.56	1.93	0.98	1.42	10-32 UNF
	16	0.31	1.66	2.03	1.14		
	20	0.49	1.58	2.08	1.34		
	25	0.76	1.67	2.17	1.58	1.65	1/8 PIPE
	32	1.25	1.89	2.39	1.73	1.97	
	40	1.95	1.95	2.57	2.05	2.30	
	50	3.04	2.19	2.81	2.44	2.82	1/4 PIPE

*For HJSADS50 (50 Bore) – 1/2, 3/4 strokes
**For HJSADS50 (50 Bore) – 1, 1-1/4, 1-1/2 strokes

HOW TO ORDER



SPECIFICATIONS

Media:	Air	
Pressure Range (PSIG):	12, 16 Bores	30-100 PSIG
	20, 25, 32 Bores	25-100 PSIG
	40, 50 Bores	15-100 PSIG
Temperature Range:	32°F to 140°F	

HOW TO OBTAIN SPECIFICATIONS FOR CYLINDERS

- Go to www.humphrey-products.com
- Select "Online Product Guide." Follow the steps to get the cylinder you need.
- Once the specifications have been entered, select "Download Spec Sheet" to create a personalized PDF of the cylinder, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

HOW TO ORDER HUMPHREY CYLINDERS AND ACCESSORIES

- Go to www.humphrey-products.com
- Select "Find A Distributor" and input your information to locate a distributor nearest you.
- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.

HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

LINEAR ACTUATORS

Humphrey miniature, spring-return Knock Cylinders minimize overall size and fit into applications where force is required but space is at a premium. Offered in three bore sizes from 6 to 16mm bore, Knock Cylinders feature a cartridge style, precision threaded body for insert, foot or flange mounting possibilities. Mount through threaded holes on body or foot, flange, and pivot styles.

BORE SIZES (mm):

- 6, 10, 16

TYPE:

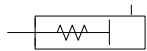
- Single Acting – Push (HNSA)

STANDARD STROKES (inch):

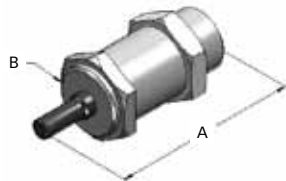
- 1/4, 3/8, 1/2

OPTIONS AND ACCESSORIES:

Fluoroelastomer option not available with Magnet (S) and Bumper (R) options. Rod nuts sold separately.



HNSA
(Panel Mount)



Model	Bore Size - Effective Area		Overall Dimensions				
	Bore Diameter (mm)	Piston Area inch ²	Length - A (inch)			Front Hex Flat B (inch)	Port Thread
			1/4"	3/8"	1/2"		
HNSA	6	0.04	1.28	1.40	1.60	0.55	10-32 UNF
	10	0.12	1.47	1.60	1.80	0.73	
	16	0.31	1.65	1.78	1.96	1.09	



HNSA - Insert Mount



HNSA - Foot Mount

HOW TO OBTAIN SPECIFICATIONS FOR CYLINDERS

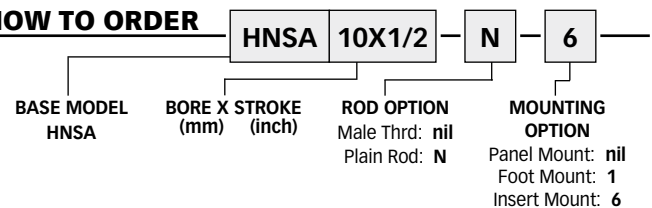
- Go to www.humphrey-products.com
- Select "Online Product Guide." Follow the steps to get the cylinder you need.
- Once the specifications have been entered, select "Download Spec Sheet" to create a personalized PDF of the cylinder, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

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- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.

HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

HOW TO ORDER



SPECIFICATIONS

Media:			
Pressure Range (PSIG):	6 Bore	10 Bore	16 Bore
	28-100	21-100	21-100
Temperature Range:			

GUIDED LINEAR ACTUATORS

INTRODUCTION

Humphrey Guided Linear Actuators build upon the Humphrey Linear Actuator features and benefits (page 16), while adding support and precision to the extending and retracting functions. Cross-roller bearing linear rails, multiple rods and/or guide shafts are employed with the actuator to withstand compound or lateral loads and ensure precise movements and positioning of the work piece. Additional design and cost considerations, such as miniaturization, mounting, stroke adjustment, position sensor conveniences, and RoHS compliant materials round out the offering.

The lineup includes precisely guided actuators as small as the subminiature 4.5mm bore Mini-Guide Slider to a robust 63mm bore, the largest of eight bore sizes available with the Guided Block Cylinder Series.

MINI-GUIDE SLIDERS PRECISE MINIATURE LINEAR ACTUATORS

The Mini-Guide Slider Series are highly precise, miniature actuators utilizing an integrated cross-roller bearing rail for precise movement and excellent load bearing capability. A wide variety of types, bore sizes and strokes are available. Sensor type is standard and includes a magnetic piston and sensor rail for end-of-stroke position sensor. Stainless steel tables and bodies are standard.



GUIDED BLOCK CYLINDER SERIES COMPACT GUIDED LINEAR ACTUATORS

The Guided Block Cylinder Series are guided linear actuators that minimize overall length. A wide variety of sizes, mounting and piping methods, and options complete a broad offering suitable for virtually any application. Precision guide shafts flank the piston rod and are coupled via a rod end tooling plate. Includes magnetic piston for end-of-stroke position sensing via sensor switches that do not protrude above the surface of the body.



TWIN-ROD CYLINDERS TWO CYLINDERS CREATE GUIDED FUNCTION

Twin-Rod Cylinders are essentially two air cylinders residing within a low cost, rectangular body. Rod ends are coupled via a tooling plate to achieve excellent non-rotational accuracy. Flat in construction, Twin-Rod Cylinders effectively double the thrust force of conventional cylinders within the same profile. Includes magnetic piston for end-of-stroke position sensing via sensor switches that do not protrude above the surface of the body.



MINI-GUIDE SLIDERS



HMGA



HMGAES



HMGAL

TWIN ROD



HTBDAK



HTBSA

GUIDED BLOCK



HSGDAP



HSGDA

MINI-GUIDE SLIDERS	Bore Size – mm	(Push Force @100psi-lbs)	Std. Stroke Range (mm)	Page
	4.5	(2.5)	5, 10	
HMG A – Double Acting, Sensor	6	(4.4)	5 – 30	34
HMG AP – Double Acting, Extended Side Stroke Adjustment, Sensor	8	(7.7)	5 – 30	35
HMG AE – Double Acting, Extended & Retracted Stroke Adjustment, Sensor	10	(12)	5 – 50	35
HMG AL – Double Acting, Side Mounted, Sensor	12	(18)	10 – 80	36
HMG AG, HGMAH, HGMAK, CS-HMG A – Additional variations	16	(31)	10 – 100	37
	20	49	10 – 125	

TWIN-ROD CYLINDERS	Bore Size – mm	(Push Force @100psi-lbs)	Std. Stroke Range (inch)	Max. Poss. Stroke (inch)	Page
HTBDA – Double Acting, Sensor	6	(8.7)	1/4 – 1-1/4	1-1/4	38
	10	(24)			
HTBDA – Double Acting, Sensor	16	(62)			38
HTBDAM – Double Acting, Long Bushing, Sensor	20	(97)	1/2 – 4 (varies by bore & type)	4	39
HTBSA – Single Acting – Push, Sensor	25	(152)			40
HTBDAK – Double Acting, End Keep, Sensor	32	(249)			41

GUIDED BLOCK CYLINDERS	Bore Size – mm	(Push Force @100psi-lbs)	Std. Stroke Range (inch)	Max. Poss. Stroke (inch)	Page
HSGDA – Double Acting	12	(18)			42
HSGDAP – Double Acting, Stroke Adjust	16	(31)	1/2 – 4	4	43
	20	(49)			
	25	(76)			
HSGDA – Double Acting	32	(125)			42
HSGDAP – Double Acting, Stroke Adjust	40	(195)	1/2 – 8	8	43
	50	(304)			
	63	(483)			

MINI-GUIDE SLIDERS

HMGA, HMGAS

Humphrey Mini-Guide Sliders are sub-miniature, high precision, pneumatic actuators with dramatically reduced overall size versus comparable actuators. Available in seven bore sizes from 4.5 to 20mm. Mount load or tooling on top or front of the table. All models include stainless steel table and body, and 4-point, cross-roller bearing guide for load carrying support and accuracy. All models can be sensor cylinders for end-of-stroke position signaling to PLCs

BORE SIZES (mm):

- 4.5, 6, 8, 10, 12, 16, 20

TYPE:

- Double Acting (HMGA, HMGAS)

STANDARD STROKES (mm):

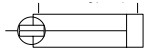
Bore..... Strokes

- 4.5..... 5, 10
- 6 & 8 5, 10, 15, 20, 25, 30
- 10..... 5, 10, 15, 20, 25, 30, 40, 50
- 12..... 10, 15, 20, 30, 40, 50, 60, 70, 80
- 16..... 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100
- 20..... 10, 15, 20, 30, 40, 50, 60, 70, 80, 100, 125

OPTIONS AND ACCESSORIES (page 37):

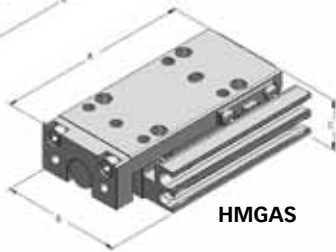
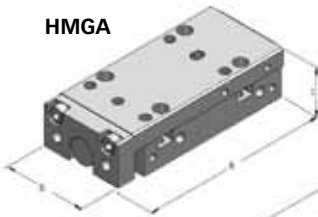
Extended stroke Buffer Type includes built-in spring to absorb work piece impact shock (consult website). Rear Piping and End Keep Types are available. Shock Absorber optional on 10 through 20 Bores. Choice of Reed or Non-Contact Sensor Switches (see page 53).

GUIDED LINEAR ACTUATORS



HMGA

HMGA

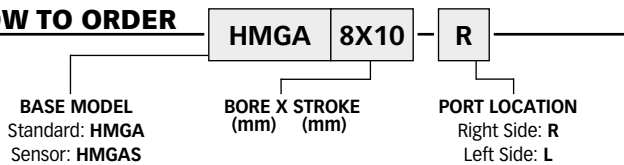


HMGAS

Model	Bore Size - Effective Force		Overall Dimensions				
	Bore Diameter (mm)	Piston Area inch ²	Stroke	Length - A	Width-B* (mm)	Depth-C (mm)	Port Thread
HMGA, HMGAS	4.5	0.02	5 or 10	42	18	10	M3x0.5
			5 or 10	44			
	6	0.04	15	49	20	12	
			5 or 10	44			
	8	0.08	15 or 20	54	24	14	
			5 or 10	47			
	10	0.12	15 or 20	57	26	16	
			30	67			
			10 or 20	69			
	12	0.18	30 or 40	89	34	18	
			50 or 60	109			
			10 or 20	72			
16	0.31	30 or 40	92	40	23		
		50 or 60	112				
		10 or 20	79				
20	0.49	30 or 40	99	47	28		
		50 or 60	119				
		70 or 80	139				
		10 or 20	79				

* - For Sensor Cylinders (HMGAS), add 9.5mm to dimension B, for sensor rail.

