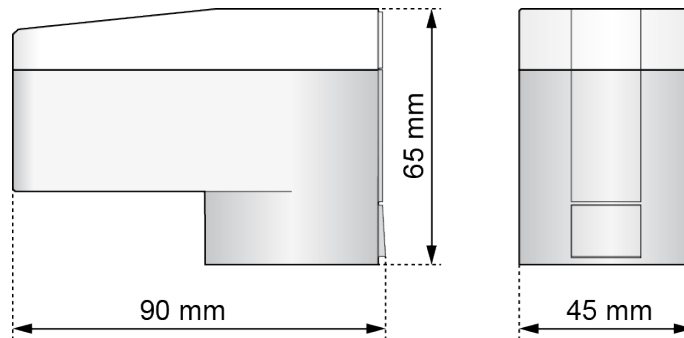


# HERZ-Motor Valve Drive

Data sheet for **7708**, Issue 1024

## ☑ Dimensions in mm



- 1 **7708 40**
- 1 **7708 41**
- 1 **7708 42**
- 1 **7708 46**
- 1 **7708 47**

## ☑ Models

- 1 **7708 40** **HERZ Motor Valve Drive, 3-point, M28 x 1.5, 24 V, 50 Hz**  
actuating force 200 N, operating voltage 24 V AC/DC, threaded connection M28 x 1.5, red adapter 1 **7708 90** is included, max. stroke 8,5 mm, regulating time 30 s/mm
- 1 **7708 41** **HERZ Motor Valve Drive, 3-point, M28 x 1.5, 230 V, 50 Hz**  
normally closed, actuating force 200 N, operating voltage 230 V AC, threaded connection M28 x 1.5, red adapter 1 **7708 90** is included, max. stroke 8,5 mm, regulating time 30 s/mm
- 1 **7708 42** **HERZ Motor Valve Drive, continuous 0..10 V, M28 x 1.5, 24 V, 50 Hz**  
normally closed, actuating force 200 N, operating voltage 24 V AC/DC, threaded connection M28 x 1.5, red adapter 1 **7708 90** is included, max. stroke 8,5 mm, regulating time 15 s/mm
- 1 **7708 46** **HERZ Motor Valve Drive, continuous 0..10 V, M28 x 1.5, 24 V, 50 Hz**  
normally closed, actuating force 200 N, operating voltage 24 V AC/DC, threaded connection M28 x 1.5, red adapter 1 **7708 90** is included, max. stroke 8,5 mm with stroke recognition and feedback signal, regulating time 30 s/mm
- 1 **7708 47** **HERZ Motor Valve Drive, DDC 0..10 V Failsafe, M28 x 1.5, 24 V, 50 Hz**  
Actuation force 200 N, operating voltage 24 V AC/DC, threaded connection M28 x 1.5, red adapter 1 **7708 90** is included, stroke distance max. 8.5 mm, regulating time 15 s/mm. With failsafe function, closes in case of power failure. With valve port detection and feedback channel.

## ☑ Description 1 7708 40

The HERZ Motor Valve Drive 1 **7708 40** is an electromotive actuator for valves used in heating and cooling systems. The HERZ Motor Valve Drive 1 **7708 40** (24 V, 3-Point) is controlled via a control device with 2- or 3-point control output (e. g. a temperature controller) or a building management system. The actuator is equipped with an LED for function display as well as with a manual valve setting which can be used e. g. for maintenance or for installation purposes. The area of application is the energy-efficient control of water-bearing valves in the area of building services and automation.

## ☑ Description 1 7708 41

The HERZ Motor Valve Drive 1 **7708 41** is an electromotive actuator for valves used in heating and cooling systems. The HERZ Motor Valve Drive 1 **7708 41** (230 V, 3-Point) is controlled via a control device with 2- or 3-point control output (e. g. a temperature controller) or a building management system. The actuator is equipped with an LED for function display as well as with a manual valve setting which can be used e. g. for maintenance or for installation purposes. The area of application is the energy-efficient control of water-bearing valves in the area of building services and automation.

#### ☑ Description 1 7708 42/46\*

The Motor Valve Drive 1 **7708** 42/46 is an electromotive actuator for valves used in heating and cooling systems. The control of the Motor Valve Drive 1 **7708** 42/46 (24 V Proportional) is controlled by a 0-10 V DC control signal of a room thermostat or a building management system. The actuator is equipped with a LC display with background illumination for displaying the current stroke, the control voltage, and the operating modes (open/close), as well as for the output of error codes. The actuator is equipped with a plug-in connection line as well as with a manual valve setting which can be used e. g. for maintenance or installation purposes. Optionally a variant with Feedback-Signal is available. This signal gives information about current valve position and status evidences to a BMS- System. The area of application is the energy-efficient control of water-bearing valves in the area of building services and automation.

#### ☑ Description 1 7708 47

The Motor Valve Drive 1 **7708** 47 (24 V Proportional Failsafe) is an electromotive actuator for opening and closing valves for heating and cooling systems. The predominant area of application is the energy-efficient control of water-bearing valves in the area of building services and automation. The actuator is equipped with a failsafe function. If the power supply fails, the valve pressure plate moves into a parking position. The energy for this is provided by an internal rechargeable accumulator.

The control is performed by a 0-10 V DC control signal sent by a central DDC system or a room thermostat. The current position and the control voltage are shown on an LC display.

The actuator supplied with a pluggable connecting cable has a manual valve adjustment which can be used, for example, for maintenance or installation. A version with feedback signal is available as an option. The back channel transmits information about the current valve position as well as about possibly occurred errors to the DDC installation.

