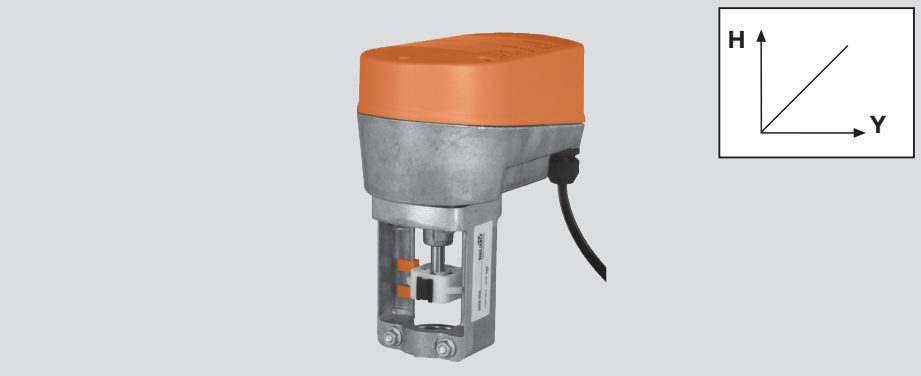


Linear actuators for 2-way and 3-way globe valves DN 15...80

Modulating actuator (AC/DC 24 V)
Control DC 0...10 V

Applications

Operation of globe valves.

Mode of operation

Modulating control is effected by means of a standard 0…10 V control signal.

Product features

Simple attachment to the neck of the valve by means of a clamping strap. Semiautomatic coupling of the valve stem to the actuator spindle. The actuator can be rotated through 360° on the neck of the valve.

Functional reliability

The actuator is short-circuit-proof and protected against polarity reversal. The stroke is adapted automatically and is also overload-proof.

Manual operation

Inserting a 5 mm hexagonal key and turning it clockwise causes the actuator spindle to extend from the actuator housing (pushing).
Together with the action of the valve, this causes the flow of water to increase. The actuator spindle retains its position until the power supply is energized (the controller takes first priority).

Position indication

The stroke of the valve is indicated mechanically on the bracket; the maximum stroke adjusts itself automatically. There is a twin-color LED status indicator under the cover of the housing.

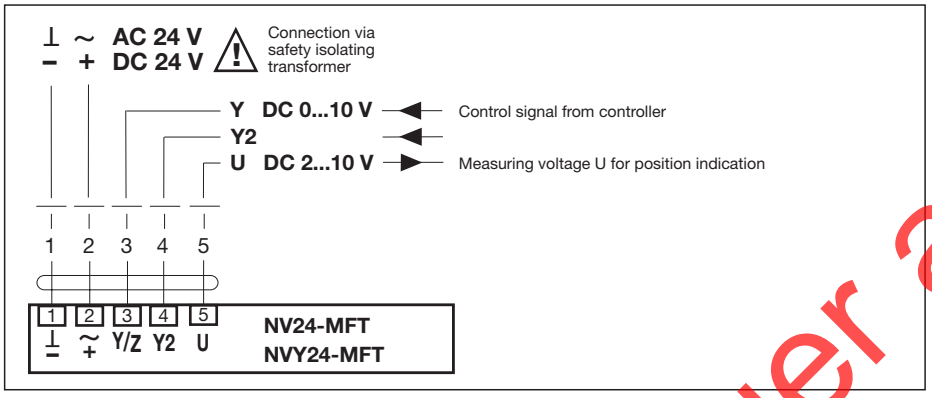
Safety note

The linear actuator contains no components which can be replaced or repaired by the user.

Note on delivery

The UNV-002 bracket is included in the scope of delivery, providing the valve and the actuator are ordered together.

