



**Linear actuator for globe valves of 8...20 mm lift**

**3-point actuators**

**NV24-3-T  
NV230-3-T**

**AC / DC 24 V  
AC 230 V**

### Applications

The NV..-3-T actuator is intended for motorizing globe valves by exerting an operating force on the valve stem in either a retracting or an extending direction.

### Mode of operation

The brushless motor is controlled by a 3-point control signal.

When the actuator is lifting and it reaches the seat for either VALVE OPEN or VALVE CLOSED the supply of current to the actuator is reduced. Thanks to the use of a brushless motor the control signals Y1 and Y2 do not need to be interrupted externally (therefore, overload protection is assured).

### Functional reliability

The electric motor is de-energized when the actuator runs on to its internal end-stops.

### Manual operation

Inserting a 5 mm hexagonal key and turning it clockwise causes the spindle of the actuator to emerge from the housing (an extending action). The spindle will remain in that position until the power supply is energized (the controller has first priority).

### Position indication

The stroke is indicated mechanically on the UNV-... mounting bracket.

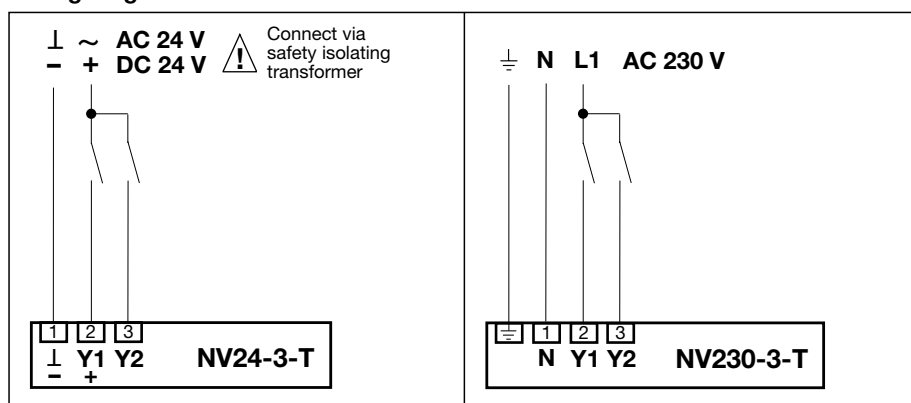
### Safety note

The linear actuator contains no components which the user can replace or repair.

### Dimensions

The dimensions depend on the type of UNV-... mounting bracket used; see from Page 22.

### Wiring diagram



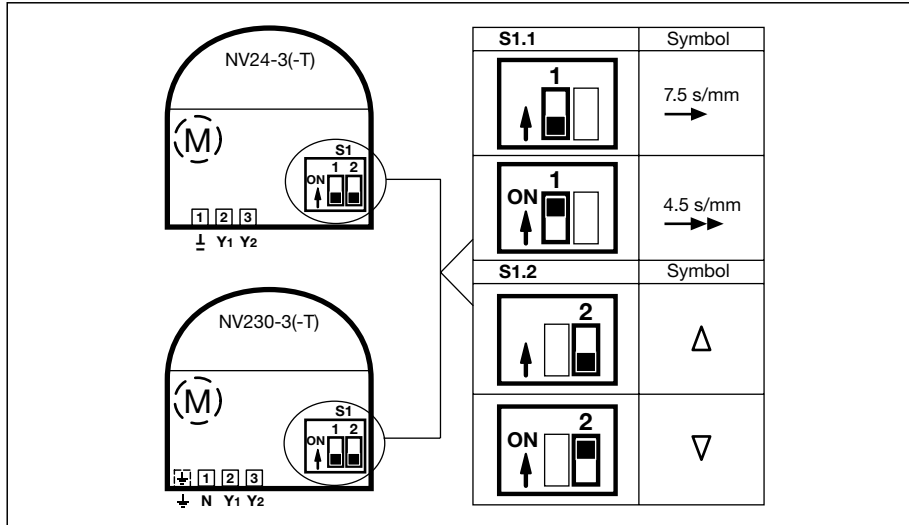
Technical data	NV24-3-T	NV230-3-T
Nominal voltage	AC 24 V 50/60 Hz, DC 24 V	AC 230 V 50/60 Hz
Nominal voltage range	AC 19.2...28.8 V DC 21.6...28.8 V	AC 198...264 V
For wire sizing	5 VA	7 VA
Power consumption	3 W	6 W
Connecting	terminals 2 x 1.5 mm <sup>2</sup> or 1 x 2.5 mm <sup>2</sup>	
Nominal stroke	20 mm	
Actuating force	1000 N <sup>1)</sup> / (800 N) <sup>2)</sup>	
Manual operation	hexagonal key, self-resetting <sup>3)</sup>	
Actuating time	7.5 s/mm	
Sound power level	max. 35 dB (A)	
Position indicator	mechanical 8...20 mm stroke (mounting bracket)	
Protection class	⚡ (safety extra-low voltage)	I (with PE conductor)
Degree of protection	IP54	
Ambient temp. range	0°...+50°C	
Non-operating temp.	-40°...+80°C	
Humidity test	to EN 60730-1	
EMC	CE according to 89/336/EEC, 92/31/EWG, 93/68/EEC	
LV Directive	CE according to 73/23/EEC	
Mode of operation	Type 1 to EN 60730-1	
Maintenance	maintenance-free	
Weight	1.7 kg (without mounting bracket UNV)	

<sup>1)</sup> Electrical closing force

<sup>2)</sup> Blocking force

<sup>3)</sup> Permanent manual operation to order

## Arrangement of the operating controls



The terminals for connecting the lead and the S1 control device will be found under the cover of the actuator.

