

# VF and NL Series Motorized Control Valves

Ductile iron motorized control valves of VF730/750 and NL800/870 series apply to HVAC and building automation systems. Once the motorized control valves receive signals transmitted by computers or other devices, they can then adjust temperature, pressure and control system parameters such as flow rate and liquid level. The valves are mainly used to convey mediums such as cold water, hot water, and ethylene glycol solution.



## Product Features

- Adopt the AC synchronous hysteresis clutch motor. When the limited position is reached, the hysteresis clutch disengages the motor's output shaft from the transmission part to protect the motor.
- High-precision control offers precise actions.
- Low power consumption and low noise.
- Have the self-adaptive valve travel function.
- Multiple signal controls: Increment/floating-point signal, voltage 0 - 10 V, current 4 - 20 mA.
- ABS shell and die-cast aluminum bracket with the advantages of small size and light weight.
- Easy installation and maintenance.

## Technical Parameters

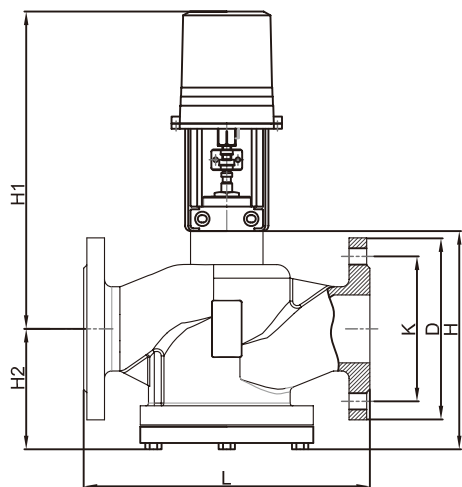
- Valve Type:** Two-way Valve/three-way Valve  
**Material:** Shell: ductile iron; disc/stem: stainless steel;  
 Sealing: PTFE  
**Working Pressure:** 1.6 Mpa/2.5 Mpa  
**Medium:** cold water, hot water, and the aqueous solution of ethylene glycol (concentration within 50%)  
**Medium Temperature:** -10°C ~ 120°C/-10°C ~ 180°C with a heat sink  
**Flow Characteristic:** Equal percentage curve/equivalent linear  
**Leakage Volume:** Below 0.02% of kv value  
**End Type:** Flanges (ANSI B16.1/16.5 or EN1092)

## Actuator Parameters

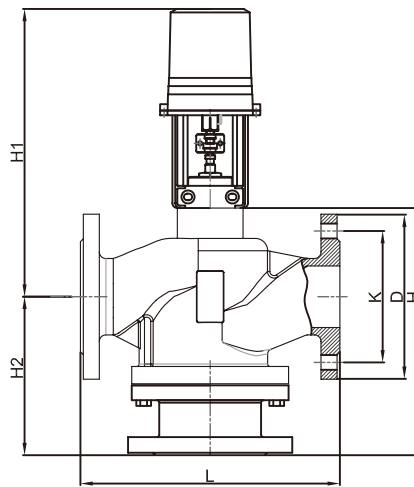
Item	Performance parameters	
	VF series (incremental control model)	NL series (proportional adjustment model)
Power Supply	AC 24 VAC/220 VAC ± 10%, 50 Hz/60 Hz	
Motor	AC synchronous motor	
Force	1000 N, 1500 N, 3000 N	
Power Consumption	6 - 18 VA	
Operating Speed	1¼" - 2" 0.20 mm/s (1000 N) 2½" 0.25 mm/s (1500 N) 4" - 8" 0.32 mm/s (3000 N)	
Control Signal	Increment/floating-point signal	0 ~ 10VDC or 4 ~ 20 mA
Working Temperature	-10°C ~ 50°C (50°F ~ 120°F)	
Humidity	10% ~ 90% RH, no condensation	
Maximum Travel	1000N 22mm; 1500N 22mm; 3000N 55mm; 6500N 60mm; 10000N 100mm	
Actuator Weight	1000N 2.7Lbs/1.2 kg; 1500N 3.3Lbs/1.5 kg; 3000N 7.7Lbs/3.5 kg	
Materials of Main Parts	Fire-retardant ABS plastic shell and die-cast aluminum bracket	
Waterproof Rating	IP54	
Valve Opening Before Delivery	Middle position	
Manual Function	Have manual operation	
Valve Opening Indication	Have valve opening indication	
Insulation Resistance	Resistance between the power supply terminal and the shell: ≥ 50 MΩ; that between the input terminal and the shell: ≥ 20 MΩ.	
Dielectric Strength	Dielectric strength between the power supply terminal and the shell: 500 V, 50 Hz for AC24V equipment; 1,500 V, 50 Hz for AC220 equipment; that between the input terminal and the shell: 500 V, 50 Hz	

