



**neptronic**<sup>®</sup>  
www.neptronic.com

# ACTUATORS



## **ELECTRIC ACTUATORS** Selection Guide



## Actuator Selection Web Application

Neptronic has developed an easy to use web application that saves you time when searching for an actuator model for specific applications.

**Selection info:** Actuators matching your selection: 129

Selection units  Metric  Imperial

**Actuator Types**  Standard  Fast  Smoke  Linear actuator for globe valve  IP 65 NEMA 4

**Fail safe**  No  Yes

**Torque**  18 in.lb  35 in.lb  50 in.lb  70 in.lb  140 in.lb  180 in.lb  
 360 in.lb  1800 in.lb  2500 in.lb  3500 in.lb  4000 in.lb

**Power supply**  24 Vac  120 Vac  240 Vac  30 Vdc  48 Vdc

**Control signal**  On-Off  3 point floating  2-10 Vdc  4-20 mA  PWM

**Auxiliary switch**  No  Yes

**More Options**

**Feedback**  Yes  No

**Running time through 90°**  <= 20 sec.  21 to 40 sec.  41 to 60 sec.  61 to 85 sec.  >= 86 sec.

**Motor Type**  Brush  Brushless



### Easy To Use

Select the desired options and features and then click submit.






### Compare Models

Models matching your selections appear in a table format for easy comparison.



### Web-Based Tool

Accessible from anywhere in the world - all you need is an internet connection. Just go to [www.neptronic.com](http://www.neptronic.com) and click Actuator Software in the top tab bar.

Your Selection Result	BT000S	BT000	BT400
			
<b>Auxiliary Switches</b>	N/A	N/A	N/A
<b>Fail Safe - Endrive</b>	N/A	N/A	N/A
<b>Power Consumption</b>	6 VA	6 VA	3 VA
<b>Torque</b>	50 in.lb. [5.6 Nm] at rated voltage	50 in.lb. [5.6 Nm] at rated voltage	50 in.lb. [5.6 Nm] at rated voltage
<b>Running Time Through 90°</b>	90 - 110 sec. (Fail-safe 20-30 sec.)	20 to 30 sec. Torque depending	90 sec. At 60 Hz, 110 sec. at 50 Hz
<b>Feedback</b>	N/A	N/A	N/A
<b>Power Supply</b>	22 to 26 VAC or 28 to 32 VDC	22 to 26 VAC or 28 to 32 VDC	22 to 26 VAC
<b>Electrical Connection</b>	18 AWG [0.8 mm <sup>2</sup> ] minimum	18 AWG [0.8 mm <sup>2</sup> ] minimum	18 AWG [0.8 mm <sup>2</sup> ] minimum
<b>Inlet Bushing</b>	2 inlet bushing of 5/8 in [15.9 mm] & 7/8 in [22.2 mm]	2 inlet bushing of 5/8 in [15.9 mm] & 7/8 in [22.2 mm]	2 inlet bushing of 5/8 in [15.9 mm] & 7/8 in [22.2 mm]
<b>Control Signal</b>	3 wire / 2 position, 3 wire / 3 point floating	3 wire / 2 position, 3 wire / 3 point floating	3 wire / 3 point floating
<b>Angle of Rotation</b>	0 to 90 degrees, mechanically adjustable (factory set with 90° stroke)	0 to 90 degrees, mechanically adjustable (factory set with 90° stroke)	0 to 90 degrees, mechanically adjustable (factory set with 90° stroke)
<b>Direction of Rotation</b>	Reversible, Clockwise (CW) or Counterclockwise (CCW) (factory set with CW direction)	Reversible, Clockwise (CW) or Counterclockwise (CCW) (factory set with CW direction)	Clockwise (CW)
<b>Ambient Temperature</b>	-22°F to +122°F [-30°C to +50°C]	-22°F to +122°F [-30°C to +50°C]	-22°F to +122°F [-30°C to +50°C]
<b>Storage Temperature</b>	-22°F to +122°F [-30°C to +50°C]	-22°F to +122°F [-30°C to +50°C]	-22°F to +122°F [-30°C to +50°C]
<b>Relative Humidity</b>	5 to 95 % non condensing	5 to 95 % non condensing	5 to 95 % non condensing
<b>Weight</b>	3 lbs. [1.4 kg]	3 lbs. [1.4 kg]	3 lbs. [1.4 kg]
<b>Motor Type</b>	Brush Motor	Brush Motor	Brush Motor
<b>Ingress Protection</b>	IP22 equivalent to Nema type 2, IP54 equivalent to Nema type 3R if water tight inlet bushings (not supplied) are installed	IP22 equivalent to Nema type 2, IP54 equivalent to Nema type 3R if water tight inlet bushings (not supplied) are installed	IP22 equivalent to Nema type 2, IP54 equivalent to Nema type 3R if water tight inlet bushings (not supplied) are installed





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### Neptronic Company Profile

- ▶ Private company founded in 1976
- ▶ Design, manufactures and distributes HVAC products
- ▶ Over 250 dedicate employees
- ▶ 7,500m<sup>2</sup> (80,000 ft<sup>2</sup>) state of the art facility
- ▶ Continued commitment to R&D
- ▶ Highly skilled distribution network around the world
- ▶ Exports over 70% of its sales in over 60 countries
- ▶ Prominent HVAC OEM customer base
- ▶ Vertical Integration: Entire manufacturing chain under one roof

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**Important Note:** Information, such as specifications, contained in this catalogue is subject to change. For last updated information please consult [www.neptronic.com](http://www.neptronic.com)



Neptronic headquarters and manufacturing facility  
Montreal, Canada

## Actuator Applications

### Actuators for Globe Valves

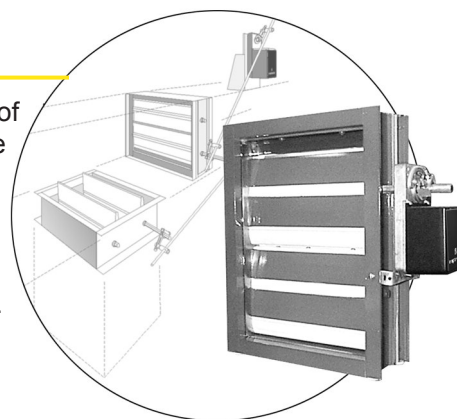
The A and M family of linear actuators operate 2 way and 3 way globe valves. They are equipped with electronic stroke adjustment, can accept analog, tri-state, on/off and PWM control signals and are available with the patented enerdrive fail safe system. They will adapt to many different makes of globe valves with our retrofit linkage assemblies.



The ultra compact X family of linear actuators operate 2-way globe valves. They are equipped with electronic stroke adjustment, can accept analog or digital control signals, and are available with the patented Enerdrive fail safe system. They are ideal for VAV terminal units, fan coil units, chilled beams, small heat/cool coils and baseboard radiation units.

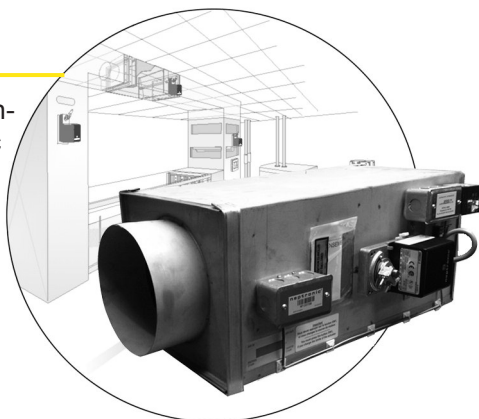
### Actuators for Dampers

We build a comprehensive line of damper actuators. The versatile multi-signal actuators, the fast actuators for precise laboratory fume hood control and the high torque U & W actuators place us at the forefront of actuator technology.



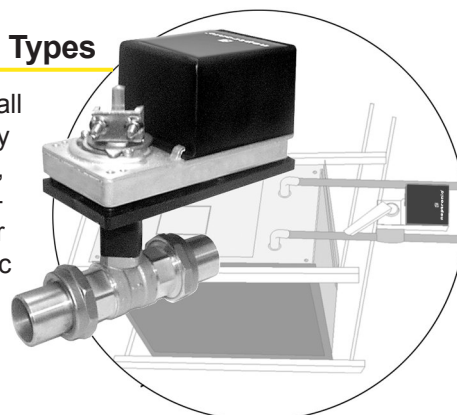
### Actuators for VAV Boxes

Neptronic actuators for close control of VAV systems have electronic stroke and zero & span adjustment. They are compatible with building automation systems and are easy to install and commission.



### Actuators for Various Valve Types

Neptronic actuators mount on ball valves, globe valves and butterfly valves of different size and make, combining rugged mounting hardware with a smooth operation. For fluid control see our Neptronic valve catalog.



### **Wide Selection**

Inherent in each Neptronic actuator is the experience gained in addressing the concerns and requirements of the building automation industry. This means simplicity in the appropriate model selection, quick and easy installation and trouble free commissioning. Only Neptronic offers the widest selection of torque output, control signals and rotational speeds in both fail safe and non-fail safe motors. Only Neptronic developed the patented Enerdrive System, the modern, electronic replacement for antiquated spring return.

### **Torque**

The Neptronic family of actuators is divided foremost by the torque capability. Direct coupled models deliver up to 18 in.lb. (C), 35 in.lb. (D), 50 in.lb. (B), 70 in.lb. (S), 140 in.lb. (L), 180 in.lb. (T) or 360 in.lb. (R) at rated voltage and are suitable for applications from small variable air volume boxes to large air handler dampers. The most powerful units available (U & W) produce from 1800 in.lb. to 4000 in.lb. and are mounted on large butterfly valves, vortex dampers or fan inlet guide vanes.

### **Control Signals**

Control signal selection is simple. Choose digital or multi signal (analog) regardless of the size. All digital models, including those with Enerdrive, may be wired for 2 position or 3 point floating control. Similarly, all multi-signal (analog) models may be wired and calibrated in the field to respond to 2-10Vdc, 4-20mA, pulse width modulating, 2 position or floating control. In addition, the multi signal (analog) motors feature electronic stroke adjustment and zero & span signal conditioning.

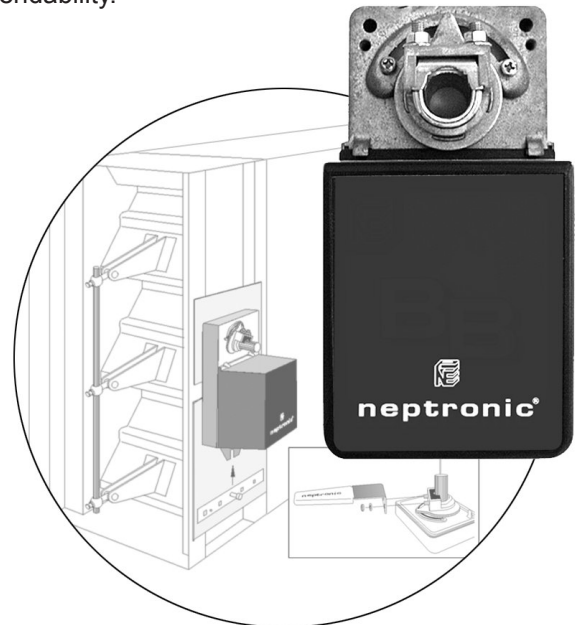
### **Fast Rotation**

Neptronic is the leader in developing fast response technology. In the B classification, the rotational speed of these models varies from 1.5 to 6 sec. Their primary use is in fume hood damper control in clean room applications. Larger fast response models with the T and R classification have a 20 second timing and are applicable in smoke control, stairwell pressurization and generator room installations. For applications where fast response is not essential, Neptronic's standard models deliver rotational speeds from 60 to 100 sec of quiet, smooth operation.

### **Fail Safe**

Neptronic is the only manufacturer to incorporate fail safe functionality in all its directly coupled actuator models without any changes to physical dimensions, torque outputs, rotational times or control signal processing.

How is this possible? By inventing, in 1992, a super capacitive return system called Enerdrive, Neptronic was able to eliminate the bulky mechanical components that require increased space or that affect either the torque or response time. Since its introduction to the HVAC marketplace, Enerdrive has proven its versatility and dependability.



### **Enerdrive**

Enerdrive, the Electronic Spring is a system that is fully incorporated into the PC board for both low and line voltage service. The power generated and stored in its capacitors will drive the controlled device at full rated torque to its safety position. It is 100% operational with the resumption of power. Enerdrive models may be manually positioned with the clutch override that is standard on all Neptronic actuators. Most importantly, the final fail position, either normally open or normally closed may be chosen at any time either before or after installation with the flick of a dip switch. A more detailed description of Enerdrive's operational characteristics is located on page 72.

### **Simple Installation**

Easily installed, Neptronic actuators mount directly on the jack shaft without any extra attachments. Neptronic has standardized its electronic functions and programming so that all digital models are wired alike as are all multi signal (analog) models. The end result is faster installation and commissioning.

## Actuator Sizing

Important data required when sizing an actuator to a damper:

- Size of Damper
- Type of Damper
- Face Velocity
- Static Pressure

Given the above parameters, consult the damper manufacturer's specifications for the torque (in. lb. per square foot) required to operate the damper. (velocity and static pressure charts for the specific style of damper, ie. Parallel blade, opposed blade, with or without blade seals, etc.)

If no information is available use the following table as an approximate industry standard.

<b>DAMPER REQUIREMENTS (in.lb./sq. ft.)</b>					
	Face Velocity (FPM)/ Static Pressure (in. Wc.)				
	<500 FPM 1 in. Wc.	500-1000 FPM 2 in. Wc.	1000-1500 FPM 3 in. Wc.	1500-2000 FPM 4 in. Wc.	2000-3000 FPM 4 in. Wc.
Parallel blades with seals	4	7	10.5	12	14
Opposed blades with seals	3	5	7.5	8.5	10
Parallel blades without seals	3	4.5	6.5	7	8
Opposed blades without seals	2	3	4.5	5	6

When the proper torque (in. lb./sq. ft.) is known for the specific damper application:

$$\text{Damper Requirements (in.lb./ft}^2\text{)} \times \text{Surface Area of Damper (ft}^2\text{)} = \text{Total Torque (in.lb.) Required}$$



When you select your actuator it is good practice to oversize by at least 20%.

**Note:** For off center pivot dampers, the above rules do not hold. For these types of dampers as well as inlet guide vanes or fan vortex dampers, one must obtain the torque requirements from the manufacturer of the damper.

### Cross References

To select the Neptronic actuator that directly or most closely replaces models by other manufacturers, visit [www.neptronic.com](http://www.neptronic.com) or contact us.

For a cross reference of our old part numbers to our new part numbers, visit [www.neptronic.com](http://www.neptronic.com) or contact us.

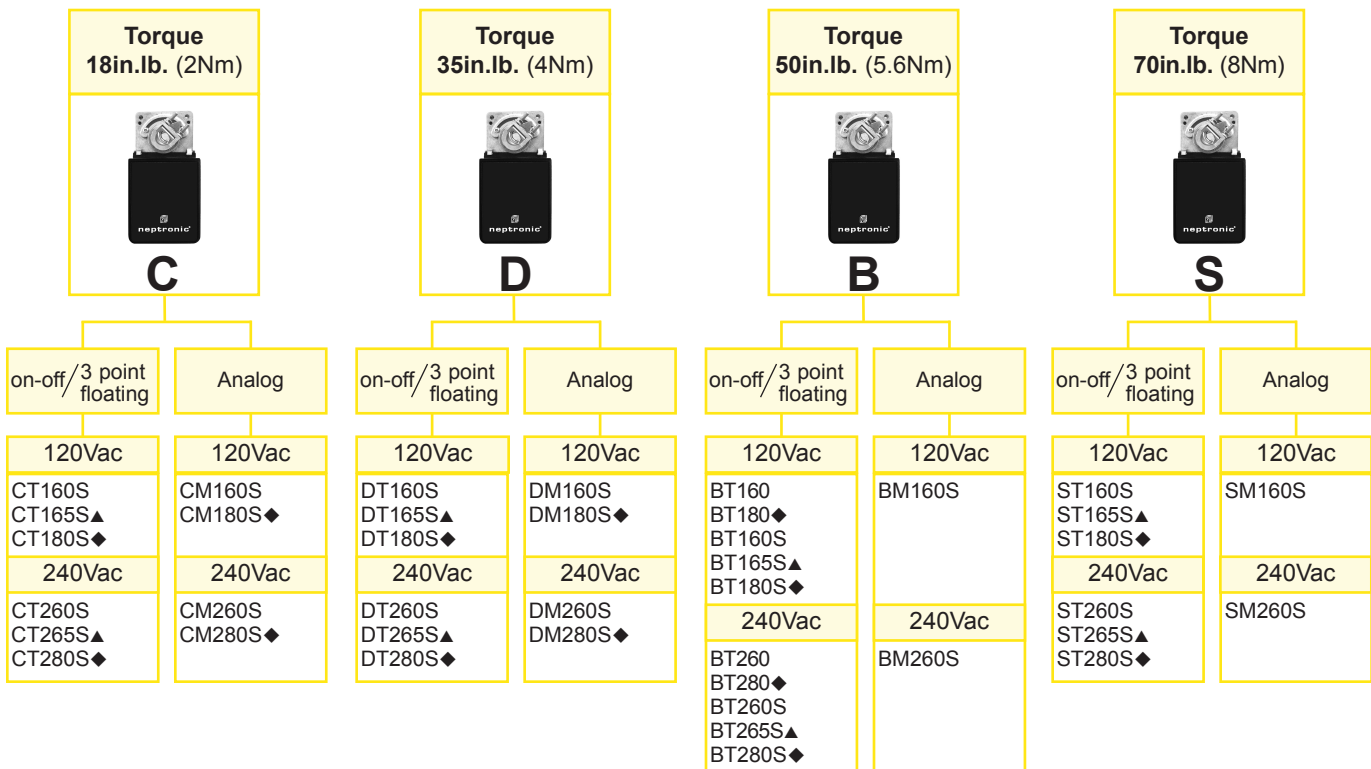
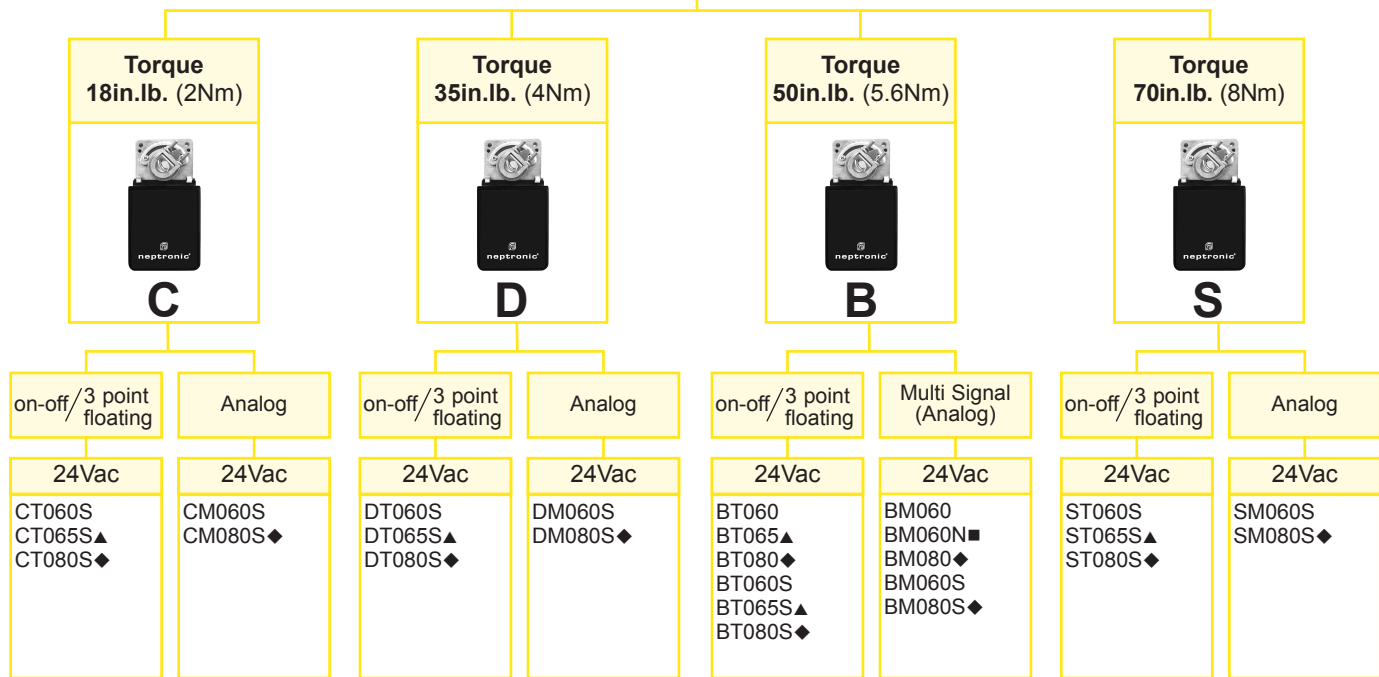
Neptronic Actuator Selection Code		<b>B</b>	<b>M</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>F</b>	<b>N</b>
<b>TORQUES</b>								
C	18 in.lb. (2 Nm)							
D	35 in.lb. (4 Nm)							
B	50 in.lb. (5.6 Nm)							
S	70 in.lb. (8 Nm)							
L	140 in.lb. (16 Nm)							
T	180 in.lb. (20 Nm)							
R	360 in.lb. (40 Nm)							
U & W	1800 to 4000 in.lb. (200 to 450 Nm)							
<b>CONTROL SIGNAL</b>								
T	ON-OFF/3 point floating							
M	ON-OFF/3 point floating / analog / pwm or analog only (2-10 Vdc)							
<b>POWER SUPPLY</b>								
0	24 Vac or 30 Vdc							
1	120 Vac							
2	240 Vac							
3	120/240 Vac or 24/120/240 Vac							
<b>FUNCTIONS</b>								
00	standard							
05	potentiometer feedback: 5 K ohms or 0 to input voltage (where input voltage is 5-10Vdc) depends on the model							
10	Fail Safe (battery)							
20	auxiliary contacts (2)							
30	Fail Safe (battery) & auxiliary contacts (2)							
60*	Fail Safe (Enerdrive*)							
65*	Fail Safe (Enerdrive*) & potentiometer feedback: 5 K ohms or 0 to input voltage (where input voltage is 5-10Vdc) depends on the model							
80*	Fail Safe (Enerdrive*) & auxiliary contacts (2)							
<b>OPTIONS</b>								
-	leave blank if no option							
F	fast (BT=6 sec, BM=3.5 sec, T & R=20 sec)							
FF	very fast (BM=1.5 sec)							
S	Slow motion (90 sec running time)							
X__	Smoke Damper actuator 4 = 35 in.lb. (4 Nm), 8 = 70 in.lb. (8 Nm) & 11 = 90 in.lb. (11 Nm)							
N	Brushless Motor D.C.							
W	IP65 equivalent to Nema type 4 enclosure, available for L, T and R series actuators							

