

H-BLOCK

The lightweight, durable, low-profile H-Block design is the most versatile of our rod cylinder slides. It also has one of the highest ratings of load weight vs extension for its kind in the industry. The H-Block features flexible mounting with your choice of sintered bronze, composite or precision ball bearings.

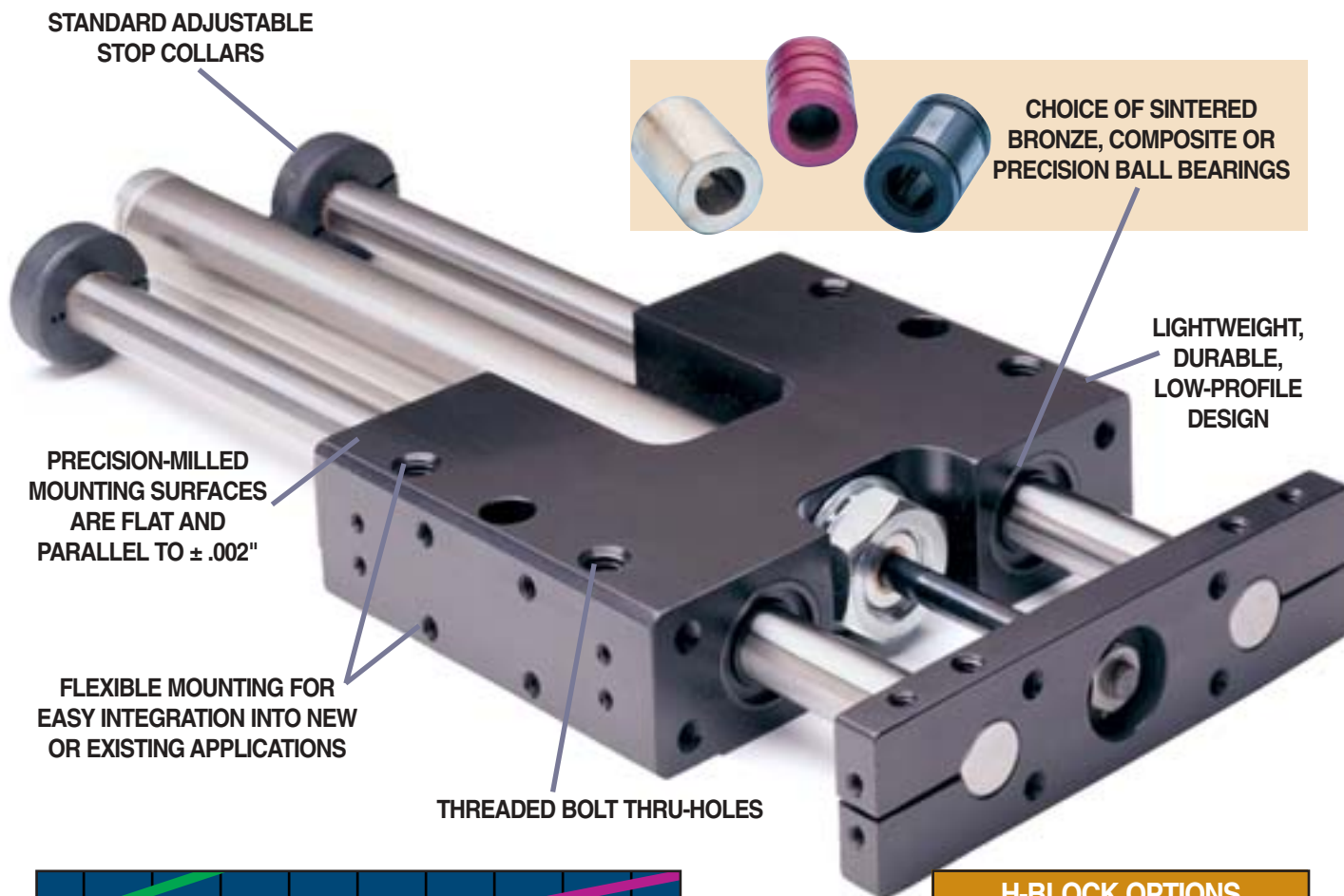
Tol-O-Matic's H-Block Rod Cylinder Slide was developed in direct response to customer requests. Thanks to its flexible mounting options and light-

weight yet strong and durable low-profile design, the H-Block is gaining popularity in a variety of linear motion applications.

H-Block actuators can be ordered with stroke lengths up to 12" [305mm] (longer stroke lengths are also available) in your choice of six cylinder bore sizes: $\frac{9}{16}$ ", $\frac{3}{4}$ ", $1\frac{1}{16}$ ", $1\frac{1}{2}$ ", 2" and 3". Three bearing types: sintered bronze bearings, composite bearings or precision ball bearings are available for smooth operation and longer bear-

ing life. Best of all, the H-Block series is completely adaptable to other Tol-O-Matic actuators, making it the perfect building block for a complete motion system.

The unique "H" design allows for easy mounting of sensing systems: dc reed, Hall-effect or ac Traic switches. Shock absorbers are available for high inertia applications. See page 211 & 222 for detailed descriptions, dimensional drawings and performance data. In addition, stop collars and fasteners are available.



PERFORMANCE DATA

SEE PAGES 9 to 14
FOR PERFORMANCE DATA FOR
H-BLOCK ROD CYLINDER SLIDES

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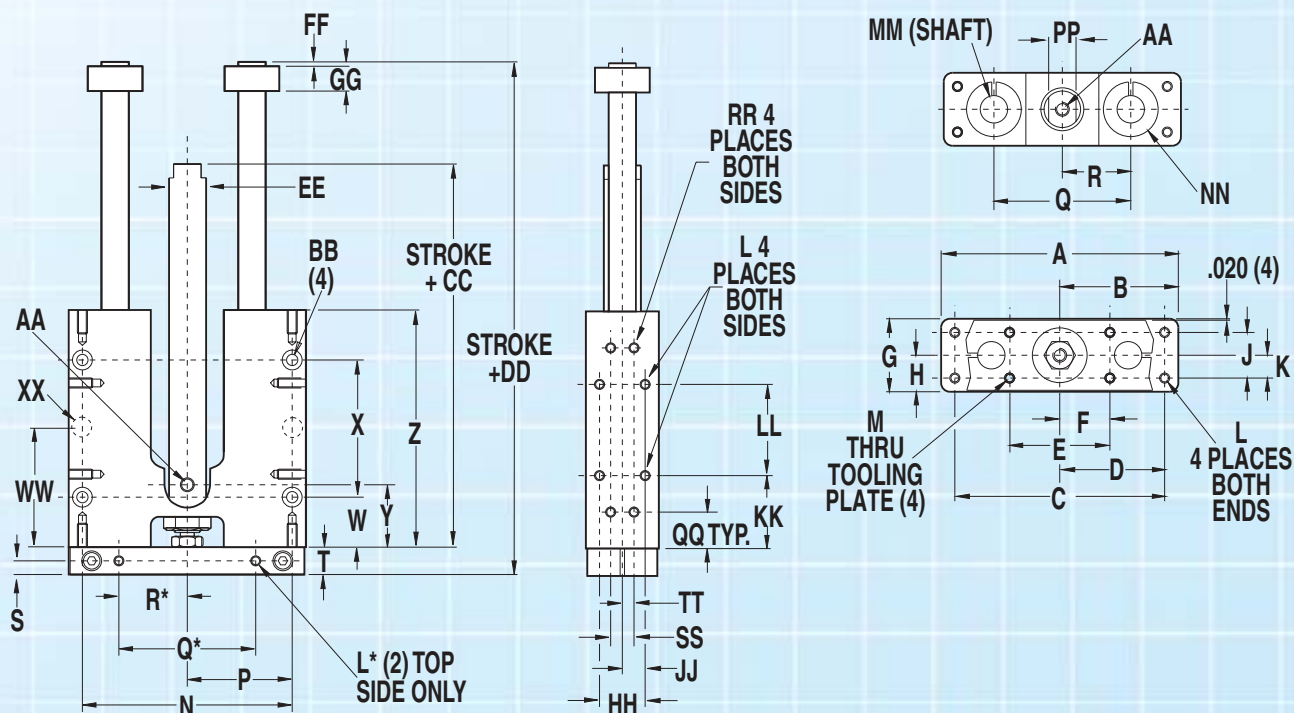
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H-BLOCK

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HB09.DXF
HB12.DWG
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HB17.DWG
HB17.DXF

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HB24.DWG
HB24.DXF
HB32.DWG
HB32.DXF
HB48.DWG
HB48.DXF



OVERALL UNIT SPECIFICATIONS

	HB09	HB12	HB17	HB24	HB32	HB48
Bore size (in.)	0.562	0.75	1.062	1.50	2.00	3.00
Base weight (lbs.)	1.61	2.07	3.96	4.83	12.82	31.38
Weight per in. of stk. (lbs.)	0.08	0.15	0.22	0.34	0.59	0.97

OVERALL UNIT SPECIFICATIONS

	HB09	HB12	HB17	HB24	HB32	HB48
Bore size (in.)	0.562	0.75	1.062	1.50	2.00	3.00
Base weight (kgs.)	0.7	0.9	1.8	2.2	5.8	14.2
Weight per in.(25mm) of stk. (kgs.)	0.04	0.07	0.10	0.15	0.27	0.44

For Assistance Call
1-800-328-2174
(Toll Free U.S. and Canada)
or
763-478-8000
Fax 763-478-8080

MODEL NO.	BORE SIZE	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q*	R*	S	T	W	X	Y	Z
HB09	9/16"	3.250	1.625	2.875	1.438	1.375	0.688	0.950	0.475	0.625	0.313	#6-32 x .31 DP	#6-32 thru	2.875	1.438	1.875	0.938	0.18	0.38	0.685	1.880	0.86	3.250
HB12	3/4"	4.531	2.266	3.937	1.969	1.750	0.875	1.200	0.600	0.700	0.350	#10-24 x .38 DP	#10-24 thru	3.937	1.969	2.500	1.250	0.18	0.38	0.825	2.000	1.30	3.650
HB17	1 1/16"	5.125	2.562	4.500	2.250	2.000	1.000	1.560	0.780	0.945	0.473	1.4-20 x .50 DP	1/4-20 thru	4.500	2.250	2.750	1.375	0.25	0.50	1.000	2.500	1.36	4.500
HB24	1 1/2"	6.250	3.125	5.438	2.719	2.500	1.250	1.935	0.968	1.250	0.625	1/4-20 x .50 DP	1/4-20 thru	5.438	2.719	3.500	1.750	0.31	0.63	1.063	2.625	1.88	4.750
HB32	2"	7.750	3.875	7.000	3.500	3.500	1.750	2.800	1.400	2.050	1.025	5/16-18 x .50 DP	5/16-18 thru	7.000	3.500	4.688	2.344	0.38	0.75	1.188	3.875	2.19	6.250
HB48	3"	10.000	5.000	9.000	4.500	4.500	2.250	3.560	1.780	2.500	1.250	3/8-16 x .63 DP	3/8-16 thru	9.000	4.500	6.000	3.000	0.50	1.00	1.437	4.125	2.66	7.000
MODEL	BORE	AA	BB		CC	CC*	DD	EE	FF	GG	HH	JJ	KK	LL	MM	NN	PP	QQ	RR	SS	TT	WW	XX ^s
HB09	9/16"	#10-32	Clearance for #6 SHCS tapped #8-32 x .55DP from opposite side		2.41	2.66	4.07	Ø.62	0.03	0.31	0.625	0.313	1.000	1.250	.375 nom.	0.88	0.38	0.500	#6-32 x .18 DP	0.320	0.160	1.625	Ø.250/.251 x .375DP
HB12	3/4"	1/8-27 NPTF	Clearance for 1/4 SHCS tapped 5/16 x .95DP from opposite side		3.30	3.55	4.44	Ø.81	0.03	0.38	0.700	0.350	1.275	1.100	.500 nom.	1.13	0.62	0.500	#6-32 x .18 DP	0.320	0.160	1.825	Ø.375/.376 x .500DP
HB17	1 1/16"	1/8-27 NPTF	Clearance for 1/4 SHCS tapped 5/16 x .95DP from opposite side		3.47	3.63	5.44	Ø1.12	0.03	0.41	0.945	0.473	1.500	1.500	.625 nom.	1.50	0.88	0.625	#8-32 x .25 DP	0.450	0.225	2.250	Ø.375/.376 x .500DP
HB24	1 1/2"	1/8-27 NPTF	Clearance for 1/4 SHCS tapped 5/16 x .95DP from opposite side		4.07	4.32	5.91	Ø1.56	0.03	0.50	1.250	0.625	1.500	1.750	.750 nom.	1.75	0.88	0.625	#8-32 x .25 DP	0.450	0.225	2.375	Ø.375/.376 x .500DP
HB32	2"	1/4-18 NPT	Clearance for 5/16-18 SHCS tapped 3/8 x 1.00DP from opposite side		5.04	5.32	7.53	Ø2.08	0.03	0.50	2.050	1.025	1.750	2.750	1.000 nom.	2.00	1.25	0.625	#8-32 x .25 DP	0.450	0.225	3.125	Ø.500/.502 x .500DP
HB48	3"	3/8-18 NPT	Clearance for 7/16 SHCS tapped 1/2-13UNC-2B x 1.50 DP from opposite side		5.82	6.07	8.53	Ø3.16	0.03	0.50	2.500	1.250	2.125	2.750	1.250 nom.	2.25	2.00	0.625	#8-32 x .25 DP	0.450	0.225	3.500	Ø.500/.502 x .500DP

*Holes on top side only, set screws fill holes on bottom side ¥Cylinders equipped with magnets

\$Dowel Pins Φ 0.002 M

Above Dimensions in inches

MODEL NO.	BORE SIZE	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q*	R*	S	T	W	X	Y	Z		
HB09	9/16"	82.55	41.28	73.03	36.53	34.93	17.48	24.13	12.07	15.88	7.95	#6-32 x .31 DP	#6-32 thru	73.03	36.53	47.63	23.83	4.6	9.7	17.40	47.75	21.8	82.55		
HB12	3/4"	115.09	57.56	100.00	50.01	44.45	22.23	30.48	15.24	17.78	8.89	#10-24 x .38 DP	#10-24 thru	100.00	50.01	63.50	31.75	4.6	9.7	20.96	50.80	33.0	92.71		
HB17	1 1/16"	130.18	65.07	114.30	57.15	50.80	25.40	39.62	19.81	24.00	12.01	1.4-20 x .50 DP	1/4-20 thru	114.30	57.15	69.85	34.93	6.4	12.7	25.40	63.50	34.5	114.30		
HB24	1 1/2"	158.75	79.38	138.13	69.06	63.50	31.75	49.15	24.59	31.75	15.88	1/4-20 x .50 DP	1/4-20 thru	138.13	69.06	88.90	44.45	7.9	16.0	27.00	66.68	47.8	120.65		
HB32	2"	196.85	98.43	177.80	88.90	88.90	44.45	71.12	35.56	52.07	26.04	5/16-18 x .50 DP	5/16-18 thru	177.80	88.90	119.08	59.54	9.7	19.1	30.18	98.43	55.6	158.75		
HB48	3"	254.00	127.00	228.60	114.30	114.30	57.15	90.42	45.21	63.50	31.75	3/8-16 x .63 DP	3/8-16 thru	228.60	114.30	152.40	76.20	12.7	25.4	36.50	104.78	67.6	177.80		
MODEL	BORE	AA	BB				CC	CC*	DD	EE	FF	GG	HH	JJ	KK	LL	MM	NN	PP	QQ	RR	SS	TT	WW	XX [§]
HB09	9/16"	#10-32	Clearance for #6 SHCS tapped #8-32 x .55DP from opposite side				61.21	67.6	103.4	Ø15.7	0.8	7.9	15.88	7.95	25.40	31.75	9.53 nom.	22.4	9.7	12.70	#6-32 x .18 DP	8.13	4.06	41.28	Ø.250/.251 x .375DP
HB12	3/4"	1/8-27 NPTF	Clearance for 1/4 SHCS tapped 5/16 x .95DP from opposite side				83.82	90.2	112.8	Ø20.6	0.8	9.7	17.78	8.89	32.39	27.94	12.70 nom.	28.7	15.7	12.70	#6-32 x .18 DP	8.13	4.06	46.36	Ø.375/.376 x .500DP
HB17	1 1/16"	1/8-27 NPTF	Clearance for 1/4 SHCS tapped 5/16 x .95DP from opposite side				88.14	92.2	138.2	Ø28.4	0.8	10.4	24.00	12.01	38.10	38.10	15.88 nom.	38.1	22.4	15.88	#8-32 x .25 DP	11.43	5.72	57.15	Ø.375/.376 x .500DP
HB24	1 1/2"	1/8-27 NPTF	Clearance for 1/4 SHCS tapped 5/16 x .95DP from opposite side				103.4	109.7	150.1	Ø39.6	0.8	12.7	31.75	15.88	38.10	44.45	19.05 nom.	44.5	22.4	15.88	#8-32 x .25 DP	11.43	5.72	60.33	Ø.375/.376 x .500DP
HB32	2"	1/4-18 NPT	Clearance for 5/16-18 SHCS tapped 3/8 x 1.00DP from opposite side				128.0	135.1	191.3	Ø52.8	0.8	12.7	52.07	26.04	44.45	69.85	25.40 nom.	50.8	31.8	15.88	#8-32 x .25 DP	11.43	5.72	79.38	Ø.500/.502 x .500DP
HB48	3"	3/8-18 NPT	Clearance for 7/16 SHCS tapped 1/2-13UNC-2B x 1.50 DP from opposite side				147.8	154.2	216.7	Ø80.3	0.8	12.7	63.50	31.75	53.98	69.85	31.75 nom.	57.2	50.8	15.88	#8-32 x .25 DP	11.43	5.72	88.90	Ø.500/.502 x .500DP

*Holes on top side only, set screws fill holes on bottom side ¥Cylinders equipped with magnets

\$Dowel Pins Φ 0.051 M

Above Dimensions in millimeters

U-BLOCK

The U-Block, Tol-O-Matic's latest introduction to the rod cylinder slide product line is competitively priced with loads of flexibility. It also has one of the highest ratings of load weight vs extension for its kind in the industry.