HOW TO ORDER



SPECIFICATIONS

Media:	Air
Pressure Range:	30-100 PSIG
Temperature Range:	32°F to 140°F

HOW TO OBTAIN SPECIFICATIONS FOR SLIDERS

- Go to www.humphrey-products.com
- Select "Online Product Guide." Follow the steps to get the slider you need.
- Once the specifications have been entered, select "Download Spec Sheet" to create a personalized PDF of the slider, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

HOW TO ORDER HUMPHREY SLIDERS AND ACCESSORIES

- Go to www.humphrey-products.com
- Select "Find A Distributor" and input your information to locate a distributor nearest you.
- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.

HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

Humphrey Mini-Guide "Stroke Adjusting" Sliders are sub-miniature, high precision, pneumatic actuators with dramatically reduced overall size versus comparable actuators. Available in seven bore sizes from 4.5 to 20mm. Mount load on top or front of the table. Fine tune extended or retracted stroke end. All models include stainless steel table and body, and 4-point, cross-roller bearing guide for load carrying support and accuracy. All models can be sensor cylinders for end-of-stroke position signaling to PLCs

BORE SIZES (mm):

- 4.5, 6, 8, 10, 12, 16, 20

TYPES:

- Double Acting – Extended Side Stroke Adjust (HMGAP, HMGAPS)
- Double Acting – Extend and Retract Adjust (HMGAE, HMGAE S)

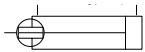
STANDARD STROKES (mm):

Bore Strokes

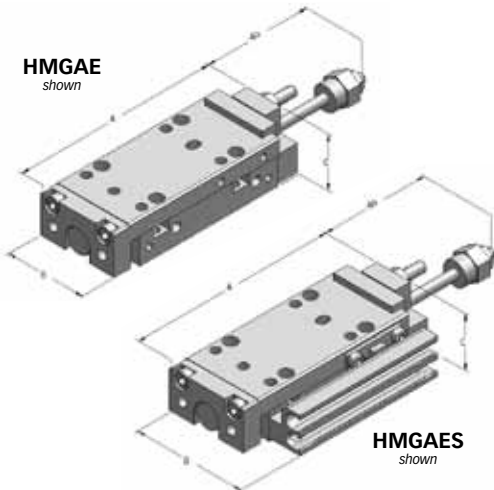
- 4.5..... 5, 10
- 6 & 8 5, 10, 15, 20, 25, 30
- 10..... 5, 10, 15, 20, 25, 30, 40, 50
- 12..... 10, 15, 20, 30, 40, 50, 60, 70, 80
- 16..... 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100
- 20..... 10, 15, 20, 30, 40, 50, 60, 70, 80, 100, 125

OPTIONS AND ACCESSORIES (page 37):

Extended stroke Buffer Type includes built-in spring to absorb work piece impact shock (consult website). Shock Absorber optional on 10 through 20 Bores. Choice of Reed or Non-Contact Sensor Switches.



HMGAE
shown



Model	Bore Size - Effective Force		Overall Dimensions (mm)					
	Bore Diameter (mm)	Piston Area inch ²	Stroke	Length - A (add stroke)	Length - AP (add stroke)	Width - B	Depth - C	Port Thread
HMGAP, HMGAPS	4.5	0.02	5 or 10	32	16	18	10	M3x0.5
	6	0.04	5 or 10	44	19	20	12	
			15	49				
	8	0.08	5 or 10	44	19	24	14	
			15 or 20	54				
	10	0.12	5 or 10	42	20	26	16	
			15 or 20	57				
			30	67				

*For Sensor Cylinders (HMGAE S), add 9.5mm to dimension B, for sensor rail.

Model	Bore Size - Effective Force		Overall Dimensions					
	Bore Diameter (mm)	Piston Area inch ²	Stroke	Length - A (add stroke)	Length-AP (add stroke)	Width-B (inch)	Depth-C (inch)	Port Thread
HMGAE, HMGAE S	4.5	0.02	5 or 10	32	16	18	13	M3x0.5
	6	0.04	5 or 10	44	19	20	15	
			15	49				
	8	0.08	5 or 10	44	19	24	16	
			15 or 20	54				
	10	0.12	5 or 10	42	20	26	18	
			15 or 20	57				
			30	67				

*For Sensor Cylinders (HMGAE S), add 9.5mm to dimension B, for sensor rail.

HOW TO OBTAIN SPECIFICATIONS FOR SLIDERS

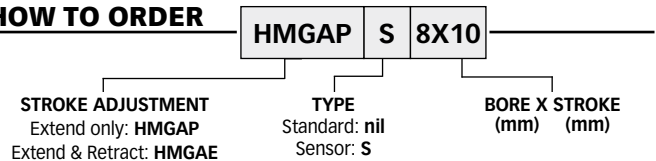
- Go to www.humphrey-products.com
- Select "Online Product Guide." Follow the steps to get the slider you need.
- Once the specifications have been entered, select "Download Spec Sheet" to create a personalized PDF of the slider, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

HOW TO ORDER HUMPHREY SLIDERS AND ACCESSORIES

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- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.

HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

HOW TO ORDER



SPECIFICATIONS

Media:	Air
Pressure Range:	30-100 PSIG
Temperature Range:	32°F to 140°F

MINI-GUIDE SLIDERS, SIDE MOUNTED

HMGAL-L, HMGAL-R, HMGALS-L, HMGALS-R

Humphrey Side-Mounted, Mini-Guide Sliders are sub-miniature sized, high precision, square-bodied actuators that have dramatically reduced the overall volume and length versus comparable "accuracy" actuators. Convenient rear porting location through the side mount, and choice of left or right side mounting, allows user to fit this Mini-Guide into tight, thin spaces. Available in four bore sizes. All models can be sensor cylinders for end-of-stroke position signaling to PLCs.

BORE SIZES (mm):

- 4.5, 6, 8, 10

TYPE:

- Double Acting (HMGAL-L, HMGAL-R, HMGALS-L, HMGALS-R)

STANDARD STROKES (mm):

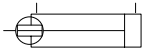
Bore..... Strokes

- 4.5..... 5, 10
- 6 & 8.... 5, 10, 15, 20, 25, 30
- 10..... 5, 10, 15, 20, 25, 30, 40, 50

OPTIONS AND ACCESSORIES (page 37):

Extended stroke Buffer Type includes built-in spring to absorb work piece impact shock (consult website). Rear Piping and End Keep Types are available. Shock Absorber optional on 10 through 20 Bores. Choice of Reed or Non-Contact Sensor Switches.

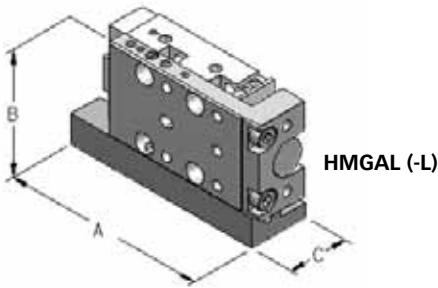
GUIDED LINEAR ACTUATORS



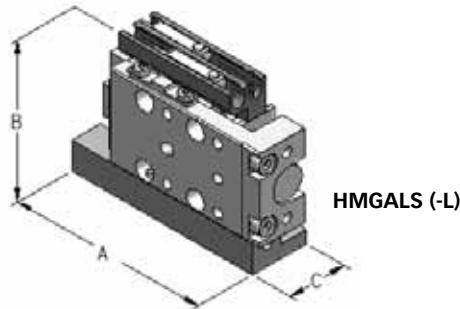
HMGAL (-R)

Model	Bore Size - Effective Force		Overall Dimensions (mm)				Port Thread
	Bore Diameter (mm)	Piston Area inch ²	Stroke	Length - A	Width - B*	Depth - C	
HMGAL, HMGALS	4.5	0.02	5 or 10	54	27	12	M3x0.5
			5 or 10 15	55 60			
	6	0.04	5 or 10 15 or 20	57 67	33	16	
			5 or 10 15 or 20 30	60 70 80			
	8	0.08	5 or 10 15 or 20	60 70	35	18	
			5 or 10 15 or 20 30	60 70 80			
	10	0.12	5 or 10 15 or 20	60 70	35	18	
			5 or 10 15 or 20 30	60 70 80			

*For Sensor Cylinders (HMGALS), add 9.5mm to dimension B, for sensor rail.

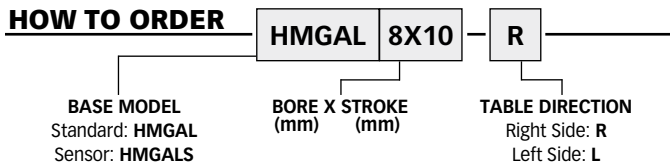


HMGAL (-L)



HMGALS (-L)

HOW TO ORDER



SPECIFICATIONS

Media:	Air
Pressure Range:	30-100 PSIG
Temperature Range:	32°F to 140°F

HOW TO OBTAIN SPECIFICATIONS FOR SLIDERS

- Go to www.humphrey-products.com
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- Go to www.humphrey-products.com
- Select "Find A Distributor" and input your information to locate a distributor nearest you.
- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.

HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

Additional variations of the Humphrey Mini-Guide Sliders include:

BUFFER TYPE – An extended stroke built-in spring mechanism absorbs delicate work piece impact shock.

REAR PIPING TYPE – Locates air fittings and tubing at the rear and away from work piece.

END KEEP TYPE – On lifting applications, the End Keep Type is available to prevent the work piece from falling when loss or insufficient pressure has occurred.

CLEAN SYSTEM – A vacuum port draws away contaminants present on the piston rod.

SHOCK ABSORBERS – Optional on Mini-Guide Slider bore sizes 10, 12 16 and 20. Or, consider metal or rubber stoppers.

SENSOR SWITCHES – Finally, select from a variety of Reed or Non-Contact Sensor Switches when end-of-stroke feedback is desired.

BUFFER TYPE



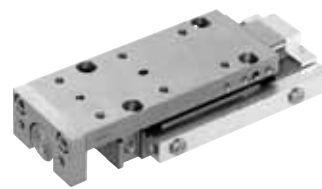
Available Bore Sizes (mm):

- 4.5, 6, 8, 10, 12, 16, 20

Models: HMGAG, HMGALG, HMGAPG, HMGAGH, HMGAEAG, HMGAGK

Available on Standard models, Stroke Adjusting models, Side Mounted, End Keep, and Clean System models.

REAR PIPING TYPE

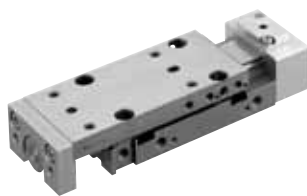


Available Bore Sizes (mm):

- 4.5, 6, 8, 10, 12, 16, 20

Models: HGMAH, HGMAGH
Available on Standard models, Buffer Type models, and Clean System models.

END KEEP TYPE



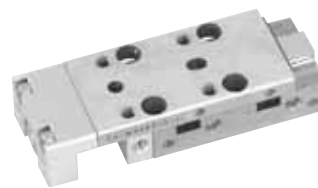
Available Bore Sizes (mm):

- 12, 16, 20

Models: HGMAK, HGAGK

Head side only. Available on Standard models, and Buffer Type models.

CLEAN SYSTEM TYPE

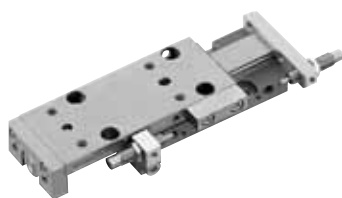


Available Bore Sizes (mm):

- 4.5, 6, 8, 10, 12, 16, 20

Models: CS-HMGA, CS-HMGAH
Available on Standard models and Rear Piping Type models.

