Nor'East Controls

NEC-340 Actuator with Fail Open/Close Function

NEC-340 is an electronic actuator for use on Nor'East globe valves and similar valves from other manufacturers. It incorporates a fail function on power loss, stem up or down.

NEC-340 can operate in either modulating or 3-point floating modes. In modulating mode two actuators can be sequenced by setting one to operate over the lower half of the control signal and the other to operate over the upper half.

The full modulating signal applies to the actual stroke of the valve which the actuator determines with automatic stroke adjustment.

NEC-340 can be operated manually. When the black knob points down the actuator is in manual mode (factory setting).

The NEC-340 is for fail in place opertion, the NEC-340SR is for fail open or closed.

Technical Data

Power Input	24 Vac / 24 Vdc ± 10%		
Power Consumption	21 VA Running		
	32 VA When charging super capacitors		
Transformer Size	75 VA		
Power Output	16 Vdc max 25 mA (to power aux. devices)		
Feedback	2 - 10 Vdc 2 mA		
Control Signal Input			
Modulating	0 - 10 Vdc, 2 - 10 Vdc, 4-20 mA		
Mod. in sequence	0 - 5 / 5 - 10 Vdc or 2 - 6 / 6 - 10 Vdc		
Floating	24 Vac or Vdc @ 5 mA pulse Stem Force		
340 lb. 1500N	Stroke	4" - 2 1/4" 6 - 58 mm	
Running time floating	60 sec		
Run time modulating	3/8"	10 sec	
3/4"		20 sec	
1"		28 sec	
2-1/4"		60 sec	
Ambient Temp Limits	14º F - 122 ºF (-10º C - +50 ºC)		
Humidity Limit	max 90 % RH Enclosure		
NEMA 3 (IP 54) Material			
Housing	Aluminum, unpainted Cover	ABS/PC, white	

Note: The part number on the label affixed to the actuator reads NEC-340.

Operation

The operating mode of the actuator is set by a row of DIP switches on the circuit board.
The DIP switches can be changed by activating manual operation (turning down the knob).
Activating manual mode disconnects the power to the gear motor but not to the electronic circuit.

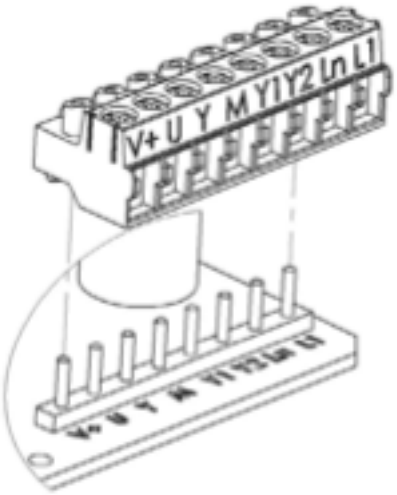
Factory setting: All DIP switches are in OFF position by default.

DIP Switch Positions

Switch	OFF	ON
1	D.A. Stem Down on high control signal	R.A. Stem up on high control signal
2	Modulating 2 - 10 Vdc or 0 - 10 Vdc	3 point floating mode
3	Full range control signal	Split range control signal (see DIP 4 & 5)
4	0 - 10 volt control signal	2 - 10 volt control signal
5	0 - 5 Vdc with DIP #4 OFF 2 - 6 Vdc with DIP #4 ON	5 - 10 Vdc with DIP #4 OFF 6 - 10 Vdc with DIP #4 ON
6	Vdc Input	4 - 20 mA Input (DIP #4 must be ON)
7	Automatic stroke adjustment The actuator updates the stroke when an unexpected mechanical stop is detected for 10 seconds.	Manual stroke adjustment Moving DIP #7 momentarily ON and back back to OFF adjusts the actuator to the stroke of the valve. Do not leave at ON.