#### ☑ Function 1 7708 40

The actuator mechanism of the geared motor 1 **7708** 40 (24 V, 3-Point) works with a stop motor, a micro controller and a gearing mechanism. The force generated by the drive motor is transferred to the valve pressure plate, opening or closing the valve.

#### ☑ Function 1 7708 41

The actuator mechanism of the geared motor 1 **7708** 41 (230 V, 3-Point) works with a stop motor, a micro controller and a gearing mechanism. The force generated by the drive motor is transferred to the valve pressure plate, opening or closing the valve.

#### ☑ Function 1 7708 42/46

The control of the geared motor 1 **7708** 42/46 (24 V Proportional) is performed by a 0-10 V DC control signal from a room thermostat or a building management system. After switching on the power supply, the actuator initializes. In the initialization of the actuator determines the mechanical stroke of the actuator. In this period the display alternately shows "In" (for initialization) and the control voltage applied to.

#### ☑ Function 1 7708 47

The actuator mechanism of the geared motor 1 **7708** 47 (24 V Proportional, Failsafe) works with a stop motor, a micro controller and a gearing mechanism. After switching on the power supply, the actuator carries out an initialization. In the initialization phase, the traverse path is determined; in the display, alternately "In" (for initialization) and the applied control voltage are shown.

#### ☑ Failsafe function 1 7708 47

The electronic system of the actuator continuously monitors the supply voltage. If this fails for  $\geq 2$  seconds, the valve spindle moves to the specified parking position and closes e. g. the valve. The actuator remains in this parking position until an operating voltage is applied again.

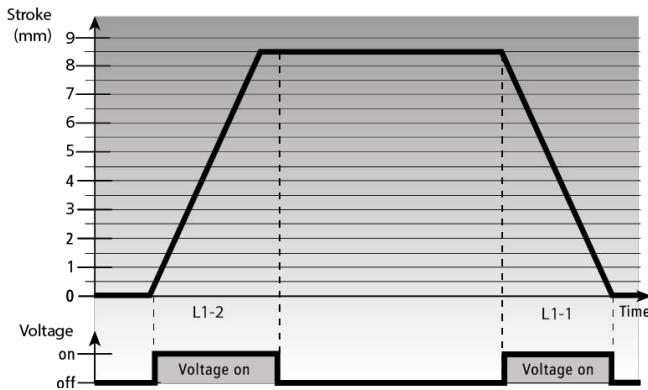
In the event of a power failure during the initialization phase, the drive stops the initialization and then moves to the parking position.

- The internal energy storage may only have a small residual charge after longer storage.
- The internal energy storage is designed for at least 4 power failures per day.
- The charging time for a completely empty energy storage is 16 hours.
- When the operating voltage is applied to the failsafe drive again, it starts initialization.
- A short start-up can trigger a failsafe event. The valve pressure plate extends and the actuator can no longer be mounted. In this case, retract the valve pressure plate manually.
- Perform the commissioning of the valve

#### ☑ Factory setting 1 7708 47

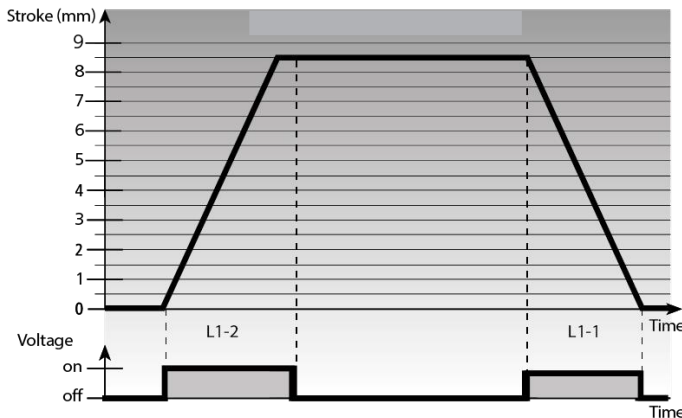
The failsafe parking position can be set at the factory in increments of 10 percent at the customer's request.

**☑ Operation 1 7708 40**



The Motor Valve Drive 1 **7708 40** is activated via the two electrical connections L1-1 (open) and L1-2 (closed). The desired moving direction is selected via operation voltage at one of the connection lines, extracting or retracting the valve pressure plate. Operation voltage at L1-2 retracts the valve pressure plate, operation voltage at L1-1 extracts it. After reaching the final positions, the motoric valve drive will switch off, depending on a time-overflow. If the operation voltage is switched- off before reaching a final position, the drive remains in its current position.

**☑ Operation 1 7708 41**



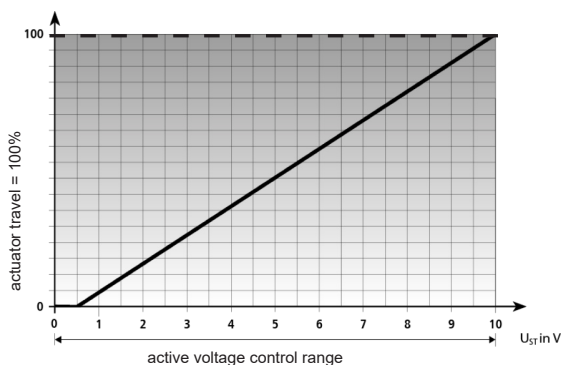
The Motor Valve Drive 1 **7708 41** is activated via the two electrical connections L1-2 (open) and L1-1 (closed). The desired moving direction is selected via operation voltage at one of the connection lines, extracting or retracting the valve pressure plate. Operation voltage at L1-2 retracts the valve pressure plate, operation voltage at L1-1 extracts it. After reaching the final positions, the motoric valve drive will switch off, depending on a time-overflow. If the operation voltage is switched- off before reaching a final position, the drive remains in its current position.