\*ENERDRIVE: fail safe system by electronic spring U.S. patent #5,278,454 and European Patent #0647366

# Actuator Flow Charts (18 to 70 in.lb. torque)

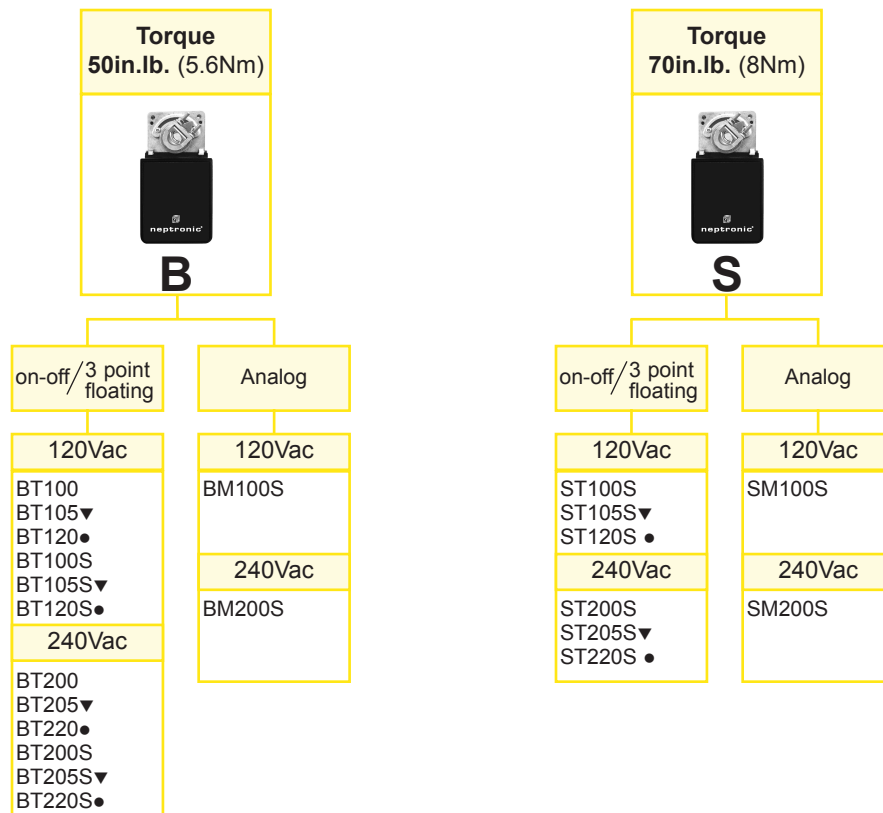
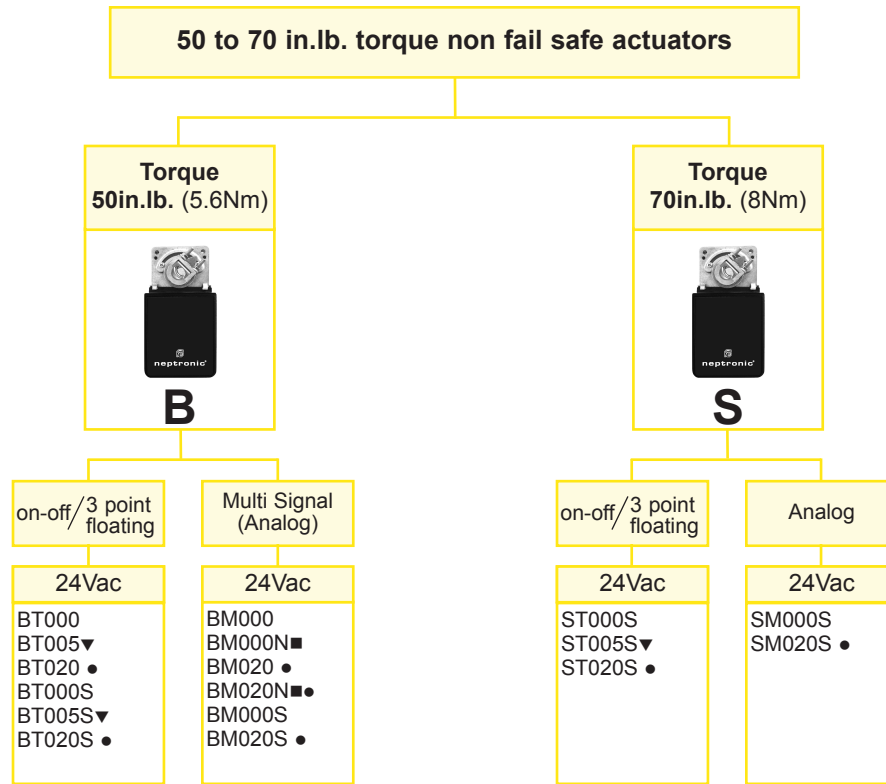


## 18 to 70 in.lb. torque fail safe actuators (enerdrive system)



- Neptronic actuator models ending in "N" are brushless motors.
- ◆ Neptronic actuator models ending in "80 (S)" include Enerdrive (Fail safe) and End Switches.
- ▲ Neptronic actuator models ending in "65 (S)" include Enerdrive (Fail safe) and Feedback.



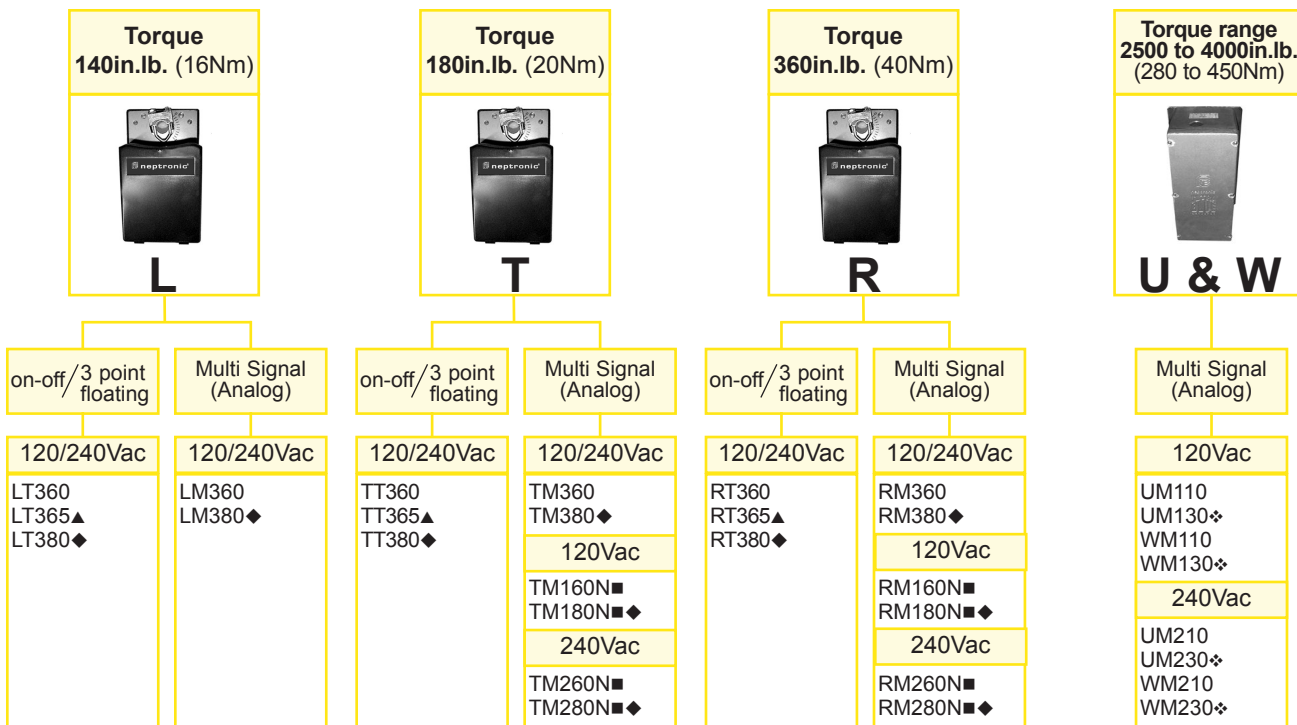
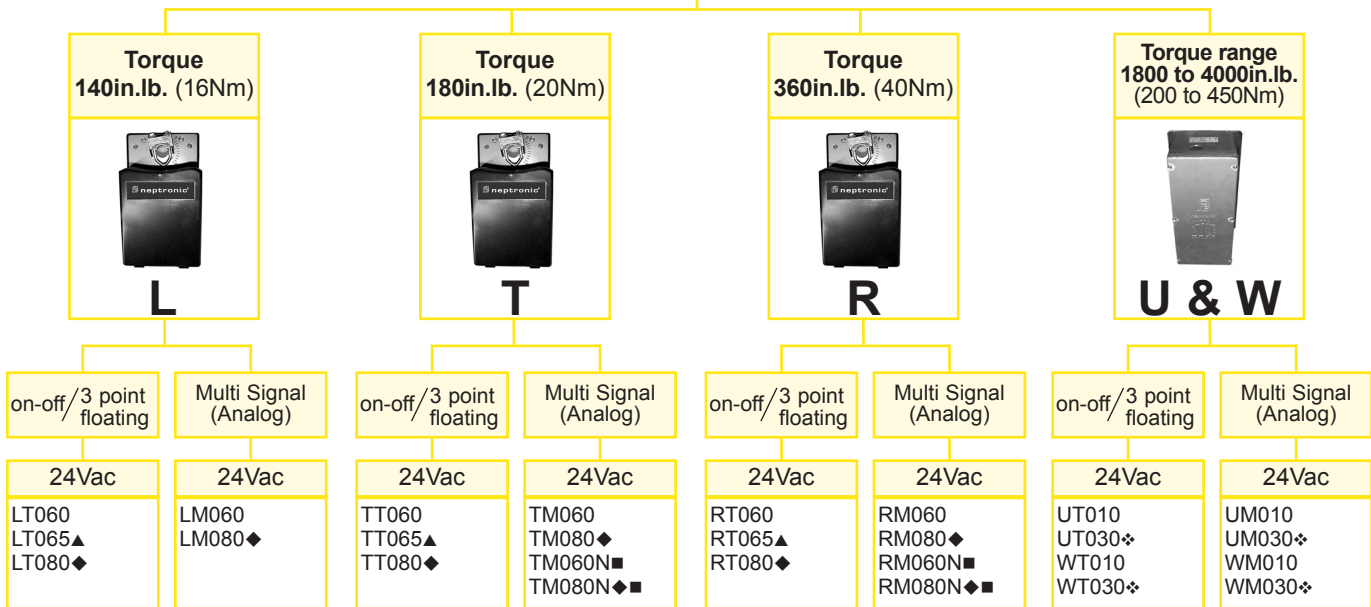


- Neptronic actuator models ending in "N" are brushless motors.
- Neptronic actuator models ending in "20 (S)" include End Switches.
- ▼ Neptronic actuator models ending in "05 (S)" include Feedback.

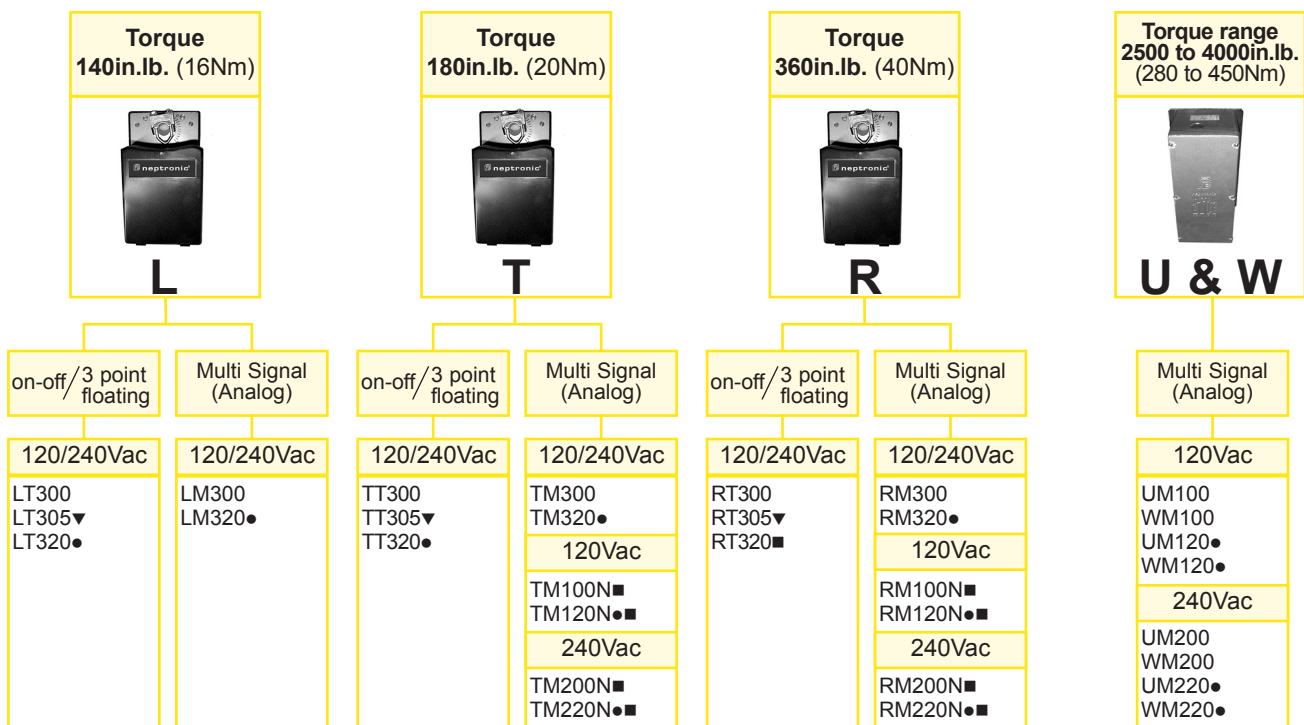
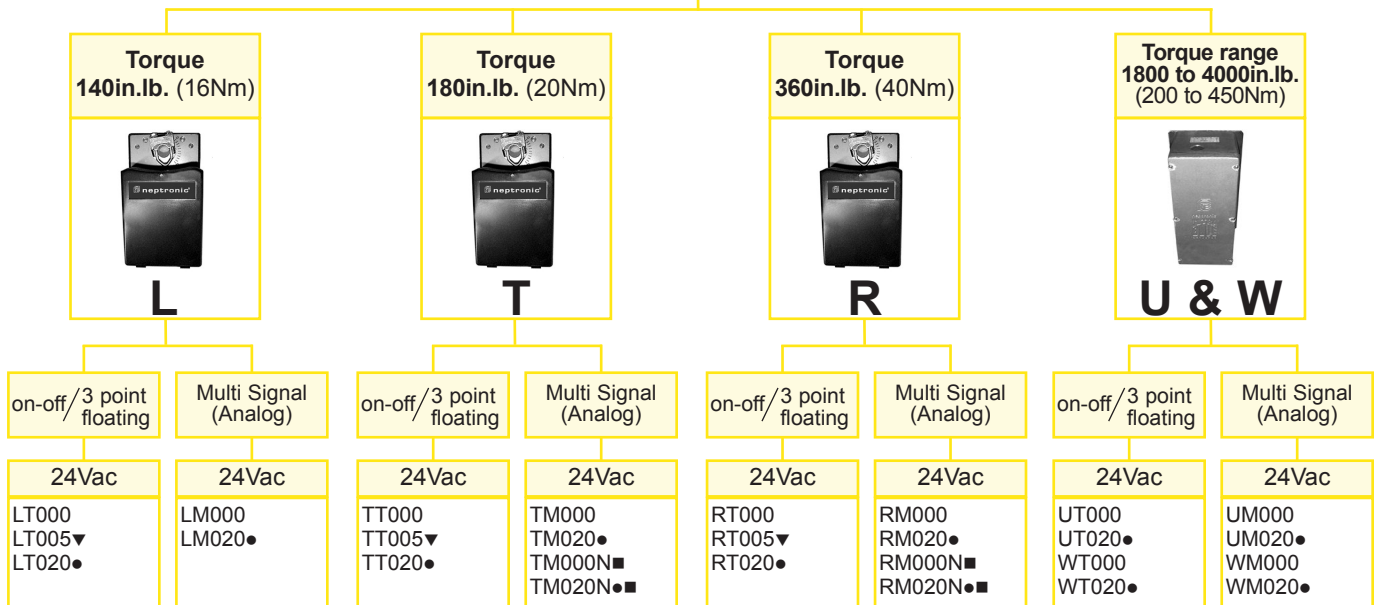
# Actuator Flow Charts (140 to 4000 in.lb torque)



## 140 to 4000 in.lb. torque fail safe actuators (enerdrive system)



- Neptronic actuator models ending in "N" are brushless motors.
- ▲ Neptronic actuator models ending in "80" include Enerdrive (Fail safe) and End Switches.
- ◆ Neptronic actuator models ending in "65" include Enerdrive (Fail safe) and Feedback.
- ❖ Neptronic actuator models ending in "30" include Battery (Fail safe) and End Switches.

**140 to 4000 in.lb. torque Non fail safe actuators**


- Neptronic actuator models ending in "N" are brushless motors.
- Neptronic actuator models ending in "20" include End Switches.
- ▼ Neptronic actuator models ending in "05" include Feedback.

## C Series Actuator (slow motion)



**18 in.lb. (2 Nm) torque**

### PRIMARY USES FOR THESE ACTUATORS

- ◆ small dampers
- ◆ VAV box control
- ◆ unit ventilators
- ◆ fan coils

These compact quarter turn actuators may be directly coupled to either a 1/2 inch round or 3/8 inch square jack shaft or remotely mounted using an adaptor kit. All actuators are bi-directional. Enerdrive actuators are also bi-directional under fail safe conditions. The stroke may be limited to less than 90° mechanically.

## GENERAL SPECIFICATIONS

<b>Power Supply:</b>	24Vac/30Vdc, 120Vac or 240Vac Depending upon the Model
<b>Power Consumption:</b>	Peak at Start-up: 10VA at 26Vac or at Line Voltage Operating at Full Load: 3VA at 26Vac or at Line Voltage
<b>Wire Size:</b>	18 AWG (0.8 mm <sup>2</sup> ) Minimum
<b>Electrical Connections:</b>	5/8 in. (15.9 mm) & 7/8 in. (22.2 mm) Knock Outs, Screw Terminals

<b>Control Signals:</b>	<b>Digital (CT):</b> 2 Wire 2 Position and 4 Wire 3 Point Floating
	<b>Analog (CM):</b> A) 2-10Vdc; or B) 4-20mA

<b>Torque:</b>	<b>18 in.lb. (2 Nm) at Rated Voltage</b>
<b>Direction &amp; Time of Rotation:</b>	Reversible, 80 to 100 sec

<b>Ambient Temperature:</b>	0°F to +122°F (-18°C to +50°C)
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<b>Feedback Potentiometer:</b>	<b>In Digital (CTXX5S):</b> Potentiometer (5Kohms)
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<b>Fail Safe (Enerdrive) Rating:</b>	18 in.lb. (2 Nm)
<b>Enerdrive Response Time:</b>	20 to 40 sec Closure Through 90°, 0-18 in.lb. (0-2 Nm)

<b>Auxiliary Switches:</b>	<b>Models Ending in 80S:</b> 2 Mechanical, Fixed at 10° & 80°
<b>Auxiliary Switch Rating:</b>	5 Amp Resistive, 250Vac

<b>Electronic Enclosure:</b>	Flammability rating UL94-5V
<b>GearTrain Enclosure:</b>	Die Cast Zinc with a Steel Base

Spec Sheet Available on Our Website

Actuator Models	Power			Control Signals					Time in sec Thru 90° Arc	Actuator Features				
	Nom. Supply	Consumption		Digital		Multi Signal				Feed Back	Auto Stroke	Zero & Span	Fail Safe (Enerdrive)	2 Mech. Aux. Switches
		Start Up	Full Load	2 POS	3 PT FLT	2-10 Vdc	4-20 mA	PWM						
<i>for low voltage applications</i>														
<b>CT060S</b>	24Vac 30Vac	10VA	3VA	◆	◆				80 to 100				◆	
<b>CT065S</b>	24Vac 30Vdc	10VA	3VA	◆	◆				80 to 100	◆			◆	
<b>CT080S</b>	24Vac 30Vdc	10VA	3VA	◆	◆				80 to 100				◆	◆
<b>CM060S</b>	24Vac 30Vdc	10VA	3VA				◆	◆	80 to 100				◆	
<b>CM080S</b>	24Vac 30Vdc	10VA	3VA				◆	◆	80 to 100				◆	◆
<i>for line voltage applications</i>														
<b>CT160S</b>	120Vac	10VA	3VA	◆	◆				80 to 100				◆	
<b>CT165S</b>	120Vac	10VA	3VA	◆	◆				80 to 100	◆			◆	
<b>CT180S</b>	120Vac	10VA	3VA	◆	◆				80 to 100				◆	◆
<b>CT260S</b>	240Vac	10VA	3VA	◆	◆				80 to 100				◆	
<b>CT265S</b>	240Vac	10VA	3VA	◆	◆				80 to 100	◆			◆	
<b>CT280S</b>	240Vac	10VA	3VA	◆	◆				80 to 100				◆	◆
<b>CM160S</b>	120Vac	10VA	3VA				◆	◆	80 to 100				◆	
<b>CM180S</b>	120Vac	10VA	3VA				◆	◆	80 to 100				◆	◆
<b>CM260S</b>	240Vac	10VA	3VA				◆	◆	80 to 100				◆	
<b>CM280S</b>	240Vac	10VA	3VA				◆	◆	80 to 100				◆	◆

## D Series Actuator (slow motion)



**35 in.lb. (4 Nm) torque**

### PRIMARY USES FOR THESE ACTUATORS

- ◆ small dampers
- ◆ VAV box control
- ◆ unit ventilators
- ◆ fan coils
- ◆ 1/4 turn valves

These compact quarter turn actuators may be directly coupled to either a 1/2 inch round or 3/8 inch square jack shaft or remotely mounted using an adaptor kit. All actuators are bi-directional. Enerdrive actuators are also bi-directional under fail safe conditions. The stroke may be limited to less than 90° mechanically.