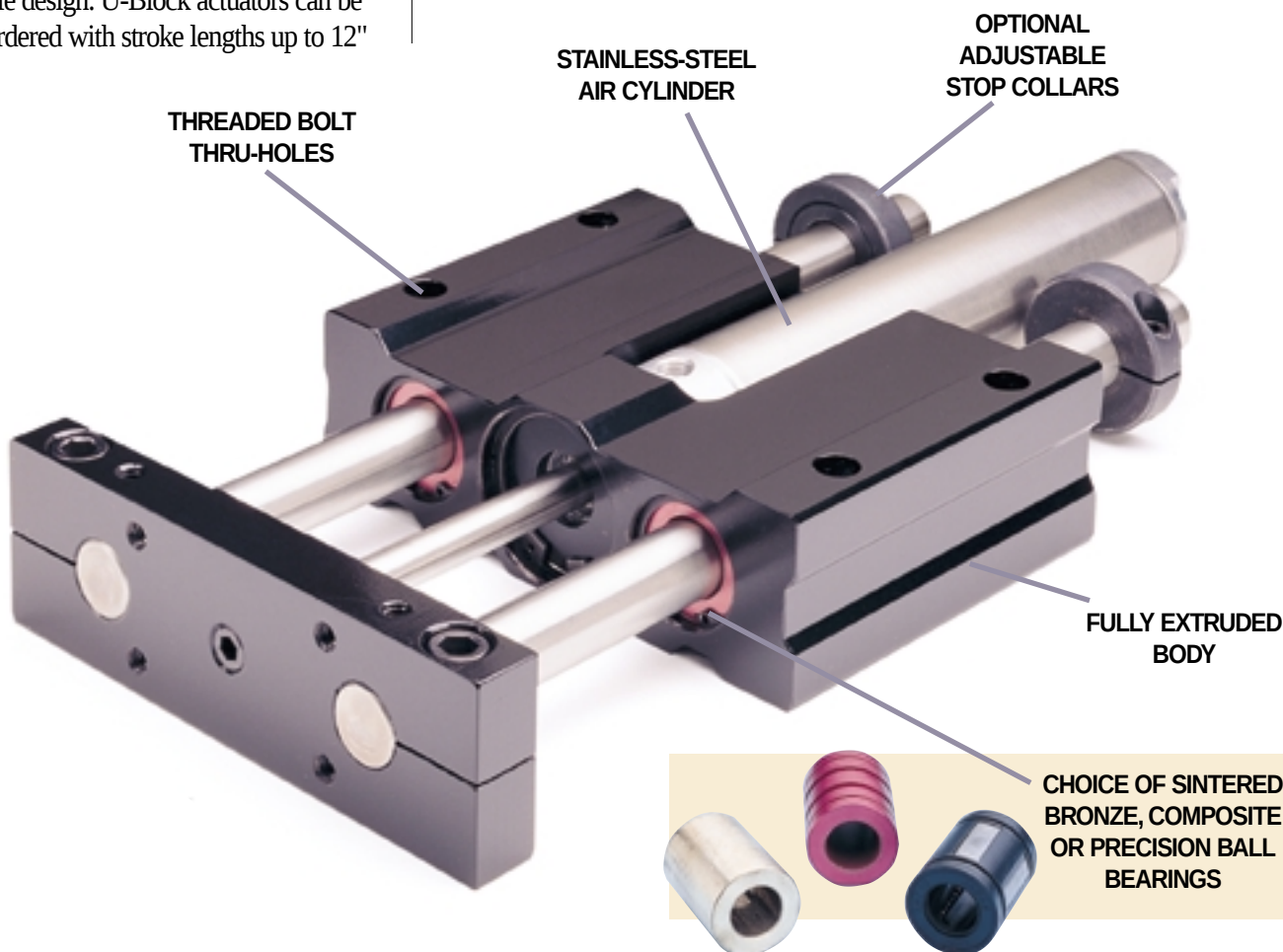
What makes the U-Block different is its unique body design. Created from extruded aluminum, the U-Block combines price competitiveness with a lightweight, strong, durable, low-profile design. U-Block actuators can be ordered with stroke lengths up to 12"

[305mm] (longer stroke lengths are also available) in your choice of four different bore sizes: $\frac{9}{16}$ ", $\frac{3}{4}$ ", $1\frac{1}{16}$ " and $1\frac{1}{2}$ " with three different bearing styles: linear ball, sintered bronze, and composite.

The U-Block series is also available in kit form, preassembled without the cylinder, making it very price competitive and fully adaptable to accommodate a number of different manufacturers' rod cylinders.

The U-Block series provides flexible mounting options and is completely adaptable to other Tol-O-Matic actuators using adapter plates, making it a perfect building block for multi-axis applications.

Options include: easily mounted switches for detecting end of stroke, stop collars, and bumpers. For applications where protection from corrosives is required, stainless-steel guide shafts, stop collars and fasteners are available.



U-BLOCK OPTIONS

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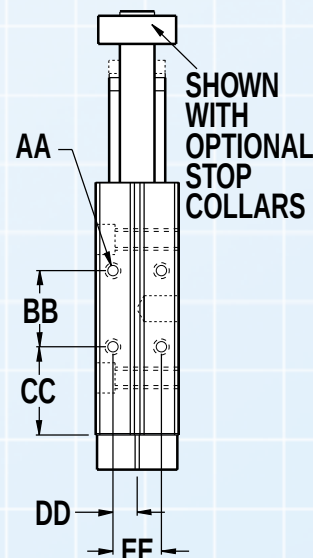
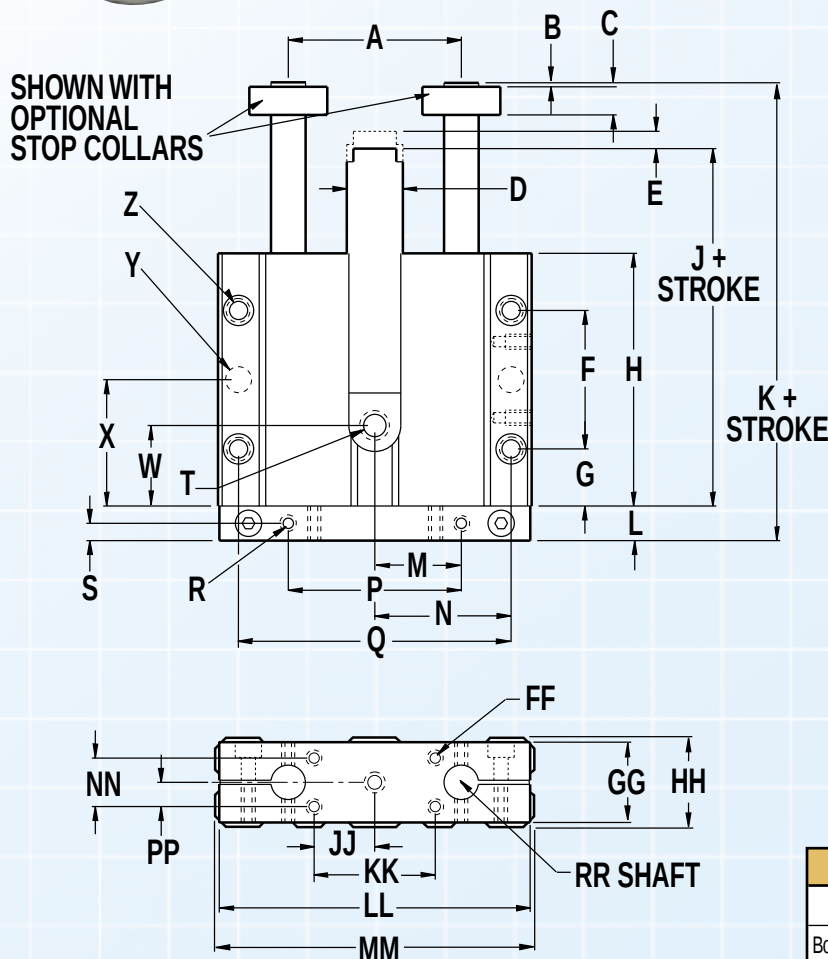
PERFORMANCE DATA

SEE PAGES 9 to 12
FOR PERFORMANCE DATA FOR
U-BLOCK ROD CYLINDER SLIDES

UB.EXE
UB09.DWG
UB09.DXF
UB12.DWG
UB12.DXF

DIMENSIONAL DATA

UB.EXE
UB17.DWG
UB17.DXF
UB24.DWG
UB24.DXF



OVERALL UNIT SPECIFICATIONS				
	UB09	UB12	UB17	UB24
Bore size (in.)	0.562	0.75	1.062	1.50
Base weight (lbs.)	1.08	2.52	3.85	6.35
Weight per in. of stk. (lbs.)	0.08	0.15	0.22	0.34

MODEL	BORE	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	W	X
UB09	9/16"	1.875	.03	.375	.62	.25 with magnet	1.880	.685	3.250	2.43	4.16	.500	.937	1.438	1.875	2.875	#6-32UNC-2B X .27 DP (4) 2 each side	.250	#10-32 PORT (2)	0.93	1.625
UB12	3/4"	2.500	.03	.406	.81	.25 with magnet	2.000	.825	3.650	3.16	4.59	.500	1.250	1.969	2.500	3.937	#10-24UNC-2B X .33 DP (4) 2 each side	.250	1/8 NPT PORT (2)	1.16	1.825
UB17	1-1/16"	2.750	.03	.406	1.12	.16 with magnet	2.500	1.000	4.500	3.45	5.69	.750	1.375	2.250	2.750	4.500	#1/4-20UNC-2B X .27 DP (4) 2 each side	.375	1/8 NPT PORT (2)	1.39	2.250
UB24	1-1/2"	3.500	.03	.500	1.56	.25 with magnet	2.625	1.063	4.750	3.99	6.03	.750	1.750	2.719	3.500	5.438	#1/4-20UNC-2B X .27 DP (4) 2 each side	.375	1/8 NPT PORT (2)	1.80	2.375
MODEL	BORE	Y§	Z			AA		BB	CC	DD	EE	FF	GG	HH	JJ	KK	LL	MM	NN	PP	RR
UB09	9/16"	Ø.250/.251 X .39 DP (2) opposite side	Clearance for #6 SHCS, tapped #8-32UNC-2B X .55 DP (4) opposite side			#6-32UNC-2B X .31 DP (4)		1.250	1.000	.313	.625	#6-32UNC-2B X .50 DP (4)	.901	.950	.687	1.375	3.210	3.250	.625	.313	.375 nom.
UB12	3/4"	Ø.375/.376 X .50 DP (2) opposite side	Clearance for 1/4 SHCS, tapped 5/16-18UNC-2B X .95 DP (4) opposite side			#10-24UNC-2B X .31 DP (4)		1.100	1.275	.350	.700	#10-24UNC-2B X .50 DP (4)	1.160	1.200	.875	1.750	4.491	4.531	.700	.350	.50 nom
UB17	1-1/16"	Ø.375/.376 X .52 DP (2) opposite side	Clearance for 1/4 SHCS, tapped 5/16-18UNC-2B X .95 DP (4) opposite side			#1/4-20UNC-2B X .50 DP (4)		1.500	1.500	.473	.945	#1/4-20UNC-2B X .75 DP (4)	1.520	1.560	1.000	2.000	5.085	5.125	.945	.473	.625 nom
UB24	1-1/2"	Ø.375/.376 X .52 DP (2) opposite side	Clearance for 1/4 SHCS, tapped 5/16-18UNC-2B X .95 DP (4) opposite side			#1/4-20UNC-2B X .50 DP (4)		1.750	1.500	.625	1.250	#1/4-20UNC-2B X .75 DP (4)	1.895	1.935	1.250	2.500	6.210	6.250	1.250	.625	.75 nom

SDowel Pins ± 0.002 (M)

Above dimensions in inches (see next page for dimensions in millimeters)

CHANNEL-BLOCK

Lightweight, durable, low-profile channel design is a cost-effective alternative to "traditional" rod cylinder slides. Standard features include bumpers and sintered bronze bearings. Use them alone or in conjunction with other Tol-O-Matic linear actuators.

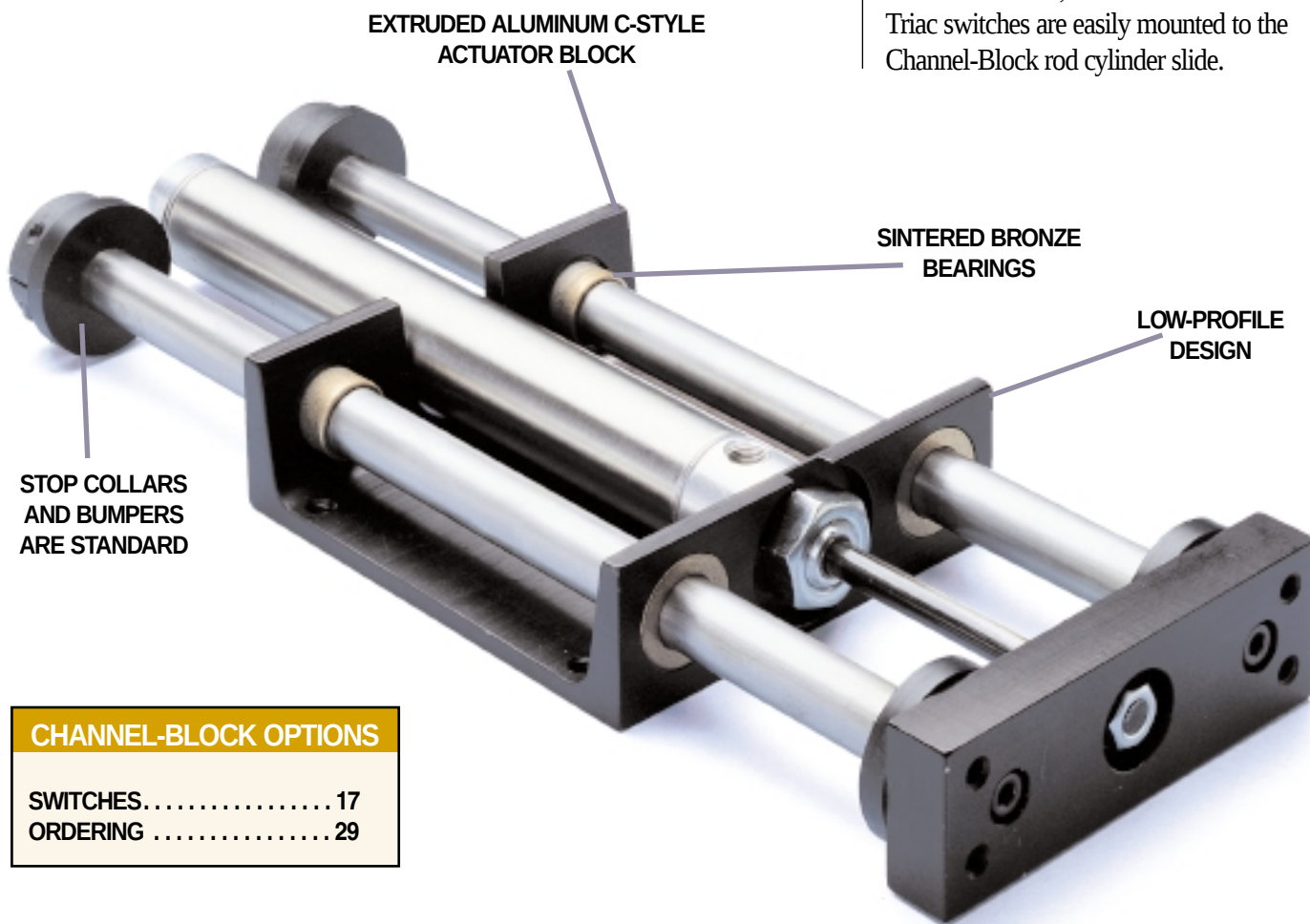
Based on the field-proven "H-Block" design, the Channel-Block rod

cylinder slide is a natural extension to Tol-O-Matic's existing line of high-quality linear actuator products. Remarkably light in weight, yet extremely strong and durable, this cost-effective low-profile rod cylinder slide design is ideal for use in a variety of new or existing linear motion systems.

