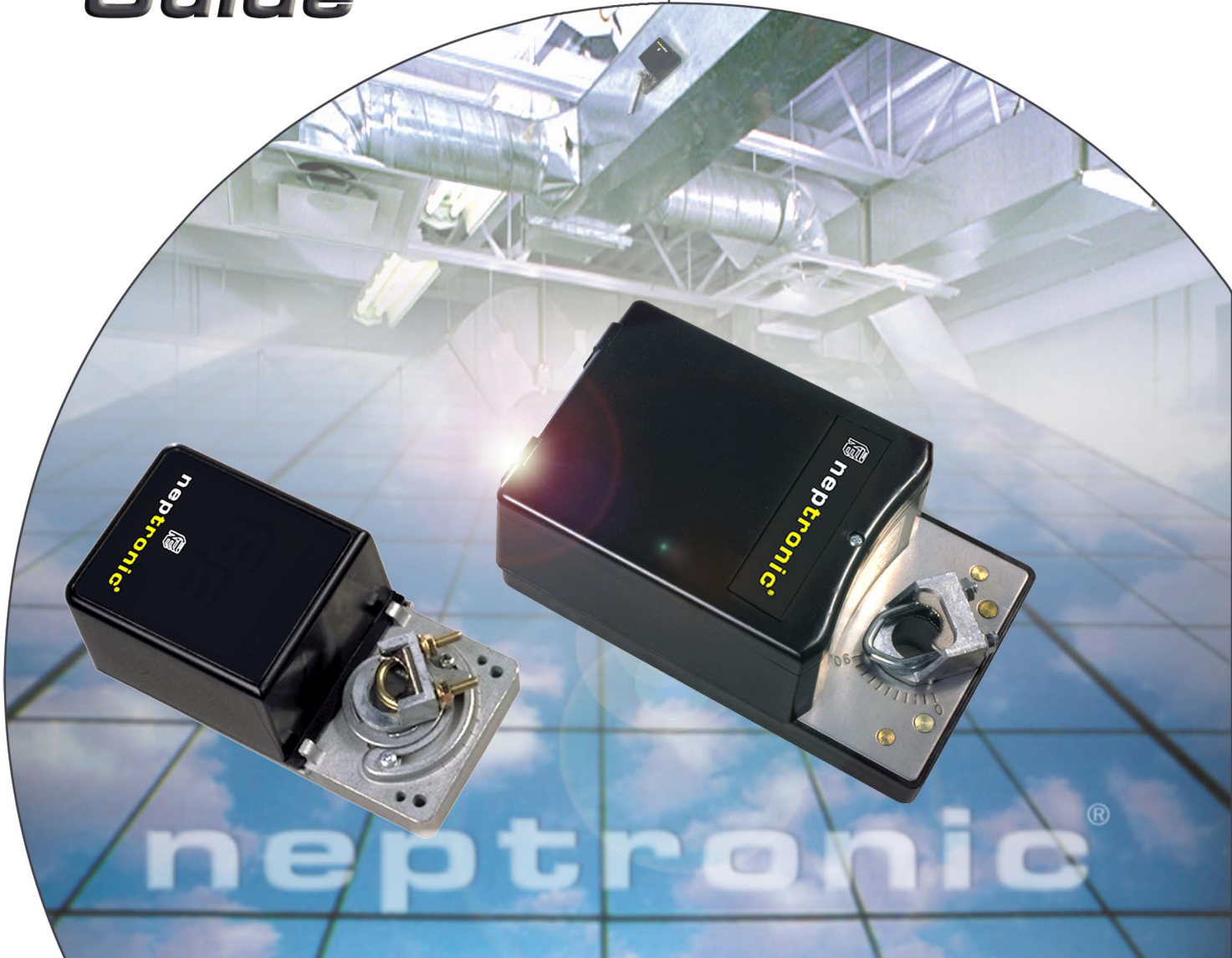
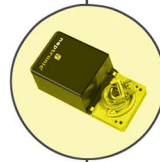


Actuator Selection Guide



Actuation Through Innovation
2011 Price List

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Achieving New Heights for the Indoor Environment

More than a quarter of a century's manufacturing experience has gone into every product that carries the Neptronic name. From inspiration to realization, innovation has been the standard in design. As a result



of this dedication, National Environmental Products owns several patents, notably the Enerdrive System and the AFEC System. Manufacturing is conducted on the premises of our modern 80,000 sq. ft. facility in Montreal, Canada. The components used are precision engineered and carefully inspected to ensure product integrity and each product manufactured undergoes rigorous testing to guarantee its performance and dependability.



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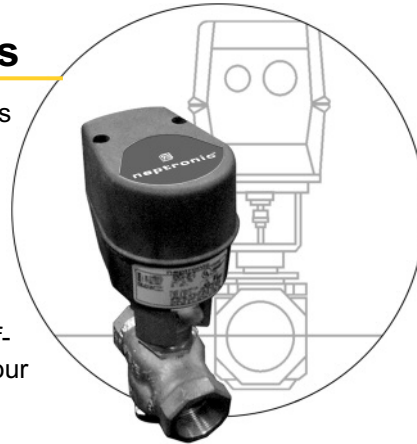
Important Note: Information such as specification or prices contained in this catalogue is subject to change. For last updated information please consult www.neptronic.com



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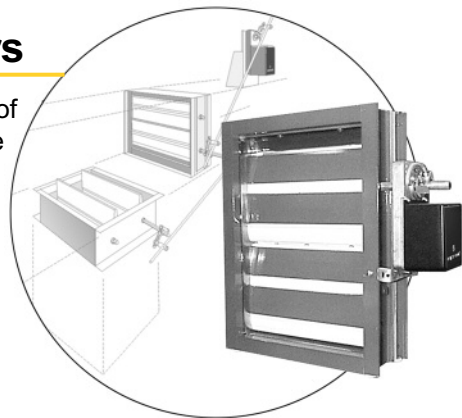
Neptronic Actuators for Globe Valves

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.



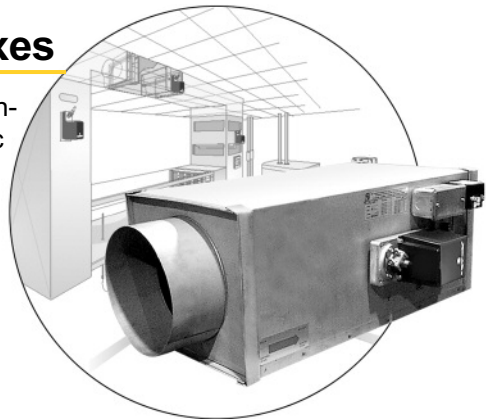
Neptronic Actuators for Dampers

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.



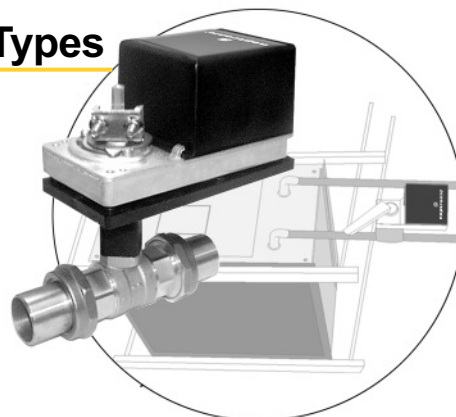
Neptronic Actuators for VAV Boxes

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.



Neptronic 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.



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.

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 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.

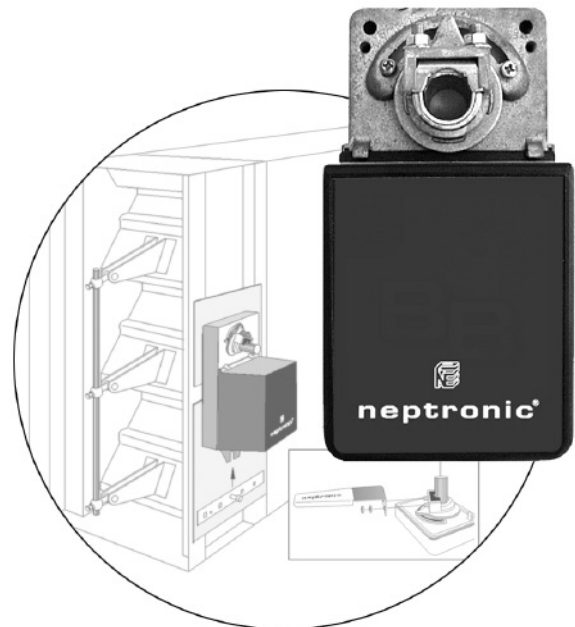
Neptronic is the leader

in developing fast response technology. In the B classification, the rotational speed of these models varies from 1.5 to 6 seconds. 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 seconds of quiet, smooth operation.

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, 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 64.

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.

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.

DAMPER REQUIREMENTS (in.lb./sq. ft.)					
	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.

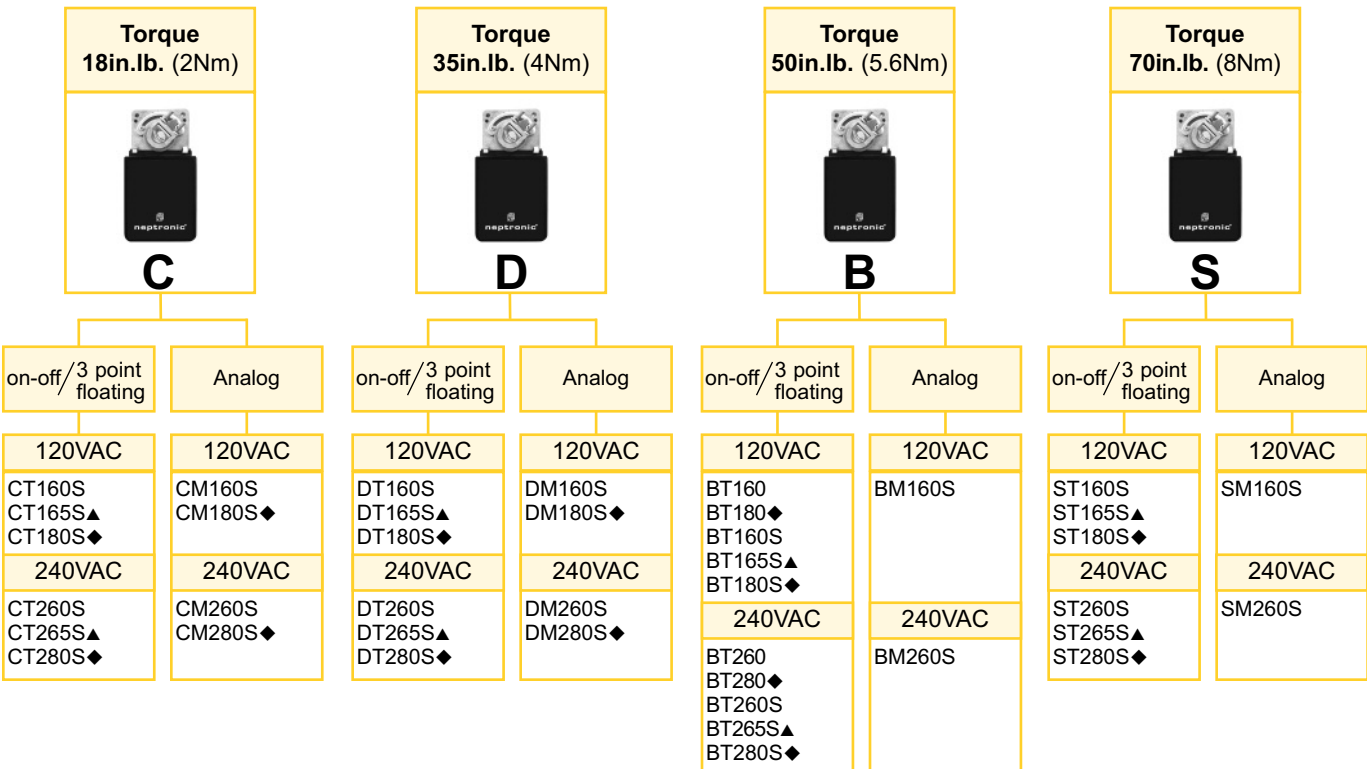
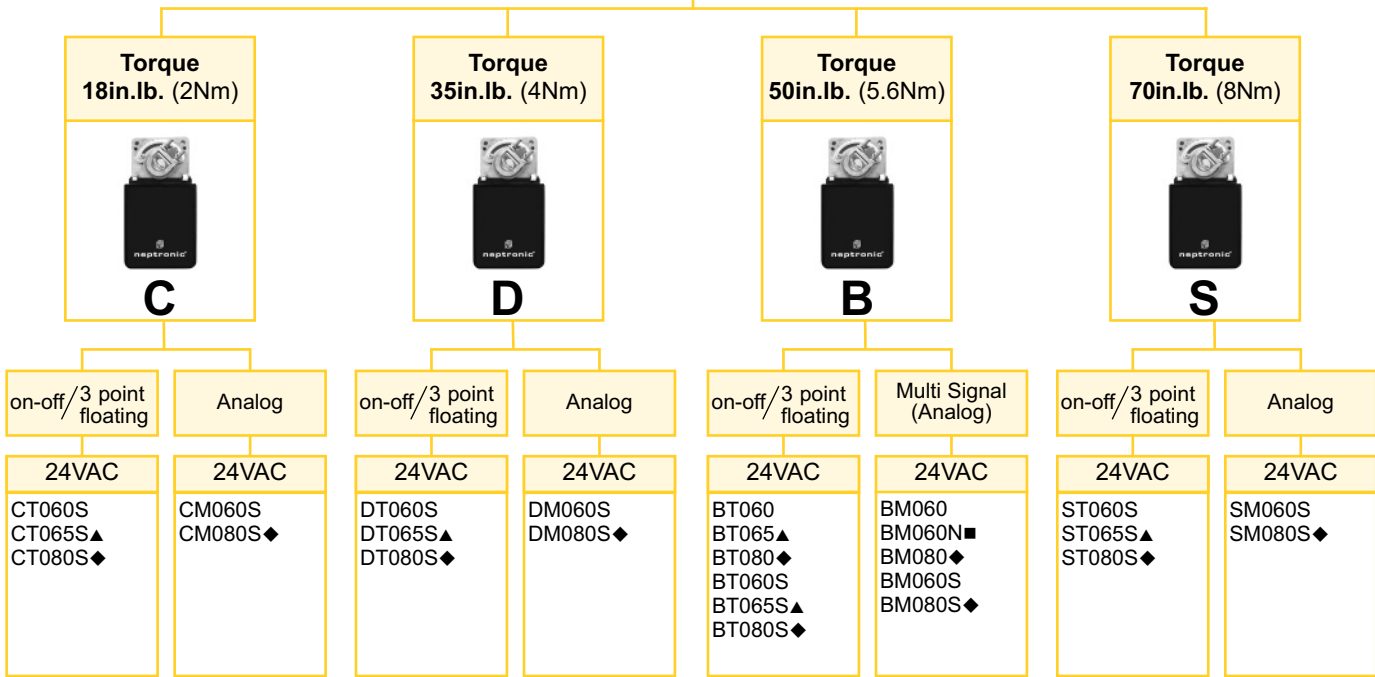
Neptronic Actuator Selection Code	B	M	0	6	0	F	N
TORQUES							
C	18 in.lb. (2 Nm)						
D	35 in.lb. (4 Nm)						
B	50 in.lb. (5.6 Nm)						
S	70 in.lb. (8 Nm)						
L	140 in.lb. (16 Nm)						
T	180 in.lb. (20 Nm)						
R	360 in.lb. (40 Nm)						
U & W	1800 to 4000 in.lb. (200 to 450 Nm)						
CONTROL SIGNAL							
T	ON-OFF / 3 point floating						
M	ON-OFF / 3 point floating / analog / pwm or analog only (2-10vdc)						
POWER SUPPLY							
0	24 vac or 30 vdc						
1	120 vac						
2	240 vac						
3	120/240 vac or 24/120/240 vac						
FUNCTIONS							
00	standard						
05	potentiometer (feedback, 5 K ohms)						
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)						
80*	Fail Safe (Enerdrive*) & auxiliary contacts (2)						
OPTIONS							
-	leave blank if no option						
F	fast (BT=6sec., BM=3.5sec., T & R=20sec.)						
FF	very fast (BM=1.5sec.)						
S	Slow motion (90 seconds 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

