



HL Slides

Transfer and Lift Systems



HYDRO-LINE, INC.

An IMC Company





NFPA

Solutions through maskin technology

MEMBER

PATENTS PENDING
OR PATENTED
5263402
5255591
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Table of Contents

Thank you for using Hydro-Line...

We would like to take this opportunity to introduce Hydro-Line, Inc. to your company and the many benefits, which may be gained by becoming a Hydro-Line customer.

Experience :

Hydro-Line, Inc. was established in 1946 and is committed to being a world leader in actuation. Hydro-Line provides industrial, agricultural and mobile markets with products of unparalleled quality and after-sale support. It is our mission to continuously improve, so our partners remain ahead of their competition as we seek to stay ahead of ours.

Positioned for growth in a Global Market :

Hydro-Line is owned by International Motion Control and is part of the IMC Fluid Power Group. The goal of IMC is to be a world leader in motion control and to build off the synergies of each company to develop state of the art technology. The IMC Fluid Group is comprised of six manufacturing facilities strategically located throughout the world.

Market knowledge :

Hydro-Line's success in markets such as automotive, plastic, foundry, oil & gas, agricultural, wood products and amusement machinery comes through knowledge of our customer's market. We speak the same language! However, knowledge alone is not enough, we earn the loyalty of customers through concurrent engineering, cost containment programs, mutual forecasting programs, and internal program managers, who supervise accounts on a daily basis.

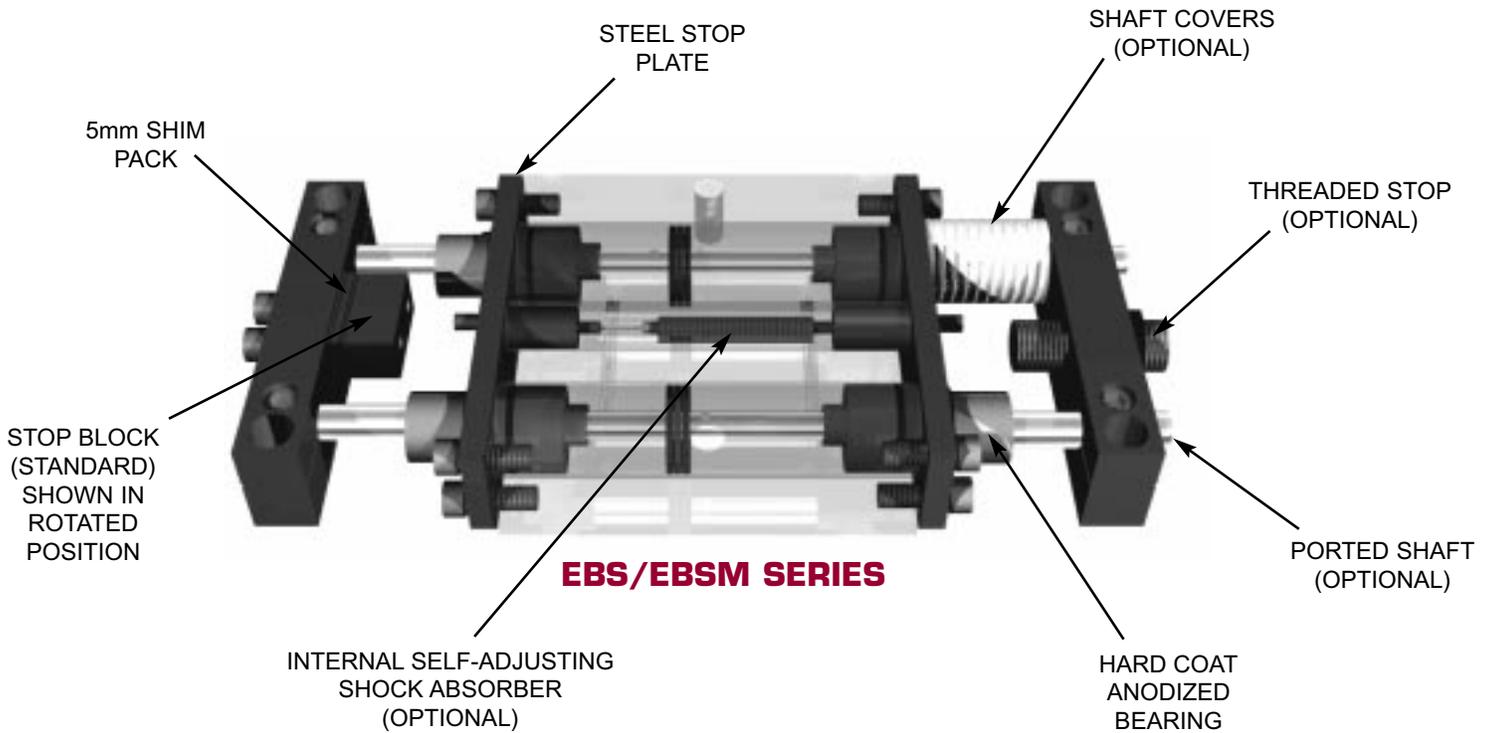
HL Slides are an extension of the high quality products we offer to companies throughout the world. We look forward to working with your company in the future.

Sincerely,
Hydro-Line, Inc.

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Products & Services



HL Slides offer a full line of transfer & lift systems. Available with payloads up to 5,000 lbs and travel up to 36 inches. Units are available in two or more positions. This catalog is designed to help you find the correct transfer & lift system to fit your needs, as quickly and easily as possible. Contact your local Hydro-Line distributor for application assistance, or visit us on the internet at www.epi-power.com

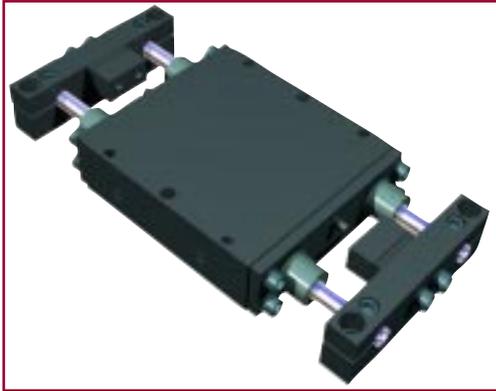
All Hydro-Line transfer & lift systems are completely self-contained and internally powered. Installation requires four bolts and air line connections.

PRODUCT SELECTOR GUIDE

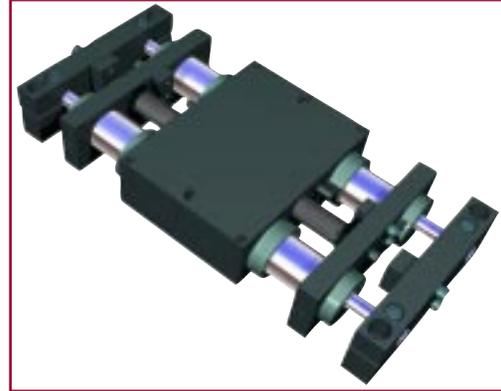
Series	Max. Horizontal Centered Load - 6" Travel (lbs)	Max. Vertical Lift @ 60 PSI (lbs)	Max. No. of Positions	Protected Shafting
EBS	3,500	750	2	Optional Bellows
EIS	2,600	525	4	None
S	5,000	1000	2	Optional Bellows



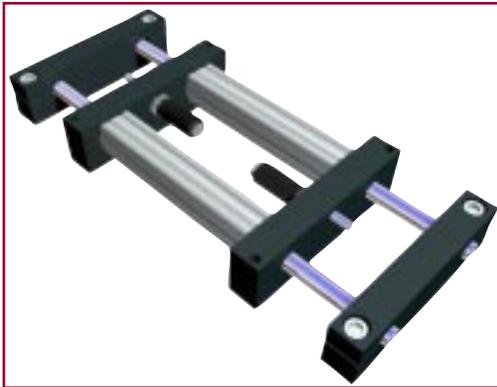
Products & Services



EBS Series 2-Position Slide. Payloads up to 3,500 lbs. Travel up to 18". Available in many custom configurations. See page 6.



EIS Series 4-Position Slide. Payloads up to 2,600 lbs. Combined Travel up to 36". Four repeatable positions with hardened stops. See page 15.



S Series 2-Position Slide. Payloads up to 5,000 lbs. Travel up to 36". Standard sizing and cost competitive. See page 22.



Complete Transfer & Lift System. Hydro-Line's staff of engineers are ready to design a system to meet or exceed your expectations.

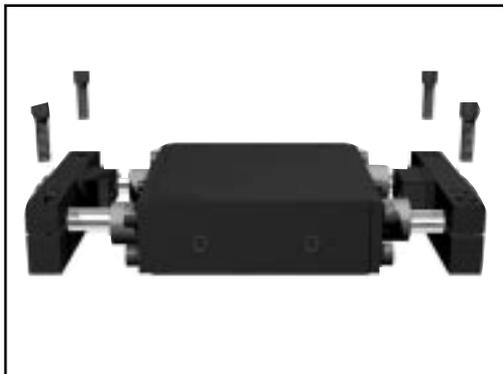


Apply It, Install It, Forget It...

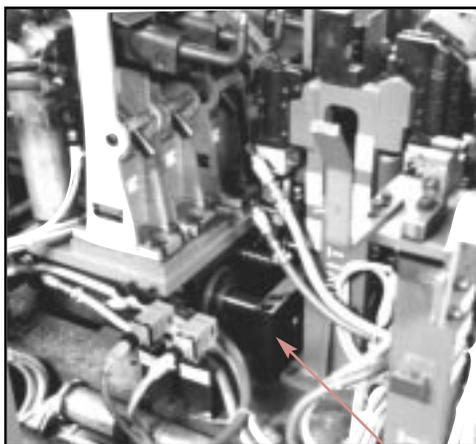
The ideal transfer & lift system is easy to fit into your application. It must be easy to install and it must perform to your specifications without failure. To accomplish this, the ideal transfer and lift system must be:



+



+



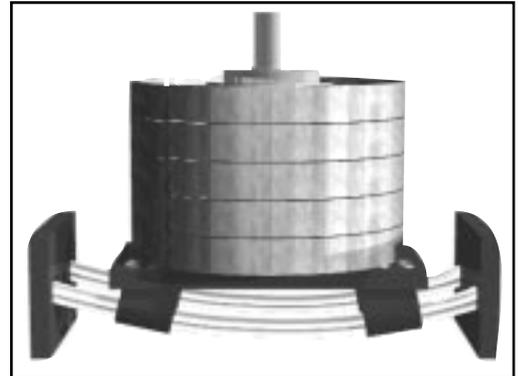
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**APPLY IT,
INSTALL IT,
FORGET IT!**

**1. Properly Designed
For The Application**

vs.

Misapplied

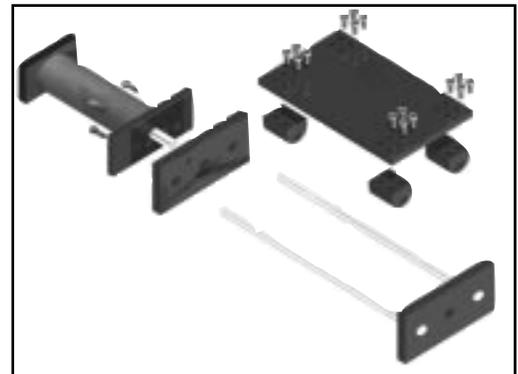


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**2. "Bolt and Go"
Installation**

vs.

**Many Separate
Parts to Purchase
and Assemble**



+

3. Reliable

vs.

**Maintenance
Problems**



=

**MORE TIME,
MORE \$\$\$,
MORE PROBLEMS!**

EIS Series
Slide



Apply It, Install It, Forget It...

Hydro-Line is committed to providing superior products and services:

APPLY IT...

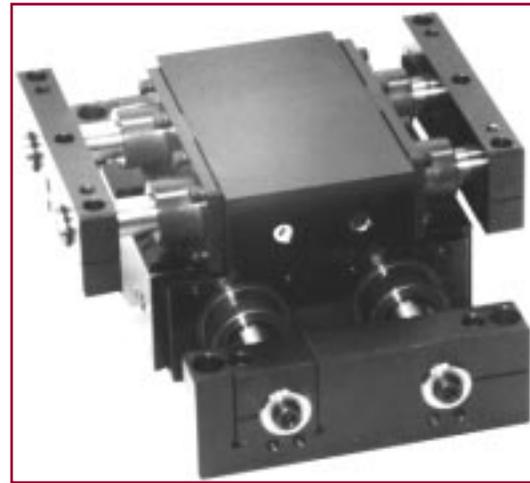
Our staff of application engineers work with you to make sure your transfer & lift system meets your needs. We offer the only application approval process in the industry. Approved applications receive an extended 3-year warranty.

INSTALL IT...

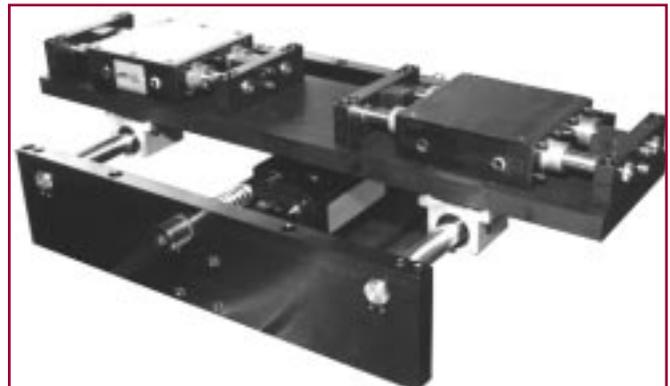
All HL Slide transfer & lift systems are completely self-contained. There are no separate parts to purchase and assemble such as rails, bearings and cylinders. There is no design time - it's done. Furthermore, Hydro-Line takes responsibility for the entire assembly. Installation requires only four bolts and air connections.

FORGET IT...

HL Slide patented designs have withstood the test of time. We have installed thousands of slides in harsh environments since 1984. Our slides are buried confidentially under thousands of pounds of tooling. HL Slides have a field mean cycle rate between failures (MCBF) greater than 4,500,000 cycles.