## GENERAL SPECIFICATIONS

<b>Power Supply:</b>	24Vac/30Vdc, 120Vac or 240Vac Depending upon the Model
<b>Power Consumption:</b>	Peak at Start-up: 15VA at 26Vac 12VA at Line Voltage Operating at Full Load: 6VA at 26Vac or at Line Voltage
<b>Wire Size:</b>	18 AWG (0.8 mm <sup>2</sup> ) Minimum
<b>Electrical Connections:</b>	Two 13/16 in. (20.6mm) Knock Outs, Screw Terminals

<b>Control Signals:</b>	<b>Digital (DT):</b> 2 Wire 2 Position and 4 Wire 3 Point Floating <b>Analog (DM):</b> A) 2-10Vdc; or B) 4-20mA
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<b>Torque:</b>	<b>35 in.lb. (4 Nm) at Rated Voltage</b>
<b>Direction &amp; Time of Rotation:</b>	Reversible, 90 to 110 sec, 0-35 in.lb. (0-4 Nm)

<b>Ambient Temperature:</b>	-22°F to +122°F (-30°C to +50°C)
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<b>Feedback Potentiometer:</b>	<b>In Digital (DTXX5S):</b> Potentiometer (5Kohms)
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<b>Fail Safe (Enerdrive) Rating:</b>	35 in.lb. (4 Nm)
<b>Enerdrive Response Time:</b>	25 to 50 sec or 70 to 80 sec Closure Through 90°, 0-35 in.lb. (0-4 Nm) Depending upon the Model

<b>Auxiliary Switches:</b>	<b>Models Ending in 80S:</b> 2 Mechanical, Fixed at 10° & 80°
<b>Auxiliary Switch Rating:</b>	1 Amp Resistive, 24Vac or 5 Amp Resistive, 250Vac Depending upon the model

<b>Electronic Enclosure:</b>	Flammability rating UL94-5V
<b>GearTrain Enclosure:</b>	Die Cast Zinc with a Steel Base



Spec Sheet Available on Our Website

Actuator Models	Power			Control Signals					Time in sec Thru 90° Arc	Actuator Features				
	Nom. Supply	Consumption		Digital		Multi Signal				Feed Back	Auto Stroke	Zero & Span	Fail Safe (Enerdrive)	2 Mech. Aux. Switches
		Start Up	Full Load	2 POS	3 PT FLT	2-10 Vdc	4-20 mA	PWM						
<i>for low voltage applications</i>														
<b>DT060S</b>	24Vac 30Vdc	15VA	6VA	◆	◆				90 to 110				◆	
<b>DT065S</b>	24Vac 30Vdc	15VA	6VA	◆	◆				90 to 110	◆			◆	
<b>DT080S</b>	24Vac 30Vdc	15VA	6VA	◆	◆				90 to 110				◆	◆
<b>DM060S</b>	24Vac 30Vdc	15VA	6VA				◆	◆	90 to 110				◆	
<b>DM080S</b>	24Vac 30Vdc	15VA	6VA				◆	◆	90 to 110				◆	◆
<i>for line voltage applications</i>														
<b>DT160S</b>	120Vac	12VA	6VA	◆	◆				90 to 110				◆	
<b>DT165S</b>	120Vac	12VA	6VA	◆	◆				90 to 110	◆			◆	
<b>DT180S</b>	120Vac	12VA	6VA	◆	◆				90 to 110				◆	◆
<b>DT260S</b>	240Vac	12VA	6VA	◆	◆				90 to 110				◆	
<b>DT265S</b>	240Vac	12VA	6VA	◆	◆				90 to 110	◆			◆	
<b>DT280S</b>	240Vac	12VA	6VA	◆	◆				90 to 110				◆	◆
<b>DM160S</b>	120Vac	12VA	6VA				◆	◆	90 to 110				◆	
<b>DM180S</b>	120Vac	12VA	6VA				◆	◆	90 to 110				◆	◆
<b>DM260S</b>	240Vac	12VA	6VA				◆	◆	90 to 110				◆	
<b>DM280S</b>	240Vac	12VA	6VA				◆	◆	90 to 110				◆	◆

## B Series Actuator (low voltage)



**50 in.lb. (5.6 Nm) torque**

### PRIMARY USES FOR THESE ACTUATORS

- ◆ small dampers
- ◆ VAV box control
- ◆ unit ventilators
- ◆ fan coils
- ◆ 1/4 turn valves

These compact quarter turn actuators may be directly coupled to either a 1/2 inch round or 3/8 inch square jack shaft or remotely mounted using an adaptor kit. All actuators are bi-directional. Enerdrive actuators are also bi-directional under fail safe conditions. The stroke may be limited to less than 90° mechanically in digital models and electronically in Multi Signal models.

## GENERAL SPECIFICATIONS

<b>Power Supply:</b>	24Vac/30Vdc or 24Vdc Depending upon the Model
<b>Power Consumption:</b>	Peak at Start-up: 6VA to 24VA at 26Vac Depending upon the Model Operating at Full Load: 6VA to 15VA at 26Vac Depending upon the Model
<b>Wire Size:</b>	18 AWG (0.8 mm <sup>2</sup> ) Minimum
<b>Electrical Connections:</b>	Two 13/16 in. (20.6mm) Knock Outs, Screw Terminals
<b>Control Signals:</b>	<p><b>Digital (BT):</b> 2 Wire or 3 Wire 2 Position and 3 Wire or 4 Wire 3 Point Floating Depending upon the Model</p> <p><b>Multi Signal (BM):</b>  <b>ANALOG:</b> A) 2-10Vdc; or B) May be Externally Wired with a 500 Ohm Resistor which is Supplied for 4-20mA, Zero &amp; Span Adjustable  <b>PULSE WIDTH MODULATION:</b> Time Base of 0.1 to 5 sec/20mS Resolution or 0.1 to 25 sec/100mS Resolution Selected by Dip Switch Position  <b>SWITCH 24Vac:</b> Triac or Dry Contact, 40mA Max. Switching Current  <b>SWITCH COMMON:</b> NPN Transistor, SCR, Triac or Dry Contact 75mA Max. Switching Current  <b>DIGITAL:</b> 3 Wire 2 Position or 4 Wire 3 Point Floating</p>
<b>Torque:</b>	<b>50 in.lb. (5.6 Nm) at Rated Voltage</b>
<b>Direction &amp; Time of Rotation:</b>	Reversible, 15 to 30 sec, 0-50 in.lb. (0-5.6 Nm) Depending upon the Model
<b>Ambient Temperature:</b>	-22°F to +122°F (-30°C to +50°C)
<b>Feedback Potentiometer:</b>	<p><b>In Digital (BTXX5):</b> Potentiometer (5 Kohms)</p> <p><b>In Multi Signal (BM):</b> 4-20mA Output (May be wired for a 2-10Vdc signal)</p>
<b>Fail Safe (Enerdrive) Rating:</b>	<b>Models Ending in 60, 65, 80 or 60N:</b> 50 in.lb. (5.6 Nm)
<b>Enerdrive Response Time:</b>	20 to 30 sec Closure Through 90°, 0-50 in.lb. (0-5.6 Nm)
<b>Auxiliary Switches:</b>	<b>Models Ending in 20, 80 or 20N:</b> 2 Mechanical, Fixed at 10° & 80°
<b>Auxiliary Switch Rating:</b>	1 Amp Resistive, 24Vac or 5 Amp Resistive, 250Vac Depending upon the Model
<b>Electronic Enclosure:</b>	Flammability rating UL94-5V
<b>GearTrain Enclosure:</b>	Die Cast Zinc with a Steel Base

Spec Sheet Available on Our Website

Actuator Models	Power			Control Signals					Time in sec Thru 90° Arc	Actuator Features				
	Nom. Supply	Consumption		Digital		Multi Signal				Feed Back	Auto Stroke	Zero & Span	Fail Safe (Enerdrive)	2 Mech. Aux. Switches
		Start Up	Full Load	2 POS	3 PT FLT	2-10 Vdc	4-20 mA	PWM						
<i>for low voltage applications</i>														
<b>BT000</b>	24Vac 30Vdc	6VA	6VA	◆	◆				20 to 30					
<b>BT005</b>	24Vac 30Vdc	6VA	6VA	◆	◆				20 to 30	◆				
<b>BT020</b>	24Vac 30Vdc	6VA	6VA	◆	◆				20 to 30					◆
<b>BT060</b>	24Vac 30Vdc	15VA	6VA	◆	◆				20 to 30				◆	
<b>BT065</b>	24Vac 30Vdc	15VA	6VA	◆	◆				20 to 30	◆			◆	
<b>BT080</b>	24Vac 30Vdc	15VA	6VA	◆	◆				20 to 30				◆	◆
<b>BM000</b>	24Vac 30Vdc	6VA	6VA	◆	◆	◆	◆	◆	20 to 30	◆	◆	◆		
<b>BM020</b>	24Vac 30Vdc	6VA	6VA	◆	◆	◆	◆	◆	20 to 30	◆	◆	◆		◆
<b>BM060</b>	24Vac 30Vdc	15VA	6VA	◆	◆	◆	◆	◆	20 to 30	◆	◆	◆	◆	
<b>BM080</b>	24Vac 30Vdc	15VA	6VA	◆	◆	◆	◆	◆	20 to 30	◆	◆	◆	◆	◆
<b>BM000N</b>	24Vac 30Vdc	15VA	15VA	◆	◆	◆	◆	◆	15	◆	◆	◆		
<b>BM020N</b>	24Vac 30Vdc	15VA	15VA	◆	◆	◆	◆	◆	15	◆	◆	◆		◆
<b>BM060N</b>	24Vac 30Vdc	24VA	15VA	◆	◆	◆	◆	◆	15	◆	◆	◆	◆	

**Note:** All actuators are powered by brush motors except those ending with the letter “N”

## B Series Actuator (line voltage)



**50 in.lb. (5.6 Nm) torque**

### PRIMARY USES FOR THESE ACTUATORS

- ◆ small dampers
- ◆ VAV box control
- ◆ unit ventilators
- ◆ fan coils
- ◆ 1/4 turn valves

These compact quarter turn actuators may be directly coupled to either a 1/2 inch round or 3/8 inch square jack shaft or remotely mounted using an adaptor kit. All actuators are bi-directional. Enerdrive actuators are also bi-directional under fail safe conditions. The stroke may be limited to less than 90° mechanically in digital models and electronically in Multi Signal models.

## GENERAL SPECIFICATIONS

<b>Power Supply:</b>	120Vac or 240Vac Depending upon the Model
<b>Power Consumption:</b>	Peak at Start-up: 8VA to 7 Watts at Line Voltage Depending upon the Model Operating at Full Load: 5VA to 7 Watts at Line Voltage Depending upon the Model
<b>Wire Size:</b>	18 AWG (0.8 mm <sup>2</sup> ) Minimum
<b>Electrical Connections:</b>	Two 13/16 in. (20.6mm) Knock Outs, Screw Terminals
<b>Control Signals:</b>	<b>Digital (BT):</b> 2 Wire or 3 Wire 2 Position and 3 Wire 3 Point Floating Depending upon the Model
<b>Torque:</b>	<b>50 in.lb. (5.6 Nm) at Rated Voltage</b>
<b>Direction &amp; Time of Rotation:</b>	Reversible, 20 to 30 sec, 0-50 in.lb. (0-5.6 Nm) Depending upon the Model
<b>Ambient Temperature:</b>	-22°F to +122°F (-30°C to +50°C)
<b>Feedback Potentiometer:</b>	<b>In Digital (BTXX5):</b> Potentiometer (5 Kohms)
<b>Fail Safe (Enerdrive) Rating:</b>	<b>Models Ending in 60 or 80:</b> 50 in.lb. (5.6 Nm)
<b>Enerdrive Response Time:</b>	20 to 30 sec Closure Through 90°, 0-50 in.lb. (0-5.6 Nm)
<b>Auxiliary Switches:</b>	<b>Models Ending in, 20 or 80:</b> 2 Mechanical, Fixed at 10° & 80°
<b>Auxiliary Switch Rating:</b>	1 Amp Resistive, 24Vac or 5 Amp Resistive, 250Vac Depending upon the Model
<b>Electronic Enclosure:</b>	Flammability rating UL94-5V
<b>GearTrain Enclosure:</b>	Die Cast Zinc with a Steel Base

Spec Sheet Available on Our Website

Actuator Models	Power			Control Signals					Time in sec Thru 90° Arc	Actuator Features				
	Nom. Supply	Consumption		Digital		Multi Signal				Feed Back	Auto Stroke	Zero & Span	Fail Safe (Enerdrive)	2 Mech. Aux. Switches
		Start Up	Full Load	2 POS	3 PT FLT	2-10 Vdc	4-20 mA	PWM						
<i>for line voltage applications</i>														
<b>BT100</b>	120Vac	4 watts	4 watts	◆	◆				20 to 30					
<b>BT105</b>	120Vac	4 watts	4 watts	◆	◆				20 to 30	◆				
<b>BT120</b>	120Vac	4 watts	4 watts	◆	◆				20 to 30					◆
<b>BT160</b>	120Vac	8VA	5VA	◆					20 to 35			◆		
<b>BT180</b>	120Vac	8VA	5VA	◆					20 to 35			◆		◆
<b>BT200</b>	240Vac	7 watts	7 watts	◆	◆				20 to 30					
<b>BT205</b>	240Vac	7 watts	7 watts	◆	◆				20 to 30	◆				
<b>BT220</b>	240Vac	7 watts	7 watts	◆	◆				20 to 30					◆
<b>BT260</b>	240Vac	8VA	5VA	◆					20 to 35			◆		
<b>BT280</b>	240Vac	8VA	5VA	◆					20 to 35			◆		◆

## B Series Actuator (slow motion low voltage)



**50 in.lb. (5.6 Nm) torque**



### PRIMARY USES FOR THESE ACTUATORS

- ◆ small dampers
- ◆ VAV box control
- ◆ unit ventilators
- ◆ fan coils
- ◆ 1/4 turn valves

These compact quarter turn actuators may be directly coupled to either a 1/2 inch round or 3/8 inch square jack shaft or remotely mounted using an adaptor kit. All actuators are bi-directional. Enerdrive actuators are also bi-directional under fail safe conditions. The stroke may be limited to less than 90° mechanically.

## GENERAL SPECIFICATIONS

<b>Power Supply:</b>	24Vac/30Vdc or 48Vdc Depending upon the Model
<b>Power Consumption:</b>	Peak at Start-up: 3VA to 15VA at 26Vac Depending upon the Model Operating at Full Load: 3VA to 6VA at 26Vac
<b>Wire Size:</b>	18 AWG (0.8 mm <sup>2</sup> ) Minimum
<b>Electrical Connections:</b>	Two 13/16 in. (20.6mm) Knock Outs, Screw Terminals
<b>Control Signals:</b>	<b>Digital (BT):</b> 2 Wire or 3 Wire 2 Position and 3 Wire or 4 Wire 3 Point Floating Depending upon the Model <b>Analog (BM):</b> A) 2-10Vdc; or B) 4-20mA
<b>Torque:</b>	<b>50 in.lb. (5.6 Nm) at Rated Voltage</b>
<b>Direction &amp; Time of Rotation:</b>	Reversible, 90 to 110 sec, 0-50 in.lb. (0-5.6 Nm)
<b>Ambient Temperature:</b>	-22°F to +122°F (-30°C to +50°C)
<b>Feedback Potentiometer:</b>	<b>In Digital (BTXX5S):</b> Potentiometer (5 Kohms)
<b>Fail Safe (Enerdrive) Rating:</b>	<b>Models Ending in 60S, 65S or 80S:</b> 50 in.lb. (5.6 Nm)
<b>Enerdrive Response Time:</b>	20 to 30 sec or 20 to 35 sec for BT models Closure Through 90°, 0-50 in.lb. (0-5.6 Nm)
<b>Auxiliary Switches:</b>	<b>Models Ending in 20S or 80S:</b> 2 Mechanical, Fixed at 10° & 80°
<b>Auxiliary Switch Rating:</b>	1 Amp Resistive, 24Vac or 5 Amp Resistive, 250Vac Depending upon the Model
<b>Electronic Enclosure:</b>	Flammability rating UL94-5V
<b>GearTrain Enclosure:</b>	Die Cast Zinc with a Steel Base





Spec Sheet Available on Our Website

Actuator Models	Power			Control Signals					Time in sec Thru 90° Arc	Actuator Features				
	Nom. Supply	Consumption		Digital		Multi Signal				Feed Back	Auto Stroke	Zero & Span	Fail Safe (Enerdrive)	2 Mech. Aux. Switches
		Start Up	Full Load	2 POS	3 PT FLT	2-10 Vdc	4-20 mA	PWM						
<i>for low voltage applications</i>														
BT000S	24Vac 30Vdc	6VA	6VA	◆	◆				90 to 110					
BT005S	24Vac 30Vdc	6VA	6VA	◆	◆				90 to 110	◆				
BT020S	24Vac 30Vdc	6VA	6VA	◆	◆				90 to 110					◆
BT060S	24Vac 30Vdc	15VA	6VA	◆	◆				90 to 110			◆		
BT065S	24Vac 30Vdc	15VA	6VA	◆	◆				90 to 110	◆		◆		
BT080S	24Vac 30Vdc	15VA	6VA	◆	◆				90 to 110			◆		◆
BT800S	48Vdc	4 watts	4 watts	◆	◆				90 to 110					
BT805S	48Vdc	4 watts	4 watts	◆	◆				90 to 110	◆				
BT820S	48Vdc	4 watts	4 watts	◆	◆				90 to 110					◆
BT860S	48Vdc	4 watts	4 watts	◆	◆				90 to 110			◆		
BT865S	48Vdc	12 watts	4 watts	◆	◆				90 to 110	◆		◆		
BT880S	48Vdc	12 watts	4 watts	◆	◆				90 to 110			◆		◆
BM000S	24Vac 30Vdc	6VA	6VA				◆	◆	90 to 110					
BM020S	24Vac 30Vdc	6VA	6VA				◆	◆	90 to 110					◆
BM060S	24Vac 30Vdc	20VA	6VA				◆	◆	90 to 110			◆		
BM080S	24Vac 30Vdc	20VA	6VA				◆	◆	90 to 110			◆		◆
BM800S	48Vdc	6 watts	6 watts				◆	◆	90 to 110					
BM820S	48Vdc	6 watts	6 watts				◆	◆	90 to 110					◆
BM860S	48Vdc	20 watts	6 watts				◆	◆	90 to 110			◆		
BM880S	48Vdc	20 watts	6 watts				◆	◆	90 to 110			◆		◆

## B Series Actuator (slow motion line voltage)



**50 in.lb. (5.6 Nm) torque**



### PRIMARY USES FOR THESE ACTUATORS

- ◆ small dampers
- ◆ VAV box control
- ◆ unit ventilators
- ◆ fan coils
- ◆ 1/4 turn valves

These compact quarter turn actuators may be directly coupled to either a 1/2 inch round or 3/8 inch square jack shaft or remotely mounted using an adaptor kit. All actuators are bi-directional. Enerdrive actuators are also bi-directional under fail safe conditions. The stroke may be limited to less than 90° mechanically.