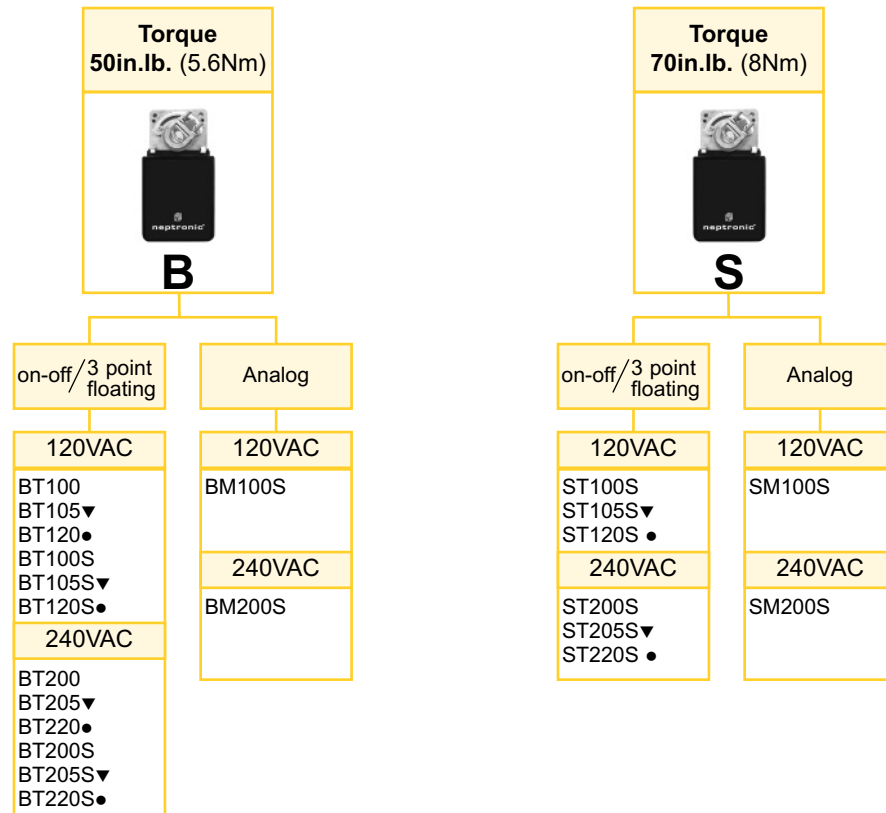
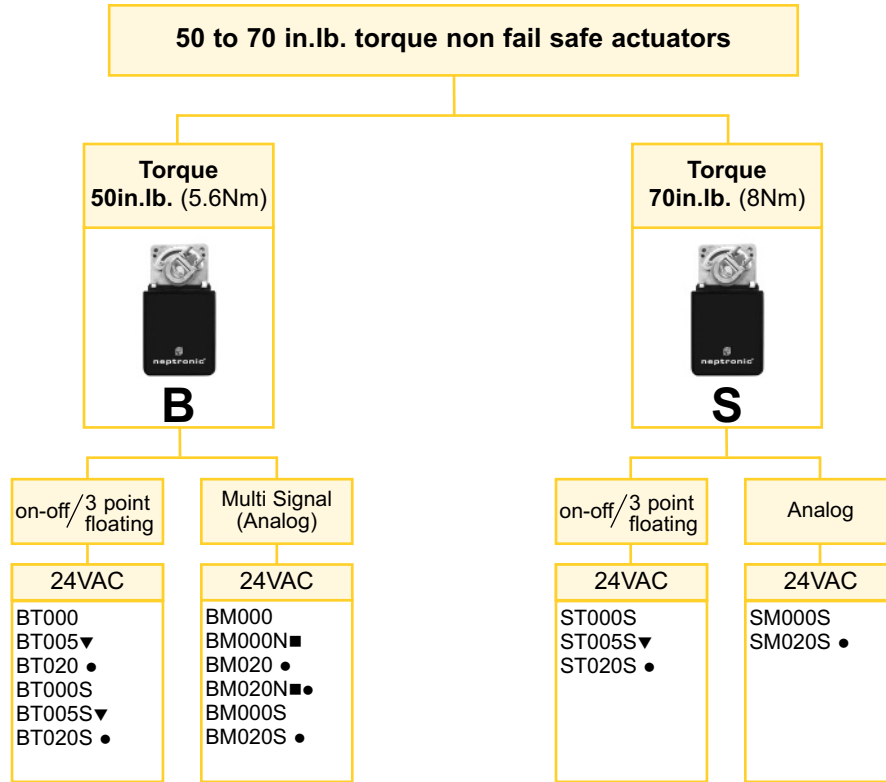
Actuator Flow Charts (18 to 70 in.lb. torque)



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



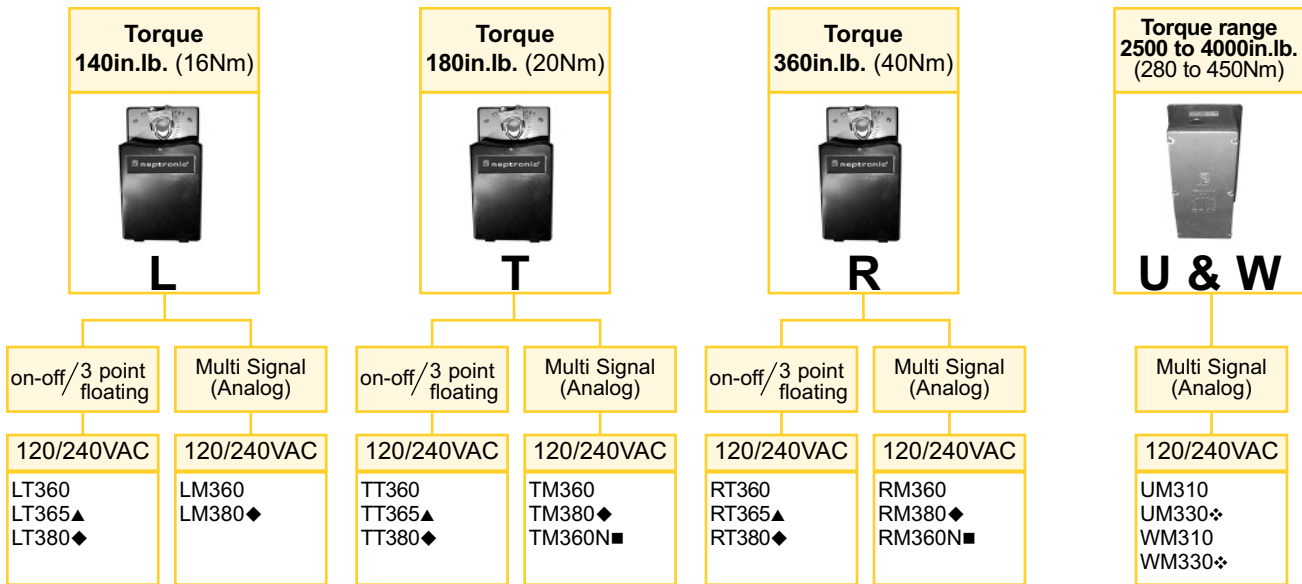
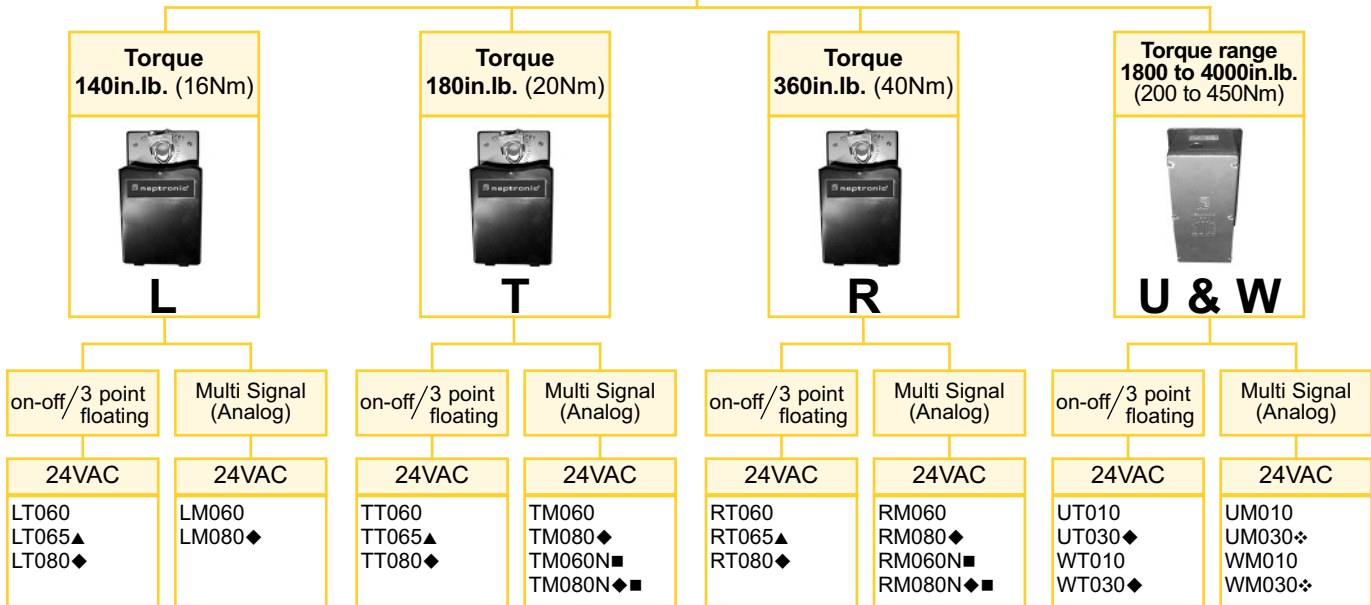
- Neptronic actuator models ending in "N" are brushless motors.
- ◆ Neptronic actuator models ending in "80 (S)" include Enerdrive (Fail safe) and End Switches.
- ▲ Neptronic actuator models ending in "65 (S)" include Enerdrive (Fail safe) and Feedback.



- 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) **neptronic**[®]

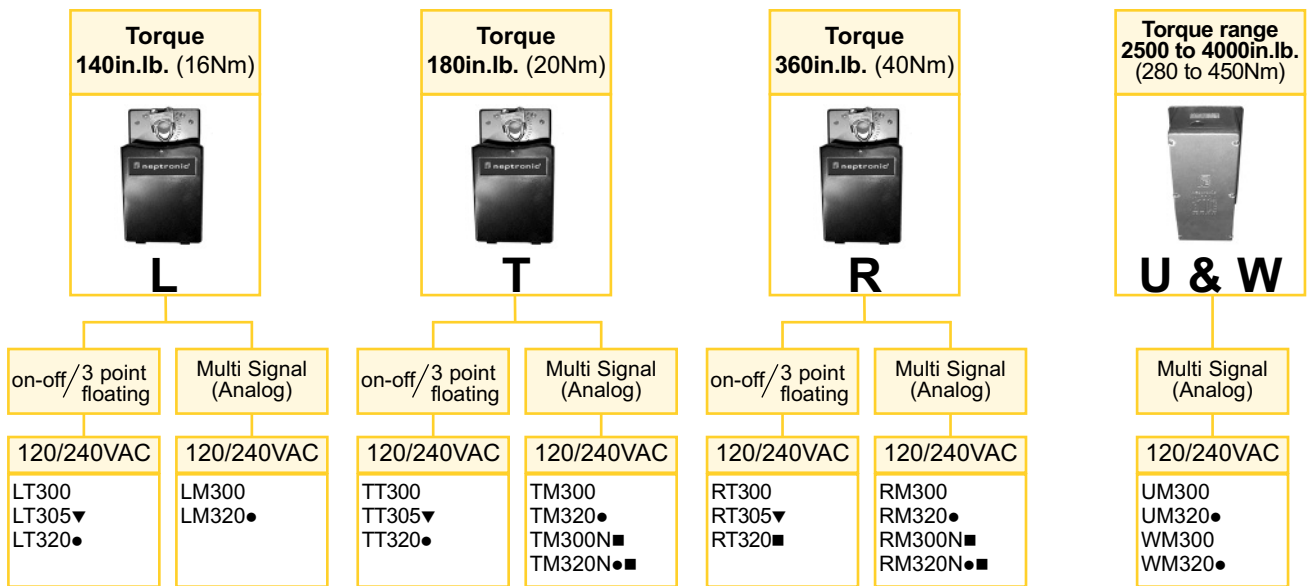
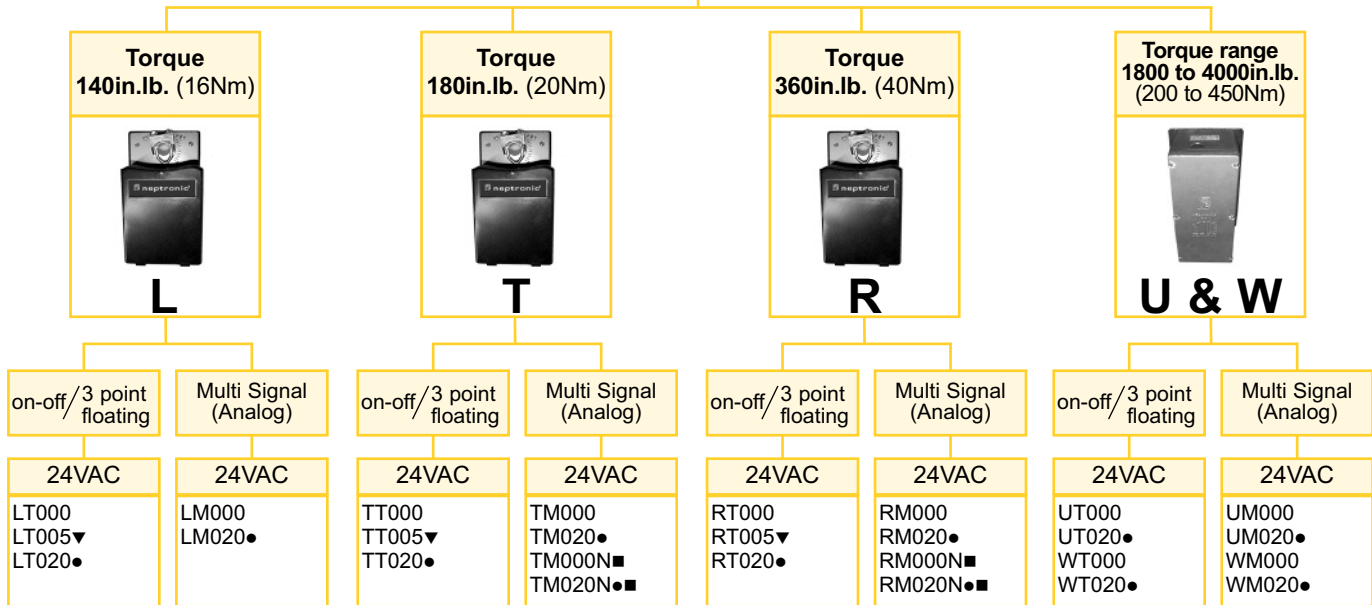
140 to 4000 in.lb. torque fail safe actuators (enerdrive system)



- 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.

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

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.



