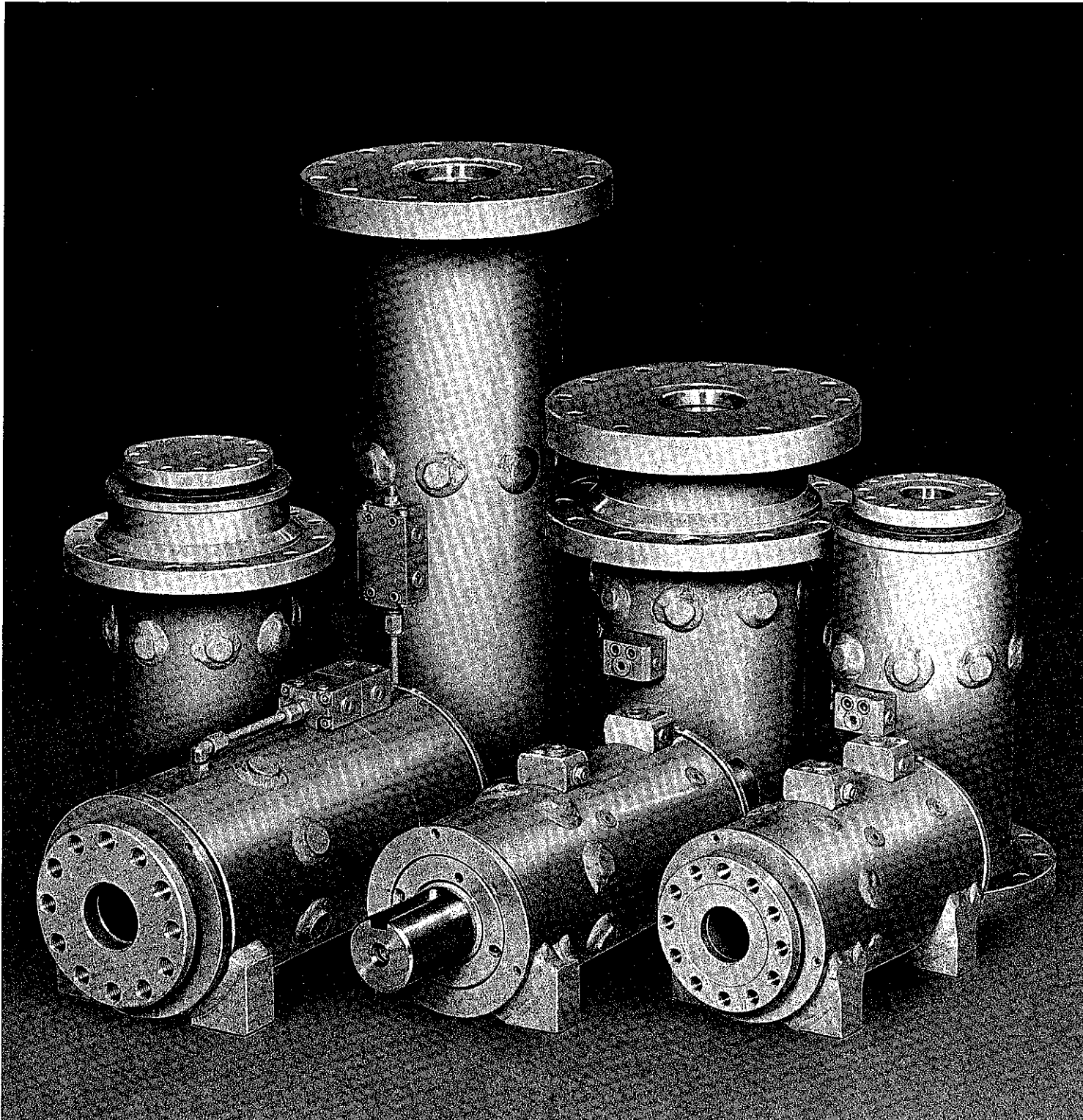


HB SERIES

HELAC[®]
CORPORATION

Helical Hydraulic Rotary Actuators



HB Series

FEATURES

Helac Corporation's new HB Series is the result of over 15 years of manufacturing experience with sliding spline rotary actuators. Our original HP Series pivot actuators established the concepts of integrated shaft flanges with drilled and tapped bolt circles and large bearing capacities. The new HB Series actuators continue that tradition with their ability to support and carry heavy loads while providing tremendous output torque: integral, angular contact ball bearings support the shaft and eliminate the need for additional, external bearings.

