

Helical, hydraulic
rotary actuators

HELAC®



T20 SERIES

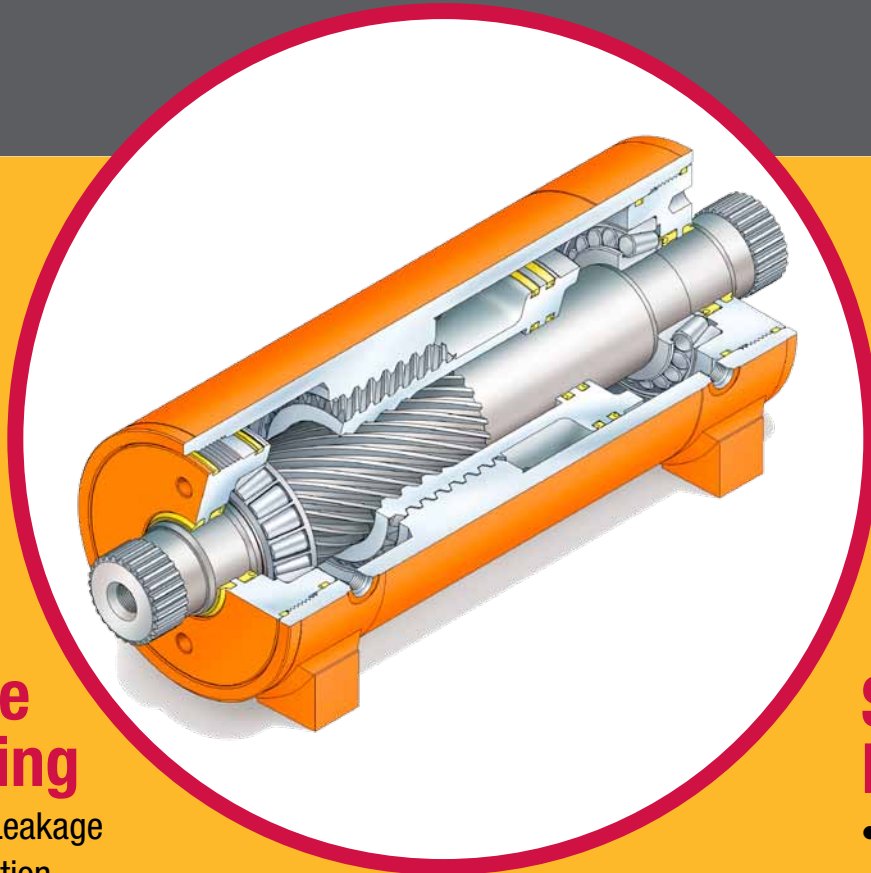
T20 SERIES

THE T20 SERIES

Robust Performance for High Cycle, Torque Demanding Applications

Ideal for applications where torque generation and higher cycle rates are the primary requirements, the T20 Series features splined output shafts and 200-220 degrees of rotation. Helac's helical, sliding spline technology is non self-locking while providing high shock resistance and high-holding torque for demanding applications.

Functioning as a rotating device, mounting bracket and load bearing structure the T20 Series eliminates the need for external bearing systems, brakes or locking devices. Three standard sizes with torque output up to 60,000 in-lbs at 3,000 psi (6,780 Nm at 210 bar).



Powerful

- High Torque
- High Bearing Capacity

Durable

- Suitable for Harsh Environments
- Moving Parts Enclosed

Drift Free Positioning

- Zero Internal Leakage
- Smooth Operation
- No External Brake Required

Streamlined Design

- Eliminates Linkages and Bearings
- Reduced Bill of Materials

Backdrives in Overload Conditions

- Hydraulic Fuse
- Prevents Mechanical Damage

Ultra Compact

- High Power Density
- Fits in Tight Spaces

Custom Engineering

In addition to our standard T20 Series product line, Helac Corporation can readily customize our rotary actuators to meet unique OEM application requirements. Custom engineering can range from slight to moderate to complete, and is offered to those customers whose actuator needs match our program requirements. Our product customization plan has been developed to optimize the unique needs of customers with the need to limit product variation.

The chart below showcases the wide variety of custom features that can be incorporated into T20 Series actuators, including angles of rotation greater or less than standard, alternative seals for high temperature or special fluid applications, or selected output shaft configurations.

Sample Custom Designs

The actuators below feature two special order options.