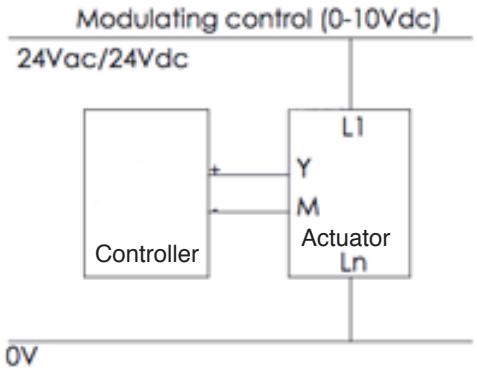
Wiring Terminals

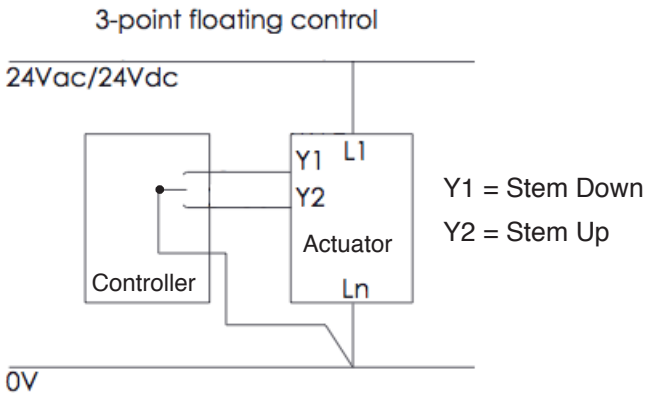
L1	Power In	24 Vac or Vdc
Ln	Power In	“Neutral”, 0V
Y2	Floating Input Stem Up	24 Vac or Vdc
Y1	Floating Input Stem Down	24 Vac or Vdc
M	Input common	0 Vdc
Y	Control Signal In	Vdc or mA
U	Feedback signal	2 -10 Vdc
V+	Power Out	16 Vdc, 25 mA

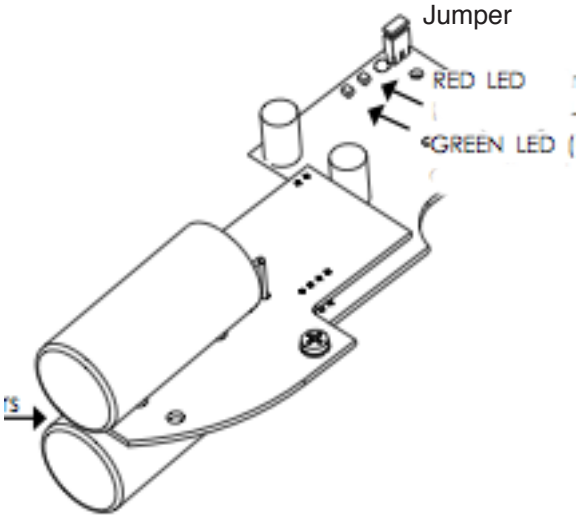


Removable Terminal Block

NEC_340 has a single half-way rectifier.
It should not be connected to a transformer
that is also connected to another device with
a double half-wave rectifier or full wave rectifier.







Electronic fail function with super capacitors

On a power failure the actuator will move stem up or stem down depending on the jumper position.

Closed Jumper: Fail Stem Down

Open Jumper: Fail Stem UP

LEDs on capacitor circuit board (upper board)

Green ON Capcitors are fully charged

Red ON Capacitors are charging or discharging

Both OFF Capacitors are totally discharged

LEDs on lower circuit board

LED	ACTION
Green ON	The Actuator is at one of the end positions
Green Blinking	The Actuator is moving or is stopped by the control signal
Red/Green Blinking alternately:	Initial valve stroke self-adjustment
Red/Green Blinking together:	Actuator is in fail mode

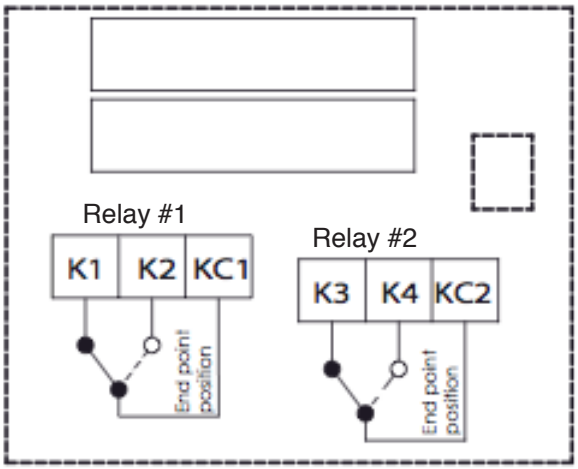
Notes:

It takes about 3 minutes after initial power-up before the electric motor moves. The super capacitors for the electronic “spring return”, are being charged during this time. When the motor starts moving it automatically goes into stroke self-adjustment mode.