X-Y SLIDE

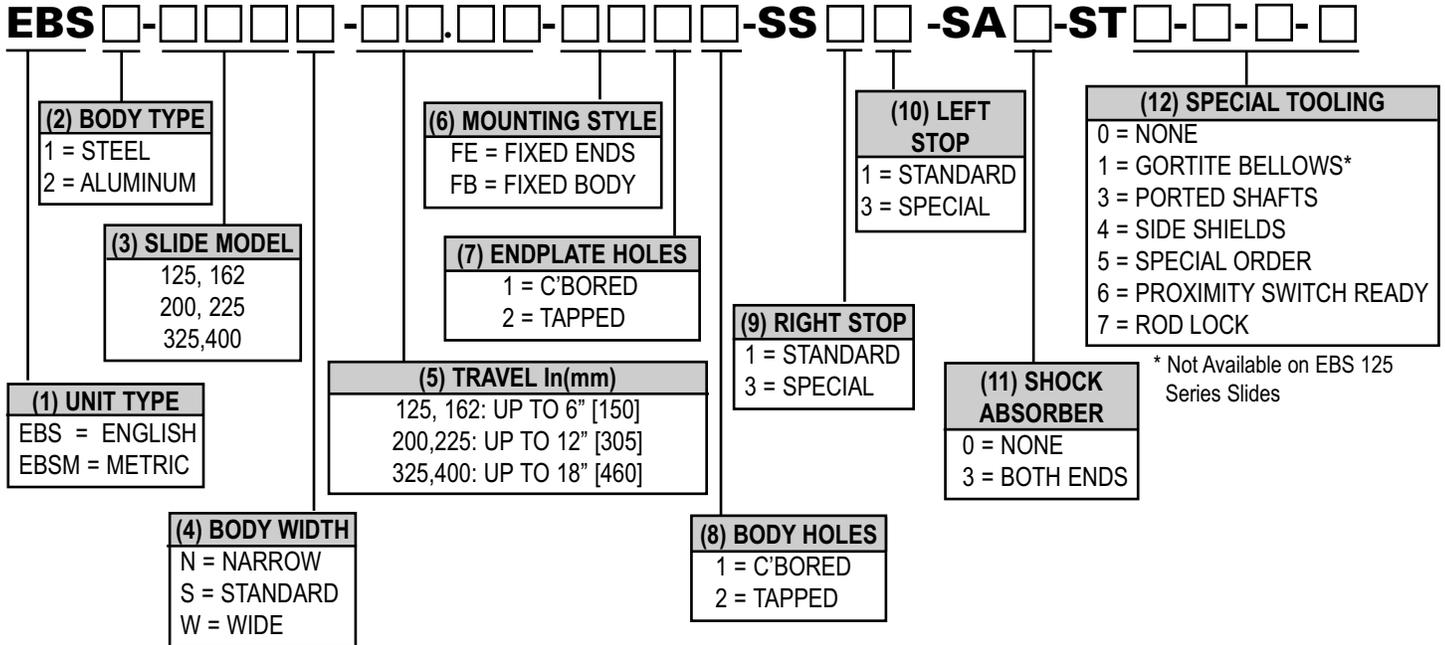


2 X-AXIS, Y-AXIS SLIDE



EBS/EBSM Series

HOW TO ORDER



EXAMPLE:

To order an EBS200 Series Slide, standard body width, aluminum, with 6.00 inches of travel, fixed end plates with counter bores, tapped body, standard stop plates, shock absorber, and ported shafts:
EBS2-200S-06.00-FE12-SS11-SA3-ST3

REORDERS:

Because the EBS/EBSM series is available in many custom configurations, the serial number of the slide must be included with the part number.

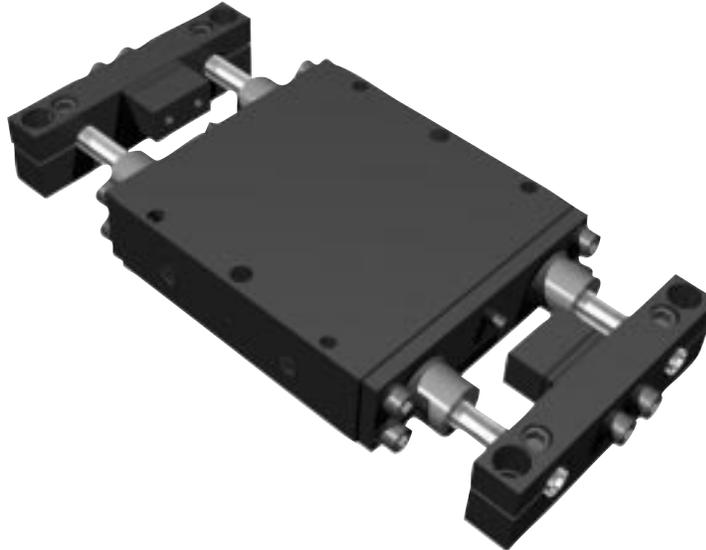
NOTES:

- (1) See page 11 & 12 for English & Metric dimensions.
- (2) Steel body black oxide finish or aluminum hard coat anodized teflon impregnated.
- (3) Model size.
- (4) Not all series are available in all widths. See page 11.
- (5) Travel in inches or millimeters. Standard 0.197" (5mm) "To-Go" travel adjustment per side.
- (6) Fixed ends = end plates are fixed, saddle moves.
- (7) End plate mounting style.
- (8) See pages 11 & 12 for details.
- (10) Standard hardened steel stop blocks.
- (11) Self-adjusting shock absorber is silicone free.



EBS/EBSM Series

2-POSITION SLIDES



DESCRIPTION

The EBS Series is a self-contained, internally powered 2-position slide system. The patented design includes twin power cylinders integrated into the saddle of the slide. This results in twice the force using less space than an externally powered slide.

The EBS Series is available in light weight aluminum or steel body. Slides can be ordered to custom lengths. Options include ported rods, internal self-adjusting shock absorbers, side shields, bellows, rod lock, and others.

FEATURES:	BENEFITS:
<ul style="list-style-type: none">• Greatest force in the smallest space	<ul style="list-style-type: none">• Easy to fit into your design
<ul style="list-style-type: none">• Factory lubricated for life	<ul style="list-style-type: none">• Low maintenance, long life
<ul style="list-style-type: none">• Completely engineered self-contained slide system	<ul style="list-style-type: none">• Saves you time and money
<ul style="list-style-type: none">• Internal self-adjusting shock absorber	<ul style="list-style-type: none">• Protects your tooling



EBS/EBSM Series

SLIDE SPECIFICATIONS

Power:	Air 50 to 150 PSI Oil 150 to 350 PSI
Load:	Up to 1,900 Lbs
Travel:	Up to 18" in 0.010" Increments
To-Go:	0.197" (5mm) Per Side Standard
Repeatability:	± 0.0005" Axial ± 0.0020" Radial
Saddle:	Hardcoat Anodized Aluminum or Steel
Bearings:	4 Linear Hard Coat Anodized Teflon Impregnated
Shafts:	Precision Ground Hardened Steel
Lubrication:	Factory Lubricated for Life
Reliability:	4.5 Million Mean Cycles Between Failures (MCBF)
Warranty:	1 Year Standard 3 Years Extended with Application Approval
Options:	<ul style="list-style-type: none">• Internal Self-adjusting Shock Absorber• Shaft Protectors• Ported Shafts• Side Shields• Rod Lock

DESIGNING WITH EBS/EBSM SERIES SLIDES

STROKE

Stroke is the maximum distance a slide or lifter can travel.

TRAVEL

Travel is the actual distance a slide or lifter moves because of preset adjustable stops which accurately locate the beginning and end of travel. EBS/EBSM Slides can be ordered to the exact travel desired.

TO-GO

To-Go is the amount of reserve travel adjustment on each side of the slide.

$$TO-GO = STROKE - TRAVEL$$

EBS/EBSM slides have 0.197" (5mm) of *To-Go* standard at the beginning and end of travel. Other *To-Go* distances can be special-ordered.



EBS/EBSM Series

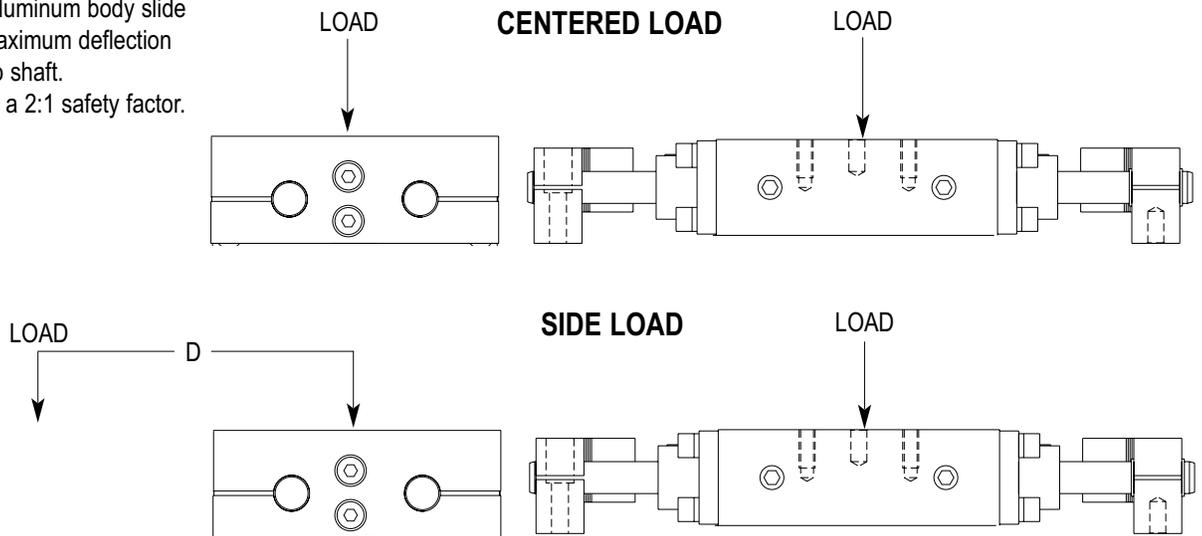
SLIDE SELECTOR GUIDE

- 1) Select a slide with a greater horizontal or vertical thrust than the load.
- 2) Load must not be greater than the max. centered load and must not cause a torque greater than the max. torque.

MODEL NUMBER EBS2/EBSM2	SHAFT DIA. (in)	BORE DIA. (in)	FORCE AREA (in ²)	(1) VERTICAL LIFT		(2) HORIZONTAL LOAD		(3) MAXIMUM CENTERED LOAD (lbF) TRAVEL				(4) MAXIMUM TORQUE (lbF-in) STROKE			
				60 PSI (lbs)	80 PSI (lbs)	60 PSI (lbs)	80 PSI (lbs)	3"	6"	12"	18"	3"	6"	12"	18"
				125N	1/2	1 1/4	2.05	61	82	205	273	633	115	N/A	N/A
125S	1/2	1 1/4	2.05	61	82	205	273	632	114	N/A	N/A	337	89	N/A	N/A
162S	3/4	1 5/8	3.26	97	130	325	333	2225	473	N/A	N/A	1148	174	N/A	N/A
200N	1	2	4.71	141	189	471	628	3492	983	192	N/A	2337	859	202	N/A
200S	1	2	4.71	141	189	471	628	3489	979	185	N/A	3462	1265	285	N/A
225N	1	2 1/4	6.37	191	256	637	849	3492	983	192	N/A	2156	792	186	N/A
225S	1	2 1/4	6.37	191	256	637	849	3490	981	187	N/A	3276	1198	274	N/A
325N	1 1/2	3 1/4	13.05	391	524	1305	1740	10105	3397	797	272	7758	3418	1006	368
325S	1 1/2	3 1/4	13.05	391	524	1305	1740	10101	3392	791	264	9688	4260	1240	440
325W	1 1/2	3 1/4	13.05	391	524	1305	1740	10093	3381	775	244	15468	6772	1920	624
400S	2	4	18.85	565	757	1885	2513	20207	7650	2036	773	18796	9460	3253	1364
400W	2	4	18.85	565	757	1885	2513	20180	7618	1994	720	32481	16188	5415	2109

NOTES:

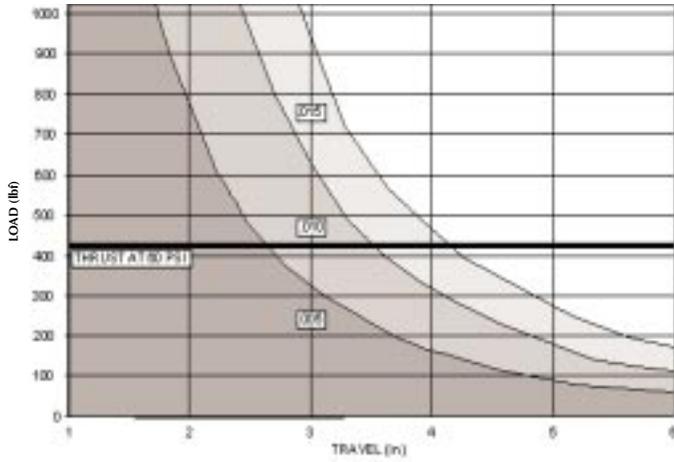
- 1) Vertical Lift = $(Force\ Area \times Pressure) / 2$
- 2) Horizontal Thrust = $(Force\ Area \times Pressure) / (0.3 \times 2)$
- 3) Fixed Ends, "FE" Aluminum body slide without bellows. Maximum shaft deflection 0.010".
- 4) Fixed Ends, "FE" Aluminum body slide without bellows. Maximum deflection is/of 0.010" shaft to shaft.
- 5) All calculations use a 2:1 safety factor.



