

Machine Screw Actuators Stainless Steel

Top Plate - 316 S.S.
Must be bolted to lifted member to prevent rotation, except when keyed.

Lifting Screw - 316 S.S. Also available as threaded end or clevis end.

Carbon Steel Load Bearings - Top and bottom to take full load in either direction.

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

Worm - 316 S.S. standard. (17-4 Ph available)

Cover Pipe - 316S.S.
Protects lifting screw threads.

Shell Cap - 316 S.S.
Locked into place by set screws.

Guide Bushing - Bronze

Nitrile Rubber Seals - Top and bottom with 316 S.S. case and spring. Protects gearcase from contamination.

Worm Bearings and Seals - Both ends of worm. 316 S.S. case and spring.

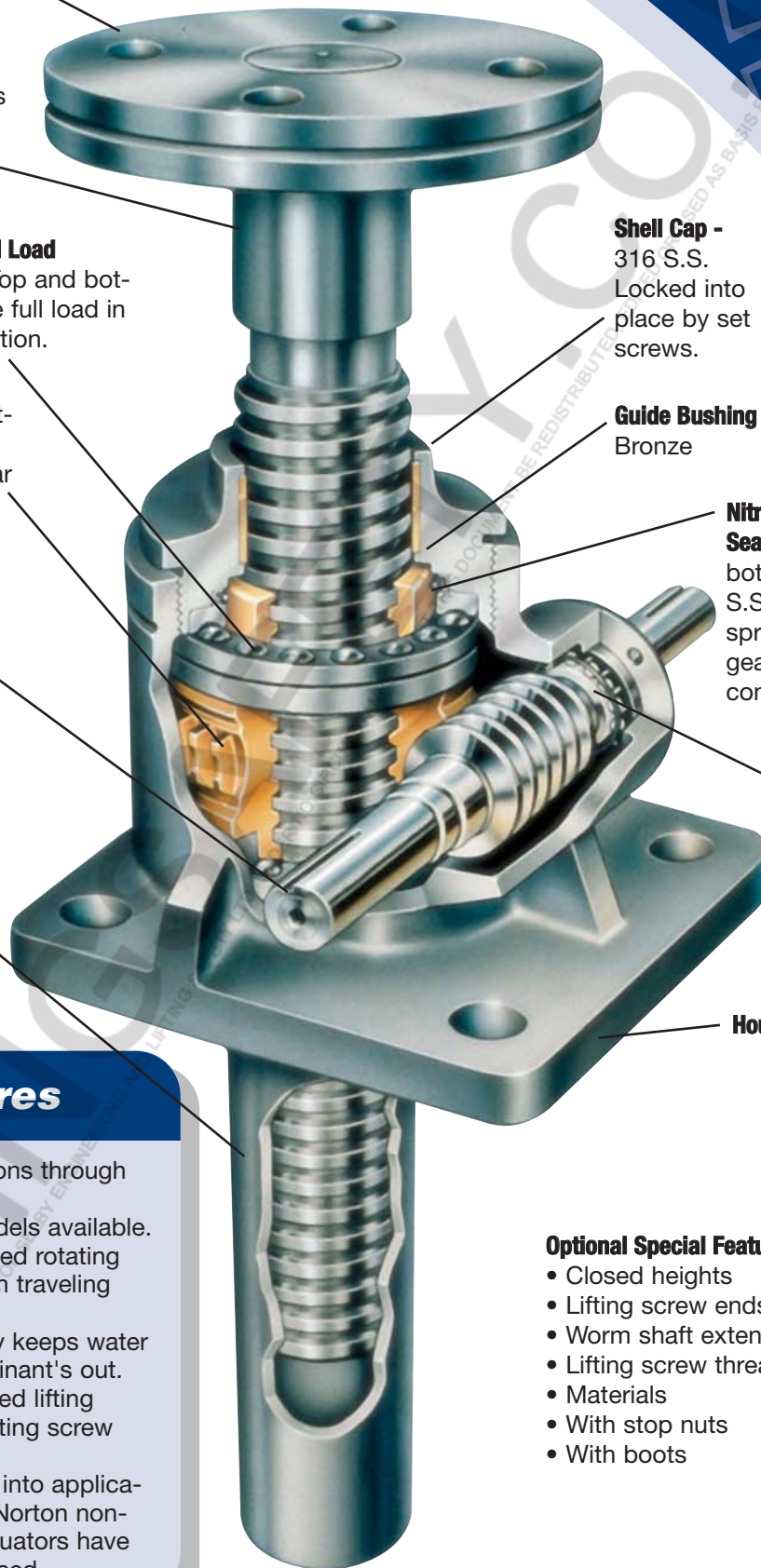
Housing - 316 S.S.

