



Duff-Norton®

Electromechanical Linear Actuators



Models
TMD01 and TMD02

100 and 250 Pound
Electromechanical Actuators

Installation & Operation Manual



Publication Part No. EM1010-100

⚠ CAUTION!

This manual contains important information for the correct installation, operation and maintenance of the equipment described herein. All persons involved in such installation, operation, and maintenance should be thoroughly familiar with the contents. To safeguard against the possibility of personal injury or property damage, follow the recommendations and instructions of this manual and keep it for further reference.

⚠ WARNING!

The equipment shown in this manual is intended for industrial use only and should not be used to lift, support, or otherwise transport people unless authorized in writing by Duff-Norton.

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INTRODUCTION

1-1 General Information

This manual provides instructions for the installation and operation of Duff-Norton® electromechanical actuators. All persons operating or maintaining these actuators should be familiar with the information presented here.

1-2 Application Information

This actuator is designed to provide linear actuation of guided loads requiring forces no greater than the load rating of the actuator. It is intended for inter-

mittent use, not for applications requiring constant motion. The actuator should not be used to lift, support, or otherwise transport people unless the application is authorized in writing by Duff-Norton.

The actuator can be used outdoors but must not be subjected to precipitation, high pressure sprays, icing, or submersion. Do not use the actuator in areas containing explosive dust, vapors, or gases.

1-3 Specifications

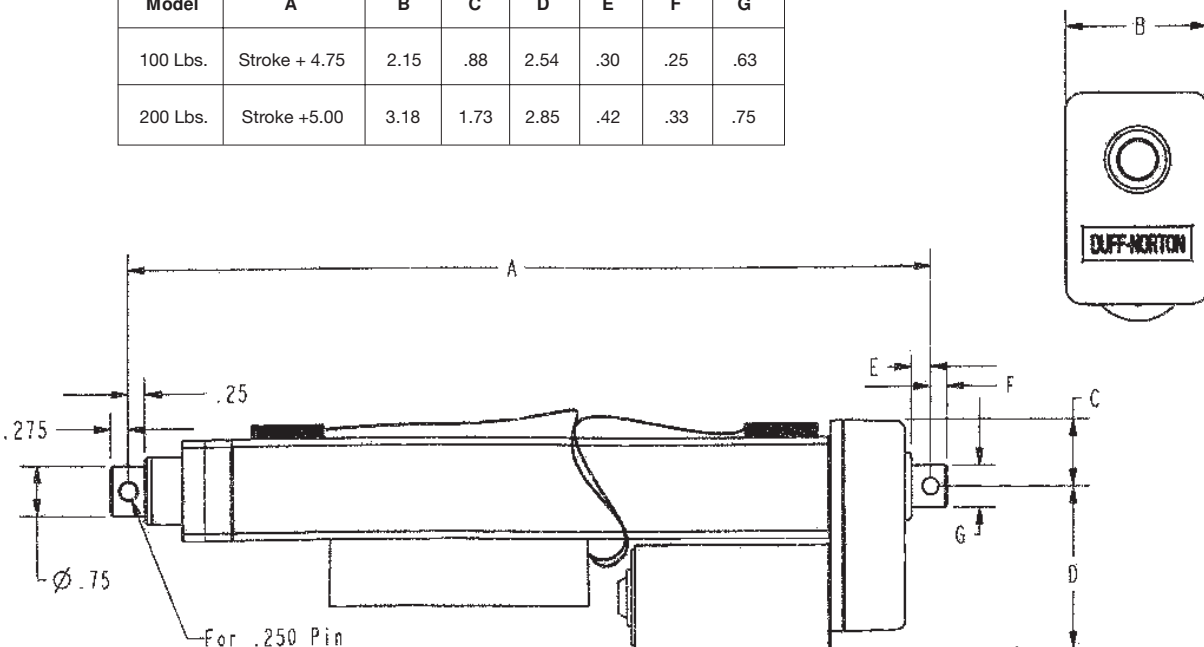
| | |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| Stroke Lengths: | 2, 4, 6, 8, 10, & 12 inch. Special lengths on application. |
| Duty Cycle: | 25% max. on time at rated load and 25°C ambient. |
| Input Power: | 12 or 24 VDC, depending on model. |
| Ambient Temperature: | -20°F to 120°F (-29°C to 50°C) |
| Motor Protection: | External fusing by installer recommended; 8 amp rating, standard time response. Limit switch models include internal fusing. |
| Overload Protection: | By motor fusing (see above). |
| Limit Switched (opt.): | Independently adjustable, magnetic reed switches with a control relay. |
| End Play: | .060" max. |
| Static Load: | 300 lbs. Max. |
| Mounting: | Keyed translating tube with hole for .250" pin, each end. #10-32 axial thread in translating tube end for optional rod end. |