Channel-Block actuators feature extruded-aluminum C-style actuator block

block, prelubricated actuator and sintered bronze bearings. Channel-Block actuators can be ordered with stroke lengths up to 12" [305mm] (longer stroke lengths are also available) in your choice of three different bore sizes ($\frac{9}{16}$ ", $\frac{3}{4}$ ", and $1\frac{1}{16}$ "). Each model features flexible mounting, which allows Channel-Block actuators to be used alone or in "building block" configurations with other Tol-O-Matic linear motion actuators.

Available dc reed, Hall-effect and ac Triac switches are easily mounted to the Channel-Block rod cylinder slide.



CHANNEL-BLOCK OPTIONS

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For Assistance Call
1-800-328-2174
(Toll Free U.S. and Canada)
or
763-478-8000
Fax 763-478-8080

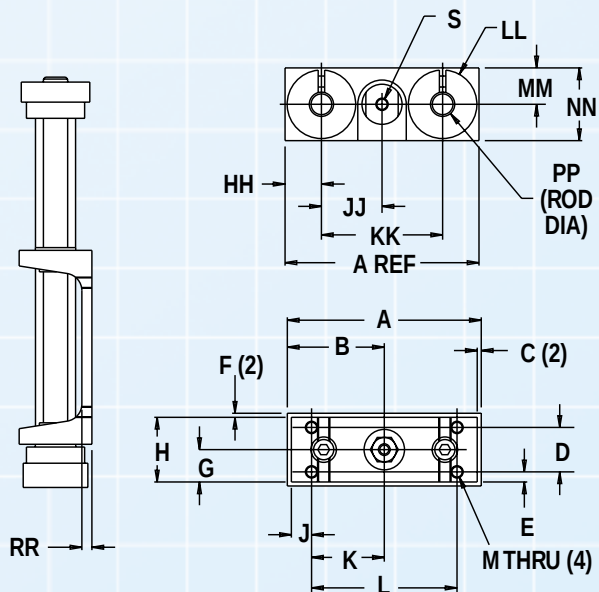
PERFORMANCE DATA

SEE PAGES 9 to 12
 FOR PERFORMANCE DATA FOR
 CHANNEL-BLOCK ROD CYLINDER SLIDES

CB.EXE
CB09.DWG
CB09.DXF
CB12.DWG
CB12.DXF
CB17.DWG
CB17.DXF

DIMENSIONAL DATA

OVERALL UNIT SPECIFICATIONS			
	CB09	CB12	CB17
Bore size (in.)	0.562	0.75	1.062
Base weight (kgs.)	0.4	0.8	1.2
Weight per in.(25mm) of stk. (kgs.)	0.04	0.06	0.10



Dimensions in inches

*Cylinders equipped with magnets

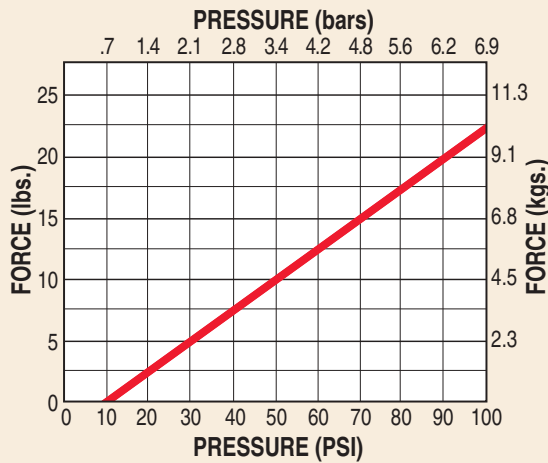
Dimensions in millimeters

*Cylinders equipped with magnets

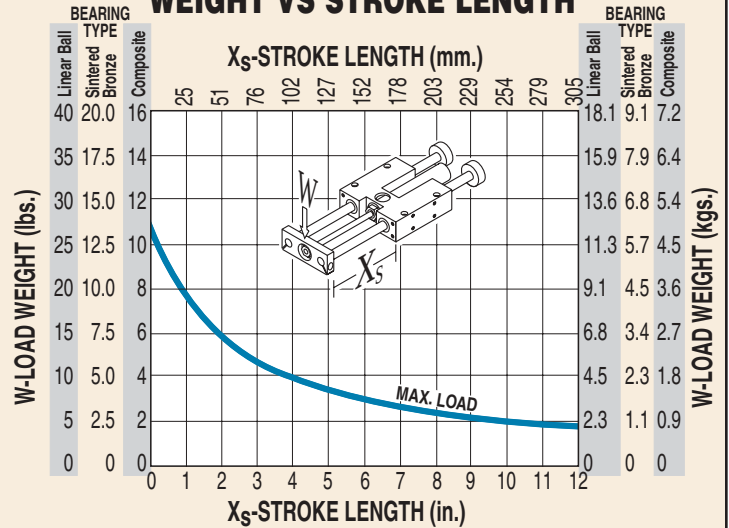
PERFORMANCE DATA

HB09, UB09, CB09 9/16" Bore

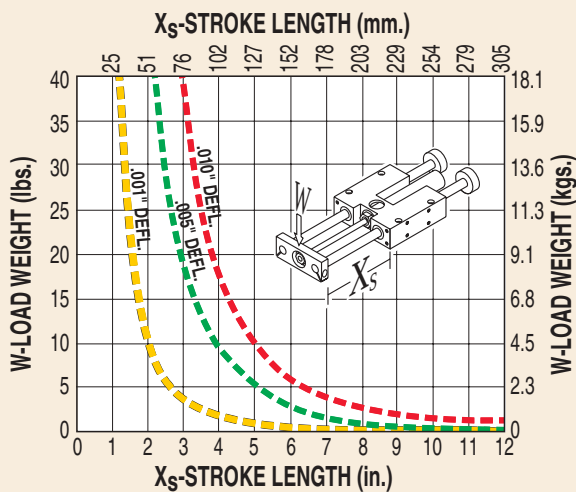
FORCE VS PRESSURE



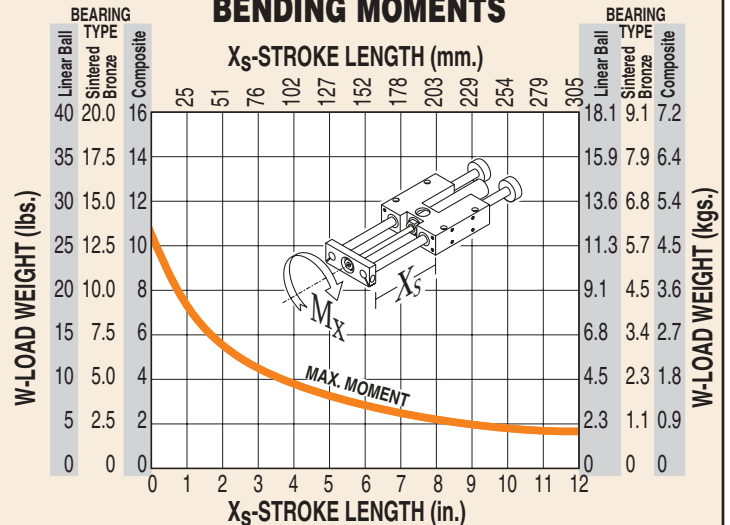
WEIGHT VS STROKE LENGTH



DEFLECTION



BENDING MOMENTS



FORCE VS. PRESSURE

NOTE: Force vs Pressure performance data applies to models with either linear ball, sintered bronze or composite bearings.

MAX. LOAD WEIGHT VS. STROKE LENGTH

Do not exceed Max. Load curve. (Deflection curves are provided for reference.)

Max. Load for linear ball and composite bearings is based on 200 million linear inches of travel; 20 million for sintered bronze bearings.

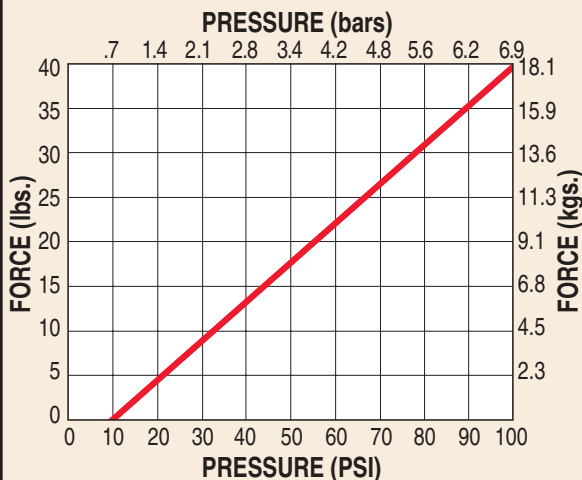
BENDING MOMENTS

Max. Moment for linear ball and composite bearings is based on 200 million linear inches of travel; 20 million for sintered bronze.

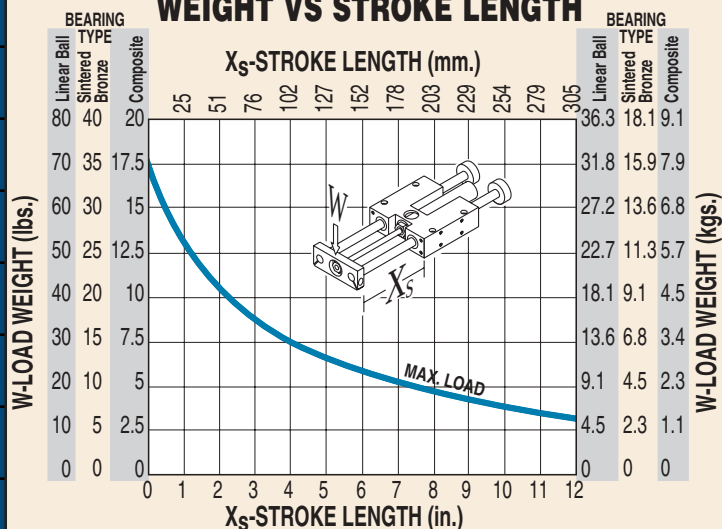
PERFORMANCE DATA

HB12, UB12, CB12 3/4" Bore

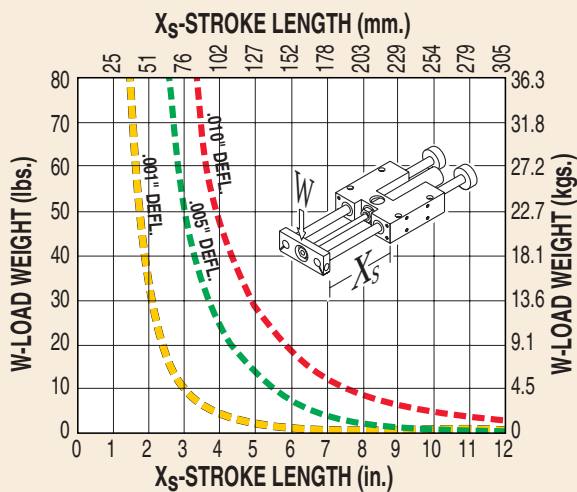
FORCE VS PRESSURE



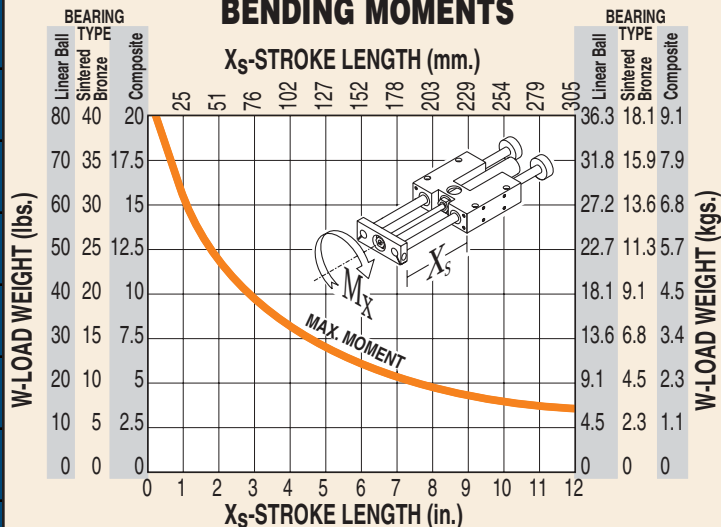
WEIGHT VS STROKE LENGTH



DEFLECTION



BENDING MOMENTS



FORCE VS. PRESSURE

NOTE: Force vs Pressure performance data applies to models with either linear ball, sintered bronze or composite bearings.

MAX. LOAD WEIGHT VS. STROKE LENGTH

Do not exceed Max. Load curve. (Deflection curves are provided for reference.)
Max. Load for linear ball and composite bearings is based on 200 million linear inches of travel; 20 million for sintered bronze bearings.

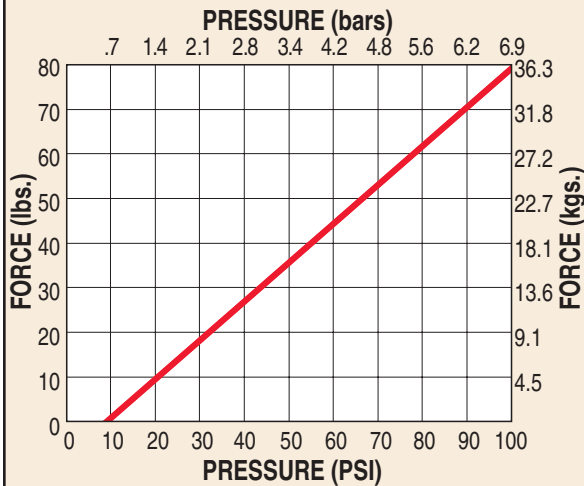
BENDING MOMENTS

Max. Moment for linear ball and composite bearings is based on 200 million linear inches of travel; 20 million for sintered bronze.

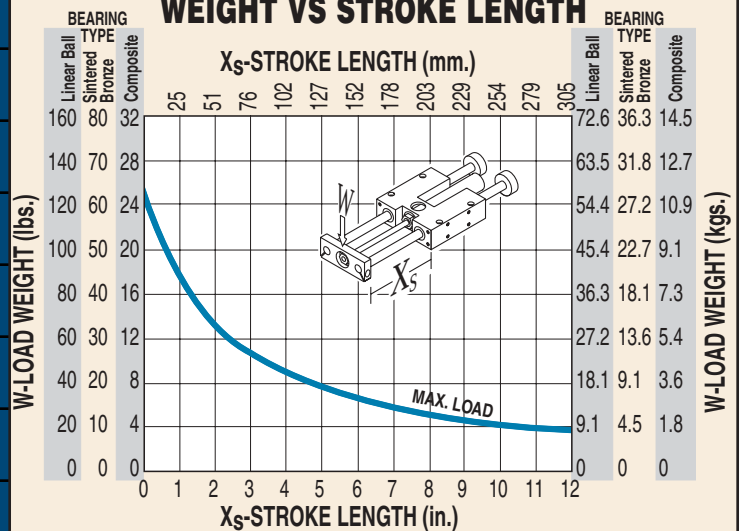
PERFORMANCE DATA

HB17, UB17, CB17 1 1/16" Bore

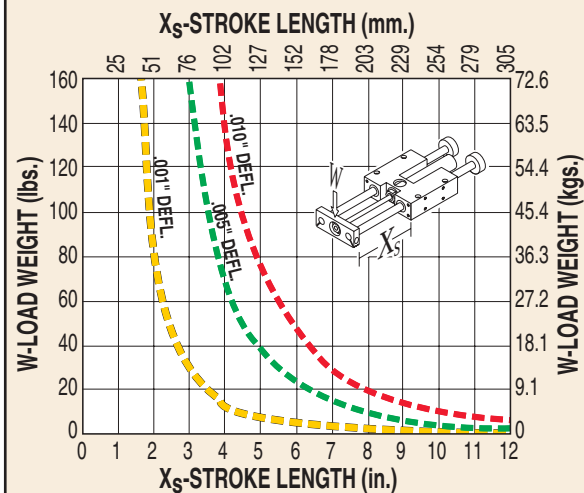
FORCE VS PRESSURE



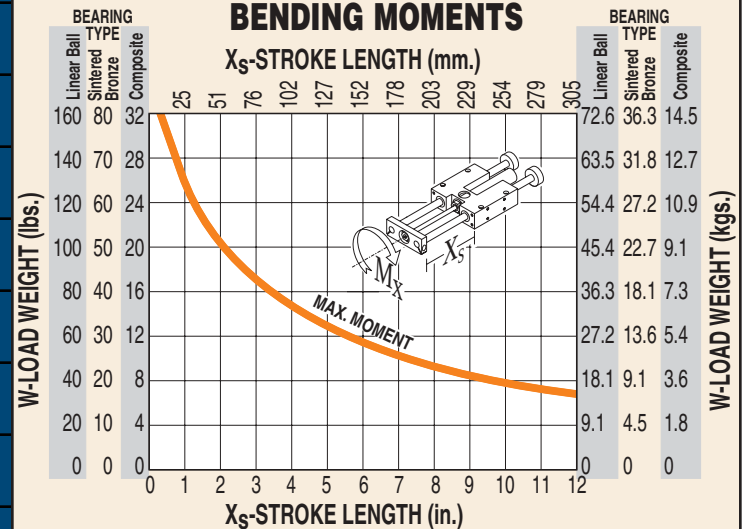
WEIGHT VS STROKE LENGTH



DEFLECTION



BENDING MOMENTS



FORCE VS. PRESSURE

NOTE: Force vs Pressure performance data applies to models with either linear ball, sintered bronze or composite bearings.