Features

- Capacity from 2 tons through 100 tons.
- Anti-backlash models available.
- Upright and inverted rotating screw models with traveling nut available.
- Sealed gear cavity keeps water and other contaminant's out.
- Available with keyed lifting screws for translating screw models.
- Can be retrofitted into applications where Duff-Norton non-stainless steel actuators have been previously used.

Optional Special Features:

- Closed heights
- Lifting screw ends
- Worm shaft extensions
- Lifting screw thread pitches
- Materials
- With stop nuts
- With boots



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FL – TSM – 9002 – 6 – 1R

Model Prefix

R – Reducer
F – C-face Adapter
H – Hand Wheel
L – Limit Switch
E – Encoder
J – Rotary Counter

Screw End & Configuration

T – Threaded End
C – Clevis End
M – Top Plate
P – Plain End

K – Keyed Screw
CC – Double Clevis

D – Inverted Rotating
U – Upright Rotating

Series & Capacity No.

Series:

Machine Screw (90xx, 18xx, 70xx, 25xx)
Special MS (100xx, 20xx, 80xx, 35xx)

(1800 series base configurations are available only on 2 and 50 ton models)

1/4 & 1/2 Ton MS (2555, 2625)
MS (3555, 3625)

Capacities:

Upright model suffixes end with the capacity number.
Inverted model suffixes lower the capacity number by one digit.
Rotating model suffixes raise the capacity number by one digit.

1/4 & 1/2 Ton models suffixes are as shown and then change as previously described.

SM – Base Model

Travel

1" 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

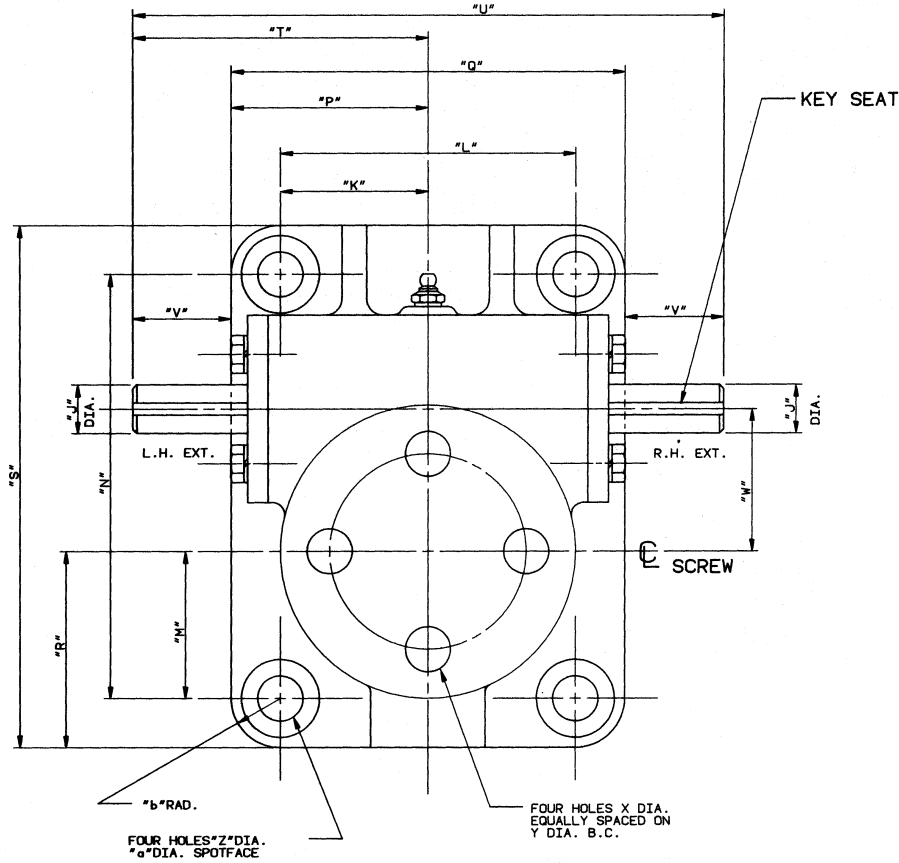
B – Boot
L – Single End Worm Ext. Left
R – Single End Worm Ext. Right
1 – Optional Ratio #1
2 – Optional Ratio #2
X – Supplied without cover pipe

