

# MR90

## Thermoelectric Radiator Valve Actuator

### Product Description

MR90 is a thermoelectric actuator designed to provide on/off control with radiator valves.

The MR90 NC is fully extended with power off, thus a radiator valve stem would be compressed and the valve 'normally closed'.

The MR90 NO is fully retracted with the power off, thus a radiator valve stem will be fully extended and the valve 'normally open'.

The actuator operation is carried out by a built-in wax thermostatic element for silent operation.



### Specifications

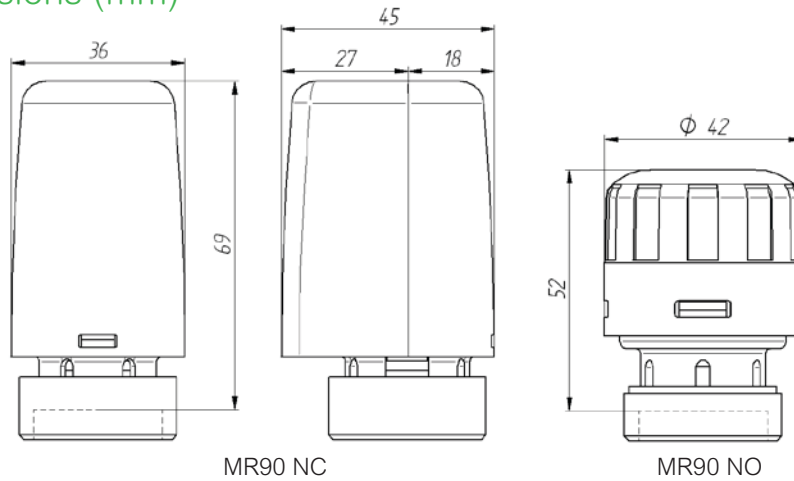
Part No.	MR90 NC	MR90NC-230T, MR90NC-24T
	MR90 NO	MR90NO-230T, MR90NO-24T
Type Designation	MR90 NCD-230T 2M43 00	
	MR90 NCD-24T 2M43 00	
	MR90 NOU-230T 2M44 00	
	MR90 NOU-24T 2M44 00	
Normal Stem position (without power)	MR90 NC	Down (Extended)
	MR90 NO	Up (Retracted)
Input voltage	MR90 230T	110...230 Vac 50/60 Hz
	MR90 24T	24 Vac/dc 50/60 Hz
Power consumption		1.8 W
Power consumption at start up	MR90 230T	50 VA
	MR90 24T	4 VA
Opening/closing time		Fig. 1
Max. stroke		4 mm
Force, nominal		90 N
Environment	Ambient temperature	
	Operation	2...50 °C
	Storage	-45...50 °C

Enclosure rating	MR90 NC	IP43 (Vertical mount) IP41 (Horizontal mount) IP40 (Upside down)
	MR90 NO	IP44
Connection thread		M30 x 1.5
Standards/Directives	Emission/Immunity	EMC 2004/108/CE according to EN 61326-1:2006
	Heat	IEC-68-2-2
	Humidity	IEC-68-2-3
	Cold	IEC-68-2-1
	Vibration	IEC-68-2-6
Main Construction Materials	Fire-resistant case	Class V0
Cable		2 m bipolar (0.35 mm <sup>2</sup> ), white 2 m bipolar (0.75 mm <sup>2</sup> ), white
Cable diameter		4.5 mm 6 mm
Weight		118 gr

### Available Part Numbers

Part Number	Type Designation	Voltage	Function - without power
MR90NC-230T	MR90 NCD-230T-2M43 00	110...230 Vac	Stem Down - Normally Closed
MR90NC-24T	MR90 NCD-24T-2M43 00	24 Vac/dc	
MR90NO-230T	MR90 NOU-230T-2M44 00	110...230 Vac	Stem Up - Normally Open
MR90NO-24T	MR90 NOU-24T-2M44 00	24 Vac/dc	