MAX. LOAD WEIGHT VS. STROKE LENGTH

Do not exceed Max. Load curve. (Deflection curves are provided for reference.)
Max. Load for linear ball and composite bearings is based on 200 million linear inches of travel; 20 million for sintered bronze bearings.

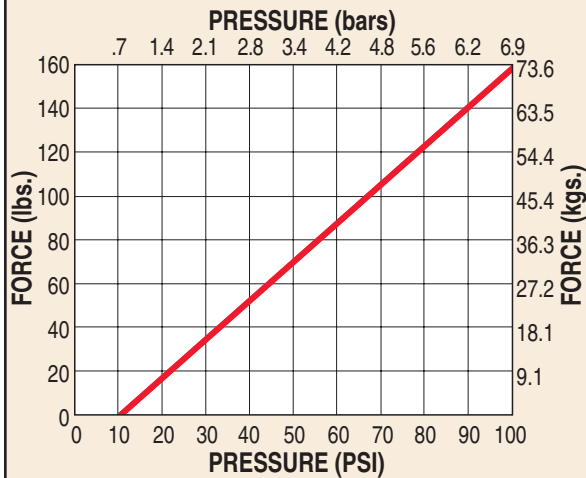
BENDING MOMENTS

Max. Moment for linear ball and composite bearings is based on 200 million linear inches of travel; 20 million for sintered bronze.

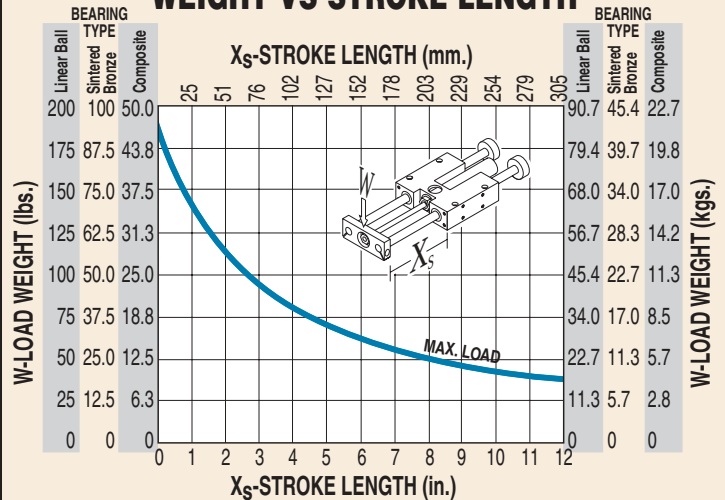
PERFORMANCE DATA

HB24, UB24, CB24 1½" Bore

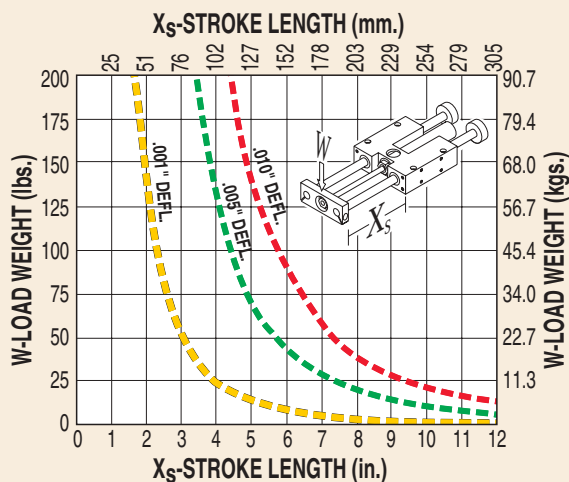
FORCE VS PRESSURE



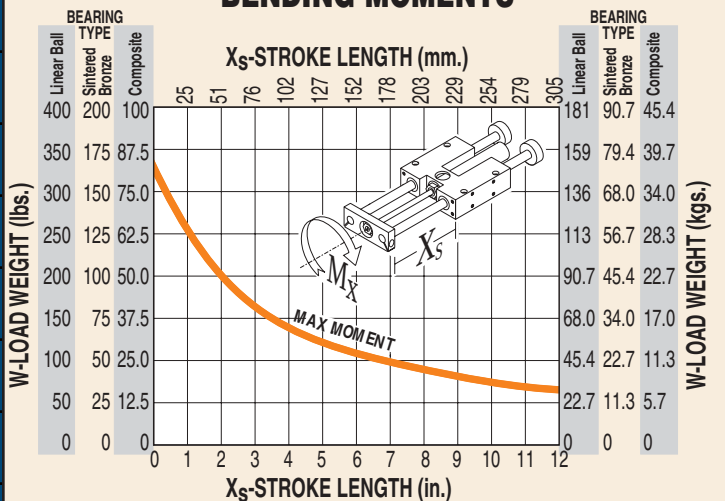
WEIGHT VS STROKE LENGTH



DEFLECTION



BENDING MOMENTS



FORCE VS. PRESSURE

NOTE: Force vs Pressure performance data applies to models with either linear ball, sintered bronze or composite bearings.

MAX. LOAD WEIGHT VS. STROKE LENGTH

Do not exceed Max. Load curve. (Deflection curves are provided for reference.)
Max. Load for linear ball and composite bearings is based on 200 million linear inches of travel; 20 million for sintered bronze bearings.

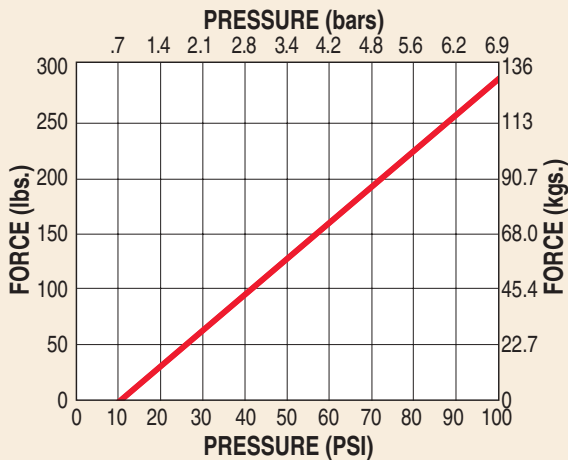
BENDING MOMENTS

Max. Moment for linear ball and composite bearings is based on 200 million linear inches of travel; 20 million for sintered bronze.

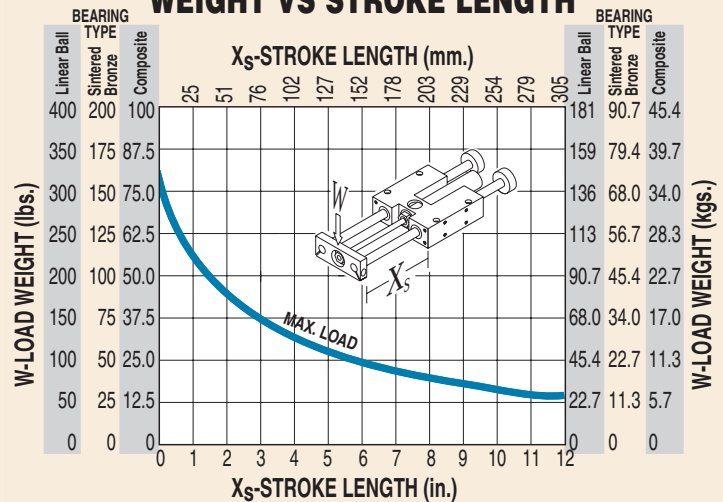
PERFORMANCE DATA

HB32 2" Bore

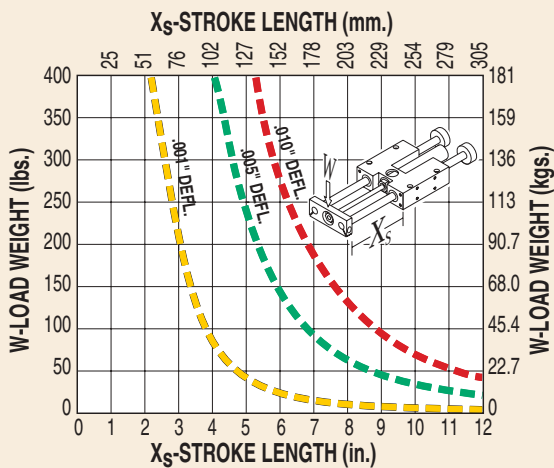
FORCE VS PRESSURE



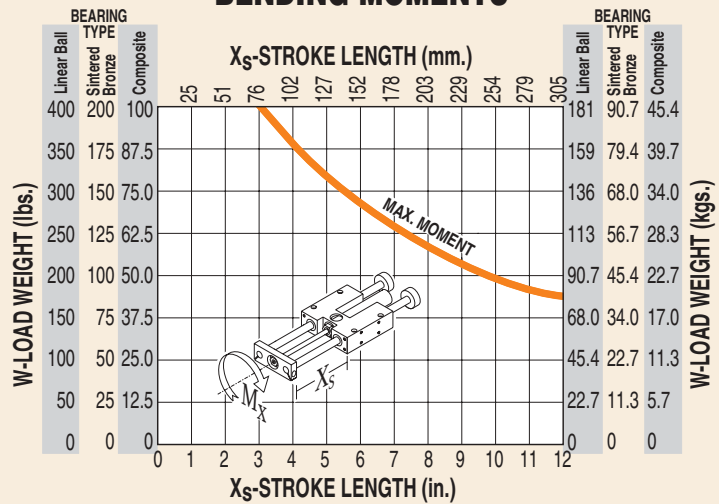
WEIGHT VS STROKE LENGTH



DEFLECTION



BENDING MOMENTS



FORCE VS. PRESSURE

NOTE: Force vs Pressure performance data applies to models with either linear ball, sintered bronze or composite bearings.

MAX. LOAD WEIGHT VS. STROKE LENGTH

Do not exceed Max. Load curve. (Deflection curves are provided for reference.)
Max. Load for linear ball and composite bearings is based on 200 million linear inches of travel; 20 million for sintered bronze bearings.

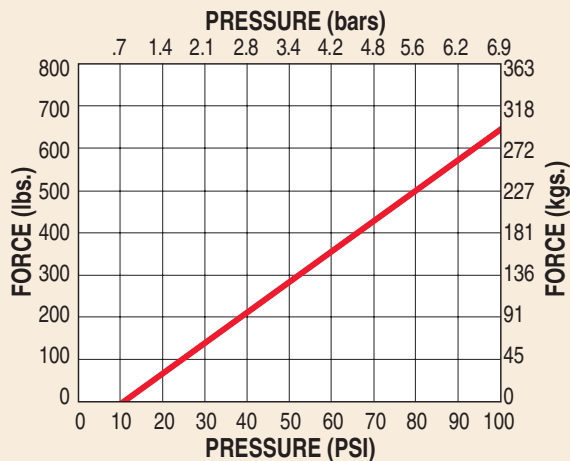
BENDING MOMENTS

Max. Moment for linear ball and composite bearings is based on 200 million linear inches of travel; 20 million for sintered bronze.

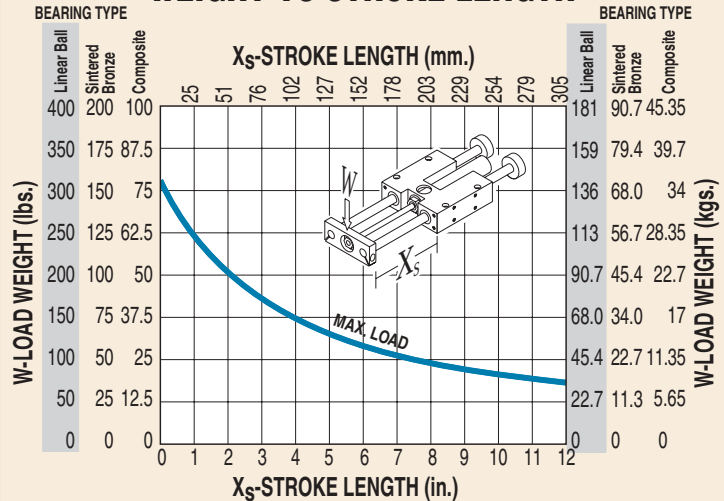
PERFORMANCE DATA

HB48 3" Bore

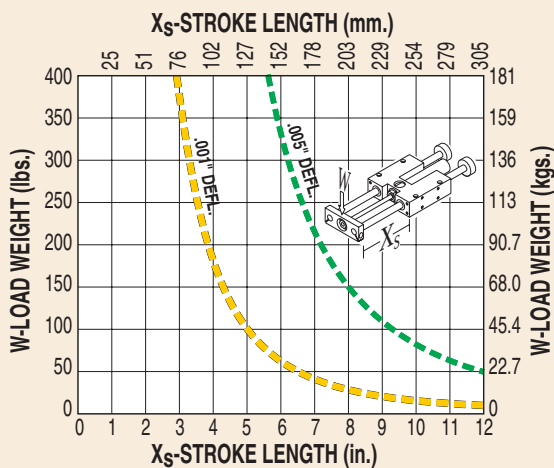
FORCE VS PRESSURE



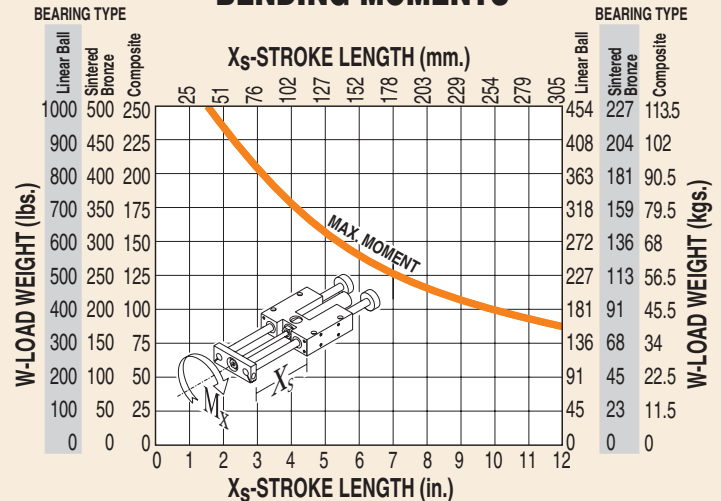
WEIGHT VS STROKE LENGTH



DEFLECTION



BENDING MOMENTS



FORCE VS. PRESSURE

NOTE: Force vs Pressure performance data applies to models with either linear ball or composite bearings.

MAX. LOAD WEIGHT VS. STROKE LENGTH

Do not exceed Max. Load curve. (Deflection curves are provided for reference.)
Max. Load for linear ball and composite bearings is based on 200 million linear inches of travel.

BENDING MOMENTS

Max. Moment for linear ball and composite bearings is based on 200 million linear inches of travel.

STOP COLLAR / BUMPER KITS

Stop Collar and Bumper Kits are available for most Tol-O-Matic rod cylinder slides. Bumpers are made of polyurethane and designed to prevent metal-to-metal contact and absorb impact shock. NOTE: All Bumpers are $\frac{1}{4}$ " thick which may require additional cylinder stroke length.