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

Power Supply: 24VAC/30VDC, 120VAC or 240VAC Depending upon the Model
Power Consumption: Peak at Start-up: 10VA at 26VAC or at Line Voltage
 Operating at Full Load: 3VA at 26VAC or at Line Voltage
Wire Size: 18 AWG (0.8 mm²) Minimum
Electrical Connections: 5/8 in. (15.9 mm) & 7/8 in. (22.2 mm) Knock Outs, Screw Terminals

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

Torque: 18 in.lb. (2 Nm) at Rated Voltage
Direction & Time of Rotation: Reversible, 80 Sec. at no load and 100 sec at full load

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

Feedback Potentiometer: In Digital (CTXX5S): Potentiometer (5Kohms)

Fail Safe (Enerdrive) Rating: 18 in.lb. (2 Nm)
Enerdrive Response Time: 20-40 Seconds Closure Through 90°, 18 in.lb. (2 Nm)

Auxiliary Switches: Models Ending in 80S: 2 Mechanical, Fixed at 10° & 80°
Auxiliary Switch Rating: 5 Amp Resistive, 250VAC

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

Spec Sheet Available on Our Website

Actuator Models	Power			Control Signals					Time in Seconds Thru 90° Arc	Actuator Features					List Price
	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>															
CT060S	24VAC 30VDC	10VA	3VA	◆	◆				80 to 100				◆		\$ 227
CT065S	24VAC 30VDC	10VA	3VA	◆	◆				80 to 100	◆			◆		\$ 283
CT080S	24VAC 30VDC	10VA	3VA	◆	◆				80 to 100				◆	◆	\$ 289
CM060S	24VAC 30VDC	10VA	3VA				◆	◆	80 to 100				◆		\$ 272
CM080S	24VAC 30VDC	10VA	3VA				◆	◆	80 to 100				◆	◆	\$ 334
<i>for line voltage applications</i>															
CT160S	120VAC	10VA	3VA	◆	◆				80 to 100				◆		\$ 261
CT165S	120VAC	10VA	3VA	◆	◆				80 to 100	◆			◆		\$ 317
CT180S	120VAC	10VA	3VA	◆	◆				80 to 100				◆	◆	\$ 323
CT260S	240VAC	10VA	3VA	◆	◆				80 to 100				◆		\$ 261
CT265S	240VAC	10VA	3VA	◆	◆				80 to 100	◆			◆		\$ 317
CT280S	240VAC	10VA	3VA	◆	◆				80 to 100				◆	◆	\$ 323
CM160S	120VAC	10VA	3VA				◆	◆	80 to 100				◆		\$ 295
CM180S	120VAC	10VA	3VA				◆	◆	80 to 100				◆	◆	\$ 357
CM260S	240VAC	10VA	3VA				◆	◆	80 to 100				◆		\$ 295
CM280S	240VAC	10VA	3VA				◆	◆	80 to 100				◆	◆	\$ 357



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

Power Supply: 24VAC/30VDC, 120VAC or 240VAC Depending upon the Model
Power Consumption: Peak at Start-up: 15VA at 26VAC
 12VA at Line Voltage
 Operating at Full Load: 6VA at 26VAC or at Line Voltage
Wire Size: 18 AWG (0.8 mm²) Minimum
Electrical Connections: 5/8 in. (15.9 mm) & 7/8 in. (22.2 mm) Knock Outs, Screw Terminals

Control Signals: **Digital (DT):**
 2 Wire 2 Position and 4 Wire 3 Point Floating
Analog (DM):
 A) 2-10VDC; or B) 4-20mA

Torque: **35 in.lb. (4 Nm) at Rated Voltage**
Direction & Time of Rotation: Reversible, 90 Sec. / 0-35 in.lb. (0-4 Nm)

Ambient Temperature: -22°F to +122°F (-30°C to +50°C)

Feedback Potentiometer: **In Digital (DTXX5S):** Potentiometer (5Kohms)

Fail Safe (Enerdrive) Rating: 35 in.lb. (4 Nm)
Enerdrive Response Time: 70-80 Seconds Closure Through 90°, 0-35 in.lb. (0-4 Nm) Depending upon the Model

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

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

Spec Sheet Available on Our Website

Actuator Models	Power			Control Signals					Time in Seconds Thru 90° Arc	Actuator Features					List Price
	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>															
DT060S (MDTS1060)	24VAC 30VDC	15VA	6VA	◆	◆				90 to 110				◆		\$ 250
DT065S (MDTS1065)	24VAC 30VDC	15VA	6VA	◆	◆				90 to 110	◆			◆		\$ 312
DT080S (MDTS1080)	24VAC 30VDC	15VA	6VA	◆	◆				90 to 110				◆	◆	\$ 312
DM060S (MDMS2060)	24VAC 30VDC	15VA	6VA				◆	◆	90 to 110				◆		\$ 295
DM080S (MDMS2080)	24VAC 30VDC	15VA	6VA				◆	◆	90 to 110				◆	◆	\$ 357
<i>for line voltage applications</i>															
DT160S	120VAC	12VA	6VA	◆	◆				90 to 110				◆		\$ 283
DT165S	120VAC	12VA	6VA	◆	◆				90 to 110	◆			◆		\$ 339
DT180S	120VAC	12VA	6VA	◆	◆				90 to 110				◆	◆	\$ 346
DT260S	240VAC	12VA	6VA	◆	◆				90 to 110				◆		\$ 283
DT265S	240VAC	12VA	6VA	◆	◆				90 to 110	◆			◆		\$ 339
DT280S	240VAC	12VA	6VA	◆	◆				90 to 110				◆	◆	\$ 346
DM160S	120VAC	12VA	6VA				◆	◆	90 to 110				◆		\$ 317
DM180S	120VAC	12VA	6VA				◆	◆	90 to 110				◆	◆	\$ 380
DM260S	240VAC	12VA	6VA				◆	◆	90 to 110				◆		\$ 317
DM280S	240VAC	12VA	6VA				◆	◆	90 to 110				◆	◆	\$ 380

Note: All numbers in parenthesis represent the old nomenclature and will be phased out by Dec. 31, 2008



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

Power Supply:	24VAC/30VDC or 24VDC Depending upon the Model
Power Consumption:	Peak at Start-up: 3VA to 24VA at 26VAC Depending upon the Model Operating at Full Load: 3VA to 15VA at 26VAC Depending upon the Model
Wire Size:	18 AWG (0.8 mm ²) Minimum
Electrical Connections:	5/8 in. (15.9 mm) & 7/8 in. (22.2 mm) Knock Outs, Screw Terminals
Control Signals:	<p>Digital (BT): 2 Wire or 3 Wire 2 Position and 3 Wire or 4 Wire 3 Point Floating Depending upon the Model</p> <p>Multi Signal (BM): 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 Seconds/20mS Resolution or 0.1 - 25 Seconds/100mS Resolution Selected by Dip Switch Position SWITCH HOT: 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</p>
Torque:	50 in.lb. (5.6 Nm) at Rated Voltage
Direction & Time of Rotation:	Reversible, 15-30 Sec. or 90-110 Sec. / 0-50 in.lb. (0-5.6 Nm) Depending upon the Model
Ambient Temperature:	-22°F to +122°F (-30°C to +50°C)
Feedback Potentiometer:	<p>In Digital (BTXX5): Potentiometer (5 Kohms)</p> <p>In Multi Signal (BM): 4-20mA Output (May be wired for a 2-10VDC signal)</p>
Fail Safe (Enerdrive) Rating:	Models Ending in 60, 65, 80 or 60N: 50 in.lb. (5.6 Nm)
Enerdrive Response Time:	20-30 Seconds Closure Through 90°, 0-50 in.lb. (0-5.6 Nm)
Auxiliary Switches:	Models Ending in, 20, 80 or 20N: 2 Mechanical, Fixed at 10° & 80°
Auxiliary Switch Rating:	1 Amp Resistive, 24VAC or 5 Amp Resistive, 250VAC Depending upon the Model
Electronic Enclosure:	Flammability rating UL94-5V
GearTrain Enclosure:	Die Cast Zinc with a Steel Base

Spec Sheet Available on Our Website

Actuator Models	Power			Control Signals					Time in Seconds Thru 90° Arc	Actuator Features					List Price
	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>															
BT000 (BBT1000 A)	24VAC 30VDC	6VA	6VA	◆	◆				20 to 30						\$ 149
BT005 (BBT1005 A)	24VAC 30VDC	6VA	6VA	◆	◆				20 to 30	◆					\$ 194
BT020 (BBT1021 A)	24VAC 30VDC	6VA	6VA	◆	◆				20 to 30				◆		\$ 210
BT060 (BBT1060 A)	24VAC 30VDC	15VA	6VA	◆	◆				20 to 30				◆		\$ 278
BT065 (BBT1065 A)	24VAC 30VDC	15VA	6VA	◆	◆				20 to 30	◆			◆		\$ 317
BT080 (BBT1080 A)	24VAC 30VDC	15VA	6VA	◆	◆				20 to 30				◆	◆	\$ 339
BT400 (BBT24 A)	24VAC	3VA	3VA		◆				90 to 110						\$ 165
BT405 (BBT24 AP)	24VAC	3VA	3VA		◆				90 to 110	◆					\$ 210
BT420 (BBT24 AAX)	24VAC	3VA	3VA		◆				90 to 110					◆	\$ 227
BM000 (BBM2000 A)	24VAC 30VDC	6VA	6VA	◆	◆	◆	◆	◆	20 to 30	◆	◆	◆			\$ 244
BM020 (BBM2021 A)	24VAC 30VDC	6VA	6VA	◆	◆	◆	◆	◆	20 to 30	◆	◆	◆		◆	\$ 306
BM060 (BBM2060 A)	24VAC 30VDC	15VA	6VA	◆	◆	◆	◆	◆	20 to 30	◆	◆	◆	◆		\$ 339
BM080 (BBM2080 A)	24VAC 30VDC	15VA	6VA	◆	◆	◆	◆	◆	20 to 30	◆	◆	◆	◆	◆	\$ 401
BM400 (BBM24 A)	24VAC	4VA	4VA	◆	◆	◆	◆	◆	90 to 100	◆	◆	◆			\$ 255
BM420 (BBT24 AAX)	24VAC	4VA	4VA	◆	◆	◆	◆	◆	90 to 100	◆	◆	◆		◆	\$ 317
BM000N (BBM2000 NA)	24VAC 30VDC	15VA	15VA	◆	◆	◆	◆	◆	15	◆	◆	◆			\$ 351
BM020N (BBM2021 NA)	24VAC 30VDC	15VA	15VA	◆	◆	◆	◆	◆	15	◆	◆	◆		◆	\$ 412
BM060N (BBM2060 NA)	24VAC 30VDC	24VA	15VA	◆	◆	◆	◆	◆	15	◆	◆	◆	◆		\$ 458

Note: All actuators are powered by brush motors except those ending with the letter “N”
All numbers in parenthesis represent the old nomenclature and will be phased out by Dec. 31, 2008



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

Power Supply:	120VAC or 240VAC Depending upon the Model
Power Consumption:	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
Wire Size:	18 AWG (0.8 mm ²) Minimum
Electrical Connections:	5/8 in. (15.9 mm) & 7/8 in. (22.2 mm) Knock Outs, Screw Terminals
Control Signals:	Digital (BT): 2 Wire or 3 Wire 2 Position and 3 Wire 3 Point Floating Depending upon the Model
Torque:	50 in.lb. (5.6 Nm) at Rated Voltage
Direction & Time of Rotation:	Reversible, 20-30 Sec. / 0-50 in.lb. (0-5.6 Nm) Depending upon the Model
Ambient Temperature:	-22°F to +122°F (-30°C to +50°C)
Feedback Potentiometer:	In Digital (BTXX5): Potentiometer (5 Kohms)
Fail Safe (Enerdrive) Rating:	Models Ending in 60 or 80: 50 in.lb. (5.6 Nm)
Enerdrive Response Time:	20-30 Seconds Closure Through 90°, 0-50 in.lb. (0-5.6 Nm)
Auxiliary Switches:	Models Ending in, 20 or 80: 2 Mechanical, Fixed at 10° & 80°
Auxiliary Switch Rating:	1 Amp Resistive, 24VAC or 5 Amp Resistive, 250VAC Depending upon the Model
Electronic Enclosure:	Flammability rating UL94-5V
GearTrain Enclosure:	Die Cast Zinc with a Steel Base

Spec Sheet Available on Our Website

Actuator Models	Power			Control Signals					Time in Seconds Thru 90° Arc	Actuator Features					List Price
	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>															
BT100 (BBTHV1100 A)	120VAC	4 watts	4 watts	◆	◆				20 to 30						\$ 170
BT105 (BBTHV1105 A)	120VAC	4 watts	4 watts	◆	◆				20 to 30	◆					\$ 227
BT120 (BBTHV1121 A)	120VAC	4 watts	4 watts	◆	◆				20 to 30				◆		\$ 233
BT160 (BBTHV1160 A)	120VAC	8VA	5VA	◆					20 to 30			◆			\$ 306
BT180 (BBTHV1180 A)	120VAC	8VA	5VA	◆					20 to 30			◆	◆		\$ 368
BT200 (BBTHV1200 A)	240VAC	7 watts	7 watts	◆	◆				20 to 30						\$ 170
BT205 (BBTHV1205 A)	240VAC	7 watts	7 watts	◆	◆				20 to 30	◆					\$ 227
BT220 (BBTHV1221 A)	240VAC	7 watts	7 watts	◆	◆				20 to 30				◆		\$ 233
BT260 (BBTHV1260 A)	240VAC	8VA	5VA	◆					20 to 30			◆			\$ 306
BT280 (BBTHV1280 A)	240VAC	8VA	5VA	◆					20 to 30			◆	◆		\$ 368

Note: All numbers in parenthesis represent the old nomenclature and will be phased out by Dec. 31, 2008



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

Power Supply:	24VAC/30VDC, 24VDC or 48VDC Depending upon the Model
Power Consumption:	Peak at Start-up: 3VA to 15VA at 26VAC Depending upon the Model Operating at Full Load: 3VA to 6VA at 26VAC
Wire Size:	18 AWG (0.8 mm ²) Minimum
Electrical Connections:	5/8 in. (15.9 mm) & 7/8 in. (22.2 mm) Knock Outs, Screw Terminals
Control Signals:	Digital (BT): 2 Wire or 3 Wire 2 Position and 3 Wire or 4 Wire 3 Point Floating Depending upon the Model Analog (BM): A) 2-10VDC; or B) 4-20mA
Torque:	50 in.lb. (5.6 Nm) at Rated Voltage
Direction & Time of Rotation:	Reversible, 90 to 110 Sec. or 180 to 220 Sec. / 0-50 in.lb. (0-5.6 Nm) Depending upon the Model
Ambient Temperature:	-22°F to +122°F (-30°C to +50°C)
Feedback Potentiometer:	In Digital (BTXX5S): Potentiometer (5 Kohms)
Fail Safe (Enerdrive) Rating:	Models Ending in 60S, 65S or 80S: 50 in.lb. (5.6 Nm)
Enerdrive Response Time:	20-30 Seconds Closure Through 90°, 0-50 in.lb. (0-5.6 Nm)
Auxiliary Switches:	Models Ending in 20S or 80S: 2 Mechanical, Fixed at 10° & 80°
Auxiliary Switch Rating:	1 Amp Resistive, 24VAC or 5 Amp Resistive, 250VAC Depending upon the Model
Electronic Enclosure:	Flammability rating UL94-5V
GearTrain Enclosure:	Die Cast Zinc with a Steel Base

Spec Sheet Available on Our Website

Actuator Models	Power			Control Signals					Time in Seconds Thru 90° Arc	Actuator Features					List Price
	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 (BBTS1000)	24VAC 30VDC	6VA	6VA	◆	◆				90 to 110						\$ 142
BT005S (BBTS1005)	24VAC 30VDC	6VA	6VA	◆	◆				90 to 110	◆					\$ 204
BT020S (BBTS1021)	24VAC 30VDC	6VA	6VA	◆	◆				90 to 110				◆		\$ 204
BT060S (BBTS1060)	24VAC 30VDC	15VA	6VA	◆	◆				90 to 110				◆		\$ 272
BT065S (BBTS1065)	24VAC 30VDC	15VA	6VA	◆	◆				90 to 110	◆			◆		\$ 328
BT080S (BBTS1080)	24VAC 30VDC	15VA	6VA	◆	◆				90 to 110				◆	◆	\$ 334
BT400S (BBTS24 A)	24VAC	3VA	3VA		◆				180 to 220						\$ 165
BT405S (BBTS24 AP)	24VAC	3VA	3VA		◆				180 to 220	◆					\$ 222
BT420S (BBTS24 AAX)	24VAC	3VA	3VA		◆				180 to 220					◆	\$ 227
BT800S (BBTS1800)	48VDC	4 watts	4 watts	◆	◆				90 to 110						\$ 188
BT805S	48VDC	4 watts	4 watts	◆	◆				90 to 110	◆					\$ 244
BT820S	48VDC	4 watts	4 watts	◆	◆				90 to 110					◆	\$ 250
BT860S (BBTS1860)	48VDC	4 watts	4 watts	◆	◆				90 to 110				◆		\$ 306
BT865S	48VDC	12 watts	4 watts	◆	◆				90 to 110	◆			◆		\$ 362
BT880S	48VDC	12 watts	4 watts	◆	◆				90 to 110				◆	◆	\$ 368
BM000S (BBMS2000)	24VAC 30VDC	6VA	6VA				◆	◆	90 to 110						\$ 194
BM020S (BBMS2021)	24VAC 30VDC	6VA	6VA				◆	◆	90 to 110					◆	\$ 255
BM060S (BBMS2060)	24VAC 30VDC	15VA	6VA				◆	◆	90 to 110				◆		\$ 317
BM080S (BBMS2080)	24VAC 30VDC	15VA	6VA				◆	◆	90 to 110				◆	◆	\$ 380
BM800S (BBMS2800)	48VDC	6 watts	6 watts				◆	◆	90 to 110						\$ 227
BM820S (BBMS2821)	48VDC	6 watts	6 watts				◆	◆	90 to 110					◆	\$ 289
BM860S (BBMS2860)	48VDC	20 watts	6 watts				◆	◆	90 to 110				◆		\$ 328
BM880S (BBMS2880)	48VDC	20 watts	6 watts				◆	◆	90 to 110				◆	◆	\$ 391