## Dimensions

In	1 ½	2	2 ½	3	4	5	6	8	10	
mm	40	50	65	80	100	125	150	200	250	
L	200	230	290	310	350	400	480	495	622	
H	Two-way valve	165	175	215	235	265	295	320	405	489
	Three-way valve	242	259	273	291	323	363	395	492	643
H1	Two-way valve	329	332	333	344	421	437	451	475	938
	Three-way valve	329	332	333	344	421	437	451	475	938
H2	Two-way valve	79	86	125	134	154	168	179	240	241
	Three-way valve	156	170	183	190	212	236	254	327	395
D	150	165	185	200	220	250	295	340	405	
K	110	125	145	160	180	210	240	295	355	
Number of flange holes and number of bolts	4-M16	4-M16	4-M16	8-M16	8-M16	8-M16	8-M20	12-M20	12-M24	

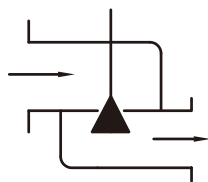


Motorized two-way control valve

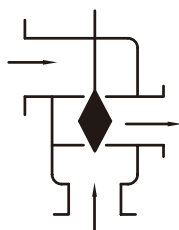


Motorized three-way control valve

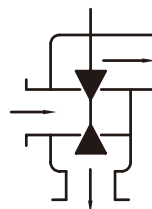
## Flow Direction of Medium



Two-way valve



Three-way merging valve



Three-way diverging valve

**Note:** Please note that the flow direction of the medium in pipelines is the same as the direction of the valve body's arrow during design and installation.

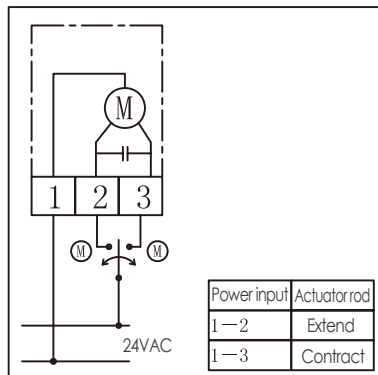
# Kv (Flow Rate Value) and Close-Off Differential Pressure

In	1½	2	2½	3	4	5	6	8	10
mm	40	50	65	80	100	125	150	200	250
Kv value (m³/h)	21	35	52	88	140	200	280	410	630
Close-off differential pressure (MPa)	0.47	0.30	0.40	0.30	0.35	1.0	1.0	1.0	0.2
Force	1000N		1500N		3000N			6500N	

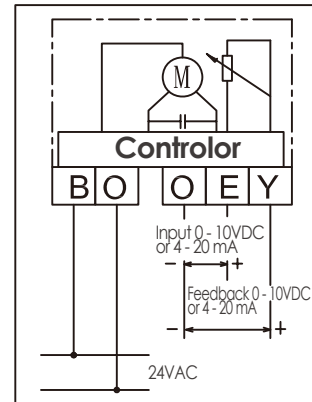
**Note:** The closed-off pressure differential listed in this table refers to the calibration value when the medium is water at 25°C.

## Electrical Wiring Diagrams

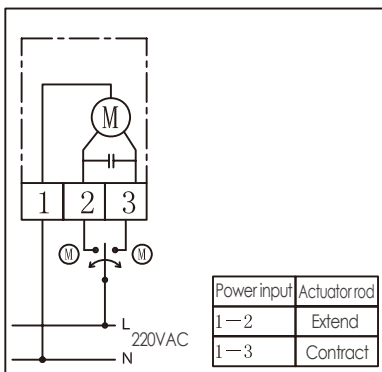
Applicable to AC 24 V incremental control models



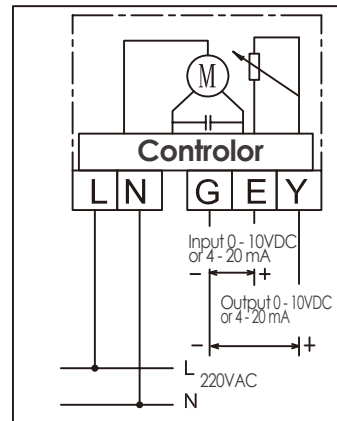
Applicable to AC 24 V analog control models



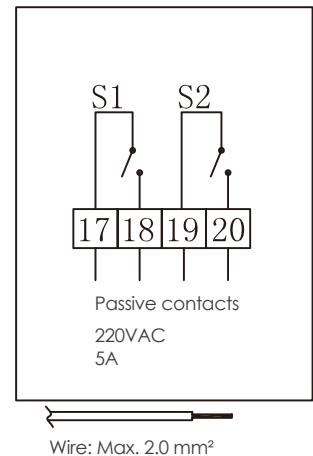
Applicable to AC 220 V incremental control models



Applicable to AC 220 V analog control models



Applicable to all actuator models with passive contacts



**Note:** The power switch must be closed during the normal operation of the actuator, and it is strictly forbidden to run the actuator when it is not connected to the valve body.