Stainless Steel Actuator Performance Specifications

Capacity (Tons) - 17-4PH Worm		2	5	10	15	20	25	35	50	100
Capacity (Tons) - 316 SS Worm		0.67	1.66	3.33	5.00	6.66	8.33	11.66	16.66	33.33
Lifting Screw	Diameter (in)	1	1 1/2	2	2 1/4	2 1/2	3	3 3/4	4 1/2	6
	Pitch (in)	0.250	0.375	0.500	0.500	0.500	0.666	0.666	0.666	0.750
	Type	ACME	ACME	ACME	ACME	ACME	ACME	ACME	ACME	Mod. Sq.
Worm Gear Ratios	Std.	6:1	6:1	8:1	8:1	8:1	10 2/3:1	10 2/3:1	10 2/3:1	12:1
	Optional No. 1	24:1	24:1	24:1	24:1	24:1	32:1	32:1	32:1	36:1
	Optional No. 2	12:1	12:1	—	—	—	—	—	—	—
Turns of Worm for 1" Raise	Std.	24	16	16	16	16	16	16	16	16
	Optional No. 1	96	64	48	48	48	48	48	48	48
	Optional No. 2	48	32	—	—	—	—	—	—	—
Worm Torque at No Load (in-lb)	Std.	5	10	20	20	30	40	50	100	200
	Optional No. 1	5	10	20	20	30	40	50	100	200
	Optional No. 2	5	10	—	—	—	—	—	—	—
Maximum Horsepower per Actuator	Std.	2	4	5	5	5	8	8	15	25
	Optional No. 1	1/2	3/4	1 1/2	1 1/2	1 1/2	2 1/2	2 1/2	6	11
	Optional No. 2	3/4	2	—	—	—	—	—	—	—
Worm Torque at Full load (in-lb) 17-4PH Worm	Std.	120	450	750	1430	2050	2700	4000	7500	16000
	Optional No. 1	50	185	400	820	1170	1700	2400	4200	8600
	Optional No. 2	75	275	—	—	—	—	—	—	—
Worm Torque at Full load (in-lb) 316SS Worm	Std.	43	156	263	490	703	926	1366	2566	5466
	Optional No. 1	20	68	147	287	410	593	833	1466	3000
	Optional No. 2	28	98	—	—	—	—	—	—	—
Efficiency Rating (%)	Std.	20.4	21.2	25.2	20.3	18.9	17.9	17.0	12.9	12.1
	Optional No. 1	11.1	12.1	15.1	11.6	10.8	9.3	9.3	7.5	7.4
	Optional No. 2	15.6	16.8	—	—	—	—	—	—	—
Weight with 6" Raise (lb)		17	35	52	66	93	160	240	410	1200
Weight per Additional 1" Raise (lb)		0.3	0.9	1.4	1.5	2.6	2.5	3.7	5.5	9.0
Key Torque (in-lb)		153	581	1565	2527	3538	4665	8828	15697	39396
Max Worm Speed at Full Load (rpm)	Std.	1750	1615	1198	643	449	544	369	368	288
	Optional No. 1	1576	694	645	330	231	266	189	258	231
	Optional No. 2	1669	1286	—	—	—	—	—	—	—
Max Load at Full Horsepower and 1750 rpm (lb)	Std.	1333	3047	4386	3406	2972	4664	4220	5949	8865
	Optional No. 1	1156	972	1791	1276	843	1507	1192	2831	4671
	Optional No. 2	1258	2339	—	—	—	—	—	—	—

For loads from 25% to 100% of actuator capacity, torque requirements are approximately proportional to the load.