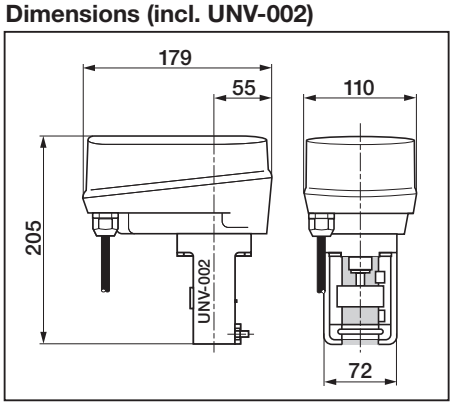
Wiring diagram



Technical data	NV24-MFT	NVY24-MFT
Nominal voltage	AC 24 V 50/60 Hz, DC 24 V	
Nominal voltage range	AC 19.2…28.8 V, DC 21.6…28.8 V	
For wire sizing	5 VA	
Power consumption	3 W	
Connecting cable	1 m, 5 x 0.75 mm²	
Control	DC 0…10 V @ 100 kΩ	
Operating range	DC 2…10 V	DC 0.5…10 V für 0…100 % stroke
Position feedback	DC 2…10 V (0.5 mA)	DC 0.5…10 V @ 0.5 mA
Uni-rotation	±5 %	
Nominal stroke	20 mm	
Actuating force	[1] 1000 N / [2] 800 N	
Manual operation	Hexagonal key, self-resetting	
Fast running function		•
Running time	150 s	35 s
Sound power level	Max. 35 dB (A)	Max. 45 dB (A)
Position indication	Mechanical 10…20 mm stroke	
Protection class	III (safety extra-low voltage)	
Degree of protection	IP54	
Ambient temperature range	0°…+ 50° C	
Non-operating temperature	–40°…+ 80° C	
Humidity test	To EN 60730-1	
EMC	CE according to 89/336/EEC	
Software class A	To EN 60730-1	
Mode of operation	Type 1 to EN 60730-1	
Maintenance	Maintenance-free	
Weight	1.5 kg incl. UNV-002 bracket (without valve)	

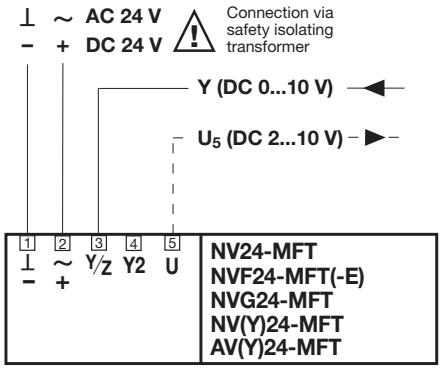
[1] **Closing force**
[2] **Inhibiting force**

Dimensions (incl. UNV-002)



Wiring diagrams of NV../AV.. multifunctional

Modulating (optional with feedback)

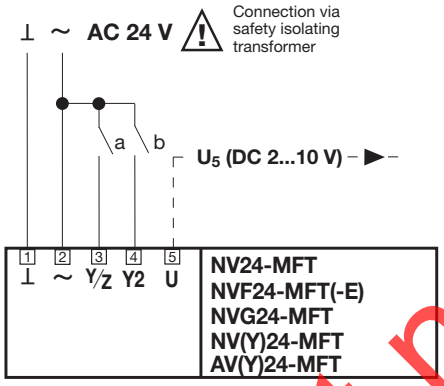


Symbols: Direction of stroke	Symbols: Valve closing point	"Direct" signal	"Inverted" signal	Closing point "up"	Closing point "down"	Control signal min. (e.g. Y = 2 V)	Control signal max. (e.g. Y = 10 V)	Meas. signal min. (e.g. U = 2 V)	Meas. signal max. (e.g. U = 10 V)	Actuator spindle moves	
		S3.1		S3.2							
H / Y	Δ	OFF		OFF		x		x		RETRACTING	
							x		x		EXTENDING
	∇	OFF			ON	x		x			EXTENDING
							x		x		RETRACTING
H / Y	Δ		ON[1)]	OFF		x			x		EXTENDING
							x	x		RETRACTING	
	∇		ON[1)]		ON		x				RETRACTING
							x	x			EXTENDING

1) If the controller generates a negative signal (< 0.15 V), slide switch S3.1 must not be set to "ON" if the operating range of the actuator is set to 2...10 V (exception: start point in the parameterized operating range = 0.5 V).