MODEL INFORMATION

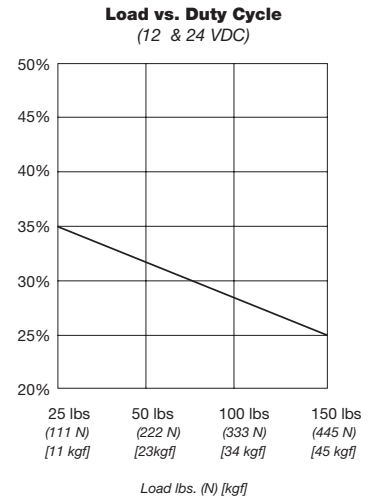
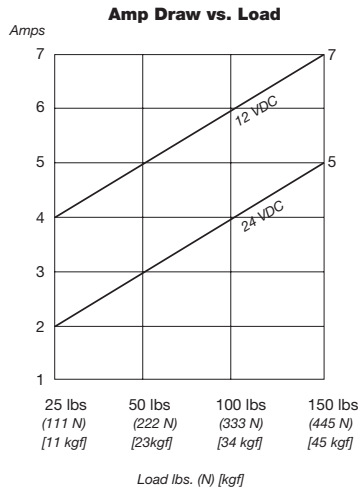
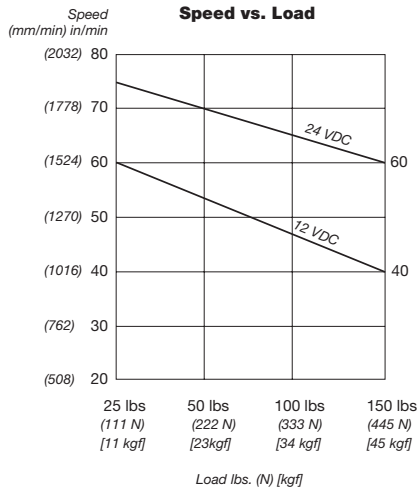
| 100 Lb. | 250 Lb. |
|------------------------------------------------------------|------------------------------------------------------------|
| TMD01-1406-stroke 100 lb. Non-Limit Switch 12VDC | TMD02-1406-stroke 250 lb. Non-Limit Switch 12VDC |
| TMD01-1906-stroke 100 lb. Limit Switch 12VDC | TMD02-1906-stroke 250 lb. Limit Switch 12VDC |
| TMD01-2406-stroke 100 lb. Non-Limit Switch 24VDC | TMD02-2406-stroke 250 lb. Non-Limit Switch 24VDC |
| TMD01-2906-stroke 100 lb. Limit Switch 24VDC | TMD02-2906-stroke 250 lb. Limit Switch 24VDC |

1-4 Dimensions

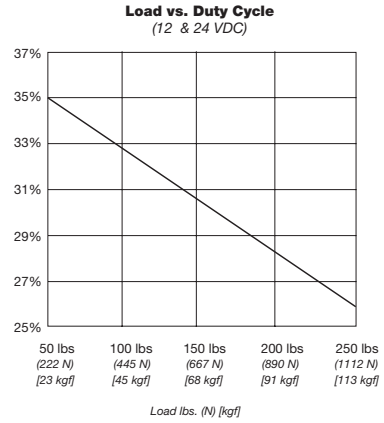
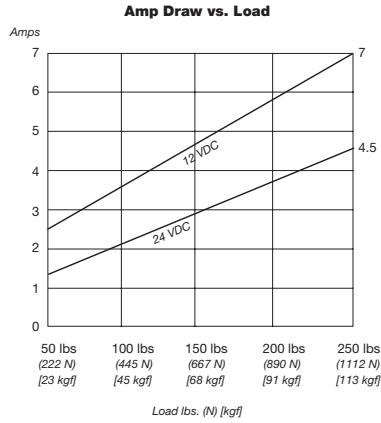
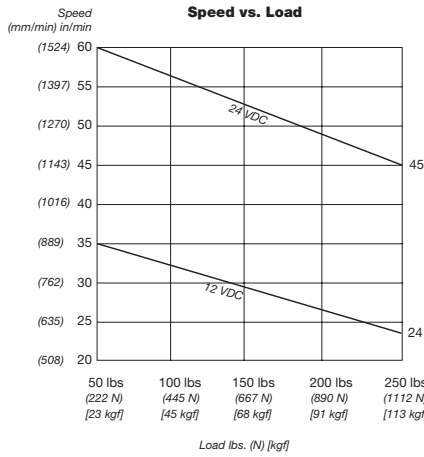
| Model | A | B | C | D | E | F | G |
|----------|---------------|------|------|------|-----|-----|-----|
| 100 Lbs. | Stroke + 4.75 | 2.15 | .88 | 2.54 | .30 | .25 | .63 |
| 200 Lbs. | Stroke +5.00 | 3.18 | 1.73 | 2.85 | .42 | .33 | .75 |



TracMaster 100 Performance Charts

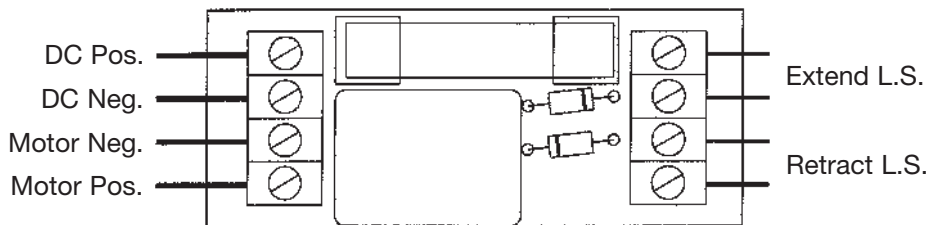


TracMaster 250 Performance Charts



1-6 Wiring Diagram (limit switch models only)

Polarity as shown to Extend.

