HELAC®

Helical Hydraulic Rotary Actuators

we carry the load.

HELAC®

POWERFUL

- High torque
- High bearing capacity

DURABLE

- Moving parts enclosed
- Suitable for harsh environments

COMPACT

- High power density
- Fits in tight spaces

HOLDS POSITION

- Zero internal leakage
- Smooth operation
- No external brake required

SIMPLIFIES

- Eliminates bearings, linkages & brackets
- Reduces bill of materials
- Simplifies supply chain, assembly and maintenance

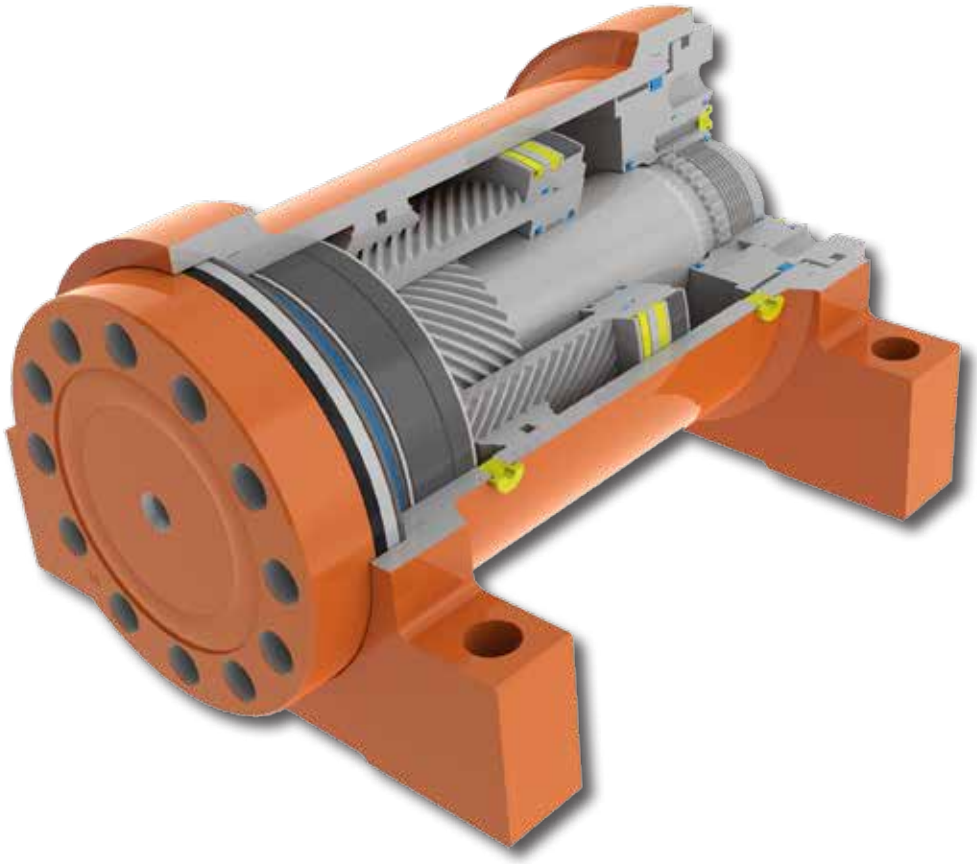
BACKDRIVES IN OVERLOAD CONDITIONS

- Hydraulic fuse
- Prevents mechanical damage

Helac's innovative

Powered Hinge

Helical, Hydraulic Rotary Actuators



For over 45 years, Helac has lead the way in actuator technology and innovation. Our extensive line of compact and powerful rotary actuators offer simple and cost-effective solutions to move, support and position rotating loads in countless applications.

Helac actuators are designed to replace multiple components and function as a rotating device, mounting bracket and bearing, all-in-one. They feature tremendous torque output and exceptional load bearing capability in compact dimensions.

we carry the load.

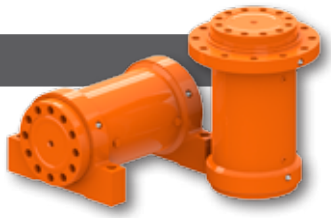
L10 SERIES

Rotation:	180° and 360°
Maximum Drive Torque:	1,700 to 25,000 in-lb
Maximum Holding Torque:	5,600 to 83,000 in-lb
Maximum Straddle Moment:	5,000 to 100,000 in-lb
Maximum Cantilever Moment:	5,000 to 100,000 in-lb
Mounting:	Flange

L20 SERIES

Rotation:	180°
Maximum Drive Torque:	4,500 to 39,000 in-lb
Maximum Holding Torque:	11,800 to 93,200 in-lb
Maximum Straddle Moment:	22,500 to 280,000 in-lb
Maximum Cantilever Moment:	12,000 to 140,000 in-lb
Mounting:	Foot

L30 SERIES



Rotation:	180° and 360°
Maximum Drive Torque:	17,000 to 380,000 in-lb
Maximum Holding Torque:	43,600 to 936,000 in-lb
Maximum Straddle Moment:	119,000 to 1,505,000 in-lb
Maximum Cantilever Moment:	45,900 to 570,000 in-lb
Mounting:	Flange or Foot

T SERIES

Rotation:	200° and 220°
Maximum Drive Torque:	25,000 to 60,000 in-lb
Maximum Holding Torque:	54,200 to 127,000 in-lb
Maximum Straddle Moment:	37,500 to 90,000 in-lb
Mounting:	Foot

Helac actuators move, support and position . . .









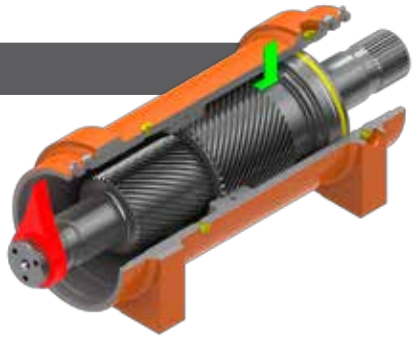
. . . all around the world

Operating Technology

Helac's innovative, sliding-spline technology converts linear piston motion into powerful shaft rotation. Each actuator is comprised of a housing and two moving parts — the central shaft and piston. Helical spline teeth on the shaft engage matching teeth on the piston's inside diameter. A second set of helical splines on the piston's outside diameter mesh with the gear in the housing.

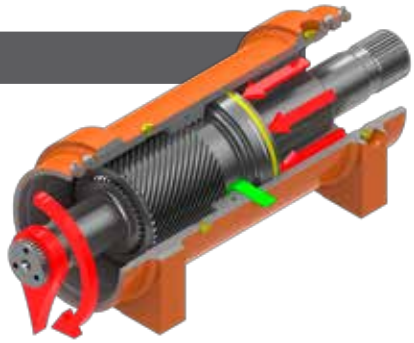
STARTING POSITION

The piston is completely bottomed out. Bars indicate starting positions of piston and shaft. The housing with integral gear remains stationary.



ENDING POSITION

When hydraulic pressure is applied to the piston, it moves axially; while the helical gearing causes the piston and shaft to rotate simultaneously. Applying pressure to the opposite port will return the piston and shaft to their original starting positions.



Industries Served

Agriculture
Construction
Energy
Marine
Material Handling
Military
Mining
Truck/Trailer

and many others . . .

Customized Products

Helac Corporation can customize our rotary actuators to meet unique application requirements. Custom engineering can range from slight to complete, and is offered to those customers whose actuator needs match our program requirements.

Rail Mount

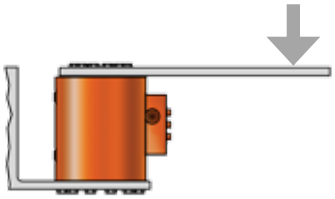
Clevis Mount

Mounting Options

Cantilever Mount
The load is mounted to the shaft flange and is supported at only one end of the shaft. Cantilever mounting is not recommended for aerial work platforms or other critical and safety-related applications.

