



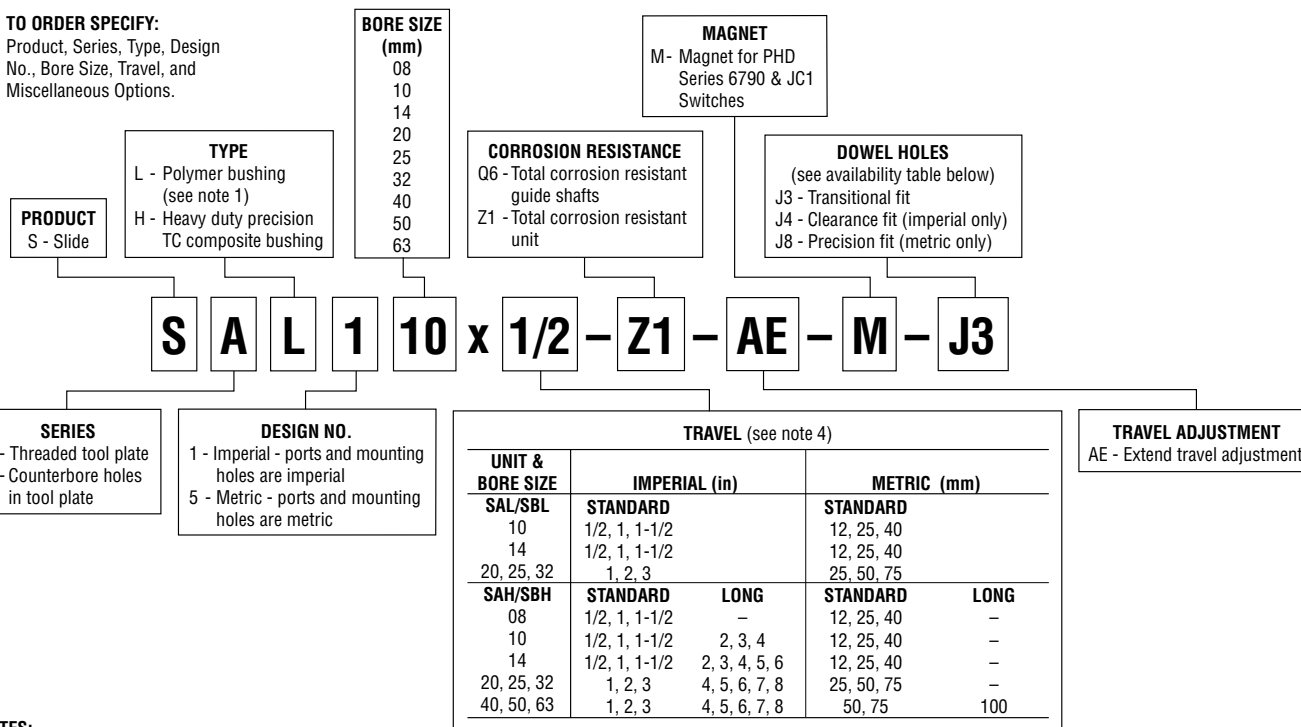
INFORMATION SHEET: SERIES SxL/SxH DESIGN 1 [5] SLIDES

IMPORTANT INFORMATION DO NOT DISCARD!

Use this information sheet to assist with slide installation and setup.
File with maintenance or machine documentation.

TO ORDER SPECIFY:

Product, Series, Type, Design
No., Bore Size, Travel, and
Miscellaneous Options.



NOTES:

- 1) L - Polymer bushing not available on size 08, 40, 50, & 63 mm bore units.
- 2) Shock pads are standard on extend and retract for all sizes. Retract shock pads are located on the guide shafts. Extend shock pad is located internally on the piston.
- 3) -AE option (stop collars) is recommended for high cycle speed applications and high load applications. Extend shock pads are included with the -AE option to remove impact load from the piston rod.
- 4) ** Long travel units are available standard on imperial units. 100 mm long travel units are available on metric sizes 40, 50, & 63. Contact PHD for longer travel metric units.