The HB designs feature much smaller envelopes than our earlier sliding spline actuator designs. Steeper helix angles have reduced the length. Three housing styles and three shaft styles are offered, and every shaft can be fitted with every housing. All models are available in inch (HBI) and metric (HBM) versions. The nominal design pressure is 3000 PSI, and the burst pressure is in excess of 10000 PSI.

Standard rotations are 90°, 180°, and 360°. Rotations up to 10° over nominal can be provided at customer request.

Optional features include cushions, direct mounted dual pilot operated check valves, and stop tubes to achieve almost any non-standard rotation under 360°.

OPERATING CHARACTERISTICS

The model number represents the nominal output torque of the actuator at 3000 PSI. For example, the HB-42K produces 42000 IN-LB of torque at 3000 PSI. The minimum operating pressure is 100 PSI and torque is a linear function of the system pressure.

HB Series actuators are not self-locking. However, a backdriving load will require a holding pressure of only about 50% of the pressure to drive the same load forward.

Actuators are drawn and shipped at end of rotation following application of pressure to Port P2. As pressure is applied to Port P1, shafts will rotate in the direction indicated by the arrows in the end views.

End position accuracy is $\pm 1^\circ$.

WARRANTY INFORMATION

HELAC CORPORATION warrants products manufactured by it to be free from defective material and factory workmanship. HELAC CORPORATION shall replace or repair such products, which under normal use and service, discloses such defects and return the repaired or replacement products to the purchaser prepaid with reports on defectiveness and remedial work rendered. Products under warranty shall be returned to HELAC CORPORATION's manufacturing facility at 225 Battersby Avenue, Enumclaw, Washington 98022, transportation prepaid by the purchaser, for inspection by HELAC CORPORATION whose opinion as to defects shall be conclusive.

