

Ball Screw Actuators

Lifting Screw - Standard with threaded end.

Shell Cap - Adjustable to take end play out of bearings. Locked into place by set screws.

Ball Nut - Equipped with return tubes for continuous recirculation of steel balls. Threaded and secured to worm gear.

Worm Gear - Wear resistant bronze. Accurately hobbled for greater gear contact.

Load Bearings - Top and bottom to take loads in either direction.

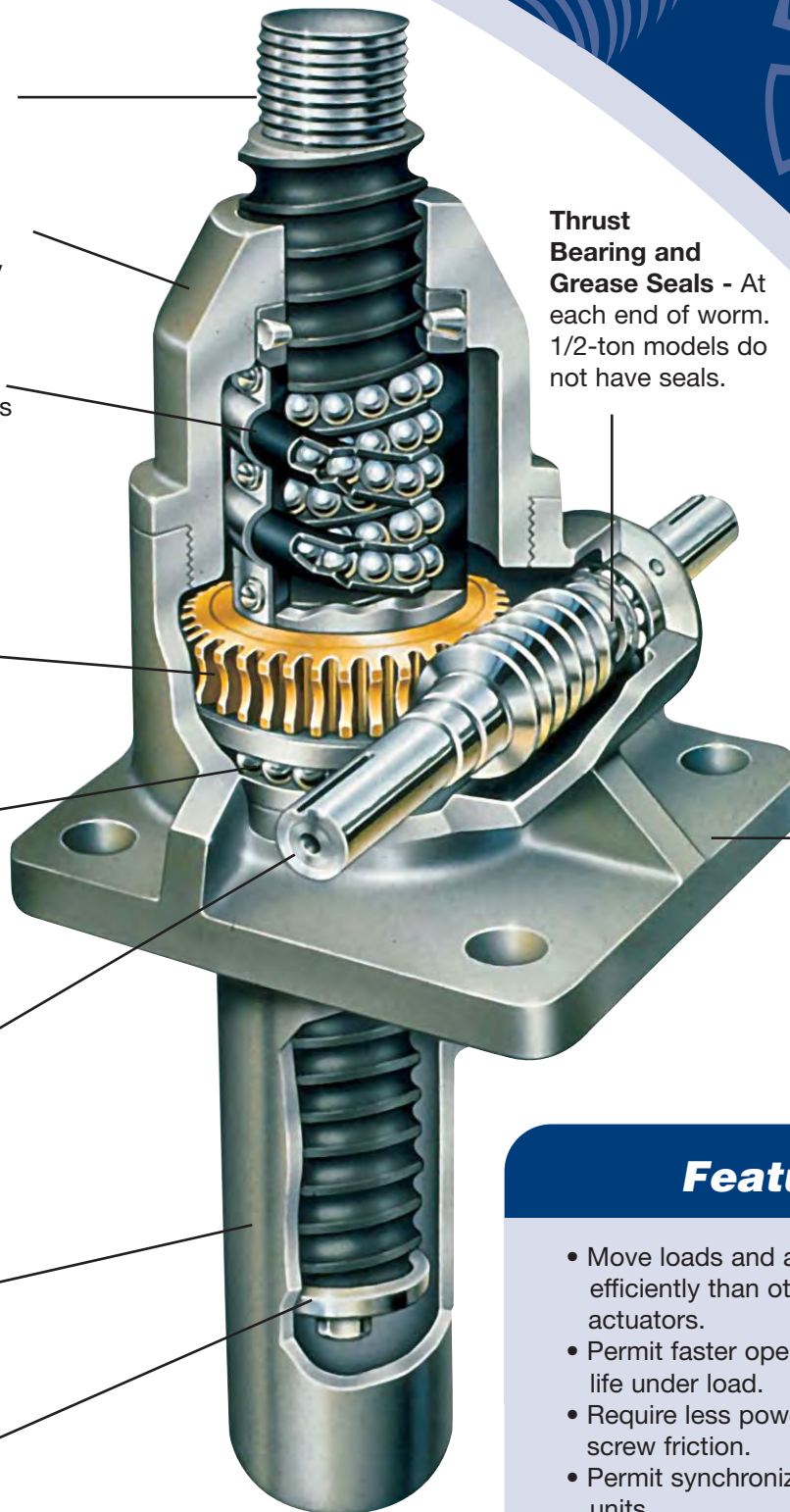
Worm - Available with double or single shaft extension. Clockwise rotation of this end raises load on all actuator models except 50-ton ball screw actuator units.

Cover Pipe - Protects lifting screw threads.

Stop Disc - This is not a power stop.

Thrust Bearing and Grease Seals - At each end of worm. 1/2-ton models do not have seals.

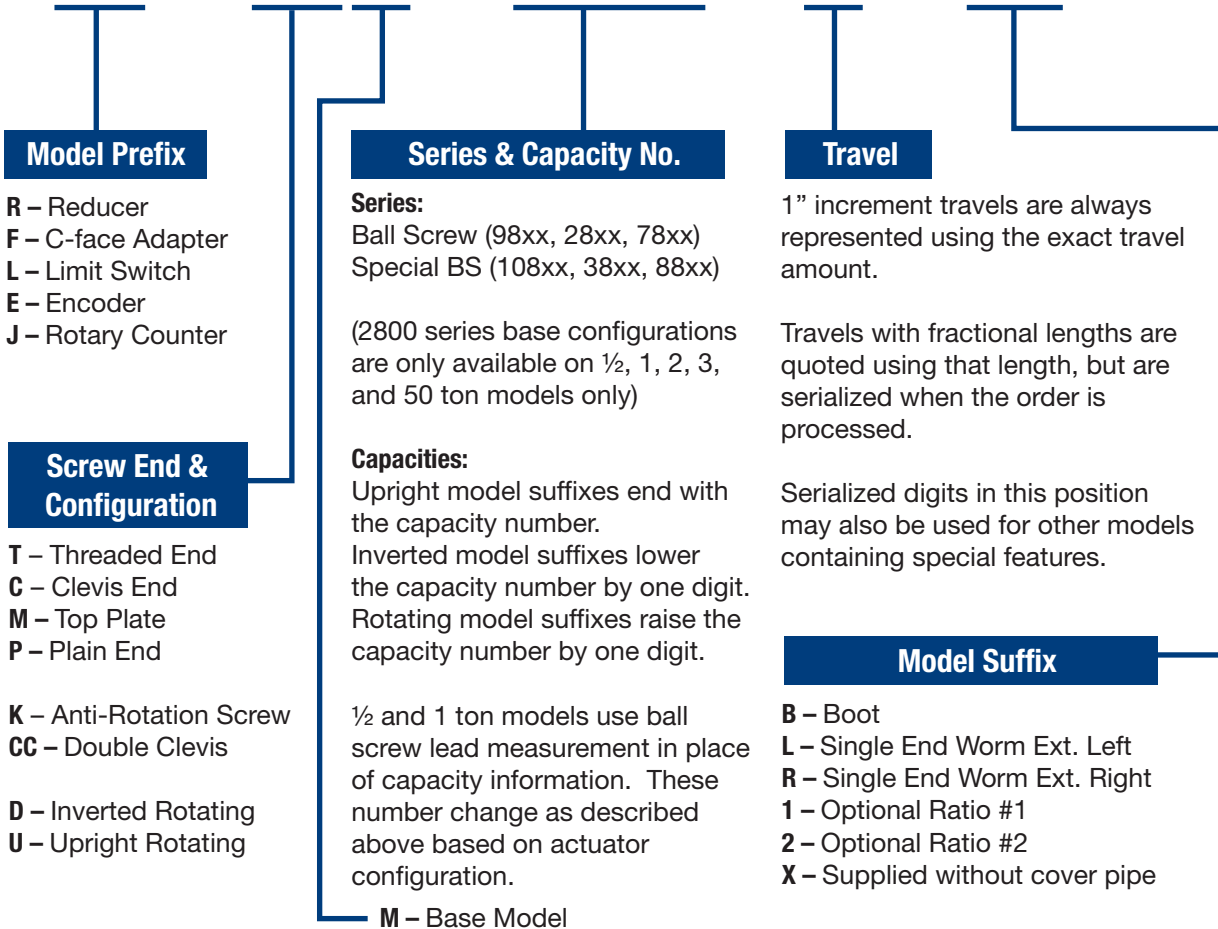
Housing - Aluminum on 1/2 and 1 ton models, ductile iron on 2-ton through 10-ton models cast steel on 20-ton through 50-ton models.



Features

- Move loads and apply force more efficiently than other mechanical actuators.
- Permit faster operation and longer life under load.
- Require less power by reducing screw friction.
- Permit synchronization of multiple units.
- Capacity from 1/2 to 50 tons.
- Handles full load in tension or compression
- 40 models available.

FL – TKM – 9802 – 6 – 1R



Ball Screw Actuators



Ball Screw Actuator Performance Specifications

Capacity (Tons)		1/2	1	2 (HL)	2	3	5 (HL)	5	10 (HL)	10	20 (HL)	20	25	50
Max. Speed Cface Driven (in/min)** (pg. 114)		—	—	287.5	72.0	118.5	287.5	136.5	215.5	102.0	215.5	108.0	81.0	—
Max. Speed Red. Driven (in/min)** (pg. 108-109)		—	—	57.5	14.4	23.7	57.4	27.2	43	20.4	43.1	21.6	20.1	33.4
Dimensional Information Shown on Page(s):		52	53	54-59	54-59	60-61	62	63	64	65	66	66	67	68-69
Lifting Screw	Diameter (in)	5/8	3/4	1	1	1 11/64	1 1/2	1 1/2	1 1/2	1 1/2	2 1/4	2 1/4	3	4
	Lead (in)	0.200	0.200	1.000	0.250	0.413	1.000	0.474	1.000	0.474	1.000	0.500	0.660	1.000
Worm Gear Ratios	Std.	5:1	5:1	6:1	6:1	6:1	6:1	6:1	8:1	8:1	8:1	8:1	10 2/3:1	10 2/3:1
	Optional No. 1	20:1	20:1	24:1	24:1	24:1	24:1	24:1	24:1	24:1	24:1	24:1	32:1	32:1
	Optional No. 2	—	—	12:1	12:1	12:1	12:1	12:1	—	—	—	—	—	—
Turns of Worm for 1" Stroke	Std.	25	25	6	24	14.526	6	12.667	8	16.889	8	16	16.16	10.67
	Optional No. 1	100	100	24	96	58.106	24	50.667	24	50.667	24	48	48.48	32
	Optional No. 2	—	—	12	48	29.053	12	25.334	—	—	—	—	—	—
Worm Torque at No Load (in-lb)	Std.	0.5	2	10	3	5	20	10	20	15	50	40	40	90
	Optional No. 1	0.5	2	10	3	5	20	10	20	15	50	40	40	90
	Optional No. 2	—	—	10	3	5	20	10	—	—	—	—	—	—
Maximum Horsepower per Actuator	Std.	1/3	1/2	2	2	2	4	4	5	5	5	5	8	15
	Optional No. 1	1/6	1/4	1/2	1/2	1/2	3/4	3/4	1 1/2	1 1/2	1 1/2	1 1/2	2 1/2	6
	Optional No. 2	—	—	3/4	3/4	3/4	2	2	—	—	—	—	—	—
Starting Worm Torque at Full Load (in-lb)	Std.	10.5	22	180	50	110	500	220	800	350	1375	700	925	2700
	Optional No. 1	5.0	11	80	25	50	206	90	400	175	625	325	475	1500
	Optional No. 2	—	—	110	30	68	300	145	—	—	—	—	—	—
Running Worm Torque at Full Load (in-lb)	Std.	9.5	21	160	45	100	410	180	700	300	1270	650	825	2200
	Optional No. 1	4.0	10	70	20	45	183	80	290	150	570	300	425	1200
	Optional No. 2	—	—	100	25	60	270	125	—	—	—	—	—	—
Efficiency Rating (%)	Std.	67.0	60.6	66.3	58.9	65.7	64.7	69.8	56.8	62.8	62.7	61.2	59.7	67.8
	Optional No. 1	39.8	31.8	37.9	33.2	36.5	36.2	39.3	45.7	41.9	46.5	44.2	38.6	41.4
	Optional No. 2	—	—	53.0	53.1	54.8	49.1	50.3	—	—	—	—	—	—
Weight with 6" Stroke (Raise) (lb)		2.8	5	20	20	21	40	40	50	50	115	115	235	520
Weight per Additional 1" Stroke (Raise) (lb)		0.1	0.3	0.3	0.3	0.4	0.9	0.9	0.9	0.9	1.5	1.5	2.9	5.0
Hold Back Torque at Rated Load (ft-lb)	Std.	1	1	2	2	7	8	8	24	11	24	24	24	92
	Optional No. 1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2	2	2	33
	Optional No. 2	—	—	1	1	2	2	2	—	—	—	—	—	—
Key Torque (in-lb)		35	70	700	175	440	1800	850	3500	1700	7000	3500	6000	17700
Max Worm Speed at Full Load (rpm)	Std.	2001	1432	700	2521	1146	504	1146	394	900	229	450	545	350
	Optional No. 1	2101	1432	394	1261	630	229	525	236	540	151	291	332	252
	Optional No. 2	—	—	430	1576	695	420	869	—	—	—	—	—	—
Max Load at Full Horsepower and 1750 rpm (lb)	Std.	1150	1601	1459	5875	3830	2585	6384	4104	9855	3927	8489	14018	17250
	Optional No. 1	1223	1556	458	2729	1734	377	2126	1791	4878	280	1968	5751	8942
	Optional No. 2	—	—	680	3557	2096	1858	4595	—	—	—	—	—	—

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

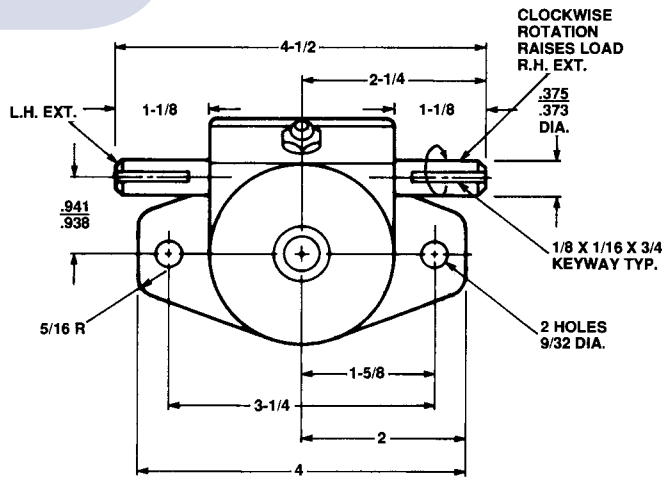
Lifting torques are proportional to load, down to 25% of rated load.