SHOCK ABSORBERS & STOPPERS

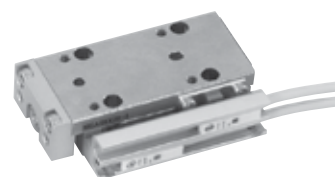


Available Bore Sizes (mm):

- 10, 12, 16, 20

Shocks and Rubber Stoppers available on Standard, Stroke Adjusting, Buffer Type, End Keep Type, and Clean System models. Metal Stopper available on most.

SENSOR SWITCHES



Available Bore Sizes (mm):

- 4.5, 6, 8, 10, 12, 16, 20

Available on models and types, 1 or 2 switches per Slider. Switches can be added later, via kits. See page 53 for switch types.

HOW TO OBTAIN SPECIFICATIONS FOR SLIDERS

Go to www.humphrey-products.com

- Select "Online Product Guide." Follow the steps to get the slider you need.
- Once you have finished entering the specifications, select "Download Spec Sheet." Doing this will create a personalized PDF of the slider, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

HOW TO ORDER HUMPHREY SLIDERS AND ACCESSORIES

Go to www.humphrey-products.com

- Select "Find A Distributor." Input your information to locate a distributor nearest you.
- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.



HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

TWIN-ROD CYLINDERS

HTBDA

Humphrey Twin-Rod Cylinders are essentially two conventional double-acting cylinders in one, extruded aluminum housing which are coupled together with a rod-end tooling plate. Offered in six sizes from 6 to 32mm bore, Twin-Rod Cylinders feature a rectangular, non-rotational construction for easy mounting. Two-cylinder design allows for "double the force" within the width of one. Twin-Rod Cylinders are capable of withstanding greater lateral load than a conventional cylinder. Standard features include fine stroke adjustment, noise-reducing bumpers and magnetic piston for sensor switch operation.

BORE SIZES (mm):

- 6, 10, 16, 20, 25, 32

TYPE:

- Double Acting (HTBDA)

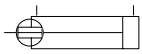
STANDARD STROKES (inch):

- 6 Bore: 1/2, 3/4, 1, 1-1/2, 2
- 10 Bore: 1/2, 3/4, 1, 1-1/2, 2, 2-1/2, 3
- Other Bores: 1/2, 3/4, 1, 1-1/2, 2, 2-1/2, 3, 3-1/2, 4

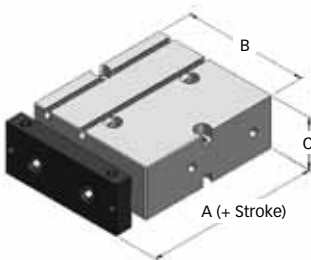
OPTIONS AND ACCESSORIES:

Reed or Non-Contact Sensor Switches (see page 53).

GUIDED LINEAR ACTUATORS

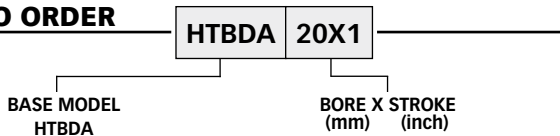


HTBDA



Model	Bore Size - Effective Area		Overall Dimensions			
	Bore Diameter (mm)	Piston Area (inch ²)	Length A + Stroke (inch)	Width-B (inch)	Depth-C (inch)	Port Thread
HTBDA	6	0.09	1.93	1.28	0.55	10-32 UNF
	10	0.24	2.28	1.65	0.67	
	16	0.62	2.68	2.13	0.83	
	20	0.97	3.07	2.44	0.98	
	25	1.52	3.19	2.87	1.18	
	32	2.49	4.25	3.78	1.58	1/8 PIPE

HOW TO ORDER



SPECIFICATIONS

Media:	Air	
Pressure Range (PSIG):	6 Bore	28-100 PSIG
	10 Bore	22-100 PSIG
	16, 20, 25, 32 Bores	15-100 PSIG
Temperature Range:	32°F to 140°F	

HOW TO OBTAIN SPECIFICATIONS FOR CYLINDERS

- Go to www.humphrey-products.com
- Select "Online Product Guide." Follow the steps to get the cylinder you need.
- Once the specifications have been entered, select "Download Spec Sheet" to create a personalized PDF of the cylinder, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

HOW TO ORDER HUMPHREY CYLINDERS AND ACCESSORIES

- Go to www.humphrey-products.com
- Select "Find A Distributor" and input your information to locate a distributor nearest you.
- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.

 **HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS**

Humphrey Long-Bushing Type, Twin-Rod Cylinders are essentially two conventional double-acting cylinders in one, extruded aluminum housing coupled together with a rod-end tooling plate. Offered in five sizes from 10 to 32mm bore, Twin-Rod Cylinders feature a rectangular, non-rotational, construction for easy mounting. Long-bushing type is capable of even greater lateral loads than standard Twin-Rod Cylinder types. Noise-reducing bumpers and magnetic piston for sensor switch operation standard.

BORE SIZES (mm):

- 10, 16, 20, 25, 32

TYPE:

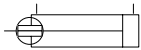
- Double Acting (HTBDAM)

STANDARD STROKES (inch):

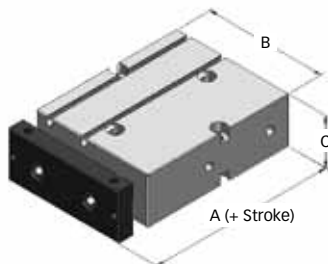
- 10 Bore: 1/2, 3/4, 1, 1-1/2, 2, 2-1/2, 3
- Other Bores: 1/2, 3/4, 1, 1-1/2, 2, 2-1/2, 3, 3-1/2, 4

OPTIONS AND ACCESSORIES:

Reed or Non-Contact Sensor Switches (see page 53).



HTBDAM



Model	Bore Size - Effective Area		Overall Dimensions			
	Bore Diameter (mm)	Piston Area inch ²	Length A + Stroke (inch)	Width-B (inch)	Depth-C (inch)	Port Thread
HTBDAM	10	0.24	2.68	1.65	0.67	10-32 UNF
	16	0.62	3.07	2.13	0.83	
	20	0.97	3.47	2.44	0.98	
	25	1.52	3.58	2.87	1.18	
	32	2.49	4.65	3.78	1.58	1/8 PIPE

HOW TO OBTAIN SPECIFICATIONS FOR CYLINDERS

- Go to www.humphrey-products.com
- Select "Online Product Guide." Follow the steps to get the cylinder you need.
- Once the specifications have been entered, select "Download Spec Sheet" to create a personalized PDF of the cylinder, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

HOW TO ORDER HUMPHREY CYLINDERS AND ACCESSORIES

- Go to www.humphrey-products.com
- Select "Find A Distributor" and input your information to locate a distributor nearest you.
- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.

HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

HOW TO ORDER



SPECIFICATIONS

Media:	Air	
Pressure Range (PSIG):	10 Bore	28-100 PSIG
	16, 20, 25, 32 Bores	21-100 PSIG
Temperature Range:	32°F to 140°F	

TWIN-ROD SINGLE-ACTING CYLINDERS

HTBSA

Humphrey Twin-Rod Single-Acting Cylinders are essentially two conventional spring-return cylinders in one, extruded aluminum housing, which are coupled together with a rod-end tooling plate. Offered in four bore sizes from 10 to 25mm bore, these cylinders feature a rectangular, non-rotational, construction for easy mounting. The two-cylinder design allows for "double the force" within the width of one. Twin-Rod Cylinders are capable of withstanding greater lateral load than conventional cylinder. Standard features include fine stroke adjustment, noise-reducing bumpers and magnetic piston for sensor switch operation.

BORE SIZES (mm):

- 10, 16, 20, 25

TYPE:

- Single Acting – Push (HTBSA)

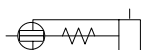
STANDARD STROKES (inch):

- 1/2, 3/4, 1, 1-1/2, 2, 2-1/2

OPTIONS AND ACCESSORIES:

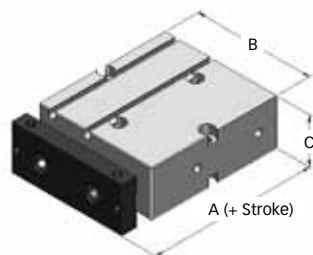
Reed or Non-Contact Sensor Switches (see page 53).

GUIDED LINEAR ACTUATORS



HTBSA

Model	Bore Size - Effective Area		Overall Dimensions - Retracted Position				
	Bore Diameter (mm)	Piston Area inch ²	Length A + Stroke (inch)		Width-B (inch)	Depth-C (inch)	Port Thread
			≤1/2-1 Stroke	≥1-1/2" Stroke			
HTBSA	10	0.24	2.28	2.71	1.65	0.67	10-32 UNF
	16	0.62	2.68	3.18	2.13	0.83	
	20	0.97	3.07	3.57	2.44	0.98	
	25	1.52	3.19	3.69	2.87	1.18	



HOW TO ORDER



SPECIFICATIONS

Media:	Air	
Pressure Range (PSIG):	10 Bore	35-100 PSIG
	16, 20, 25 Bores	28-100 PSIG
Temperature Range:	32°F to 140°F	

HOW TO OBTAIN SPECIFICATIONS FOR CYLINDERS

- Go to www.humphrey-products.com
- Select "Online Product Guide." Follow the steps to get the cylinder you need.
- Once the specifications have been entered, select "Download Spec Sheet" to create a personalized PDF of the cylinder, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

HOW TO ORDER HUMPHREY CYLINDERS AND ACCESSORIES

- Go to www.humphrey-products.com
- Select "Find A Distributor" and input your information to locate a distributor nearest you.
- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.

HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

Humphrey Twin-Rod End-Keep Cylinders are essentially two double-acting cylinders in one, extruded aluminum housing coupled together with a rod-end tooling plate. A mechanical lock fixes the cylinder in either the extended or retracted position in the event of pressure loss or failure. Offered in three bore sizes from 16 to 25mm bore, End-Keep Cylinders feature a square, non-rotational construction for easy mounting. Two-cylinder design allows for “double the force” within the width of one and is capable of withstanding greater lateral load than conventional cylinders. Standard features include fine stroke adjustment, noise-reducing bumpers and magnetic piston for sensor switch operation.

BORE SIZES (mm):

- 16, 20, 25

TYPE:

- Double Acting – Head Side Lock (HTBDAK-HL)
- Double Acting – Rod Side Lock (HTBDAK-RL)

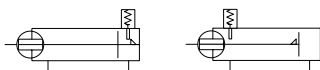
STANDARD STROKES (inch):

- 1/2, 3/4, 1, 1-1/2, 2, 3, 4

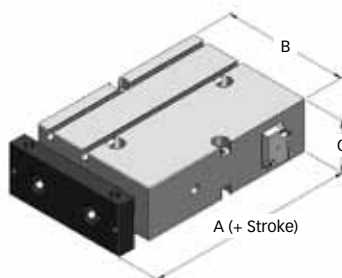
OPTIONS AND ACCESSORIES:

Reed or Non-Contact Sensor Switches (see page 53).