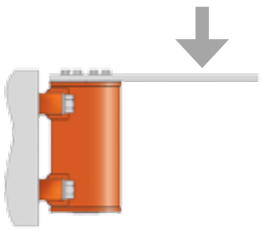
Straddle Mount
The load is supported at both ends of the shaft.

L10 SERIES

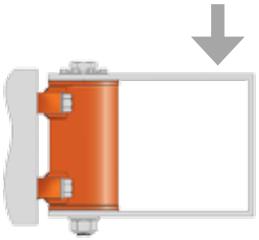


Cantilever Mount

L20 SERIES



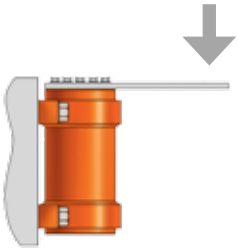
Cantilever Mount



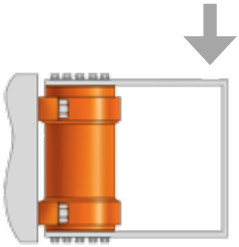
Straddle Mount

The upper portion of the bracket is bolted to the shaft flange. The lower portion is secured either by a tie rod passed through the shaft bore or is bolted to the endcap flange.

L30 SERIES



Cantilever Mount



Straddle Mount

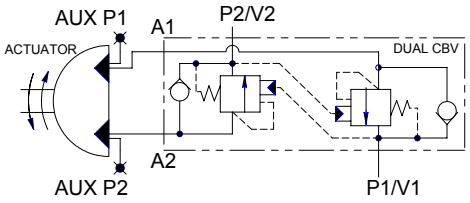
The upper portion of the bracket is bolted to the shaft flange, the lower portion is bolted to the endcap flange.

⚠ WARNING

IMPROPER SELECTION, INSTALLATION, OR USE OF HELAC PRODUCTS OR SYSTEMS MAY RESULT IN FAILURE AND CAUSE DEATH, PERSONAL INJURY OR PROPERTY DAMAGE.

Valve Configurations

Optional factory mounted counterbalance valves prevent rotation in the event of a hydraulic line failure, control rotation when loads go over center, and protect the actuator against excessive torque loads.



Hydraulic Schematic of Optional Counterbalance Valve

L10, L20 AND T20 SERIES

Manufactured from aluminum, the valve blocks are bolted to a flat mounting pad on the actuator housing. Three bolts secure the valve block to the actuator. See specification pages for valve location.

The pilot ratio is 3:1. The valves are set to relieve at 3300 psi ±300 psi (228 bar ±21 bar).

L30 SERIES

Standard Valve for L30-17 and L30-25 180 Degree Models
Manufactured from aluminum, the valve blocks are bolted to a flat mounting pad on the actuator housing. Three bolts secure the valve block to the actuator. See specification pages for valve location.

The pilot ratio is 3:1. The valves are set to relieve at 3300 psi ±300 psi (228 bar ±21 bar).

Standard Valve for all other L30 Series Actuators
Manufactured from ductile iron, the valve blocks are bolted to a flat mounting pad on the actuator housing, usually over port P1. Factory installed steel tubing connects the valve to port P2. Valve locations and plumbing routing differ among sizes. See specification pages for details.

The pilot ratio is 2.5:1. The valves are set to relieve at 3,625 psi ±360 psi (250 bar ±25 bar).

VALVE READY OPTION

Available on select models only, the actuator has a flat mounting pad machined on the housing with threaded holes to accept the valve mounting bolts. The actuator-to-valve ports have threaded plugs which allow the actuator to be used with or without a valve.

L10 with counterbalance valve

L20 with counterbalance valve

T20 with counterbalance valve

L30 with counterbalance valve, no tube (select models only)

L30 with counterbalance valve, with tube (select models only)

Model Code Reference Guide

L10 - 25 - E - RF - 180/90 - S1 - O - H/G

1 2 3 4 5 6 7 8 9 10

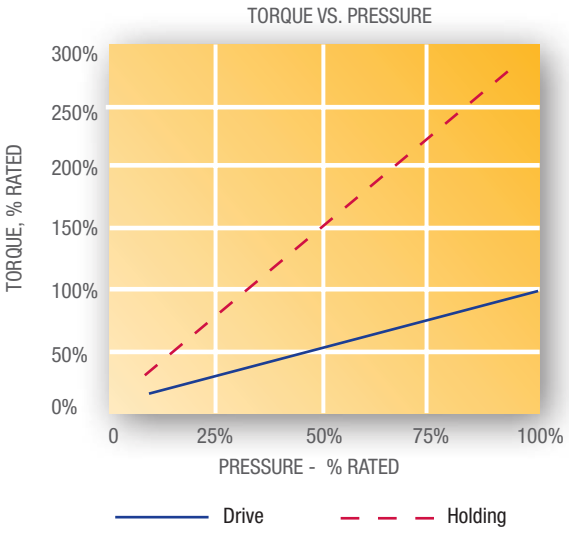
MODEL CODE DESCRIPTION	L10 SERIES	L20 SERIES	L30 SERIES	T20 SERIES
1 **Actuator Series**	**L10**	**L20**	**L30**	**T20**
2 **Model**	**1.7** **15** **3.0** **25** **5.5** **9.5**	**4.5** **39** **8.2** **15** **25**	**17** **95** **380** **25** **125** **42** **165** **65** **215**	**25** **45** **60**
3 **Measurement System**	**E** English System	**M** Metric System	**ES or MS** Custom Design	
4 **Housing Configuration**	**RF** Rear Flange	**FT** Foot Mount	**FT** Foot Mount **FF** Front Flange	**FT** Foot Mount
5 **Standard Rotation**	**180** 180 Degrees **360** 360 Degrees L10-1.7 180° only L10-9.5 185° or 360° only	**180** 180 Degrees	**180** 180 Degrees **360** 360 Degrees L30-380 210° only	**220** 220 Degrees T20-60 200° only
6 **Special Rotation**	Standard design with internal stop tube to limit rotation - indicates final rotation. Stop tubes are available in 10° increments.			
7 **Shaft/End cap Configuration**	**S1** Mounting holes in shaft flange only.	**S1** Mounting holes in shaft flange with through-hole for tie rod (4.5, 8.2, and 15k models) **S2** Mounting holes in shaft and end cap flanges (25 and 39k models)	**S1** Mounting holes in shaft flange only **S2** Mounting holes in shaft and end cap flanges	**DS** Dual Spline **DA** Dual Adapter
8 **Valve Options**	**C** Counterbalance Valve	**O** No Valve	**V** Valve Ready**	
9 **Seals**	**H** Standard Seals and Bearings		**S** Special Seals and Bearings***	
10 **Options**	**G** Customer Greasing Capabilities*			

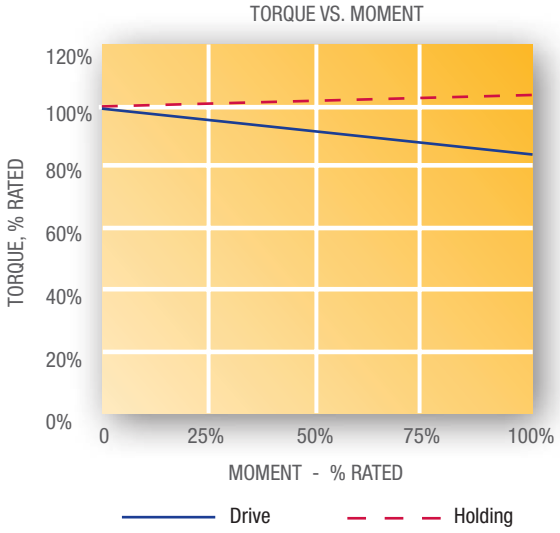
* Greasing is standard on L30 and T20-60 models. Option applies to L10 models only.
** Available only on L10 and L20 models. *** High volume only
The Model Code defines standard configurations of our actuators. Please contact Helac Corporation for special requirements.