Note: See page 103 for Ball Screw and Nut Life Expectancy

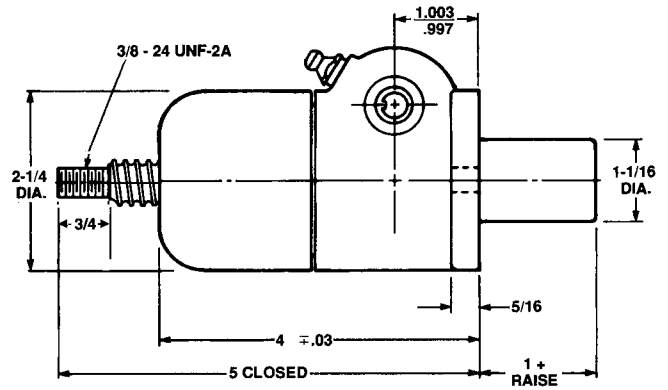
All actuator units can be supplied with standard raises up to 24 inches. Special raises up to 20 feet are available upon request. Closed height dimensions may increase for actuators supplied with bellows boots. See pages 143-144.

Ball Screw Actuators

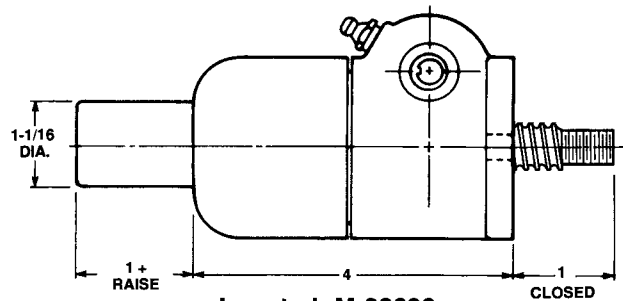
1/2 Ton Capacity



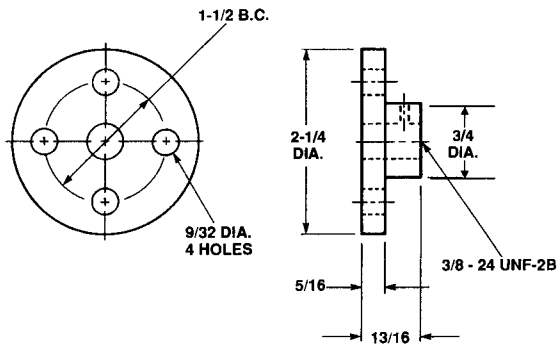
.631" Diameter x .200 Lead Lifting Screws



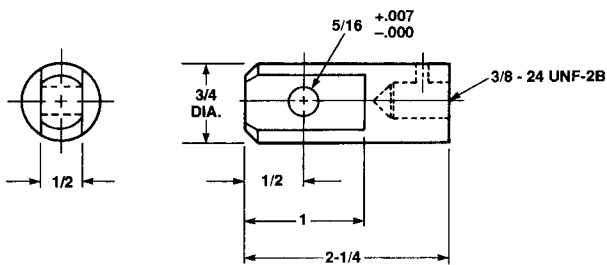
Upright: M-28631



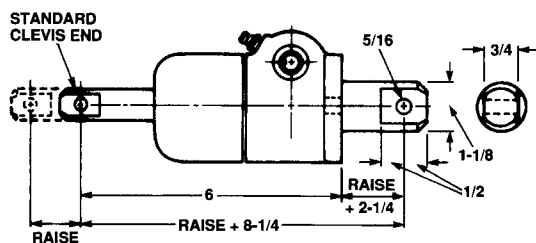
Inverted: M-28630



Top Plate (Optional)
SK2800-1-29A

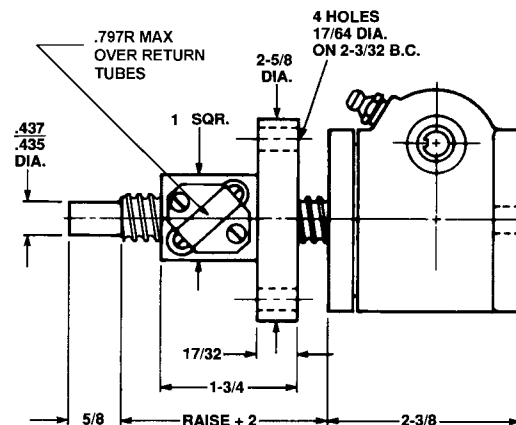


Clevis End (Optional)
SK2800-4-29A

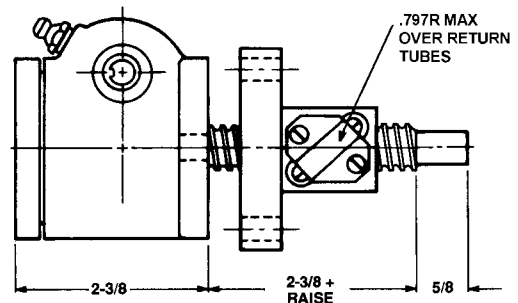


Double Clevis

Maximum Allowable Raise in Compression 8" —Rating 1000 Lbs.



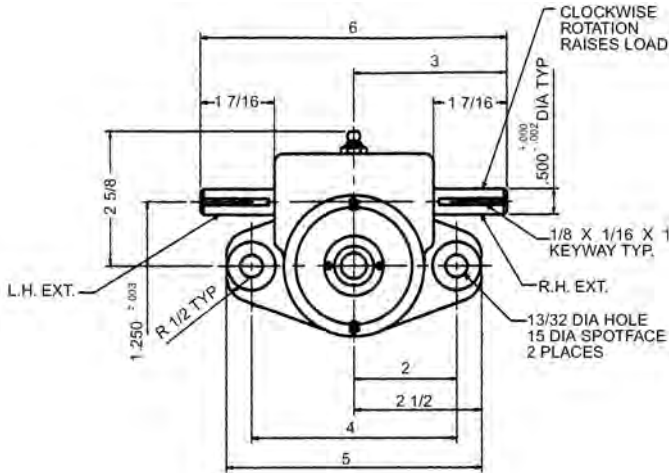
Upright Rotating: UM-28632



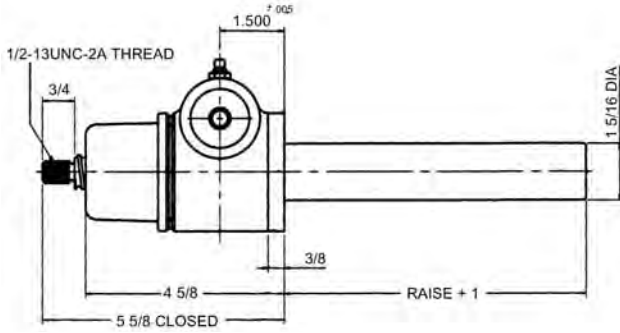
Inverted Rotating: DM-28632

Note: Lifting screw is not keyed. Top should be secured to a lifting member to prevent rotation. When a Bellows Boot is required, see pages 143-144. Dimensions are subject to change without notice.

1 Ton Capacity

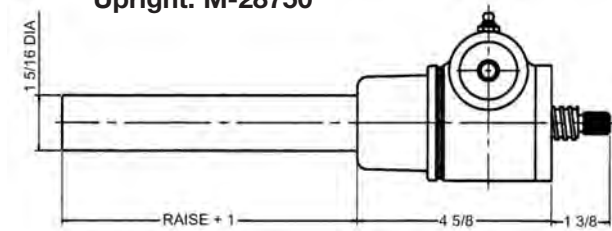


3/4" Diameter x .200 Lead Lifting Screw

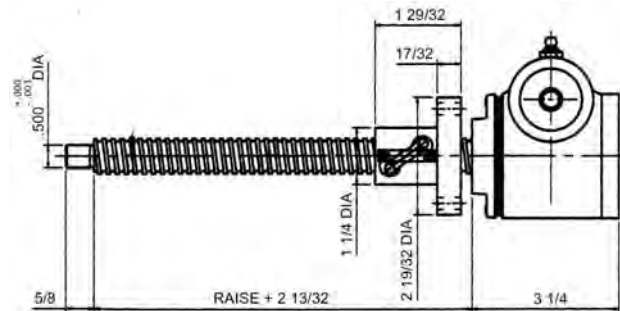


NEW

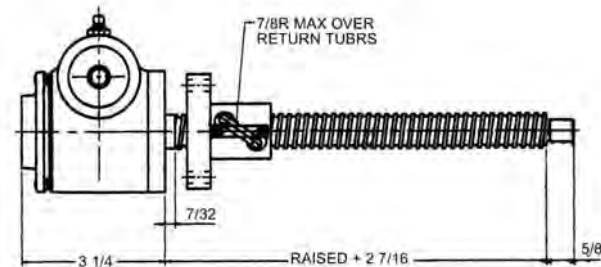
Upright: M-28750



Inverted: M-28749

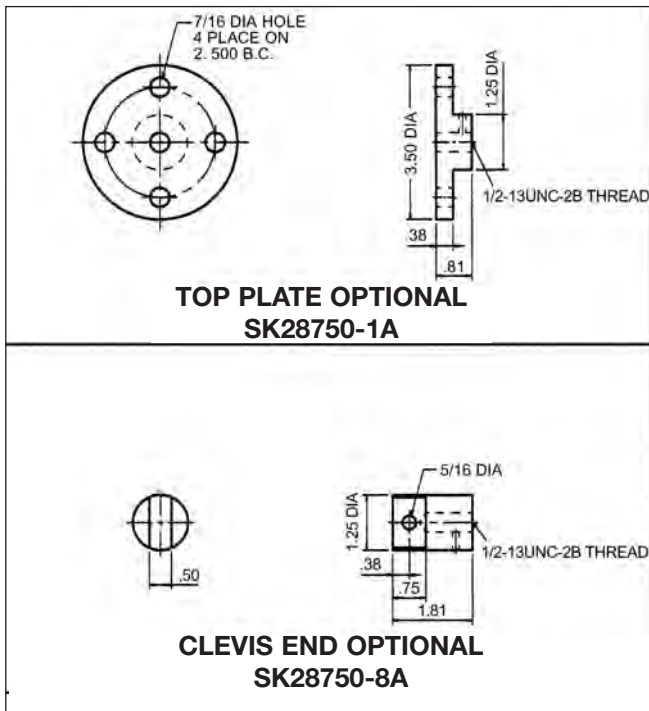


Upright Rotating: UM-28751



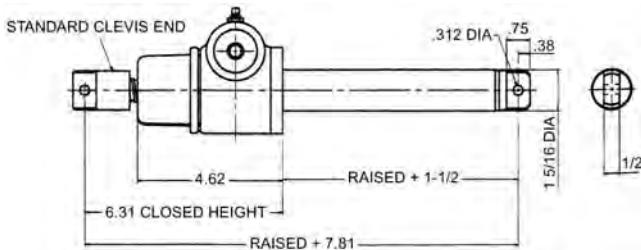
Inverted Rotating: DM-28751

Note: Lifting screw is not keyed. Top should be secured to a lifting member to prevent rotation. When a Bellows Boot is required, see pages 143-144. Dimensions are subject to change without notice.



TOP PLATE OPTIONAL
SK28750-1A

CLEVIS END OPTIONAL
SK28750-8A

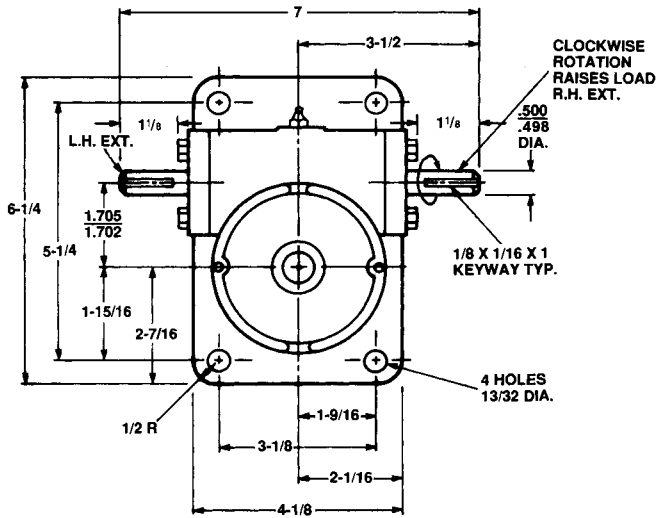


Double Clevis: CCM-28750

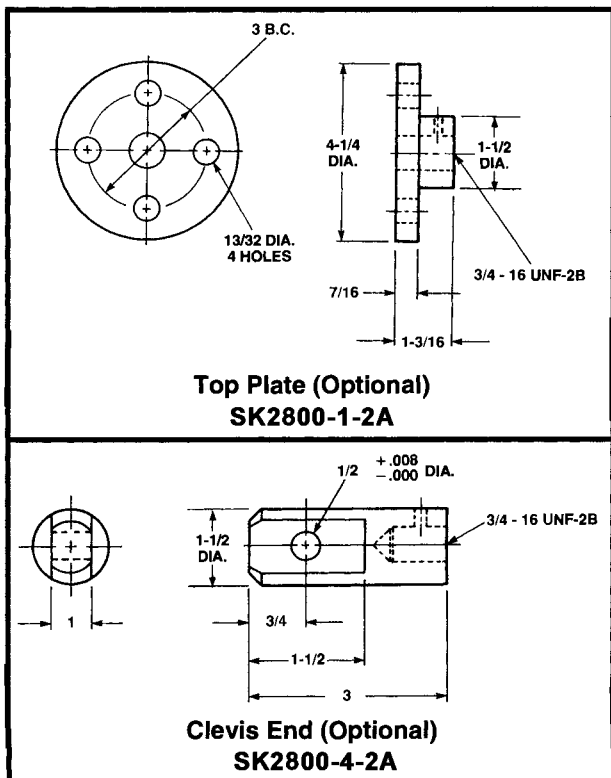
Maximum allowable raise in compression 12" - Rating 2000 lb.