After a power failure it takes about 1.5 minutes for normal operation to resume. The super capacitors are being recharged.

On return of power or after a manual adjustment, the actuator goes fully stem up then back to control signal position.

Optional auxilliary switches MVE-S

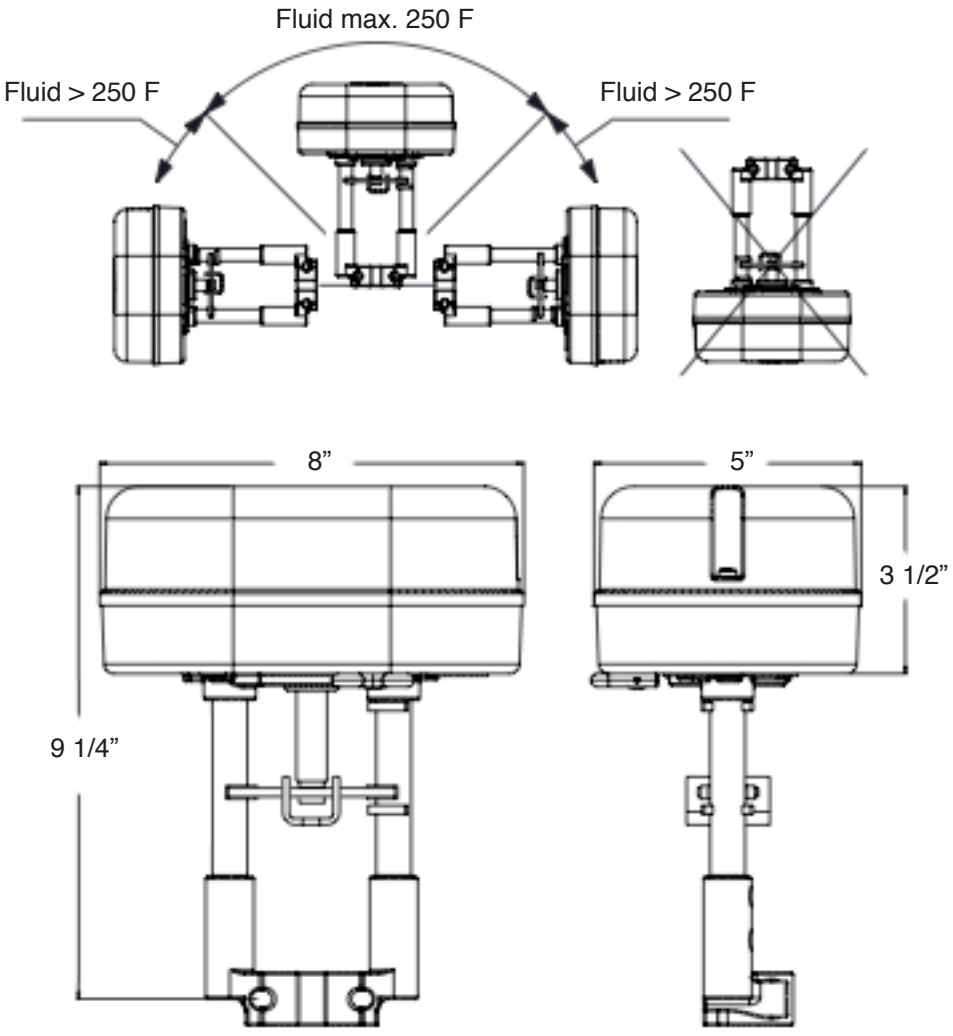


Relay contact positions

Direct Acting

Stem Postion	Control Signal	Relay #1	Relay #2
Stem Up	0 - 0.5 Vdc	KC1 to K2	KC2 to K3
Inbetween	0.5 - 9.5	KC1 to K1	KC2 to K3
Stem Down	9.5 -10	KC1 to K1	KC2 to K4
Reverse Acting			
Stem Up	0 - 0.5 Vdc	KC1 to K2	KC2 to K3
Inbetween	0.5 - 9.5	KC1 to K1	KC2 to K3
Stem Down	9.5 - 10	KC1 to K1	KC2 to K4

Note: The contact positions are the same in 3-point floating mode for stem up or stem down.



Add minimum 6” to the 9 1/4” dimension for removal of the service cover