Note: Contact Duff-Norton Customer Service for motorized performance.

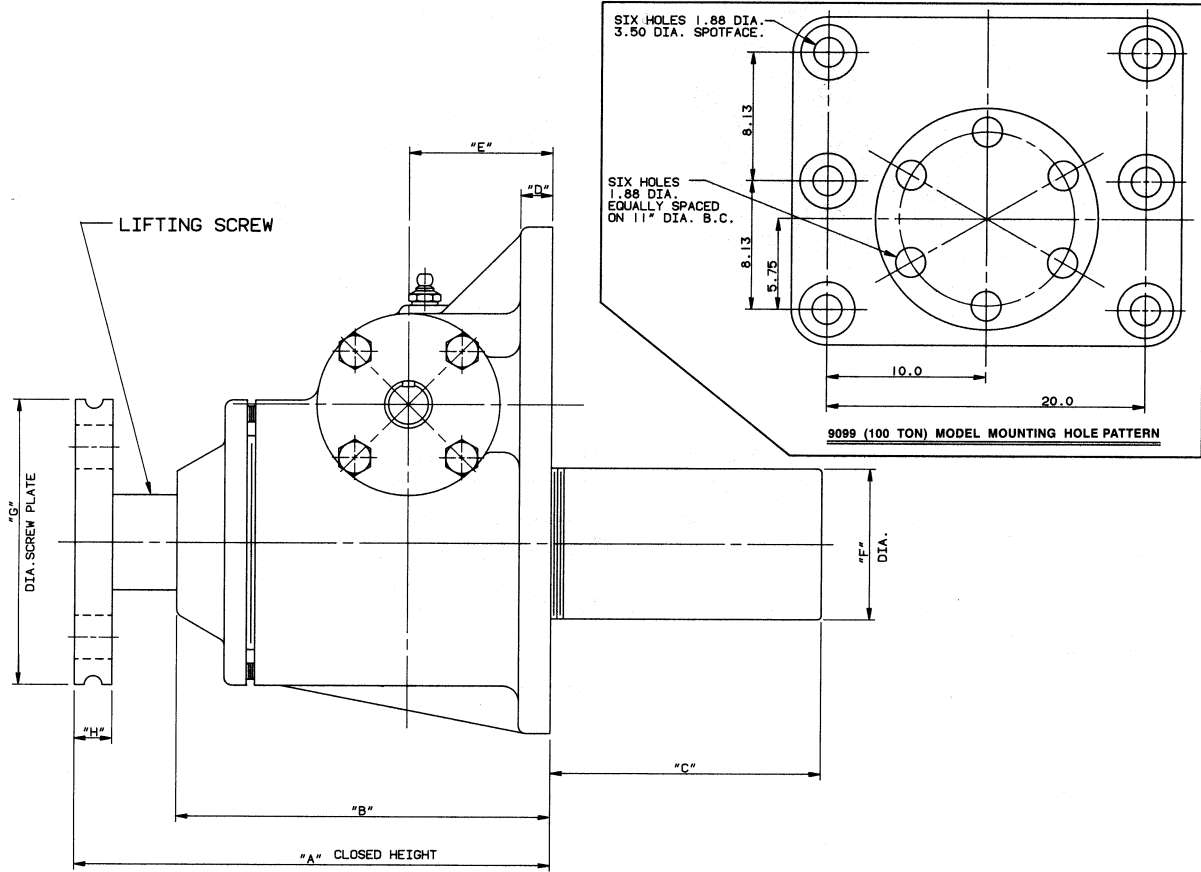


17 - 4 PH Worm Cap. (Tons)	316 SS Worm Capacity (Tons)		A	B	C	D	E (+/- .005)	F	G	H	J (+.000/- .002)	K	L	M	N
	Sustaining	Operating													
2 (1800 Series)	2	.67	5.50	4.56	Travel	.50	1.750	1.66	4.25	.50	.500	3.00	6.00	1.00	2.00
2 (9000 Series)	2	.67	5.50	4.56	Travel	.50	1.750	1.66	4.25	.50	.500	1.56	3.13	1.93	5.25
5	5	1.66	7.50	5.88	Travel	.50	2.250	2.38	4.50	.60	.749	2.25	4.50	2.25	6.50
10	10	3.33	7.75	5.62	Travel + 3/8	.50	2.250	2.88	5.75	.94	1.000	2.88	5.75	2.00	7.00
15	15	5.00	8.00	6.31	Travel + 9/16	.63	2.750	2.88	5.75	.94	1.000	3.00	6.00	2.50	7.50
20	20	6.66	10.25	7.13	Travel + 1/2	.75	3.250	3.50	5.75	.94	1.000	3.00	6.00	3.00	8.75
25	25	8.33	11.75	9.75	Travel + 1/4	1.00	4.000	4.50	8.50	.94	1.375	3.75	7.50	3.75	11.00
35	35	11.66	12.50	9.56	Travel + 1/4	1.25	4.000	4.50	10.50	1.31	1.375	3.75	7.50	4.50	12.50
50 (1800 Series)	50	16.66	13.50	11.38	Travel + 5/8	1.25	4.750	5.63	11.25	1.25	1.500	8.00	16.00	3.00	6.00
100	100	33.33	24.00	18.50	Travel + 1/2	1.50	6.000	7.00	14.00	2.94	1.750	10.00	20.00	5.75	16.26

Dimensions are subject to change without notice.

2 to 100 Ton Capacity

