Because the Duff-Norton machine screw mechanical actuator is produced in many standard models with a wide range of capacities, there is a standard model for almost any requirement. Models can be furnished to 250 Tons capacity.

Operated manually or by means of gear motors, machine screw actuator models can be used singly, in tandem or in multiple arrangements (see page 133). Since most capacities have a uniform lifting speed, added economy can be realized in raising unevenly distributed loads by operating the different capacities in union.

Most Duff-Norton machine screw actuator models with higher ratios are self-locking and will hold heavy loads in position indefinitely without creep. They can be used to push, pull, apply pressure and as linear actuators. They are furnished with standard raises in increments of 1 inch. Depending upon size and type of load, models are available with raises up to 20 feet.

Features
- Positive, mechanical positioning
- Uniform lifting speed
- Multiple arrangements
- Anti-backlash (optional)
MACHINE SCREW ACTUATORS
Model Numbering System

FL - TKM - 9002 - 6 - 1R

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

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)

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.

Travel
1" Incremental 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

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
N - Numeric Ratio

B9003 TV - 10.50 - LX2 - BFL

Capacity
B9225 - 500 Lbs
B9250 - 1000 Lbs
B9003 - 3 Ton

Screw End
C - Clevis End Screw
CC - Double Clevis Ends
M - Top Plate Screw
P - Plain End Screw
T - Threaded End Screw

Base Model
None - Upright Translating
D - Inverted Rotating
K - Keyed, anti-rotation
U - Upright Rotating
V - Inverted Translating

Model Suffix
L - Single End Worm Extension Left
N - Numeric Gear Ratio – 100 turns/inch
R - Single End Worm Extension Right
X - Supplied without Cover Pipe
1 - Alternate Gear Ratio #1
2 - Alternate Gear Ratio #2

Key Accessories
B - Boot
E - Encoder
F - C-face Adapter
H - Hand Wheel
J - Rotary Counter
L - Limit Switch
R - Reducer

Alphabet characters representing features and suffixes should always be used in alphabetic order to avoid questions of hierarchy.

Models for actuators with specialized features will have a serialized suffix such as B9225T-0001.
**Speed is a function of how the actuator is driven. Please see the indicated pages for more information.**

When reviewing any Duff-Norton Actuator Performance Specifications Table, as part of the process of selecting the best-suited actuator for your application, there are several important worm-gear ratios to consider.

**Standard Ratio** – is frequently chosen when higher speeds and efficiency ratings are desired.

**Optional Ratio** – is frequently chosen when the application requires higher lifting capacities, lower speeds, or to ease the use of a handwheel.

**Numeric Ratio** – is frequently chosen for applications requiring fine adjustments, higher lifting capacities, lower speeds, the easy use of a handwheel, self locking applications, and also offers the benefit of an even number of worm input turns per inch of stroke.

### Specifications - Standard, Optional, and Numeric Ratios

<table>
<thead>
<tr>
<th>Capacity (Tons)</th>
<th>1/4</th>
<th>1/2</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>5</th>
<th>10</th>
<th>15</th>
<th>20</th>
<th>25</th>
<th>35</th>
<th>50</th>
<th>75</th>
<th>100</th>
<th>150</th>
<th>250</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Max. Speed C-face Driven (in/min)</strong> page 116</td>
<td>—</td>
<td>—</td>
<td>72.0</td>
<td>72.0</td>
<td>108.0</td>
<td>108.0</td>
<td>108.0</td>
<td>108.0</td>
<td>108.0</td>
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<td>108.0</td>
<td>108.0</td>
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</tr>
<tr>
<td><strong>Dimensional Information Shown on page</strong></td>
<td>18</td>
<td>19</td>
<td>20</td>
<td>21-23</td>
<td>24</td>
<td>25</td>
<td>26</td>
<td>27</td>
<td>28</td>
<td>29</td>
<td>30</td>
<td>31-32</td>
<td>33</td>
<td>34</td>
<td>35</td>
<td>36</td>
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<tr>
<td><strong>Lifting Screw</strong></td>
<td>5/8</td>
<td>5/8</td>
<td>3/4</td>
<td>1</td>
<td>1/1/2</td>
<td>2</td>
<td>2 1/4</td>
<td>2 1/2</td>
<td>3</td>
<td>3 3/4</td>
<td>4 1/2</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td><strong>Pitch (Std.&amp;Opt.)</strong></td>
<td>0.250</td>
<td>0.125</td>
<td>0.200</td>
<td>0.250</td>
<td>0.250</td>
<td>0.375</td>
<td>0.500</td>
<td>0.500</td>
<td>0.500</td>
<td>0.666</td>
<td>0.666</td>
<td>0.666</td>
<td>0.750</td>
<td>1.000</td>
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<td>—</td>
</tr>
<tr>
<td><strong>Pitch (Numeric)</strong></td>
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<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>0.250</td>
<td>0.250</td>
<td>0.250</td>
<td>0.250</td>
<td>0.320</td>
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<tr>
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<td>ACME</td>
<td>ACME</td>
<td>ACME</td>
<td>Mod. Sq.</td>
<td>Mod. Sq.</td>
</tr>
<tr>
<td><strong>Worm Gear Ratios</strong></td>
<td>Std.</td>
<td>5/1</td>
<td>5/1</td>
<td>5/1</td>
<td>6/1</td>
<td>6/1</td>
<td>6/1</td>
<td>6/1</td>
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<td>6/1</td>
<td>6/1</td>
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</tr>
<tr>
<td><strong>Turns of Worm for 1&quot; Stroke</strong></td>
<td>Std.</td>
<td>20</td>
<td>40</td>
<td>25</td>
<td>24</td>
<td>24</td>
<td>16</td>
<td>16</td>
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<td>16</td>
<td>16</td>
<td>12</td>
<td>12</td>
<td>50</td>
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</tr>
<tr>
<td><strong>Worm Gear Ratios</strong></td>
<td>Optional No. 1</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>100</td>
<td>96</td>
<td>96</td>
<td>64</td>
<td>64</td>
<td>64</td>
<td>64</td>
<td>64</td>
<td>64</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td><strong>Worm Gear Ratios</strong></td>
<td>Optional No. 2</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>96</td>
<td>96</td>
<td>64</td>
<td>48</td>
<td>48</td>
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<td>48</td>
<td>48</td>
<td>48</td>
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<td>48</td>
</tr>
<tr>
<td><strong>Max Load at Full Horsepower and 1750 rpm (lb)</strong></td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<tr>
<td><strong>Dimensional Information Shown on page</strong></td>
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</tr>
<tr>
<td><strong>Weight with 6&quot; Stroke (Raise) (lb)</strong></td>
<td>2</td>
<td>5</td>
<td>17</td>
<td>17</td>
<td>35</td>
<td>35</td>
<td>52</td>
<td>66</td>
<td>93</td>
<td>160</td>
<td>240</td>
<td>410</td>
<td>650</td>
<td>1200</td>
<td>1350</td>
<td>2700</td>
</tr>
<tr>
<td><strong>Weight per Additional 1&quot; Stroke (Raise) (lb)</strong></td>
<td>0.1</td>
<td>0.1</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
<td>0.9</td>
<td>1.4</td>
<td>1.5</td>
<td>2.6</td>
<td>2.5</td>
<td>3.7</td>
<td>5.5</td>
<td>6.5</td>
<td>9.0</td>
<td>12.6</td>
<td>23.0</td>
</tr>
</tbody>
</table>

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

**Speed is a function of how the actuator is driven. Please see the indicated pages for more information.

Note: 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 146-147.

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