Ball Screw Actuators

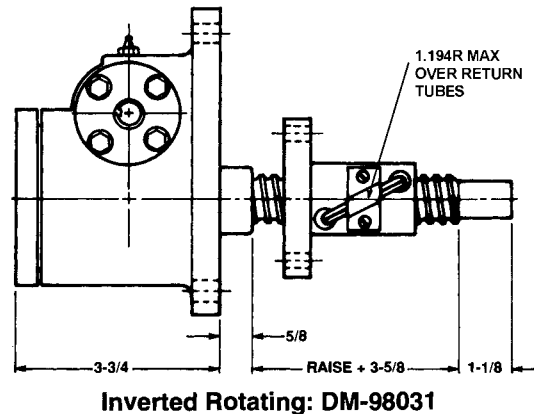
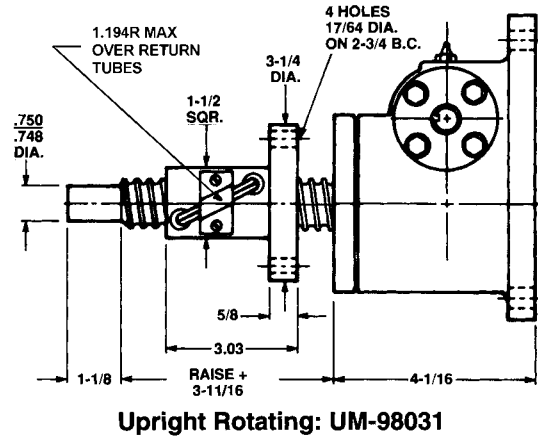
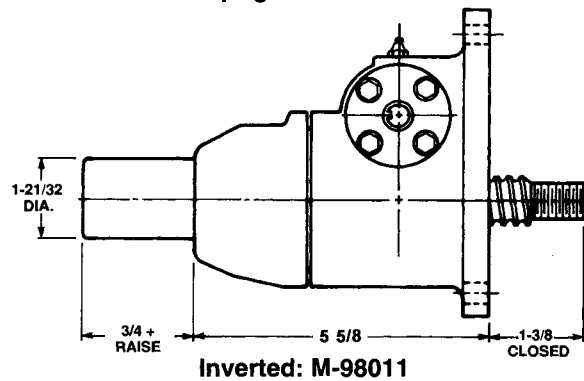
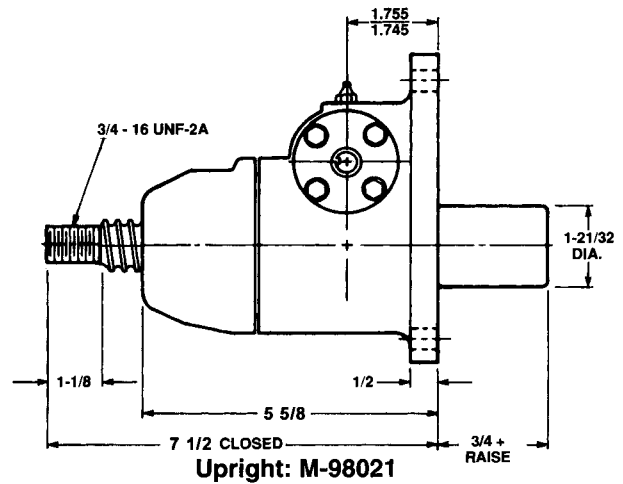
2 Ton - 1" Lead 9800 Series



1" Diameter x 1.000 Lead Lifting Screws

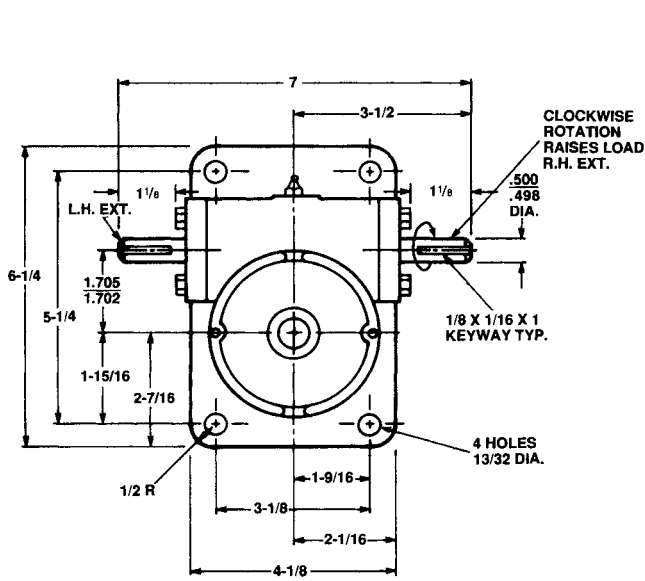


Note: Lifting screw is not keyed. Top should be secured to a lifting member to prevent rotation. When a Bellows Boot is required, see pages 143-144. Dimensions are subject to change without notice.