	HB	UB	CB	PB	PB2
Stop Collars	ST	OP	ST	OP	–
Bumpers	OP	OP	ST	OP	–

– Not Available OP Optional ST Standard

H-BLOCK

Stop Collars – *Standard feature*

Bumper Kit – *Optional feature*: contains 4 bumpers

U-BLOCK

Stop Collar Kit – *Optional feature*: contains 2 stop collars

Stop Collar / Bumper Kit – *Optional feature*: contains 4 bumpers and 2 stop collars

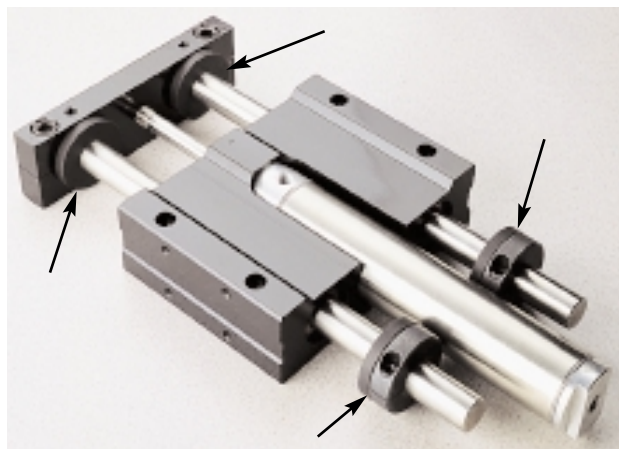
CHANNEL-BLOCK

Stop Collars and Bumpers – *Standard features*

POWER BLOCK

Internal Bumpers – *Standard feature*: for use on light inertia applications

Stop Collar / Bumper Kit – *Optional feature*: contains 2 stop collars and 2 bumpers



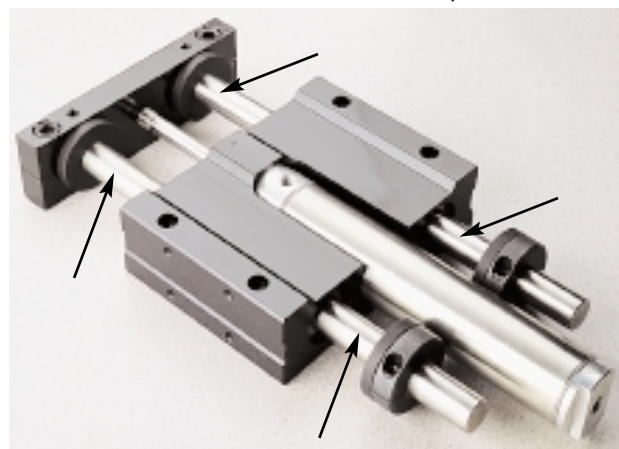
STAINLESS STEEL GUIDE SHAFTS

For the H-Block and U-Block Rod Cylinder Slides Stainless-Steel components can be ordered to replace the standard guide shafts, stop collars and fasteners, for use in applications where protection from corrosives is required.

Note: Use only composite bearings or sintered bronze bearings with stainless-steel guide shafts. *Linear bearings are not available with the stainless-steel shaft option.*

	HB	UB	CB	PB	PB2
SS Shafts	OP	OP	–	–	–

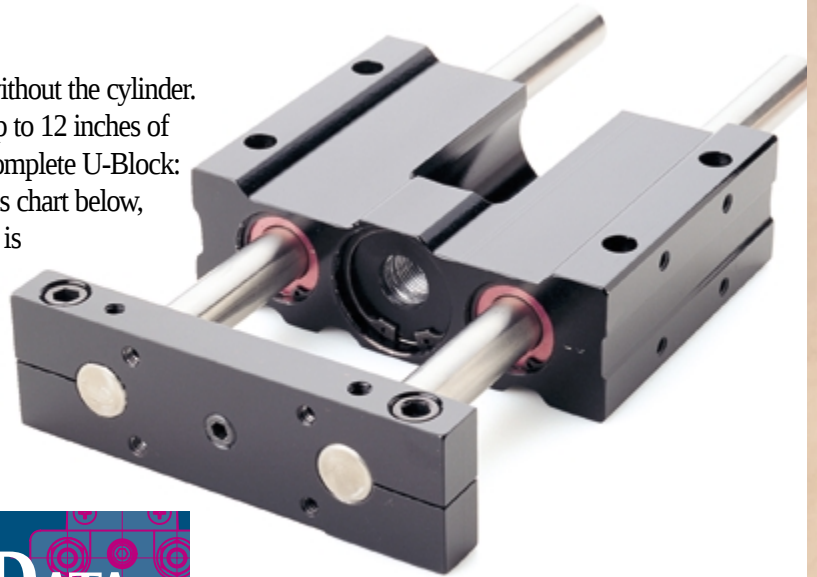
– Not Available OP Optional ST Standard



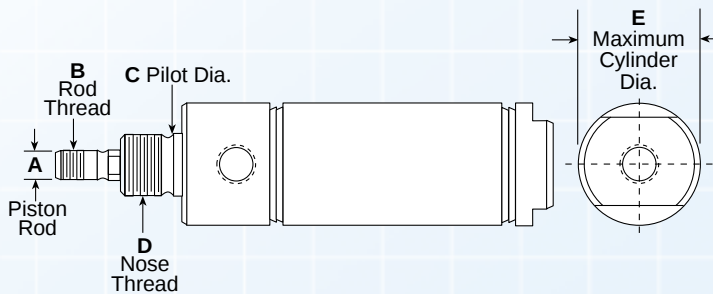
U-BLOCK KIT

The U-Block series is available in kit form, preassembled without the cylinder. Kits may be purchased in one-inch stroke increments, for up to 12 inches of stroke and are available in the same four bore sizes as the complete U-Block: $\frac{9}{16}$ ", $\frac{3}{4}$ ", $1\frac{1}{16}$ ", and $1\frac{1}{2}$ ". Check the air cylinder dimensions chart below, items A through E, to be sure the cylinder you intend to use is compatible with the U-Block kit you purchase. Most major manufacturers' cylinders meet these requirements and will easily install.

Use caution with cushioned cylinders as access to the cushion needle on cylinder rod end may not be possible once the cylinder is mounted into the slide.



DIMENSIONAL DATA



	HB	UB	CB	PB	PB2
U-Block Kit	-	OP	-	-	-

- Not Available OP Optional ST Standard

MODEL	A PISTON ROD DIA.	B ROD THREAD	C PILOT DIA.	D NOSE THREAD	E MAXIMUM CYL. DIA.
UBK09	.188	10-32 UNF	.437	7/16 - 20	.62
UBK12	.250	1/4-28 UNF	.625	5/8 - 18	.88
UBK17	.312	5/16-24 UNF	.625	5/8 - 18	1.34
UBK24	.437	7/16-20 UNF	.750	3/4 - 16	1.56

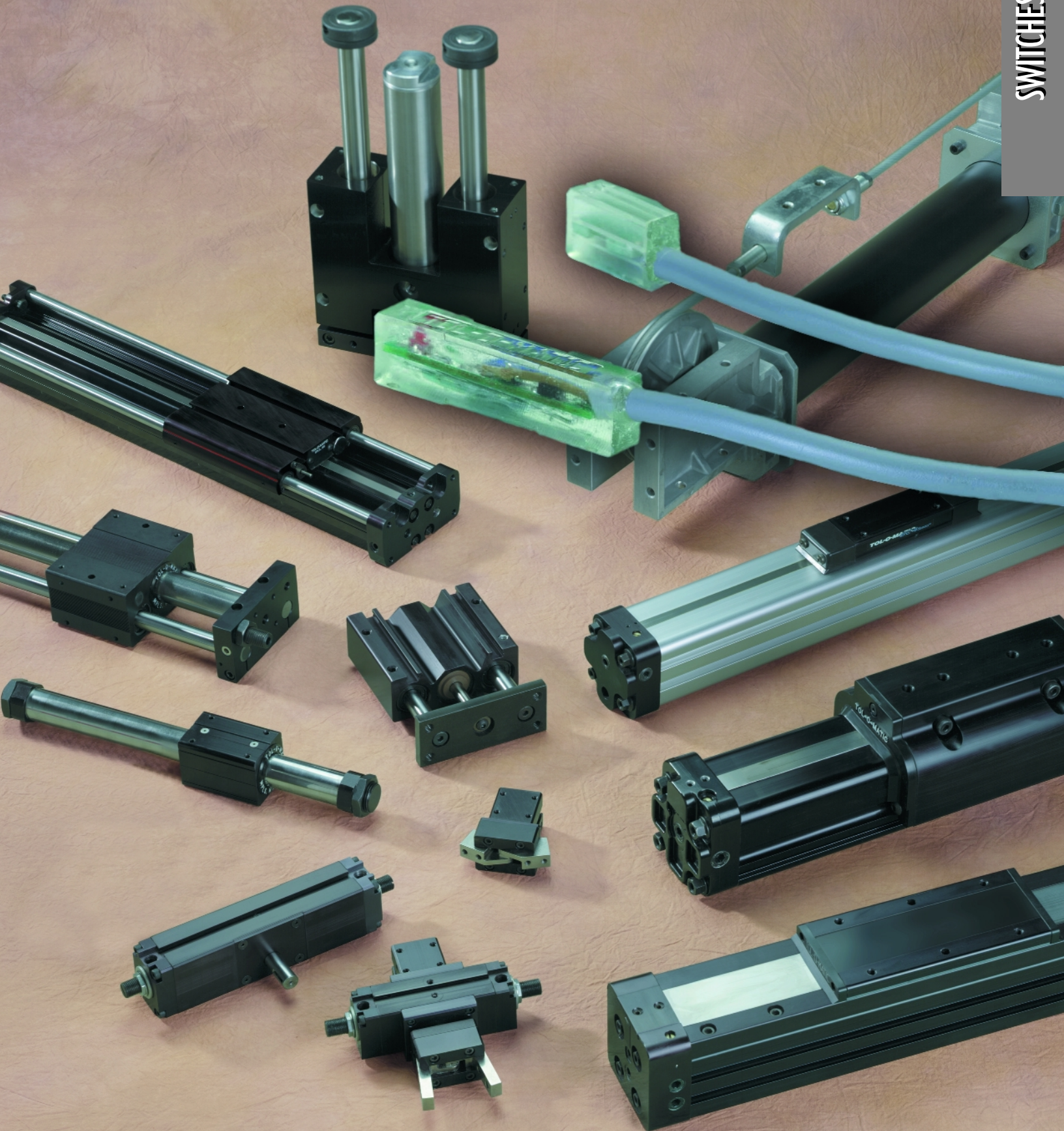
Dimensions in inches

MODEL	A PISTON ROD DIA.	B ROD THREAD	C PILOT DIA.	D NOSE THREAD	E MAXIMUM CYL. DIA.
UBK09	4.8	10-32 UNF	11.1	7/16-20	15.7
UBK12	6.4	1/4-28 UNF	15.9	5/8 - 18	22.4
UBK17	7.9	5/16-24 UNF	15.9	5/8 - 18	34.0
UBK24	11.1	7/16-20 UNF	19.1	5/8 - 18	39.6

Dimensions in millimeters

SWITCHES

SWITCHES



SWITCHES

**UNIVERSAL-MINI SWITCH
(HALL-EFFECT ONLY)**
See chart below



**UNIVERSAL SWITCH
(DC REED, HALL-EFFECT
& AC TRIAC)**

DC Reed Switches are designed for signalling end-of-stroke position to

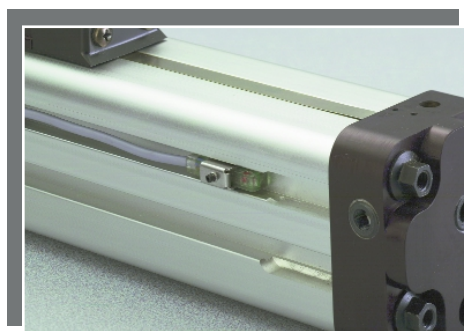
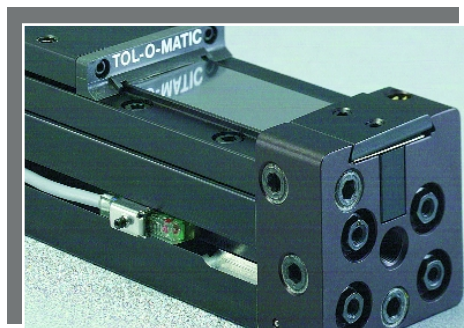
devices such as programmable controllers. They can be used to operate dc relays and solenoids if a protection circuit is used and if current and voltage limits are observed.



Hall-effect switches are available in either sinking type (NPN), or sourcing type (PNP). They are designed to signal devices such as programmable controllers, dc loads, and TTL or CMOS circuits.

AC Triac Reed Switches are designed for signalling end-of-stroke position to devices such as programmable controllers. They can be used to operate ac

relays and solenoids if a protection circuit is used and if current and voltage limits are observed.



UNIVERSAL SWITCH AVAILABILITY

ST - STANDARD FEATURE

OP - INDICATES AVAILABLE OPTION

- NOT AVAILABLE

Switch	BC2	BC3	BC4	B3S	BCB	BCS	CB	CC	GP	HB	LS	SLS	MG	MGS	PB	PB2	RA	UB
DC Reed	OP	OP	OP	OP	OP	OP	OP	OP ²	OP ³	OP	OP ⁵	OP ⁵	OP	OP	OP	OP	-	OP
AC Triac	OP	OP	OP	OP	OP	OP	OP	OP ²	OP ³	OP	OP ⁵	OP ⁵	OP	OP	OP	OP	-	OP
DC Hall-effect	OP ¹	OP	OP	OP	OP	OP	OP	-	OP ⁴	OP	OP ⁵	OP ⁵	OP	OP	OP	OP	-	OP
Universal-Mini Hall-effect	-	-	-	-	-	-	-	-	OP ⁴	-	-	-	-	-	-	-	OP	-
Magnet	OP	ST	ST	ST	OP	OP	OP	OP	OP	OP	OP	OP	ST	ST	OP	ST	OP	OP

¹ Not available on BC205

² Not available for 3/8", 5/8" and 1" Grippers

⁵ Requires Rail

³ Not available with steel tubes

⁴ Universal-Mini available for 3/8", 5/8" and 1" Grippers

QUICK-DISCONNECT COUPLERS

Quick-disconnect couplers are available for all switches with shielded* cables in 5m (16.4 ft.) lengths. These couplers allow switches to be removed quickly and easily. Switch includes one male-end coupler (hard wired to switch) and one female-end coupler with additional cable for in-line splice. Replacement switch with hard-wired male-end connector is available as a service part.

NOTE: Quick-disconnect coupler is positioned 6" (152mm) from the sensor.

*See switch note page 19



SWITCH PERFORMANCE

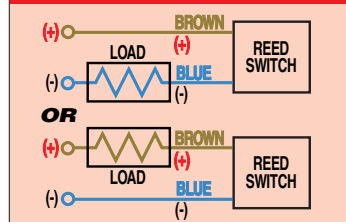
REED SWITCHES

See the following pages for mounting dimensions.

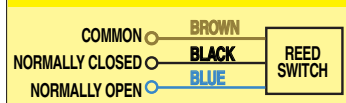
NOTE: All Reed switch codes that incorporate the QUICK-DISCONNECT COUPLER feature have SHIELDED cable from the female quick-disconnect coupler to the flying leads. Shield should be terminated at flying lead end. Switch cable is UNSHIELDED for Reed switch option codes that DO NOT incorporate the Quick-disconnect feature. Reed switches can be used to operate relays and solenoids if a protection circuit is used and if current, wattage and voltage limits are observed. (Call the factory for more information.)