GUIDED LINEAR ACTUATORS



HTBDAK



Model	Bore Size - Effective Area		Overall Dimensions			Port Thread
	Bore Diameter (mm)	Piston Area inch ²	Length A + Stroke (inch)	Width-B (inch)	Depth-C (inch)	
HTBDAK	16	0.62	3.68	2.13	0.83	10-32 UNF
	20	0.97	4.07	2.44	0.98	
	25	1.52	4.19	2.87	1.18	

HOW TO OBTAIN SPECIFICATIONS FOR CYLINDERS

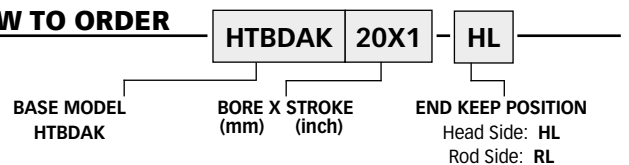
- Go to www.humphrey-products.com
- Select “Online Product Guide.” Follow the steps to get the cylinder you need.
- Once the specifications have been entered, select “Download Spec Sheet” to create a personalized PDF of the cylinder, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

HOW TO ORDER HUMPHREY CYLINDERS AND ACCESSORIES

- Go to www.humphrey-products.com
- Select “Find A Distributor” and input your information to locate a distributor nearest you.
- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.

HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

HOW TO ORDER



SPECIFICATIONS

Media:	Air
Pressure Range (PSIG):	22-100 PSIG
Temperature Range:	32°F to 140°F

GUIDED BLOCK CYLINDERS

HSGDA

Humphrey Guided Block Cylinders are heavy-duty air cylinders with precision guide shafts that are integrated into a unique extruded aluminum body and rugged tooling plate. They provide rigid movements while withstanding significant lateral loads. The rectangular design saves space and provides selection of mounting, porting and sensor switch options. Eight bore sizes are available.

BORE SIZES (mm):

- 12, 16, 20, 25, 32, 40, 50, 63

TYPE:

- Double Acting (HSGDA)

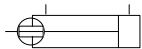
STANDARD STROKES (inch):

- 12,16mm bore: 1/2, 1, 1 1/2, 2, 3, 4
- Other Bores: 1/2, 1, 1 1/2, 2, 3, 4, 5, 6, 7, 8

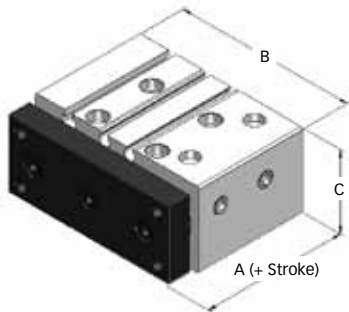
OPTIONS AND ACCESSORIES:

Sensor Switches, Reed and Non-Contact types (see page 53).

GUIDED LINEAR ACTUATORS



HSGDA



Model	Bore Size - Effective Area		Overall Dimensions			
	Bore Diameter (mm)	Piston Area inch ²	Length A + Stroke (inch)	Width-B (inch)	Depth-C (inch)	Port Thread
HSGDA	12	0.18	1.42	2.28	1.10	10-32 UNF
	16	0.31	1.58	2.68	1.26	
	20	0.49	2.05	3.23	1.58	1/8 PIPE
	25	0.76	2.13	3.62	1.65	
	32	1.25	2.32	4.49	1.89	
	40	1.95	2.48	4.89	2.13	1/4 PIPE
	50	3.04	2.76	5.91	2.60	
63	4.83	2.76	6.38	2.99		

HOW TO ORDER



SPECIFICATIONS

Media:	Air	
Pressure Range (PSIG):	12, 16, 20 Bores	22-145 PSIG
	20, 25, 32, 40, 50, 63 Bores	15-145 PSIG
Temperature Range:	32°F to 140°F	

HOW TO OBTAIN SPECIFICATIONS FOR CYLINDERS

- Go to www.humphrey-products.com
- Select "Online Product Guide." Follow the steps to get the cylinder you need.
- Once the specifications have been entered, select "Download Spec Sheet" to create a personalized PDF of the cylinder, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

HOW TO ORDER HUMPHREY CYLINDERS AND ACCESSORIES

- Go to www.humphrey-products.com
- Select "Find A Distributor" and input your information to locate a distributor nearest you.
- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.

HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

Humphrey Guided Block Cylinders are heavy-duty air cylinders with precision guide shafts that are integrated into a unique extruded aluminum body and rugged tooling plate. They provide rigid movements while withstanding significant lateral loads. The rectangular design saves space and provides selection of mounting, porting and sensor switch options. Eight stroke-adjusting bore sizes are available. Stroke-adjusting range is 0 to 3/8".

BORE SIZES (mm):

- 12, 16, 20, 25, 32, 40, 50, 63

TYPE:

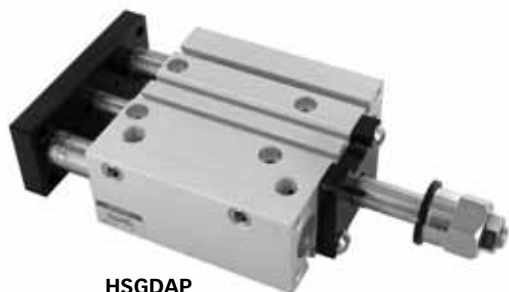
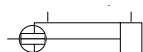
- Double Acting with Stroke Adjuster (HSGDAP)

STANDARD STROKES (inch):

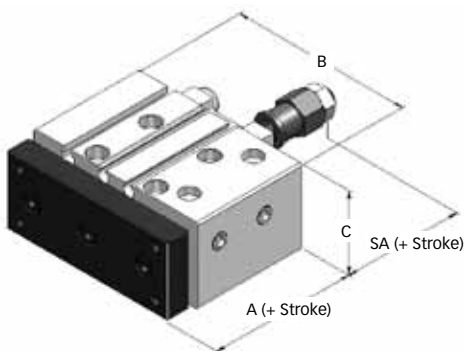
- 12,16mm bore: 1/2, 1, 1 1/2, 2, 3, 4
- Other Bores: 1/2, 1, 1 1/2, 2, 3, 4, 5, 6, 7, 8

OPTIONS AND ACCESSORIES:

Sensor Switches, Reed and Non-Contact types (see page 53).



HSGDAP



Model	Bore Size - Effective Area		Overall Dimensions				
	Bore Diameter (mm)	Piston Area inch ²	Length A + Stroke (inch)	Add'l Length SA + Stroke (inch)	Width-B (inch)	Depth-C (inch)	Port Thread
			1" Stroke Cylinder	1" Stroke Cylinder			
HSGDAP	12	0.18	1.42	1.24	2.28	1.10	10-32 UNF
	16	0.31	1.57	1.35	2.68	1.26	
	20	0.49	2.05	1.45	3.23	1.58	1/8 PIPE
	25	0.76	2.13	1.59	3.62	1.65	
	32	1.25	2.32	1.91	4.49	1.89	
	40	1.95	2.48	1.85	4.89	2.13	
	50	3.04	2.76	2.09	5.91	2.60	1/4 PIPE
	63	4.83	2.76	2.13	6.38	2.99	

GUIDED LINEAR ACTUATORS

HOW TO OBTAIN SPECIFICATIONS FOR CYLINDERS

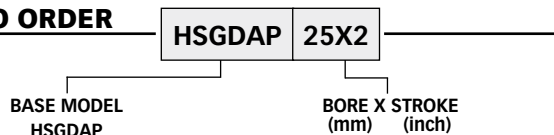
- Go to www.humphrey-products.com
- Select "Online Product Guide." Follow the steps to get the cylinder you need.
- Once the specifications have been entered, select "Download Spec Sheet" to create a personalized PDF of the cylinder, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

HOW TO ORDER HUMPHREY CYLINDERS AND ACCESSORIES

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- Select "Find A Distributor" and input your information to locate a distributor nearest you.
- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.

HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

HOW TO ORDER



SPECIFICATIONS

Media:	Air	
Pressure Range (PSIG):	12, 16, 20 Bores	22-145 PSIG
	25, 32, 40, 50, 63 Bores	15-145 PSIG
Temperature Range:	32°F to 140°F	

SPECIALTY ACTUATORS

INTRODUCTION

Humphrey Specialty Actuators include Rodless Cylinders, Swing Cylinders, Rotary Actuators and the Air Hand Series Pneumatic Grippers. Specialty Actuators all utilize an internal linear actuator to accomplish specialty movements such as long travel distances, rotation, twisting, swing and linear combination, gripping and holding functions. Additional design and cost considerations, such as miniaturization, mounting, adjustment, position sensor conveniences, and RoHS compliant materials round out the offering.

For nearly 50 years, Humphrey has partnered with Koganei Corporation, one of the world leaders in pneumatic automation, offering a broad line of linear actuators.

HORV SERIES RODLESS CYLINDER

The HORV Series is the shortest, thinnest, lightest and most cost-effective band-type, rodless cylinder on the market. Available in three bore sizes and strokes to 78 inches, the HORV fits into spaces other rodless cylinders cannot. Optional barrel support brackets, shock absorbers, and load mounts round out the offering. Pistons include magnets for end-of-stroke position sensor.



HRAPS SERIES COMPACT ROTARY ACTUATORS

The HRAPS Series Rotary Actuators are a double rack-and-pinion type to achieve torque with no backlash. Available in four sizes and five rotation angles from 90 to 360 degrees, HRAPS are perfect for swing movements within tight spaces. Square body mounts with ease. All types include magnetic piston for end-of-turn position sensor.



AIR HAND SERIES PNEUMATIC GRIPPERS

The miniature Air Hand Series Pneumatic Grippers is heavy duty, but light and compact. Capable of holding loads up to 25lbs, Air Hands fit into tight spaces easily with their square body construction. Available in angular or parallel lever movement, four bore sizes and either single or double acting (normally open). Pistons include magnets for end-of-stroke position sensor.



SWING CYLINDER SERIES COMBINES ROTATION AND LINEAR ACTUATION

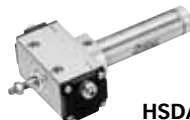
Swing Cylinders are rotary and linear actuating functions, acting independently within a single product. Provides both motions either alternately or simultaneously. Available in two bore sizes, strokes to 4 inches, and rotation angles up to 180 degrees, Swing Cylinders simplify engineering design time for pick and place and factory automation applications. All Swing Cylinders include magnetic pistons for end-of-stroke and end-of-swing angle position sensor.



SWING



HSDA
with magnet



HSDA
without magnet

ROTARY



HRAPS20



HRAPS1

AIR HAND



HNHBDP
Parallel Type



HNHBDS
Swing - Open

RODLESS



HORV

HORV RODLESS CYLINDER SERIES					
	Bore Size - mm	(Push Force @100psi-lbs)	Std. Stroke Range (inch)	Max. Poss. Stroke (inch)	Page
	16	(32)			
HORV – Double Acting, Sensor	25	(77)	2 – 78	78	46
	40	(198)			
HRAP ROTARY ACTUATOR SERIES					
	Size	(Torque in/lb. @100psi)	Degrees Rotation	Max. Rotation (degrees)	Page
	1	(0.87)			
HRAPS – Double Acting, Sensor	5	(4.3)	90, 100, 180, 190, 360	360	47
	10	(8.7)			
	20	(17.4)			
SWING CYLINDER SERIES					
	Bore Size - mm	(Push Force @100psi-lbs)	Std. Stroke Range (inch)	Degrees Rotation	Page
	25	(75)			
HSDA – Double Acting, Sensor	40	(191.8)	3/4 – 4	45, 90, 135, 180	48
AIR HAND GRIPPER SERIES					
	Bore Size - mm	(Grip Force @73psi-lbs)	Swing Angle (degrees)	Lever Open Stroke	Page
	10	(0.6)			
HNHBDS – Swing, Double Acting, Sensor	16	(3.4)			
HNHBRS – Swing, Single Acting – Close, Sensor	20	(6.4)	-10° – +30°		49
	25	(12.9)			
	10	(1.8)		4	
HNHBDP – Parallel, Double Acting, Sensor	16	(5.3)		8	
HNHBRS – Swing, Single Acting – Close, Sensor	20	(10.4)		12	49
	25	(17.2)		14	

RODLESS CYLINDERS

HORV16, HORV25, HORV40

Designed for longer distances of travel, Humphrey HORV Rodless Cylinders are shorter, thinner, lighter and more cost effective than traditional rodless cylinders. Available in three bore sizes, these band type, rodless cylinders fit in and minimize the overall mass of the device. While other types add mass/weight to resist lateral loads and moments, the HORV is a better value for those applications where extraneous loads have been eliminated. Mounting is via through holes on end caps. Magnet piston for Sensor Switch operation is standard.