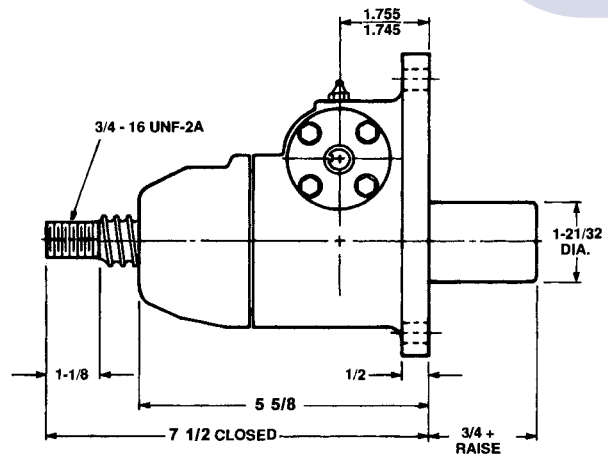


2 Ton Capacity 9800 Series

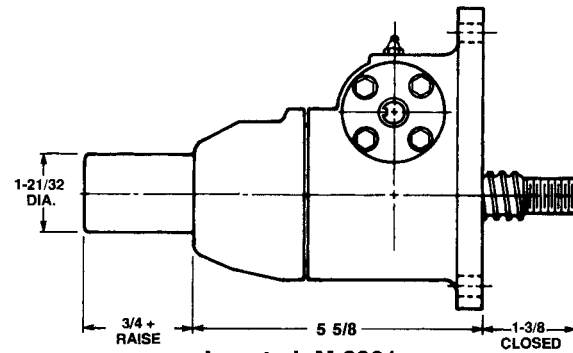
Ball Screw Actuators



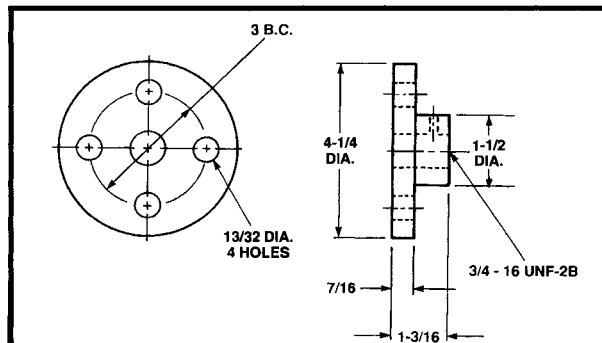
1" Diameter x .250 Lead Lifting Screws



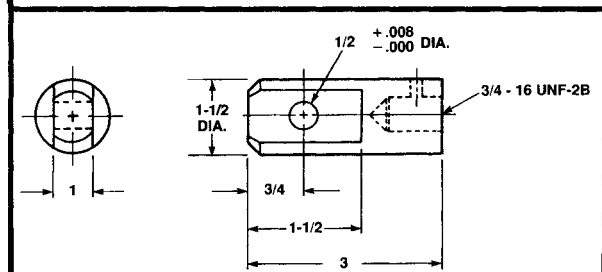
Upright: M-9802



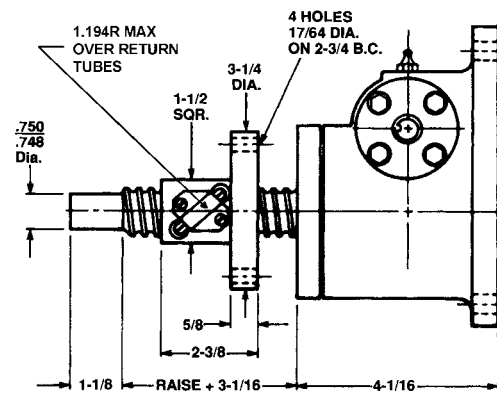
Inverted: M-9801



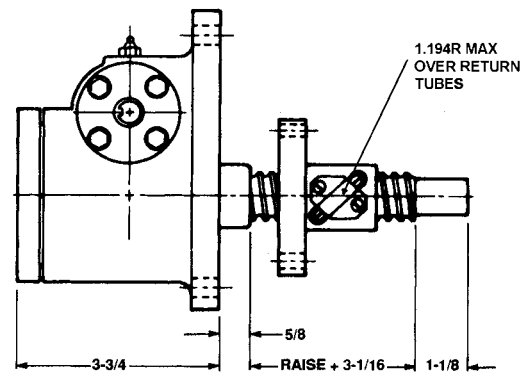
Top Plate (Optional)
SK2800-1-2A



Clevis End (Optional)
SK2800-4-2A



Upright Rotating: UM-9803

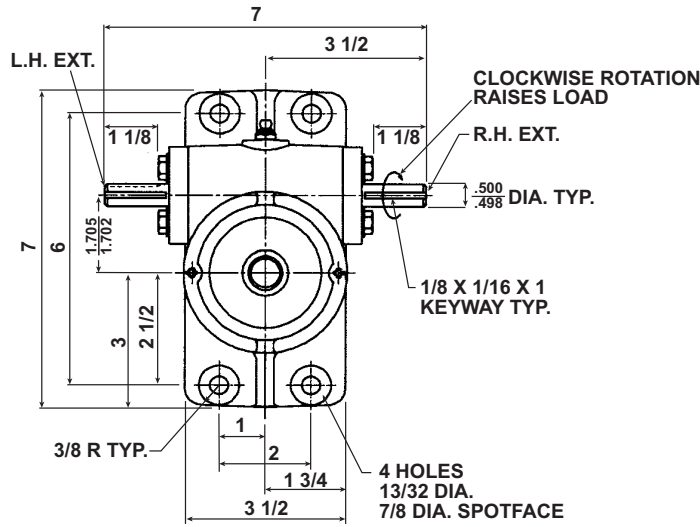


Inverted Rotating: DM-9803

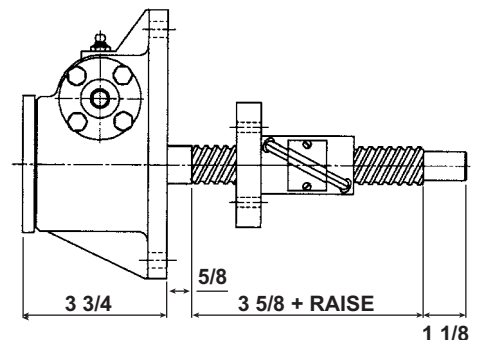
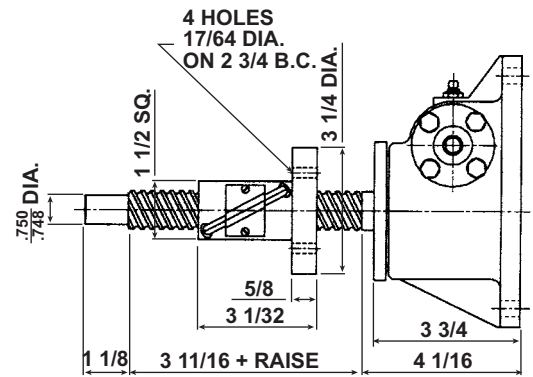
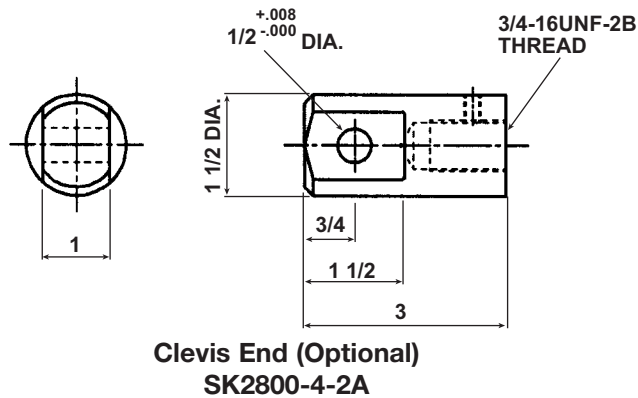
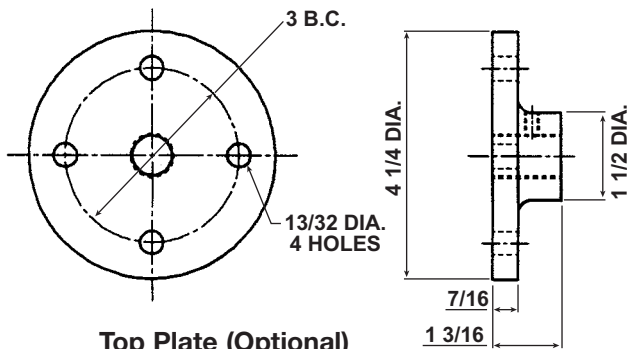
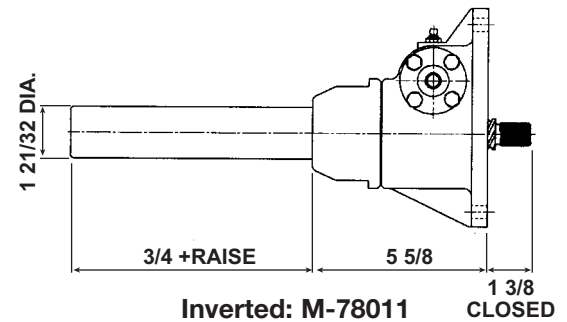
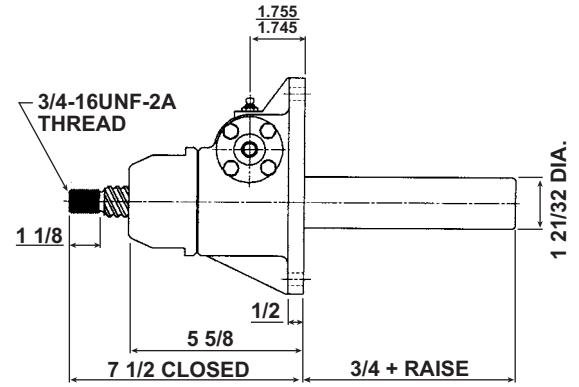
Note: Lifting screw is not keyed. Top should be secured to a lifting member to prevent rotation. When a Bellows Boot is required, see pages 143-144. Dimensions are subject to change without notice.

Ball Screw Actuators

2 Ton - 1" Lead 7800 Series



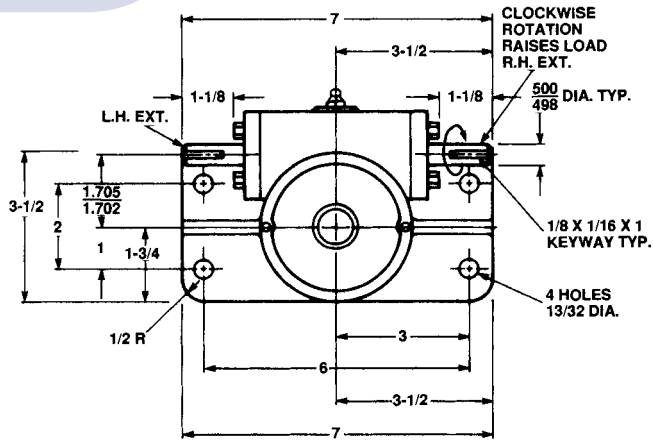
1" Diameter x 1.000 Lead Lifting Screws



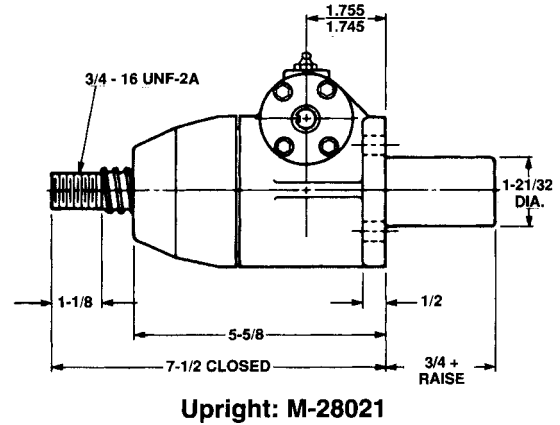
Note: Lifting screw is not keyed. Top should be secured to a lifting member to prevent rotation. When a Bellows Boot is required, see pages 143-144. Dimensions are subject to change without notice.

Ball Screw Actuators

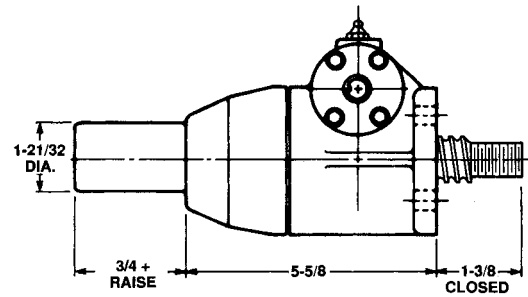
2 Ton - 1" Lead 2800 Series



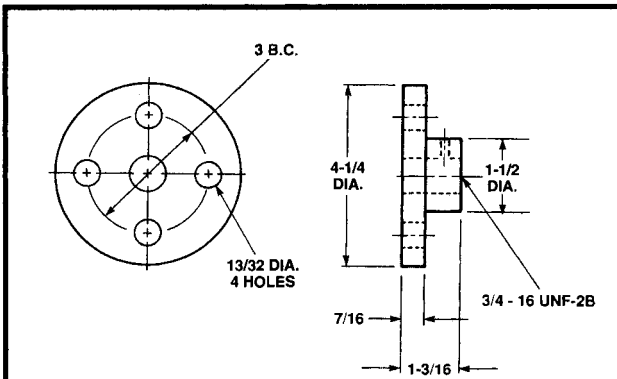
1" Diameter x 1.000 Lead Lifting Screws



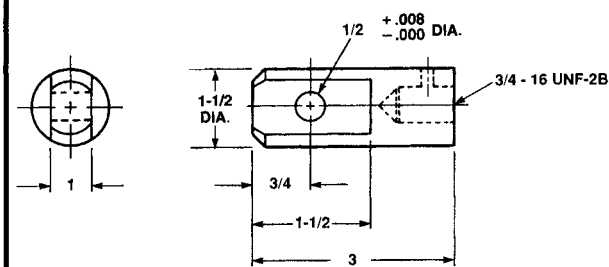
Upright: M-28021



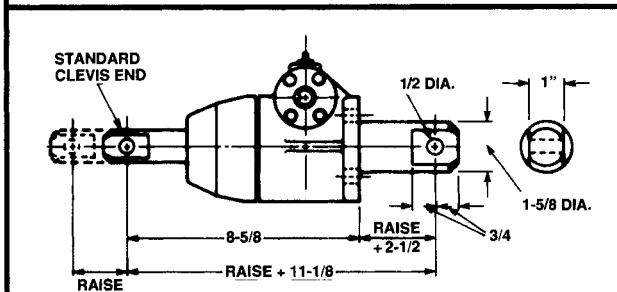
Inverted: M-28011



Top Plate (Optional)
SK2800-1-2A

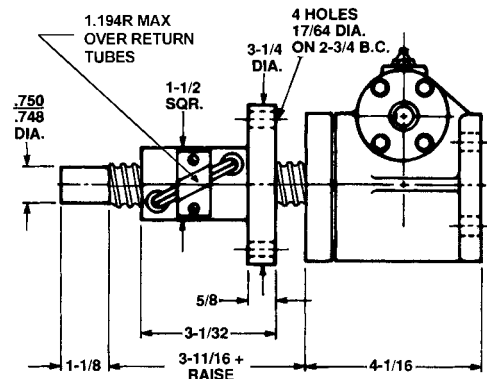


Clevis End (Optional)
SK2800-4-2A

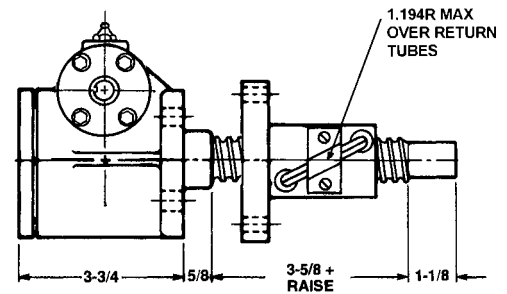


Double Clevis

Maximum Allowable Raise in Compression 15"—Rating 3800 Lbs.
Maximum Raise at Rated Load in Compression 14"



Upright Rotating: KUM-28031

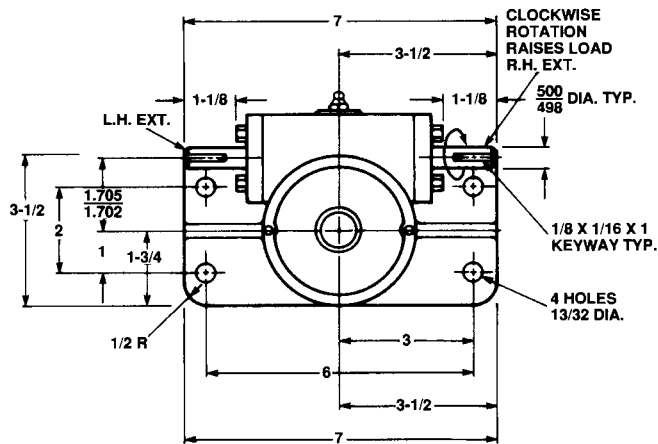


Inverted Rotating: KDM-28031

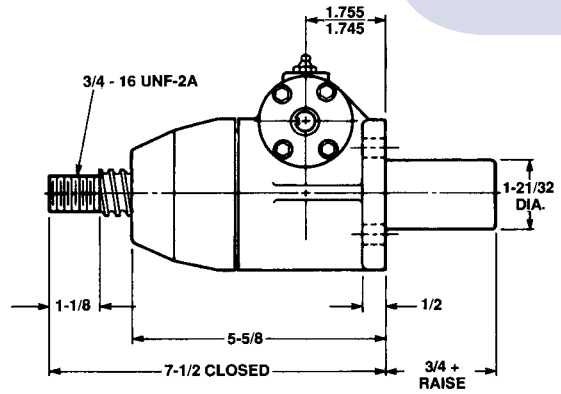
Note: Lifting screw is not keyed. Top should be secured to a lifting member to prevent rotation. When a Bellows Boot is required, see pages 143-144. Dimensions are subject to change without notice.

2 Ton Capacity 2800 Series

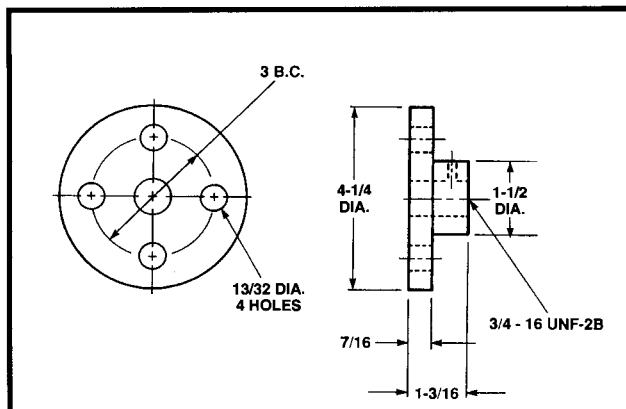
Ball Screw Actuators



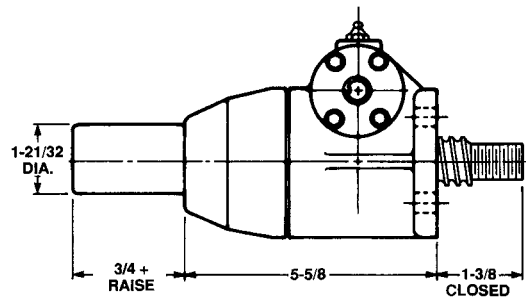
1" Diameter x .250 Lead Lifting Screws



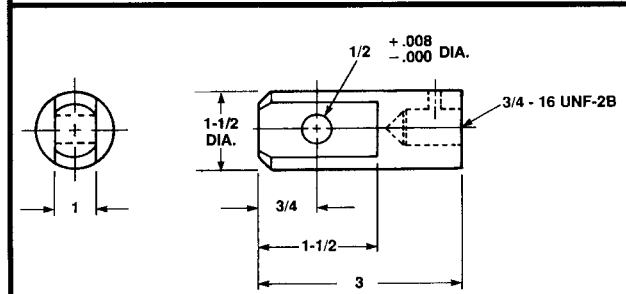
Upright: M-2802



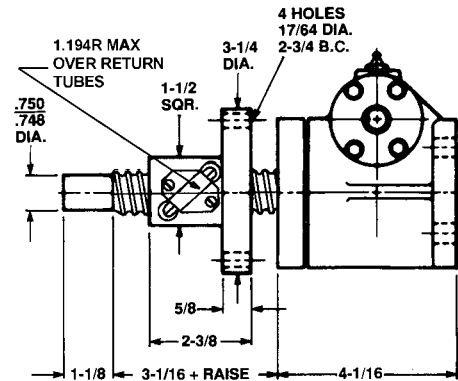
Top Plate (Optional)
SK2800-1-2A



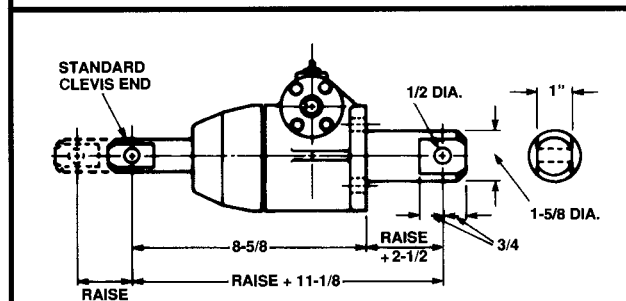
Inverted: M-2801



Clevis End (Optional)
SK2800-4-2A

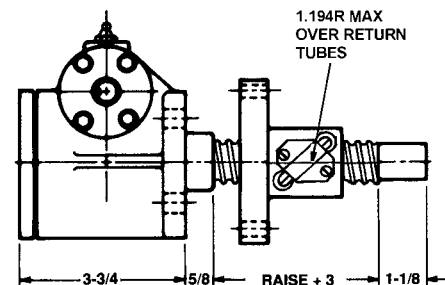


Upright Rotating: KUM-2803



Double Clevis

Maximum Allowable Raise in Compression 15"—Rating 3800 Lbs.
Maximum Raise at Rated Load in Compression 14"