**☑ Operation 1 7708 42**

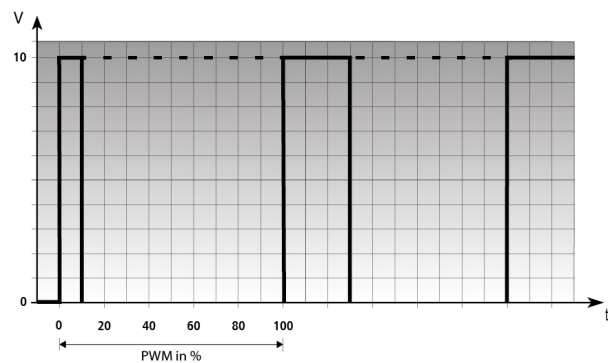
24 V Proportional is performed by a 0-10 V DC control signal from a room thermostat or a building management system. The control signal allows a precise activation and positioning of the actuator. A 0 - 10 V or PWM signal can be applied to the control voltage input for control purposes.

**Note**

1. Using poppet valves with soft rubber seal the pressing of the sealing will be determined as a valve stroke.
2. The following diagrams are only valid, when the correct valve adapterring is choosen:



Functionality-diagram: 1 **7708 42**



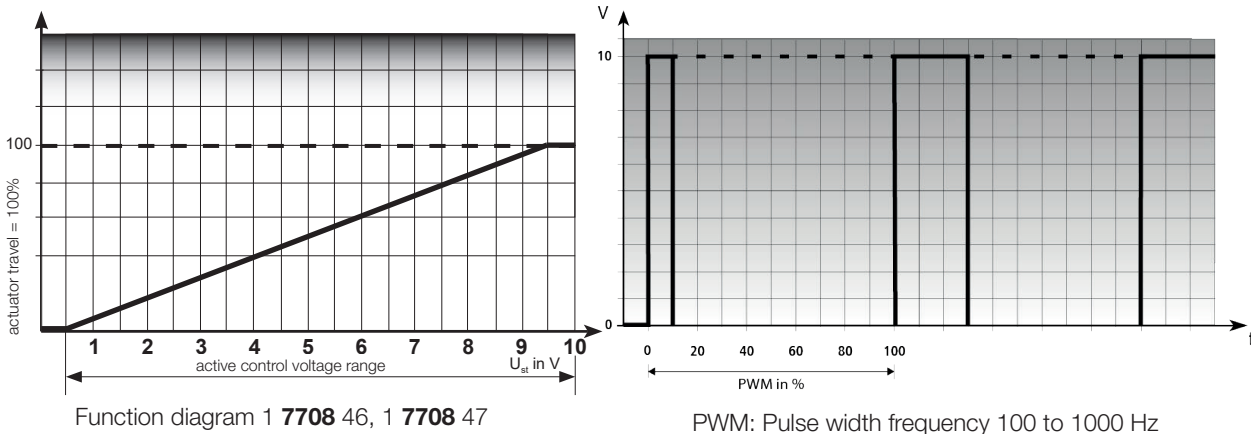
PWM: Pulse width frequency 100 Hz to 1000 Hz

### ☑ Operation 1 7708 46, 1 7708 47

The control of the geared motors 1 7708 46/47 (24 V Proportional) is performed by a 0-10 V DC control signal from a room thermostat or a building management system. The control signal allows a precise activation and positioning of the actuator. A 0 - 10 V or PWM signal can be applied to the control voltage input for control purposes.

#### Note

1. For poppet valves with a soft rubber seal, the compression of the rubber seal is detected as the valve path.
2. The following diagrams only apply when the appropriate valve adapter ring is used:



### ☑ Initialisation 1 7708 42

First, the valves pressure plate is fully retracted, whereby the upper end-stop of the drive is determined. Following the valve plate extends fully and determined the bottom end stop, the closing point of the valve and this point of the valve is detected. If a control voltage is applied, the actuator opens the valve smoothly. The drive is calculating from control voltage and actuator travel the needed position and move to it precisely.

#### Note:

For initialization the Motor Valve Drive 1 7708 42 needs max. 7 minutes

### ☑ Initialisation 1 7708 46

First, the valves pressure plate is fully retracted, whereby the upper end-stop of the drive is determined. Following the valve plate extends fully and determined the bottom end stop, the closing point of the valve and this point of the valve is detected. Now the valve stroke recognition will happen. Therefor the actuator moves with high speed to the upper position and back to the lower position slowly, for determining the valve stroke. In case of not sensing the valve, the actuator will work with the factory setting stroke (8.5 mm).

The stroke of the valve can be changed in practice by different conditions. The valve was adjusted, or the actuator was mounted to a new valve. In both cases, the data obtained at the initialization values has changed. Thus, the actuator adjusts to the new valve stroke, the power supply and the control voltage must be interrupted briefly. After the power has been switched on again, the actuator performs a new initialization phase.

#### Note:

For initialization the Motor Valve Drive 1 7708 46 needs max. 15 minutes

### ☑ Initialisation 1 7708 47

First the valve pressure plate is completely retracted; the upper end stop of the actuator is determined by this. The valve pressure plate then extends completely and determines the lower end stop, the closing point of the valve. Subsequently the actual valve path recognition is performed. For this, the valve pressure plate retracts at high speed and extends again slowly. The valve travel is detected during this process. If the actuator does not detect the valve path, control is performed using the parameterized stroke (factory setting: 8.5 mm).