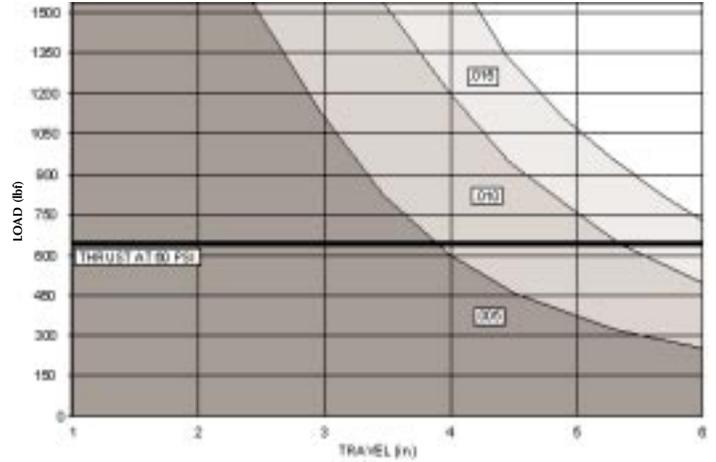


EBS/EBSM Series

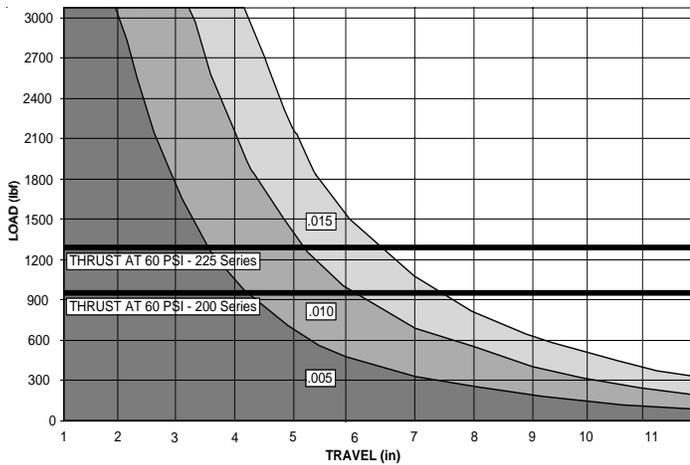
SLIDE DEFLECTION GRAPHS



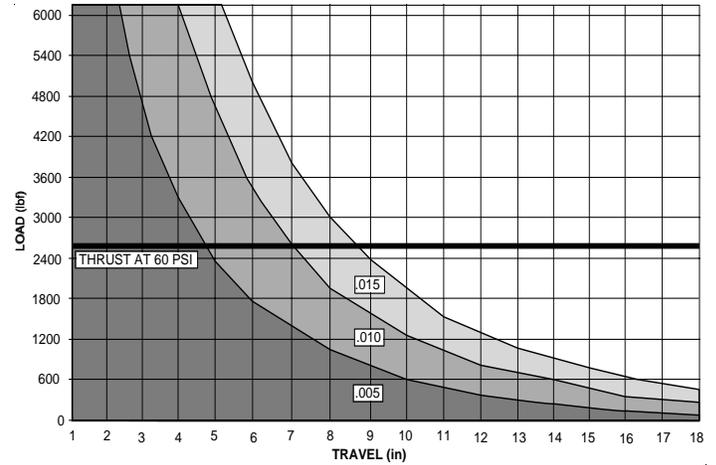
EBS-125 SERIES
(Centered Load)



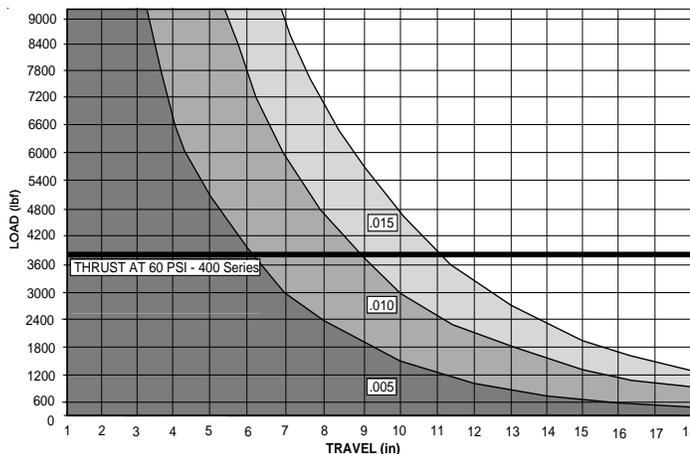
EBS-162 SERIES
(Centered Load)



EBS-200 & 225 SERIES
(Centered Load)



EBS-325 SERIES
(Centered Load)



EBS-400 SERIES
(Centered Load)

KEY:

- Maximum Deflection less than 0.005"
- Maximum Deflection between 0.005" and 0.010"
- Maximum Deflection between 0.010" and 0.015"

NOTES:

- 1) Thrust line is with slide in horizontal position.
- 2) Max. Deflection is indicated at the saddle of the slide.



EBS/EBSM Series

EBS SLIDE DIMENSION CHART (INCHES)

MODEL	ENVELOPE AND MOUNTING DIMENSIONS														WEIGHT - LBS		
	A	B	C	D	E	F	G	H	J	K	L	DH	SH	P	FE MOUNTING		FB MOUNTING
															STEEL BODY	ALUMINUM BODY	SHAFT ASSEMBLY
125N	1.625	4	3.500	2.675	1.82	1.50	0.75	-.190	2.40*	0.30	6.10*	.251	1/4-20	1/8 NPT	3+S	1.8+.4(S)	3+.3(S)
125S	1.625	5	4.500	2.675	2.82	1.50	0.75	-.190	2.40*	0.30	6.10*	.251	1/4-20	1/8 NPT	4+1.4(S)	2.2+.5(S)	4+.3(S)
162S	2.00	6	5.250	3.475	3.00	1.88	0.75 ^Δ	1.200	3.20	0.48	7.70 ^Δ	.376	3/8-16	1/4 NPT	8+2(S)	6+.7(S)	7+.5(S)
200N	2.375	6.5	5.750	4.500	3.10	2.25	1.00	1.600	4.00	0.48	10.00	.376	3/8-16	1/4 NPT	12+2.4(S)	10+.8(S)	13+.9(S)
200S	2.375	8	7.250	4.500	4.60	2.25	1.00	1.600	4.00	0.48	10.00	.376	3/8-16	1/4 NPT	17+3.3(S)	12+1.2(S)	15+.9(S)
225N	2.60	6.5	5.750	4.500	2.86	2.50	1.00	1.600	4.00	0.48	10.00	.376	3/8-16	1/4 NPT	14+2.4(S)	10+.8(S)	13+(S)
225S	2.60	8	7.250	4.500	4.35	2.50	1.00	1.600	4.00	0.48	10.00	.376	3/8-16	1/4 NPT	17+3.4(S)	11+1.1(S)	15+(S)
325N	4.00	9	8.000	6.475	4.00	3.50	1.25	2.500	6.00	0.55	14.20	.501	1/2-13	3/8 NPT	40+5(S)	22+1.7(S)	38+2(S)
325S	4.00	10	9.000	6.475	5.00	3.50	1.25	2.500	6.00	0.55	14.20	.501	1/2-13	3/8 NPT	48+6(S)	25+2(S)	40+2(S)
325W	4.00	13	12.000	6.475	8.00	3.50	1.25	2.500	6.00	0.55	14.20	.501	1/2-13	3/8 NPT	70+9.5(S)	31+2.8(S)	48+2(S)
400S	4.60	12	10.500	8.860	5.50	4.40	1.48	3.750	9.00	0.70	19.20	.501	3/4-10	1/2 NPT	90+8(S)	45+2.6(S)	80+4(S)
400W	4.60	16	14.500	8.860	9.50	4.40	1.48	3.750	9.00	0.70	19.20	.501	3/4-10	1/2 NPT	142+13(S)	67+4.3(S)	95+4(S)

EBSM SLIDE DIMENSION CHART (MILLIMETERS)

MODEL	ENVELOPE AND MOUNTING DIMENSIONS														WEIGHT - LBS		
	A	B	C	D	E	F	G	H	J	K	L	SCR/DW	P	FE MOUNTING		FB MOUNTING	
														STEEL BODY	ALUMINUM BODY	SHAFT ASSEMBLY	
125S	41.3	127.0	114.3	67.9	71.63	38.1	19.0	-4.8 [†]	61.1	7.62	154.9	6.0/6.0	1/8 NPT	4+1.4(S)	2.2+.5(S)	4+.3(S)	
162S	50.8	152.4	133.4	88.3	76.20	47.8	19.0	30.5	81.3	7.62	195.6	8.0/8.0	1/4 NPT	8+2(S)	6+.7(S)	7+.5(S)	
200S	60.3	203.2	184.2	114.3	116.84	57.2	25.4	40.6	101.6	12.19	254.0	10.0/10.0	1/4 NPT	17+3.3(S)	12+1.2(S)	15+.9(S)	
225S	66.0	203.2	184.2	114.3	110.49	63.5	25.4	40.6	101.6	12.19	254.0	10.0/10.0	1/4 NPT	17+3.4(S)	11+1.1(S)	15+(S)	
325S	101.6	254.0	228.6	164.5	127.00	88.9	31.8	63.5	152.4	13.97	360.7	12.0/12.0	3/8 NPT	48+6(S)	25+2(S)	40+2(S)	
325W	101.6	330.2	304.8	164.5	203.20	88.9	31.8	63.5	152.4	13.97	360.7	12.0/12.0	3/8 NPT	70+9.5(S)	31+2.8(S)	48+2(S)	
400S	116.8	304.8	266.7	225.0	139.70	111.8	37.6	95.3	228.6	7.78	487.7	16.0/12.0	1/2 NPT	90+8(S)	45+2.6(S)	80+4(S)	
400W	116.8	406.4	368.3	225.0	241.30	111.8	37.6	95.3	228.6	7.78	487.7	16.0/12.0	1/2 NPT	142+13(S)	67+4.3(S)	95+4(S)	

Dimensions A,D,F, & L increase when shaft covers are used (see Page 12).

* 3.9" Minimum "J" Dimension. 9.1" Minimum "L" Dimension.

^Δ Increase with side shields or proximity switches.

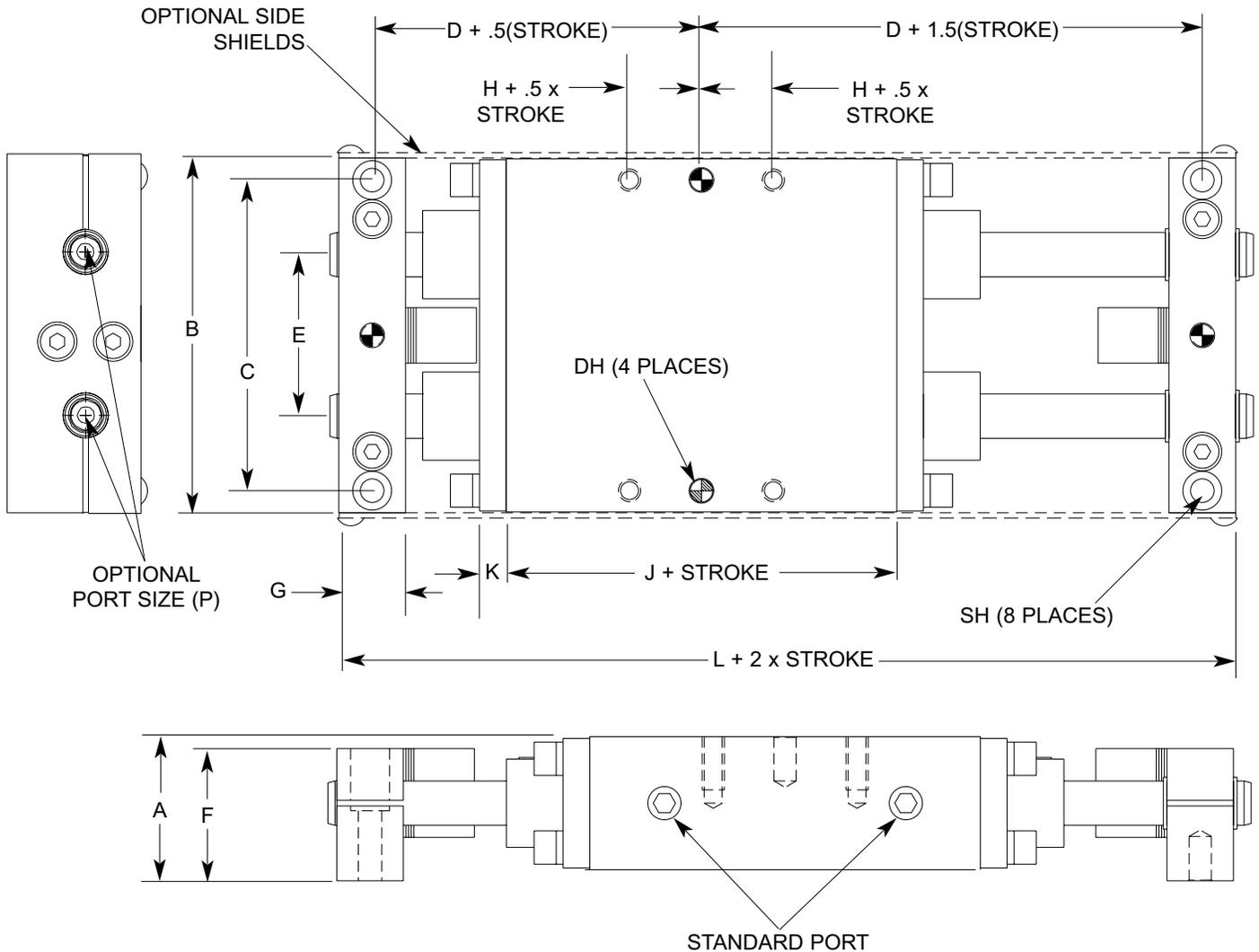
[†] 99.0" Minimum "J" Dimensions. 231.1" Minimum "L" Dimension.



