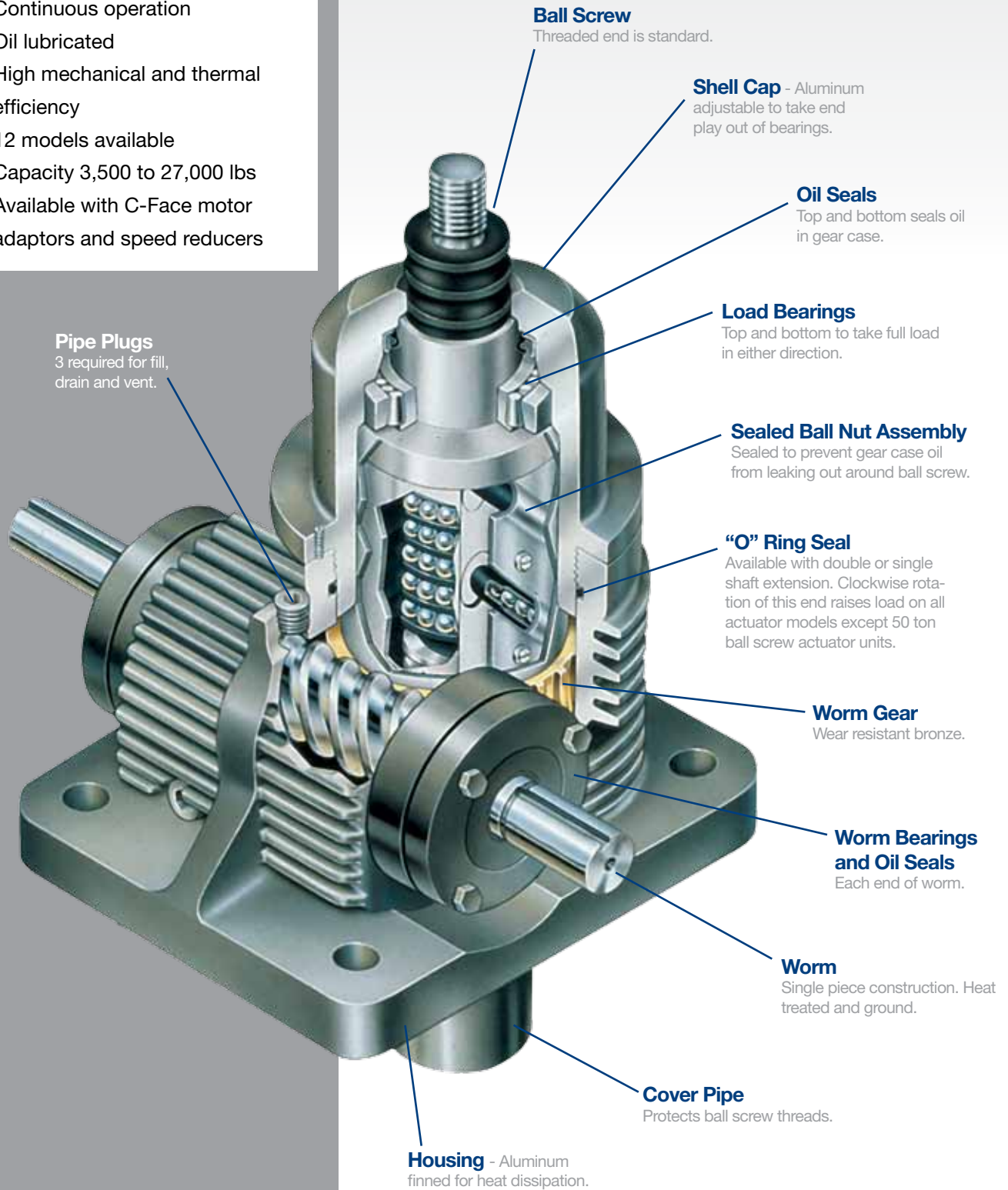


# CONTINUOUS DUTY CYCLE ACTUATORS

## FEATURES

- Predictable life
- Continuous operation
- Oil lubricated
- High mechanical and thermal efficiency
- 12 models available
- Capacity 3,500 to 27,000 lbs
- Available with C-Face motor adaptors and speed reducers