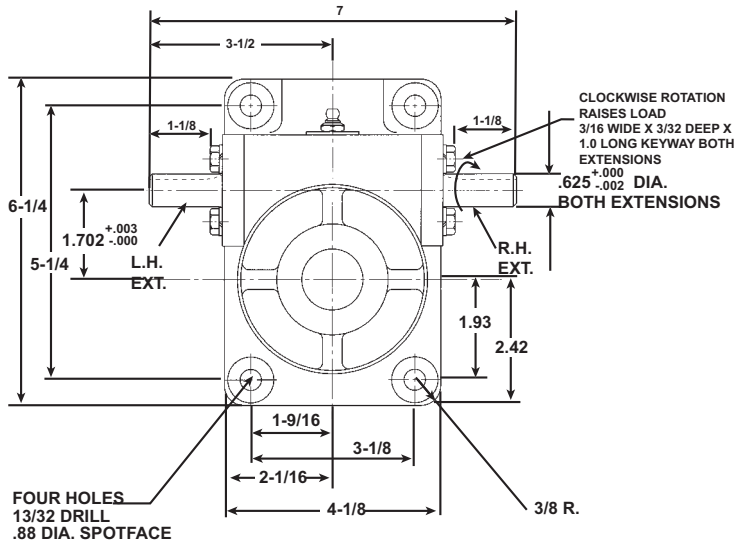


Inverted Rotating: KDM-2803

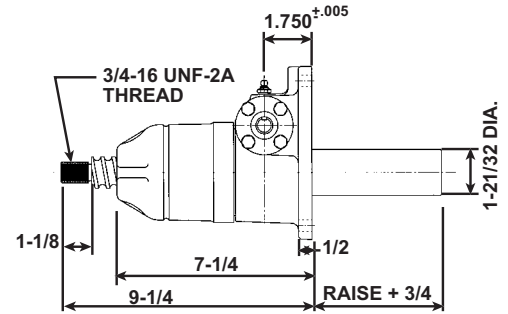
Note: Lifting screw is not keyed. Top should be secured to a lifting member to prevent rotation. When a Bellows Boot is required, see pages 143-144. Dimensions are subject to change without notice.

Ball Screw Actuators

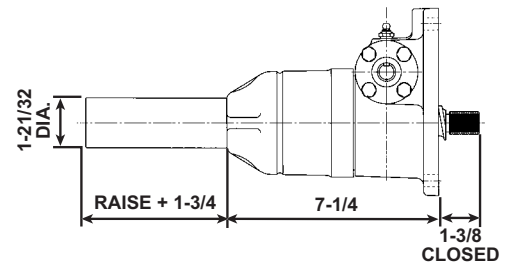
3 Ton Capacity 9800 Series



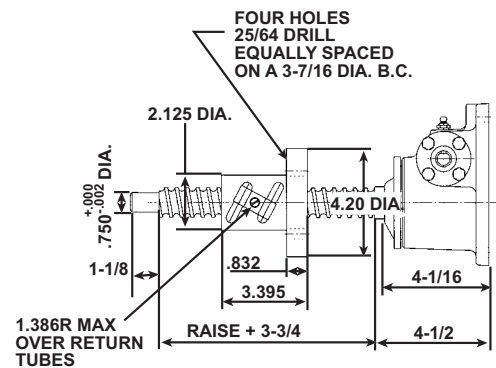
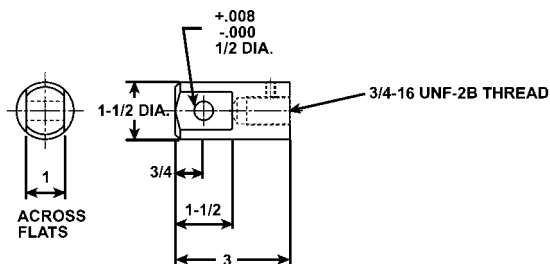
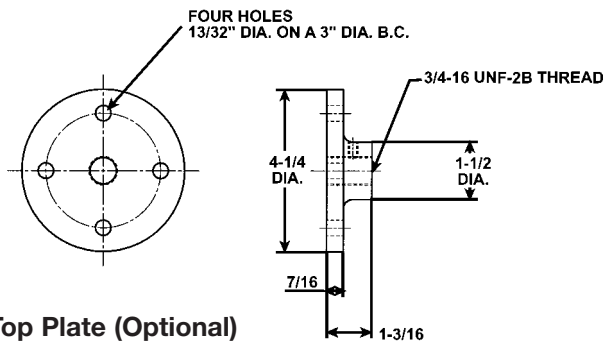
1-11/64" Diameter x .413 Lead Lifting Screw



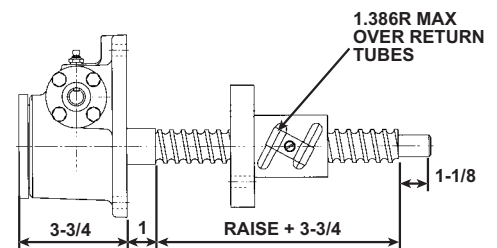
Upright: M-98003



Inverted: M-98002



Upright Rotating: UM-98004

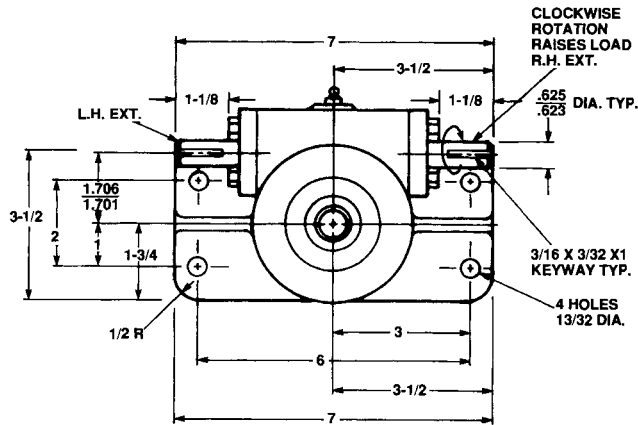


Inverted Rotating: DM-98004

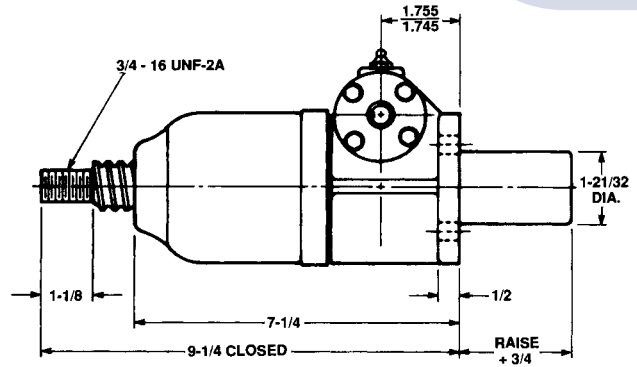
Note: Lifting screw is not keyed. Top should be secured to a lifting member to prevent rotation. When a Bellows Boot is required, see pages 143-144. Dimensions are subject to change without notice.

3 Ton Capacity 2800 Series

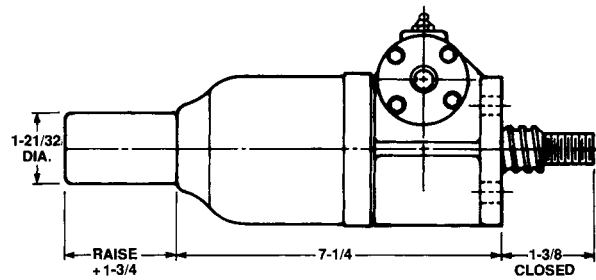
Ball Screw Actuators



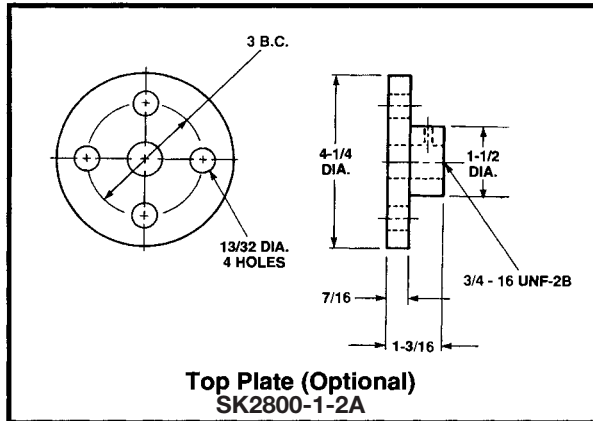
1 1/64" Diameter x .413 Lead Lifting Screws



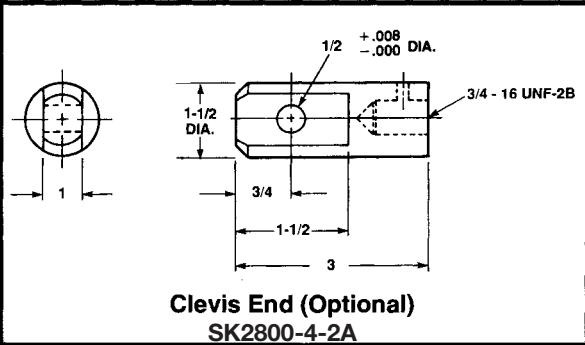
Upright: M-28003



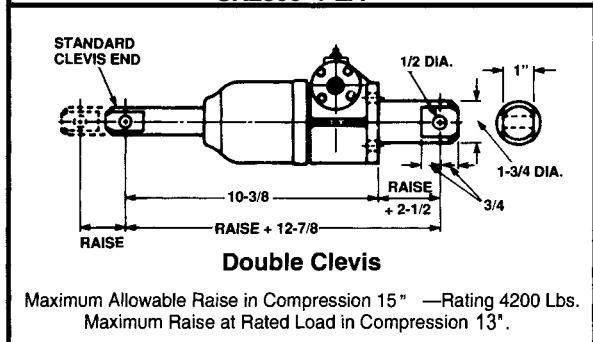
Inverted: M-28002



Top Plate (Optional)
SK2800-1-2A

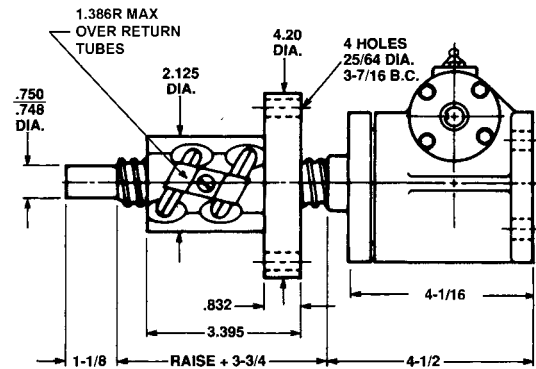


Clevis End (Optional)
SK2800-4-2A

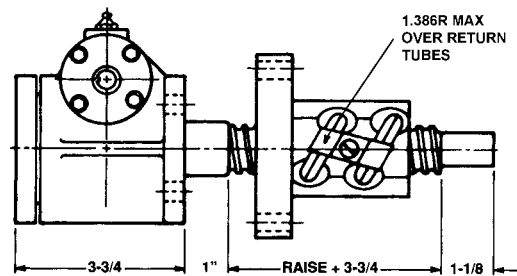


Double Clevis

Maximum Allowable Raise in Compression 15" — Rating 4200 Lbs.
Maximum Raise at Rated Load in Compression 13".