## GENERAL SPECIFICATIONS

<b>Power Supply:</b>	120Vac or 240Vac Depending upon the Model
<b>Power Consumption:</b>	Peak at Start-up: 6VA to 20VA at Line Voltage Depending upon the Model Operating at Full Load: 6VA at Line Voltage
<b>Wire Size:</b>	18 AWG (0.8 mm <sup>2</sup> ) Minimum
<b>Electrical Connections:</b>	Two 13/16 in. (20.6mm) Knock Outs, Screw Terminals

<b>Control Signals:</b>	<b>Digital (BT):</b> 2 Wire or 3 Wire 2 Position and 3 Wire or 4 Wire 3 Point Floating Depending upon the Model <b>Analog (BM):</b> A) 2-10Vdc; or B) 4-20mA
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<b>Torque:</b>	<b>50 in.lb. (5.6 Nm) at Rated Voltage</b>
<b>Direction &amp; Time of Rotation:</b>	Reversible, 90 to 110 sec, 0-50 in.lb. (0-5.6 Nm)

<b>Ambient Temperature:</b>	-22°F to +122°F (-30°C to +50°C)
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<b>Feedback Potentiometer:</b>	<b>In Digital (BTXX5S):</b> Potentiometer (5 Kohms)
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<b>Fail Safe (Enerdrive) Rating:</b>	<b>Models Ending in 60S, 65S or 80S:</b> 50 in.lb. (5.6 Nm)
<b>Enerdrive Response Time:</b>	20 to 30 sec or 20 to 35 sec for BT models Closure Through 90°, 0-50 in.lb. (0-5.6 Nm)

<b>Auxiliary Switches:</b>	<b>Models Ending in 20S or 80S:</b> 2 Mechanical, Fixed at 10° & 80°
<b>Auxiliary Switch Rating:</b>	1 Amp Resistive, 24Vac or 5 Amp Resistive, 250Vac Depending upon the Model

<b>Electronic Enclosure:</b>	Flammability rating UL94-5V
<b>GearTrain Enclosure:</b>	Die Cast Zinc with a Steel Base



Spec Sheet Available on Our Website

Actuator Models	Power			Control Signals					Time in sec Thru 90° Arc	Actuator Features				
	Nom. Supply	Consumption		Digital		Multi Signal				Feed Back	Auto Stroke	Zero & Span	Fail Safe (Enerdrive)	2 Mech. Aux. Switches
		Start Up	Full Load	2 POS	3 PT FLT	2-10 Vdc	4-20 mA	PWM						
<i>for line voltage applications</i>														
BT100S	120Vac	6VA	6VA	◆	◆				90 to 110					
BT105S	120Vac	6VA	6VA	◆	◆				90 to 110	◆				
BT120S	120Vac	6VA	6VA	◆	◆				90 to 110					◆
BT160S	120Vac	20VA	6VA	◆	◆				90 to 110			◆		
BT165S	120Vac	20VA	6VA	◆	◆				90 to 110	◆		◆		
BT180S	120Vac	20VA	6VA	◆	◆				90 to 110			◆		◆
BT200S	240Vac	6VA	6VA	◆	◆				90 to 110					
BT205S	240Vac	6VA	6VA	◆	◆				90 to 110	◆				
BT220S	240Vac	6VA	6VA	◆	◆				90 to 110					◆
BT260S	240Vac	20VA	6VA	◆	◆				90 to 110			◆		
BT265S	240Vac	20VA	6VA	◆	◆				90 to 110	◆		◆		
BT280S	240Vac	20VA	6VA	◆	◆				90 to 110			◆		◆
BM100S	120Vac	6VA	6VA				◆	◆	90 to 110					
BM120S	120Vac	6VA	6VA				◆	◆	90 to 110					◆
BM160S	120Vac	20VA	6VA				◆	◆	90 to 110			◆		
BM200S	240Vac	6VA	6VA				◆	◆	90 to 110					
BM220S	240Vac	6VA	6VA				◆	◆	90 to 110					◆
BM260S	240Vac	20VA	6VA				◆	◆	90 to 110			◆		

# S Series Actuator (slow motion low voltage)



**70 in.lb. (8 Nm) torque**



## PRIMARY USES FOR THESE ACTUATORS

- ◆ small dampers
- ◆ VAV box control
- ◆ unit ventilators
- ◆ fan coils
- ◆ 1/4 turn valves

These compact quarter turn actuators may be directly coupled to either a 1/2 inch round or 3/8 inch square jack shaft or remotely mounted using an adaptor kit. All actuators are bi-directional. Enerdrive actuators are also bi-directional under fail safe conditions. The stroke may be limited to less than 90° mechanically.

## GENERAL SPECIFICATIONS

<b>Power Supply:</b>	24Vac/30Vdc
<b>Power Consumption:</b>	Peak at Start-up: 8VA to 20VA at 26Vac Depending upon the Model Operating at Full Load: 8VA at 26Vac
<b>Wire Size:</b>	18 AWG (0.8 mm <sup>2</sup> ) Minimum
<b>Electrical Connections:</b>	Two 13/16 in. (20.6mm) Knock Outs, Screw Terminals
<b>Control Signals:</b>	<b>Digital (ST):</b> 2 Wire or 3 Wire 2 Position and 4 Wire 3 Point Floating Depending upon the Model <b>Analog (SM):</b> A) 2-10Vdc; or B) 4-20mA
<b>Torque:</b>	<b>70 in.lb. (8 Nm) at Rated Voltage</b>
<b>Direction &amp; Time of Rotation:</b>	Reversible, 90 to 110 sec, 0-70 in.lb. (0-8 Nm)
<b>Ambient Temperature:</b>	-22°F to +122°F (-30°C to +50°C)
<b>Feedback Potentiometer:</b>	<b>In Digital (STXX5S):</b> Potentiometer (5 Kohms)
<b>Fail Safe (Enerdrive) Rating:</b>	<b>Models Ending in 60S, 65S or 80S:</b> 70 in.lb. (8 Nm)
<b>Enerdrive Response Time:</b>	20 to 30 sec, 20 to 35 for ST Models Closure Through 90°, 0-70 in.lb. (0-8 Nm)
<b>Auxiliary Switches:</b>	<b>Models Ending in 20S or 80S:</b> 2 Mechanical, Fixed at 10° & 80°
<b>Auxiliary Switch Rating:</b>	1 Amp Resistive, 24Vac or 5 Amp Resistive, 250Vac Depending upon the Model
<b>Electronic Enclosure:</b>	Flammability rating UL94-5V
<b>GearTrain Enclosure:</b>	Die Cast Zinc with a Steel Base

Spec Sheet Available on Our Website

Actuator Models	Power			Control Signals					Time in sec Thru 90° Arc	Actuator Features				
	Nom. Supply	Consumption		Digital		Multi Signal				Feed Back	Auto Stroke	Zero & Span	Fail Safe (Enerdrive)	2 Mech. Aux. Switches
		Start Up	Full Load	2 POS	3 PT FLT	2-10 Vdc	4-20 mA	PWM						
<i>for low voltage applications</i>														
<b>ST000S</b>	24Vac 30Vdc	8VA	8VA	◆	◆				90 to 110					
<b>ST005S</b>	24Vac 30Vdc	8VA	8VA	◆	◆				90 to 110	◆				
<b>ST020S</b>	24Vac 30Vdc	8VA	8VA	◆	◆				90 to 110					◆
<b>ST060S</b>	24Vac 30Vdc	20VA	8VA	◆	◆				90 to 110				◆	
<b>ST065S</b>	24Vac 30Vdc	20VA	8VA	◆	◆				90 to 110	◆			◆	
<b>ST080S</b>	24Vac 30Vdc	20VA	8VA	◆	◆				90 to 110				◆	◆
<b>SM000S</b>	24Vac 30Vdc	8VA	8VA			◆	◆		90 to 110					
<b>SM020S</b>	24Vac 30Vdc	8VA	8VA			◆	◆		90 to 110					◆
<b>SM060S</b>	24Vac 30Vdc	20VA	8VA			◆	◆		90 to 110				◆	
<b>SM080S</b>	24Vac 30Vdc	20VA	8VA			◆	◆		90 to 110				◆	◆

# S Series Actuator (slow motion line voltage)



**70 in.lb. (8 Nm) torque**



### PRIMARY USES FOR THESE ACTUATORS

- ◆ small dampers
- ◆ VAV box control
- ◆ unit ventilators
- ◆ fan coils
- ◆ 1/4 turn valves

These compact quarter turn actuators may be directly coupled to either a 1/2 inch round or 3/8 inch square jack shaft or remotely mounted using an adaptor kit. All actuators are bi-directional. Enerdrive actuators are also bi-directional under fail safe conditions. The stroke may be limited to less than 90° mechanically.

## GENERAL SPECIFICATIONS

<b>Power Supply:</b>	120Vac or 240Vac Depending upon the Model
<b>Power Consumption:</b>	Peak at Start-up: 8VA to 20VA at Line Voltage Depending upon the Model Operating at Full Load: 8VA at Line Voltage
<b>Wire Size:</b>	18 AWG (0.8 mm <sup>2</sup> ) Minimum
<b>Electrical Connections:</b>	Two 13/16 in. (20.6mm) Knock Outs, Screw Terminals
<b>Control Signals:</b>	<b>Digital (ST):</b> 2 Wire or 3 Wire 2 Position and 4 Wire 3 Point Floating Depending upon the Model <b>Analog (SM):</b> A) 2-10Vdc; or B) 4-20mA
<b>Torque:</b>	<b>70 in.lb. (8 Nm) at Rated Voltage</b>
<b>Direction &amp; Time of Rotation:</b>	Reversible, 90 to 110 sec, 0-70 in.lb. (0-8 Nm)
<b>Ambient Temperature:</b>	-22°F to +122°F (-30°C to +50°C)
<b>Feedback Potentiometer:</b>	<b>In Digital (STXX5S):</b> Potentiometer (5 Kohms)
<b>Fail Safe (Enerdrive) Rating:</b>	<b>Models Ending in 60S, 65S or 80S:</b> 70 in.lb. (8 Nm)
<b>Enerdrive Response Time:</b>	20 to 30 sec Closure Through 90°, 0-70 in.lb. (0-8 Nm)
<b>Auxiliary Switches:</b>	<b>Models Ending in 20S or 80S:</b> 2 Mechanical, Fixed at 10° & 80°
<b>Auxiliary Switch Rating:</b>	1 Amp Resistive, 24Vac or 5 Amp Resistive, 250Vac Depending upon the Model
<b>Electronic Enclosure:</b>	Flammability rating UL94-5V
<b>GearTrain Enclosure:</b>	Die Cast Zinc with a Steel Base





Spec Sheet Available on Our Website

Actuator Models	Power			Control Signals					Time in sec Thru 90° Arc	Actuator Features				
	Nom. Supply	Consumption		Digital		Multi Signal				Feed Back	Auto Stroke	Zero & Span	Fail Safe (Enerdrive)	2 Mech. Aux. Switches
		Start Up	Full Load	2 POS	3 PT FLT	2-10 Vdc	4-20 mA	PWM						
<i>for line voltage applications</i>														
ST100S	120Vac	8VA	8VA	◆	◆				90 to 110					
ST105S	120Vac	8VA	8VA	◆	◆				90 to 110	◆				
ST120S	120Vac	8VA	8VA	◆	◆				90 to 110					◆
ST160S	120Vac	20VA	8VA	◆	◆				90 to 110				◆	
ST165S	120Vac	20VA	8VA	◆	◆				90 to 110	◆			◆	
ST180S	120Vac	20VA	8VA	◆	◆				90 to 110				◆	◆
ST200S	240Vac	8VA	8VA	◆	◆				90 to 110					
ST205S	240Vac	8VA	8VA	◆	◆				90 to 110	◆				
ST220S	240Vac	8VA	8VA	◆	◆				90 to 110					◆
ST260S	240Vac	20VA	8VA	◆	◆				90 to 110				◆	
ST265S	240Vac	20VA	8VA	◆	◆				90 to 110	◆			◆	
ST280S	240Vac	20VA	8VA	◆	◆				90 to 110				◆	◆
SM100S	120Vac	8VA	8VA			◆	◆		90 to 110					
SM160S	120Vac	20VA	8VA			◆	◆		90 to 110				◆	
SM200S	240Vac	8VA	8VA			◆	◆		90 to 110					
SM260S	240Vac	20VA	8VA			◆	◆		90 to 110				◆	

# L Series Actuator



**140 in.lb. (16 Nm) torque**



### PRIMARY USES FOR THESE ACTUATORS

- ◆ small size air handler dampers
- ◆ zone dampers
- ◆ 1/4 turn valves

These quarter turn actuators may be directly coupled to either a 3/4 inch round or 5/8 inch square jack shaft or remotely mounted using an adaptor kit. All actuators are bi-directional. Enerdrive actuators are also bi-directional under fail safe conditions. The stroke may be limited to less than 90° mechanically in digital models (with SLD sold separately), and electronically in Multi Signal models.

## GENERAL SPECIFICATIONS

<b>Power Supply:</b>	24Vac/30Vdc, 120Vac/240Vac or 24Vac/30Vdc/120Vac/240Vac Depending upon the Model
<b>Power Consumption:</b>	Peak at Start-up: 5VA to 30VA at 26Vac Depending upon the Model 8VA to 35VA at Line Voltage Depending upon the Model Operating at Full Load: 5VA to 8VA at 26Vac Depending upon the Model 8VA to 10VA at Line Voltage Depending upon the Model
<b>Wire Size:</b>	18 AWG (0.8 mm <sup>2</sup> ) Minimum
<b>Electrical Connections:</b>	Two 7/8 in. (22.2 mm) Knock Outs, Screw Terminals
<b>Control Signals:</b>	<b>Digital (LT):</b> 2 Wire or 3 Wire 2 Position and/or 3 Wire or 4 Wire 3 Point Floating Depending upon the Model <b>Multi Signal (LM):</b> <b>ANALOG:</b> A) 2-10Vdc; or B) May be Externally Wired with a 500 Ohm Resistor which is Supplied for 4-20mA, Zero & Span Adjustable <b>PULSE WIDTH MODULATION:</b> Time Base of 0.1 to 5 sec/20mS Resolution or 0.1 - 25 sec/100mS Resolution Selected by 30VA Dip Switch Position SWITCH 24Vac: Triac or Dry Contact, 40mA Max. Switching Current SWITCH COMMON: NPN Transistor, SCR, Triac or Dry Contact 75mA Max. Switching Current <b>DIGITAL:</b> 3 Wire 2 Position or 4 Wire 3 Point Floating
<b>Torque:</b>	<b>140 in.lb. (16 Nm) at Rated Voltage</b>
<b>Direction &amp; Time of Rotation:</b>	Reversible, 60 to 85 sec, 0-140 in.lb. (0-16 Nm)
<b>Ambient Temperature:</b>	0°F to +122°F (-18°C to +50°C)
<b>Feedback Potentiometer:</b>	<b>In Digital (LTXX5):</b> Voltage (0 to 12Vdc max) <b>In Multi Signal (LM):</b> 4-20mA Output (May be wired for a 2-10Vdc signal)
<b>Fail Safe (Enerdrive) Rating:</b>	<b>Models Ending in 60, 65 or 80:</b> 140 in.lb. (16 Nm)
<b>Enerdrive Response Time:</b>	60 to 85 sec Closure Through 90°, 0-140 in.lb. (0-16 Nm)
<b>Auxiliary Switches:</b>	<b>Models Ending in 20 or 80:</b> 2 Mechanical Switches, Fixed at 10° & 80°
<b>Auxiliary Switch Rating:</b>	5 Amp Resistive, 250Vac
<b>Electronic Enclosure:</b>	Flammability rating UL94-5V <b>Option W:</b> IP65 equivalent to Nema type 4 enclosure with special protection against chemicals

Spec Sheet Available on Our Website

Actuator Models	Power			Control Signals					Time in sec Thru 90° Arc	Actuator Features				
	Nom. Supply	Consumption		Digital		Multi Signal				Feed Back	Auto Stroke	Zero & Span	Fail Safe (Enerdrive)	2 Mech. Aux. Switches
		Start Up	Full Load	2 POS	3 PT FLT	2-10 Vdc	4-20 mA	PWM						
<i>for low voltage applications</i>														
LT000	24Vac 30Vdc	5VA	5VA	◆	◆				60 to 85					
LT005	24Vac 30Vdc	5VA	5VA	◆	◆				60 to 85	◆				
LT020	24Vac 30Vdc	5VA	5VA	◆	◆				60 to 85					◆
LT060	24Vac 30Vdc	30VA	5VA	◆	◆				60 to 85				◆	
LT065	24Vac 30Vdc	30VA	5VA	◆	◆				60 to 85	◆			◆	
LT080	24Vac 30Vdc	30VA	5VA	◆	◆				60 to 85				◆	◆
LM000	24Vac 30Vdc	8VA	8VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆		
LM020	24Vac 30Vdc	8VA	8VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆		◆
LM060	24Vac 30Vdc	30VA	8VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆	◆	
LM080	24Vac 30Vdc	30VA	8VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆	◆	◆
<i>for line voltage applications</i>														
LT300	120Vac 240Vac	8VA	8VA	◆	◆				60 to 85					
LT305	120Vac 240Vac	8VA	8VA	◆	◆				60 to 85	◆				
LT320	120Vac 240Vac	8VA	8VA	◆	◆				60 to 85					◆
LT360	120Vac 240Vac	30VA	8VA	◆	◆				60 to 85				◆	
LT365	120Vac 240Vac	30VA	8VA	◆	◆				60 to 85	◆			◆	
LT380	120Vac 240Vac	30VA	8VA	◆	◆				60 to 85				◆	◆
LM300	24Vac 30Vdc 120Vac 240Vac	10VA	10VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆		
LM320	24Vac 30Vdc 120Vac 240Vac	10VA	10VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆		◆
LM360	24Vac 30Vdc 120Vac 240Vac	30VA	10VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆	◆	
LM380	24Vac 30Vdc 120Vac 240Vac	30VA	10VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆	◆	◆

## T Series Actuator (low voltage)



**180 in.lb. (20 Nm) torque**



### PRIMARY USES FOR THESE ACTUATORS

- ◆ medium size air handler dampers
- ◆ 1/4 turn valves

These quarter turn actuators may be directly coupled to either a 3/4 inch round or 5/8 inch square jack shaft or remotely mounted using an adaptor kit. All actuators are bi-directional. Enerdrive actuators are also bi-directional under fail safe conditions. The stroke may be limited to less than 90° mechanically in digital models (with SLD sold separately) and electronically in Multi Signal models.

## GENERAL SPECIFICATIONS

<b>Power Supply:</b>	24Vac/30Vdc
<b>Power Consumption:</b>	Peak at Start-up: 8VA to 40VA at 26Vac Depending upon the Model Operating at Full Load: 8VA to 15VA at 26Vac Depending upon the Model
<b>Wire Size:</b>	18 AWG (0.8 mm <sup>2</sup> ) Minimum
<b>Electrical Connections:</b>	Two 7/8 in. (22.2 mm) Knock Outs, Screw Terminals
<b>Control Signals:</b>	<p><b>Digital (TT):</b> 2 Wire or 3 Wire 2 Position and/or 3 Wire or 4 Wire 3 Point Floating Depending upon the Model</p> <p><b>Multi Signal (TM):</b>  <b>ANALOG:</b> A) 2-10Vdc; or B) May be Externally Wired with a 500 Ohm Resistor which is Supplied for 4-20mA, Zero &amp; Span Adjustable  <b>PULSE WIDTH MODULATION:</b> Time Base of 0.1-5 Sec/20mS Resolution or 0.1-25 Sec/100mS Resolution Selected by Dip Switch Position  <b>SWITCH 24Vac:</b> Triac or Dry Contact, 40mA Max. Switching Current  <b>SWITCH COMMON:</b> NPN Transistor, SCR, Triac or Dry Contact 75mA Max. Switching Current  <b>DIGITAL:</b> 3 Wire 2 Position or 4 Wire 3 Point Floating</p>
<b>Torque:</b>	<b>180 in.lb. (20 Nm) at Rated Voltage</b>
<b>Direction &amp; Time of Rotation:</b>	Reversible, 40 to 50 sec or 60 to 85 sec, 0-180 in.lb. (0-20 Nm) Depending upon the Model
<b>Ambient Temperature:</b>	0°F to +122°F (-18°C to +50°C)
<b>Feedback Potentiometer:</b>	<p><b>In Digital (TTXX5):</b> Voltage (0-12Vdc max)</p> <p><b>In Multi Signal (TM):</b> 4-20mA Output (May be wired for a 2-10Vdc signal)</p>
<b>Fail Safe (Enerdrive) Rating:</b>	<b>Models Ending in 60, 65, 80, 60N or 80N:</b> 180 in.lb. (20 Nm)
<b>Enerdrive Response Time:</b>	60 to 85 sec Closure Through 90°, 0-180 in.lb. (0-20 Nm)
<b>Auxiliary Switches:</b>	<b>Models Ending in 20, 80, 20N, or 80N:</b> 2 Mechanical Switches, Fixed at 10° & 80°
<b>Auxiliary Switch Rating:</b>	5 Amp Resistive, 250Vac
<b>Electronic Enclosure:</b>	Flammability rating UL94-5V <b>Option W:</b> IP65 equivalent to Nema type 4 enclosure with special protection against chemicals

Spec Sheet Available on Our Website

Actuator Models	Power			Control Signals					Time in sec Thru 90° Arc	Actuator Features				
	Nom. Supply	Consumption		Digital		Multi Signal				Feed Back	Auto Stroke	Zero & Span	Fail Safe (Enerdrive)	2 Mech. Aux. Switches
		Start Up	Full Load	2 POS	3 PT FLT	2-10 Vdc	4-20 mA	PWM						
<i>for low voltage applications</i>														
TT000	24Vac 30Vdc	8VA	8VA	◆	◆				60 to 85					
TT005	24Vac 30Vdc	8VA	8VA	◆	◆				60 to 85	◆				
TT020	24Vac 30Vdc	8VA	8VA	◆	◆				60 to 85					◆
TT060	24Vac 30Vdc	24VA	8VA	◆	◆				60 to 85				◆	
TT065	24Vac 30Vdc	24VA	8VA	◆	◆				60 to 85	◆			◆	
TT080	24Vac 3Vdc	24VA	8VA	◆	◆				60 to 85				◆	◆
TM000	24Vac 30Vdc	8VA	8VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆		
TM020	24Vac 30Vdc	8VA	8VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆		◆
TM060	24Vac 30Vdc	30VA	8VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆	◆	
TM080	24Vac 30Vdc	30VA	8VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆	◆	◆
TM000N	24Vac 30Vdc	15VA	15VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆		
TM020N	24Vac 30Vdc	15VA	15VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆		◆
TM060N	24Vac 30Vdc	40VA	15VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆	◆	
TM080N	24Vac 30Vdc	40VA	15VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆	◆	◆

Note: All actuators are powered by brush motors except those ending with the letter “N”

## T Series Actuator (line voltage)



**180 in.lb. (20 Nm) torque**



### PRIMARY USES FOR THESE ACTUATORS

- ◆ medium size air handler dampers
- ◆ 1/4 turn valves

These quarter turn actuators may be directly coupled to either a 3/4 inch round or 5/8 inch square jack shaft or remotely mounted using an adaptor kit. All actuators are bi-directional. Enerdrive actuators are also bi-directional under fail safe conditions. The stroke may be limited to less than 90° mechanically in digital models (with SLD sold separately) and electronically in Multi Signal models.

