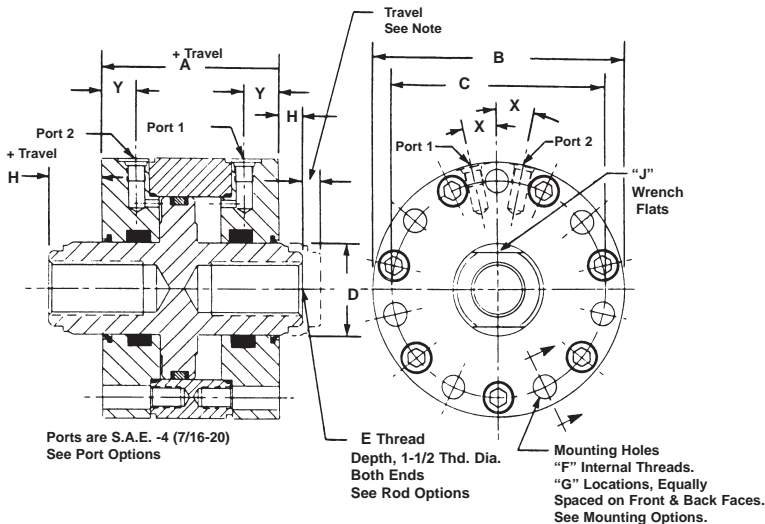


SHORT STROKE HYDRAULIC CYLINDERS, HI-ENERGY® SERIES 3000-LS-SP-FM

Double Acting-Double Ended Pistons With Threaded Ends-Side Ported-Either Face Mounted



SPECIFICATIONS:

SERVICE, HYDRAULIC OIL
M.O.P., 3000 PSI
TEMPERATURE, -40 TO 275 deg. F
MATERIALS:

BODY & PLAIN COVER, STAINLESS STEEL
GUIDE COVER, BEARING BRONZE
PISTON, STAINLESS STEEL
FASTENERS, ALLOY STEEL, I.S.H.C.S.
ROD SEALS, LIP STYLE
PISTON HEAD SEAL, "O" RING
BACKUP RINGS, TEFLON

NOTES:

Dimensions are nominal in U.S. Customary units.

Metric versions are dimensionally equivalent except for conversion in mounting details where fasteners, threads, clearance holes & counter-bores are to metric standards. Please see inside rear cover for a table of U.S. Customary to Metric fastener conversion. There is no added cost for this metric modification.





BASIC PART NUMBER	DIMENSIONS										TORQ.		BORE DIA.		NET PISTON AREA (SQ. IN.)
	A	O.D. B	B.C. C	ROD DIA. D	ROD THD. E	THD. F	NO. G	H	W.F. J	DEG. K	DEG. L	X	Y	(IN.)	
HS3678 (-)-LS	3.125	2.250	1.657	0.625	3/8-24	5/16-24	2	0.375	0.500	180	145	90	0.575	1.125	0.68
HS3679 (-)-LS	3.125	2.500	1.907	0.750	3/8-24	5/16-24	2	0.375	0.625	180	145	90	0.575	1.375	1.04
HS3680 (-)-LS	3.250	3.000	2.345	0.875	1/2-20	5/16-24	4	0.375	0.750	90	145	22-1/2	0.638	1.750	1.80
HS3681 (-)-LS	3.375	3.500	2.782	1.125	5/8-18	3/8-24	4	0.407	0.938	90	265	22-1/2	0.700	2.125	2.55
HS3682 (-)-LS	3.375	4.000	3.220	1.250	3/4-16	3/8-24	5	0.407	1.063	72	265	18	0.700	2.500	3.68
HS3683 (-)-LS	3.625	4.500	3.657	1.375	3/4-16	7/16-20	5	0.407	1.125	72	412	18	0.825	2.875	5.00
HS3684 (-)-LS	3.625	5.000	4.157	1.625	1-14	7/16-20	6	0.438	1.375	60	412	15	0.825	3.375	6.87
HS3685 (-)-LS	3.625	5.500	4.595	1.750	1-14	1/2-20	6	0.438	1.500	60	650	15	0.825	3.750	8.63
HS3686 (-)-LS	3.625	6.000	5.095	2.125	1-1/4-12	1/2-20	7	0.438	1.750	51.5	650	13	0.825	4.250	10.63

Nom. Force (lbs) = Pressure (psi) times Area (sq. in.)

Angular relationship between Ports 1 & 2 may be adjusted in increments of "K" degrees by removing cover bolts from one side indexing the cover to a new location & re-torquing to values shown in column "L".

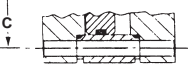


All inquiries regarding modification to standard cylinders are welcome.

International Port Options:

-  U.S.A - 1/8 NPTF port. Tapered thread sealing. Add suffix -1/8 NPTF to the BASIC PART NO.
-  BRITISH 1/8 - 28 BSPT port. Tapered thread sealing. Add suffix -BSPT to the BASIC PART NUMBER.
-  BRITISH 1/8-28 BSPP port. Str. thd. with "O" ring sealing. Add suffix -BSPP to the BASIC PART NUMBER.
-  METRIC M10 X 1 port per Spec. ISO-6149 Str. thd. with captive "O" ring sealing. Add suffix -M10 to the BASIC PART NUMBER.

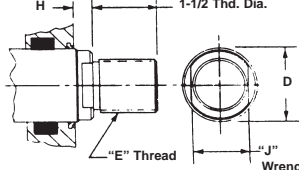
OPTIONAL PORTS ARE FURNISHED AT NO ADDED COST.

Mounting Options:

-  Clearance holes for thru bolts of the size shown as "F" in the table. Add suffix -CL to the BASIC PART NUMBER.
-  Clearance holes with counter-bores in the cover which incorporates "PORT # 1" for internal socket head cap screws of size shown as "F" in the table. Add suffix -CB1 to the BASIC PART NUMBER.
-  Clearance holes with counter-bores in the cover which incorporates "PORT # 2" for internal socket head cap screws of size shown as "F" in the table. Add suffix -CB2 to the BASIC PART NUMBER.

Optional mounting is supplied at no added cost.

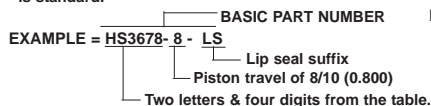
Rod End Options:

-  Rod end with an external thread extending from the cover with port #1. Opposite end has an internal thread "E". Add suffix -ETW to the BASIC PART NUMBER. Add 8% to the BASE PRICE. Please consult the Factory for other piston configurations.

Ordering Information:

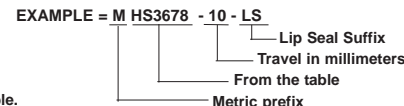
HOW TO ORDER BASIC CYLINDERS

A BASIC PART NUMBER consists of two letters & four digits followed by a dash number to indicate piston travel in increments of 1/10 (0.100) inch followed by the suffix -LS. Travel to -10 (1.000) is standard.



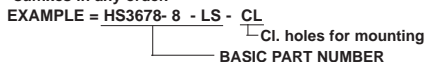
HOW TO ORDER METRIC VERSIONS

A BASIC PART NUMBER FOR METRIC VERSIONS consists of two letters & four digits from the table with a prefix "M" and a suffix to indicate piston travel in millimeters and the suffix -LS. See inside rear cover for travel and thd. conversion.



HOW TO ORDER CYLINDERS WITH OPTIONS

Add options to the BASIC PART NUMBER as suffixes in any order.



HOW TO ORDER SERVICE KITS

Specify the COMPLETE PART NO. followed by the suffix -SK.