Actuator Performance

Torque Versus Hydraulic Pressure and Loads

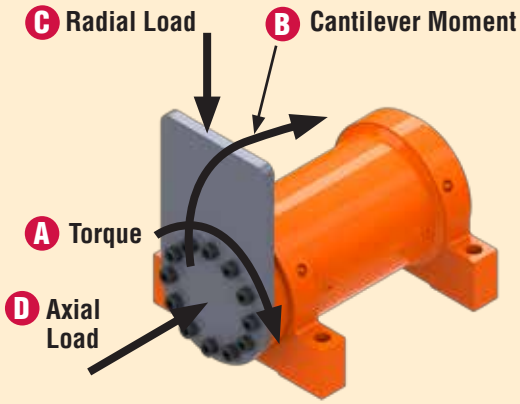
The driving torque and holding torque are approximately linear with hydraulic pressure. As moment loads increase, drive torque may be reduced by up to 15%.



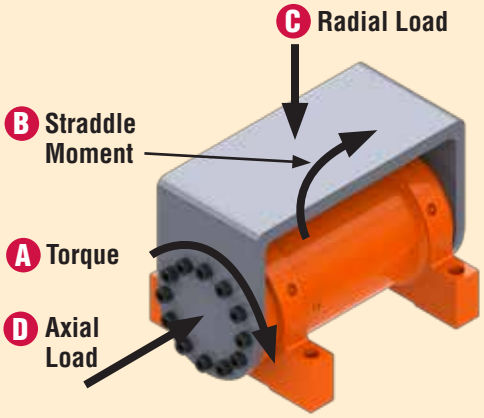


SPECIFICATIONS REFERENCE GUIDE

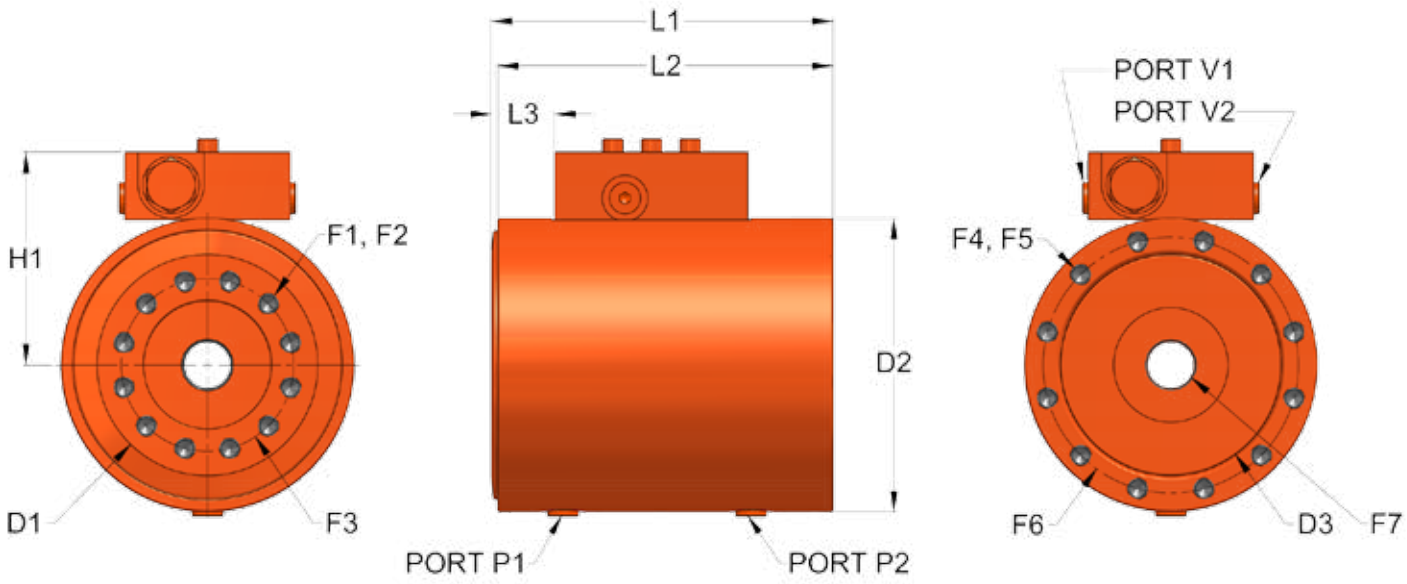
CANTILEVER MOUNT



STRADDLE MOUNT



Digital Drawings can be provided in the following formats: .pdf, .stp, .dwg and .dxf. Email request to actuators@helac.com, or call +1 800 327 2589 (US and Canada), or +1 360 825 1601 (Worldwide).



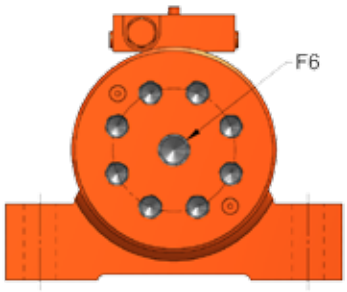
SHAFT FLANGE **HOUSING FLANGE**

L10 SPECIFICATIONS		1.7	3.0	5.5	9.5*	15	25
TORQUE (A)							
Drive Torque	in-lb @ 3,000 psi *Nm @ 207 bar*	1,700 *192*	3,000 *339*	5,500 *622*	9,500 *1 074*	15,000 *1 695*	25,000 *2 825*
Holding Torque	in-lb @ 3,000 psi *Nm @ 207 bar*	5,600 *633*	11,000 *1 243*	17,000 *1 921*	34,000 *3 842*	50,000 *5 650*	83,000 *9 379*
MOMENT CAPACITY (B), CANTILEVER MOUNT							
Capacity	in-lb *Nm*	5,000 *565*	9,000 *1 017*	20,000 *2 260*	50,000 *5 650*	80,000 *9 040*	100,000 *11 300*
RADIAL CAPACITY (C)							
Radial	lb *kg*	2,000 *907*	3,000 *1 361*	4,000 *1 814*	8,000 *3 629*	11,000 *4 990*	15,000 *6 804*
AXIAL CAPACITY (D)							
Axial	lb *kg*	2,000 *907*	3,000 *1 361*	4,000 *1 814*	8,000 *3 629*	11,000 *4 990*	15,000 *6 804*
DISPLACEMENT							
180°	in^3 cm^3	3.90 *63.9*	7.40 *121.3*	11.7 *191.7*	22.3 *365.4*	33.7 *552.2*	55.8 *914.4*
360°	in^3 cm^3	— —	14.80 *242.5*	23.40 *383.5*	44.70 *732.5*	67.40 *1 104.5*	111.60 *1 828.8*
APPROXIMATE WEIGHT							
180°	lb *kg*	14.0 *6.4*	22.0 *10.0*	31.0 *14.1*	57.0 *25.9*	95.0 *43.1*	125 *56.7*
360°	lb *kg*	— —	28.0 *12.7*	42.0 *19.1*	77.0 *34.9*	120 *54.4*	183 *83.0*