## GENERAL SPECIFICATIONS

<b>Power Supply:</b>	24Vac, 30Vdc, 120Vac, and/or 240Vac Depending upon the Model
<b>Power Consumption:</b>	Peak at Start-up: 10VA to 45VA at Line Voltage Depending upon the Model Operating at Full Load: 10VA to 20VA at Line Voltage Depending upon the Model
<b>Wire Size:</b>	18 AWG (0.8 mm <sup>2</sup> ) Minimum
<b>Electrical Connections:</b>	Two 7/8 in. (22.2 mm) Knock Outs, Screw Terminals
<b>Control Signals:</b>	<p><b>Digital (TT):</b> 2 Wire or 3 Wire 2 Position and/or 4 Wire 3 Point Floating Depending upon the Model</p> <p><b>Multi Signal (TM):</b>  <b>ANALOG:</b> A) 2-10Vdc; or B) May be Externally Wired with a 500 Ohm Resistor which is Supplied for 4-20mA, Zero &amp; Span Adjustable  <b>PULSE WIDTH MODULATION:</b> Time Base of 0.1to 5 sec/20mS Resolution or 0.1 to 25 sec/100mS Resolution Selected by Dip Switch Position            SWITCH 24Vac: Triac or Dry Contact, 40mA Max. Switching Current            SWITCH COMMON: NPN Transistor, SCR, Triac or Dry Contact 75mA Max. Switching Current  <b>DIGITAL:</b> 3 Wire 2 Position or 4 Wire 3 Point Floating</p>
<b>Torque:</b>	<b>180 in.lb. (20 Nm) at Rated Voltage</b>
<b>Direction &amp; Time of Rotation:</b>	Reversible, 40 to 50 sec or 60 to 85 sec, 0-180 in.lb. (0-20 Nm) Depending upon the Model
<b>Ambient Temperature:</b>	0°F to +122°F (-18°C to +50°C)
<b>Feedback Potentiometer:</b>	<p><b>In Digital (TTXX5):</b> Voltage (0-12Vdc max)</p> <p><b>In Multi Signal (TM):</b> 4-20mA Output (May be wired for a 2-10Vdc signal)</p>
<b>Fail Safe (Enerdrive) Rating:</b>	<b>Models Ending in 60, 65, 80 or 60N:</b> 180 in.lb. (20 Nm)
<b>Enerdrive Response Time:</b>	60 to 85 sec Closure Through 90°, 0-180 in.lb. (0-20 Nm)
<b>Auxiliary Switches:</b>	<b>Models Ending in 20, 80 or 20N:</b> 2 Mechanical Switches, Fixed at 10° & 80°
<b>Auxiliary Switch Rating:</b>	5 Amp Resistive, 250Vac
<b>Electronic Enclosure:</b>	Flammability rating UL94-5V <b>Option W:</b> IP65 equivalent to Nema type 4 enclosure with special protection against chemicals

Spec Sheet Available on Our Website

Actuator Models	Power			Control Signals					Time in sec Thru 90° Arc	Actuator Features				
	Nom. Supply	Consumption		Digital		Multi Signal				Feed Back	Auto Stroke	Zero & Span	Fail Safe (Enerdrive)	2 Mech. Aux. Switches
		Start Up	Full Load	2 POS	3 PT FLT	2-10 Vdc	4-20 mA	PWM						
<i>for line voltage applications</i>														
TT300	120Vac 240Vac	10VA	10VA	◆	◆				60 to 85					
TT305	120Vac 240Vac	10VA	10VA	◆	◆				60 to 85	◆				
TT320	120Vac 240Vac	10VA	10VA	◆	◆				60 to 85					◆
TT360	120Vac 240Vac	30VA	10VA	◆	◆				60 to 85				◆	
TT365	120Vac 240Vac	30VA	10VA	◆	◆				60 to 85	◆			◆	
TT380	120Vac 240Vac	30VA	10VA	◆	◆				60 to 85				◆	◆
TM300	24Vac 30Vdc 120Vac 240Vac	10VA	10VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆		
TM320	24Vac 30Vdc 120Vac 240Vac	10VA	10VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆		◆
TM360	24Vac 30Vdc 120Vac 240Vac	30VA	10VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆	◆	
TM380	24Vac 30Vdc 120Vac 240Vac	30VA	10VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆	◆	◆
TM100N	24Vac 30Vdc 120Vac	20VA	20VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆		
TM200N	24Vac 30Vdc 240Vac	20VA	20VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆		
TM120N	24Vac 30Vdc 120Vac	20VA	20VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆		◆
TM220N	24Vac 30Vdc 240Vac	20VA	20VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆		◆
TM160N	24Vac 30Vdc 120Vac	45VA	20VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆	◆	
TM260N	24Vac 30Vdc 240Vac	45VA	20VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆	◆	
TM180N	24Vac 30Vdc 120Vac	45VA	20VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆	◆	◆
TM280N	24Vac 30Vdc 240Vac	45VA	20VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆	◆	◆

Note: All actuators are powered by brush motors except those ending with the letter "N"



# R Series Actuator (low voltage)



**360 in.lb. (40 Nm) torque**



### PRIMARY USES FOR THESE ACTUATORS

- ◆ large size air handler dampers
- ◆ 1/4 turn valves

These quarter turn actuators may be directly coupled to either a 3/4 inch round or 5/8 inch square jack shaft or remotely mounted using an adaptor kit. All actuators are bi-directional. Enerdrive actuators are also bi-directional under fail safe conditions. The stroke may be limited to less than 90° mechanically in digital models (with SLD sold separately) and electronically in Multi Signal models.

## GENERAL SPECIFICATIONS

<b>Power Supply:</b>	24Vac/30Vdc
<b>Power Consumption:</b>	Peak at Start-up: 10VA to 40VA at 26Vac Depending upon the Model Operating at Full Load: 10VA to 24VA at 26Vac Depending upon the Model
<b>Wire Size:</b>	18 AWG (0.8 mm <sup>2</sup> ) Minimum
<b>Electrical Connections:</b>	Two 7/8 in. (22.2 mm) Knock Outs, Screw Terminals
<b>Control Signals:</b>	<b>Digital (RT):</b> 2 Wire or 3 Wire 2 Position and/or 3 Wire or 4 Wire 3 Point Floating Depending upon the Model <b>Multi Signal (RM):</b> <b>ANALOG:</b> A) 2-10Vdc; or B) May be Externally Wired with a 500 Ohm Resistor which is Supplied for 4-20mA, Zero & Span Adjustable <b>PULSE WIDTH MODULATION:</b> Time Base of 0.1 to 5 sec/20mS Resolution or 0.1 to 25 sec/100mS Resolution Selected by Dip Switch Position SWITCH 24Vac: Triac or Dry Contact, 40mA Max. Switching Current SWITCH COMMON: NPN Transistor, SCR, Triac or Dry Contact 75mA Max. Switching Current <b>DIGITAL:</b> 3 Wire 2 Position or 4 Wire 3 Point Floating
<b>Torque:</b>	<b>360 in.lb. (40 Nm) at Rated Voltage</b>
<b>Direction &amp; Time of Rotation:</b>	Reversible, 40 to 50 sec or 60 to 85 sec, 0-360 in.lb. (0-40 Nm) Depending upon the Model
<b>Ambient Temperature:</b>	0°F to +122°F (-18°C to +50°C)
<b>Feedback Potentiometer:</b>	<b>In Digital (RTXX5):</b> Voltage (0-12Vdc max) <b>In Multi Signal (RM):</b> 4-20mA Output (May be wired for a 2-10Vdc signal)
<b>Fail Safe (Enerdrive) Rating:</b>	<b>Models Ending in 60, 65, 80, 60N or 80N:</b> 360 in.lb. (40 Nm)
<b>Enerdrive Response Time:</b>	60 to 85 sec closure through 90°, 0-360 in.lb. (0-40 Nm)
<b>Auxiliary Switches:</b>	<b>Models Ending in 20, 80, 20N or 80N:</b> 2 Mechanical Switches, Fixed at 10° & 80°
<b>Auxiliary Switch Rating:</b>	5 Amp Resistive, 250Vac
<b>Electronic Enclosure:</b>	Flammability rating UL94-5V <b>Option W:</b> IP65 equivalent to Nema type 4 enclosure with special protection against chemicals

Spec Sheet Available on Our Website

Actuator Models	Power			Control Signals					Time in sec Thru 90° Arc	Actuator Features				
	Nom. Supply	Consumption		Digital		Multi Signal				Feed Back	Auto Stroke	Zero & Span	Fail Safe (Enerdrive)	2 Mech. Aux. Switches
		Start Up	Full Load	2 POS	3 PT FLT	2-10 Vdc	4-20 mA	PWM						
<i>for low voltage applications</i>														
RT000	24Vac 30Vdc	10VA	10VA	◆	◆				60 to 85					
RT005	24Vac 30Vdc	10VA	10VA	◆	◆				60 to 85	◆				
RT020	24Vac 30Vdc	10VA	10VA	◆	◆				60 to 85					◆
RT060	24Vac 30Vdc	24VA	10VA	◆	◆				60 to 85				◆	
RT065	24Vac 30Vdc	24VA	10VA	◆	◆				60 to 85	◆			◆	
RT080	24Vac 30Vdc	24VA	10VA	◆	◆				60 to 85				◆	◆
RM000	24Vac 30Vdc	10VA	10VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆		
RM020	24Vac 30Vdc	10VA	10VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆		◆
RM060	24Vac 30Vdc	30VA	10VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆	◆	
RM080	24Vac 30Vdc	30VA	10VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆	◆	◆
RM000N	24Vac 30Vdc	24VA	24VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆		
RM020N	24Vac 30Vdc	24VA	24VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆		◆
RM060N	24Vac 30Vdc	40VA	24VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆	◆	
RM080N	24Vac 30Vdc	40VA	24VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆	◆	◆

Note: All actuators are powered by brush motors except those ending with the letter "N"

## R Series Actuator (line voltage)



**360 in.lb. (40 Nm) torque**



### PRIMARY USES FOR THESE ACTUATORS

- ◆ large size air handler dampers
- ◆ 1/4 turn valves

These quarter turn actuators may be directly coupled to either a 3/4 inch round or 5/8 inch square jack shaft or remotely mounted using an adaptor kit. All actuators are bi-directional. Enerdrive actuators are also bi-directional under fail safe conditions. The stroke may be limited to less than 90° mechanically in digital models (with SLD sold separately) and electronically in Multi Signal models.

## GENERAL SPECIFICATIONS

<b>Power Supply:</b>	24Vac, 30Vdc, 120Vac, and/or 240Vac Depending upon the Model
<b>Power Consumption:</b>	Peak at Start-up: 14VA to 50VA at Line Voltage Depending upon the Model Operating at Full Load: 14VA to 30VA at Line Voltage Depending upon the Model
<b>Wire Size:</b>	18 AWG (0.8 mm <sup>2</sup> ) Minimum
<b>Electrical Connections:</b>	Two 7/8 in. (22.2 mm) Knock Outs, Screw Terminals
<b>Control Signals:</b>	<p><b>Digital (RT):</b> 2 Wire or 3 Wire 2 Position and/or 4 Wire 3 Point Floating Depending upon the Model</p> <p><b>Multi Signal (RM):</b>  <b>ANALOG:</b> A) 2-10Vdc; or B) May be Externally Wired with a 500 Ohm Resistor which is Supplied for 4-20mA, Zero &amp; Span Adjustable  <b>PULSE WIDTH MODULATION:</b> Time Base of 0.1 to 5 sec/20mS Resolution or 0.1 to 25 sec/100mS Resolution Selected by Dip Switch Position  <b>SWITCH 24Vac:</b> Triac or Dry Contact, 40mA Max. Switching Current  <b>SWITCH COMMON:</b> NPN Transistor, SCR, Triac or Dry Contact 75mA Max. Switching Current  <b>DIGITAL:</b> 3 Wire 2 Position or 4 Wire 3 Point Floating</p>
<b>Torque:</b>	<b>360 in.lb. (40 Nm) at Rated Voltage</b>
<b>Direction &amp; Time of Rotation:</b>	Reversible, 40 to 50 sec or 60 to 85 sec, 0-360 in.lb. (0-40 Nm) Depending upon the Model
<b>Ambient Temperature:</b>	0°F to +122°F (-18°C to +50°C)
<b>Feedback Potentiometer:</b>	<p><b>In Digital (RTXX5):</b> Voltage (0-12Vdc max)</p> <p><b>In Multi Signal (RM):</b> 4-20mA Output (May be wired for a 2-10Vdc signal)</p>
<b>Fail Safe (Enerdrive) Rating:</b>	<b>Models Ending in 60, 65, 80 or 60N:</b> 360 in.lb. (40 Nm)
<b>Enerdrive Response Time:</b>	60 to 85 sec Closure Through 90°, 0-360 in.lb. (0-40 Nm)
<b>Auxiliary Switches:</b>	<b>Models Ending in 20, 80 or 20N:</b> 2 Mechanical Switches, Fixed at 10° & 80°
<b>Auxiliary Switch Rating:</b>	5 Amp Resistive, 250Vac
<b>Electronic Enclosure:</b>	Flammability rating UL94-5V <b>Option W:</b> IP65 equivalent to Nema type 4 enclosure with special protection against chemicals



Spec Sheet Available on Our Website

Actuator Models	Power			Control Signals					Time in sec Thru 90° Arc	Actuator Features				
	Nom. Supply	Consumption		Digital		Multi Signal				Feed Back	Auto Stroke	Zero & Span	Fail Safe (Enerdrive)	2 Mech. Aux. Switches
		Start Up	Full Load	2 POS	3 PT FLT	2-10 Vdc	4-20 mA	PWM						
<i>for line voltage applications</i>														
RT300	120Vac 240Vac	14VA	14VA	◆	◆				60 to 85					
RT305	120Vac 240Vac	14VA	14VA	◆	◆				60 to 85	◆				
RT320	120Vac 240Vac	14VA	14VA	◆	◆				60 to 85					◆
RT360	120Vac 240Vac	30VA	14VA	◆	◆				60 to 85				◆	
RT365	120Vac 240Vac	30VA	14VA	◆	◆				60 to 85	◆			◆	
RT380	120Vac 240Vac	30VA	14VA	◆	◆				60 to 85				◆	◆
RM300	24Vac 30Vdc 120Vac 240Vac	14VA	14VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆		
RM320	24Vac 30Vdc 120Vac 240Vac	14VA	14VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆		◆
RM360	24Vac 30Vdc 120Vac 240Vac	30VA	14VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆	◆	
RM380	24Vac 30Vdc 120Vac 240Vac	30VA	14VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆	◆	◆
RM100N	24Vac 30Vdc 120Vac	30VA	30VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆		
RM200N	24Vac 30Vdc 240Vac	30VA	30VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆		
RM120N	24Vac 30Vdc 120Vac	30VA	30VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆		◆
RM220N	24Vac 30Vdc 240Vac	30VA	30VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆		◆
RM160N	24Vac 30Vdc 120Vac	50VA	30VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆	◆	
RM260N	24Vac 30Vdc 240Vac	50VA	30VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆	◆	
RM180N	24Vac 30Vdc 120Vac	50VA	30VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆	◆	◆
RM280N	24Vac 30Vdc 240Vac	50VA	30VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆	◆	◆

Note: All actuators are powered by brush motors except those ending with the letter "N"

# U & W Series Actuator (low voltage)



**1800 in.lb. (200 Nm) torque  
to  
4000 in.lb. (450 Nm) torque**



### PRIMARY USES FOR THESE ACTUATORS

- ◆ fan vortex dampers
- ◆ large damper sections
- ◆ 1/4 turn valves
- ◆ inlet guide vanes

These microprocessor based, low voltage actuators are encased in a sturdy cast aluminum, weather tight enclosure. All actuators are bi-directional. The actuators with the fail safe option are also bi-directional in the event of a power failure. The stroke may be electronically limited to less than 110°. Factory installed auxiliary switches, UBAUX2, and a remote mounting kit, UBARM & ELUB, are available. Refer to Actuator Accessories.

## GENERAL SPECIFICATIONS

<b>Power Supply:</b>	24Vac/30Vdc
<b>Power Consumption:</b>	Peak at Start-up: 40VA to 100VA at 26Vac Depending upon the Model Operating at Full Load: 40VA to 100VA at 26Vac Depending upon the Model
<b>Wire Size:</b>	18 AWG (0.8 mm <sup>2</sup> ) Minimum
<b>Electrical Connections:</b>	Three 7/8 in. (22.2 mm) Knock Outs, Screw Terminals
<b>Control Signals:</b>	<b>Digital (UT &amp; WT):</b> 4 Wire 2 Position or 5 Wire 3 Point Floating <b>Multi Signal (UM &amp; WM):</b> <b>ANALOG:</b> A) 2-10Vdc; or B) May be Externally Wired with a 500 Ohm Resistor which is Supplied for 4-20mA, Zero & Span Adjustable <b>PULSE WIDTH MODULATION:</b> Time Base of 0.1 to 5 sec/20mS Resolution or 0.1 to 25 sec/100mS Resolution Selected by Dip Switch Position <b>SWITCH 24Vac:</b> Triac or Dry Contact, 40mA Max. Switching Current <b>SWITCH COMMON:</b> NPN Transistor, SCR, Triac or Dry Contact 75mA Max. Switching Current <b>DIGITAL:</b> 3 Wire 2 Position or 4 Wire 3 Point Floating
<b>Torque at Rated Voltage:</b>	<b>1800 in.lb. (200 Nm) to 4000 in.lb. (450 Nm) Depending upon the Model</b>
<b>Direction &amp; Time of Rotation:</b>	Reversible, 45 sec to 8 min Depending upon the Model
<b>Ambient Temperature:</b>	0°F to +122°F (-18°C to +50°C)
<b>Feedback Potentiometer:</b>	<b>On all Models:</b> 4-20mA Output (May be wired for a 2-10Vdc signal)
<b>Fail Safe Rating:</b>	<b>UT010, UT030, UM010 &amp; UM030:</b> 1800 in.lb. (200 Nm) & 2500 in.lb. (280 Nm) <b>WT010, WT030, WM010 &amp; WM030:</b> 3500 in.lb. (400 Nm) & 4000 in.lb. (450 Nm)
<b>Response Time Through 90°:</b>	45 sec: 0-1800 in.lb. (0-200 Nm): 4 min, 0-2500 in.lb. (0-280 Nm) 90 sec: 0-3500 in.lb. (0-400 Nm): 8 min, 0-4000 in.lb. (0-450 Nm)
<b>Battery Type:</b>	12 Volt Sealed Gel Type
<b>Battery Rating:</b>	800 mA
<b>Auxiliary Switches:</b>	<b>Models Ending in 20 or 30:</b> 2 Mechanical Switches, Fixed at 10° & 80°
<b>Auxiliary Switch Rating:</b>	5 Amp Resistive, 250Vac
<b>Electronic Enclosure:</b>	Cast Aluminum, IP56 equivalent to Nema type 4 enclosure



Spec Sheet Available on Our Website

Actuator Models	Power			Control Signals					Rotation Time Thru 90° Arc	Actuator Features				2 Mech. Aux. Switches
	Nom. Supply	Consumption		Digital		Multi Signal				Feed Back	Auto Stroke	Zero & Span	The Fail Safe Option	
		Start Up	Full Load	2 POS	3 PT FLT	2-10 Vdc	4-20 mA	PWM						
<i>for applications requiring up to 1800 in.lb. (200 Nm.) torque at rated voltage</i>														
UT000	24Vac 30Vdc	100VA	100VA	◆	◆				45 sec	◆	◆			
UT010	24Vac 30Vdc	100VA	100VA	◆	◆				45 sec	◆	◆		◆	
UT020	24Vac 30Vdc	100VA	100VA	◆	◆				45 sec	◆	◆			◆
UT030	24Vac 30Vdc	100VA	100VA	◆	◆				45 sec	◆	◆		◆	◆
<i>for applications requiring up to 2500 in.lb. (280 Nm.) torque at rated voltage</i>														
UM000	24Vac 30Vdc	40VA	40VA	◆	◆	◆	◆	◆	4 min	◆	◆	◆		
UM010	24Vac 30Vdc	40VA	40VA	◆	◆	◆	◆	◆	4 min	◆	◆	◆	◆	
UM020	24Vac 30Vdc	40VA	40VA	◆	◆	◆	◆	◆	4 min	◆	◆	◆		◆
UM030	24Vac 30Vdc	40VA	40VA	◆	◆	◆	◆	◆	4 min	◆	◆	◆	◆	◆
<i>for applications requiring up to 3500 in.lb. (400 Nm.) torque at rated voltage</i>														
WT000	24Vac 30Vdc	100VA	100VA	◆	◆				90 sec	◆	◆			
WT010	24Vac 30Vdc	100VA	100VA	◆	◆				90 sec	◆	◆		◆	
WT020	24Vac 30Vdc	100VA	100VA	◆	◆				90 sec	◆	◆			◆
WT030	24Vac 30Vdc	100VA	100VA	◆	◆				90 sec	◆	◆		◆	◆
<i>for applications requiring up to 4000 in.lb. (450 Nm.) torque at rated voltage</i>														
WM000	24Vac 30Vdc	40VA	40VA	◆	◆	◆	◆	◆	8 min	◆	◆	◆		
WM010	24Vac 30Vdc	40VA	40VA	◆	◆	◆	◆	◆	8 min	◆	◆	◆	◆	
WM020	24Vac 30Vdc	40VA	40VA	◆	◆	◆	◆	◆	8 min	◆	◆	◆		◆
WM030	24Vac 30Vdc	40VA	40VA	◆	◆	◆	◆	◆	8 min	◆	◆	◆	◆	◆

## U Series Actuator (line voltage)



**2500 in.lb. (280 Nm) torque**



### PRIMARY USES FOR THESE ACTUATORS

- ◆ fan vortex dampers
- ◆ large damper sections
- ◆ 1/4 turn valves
- ◆ inlet guide vanes

These microprocessor based, low voltage actuators are encased in a sturdy cast aluminum, weather tight enclosure. All actuators are bi-directional. The actuators with the fail safe option are also bi-directional in the event of a power failure. The stroke may be electronically limited to less than 110°. Factory installed auxiliary switches, UBAUX2, and a remote mounting kit, UBARM & ELUB, are available. Refer to Actuator Accessories.