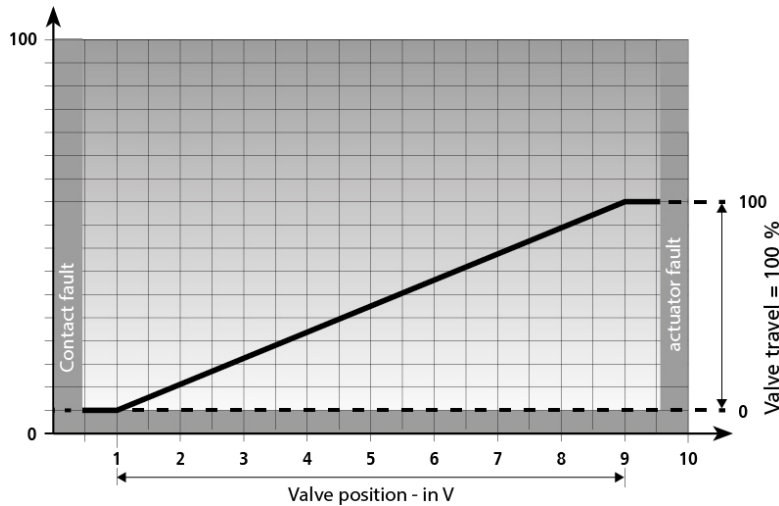
Due to different conditions, the valve travel for the actuator can change in practice. The valve has been readjusted or the actuator has been mounted on a new valve. In both cases, the values determined during initialization will change. In order for the actuator to adjust to the new valve path, the voltage supply and the control voltage must be interrupted briefly. After the power supply has been switched on again, a new initialization phase is carried out.

#### Note

The Motor Valve Drive 1 7708 47 needs a maximum of 15 min for an initialization phase.

**Feedback signal 1 7708 46 and 1 7708 47**

The 0-10 V feedback signal of the actuators 1 7708 46/47 enables direct feedback of the current operating status to the DDC system. Voltages of 1-9 V provide information about the actuator position. Voltages <0.5 V and >9.5 V signal any errors that may occur. The connection of the feedback signal is voltage resistant up to 24 V. It outputs a voltage proportional to the actuator position, which is made available to the DDC system.

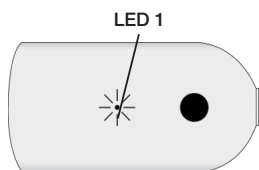


Voltage	Description
< 0.5 V	No function or no contacting
1 V to 9 V	voltage emitted proportionally to the valve path
1 V	corresponds to a closed valve
9 V	corresponds to an open valve
> 9.5 V	Internal error

**Function display via LED 1 7708 40**

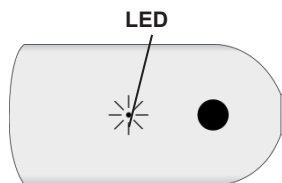
The Motor Valve Drive 1 7708 40: 24 V 3-Point is equipped with a multi-coloured LED for the signalling of operating statuses. Green, orange and red are used as signal colours. Signalling is only performed if the valve drive is supplied with operating voltage.

The LED is lighting 3 seconds after power-on, to eliminate a flashing LED when using impulse-control. Moves the actuator against the upper or lower stop, the motor and LED are switching- off after a time-limit.



LED 1 - Signal	Meaning
Indicated with steady red light, when drive is supplied with 24 V	Error conditions
Green LED is lightning	Valve pressure plate moves in (retracts)
Green and red LED are lightning (Light color is orange)	Valve pressure plate moves out (extracts)

**Function display via LED 1 7708 41**



The Motor Valve Drive 1 7708 41: 230 V 3-Point is equipped with a multi-coloured LED for the signalling of operating statuses. Green, orange and red are used as signal colours. Signalling is only performed if the valve drive is supplied with operating voltage.

Error conditions are indicated with steady red light, when drive is supplied with 230 V.

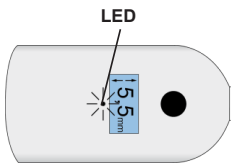
Valve pressure plate moves in (retract): green LED is lightning.

Valve pressure plate moves out (extract): green and red LED are lightning (Light color is orange).

The LED is lighting 3 seconds after power-on, to eliminate a flashing LED when using impulse-control.

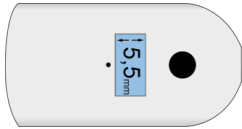
Moves the actuator against the upper or lower stop, the motor and LED are switching- off after a time-limit.

**Function display via LED 1 7708 42, 1 7708 46**



The Motor Valve Drives 1 **7708** 42/46: 24 V Proportional are equipped with a multi-coloured LED for the signalling of operating statuses. Green and red are used as signal colours. Signalling is only performed if the valve drive is supplied with operating voltage. Error conditions are indicated with steady red light.

**LC-Display 1 7708 42, 1 7708 46**

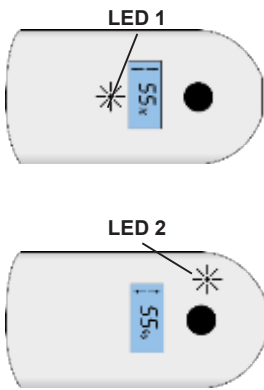


The LC display of the Motor Valve Drives 1 **7708** 42/46: 24 V Proportional alternately show the setting position and the applied control voltage. In case of a control requirement, the current driving direction is shown in the LC display by means of an arrow. In case of an error, the corresponding error code is shown and the error is indicated by a steadily lighted LED.

**Note**

The mechanical play between actuator and valve adapter and the gear in the actuator is recognized as valve travel. This affects the position indicator and the control bandwidth is minimally reduced. In contrast to the actual valve stroke, thus an approximately 1 mm higher valve stroke is shown in the display.