# CONTINUOUS DUTY CYCLE ACTUATORS

## MODEL NUMBERING SYSTEM

# FL - TKM - 7515 - 6 - 1R

### Model Prefix

**R** - Reducer  
**F** - C-face Adapter  
**L** - Limit Switch  
**E** - Encoder  
**J** - Rotary Counter

### Screw End & Configuration

**T** - Threaded End  
**C** - Clevis End  
**M** - Top Plate  
**P** - Plain End  
  
**K** - Anti-Rotation Screw  
**CC** - Double Clevis  
  
**D** - Inverted Rotating  
**U** - Upright Rotating

### Series & Capacity No.

**Series:**  
 Standard Models (75xx,  
 7511, 7515, 7522)  
 Special Models (85xx,  
 8511, 8515, 8522)

**Capacities:**  
 Upright model suffixes  
 end as shown.  
 Inverted model suffixes lower the  
 capacity number by one digit.  
 Rotating model suffixes raise the  
 capacity number by one digit.

**M** - Base Model

### Travel

1 inch increment travels are always represented using the exact travel amount.

Travels with fractional lengths are quoted using that length, but are serialized when the order is processed.

Serialized digits in this position may also be used for other models containing special features.

### Model Suffix

**B** - Boot  
**L** - Single End Worm Ext. Left  
**R** - Single End Worm Ext. Right  
**1** - Optional Ratio #1  
**2** - Optional Ratio #2  
**X** - Supplied without cover pipe

# CONTINUOUS DUTY CYCLE ACTUATORS PERFORMANCE TABLE

## FEATURES

- 25 configured models. Upright or inverted translating screw, rotating screw available and double clevis.
- Maximum load capacities range from 3,500 to 27,000 pounds.
- Rated load capacities (load at which actuator life is 1,000 hours) range from 2,000 to 13,000 lbs.
- High mechanical efficiency - The unit's mechanical efficiency (as high as 70%) is due to the heat-treated ball bearing screw and mating nut, hardened and ground alloy steel worm, wear resistant bronze worm gear and oil bath lubrication.
- High thermal efficiency - The continuous duty cycle actuator units have high thermal efficiency (100% on-time at rated loads and at least 33% on-time at maximum loads)
- High speed - Designed to run at a worm speed of 1750 rpm fully loaded. Higher speeds possible with less than capacity loads. Screw speed up to 120 inches per minute.
- Positive action - High reliability; needs no pumps, hoses or valves. Can be synchronized for multiple usage.
- Less power required - Efficient design needs less power for given thrust; cuts power requirements.
- Worm gearing meets AGMA Standards.
- Sand-cast aluminum housings for added heat dissipation.
- Available with C-Face motor adaptors and reducers.

Duff-Norton 7500 Series high duty cycle actuators are specifically designed for continuous operation within certain load limitations (see Maximum Allowable Duty Cycle chart below). The precision worm gear set operates in an oil bath that improves thermal efficiency. In addition, the precision drive arrangement permits the accurate prediction of

Maximum Allowable Duty Cycle at 1750 RPM Input Speed			
Model Number	Max. Capacity	75% Max. Capacity	Rated Capacity
7511	100%	100%	100%
7515	33%	67%	100%
7522	33%	67%	100%

Note: Duty cycles are based on 100°F temperature rise above ambient not to exceed 200°F using Duff-Norton's standard oil.

operating life in terms of millions of inches of travel. This important feature allows optimum maintenance and replacement scheduling, so as to minimize downtime.

Specifications - Continuous Duty Cycle Actuator					
Model Number	7511	7515	75151 (HL)	7522	75221 (HL)
Maximum Speed Cface Driven (in/min)** (page 114)	118.5	102.0	215.5	81.0	215.5
Maximum Speed Reducer Driven (in/min)** (page 110)	23.0	20.0	43.0	16.0	32.0
Maximum Load Capacity (lbs)	3,500	12,000	5,500	27,000	13,500
Rated Load Capacity (lbs - 1000 hours life)	2,000	5,200	3,200	13,000	12,000
Lifting Screw (Diameter x Lead)	1.17 x .413	1.5 x .474	1.5 x 1.00	2.25 x .500	2.25 x 1.0
Worm Gear Ratio	6:1	8:1	8:1	10-2/3:1	10-2/3:1
Turns of Worm for 1 inch Raise	14.526	16.889	8.000	21.333	10.667
Horsepower per Actuator (Maximum at 1750 rpm)	2	5	5	10	10
Key Torque (in-lb)	260	1000	975	2400	2400
Starting Torque (in-lb at Maximum Load)	75	200	450	420	825
Running Torque (in-lb at Maximum Load)	60	170	392	350	685
Hold Back Torque* (lb-ft at Maximum Load)	4	9	9	12	12
Actuator Efficiency Rating (Percentage)	63.91	66.52	64.36	57.55	57.55
Weight with Base Raise of 6 inches (lbs)	19	43	43	95	95
Weight for Each Additional 1 inch Raise (lbs)	.4	.9	.9	1.5	1.5

\*Note: Hold Back Torque is resisting torque at the worm shaft to keep load from running down.