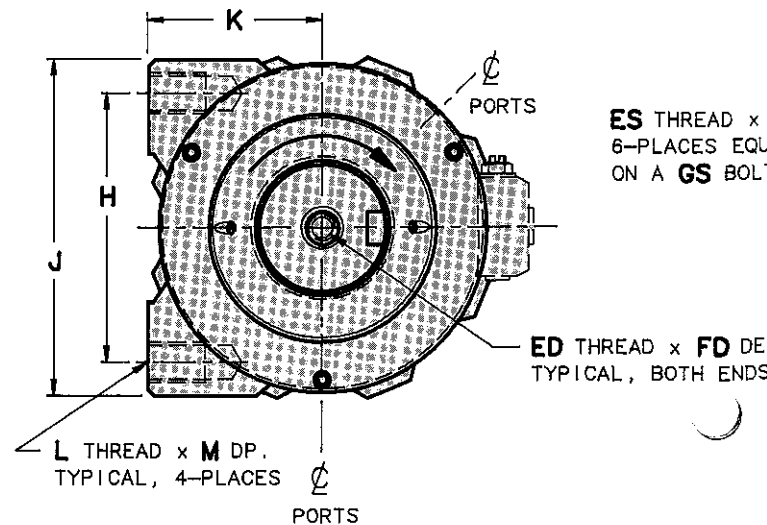
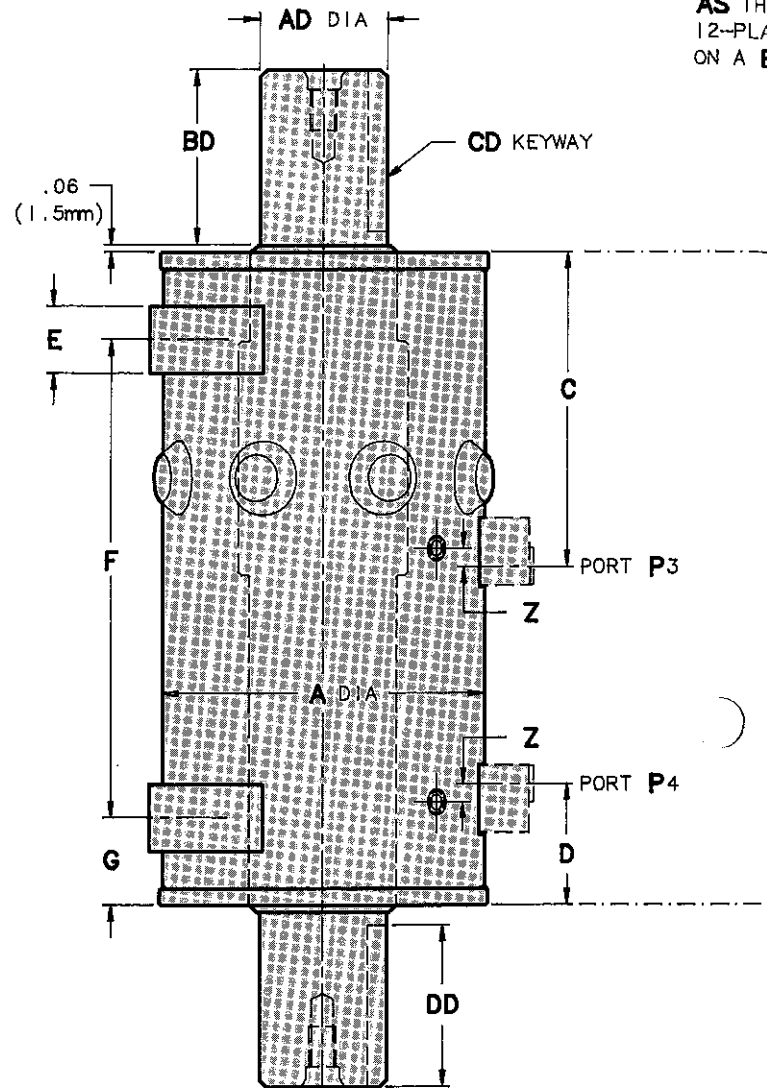
The warranty period shall be 12 months from the date of shipment from HELAC CORPORATION's manufacturing facility for HELAC CORPORATION approved applications. This warranty shall be voided as to any products which have been repaired, worked upon, or altered by persons not authorized by HELAC CORPORATION, or which have been subject to misuse, negligence, accident, or overload.

HELAC CORPORATION reserves the right to make changes in the design or construction of any of its products at any time without incurring any obligations to make changes or alterations in products previously sold.

This warranty is in lieu of all other and/or prior warranties, expressed or implied, and no other company or person is authorized to represent or assume for HELAC CORPORATION any liability in connection with the sale of HELAC CORPORATION products other than set forth herein. In no event shall HELAC CORPORATION be liable for any incidental or consequential damages. This includes, but is not limited to, operator use and/or neglect, incorrect design application, and structural failure of any components attached to a HELAC CORPORATION product.

SD Housing/DK Shaft

Splined shafts available upon request.