NOT AVAILABLE FOR ROTARY ACTUATORS, GP_038, GP_063, GP_100

REED SWITCH, FORM A WIRING DIAGRAM



REED SWITCH, FORM C WIRING DIAGRAM



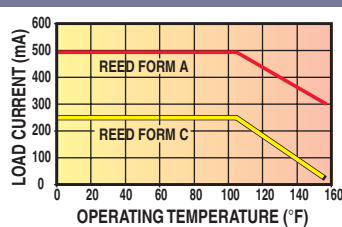
PERFORMANCE DATA

DC REED SWITCH SPECIFICATIONS

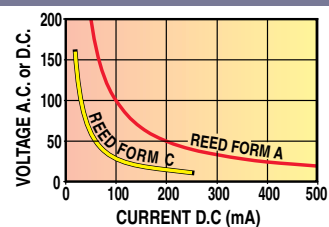
SPECS	REED SWITCH – FORM A	REED SWITCH – FORM C
CONTACTS	Single-pole, single-throw, normally open	Single-pole, double-throw, normally-open / normally-closed
CONTACT RATING	10 Watts, maximum current 500mA (not to exceed 10VA) (Refer to Temperature vs. Current and Voltage Derating charts.)	3 Watts, maximum current 250mA (not to exceed 3VA) (Refer to Temperature vs. Current and Voltage Derating charts.)
INPUT VOLTAGE	200Vdc maximum	120Vdc maximum
RESISTANCE	0.1Ω Initial (Maximum)	0.1Ω Initial (Maximum)
RELEASE TIME	1.0 msec. maximum	1.0 msec. maximum
OPERATING TIME	0.6 msec. maximum (including bounce)	0.7 msec. maximum (including bounce)
OPERATING TEMP.	-40° F (-40° C) to 158° F (70° C)	-40° F (-40° C) to 158° F (70° C)
INDICATOR	Red LED lit when 4mA min. flows through contacts	None
*LIFE EXPECTANCY	Up to 200,000,000 cycles (depending on load current, duty cycle and environmental conditions)	Up to 200,000,000 cycles (depending on load current, duty cycle and environmental conditions)
CABLE	5 meter with PVC jacket 2m or 5m Quick-Disconnect with PVC jacket	5 meter with PVC jacket 2m or 5m Quick-Disconnect with PVC jacket
VOLTAGE DROP	2.6V typical @ 100mA	NA

* Data available from manufacturer.

TEMPERATURE vs CURRENT



VOLTAGE DERATING

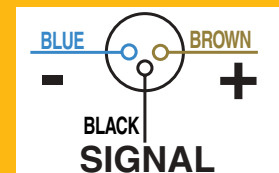


This chart is a quick reference to help select the correct Tol-O-Matic switch to use in your application. See the specifications for each switch to confirm your choice.

REQUIREMENTS	S W I T C H				
	Reed Form C	Reed Form A	Triac Reed	Hall-effect Sinking	Hall-effect Sourcing
AC			•		
DC	•	•		•	•
Mechanical Switch	•	•	•		
Solid State Switch (Zero Bounce)				•	•
Input-Programmable Controller	•	•	•	•	•
Coil Direct	•	•	•		
Longest Life				•	•
Reverse Polarity Protection	•	•	•	•	•

An Important Note Regarding Field Retrofit of Quick-Disconnect Couplers: If replacing a Quick-Disconnect switch manufactured before 7-1-97 it will also be necessary to replace or rewire the female-end coupler with the in-line splice.

CURRENT – Quick-Disconnect Wiring



OLD – Quick-Disconnect Wiring



SWITCH PERFORMANCE

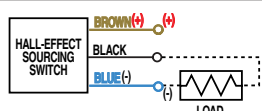
DC HALL-EFFECT SWITCHES

Refer to next pages for mounting data.

NOTE: All Hall-effect switch codes that incorporate the QUICK-DISCONNECT COUPLER feature have SHIELDED cable from the female quick-disconnect coupler to the flying leads. Shield should be terminated at flying lead end. Switch cable is UNSHIELDED for Hall-effect switch option codes that DO NOT incorporate the Quick-disconnect feature.

NOT AVAILABLE FOR CABLE CYLINDERS, BC205

HALL-EFFECT SOURCING (PNP) SWITCH WIRING DIAGRAM



HALL-EFFECT SINKING (NPN) SWITCH WIRING DIAGRAM



PERFORMANCE DATA

DC HALL-EFFECT SWITCH SPECIFICATIONS

SPECIFICATIONS	HALL-EFFECT SOURCING	HALL-EFFECT SINKING
INPUT VOLTAGE	5 to 25 Vdc	5 to 25 Vdc
OUTPUT	Open collector transistor switch	Open collector transistor switch
OUTPUT RATING	25 Vdc, 200mA dc	25 Vdc, 200mA dc
ON TRIP POINT	150 Gauss maximum	150 Gauss maximum
OFF TRIP POINT	40 Gauss minimum	40 Gauss minimum
OPERATING TEMP.	0° F (-18° C) to 150° F (66° C)	0° F (-18° C) to 150° F (66° C)
OPERATING SPEED	< 10 micro sec.	< 10 micro sec.
INDICATOR*	Red LED lit when sensor is activated	Red LED lit when sensor is activated
CABLE	5 meter with PVC jacket 2m or 5m Quick-Disconnect with PVC jacket	5 meter with PVC jacket 2m or 5m Quick-Disconnect with PVC jacket

*NOTE: Mini-style Universal Hall-effect switches do not have an L.E.D.

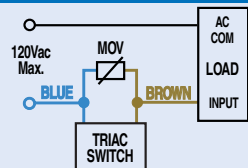
AC TRIAC REED SWITCHES

See next pages for mounting dimensions.

NOTE: All Reed switch codes that incorporate the QUICK-DISCONNECT COUPLER feature have SHIELDED cable from the female quick-disconnect coupler to the flying leads. Shield should be terminated at flying lead end. Switch cable is UNSHIELDED for Reed switch option codes that DO NOT incorporate the Quick-disconnect feature. Reed switches can be used to operate relays and solenoids if a protection circuit is used and if current, wattage and voltage limits are observed. (Call the factory for more information.)

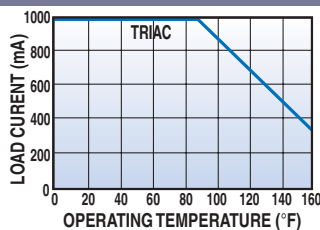
NOT AVAILABLE FOR ROTARY ACTUATORS, GP_038, GP_063, GP_100

TRIAC REED SWITCH WIRING DIAGRAM



PERFORMANCE DATA

TEMPERATURE vs CURRENT



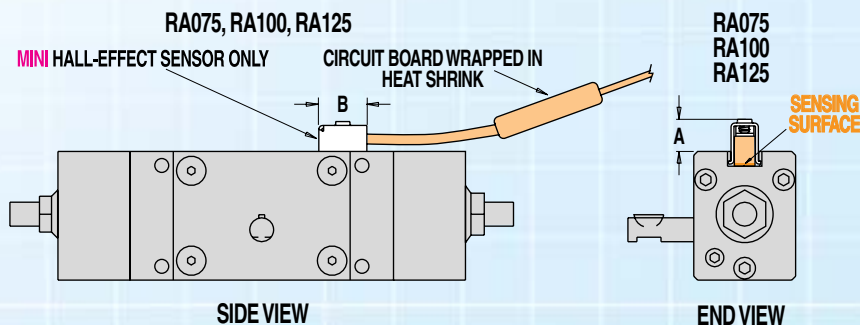
* Data available from manufacturer.

AC TRIAC REED SWITCH SPECIFICATIONS

SPECIFICATIONS	TRIAC SWITCH
CONTACTS	Single-pole, single-throw, normally open
INPUT VOLTAGE	120Vac maximum
FREQUENCY	47 - 63 Hz
CONTINUOUS CURRENT	1 Amp at 86° F (30° C); 0.5 Amp at 140° F (60° C)
PEAK SURGE CURRENT	10 Amp
OPERATING TEMP.	-40° F (-40° C) to 158° F (70° C)
INDICATOR	None
LIFE EXPECTANCY*	Up to 200,000,000 cycles (depending on load current, duty cycle and environmental conditions)
CABLE	5 meter with PVC jacket 2m or 5m Quick-Disconnect with PVC jacket

NOTE: THE SCORED FACE OF THE SWITCH INDICATES THE SENSING SURFACE AND MUST FACE TOWARD THE MAGNET

RACK & PINION ROTARY ACTUATORS



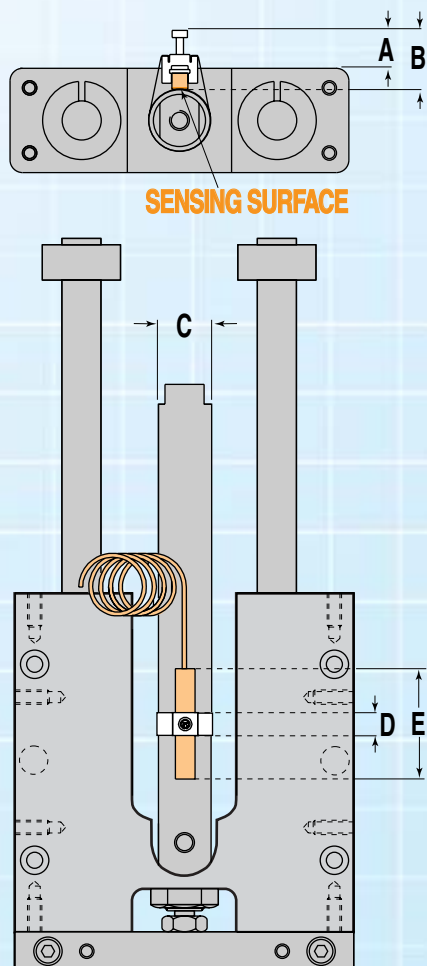
MODEL	BORE	A	B
RA075	0.75	.34	.50
RA100	1.00	.34	.50
RA125	1.25	.32	.50

Above dimensions in inches

MODEL	BORE	A	B
RA075	0.75"	8.51	12.70
RA100	1.00"	8.51	12.70
RA125	1.25"	8.18	12.70

Above dimensions in millimeters

H-Block Rod CYLINDER SLIDE



MODEL	BORE	A	B	C	D	E
HB09	0.563	0.69	0.85	0.62	0.37	1.25
HB12	0.750	0.66	0.85	0.81	0.37	1.25
HB17	1.063	0.63	0.85	1.12	0.37	1.25
HB24	1.500	0.66	0.85	1.56	0.37	1.25
HB32	2.000	0.49	0.85	2.08	0.37	1.25
HB48	3.000	0.65	0.85	3.16	0.37	1.25

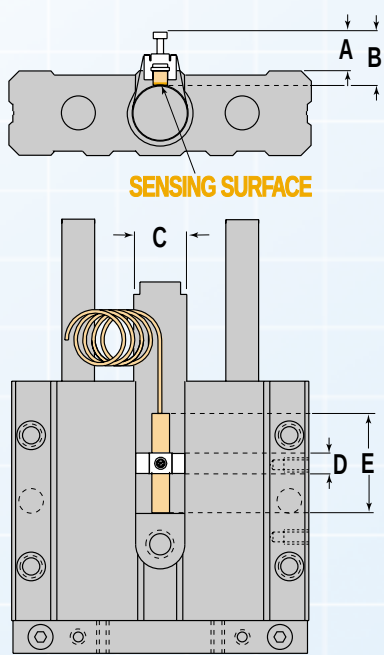
Above dimensions in inches

MODEL	BORE	A	B	C	D	E
HB09	0.563"	17.40	21.59	15.75	9.40	31.75
HB12	0.750"	16.64	21.59	20.57	9.40	31.75
HB17	1.063"	16.00	21.59	28.45	9.40	31.75
HB24	1.500"	16.83	21.59	39.62	9.40	31.75
HB32	2.000"	12.45	21.59	52.83	9.40	31.75
HB48	3.000"	16.51	21.59	80.26	9.40	31.75

Above dimensions in millimeters

SWITCH MOUNTING

U-Block Rod CYLINDER SLIDE



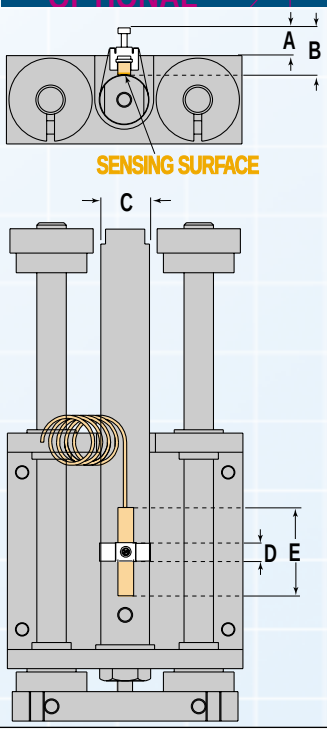
MODEL	BORE	A	B	C	D	E
UB09	0.563	0.69	0.85	0.62	0.37	1.25
UB12	0.750	0.68	0.85	0.81	0.37	1.25
UB17	1.063	0.65	0.85	1.12	0.37	1.25
UB24	1.500	0.68	0.85	1.56	0.37	1.25

Above dimensions in inches

MODEL	BORE	A	B	C	D	E
UB09	0.563"	17.40	21.59	15.75	9.40	31.75
UB12	0.750"	17.15	21.59	20.57	9.40	31.75
UB17	1.063"	16.51	21.59	28.45	9.40	31.75
UB24	1.500"	17.34	21.59	39.62	9.40	31.75

Above dimensions in millimeters

CHANNEL-BLOCK Rod CYLINDER SLIDE



MODEL	BORE	A	B	C	D	E
CB09	0.563	0.60	0.85	0.62	0.37	1.25
CB12	0.750	0.51	0.85	0.81	0.37	1.25
CB17	1.063	0.48	0.85	1.12	0.37	1.25

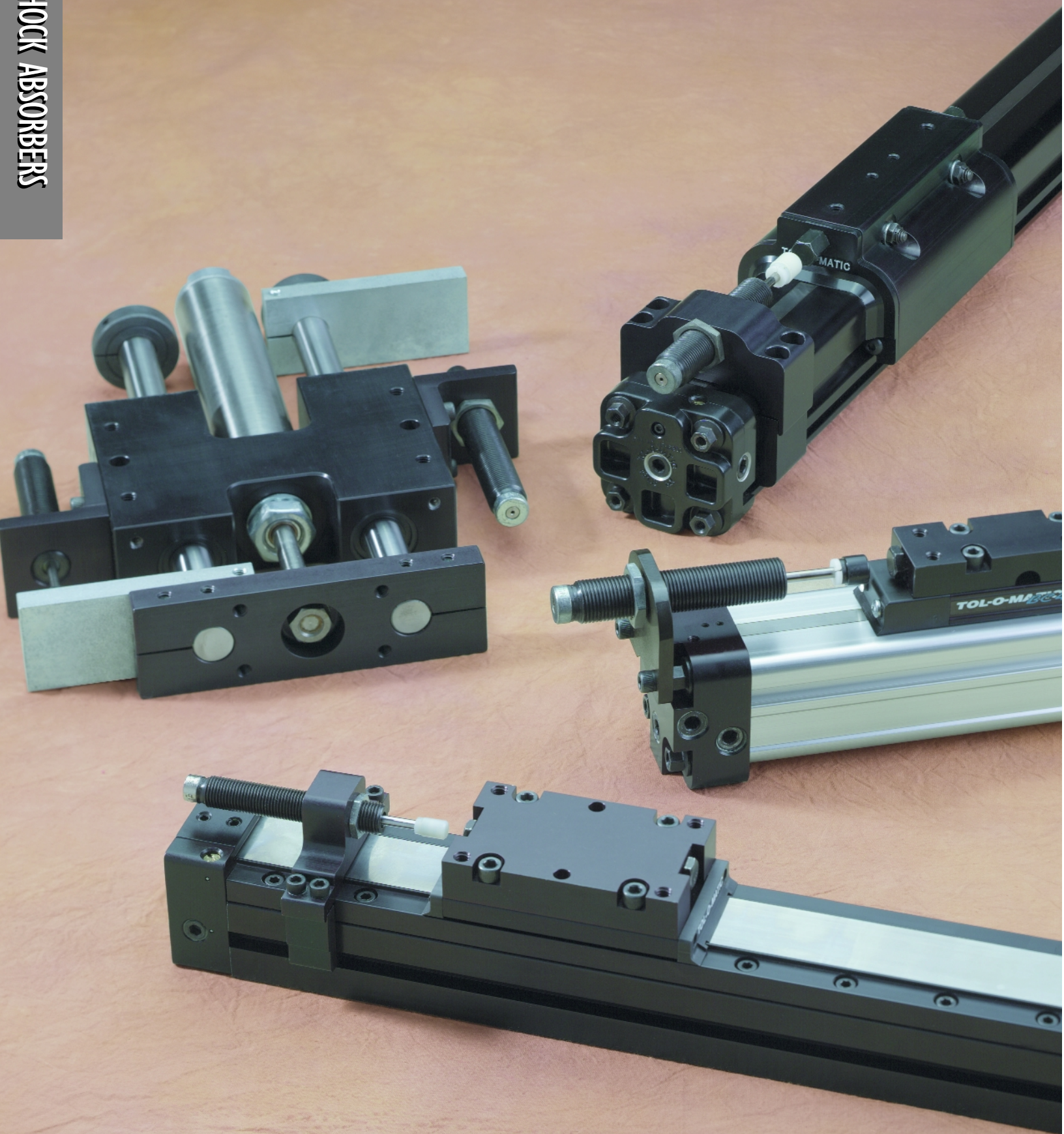
Above dimensions in inches

MODEL	BORE	A	B	C	D	E
CB09	0.563"	15.18	21.59	15.75	9.40	31.75
CB12	0.750"	12.83	21.59	20.57	9.40	31.75
CB17	1.063"	12.07	21.59	28.45	9.40	31.75

Above dimensions in millimeters

SHOCK ABSORBERS

SHOCK ABSORBERS



SHOCK ABSORBERS

ADVANTAGES OF SHOCK ABSORBERS:

- Increases operating speed
- Smoother deceleration
- Self-compensates for load changes
- Minimizes shock load to equipment
- Reduces equipment maintenance
- Higher equipment productivity

H-BLOCK SHOCK ABSORBER



Shock absorbers can be ordered for the H-Block rod cylinder slide for high inertia applications. Designed for reversible mounting in either extended or retractable positions, these shocks will increase life and broaden the application range of any H-Block model you choose.