The control signal can be inverted by adjusting slide switch S3.1 to the "ON" position, and the valve closes as the control signal increases. This is a simple way of matching the sequences in the actuator. The closing point is down with fewer than 20% of the valves that are used and slide switch S3.2 must be set to the "ON" position. The position feedback U5 is likewise matched to the closing point.

MFT actuator parameterized with 3-point control (optional with feedback)

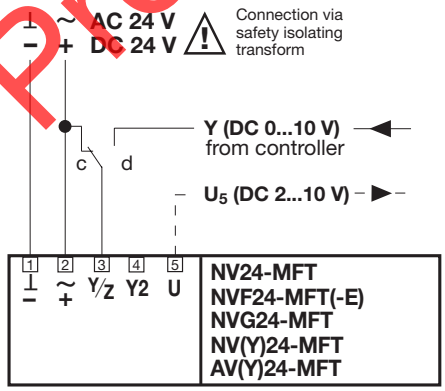


Symbols: 3-point" stroke direction	Symbols: Valve closing point	"Direct" signal	"Inverted" signal	Closing point "up"	Closing point "down"	Relay contact a (Y1)	Relay contact b (Y2)	Meas. signal min. (e.g. U = 2 V)	Meas. signal max. (e.g. U = 10 V)	Actuator spindle moves	
		S3.1		S3.2		0	0	*)	*)	stops	stops
H+ Y2 Y1 H-	Δ	OFF		OFF		1	0		m		EXTENDING
						0	1	m		RETRACTING	
	∇	OFF			ON	1		0	m	RETRACTING	
						0	1	m			EXTENDING
H+ Y2 Y1 H-	Δ		ON	OFF		1	0	m		RETRACTING	
						0	1		m		EXTENDING
	∇		ON		ON	1	0	m			EXTENDING
						0	1		m	RETRACTING	

*) Measuring signal U_5 according to position
m: If relay contact a or b is in switch position 1 for longer than the running time (150 s)

The NV..-MFT.. linear actuator with MFT can also be used for 3-point control. The actuator must, however, be parameterized for 3-point control and provided with a 4-wire connection. **Note:** Only works with a nominal voltage of **AC 24 V**!

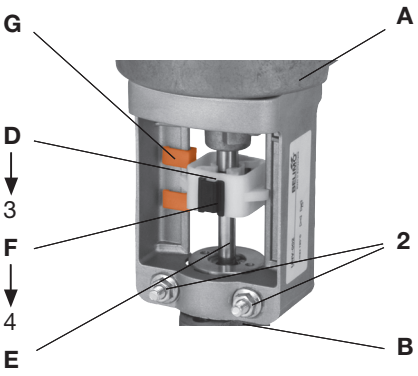
Override control 100% (optional with feedback)



Symbols: "Override" stroke direction	Symbols: Valve closing point	"Direct" signal	"Inverted" signal	Closing point "up"	Closing point "down"	Relay contact c	Relay contact d	Meas. signal min. (e.g. U = 2 V)	Meas. signal max. (e.g. U = 10 V)	Actuator spindle moves	
		S3.1		S3.2							
H / Y	Δ	OFF		OFF		1	0		x		EXTRACTING
			ON			1		0	x	RETRACTING	
	∇	OFF			ON	1	0		x	RETRACTING	
			ON			1	0	x			EXTRACTING

A typical use for "100%" override control is in a frost protection circuit. Whether or not the frost thermostat has to interrupt the signal conductor to the controller "d" depends on the make of controller being used (not necessary if the signal output at the controller is short-circuit-proof and protected against polarity reversal).