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12-PLA
ON A E

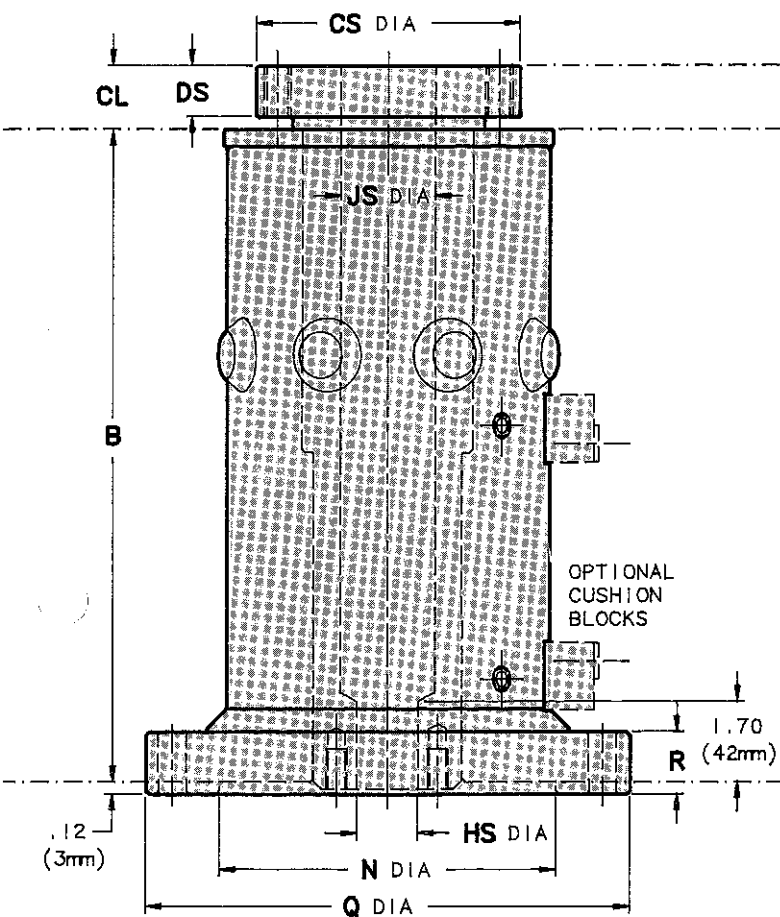
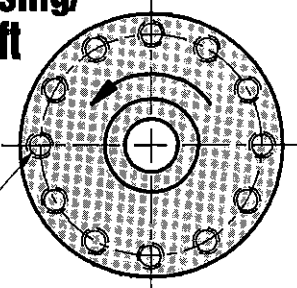
ES THREAD x
6-PLACES EQU
ON A GS BOLT