NOTE: For H-Block shocks (both extending and retracting shock absorption), specify a quantity of “2”. H-Blocks specified with single shock absorber will be mounted for the extending stroke

Typical shock absorber life varies between 1-2 million cycles (depending on environment) appropriate preventative maintenance should be considered in high cyclic applications.

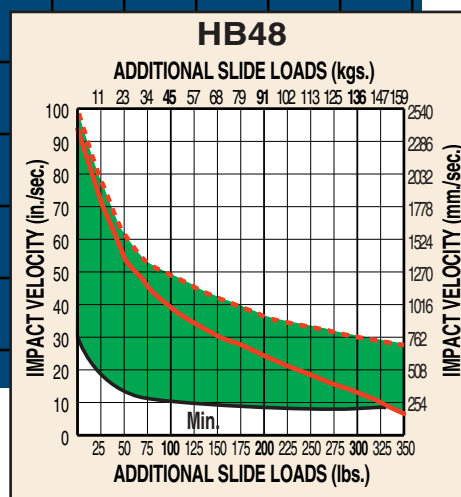
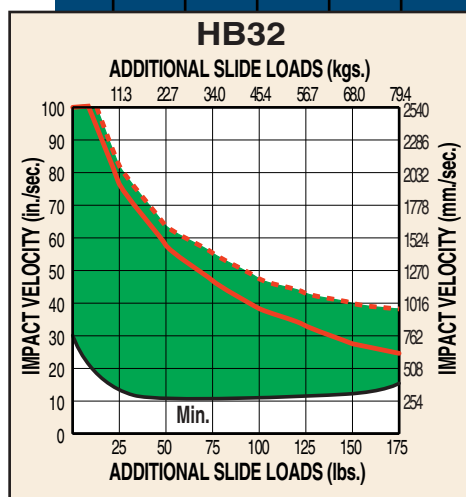
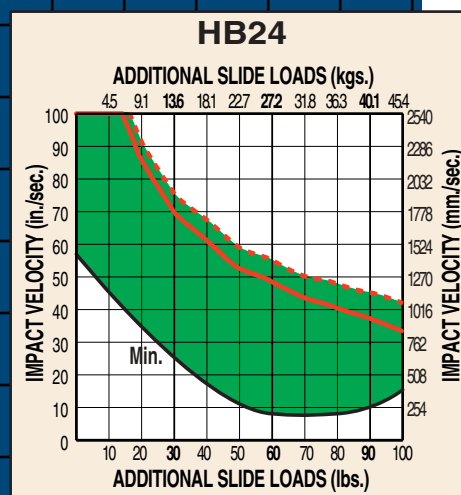
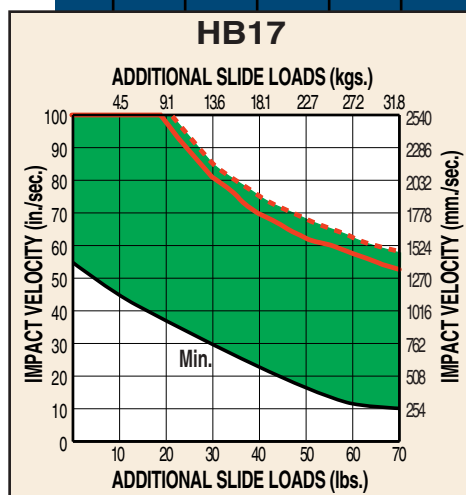
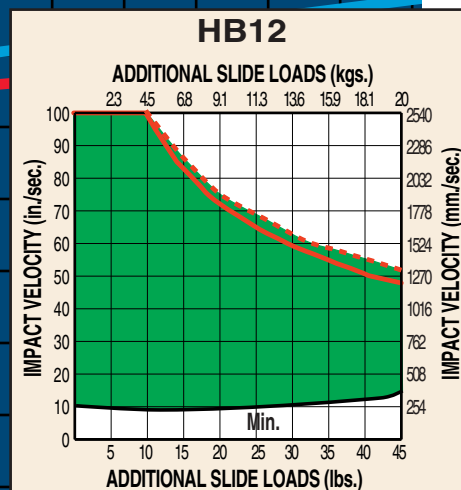
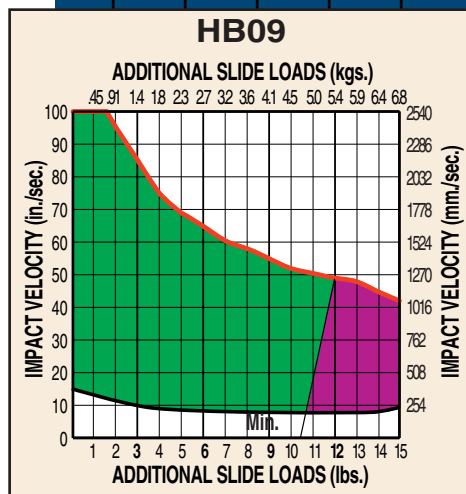
LOAD DECELERATION / SHOCK ABSORBER OPTIONS

	INTERNAL AIR CUSHION	EXTERNAL BUMPERS	END-OF-STROKE SHOCK ABSORBERS	ADJUSTABLE POSITION SHOCK ABSORBERS	MAXIMUM CYCLES PER HOUR
HB09	–	OP	OP	–	2000
HB12	–	OP	OP	–	1775
HB17	–	OP	OP	–	1775
HB24	–	OP	OP	–	1000
HB32	–	OP	OP	–	1000
HB48	–	OP	OP	–	1000

– Not Available OP Optional ST Standard

HB SHOCK ABSORBERS

PERFORMANCE DATA H-BLOCK SHOCKS



LITE DUTY (Light load/High velocity)

HEAVY DUTY (Heavy load/Low velocity)

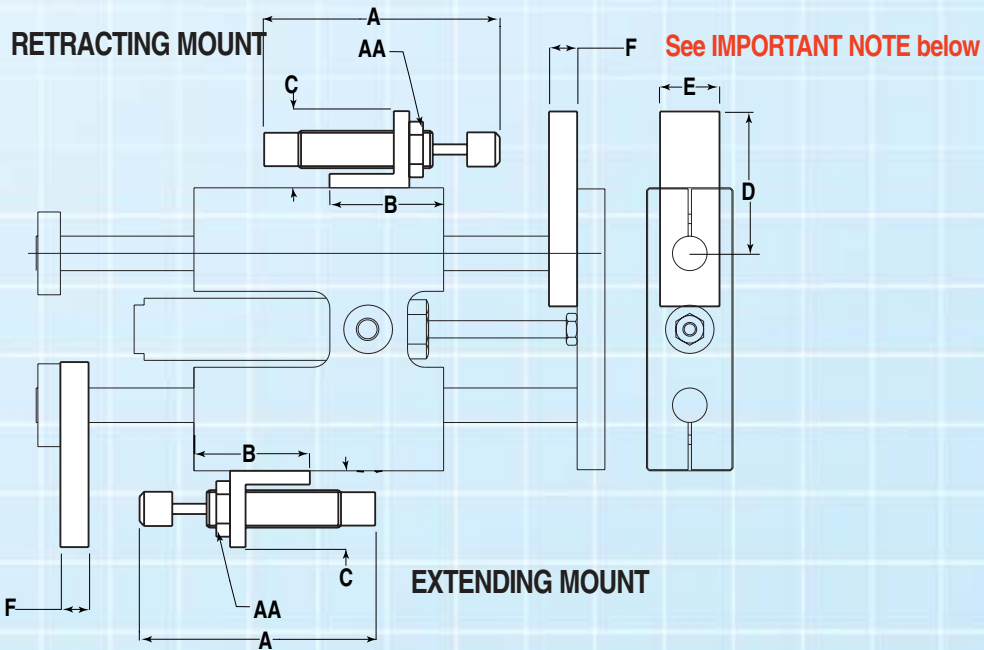
Horizontal Max. Vel.

NOTE: If final (or impact) velocity cannot be calculated directly, a reasonable guideline to use is 2 x average velocity.

Vertical Max. Vel.

HB SHOCK ABSORBERS

DIMENSIONAL DATA H-BLOCK SHOCKS



H-BLOCK											
MODEL NO.	BORE SIZE	STROKE	SHOCK LENGTH A	MOUNT LOCATION B	MOUNT HEIGHT C	STOP HEIGHT D	STOP WIDTH E	SHOCK BODY AA	KIT NUMBER	THICKNESS F	KIT WEIGHT (OZ.)
HB09	9/16"	.41	2.74	1.16	1.25	2.16	.88	7/16-28UNEF	23099025 [§] 23099026**	.50	6.2
HB12	3/4"	.63	4.25	1.16	1.25	2.50	1.00	9/16-18UNF	23129025 [§]	.50	7.3
HB17	1-1/16"	.88	5.38	1.29	1.25	2.38	1.25	3/4-16UNF	23179026 [§]	.50	22.9
HB24	1-1/2"	.88	5.38	1.63	2.00	3.24	1.75	3/4-16UNF	23249025 [§]	.50	22.9
HB32	2"	1.00	5.75	1.63	1.50	3.50	2.25	1-12UNF	23329025 [§]	.50	30.9
HB48	3"	1.00	5.66	1.63	1.75	4.12	3.00	1 1/4-12UNF	23489025 [§]	.50	42.9

Above Dimensions in Inches

H-BLOCK											
MODEL NO.	BORE SIZE	STROKE	SHOCK LENGTH A	MOUNT LOCATION B	MOUNT HEIGHT C	STOP HEIGHT D	STOP WIDTH E	SHOCK BODY AA	KIT NUMBER	THICKNESS F	KIT WEIGHT (KGS.)
HB09	9/16"	10.4	69.6	29.5	31.8	54.9	22.4	7/16-28UNEF	23099025 [§] 23099026**	12.7	0.18
HB12	3/4"	16.0	108.0	29.5	31.8	63.5	25.4	9/16-18UNF	23129025 [§]	12.7	0.21
HB17	1-1/16"	22.4	136.7	32.8	31.8	60.5	31.8	3/4-16UNF	23179026 [§]	12.7	0.65
HB24	1-1/2"	22.4	136.7	41.4	50.8	82.3	44.5	3/4-16UNF	23249025 [§]	12.7	0.65
HB32	2"	25.4	146.1	41.4	38.1	88.9	57.2	1-12UNF	23329025 [§]	12.7	0.88
HB48	3"	25.4	143.8	41.4	44.5	104.6	76.2	1 1/4-12UNF	23489025 [§]	12.7	1.22

Above Dimensions in Millimeters

* Measured shock is fully compressed.
[§] Light duty (see application graph)
 ** Heavy duty (see application graph)

IMPORTANT NOTE: Shock stop will reduce overall stroke by dimension "F" for each shock absorber.

H-BLOCK - ORDERING

CONFIGURATOR EXAMPLE

MODEL, BORE, STROKE, AND BEARING

1.	2.	3.	4.
H B	1 7	S K 0 9	S B

ACCESSORIES AND OPTIONS

5.	6.	7.
T T 1		S L 1

The above example describes a H-Block Rod Cylinder Slide with a 1 1/4" bore, a stroke length of 9.0* inches and sintered bronze bearings. Options include one Hall-effect (sourcing) switch with 5 meter lead, foot plate, and one light duty shock. (No proximity sensors are desired.)

*Actual stroke is 8"; optional foot plate reduces stroke by 1/2", one (1) shock stop reduces stroke by 1/2".

Boxes above represent the number of fields available for each section and not all of them will be used in every application. Omit empty boxes when you construct your configurator number (placeholders are not required). For the above example, the order string as it is typed would appear as follows:

HB17SK09SBTT1FPSL1.

1. MODEL TYPE

Enter:

HB for H-Block rod cylinder slide

HBSS for H-Block rod cylinder slide Stainless-Steel¹

¹Stainless-steel version, shafts and fasteners only

2. CYLINDER BORE DIAMETER

Enter:

09 for 9/16" **12** for 3/4" **17** for 1 1/16"

24 for 1 1/2" **32** for 2" **48** for 3"

3. STROKE LENGTH

Enter:

SK then required stroke length in **inches**
from 01 to 12 in 1" increments

Example: SK09 for 9.0 inch stroke

4. BEARING TYPE

Enter:

²**LB** for linear bearings **SB** for sintered bronze

CB for composite bearings

²Not available on stainless-steel models

5. SWITCHES

Enter:

BT for Form C Reed Switch 5-meter lead.

BM for Form C Reed Switch 5-meter lead Quick-disconnect

RT for Form A Reed Switch 5-meter lead.

RM for Form A Reed Switch 5-meter lead Quick-disconnect

CT for AC Triac Reed Switch 5-meter lead

CM for AC Triac Reed Switch 5-meter lead Quick-disconnect

KT for Hall-Effect (Sinking) 5-meter lead

KM for Hall-Effect (Sinking) 5-meter lead Quick Disconnect

TT for Hall-Effect (Sourcing) 5-meter lead

TM for Hall-Effect (Sourcing) 5-meter lead Quick Disconnect

Then enter:

The number of Switches required.

NOTE: Switch magnet is included standard on all H-Block rod cylinder slides.

6. ³ BUMPER KIT (4 BUMPERS)

Enter:

BP for Bumper Kit

³**NOTE:** Bumpers will reduce overall stroke by .5"

7. SHOCK ABSORBERS

Enter:

SL for light duty shock absorber (Light Duty)

SH for heavy duty shock absorber (Heavy Duty) **HB09 only**

SD for shock hardware

number of shock kits in the third box

Leave blank if no shock absorbers are required.

When ordering one shock absorber it will be mounted for extending stroke

⁵**NOTE:** Shock Stop will reduce overall stroke



For the available field retrofit options and accessories, refer to kit listings on page 30 for part numbers.

U-BLOCK - ORDERING

CONFIGURATOR EXAMPLE

MODEL, BORE, STROKE, AND BEARING

1.	2.	3.	4.
U B S S	0 9	S K 0 9	C B

ACCESSORIES AND OPTIONS

5.	6.	7.
R U 2		B P

The above example describes a U-Block Rod Cylinder Slide with stainless-steel shafting and fasteners with a $\frac{9}{16}$ " bore size with a stroke of 9.0* inches and composite bearings. Options include two quick-disconnect reed switches and stainless-steel bumper/collar kit.

*Actual stroke is 8 $\frac{1}{2}$ "; optional bumpers reduces stroke by $\frac{1}{2}$ ".

Boxes above represent the number of fields available for each section and not all of them will be used in every application. Omit empty boxes when you construct your configurator number (placeholders are not required). For the above example, the order string as it is typed would appear as follows: **UBSS09SK09CBRU2BP**.