**Function display via LED 1 7708 47**



For function signalling of operating statuses, the Motor Valve Drive 1 **7708** 47: 24 V Proportional Failsafe has two multi-coloured LEDs. Green and red are used as signal colours.

LED 1	Description
Green (flashes)	Initialisation
Red	Error <sup>1</sup>
LED 2	Description
Green (flashes)	Failsafe operation, parking position is approached
Green	Device ready
Orange	Ready for operation, battery is charging
Red	Error <sup>1</sup>

<sup>1</sup>In case of error: Disconnect from voltage, keep voltage free for 20 minutes and then reconnect. If this occurs more than once, replace the device.

**LC-Display 1 7708 47**



The LC display alternatively shows the setting position and the applied control voltage. In case of a control requirement, the current driving direction is shown in the LC display by means of an arrow. In case of an error, the corresponding error code is shown and the error is indicated by a steadily lighted LED.

**Error codes 1 7708 42,1 7708 46**

Queued errors are indicated by an error code. The subsequent table explains the different error codes and error corrections.

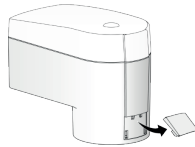
Error code	Description	Error correction
E6	Irregular position is determined	The actuator has to be disconnected from the power supply and the control shaft must be moved with the manual setting from the end position. After the power resumes, the initialization starts again. If the error recurs, the customer service is to be called.
E8	Indicates an internal error	The actuator will perform a reinitialization after 10 seconds. If the error cannot be corrected automatically after a maximum of three attempts, there is a permanent error displayed. In this case, the customer service is to be called.

**☑ Error codes 1 7708 47**

Queued errors are indicated by an error code.

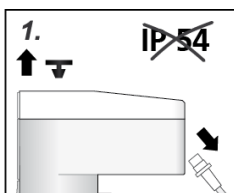
Error code	Description	Error correction
E8	Indicates an internal error	The actuator performs a re-initialisation after 10 seconds. If the error cannot be eliminated automatically after a maximum of three attempts, the indication will become steady. In this case the customer service must be called.

**☑ Antitheft device 1 7708 40, 1 7708 41, 1 7708 42, 1 7708 46 and 1 7708 47**

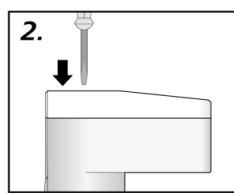


The Motor Valve Drives 1 **7708** 40, 1 **7708** 41, 1 **7708** 42, 1 **7708** 46 and 1 **7708** 47 can be protected against unauthorised access by a simple removal of the locking latch.

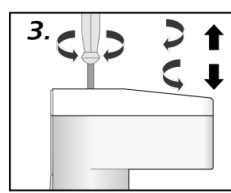
**☑ Manuel valve setting 1 7708 40 and 1 7708 42/46**



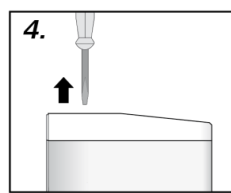
Remove the protective plug and the connection line, or switch off the voltage supply.



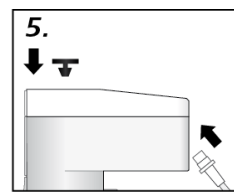
Introduce a screwdriver (0.3 x 2 mm) into the manual valve setting device.



Turn to the right or left for extracting or retracting, respectively.  
**Note:** When the stop is reached, turn back by 1/4.



Remove the screwdriver after reaching the desired position.

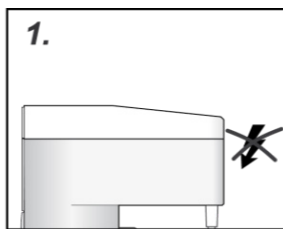


Install the protective plug and connect the connection line.

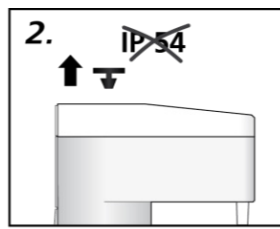
The manual valve setting allows to bring the valve pressure plate to the desired position in de-energised status. This facilitates e. g. maintenance and installation.

**☑ Manuel valve setting 1 7708 41**

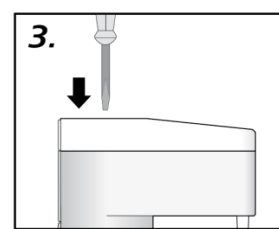
The manual valve setting allows to bring the valve pressure plate to the desired position in de-energised status. This facilitates e. g. maintenance and installation.



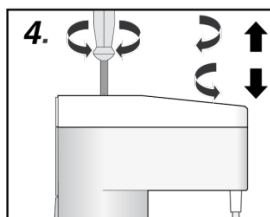
Switch-off power-supply.



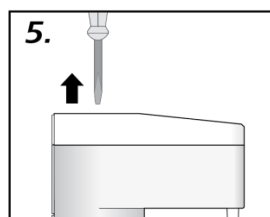
Remove the protective plug.



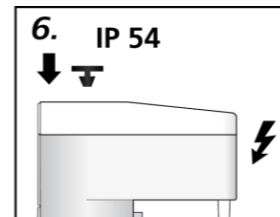
Introduce a screwdriver (0.3 x 2 mm) into the manual valve setting device.



Turn to the right or left for extracting or retracting, respectively.