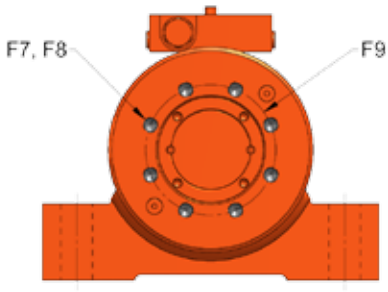
L10 MODELS			1.7	3.0	5.5	9.5*	15	25
D1	Shaft mounting surface diameter	in *mm*	3.04 *77.2*	3.50 *89*	4.00 *102*	5.00 *127*	5.81 *148*	7.27 *185*
D2	Housing diameter	in *mm*	3.90 *100*	4.70 *119*	5.30 *135*	6.70 *170*	7.80 *198*	8.90 *226*
D3	Mounting flange inside diameter	in *mm*	3.02 *76.7*	3.66 *93*	4.12 *105*	5.28 *134*	6.16 *157*	7.32 *186*
F1	Threaded mounting hole, shaft flange	inch deep *metric* *deep*	5/16-18 0.50 *M8 x 1.25* *11.9*	5/16-18 0.50 *M8 x 1.25* *12*	3/8-16 0.63 *M10 x 1.5* *15.2*	1/2-13 0.75 *M12 x 1.75* *19.1*	1/2-13 0.75 *M12 x 1.75* *19.1*	5/8-11 1.00 *M16 x 2* *25.4*
F2	Quantity of mounting holes, shaft flange		8	8	12	12	12	12
F3	Bolt circle diameter, shaft flange	in *mm*	2.125 *54.0*	2.875 *73.0*	3.125 *80.0*	4.000 *102*	5.000 *127*	5.500 *140*
F4	Threaded mounting hole, housing flange	inch deep *metric* *deep*	5/16-18 0.50 *M8 x 1.25* *11.9*	5/16-18 0.50 *M8 x 1.25* *12*	3/8-16 0.63 *M10 x 1.5* *18*	1/2-13 0.75 *M12 x 1.75* *19.1*	1/2-13 0.75 *M12 x 1.75* *19.1*	1/2-13 0.75 *M12 x 1.75* *19.1*
F5	Quantity of mounting holes, housing flange		8	8	12	12	12	12
F6	Bolt circle diameter, housing flange	in *mm*	3.375 *86*	4.063 *103*	4.625 *117*	5.938 *151*	6.875 *175*	8.000 *203*
F7	Shaft through-hole diameter	in *mm*	0.56 *14.3*	0.66 *17*	.84 *21.4*	1.41 *35.7*	1.80 *45.7*	2.63 *66.7*
H1	Centerline to valve top	in *mm*	3.15 *80*	3.53 *89.7*	3.85 *97.8*	4.53 *115*	5.07 *129*	5.63 *143*
L1	Overall Length 180°	in *mm*	5.50 *140*	5.63 *143*	6.13 *156*	7.25 *184*	8.83 *224*	9.50 *241*
	360°	in *mm*	— —	7.45 *189*	8.35 *212*	10.15 *258*	12.25 *311*	13.64 *346*
L2	Overall Length, non-rotating 180°	in *mm*	5.45 *138*	5.58 *142*	6.08 *154*	7.17 *182*	8.72 *221*	9.40 *239*
	360°	in *mm*	— —	7.40 *188*	8.30 *211*	10.07 *256*	12.14 *308*	13.54 *344*
L3	Shaft flange to counterbalance valve 180°	in *mm*	1.00 *25.4*	1.06 *26.9*	1.09 *27.7*	1.10 *27.9*	1.52 *38.6*	1.73 *43.9*
	360°	in *mm*	— —	*0.89* *22.6*	0.97 *24.6*	1.68 *42.7*	2.37 *60.2*	2.77 *70.4*
P1, P2 Ports, housing **V1, V2** Ports, valve		inch *metric*	ISO-11926/SAE Series of ports. Sizes are 7/16. See drawings for details. *ISO-1179-1/BSPP 'G' Series of ports. Sizes are 1/8. See drawings for details.*					

* L10-9.5 185°

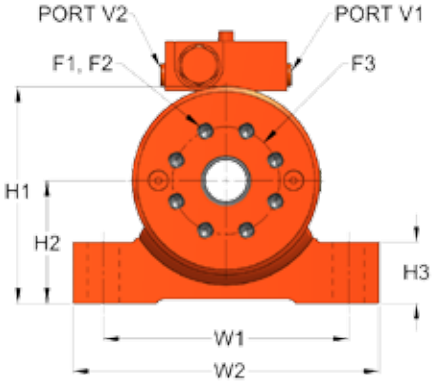
Specification charts are for general reference only. Consult drawing for actual values and tolerances.



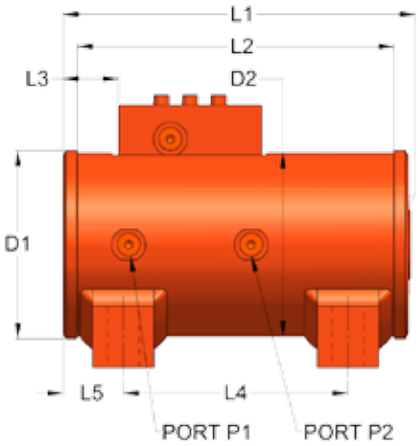
L20-25, 39 SHAFT FLANGE

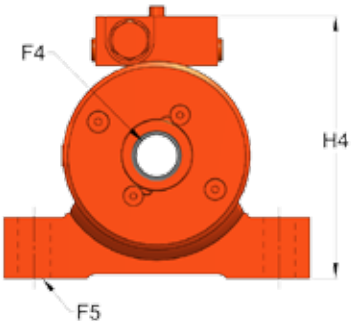


L20-25, 39 ENDCAP



L20-4.5, 8.2, 15 SHAFT FLANGE



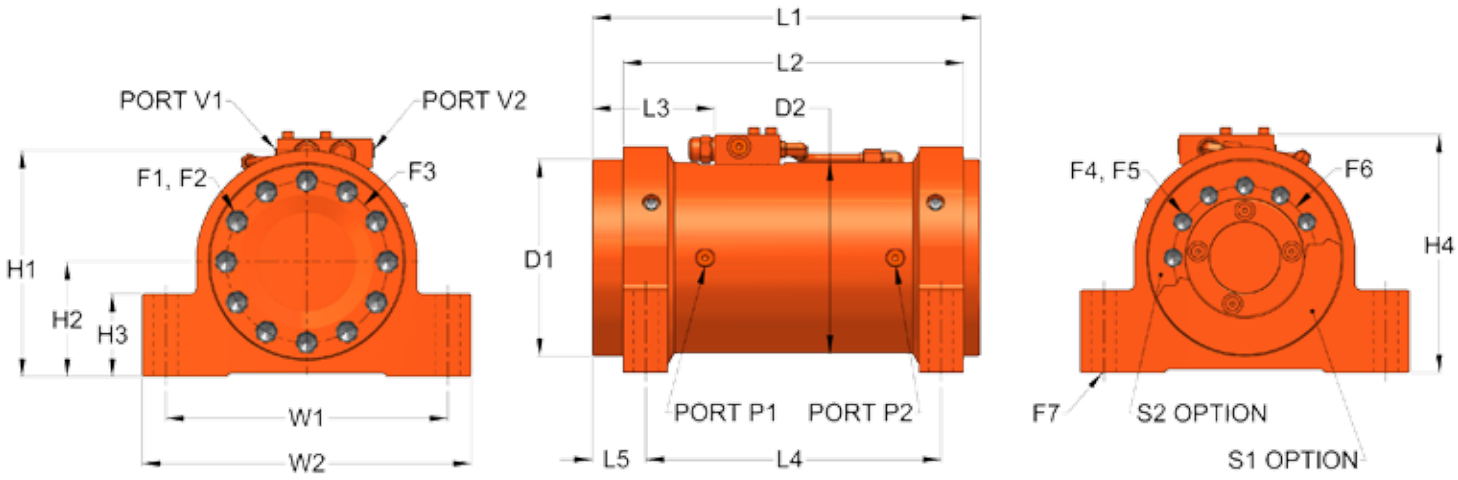


L20-4.5, 8.2, 15 ENDCAP

L20 SPECIFICATIONS		4.5	8.2	15	25	39
TORQUE (A)						
Drive Torque	in-lb @ 3,000 psi	4,500	8,200	15,000	25,000	39,000
	Nm @ 207 bar	*509*	*927*	*1 695*	*2 825*	*4 407*
Holding Torque	in-lb @ 3,000 psi	11,800	21,000	38,720	62,900	93,200
	Nm @ 207 bar	*1 333*	*2 373*	*4 375*	*7 108*	*10 532*
MOMENT CAPACITY (B)						
Straddle Moment	in-lb	22,500	40,000	90,000	200,000	280,000
	Nm	*2 543*	*4 520*	*10 170*	*22 597*	*31 640*
Cantilever Moment	in-lb	12,000	22,000	48,000	100,000	140,000
	Nm	*1 356*	*2 486*	*5 424*	*11 300*	*15 820*
RADIAL CAPACITY (C)						
	lb	3,050	4,700	9,230	12,300	21,000
	kg	*1 383*	*2 132*	*4 187*	*5 579*	*9 526*
AXIAL CAPACITY (D)						
	lb	1,100	1,500	2,200	3,100	3,900
	kg	*499*	*680*	*998*	*1 406*	*1 769*
DISPLACEMENT						
180°	in^3	8.05	14.3	26.6	44.3	65.7
	cm^3	*131.9*	*234.3*	*435.9*	*725.9*	*1 076.6*
APPROXIMATE WEIGHT						
	lb	27.0	37.0	66.0	113	169
	kg	*12.2*	*16.8*	*29.9*	*51.3*	*76.7*