Note: All numbers in parenthesis represent the old nomenclature and will be phased out by Dec. 31, 2008



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

Power Supply:	120VAC or 240VAC Depending upon the Model
Power Consumption:	Peak at Start-up: 6VA to 20VA at Line Voltage Depending upon the Model Operating at Full Load: 6VA at Line Voltage
Wire Size:	18 AWG (0.8 mm ²) Minimum
Electrical Connections:	5/8 in. (15.9 mm) & 7/8 in. (22.2 mm) Knock Outs, Screw Terminals
Control Signals:	Digital (BT): 2 Wire or 3 Wire 2 Position and 3 Wire or 4 Wire 3 Point Floating Depending upon the Model Analog (BM): A) 2-10VDC; or B) 4-20mA
Torque:	50 in.lb. (5.6 Nm) at Rated Voltage
Direction & Time of Rotation:	Reversible, 90 Sec. to 110 Sec. / 0-50 in.lb. (0-5.6 Nm)
Ambient Temperature:	-22°F to +122°F (-30°C to +50°C)
Feedback Potentiometer:	In Digital (BTXX5S): Potentiometer (5 Kohms)
Fail Safe (Enerdrive) Rating:	Models Ending in 60S, 65S or 80S: 50 in.lb. (5.6 Nm)
Enerdrive Response Time:	20-30 Seconds Closure Through 90°, 0-50 in.lb. (0-5.6 Nm)
Auxiliary Switches:	Models Ending in 20S or 80S: 2 Mechanical, Fixed at 10° & 80°
Auxiliary Switch Rating:	1 Amp Resistive, 24VAC or 5 Amp Resistive, 250VAC Depending upon the Model
Electronic Enclosure:	Flammability rating UL94-5V
GearTrain Enclosure:	Die Cast Zinc with a Steel Base

Spec Sheet Available on Our Website

Actuator Models	Power			Control Signals					Time in Seconds Thru 90° Arc	Actuator Features					List Price
	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						\$ 170
BT105S	120VAC	6VA	6VA	◆	◆				90 to 110	◆					\$ 227
BT120S	120VAC	6VA	6VA	◆	◆				90 to 110					◆	\$ 233
BT160S	120VAC	20VA	6VA	◆	◆				90 to 110				◆		\$ 306
BT165S	120VAC	20VA	6VA	◆	◆				90 to 110	◆			◆		\$ 362
BT180S	120VAC	20VA	6VA	◆	◆				90 to 110				◆	◆	\$ 368
BT200S	240VAC	6VA	6VA	◆	◆				90 to 110						\$ 170
BT205S	240VAC	6VA	6VA	◆	◆				90 to 110	◆					\$ 283
BT220S	240VAC	6VA	6VA	◆	◆				90 to 110					◆	\$ 233
BT260S	240VAC	20VA	6VA	◆	◆				90 to 110				◆		\$ 306
BT265S	240VAC	20VA	6VA	◆	◆				90 to 110	◆			◆		\$ 362
BT280S	240VAC	20VA	6VA	◆	◆				90 to 110				◆	◆	\$ 368
BM100S	120VAC	6VA	6VA				◆	◆	90 to 110						\$ 250
BM160S	120VAC	20VA	6VA				◆	◆	90 to 110				◆		\$ 351
BM200S	240VAC	6VA	6VA				◆	◆	90 to 110						\$ 250
BM260S	240VAC	20VA	6VA				◆	◆	90 to 110				◆		\$ 351



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

Power Supply:	24VAC/30VDC
Power Consumption:	Peak at Start-up: 8VA to 20VA at 26VAC Depending upon the Model Operating at Full Load: 8VA at 26VAC
Wire Size:	18 AWG (0.8 mm ²) Minimum
Electrical Connections:	5/8 in. (15.9 mm) & 7/8 in. (22.2 mm) Knock Outs, Screw Terminals
Control Signals:	Digital (ST): 2 Wire or 3 Wire 2 Position and 4 Wire 3 Point Floating Depending upon the Model Analog (SM): A) 2-10VDC; or B) 4-20mA
Torque:	70 in.lb. (8 Nm) at Rated Voltage
Direction & Time of Rotation:	Reversible, 90 to 110 Sec. / 0-70 in.lb. (0-8 Nm)
Ambient Temperature:	-22°F to +122°F (-30°C to +50°C)
Feedback Potentiometer:	In Digital (STXX5S): Potentiometer (5 Kohms)
Fail Safe (Enerdrive) Rating:	Models Ending in 60S, 65S or 80S: 70 in.lb. (8 Nm)
Enerdrive Response Time:	20-30 Seconds Closure Through 90°, 0-70 in.lb. (0-8 Nm)
Auxiliary Switches:	Models Ending in 20S or 80S: 2 Mechanical, Fixed at 10° & 80°
Auxiliary Switch Rating:	1 Amp Resistive, 24VAC or 5 Amp Resistive, 250VAC Depending upon the Model
Electronic Enclosure:	Flammability rating UL94-5V
GearTrain Enclosure:	Die Cast Zinc with a Steel Base

Spec Sheet Available on Our Website

Actuator Models	Power			Control Signals					Time in Seconds Thru 90° Arc	Actuator Features					List Price
	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>															
ST000S	24VAC 30VDC	8VA	8VA	◆	◆				90 to 110						\$ 160
ST005S	24VAC 30VDC	8VA	8VA	◆	◆				90 to 110	◆					\$ 216
ST020S	24VAC 30VDC	8VA	8VA	◆	◆				90 to 110					◆	\$ 222
ST060S	24VAC 30VDC	20VA	8VA	◆	◆				90 to 110				◆		\$ 289
ST065S	24VAC 30VDC	20VA	8VA	◆	◆				90 to 110	◆			◆		\$ 346
ST080S	24VAC 30VDC	20VA	8VA	◆	◆				90 to 110				◆	◆	\$ 351
SM000S	24VAC 30VDC	8VA	8VA			◆	◆		90 to 110						\$ 250
SM020S	24VAC 30VDC	8VA	8VA			◆	◆		90 to 110					◆	\$ 312
SM060S	24VAC 30VDC	20VA	8VA			◆	◆		90 to 110				◆		\$ 351
SM080S	24VAC 30VDC	20VA	8VA			◆	◆		90 to 110				◆	◆	\$ 412



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

Power Supply:	120VAC or 240VAC Depending upon the Model
Power Consumption:	Peak at Start-up: 8VA to 20VA at Line Voltage Depending upon the Model Operating at Full Load: 8VA at Line Voltage
Wire Size:	18 AWG (0.8 mm ²) Minimum
Electrical Connections:	5/8 in. (15.9 mm) & 7/8 in. (22.2 mm) Knock Outs, Screw Terminals
Control Signals:	Digital (ST): 2 Wire or 3 Wire 2 Position and 4 Wire 3 Point Floating Depending upon the Model Analog (SM): A) 2-10VDC; or B) 4-20mA
Torque:	70 in.lb. (8 Nm) at Rated Voltage
Direction & Time of Rotation:	Reversible, 90 to 110 Sec. / 0-70 in.lb. (0-8 Nm)
Ambient Temperature:	-22°F to +122°F (-30°C to +50°C)
Feedback Potentiometer:	In Digital (STXX5S): Potentiometer (5 Kohms)
Fail Safe (Enerdrive) Rating:	Models Ending in 60S, 65S or 80S: 70 in.lb. (8 Nm)
Enerdrive Response Time:	20-30 Seconds Closure Through 90°, 0-70 in.lb. (0-8 Nm)
Auxiliary Switches:	Models Ending in 20S or 80S: 2 Mechanical, Fixed at 10° & 80°
Auxiliary Switch Rating:	1 Amp Resistive, 24VAC or 5 Amp Resistive, 250VAC Depending upon the Model
Electronic Enclosure:	Flammability rating UL94-5V
GearTrain Enclosure:	Die Cast Zinc with a Steel Base

Spec Sheet Available on Our Website

Actuator Models	Power			Control Signals					Time in Seconds Thru 90° Arc	Actuator Features					List Price
	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						\$ 176
ST105S	120VAC	8VA	8VA	◆	◆				90 to 110	◆					\$ 233
ST120S	120VAC	8VA	8VA	◆	◆				90 to 110					◆	\$ 238
ST160S	120VAC	20VA	8VA	◆	◆				90 to 110				◆		\$ 328
ST165S	120VAC	20VA	8VA	◆	◆				90 to 110	◆			◆		\$ 385
ST180S	120VAC	20VA	8VA	◆	◆				90 to 110				◆	◆	\$ 391
ST200S	240VAC	8VA	8VA	◆	◆				90 to 110						\$ 176
ST205S	240VAC	8VA	8VA	◆	◆				90 to 110	◆					\$ 233
ST220S	240VAC	8VA	8VA	◆	◆				90 to 110					◆	\$ 238
ST260S	240VAC	20VA	8VA	◆	◆				90 to 110				◆		\$ 328
ST265S	240VAC	20VA	8VA	◆	◆				90 to 110	◆			◆		\$ 385
ST280S	240VAC	20VA	8VA	◆	◆				90 to 110				◆	◆	\$ 391
SM100S	120VAC	8VA	8VA			◆	◆		90 to 110						\$ 272
SM160S	120VAC	20VA	8VA			◆	◆		90 to 110				◆		\$ 373
SM200S	240VAC	8VA	8VA			◆	◆		90 to 110						\$ 272
SM260S	240VAC	20VA	8VA			◆	◆		90 to 110				◆		\$ 373



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 and electronically in Multi Signal models.

GENERAL SPECIFICATIONS

Power Supply: 24VAC/30VDC, 120VAC/240VAC or 24VAC/120VAC/240VAC Depending upon the Model

Power Consumption: 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

Wire Size: 18 AWG (0.8 mm²) Minimum

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

Control Signals:

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

Multi Signal (LM):
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 Seconds/20mS Resolution or 0.1 - 25 Seconds/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: **140 in.lb. (16 Nm) at Rated Voltage**

Direction & Time of Rotation: Reversible, 60-85 Sec. / 0-140 in.lb. (0-16 Nm)

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

Feedback Potentiometer:
In Digital (LTXX5): Voltage (0 to 12VDC max)
In Multi Signal (LM): 4-20mA Output (May be wired for a 2-10VDC signal)

Fail Safe (Enerdrive) Rating: **Models Ending in 60, 65 or 80:** 140 in.lb. (16 Nm)

Enerdrive Response Time: 60-85 seconds closure through 90°, 0-140 in.lb. (0-16 Nm)

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

Auxiliary Switch Rating: 5 Amp Resistive, 250VAC

Electronic Enclosure: Flammability rating UL94-5V

Option W: 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 Seconds Thru 90° Arc	Actuator Features					List Price
	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 (LDT3000 A)	24VAC 30VDC	5VA	5VA	◆	◆				60 to 85						\$ 222
LT005 (LDT3005 A)	24VAC 30VDC	5VA	5VA	◆	◆				60 to 85	◆					\$ 278
LT020 (LDT3021 A)	24VAC 30VDC	5VA	5VA	◆	◆				60 to 85				◆		\$ 283
LT060 (LDT3060 A)	24VAC 30VDC	30VA	5VA	◆	◆				60 to 85				◆		\$ 419
LT065 (LDT3065 A)	24VAC 30VDC	30VA	5VA	◆	◆				60 to 85	◆			◆		\$ 474
LT080 (LDT3080 A)	24VAC 30VDC	30VA	5VA	◆	◆				60 to 85				◆	◆	\$ 480
LM000 (LDM4000 A)	24VAC 30VDC	8VA	8VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆			\$ 306
LM020 (LDM4021 A)	24VAC 30VDC	8VA	8VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆		◆	\$ 368
LM060 (LDM4060 A)	24VAC 30VDC	30VA	8VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆	◆		\$ 469
LM080 (LDM4080 A)	24VAC 30VDC	30VA	8VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆	◆	◆	\$ 531
<i>for line voltage applications</i>															
LT300 (LDTHV3300 A)	120VAC 240VAC	8VA	8VA	◆	◆				60 to 85						\$ 283
LT305 (LDTHV3305 A)	120VAC 240VAC	8VA	8VA	◆	◆				60 to 85	◆					\$ 339
LT320 (LDTHV3321 A)	120VAC 240VAC	8VA	8VA	◆	◆				60 to 85				◆		\$ 346
LT360 (LDTHV3360 A)	120VAC 240VAC	35VA	8VA	◆	◆				60 to 85				◆		\$ 469
LT365 (LDTHV3365 A)	120VAC 240VAC	35VA	8VA	◆	◆				60 to 85	◆			◆		\$ 525
LT380 (LDTHV3380 A)	120VAC 240VAC	35VA	8VA	◆	◆				60 to 85				◆	◆	\$ 531
LM300 (LDMHV4300 A)	24VAC 30VDC 120VAC 240VAC	10VA	10VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆			\$ 357
LM320 (LDMHV4321 A)	24VAC 30VDC 120VAC 240VAC	10VA	10VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆		◆	\$ 419
LM360 (LDMHV4360 A)	24VAC 30VDC 120VAC 240VAC	30VA	10VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆	◆		\$ 520
LM380 (LDMHV4380 A)	24VAC 30VDC 120VAC 240VAC	30VA	10VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆	◆	◆	\$ 581

Note: All numbers in parenthesis represent the old nomenclature and will be phased out by Dec. 31, 2008



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 and electronically in Multi Signal models.