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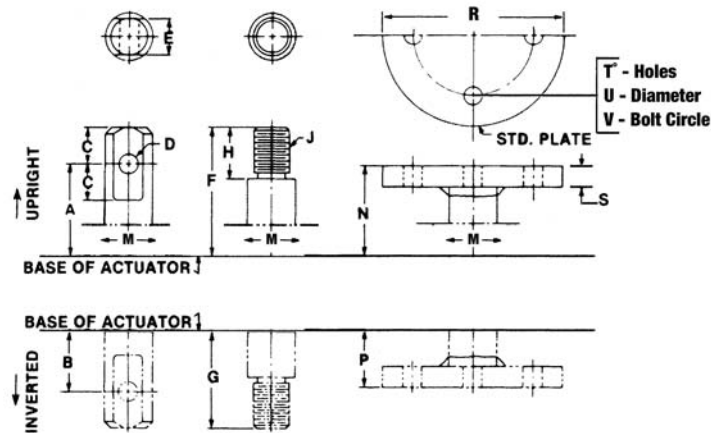
P	Q	R	S	T	U	V	W	X	Y	Z	a	b	Keyseat	Lifting Screw (Dia./Pitch)
3.50	7.00	1.75	3.50	3.50	7.00	1.12	1.702 +.003/-0.000	.41	3.00	.41	.75	.5	.125 x .060 x 1.00 LG.	1.00 x .250
2.06	4.13	2.42	6.25	3.50	7.00	1.12	1.702 +.003/-0.000	.41	3.00	.41	.88	.38	.125 x .060 x 1.00 LG.	1.00 x .250
3.00	6.00	3.00	8.00	4.50	9.00	1.50	2.188 +.002/-0.000	.69	3.00	.69	1.19	.75	.188 x .094 x 1.25 LG.	1.50 x .375
3.75	7.50	2.88	8.75	5.50	11.00	1.80	2.598 +.003/-0.000	.81	4.13	.81	1.31	.88	.250 x .125 x 1.50 LG.	2.00 x .500
3.88	7.75	3.38	9.25	5.50	11.00	1.80	2.598 +.003/-0.000	.81	4.13	.81	1.38	.88	.250 x .125 x 1.50 LG.	2.25 x .500
4.13	8.25	4.13	11.00	5.50	11.00	1.50	2.598 +.003/-0.000	.81	4.13	1.12	1.75	1.13	.250 x .125 x 1.50 LG.	2.50 x .500
5.13	10.25	5.13	13.75	7.00	14.00	2.30	3.750 +.006/-0.000	1.06	6.00	1.38	2.13	1.38	.313 x .156 x 2.00 LG.	3.00 x .666
5.13	10.25	6.00	15.50	7.00	14.00	2.10	3.750 +.006/-0.000	1.62	7.75	1.62	2.63	1.38	.313 x .156 x 2.00 LG.	3.75 x .666
9.88	19.75	4.88	9.75	11.00	22.00	4.40	5.313 +.003/-0.000	1.38	8.75	1.88	3.25	1.88	.375 x .188 x 2.25 LG.	4.50 x .666
12.25	24.50	8.00	20.75	11.50	23.00	3.40	7.500 +.003/-0.000	1.88	11.00	1.88	3.50	2.25	.500 x .250 x 3.00 LG.	6.00 x .750