EBS/EBSM Series

SLIDE DIMENSIONS

STROKE = TRAVEL + "TO GO"

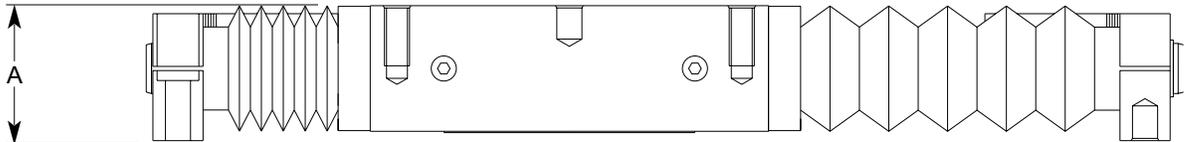
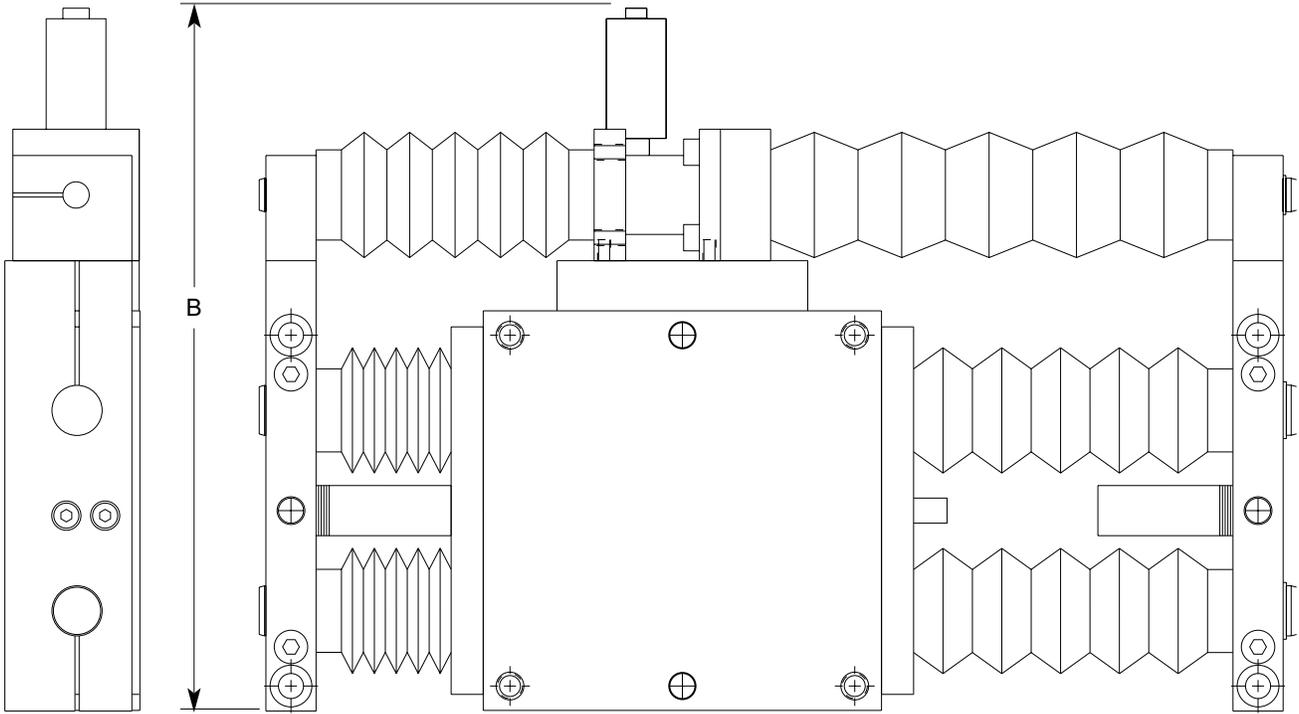


GORTITE COVER DIMENSIONS (INCHES):						
When using Gortite Covers, reference the table below for Dimension "L"						
	0-3.0	3.1 - 6.0	6.1 - 9.0	9.1 - 12.0	12.1 - 18.0	
EBS SERIES SLIDES	162	2.0	4.0	NA	NA	NA
	200	2.0	5.25	NA	NA	NA
	225	1.0	3.0	5.0	NA	NA
	325	0	0	0	.75	2.5
	400	0	0	0	0	1.5



EBS/EBSM Series

SLIDE DIMENSIONS W/ROD-LOCK ADDER



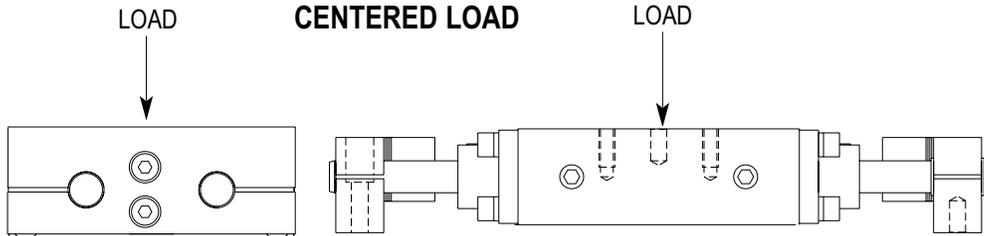
EBS SERIES SLIDES	Rod-Lock Adder - Dimensions (Inches):	
	When using the Rod-Lock option, reference the table below for dimensional info.	
	A Dimension Adder	B Dimension Adder
162	0.02	4.52
225	0.00	4.79
325	0.00	6.68
400	0.00	8.00

* Note: Add B dimension measurements in addition to standard B measurements on page 11.
 Example: For 2255 B dimension = 4.79 + 8 = 12.79.



EBS/EBSM Series

DEFLECTION CALCULATIONS



$$\text{MAXIMUM DEFLECTION} = \frac{LeA^2(3L-4A)}{C}$$

$$Le = 1/2 (Wl + Ws)$$

Le	Effective Load
Wl	Weight of the Load
Ws	Moving Weight of the Slide
S	Stroke of Slide

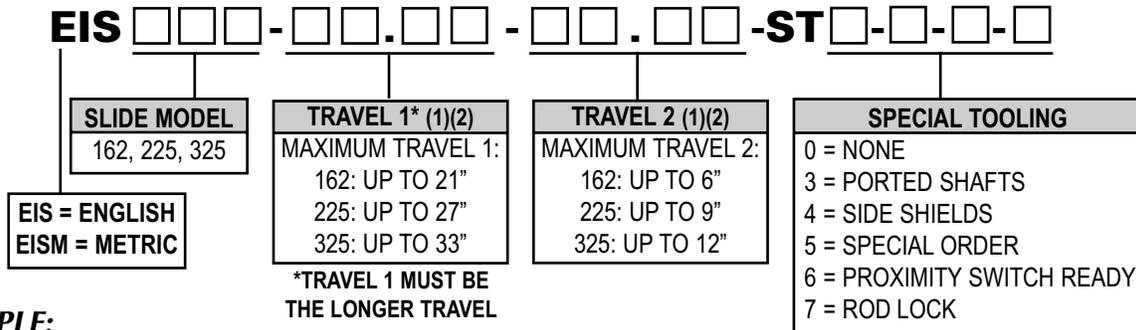
STROKE = TRAVEL + "TO-GO"

MODEL NUMBER	VARIABLES			BODY		
				ALUMINUM Ws	STEEL Ws	ROD ASSEMBLY Ws
EBS/EBSM	A	L	C			
125N	(S + .32)/2	2(S) + 4.60	2,203,200	1.8 + 0.4(S)	3 + S	3 + 0.3(S)
125S	(S + .32)/2	2(S) + 4.60	2,203,200	2.2 + 0.5(S)	4 + 1.4(S)	4 + 0.3(S)
162S	(S + .70)/2	2(S) + 6.20	11,160,000	6 + 0.7(S)	8 + 2(S)	7 + 0.5(S)
200N	(S + 2.02)/2	2(S) + 8.00	35,280,000	10 + 0.8(S)	12 + 2.4(S)	13 + 0.9(S)
200S	(S + 2.02)/2	2(S) + 8.00	35,280,000	12 + 1.2(S)	17 + 3.3(S)	15 + 0.9(S)
225N	(S + 2.02)/2	2(S) + 8.00	35,280,000	10 + 0.8(S)	14 + 2.4(S)	13 + S
225S	(S + 2.02)/2	2(S) + 8.00	35,280,000	11 + 1.1(S)	17 + 3.4(S)	15 + S
325N	(S + 2.84)/2	2(S) + 11.70	178,920,000	22 + 1.7(S)	40 + 5(S)	38 + 2(S)
325S	(S + 2.84)/2	2(S) + 11.70	178,920,000	25 + 2(S)	48 + 6(S)	40 + 2(S)
325W	(S + 2.84)/2	2(S) + 11.70	178,920,000	31 + 2.8(S)	70 + 9.5(S)	48 + 2(S)
400S	(S + 3.44)/2	2(S) + 16.24	565,488,000	45 + 2.6(S)	90 + 8(S)	80 + 4(S)
400W	(S + 3.44)/2	2(S) + 16.24	565,488,000	67 + 4.3(S)	142 + 13(S)	95 + 4(S)



EIS Series

HOW TO ORDER



EXAMPLE:

To order an EIS225 Series Slide, with travel 1 of 6.00 inches and travel 2 of 3.00 inches and ported shafts:

EIS225-06.00-03.00-ST3

REORDERS:

Because the EIS series is available in many custom configurations, the serial number of the slide must be included with the part number.

NOTES:

- (1) Travel in inches or millimeters. Standard 0.197" (5mm) "To-Go" travel adjustment per side.
- (2) Maximum total travel EIS162: 24"
EIS225: 30"
EIS325: 36"

EIS SERIES INDEXING SLIDES, 4 POSITIONS:

POSITION 1 (Travel = 0):

Operating pressure holds both body and shuttle rods against their respective left side stop plates. Adjustable stops are used to accurately locate the start and end of travel.

POSITION 2 (Travel = S1):

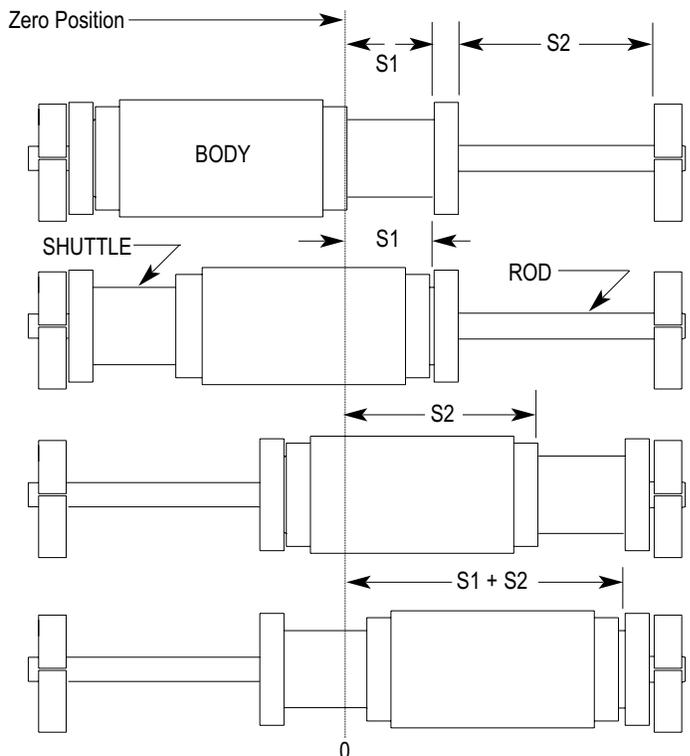
Activate the body port, the body travels along the shuttle tube a distance **S1**. Adjustable stops are attached to the **S1** end plates so that **S1** can be *tuned in*.

POSITION 3 (Travel = S2):

Activate shuttle port. The shuttle travels forward along the rod a distance **S2**. Adjustable stops are attached to the **S2** end plates so that **S2** can be *tuned in*.

POSITION 4 (Travel = S1 + S2):

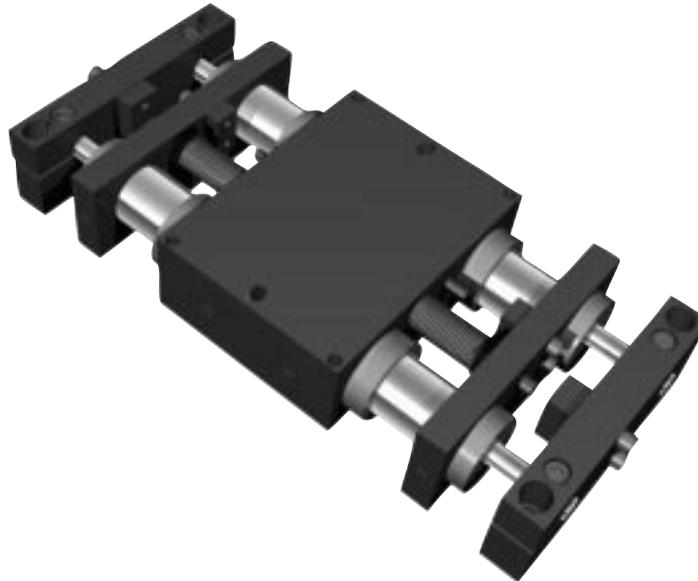
Activate both the body port and shuttle port. The total body travel relative to the zero travel position is **S1 + S2**.





EIS Series

4-POSITION SLIDES



DESCRIPTION

EIS Series Slides are twin cylinder, internally powered, linear motion devices. The power source can be either pneumatic or low pressure hydraulic. EIS Series Slides are available in either 2, 3, or 4-positions. Each position has an adjustable hardened stop for location repeatability and is fitted with a self-adjusting shock absorber. Positioning is achieved with the use of standard four-way valves. The quality construction and wide array of custom design features and options are identical to our field proven EBS Series Slides. This ensures compactness, durability, precision, design convenience, simplicity, and bottom line economy.

USING & DESIGNING WITH EIS SLIDES

A single EIS Slide has the same motion control capabilities as two standard slides used in *piggy-back* fashion, but occupies only half the space. A single EIS slide can be programmed to move from its starting position to up to three additional locations, for a total of four positions. An EIS Slide *piggy-backed* with a standard slide will have up to eight repeatable positions. Two EIS Slides *piggy-backed* can generate 16 repeatable locations.

FEATURES:	BENEFITS:
• 4 Repeatable Positions	• Smaller and moves more efficiently than “piggy-backing” 2-position slides.
• Greatest force in the smallest space	• Easy to fit into your design
• Factory lubricated for life	• Low maintenance, long life
• Completely engineered self-contained slide system	• Saves you time and money



EIS Series

SLIDE SPECIFICATIONS

Power:	Air 50 to 150 PSI Oil 150 to 350 PSI
Load:	Up to 1,300 Lbs
Travel:	Up to 36" Total in 0.010" Increments
To-Go:	0.197" (5mm) Per Side Standard
Repeatability:	± 0.0005" Axial ± 0.0040" Radial
Saddle:	Hardcoat Anodized Aluminum
Bearings:	4 Linear Hard Coat Anodized Teflon Impregnated
Shafts:	Precision Ground Hardened Steel
Lubrication:	Factory Lubricated For Life
Reliability:	4.5 Million Mean Cycles Between Failures (MCCBF)
Warranty:	1 Year Standard 3 Years Extended with Application Approval
Options:	<ul style="list-style-type: none">• Internal Self-adjusting Shock Absorber• Ported Shafts• Side Shields• Rod Lock

DESIGNING WITH EIS SERIES SLIDES

STROKE

Stroke is the maximum distance a slide or lifter can travel.

TRAVEL

Travel is the actual distance a slide or lifter moves because of preset adjustable stops which accurately locate the beginning and end of travel. EIS Slides can be ordered to the exact travel desired.