GENERAL SPECIFICATIONS

Power Supply:	24VAC/30VDC
Power Consumption:	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
Wire Size:	18 AWG (0.8 mm ²) Minimum
Electrical Connections:	Two 7/8 in. (22.2 mm) Knock Outs, Screw Terminals
Control Signals:	<p>Digital (TT): 2 Wire or 3 Wire 2 Position and/or 3 Wire or 4 Wire 3 Point Floating Depending upon the Model</p> <p>Multi Signal (TM): 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 Seconds/20mS Resolution or 0.1 - 25 Seconds/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</p>
Torque:	180 in.lb. (20 Nm) at Rated Voltage
Direction & Time of Rotation:	Reversible, 40-50 Sec. or 60-85 Sec. / 0-180 in.lb. (0-20 Nm) Depending upon the Model
Ambient Temperature:	0°F to +122°F (-18°C to +50°C)
Feedback Potentiometer:	<p>In Digital (TTXX5): Voltage (0 to 12VDC max)</p> <p>In Multi Signal (TM): 4-20mA Output (May be wired for a 2-10VDC signal)</p>
Fail Safe (Enerdrive) Rating:	Models Ending in 60, 65, 80, 60N or 80N: 180 in.lb. (20 Nm)
Enerdrive Response Time:	60-85 seconds closure through 90°, 0-180 in.lb. (0 - 20 Nm)
Auxiliary Switches:	Models Ending in 20, 80, 20N, or 80N: 2 Mechanical Switches, Fixed at 10° & 80°
Auxiliary Switch Rating:	5 Amp Resistive, 250VAC
Electronic Enclosure:	<p>Flammability rating UL94-5V</p> <p>Option W: IP65 equivalent to Nema type 4 enclosure with special protection against chemicals</p>

Spec Sheet Available on Our Website

Actuator Models	Power			Control Signals					Time in Seconds Thru 90° Arc	Actuator Features					List Price
	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 (TBT3000 A)	24VAC 30VDC	8VA	8VA	◆	◆				60 to 85						\$ 255
TT005 (TBT3005 A)	24VAC 30VDC	8VA	8VA	◆	◆				60 to 85	◆					\$ 318
TT020 (TBT3021 A)	24VAC 30VDC	8VA	8VA	◆	◆				60 to 85				◆		\$ 318
TT060 (TBT3060 A)	24VAC 30VDC	24VA	8VA	◆	◆				60 to 85				◆		\$ 512
TT065 (TBT3065 A)	24VAC 30VDC	24VA	8VA	◆	◆				60 to 85	◆			◆		\$ 575
TT080 (TBT3080 A)	24VAC 30VDC	24VA	8VA	◆	◆				60 to 85				◆	◆	\$ 575
TM000 (TBM4000 A)	24VAC 30VDC	8VA	8VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆			\$ 358
TM020 (TBM4021 A)	24VAC 30VDC	8VA	8VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆		◆	\$ 420
TM060 (TBM4060 A)	24VAC 30VDC	30VA	8VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆	◆		\$ 593
TM080 (TBM4080 A)	24VAC 30VDC	30VA	8VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆	◆	◆	\$ 657
TM000N (TBM4000 NA)	24VAC 30VDC	15VA	15VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆			\$ 507
TM020N (TBM4021 NA)	24VAC 30VDC	15VA	15VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆		◆	\$ 570
TM060N (TBM4060 NA)	24VAC 30VDC	40VA	15VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆	◆		\$ 788
TM080N (TBM4080 NA)	24VAC 30VDC	40VA	15VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆	◆	◆	\$ 852

Note: All actuators are powered by brush motors except those ending with the letter “N”
All numbers in parenthesis represent the old nomenclature and will be phased out by Dec. 31, 2008



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 and electronically in Multi Signal models.

GENERAL SPECIFICATIONS

Power Supply:	120VAC/240VAC or 24VAC/120VAC/240VAC Depending upon the Model
Power Consumption:	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
Wire Size:	18 AWG (0.8 mm ²) Minimum
Electrical Connections:	Two 7/8 in. (22.2 mm) Knock Outs, Screw Terminals
Control Signals:	<p>Digital (TT): 2 Wire or 3 Wire 2 Position and/or 4 Wire 3 Point Floating Depending upon the Model</p> <p>Multi Signal (TM): 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 Seconds/20mS Resolution or 0.1 - 25 Seconds/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</p>
Torque:	180 in.lb. (20 Nm) at Rated Voltage
Direction & Time of Rotation:	Reversible, 40-50 Sec. or 60-85 Sec. / 0-180 in.lb. (0-20 Nm) Depending upon the Model
Ambient Temperature:	0°F to +122°F (-18°C to +50°C)
Feedback Potentiometer:	<p>In Digital (TTXX5): Voltage (0 to 12VDC max)</p> <p>In Multi Signal (TM): 4-20mA Output (May be wired for a 2-10VDC signal)</p>
Fail Safe (Enerdrive) Rating:	Models Ending in 60, 65, 80 or 60N: 180 in.lb. (20 Nm)
Enerdrive Response Time:	60-85 seconds closure through 90°, 0-180 in.lb. (0 - 20 Nm)
Auxiliary Switches:	Models Ending in 20, 80 or 20N: 2 Mechanical Switches, Fixed at 10° & 80°
Auxiliary Switch Rating:	5 Amp Resistive, 250VAC
Electronic Enclosure:	Flammability rating UL94-5V Option W: 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 Seconds Thru 90° Arc	Actuator Features					List Price
	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 (TBTHV3300 A)	120VAC 240VAC	10VA	10VA	◆	◆				60 to 85						\$ 334
TT305 (TBTHV3305 A)	120VAC 240VAC	10VA	10VA	◆	◆				60 to 85	◆					\$ 398
TT320 (TBTHV3321 A)	120VAC 240VAC	10VA	10VA	◆	◆				60 to 85				◆		\$ 398
TT360 (TBTHV3360 A)	120VAC 240VAC	30VA	10VA	◆	◆				60 to 85			◆			\$ 570
TT365 (TBTHV3365 A)	120VAC 240VAC	30VA	10VA	◆	◆				60 to 85	◆		◆			\$ 633
TT380 (TBTHV3380 A)	120VAC 240VAC	30VA	10VA	◆	◆				60 to 85			◆	◆		\$ 633
TM300 (TBMHV4300 A)	24VAC 30VDC 120VAC 240VAC	10VA	10VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆			\$ 415
TM320 (TBMHV4321 A)	24VAC 30VDC 120VAC 240VAC	10VA	10VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆		◆	\$ 478
TM360 (TBMHV4360 A)	24VAC 30VDC 120VAC 240VAC	30VA	10VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆	◆		\$ 719
TM380 (TBMHV4380 A)	24VAC 30VDC 120VAC 240VAC	30VA	10VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆	◆	◆	\$ 783
TM300N (TBMHV4300 NA)	24VAC 30VDC 120VAC 240VAC	20VA	20VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆			\$ 650
TM320N (TBMHV4321 NA)	24VAC 30VDC 120VAC 240VAC	20VA	20VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆		◆	\$ 713
TM360N (TBMHV4360 NA)	24VAC 30VDC 120VAC 240VAC	45VA	20VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆	◆		\$ 932

Note: All actuators are powered by brush motors except those ending with the letter “N”
All numbers in parenthesis represent the old nomenclature and will be phased out by Dec. 31, 2008



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 di-gital models and electronically in Multi Signal models.

GENERAL SPECIFICATIONS

Power Supply:	24VAC/30VDC
Power Consumption:	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
Wire Size:	18 AWG (0.8 mm ²) Minimum
Electrical Connections:	Two 7/8 in. (22.2 mm) Knock Outs, Screw Terminals
Control Signals:	<p>Digital (RT): 2 Wire or 3 Wire 2 Position and/or 3 Wire or 4 Wire 3 Point Floating Depending upon the Model</p> <p>Multi Signal (RM): 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 Seconds/20mS Resolution or 0.1 - 25 Seconds/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</p>
Torque:	360 in.lb. (40 Nm) at Rated Voltage
Direction & Time of Rotation:	Reversible, 40-50 Sec. or 60-85 Sec. / 0-360 in.lb. (0-40 Nm) Depending upon the Model
Ambient Temperature:	0°F to +122°F (-18°C to +50°C)
Feedback Potentiometer:	<p>In Digital (RTXX5): Voltage (0 to 12VDC max)</p> <p>In Multi Signal (RM): 4-20mA Output (May be wired for a 2-10VDC signal)</p>
Fail Safe (Enerdrive) Rating:	Models Ending in 60, 65, 80, 60N or 80N: 360 in.lb. (40 Nm)
Enerdrive Response Time:	60-85 seconds closure through 90°, 0-360 in.lb. (0-40 Nm)
Auxiliary Switches:	Models Ending in 20, 80, 20N or 80N: 2 Mechanical Switches, Fixed at 10° & 80°
Auxiliary Switch Rating:	5 Amp Resistive, 250VAC
Electronic Enclosure:	<p>Flammability rating UL94-5V</p> <p>Option W: IP65 equivalent to Nema type 4 enclosure with special protection against chemicals</p>

Spec Sheet Available on Our Website

Actuator Models	Power			Control Signals					Time in Seconds Thru 90° Arc	Actuator Features					List Price
	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 (RBT5000 A)	24VAC 30VDC	10VA	10VA	◆	◆				60 to 85						\$ 393
RT005 (RBT5005 A)	24VAC 30VDC	10VA	10VA	◆	◆				60 to 85	◆					\$ 455
RT020 (RBT5021 A)	24VAC 30VDC	10VA	10VA	◆	◆				60 to 85				◆		\$ 455
RT060 (RBT5060 A)	24VAC 30VDC	24VA	10VA	◆	◆				60 to 85				◆		\$ 891
RT065 (RBT5065 A)	24VAC 30VDC	24VA	10VA	◆	◆				60 to 85	◆			◆		\$ 948
RT080 (RBT5080 A)	24VAC 30VDC	24VA	10VA	◆	◆				60 to 85				◆	◆	\$ 953
RM000 (RBM6000 A)	24VAC 30VDC	10VA	10VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆			\$ 460
RM020 (RBM6021 A)	24VAC 30VDC	10VA	10VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆		◆	\$ 524
RM060 (RBM6060 A)	24VAC 30VDC	30VA	10VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆	◆		\$ 937
RM080 (RBM6080 A)	24VAC 30VDC	30VA	10VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆	◆	◆	\$ 1,001
RM000N (RBM6000 NA)	24VAC 30VDC	24VA	24VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆			\$ 582
RM020N (RBM6021 NA)	24VAC 30VDC	24VA	24VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆		◆	\$ 644
RM060N (RBM6060 NA)	24VAC 30VDC	40VA	24VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆	◆		\$ 1,017
RM080N (RBM6080 NA)	24VAC 30VDC	40VA	24VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆	◆	◆	\$ 1,081

Note: All actuators are powered by brush motors except those ending with the letter "N"
 All numbers in parenthesis represent the old nomenclature and will be phased out by Dec. 31, 2008



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 di-gital models and electronically in Multi Signal models.

GENERAL SPECIFICATIONS

Power Supply:	120VAC/240VAC or 24VAC/120VAC/240VAC Depending upon the Model
Power Consumption:	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
Wire Size:	18 AWG (0.8 mm ²) Minimum
Electrical Connections:	Two 7/8 in. (22.2 mm) Knock Outs, Screw Terminals
<hr/>	
Control Signals:	<p>Digital (RT): 2 Wire or 3 Wire 2 Position and/or 4 Wire 3 Point Floating Depending upon the Model</p> <p>Multi Signal (RM): 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 Seconds/20mS Resolution or 0.1 - 25 Seconds/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</p>
<hr/>	
Torque:	360 in.lb. (40 Nm) at Rated Voltage
Direction & Time of Rotation:	Reversible, 40-50 Sec. or 60-85 Sec. / 0-360 in.lb. (0-40 Nm) Depending upon the Model
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Ambient Temperature:	0°F to +122°F (-18°C to +50°C)
<hr/>	
Feedback Potentiometer:	<p>In Digital (RTXX5): Voltage (0 to 12VDC max)</p> <p>In Multi Signal (RM): 4-20mA Output (May be wired for a 2-10VDC signal)</p>
<hr/>	
Fail Safe (Enerdrive) Rating:	Models Ending in 60, 65, 80 or 60N: 360 in.lb. (40 Nm)
Enerdrive Response Time:	60-85 seconds closure through 90°, 0-360 in.lb. (0-40 Nm)
<hr/>	
Auxiliary Switches:	Models Ending in 20, 80 or 20N: 2 Mechanical Switches, Fixed at 10° & 80°
Auxiliary Switch Rating:	5 Amp Resistive, 250VAC
<hr/>	
Electronic Enclosure:	Flammability rating UL94-5V Option W: 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 Seconds Thru 90° Arc	Actuator Features					List Price
	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 (RBTHV5300 A)	120VAC 240VAC	14VA	14VA	◆	◆				60 to 85						\$ 450
RT305 (RBTHV5305 A)	120VAC 240VAC	14VA	14VA	◆	◆				60 to 85	◆					\$ 507
RT320 (RBTHV5321 A)	120VAC 240VAC	14VA	14VA	◆	◆				60 to 85				◆		\$ 512
RT360 (RBTHV5360 A)	120VAC 240VAC	30VA	14VA	◆	◆				60 to 85				◆		\$ 943
RT365 (RBTHV5365 A)	120VAC 240VAC	30VA	14VA	◆	◆				60 to 85	◆			◆		\$ 1,007
RT380 (RBTHV5380 A)	120VAC 240VAC	30VA	14VA	◆	◆				60 to 85				◆	◆	\$ 1,007
RM300 (RBMHV6300 A)	24VAC 30VDC 120VAC 240VAC	14VA	14VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆			\$ 535
RM320 (RBMHV6321 A)	24VAC 30VDC 120VAC 240VAC	14VA	14VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆		◆	\$ 657
RM360 (RBMHV6360 A)	24VAC 30VDC 120VAC 240VAC	30VA	14VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆	◆		\$ 988
RM380 (RBMHV6380 A)	24VAC 30VDC 120VAC 240VAC	30VA	14VA	◆	◆	◆	◆	◆	60 to 85	◆	◆	◆	◆	◆	\$ 1,109
RM300N (RBMHV6300 NA)	24VAC 30VDC 120VAC 240VAC	30VA	30VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆			\$ 725
RM320N (RBMHV6321 NA)	24VAC 30VDC 120VAC 240VAC	30VA	30VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆		◆	\$ 788
RM360N (RBMHV6360 NA)	24VAC 30VDC 120VAC 240VAC	50VA	30VA	◆	◆	◆	◆	◆	40 to 50	◆	◆	◆	◆		\$ 1,104

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

Power Supply:	24VAC/30VDC
Power Consumption:	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
Wire Size:	18 AWG (0.8 mm ²) Minimum
Electrical Connections:	Three 7/8 in. (22.2 mm) Knock Outs, Screw Terminals
Control Signals:	<p>Digital (UT & WT): 4 Wire 2 Position or 5 Wire 3 Point Floating</p> <p>Multi Signal (UM & 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 Seconds/20mS Resolution or 0.1 - 25 Seconds/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</p>
Torque at Rated Voltage:	1800 in.lb. (200 Nm) to 4000 in.lb. (450 Nm) Depending upon the Model
Direction & Time of Rotation:	Reversible, 45 Seconds to 8 Minutes Depending upon the Model
Ambient Temperature:	0°F to +122°F (-18°C to +50°C)
Feedback Potentiometer:	On all Models: 4-20mA Output (May be wired for a 2-10VDC signal)
Fail Safe Rating:	UT010, UT030, UM010 & UM030: 1800 in.lb. (200 Nm) & 2500 in.lb. (280 Nm) WT010, WT030, WM010 & WM030: 3500 in.lb. (400 Nm) & 4000 in.lb. (450 Nm)
Response Time Through 90°:	0 - 1800 in.lb. (0 - 200 Nm): 45 Sec., 0 - 2500 in.lb. (0 - 280 Nm): 4 Min. 0 - 3500 in.lb. (0 - 400 Nm): 90 Sec., 0 - 4000 in.lb. (0 - 450 Nm): 8 Min.
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	List Price
	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 (UB8000 A)	24VAC 30VDC	100VA	100VA	◆	◆				45 Sec.	◆	◆				\$ 2,444
UT010 (UB8030 A)	24VAC 30VDC	100VA	100VA	◆	◆				45 Sec.	◆	◆		◆		\$ 3,080
UT020 (UB8000 A-AUX2)	24VAC 30VDC	100VA	100VA	◆	◆				45 Sec.	◆	◆			◆	\$ 2,701
UT030 (UB8030 A-AUX2)	24VAC 30VDC	100VA	100VA	◆	◆				45 Sec.	◆	◆		◆	◆	\$ 3,337
<i>for applications requiring up to 2500 in.lb. (280 Nm.) torque at rated voltage</i>															
UM000 (UB8010 A)	24VAC 30VDC	40VA	40VA	◆	◆	◆	◆	◆	4 Min.	◆	◆	◆			\$ 2,444
UM010 (UB8040 A)	24VAC 30VDC	40VA	40VA	◆	◆	◆	◆	◆	4 Min.	◆	◆	◆		◆	\$ 3,080
UM020 (UB8010 A-AUX2)	24VAC 30VDC	40VA	40VA	◆	◆	◆	◆	◆	4 Min.	◆	◆	◆		◆	\$ 2,701
UM030 (UB8040 A-AUX2)	24VAC 30VDC	40VA	40VA	◆	◆	◆	◆	◆	4 Min.	◆	◆	◆		◆	\$ 3,337
<i>for applications requiring up to 3500 in.lb. (400 Nm.) torque at rated voltage</i>															
WT000 (UB9000 A)	24VAC 30VDC	100VA	100VA	◆	◆				90 Sec.	◆	◆				\$ 3,086
WT010 (UB9030 A)	24VAC 30VDC	100VA	100VA	◆	◆				90 Sec.	◆	◆		◆		\$ 3,473
WT020 (UB9000 A-AUX2)	24VAC 30VDC	100VA	100VA	◆	◆				90 Sec.	◆	◆			◆	\$ 3,343
WT030 (UB9030 A-AUX2)	24VAC 30VDC	100VA	100VA	◆	◆				90 Sec.	◆	◆		◆	◆	\$ 3,729
<i>for applications requiring up to 4000 in.lb. (450 Nm.) torque at rated voltage</i>															
WM000 (UB9010 A)	24VAC 30VDC	40VA	40VA	◆	◆	◆	◆	◆	8 Min.	◆	◆	◆			\$ 3,086
WM010 (UB9040 A)	24VAC 30VDC	40VA	40VA	◆	◆	◆	◆	◆	8 Min.	◆	◆	◆		◆	\$ 3,473
WM020 (UB9010 A-AUX2)	24VAC 30VDC	40VA	40VA	◆	◆	◆	◆	◆	8 Min.	◆	◆	◆		◆	\$ 3,343
WM030 (UB9040 A-AUX2)	24VAC 30VDC	40VA	40VA	◆	◆	◆	◆	◆	8 Min.	◆	◆	◆		◆	\$ 3,729