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Stainless Steel Actuators:

Standard Screw End Dimensions



Standard Stainless Steel Actuators Screw End Dimensions

Capacity	A**	B**	C	D	E	F**	G**	H	J
2 Ton SMS	5 1/4	1 3/4	3/4	13/32	3/4	6	2 1/2	1 1/8	3/4"-10UNC-2A
5 Ton SMS	7	2 1/2	1	21/32	1	8	2 1/2	1 1/8	1"-8UNC-2A
10 Ton SMS	7 1/2	3	1 1/4	25/32	1 1/4	9 1/4	4 1/4	1 5/8	1 1/2"-6UNC-2A
15 Ton SMS	8 1/2	3	1 1/4	29/32	1 1/2	10 1/4	4 1/4	2	1 3/4"-5UNC-2A
20 Ton SMS	10	3 1/2	1 1/2	1 1/32	1 3/4	12 1/2	5	2 1/4	2"-4 1/2UNC-2A
25 Ton SMS	12	4	1 3/4	1 9/32	2 1/4	14 1/2	5 3/4	3 1/4	2 1/2"4-UNC-2A
35 Ton SMS	13	5	2	1 17/32	2 1/2	15 1/2	7	3 3/4	3 1/4"-4UNC-2A
50 Ton SMS	15	5 1/2	2 1/2	1 21/32	3 1/4	18	8	4 1/4	4"4UNC-2A
100 Ton SMS	24	9	3	2 17/32	4 1/4	25	12	5	1 1/2"-12UNC-2A

Capacity	M	N**	P**	R	S	T	U	V
2 Ton SMS	1	5 1/4	1 3/4	4 1/4	7/16	4	13/32	3
5 Ton SMS	1 1/2	7 1/2	2 1/2	4 1/2	5/8	4	11/16	3
10 Ton SMS	2	7 3/4	2 3/4	5 3/4	15/16	4	13/16	4 1/8
15 Ton SMS	2 1/4	8 1/2	2 3/4	5 3/4	15/16	4	13/16	4 1/8
20 Ton SMS	2 1/2	10 1/4	3	5 3/4	15/16	4	13/16	4 1/8
25 Ton SMS	3	11 3/4	3	8 1/2	15/16	4	1 1/16	6
35 Ton SMS	3 3/4	12 1/2	4	10 1/2	1 5/16	4	1 5/8	7 3/4
50 Ton SMS	4 1/2	13 1/2	3 1/2	11 1/4	1 1/4	4	1 3/8	8 3/4
100 Ton SMS	6	24	12	14	2 15/16	6	1 7/8	11

**Closed dimensions may increase for actuator units supplied with bellows boots. Consult Customer Service.

Note: Lifting screws listed above are not keyed, and i.c. must be held to prevent rotation.

Keyed lifting screws and keyed anti-backlash models also available. Consult Customer Service.