## Dimensions (mm)

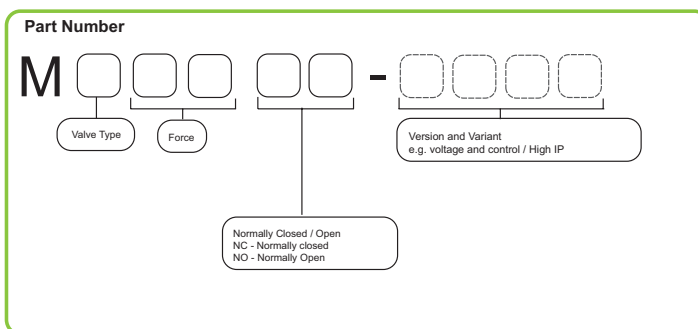
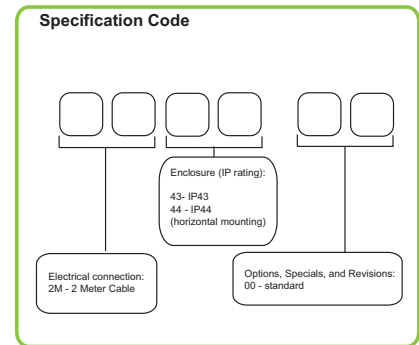
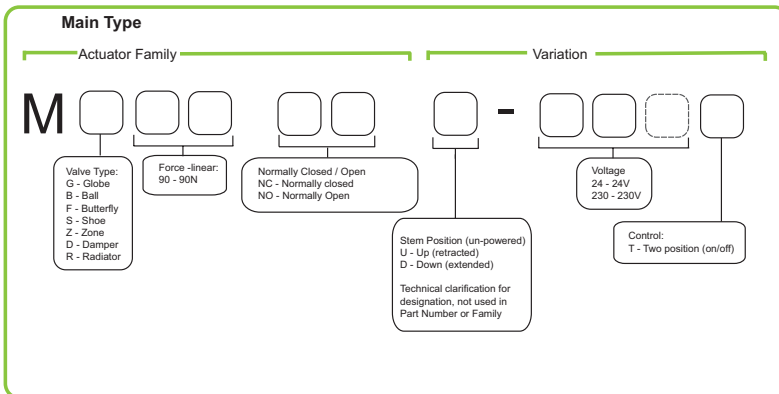


## Suitable Radiator Valves

Manufacturer	Valve model	Adaptor
HONEYWELL	VT220E	not required
DANFOSS	RAS-C Combi	911 2074 000
DRAYTON	TRV-4	not required
MISTRAL		not required
TA	TRV-2/TRV-2S	not required
HEIMEIER		not required

## Type Designation & Part Numbering System

Full Type Designation Guide and Part number explanation on document No. 02-00047



### Construction Guide:

The MR90 Radiator Valve Actuators looks as follows:

Full Type Designation:  
MR90 NCD-24T 2M43 00

Family:  
MR90 NC

Part Number:  
MR90NC-24T

## Actuator

The actuator operation is carried out by a built-in wax thermostatic element. A PTC element is heated from the control signal which in turn heats up the wax to expand and move the actuator piston.

At power on, after a short heating time (dead time), the actuator piston moves, initiating valve stroke. At power off, the wax element cools down and after the cooling dead time, the piston and the valve stem return to the rest position (fig.1).

All models are provided with a stroke indicator (Fig. 2).

## Mounting

The Actuator to valve connection is made by a M30 x 1.5 ring nut, this allows positioning of the actuator at any angle for convenient routing of the electrical cable.

Attention must be given to ensure the electrical cable does not touch any hot pipework or radiator surfaces

Before mounting to the valve, make sure pipes are clean, free from weld slag, perfectly aligned with the valve body and not subjected to vibrations.

The actuator must be mounted by hand. Tools are not necessary and may even damage the actuator or valve if used.

The actuators are able to operate in any mounting position, however, attention must be given to the IP rating for the MR90 NC which is lower if installed horizontally or upside down. The MR90 NO can be mounted in any position without affecting the IP44 rating.