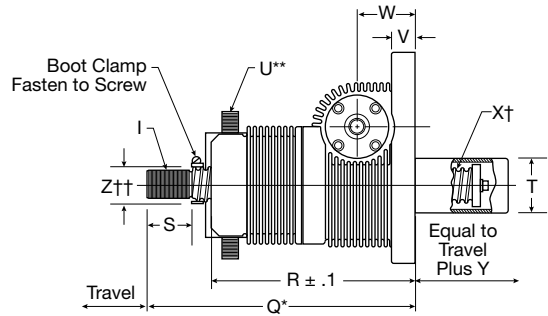
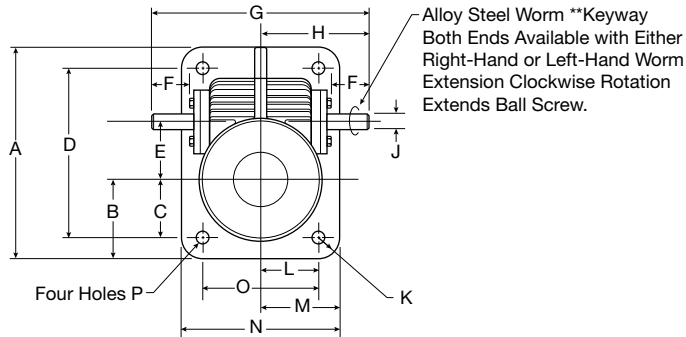
All actuator units can be supplied with standard raises up to 24 inches. Special raises up to 20 feet are available upon request. Standard inverted keyed models do not have a cover pipe (except for the 1 ton and 75 ton models). Closed height dimensions may increase for actuators supplied with bellows boots. See page 148-149.

Note: See page 107 for ball screw and nut life expectancy

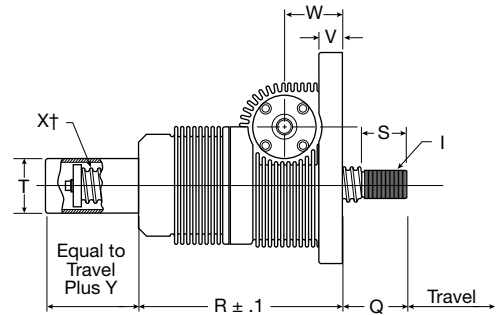
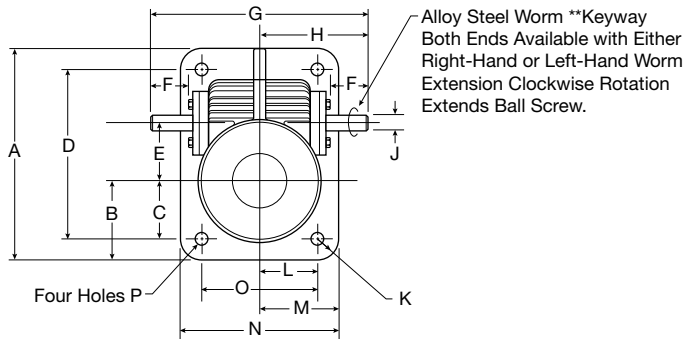
# CONTINUOUS DUTY CYCLE ACTUATORS