L20 MODELS			4.5	8.2	15	25	39
D1	Shaft and endcap flange diameter	in *mm*	4.10 *104*	4.60 *117*	5.60 *142*	6.70 *170*	7.70 *196*
D2	Housing diameter	in *mm*	4.00 *101*	4.50 *114*	5.50 *139*	6.50 *165*	7.50 *191*
F1	Threaded mounting hole, shaft flange	inch deep *metric* *deep*	3/8-16 0.54 *M10 x 1.5* *12.7*	3/8-16 0.54 *M10 x 1.5* *15.2*	1/2-13 0.75 *M12 x 1.75* *19.1*	3/4-10 1.13 *M20 x 2.5* *30*	3/4-10 1.25 *M20 x 2.5* *28*
F2	Quantity of mounting holes, shaft flange		6	8	8	8	10
F3	Bolt circle diameter, shaft flange	in *mm*	2.125 *53.9*	2.625 *65*	3.375 *85*	4.000 *102*	4.750 *121*
F4	Clearance hole for shaft through-bolt (S1)	inch deep *metric* *deep*	3/4 through *M20* *through*	1 through *M24* *through*	1 through *M24* *through*	— — — —	— — — —
F5	Housing foot clearance hole, required bolt size	in *mm*	5/8 *M16*	3/4 *M20*	1 *M24*	1 *M24*	1 1/4 *M30*
F6	Shaft center threaded hole	inch deep *metric* *deep*	— — — —	— — — —	— — — —	1-8 2.00 *M24 x 3* *25*	1 1/4-7 2.00 *1 1/4-7* *2.00*
F7	Threaded mounting hole, endcap flange (S2)	inch deep *metric* *deep*	— — — —	— — — —	— — — —	1/2-13 0.75 *M12 x 1.75* *18*	5/8-11 0.94 *M16 x 2* *23*
F8	Quantity of mounting holes, endcap flange (S2)		—	—	—	8	10
F9	Bolt circle diameter, endcap flange (S2)	in *mm*	— —	— —	— —	4.25 *108*	4.75 *121*
H1	Overall height (excluding valve)	in *mm*	4.67 *119*	5.32 *135*	6.21 *158*	7.60 *193*	8.60 *218*
H2	Height to centerline	in *mm*	2.60 *66.0*	3.00 *76.2*	3.38 *85.9*	4.25 *108*	4.75 *121*
H3	Foot height	in *mm*	1.35 *34.3*	1.5 *38.1*	1.75 *44.5*	2.50 *63.5*	2.75 *70*
H4	Overall height (with valve)	in *mm*	5.76 *146*	6.41 *163*	7.28 *185*	8.66 *220*	9.65 *245*
L1	Overall length	in *mm*	7.40 *188*	8.50 *216*	9.75 *248*	11.75 *298*	13.25 *337*
L2	Overall length, non-rotating	in *mm*	6.80 *173*	7.76 *197*	9.01 *229*	10.87 *276*	12.37 *314*
L3	Shaft flange to counterbalance valve	in *mm*	1.26 *32*	1.36 *34.5*	1.76 *44.7*	1.92 *48.8*	1.93 *49*
L4	Mounting length	in *mm*	4.38 *111*	5.50 *140*	6.00 *152*	7.25 *184*	8.50 *216*
L5	Shaft flange to mounting hole	in *mm*	1.49 *37.9*	1.48 *37.6*	1.85 *47*	2.25 *57.2*	2.38 *60.5*
W1	Mounting width	in *mm*	5.50 *145*	6.00 *152*	7.75 *197*	8.75 *222*	10.50 *267*
W2	Overall width	in *mm*	7.00 *178*	7.50 *191*	9.75 *248*	11.00 *279*	13.00 *330*
P1, P2 Ports, housing **V1, V2** Ports, valve		inch *metric*	ISO-11926/SAE Series of ports. Sizes are 7/16. See drawings for details.				

Specification charts are for general reference only. Consult drawing for actual values and tolerances.



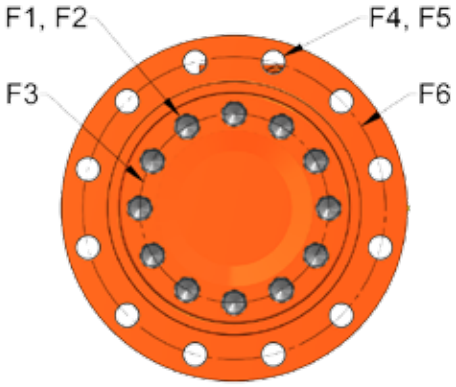
SHAFT FLANGE **ENDCAP FLANGE**

L30 SPECIFICATIONS		17	25	42	65	95	125	165	215	380*
TORQUE (A)										
Drive Torque	in-lb @ 3,000 psi	17,000	25,000	42,000	65,000	95,000	125,000	165,000	215,000	380,000
	Nm @ 207 bar	*1 921*	*2 825*	*4 746*	*7 345*	*10 735*	*14 125*	*18 645*	*24 295*	*42 940*
Holding Torque	in-lb @ 3,000 psi	43,600	60,400	103,000	162,000	232,000	306,000	404,000	520,000	936,000
	Nm @ 207 bar	*4 927*	*6 825*	*11 639*	*18 306*	*26 216*	*34 578*	*45 652*	*58 760*	*105 768*
MOMENT CAPACITY (B)										
Cantilever Mount	in-lb	45,900	62,500	105,000	162,500	261,250	343,750	495,000	645,000	570,000
	Nm	*5 187*	*7 063*	*11 865*	*18 363*	*29 521*	*38 844*	*55 935*	*72 885*	*64 410*
Straddle Mount 180°	in-lb	119,000	150,000	273,000	423,000	665,000	875,000	1,155,000	1,505,000	1,505,000
	Nm	*13 447*	*16 950*	*30 849*	*47 799*	*75 145*	*98 875*	*130 515*	*170 065*	*170 065*
Straddle Mount 360°	in-lb	170,000	218,000	402,000	630,000	987,000	1,295,000	1,750,000	2,270,000	1,505,000
	Nm	*19 210*	*24 634*	*45 426*	*71 190*	*111 531*	*146 335*	*197 750*	*256 510*	*170 065*
RADIAL CAPACITY (C)										
	lb	4,000	5,000	8,000	11,000	15,000	18,000	22,000	26,000	26,000
	kg	*1 814*	*2 268*	*3 629*	*4 990*	*6 804*	*8 165*	*9 979*	*11 794*	*11 794*
AXIAL CAPACITY (D)										
	lb	3,000	4,000	6,000	8,000	10,000	13,000	15,000	18,000	18,000
	kg	*1 361*	*1 814*	*2 722*	*3 629*	*4 536*	*5 897*	*6 804*	*8 165*	*8 165*
DISPLACEMENT										
180°	in^3	29.8	42.5	72.2	114	164	216	284	366	622
	cm^3	*488.3*	*696.5*	*1 183.1*	*1 868.1*	*2 687.5*	*3 539.6*	*4 653.9*	*5 997.7*	*10 192.8*
360°	in^3	60.0	85.0	144	228	327	432	569	732	—
	cm^3	*983.2*	*1 392.9*	*2 359.7*	*3 736.3*	*5 358.6*	*7 079.2*	*9 324.3*	*11 995.4*	—
APPROXIMATE WEIGHT										
180°	lb	76.0	110	160	240	360	490	610	790	1,100
	kg	*34.5*	*49.9*	*72.6*	*108.9*	*163.3*	*222.3*	*276.7*	*358.3*	*499.0*
360°	lb	100	140	220	310	450	630	*810*	*1,000*	—
	kg	*45.4*	*63.5*	*99.8*	*140.6*	*204.1*	*285.8*	*367.4*	*453.6*	—