TO-GO

To-Go is the amount of reserve travel adjustment on each side of the slide.

$$TO-GO = STROKE - TRAVEL.$$

EIS slides have 0.197" (5mm) of *To-Go* standard at the beginning and end of travel. Other *To-Go* distances can be special ordered.



EIS Series

SLIDE SELECTOR GUIDE

- 1) Select a slide with a greater horizontal or vertical thrust than the load.
- 2) Load must not be greater than the max. centered load and must not cause a torque greater than the max. torque.

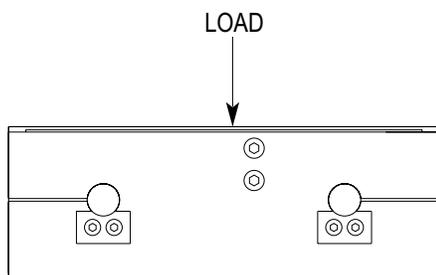
MODEL NUMBER	SHAFT DIA. (IN)	BORE DIA. (IN)	FORCE AREA (IN)	VERTICAL LIFT (lbf)		HORIZONTAL LOAD (lbf)	
				60 PSI	80 PSI	60 PSI	80 PSI
EIS 162	3/4	1 5/8	3.26	97	130	326	434
EIS 225	1	2 1/4	6.39	191	255	639	852
EIS 325	1 1/2	3 1/4	13.06	391	522	1306	1741

NOTES:

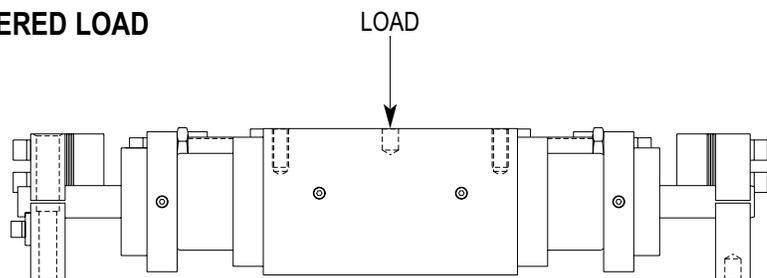
- 1) VERTICAL LIFT = (FORCE AREA x PRESSURE) / 2
- 2) HORIZONTAL THRUST = (FORCE AREA x PRESSURE) / (0.3 x 2)
- 3) FIXED ENDS "FE" ALUMINUM BODY SLIDE WITHOUT BELLOWS HAS MAXIMUM SHAFT DEFLECTION OF 0.010."
- 4) ALL CALCULATIONS USE A 2:1 SAFETY FACTOR.

MAXIMUM CENTERED LOAD (lbf)

SLIDE MODEL	TRAVEL 2	TRAVEL 1										
		3	6	9	12	15	18	21	24	27	30	33
EIS 162	3	1429	1010	766	604	487	396	324	N/A	N/A	N/A	N/A
	6	N/A	252	175	120	76	N/A	N/A	N/A	N/A	N/A	N/A
EIS 225	3	2692	1966	1526	1227	1008	839	703	590	494	N/A	N/A
	6	N/A	603	444	330	243	171	111	58	N/A	N/A	N/A
	9	N/A	N/A	158	92	N/A						
EIS 325	3	13448	10044	7981	6590	5585	4822	4219	3730	3323	2978	2681
	6	N/A	3309	2607	2120	1759	1477	1249	1059	896	754	N/A
	9	N/A	N/A	1183	932	739	584	455	344	246	N/A	N/A
	12	N/A	N/A	N/A	454	329	224	134	55	N/A	N/A	N/A



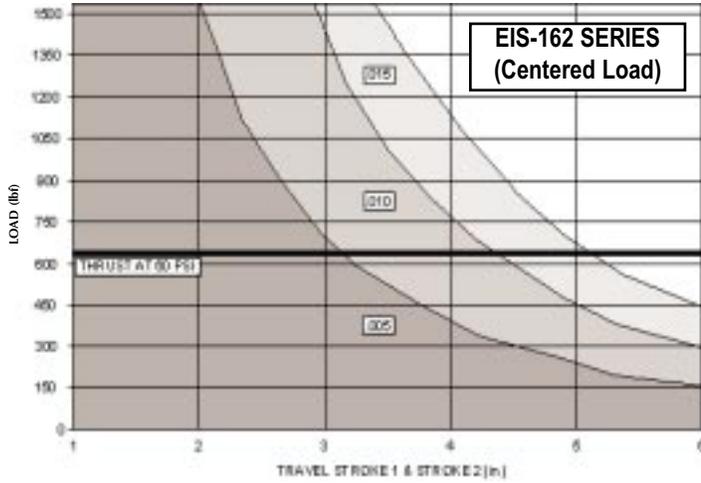
CENTERED LOAD





EIS Series

SLIDE DEFLECTION GRAPHS

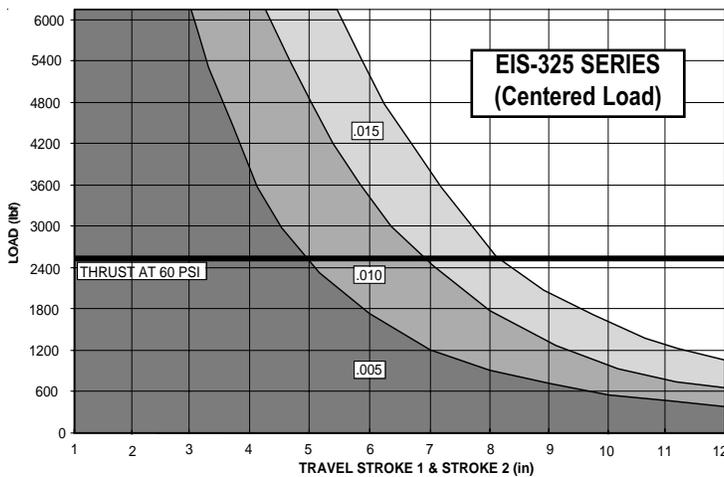
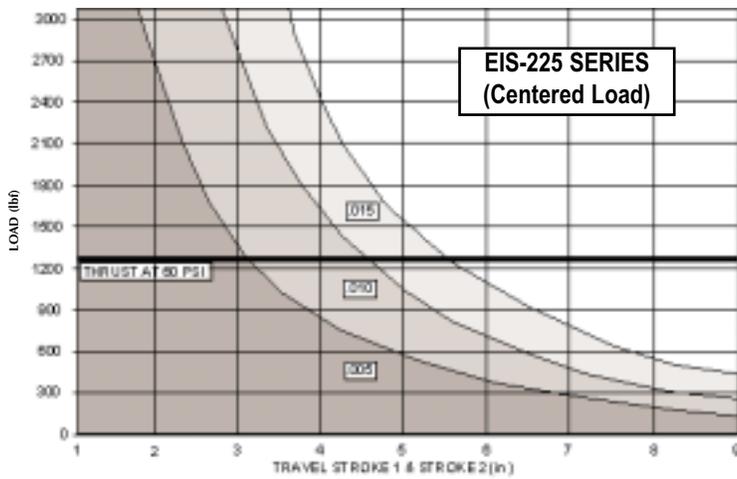


KEY:

- Maximum Deflection less than 0.005"
- Maximum Deflection between 0.005" and 0.010"
- Maximum Deflection between 0.010" and 0.015"

NOTES:

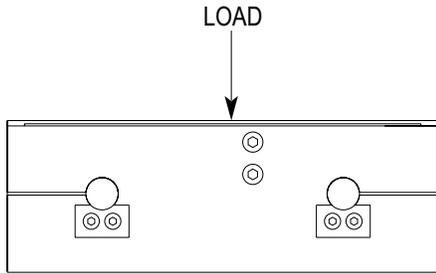
- 1) Thrust line is with slide in horizontal position.
- 2) Max. Deflection is indicated at the saddle of the slide.



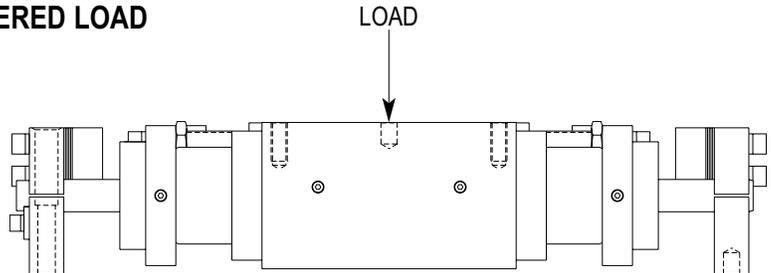


EIS Series

DEFLECTION CALCULATIONS



CENTERED LOAD



$$\text{MAXIMUM DEFLECTION} = \frac{LeA^2(3L-4A)}{C}$$

$$Le = 1/2 (Wl + Ws)$$

Le	Effective Load
Wl	Weight of the Load
Ws	Moving Weight of the Slide

$$\text{STROKE} = \text{TRAVEL} + \text{“TO-GO”}$$

MODEL NUMBER	VARIABLES			ALUMINUM		
				FIXED ENDS	FIXED BODY	FIXED END STEEL
EIS	A	L	C			
162	0.30 + .5(T2)	9.1+2(S1) + S2	11,160,000	28.9 + 4.4 (T1)	36.4 + 2.8 (T1)	44.9 + 8.9 (T1)
225	0.30 + .5(T2)	11.5 + 2(S1) + S2	35,280,000	70.6 + 9.2 (T1)	100.2 + 4.8 (T1)	98.4 + 14.8 (T1)
325	0.70 + .5(T2)	12.1 + 2(S1) + S2	178,920,000	95.9 + 11.9 (T1)	147.5 + 8.8 (T1)	137.9 + 21.5 (T1)

T1= Travel One

NOTE:

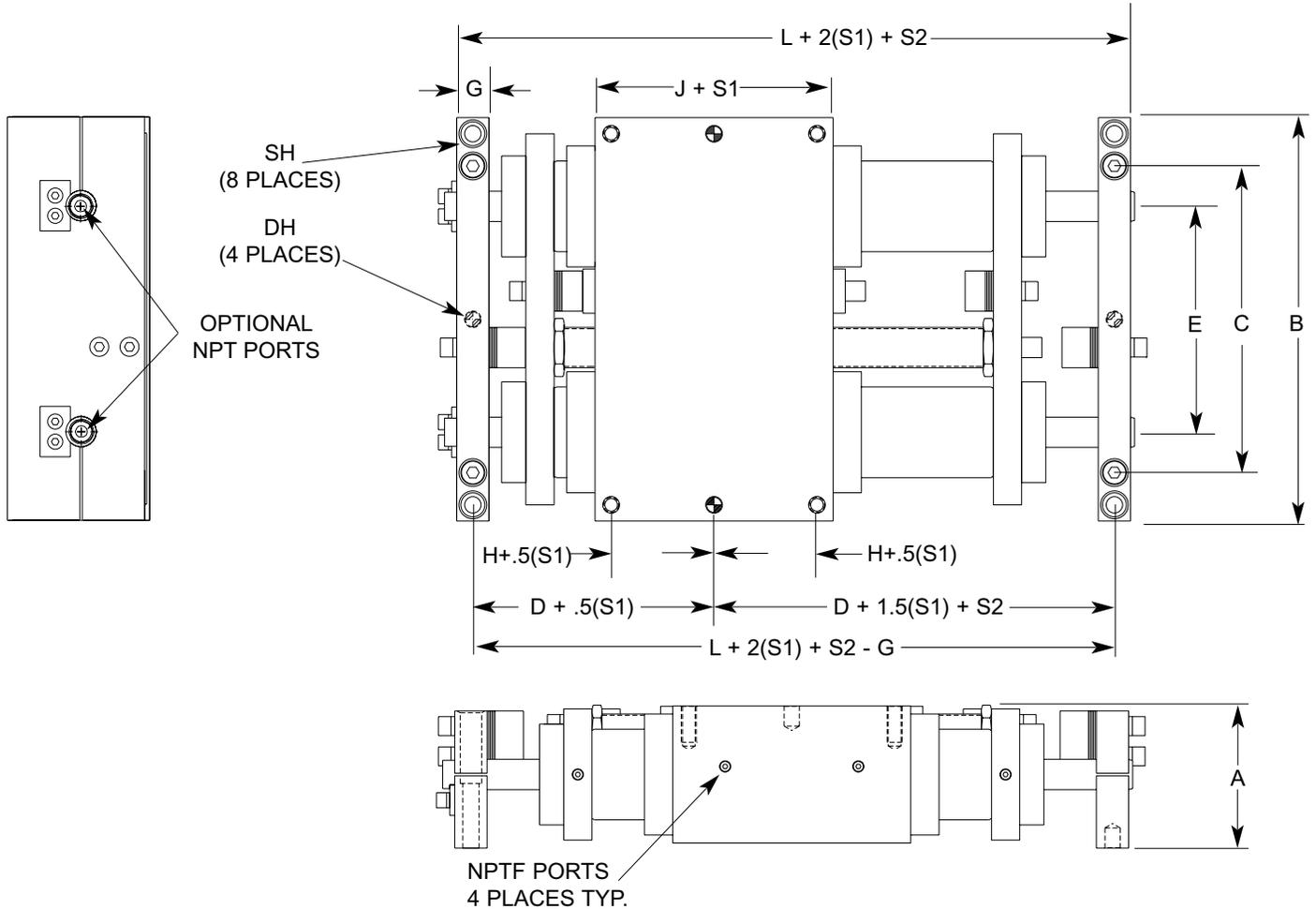
Your local distributor or Hydro-Line can provide application assistance by calculating deflection for you. How can we assist you with your application?