ED THREAD x FD DE
TYPICAL, BOTH ENDS

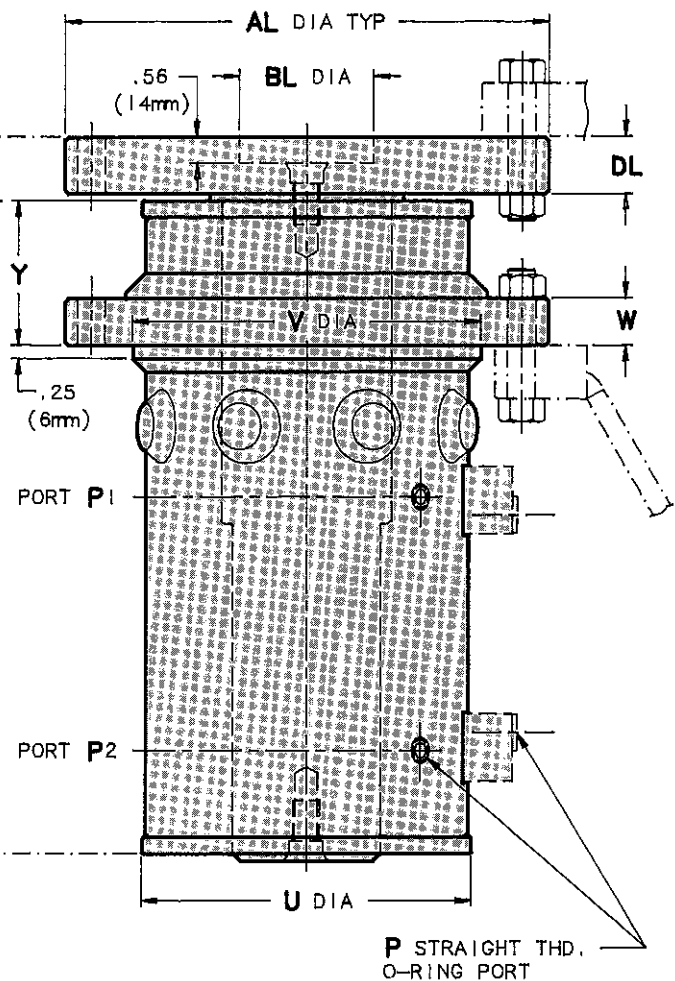
L THREAD x M DP.
TYPICAL, 4-PLACES

RF Housing/ SF Shaft

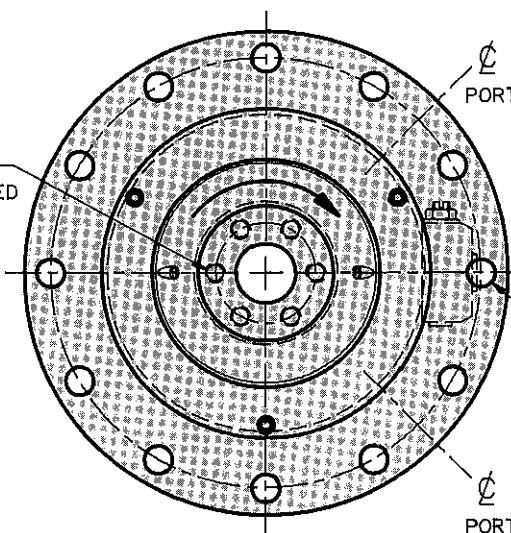
DEEPEST THRU HOLE
HOLE CIRCLES EQUALLY SPACED
ON A S BOLT CIRCLE



FF Housing/LF Shaft

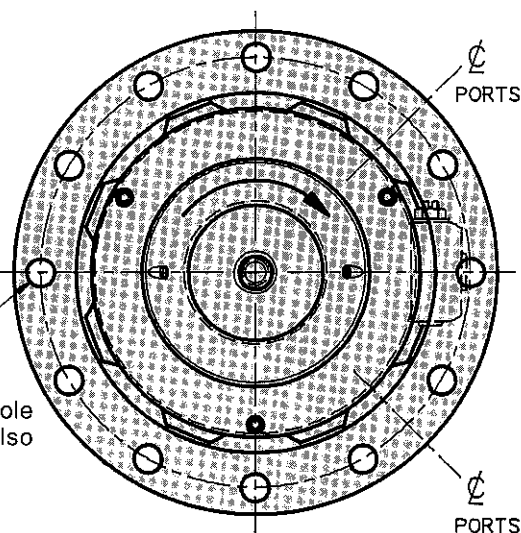


FS DEEP
HOLE CIRCLES EQUALLY SPACED
ON A T BOLT CIRCLE



S DIA THRU HOLE
12-PL. EQUALLY SPACED
ON A T BOLT CIRCLE

Same bolt circle and hole
diameter dimensions also
apply to LF Shaft flange.