## GENERAL SPECIFICATIONS

**Power Supply:** 24Vac, 30Vdc, 120Vac, and/or 240Vac Depending upon the Model

**Power Consumption:** Peak at Start-up: 40VA at Line Voltage  
Operating at Full Load: 40VA at Line Voltage

**Wire Size:** 18 AWG (0.8 mm<sup>2</sup>) Minimum

**Electrical Connections:** Three 7/8 in. (22.2 mm) Knock Outs, Screw Terminals

**Control Signals:**

**Multi Signal (UM):**

**ANALOG:** A) 2-10Vdc; or B) May be Externally Wired with a 500 Ohm Resistor which is Supplied for 4-20mA, Zero & Span Adjustable

**PULSE WIDTH MODULATION:** Time Base of 0.1 to 5 sec/20mS Resolution or 0.1 to 25 sec/100mS Resolution Selected by Dip Switch Position

**SWITCH 24Vac:** Triac or Dry Contact, 40mA Max. Switching Current

**SWITCH COMMON:** NPN Transistor, SCR, Triac or Dry Contact 75mA Max. Switching Current

**DIGITAL:** 3 Wire 2 Position or 4 Wire 3 Point Floating

**Torque at Rated Voltage:** 2500 in.lb. (280 Nm)

**Direction & Time of Rotation:** Reversible, 4 min

**Ambient Temperature:** 0°F to +122°F (-18°C to +50°C)

**Feedback Potentiometer:** In Multi Signal: 4-20mA Output (May be wired for a 2-10Vdc signal)

**Fail Safe Rating:** UM110, UM130, UM210 & UM230: 2500 in.lb. (280 Nm)

**Response Time Through 90°:** 4 min: 0-2500 in.lb. (0-280 Nm)

**Battery Type:** 12 Volt Sealed Gel Type

**Battery Rating:** 800 mA

**Auxiliary Switches:** Models Ending in 20 or 30: 2 Mechanical Switches, Fixed at 10° & 80°

**Auxiliary Switch Rating:** 5 Amp Resistive, 250Vac

**Electronic Enclosure:** Cast Aluminum, IP56 equivalent to Nema type 4 enclosure



Spec Sheet Available on Our Website

Actuator Models	Power			Control Signals					Rotation Time Thru 90° Arc	Actuator Features				2 Mech. Aux. Switches
	Nom. Supply	Consumption		Digital		Multi Signal				Feed Back	Auto Stroke	Zero & Span	The Fail Safe Option	
		Start Up	Full Load	2 POS	3 PT FLT	2-10 Vdc	4-20 mA	PWM						
<i>for applications requiring up to 2500 in.lb. (280 Nm.) torque at rated voltage</i>														
UM100	24Vac 30Vdc 120Vac	40VA	40VA	◆	◆	◆	◆	◆	4 min	◆	◆	◆		
UM200	24Vac 30Vdc 240Vac	40VA	40VA	◆	◆	◆	◆	◆	4 min	◆	◆	◆		
UM110	24Vac 30Vdc 120Vac	40VA	40VA	◆	◆	◆	◆	◆	4 min	◆	◆	◆	◆	
UM210	24Vac 30Vdc 240Vac	40VA	40VA	◆	◆	◆	◆	◆	4 min	◆	◆	◆	◆	
UM120	24Vac 30Vdc 120Vac	40VA	40VA	◆	◆	◆	◆	◆	4 min	◆	◆	◆		◆
UM220	24Vac 30Vdc 240Vac	40VA	40VA	◆	◆	◆	◆	◆	4 min	◆	◆	◆		◆
UM130	24Vac 30Vdc 120Vac	40VA	40VA	◆	◆	◆	◆	◆	4 min	◆	◆	◆	◆	◆
UM230	24Vac 30Vdc 240Vac	40VA	40VA	◆	◆	◆	◆	◆	4 min	◆	◆	◆	◆	◆

# W Series Actuator (line voltage)



**4000 in.lb. (450 Nm) torque**



### PRIMARY USES FOR THESE ACTUATORS

- ◆ fan vortex dampers
- ◆ large damper sections
- ◆ 1/4 turn valves
- ◆ inlet guide vanes

These microprocessor based, low voltage actuators are encased in a sturdy cast aluminum, weather tight enclosure. All actuators are bi-directional. The actuators with the fail safe option are also bi-directional in the event of a power failure. The stroke may be electronically limited to less than 110°. Factory installed auxiliary switches, UBAUX2, and a remote mounting kit, UBARM & ELUB, are available. Refer to Actuator Accessories.

## GENERAL SPECIFICATIONS

**Power Supply:** 24Vac, 30Vdc, 120Vac, and/or 240Vac Depending upon the Model

**Power Consumption:** Peak at Start-up: 40VA at Line Voltage  
Operating at Full Load: 40VA at Line Voltage

**Wire Size:** 18 AWG (0.8 mm<sup>2</sup>) Minimum

**Electrical Connections:** Three 7/8 in. (22.2 mm) Knock Outs, Screw Terminals

### Control Signals:

#### Multi Signal (WM):

**ANALOG:** A) 2-10Vdc; or B) May be Externally Wired with a 500 Ohm Resistor which is Supplied for 4-20mA, Zero & Span Adjustable

**PULSE WIDTH MODULATION:** Time Base of 0.1-5 sec/20mS Resolution or 0.1-25 sec/100mS Resolution Selected by Dip Switch Position

**SWITCH 24Vac:** Triac or Dry Contact, 40mA Max. Switching Current

**SWITCH COMMON:** NPN Transistor, SCR, Triac or Dry Contact 75mA Max. Switching Current

**DIGITAL:** 3 Wire 2 Position or 4 Wire 3 Point Floating

**Torque at Rated Voltage:** 4000 in.lb. (450 Nm)

**Direction & Time of Rotation:** Reversible, 8 min

**Ambient Temperature:** 0°F to +122°F (-18°C to +50°C)

**Feedback Potentiometer:** In Multi Signal: 4-20mA Output (May be wired for a 2-10Vdc signal)

**Fail Safe Rating:** WM110, WM130, WM210 & WM230: 4000 in.lb. (450 Nm)

**Response Time Through 90°:** 8 min: 0-4000 in.lb. (0-450 Nm)

**Battery Type:** 12 Volt Sealed Gel Type

**Battery Rating:** 800 mA

**Auxiliary Switches:** Models Ending in 20 or 30: 2 Mechanical Switches, Fixed at 10° & 80°

**Auxiliary Switch Rating:** 5 Amp Resistive, 250Vac

**Electronic Enclosure:** Cast Aluminum, IP56 equivalent to Nema type 4 enclosure

Spec Sheet Available on Our Website

Actuator Models	Power			Control Signals					Rotation Time Thru 90° Arc	Actuator Features				2 Mech. Aux. Switches
	Nom. Supply	Consumption		Digital		Multi Signal				Feed Back	Auto Stroke	Zero & Span	The Fail Safe Option	
		Start Up	Full Load	2 POS	3 PT FLT	2-10 Vdc	4-20 mA	PWM						
<i>for applications requiring up to 4000 in.lb. (450 Nm.) torque at rated voltage</i>														
<b>WM100</b>	24Vac 30Vdc 120Vac	40VA	40VA	◆	◆	◆	◆	◆	8 min	◆	◆	◆		
<b>WM200</b>	24Vac 30Vdc 240Vac	40VA	40VA	◆	◆	◆	◆	◆	8 min	◆	◆	◆		
<b>WM110</b>	24Vac 30Vdc 120Vac	40VA	40VA	◆	◆	◆	◆	◆	8 min	◆	◆	◆	◆	
<b>WM210</b>	24Vac 30Vdc 240Vac	40VA	40VA	◆	◆	◆	◆	◆	8 min	◆	◆	◆	◆	
<b>WM120</b>	24Vac 30Vdc 120Vac	40VA	40VA	◆	◆	◆	◆	◆	8 min	◆	◆	◆		◆
<b>WM220</b>	24Vac 30Vdc 240Vac	40VA	40VA	◆	◆	◆	◆	◆	8 min	◆	◆	◆		◆
<b>WM130</b>	24Vac 30Vdc 120Vac	40VA	40VA	◆	◆	◆	◆	◆	8 min	◆	◆	◆	◆	◆
<b>WM230</b>	24Vac 30Vdc 240Vac	40VA	40VA	◆	◆	◆	◆	◆	8 min	◆	◆	◆	◆	◆



## FAST ACTUATOR 1.5 - 8 SEC.

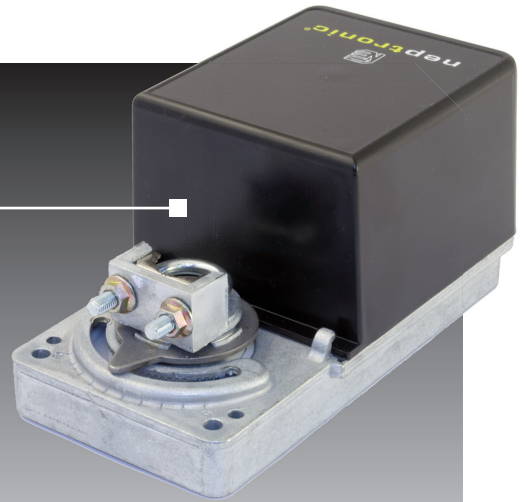
For applications up to 50 in.lb. (5.6 Nm)

### APPLICATIONS

- fume hood control
- stairwell pressurization
- air handler dampers

### Performance Examples:

Time ⇒ 1.5 sec.    Rotation ⇒ 0-90°    Torque ⇒ 25 in.lb. (2.8Nm)  
 Time ⇒ 3.5 sec.    Rotation ⇒ 0-90°    Torque ⇒ 35 in.lb. (4Nm)



## FAST ACTUATOR 15 - 30 SEC.

For applications up to 240 in.lb. (27 Nm)

### APPLICATIONS

- fume hood control
- stairwell pressurization
- air handler dampers

### Performance Examples:

Time ⇒ 20 sec.    Rotation ⇒ 0-90°    Torque ⇒ 240 in.lb. (27Nm)



# Fast Actuators (25 to 50 in.lb. torque)



**Rotational speeds from 1.5 to 8 sec  
for applications up to 50 in.lb. (5.6 Nm)**

### PRIMARY USES FOR THESE ACTUATORS

- ◆ fume hood control
- ◆ stairwell pressurization
- ◆ air handler dampers

These microprocessor based actuators are designed for critical for environments where the speed of the actuator is essential. All actuators are bi-directional. Enerdrive actuators are also bi-directional under fail safe conditions. The stroke may be limited to less than 90° electronically.

## GENERAL SPECIFICATIONS

<b>Power Supply:</b>	24Vac/30Vdc
<b>Power Consumption:</b>	Peak at Start-up: 15VA to 24VA at 26Vac Depending upon the Model Operating at Full Load: 15VA to 24VA at 26Vac Depending upon the Model
<b>Wire Size:</b>	18 AWG (0.8 mm <sup>2</sup> ) Minimum
<b>Electrical Connections:</b>	Two 13/16 in. (20.6mm) Knock Outs, Screw Terminals
<b>Control Signals:</b>	<b>Digital (BT):</b> 2 Wire or 3 Wire 2 Position and/or 3 Wire or 4 Wire 3 Point Floating Depending upon the Model <b>Multi Signal:</b> <b>ANALOG:</b> A) 2-10Vdc; or B) May be Externally Wired with a 500 Ohm Resistor which is Supplied for 4-20mA, Zero & Span Adjustable <b>PULSE WIDTH MODULATION:</b> Time Base of 0.1-5 sec/20mS Resolution or 0.1-25 sec/100mS Resolution Selected by Dip Switch Position <b>SWITCH 24Vac:</b> Triac or Dry Contact, 40mA Max. Switching Current <b>SWITCH COMMON:</b> NPN Transistor, SCR, Triac or Dry Contact 75mA Max. Switching Current <b>DIGITAL:</b> 3 Wire 2 Position or 4 Wire 3 Point Floating
<b>Torque at Rated Voltage:</b>	<b>25 in.lb. (2.8 Nm) to 50 in.lb. (5.6 Nm) at Rated Voltage Depending upon the Model</b>
<b>Direction &amp; Time of Rotation:</b>	Reversible, 1.5 to 8 Sec Depending upon the Model
<b>Ambient Temperature:</b>	0°F to +122°F (-18°C to +50°C)
<b>Feedback Potentiometer:</b>	<b>In Multi Signal (BM):</b> 4-20mA Output (May be wired for a 2-10Vdc signal)
<b>Fail Safe (Enerdrive) Rating:</b>	<b>Models Ending in 60, 80 (F, FF, FN, FFN):</b> 25 to 50 in.lb. (2.8 to 5.6Nm) Depending upon the Model
<b>Enerdrive Response Time:</b>	1.5 to 20 sec Closure Through 90°, Depending upon the Model
<b>Auxiliary Switches:</b>	<b>Models Ending in 20 or 80 (F, FF, FN, FFN):</b> 2 Mechanical Switches, Fixed at 10° & 80°
<b>Auxiliary Switch Rating:</b>	5 Amp Resistive, 250Vac
<b>Electronic Enclosure:</b>	Flammability rating UL94-5V

Actuator Models	Power			Control Signals					Time in sec Thru 90° Arc	Actuator Features				
	Nom. Supply	Consumption		Digital		Multi Signal				Feed Back	Auto Stroke	Zero & Span	Fail Safe (Enerdrive)	2 Mech. Aux. Switches
		Start Up	Full Load	2 POS	3 PT FLT	2-10 Vdc	4-20 mA	PWM						
<b>25 in.lb. (2.8 Nm.) torque at rated voltage</b>														
BM000FF	24Vac 30Vdc	15VA	15VA	◆	◆	◆	◆	◆	1.5 to 2.5	◆	◆	◆		
BM020FF	24Vac 30Vdc	15VA	15VA	◆	◆	◆	◆	◆	1.5 to 2.5	◆	◆	◆		◆
BM060FF	24Vac 30Vdc	24VA	15VA	◆	◆	◆	◆	◆	1.5 to 2.5	◆	◆	◆	◆	
BM080FF	24Vac 30Vdc	24VA	15VA	◆	◆	◆	◆	◆	1.5 to 2.5	◆	◆	◆	◆	◆
<b>35 in.lb. (4 Nm.) torque at rated voltage</b>														
BM000F	24Vac 30Vdc	15VA	15VA	◆	◆	◆	◆	◆	3.5 to 4.5	◆	◆	◆		
BM020F	24Vac 30Vdc	15VA	15VA	◆	◆	◆	◆	◆	3.5 to 4.5	◆	◆	◆		◆
BM060F	24Vac 30Vdc	24VA	15VA	◆	◆	◆	◆	◆	3.5 to 4.5	◆	◆	◆	◆	
BM080F	24Vac 30Vdc	24VA	15VA	◆	◆	◆	◆	◆	3.5 to 4.5	◆	◆	◆	◆	◆
BM000FFN	24Vac 30Vdc	24VA	24VA	◆	◆	◆	◆	◆	3	◆	◆	◆		
BM020FFN	24Vac 30Vdc	24VA	24VA	◆	◆	◆	◆	◆	3	◆	◆	◆		◆
BM060FFN	24Vac 30Vdc	24VA	24VA	◆	◆	◆	◆	◆	3	◆	◆	◆	◆	
<b>50 in.lb. (5.6 Nm.) torque at rated voltage</b>														
BT000F	24Vac 30Vdc	15VA	15VA	◆	◆				6 to 8		◆			
BT020F	24Vac 30Vdc	15VA	15VA	◆	◆				6 to 8		◆			◆
BT060F	24Vac 30Vdc	24VA	15VA	◆	◆				6 to 8		◆		◆	
BT080F	24Vac 30Vdc	24VA	15VA	◆	◆				6 to 8		◆		◆	◆
BM000FN	24Vac 30Vdc	24VA	24VA	◆	◆	◆	◆	◆	6	◆	◆	◆		
BM020FN	24Vac 30Vdc	24VA	24VA	◆	◆	◆	◆	◆	6	◆	◆	◆		◆
BM060FN	24Vac 30Vdc	24VA	24VA	◆	◆	◆	◆	◆	6	◆	◆	◆	◆	

Note: All actuators are powered by brush motors except those ending with the letter "N"



# Fast Actuators (120 in.lb. torque)



**Rotational speeds from 15 to 30 sec  
for applications up to 120 in.lb. (13.5 Nm)**



### PRIMARY USES FOR THESE ACTUATORS

- ◆ fume hood control
- ◆ stairwell pressurization
- ◆ air handler dampers

These microprocessor based actuators are designed for critical environments where the speed of the actuator is essential. All actuators are bi-directional. Enerdrive actuators are also bi-directional under fail safe conditions. The stroke may be limited to less than 90° electronically.

## GENERAL SPECIFICATIONS

<b>Power Supply:</b>	24Vac, 30Vdc, 120Vac, and/or 240Vac Depending upon the Model
<b>Power Consumption:</b>	Peak at Start-up: 10VA to 50VA at 26Vac Depending upon the Model Operating at Full Load: 10VA to 30VA at 26Vac Depending upon the Model
<b>Wire Size:</b>	18 AWG (0.8 mm <sup>2</sup> ) Minimum
<b>Electrical Connections:</b>	Two 7/8 in. (22.2mm) or One 5/8 in. (15.9mm) and One 7/8in. (22.2mm) Knock Outs, Screw Terminals

<b>Control Signals:</b>	<b>Digital (TT):</b> 2 Wire or 3 Wire 2 Position and/or 3 Wire or 4 Wire 3 Point Floating Depending upon the Model <b>Multi Signal:</b> <b>ANALOG:</b> A) 2-10Vdc; or B) May be Externally Wired with a 500 Ohm Resistor which is Supplied for 4-20mA, Zero & Span Adjustable <b>PULSE WIDTH MODULATION:</b> Time Base of 0.1-5 sec/20mS Resolution or 0.1-25 sec/100mS Resolution Selected by Dip Switch Position <b>SWITCH 24Vac:</b> Triac or Dry Contact, 40mA Max. Switching Current <b>SWITCH COMMON:</b> NPN Transistor, SCR, Triac or Dry Contact 75mA Max. Switching Current <b>DIGITAL:</b> 3 Wire 2 Position or 4 Wire 3 Point Floating
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<b>Torque at Rated Voltage:</b>	<b>120 in.lb. (13.5 Nm) at Rated Voltage</b>
<b>Direction &amp; Time of Rotation:</b>	Reversible, 15 to 30 sec Depending upon the Model

<b>Ambient Temperature:</b>	0°F to +122°F (-18°C to +50°C)
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<b>Feedback Potentiometer:</b>	<b>In Multi Signal (TM):</b> 4-20mA Output (May be wired for a 2-10Vdc signal)
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<b>Fail Safe (Enerdrive) Rating:</b>	<b>Models Ending in 60, 80 (F, FN):</b> 120 in.lb. (13.5 Nm)
<b>Enerdrive Response Time:</b>	15 to 30 sec Closure Through 90°, Depending upon the Model

<b>Auxiliary Switches:</b>	<b>Models Ending in 20, 80 (F, FN):</b> 2 Mechanical Switches, Fixed at 10° & 80°
<b>Auxiliary Switch Rating:</b>	5 Amp Resistive, 250Vac

<b>Electronic Enclosure:</b>	Flammability rating UL94-5V
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Spec Sheet Available on Our Website

Actuator Models	Power			Control Signals					Time in sec Thru 90° Arc	Actuator Features				
	Nom. Supply	Consumption		Digital		Multi Signal				Feed Back	Auto Stroke	Zero & Span	Fail Safe (Enerdrive)	2 Mech. Aux. Switches
		Start Up	Full Load	2 POS	3 PT FLT	2-10 Vdc	4-20 mA	PWM						
<i>120 in.lb. (13.5 Nm.) torque at rated voltage</i>														
TT000F	24Vac 30Vdc	10VA	10VA	◆	◆				20 to 30		◆			
TT020F	24Vac 30Vdc	10VA	10VA	◆	◆				20 to 30		◆			◆
TT060F	24Vac 30Vdc	24VA	10VA	◆	◆				20 to 30		◆		◆	
TT080F	24Vac 30Vdc	24VA	10VA	◆	◆				20 to 30		◆		◆	◆
TM000FN	24Vac 30Vdc	25VA	25VA	◆	◆	◆	◆	◆	15 to 20	◆	◆	◆		
TM020FN	24Vac 30Vdc	25VA	25VA	◆	◆	◆	◆	◆	15 to 20	◆	◆	◆		◆
TM060FN	24Vac 30Vdc	40VA	25VA	◆	◆	◆	◆	◆	15 to 20	◆	◆	◆	◆	
TM080FN	24Vac 30Vdc	40VA	25VA	◆	◆	◆	◆	◆	15 to 20	◆	◆	◆	◆	◆
TM100FN	24Vac 30Vdc 120Vac	30VA	30VA	◆	◆	◆	◆	◆	20	◆	◆	◆		
TM200FN	24Vac 30Vdc 240Vac	30VA	30VA	◆	◆	◆	◆	◆	20	◆	◆	◆		
TM120FN	24Vac 30Vdc 120Vac	30VA	30VA	◆	◆	◆	◆	◆	20	◆	◆	◆		◆
TM220FN	24Vac 30Vdc 240Vac	30VA	30VA	◆	◆	◆	◆	◆	20	◆	◆	◆		◆
TM160FN	24Vac 30Vdc 120Vac	50VA	30VA	◆	◆	◆	◆	◆	20	◆	◆	◆	◆	
TM260FN	24Vac 30Vdc 240Vac	50VA	30VA	◆	◆	◆	◆	◆	20	◆	◆	◆	◆	
TM180FN	24Vac 30Vdc 120Vac	50VA	30VA	◆	◆	◆	◆	◆	20	◆	◆	◆	◆	◆
TM280FN	24Vac 30Vdc 240Vac	50VA	30VA	◆	◆	◆	◆	◆	20	◆	◆	◆	◆	◆

**Note:** All actuators are powered by brush motors except those ending with the letter "N"

# Fast Actuators (240 in.lb. torque)



**Rotational speeds from 15 to 30 sec  
for applications up to 240 in.lb. (27 Nm)**



### PRIMARY USES FOR THESE ACTUATORS

- ◆ fume hood control
- ◆ stairwell pressurization
- ◆ air handler dampers

These microprocessor based actuators are designed for critical environments where the speed of the actuator is essential. All actuators are bi-directional. Enerdrive actuators are also bi-directional under fail safe conditions. The stroke may be limited to less than 90° electronically.