Note: All numbers in parenthesis represent the old nomenclature and will be phased out by Dec. 31, 2008



**2500 in.lb. (280 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

Power Supply:	24VAC/120VAC/240VAC
Power Consumption:	Peak at Start-up: 40VA at Line Voltage Depending upon the Model Operating at Full Load: 40VA at Line Voltage Depending upon the Model
Wire Size:	18 AWG (0.8 mm ²) Minimum
Electrical Connections:	Three 7/8 in. (22.2 mm) Knock Outs, Screw Terminals
Control Signals:	<p>Multi Signal (UM & WM):</p> <p>ANALOG: A) 2-10VDC; or B) May be Externally Wired with a 500 Ohm Resistor which is Supplied for 4-20mA, Zero & Span Adjustable</p> <p>PULSE WIDTH MODULATION: Time Base of 0.1 - 5 Seconds/20mS Resolution or 0.1 - 25 Seconds/100mS Resolution Selected by Dip Switch Position</p> <p>SWITCH 24VAC: Triac or Dry Contact, 40mA Max. Switching Current</p> <p>SWITCH COMMON: NPN Transistor, SCR, Triac or Dry Contact 75mA Max. Switching Current</p> <p>DIGITAL: 3 Wire 2 Position or 4 Wire 3 Point Floating</p>
Torque at Rated Voltage:	2500 in.lb. (280 Nm) to 4000 in.lb. (450 Nm) Depending upon the Model
Direction & Time of Rotation:	Reversible, 4 Minutes to 8 Minutes Depending upon the Model
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:	UM310 & UM330: 2500 in.lb. (280 Nm) WM310 & WM330: 4000 in.lb. (450 Nm)
Response Time Through 90°:	0 - 2500 in.lb. (0 - 280 Nm): 4 Min. 0 - 4000 in.lb. (0 - 450 Nm): 8 Min.
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

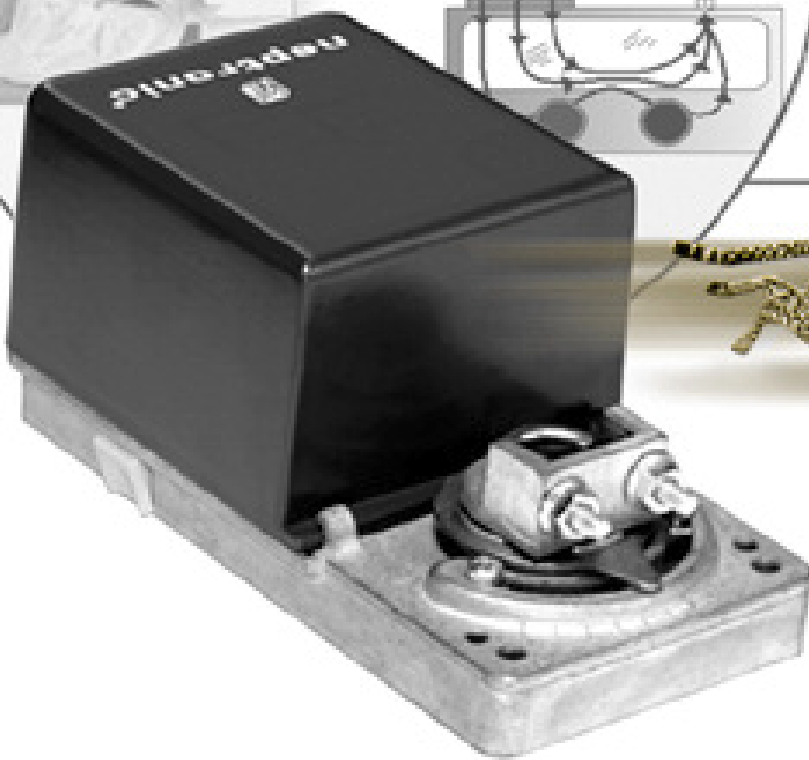
Spec Sheet Available on Our Website

Actuator Models	Power			Control Signals					Rotation Time Thru 90° Arc	Actuator Features				2 Mech. Aux. Switches	List Price
	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>															
UM300 (UB8310 A)	24VAC 30VDC 120VAC 240VAC	40VA	40VA	◆	◆	◆	◆	◆	4 Min.	◆	◆	◆			\$2,571
UM310 (UB8340 A)	24VAC 30VDC 120VAC 240VAC	40VA	40VA	◆	◆	◆	◆	◆	4 Min.	◆	◆	◆	◆		\$ 3,343
UM320 (UB8310 A-AUX2)	24VAC 30VDC 120VAC 240VAC	40VA	40VA	◆	◆	◆	◆	◆	4 Min.	◆	◆	◆		◆	\$ 2,969
UM330 (UB8340 A-AUX2)	24VAC 30VDC 120VAC 240VAC	40VA	40VA	◆	◆	◆	◆	◆	4 Min.	◆	◆	◆	◆	◆	\$ 3,740
<i>for applications requiring up to 4000 in.lb. (450 Nm.) torque at rated voltage</i>															
WM300 (UB9310 A)	24VAC 30VDC 120VAC 240VAC	40VA	40VA	◆	◆	◆	◆	◆	8 Min.	◆	◆	◆			\$ 3,343
WM310 (UB9340 A)	24VAC 30VDC 120VAC 240VAC	40VA	40VA	◆	◆	◆	◆	◆	8 Min.	◆	◆	◆	◆		\$ 4,114
WM320 (UB9310 A-AUX2)	24VAC 30VDC 120VAC 240VAC	40VA	40VA	◆	◆	◆	◆	◆	8 Min.	◆	◆	◆		◆	\$ 3,740
WM330 (UB9340 A-AUX2)	24VAC 30VDC 120VAC 240VAC	40VA	40VA	◆	◆	◆	◆	◆	8 Min.	◆	◆	◆	◆	◆	\$ 4,512

Note: All numbers in parenthesis represent the old nomenclature and will be phased out by Dec. 31, 2008



FAST *ACTUATORS*



◆ Designed for critical environments where the **speed** of the actuator is **essential**.

◆ Finally a **superior** alternative to the pneumatic actuator.

Fastest Electric Damper Actuator in the World!

- ◆ For accurate **control** of air movement in laboratories and clean rooms.
- ◆ For **precise** fume hood control.
- ◆ For water source heat pump valves that require **fast opening** and **shut off**.
- ◆ For generator room dampers that require fast opening and shut off at high torque.

PERFORMANCE RESULTS:

Time ⇒ 1.5 seconds! **Rotation** ⇒ 0-90° **Torque** ⇒ 25 in. lb. (2.8Nm)

Time ⇒ 3.5 seconds! **Rotation** ⇒ 0-90° **Torque** ⇒ 35 in. lb. (4Nm)

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

- ◆ Accepts **digital, analog** and **PWM** control signals with conditioned **feedback**.
- ◆ Micro processor based with **programmable** auto stroke, zero & span.
- ◆ Easy to install, direct mount to the damper shaft or remote mount.
- ◆ Adaptable to the venturi linear flow air valves.
- ◆ Fail Safe with Enerdrive.





Rotational speeds from 1.5 to 8 seconds 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 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

Power Supply:	24VAC/30VDC
Power Consumption:	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
Wire Size:	18 AWG (0.8 mm ²) Minimum
Electrical Connections:	Two 7/8 in. (22.2mm) or One 5/8 in. (15.9mm) and One 7/8in. (22.2mm) Knock Outs, Screw Terminals
Control Signals:	<p>Digital (BT): 2 Wire or 3 Wire 2 Position and/or 3 Wire or 4 Wire 3 Point Floating Depending upon the Model</p> <p>Multi Signal: 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 Seconds/20mS Resolution or 0.1 - 25 Seconds/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</p>
Torque at Rated Voltage:	25 in.lb. (2.8 Nm) to 50 in.lb. (5.6 Nm) at Rated Voltage Depending upon the Model
Direction & Time of Rotation:	Reversible, 1.5 to 8 Seconds Depending upon the Model
Ambient Temperature:	0°F to +122°F (-18°C to +50°C)
Feedback Potentiometer:	In Multi Signal (BM): 4-20mA Output (May be wired for a 2-10VDC signal)
Fail Safe (Enerdrive) Rating:	Models Ending in 60, 80 (F, FF, FN, FFN): 25 to 50 in.lb. (2.8 to 5.6Nm) Depending upon the Model
Enerdrive Response Time:	1.5 to 20 Seconds Closure Through 90°, Depending upon the Model
Auxiliary Switches:	Models Ending in 20 or 80 (F, FF, FN, FFN): 2 Mechanical Switches, Fixed at 10° & 80°
Auxiliary Switch Rating:	5 Amp Resistive, 250VAC
Electronic Enclosure:	Flammability rating UL94-5V

Spec Sheet Available on Our Website

Actuator Models	Power			Control Signals					Time in Seconds Thru 90° Arc	Actuator Features					List Price
	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							
25 in.lb. (2.8 Nm.) torque at rated voltage															
BM000FF (BBMFF2000 A)	24VAC 30VDC	15VA	15VA	◆	◆	◆	◆	◆	1.5 to 2.5	◆	◆	◆			\$ 334
BM020FF (BBMFF2021 A)	24VAC 30VDC	15VA	15VA	◆	◆	◆	◆	◆	1.5 to 2.5	◆	◆	◆		◆	\$ 396
BM060FF (BBMFF2060 A)	24VAC 30VDC	24VA	15VA	◆	◆	◆	◆	◆	1.5 to 2.5	◆	◆	◆	◆		\$ 435
BM080FF (BBMFF2080 A)	24VAC 30VDC	24VA	15VA	◆	◆	◆	◆	◆	1.5 to 2.5	◆	◆	◆	◆	◆	\$ 498
35 in.lb. (4 Nm.) torque at rated voltage															
BM000F (BBMF2000 A)	24VAC 30VDC	15VA	15VA	◆	◆	◆	◆	◆	3.5 to 4.5	◆	◆	◆			\$ 334
BM020F (BBMF2021 A)	24VAC 30VDC	15VA	15VA	◆	◆	◆	◆	◆	3.5 to 4.5	◆	◆	◆		◆	\$ 396
BM060F (BBMF2060 A)	24VAC 30VDC	24VA	15VA	◆	◆	◆	◆	◆	3.5 to 4.5	◆	◆	◆	◆		\$ 435
BM080F (BBMF2080 A)	24VAC 30VDC	24VA	15VA	◆	◆	◆	◆	◆	3.5 to 4.5	◆	◆	◆	◆	◆	\$ 498
BM000FFN (BBMFF2000 NA)	24VAC 30VDC	24VA	24VA	◆	◆	◆	◆	◆	3	◆	◆	◆			\$ 419
BM020FFN (BBMFF2021 NA)	24VAC 30VDC	24VA	24VA	◆	◆	◆	◆	◆	3	◆	◆	◆		◆	\$ 480
BM060FFN (BBMFF2060 NA)	24VAC 30VDC	24VA	24VA	◆	◆	◆	◆	◆	3	◆	◆	◆	◆		\$ 581
50 in.lb. (5.6 Nm.) torque at rated voltage															
BT000F (BBTF1000 A)	24VAC 30VDC	15VA	15VA	◆	◆				6 to 8		◆				\$ 210
BT020F (BBTF1021 A)	24VAC 30VDC	15VA	15VA	◆	◆				6 to 8		◆			◆	\$ 295
BT060F (BBTF1060 A)	24VAC 30VDC	24VA	15VA	◆	◆				6 to 8		◆		◆		\$ 317
BT080F (BBTF1080 A)	24VAC 30VDC	24VA	15VA	◆	◆				6 to 8		◆		◆	◆	\$ 380
BM000FN (BBMF2000 NA)	24VAC 30VDC	24VA	24VA	◆	◆	◆	◆	◆	6	◆	◆	◆			\$ 419
BM020FN (BBMF2021 NA)	24VAC 30VDC	24VA	24VA	◆	◆	◆	◆	◆	6	◆	◆	◆		◆	\$ 480
BM060FN (BBMF2060 NA)	24VAC 30VDC	24VA	24VA	◆	◆	◆	◆	◆	6	◆	◆	◆	◆		\$ 581

Note: All actuators are powered by brush motors except those ending with the letter “N”
All numbers in parenthesis represent the old nomenclature and will be phased out by Dec. 31, 2008

**Rotational speeds from 15 to 30 seconds
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

Power Supply:	24VAC/30VDC
Power Consumption:	Peak at Start-up: 10VA to 40VA at 26VAC Depending upon the Model Operating at Full Load: 10VA to 30VA at 26VAC Depending upon the Model
Wire Size:	18 AWG (0.8 mm ²) Minimum
Electrical Connections:	Two 7/8 in. (22.2mm) or One 5/8 in. (15.9mm) and One 7/8in. (22.2mm) Knock Outs, Screw Terminals

Control Signals:	Digital (TT & RT): 2 Wire or 3 Wire 2 Position and/or 3 Wire or 4 Wire 3 Point Floating Depending upon the Model Multi Signal: 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 Seconds/20mS Resolution or 0.1 - 25 Seconds/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
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Torque at Rated Voltage:	120 in.lb. (13.5 Nm) to 240 in.lb. (27 Nm) at Rated Voltage Depending upon the Model
Direction & Time of Rotation:	Reversible, 15 to 30 Seconds Depending upon the Model

Ambient Temperature:	0°F to +122°F (-18°C to +50°C)
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Feedback Potentiometer:	In Multi Signal (TM or RM): 4-20mA Output (May be wired for a 2-10VDC signal)
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Fail Safe (Enerdrive) Rating:	Models Ending in 60, 80 (F, FN): 120 to 240 in.lb. (13.5 to 27Nm) Depending upon the Model
Enerdrive Response Time:	15 to 20 Seconds Closure Through 90°, Depending upon the Model