DOWEL HOLE AVAILABILITY

DESIGN NO.	ITEM	DOWEL HOLES		
		J3	J4	J8
1 (IMPERIAL)	HOUSING	(J3 STD) STD	OPT	-
	SAX TOOL PLATE	NONE	OPT	-
	SBx TOOL PLATE	(J3 STD) STD	OPT	-
2 (METRIC)	HOUSING	PD	OPT	- OPT
	SAX TOOL PLATE	PD	OPT	- OPT
	SBx TOOL PLATE	PD	OPT	- OPT

NOTES:

- 1) SEE DOWEL HOLE DIAMETERS TABLE FOR DIMENSIONAL INFORMATION.
- 2) STD = Standard OPT = Optional PD = Production Diameter

PHD UNLIMITED®

A model number "ML-xxxxxx" indicates the unit is a unique solution. Contact your local distributor or PHD, Inc. for a complete product description.

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ENGINEERING DATA: SERIES SxL/SxH DESIGN 1 [5] SLIDES

SPECIFICATIONS	SERIES SxL / SxH
OPERATING PRESSURE	30 to 150 psi [2 to 10 bar]
OPERATING TEMPERATURE	-20° to 180°F [-29° to 82°C]
TRAVEL TOLERANCE	Nominal travel $\pm .080/-0.000$ [± 2 mm/ -0 mm]
LUBRICATION	Factory lubricated for rated life
MAINTENANCE	Field repairable

CYLINDER FORCE CALCULATIONS		
	Imperial	Metric
	$F = P \times A$	$F = 0.1 \times P \times A$
F = Cylinder Force	lbs	N
P = Operating Pressure	psi	bar
A = Effective Area	in ²	mm ²

SIZE	TRAVEL in mm	SHAFT DIAMETER in mm	BORE DIAMETER in mm	EFFECTIVE AREA DIRECTION in ² mm ²	BASE WEIGHT lb kg	MAX. STATIC LOAD				TYPICAL DYNAMIC LOAD	
						SxL		SxH		lb	N
08	1/2 12	.197 5	.315 8	EXTEND .078 50.3 RETRACT .058 37.4	.24 .11	—	—	46	205	0 - 1	0 - 4.5
	1 25				.29 .13	—	—	33	147		
	1 1/2 40				.34 .15	—	—	26	116		
10	1/2 12	.236 6	.394 10	EXTEND .122 78.7 RETRACT .091 58.7	.28 .13	60	267	82	365	1 - 2	4.5 - 8.9
	1 25				.36 .16	44	196	59	262		
	1 1/2 40				.44 .20	34	151	46	205		
	2 —				.52 —	—	—	37	—		
	3 —				.68 —	—	—	27	—		
	4 —				.84 —	—	—	21	—		
14	1/2 12	.394 10	.551 14	EXTEND .238 154 RETRACT .195 126	.79 .36	210	934	344	1530	2 - 6	8.9 - 26.7
	1 25				.95 .43	190	845	254	1130		
	1 1/2 40				1.11 .50	150	667	202	898		
	2 —				1.27 —	—	—	165	—		
	3 —				1.59 —	—	—	123	—		
	4 —				1.91 —	—	—	98	—		
	5 —				2.23 —	—	—	81	—		
	6 —				2.55 —	—	—	69	—		
20	1 25	.472 12	.787 20	EXTEND .487 314 RETRACT .409 264	1.72 .78	280	1245	378	1681	6 - 12	26.7 - 53.4
	2 50				2.26 1.03	190	845	260	1156		
	3 75				2.80 1.27	150	667	198	881		
	4 —				3.34 —	—	—	158	—		
	5 —				3.88 —	—	—	133	—		
	6 —				4.42 —	—	—	114	—		
	7 —				4.96 —	—	—	100	—		
	8 —				5.50 —	—	—	89	—		
25	1 25	.630 16	.984 25	EXTEND .761 491 RETRACT .639 412	2.79 1.27	423	1882	738	3284	10 - 16	44.5 - 71.2
	2 50				3.62 1.64	419	1865	489	2176		
	3 75				4.45 2.02	323	1437	380	1691		
	4 —				5.27 —	—	—	312	—		
	5 —				6.10 —	—	—	264	—		
	6 —				6.92 —	—	—	229	—		
	7 —				7.75 —	—	—	202	—		
	8 —				8.58 —	—	—	180	—		
32	1 25	.787 20	1.260 32	EXTEND 1.247 805 RETRACT 1.071 691	3.89 1.76	528	2349	1325	5894	12 - 25	53.4 - 111
	2 50				4.97 2.25	523	2326	950	4226		
	3 75				6.05 2.74	520	2313	750	3336		
	4 —				7.13 —	—	—	605	—		
	5 —				8.21 —	—	—	515	—		
	6 —				9.24 —	—	—	445	—		
	7 —				10.32 —	—	—	393	—		
	8 —				11.40 —	—	—	352	—		
40	1 —	.984 25	1.575 40	EXTEND 1.948 1256.8 RETRACT 1.636 1055.5	6.86 —	—	—	1947	—	16 - 75	71 - 334
	2 50				8.57 3.86	—	—	1740	7740		
	3 75				10.28 4.64	—	—	1374	6112		
	4 100				11.99 5.41	—	—	1136	5053		
	5 —				13.70 —	—	—	968	—		
	6 —				15.41 —	—	—	843	—		
	7 —				17.12 —	—	—	747	—		
	8 —				18.83 —	—	—	671	—		
50	1 —	1.181 30	1.969 50	EXTEND 3.043 1963.2 RETRACT 2.556 1649.0	10.94 —	—	—	2888	—	25 - 100	111 - 445
	2 50				13.43 6.08	—	—	2859	12717		
	3 75				15.92 7.21	—	—	2282	10151		
	4 100				18.41 8.34	—	—	1899	8447		
	5 —				20.90 —	—	—	1626	—		
	6 —				23.39 —	—	—	1422	—		
	7 —				25.88 —	—	—	1263	—		
	8 —				28.37 —	—	—	1137	—		
63	1 —	1.374 34.9	2.480 63	EXTEND 4.832 3117.4 RETRACT 4.345 2803.2	17.26 —	—	—	3823	—	75 - 150	334 - 668
	2 50				20.64 9.34	—	—	3805	16925		
	3 75				24.03 10.87	—	—	3555	15813		
	4 100				27.41 12.41	—	—	2964	13185		
	5 —				30.79 —	—	—	2542	—		
	6 —				34.18 —	—	—	2225	—		
	7 —				37.56 —	—	—	1978	—		
	8 —				40.94 —	—	—	1781	—		