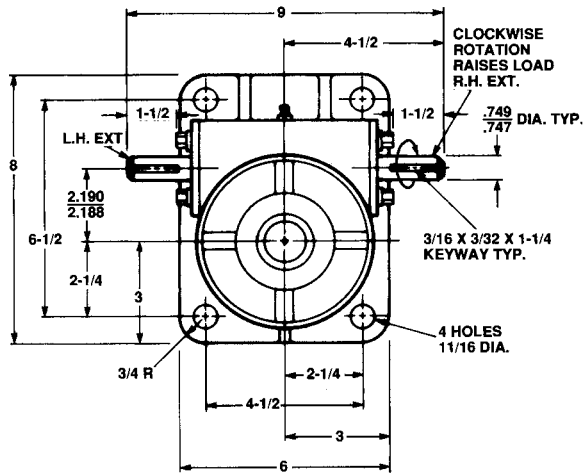


Upright Rotating: KUM-28004

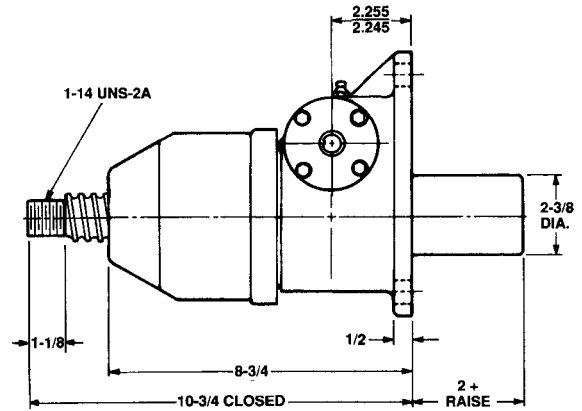
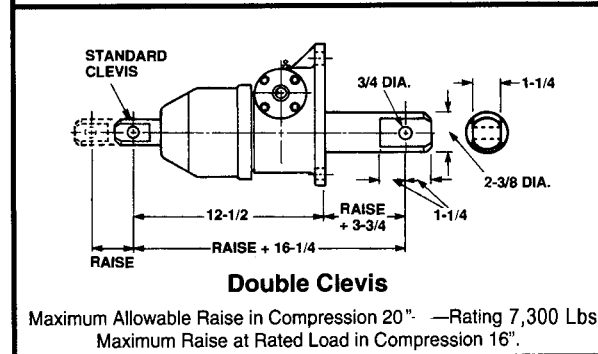
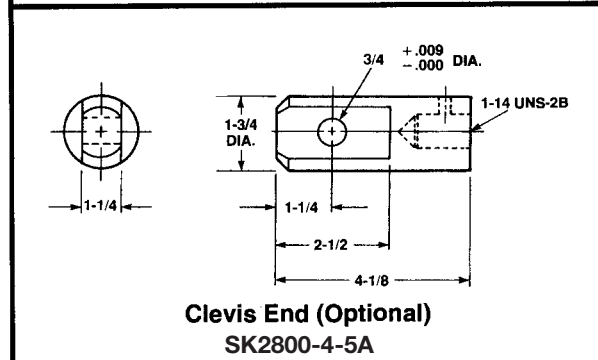
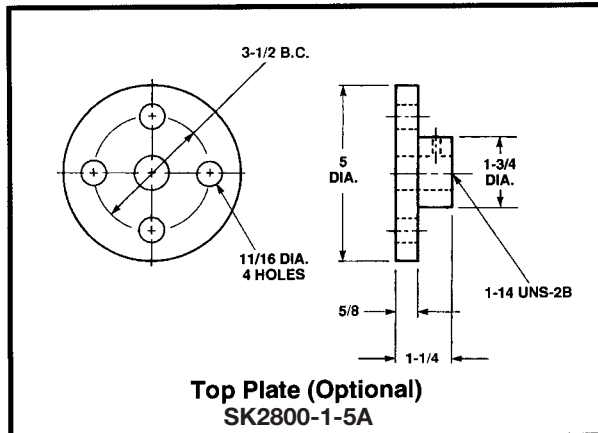


Inverted Rotating: KDM-28004

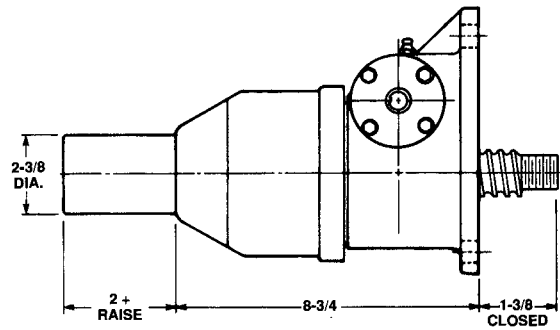
Note: Lifting screw is not keyed. Top should be secured to a lifting member to prevent rotation. When a Bellows Boot is required, see pages 143-144. Dimensions are subject to change without notice.



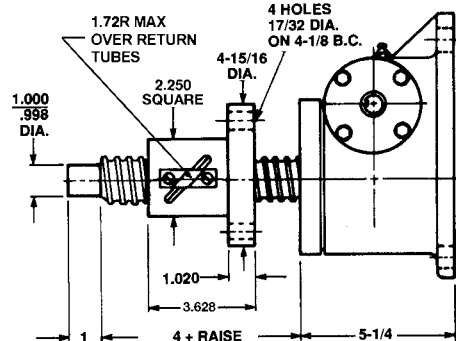
1 1/2" Diameter x 1.000 Lead Lifting Screws



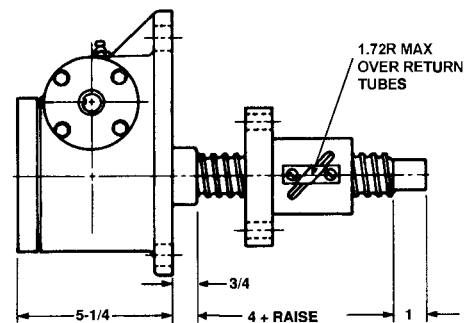
Upright: M-98051



Inverted: M-98041



Upright Rotating: UM-98061

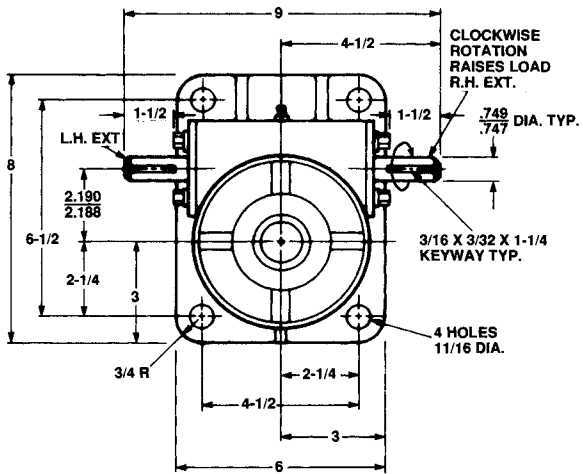


Inverted Rotating: DM-98061

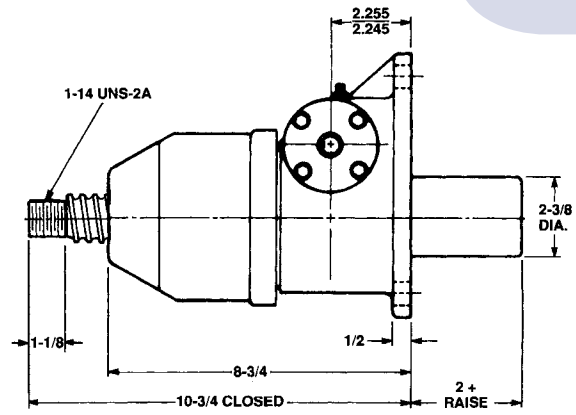
Note: Lifting screw is not keyed. Top should be secured to a lifting member to prevent rotation. When a Bellows Boot is required, see pages 143-144. Dimensions are subject to change without notice.

5 Ton Capacity

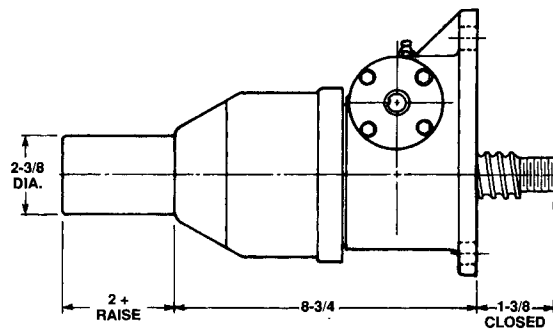
Ball Screw Actuators



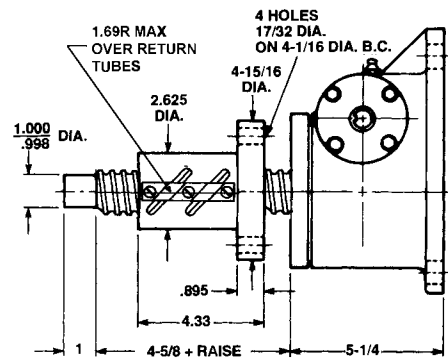
1 1/2" Diameter x .474 Lead Lifting Screws



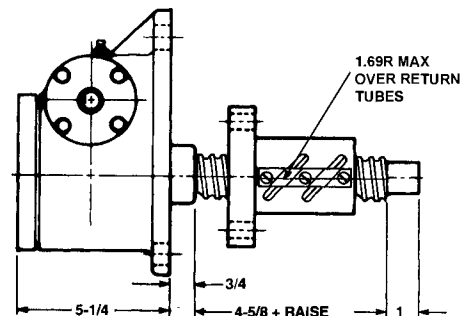
Upright: M-9805



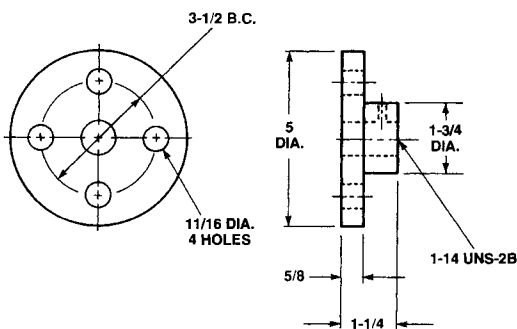
Inverted: M-9804



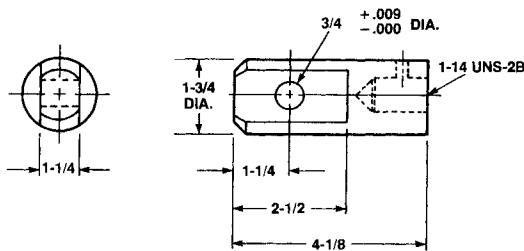
Upright Rotating: UM-9806



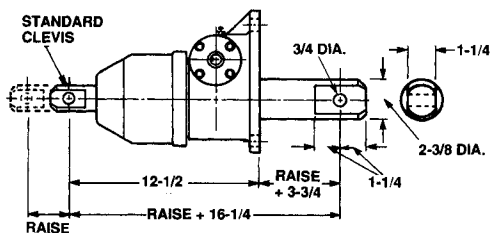
Inverted Rotating: DM-9806



Top Plate (Optional)
SK2800-1-5A



Clevis End (Optional)
SK2800-4-5A



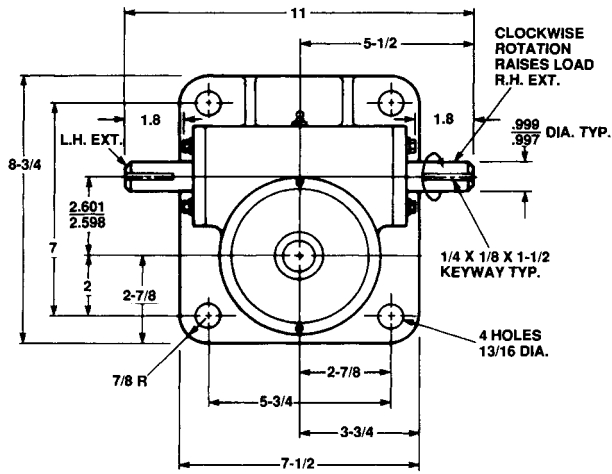
Double Clevis

Maximum Allowable Raise in Compression 20" —Rating 7,300 Lbs.
Maximum Raise at Rated Load in Compression 16".

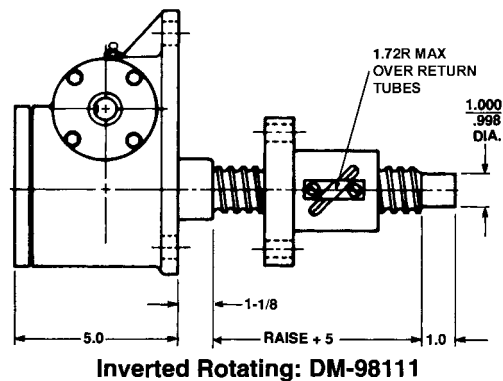
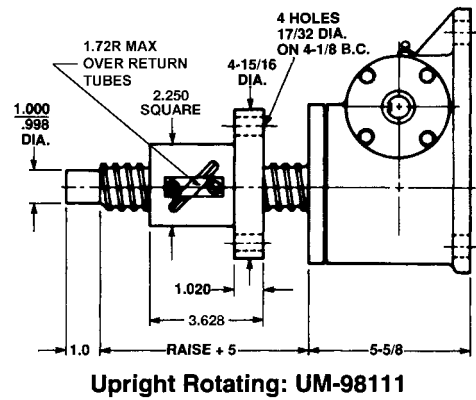
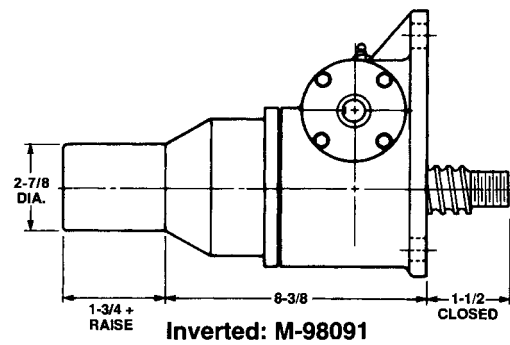
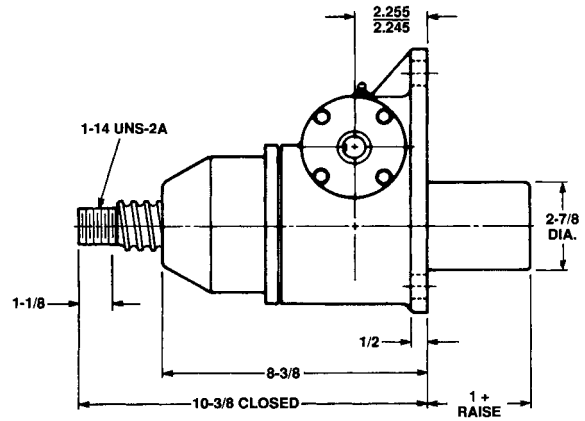
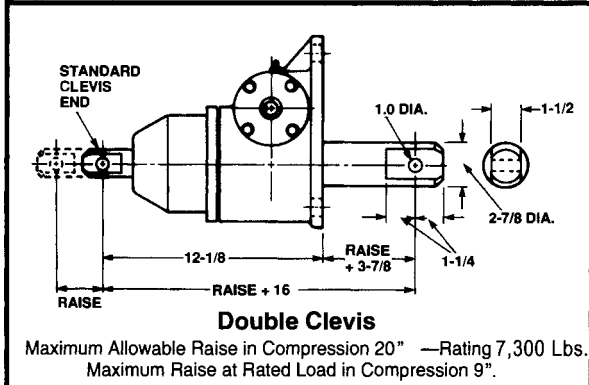
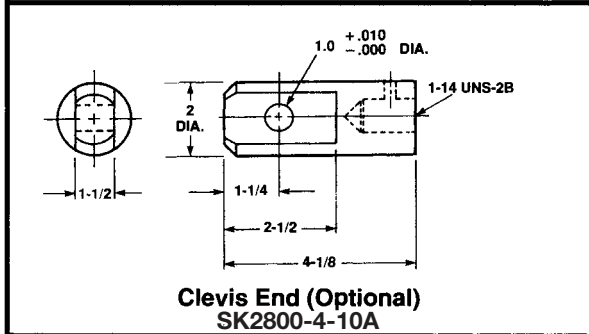
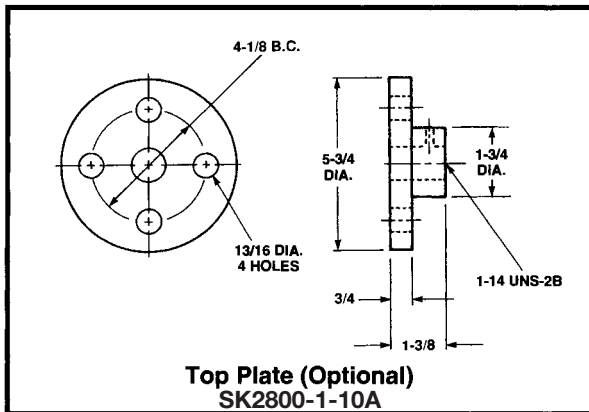
Note: Lifting screw is not keyed. Top should be secured to a lifting member to prevent rotation. When a Bellows Boot is required, see pages 143-144. Dimensions are subject to change without notice.