## 7500 SERIES WITH TRANSLATING SCREW

### Typical 7500 Series Actuator with Upright Translating Screw



### Typical 7500 Series Actuator with Inverted Translating Screw



#### Specifications - Continuous Duty Cycle Actuators

Model Number	Dimensions (inches)					
	7511 Upright	7515 or 75151 Upright	7522 or 75221 Upright	7510 Inverted	7514 or 75141 Inverted	7521 or 75211 Inverted
A	7	8-3/4	13-3/4	7	8-3/4	13-3/4
B	2-3/4	2-7/8	5-1/8	2-3/4	2-7/8	5-1/8
C	2.20	2	3-3/4	2.20	2	3-3/4
D	6	7	11	6	7	11
E	+/- .001 1.703	+ .003 / - .000 2.598	+ .005 / - .000 3.750	+/- .001 1.703	+ .003 / - .000 2.598	+ .500 / - .001 3.750
F	1.12	1.68	2.38	1.12	1.68	2.38
G	8.6	11	14	8.6	11	14
H	4.3	5.5	7.0	4.3	5.5	7.0
I	3/4 16UNF -2A	1 14UNS -2A	1-3/4 12UN -2A	3/4 16UNF -2A	1 14UNS -2A	1-3/4 12UN -2A
J	+ .000 / - .002 .500	+ .000 / - .002 1.000	+ .001 / - .002 1.000	+ .000 / - .002 .500	+ .000 / - .002 1.000	+ .000 / - .002 1.000
K	1/2 R	7/8 R	1-3/8 R	1/2 R	7/8 R	1-3/8 R
L	2-1/4	2-7/8	3-3/4	2-1/4	2-7/8	3-3/4
M	2-3/4	3-3/4	5-1/8	2-3/4	3-3/4	5-1/8
N	5-1/2	7-1/2	10-1/4	5-1/2	7-1/2	10-1/4
O	4-1/2	5-3/4	7-1/2	4-1/2	5-3/4	7-1/2
P	13/32	11/16	13/16	13/32	11/16	13/16
Q*	+/- .06 10.4	+/- .10 11.2	+/- .10 16.6	+/- .06 10.4	+/- .10 11.2	+/- .10 16.6
R	+/- .06 8.4	+/- .10 9.2	+/- .10 13.2	+/- .06 8.4	+/- .10 9.2	+/- .10 13.2
S	1-1/8	1-1/8	2-1/4	1-1/8	1-1/8	2-1/4
T	1-21/32	2-3/8	3-1/2	1-21/32	2-3/8	3-1/2
U**	7 O.D. x 4 I.D.	7 O.D. x 4-3/4 I.D.	9.8 O.D. x 6.8 I.D.	7 O.D. x 4 I.D.	7 O.D. x 4-3/4 I.D.	9.8 O.D. x 6.8 I.D.
V	3/4	1	1-1/2	3/4	1	1-1/2
W	+/- .005 2.500	+/- .005 2.75	+/- .005 3.7500	+/- .005 2.500	+/- .005 2.750	+/- .005 3.7500
X†	1.171 Dia. 0.413 Lead	1.500 Dia. 0.474 Lead	2.25 Dia. 0.500 Lead	1.171 Dia. 0.413 Lead	1.50 Dia. 0.474 Lead	2.250 Dia. 0.500 Lead
Y	2	2	3	2	2	3
Z††	1.5	—	—	—	—	—

\*Closed height

†Dimension includes diameter of ball screw with indicated lead for right-hand single thread.

\*\*Bellows boot (optional)

††Hub Dia. for boot attachment

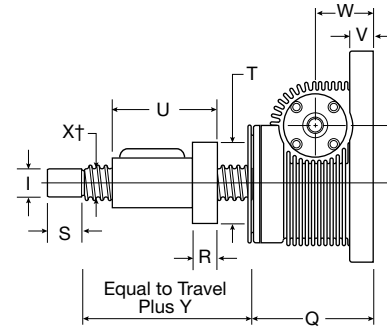
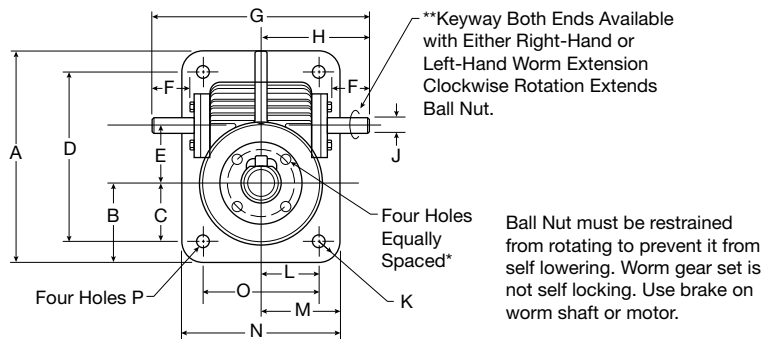
\*\*Keyway for Model 7511 is 1/8 x 5/64 x 15/16 LG.