Dimensions

	HBI Series (Inches)			HBM Series (mm)		
	HBI-25K	HBI-42K	HBI-80K	HBM-25K	HBM-42K	HBM-80K
A	6.00	7.00	8.50	152	178	216
B 90° ROTATION	9.50	10.62	12.50	241	270	318
180° ROTATION	12.25	14.00	16.75	311	356	426
360° ROTATION	17.88	20.75	25.25	454	527	641
C 90° ROTATION	4.62	5.16	6.20	117	131	157
180° ROTATION	5.98	6.85	8.33	152	174	212
360° ROTATION	8.80	10.23	12.60	224	260	320
D	2.22	2.45	2.79	56	62	71
E	1.25	1.38	1.50	32	35	38
F 90° ROTATION	6.12	7.00	8.25	155	178	210
180° ROTATION	8.88	10.38	12.50	225	264	318
360° ROTATION	14.50	17.12	21.00	368	435	533
G	1.69	1.81	2.12	43	46	54
H	5.000	6.000	7.250	127	152	184
J	6.300/6.290	7.480/7.470	9.055/9.045	160.0/159.8	190.0/189.8	230.0/229.8
K	3.250	3.740	4.725	82.5	95	120
L	3/4 - 10 UNC	7/8 - 9 UNC	1" - 8 UNC	M20 x 2.5	M22 x 2.5	M24 x 3
M	1.12	1.31	1.50	30	33	36
N	6.25	7.12	8.75	158	180	222
P	SAE-6	SAE-6	SAE-6	M14 x 1.5	M14 x 1.5	M14 x 1.5
Q	9.00	10.50	12.50	228	267	318
R	1.06	1.19	1.31	27	30	33
S	.53	.66	.80	13.5	16.6	20.3
T	8.00	9.25	11.02	203	235	280
U	6.12	7.00	8.60	155	178	218
V	6.690/6.682	7.675/7.667	9.250/9.242	170.0/169.8	195.0/194.8	235.0/234.8
W	.81	.94	1.06	21	24	27
Y 90° ROTATION	1.94	2.31	2.69	49	58.5	68
180° & 360° ROTATION	2.69	3.19	3.81	68	81	97
Z	.33	.33	.40	8.5	8.5	10

DK SHAFT DIMENSIONS

AD	2.362/2.360	2.952/2.950	3.543/3.541	60.00/59.95	75.00/74.95	90.00/89.95
BD	3.35	3.94	4.92	85	100	125
CD	5/8 x 5/16	3/4 x 3/8	7/8 x 7/16	18 x 11	20 x 12	25 x 14
DD	3.00	3.50	4.50	75	90	115
ED	1/2 - 13 UNC	1/2 - 13 UNC	1/2 - 13 UNC	M12 x 1.75	M12 x 1.75	M12 x 1.75
FD	.75	.75	.75	18	18	18

SF SHAFT DIMENSIONS

AS	1/2 - 13 UNC	5/8 - 11 UNC	N/A	M12 x 1.75	M16 x 2	N/A
BS	4.375	5.125	N/A	110	130	N/A
CS	5.118/5.113	6.141/6.136	N/A	130.0/129.9	156.0/155.9	N/A
DS	.88	1.00	N/A	22	25	N/A
ES	3/8 - 16 UNC	1/2 - 13 UNC	N/A	M10 x 1.5	M12 x 1.75	N/A
FS	.62	.75	N/A	15	18	N/A
GS	1.875	2.375	N/A	47	60	N/A
HS	1.182/1.190	1.496/1.504	N/A	30.0/30.2	38.0/38.2	N/A
JS	1.75	2.25	N/A	44	57	N/A

* These dimensions apply only to 90° and 180° models - not available with 360° models.

LF SHAFT DIMENSIONS

AL	9.00	10.50	12.50	228	267	318
BL	2.560/2.564	2.953/2.957	3.545/3.550	65.0/65.1	75.0/75.1	90.0/90.1
CL	1.18	1.31	1.44	30	33	36.5
DL	1.12	1.25	1.38	28	32	35

Selection Guide/Shaft and Housing Options

Three different shaft styles and three different housing styles are available for each size actuator in the HB Series (except HB-80K). Shafts and housings are completely interchangeable with each size actuator available in nine different configurations as illustrated below (180° models shown). Optional cushion blocks are included on all examples.