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phd[®] ENGINEERING DATA & OPTIONS: SERIES SxL/SxH DESIGN 1 [5] SLIDES

MATERIAL SPECIFICATIONS

On both the Series SxL and SxH units, the slide housing and tool plate are anodized aluminum alloy.

SERIES SxL SLIDES

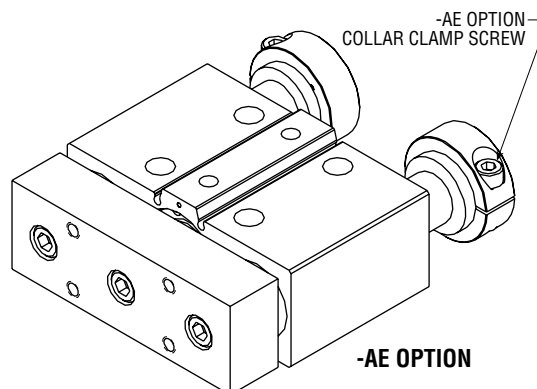
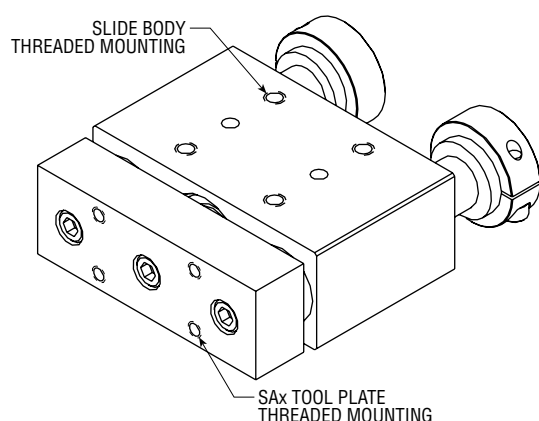
On Series SxL Slides sizes 10, 14, 20, 25, and 32, the guide shafts are hard chrome plated steel. The -Q6 corrosion resistant option these sizes provides hard chrome plated stainless steel guide shafts.

All Series SxL Slides have low friction polymer bearings.

SERIES SxH SLIDES

Series SxH Slides have precision ground case hardened guide shafts. The -Q6 corrosion resistant option provides a corrosion resistant coating on these guide shafts. Series SxH Slides utilize high load capacity composite bearings.