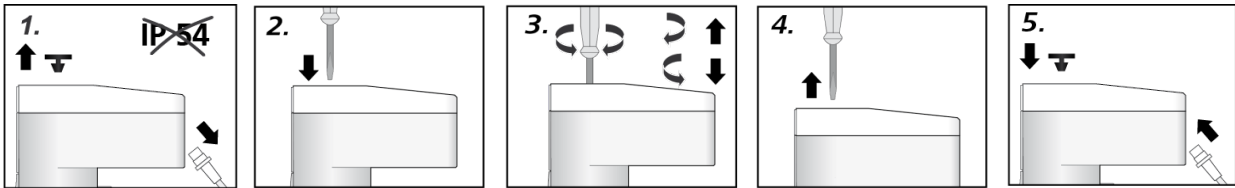
Remove the screwdriver after reaching the desired position.



Install the protective plug and switch on the voltage supply.

### ☑ Manual valve setting 1 7708 47

The manual valve setting allows to bring the valve pressure plate to the desired position in de-energised status. This facilitates e. g. maintenance and installation.



1. Remove the protective plug and the connection line, or switch off the voltage supply.

2. Introduce a screwdriver (0.3 x 2 mm) into the manual valve setting device.

3. When turning to the right, the valve pressure plate is retracted; turning to the left extracts it.  
**Note:** When the stop is reached, turn back by 1/4.

4. Remove the screwdriver after reaching the desired position.

5. Install the protective plug and connect the connection line.

#### Note

Pull the plug for manual setting. Then wait for the fail-safe function to end until LED 2 (green) goes out. See also the chapter "Function display via LED".

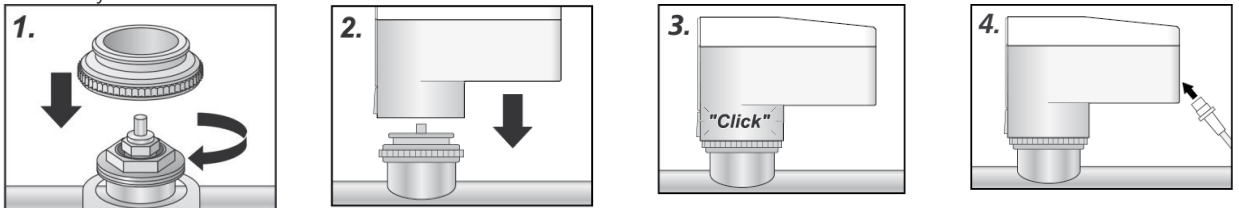
### ☑ Installation 1 7708 40, 1 7708 42/46 and 1 7708 47

#### ATTENTION!

Installation with extracted valve pressure plate leads to actuator damage.

- Only install the actuator with completely retracted valve pressure plate.
- Retract an extracted valve pressure plate with the manual valve setting, or electrically.

The Motor Valve Drives are installed to the valve with a valve adapter. An extensive valve adapter assortment guarantees a perfect mechanical match of the actuator to almost all valves available on the market. The actuator is simply plugged onto the valve adapter previously installed manually. The fact that the valve pressure plate is retracted in factory, allows for easy installation.



1. Screw the valve adapter manually onto the valve.

2. Position the actuator manually in vertical position to the valve adapter.

3. Simply latch the actuator to the valve adapter manually by applying vertical pressure; a clicking sound can be heard.

4. Connect the connection line to the actuator.

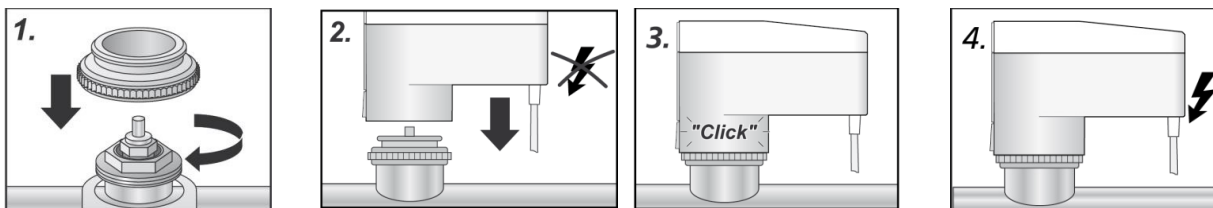
### ☑ Installation with valve adapter 1 7708 41

#### ATTENTION!

Installation with extracted valve pressure plate leads to actuator damage.

- Only install the actuator with completely retracted valve pressure plate.
- Retract an extracted valve pressure plate with the manual valve setting, or electrically.

The Motor Valve Drive: 230 V 3-Point is installed to the valve with a valve adapter. An extensive valve adapter assortment guarantees a perfect mechanical match of the actuator to almost all valves available on the market. The actuator is simply plugged onto the valve adapter previously installed manually. The fact that the valve pressure plate is retracted in factory, allows for easy installation.