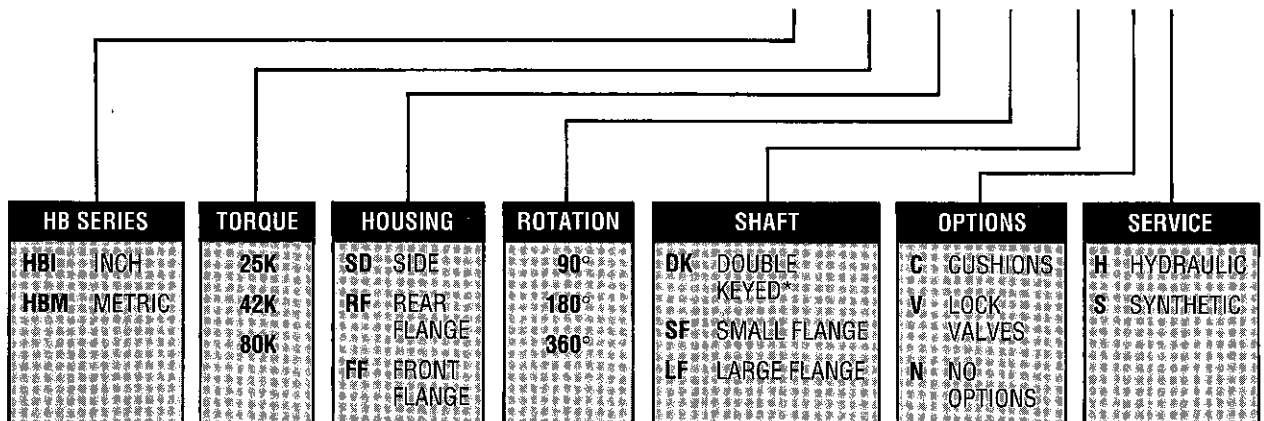
The HB Series is available in nine different shaft/housing combinations.

		3 STANDARD HOUSING STYLES		
		SD HOUSING Integral mounting feet with blind drilled and tapped holes.	RF HOUSING Integral mounting flange with through drilled bolt circle. Flange located at rear of housing.	FF HOUSING Integral mounting flange with through drilled bolt circle. Flange set back from front of housing.
3 STANDARD SHAFT STYLES				

Ordering Information

To be assured of ordering the correct model of actuator, please use Helac's coding system as outlined below.

SAMPLE MODEL NUMBER
HBI-25K-RF-180-DK-C-H



* One shaft extension may be removed at customer request.

Specifications

	HBI Series (Inch)			HBM Series (Metric)		
	HBI-25K	HBI-42K	HBI-80K	HBM-25K	HBM-42K	HBM-80K
NET TORQUE	25000	42000 IN-LB @ 3000 PSI	80000	2825	4745 N.m @ 206 Bar	9030
DISPLACEMENT PER 90° ROTATION	21 IN ³	33 IN ³	62 IN ³	337 cm ³	534 cm ³	1019 cm ³
WEIGHT ^①						
90° ROTATION	80 LB	112 LB	195 LB	36 kg	51 kg	88 kg
180° ROTATION	88 LB	124 LB	225 LB	40 kg	56 kg	102 kg
360° ROTATION	108 LB	149 LB	285 LB	49 kg	68 kg	129 kg
THRUST CAPACITY (T) ^②	15000 LB	20000 LB	30000 LB	6800 kg	9000 kg	13600 kg
RADIAL CAPACITY (R) ^③	11000 LB	14000 LB	22000 LB	5000 kg	6400 kg	10000 kg
MOMENT CAPACITY (M1) ^④	135000 IN-LB	210000 IN-LB	310000 IN-LB	15200 N.m	23700 N.m	35000 N.m
MOMENT CAPACITY (M2) ^⑤	85000 IN-LB	145000 IN-LB	240000 IN-LB	9600 N.m	16400 N.m	27000 N.m
MOMENT CAPACITY (M3) ^⑥	45000 IN-LB	75000 IN-LB	130000 IN-LB	5100 N.m	8500 N.m	14700 N.m
MOMENT CAPACITY (M4) ^⑥	8000 IN-LB	15000 IN-LB	22000 IN-LB	900 N.m	1700 N.m	2500 N.m

① SD Housing with SF Shaft. Weights are greater for other configurations; consult factory.

② Based on bearing strength. Includes a 3:1 safety factor.