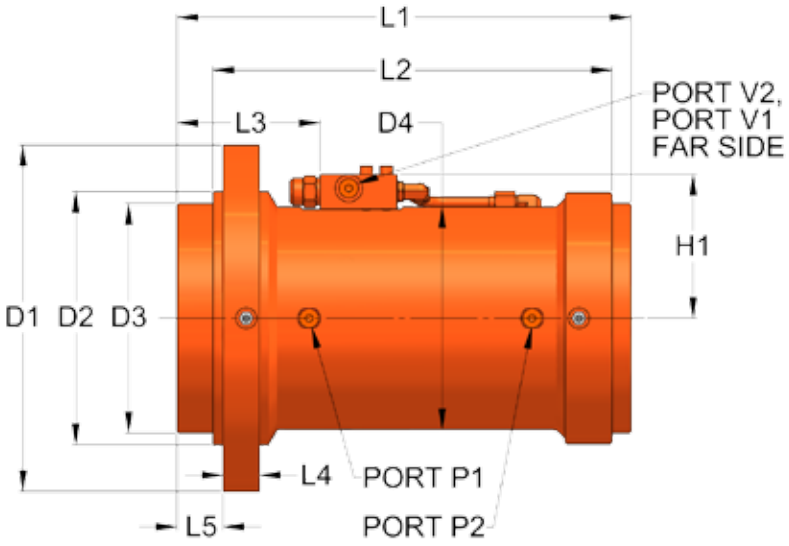
* L30-380 Standard rotation is 210°. 180° rotation is achieved by incorporating an internal stop tube in the 210° actuator. Contact Helac Corporation for more information.

L30 MODELS				17	25	42	65	95	125	165	215	380*
D1	Shaft and endcap flange diameter		in *mm*	5.47 *139*	6.09 *155*	7.22 *183*	8.22 *209*	9.22 *234*	10.34 *263*	11.35 *288*	12.22 *310*	12.22 *310*
D2	Housing Diameter		in *mm*	5.50 *140*	6.00 *152*	7.00 *178*	8.00 *203*	9.00 *229*	10.0 *254*	11.0 *279*	12.0 *305*	12.0 *305*
F1	Threaded mounting hole, shaft flange (**F2** Quantity of mounting holes: 12)		inch deep *metric* *deep*	1/2-13 0.75 *M12 x 1.75* *18*	5/8-11 0.94 *M16 x 2* *23.9*	3/4-10 1.13 *M20 x 2.5* *30*	7/8-9 1.31 *M22 x 2.5* *33*	1-8 1.38 *M24 x 3* *36.1*	1 1/8-7 1.69 *M27 x 3* *40.6*	1 1/8-7 1.69 *M27 x 3* *40.6*	1 1/4-7 1.88 *M30 x 3.5* *44.9*	1 1/4-7 1.88 *M30 x 3.5* *44.9*
F3	Bolt circle diameter, shaft flange		in *mm*	4.50 *115*	5.00 *125*	5.88 *150*	6.75 *170*	7.75 *195*	8.50 *215*	9.50 *240*	10.00 *255*	10.00 *255*
F4	Threaded mounting hole, endcap flange, S2 (**F5** Quantity of mounting holes: 12)		inch deep *metric* *deep*	3/8-16 0.56 *M10 x 1.5* *15*	1/2-13 0.75 *M12 x 1.75* *18*	5/8-11 0.94 *M16 x 2* *23.9*	3/4-10 1.13 *M20 x 2.5* *30*	7/8-9 1.31 *M22 x 2.5* *33*	1-8 1.50 *M24 x 3* *36.1*	1-8 1.50 *M24 x 3* *36.1*	1 1/8-7 1.69 *M27 x 3* *40.1*	1 1/8-7 1.69 *M27 x 3* *40.1*
F6	Bolt circle diameter, endcap flange, S2		in *mm*	4.25 *108*	4.75 *120*	5.25 *133*	6.00 *150*	6.75 *170*	7.50 *190*	8.25 *210*	9.00 *230*	9.00 *230*
F7	Housing foot clearance hole, required bolt size		in *mm*	5/8 *M16*	3/4 *M20*	7/8 *M22*	1 *M24*	1 1/8 *M27*	1 1/4 *M30*	1 3/8 *M36*	1 1/2 *M36*	1 1/2 *M36*
H1	Overall height (excluding valve)		in *mm*	6.15 *156*	7.34 *186*	8.35 *212*	9.45 *240*	10.86 *276*	11.99 *305*	12.88 *327*	14.25 *362*	14.25 *362*
H2	Height to centerline		in *mm*	3.15 *80.0*	3.74 *94.9*	4.25 *108*	4.80 *122*	5.51 *140*	6.06 *154*	6.50 *165*	7.25 *184*	7.25 *184*
H3	Foot Height		*in* *mm*	1.89 *48*	2.75 *69.9*	3.07 *77.9*	3.47 *88.1*	4.13 *105*	4.33 *110*	4.73 *120*	5.32 *135*	5.32 *135*
H4	Overall Height (with valve)		in *mm*	7.05 *179*	7.91 *201*	8.90 *226*	10.68 *271*	11.16 *283*	12.21 *310*	13.15 *334*	14.40 *366*	14.40 *366*
L1	Overall length	180° 360°	in *mm* in *mm*	11.73 *298* 16.81 *427*	12.72 *323* 18.51 *470*	14.37 *365* 21.18 *538*	16.24 *413* 24.20 *615*	18.70 *475* 27.76 *705*	20.63 *524* 30.55 *776*	21.81 *554* 32.92 *836*	23.62 *600* 35.67 *906*	35.67 *906* — —
L2	Overall length, non-rotating	180° 360°	in *mm* in *mm*	10.26 *261* 15.44 *392*	11.27 *286* 17.05 *433*	12.73 *323* 19.54 *496*	14.27 *363* 22.23 *565*	16.95 *431* 26.01 *661*	18.21 *463* 28.13 *715*	19.39 *493* 30.49 *775*	21.02 *534* 33.19 *843*	33.37 *848* — —
L3	Shaft flange to counterbalance valve	180° 360°	in *mm* in *mm*	2.96 *75.2* 5.85 *149*	5.27 *134* 6.19 *157*	5.61 *143* 7.75 *197*	5.12 *130* 9.15 *232*	6.00 *152* 10.50 *267*	7.27 *185* 12.13 *308*	7.73 *196* 13.32 *338*	8.69 *221* 14.71 *374*	14.71 *374* — —
L4	Mounting Length	180° 360°	in *mm* in *mm*	9.02 *229* 14.09 *358*	9.76 *248* 15.55 *395*	11.06 *281* 17.87 *454*	12.36 *314* 20.32 *516*	14.73 *374* 23.78 *604*	15.75 *400* 25.67 *652*	16.77 *426* 27.88 *708*	18.11 *460* 30.16 *766*	30.16 *766* — —
L5	Shaft flange to mounting hole		in *mm*	1.50 *38.1*	1.73 *43.9*	1.97 *50*	2.24 *56.9*	2.36 *59.9*	2.92 *74.2*	2.99 *75.9*	3.09 *78.5*	3.15 *80*
W1	Mounting width		in *mm*	7.48 *190*	9.06 *230*	10.24 *260*	11.81 *300*	13.39 *340*	14.96 *380*	16.14 *410*	17.72 *450*	17.72 *450*
W2	Overall width		in *mm*	8.74 *222*	10.55 *268*	12.21 *310*	13.78 *350*	15.75 *400*	17.60 *447*	19.06 *484*	20.87 *530*	20.87 *530*
P1, P2 Ports, housing **V1, V2** Ports, valve			inch *metric*	ISO-11926/SAE Series of ports. Sizes vary from 7/16 to 3/4. See drawings for details. *ISO-1179-1/BSPP 'G' Series of ports. Sizes vary from 1/4 thru 1/2. See drawings for details.*								

Specification charts are for general reference only. Consult drawing for actual values and tolerances.