Mounting: NV.. linear actuator on H.. globe valve



The neck of the valve (B) must be cleaned before the linear actuator (A) is fitted onto it.

Care must be taken to ensure that the bracket, which is an integral part of the linear actuator, is pushed down until it is in firm contact with the neck of the valve. The bracket must then be secured firmly to the neck of the valve by tightening the two fixing nuts (2) (with a torque of at least 10 Nm) with a 10 mm open-jaw or ring spanner. Next, use the manual operating mechanism to move the position indicator (D) to the position (3) of the valve stem (E) and latch it there.

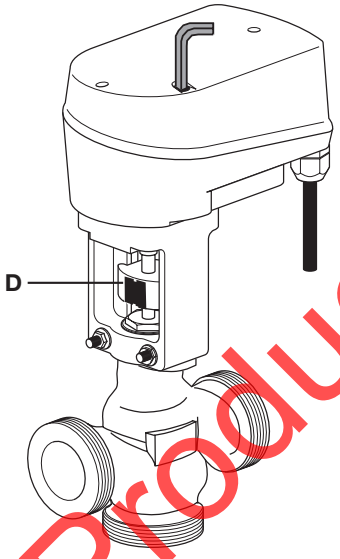
The black locking device (F) is then pushed down so that it is flush with the position indicator (4). The stem coupling is now secured and cannot unlatch accidentally.

The followers (G) are automatically moved to the maximum traveled stroke by the position indicator.

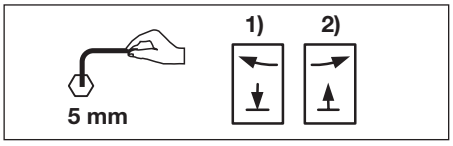
When dismantling, first release the fixing nuts of the bracket. Then move the stem coupling to the middle of the stroke with the manual operating mechanism. Next, push the locking device (black sliding part) up. The actuator can now be detached from the spindle by pressing in the meanwhile released pushbuttons on the stem coupling.

Manual operation of the NV.. linear actuator

When a linear actuator is supplied separately but together with a valve, the actuator spindle is extended to approximately the 3/4 position. The spindle can be operated with a hexagonal key (the 5 mm or 3/16" hexagonal key is not included with the actuator).
The manual operating mechanism is overload-proof. The actuator spindle remains in the manual setting either until its power supply is energized or until it moves to whichever end stroke position has been selected the next time the power supply is interrupted.

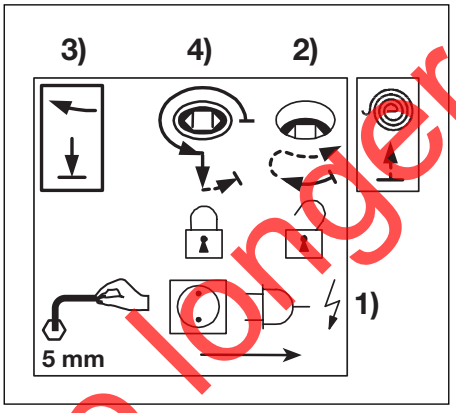


Manual operation of:
- NV24-3
- NV230-3
- NV24-MFT
- NVY24-MFT
- NVG24-MFT



Turning the hexagonal key clockwise 1) causes the actuator spindle to extend; turning it counterclockwise 2) causes it to retract.

Manual operation of NVF24-MFT



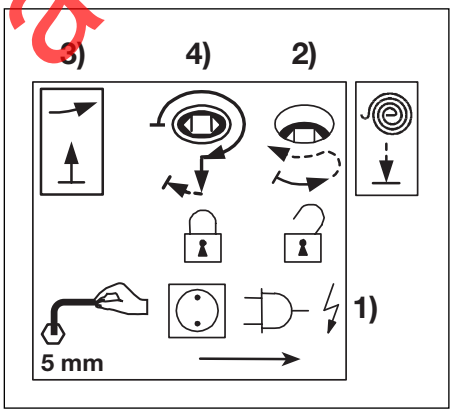
1) Isolate the actuator from the power supply!