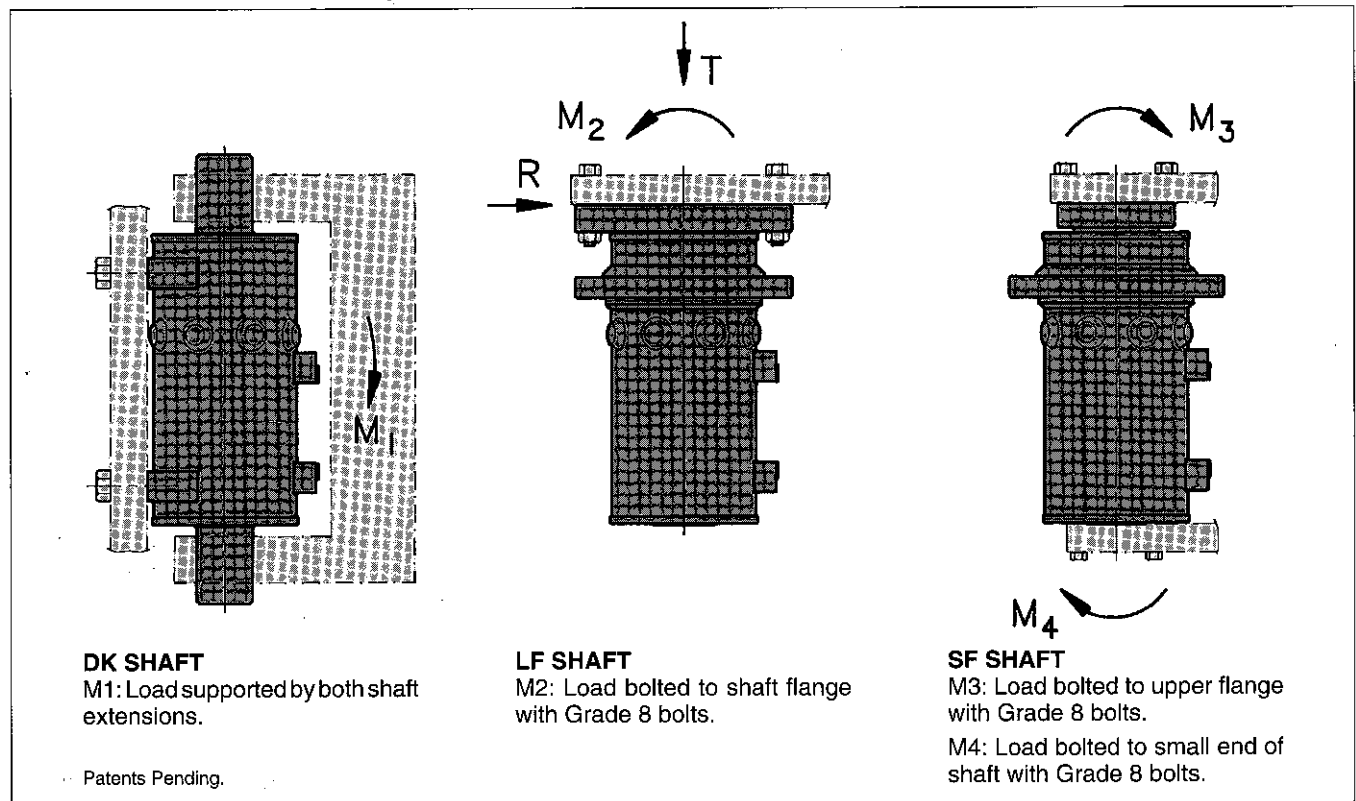
③ Force applied in the plane of the shaft flange. Based on bearing strength. Includes a 3:1 safety factor.

④ Based on the radial bearing capacity and strength of Grade 8 mounting bolts for 180° models. Must be reduced for 90° models. Includes a 3:1 safety factor.

⑤ Based on the fatigue strength of Grade 8 bolts, and on fatigue strength of shaft. Includes a 3:1 safety factor.

⑥ For shafts with through bores, tie rods can be used to substantially increase M3 and M4; consult factory.

All ratings are based on constant loading. For shock loads the permissible ratings must be reduced substantially based on the designer's experience, or consult factory.



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CATALOG HB-0596/2.5M