## GENERAL SPECIFICATIONS

<b>Power Supply:</b>	24Vac, 30Vdc, 120Vac, and/or 240Vac Depending upon the Model
<b>Power Consumption:</b>	Peak at Start-up: 18VA to 50VA at 26Vac Depending upon the Model Operating at Full Load: 18VA to 30VA at 26Vac Depending upon the Model
<b>Wire Size:</b>	18 AWG (0.8 mm <sup>2</sup> ) Minimum
<b>Electrical Connections:</b>	Two 7/8 in. (22.2mm) or One 5/8 in. (15.9mm) and One 7/8in. (22.2mm) Knock Outs, Screw Terminals

<b>Control Signals:</b>	<b>Digital (RT):</b> 2 Wire or 3 Wire 2 Position and/or 3 Wire or 4 Wire 3 Point Floating Depending upon the Model <b>Multi Signal:</b> <b>ANALOG:</b> A) 2-10Vdc; or B) May be Externally Wired with a 500 Ohm Resistor which is Supplied for 4-20mA, Zero & Span Adjustable <b>PULSE WIDTH MODULATION:</b> Time Base of 0.1-5 sec/20mS Resolution or 0.1-25 sec/100mS Resolution Selected by Dip Switch Position <b>SWITCH 24Vac:</b> Triac or Dry Contact, 40mA Max. Switching Current <b>SWITCH COMMON:</b> NPN Transistor, SCR, Triac or Dry Contact 75mA Max. Switching Current <b>DIGITAL:</b> 3 Wire 2 Position or 4 Wire 3 Point Floating
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<b>Torque at Rated Voltage:</b>	<b>240 in.lb. (27 Nm) at Rated Voltage</b>
<b>Direction &amp; Time of Rotation:</b>	Reversible, 15 to 30 sec Depending upon the Model

<b>Ambient Temperature:</b>	0°F to +122°F (-18°C to +50°C)
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<b>Feedback Potentiometer:</b>	<b>In Multi Signal (RM):</b> 4-20mA Output (May be wired for a 2-10Vdc signal)
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<b>Fail Safe (Enerdrive) Rating:</b>	<b>Models Ending in 60, 80 (F, FN):</b> 240 in.lb. (27Nm)
<b>Enerdrive Response Time:</b>	15 to 30 sec Closure Through 90°, Depending upon the Model

<b>Auxiliary Switches:</b>	<b>Models Ending in 20, 80 (F, FN):</b> 2 Mechanical Switches, Fixed at 10° & 80°
<b>Auxiliary Switch Rating:</b>	5 Amp Resistive, 250Vac

<b>Electronic Enclosure:</b>	Flammability rating UL94-5V
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Actuator Models	Power			Control Signals					Time in sec Thru 90° Arc	Actuator Features				
	Nom. Supply	Consumption		Digital		Multi Signal				Feed Back	Auto Stroke	Zero & Span	Fail Safe (Enerdrive)	2 Mech. Aux. Switches
		Start Up	Full Load	2 POS	3 PT FLT	2-10 Vdc	4-20 mA	PWM						
<i>240 in.lb. (27 Nm.) torque at rated voltage</i>														
RT000F	24Vac 30Vdc	18VA	18VA	◆	◆				20 to 30		◆			
RT020F	24Vac 30Vdc	18VA	18VA	◆	◆				20 to 30		◆			◆
RT060F	24Vac 30Vdc	40VA	18VA	◆	◆				20 to 30		◆		◆	
RT080F	24Vac 30Vdc	40VA	18VA	◆	◆				20 to 30		◆		◆	◆
RM000FN	24Vac 30Vdc	25VA	25VA	◆	◆	◆	◆	◆	15 to 20	◆	◆	◆		
RM020FN	24Vac 30Vdc	25VA	25VA	◆	◆	◆	◆	◆	15 to 20	◆	◆	◆		
RM060FN	24Vac 30Vdc	40VA	25VA	◆	◆	◆	◆	◆	15 to 20	◆	◆	◆	◆	
RM080FN	24Vac 30Vdc	40VA	25VA	◆	◆	◆	◆	◆	15 to 20	◆	◆	◆	◆	◆
RM100FN	24Vac 30Vdc 120Vac	30VA	30VA	◆	◆	◆	◆	◆	20	◆	◆	◆		
RM200FN	24Vac 30Vac 240Vac	30VA	30VA	◆	◆	◆	◆	◆	20	◆	◆	◆		
RM120FN	24Vac 30Vdc 120Vac	30VA	30VA	◆	◆	◆	◆	◆	20	◆	◆	◆		◆
RM220FN	24Vac 30Vdc 240Vac	30VA	30VA	◆	◆	◆	◆	◆	20	◆	◆	◆		◆
RM160FN	24Vac 30Vdc 120Vac	50VA	30VA	◆	◆	◆	◆	◆	20	◆	◆	◆	◆	
RM260FN	24Vac 30Vdc 240Vac	50VA	30VA	◆	◆	◆	◆	◆	20	◆	◆	◆	◆	
RM180FN	24Vac 30Vdc 120Vac	50VA	30VA	◆	◆	◆	◆	◆	20	◆	◆	◆	◆	◆
RM280FN	24Vac 30Vdc 240Vac	50VA	30VA	◆	◆	◆	◆	◆	20	◆	◆	◆	◆	◆

**Note:** All actuators are powered by brush motors except those ending with the letter "N"

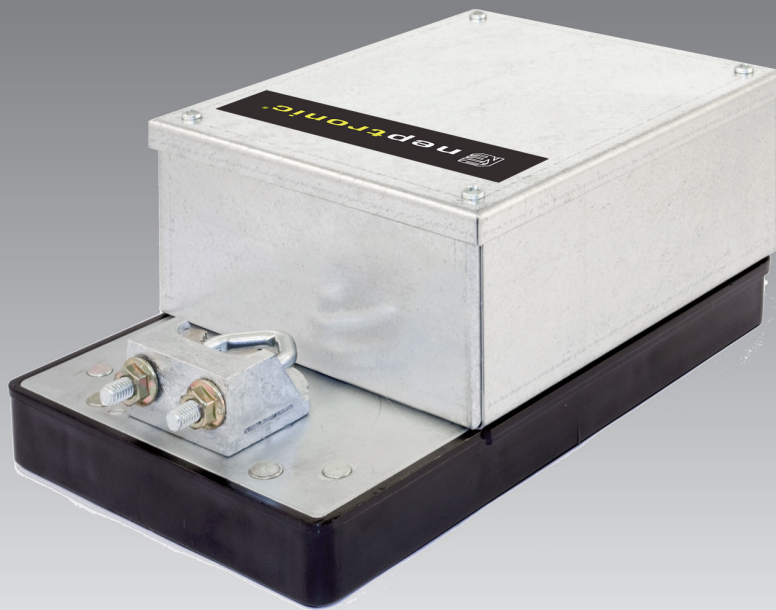


## **SMOKE DAMPER ACTUATOR**

For applications up to 90 in.lb. (11 Nm)

### **APPLICATIONS**

- designed to operate reliably in smoke control systems at 250°F (121°C)
- 2 position, with electronic fail safe
- 30 seconds open and close



# Smoke Damper Actuators



**Rotational speeds from 20 to 30 sec  
for applications up to 90 in.lb. (11 Nm)**



### PRIMARY USES FOR THESE ACTUATORS

- ◆ designed to operate reliably in smoke control systems at 250°F (121°C)
- ◆ 2 Position, with electronic fail safe
- ◆ 30 sec open and close

These actuators are designed to operate reliably in smoke control systems requiring Underwriter's Laboratories Inc, UL 555S rated at 250°F. UL 555S listing is available when tested and assembled at the damper manufacturer's factory.

## GENERAL SPECIFICATIONS

<b>Power Supply:</b>	24Vac/24Vdc, 120Vac or 240Vac Depending upon the Model
<b>Power Consumption:</b>	Running Consumption: 15VA to 24VA Depending upon the Model Holding Consumption: 5VA
<b>Wire Size:</b>	18 AWG (0.8 mm <sup>2</sup> ) Minimum
<b>Electrical Connections:</b>	Two 7/8 in. (22.2mm) or Two 13/16 in. (20.6mm) Knock Outs, Screw Terminals
<b>Control Signals:</b>	2 Wire 2 Position
<b>Torque:</b>	<b>35 in.lb. (4 Nm) to 90 in.lb. (11 Nm) at Rated Voltage Depending upon the Model</b>
<b>Direction &amp; Time of Rotation:</b>	Reversible, 20 to 30 sec
<b>Ambient Temperature:</b>	0°F to +122°F (-18°C to +50°C) * 250°F (121°C) for a limited time
<b>Fail Safe (Enerdrive) Rating:</b>	35 to 90 in.lb. (4 to 11Nm) Depending upon the Model
<b>Enerdrive Response Time:</b>	15 sec Closure Through 90°
<b>Auxiliary Switches:</b>	<b>Models Ending in 80X_ _:</b> 2 Mechanical Switches Switching Points: 5° & 85° +/-5°
<b>Auxiliary Switch Rating:</b>	5 Amp Resistive, 250Vac
<b>Electronic Enclosure:</b>	NEMA type 2/IP42





Spec Sheet Available on Our Website

Actuator Models	Power			Control Signals	Time in sec Thru 90° Arc	Actuator Features	
	Nom. Supply	Consumption		Digital		Fail Safe (Enerdrive)	2 Mech. Aux. Switches
		RUNNING	HOLDING	2 POSITION			
<i>for applications requiring up to 35 in.lb. (4 Nm.) torque at rated voltage</i>							
BT060X4	24Vac 24Vdc	15VA	5VA	◆	20 to 30	◆	
BT080X4	24Vac 24Vdc	15VA	5VA	◆	20 to 30	◆	◆
BT160X4	120Vac	15VA	5VA	◆	20 to 30	◆	
BT180X4	120Vac	15VA	5VA	◆	20 to 30	◆	◆
BT260X4	240Vac	15VA	5VA	◆	20 to 30	◆	
BT280X4	240Vac	15VA	5VA	◆	20 to 30	◆	◆
<i>for applications requiring up to 70 in.lb. (8 Nm.) torque at rated voltage</i>							
BT060X8	24Vac 24Vdc	15VA	5VA	◆	20 to 30	◆	
BT080X8	24Vac 24Vdc	15VA	5VA	◆	20 to 30	◆	◆
BT160X8	120Vac	15VA	5VA	◆	20 to 30	◆	
BT180X8	120Vac	15VA	5VA	◆	20 to 30	◆	◆
BT260X8	240Vac	15VA	5VA	◆	20 to 30	◆	
BT280X8	240Vac	15VA	5VA	◆	20 to 30	◆	◆
<i>for applications requiring up to 90 in.lb. (11 Nm.) torque at rated voltage</i>							
LT060X11	24Vac 24Vdc	24VA	5VA	◆	20 to 30	◆	
LT080X11	24Vac 24Vdc	24VA	5VA	◆	20 to 30	◆	◆
LT160X11	120Vac	24VA	5VA	◆	20 to 30	◆	
LT180X11	120Vac	24VA	5VA	◆	20 to 30	◆	◆
LT260X11	240Vac	24VA	5VA	◆	20 to 30	◆	
LT280X11	240Vac	24VA	5VA	◆	20 to 30	◆	◆



## **IP65 ACTUATOR**

For applications up to 360 in.lb. (40 Nm)

### **APPLICATIONS**

- high humidity applications
- outdoor applications
- food industry
- animal husbandry





**Rotational speeds from 60 to 85 sec  
for applications up to 360 in.lb. (40 Nm)**



### PRIMARY USES FOR THESE ACTUATORS

- ◆ high humidity applications
- ◆ food industry
- ◆ outdoor applications
- ◆ animal husbandry

These quarter turn actuators have been designed with IP65 (equivalent to Nema type 4) protection against water or chemicals such as ammonia. They are to be installed in very demanding environmental conditions such as industrial food plants or animal husbandry. All actuators may be directly coupled to either a 3/4 inch round or 5/8 inch square jack shaft or remotely mounted using an adaptor kit. All actuators are bi-directional. Enerdrive actuators are also bi-directional under fail safe conditions.

## GENERAL SPECIFICATIONS

**Power Supply:** 24Vac/30Vdc  
**Power Consumption:** Peak at Start-up: 8VA to 30VA at 26Vac Depending upon the Model  
 Operating at Full Load: 8VA to 10VA at 26Vac Depending upon the Model

**Electrical Connections:** 1 meter long 6 wire plenum cable, 18 AWG [0.8 mm<sup>2</sup>]

**Control Signals:** **Analog:** 2-10 Vdc

**Torque:** **140 in.lb. (16 Nm) to 360 in.lb. (40 Nm) at Rated Voltage Depending upon the Model**  
**Direction & Time of Rotation:** Reversible, 60 to 85 sec

**Ambient Temperature:** 0°F to +122°F (-18°C to +50°C)

**Fail Safe (Enerdrive) Rating:** 140 to 360 in.lb. (16 to 40Nm) Depending upon the Model  
**Enerdrive Response Time:** 60 to 85 sec Closure Through 90°

**Auxiliary Switches:** **Models Ending in 20W & 80W:** 2 Mechanical Switches, Fixed at 10° & 80°  
**Auxiliary Switch Rating:** 5 Amp Resistive, 250Vac

**Electronic Enclosure:** IP65 equivalent to Nema type 4 enclosure with special protection against chemicals



Spec Sheet Available on Our Website

Actuator Models	Power			Control Signals					Time in sec Thru 90° Arc	Actuator Features				
	Nom. Supply	Consumption		Digital		Multi Signal				Feed Back	Auto Stroke	Zero & Span	Fail Safe (Enerdrive)	2 Mech. Aux. Switches
		Start Up	Full Load	2 POS	3 PT FLT	2-10 Vdc	4-20 mA	PWM						
<b>140 in.lb. (16 Nm.) torque at rated voltage</b>														
LM000W	24Vac 30Vdc	8VA	8VA			◆			60 to 85		◆			
LM020W	24Vac 30Vdc	8VA	8VA			◆			60 to 85		◆			◆
LM060W	24Vac 30Vdc	30VA	8VA			◆			60 to 85		◆		◆	
LM080W	24Vac 30Vdc	30VA	8VA			◆			60 to 85		◆		◆	◆
<b>180 in.lb. (20 Nm.) torque at rated voltage</b>														
TM000W	24Vac 30Vdc	8VA	8VA			◆			60 to 85		◆			
TM020W	24Vac 30Vdc	8VA	8VA			◆			60 to 85		◆			◆
TM060W	24Vac 30Vdc	30VA	8VA			◆			60 to 85		◆		◆	
TM080W	24Vac 30Vdc	30VA	8VA			◆			60 to 85		◆		◆	◆
<b>360 in.lb. (40 Nm.) torque at rated voltage</b>														
RM000W	24Vac 30Vdc	10VA	10VA			◆			60 to 85		◆			
RM020W	24Vac 30Vdc	10VA	10VA			◆			60 to 85		◆			◆
RM060W	24Vac 30Vdc	30VA	10VA			◆			60 to 85		◆		◆	
RM080W	24Vac 30Vdc	30VA	10VA			◆			60 to 85		◆		◆	◆

## IP65/NEMA 4 Actuators (line voltage)



**Rotational speeds from 60 to 85 sec  
for applications up to 360 in.lb. (40 Nm)**



### PRIMARY USES FOR THESE ACTUATORS

- ◆ high humidity applications
- ◆ food industry
- ◆ outdoor applications
- ◆ animal husbandry

These quarter turn actuators have been designed with IP65 (equivalent to Nema type 4) protection against water or chemicals such as ammonia. They are to be installed in very demanding environmental conditions such as industrial food plants or animal husbandry. All actuators may be directly coupled to either a 3/4 inch round or 5/8 inch square jack shaft or remotely mounted using an adaptor kit. All actuators are bi-directional. Enerdrive actuators are also bi-directional under fail safe conditions.

## GENERAL SPECIFICATIONS

<b>Power Supply:</b>	120Vac or 240Vac Depending upon the Model
<b>Power Consumption:</b>	Peak at Start-up: 10VA to 30VA at Line Voltage Depending upon the Model Operating at Full Load: 10VA to 14VA at Line Voltage Depending upon the Model
<b>Electrical Connections:</b>	1 meter long 6 wire plenum cable, 18 AWG [0.8 mm <sup>2</sup> ]
<b>Control Signals:</b>	<b>Analog:</b> 2-10 Vdc
<b>Torque:</b>	<b>140 in.lb. (16 Nm) to 360 in.lb. (40 Nm) at Rated Voltage Depending upon the Model</b>
<b>Direction &amp; Time of Rotation:</b>	Reversible, 60 to 85 sec
<b>Ambient Temperature:</b>	0°F to +122°F (-18°C to +50°C)
<b>Fail Safe (Enerdrive) Rating:</b>	140 to 360 in.lb. (16 to 40Nm) Depending upon the Model
<b>Enerdrive Response Time:</b>	60 to 85 sec Closure Through 90°
<b>Electronic Enclosure:</b>	IP65 equivalent to Nema type 4 enclosure with special protection against chemicals



Spec Sheet Available on Our Website

Actuator Models	Power			Control Signals					Time in sec Thru 90° Arc	Actuator Features				
	Nom. Supply	Consumption		Digital		Multi Signal				Feed Back	Auto Stroke	Zero & Span	Fail Safe (Enerdrive)	2 Mech. Aux. Switches
		Start Up	Full Load	2 POS	3 PT FLT	2-10 Vdc	4-20 mA	PWM						
<b>140 in.lb. (16 Nm.) torque at rated voltage</b>														
LM100W	120Vac	10VA	10VA			◆			60 to 85		◆			
LM160W	120Vac	30VA	10VA			◆			60 to 85		◆		◆	
LM200W	240Vac	10VA	10VA			◆			60 to 85		◆			
LM260W	240Vac	30VA	10VA			◆			60 to 85		◆		◆	
<b>180 in.lb. (20 Nm.) torque at rated voltage</b>														
TM100W	120Vac	10VA	10VA			◆			60 to 85		◆			
TM160W	120Vac	30VA	10VA			◆			60 to 85		◆		◆	
TM200W	240Vac	10VA	10VA			◆			60 to 85		◆			
TM260W	240Vac	30VA	10VA			◆			60 to 85		◆		◆	
<b>360 in.lb. (40 Nm.) torque at rated voltage</b>														
RM100W	120Vac	14VA	14VA			◆			60 to 85		◆			
RM160W	120Vac	30VA	14VA			◆			60 to 85		◆		◆	
RM200W	240Vac	14VA	14VA			◆			60 to 85		◆			
RM260W	240Vac	30VA	14VA			◆			60 to 85		◆		◆	





**A & M LINEAR ACTUATOR**

100 lb. (400 N) & 1500 lb. (6750 N) FORCE

**APPLICATIONS**

- used with Neptronic supplied globe valve
- retrofit for most popular globe valves



**X LINEAR ACTUATOR**

45 lb. (200 N) FORCE

**APPLICATIONS**

- small heating and cooling coils
- VAV terminal unit
- fan coil units
- chilled beams
- baseboard radiation unit





**100 lb. (450 N) & 1500 lb. (6750 N) force**

**PRIMARY USES FOR THESE ACTUATORS**

- ◆ Used with Neptronic supplied Globe Valves
- ◆ Retrofit for most popular Globe Valves

- Cazzaniga
- Honeywell
- Robertshaw
- Controlli
- Invensys
- Tour & Anderson
- Johnson Controls
- Siemens
- Danfoss

## GENERAL SPECIFICATIONS

**Power Supply:** 24Vac, 30Vdc, 120Vac and/or 240Vac Depending upon the Model  
**Power Consumption:** Peak at Start-up: 6VA to 30VA at 26Vac Depending upon the Model  
 Operating at Full Load: 4VA to 30VA at 26Vac Depending upon the Model  
**Wire Size:** 18 AWG (0.8 mm<sup>2</sup>) Minimum  
**Electrical Connections:** 5/8 in. (15.9 mm) & 7/8 in. (22.2 mm) Knock Outs, Screw Terminals

**Control Signals:**

**Digital (AT):**  
 2 Wire or 3 Wire 2 Position and/or 3 Wire or 4 Wire 3 Point Floating Depending upon the Model

**Multi Signal (AM & MM):**  
**ANALOG:** A) 2-10Vdc; or B) May be Externally Wired with a 500 Ohm Resistor which is Supplied for 4-20mA, Zero & Span Adjustable  
**PULSE WIDTH MODULATION:** Time Base of 0.1-5 sec/20mS Resolution or 0.1-25 sec/100mS Resolution Selected by Dip Switch Position  
**SWITCH 24Vac:** Triac or Dry Contact, 40mA Max. Switching Current  
**SWITCH COMMON:** NPN Transistor, SCR, Triac or Dry Contact 75mA Max. Switching Current  
**DIGITAL:** 3 Wire 2 Position or 4 Wire 3 Point Floating