EIS Series

SLIDE DIMENSIONS

S1 = STROKE 1
S2 = STROKE 2



EIS SLIDE DIMENSION CHART

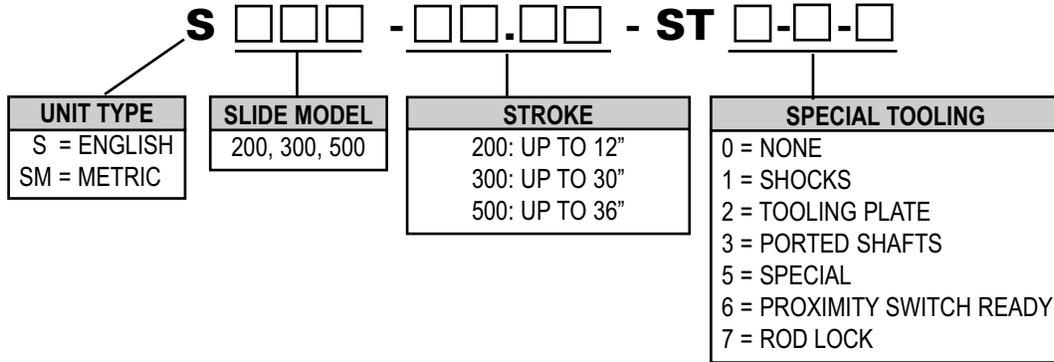
MODEL	ENVELOPE AND MOUNTING DIMENSIONS												T / B	
	A	B	C	D	E	G	H	J	L	NPT	DH	SH	TOTAL WEIGHT ALUMINUM	TOTAL WEIGHT STEEL
162	3.525	10.0	9.200	4.950	5.60	0.80	1.550	3.9	10.7	1/8	10	10	46.7 + 5 (T1)	62.7 + 9.5 (T1)
225	4.60	12.0	11.000	6.250	6.60	1.00	1.450	4.9	13.5	1/4	12	12	104.0 + 9.8 (T1)	131.8 + 15.4 (T1)
325	6.19	16.0	15.000	6.675	8.80	1.25	1.700	4.4	14.6	3/8	12	12	178.8 + 13.9 (T1)	220.8 + 23.5 (T1)

Subject to change without notice



S Series

HOW TO ORDER



EXAMPLE:

To order an S300 Series Slide, with 6.00 inches of travel and ported shafts:

S300-06.00-ST3

NOTES:

- (1) See page 28 for dimensions.
- (2) Travel in inches. Standard 0.197" (5mm) "To-Go" travel adjustment per side.

NOTES



S Series

2-POSITION SLIDES



DESCRIPTION

S Series Slides are twin cylinder, internally powered, linear motion devices. S Series Slides are available in 2-positions. Each position has an adjustable hardened stop for location repeatability and can be fitted with a self-adjusting shock absorber. Positioning is achieved with the use of standard 4-way valves. The quality construction is similar to our field proven EBS Series Slides. This ensures compactness, durability, precision, design convenience, simplicity and bottom line economy.

USING & DESIGNING WITH S SLIDES

The S Series Slide is designed for longer strokes with less deflection. The S Series is a cost effective alternative to purchasing rail systems, cylinders and other hardware. Further savings can be realized because the S Series is a completely self-contained, self-powered slide.

The bottom line:

The S Series will save you *time & money*.

FEATURES:	BENEFITS:
• Larger shafts	• Carries heavier loads longer distances
• Same quality as the time-tested EBS Series	• Low maintenance, long life
• Completely engineered self-contained slide system	• Saves you time and money
• Internal self-adjusting shock absorber	• Protects your tooling



S Series

SLIDE SPECIFICATIONS

Power:	Air 50 to 150 PSI
Load:	Up to 2,500 Lbs
Travel:	Up to 36" in 0.010" Increments (Consult factory for longer travel)
To-Go:	0.197" (5mm) Per Side Standard
Repeatability:	± 0.0005" Axial ± 0.0020" Radial
Saddle:	Anodized Aluminum
Bearings:	4 Linear Hard Coat Anodized Teflon Impregnated
Shafts:	Precision Ground Hardened Steel
Lubrication:	Factory Lubricated For Life
Reliability:	2 Million Cycles (Max. Load, No Lubrication)
Warranty:	1 Year Standard 3 Years Extended with Application Approval
Options:	<ul style="list-style-type: none">• Internal Self-Adjusting Shock Absorbers• Ported Shafts• Rod Lock• Shaft Protectors

DESIGNING WITH S SERIES SLIDES

STROKE

Stroke is the maximum distance a slide or lifter can travel.

TRAVEL

Travel is the actual distance a slide or lifter moves because of preset adjustable stops which accurately locate the beginning and end of travel. S Series Slides can be ordered to the exact travel desired.

TO-GO

To-Go is the amount of reserve travel adjustment on each side of the slide.

$$TO-GO = STROKE - TRAVEL.$$

S Series Slides have 0.197" (5mm) of *To-Go* standard at the beginning and end of travel. Other *To-Go* distances can be special-ordered.



S Series

SLIDE SELECTOR GUIDE

- 1) Select a slide with a greater horizontal or vertical thrust than the load.
- 2) Load must not be greater than the max. centered load and must not cause a torque greater than the max. torque.

MODEL NUMBER	SHAFT DIA. (in)	BORE DIA. (in)	FORCE AREA (in ²)	VERTICAL LIFT (lbf)		HORIZONTAL LOAD (lbf)	
				60 PSI	80 PSI	60 PSI	80 PSI
S200	1	2.0	4.71	141	188	471	628
S300	2	3.2	9.80	294	392	980	1306
S500	3	5.0	25.15	754	1006	2513	3351

NOTES:

- 1) VERTICAL LIFT = (FORCE AREA x PRESSURE) / 2
- 2) HORIZONTAL THRUST = (FORCE AREA x PRESSURE) / (0.3x 2)
- 3) ALL CALCULATIONS USE A 2:1 SAFETY FACTOR.

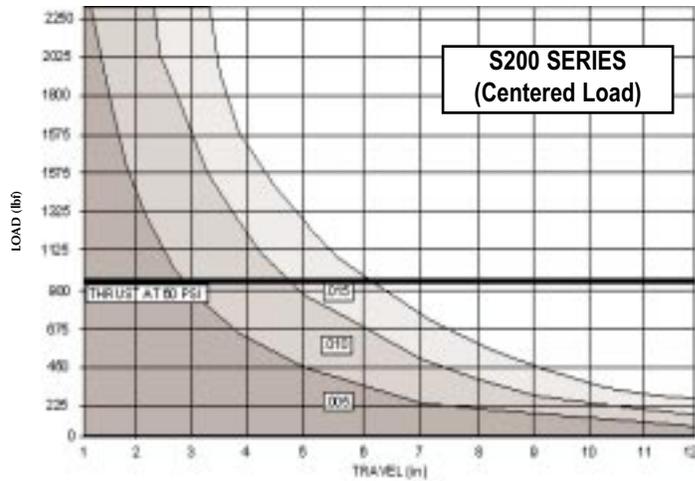
MAXIMUM STATIC CENTERED LOAD (lbf)

SLIDE MODEL	TRAVEL						
	3	6	12	18	24	30	36
S200	1814	632	150	N/A	N/A	N/A	N/A
S300	20042	7841	2155	867	423	230	N/A
S500	146410	50060	12480	4866	2366	1310	788



S Series

SLIDE DEFLECTION GRAPHS

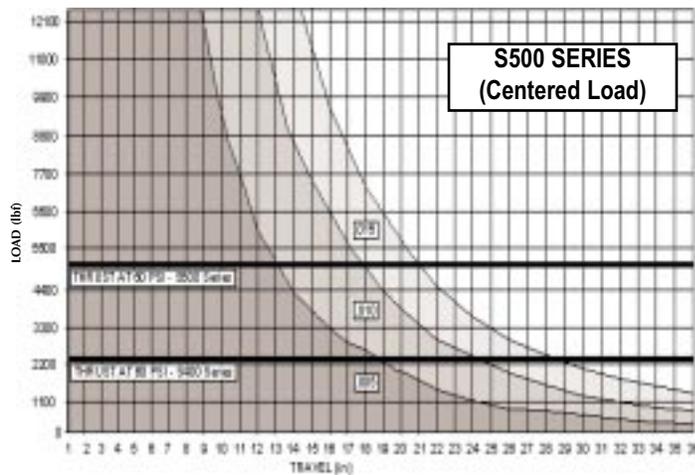
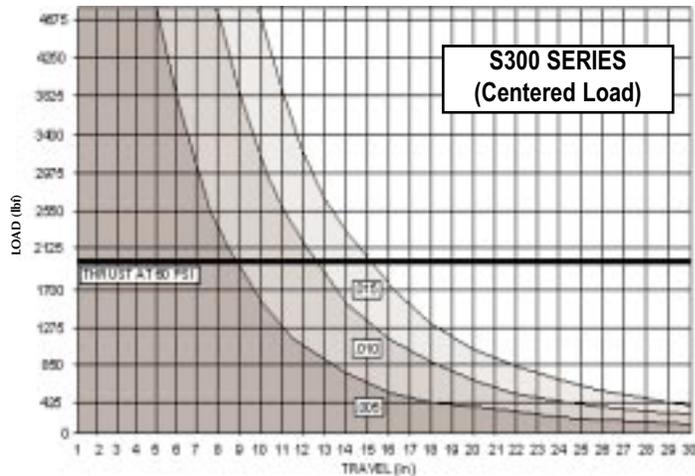


KEY:

-  Maximum Deflection less than 0.005"
-  Maximum Deflection between 0.005" and 0.010"
-  Maximum Deflection between 0.010" and 0.015"

NOTES:

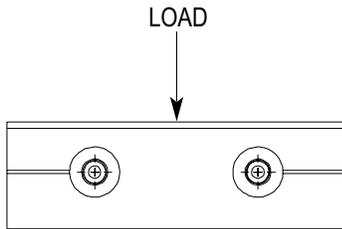
- 1) Thrust line is with slide in horizontal position.
- 2) Max. Deflection is indicated at the saddle of the slide.



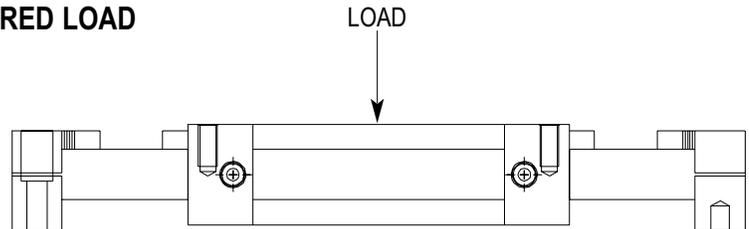


S Series

DEFLECTION CALCULATIONS



CENTERED LOAD



$$\text{MAXIMUM DEFLECTION} = \frac{LeA^2(3L-4A)}{C}$$

$$Le = 1/2 (Wl + Ws)$$

Le	Effective Load
Wl	Weight of the Load
Ws	Moving Weight of the Slide

STROKE = TRAVEL + TO GO

MODEL NUMBER	VARIABLES			MOVING WEIGHT OF SLIDE (Ws)	
				FIXED ENDS MOVING BODY	FIXED BODY MOVING ENDS
S SERIES	A	L	C		
200	1.78 + .5(Stroke)	10.77 + 2(Stroke)	35,280,000	10.3 + .11(Stroke)	16.5 + .9(Stroke)
300	2.19 + .5(Stroke)	12.72 + 2(Stroke)	565,488,000	20.8 + .19(Stroke)	49.4 + 3.6(Stroke)
500	1.31 + .5(Stroke)	14.25 + 2(Stroke)	2,862,792,000	47.1 + .31(Stroke)	131.7 + 8.1(Stroke)

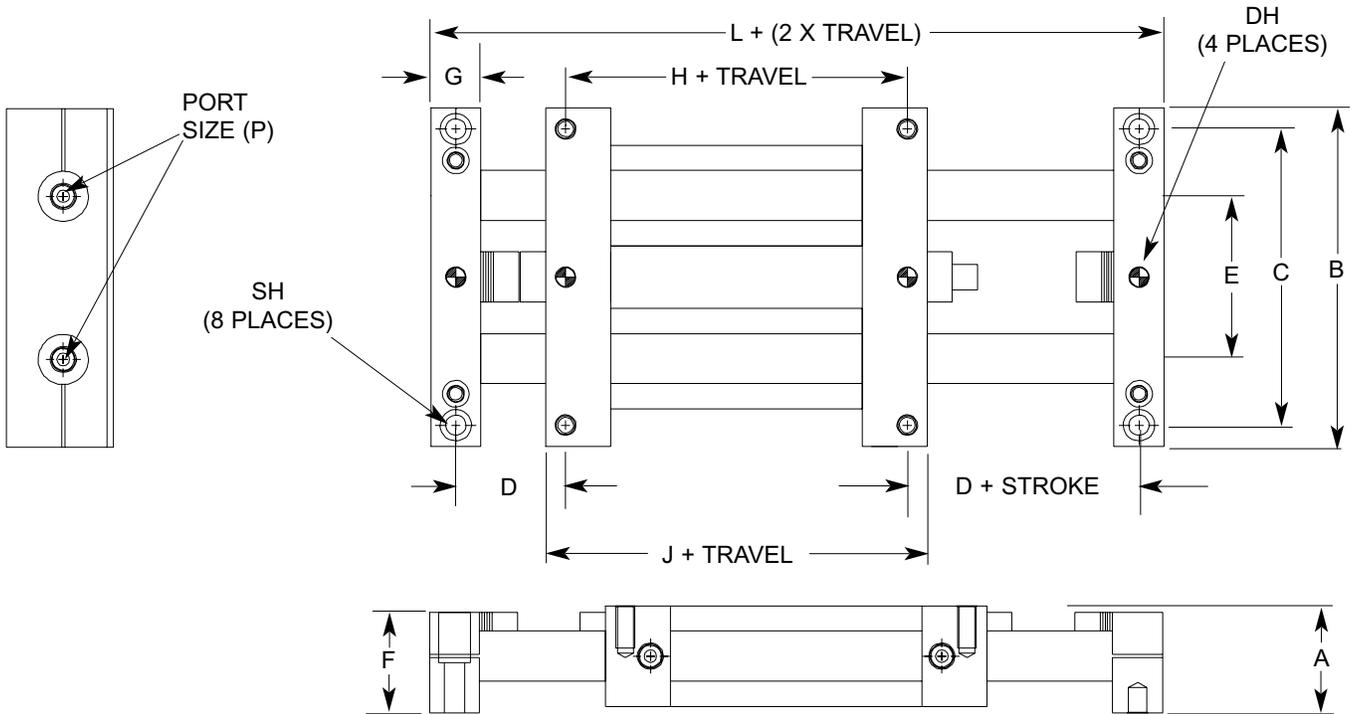
NOTE:

Your local distributor or Hydro-Line can provide application assistance by calculating deflection for you.