Ball Screw Actuators

10 Ton - 1" Lead



1 1/2" Diameter x 1.000 Lead Lifting Screws

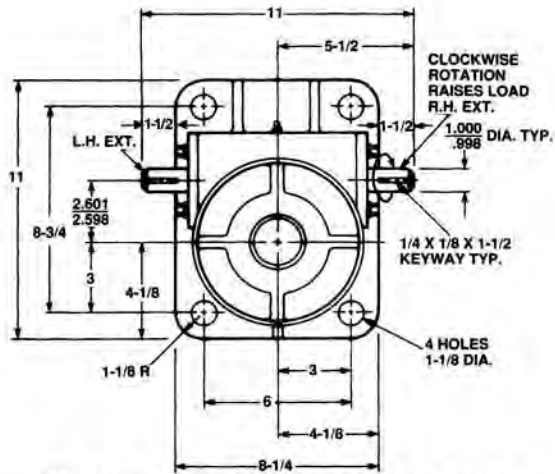


Note: Lifting screw is not keyed. Top should be secured to a lifting member to prevent rotation. When a Bellows Boot is required, see pages 143-144. Dimensions are subject to change without notice.

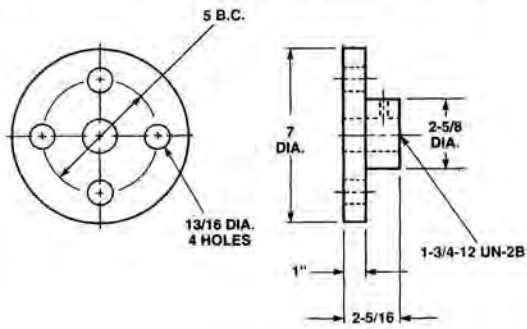
Ball Screw Actuators

20 Ton Capacity Standard and 1" Lead

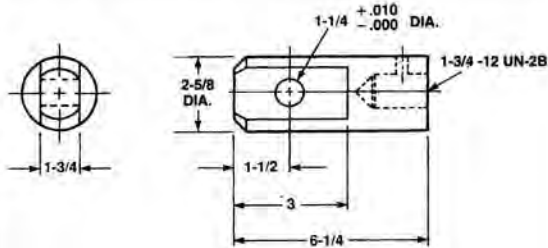
NEW



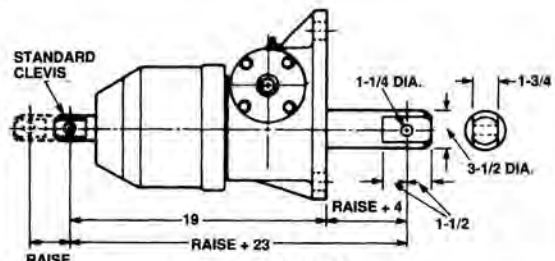
2 1/4" Diameter x .500 Lead Lifting Screws
2 1/4" Diameter x 1.00 Lead Lifting Screws



Top Plate (Optional)
SK2800-1-20A

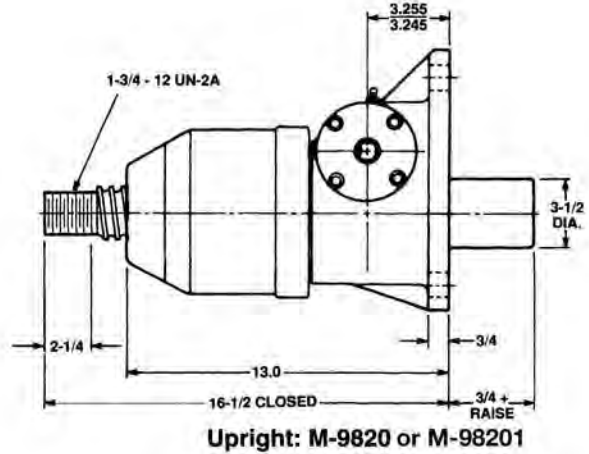


Clevis End (Optional)
SK2800-4-20A

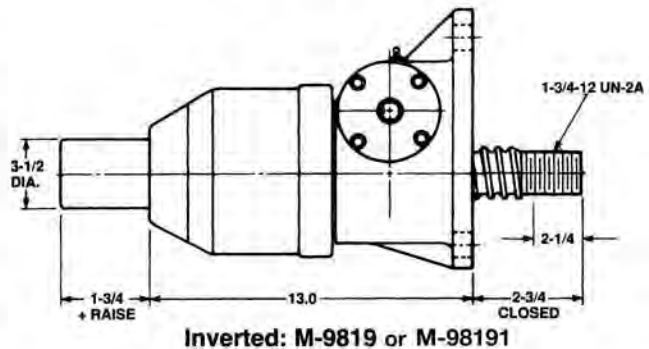


Double Clevis

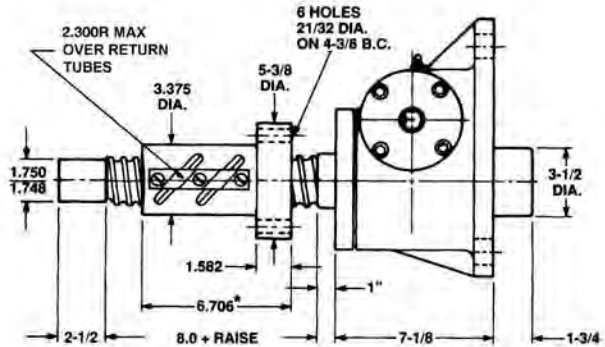
Maximum Allowable Raise in Compression 35" - Rating 19,000 Lbs.
Maximum Raise at Rated Load in Compression 30"



Upright: M-9820 or M-98201

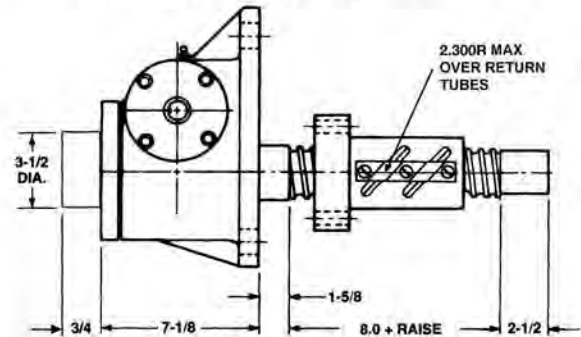


Inverted: M-9819 or M-98191



Upright Rotating: AUM-9821 or AUM-98211

*1" Lead Ball nut O.A. Length 6.379

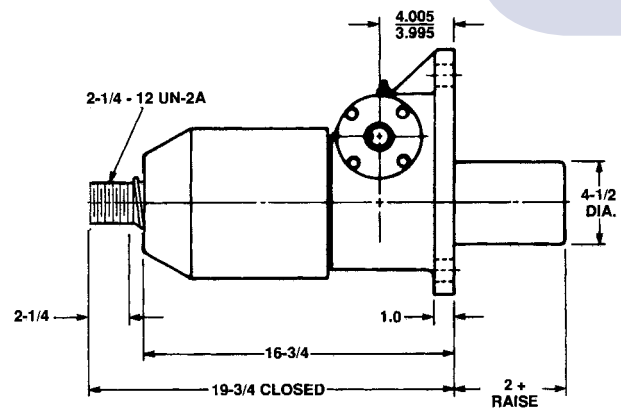
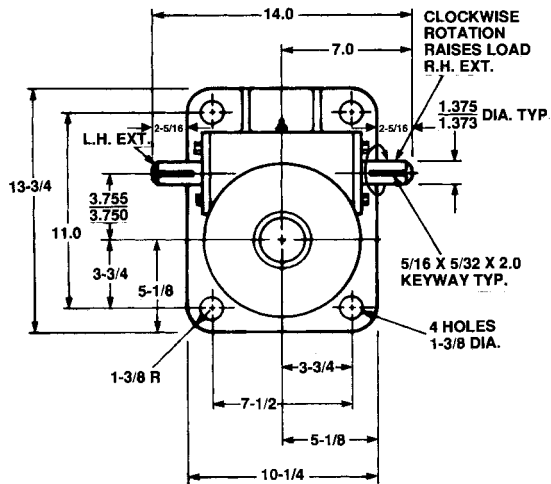


Inverted Rotating: ADM-9821 or ADM-98211

Note: Lifting screw is not keyed. Top should be secured to a lifting member to prevent rotation. When a Bellows Boot is required, see pages 143-144. Dimensions are subject to change without notice.

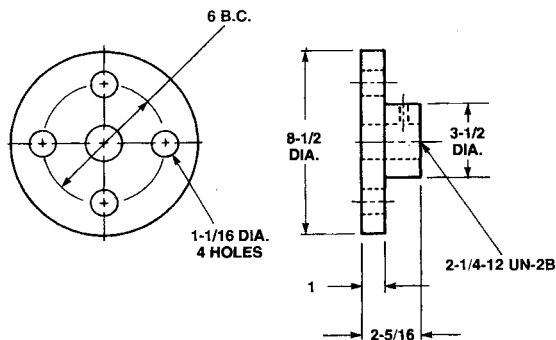
25 Ton Capacity

Ball Screw Actuators

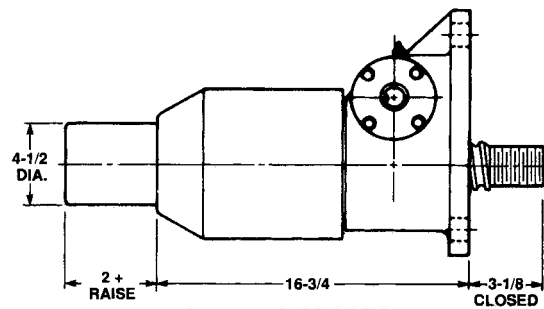


Upright: M-9825

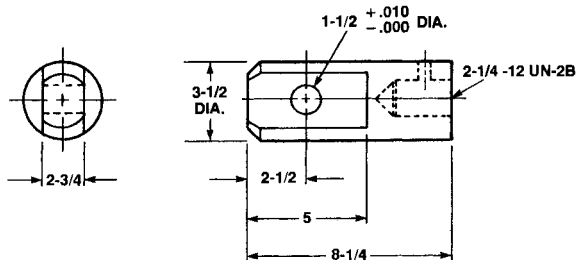
3" Diameter x .660 Lead Lifting Screws



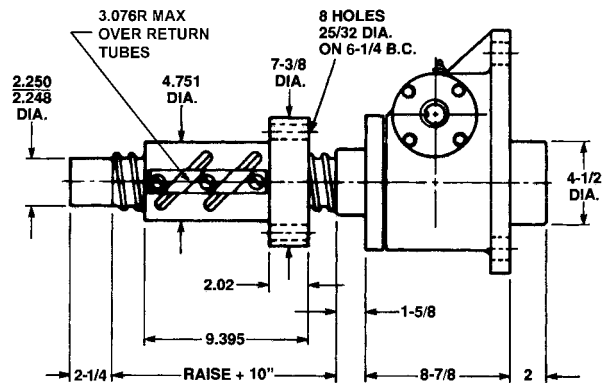
**Top Plate (Optional)
SK2800-1-25A**



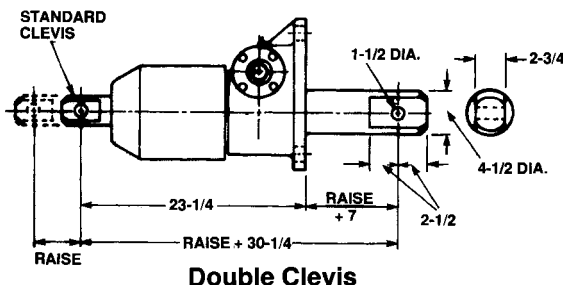
Inverted: M-9824



**Clevis End (Optional)
SK2800-4-25A**

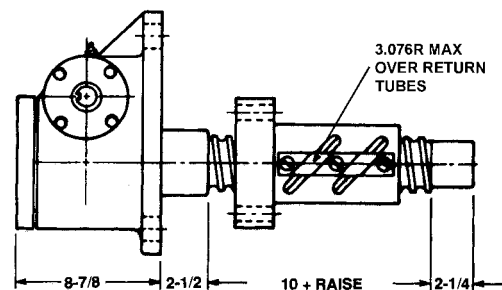


Upright Rotating: UM-9826



Double Clevis

Maximum Allowable Raise in Compression 47"—Rating 35,000 Lbs.
Maximum Raise at Rated Load in Compression 36"