MOUNTING TORQUE



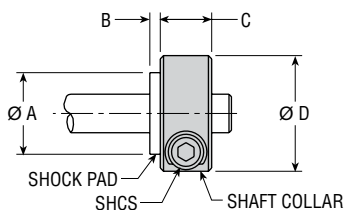
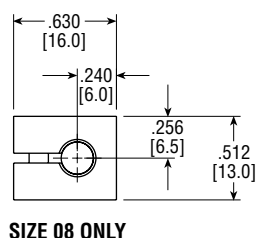
PART DESCRIPTION		SAxx08	SAxx10	SAxx14	SAxx20	TORQUE in-lb [Nm]		Sxxx40	Sxxx50	Sxxx63
Collar Clamp Screw (-AE option)		22 [2.5]	22 [2.5]	50 [5.6]	100 [11.3]	100 [11.3]	150 [16.9]	350 [39.5]	350 [39.5]	700 [79.1]
Female Thread on Bottom of Body	Imperial Unit	10 [1.1]	28 [3.2]	64 [7.2]	150 [16.9]	250 [28.2]	300 [33.9]	350 [39.5]	450 [50.8]	750 [84.7]
	Metric Unit	15 [1.7]	40 [4.5]	75 [8.5]	120 [13.6]	275 [31.1]	430 [48.6]	500 [56.5]	700 [79.1]	
Thread on Sx Tool Plate	Imperial Unit	10 [1.1]	14 [1.6]	28 [3.2]	64 [7.2]	150 [16.9]	150 [16.9]	300 [33.9]	450 [50.8]	1000 [113.0]
	Metric Unit	10 [1.1]	15 [1.7]	40 [4.5]	75 [8.5]	120 [13.6]	120 [13.6]	275 [31.1]	500 [56.5]	700 [79.1]

AE

TRAVEL ADJUSTMENT ON EXTEND

This option provides both travel adjustment stop collars and shock pads on extension only. The travel adjustment stop collars provide infinite adjustment while the shock pads provide excellent noise reduction and energy absorption capability.

NOTE: AE travel adjustments are available as a kit. To specify, give the full unit description -H9031. Each travel adjustment kit contains 2 steel shaft collars, 2 shock pads, and 2 SHCS.



UNIT SIZE	LETTER DIMENSION [mm]			
	A	B	C	D
8	.375 [9.5]	.064 [1.6]	—	—
10	.500 [12.7]	.064 [1.6]	.315 [8.0]	.709 [18.0]
14	.591 [15.0]	.064 [1.6]	.433 [11.0]	.875 [22.2]
20	.865 [22.0]	.125 [3.2]	.511 [13.0]	1.125 [28.6]
25	.945 [24.0]	.199 [5.0]	.511 [13.0]	1.375 [34.9]
32	1.125 [28.6]	.199 [5.0]	.590 [15.0]	1.500 [38.1]
40	1.500 [38.1]	.250 [6.4]	.708 [18.0]	2.026 [51.5]
50	1.750 [44.5]	.250 [6.4]	.749 [19.0]	2.345 [59.6]
63	2.120 [53.8]	.250 [6.4]	.866 [22.0]	2.750 [69.9]

TRAVEL ADJUSTMENT KIT			
UNIT SIZE	KIT NUMBER		COLLAR SCREWS
	STANDARD	Z1 OPTION	MAX TORQUE
8	73439-1	73439-2	22 in/lb [2.5 Nm]
10	73440-1	73440-2	22 in/lb [2.5 Nm]
14	73441-1	73441-2	50 in/lb [5.6 Nm]
20	73442-1	73442-1	100 in/lb [11.3 Nm]
25	74822-1	74822-2	100 in/lb [11.3 Nm]
32	73443-1	73443-2	150 in/lb [16.9 Nm]
40	79636-1	79636-2	350 in/lb [39.5 Nm]
50	79637-1	79637-2	350 in/lb [39.5 Nm]
63	79638-1	79638-2	700 in/lb [79.1 Nm]

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phd[®] OPTIONS: SERIES SxL/SxH DESIGN 1 [5] SLIDES

J3 TRANSITIONAL FIT DOWEL PIN HOLES

Transitional fit dowel pin holes in the tool plate and housing provides a compromise fit between clearance and interference. Transitional fits are used where accuracy of location is important, but a small amount of clearance in order to simplify the installation of dowel pins is permissible.

J4 CLEARANCE FIT DOWEL PIN HOLES

Clearance fit dowel pin holes in the tool plate and housing are used when extra clearance is needed due to inaccuracies of attached tooling. Available on imperial units only.

J8 PRECISION FIT DOWEL PIN HOLES

H7 tolerance precision fit dowel pin holes in the tool plate and housing are used where accuracy of location is of prime importance. Ideal for parts requiring rigidity and alignment. Metric units only.