1. MODEL TYPE

Enter:

- UB** for U-Block rod cylinder slide
 - UBK** for U-Block Kit (Without Cylinder)
 - UBSS** for U-Block rod cylinder slide stainless-steel¹
 - UBKSS** for U-Block Kit Stainless-Steel¹ (Without Cylinder)
- ¹ Stainless-steel version, shafts and fasteners only

2. CYLINDER BORE DIAMETER

Enter:

- 09** for $\frac{9}{16}$ " **12** for $\frac{3}{4}$ "
- 17** for $1\frac{1}{16}$ " **24** for $1\frac{1}{2}$ "

3. STROKE LENGTH

Enter:

- SK** then required stroke length in **inches**
- from 01 to 12 in 1" increments
- Example:** SK09 for 9.0 inch stroke

4. BEARING TYPE

Enter:

- ²**LB** for linear bearings
 - SB** for sintered bronze
 - CB** for composite bearings
- ²Not available on stainless-steel models

*For Assistance Call
1-800-328-2174
(Toll Free U.S. and Canada)
or
763-478-8000
Fax 763-478-8080*

5. SWITCHES³

Enter:

- BT** for Form C Reed Switch 5-meter lead.
 - BU** for Form C Reed Switch 2-meter lead Quick-disconnect
 - BM** for Form C Reed Switch 5-meter lead Quick-disconnect
 - RT** for Form A Reed Switch 5-meter lead.
 - RU** for Form A Reed Switch 2-meter lead Quick-disconnect
 - RM** for Form A Reed Switch 5-meter lead Quick-disconnect
 - CT** for AC Triac Reed Switch 5-meter lead
 - CU** for AC Triac Reed Switch 2-meter lead Quick-disconnect
 - CM** for AC Triac Reed Switch 5-meter lead Quick-disconnect
 - KT** for Hall-Effect (Sinking) 5-meter lead
 - KU** for Hall-Effect (Sinking) 2-meter lead Quick Disconnect
 - KM** for Hall-Effect (Sinking) 5-meter lead Quick Disconnect
 - TT** for Hall-Effect (Sourcing) 5-meter lead
 - TU** for Hall-Effect (Sourcing) 2-meter lead Quick Disconnect
 - TM** for Hall-Effect (Sourcing) 5-meter lead Quick Disconnect
- Place the **number** of SWITCHES in the third box
For **MAGNET ONLY** configuration, enter any of the above switch designators (i.e. "TT") followed by zero (0).

³Not available on UBK Models

6. COLLAR KIT⁴ (2 COLLARS)

Enter:

- CK** for Stop Collar Kit
- ⁴(Stop Collars will be stainless-steel when ordering "SS" Models.)

7. BUMPER/COLLAR KIT^{5,6} (4 BUMPERS, 2 COLLARS)

Enter:

- BP** for Bumper/ Collar Kit
- ⁵(Stop Collars will be stainless-steel when ordering "SS" Models.)
***NOTE: Bumpers will reduce overall stroke by .5"**

When ordered with any actuator, all options and accessories listed will be factory installed unless specified. For special model and option requirements not shown, consult Tol-O-Matic, Inc.

For the available field retrofit options and accessories, refer to kit listings on page 30 for part numbers.

CHANNEL-BLOCK ORDERING

CONFIGURATOR EXAMPLE

MODEL, BORE, AND STROKE				ACCESSORIES AND OPTIONS		
1.	2.	3.		4.		
C	B	1	2	S	K	0
				8	R	U
						2

The above example describes a Channel-Block Rod Cylinder Slide with a $\frac{3}{4}$ " bore size with a stroke of 8.0 inches and sintered bronze bearings. Options include one quick-disconnect reed switch.

Boxes above represent the number of fields available for each section and not all of them will be used in every application. Omit empty boxes when you construct your configurator number (placeholders are not required). For the above example, the order string as it is typed would appear as follows: **CB12SK08RU1**.

1. MODEL TYPE

Enter:

CB for Channel-Block rod cylinder slide

2. CYLINDER BORE DIAMETER

Enter:

09 for $\frac{9}{16}$ "

12 for $\frac{3}{4}$ "

17 for $1\frac{1}{16}$ "

3. STROKE LENGTH

Enter:

SK then required stroke length in **inches**:
from 01 to 12 in 1" increments

Example: **SK09** for 9.0 inch stroke

When ordered with any actuator, all options and accessories listed will be factory installed unless specified. For special model and option requirements not shown, consult Tol-O-Matic, Inc.

5. SWITCHES

Enter:

BT for Form C Reed Switch 5-meter lead.

BU for Form C Reed Switch 2-meter lead Quick-disconnect

BM for Form C Reed Switch 5-meter lead Quick-disconnect

RT for Form A Reed Switch 5-meter lead.

RU for Form A Reed Switch 2-meter lead Quick-disconnect

RM for Form A Reed Switch 5-meter lead Quick-disconnect

CT for AC Triac Reed Switch 5-meter lead

CU for AC Triac Reed Switch 2-meter lead Quick-disconnect

CM for AC Triac Reed Switch 5-meter lead Quick-disconnect

KT for Hall-Effect (Sinking) 5-meter lead

KU for Hall-Effect (Sinking) 2-meter lead Quick disconnect

KM for Hall-Effect (Sinking) 5-meter lead Quick disconnect

TT for Hall-Effect (Sourcing) 5-meter lead

TU for Hall-Effect (Sourcing) 2-meter lead Quick disconnect

TM for Hall-Effect (Sourcing) 5-meter lead Quick disconnect

Place the **number** of **SWITCHES** in the third box

For **MAGNET ONLY** configuration, enter any of the

above switch designators (i.e. "TT") followed by zero (0).

For the available field retrofit options and accessories, refer to kit listings on page 30 for part numbers.

HB/UB/CB FIELD RETROFIT

Switch Kits (all models)

SWITCH CODES ¹	
BT	Form C Reed Switch 5-meter lead.
BU	Form C Reed Switch 2-meter lead Quick-disconnect
BM	Form C Reed Switch 5-meter lead Quick-disconnect
RT	Form A Reed Switch 5-meter lead.
RU	Form A Reed Switch 2-meter lead Quick-disconnect
RM	Form A Reed Switch 5-meter lead Quick-disconnect
CT	AC Triac Reed Switch 5-meter lead
CU	AC Triac Reed Switch 2-meter lead Quick-disconnect
CM	AC Triac Reed Switch 5-meter lead Quick-disconnect
KT	Hall-Effect (Sinking) 5-meter lead
KU	Hall-Effect (Sinking) 2-meter lead Quick disconnect
KM	Hall-Effect (Sinking) 5-meter lead Quick disconnect
TT	Hall-Effect (Sourcing) 5-meter lead
TU	Hall-Effect (Sourcing) 2-meter lead Quick disconnect
TM	Hall-Effect (Sourcing) 5-meter lead Quick disconnect
TO ORDER RETROFIT KITS: SW (then the model number and base size, and code for type of switch needed). EXAMPLE: SWPB220BT Where SW is the switch kit, PB2 is a Power-Block2, 20 is the 1.25" size, and BT is a Form C Reed Switch with 5-meter lead. NOTE: If replacing a Quick-Disconnect switch manufactured before 7-1-97 it will also be necessary to replace or rewire the female-end coupler with the in-line splice. (Refer to page 221).	
QUICK DISCONNECTS	
ALL MODELS	
Quick Disconnect, Female, 2-meter	2503-1021
Quick Disconnect, Female, 5-meter	2503-1025

H-Block, U-Block, Channel Block Switch Hardware Kits

SWITCH KITS	HB/UB/CB09	HB/UB/CB12	HB/UB/CB17	HB/UB24	HB32	HB48
Switch Hardware Kit	2309-9999	2312-9999	2317-9999	2324-9999	2332-9999	2348-9999

H-Block Proximity Sensor and Options

SWITCH KITS	HB09	HB12	HB17	HB24	HB32	HB48
XN Proximity Sensor (NPN) ⁴	2309-9003	2309-9003	2317-9003	2317-9003	2317-9003	2317-9003
XP Proximity Sensor (PNP) ⁴	2309-9005	2309-9005	2317-9005	2317-9005	2317-9005	2317-9005
Proximity Sensor Hardware ⁴	2309-9013	2309-9013	2317-9013	2324-9013	2332-9013	2348-9013
OTHER OPTIONS	HB09	HB12	HB17	HB24	HB48	HB48
BP Bumper Kit ²	2309-9004	2312-9004	2317-9004	2324-9004	2332-9004	2348-9004
FP Foot Plate Kit ⁴	2309-9000	2312-9000	2317-9000	2324-9000	2332-9000	2348-9000
SL Light Duty Shock Absorber ^{3,4}	2309-9025	2312-9025	2317-9025	2324-9025	2332-9025	2348-9025
SH Heavy Duty Shock Absorber ^{3,4}	2309-9026	—	—	—	—	—
SD Shock Hardware ⁴	2309-9027	2312-9027	2317-9027	2324-9027	2332-9027	2348-9027

U-Block Switch Hardware and Options

SWITCH HARDWARE	UB09	UB12	UB17	UB 24
Reed/TRIAC/Hall Switch Hardware	2309-9999	2312-9999	2317-9999	2324-9999
OTHER OPTIONS	UB09	UB12	UB17	UB 24
CK Stop Collar ⁴	2307-1005	2312-1005	2317-1005	2324-1005
CK Stop Collar (Stainless-Steel) ⁴	2309-1056	2312-1056	2317-1056	2324-1056
BP Bumper ⁴	2309-9004	2312-9004	2317-9004	2324-9004

¹Kits include one switch with mounting hardware

²Bumper Kit for H-Block includes 4 Bumpers per kit

³Same shock absorbers used for both light duty and heavy duty applications.

⁴One each

⁵Stop Collar/ Bumper Kits for Power-Block include two stop collars and two 1/4" thick polyurethane external bumpers to help absorb impact shock

ROD CYLINDER SLIDE SELECTION PROCEDURE:

1. COMPILE APPLICATION REQUIREMENTS

To determine the appropriate Tol-O-Matic rod cylinder slide for an application, compile the following information:

- **Available pressure** (PSI)
- **Weight of load** (lbs. or kgs.)
- **Orientation of load** (lbs. or kgs.)
- **Velocity of load** (in./sec. or mm/sec.)
- **Stroke length** (in. or mm)

2. SELECT ROD CYLINDER SLIDE SIZE

- **Consult the Theoretical Force vs. Pressure graphs**

NOTE: Graphs for HB are on pages 138 to 143, for PB are on pages 146 to 147 and PB2 are on pages 151 to 152.

- **Cross-reference the load force** (or load weight if force is not known) **and the available operating pressure.** If the intersection falls below the diagonal line, and if moments do not exceed maximum values listed for that model (see Step 4) the Tol-O-Matic rod cylinder slide will accommodate the application. If the intersection is above the diagonal line, a larger rod cylinder slide bore size should be considered.

NOTE: Additional force may be required to obtain the necessary acceleration for vertical or horizontal loads.

3. DETERMINE EFFECT OF LOAD VS. EXTENDED LENGTH

- **Consult the Max. Load Weight vs Stroke Length Chart** for the Tol-O-Matic rod cylinder slides.
- **Cross-reference the load weight and the extended length.** If the intersection falls below the maximum load line, and if moments do not exceed maximum values listed for that model (see Step 4), the rod cylinder slide will accommodate the application. If the intersection is above the diagonal line, a larger rod cylinder slide bore size should be considered.

4. DETERMINE NATURE OF LOAD AND THE EFFECT OF BENDING MOMENTS

If the rod cylinder slide will guide and support a load located directly on center of the tooling plate, bending moments will not be a factor in the rod cylinder slide selection.

NOTE: the maximum load weight "W" must not exceed the capacity limits of the rod cylinder slide selected.

- **Bending Moments**
For off center or side loads, determine the distance from the center of mass of the load to the center of the tooling plate. This measurement is needed to calculate the torque for bending moments.

Should the resulting maximum bending moment exceed figures indicated on the chart, a larger rod cylinder slide should be considered.

5. DETERMINE INTERNAL BUMPER CAPACITY [POWER-BLOCK(2) ONLY]

- **Consult the Load vs Velocity Data Chart** for the Power-Block model selected. The velocities listed on the charts are final or bumper impact velocities. **NOTE:** H-Block uses external bumpers only.
- **Cross-reference the final velocity and weight of the load.** If the intersection is below the diagonal lines, the internal bumpers on the Power-Block may be used. If the point falls above the dashed diagonal line or if the velocity is not known, select a larger rod cylinder slide. On high-cyclic applications, use of external stops is strongly recommended.

6. CONSIDER OPTIONS

- **Switches**— dc Reed, Hall-effect, or ac Triac - (All Models)
- **Shock Absorbers**— if needed - (H-Block Only)
- **Bumpers and Stop Collars** - (H-Block and Power-Block)

For Assistance Call
1-800-328-2174
(Toll Free U.S. and Canada)
or
763-478-8000
Fax 763-478-8080

SELECTION EXAMPLE: HB

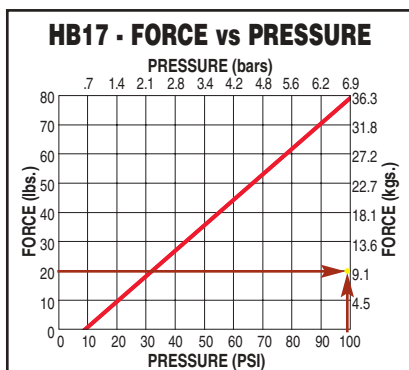
The procedure for selection of the various styles of rod cylinder slide are very similar. For illustrative purposes, charts for the HB17 model are used in this example.

1. COMPILE APPLICATION REQUIREMENTS

- Available pressure 100 psi
 - Weight of load 20 lbs.
 - Orientation of load horiz.
 - Final velocity* of load 12 per sec
 - Stroke length 6"
- *2x average velocity, see page 243

2. SELECT ROD CYLINDER SLIDE SIZE

- Consult the Theoretical Force vs. Pressure charts.

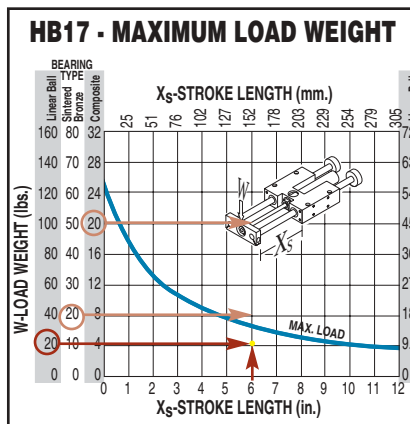


- Cross-reference the load force and the available operating pressure.

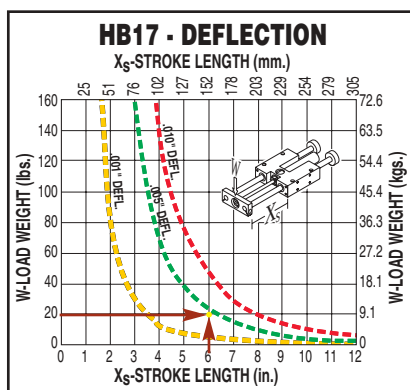
3. DETERMINE EFFECT OF LOAD VS. EXTENDED LENGTH

- Consult the Load vs Stroke Length Chart for the Tol-O-Matic rod cylinder slides.
- Cross-reference the load weight and the stroke length. In this example for the HB17 there are 3 bearing choices. With a 20 lb. load and 6" extension, the sintered bronze and

composite bearings will not be acceptable. The linear ball bearings will accommodate the load.

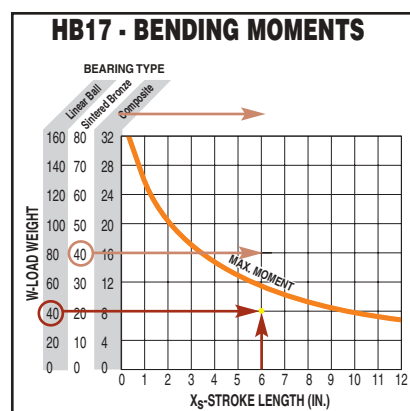


- Examine the deflection. The deflection will be nearly 0.005" which is acceptable for this application.



4. DETERMINE NATURE OF LOAD AND THE EFFECT OF BENDING MOMENTS

If the rod cylinder slide will guide and

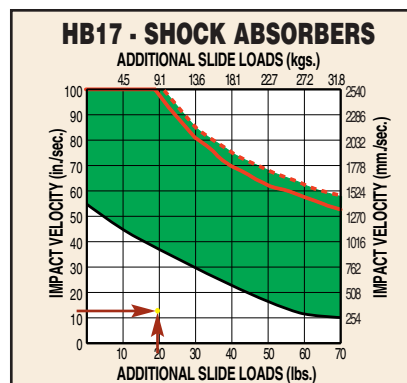


support a load located directly on center of the tooling plate, bending moments will not be a factor in the rod cylinder slide selection.

In this example, the center of the mass of the load will be 2" off the center of the tooling plate. Thus, the bending moment to be accommodated will be 40 in.lbs. The linear bearings chosen will work for this application.

5. DETERMINE INTERNAL BUMPER CAPACITY (POWER-BLOCK(2) ONLY)

- Cross-reference the final velocity and weight of the load. (For PB or PB2) The HB17 does not have internal bumpers so for this example we will consider shock absorbers.



The intersection is well below the shock capability. Shock absorbers could be used, but bumpers will be adequate.

6. CONSIDER OPTIONS

For this example, we will be adding bumpers and Form C dc Reed switches. Note: bumpers will reduce effective stroke. It will be necessary to order a 7" stroke to get an end result of a 6" stroke.

The final configured string will appear as follows:

HB17SK07LBBM2BP