neptronic®

Actuator
Specification & Installation Instructions

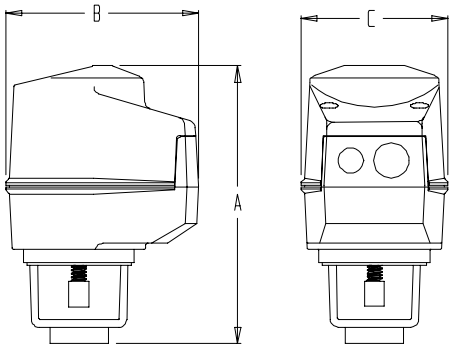
Features:

- Retrofit assembly available for the majority of the manufacturers of valves (with option –XX-Y) (see Retrofit option).
- Manuel override
- Maintenance free.
- Control signal fully programmable.
- Fail safe by *Enerdrive System*[1] (on model 060).

AM000
AM060

Technical Data	AM000	AM060
Fail safe - *Enerdrive*	No	Yes
Power consumption	6 VA	12VA Peak, 6VA
Running time	90 sec force dependant (90 sec for ½" or 90 sec for 1")	
Force	100 lb. [450 N] at rated voltage	
Feedback	4 to 20 mA or 2 to 10 Vdc adjustable (factory set 4 to 20 mA)	
Power supply	22 to 26 Vac or 28 to 32 Vdc	
Electrical connection	18 AWG [0.8 mm^2] minimum	
Inlet bushing	2 inlet bushing of 5/8 in [15.9 mm] & 7/8 in [22.2 mm]	
Control signal	Analog, Digital or Pulse with modulation (PWM) programmable (factory set with Analog control signal)	
Maximum stroke	1 in [25.4 mm], electronically adjustable	
Direction	Reversible, normally up position (open) or normally down position (close) (factory set normally down)	
Ambient temperature	0ºF to 122ºF [-18ºC to 50ºC]	
Storage temperature	-22ºF to 122ºF [-30ºC to 50ºC]	
Relative Humidity	5 to 95 % non condensing.	
Weight	2 lbs. [0.9 kg]	
Warning: Do not use automatic screw driver on manual override		

Dimensions



Dimension	Imperial (in)	Metric (mm)
A	6.93	176.0
B	4.80	121.9
C	3.60	91.4

Caution

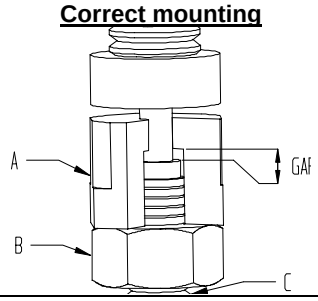
We strongly recommend that all Neptronic® products be wired to a separate transformer and that transformer shall service only Neptronic® products. This precaution will prevent interference with, and/or possible damage to incompatible equipment.
When multiple actuators are wired on a single transformer, polarity must be observed. Long wiring runs create voltage drop which may affect the actuator performance.

[1] *Enerdrive System* U.S.A. Patent #5,278,454

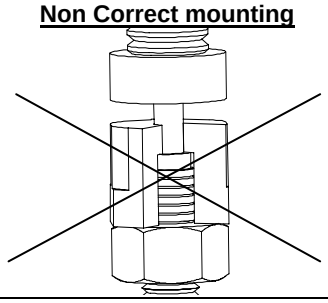
Mechanical installation

Mounting of the actuator on valve

Correct mounting



Non Correct mounting



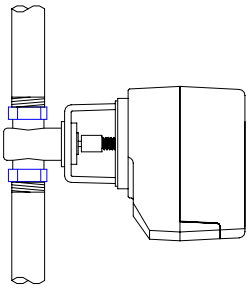
1. Screw completely the valve shaft (C) unto the coupling of the actuator (A).
2. Unscrew the coupling (A) for ½ of turn in order to leave a functional play.
3. Screw the counter nut (B).

Warning:

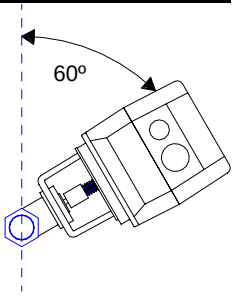
Do not over tight coupling of the actuator on the shaft of the valve.