BORE SIZES (mm):

- 16, 25, 40

TYPE:

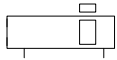
- Double Acting (HORV)

STANDARD STROKES (inch):

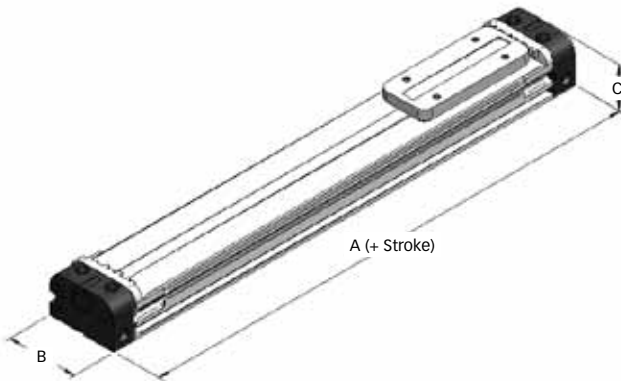
- 2 – 78 (1/2-inch increments)

OPTIONS AND ACCESSORIES:

M-Mount, Long stroke body support bracket, Stroke-end Shock Absorber kit. For Sensor options, see page 53.



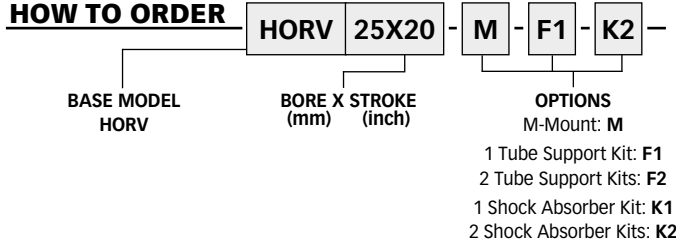
HORV 25x4



Model	Bore Size - Effective Area		Overall Dimensions			
	Bore Diameter (mm)	Piston Area	Length A + Stroke (inch)	Width-B (inch)	Depth-C (inch)	Port Thread
HORV	16	0.31	4.41	1.58	1.10	10-32 UNF
	25	0.76	5.99	2.21	1.46	1/8 PIPE
	40	1.95	9.53	3.31	2.29	1/4 PIPE

SPECIALTY ACTUATORS

HOW TO ORDER



SPECIFICATIONS

Media:	Air
Pressure Range:	21-115 PSIG
Temperature Range:	32°F to 140°F

HOW TO OBTAIN SPECIFICATIONS FOR CYLINDERS

- Go to www.humphrey-products.com
- Select "Online Product Guide." Follow the steps to get the cylinder you need.
- Once the specifications have been entered, select "Download Spec Sheet" to create a personalized PDF of the cylinder, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

HOW TO ORDER HUMPHREY CYLINDERS AND ACCESSORIES

- Go to www.humphrey-products.com
- Select "Find A Distributor" and input your information to locate a distributor nearest you.
- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.



HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

Humphrey compact Rotary Actuators are rack-and-pinion type, ensuring reliable operation and no backlash. The HRAPS series is offered in four sizes from 0.9 to 17 in-lb of torque, and five swing angle choices. Single-sided, carbon steel shaft is standard with options that include double-sided and/or stainless steel shaft. Magnetic pistons are standard for Sensor Switch operation. Mount HRAPS via body or end-cap mounting threads.

TYPE:

- Double Acting (HRAPS)

STANDARD DEGREES OF ROTATION:

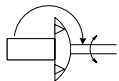
- 90, 100, 180, 190, 360

OPTIONS AND ACCESSORIES:

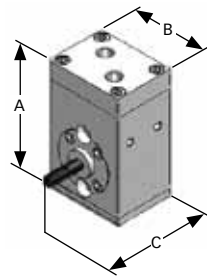
Double-sided shaft (single-sided shaft is standard).
Stainless steel shaft option. Reed or Non-Contact Sensor Switches (see page 53).

SIZES (kgf-cm ACTUAL TORQUE RATING):

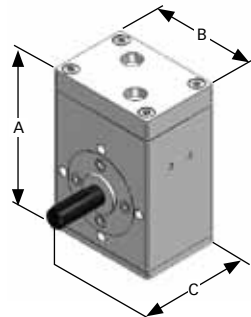
- 1, 5, 10, 20



HRAPS1



HRAPS20



Model	Torque @ 100 PSIG		Overall Dimensions					Port Thread
	(lb-in)	(kgf-cm)	Length - A (inch)			Width-B (inch)	Depth-C with shaft (inch)	
			90 & 100 degree rotation	180 & 190 degree rotation	360 degree rotation			
HRAPS1-*	0.87	1	1.89	2.36	3.47	1.18	1.63	10-32 UNF
HRAPS5-*	4.3	5	2.44	3.07	4.57	1.77	2.15	1/8 PIPE
HRAPS10-*	8.7	10	2.87	3.74	5.63	1.93	2.50	
HRAPS20-*	17.4	20	3.43	4.45	6.77	2.32	2.93	

* Enter degrees rotation (90, 100, 180, 190, 360)

HOW TO OBTAIN SPECIFICATIONS FOR ACTUATORS

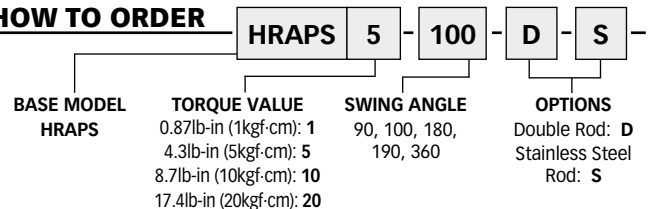
- Go to www.humphrey-products.com
- Select "Online Product Guide." Follow the steps to get the actuator you need.
- Once the specifications have been entered, select "Download Spec Sheet" to create a personalized PDF of the actuator, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

HOW TO ORDER HUMPHREY ACTUATORS AND ACCESSORIES

- Go to www.humphrey-products.com
- Select "Find A Distributor" and input your information to locate a distributor nearest you.
- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.

HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

HOW TO ORDER



SPECIFICATIONS

Media:	Air	
Pressure Range (PSIG):	HRAPS1, HRAPS5	20-100 PSIG
	HRAPS10, HRAPS20	9-100 PSIG
Temperature Range:	32°F to 122°F	

SWING CYLINDERS

HSDA

Humphrey Swing Cylinders combine independent linear motion and rotary motion within one product, thereby simplifying design and overall machine complexity. Offered in two bore sizes, Swing Cylinders utilize a non-rotational piston rod with rack-and-pinion rod bushing. Wide swing angle adjustment screws, with locknut, are standard. Piston magnets reside on both functions for sensor switch operation.

BORE SIZES (mm):

- 25, 40

TYPE:

- Double Acting and Double-Acting Rotary Motion (HSDA)

STANDARD STROKES (inch):

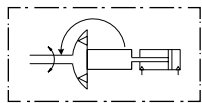
- 25 Bore: 3/4, 1, 2
- 40 Bore: 3/4, 1, 2, 3, 4

DEGREES OF ROTATION:

- 45, 90, 135, 180

OPTIONS AND ACCESSORIES:

Square rod end with female thread option, Reed and Non-Contact Type Sensor Switches (see page 53). Flange mount.

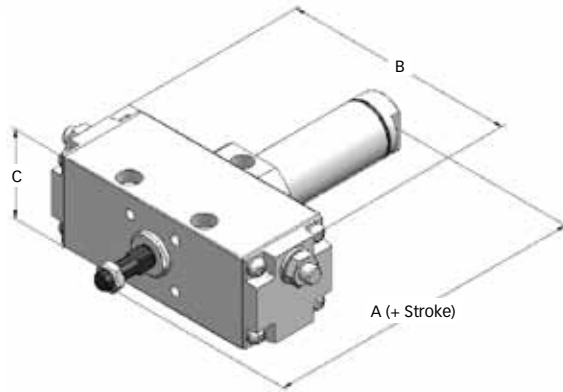


Model		Bore Size (mm)	Force		Overall Dimensions			
			Piston Area (in ²)	Torque @70psi (lb-in)	Length A + Stroke (inch)	Width-B (inch)	Depth-C (inch)	Port Thread
HSDA25x *-45	HSDA25x *-90	25	0.76	4.9	5.24	3.54	1.73	1/8 PIPE
HSDA25x *-135	HSDA25x *-180					4.53		
HSDA40x *-45	HSDA40x *-90	40	1.95	11.5	6.07	4.41	2.13	
HSDA40x *-135	HSDA40x *-180					5.91		

* Enter stroke length (inches)

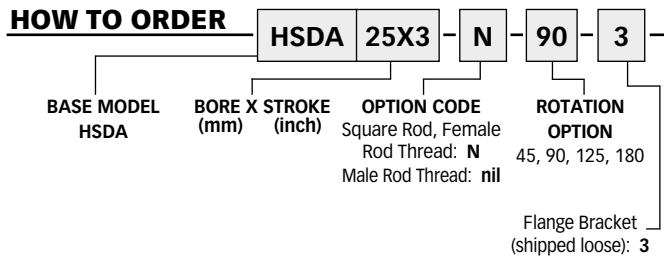


HSDA25X1



SPECIALTY ACTUATORS

HOW TO ORDER



SPECIFICATIONS

Media:	Air
Pressure Range:	30-100 PSIG
Temperature Range:	32°F to 140°F

HOW TO OBTAIN SPECIFICATIONS FOR CYLINDERS

- Go to www.humphrey-products.com
- Select "Online Product Guide." Follow the steps to get the cylinder you need.
- Once the specifications have been entered, select "Download Spec Sheet" to create a personalized PDF of the cylinder, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

HOW TO ORDER HUMPHREY CYLINDERS AND ACCESSORIES

- Go to www.humphrey-products.com
- Select "Find A Distributor" and input your information to locate a distributor nearest you.
- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.

HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

Humphrey Air Hand Series compact pneumatic grippers are offered in both parallel and angular types, and in four sizes from 10 to 25mm bore, capable of up to 25lbs of gripping force. Available in double-acting type for gripping open or gripping closed function, or single-acting type for gripping closed function. Pistons include a magnet for Sensor Switch operation.

TYPE:

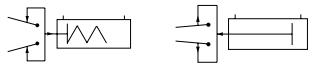
- Double Acting (HNHBDS, HNHB DP)
- Single-Acting Closed (HNHBRS, HNHB RP)

OPTIONS AND ACCESSORIES:

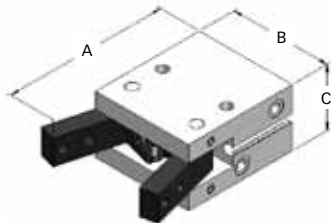
Rear mounting flange, Sensor Switch Magnet (S) standard. For Sensor options, see page 53.