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

Electronic Enclosure:	Flammability rating UL94-5V
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Actuator Models	Power			Control Signals					Time in Seconds Thru 90° Arc	Actuator Features					List Price
	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 (TBTF3000 A)	24VAC 30VDC	10VA	10VA	◆	◆				20 to 30		◆				\$ 358
TT020F (TBTF3021 A)	24VAC 30VDC	10VA	10VA	◆	◆				20 to 30		◆			◆	\$ 420
TT060F (TBTF3060 A)	24VAC 30VDC	24VA	10VA	◆	◆				20 to 30		◆		◆		\$ 622
TT080F (TBTF3080 A)	24VAC 30VDC	24VA	10VA	◆	◆				20 to 30		◆		◆	◆	\$ 684
TM000FN (TBMF4000 NA)	24VAC 30VDC	25VA	25VA	◆	◆		◆	◆	15 to 20	◆	◆	◆			\$ 570
TM020FN (TBMF4021 NA)	24VAC 30VDC	25VA	25VA	◆	◆	◆	◆	◆	15 to 20	◆	◆	◆		◆	\$ 633
TM060FN (TBMF4060 NA)	24VAC 30VDC	40VA	25VA	◆	◆	◆	◆	◆	15 to 20	◆	◆	◆	◆		\$ 898
TM080FN (TBMF4080 NA)	24VAC 30VDC	40VA	25VA	◆	◆	◆	◆	◆	15 to 20	◆	◆	◆	◆	◆	\$ 961
TM300FN (TBMFHV4300 NA)	24VAC 30VDC 120VAC 240VAC	30VA	30VA	◆	◆	◆	◆	◆	20	◆	◆	◆			\$ 690
TM320FN (TBMFHV4321 NA)	24VAC 30VDC 120VAC 240VAC	30VA	30VA	◆	◆	◆	◆	◆	20	◆	◆	◆		◆	\$ 753
TM360FN (TBMFHV4360 NA)	24VAC 30VDC 120VAC 240VAC	50VA	30VA	◆	◆	◆	◆	◆	20	◆	◆	◆	◆		\$ 977
<i>240 in.lb. (27 Nm.) torque at rated voltage</i>															
RT000F (RBTF5000 A)	24VAC 30VDC	18VA	18VA	◆	◆				20 to 30		◆				\$ 519
RT020F (RBTF5021 A)	24VAC 30VDC	18VA	18VA	◆	◆				20 to 30		◆			◆	\$ 582
RT060F (RBTF5060 A)	24VAC 30VDC	40VA	18VA	◆	◆				20 to 30		◆		◆		\$ 1,012
RT080F (RBTF5080 A)	24VAC 30VDC	40VA	18VA	◆	◆				20 to 30		◆		◆	◆	\$ 1,104
RM000FN (RBMF6000 NA)	24VAC 30VDC	25VA	25VA	◆	◆	◆	◆	◆	15 to 20	◆	◆	◆			\$ 662
RM020FN (RBMF6021 NA)	24VAC 30VDC	25VA	25VA	◆	◆	◆	◆	◆	15 to 20	◆	◆	◆		◆	\$ 719
RM060FN (RBMF6060 NA)	24VAC 30VDC	40VA	25VA	◆	◆	◆	◆	◆	15 to 20	◆	◆	◆	◆		\$ 1,149
RM080FN (RBMF6080 NA)	24VAC 30VDC	40VA	25VA	◆	◆	◆	◆	◆	15 to 20	◆	◆	◆	◆	◆	\$ 1,269
RM300FN (RBMFHV6300 NA)	24VAC 30VDC 120VAC 240VAC	30VA	30VA	◆	◆	◆	◆	◆	20	◆	◆	◆			\$ 967
RM320FN (RBMFHV6321 NA)	24VAC 30VDC 120VAC 240VAC	30VA	30VA	◆	◆	◆	◆	◆	20	◆	◆	◆		◆	\$ 1,029
RM360FN (RBMFHV6360 NA)	24VAC 30VDC 120VAC 240VAC	50VA	30VA	◆	◆	◆	◆	◆	20	◆	◆	◆	◆		\$ 1,510

Note: All actuators are powered by brush motors except those ending with the letter "N"
 All numbers in parenthesis represent the old nomenclature and will be phased out by Dec. 31, 2008

SMOKE DAMPER ACTUATORS



Smoke Damper Actuators

neptronic®

Rotational speeds from 20 to 30 seconds
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

Power Supply:	24VAC/24VDC, 120VAC or 240VAC Depending upon the Model
Power Consumption:	Running Consumption: 15VA to 24VA Depending upon the Model Holding Consumption: 5VA
Wire Size:	18 AWG (0.8 mm ²) Minimum
Electrical Connections:	Two 7/8 in. (22.2mm) or One 5/8 in. (15.9mm) and One 7/8in. (22.2mm) Knock Outs, Screw Terminals
Control Signals:	2 Wire 2 Position
Torque:	35 in.lb. (4 Nm) to 90 in.lb. (11 Nm) at Rated Voltage Depending upon the Model
Direction & Time of Rotation:	Reversible, 20-30 Seconds
Ambient Temperature:	0°F to +122°F (-18°C to +50°C) * 250°F (121°C) for a limited time
Fail Safe (Enerdrive) Rating:	35 to 90 in.lb. (4 to 11Nm) Depending upon the Model
Enerdrive Response Time:	15 Seconds Closure Through 90°
Auxiliary Switches:	Models Ending in 80X_ _: 2 Mechanical Switches Switching Points: 5° & 85° +/-5°
Auxiliary Switch Rating:	5 Amp Resistive, 250VAC
Electronic Enclosure:	NEMA type 2 / IP42

Spec Sheet Available on Our Website

Actuator Models	Power			Control Signals	Time in Seconds Thru 90° Arc	Actuator Features		List Price
	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	◆		\$ 289
BT080X4	24VAC 24VDC	15VA	5VA	◆	20 to 30	◆	◆	\$ 351
BT160X4	120VAC	15VA	5VA	◆	20 to 30	◆		\$ 334
BT180X4	120VAC	15VA	5VA	◆	20 to 30	◆	◆	\$ 396
BT260X4	240VAC	15VA	5VA	◆	20 to 30	◆		\$ 334
BT280X4	240VAC	15VA	5VA	◆	20 to 30	◆	◆	\$ 396
<i>for applications requiring up to 70 in.lb. (8 Nm.) torque at rated voltage</i>								
BT060X8	24VAC 24VDC	15VA	5VA	◆	20 to 30	◆		\$ 362
BT080X8	24VAC 24VDC	15VA	5VA	◆	20 to 30	◆	◆	\$ 424
BT160X8	120VAC	15VA	5VA	◆	20 to 30	◆		\$ 396
BT180X8	120VAC	15VA	5VA	◆	20 to 30	◆	◆	\$ 458
BT260X8	240VAC	15VA	5VA	◆	20 to 30	◆		\$ 396
BT280X8	240VAC	15VA	5VA	◆	20 to 30	◆	◆	\$ 458
<i>for applications requiring up to 90 in.lb. (11 Nm.) torque at rated voltage</i>								
LT060X11	24VAC 24VDC	24VA	5VA	◆	20 to 30	◆		\$ 605
LT080X11	24VAC 24VDC	24VA	5VA	◆	20 to 30	◆	◆	\$ 666
LT160X11	120VAC	24VA	5VA	◆	20 to 30	◆		\$ 649
LT180X11	120VAC	24VA	5VA	◆	20 to 30	◆	◆	\$ 711
LT260X11	240VAC	24VA	5VA	◆	20 to 30	◆		\$ 649
LT280X11	240VAC	24VA	5VA	◆	20 to 30	◆	◆	\$ 711

IP65 / NEMA 4 ACTUATORS



IP65 / NEMA 4 Actuators (low voltage)

neptronic®

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



PRIMARY USES FOR THESE ACTUATORS

- ◆ high humidity applications
- ◆ outdoor applications
- ◆ food industry
- ◆ 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 ²]
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, 60-85 Seconds
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:	60-85 Seconds 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 Seconds Thru 90° Arc	Actuator Features					List Price
	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>140 in.lb. (16 Nm.) torque at rated voltage</i>															
LM000W	24VAC 30VDC	8VA	8VA			◆			60 to 85		◆				\$ 416
LM020W	24VAC 30VDC	8VA	8VA			◆			60 to 85		◆		◆		\$ 477
LM060W	24VAC 30VDC	30VA	8VA			◆			60 to 85		◆	◆			\$ 578
LM080W	24VAC 30VDC	30VA	8VA			◆			60 to 85		◆	◆	◆		\$ 641
<i>180 in.lb. (20 Nm.) torque at rated voltage</i>															
TM000W	24VAC 30VDC	8VA	8VA			◆			60 to 85		◆				\$ 469
TM020W	24VAC 30VDC	8VA	8VA			◆			60 to 85		◆		◆		\$ 531
TM060W	24VAC 30VDC	30VA	8VA			◆			60 to 85		◆	◆			\$ 704
TM080W	24VAC 30VDC	30VA	8VA			◆			60 to 85		◆	◆	◆		\$ 768
<i>360 in.lb. (40 Nm.) torque at rated voltage</i>															
RM000W	24VAC 30VDC	10VA	10VA			◆			60 to 85		◆				\$ 572
RM020W	24VAC 30VDC	10VA	10VA			◆			60 to 85		◆		◆		\$ 635
RM060W	24VAC 30VDC	30VA	10VA			◆			60 to 85		◆	◆			\$ 1,048
RM080W	24VAC 30VDC	30VA	10VA			◆			60 to 85		◆	◆	◆		\$ 1,112

IP65 / NEMA 4 Actuators (line voltage)

neptronic®

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



PRIMARY USES FOR THESE ACTUATORS

- ◆ high humidity applications
- ◆ outdoor applications
- ◆ food industry
- ◆ 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:	120VAC or 240VAC Depending upon the Model
Power Consumption:	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
Electrical Connections:	1 meter long 6 wire plenum cable, 18 AWG [0.8 mm ²]
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, 60-85 Seconds
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:	60-85 Seconds Closure Through 90°
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 Seconds Thru 90° Arc	Actuator Features					List Price
	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>140 in.lb. (16 Nm.) torque at rated voltage</i>															
LM100W	120VAC	10VA	10VA			◆			60 to 85		◆				\$ 466
LM160W	120VAC	30VA	10VA			◆			60 to 85		◆		◆		\$ 629
LM200W	240VAC	10VA	10VA			◆			60 to 85		◆				\$ 466
LM260W	240VAC	30VA	10VA			◆			60 to 85		◆		◆		\$ 629
<i>180 in.lb. (20 Nm.) torque at rated voltage</i>															
TM100W	120VAC	10VA	10VA			◆			60 to 85		◆				\$ 526
TM160W	120VAC	30VA	10VA			◆			60 to 85		◆		◆		\$ 831
TM200W	240VAC	10VA	10VA			◆			60 to 85		◆				\$ 526
TM260W	240VAC	30VA	10VA			◆			60 to 85		◆		◆		\$ 831
<i>360 in.lb. (40 Nm.) torque at rated voltage</i>															
RM100W	120VAC	14VA	14VA			◆			60 to 85		◆				\$ 646
RM160W	120VAC	30VA	14VA			◆			60 to 85		◆		◆		\$ 1,101
RM200W	240VAC	14VA	14VA			◆			60 to 85		◆				\$ 646
RM260W	240VAC	30VA	14VA			◆			60 to 85		◆		◆		\$ 1,101



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

GENERAL SPECIFICATIONS

Power Supply:	24VAC/30VDC, 24VDC or 24VAC/120VAC/240VAC Depending upon the Model
Power Consumption:	Peak at Start-up: 4VA to 40VA at 26VAC Depending upon the Model Operating at Full Load: 4VA to 40VA at 26VAC Depending upon the Model
Wire Size:	18 AWG (0.8 mm ²) Minimum
Electrical Connections:	5/8 in. (15.9 mm) & 7/8 in. (22.2 mm) Knock Outs, Screw Terminals
Control Signals:	<p>Digital (AT): 2 Wire or 3 Wire 2 Position and/or 3 Wire or 4 Wire 3 Point Floating Depending upon the Model</p> <p>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 Seconds/20mS Resolution or 0.1 - 25 Seconds/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</p>
Force:	(A): 100 lb. (450 N) & (M): 1500 lb. (6750 N) at Rated Voltage
Direction & Running Time:	(A): Reversible, 60 Seconds or 90 to 100 Sec. Depending upon the Model (M): Reversible, 2 to 7 minutes. 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:	(A): 0-100 lb. (0-450N): 60 Seconds for Full Stroke (M): 0-1500 lb. (0-6750N): 7 Minutes for Full Stroke
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 in Seconds	Actuator Features				2 Mech. Aux. Switches	List Price
	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 (AQT1000A-05-S)	24VAC 30VDC	6VA	6VA	◆	◆				60						\$ 204
AT005 (AQT1005A-05-S)	24VAC 30VDC	6VA	6VA	◆	◆				60	◆					\$ 261
AT020 (AQT1021A-05-S)	24VAC 30VDC	6VA	6VA	◆	◆				60				◆		\$ 278
AT060 (AQT1060A-05-S)	24VAC 30VDC	20VA	6VA	◆	◆				60			◆			\$ 334
AT065 (AQT1065A-05-S)	24VAC 30VDC	20VA	6VA	◆	◆				60	◆		◆			\$ 391
AT080 (AQT1080A-05-S)	24VAC 30VDC	20VA	6VA	◆	◆				60			◆	◆		\$ 401
AM000 (AQM2000A-05-S)	24VAC 30VDC	6VA	6VA	◆	◆	◆	◆	◆	60	◆	◆	◆			\$ 351
AM060 (AQM2060A-05-S)	24VAC 30VDC	20VA	6VA	◆	◆	◆	◆	◆	60	◆	◆	◆	◆		\$ 452
AM400 (AQM24A-05-S)	24VAC	4VA	4VA	◆	◆	◆	◆	◆	90 to 100	◆	◆	◆			\$ 373
<i>for applications requiring up to 1500 lb. (6750 N) force at rated voltage</i>															
MM000 (MTM910AV)	24VAC 30VDC	40VA	40VA	◆	◆	◆	◆	◆	2 to 7 Min	◆	◆	◆			\$ 3,012
MM010 (MTM940AV)	24VAC 30VDC	40VA	40VA	◆	◆	◆	◆	◆	2 to 7 Min	◆	◆	◆	◆		\$ 3,283
MM300	24VAC 30VDC 120VAC 240VAC	40VA	40VA	◆	◆	◆	◆	◆	2 to 7 Min	◆	◆	◆			\$ 3,165
MM310	24VAC 30VDC 120VAC 240VAC	40VA	40VA	◆	◆	◆	◆	◆	2 to 7 Min	◆	◆	◆	◆		\$ 3,407

Note: All numbers in parenthesis represent the old nomenclature and will be phased out by Dec. 31, 2008. The last three characters of the nomenclature (05-S) designate an Invensys globe valve linkage. If you need an actuator for a different globe valve, please call the factory for accurate nomenclature, price and delivery.

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.

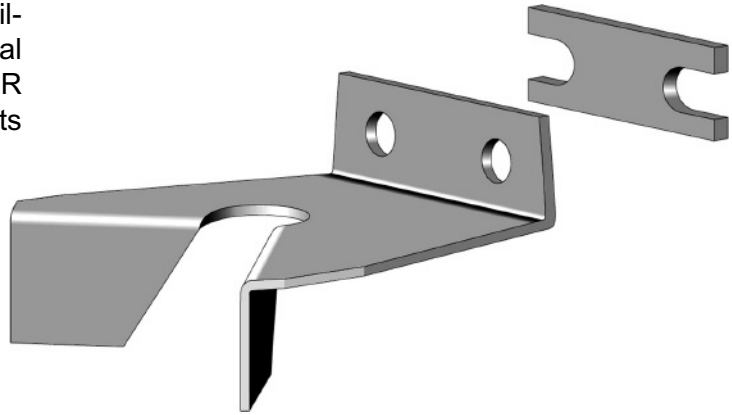


Figure: The Stroke Limiting Device complete with Stopper

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 clutch motor when power is on. Always remove power first. Then clutch and turn damper or valve.