It is recommend to mount the radiator actuators on the return line. If the fluid temperature is above 80°C, mount the actuator horizontally, away from the radiator so the actuator is least influenced by the radiant heat.

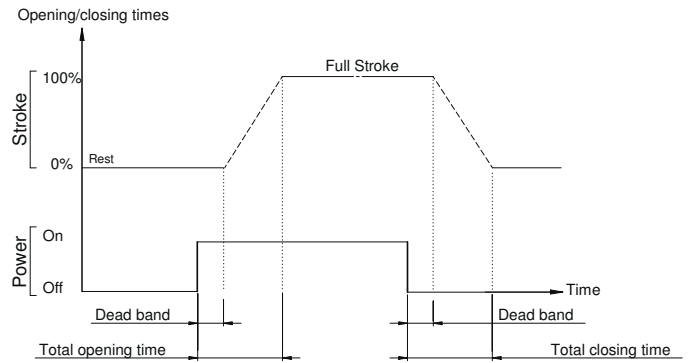


Fig. 1

Actuator timing details (approx.)					
Actuator	Supply voltage	Valve opening		Valve closing	
		Dead time	Total time	Dead time	Total time
MR90 NC & MR90 NO	230	1 min 20 sec	3 min 50 sec	2 min 20 sec	6 min 30 sec
	110	1 min 40 sec	6 min 20 sec	1 min 20 sec	5 min 30 sec
	24	2 min 30 sec	5 min 50 sec	2 min 20 sec	6 min 30 sec

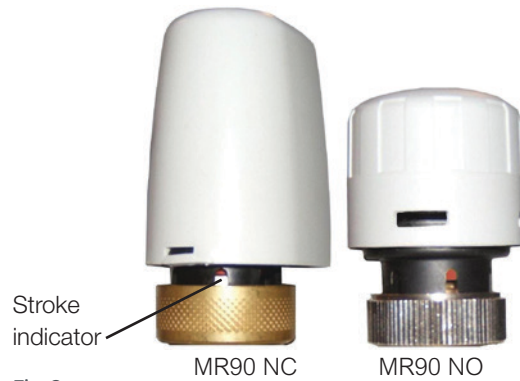
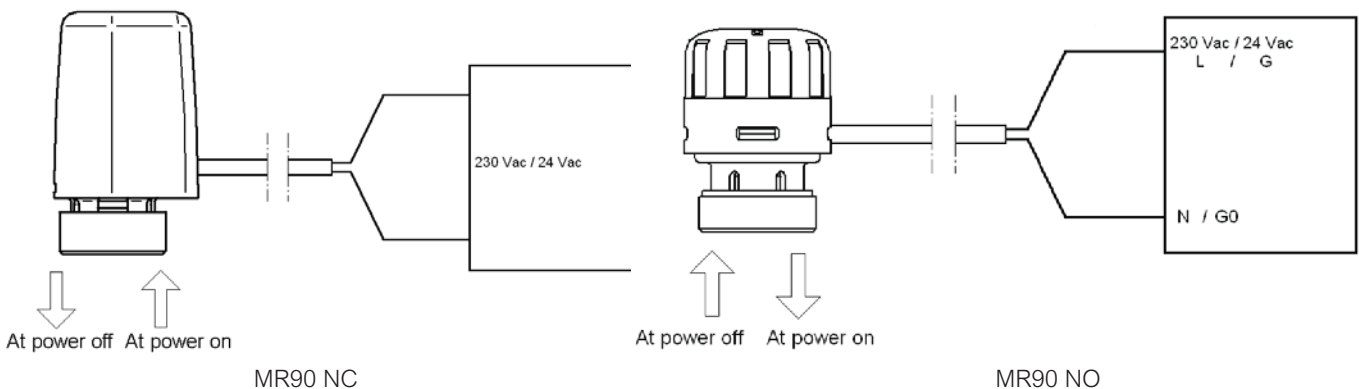


Fig. 2

## Wiring



**NOTE: Mains Voltage (230 Vac), electrical cable must not touch hot pipe work or radiator surface**