SHAFT AND MOUNTING FLANGE

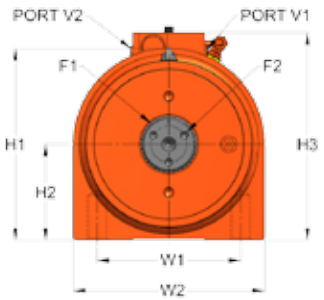


L30 SPECIFICATIONS		17	25	42	65	95	125	165	215	380*
TORQUE (A)										
Drive Torque	in-lb @ 3,000 psi	17,000	25,000	42,000	65,000	95,000	125,000	165,000	215,000	380,000
	Nm @ 207 bar	*1 921*	*2 825*	*4 746*	*7 345*	*10 735*	*14 125*	*18 645*	*24 295*	*42 940*
Holding Torque	in-lb @ 3,000 psi	43,600	60,400	103,000	162,000	232,000	306,000	404,000	520,000	936,000
	Nm @ 207 bar	*4 927*	*6 825*	*11 639*	*18 306*	*26 216*	*34 578*	*45 652*	*58 760*	*105 768*
MOMENT CAPACITY (B)										
S1 Option, Cantilever Mount	in-lb	45,900	62,500	105,000	162,500	261,250	343,750	495,000	645,000	570,000
	Nm	*5 187*	*7 063*	*11 865*	*18 363*	*29 521*	*38 844*	*55 935*	*72 885*	*64 410*
RADIAL CAPACITY (C)										
	lb	4,000	5,000	8,000	11,000	15,000	18,000	22,000	26,000	26,000
	kg	*1 814*	*2 268*	*3 629*	*4 990*	*6 804*	*8 165*	*9 979*	*11 794*	*11 794*
AXIAL CAPACITY (D)										
	lb	3,000	4,000	6,000	8,000	10,000	13,000	15,000	18,000	18,000
	kg	*1 361*	*1 814*	*2 722*	*3 629*	*4 536*	*5 897*	*6 804*	*8 165*	*8 165*
DISPLACEMENT										
180°	in^3	29.8	42.5	72.2	114	164	216	284	366	622
	cm^3	*488.3*	*696.5*	*1 183.1*	*1 868.1*	*2 687.5*	*3 539.6*	*4 653.9*	*5 997.7*	*10 192.8*
360°	in^3	60.0	85.0	144	228	327	432	569	732	—
	cm^3	*983.2*	*1 392.9*	*2 359.7*	*3 736.3*	*5 358.6*	*7 079.2*	*9 324.3*	*11 995.4*	—
APPROXIMATE WEIGHT										
180°	lb	76.0	110	160	240	360	490	610	790	1,100
	kg	*34.5*	*49.9*	*72.6*	*108.9*	*163.3*	*222.3*	*276.7*	*358.3*	*499*
360°	lb	100	140	220	310	450	630	810	1,000	—
	kg	*45.4*	*63.5*	*99.8*	*140.6*	*204.1*	*285.8*	*367.4*	*453.6*	—

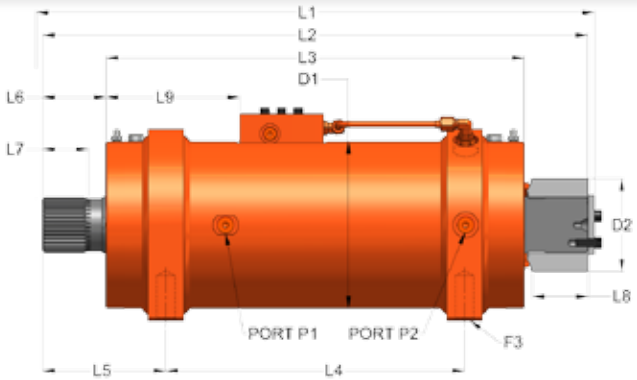
* L30-380 standard rotation is 210°. 180° rotation is achieved by incorporating an internal stop tube in the 210° actuator. Contact Helac Corporation for more information.

L30 MODELS			17	25	42	65	95	125	165	215	380*
D1	Overall flange diameter	in	7.87	9.25	11.02	12.40	13.98	15.60	17.40	18.70	18.70
		mm	*200*	*235*	*280*	*315*	*355*	*396*	*442*	*475*	*475*
D2	Pilot diameter	in	5.91	6.89	8.07	9.05	10.23	11.42	12.40	13.38	13.38
		mm	*150*	*175*	*205*	*230*	*260*	*290*	*315*	*340*	*340*
D3	Shaft and endcap flange diameter	in	5.47	6.09	7.22	8.22	9.22	10.34	11.34	12.22	12.22
		mm	*139*	*155*	*183*	*209*	*234*	*263*	*288*	*310*	*310*
D4	Housing diameter	in	5.50	6.00	7.00	8.00	9.00	10.0	11.0	12.0	12.0
		mm	*140*	*152*	*178*	*203*	*229*	*254*	*279*	*305*	*305*
F1	Threaded mounting hole, shaft flange (**F2** Quantity of mounting holes: 12)	inch	1/2-13	5/8-11	3/4-10	7/8-9	1-8	1 1/8-7	1 1/8-7	1 1/4-7	1 1/4-7
		deep	0.75	0.94	1.13	1.31	1.38	1.69	1.69	1.88	1.88
		metric	*M12 x 1.75*	*M16 x 2*	*M20 x 2.5*	*M22 x 2.5*	*M24 x 3*	*M27 x 3*	*M27 x 3*	*M30 x 3.5*	*M30 x 3.5*
		deep	*18*	*23.9*	*30*	*33*	*36.1*	*40.6*	*40.6*	*44.9*	*44.9*
F3	Bolt circle diameter, shaft flange	in	4.50	5.00	5.88	6.75	7.75	8.50	9.50	10.00	10.00
		mm	*115*	*125*	*150*	*170*	*195*	*215*	*240*	*255*	*255*
F4	Housing flange clearance hole, required bolt size (**F5** Quantity of mounting holes: 12)	in	3/8	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 1/4
		mm	*M10*	*M12*	*M16*	*M20*	*M22*	*M24*	*M27*	*M30*	*M30*
F6	Bolt circle diameter, housing flange	in	6.89	8.07	9.65	10.83	12.21	13.58	14.96	16.14	16.14
		mm	*175*	*205*	*245*	*275*	*310*	*345*	*380*	*410*	*410*
H1	Centerline to valve top	in	3.90	4.17	4.65	5.15	5.65	6.15	6.66	7.16	7.16
		mm	*99.1*	*106*	*118*	*131*	*144*	*156*	*169*	*182*	*182*
L1	Overall length										
	180°	in	11.73	12.72	14.37	16.24	18.70	20.63	21.71	23.62	35.67
		mm	*298*	*323*	*365*	*413*	*475*	*524*	*551*	*600*	*906*
	360°	in	16.81	18.51	21.18	24.20	27.76	30.55	32.92	35.67	—
		mm	*427*	*470*	*538*	*615*	*705*	*776*	836	*906*	—
L2	Overall length, non-rotating										
	180°	in	10.26	11.14	12.73	14.27	16.95	18.21	19.39	21.02	33.06
		mm	*261*	*283*	*323*	*363*	*431*	*462*	*493*	*534*	*840*
	360°	in	15.34	16.93	19.54	22.23	26.01	28.13	30.49	33.03	—
		mm	*390*	*430*	*496*	*565*	*661*	*715*	*775*	*839*	—
L3	Shaft flange to counterbalance valve										
	180°	in	2.96	5.27	5.61	5.12	6.00	7.25	7.83	8.69	14.71
		mm	*75.2*	*134*	*142*	*130*	*152*	*184*	*199*	*221*	*374*
	360°	in	7.95	6.19	7.75	9.15	10.50	12.14	13.39	14.71	—
		mm	*202*	*157*	*197*	*232*	*267*	*308*	*340*	*374*	—
L4	Mounting flange thickness	*in*	0.99	1.02	1.22	1.30	1.58	1.65	1.81	2.05	2.05
		mm	*25.2*	*25.9*	*30.9*	*33*	*40.1*	*41.9*	*45.9*	*52*	*52*
L5	Shaft flange to mounting flange face	*in*	1.06	1.26	1.38	1.65	1.58	2.09	2.13	2.20	2.20
		mm	*26.9*	*32*	*35.1*	*41.9*	*40.1*	*53.1*	*54.1*	*55.9*	*55.9*
P1, P2 Ports, housing **V1, V2** Ports, valve		inch	ISO-11926/SAE Series of ports. Sizes vary from 7/16 to 3/4. See drawings for details.								
		metric	*ISO-1179-1/BSPP 'G' Series of ports. Sizes vary from 1/4 thru 1/2. See drawings for details.*								