BORE SIZES (mm):

- 10, 16, 20, 25

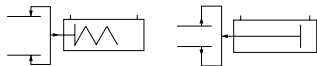


**HNHBDS,
HNHBRS**
Swing Type

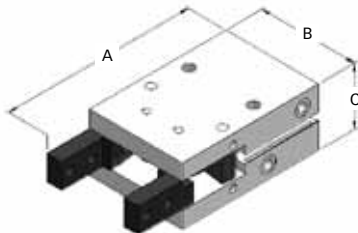


Swing Model	Bore Size (mm)	Gripping Force		Overall Dimensions			
		Double Acting @100psi (lb-in)	Single Acting @100psi (lb-in)	Length-A w/fingers (inch)	Width-B (inch)	Depth-C (inch)	Port Thread
HNHB *S-10	10	1.0	0.7	1.99	0.91	0.63	M3x0.5
HNHB *S-16	16	5.5	4.6	2.36	1.34	0.87	
HNHB *S-20	20	10.4	8.6	2.84	1.77	1.02	
HNHB *S-25	25	20.7	17.6	3.31	2.05	1.26	

* Enter Double Acting (D) or Single Acting (R)



**HNHB DP,
HNHB RP**
Parallel Type



Parallel Model	Bore Size (mm)	Gripping Force		Overall Dimensions			
		Double Acting @100psi (lb-in)	Single Acting @100psi (lb-in)	Length-A w/fingers (inch)	Width-B (inch)	Depth-C (inch)	Port Thread
HNHB *P-10	10	1.7	0.65	2.24	0.91	0.63	M3x0.5
HNHB *P-16	16	5.2	2.8	2.78	1.34	0.87	
HNHB *P-20	20	10.3	5.0	3.37	1.77	1.02	
HNHB *P-25	25	17.2	8.3	3.96	2.05	1.26	

* Enter Double Acting (D) or Single Acting (R)

HOW TO OBTAIN SPECIFICATIONS FOR GRIPPERS

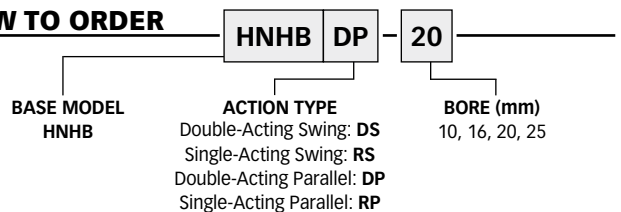
- Go to www.humphrey-products.com
- Select "Online Product Guide." Follow the steps to get the gripper you need.
- Once the specifications have been entered, select "Download Spec Sheet" to create a personalized PDF of the gripper, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

HOW TO ORDER HUMPHREY GRIPPERS AND ACCESSORIES

- Go to www.humphrey-products.com
- Select "Find A Distributor" and input your information to locate a distributor nearest you.
- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.

HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

HOW TO ORDER



SPECIFICATIONS

Media:	Air
Pressure Range:	15-100 PSIG
Temperature Range:	32°F to 140°F

ACCESSORIES

INTRODUCTION

Actuator Accessories enhance the performance of the pneumatic cylinder or linear actuator movement and positioning within the device in a compact and most cost effective means. Actuator Accessories complement the actuator and include piston-rod-position sensor switches, end-of-stroke shock absorbers, speed controllers, quick exhaust valves and rod-end alignment couplers.

SENSOR SWITCHES REED OR HALL EFFECT TYPES

Most Humphrey Cylinders and Actuators are available with magnetic pistons for position sensing via sensor switches. Cost-effective Reed Switch Types or long lasting, Non-Contact Types are offered and provide "input" signals to PLCs or controllers, typically at end-of-stroke but actually anywhere along the barrel of the product.



FLOW CONTROLLERS HSC TYPE

Humphrey right angle flow controller, Series HSC, allows for full flow into the cylinder, but meters the escaping air, thereby controlling cycle speeds. Offered in 1/8 or 1/4 PIPE threads, the HSC Series offers precise control in a heavy duty, yet attractive, design. Miniature inline model, SC1, also available.



CYLINDER JOINTS HCJ SERIES

Humphrey Cylinder Joints are rod-end alignment couplers and attach to the rod-end thread of the cylinder. They align the axial center of the rod to the mating work tooling, thus greatly reducing engineering and installation complexity. Offered in 10 thread sizes.



QUICK EXHAUST VALVES QE SERIES

Humphrey Quick Exhaust Valves accelerate the speed of pneumatic actuators by releasing the exhausting air at the actuator's port, rather than through the remotely mounted control valve. Other quick exhaust uses are as shuttle valves, air springs, or to ensure air line lubrication to the cylinder. Seven sizes are offered.



SHOCK ABSORBERS MINIATURE LINEAR ABSORPTION TYPE

The KSHJ Series "Linear" Shock Absorbers provide lower impact, lower noise, faster operation, and longer life than competitive shock absorber types. With 16 sizes offered, including the world's smallest M4 threaded body, we have a suitable size to meet your every need.



SENSOR SWITCHES



ZC130



ZE235A



RS4

CYLINDER JOINTS



HCJ10/32

FLOW CONTROLLERS



SC1



HSC12

QE VALVES



QE3



SQE

SHOCK ABSORBERS



KSHJ16x15



KSHJ10x10

SENSOR SWITCHES		Applicable Name of Base Model Code			Page	
Humphrey Stainless Steel Cylinders		Reed Switch Type, Non-Contact (Hall Effect/Solid State) Type			52	
All Other Actuators (Linear, Guided Linear and Specialty)		Reed Switch Type, Non-Contact (Hall Effect/Solid State) Type			53	
SHOCK ABSORBERS		Bore Sizes – mm	Stroke – mm	Body Thread Size – mm	Max. Absorption (ft-lbf/Min)	Page
KSHJ – Linear Type		4	3	M4x0.5	7.4	54
		6	4	M6x0.75	14.8	
		8	5	M8x0.75	26.6	
		8	8	M8x0.75	44.3	
		10	10	M10x1	88.5	
		10	15	M10x1	148	
		12	10	M12x1	162	
		14	12	M14x1.5	177	
		16	15	M16x1.5	207	
		18	16	M18x1.5	236	
		20	16	M20x1.5	332	
		22	25	M22x1.5	369	
		25	25	M25x1.5	516	
		27	25	M27x1.5	590	
		30	30	M30x1.5	664	
		36	50	M36x1.5	1328	
42	50	M42x1.5	1770			
42	70	M42x1.5	1770			
48	50	M48x2	2213			
FLOW CONTROLS		Available Sizes	N/A	Free Flow (Nom CFM)	N/A	Page
SC1 – Speed Controller		10-32 UNF		7		55
HSCL – Speed Controller		1/8 PIPE		15		
		1/4 PIPE		42		
CYLINDER JOINTS		Thread Size	Max Load (lbs)	Max Eccentricity (inch)	Max. Swivel Angle	Page
HCJ – Small, Short Nose		10-32 UNF	1320	0.02		
		1/4 - 20				
		1/4 - 28				
HCJS – Large, Short Nose HCJL – Large, Long Nose		5/16 - 18	4620	0.02	+/-5°	56
		5/16 - 24				
		3/8 - 16	7040	0.03		
		7/16 - 20	11,000	0.04		
		1/2 - 13				
1/2 - 20	14,080	0.05				
3/4 - 10						
QUICK EXHAUST VALVES		Ports	N/A	CFM (@100 PSI)	N/A	Page
SQE – Small		10-32 UNF		7		57
		1/8 PIPE		63		
		1/4 PIPE		85		
QE – Large		1/4 PIPE		120		
		3/8 PIPE		155		
		1/2 PIPE		373		
		3/4 PIPE		395		

SENSOR SWITCHES – STAINLESS STEEL CYLINDERS

REED SWITCH AND NON-CONTACT SENSOR SWITCH TYPES

Humphrey Reed Type and Non-Contact Type Sensor Switches offer a cost-effective interface “input” from pneumatic automation to electrical control systems. Available for any cylinder or actuator ordered with a piston magnet, Humphrey Sensor Switches close, providing a PLC “input” as the internal magnet field is sensed. Reed Switch Types are cost effective, and Non-Contact Types ensures long life, due to no moving parts.

TYPE:

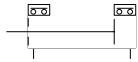
- Reed Switch, Non-Contact

TYPES:

- Reed 2-wire without LED – (DC or AC)
- Reed 3-wire with LED – (DC or AC)
- Non-Contact 2-wire with LED – 5 – 25VDC

OPTIONS AND ACCESSORIES:

Long lead length (3600mm), PSMK mounting kit may be ordered with switch or separately.



MODEL	TYPE	Load Voltage DC	Load Voltage AC	Load Current DC	Load Current AC	LED	Lead Length mm*	Applicable Name of Base Model Code
RS2	2-wire, Reed	200V	140V	1 amp	1 amp	none	600 (3600)	Humphrey SST Cylinder
RS4	3-wire, Reed					Red		
GMR1	3-wire, Non-Contact	5-25V	N/A	25mA	N/A	N/A		

* Length in parenthesis is optional length, at extra charge.



RS4



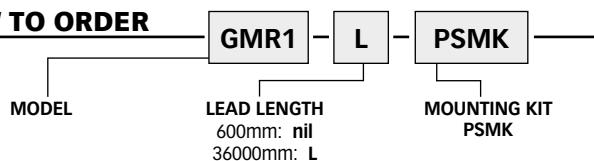
GMR1



5-DP-4M with two RS-2-PSMK switches

ACCESSORIES

HOW TO ORDER



HOW TO OBTAIN SPECIFICATIONS FOR CYLINDERS

- Go to www.humphrey-products.com
- Select “Online Product Guide.” Follow the steps to get the cylinder you need.
- Once the specifications have been entered, select “Download Spec Sheet” to create a personalized PDF of the cylinder, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

HOW TO ORDER HUMPHREY CYLINDERS AND ACCESSORIES

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- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.

HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

SENSOR SWITCHES – ALL OTHER ACTUATORS

REED SWITCH AND NON-CONTACT SENSOR SWITCH TYPES

Humphrey Reed Type and Non-Contact Type Sensor Switches offer a cost-effective interface “input” between pneumatic automation and electrical control systems. Available for any actuator ordered with a piston magnet, Humphrey Sensor Switches close, providing a PLC “input” as the internal magnet field is sensed. Reed Switch Types are cost effective, and Non-Contact Types ensure long life, due to no moving parts.

TYPES:

- Reed Switch, Non-Contact

DESIGNS:

- Reed 2-wire without LED – (DC or AC)
- Reed 2-wire with LED – (DC or AC)
- Non-Contact 2-wire with LED – DC only
- Non-Contact 3-wire with LED – DC only

OPTIONS AND ACCESSORIES:

Standard lead lengths (1000, 3000 or 5000mm). Mounting accessories included.