NOTE: When ordering, specify load and duty cycle. Keyway for Model 7515 & 7522 is 1/4 x 1/8 x 1 1/2

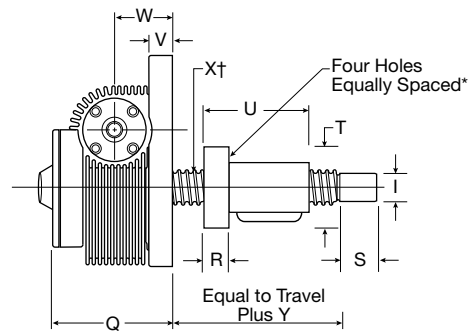
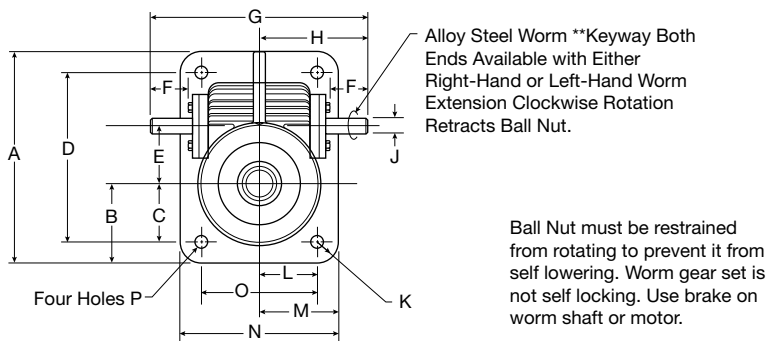
# CONTINUOUS DUTY CYCLE ACTUATORS

## 7500 SERIES WITH ROTATING SCREW

### Typical 7500 Series Actuator with Upright Rotating Screw



### Typical 7500 Series Actuator with Inverted Rotating Screw



### Specifications - Continuous Duty Cycle Actuator

Model Number	Dimensions (inches)					
	UM7512 Upright	UM7516 or UM75161 Upright	UM7523 or UM75231 Upright	DM7512 Inverted	DM7516 or DM75161 Inverted	DM7523 or DM75231 Inverted
A	7	8-3/4	13-3/4	7	8-3/4	13-3/4
B	2-3/4	2-7/8	5-1/8	2-3/4	2-7/8	5-1/8
C	2.20	2	3-3/4	2.20	2	3-3/4
D	6	7	11	6	7	11
E	+/- .001 1.703	+ .003 / - .000 2.598	+ .005 / - .000 3.750	+/- .001 1.703	+ .003 / - .000 2.598	+ .005 / - .000 3.750
F	1.12	1.68	2.38	1.12	1.68	2.38
G	8.6	11	14	8.6	11	14
H	4.3	5.5	7.0	4.3	5.5	7.0
I	+ .000 / - .002 0.750	+ .000 / - .002 1.000	+ .000 / - .002 1.750	+ .000 / - .002 0.750	+ .000 / - .002 1.000	+ .000 / - .002 1.750
J	+ .000 / - .002 0.500	+ .000 / - .002 1.000	+ .000 / - .002 1.000	+ .000 / - .002 0.500	+ .000 / - .002 1.000	+ .000 / - .002 1.000
K	1/2 R	7/8 R	1-3/8 R	1/2 R	7/8 R	1-3/8 R
L	2-1/4	2-7/8	3-3/4	2-1/4	2-7/8	3-3/4
M	2-3/4	3-3/4	5-1/8	2-3/4	3-3/4	5-1/8
N	5-1/2	7-1/2	10-1/4	5-1/2	7-1/2	10-1/4
O	4-1/2	5-3/4	7-1/2	4-1/2	5-3/4	7-1/2
P	13/32	11/16	13/16	13/32	11/16	13/16
Q*	+/- .1 5-1/4	+/- .1 5-3/4	+/- .1 7-3/4	+/- .1 5-1/4	+/- .1 5-3/4	+/- .1 7-3/4
R	.832	.985	+/- .10 1.582	.832	.895	+/- .10 1.582
S	1.13	1	2-1/4	1.13	1	2-1/4
T	4.250	4.937	5.375	4.250	4.937	5.375
U	3.395	4.33 Std. or 3.65 HL	6.706 Std. or 6.739 HL	3.395	4.33 Std. or 3.65 HL	6.706 Std. or 6.739 HL
V	3/4	1	1-1/2	3/4	1	1-1/2
W	+/- .005 2.500	+/- .005 2.750	+/- .005 3.7500	+/- .005 2.500	+/- .005 2.750	+/- .005 3.7500
X†	1.171 Dia. 0.413 Lead	1.500 Dia. 0.474 Lead	2.250 Dia. 0.500 Lead	1.171 Dia. 0.413 Lead	1.500 Dia. 0.474 Lead	2.250 Dia. 0.500 Lead
Y	3.75	4.75	8.0	3.75	4.75	8.0

†Dimension includes diameter of ball screw with indicated lead for right-hand single thread \*\*Keyway for Model UM-7512 is 1/8 x 5/64 x 15/16 LG.