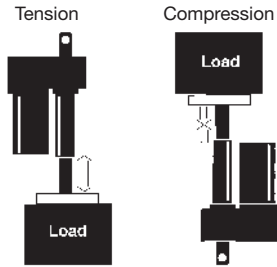


INSTALLATION

2-1 Direction of Loading

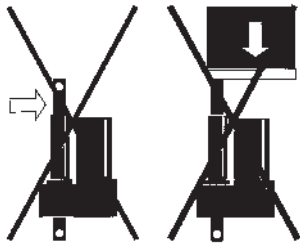
Duff-Norton electromechanical actuators can be used in tension, compression, or combination tension/compression applications. Examples are as shown below.

PROPER LOADING



It is important to mount the actuator so that side loading or eccentric loading are avoided. To optimize the ----- performance and life of the actuator, it should be mounted so that the load is applied along the longitudinal axis of the translating tube, with freely pivoting clevis attachments. Examples of improper loading are shown below.

IMPROPER SIDE LOADING



2-1 Limit Switches

These actuators do not have clutches or other provision for accommodating end of stroke jamming. Thus, electrical limit switches must be provided. Actuators are available from the factory with or without magnetically activated limit switches are not utilized, external limit switches must be provided by the installer.

2-1 Wiring Connections

⚠ CAUTION

Be sure power connections are not live before connecting to actuator.

Actuators with factory installed Limit Switches

1. Either 12 or 24 volts DC, to match the voltage rating of the actuator, should be connected to the two terminals of the relay board which do not have other connections (see wiring diagram). Reverse DC polarity to reverse actuator.
2. Actuator speed control by operation on reduced voltage should not be used, as this will prevent proper operation of the control relay.

Actuators with limit switches by installer

1. Power supply to the actuator should be protected by a fuse with standard blow characteristics. Proper fuse sizing is 8 amps for 12 volt units and 5 amps for 24 volt units.
2. Power from the control circuit, which should include limit switches and appropriate controls, should be connected directly to motor terminals.

2-4 Limit Switch Adjustment

Actuators with factory installed switches are shipped with switches adjusted for maximum retraction and travel. Attempting to increase stroke in either direction invites actuator jamming which will result in irreparable damage. Stroke may be reduced on either end of travel by loosening screws attaching switches, sliding along tube, and resealing.

OPERATION

3-1 Operating Conditions

The actuator should be operated within its ratings for load, duty, and temperature (see 1-3. Specifications). Rapid jogging or plug-reversals should be avoided. Stalling the actuator by overloading or by improper limit switch setting will result in rapid failure.

INSPECTION AND MAINTENANCE

4-1 Safety Note

Disconnect power from actuator before making repairs.

4-2 Inspection

Inspect periodically for loose or damaged parts, including clevis attachment pins.

4-3 Maintenance

No periodic maintenance is required or prescribed. Replacement parts are not available.

4-4 Lubrication

The actuator is lubricated at the factory. Relubrication is not generally required.

DUFF-NORTON ELECTROMECHANICAL ACTUATOR LIMITATION OF WARRANTIES, REMEDIES AND DAMAGES

The warranty stated below is given in place of all other warranties, express or implied, of merchantability, fitness for a particular purpose or otherwise. No promise or affirmation of fact made by any agent or representative of seller shall constitute a warranty by seller or give rise to any liability or obligation.

Seller warrants that on the date of its delivery to carrier the goods are free from defects in workmanship and materials.

Seller's sole obligation in the event of breach of warranty or contract or for negligence or otherwise with respect to goods sold shall be exclusively limited to repair or replacement, f.o.b. seller's point of shipment, of any parts which seller determines to have been defective or if seller determines that such repair or replacement is not feasible, to a refund of the purchase price upon return of the goods to seller.

Any action against seller for breach of warranty, negligence or otherwise must be commenced within one year after such cause of action accrues.

No claim against seller for any defect in the goods shall be valid or enforceable unless buyer's written notice thereof is received by seller within one year from the date of shipment.

Seller shall not be liable for any damage, injury or loss arising out of the use of the goods if, prior to such damage, injury or loss, such goods are (1) damaged or misused following seller's delivery to carrier; (2) not maintained, inspected, or used in compliance with applicable law and seller's written instructions and recommendations; or (3) installed, repaired, altered or modified without compliance with such law, instructions or recommendations.

Under no circumstances shall seller be liable for incidental or consequential damages as those terms are defined in section 2-715 of the uniform commercial code.



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