Mounting of the actuated valve on system

Vertical mounting



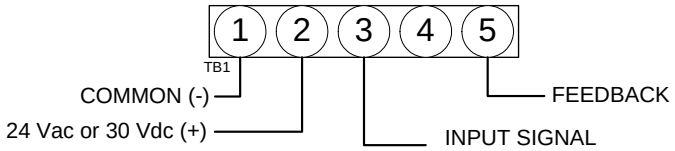
Horizontal mounting



1. Pay attention to system particularity; be sure that the expansions, contractions of the system and its medium as well as operating pressures are within the tolerances.
2. When plumbing, the motorized valve should be situated in an easily accessible place and sufficient space should be allowed for the removal of the actuator.
3. To prevent moisture from collecting in the motor casing, install the motorized valve such that the **actuator is superior to the valve**, at 60º maximum / at vertical. Avoid mounting the valve so that the valve stem is below horizontal.

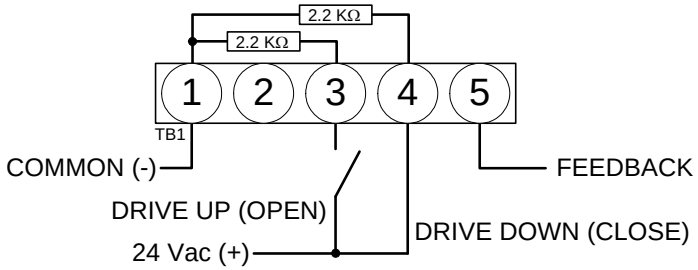
Wiring Diagrams

Analog or PWM

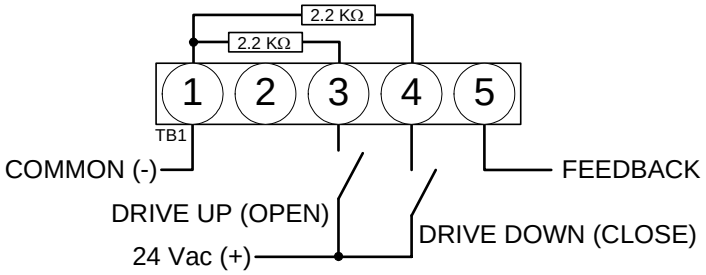


Digital signal

Digital – 3 wire / 2 position



Digital – 4 wire / 3 point floating



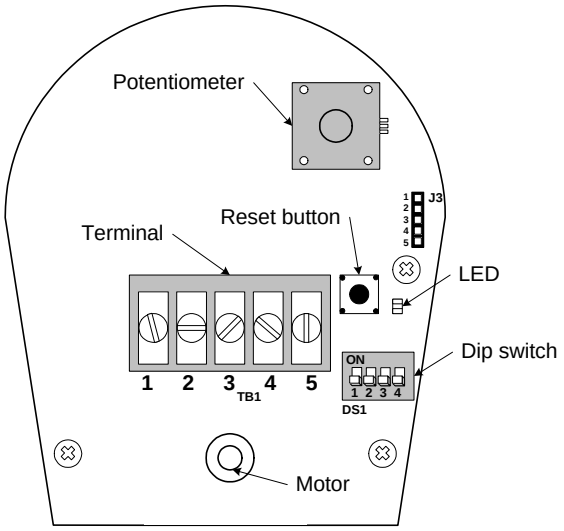
Special consideration for Digital control

In this mode, the actuator is sensitive to induced electrical voltages **from external sources**. To prevent such interference, if the signal on pins 4 and 3 on TB1 are from an **external 24 Vac source**, install a resistor 2.2kohm, 0.5W between pins 4 and 1 and another of 2.2kohms, 0.5W between pins 3 and 1 of TB1. These resistors are included.