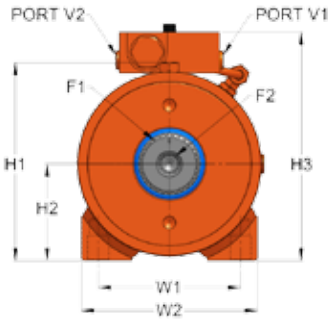
Specification charts are for general reference only. Consult drawing for actual values and tolerances.



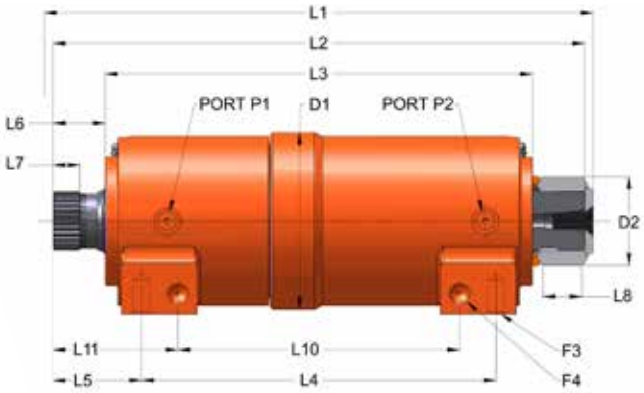
T20-60, ENDVIEW



T20-60



T20-25, 45 ENDVIEW



T30-27

T SERIES SPECIFICATIONS		T20-25	T30-27	T20-45	T20-60
TORQUE (A)					
Drive Torque	in-lb @ 3,000 psi *Nm @ 207bar*	25,000 *2 825*	27,000 *3 051*	45,000 *5 085*	60,000 *6 780*
Holding Torque	in-lb @ 3,000 psi *Nm @ 207 bar*	54,200 *6 125*	54,200 *6 125*	94,000 *10 622*	127,000 *14 351*
Standard Rotation		220°	220°	220°	200°
MOMENT CAPACITY (B)					
Straddle mount	in-lb *Nm*	37,500 *4 238*	40,500 *4 577*	67,500 *7 628*	90,000 *10 170*
RADIAL CAPACITY (C)					
	lb *kg*	4,500 *2 041*	4,500 *2 041*	6,900 *3 130*	8,600 *3 901*
AXIAL CAPACITY (D)					
	lb *kg*	4,500 *2 041*	4,500 *2 041*	6,900 *3 130*	8,600 *3 901*
DISPLACEMENT					
	in^3 cm^3	47.3 *775.1*	48.8 *799.7*	82.8 *1 356.9*	101 *1 655.1*
APPROXIMATE WEIGHT					
	lb *kg*	74.0 *33.6*	72.0 *32.7*	128 *58.1*	166 *75.3*

T SERIES MODELS			T20-25	T30-27	T20-45	T20-60
D1	Housing diameter	in *mm*	5.50 *140*	5.46 *139*	6.50 *165*	7.00 *178*
D2	Optional spline adapter diameter	in *mm*	3.15 *80*	2.73 *80*	3.54 *89.9*	3.87 *98.3*
F1	Shaft spline, both ends	inch *metric*	Inch models comply with ANSI B92.1. See Drawings for specific details. *Metric models comply with DIN5480. See Drawings for specific details.*			
F2	Shaft threaded mounting hole, both ends	inch deep *metric* *deep*	1/2-13 1.21 *M12 x 1.75* *35.1*	1/2-13 1.21 *M12 x 1.75* *35.1*	1/2-13 1.21 *M12 x 1.75* *35.1*	5/16-18 (Quantity 3) .50 on 1.50" Bolt circle *M12 x 1.75 (Quantity 1)* *35.1*
F3 **F4**	Threaded mounting hole, housing feet (**F4** T30-27 only)	inch deep *metric* *deep*	5/8-11 1.00 *M16 x 2* *19*	5/8-11 0.78 *M16 x 2* *19.8*	3/4-10 1.00 *M20 x 2.5* *25*	7/8-9 1.31 *M22 x 2.5* *30*
H1	Overall height (excluding valve)	in *mm*	5.9 *150*	5.61 *142*	6.85 *176*	8.00 *203*
H2	Height to centerline	in *mm*	2.88 *73.2*	2.88 *73.2*	3.30 *83.9*	4.00 *102*
H3	Overall height (including valve)	in *mm*	6.79 *173*	- -	7.72 *196*	8.64 *220*
L1	Overall length, rotating, with optional adapter	*in* *mm*	16.95 *431*	16.65 *423*	22.08 *561*	23.94 *608*
L2	Overall length, rotating, without optional adapter	in *mm*	16.41 *417*	16.41 *417*	21.50 *546*	22.81 *579*
L3	Overall Length, non-rotating	in *mm*	13.20 *335*	13.20 *335*	16.62 *422*	17.50 *445*
L4	Mounting length	in *mm*	10.50 *265*	10.95 *278.1*	12.50 *320*	12.50 *320*
L5	Mounting hole to end of shaft	in *mm*	2.96 *75.1*	2.72 *69.1*	4.50 *113*	5.16 *130*
L6	Shaft extension	in *mm*	1.61 *40.9*	1.59 *40.5*	2.44 *61.9*	2.66 *67.6*
L7	Spline length	in *mm*	0.88 *21.6*	0.83 *21*	1.58 *40*	1.92 *49*
L8	Optional spline adapter length	*in* *mm*	1.28 *32.5*	1.20 *30.6*	2.07 *52.6*	2.42 *60.5*
L9	Housing end to valve	in *mm*	3.44 *87*	- -	4.97 *126*	5.59 *142*
L10	Mounting length	in *mm*	- -	8.70 *220.9*	- -	- -
L11	Mounting hole to end of shaft	in *mm*	- -	3.84 *97.6*	- -	- -
W1	Mounting width	in *mm*	4.25 *104*	4.25 *104*	5.25 *140*	5.50 *150*
W2	Overall foot width	in *mm*	5.25 *133*	5.25 *133*	6.70 *170*	8.00 *203*
P1, P2 Ports, housing **V1, V2** Ports, valve		inch *metric*	ISO-11926/SAE Series of ports. Sizes vary from 7/16 to 9/16. See drawings for details. *ISO-1179-1/BSPP 'G' Series of ports. Sizes vary from 1/8 thru 1/4. See drawings for details.*			

Specification charts are for general reference only. Consult drawing for actual values and tolerances.

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The overall integrity of the installation, and the applications safety and compliance with industry standards and warning requirements, are the ultimate responsibility of the customer. The customer is solely responsible for the engineering of mating structures, fasteners, and other associated components related to the installation of the product and its ultimate application. Helac Corporation recommends that prototype testing be conducted to verify installation integrity. Testing with applied loads that equal or exceed the static and dynamic load frequency and intensity are recommended to determine the suitability of the actuator for the application.

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