Q6 TOTAL CORROSION RESISTANT GUIDE SHAFTS

Stainless steel hard chrome guide shafts on the Series SxL Slides and corrosion resistant coating on the Series SxH Slides for use in applications where moisture may corrode untreated, hardened and ground shafts. For sizes and locations, see dimension pages.

Z1 TOTAL CORROSION RESISTANT UNIT

This option includes Q6 guide shafts and provides stainless steel or electroless nickel plating on all other externally exposed ferrous parts. This optional plating can be used for protecting the slide from severe or corrosive environments.

M MAGNET FOR PHD SERIES 6790 & JC1 SWITCHES

This option equips the unit with a magnetic piston for use with PHD's Series 6790 and JC1 Switches. The switch housing is completely contained by the slide housing and provides a very compact switch design. The switches mount easily to the slide housing using two small grooves located on the top of the unit and are locked into place with a set screw. **See Switches and Sensors section of Main Catalog for additional switch information and complete specifications.**

SERIES 6790 & JC1SDX CORDSET CHART

PART NO.	DESCRIPTION
63549-02	M8, 3 pin, Straight Female Connector, 2 m cable
63549-05	M8, 3 pin, Straight Female Connector, 5 m cable

TORQUE CHART

SWITCH	TORQUE
6790	16 in-oz
JC1SDx	Hand tighten clockwise until switch is securely retained. Do not overtighten.

SERIES 6790 & JC1 SWITCHES

PART NO.	DESCRIPTION
67902-1-05	PNP (Source) or NPN (Sink) Reed, 4.5-30 VDC, 5 m cable
JC1SDN-5	NPN (Sink) Solid State, 10-30 VDC, 5 m cable
JC1SDP-5	PNP (Source) Solid State, 10-30 VDC, 5 m cable
67922-1	PNP (Source) or NPN (Sink) Reed, 4.5-30 VDC, Quick Connect
JC1SDN-K	NPN (Sink) Solid State, 10-30 VDC, Quick Connect
JC1SDP-K	PNP (Source) Solid State, 10-30 VDC, Quick Connect
67929-2	PNP (Source) or NPN (Sink) Reed, 65-120 VAC, Quick Connect

START-UP PROCEDURES

Slide should be securely mounted with all tooling and external flow control devices attached prior to applying pressure to the unit. Care should be taken to provide adequate clearance for the tool plate and guideshafts to extend and retract. At initial start-up, apply pressure slowly to the unit.

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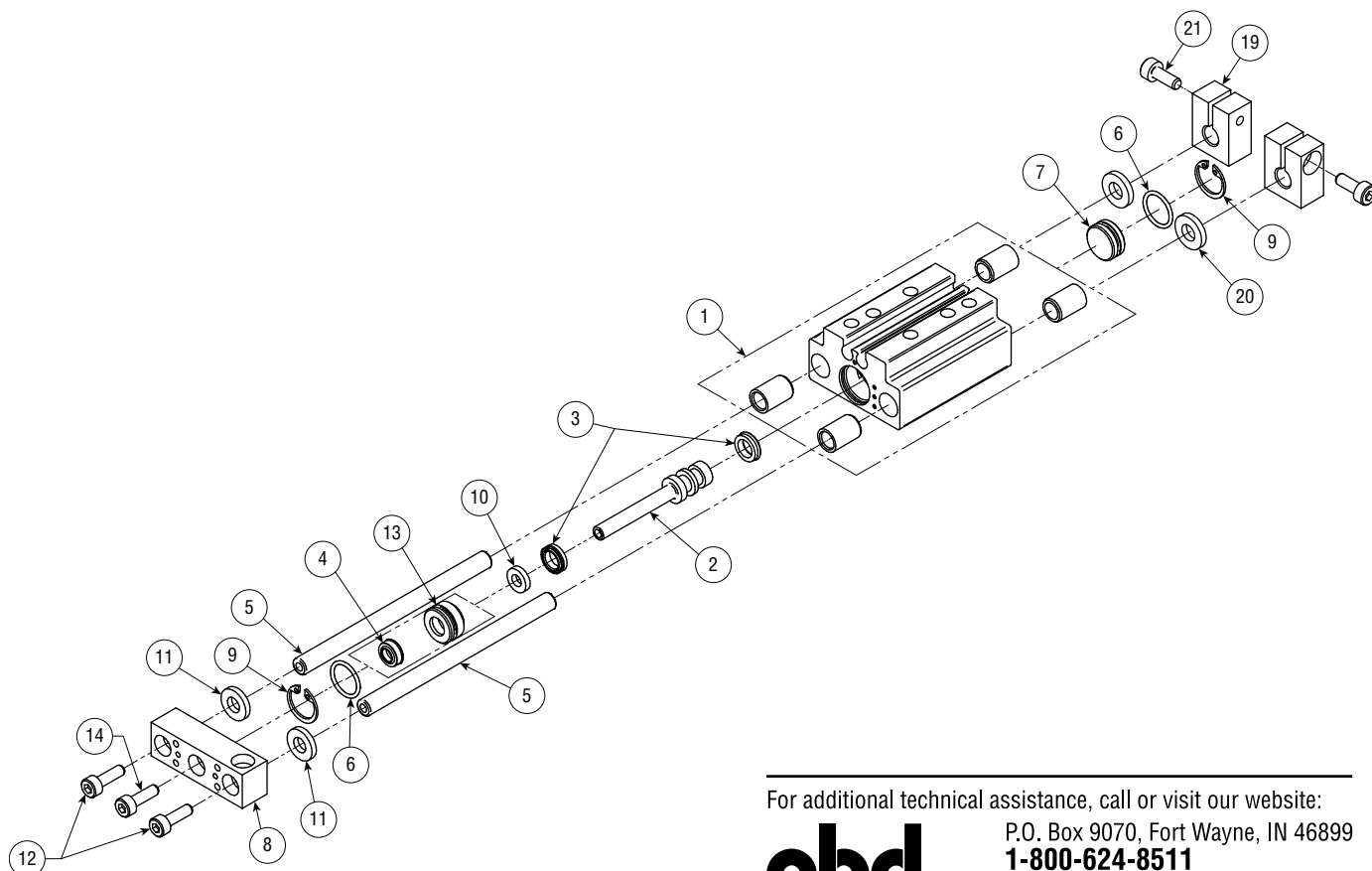