ZE135



ZE235A



ZC130



ZG530

MODEL*	TYPE	Load Voltage		Load Current		Applicable Name of Base Model Code
		DC	AC	DC	AC	
CS5T	2-wire, Reed	5-28V	85-115V	0.1-40mA	2-25mA	Multi-Mt, Twin-Rod 6mm, HRAPS, Swing
ZE101 (ZE201)	2-wire, Reed	5-28V		40mA	20mA	Mini-Bit, Mini-Guide, Twin Rod, HORV Rodless, Grippers, Guided Block
ZE102 (ZE202)	2-wire, Reed, LED	10-28V		5-40mA	5-20mA	
CS3M	2-wire, Reed, LED	10-30V		10-50mA	10-50mA	Swing
CS4M	2-wire, Reed, LED	10-30V		5-25mA	5-20mA	
CS4H	2-wire, Reed, LED	10-30V		5-25mA	5-20mA	Block
CS9H	3-wire, Non-Contac, LED	4-28V	N/A	100mA	N/A	Multi-Mt, Twin-Rod 6mm, HRAPS, Swing
ZC130 (ZE230)	2-wire, Non-Contact, LED	10-28V		4-50mA		
ZC153 (ZE253)	3-wire, Non-Contact, LED	4.5-28V		100mA		
ZE135 (ZE235)	2-wire, Non-Contact, PNP, LED	10-28V		4-20mA		Mini-Bit, Mini-Guide, Twin Rod, HORV Rodless, Grippers, Guided Block
ZE155 (ZE255)	3-wire, Non-Contact, LED	4.5-28V		50mA		
ZE175 (ZE275)	3-wire, Non-Contact, PNP, LED	4.5-28V		50mA		
ZG530	2-wire, Non-Contact, LED	10-28V	4-50mA	Swing		
ZG553	3-wire, Non-Contact, LED	4.5-28V	100mA			

*Models in parenthesis are vertical electrical entry. Others are horizontal entry.



HMGAE5 with ZE135

HOW TO OBTAIN SPECIFICATIONS FOR CYLINDERS

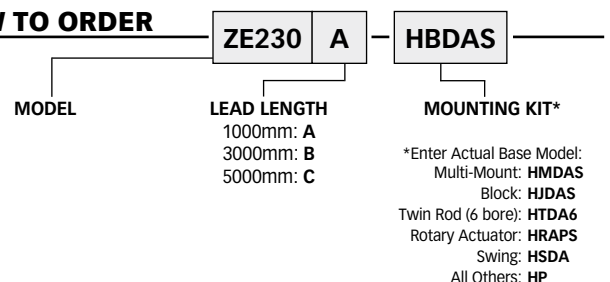
- Go to www.humphrey-products.com
- Select “Online Product Guide.” Follow the steps to get the cylinder you need.
- Once the specifications have been entered, select “Download Spec Sheet” to create a personalized PDF of the cylinder, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

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- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.

HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

HOW TO ORDER



ACCESSORIES

SHOCK ABSORBERS

KSHJ

The Humphrey/Koganei brand of miniature Shock Absorbers reduce the impact energy at stroke-end of the cylinder or actuator, thereby extending the life of the device in high speed or high load carrying applications. Unlike competitive brands, our unique "linear orifice" type ensures a quiet and smooth absorption from impact to completion of stroke. Demonstrably better than competitive brands. Adjustments are not necessary. Sixteen sizes and 90 models available.

TYPE:

- Linear Orifice Type (KSHJ)

BODY THREAD SIZES:

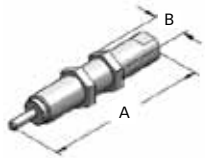
- M4, M6, M8, M10, M12, M14, M16, M18, M20, M22, M25, M27, M30, M36, M42, M48

OPTIONS AND ACCESSORIES:

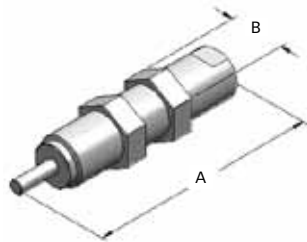
Cap, Stopper Nut, Mounting Bracket.



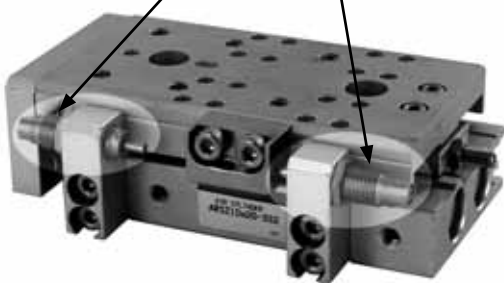
KSHJ10x10



KSHJ16x15



KSHJ10X10 (2)
ON A LINEAR TABLE

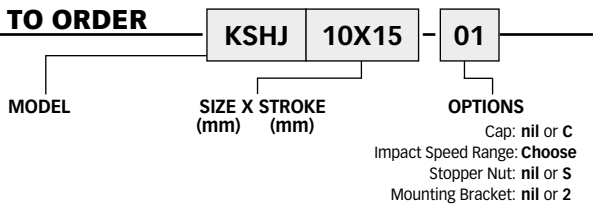


Model	Available Sizes (mm)	Stroke (mm)	Length - A (mm)	Body Thread Size-B	Maximum Impact Speed Available*	Max Absorption (ft-lbf/Min)
KSHJ	4	3	25	M4x0.5	3.3 ft/s	7.4
	6	4	29.5	M6x0.75		14.8
	8	5	37	M8x0.75		26.6
	8	8	46	M10x1	4.9 ft/s	44.3
	10	10	60	M10x1	6.5 ft/s	88.5
	10	15	77	M10x1	9.8 ft/s	148
	12	10	66	M12x1	6.5 ft/s	162
	14	12	72	M14x1.5		177
	16	15	82	M16x1.5		207
	18	16	88	M18x1.5		236
	20	16	93	M20x1.5		332
	22	25	125	M22x1.5		369
	25	25	125	M25x1.5	4.9 ft/s	516
	27	25	125	M27x1.5	4.9 ft/s	590
	30	30	153	M30x1.5	9.8 ft/s	664
	36	50	218	M36x1.5		1328
42	50	220	M42x1.5	6.5 ft/s	1770	
42	70	275	M42x1.5		1770	
48	50	230	M48x2		2213	

*Note: Other impact speed ranges available. Consult factory.

ACCESSORIES

HOW TO ORDER



SPECIFICATIONS

Type	Linear Orifice-Spring Return
Mounting	Threaded Body with Nuts (2)
Temperature Range:	32°F to 140°F

HOW TO OBTAIN SPECIFICATIONS FOR CYLINDERS

- Go to www.humphrey-products.com
- Select "Online Product Guide." Follow the steps to get the cylinder you need.
- Once the specifications have been entered, select "Download Spec Sheet" to create a personalized PDF of the cylinder, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

HOW TO ORDER HUMPHREY CYLINDERS AND ACCESSORIES

- Go to www.humphrey-products.com
- Select "Find A Distributor" and input your information to locate a distributor nearest you.
- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.

HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

Humphrey miniature Flow Controls allow for full air flow in one direction and controllable, metered flow in the opposite direction. Ideal for controlling the speed of air cylinders and actuators at the cylinder port, use Humphrey Flow Controls to meter the exhausting air, ensuring smooth cycling.

TYPE:

- Right Angle Type (HSCL1, HSCL2)
- Miniature Inline (SC1)

SIZES:

- 10-32 UNF, 1/8 PIPE, 1/4 PIPE



SC1

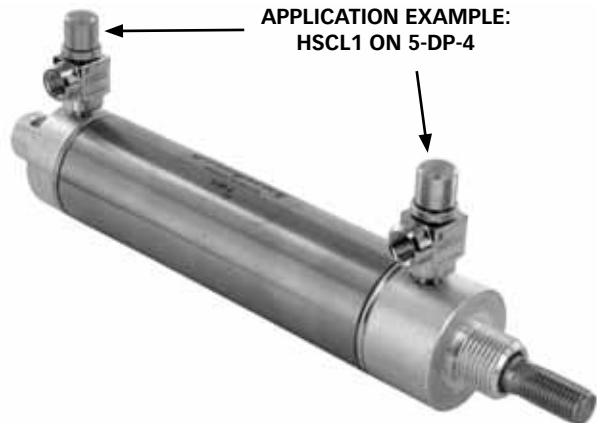


HSCL1



HSCL2

Model and Order Code	Overall Dimensions			Port Thread
	Length (inch)	Width (inch)	Depth (inch)	
SC1	1.31	0.88	0.38	10-32 UNF
HSCL1	1.81	0.55	0.79	1/8 PIPE
HSCL2	2.34	0.79	1.18	1/4 PIPE



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SPECIFICATIONS

Media:	Air (no vacuum)
Maximum Pressure:	125 PSIG
Temperature Range:	32°F to 140°F

CYLINDER JOINTS

HCJ, HCJS, HCJL

Humphrey miniature Cylinder Joints help to align the axial center of the air cylinder to the work tooling. Cylinder Joints correct for precise parallelism challenges in design and construction of the work tooling, greatly reducing installation time. Small size and shape, Cylinder Joints are available in many thread sizes. Dust seal is standard, protecting against contaminants entering the joint area.

TYPES:

- Small, Short Nose Type (HCJ)
- Large, Short Nose Type (HCJS)
- Large, Long Nose Type (HCJL)

CYLINDER JOINT SIZES (thread):

- Small: 10-32 UNF, 1/4-20, 1/4-28
- Large: 5/16-18, 5/16-24, 3/8-16, 7/16-20, 1/2-13, 1/2-20, 3/4-10

OPTIONS AND ACCESSORIES:

Foot Mounting Bracket, Flange Mounting Bracket.



HCJ10/32



HCJ10/32



HCJL7/16-20
ON 5-DP-4

Model and Order Code	Overall Dimensions			Max Load/Pull Force (lbs)
	Length (inch)	Width (inch)	Thread (inch)	
HCJ10-32 UNF	1.3	0.55	10-32 UNF	1320
HCJ1/4-20	1.42	0.55	1/4-20	
HCJ1/4-28	1.42	0.55	1/4-28	

Model and Order Code	Overall Dimensions				Max Load/Pull Force (lbs)
	Short Type Length (inch)	Long Type Length (inch)	Width (inch)	Thread (inch)	
HCJ_5/16-18	1.5	1.85	0.75	5/16-18	4620
HCJ_5/16-24	1.5	1.85	0.75	5/16-24	
HCJ_3/8-16	1.89	2.24	0.95	3/8-16	7040
HCJ_7/16-20	2.34	2.78	1.18	7/16-20	11,000
HCJ_1/2-13	2.5	2.85	1.18	1/2-13	
HCJ_1/2-20	2.5	2.85	1.18	1/2-20	
HCJ_3/4-10	3.03	3.47	1.5	3/4-10	14,080

*Select "S" for short nose thread and "L" for long nose thread.

ACCESSORIES

SPECIFICATIONS

Materials:	Hard Steel, Brass, Buna
Swivel Angle:	+/- 5°
Note:	Includes Rod Nut (loose)

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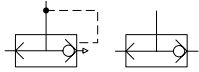


HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

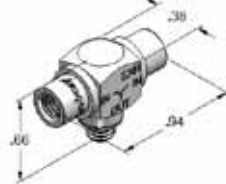
The Humphrey family of Super Quick Exhaust Valves are world renowned for service life and high flow. Available in seven sizes from 10-32 UNF porting to 3/4 PIPE port, Humphrey Quick Exhaust Valves have a bat wing, molded shuttle that totally outperforms competitive flat-disc, sheet stock diaphragm types.

FEATURES:

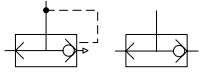
- Mount close nipple to cylinder/actuator port and short circuit exhausting air for super high speed cycling.
- Compact size, high flow.
- Outperforms all others.
- Outlasts all others.
- Also use as a shuttle valve, or plug exhaust port for check valve function.