Single spline shaft with housing flange

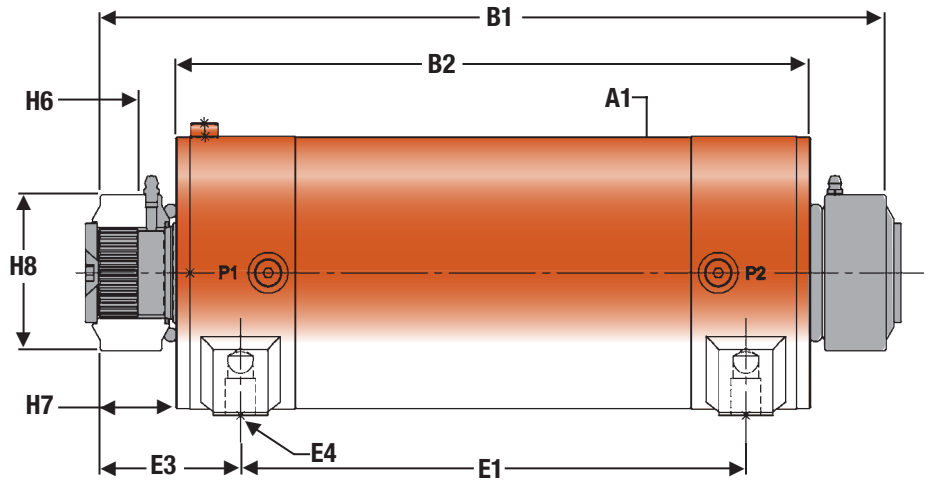
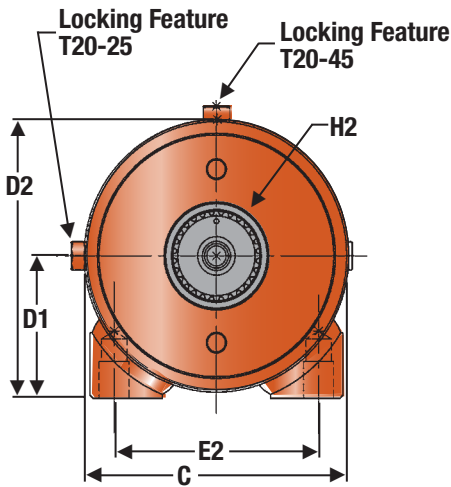


Factory mounted integral counterbalance valve

Custom Options

Actuator Component	Customization Features	Actuator Component	Customization Features
Housing	<ul style="list-style-type: none"> • Flange Mount • Non-standard mounting holes • Custom feet 	Valves	<ul style="list-style-type: none"> • Special counterbalance valve • Motion control valve
Shaft	<ul style="list-style-type: none"> • Single shaft output • Plain Shaft • Hole(s) into shaft • Non-standard attachment holes • DIN splines 	Other	<ul style="list-style-type: none"> • Bleed fittings • Special coatings • Special seals • Custom materials • Custom pressures • Special ports • Special material certifications • Special fluids • Special identification • Special packaging
Rotation	<ul style="list-style-type: none"> • Custom rotation • Custom timing 		

T20 Series Models 25 & 45 220° Rotation



Specifications

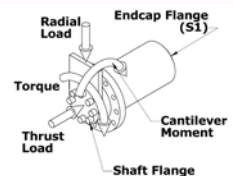
	25	45	60
Torque			
Net Output Torque			
in-lb @ 3,000 psi	25,000	45,000	60,000
Nm @ 210 bar	2,830	5,090	6,780
Holding Torque			
in-lb @ 3,000 psi	54,200	94,900	127,000
Nm @ 210 bar	6,100	11,000	14,000
Standard Rotation	220°	220°	200°
Maximum Moment Capacity			
(Straddle mount)			
in-lb	37,500	67,500	90,000
Nm	4,240	7,630	10,170
Maximum Applied Force Capacity			
(Radial force)			
lb	4,500	6,900	8,600
kg	2,040	3,130	3,900
Maximum Axial (Thrust) Force			
lb	4,500	6,900	8,600
kg	2,040	3,130	3,900
Displacement			
in ³	47.30	82.80	100.80
cm ³	488	696	1,180
Approximate Weight (Wet)			
lb	74	128	166
kg	33.60	58.10	75.30



Digital drawings are available

Drawings can be provided in .tif, .dxf and AutoCAD 2000 formats. Please send an email to actuators@helac.com, or call +1 800 327 2589 (US and Canada), or +1 360 825 1601 (Worldwide).