1. Screw the valve adapter manually onto the valve.

2. Position the Actuator in de-energized state manually in vertical position to the valve adapter.

3. Simply latch the actuator to the valve adapter manually by applying vertical pressure; a clicking sound can be heard.

4. Switch on the voltage supply.



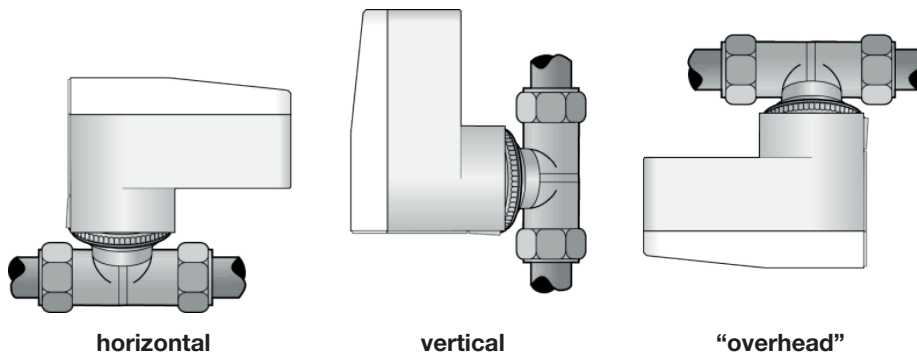
**☑ Adapter for Motor Valve Drives**

- 1 **7708 90** Colour red, adapter M28 x 1,5 for use with HERZ heating circuit distributors and HERZ valves (incl. **4002**, **4006**, **7217-GV**, **7217-V**, **4406**, **4012**, **4006 SMART** and **4206 SMART**) in combination with all 2-point drives.
- 1 **7708 85** Colour blue, adapter M28 x 1,5 for use with HERZ **4406/4006/4002** and **7217 GV** in combination with 2-point drives 1 **7708 27** / 1 **7708 48**, with continuous drives 1 **7990 3x** and 1 **7708 4x**.
- 1 **7708 80** Adapter M 28 x 1,5 for HERZ-actuating drive, colour grey for the use with **7217-98-V**, **7217-99-V**.
- 1 **7708 98** Adapter M 30 x 1,5 for HERZ-actuating drive, colour whitish-grey for the use with HERZ valves with M 30 x 1,5 threaded connection, HERZ control valves **7760**, **7762** and **7763**.

**☑ Installation position 1 7708 40, 1 7708 41, 1 7708 42, 1 7708 46 and 1 7708 47**

The HERZ Motor Valve Drives can be operated in every installation position.

The horizontal or vertical installation position should be preferred. In case of **“overhead”** installation, special circumstances (e. g. drain water) can reduce the lifetime of the actuator.

**☑ Disposal notice**

Local and currently applicable legislation must be observed for disposal. The disposal of HERZ Motor Valve Drives must not endanger the health or the environment.

**☑ Technical data 1 7708 40**

Operating voltage	24 V AC, -10% ... +20%, 50 - 60 Hz 24 V DC, -20% ... +20%
Operating power	2.6 VA / 1.4 W
Power consumption: Stand-by	< 10 mA (in end position)
Power consumption: Operation	AC: < 110 mA DC: < 60 mA
Stroke	max. 8.5 mm
Actuating force	200 N -20...+40%
Actuating time	30 s/mm
Minimum runtime	≥ 2 sec
Function display	Multicoloured LED
Fluid temperature	0 °C to +100 °C
Storage temperature	-20 °C to +70 °C
Ambient temperature	0 °C to +50 °C
Degree of protection / Protection class	IP 54 <sup>1)</sup> / III
CE conformity according to	EN 60730
Casing material/colour	Polyamide / white (RAL 9003)
Casing cover material/colour	Polycarbonate / transparent
Connection cable/colour	3 x 0.22 mm <sup>2</sup> PVC / white
Cable length	1 m
Dimensions (H x W x D)	65 x 45 x 90 mm
Weight with connection cable (1 m)	155 g
Surge strength according to EN 60730-7	1 kV

<sup>1)</sup> in all installation positions

**☑ Technical data 1 7708 41**

Operating voltage	230 V AC, -10% ... +10%, 50 Hz
Operating power	3.5 VA
Power consumption: Stand-by	< 5 mA
Power consumption: Operation	< 15 mA
Stroke	8.5 mm
Actuating force	200 N -20... +40%
Actuating time	30 s/mm
Minimum runtime	≥ 2 sec
Fluid temperature	0 °C to +100 °C
Storage temperature	-20 °C to +70 °C
Ambient temperature	0 °C to +50 °C
Degree of protection / Protection class	IP 54 <sup>1)</sup> / II
CE conformity according to	EN 60730
Casing material/colour	Polyamide / white (RAL 9003)
Casing cover material/colour	Polycarbonate / transparent
Connection cable/colour	3 x 0.75 mm <sup>2</sup> PVC / light grey (RAL 7035)
Cable length	1 m
Dimensions (H x W x D)	65 x 45 x 90 mm
Weight with connection cable (1 m)	200 g
Surge strength according to EN 60730-7	2.5 kV

<sup>1)</sup> in all installation position

**☒ Technical data 1 7708 42**

Operating voltage	24 V AC, -10% ... +20%, 50 - 60 Hz 24 V DC, -20% ... +20%
Operating power	2,6 VA / 1,4 W
Max. power consumption	< 100 mA
Stand-by power consumption	< 10 mA
Resistance of control voltage input	100 kΩ
Stroke	max. 8.5 mm
Stroke factory setting	2 mm to 8.5 mm
Actuating force	200 N -20%/+40%
Actuating time	15 s/mm
LCD (H x W)	10 x 20 mm, optional with blue backlight
LED	multicoloured-LED
Fluid temperature	0 °C to +100 °C
Storage temperature	-20 °C to +70 °C
Ambient temperature	0 °C to +50 °C
Degree of protection / Protection class	IP 54 <sup>1)</sup> / III
CE conformity according to	EN 60730
Casing material/colour	Polyamide / white (RAL 9003)
Casing cover material/colour	Polycarbonate / transparent
Connection cable/colour	3 x 0.22 mm <sup>2</sup> PVC / white
Cable length	1 m
Weight with connection cable (1 m)	155 g
Surge strength according to EN 60730-7	1 kV