2) Disengaging manual operation of the NVF24-MFT.
Turn the hexagonal key clockwise approximately 45° until resistance is encountered. Then lift the key (approx. 7 mm) until the black socket provided for it is level with the top of the housing cover. The spring mechanism now rotates the key counterclockwise and the actuator spindle retracts.

3) Manual operation of the NVF24-MFT.
Turning the hexagonal key clockwise causes the actuator spindle to extend; it must be held in the required stroke position.

4) Locking manual operation of the NVF24-MFT.
Turn the hexagonal key back 3/4 of a turn counterclockwise and then press it down into the cover of the housing (the black socket moves inwards approximately 7 mm). Slight counterclockwise rotation of the key then locks the manual operating mechanism in position.

Manual operation of NVF24-MFT-E



1) Isolate the actuator from the power supply!

2) Disengaging manual operation of the NVF24-MFT-E.
Turn the hexagonal key counterclockwise approximately 45° until resistance is encountered. Then lift the key (approx. 7 mm) until the black socket provided for it is level with the top of the housing cover. The spring mechanism now rotates the key clockwise. The actuator spindle extends fully, the position indicator (D) moves down and the valve can be coupled.

3) Manual operation of the NVF24-MFT-E. Turning the hexagonal key counterclockwise causes the actuator spindle to retract; it must be held in the required stroke position.

4) Locking manual operation of the NVF24-MFT-E.
Turn the hexagonal key back 3/4 of a turn clockwise and then press it down into the cover of the housing (the black socket moves inwards approximately 7 mm). Slight clockwise rotation of the key then locks the manual operating mechanism in position.

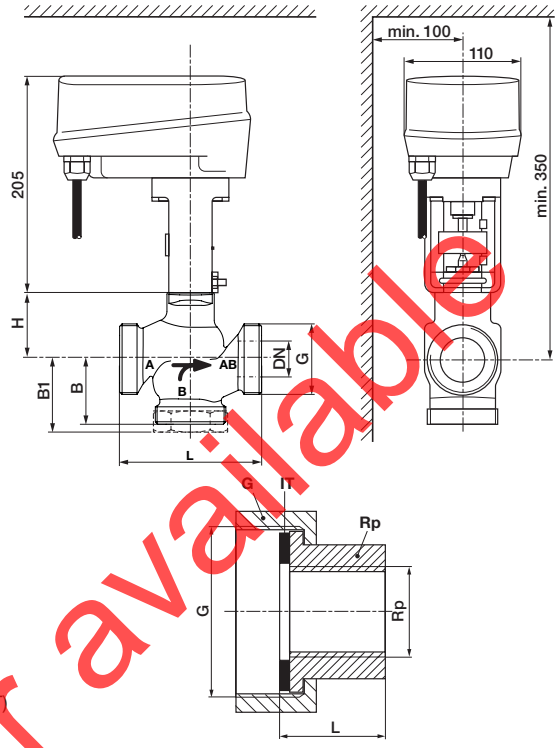
ENG-93001-93621-08.04-1M • Printed in Switzerland • ZSD • Subject to technical modifications

Assembled unit, NV.. with H4..B / H5..B, DN 15 to 50

Globe valve with external thread

DN	External thread	Dimensions [mm]		2-way			3-way		
				B1	Weight		B	Weight	
[mm]	G	L	H	[mm]	[kg]*	[kg]**	[mm]	[kg]*	[kg]**
15	G1 1/8"	80	46	65	2.7	3	55	2.6	2.9
20	G1 1/4"	90	46	65	2.8	3.1	55	2.7	3
25	G1 1/2"	110	52	66	3.1	3.4	55	2.9	3.2
32	G2"	120	56	67	3.7	4	55	3.5	3.8
40	G2 1/4"	130	65	72	4.3	4.6	60	4	4.3
50	G2 3/4"	150	65	75	5.4	5.7	65	5	5.3