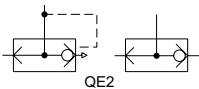
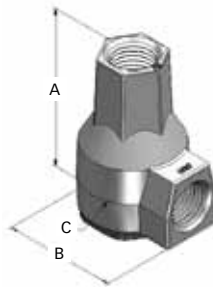
SQE



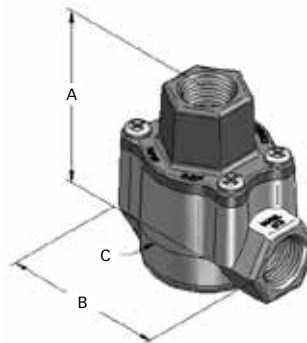
Model and Order Code	Overall Dimensions			Port Thread
	Dim - A (inch)	Dim - B (inch)	Diameter - C (inch)	
SQE	.94	.66	.38	10-32 UNF
SQE1	1.86	1.36	1.09	1/8 PIPE
SQE2				1/4 PIPE
QE2	2.38	2.19	1.56	1/4 PIPE
QE3				3/8 PIPE
QE4	3.66	3.09	2.27	1/2 PIPE
QE5				3/4 PIPE



SQE1, SQE2



QE2, QE3, QE4, QE5



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HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS

SPECIFICATIONS

Media:	Air
Pressure Range (PSIG):	0-150 PSIG
Temperature Range:	32°F to 122°F
Flow @ 100 PSIG:	SQE: Cv=0.1, CFM=7 SQE1: Cv=1.1, CFM=63 SQE2: Cv=1.4, CFM=85 QE2: Cv=2.0, CFM=120 QE3: Cv=2.6, CFM=155 QE4: Cv=6.2, CFM=373 QE5: Cv=6.6, CFM=395

ORDERS: All orders are subject to final approval by the Manufacturer.

QUOTATIONS: Special pricing on standard or custom products is available and subject to situational-based terms and conditions.

CREDIT: Written consent from Manufacturer must be obtained on all credits. Include purchase order number used when goods were ordered. A handling fee will be charged. Additional fees may be charged dependent on age and resalability of returned merchandise, etc.

CANCELLATIONS: Written consent from the Manufacturer must be obtained on all cancellations, and a cancellation fee may be charged at time cancellation is authorized.

SHIPMENTS: The Manufacturer will ship all goods via the most economical carrier unless otherwise instructed.

DELAYED DELIVERY: The Manufacturer shall not be liable for delays, damage, loss of goods in transit, or inability to supply goods for any reason at any time.

BONDS, INSURANCE, OR SPECIAL WARRANTIES, ETC.: The Buyer agrees to pay all costs in obtaining same.

CHANGES: The Manufacturer reserves the right to make changes in specifications and design, etc., and is not liable for any inconvenience or damage whatsoever caused by such design or specification changes.

DIES AND FIXTURES, ETC.: All dies, jigs and fixtures etc. shall be the property of the Manufacturer.

PRICES: The Manufacturer reserves the right to change prices without notice.

INSPECTION: Buyer waives any claims for shipping errors, shortages, non conformance of goods to order, and defective goods, unless Manufacturer receives written notice of same within ten (10) days after delivery of goods.

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.

PRODUCT LIMITED WARRANTY: Manufacturer Humphrey Products Company warranties its product to be free from defects in workmanship and/or material for one (1) year from date of shipment from factory. Manufacturer shall have no liability under the warranty or otherwise if:

1. The product is not inspected by Buyer within ten (10) days after delivery;
2. The product is used other than in accordance with current operating instructions;
3. The product is subjected to any abuse or abnormal or unintended use;
4. A claim in writing under this warranty is not presented to manufacturer at Kalamazoo, Michigan address on or before ninety (90) days after the date of any alleged defect was first known or could reasonably have been known, whichever is sooner, or;
5. The product is not returned unaltered to Manufacturer within such ninety (90) day period for inspection. Any warranty extends only to the first user of the product.

DISCLAIMER: The above Limited Warranty is EXCLUSIVE of any and all other warranties, liabilities or obligations of Manufacturer. MANUFACTURER DISCLAIMS ANY OTHER WARRANTY AND MAKES NO REPRESENTATIONS OR WARRANTY OF ANY KIND EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR OTHER MATTER.

Manufacturer neither authorizes nor assumes responsibility for any other affirmation of fact, description or other representation with respect to its product.

LIMITATIONS OF LIABILITY: Manufacturer's liability shall be limited to: 1. product replacement, 2. product repair, or 3. a refund of the product purchase price F.O.B. point of manufacture, and as Manufacturer, at its option may elect. The above remedies shall be Buyer's exclusive remedies for any and all loss or damage claimed by or through Buyer from any cause whatsoever including, without limitation, inability to supply product, errors or delays in shipment, Manufacturer's negligence, or any other matter. Manufacturer shall not be liable for any incidental, special, or consequential damages.

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.**

USE THE RIGHT PRODUCT

Humphrey valves and cylinders are general purpose and are designed for use in general industrial applications in accordance with the limitations described in this catalog. The specifications of individual products are subject to change without notice. Consult factory representative for specific information concerning application compatibility. Any use or application which deviates from Humphrey's specifications will void the warranty unless Humphrey has provided specific and written authorization beforehand.

USE THE RIGHT LUBRICATION

Except where model specifications state "No lubrication required," all Humphrey cylinders require appropriate lubrication. Humphrey recommends a non-detergent, 20 W or 30 W, mineral-based petroleum oil. Some lubricants may cause swelling or deterioration of seals, therefore lubricant/seal compatibility must be confirmed. Read specifications carefully. If there is any doubt, consult factory representative.

USE THE RIGHT AIR SUPPLY

The media, including the lubricants and other substances it may contain, must be compatible with the materials of which the cylinder is constructed. Read the specifications carefully; if there is any doubt, consult factory representative. Some cylinder models are vulnerable to contaminated or moisture-laden compressed air. To promote proper functioning and long life in such instances, appropriate air treatment equipment should be installed. Consult your supplier of air filters, regulators, and lubricators.

USE PROPER SERVICE PROCEDURES

Never attempt to service a Humphrey cylinder or any system component unless you have been properly trained to do so. A properly trained person will never attempt to remove or service a component of a compressed air system unless the compressed air has been disconnected and the system thoroughly exhausted.

DESIGN A PROPER SYSTEM

Always strive to design systems which are safe as well as efficient. Either eliminate potential hazards completely or install safety features which neutralize them.

Give special consideration to any potential for accidental actuation of a cylinder.

Consider the adverse consequences of individual component failure and design to prevent or minimize these consequences. Design a system that will fail safe under conditions of pressure variation, pressure loss, or other system failures.

Read the component literature carefully. If a model is not completely understood, do not apply it without first consulting the factory.

Size valves, cylinders and actuators properly. Models having capacity insufficient thrust force the system may cause the entire system to be inefficient. Always note the size of the cylinder orifice – this is often more important than the PIPE connection.

Specifications subject to change without notice.

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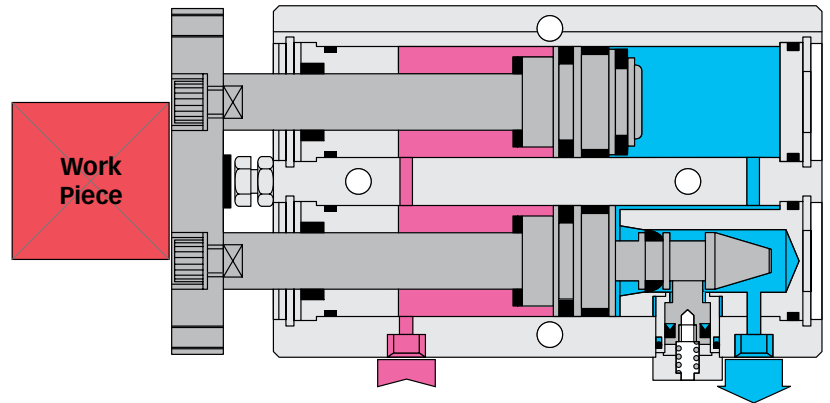
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LINEAR ACTUATORS WITH ADDED VALUE

Basic air cylinders (linear actuators) are designed to provide energy, or work, from compressed air in a linear motion. For long life, provisions should be considered to avoid lateral loads. Manufacturers of cylinders and actuators have added value to the basic cylinder construction to achieve miniaturization, non-rotational, guided or precise movements, as well as other forms of movements, such as rotary or gripping motions.

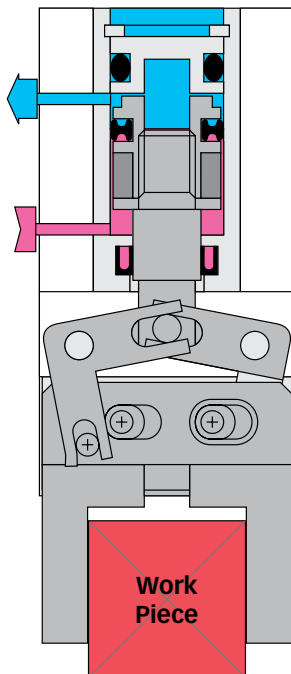
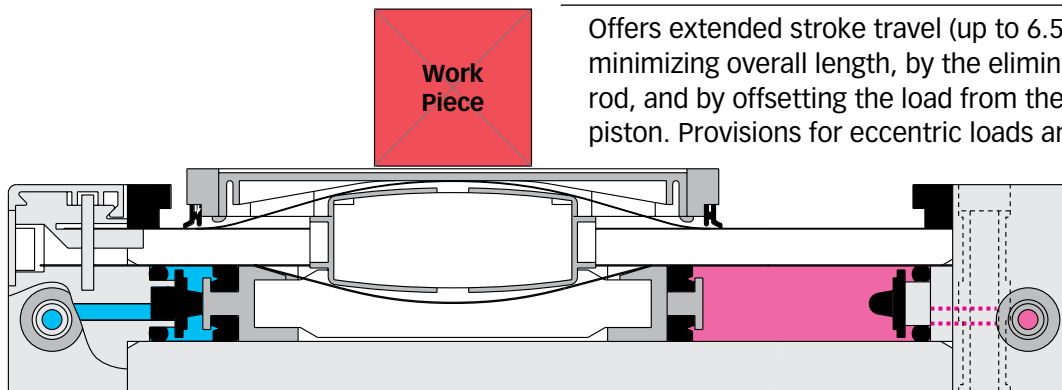
TWIN ROD

Combines two air cylinders to achieve excellent non-rotational linear movement while withstanding some lateral loads. In lifting applications, the End Keep type (shown here) protects the work piece from falling should insufficient or loss of air pressure occurs.



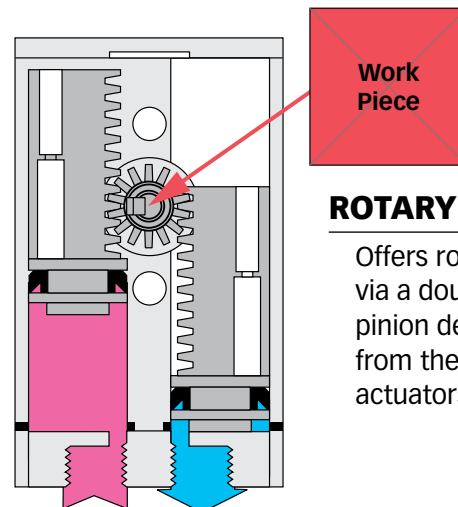
RODLESS

Offers extended stroke travel (up to 6.5 feet) while minimizing overall length, by the elimination of the piston rod, and by offsetting the load from the centerline of the piston. Provisions for eccentric loads and their moments (pitching, rolling, yawing) must be accounted for maximum life expectancy.



GRIPPER

Offers a compact closing or opening force generated from linkages with the internal linear actuator.



ROTARY ACTUATOR

Offers rotary motion via a double rack and pinion design generated from the internal linear actuators.



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