**Force:** (A): 100 lb. (450 N) & (M): 1500 lb. (6750 N) at Rated Voltage  
**Direction & Running Time:** (A): Reversible, 60 sec  
 (M): Reversible, 2 to 7 min Depending upon stroke, Force independent

**Ambient Temperature:** 0°F to +122°F (-18°C to +50°C)

**Feedback Potentiometer:** **In Digital (ATXX5):** Potentiometer (5 Kohms)  
**In Multi Signal (AM & M):** 4-20mA Output (May be wired for a 2-10Vdc signal)

**Fail Safe Rating:** (A) Models Ending in 60 & 80: 100 lb. (450 N), (M) Models Ending in 10: 1500 lb. (6750 N)  
**Response Time:** 60 sec for Full Stroke: (A): 0-100 lb. (0-450N)  
 7 min for Full Stroke: (M): 0-1500 lb. (0-6750N)

**Auxiliary Switches:** Models Ending in 20 or 80: 2 Mechanical Switches, Fixed at 10° & 80°  
**Auxiliary Switch Rating:** 1 Amp Resistive, 24Vac

**Electronic Enclosure:** Flammability rating UL94-5V

Spec Sheet Available on Our Website

Actuator Models	Power			Control Signals					Full Stroke Time	Actuator Features				2 Mech. Aux. Switches
	Nom. Supply	Consumption		Digital		Multi Signal				Feed Back	Auto Stroke	Zero & Span	Fail Safe	
		Start Up	Full Load	2 POS	3 PT FLT	2-10 Vdc	4-20 mA	PWM						
<i>low voltage 100 lb. (450 N) force</i>														
AT000	24Vac 30Vdc	6VA	6VA	◆	◆				60					
AT020	24Vac 30Vdc	6VA	6VA	◆	◆				60					◆
AT060	24Vac 30Vdc	20VA	6VA	◆	◆				60				◆	
AT080	24Vac 30Vdc	20VA	6VA	◆	◆				60				◆	◆
AM000	24Vac 30Vdc	6VA	6VA	◆	◆	◆	◆	◆	60	◆	◆	◆		
AM060	24Vac 30Vdc	20VA	6VA	◆	◆	◆	◆	◆	60	◆	◆	◆	◆	
<i>for applications requiring up to 1500 lb. (6750 N) force at rated voltage</i>														
MM000	24Vac 30Vdc	30VA	30VA	◆	◆	◆	◆	◆	2 to 7 min	◆	◆	◆		
MM010	24Vac 30Vdc	30VA	30VA	◆	◆	◆	◆	◆	2 to 7 min	◆	◆	◆	◆	
MM100	24Vac 30Vdc 120Vac	30VA	30VA	◆	◆	◆	◆	◆	2 to 7 min	◆	◆	◆		
MM110	24Vac 30Vdc 120Vac	30VA	30VA	◆	◆	◆	◆	◆	2 to 7 min	◆	◆	◆	◆	
MM200	24Vac 30Vdc 240Vac	30VA	30VA	◆	◆	◆	◆	◆	2 to 7 min	◆	◆	◆		
MM210	24Vac 30Vdc 240Vac	30VA	30VA	◆	◆	◆	◆	◆	2 to 7 min	◆	◆	◆	◆	

**Note:** All standard models are designed to be coupled to a Schneider Electric globe valve. If you need an actuator for a different globe valve, please call the factory for accurate nomenclature, price and delivery.



**45 lb. (200 N) force**

**PRIMARY USES FOR THESE ACTUATORS**

- ◆ VAV terminal units
- ◆ Fan coil units
- ◆ Chilled beams
- ◆ Small heating and cooling coils
- ◆ Baseboard radiation units

## GENERAL SPECIFICATIONS

<b>Power Supply:</b>	24Vac/24Vdc
<b>Power Consumption:</b>	Peak at Start-up: 5VA or 10VA at 26Vac Operating at Full Load: 6VA at 26Vac
<b>Electrical Connections:</b>	3-Wire Halogen Free Cable, 18AWG (0.8mm <sup>2</sup> ), 1 Meter Long
<b>Control Signals:</b>	<b>Digital (XT Series)</b> 3 Wire, 2 Position or 3 Wire, 3 Point Floating <b>Multi Signal (XM Series)</b> A) 0-10Vdc, B) 2-10Vdc, C) May be Externally Wired with a 500 Ohm Resistor
<b>Force:</b>	45lb. (200 N)
<b>Direction &amp; Running Time:</b>	Reversible, 120 sec
<b>Ambient Temperature:</b>	36°F to +122°F (2°C to +50°C)
<b>Feedback:</b>	A) 0-10Vdc, B) 2-10Vdc, Depending on Model
<b>Fail Safe Rating:</b>	45lb. (200 N)
<b>Response Time:</b>	60 sec for Full Stroke
<b>Electronic Enclosure:</b>	IP54 Equivalent to NEMA Type 3R



Spec Sheet Available on Our Website

Actuator Models	Power			Control Signals					Full Stroke Time	Actuator Features				2 Mech. Aux. Switches
	Nom. Supply	Consumption		Digital		Multi Signal				Feed Back	Auto Stroke	Zero & Span	Fail Safe	
		Start Up	Full Load	2 POS	3 PT FLT	2-10 Vdc	4-20 mA	PWM						
<i>low voltage 100 lb. (450 N) force</i>														
<b>XT000</b>	24Vac 24Vdc	5VA	5VA	◆	◆				120					
<b>XT060</b>	24Vac 24Vdc	10VA	6VA	◆	◆				120				◆	
<b>XM000</b>	24Vac 24Vdc	5VA	5VA			◆	◆*		120	◆	◆			
<b>XM060</b>	24Vac 24Vdc	10VA	6VA			◆	◆*		120	◆	◆		◆	

\* With 500 Ω resistor supplied by other manufacturers

## Mechanical Stroke Limiting Device for L, T & R Damper Actuators

### Description

The SLD or Stroke Limiting Device is an ancillary component that is added to the universal clamp assembly of any of either the L, T or R damper actuator models. It mechanically adjusts the stroke within the 90° arc.

### Application

Two instances where an SLD can be used.

1. For a damper with a stroke of less than 90° without mechanical end stops.
2. To maintain minimum air flow in the duct; for example, to prevent the damper from closing below 10° minimum position.

### Installation

The SLD should be added prior to installation. However, if the actuator is already installed, remove the power supply and the control signal prior to taking the actuator off the damper.

Remove the cover from the actuator. Depress the clutch which is located on the PC board and simultaneously rotate the universal clamp assembly (UCA) until it's end stop. The UCA indicator should be at the zero position.

Temporarily replace the cover to protect the electronics and invert the actuator. Carefully remove the retaining clip that holds the UCA in place.

With the actuator again in the upright position remove the two 10 mm nuts on the U clamp. Slide the stroke limiting device (SLD) onto the clamp and replace the nuts so that the SLD is held loosely in place.

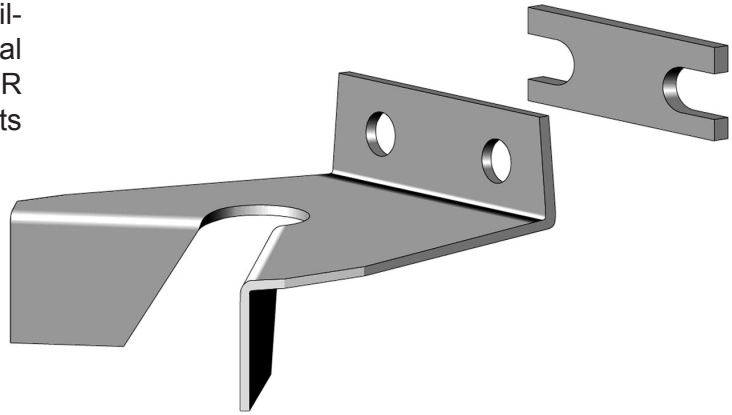


Figure: The Stroke Limiting Device complete with Stopper

Extract the UCA from the actuator and re-insert it so that the indicator is now in any location between 0° and 90° depending on the rotation arc you require.

**Example: Putting the UCA indicator at the 20° mark will result in a rotation of 70°. Note that the SLD butts against the actuator housing to mechanically limit the stroke. Reinserting the UCA indicator at the 80° mark will give a stroke of 10° and so forth.**

After selecting your stroke invert the actuator and reattach the clip ring.

Manually position the damper blades at the physical end stop such that the start position on the damper and the actuator coincide.

Slide the actuator onto the jack shaft through the aperture in the UCA.

## Installation continued

Attach the motor bracket, which is provided, to the duct work such that the stop rotational pin sits loosely in the slot that is located on the base plate beneath the EMT ports. This provides for some lateral movement without allowing the actuator to rotate about the shaft. The motor bracket may be bent for offsetting where the duct work is coated in insulation. Tighten the bolts on the UCA.

With the cover off, the terminal block is easily accessible and the actuator may now be wired according to the diagram that corresponds to the actuator model and mode of control as described in the electrical instruction section. For actuators with auxiliary switches, verify that the contacts coincide with the rotational direction required. Replace the cover and secure.

**Do not press the clutch of the motor when power is on. Always remove power first. Then press the clutch and turn damper or valve.**

**NEVER SCREW OR BOLT DOWN THE END OF THE MOTOR DIRECTLY TO THE DUCT WORK! NEVER DRILL INTO THE MOTOR CASING!**

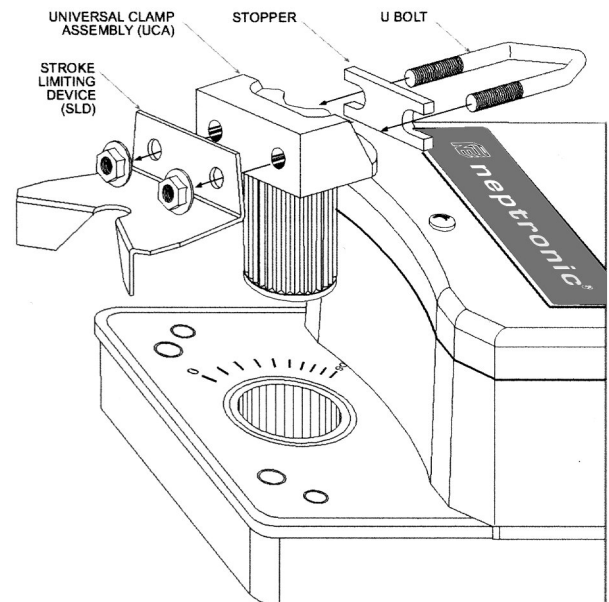
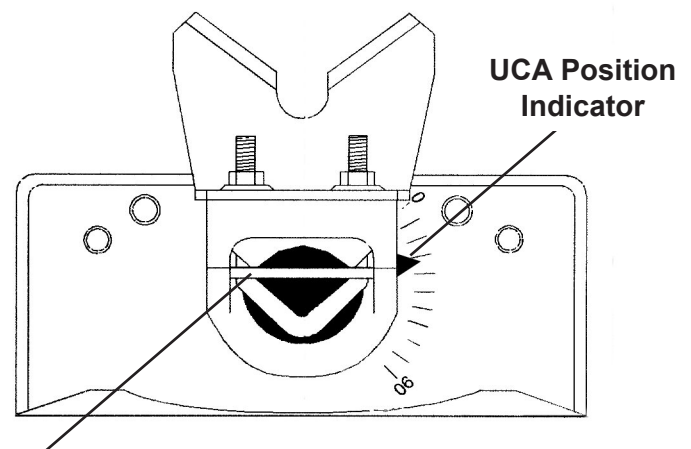


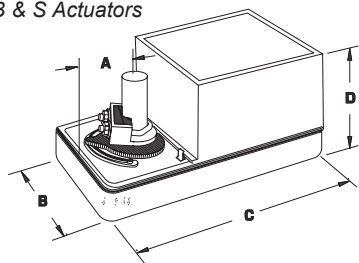
Figure: This diagram illustrates the correct sequence for attaching the SLD and Stopper.



Stopper required only when actuator is remote mounted with a crank arm.

## Actuator Dimensions

Figure i C, D, B & S Actuators

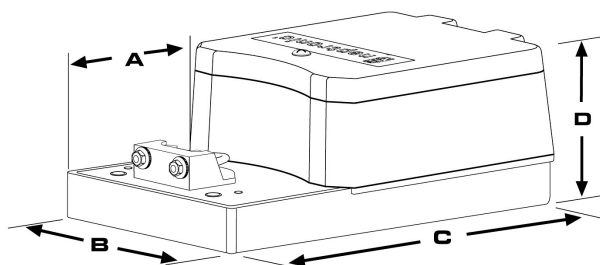


Dim.	C, D, B & S Actuators		L & T Actuators		R Actuators	
	INCHES	CENTI-METERS	INCHES	CENTI-METERS	INCHES	CENTI-METERS
A	1.50	3.81	1.33	3.38	1.33	3.38
B	3.26	8.28	5.20	13.21	5.20	13.21
C	6.60	16.75	9.13	23.19	9.13	23.19
D	3.01	7.64	3.39	8.61	3.55	9.02

Factory Settings for Multi Signal Actuators

Control Signal	2 - 10Vdc
Feedback	4 - 20mA
Stroke	90°
Rotational Direction	0° to 90° - Clockwise
<i>The Enerdrive System</i>	"Fail" to the 0° Position

Figure ii L, T & R Actuators



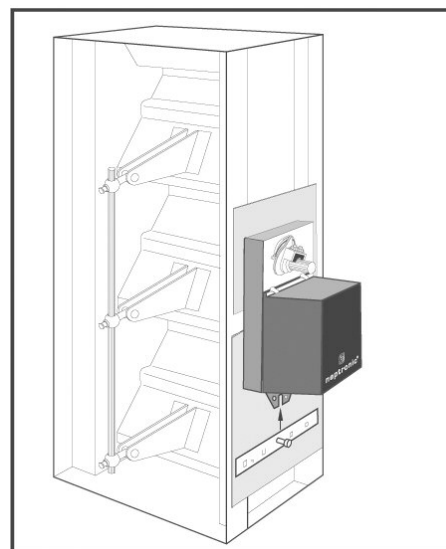
## Actuator Installation

Neptronic damper actuators are designed for direct mounting to the damper jack shaft. They may be mounted in any plane.

Slide the actuator onto the jack shaft through the aperture in the universal clamp assembly. Attach the motor bracket, which is provided, to the duct work such that the stop rotational pin sits loosely in the slot that is located on the base plate beneath the EMT ports. This provides for some lateral movement without allowing the motor to rotate about the shaft. The motor bracket may be bent for offsetting where the duct work is coated in insulation.

Loosen the retaining screw securing the motor cover to the casing and remove the cover (L,T, and R Series only). Simultaneously depress the motor clutch and rotate the universal clamp assembly so that the start position of the motor and the damper coincide. Release the clutch and tighten the bolts on the universal clamp. Replace the cover and secure (L,T, and R Series only).

**Never screw or bolt down the end of the motor directly to the duct work! Never drill into the motor casing!**



This drawing illustrates the correct placement of the actuator on the damper's jack shaft.

Accessories such as the Assembly for Remote Mounting (ARM) and Standoff Bracket (ELBB, ELTR) are available for those circumstances where direct mounting is not feasible.





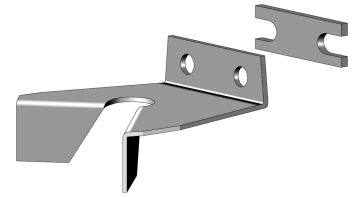
**DCA38, DCA50**

Damper Crank Arm accepts up to 3/8" or 1/2" jack shaft depending upon the model.



**MCABB & MCATR**

Motor Crank Arm for C/D/B/S or L/T/R actuators.



**SLD**

Stroke Limiting Device is a mechanical limiting bracket for L, T or R actuators.



**RSA**

Ruskin Shaft Adapter for direct mounting of an L, T or R actuator on the 1 inch hollow Ruskin jack shaft.



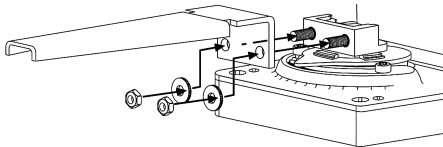
**ELBB, ELTR & ELUB**

"L" Standoff Bracket for C/D/B/S or L/T/R or U/W.



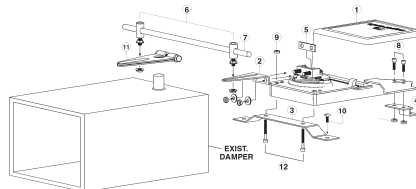
**BJ516 & BJ38**

Ball Joint for 5/16" or 3/8" rod depending upon the model.



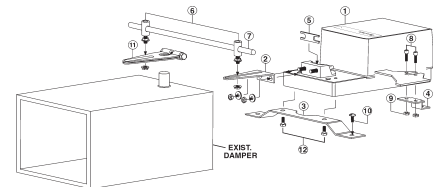
**MINI & MAXI HANDLES**

Universal Clamp Assembly Handle for C/D/B/S or L/T/R actuators depending upon the model.



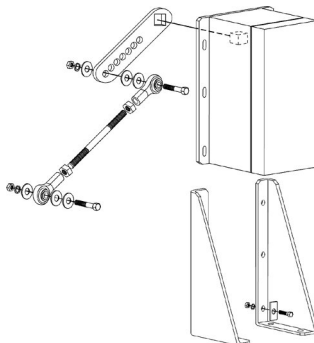
**ARM24BB & ARM36BB**

Assembly for Remote Mounting for C,D,B & S actuators only. Contains 2 ball joints, 1 motor crank arm, 24" or 36" length 5/16" rod depending upon the model, set nut & bolts.



**ARM24TR & ARM36TR**

Assembly for Remote Mounting for L, T or R actuators only. Contains 2 ball joints, 1 motor crank arm, 24" or 36" length 3/8" rod depending upon the model, set nut & bolts.



**UBARM**

Assembly for Remote Mounting of U & W actuator only. Contains 2 ball joints, 1 crank arm, 36" length 1/2" SS rod, set nuts & bolts.



**RH1 & RH2**

Rain Hood protective enclosure for C/D/B/S or L/T/R actuators depending upon the model.

# Enerdrive Explained



The standard actuator model B, above, with the Enerdrive System is rated at a minimum of 50 in.lb. torque.

U.S. Patent #5,278,454  
European Patent # 0647366

## Description

During installation, the field technician calibrates the actuator using the dip switch to respond according to the application requirements. When power is initially applied, the actuator is engaged, driving in the chosen direction and the **Enerdrive System** is activated absorbing charge. The system is fully operational within 90 sec at 77°F or 25°C. ( Fig. ii). There is no delay in the actuator's response.

## Description

The **Enerdrive System, The Electronic Spring** is a patented method of operating a damper or valve actuator during a power outage at full rated torque in a clockwise or counterclockwise direction such that the controlled device arrives at a fully closed or fully open position where it remains indefinitely or until the mains power is restored.

The motor operates normally under control signal until power is interrupted. This interruption activates the **Enerdrive System** which supplies the actuator with sufficient power to maintain its full rated torque as the motor drives the controlled device to its fail safe position. With the restoration of power, the actuator immediately resumes its function under control signal input and the **Enerdrive System** is recharged.

It is comprised of an electronic circuit which is integral to the actuator's PC board and super capacitors. It is the energy generated and stored in the super capacitor that is used by the circuit to drive the actuator.

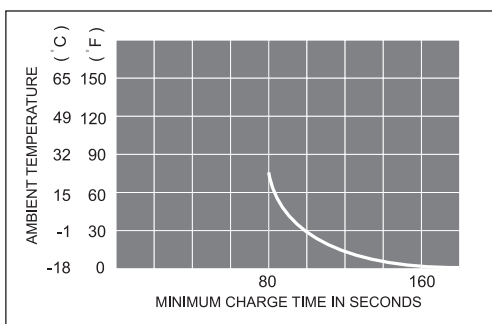


Fig. ii The Effect of Temperature on Charge Time of the Enerdrive System for the Maximum Load of 50 in.lb. at 77°F/25°C

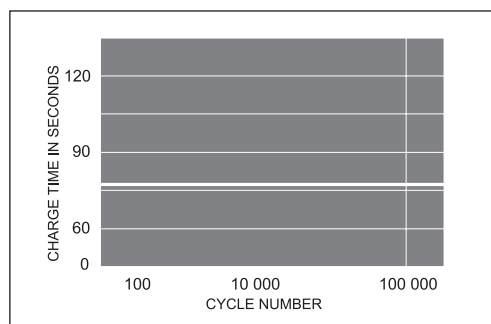


Fig. i The Cyclic Characteristics of the Enerdrive System for the Maximum Load of 50 in.lb. at 77°F/25°C

## Application

Having a controlled device return to a specific, or fail safe, position is required by industries or HVAC systems to prevent harm or damage to equipment, products, live-stock and people due to environmental factors. The controlled device may be a damper, VAV box, fume hood or valve.

This is the primary function of the **Enerdrive System**. However, in 2 wire/2 position installations, it is used to power the actuator in opposition to the control signal direction when control is broken. The graph in Figure i illustrates the rapidity and constancy of the **Enerdrive System** for virtually unlimited cycling of the actuator as frequently or infrequently as required.

## Description

- ◆ state of the art electronics
- ◆ full torque response
- ◆ 100% operational with restoration of power
- ◆ fail position selected by dip switch
- ◆ emergency override by manual clutch
- ◆ in models from 18 in. lb. to 360 in. lb. torque
- ◆ in low and line voltage models
- ◆ inherent characteristics allow long operational life
- ◆ super capacitors are environmentally safe
- ◆ no mechanical parts
- ◆ no mechanical failures



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