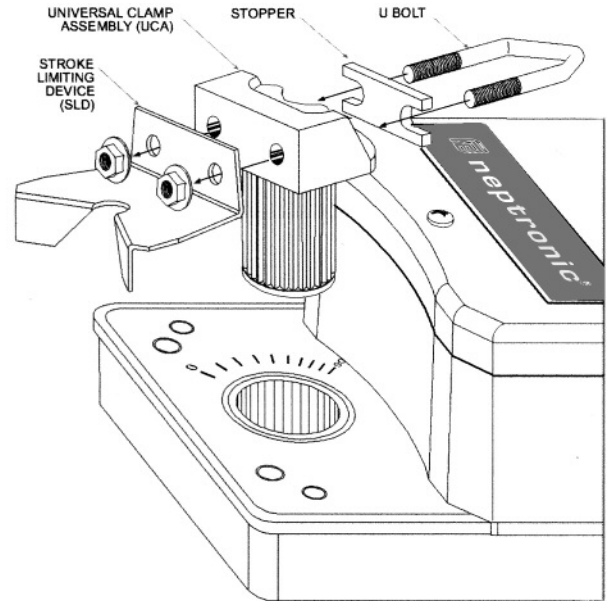
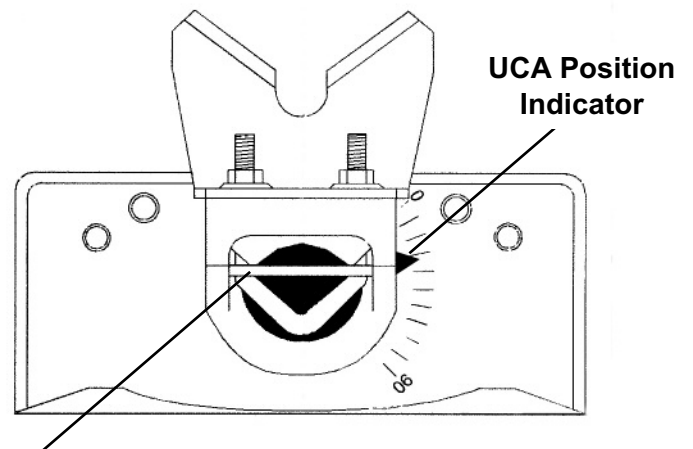


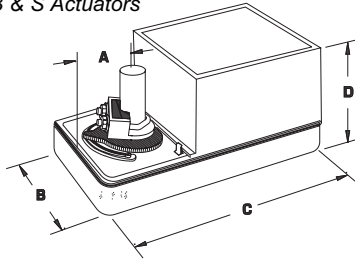
Figure: This diagram illustrates the correct sequence for attaching the SLD and Stopper.

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



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

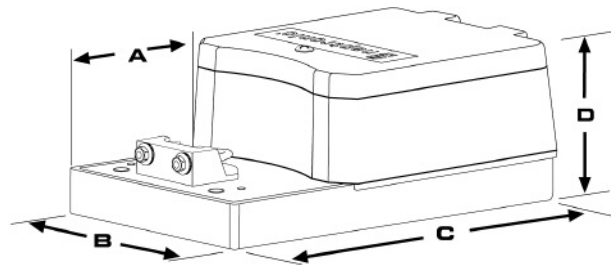
Figure i C, D, B & S Actuators



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
The Enerdrive System	"Fail" to the 0° Position

Figure ii L, T & R Actuators



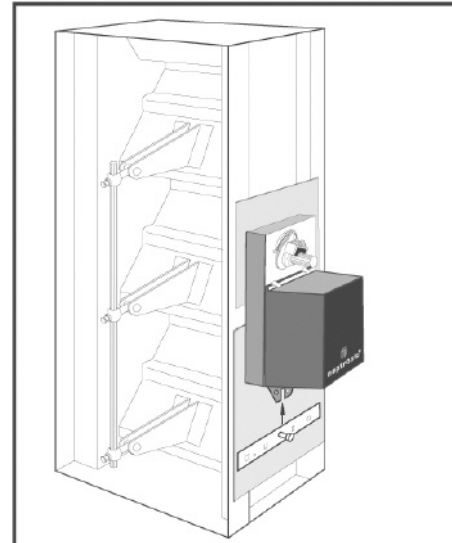
Actuator Installation

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. 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.

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. Refer to page 63 for a complete list.



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.



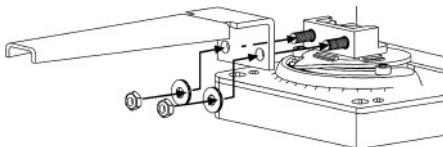
RSA
Ruskin Shaft Adapter for direct mounting of an L, T or R actuator on the 1 inch hollow Ruskin jack shaft.



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.



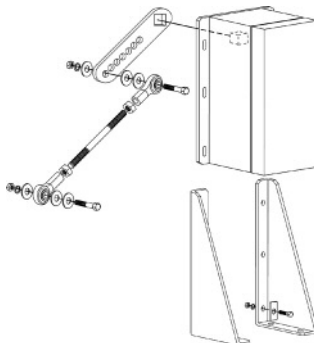
MINI & MAXI HANDLES
Universal Clamp Assembly Handle for C/D/B/S or L/T/R actuators depending upon the model.



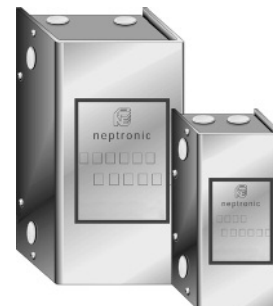
ARM24BB & ARM36BB
Assembly for Remote Mounting for C, D, B & S actuators only. Contains 2 ball joints, 1 motor crank arm, 24" or 36" length 5/16" rod depending upon the model, set nut & bolts.



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.



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

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 seconds 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.

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.

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.

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.

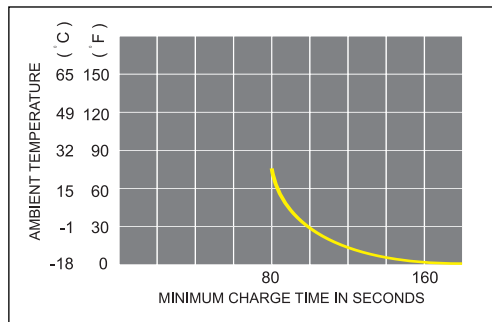


Fig. ii The Effect of Temperature on Charge Time of the Enerdrive System for the Maximum Load of 50 in.lb. at 77°F/25°C

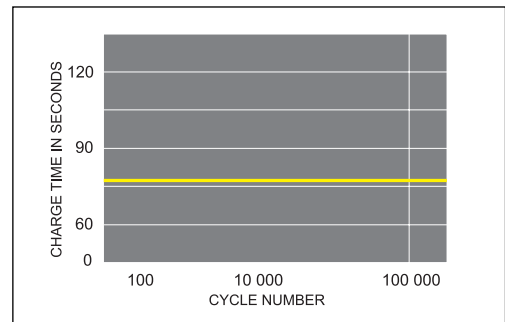


Fig. i The Cyclic Characteristics of the Enerdrive System for the Maximum Load of 50 in.lb. at 77°F/25°C.

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



Old no.	New no.
AQM2000A	AM000
AQM2060A	AM060
AQM24A	AM400
AQT1000A	AT000
AQT1005A	AT005
AQT1021A	AT020
AQT1060A	AT060
AQT1065A	AT065
AQT1080A	AT080
BBM2000A	BM000
BBM2000NA	BM000N
BBM2021A	BM020
BBM2021NA	BM020N
BBM2060A	BM060
BBM2060NA	BM060N
BBM2080A	BM080
BBM24A	BM400
BBM24AAX	BM420
BBMF2000A	BM000F
BBMF2000N	BM000FN
BBMF2021A	BM020F
BBMF2021N	BM020FN
BBMF2060A	BM060F
BBMF2060N	BM060FN
BBMF2080A	BM080F
BBMFF2000A	BM000FF
BBMFF2000NA	BM000FFN
BBMFF2021A	BM020FF
BBMFF2021NA	BM020FFN
BBMFF2060A	BM060FF
BBMFF2060NA	BM060FFN
BBMFF2080A	BM080FF
BBMS2000	BM000S
BBMS2021	BM020S
BBMS2060	BM060S
BBMS2080	BM080S
BBMS2800	BM800S
BBMS2821	BM820S
BBMS2860	BM860S
BBMS2880	BM880S
BBT1000A	BT000
BBT1005A	BT005
BBT1021A	BT020
BBT1060A	BT060
BBT1065A	BT065
BBT1080A	BT080
BBT24A	BT400
BBT24AAX	BT420
BBT24AP	BT405

Old no.	New no.
BBTF1000A	BT000F
BBTF1021A	BT020F
BBTF1060A	BT060F
BBTF1080A	BT080F
BBTHV1100A	BT100
BBTHV1105A	BT105
BBTHV1121A	BT120
BBTHV1160A	BT160
BBTHV1180A	BT180
BBTHV1200A	BT200
BBTHV1205A	BT205
BBTHV1221A	BT220
BBTHV1260A	BT260
BBTHV1280A	BT280
BBTS1000	BT000S
BBTS1005	BT005S
BBTS1021	BT020S
BBTS1060	BT060S
BBTS1065	BT065S
BBTS1080	BT080S
BBTS1800	BT800S
BBTS1860	BT860S
BBTS24A	BT400S
BBTS24AAX	BT420S
BBTS24AP	BT405S
LDM4000A	LM000
LDM4021A	LM020
LDM4060A	LM060
LDM4080A	LM080
LDMHV4300A	LM300
LDMHV4321A	LM320
LDMHV4360A	LM360
LDMHV4380A	LM380
LDT3000A	LT000
LDT3005A	LT005
LDT3021A	LT020
LDT3060A	LT060
LDT3065A	LT065
LDT3080A	LT080
LDTHV3300A	LT300
LDTHV3305A	LT305
LDTHV3321A	LT320
LDTHV3360A	LT360
LDTHV3365A	LT365
LDTHV3380A	LT380
MDMS2060	DM060S
MDMS2080	DM080S
MDTS1060	DT060S
MDTS1065	DT065S
MDTS1080	DT080S

Old no.	New no.
MTM910AV	MM000
MTM940AV	MM010
RBM6000A	RM000
RBM6000NA	RM000N
RBM6021A	RM020
RBM6021NA	RM020N
RBM6060A	RM060
RBM6060NA	RM060N
RBM6080A	RM080
RBM6080NA	RM080N
RBMF6000A	RM000FN
RBMF6021A	RM020FN
RBMF6060A	RM060FN
RBMF6080A	RM080FN
RBMFHV6300NA	RM300FN
RBMFHV6321NA	RM320FN
RBMFHV6360NA	RM360FN
RBMHV6300A	RM300
RBMHV6300NA	RM300N
RBMHV6321A	RM320
RBMHV6321NA	RM320N
RBMHV6360A	RM360
RBMHV6360NA	RM360N
RBMHV6380A	RM380
RBT5000A	RT000
RBT5005A	RT005
RBT5021A	RT020
RBT5060A	RT060
RBT5065A	RT065
RBT5080A	RT080
RBT5000A	RT000F
RBT5021A	RT020F
RBT5060A	RT060F
RBT5080A	RT080F
RBTHV5300A	RT300
RBTHV5305A	RT305
RBTHV5321A	RT320
RBTHV5360A	RT360
RBTHV5365A	RT365
RBTHV5380A	RT380
TBM4000A	TM000
TBM4000NA	TM000N
TBM4021A	TM020
TBM4021NA	TM020N
TBM4060A	TM060
TBM4060NA	TM060N
TBM4080A	TM080
TBM4080NA	TM080N
TBMF4000NA	TM000FN
TBMF4021NA	TM020FN
TBMF4060NA	TM060FN

Old no.	New no.
TBMF4080NA	TM080FN
TBMFHV4300NA	TM300FN
TBMFHV4321NA	TM320FN
TBMFHV4360NA	TM360FN
TBMHV4300A	TM300
TBMHV4300NA	TM300N
TBMHV4321A	TM320
TBMHV4321NA	TM320N
TBMHV4360A	TM360
TBMHV4360NA	TM360N
TBMHV4380A	TM380
TBT3000A	TT000
TBT3005A	TT005
TBT3021A	TT020
TBT3060A	TT060
TBT3065A	TT065
TBT3080A	TT080
TBTF3000A	TT000F
TBTF3021A	TT020F
TBTF3060A	TT060F
TBTF3080A	TT080F
TBTHV3300A	TT300
TBTHV3305A	TT305
TBTHV3321A	TT320
TBTHV3360A	TT360
TBTHV3365A	TT365
TBTHV3380A	TT380
UB8000A	UT000
UB8000A-AUX2	UT020
UB8010A	UM000
UB8010A-AUX2	UM020
UB8030A	UT010
UB8030A-AUX2	UT030
UB8040A	UM010
UB8040A-AUX2	UM030
UB8310A	UM300
UB8310A-AUX2	UM320
UB8340A	UM310
UB8340A-AUX2	UM330
UB9000A	WT000
UB9000A-AUX2	WT020
UB9010A	WM000
UB9010A-AUX2	WM020
UB9030A	WT010
UB9030A-AUX2	WT030
UB9040A	WM010
UB9040A-AUX2	WM030
UB9310A	WM300
UB9310A-AUX2	WM320
UB9340A	WM310
UB9340A-AUX2	WM330

Cross Reference

Use this at-a-glance cross reference guide to select the Neptronic actuator that directly or most closely replaces models by other manufacturers. Although only low voltage motors without peripherals have been listed to simplify the table, it amply demonstrates Neptronic's versatility in torque range for both digital and analog actuators either fail safe or non-fail safe.

MANUFACTURER	BELIMO	JOHNSON	INVENSYS	SIEMENS	HONEYWELL	NEPTRONIC	
<i>for torque <20 in. lb.</i>							
Torque	18 in. lb.					18 in. lb.	
Digital & Fail Safe	TF24					CT060S	
Analog & Fail Safe	TF24-SR					CM060S	
<i>for torque <35 in. lb.</i>							
Torque	35 in. lb.			35 in. lb.		25 in. lb.	
Digital & Fail Safe	LF24			MX40-7043		ML8175C	
Analog & Fail Safe	LF24-SR			MS40-7043			
<i>for torque <55 in. lb.</i>							
Torque	35 in. lb.	53 in. lb.	35 in. lb.	35 in. lb.	44 in. lb.	35/44 in. lb.	50 in. lb.
Digital	LMX24-3	M9106-AGA	M9104-IGA	MF40-6043	GDE131	ML6161	BT000S
Digital & Fail Safe		M9206-AGA					BT060S
Analog	LMB24-SR	M9106-GGA		MS40-6043	GDE161	ML7161	BM000S
Analog & Fail Safe		M9206-GGA				MS7505	BM060S
<i>for torque <100 in. lb.</i>							
Torque	60/70 in. lb.	70 in. lb.		60/70 in. lb.	62/88 in. lb.	70/88 in. lb.	70 in. lb.
Digital	NMB24-3	M9108-AGA		MF40-6083	GLB131.IP	ML6174	ST000S
Digital & Fail Safe	NF24			MX40-7073	GMA131	MS8110	ST060S
Analog	NMB24-SR	M9108-GGA		MS40-6083	GLB161.IP	ML7174	SM000S
Analog & Fail Safe	NF24-SR			MS40-7073	GMA161		SM060S
<i>for torque <150 in. lb.</i>							
Torque	133 in. lb.	140 in. lb.		133 in. lb.	132/142 in. lb.	142/150 in. lb.	140 in. lb.
Digital		M9116-AGA		MF40-6153	GEB131.1U	ML6184	LT000
Digital & Fail Safe	AF24	M9216-AGA		MX40-7153	GCA121	ML8195	LT060
Analog		M9116-GGA		MS40-6153	GEB161.1U	ML7284	LM000
Analog & Fail Safe	AF24-SR	M9216-GGA		MS40-7153	GCA161	ML7295	LM060
<i>for torque <180 in. lb.</i>							
Torque	160 in. lb.			150 in. lb.	177 in. lb.	175 in. lb.	180 in. lb.
Digital	AMB24-3				GBB171	MN6120	TT000
Digital & Fail Safe				MX40-7173		MS8120	TT060
Analog	AMB24-SR				GBB163	MN7220	TM000
Analog & Fail Safe				MS40-7173		MS7520	TM060
<i>for torque <360 in. lb.</i>							
Torque	266 in. lb.	210 in. lb.	280 in. lb.	300 in. lb.	310 in. lb.	310 in. lb.	360 in. lb.
Digital	GMB24-3	M9124-AGA	M9132-AGA	MF40-6343	GIB171	ML6194	RT000
Digital & Fail Safe							RT060
Analog	GMB24-SR	M9124-GGA	M9132-GGA	MS40-6343	GIB161	ML7294	RM000
Analog & Fail Safe							RM060

**SK Steam
Humidifiers**



**Electric
Actuators**



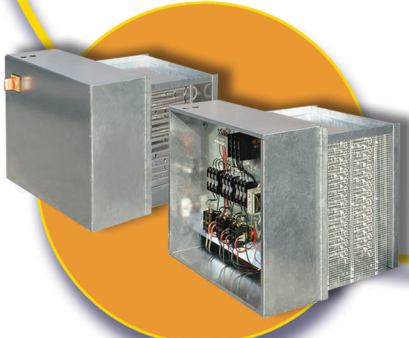
**HVAC
Controls**



**Actuated
Valves**



**Electric
Heaters**



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