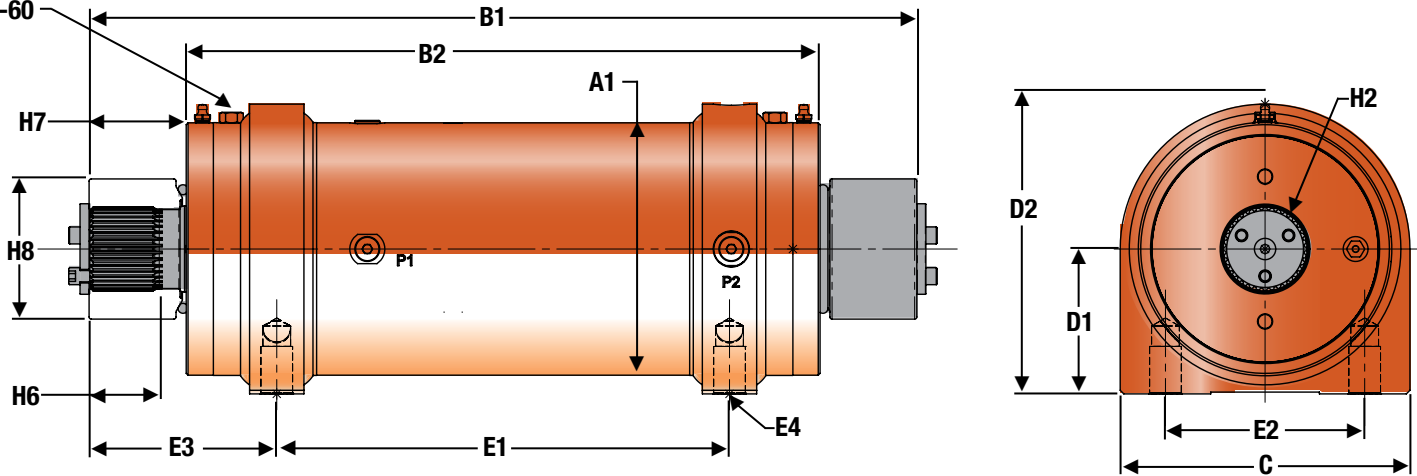
Reference Guide



T20 Series Model 60

200° Rotation

Locking Feature
T20-60



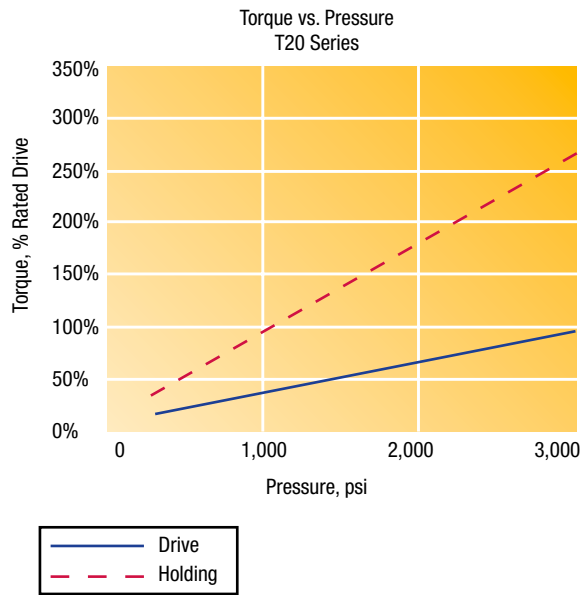
Dimensions

		25	45	60
A1 Nominal housing diameter	in	5.50	6.50	7.00
	mm	140	165	178
B1 Length overall, rotating, without adapter	in	16.41	21.50	22.81
	mm	417	546	579
B2 Length, non-rotating	in	13.20	16.62	17.50
	mm	335	422	445
C Width overall	in	5.25	6.70	8.00
	mm	133	170	203
D1 Height to centerline	in	2.88	3.30	4.00
	mm	73	84	102
D2 Height overall	in	5.63	6.84	8.00
	mm	143	174	203
E1 Mounting length	in	10.50	12.50	12.50
	mm	265	320	320
E2 Mounting width	in	4.25	5.25	5.50
	mm	104	140	140
E3 Foot location	in	2.96	4.50	5.16
	mm	76	113	130
E4 Mounting hole	inch	5/8-11	3/4-10	7/8-9
	deep	1.00	1.00	1.31
	metric	M16x2	M20x2.5	M22x2.5
	deep	19	25	30
H2 Shaft spline	inch	28 teeth	32 teeth	36 teeth
		16/32x30°		
	metric	21 teeth	26 teeth	28 teeth
		DIN 5480, Module 2		
H6 Spline length	in	0.88	1.58	1.92
	mm	21.60	40.00	49.00
H7 Shaft extension	in	1.61	2.44	2.66
	mm	41	62	68
H8 Spline adapter diameter	in	3.15	3.54	3.87
	mm	80	90	100
P1, P2 Ports, housing	inch	T20-25: ISO 11926 7/16-20 (SAE-4)		
		T20-45,60: ISO 11926 9/16-18 (SAE-6)		
	metric	T20-25: ISO 1179-1 G1/8 BSPP		
		T20-45,60: ISO 1179-1 G1/4 BSPP		