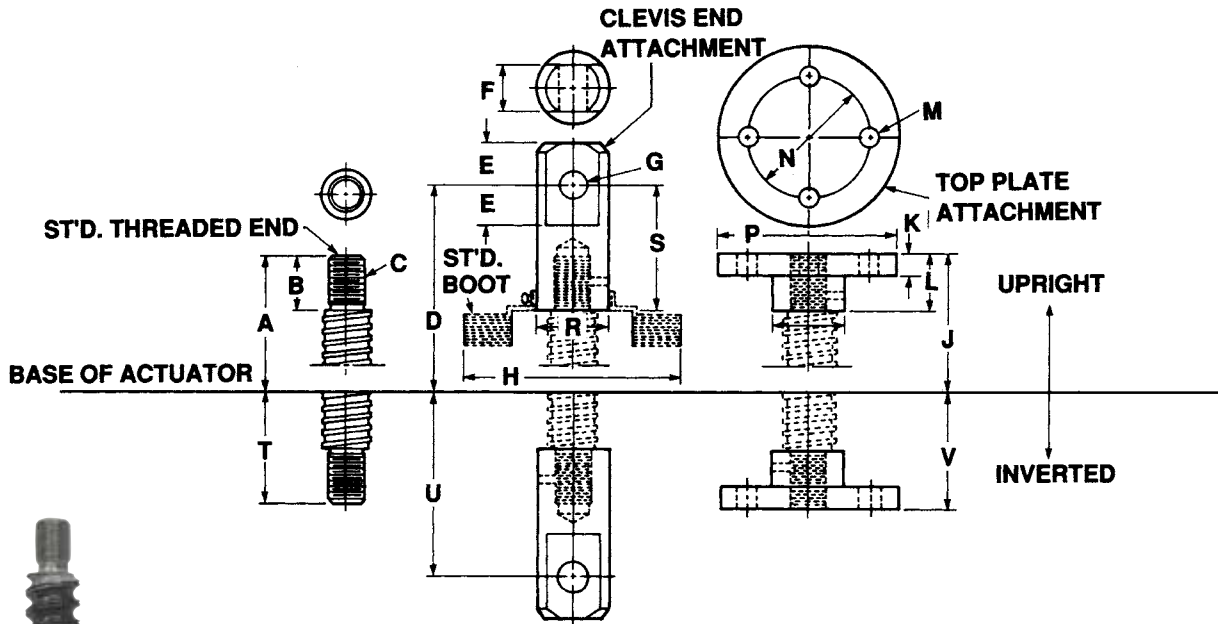
Keyway for Models UM-7516 & UM-7523 is 1/4 x 1/8 x 1 1/2.

NOTE: When ordering, specify load and duty cycle.

\*Model No. UM-7516: 17/32 dia. on 4.06 dia. bolt circle.  
Model No. UM-7523: 21/32 dia. on 4.375 dia. bolt circle.  
Model No. UM-7512: 25/64 dia. on 3.44 dia. bolt circle.

# CONTINUOUS DUTY CYCLE ACTUATORS

## 7500 SERIES STANDARD SCREW ENDS



Model No.	Dimensions (inches)								
	A	B	C	D*	E	F	G	H	J*
7511	10-3/8	1-1/8	3/4"-16-UNF-2A	11-1/2	3/4	1	1/2" +.800/-0.000	7	10-7/16
7515	11-1/4	1-1/8	1"-14-UNS-2A	13	1-1/4	1-1/4	3/4" =.010/-0.000	7	11-1/4
7522	16-5/8	2-1/4	1-3/4"-12un-2A	19-1/8	1-3/4	1-3/4	1-1/4"+.010/-0.000	9-13/16	16-5/8

Model No.	Dimensions (inches)									
	K	L	M	N	P	R	S	T*	U*	V*
7511	7/16	1-3/16	13/32	3	4-1/4	1-1/2	2-1/4	2	3-1/8	2-1/6
7515	5/8	1-1/4	11/16	3-1/2	5	1-3/4	2-7/8	2	3-3/4	2-1/16
7522	1	2-5/16	13/16	5	7	2-5/8	4-3/4	3-3/8	5-7/8	3-7/16

\*Closed dimensions may increase for actuator units supplied with bellows boots. Call Factory.  
 Note: Lifting screws listed above are not yet keyed. Must be held to prevent rotation.