S Series

SLIDE DIMENSIONS



S SERIES SLIDE DIMENSION CHART (ENGLISH) - INCHES

ENVELOPE AND MOUNTING DIMENSIONS													P
MODEL	A	B	C	D	E	F	G	H	J	L	DH	SH	
200	2.625	8.00	7.00	3.175	4.00	2.50	1.00	5.42	6.67	12.77	.376	3/8-16	1/4 NPT
300	3.75	12.50	11.50	3.595	6.50	3.625	1.00	6.53	7.78	14.72	.501	1/2-13	3/8 NPT
500	5.563	17.00	15.622	4.11	9.00	5.438	1.375	7.40	8.90	16.995	.501	3/4-10	1/2 NPT

S SERIES SLIDE DIMENSION CHART (METRIC) - MILLIMETERS

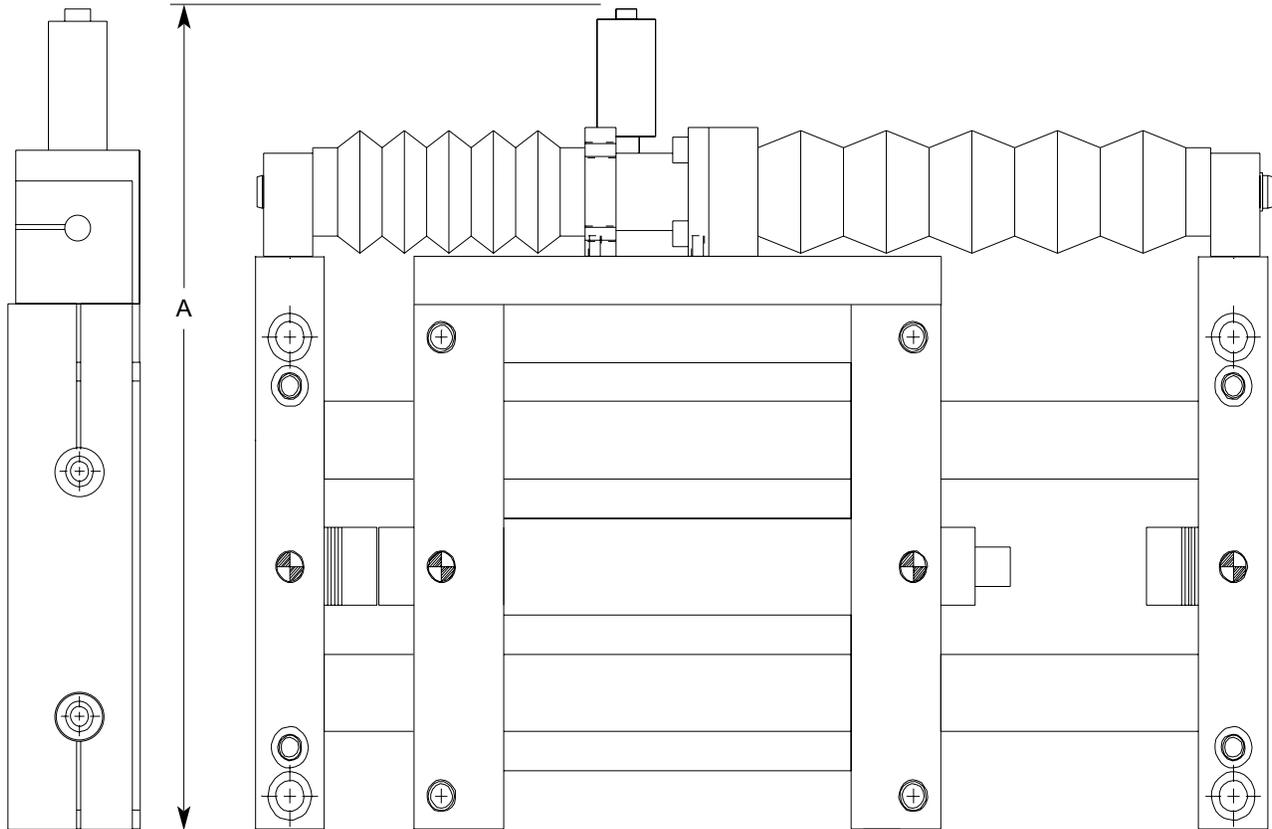
ENVELOPE AND MOUNTING DIMENSIONS													P
MODEL	A	B	C	D	E	F	G	H	J	L	DH	SH	
200	66.7	203.2	177.8	80.6	101.6	63.5	25.4	137.7	169.4	324.4	8	8	1/4 NPT
300	95.2	317.5	292.1	91.3	165.1	92.1	25.4	165.9	197.6	373.9	12	12	3/8 NPT
500	141.3	431.8	396.8	104.4	228.6	138.1	34.9	188.0	226.1	431.7	12	16	1/2 NPT

S SERIES SLIDES	Bellow Cover Adder:					
	When using Bellows, reference the table below for Dim "L."					
		0 - 3"	3.1 - 6"	6.1 - 9"	9.1 - 12"	12.1 - 15"
S200	0	1	2.5	3.5	NA	NA
S300	0.5	2.5	4.5	NA	NA	NA
S500	0	0	0	1	2	3



S Series

SLIDE DIMENSIONS - W/ROD-LOCK ADDER

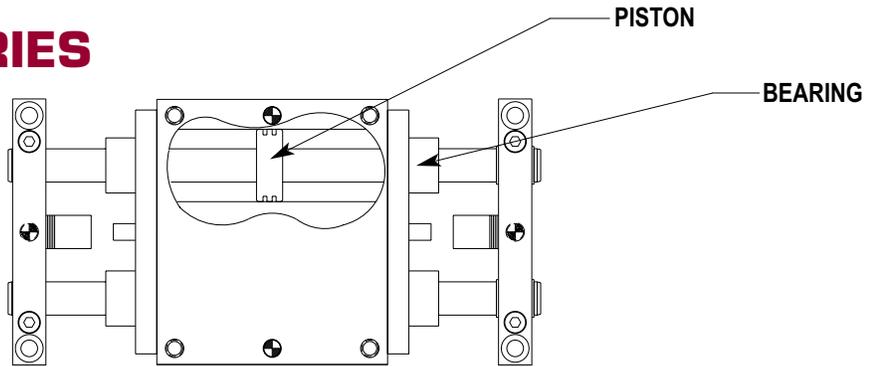


S SERIES SLIDES	Rod-Lock Adder - Dimensions (Inches): When using the rod-lock option, reference the table below for additional "A" length.	
		A Dimension Adder
	200	5.00
	300	6.75
	500	8.06



Spare Parts List

EBS/EBSM SERIES

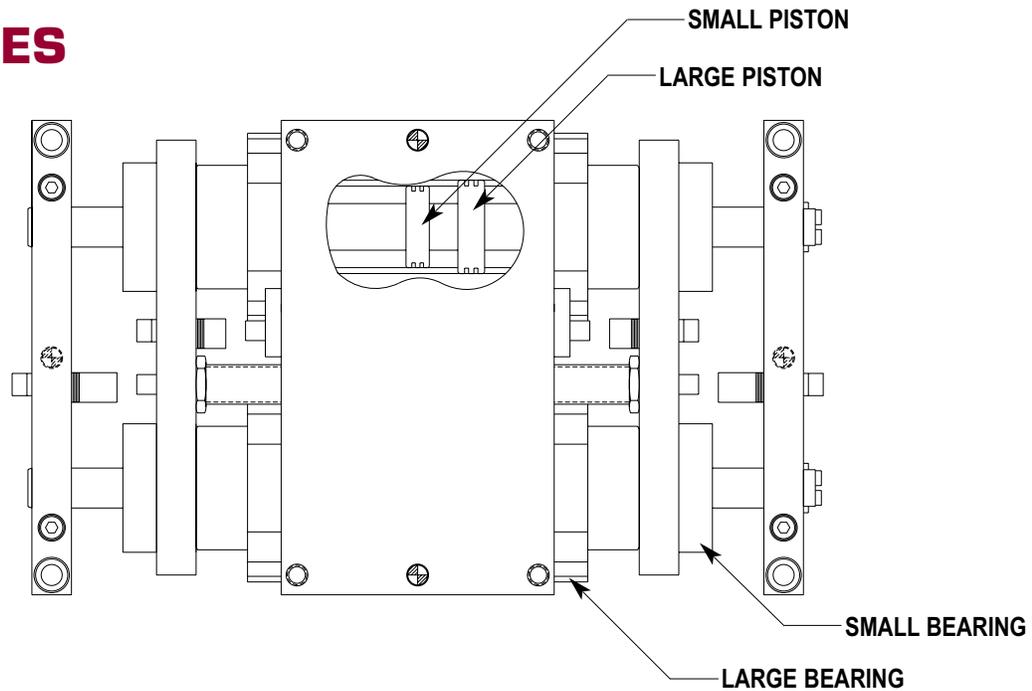


Series	Part Number	Part Description
EBS125	EBS125	Complete Seal Kit (1 Per Slide, Soft Seals Only)
	BCK125	Bearing Seal Kit (1 Needed Per Bearing)
	BCX125	Bearing Assembly Kit (Includes 1 Bearing + 1 Seal Kit) 4 Kits Needed Per Slide
	PNK125	Piston Seal Kit (1 Kit Needed Per Piston)
	PNX125	Piston Assembly Seal Kit (Includes 1 Piston + 1 Seal Kit) 2 Kits Needed Per Slide
EBS162	EBS162	Complete Seal Kit (1 Per Slide, Soft Seals Only)
	BCK162	Bearing Seal Kit (1 Needed Per Bearing)
	BCX162	Bearing Assembly Kit (Includes 1 Bearing + 1 Seal Kit) 4 Kits Needed Per Slide
	PNK162	Piston Seal Kit (1 Kit Needed Per Piston)
	PNX162	Piston Assembly Seal Kit (Includes 1 Piston + 1 Seal Kit) 2 Kits Needed Per Slide
EBS200	EBS200	Complete Seal Kit (1 Per Slide, Soft Seals Only)
	BCK200	Bearing Seal Kit (1 Needed Per Bearing)
	BCX200	Bearing Assembly Kit (Includes 1 Bearing + 1 Seal Kit) 4 Kits Needed Per Slide
	PNK200	Piston Seal Kit (1 Kit Needed Per Piston)
	PNX200	Piston Assembly Seal Kit (Includes 1 Piston + 1 Seal Kit) 2 Kits Needed Per Slide
EBS225	EBS225	Complete Seal Kit (1 Per Slide, Soft Seals Only)
	BCK225	Bearing Seal Kit (1 Needed Per Bearing)
	BCX225	Bearing Assembly Kit (Includes 1 Bearing + 1 Seal Kit) 4 Kits Needed Per Slide
	PNK225	Piston Seal Kit (1 Kit Needed Per Piston)
	PNX225	Piston Assembly Seal Kit (Includes 1 Piston + 1 Seal Kit) 2 Kits Needed Per Slide
EBS275	EBS275	Complete Seal Kit (1 Per Slide, Soft Seals Only)
	BCK275	Bearing Seal Kit (1 Needed Per Bearing)
	BCX275	Bearing Assembly Kit (Includes 1 Bearing + 1 Seal Kit) 4 Kits Needed Per Slide
	PNK275	Piston Seal Kit (1 Kit Needed Per Piston)
	PNX275	Piston Assembly Seal Kit (Includes 1 Piston + 1 Seal Kit) 2 Kits Needed Per Slide
EBS325	EBS325	Complete Seal Kit (1 Per Slide, Soft Seals Only)
	BCK325	Bearing Seal Kit (1 Needed Per Bearing)
	BCX325	Bearing Assembly Kit (Includes 1 Bearing + 1 Seal Kit) 4 Kits Needed Per Slide
	PNK325	Piston Seal Kit (1 Kit Needed Per Piston)
	PNX325	Piston Assembly Seal Kit (Includes 1 Piston + 1 Seal Kit) 2 Kits Needed Per Slide
EBS200	EBS350	Complete Seal Kit (1 Per Slide, Soft Seals Only)
	BCK350	Bearing Seal Kit (1 Needed Per Bearing)
	BCX350	Bearing Assembly Kit (Includes 1 Bearing + 1 Seal Kit) 4 Kits Needed Per Slide
	PNK350	Piston Seal Kit (1 Kit Needed Per Piston)
	PNX350	Piston Assembly Seal Kit (Includes 1 Piston + 1 Seal Kit) 2 Kits Needed Per Slide
EBS400	EBS400	Complete Seal Kit (1 Per Slide, Soft Seals Only)
	BCK400	Bearing Seal Kit (1 Needed Per Bearing)
	BCX400	Bearing Assembly Kit (Includes 1 Bearing + 1 Seal Kit) 4 Kits Needed Per Slide
	PNK400	Piston Seal Kit (1 Kit Needed Per Piston)
	PNX400	Piston Assembly Seal Kit (Includes 1 Piston + 1 Seal Kit) 2 Kits Needed Per Slide