EXPLODED VIEW & PARTS LIST: SERIES SxL/SxH DESIGN 1 [5] SLIDES

KEY	PART DESCRIPTION	SIZE 08	SIZE 10	SIZE 14	SIZE 20	SIZE 25	SIZE 32	SIZE 40	SIZE 50	SIZE 63
1	HOUSING ASSEMBLY	FULL UNIT DESCRIPTION REQUIRED -H4800								
2	PISTON & ROD ASSEMBLY	FULL UNIT DESCRIPTION REQUIRED -H1000								
3	PISTON SEAL	SOLD AS PART OF SEAL KIT								
4	ROD SEAL	SOLD AS PART OF SEAL KIT								
5	GUIDE SHAFT	FULL UNIT DESCRIPTION REQUIRED -H4710								
6	CARTRIDGE / CAP SEAL	SOLD AS PART OF SEAL KIT								
7	CAP	72487	72497	72517	72527	74816	72537	79647	79657	79667
8	TOOL PLATE	FULL UNIT DESCRIPTION REQUIRED -H6400								
9	CARTRIDGE / CAP RETAINER	FULL UNIT DESCRIPTION REQUIRED -H7100								
10	INTERNAL SHOCK PAD	68093	18683	18684	70843	74851	53759	79641	79651	79661
11	EXTERNAL SHOCK PAD	18683	18684	60569	67130	74852	72541	79642	79652	79662
12	TOOL PLATE TO GUIDE SHAFT SCREWS	FULL UNIT DESCRIPTION REQUIRED -H4750								
13	CARTRIDGE	72486	72496	72516	72526	74815	72536	79646	79656	79666
14	TOOL PLATE TO PISTON ROD SCREW	FULL UNIT DESCRIPTION REQUIRED -H3600								
OPTIONAL PARTS										
19	COLLAR	SOLD AS PART OF TRAVEL ADJUST ASSEMBLY								
20	SHOCK PAD									
21	SHCS									

KITS

KIT DESCRIPTION	SIZE 08	SIZE 10	SIZE 14	SIZE 20	SIZE 25	SIZE 32	SIZE 40	SIZE 50	SIZE 63
SEAL KIT	FULL UNIT DESCRIPTION REQUIRED -H9000								
EXTEND TRAVEL ADJUSTMENT KIT	FULL UNIT DESCRIPTION REQUIRED -H9031 (2 COLLARS, 2 SCREWS, AND 2 SHOCK PADS PER KIT)								
SxL GUIDE SHAFT BEARING KIT	FULL UNIT DESCRIPTION REQUIRED -H3450 (4 BEARINGS PER KIT - NOT AVAILABLE FOR SxH)								



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