* Weight includes NV.. linear actuator
** Weight includes NVF.. linear actuator



Accessories

Pipe connector for H4..B and H5..B valves with external thread

Type	ZR4515	ZR4520	ZR4525	ZR4532	ZR4540	ZR4550
DN [mm]	15	20	25	32	40	50
G	1 1/8"	1 1/4"	1 1/2"	2"	2 1/4"	2 3/4"
Rp	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
Weight [kg]	0.14	0.18	0.22	0.32	0.46	0.66
L approx. [mm]	23	25	28	32	34	37

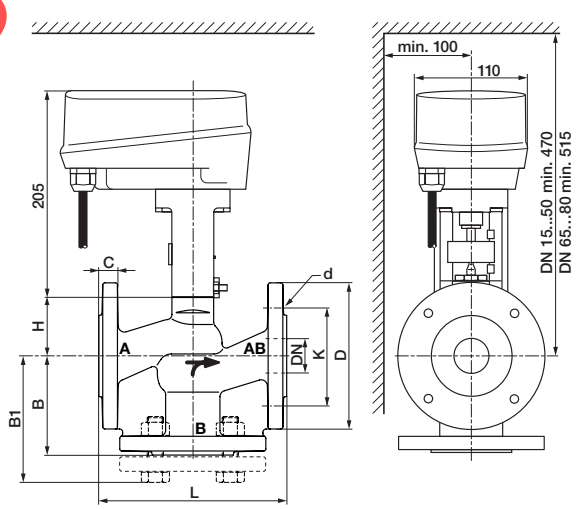
Included in scope of delivery of ZR45..: Union nut* (G thread), female part* (Rp thread), flat gasket (IT)
* Material: Malleable cast iron, galvanized

Assembled unit, NV.. with H6..N / H7..N, DN 15 to 80

Globe valve with flanged ends

DN	Dimensions [mm]						2-way			3-way		
							B1	Weight		B	Weight	
[mm]	L	H	D	K	d	C	[mm]	[kg]*	[kg]**	[mm]	[kg]*	[kg]**
15	130	46	95	65	4x14	14	81	6.3	6.6	65	4.3	4.6
20	150	46	105	75	4x14	16	88	6.5	6.8	70	5.2	5.5
25	160	52	115	85	4x14	16	93	7.8	8.1	75	6.2	6.5
32	180	56	140	100	4x18	18	113	11.1	11.4	95	8.7	9
40	200	64	150	110	4x18	18	118	13.4	13.7	100	10.7	11
50	230	64	165	125	4x18	20	120	17.4	17.7	100	13.7	14
65[1)]	290	100	185	145	4x18	20	140	25.3	25.6	120	20.5	20.8
80[2)]	310	110	200	160	8x18	22	152	31.7	32	130	25.5	25.8

* Weight includes NV.. linear actuator
** Weight includes NVF.. linear actuator
[1)] Type H664N/H764N
[2)] Type H679N/H779N



Assembled unit, NV.. with H6..S, DN 15 to 65

Globe valve with flanged ends

DN	Dimensions [mm]						Weight	
[mm]	L	H	D	K	d	C	[kg]*	[kg]**
15	130	118	95	65	4x14	14	5.1	5.4
20	150	118	105	75	4x14	16	5.8	6.1
25	160	126	115	85	4x14	16	6.7	7
32	180	126	140	100	4x18	18	8.3	9.8
40	200	133	150	110	4x18	18	10.2	10.5
50	230	139	165	125	4x18	20	13.1	13.4
65[3)]	290	100	185	145	4x18	20	18.2	18.5

* Weight includes NV.. linear actuator
** Weight includes NVF.. linear actuator
[3)] Type H664S