Spare Parts List

EIS SERIES

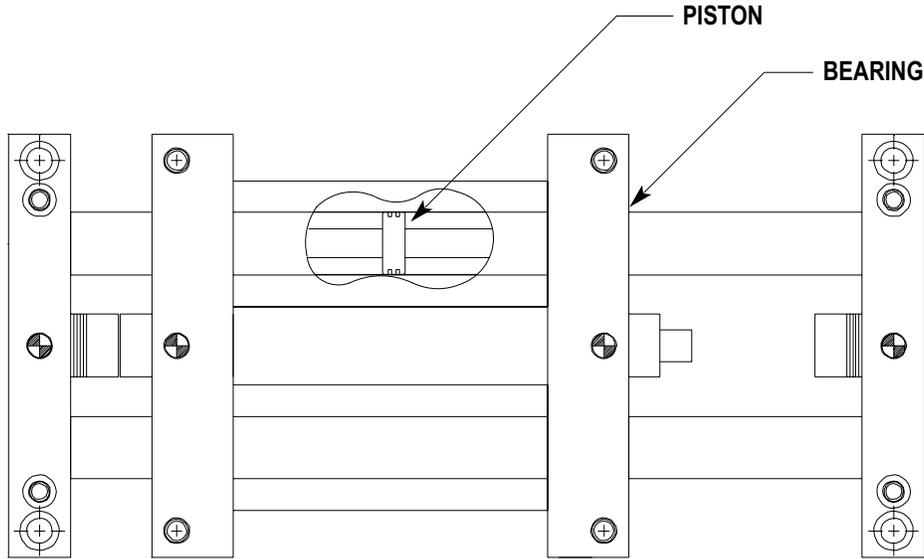


Series	Part Number	Part Description
EIS162	EIS162	Complete Seal Kit (1 Per Slide, Soft Seals Only)
	EIS162XLG	Large Bearing Seal Kit (1 Needed Per Bearing)
	EIS162XLG	Larg Bearing Ass'y Kit (Includes 1 Bearing + 1 Seal Kit) 4 Kits Needed Per Slide
	EIS162BKSM	Small Bearing Seal Kit (1 Kit Needed Per Small Bearing)
	EIS162BXSM	Small Bearing Ass'y Kit (Includes 1Small Bearing + 1 Seal Kit) 4 Kits Per Slide
	EIS162PKLG	Large Piston Seal Kit (1 Kit Needed Per Large Piston)
	EIS162PXLG	Large Piston Ass'y Kit (Includes 1 Large Piston + 1 Seal Kit) 2 Kits Per Slide
	EIS162PKSM	Small Piston Seal Kit (1 Kit Needed Per Small Piston)
	EIS162PXSM	Small Piston Ass'y Kit (Includes 1 Small Piston + Seal Kit) 2 Kits Per Slide
EIS162PRSK	Ported Rods Seal Kit (1 Kit Per Slide With Ported Rods Option)	
EIS225	EIS225	Complete Seal Kit (1 Per Slide, Soft Seals Only)
	EIS225XLG	Large Bearing Seal Kit (1 Needed Per Bearing)
	EIS225XLG	Larg Bearing Ass'y Kit (Includes 1 Bearing + 1 Seal Kit) 4 Kits Needed Per Slide
	EIS225BKSM	Small Bearing Seal Kit (1 Kit Needed Per Small Bearing)
	EIS225BXSM	Small Bearing Ass'y Kit (Includes 1Small Bearing + 1 Seal Kit) 4 Kits Per Slide
	EIS225PKLG	Large Piston Seal Kit (1 Kit Needed Per Large Piston)
	EIS225PXLG	Large Piston Ass'y Kit (Includes 1 Large Piston + 1 Seal Kit) 2 Kits Per Slide
	EIS225PKSM	Small Piston Seal Kit (1 Kit Needed Per Small Piston)
	EIS225PXSM	Small Piston Ass'y Kit (Includes 1 Small Piston + Seal Kit) 2 Kits Per Slide
EIS225PRSK	Ported Rods Seal Kit (1 Kit Per Slide With Ported Rods Option)	
EIS325	EIS325	Complete Seal Kit (1 Per Slide, Soft Seals Only)
	EIS325XLG	Large Bearing Seal Kit (1 Needed Per Bearing)
	EIS325XLG	Larg Bearing Ass'y Kit (Includes 1 Bearing + 1 Seal Kit) 4 Kits Needed Per Slide
	EIS325BKSM	Small Bearing Seal Kit (1 Kit Needed Per Small Bearing)
	EIS325BXSM	Small Bearing Ass'y Kit (Includes 1Small Bearing + 1 Seal Kit) 4 Kits Per Slide
	EIS325PKLG	Large Piston Seal Kit (1 Kit Needed Per Large Piston)
	EIS325PXLG	Large Piston Ass'y Kit (Includes 1 Large Piston + 1 Seal Kit) 2 Kits Per Slide
	EIS325PKSM	Small Piston Seal Kit (1 Kit Needed Per Small Piston)
	EIS325PXSM	Small Piston Ass'y Kit (Includes 1 Small Piston + Seal Kit) 2 Kits Per Slide
EIS325PRSK	Ported Rods Seal Kit (1 Kit Per Slide With Ported Rods Option)	



Spare Parts List

S SERIES



Series	Part Number	Part Description
S200	S200	Complete Seal Kit (1 Per Slide, Soft Seals Only)
	SBK200	Bearing Seal Kit (1 Needed Per Bearing)
	SBX200	Bearing Assembly Kit (Includes 1 Bearing + 1 Seal Kit) 4 Kits Needed Per Slide
	SPK200	Piston Seal Kit (1 Kit Needed Per Piston)
	SPX200	Piston Assembly Seal Kit (Includes 1 Piston + 1 Seal Kit) 2 Kits Needed Per Slide
S300	S300	Complete Seal Kit (1 Per Slide, Soft Seals Only)
	SBK300	Bearing Seal Kit (1 Needed Per Bearing)
	SBX300	Bearing Assembly Kit (Includes 1 Bearing + 1 Seal Kit) 4 Kits Needed Per Slide
	SPK300	Piston Seal Kit (1 Kit Needed Per Piston)
	SPX300	Piston Assembly Seal Kit (Includes 1 Piston + 1 Seal Kit) 2 Kits Needed Per Slide
S400	S400	Complete Seal Kit (1 Per Slide, Soft Seals Only)
	SBK400	Bearing Seal Kit (1 Needed Per Bearing)
	SBX400	Bearing Assembly Kit (Includes 1 Bearing + 1 Seal Kit) 4 Kits Needed Per Slide
	SPK400	Piston Seal Kit (1 Kit Needed Per Piston)
	SPX400	Piston Assembly Seal Kit (Includes 1 Piston + 1 Seal Kit) 2 Kits Needed Per Slide
S500	S500	Complete Seal Kit (1 Per Slide, Soft Seals Only)
	SBK500	Bearing Seal Kit (1 Needed Per Bearing)
	SBX500	Bearing Assembly Kit (Includes 1 Bearing + 1 Seal Kit) 4 Kits Needed Per Slide
	SPK500	Piston Seal Kit (1 Kit Needed Per Piston)
	SPX500	Piston Assembly Seal Kit (Includes 1 Piston + 1 Seal Kit) 2 Kits Needed Per Slide



An H&C Company

Notes



An IMC Company

Application Approval Form

HL Series Slides

Transfer and Lift Systems

4950 MARLIN DRIVE • P.O. BOX 2045
 ROCKFORD, ILLINOIS 61130 U.S.A.
 815-654-9050 • FAX 815-654-3393

HYDRO-LINE, INC.

Required Date 4/8/98

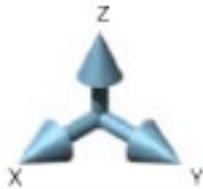
Distributor Salesperson

Program Vehicle Line Tool Number

Design House Contact Phone

Build House Contact Phone

Final Destination



Positions

X

Y

Z

Standard "TO-GO" is 0.197" (5mm) per position.

Power PSI Air Oil

Reference Drawing

(see reverse side, and attach drawing.)

Max Load (W) lbf

Distance to CG (l) in

Distance to Tooling (a) in

Maximum Deflection at Tool in

Angle of Slide (a) °

Cycle Rate cpm

Ambient Temperature °F

Options Shocks L/R Bellows Ported Rods Side Shields Proximity Switch L/R Special

Notes

	Qty	Part Number	Description
A			
B			
C			
D			
E			

Design

HL Approval Date Customer Approval Date

Build

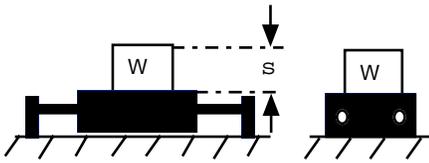
HL Approval Date Customer Approval Date

(For extended warranty)

Build Not Approved

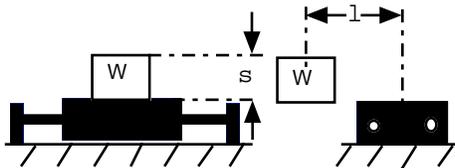
HL Date Customer Date

HORIZONTAL CENTERED LOAD



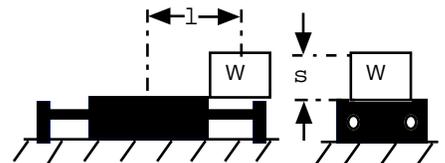
DRAWING NO. 1

HORIZONTAL OFF CENTER LOAD



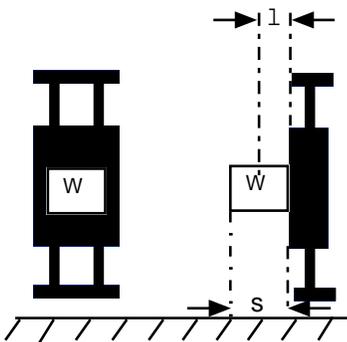
DRAWING NO. 2

HORIZONTAL OFF CENTER LOAD



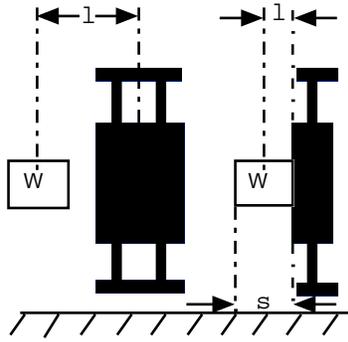
DRAWING NO. 3

VERTICAL LOAD



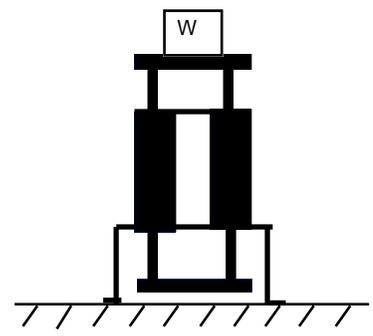
DRAWING NO. 4

VERTICAL OFF CENTER LOAD



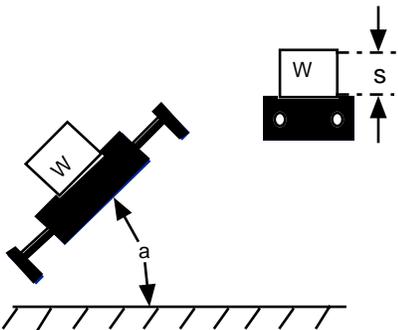
DRAWING NO. 5

VERTICAL LIFTER



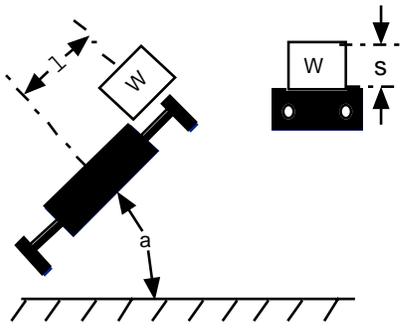
DRAWING NO. 6

CENTERED LOAD ON ANGLE



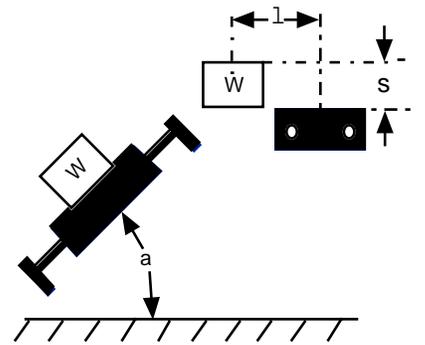
DRAWING NO. 7

OFF CENTER LOAD ON ANGLE



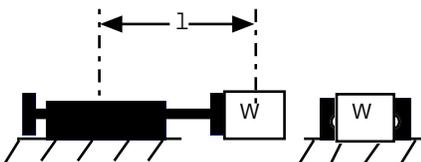
DRAWING NO. 8

OFF CENTER LOAD ON ANGLE



DRAWING NO. 9

CANTILEVERED LOAD



DRAWING NO. 10

SKETCH YOUR APPLICATION

DRAWING NO. 11

HYDRO-LINE Actuation Products



N5 SERIES CYLINDERS

- NFPA interchangeable
- **N5** – 3000 psi nominal hydraulic
- **AN5** – to 250 psi very heavy-duty pneumatic
- **LAN5** – to 250 psi very heavy-duty pneumatic – permanently lubricated
- All steel construction



R5 SERIES CYLINDERS

- NFPA interchangeable
- **A5/R5** – to 250 psi pneumatic
- **LA5/LR5** – to 250 psi pneumatic – permanently lubricated
- **HA5** – to 400 psi hydraulic
- **HR5** – 1500 psi nominal hydraulic



Q5 SERIES CYLINDERS

- NFPA interchangeable
- **Q5** – to 250 psi pneumatic
- **LQ5** – to 250 psi pneumatic – permanently lubricated
- **HQ5** – to 400 psi hydraulic
- Aluminum construction



HM SERIES CYLINDERS

- Conform to international metric specifications ISO 6020/2 and DIN 24 554
- 25 mm to 200 mm bore sizes
- 210 BAR nominal hydraulic
- All steel construction



ROCKFORD SERIES CYLINDERS

- ASAE interchangeable agricultural cylinders
- **Rockford 2500**–2500 psi hydraulic
- **Rockford 3000**–3000 psi hydraulic



ELECTRONIC FEEDBACK CYLINDERS

Hydraulic or pneumatic cylinders which incorporate cylinder position sensing and feedback throughout the stroke. Available in N5, R5, A5, Q5, HM, HW, SM or special cylinders.



SERIES 20/30 BOOSTERS

- Standard series to 5000 psi output
- Custom designs to 20,000 psi

T SERIES AIR/OIL TANKS

- All steel construction

QT SERIES AIR/OIL TANKS

- Aluminum end caps and translucent tubing



V5 SERIES CYLINDERS

- NFPA Interchangeable
- To 200 psi pneumatic
- Aluminum construction
- Now available in 5", 6" and 8" bore



HW SERIES CYLINDERS

- Welded construction
- 3000 psi nominal hydraulic



TSAYER CYLINDERS

- Threaded body construction
- To 200 psi pneumatic
- To 1000 psi nominal hydraulic



SM SERIES CYLINDERS

- Steel mill type construction
- **MSM**–2000 psi nominal hydraulic
- **HSM**–3000 psi nominal hydraulic
- **ASM**–Pneumatic



HL SLIDES

- Transfer and Lift Systems
- Available in 2, 4 and multi positions
- Payloads up to 5000 lbs
- Travel up to 36 inches



CUSTOM CYLINDERS

1170 WALTHAM WAY
McCARRAN, NV 89434 U.S.A.
775-343-1888 • FAX 775-343-1890

HYDRO-LINE s.r.l.
VIA CAPRETTI 12/14
I-25136 STOCCHETTA BS, ITALY
(39)-030-201-6211 • (39)-030-209-1500

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4950 MARLIN DRIVE • P.O. BOX 2045
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DECATUR, ALABAMA 35602 U.S.A.
256-350-2339 • FAX 256-351-9910

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WOLVERHAMPTON WEST MIDLANDS, WV11 3DZ U.K.
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Over 50 Years of Service

HYDRO-LINE, INC.

Delivering Engineered Solutions
in Actuation Worldwide



An IMC Company

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