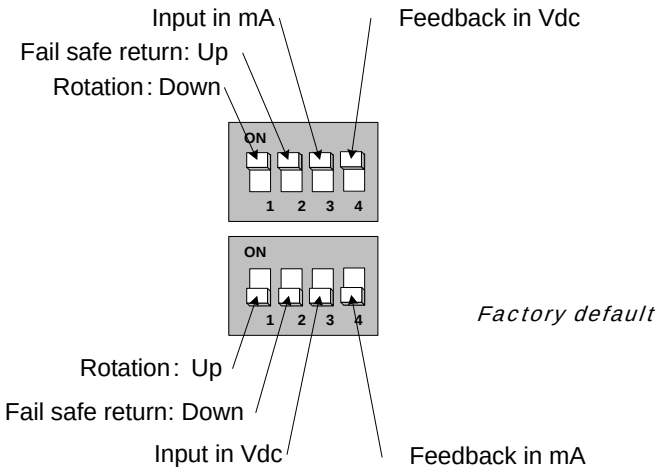
Input Signal and Feedback setup

	Input Signal	Feedback
Analog Mode	Input Signal is set with Dipswitch # 3 DS1-3 at OFF = 2 – 10Vdc (default setting) DS1-3 at ON = 4 – 20mA	Feedback is set with Dipswitch #4 DS1-4 at OFF = 4 – 20mA (default setting) DS1-4 at ON = 2 – 10Vdc
Digital & PWM Mode	No Input Signal Setting ⚠ *DS1-3 MUST be at OFF*	

PC Board



Dip switch settings



Stroke adjustment – No control signal change

1. Apply power and, **WAIT FOR LED TO BE OFF (around 10 seconds)**.
2. Press and release the reset button to start the auto-stroke process.
   The LED should be illuminated.
   - **First option:**
     The actuator will then travel in both directions to find its limit and position itself according to the demand.
     The LED will extinguish, the process is complete.
   - **Second option:**
     When the desired end position is reached, press and release the reset button. The actuator will now go the start position. (you can also press and release the reset button when It's reaches the start position)
     The LED will extinguish, the process is complete.

Programming – Change of control signal

1. Remove power and put all dip switches "OFF" (Default).
2. Apply power and, **within 10 seconds**, press and release the reset button. The LED should be blinking.
3. Select the control signal with dip switches:

	Digital or Analog Modes	**PWM Mode** *refer to PWM Mode section below to program in this mode.*
Move switch **No1** "ON" and then "OFF".	**Digital** (On/Off or 3 point floating)	Set 5s pulse (Default)
Move switch **No2** "ON" and then "OFF".	**Analog** (Default)	Set 25s pulse

Stroke adjustment
see the stroke adjustment section above.

PWM Mode & Speed selection

To enable or disable the PWM mode on the actuator, do as follow:

1. Remove power from the actuator
2. Jump pin 3 & 4 of J3 (instead of 4 & 5)
3. Select the desired action using the dipswitches (DS1):

DS1-1	**DS1-.2**	
OFF	OFF	90 sec. ½"
OFF	ON	Enable PWM Mode
ON	OFF	Disable PWM Mode
ON	ON	90 sec. 1"

4. Power on the actuator
5. Wait 5 seconds
6. Remove power from the actuator
7. Change jumper position from J3 3 & 4 to 4 & 5.
8. Re-apply power supply to actuator
   PWM is factory preset at 5 sec. pulse,
   refer to Programming section above to change pulse setting.

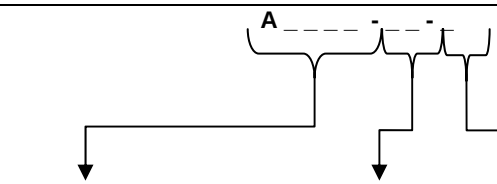
Zero and span calibration

This feature is applicable to analog control signal only.

1. Remove power and put all dip switches "OFF". (factory preset).
2. Apply power and, **within 10 seconds** press and **hold** the reset button until the LED blinks once.
   The Zero and span calibration process then start.
3. Release the reset button. The LED is now constantly illuminated.
4. Apply new minimum voltage.
   It can be any value between 0 to 7 Vdc, with an external 0 to 10 volt supply (ex : MEP).
5. Press and release the reset button to memorize the new minimum voltage. The LED blinks.
6. Apply new maximum voltage.
   It can be any value between 3 to 10 Vdc, this value should be greater than the new minimum value.
7. Press and release the reset button to memorize the new maximum voltage. The LED blinks.
   The Zero and span calibration process is complete.

Note: To reset zero and span to 2 to 10 Vdc (factory value). You just have to re-select the analog control signal mode, see Programming.

Retrofit option



Actuator designation	Manufacturer of valve		Particularity	
AM000	05	Invensys	S	Neptronic standard.
AM060	10	Siebe		
AM000-30	1_	Johnson		
AM060-30	2_	Honeywell		
	2R	Regin		
	3_	Landis & Gyr		
	4_	Tour Andersson		
	5_	Cazzaniga	P	With position indicator.
	6_	Controlli		
	8_	Barber-Colman		
	9_	Robertshaw		
	10_	Danfoss		
	11_	Lo Beer		
	12_	Geamatic		