Torque Comparisons

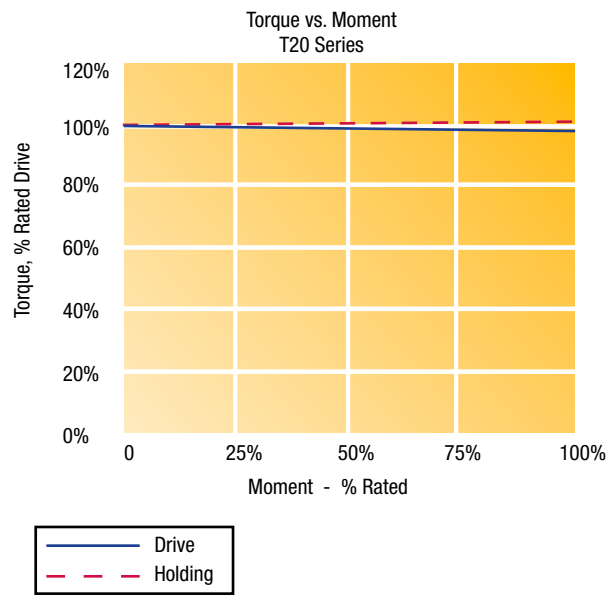
Driving and Holding Torque Versus Hydraulic Pressure

The driving torque of T20 Series actuators is approximately linear with available hydraulic pressure. T20 Series actuators also exhibit much higher holding torque than driving torque for a given pressure. Breakaway pressure is approximately 400 psi (28 bar) for all models. Applied loads and other operating parameters can affect torque output by as much as ± 15 percent.



Moment Loads

The T20 Series is designed to provide torque while supporting modest moment and radial loads. As moment and radial loads increase, the bearing friction reduces the driving torque. Other operating parameters can affect torque output by as much as ± 15 percent.



Ordering Information

The T20 product line is available in a variety of sizes and options to meet your specific application requirements. The Model Code below outlines standard options that can be furnished with T20 Series actuators. Please contact Helac Corporation for special requirements.



Typical Model Code

T20 - 25 - E - FT - 220/180 - DS - 0 - H



- 1 T20 Actuator Series**
- 2 Torque Output (in-lbs x 1000)**
25 45 60
- 3 Measurement System**
E English System
M Metric System
S Special Custom Design
- 4 Housing Configuration**
FT Foot Mount
FF Front Flange*
RF Rear Flange*
- 5 Standard Rotation****
220 220 Degrees
- 6 Special Rotations**
(Standard design with internal stop tube to limit rotation - indicates final rotation)
- 7 Shaft Configuration**
DS Dual Spline SS Single Spline*
DA Dual Adapter SA Single Adapter*
DP Dual Plain* SP Single Plain*
- 8 Valve Options**
C With Counterbalance Valve*
O Without Counterbalance Valve
- 9 Seals**
H Standard Seals & Bearings
S Special Seals & Bearings

* Special order only. Contact Helac Corporation for more information.
** T20-60 available in 200° rotation only.

Important Notice

Helac Corporation does not assume any responsibility beyond the design and performance of its rotary actuator product due to the unlimited variety of operating conditions and applications. The customer is solely responsible for the final selection of any Helac Corporation product or system and its suitability for the application in question.

The overall integrity of the installation, and the application's 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.

Documents or information provided by Helac Corporation, its subsidiaries or authorized distributors are intended for users having technical expertise. It is important to thoroughly analyze all aspects of your application and review current product information.

WARNING

For all Helac Models:

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

It is important to thoroughly analyze all aspects of your application and review current product information and guidelines.

About Helac Corporation

A leader in the rotary actuation industry for over 40 years, Helac Corporation manufactures a comprehensive line of hydraulic rotary actuators used to move, support and position rotary loads. Helac rotary actuators are best known for their tremendous torque output, compact dimensions, exceptional load bearing capability and rugged, reliable performance. Helac offers a myriad of product lines to meet individual application requirements:

- **L-Series LoadBear** — Incorporating integral bearings for heavy load carrying applications, the L-Series is available in the L10, L20 and L30 product lines.
- **T-Series TorqBear** — With a thru-shaft configuration, the T-Series is designed for torque applications.
- **Custom Designs** — Helac's rotary actuators for OEMs are customized to meet our customers' individual application requirements.
- **Construction equipment attachments** — Helac PowerTilt® and PowerGrip® increase the utilization and productivity of backhoes and excavators.

Over 1,000 worldwide customers in diverse industries depend on Helac actuators for quality, reliability, ease-of-use and durability.

➤ To learn more about Helac's rotary actuator solutions, call **+1 800 327 2589** (US and Canada), **+1 360 825 1601** (Worldwide), or visit our web site at **www.helac.com**.

HELAC®

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APPLICATIONS

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