The factory setting of actuating time is 7.5 s/mm. By moving the slide switch S1.1 to the «ON» position this time can be reduced by approximately half.

The closing point of the valve is defined with slide switch S1.2. The factory setting of the closing point is «up». When a Y1 signal is present the actuator spindle extends and the valve opens (when the «up» closing point has been selected).

The direction of travel of the actuating spindle can also be inverted by interchanging the Y1 and Y2 conductors.

## Functional description

Function	Description	Switch	Symbol	
Actuating time	For the nominal stroke function the running time for full stroke varies. (With 20 mm stroke and standard actuating time the running time is 150 s).	S1.1		<b>Bold type</b> in the table means standard factory setting.
<b>Standard</b>	<b>Actuating time 7.5 s/mm</b>	<b>OFF</b>	<b>7.5 s/mm</b> →	
High speed	Actuating time 4.5 s/mm	ON	4.5 s/mm →→	
Closing point valve	The closing point is when the actuated spindle is either retracted or extended. There is no flow through the valve control path ( $V = 0\%$ ).	S1.2	Symbol	Effect
<b>up</b>	<b>The actuated spindle is retracted into the actuator and the valve stem is extended from the valve body.</b>	<b>OFF</b>	△	
down	The actuated spindle is extended from the actuator and the valve stem is retracted into the valve body.	ON	▽	

Wiring diagrams see Page 18

## Wiring diagram NV24-3-T, NV230-3-T

3-point		Symbols								Actuator spindle moves	
Actuating time	Closing point Valve	Signal «direct»	Signal «inverted»	Closing point «up»	Closing point «down»	Control signal min. (e.g. Y = 2 V)	Control signal max. (e.g. Y = 10 V)	Control signal min. (e.g. Y = 2 V)	Control signal max. (e.g. Y = 10 V)	stationary	stationary
7.5 s/mm →	Δ	OFF		OFF		0	0	1	0	IN	OUT
	▽	OFF			ON	0	1	1	0	IN	OUT
4.5 s/mm →→	Δ		ON	OFF		1	0	0	1	IN	OUT
	▽		ON		ON	1	0	0	1	IN	OUT

In the case of the classic 3-point actuator (NV..-3-T) the actuating time can be reduced from 7.5 s/mm to 4.5 s/mm by moving the slide switch 1.1 to the «ON» position. With less than 20% of the valves used the closing point is in the down position so the slide switch S1.2 can be set to the «ON» position.

## Wiring diagram NV24-MFT(2)-T, NVF24-MFT(2)(-E)-T, NVG24-MFT2

Modulating		Symbols								Actuator spindle moves	
Actuating time	Closing point Valve	Signal «direct»	Signal «inverted»	Closing point «up»	Closing point «down»	Control signal min. (e.g. Y = 2 V)	Control signal max. (e.g. Y = 10 V)	Measur. signal min. (e.g. U = 2 V)	Measur. signal max. (e.g. U = 10 V)	IN	OUT
H y	Δ	OFF		OFF		x	x	x	x	IN	OUT
	▽	OFF			ON	x	x	x	x	IN	OUT
H y	Δ		ON <sup>1)</sup>	OFF		x	x	x	x	IN	OUT
	▽		ON <sup>1)</sup>		ON	x	x	x	x	IN	OUT

1) If the controller produces a negative signal (<0.15 V) the slide switch S3.1 may not be set to the «ON» position if the parameters for the working range of the actuator have been assigned to 2...10 V (except when the start point in the parameterized working range is 0.5 V).

Setting the slide switch S3.1 to the «ON» position inverts the control signal so that the valve closes as the control signal is increased. This is a simple way of matching the sequences in the actuator. With less than 20% of the valves used the closing point is in the down position so the slide switch S3.2 must be set to the «ON» position. The position checkback signal U<sub>5</sub> is also matched to the closing point.

## Wiring diagram NV24-MFT(2)-T, NVF24-MFT(2)(-E)-T, NVG24-MFT2

3-point parameterized MFT actuator		Symbols								Actuator spindle moves	
Direction of stroke «3-point»	Closing point Valve	Signal «direct»	Signal «inverted»	Closing point «up»	Closing point «down»	Control contact a (Y/Z)	Control contact b (Y2)	Measur. signal min. (e.g. U = 2 V)	Measur. signal max. (e.g. U = 10 V)	stationary	stationary
H+ H- Y1 Y2	Δ	OFF		OFF		0	0	*)	*)	stationary	stationary
	▽	OFF			ON	1	0	m	m	IN	OUT
H+ H- Y1 Y2	Δ		ON	OFF		1	0	m	m	IN	OUT
	▽		ON		ON	1	0	m	m	IN	OUT

\*) Measuring signal U<sub>5</sub> according to position  
m: When control contact a or b is in position 1 for longer than the running time (150 s)

The MFT linear actuator NV..-MFT.. can also be used as a 3-point control device. However, in this case the actuator must be assigned parameters for 3-point control and be provided with a 4-wire connection. **Note:** It will only function with an AC 24 V power supply!