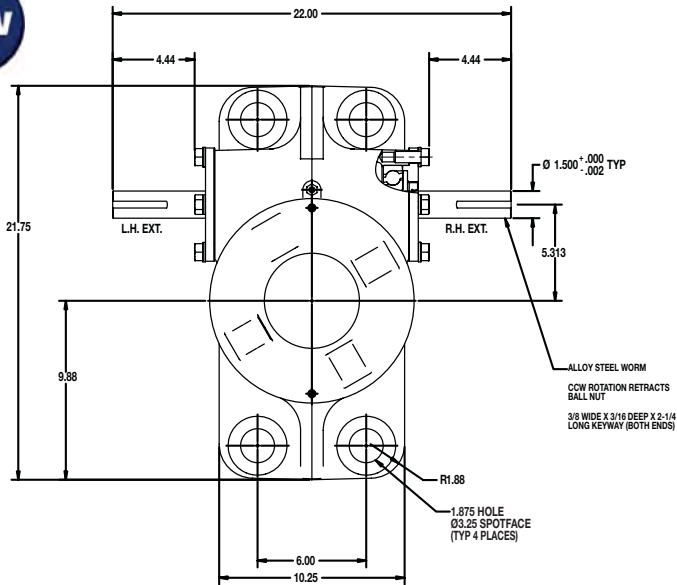
Inverted Rotating: DM-9826

Note: Lifting screw is not keyed. Top should be secured to a lifting member to prevent rotation. When a Bellows Boot is required, see pages 143-144. Dimensions are subject to change without notice.

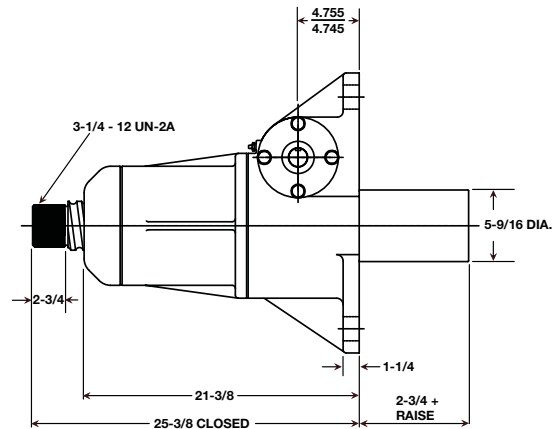
Ball Screw Actuators

50 Ton Capacity 9800 Series

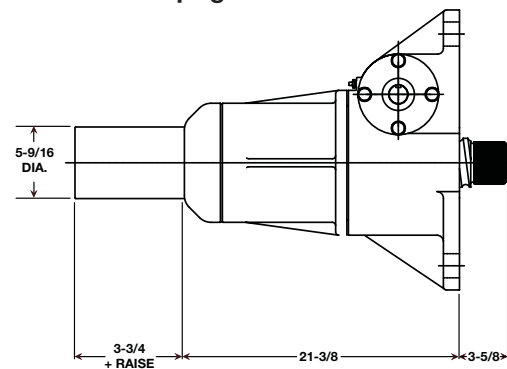
NEW



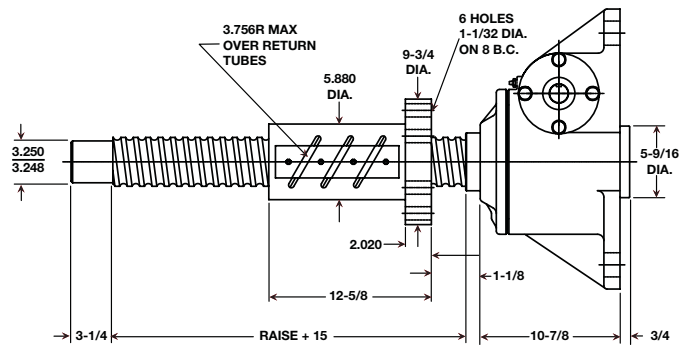
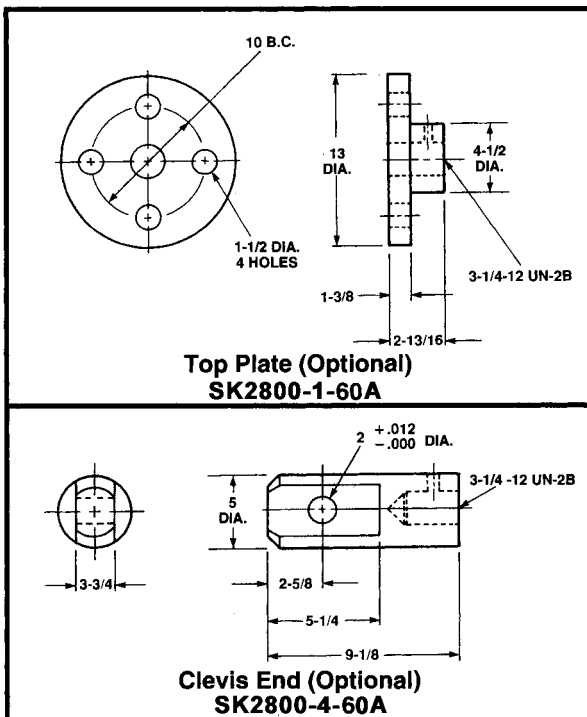
4" Diameter x 1.000 Lead Lifting Screw



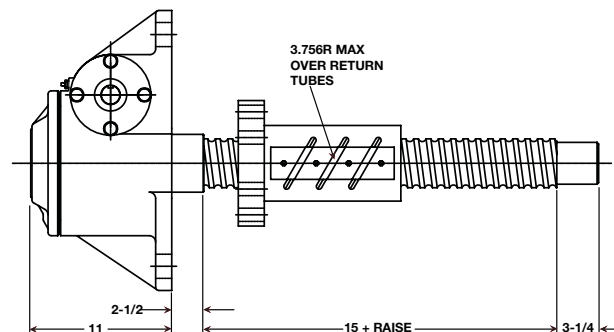
Upright: M-9860



Inverted: M-9859



Upright Rotating: UM-9861

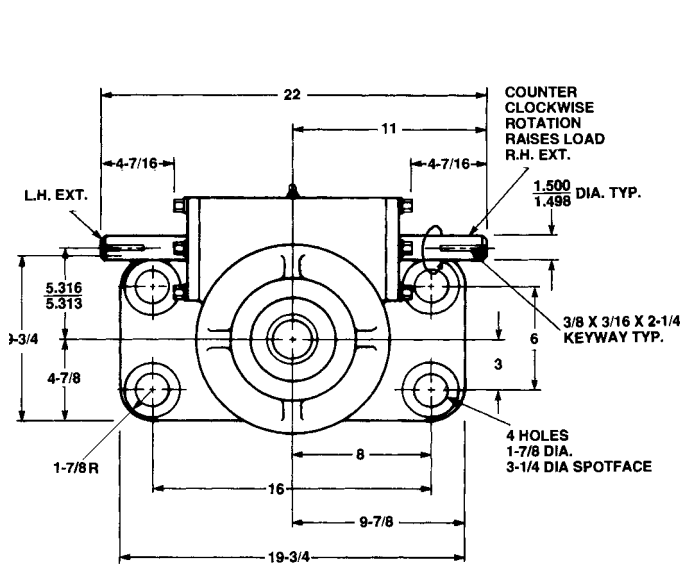


Inverted Rotating: DM-2861

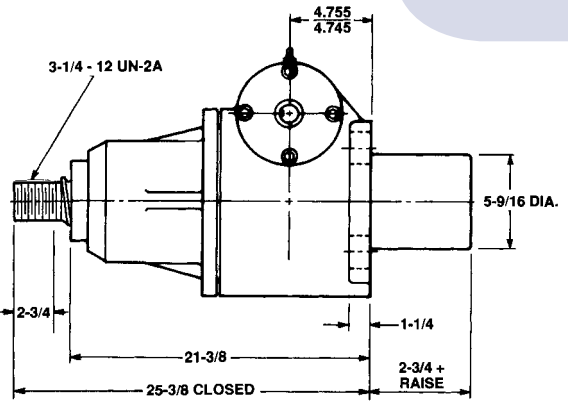
Note: Lifting screw is not keyed. Top should be secured to a lifting member to prevent rotation. When a Bellows Boot is required, see pages 143-144. Dimensions are subject to change without notice.

50 Ton Capacity 2800 Series

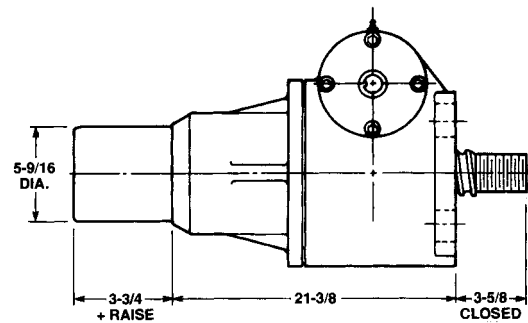
Ball Screw Actuators



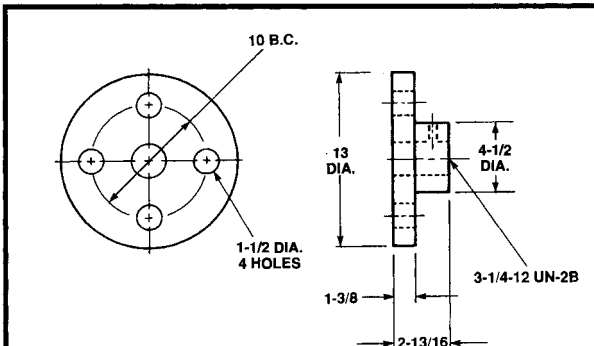
4" Diameter x 1.000 Lead Lifting Screws



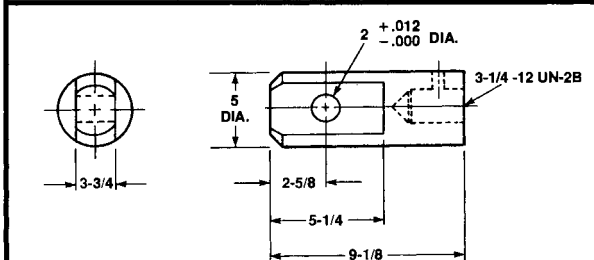
Upright: M-2860



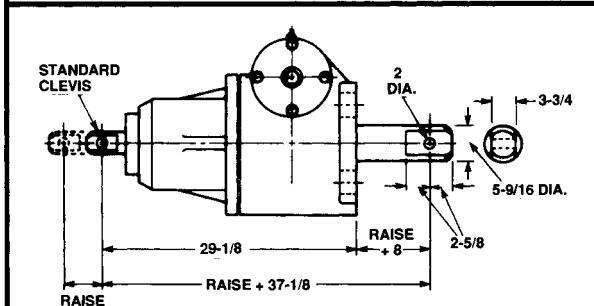
Inverted: M-2859



Top Plate (Optional)
SK2800-1-60A

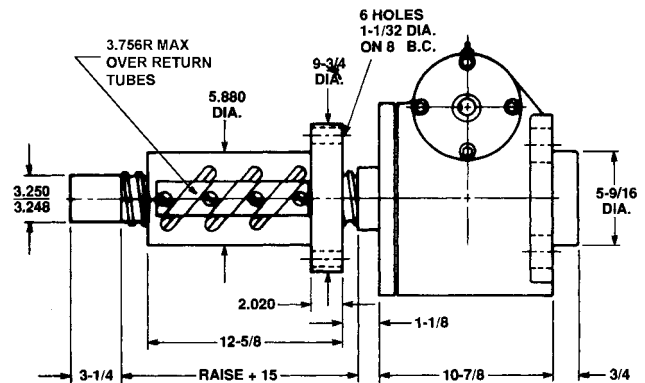


Clevis End (Optional)
SK2800-4-60A

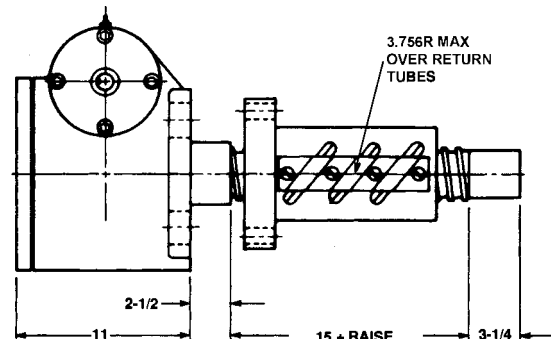


Double Clevis

Maximum Allowable Raise in Compression 65" - Rating 62,000 Lbs.
Maximum Raise at Rated Load in Compression 47".



Upright Rotating: UM-2861



Inverted Rotating: DM-2861

Note: Lifting screw is not keyed. Top should be secured to a lifting member to prevent rotation. When a Bellows Boot is required, see pages 143-144. Dimensions are subject to change without notice.