<sup>1)</sup> in all installation positions

**☒ Technical data 1 7708 46**

Operating voltage	24 V AC, -10% ... +20%, 50 - 60 Hz 24 V DC, -20% ... +20%
Operating power	2,6 VA / 1,4 W
Max. power consumption	< 100 mA
Standby power consumption	< 10 mA
Resistance of control voltage input	100 kΩ
Feedback Signal: Voltage	0 V ... 10 V DC
Current	1 mA
Load impedance	10 kΩ – 1000 kΩ
Resolution	0,1 V
Stroke standard	max. 8.5 mm
Stroke factory setting	2 mm to 8.5 mm
Actuating force	200 N -20%/+40%
Actuating time	30 s/mm
LCD (H x W)	10 x 20 mm, optional with blue backlight
LED	multicoloured-LED
Storage temperature	-20 °C to +70 °C
Ambient temperature	0 °C to +50 °C
Degree of protection / Protection class	IP 54 <sup>1)</sup> / III
CE conformity according to	EN 60730
Casing material/colour	Polyamide / white (RAL 9003)
Casing cover material/colour	Polycarbonate / transparent
Connection cable/colour	4 x 0,22 mm <sup>2</sup> PVC / white
Cable length	1 m
Weight with connection cable (1 m)	155 g
Surge strength according to EN 60730-7	1 kV

<sup>1)</sup> in all installation positions

**☑ Technical data 1 7708 47**

Operating voltage	24 V AC, -10 % ... +20 %, 50-60 Hz 24 V DC, -20 % ... +20 %
Operating power	2.6 VA / 1.4 W
Charging operating power with battery (temporarily)	3.1 VA / 1.7 W
Failsafe activations / day	4
Charging time of int. battery, if empty	16 h
Max. power consumption	< 160 mA
Stand-by power consumption	< 10 mA
Control voltage	0...10 V DC
Working range of the control voltage	0.5...10 V DC
Resistance of control voltage input	100 kΩ
Feedback Signal: voltage	0 V ... 10 V
current	1 mA
load impedance	10 kΩ–1000 kΩ
resolution	0,1 V
Stroke:	
standard	max. 8.5 mm
factory setting	2 mm to 8.5 mm
Actuating force	200 N -20 / +40%
Actuating time	15 s/mm
Noise level	< 30 dB/A
LCD (H x W)	10 x 20 mm, optional with blue backlight
LED	multicoloured-LED
Fluid temperature	0 °C to +100 °C
Storage temperature	-20 °C to +70 °C
Ambient temperature	0 °C to +50 °C
Degree of protection / Protection class	IP 54 <sup>1)</sup> / III
CE conformity according to	EN 60730
Casing material/colour	Polyamide / signal white (RAL 9003)
Casing cover material/colour	Polycarbonate / transparent
Connection cable/colour	4 x 0.22 mm <sup>2</sup> PVC / white
Cable length	1 m
Dimensions (H x W x D)	65 x 45 x 90 mm
Weight with connection cable (1 m)	155 g
Surge strength according to EN 60730-7	1 kV

<sup>1)</sup> in all installation positions

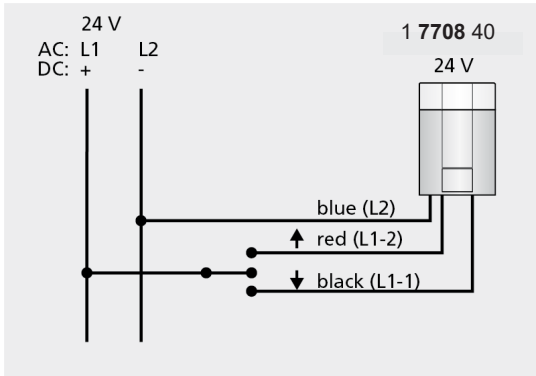
Adapter-Valve-Diagram

		Valve types															
		TS-98-V (M28 x 1,5)	TS-90-V (M28 x 1,5)	TS-99-FV (M28 x 1,5)	TS-90-KV (M28 x 1,5)	TS-90 (M28 x 1,5)	TS-90-E (M28 x 1,5)	TS-90-E (M28 x 1,5)	TS-90 (M28 x 1,5)	TS-90-V (M28 x 1,5)	TS-98-V (M28 x 1,5)	TS-99-FV (M28 x 1,5)	TS-98-VH (M30 x 1,5)	TS-90-H (M30 x 1,5)	TS-98-VH (M30 x 1,5)	TS-98-VH DIN (M30 x 1,5)	
	Actuator																
	3-Punkt- Regelung 1 7708 40 1 7708 41	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Adapter	1 7708 90 red	Adapter 1 7708 90 inkl.															
		Adapter 1 7708 98 has to be ordered separately															
	**																

Adapter-Valve-Diagram

		Valve types														
		4002 (M28 x 1,5)	4012 (M28 x 1,5)	4006 SMART (M28 x 1,5)	4406 (M28 x 1,5)	7217 V (M28 x 1,5)	7217 GV (M28 x 1,5)	7217-98-V (M28 x 1,5)	7217-99-FV (M28 x 1,5)	7761 RD (M28 x 1,5)	7760 (M30 x 1,5)	7723 Zonenventil (M28 x 1,5)	7760 RD (M28 x 1,5)	7762 (M30 x 1,5)	7763 (M30 x 1,5)	
	Actuator															
	3-Punkt- Regelung 1 7708 40 1 7708 41	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	continuous Regulation 1 7708 42 1 7708 46 1 7708 47	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Adapter	1 7708 90 red	Adapter 1 7708 90 inkl.														
		Adapter 1 7708 80 has to be ordered separately														
	*	Adapter 1 7708 98 has to be ordered separately														
	**															

**Electric connection 24 V AC/DC 1 7708 40**



Blue (L2): Ground  
 Voltage to red (L1-2):  
 The valve pressure plate retracts  
 Voltage to black (L1-1):  
 The valve pressure plate extracts  
 No voltage to red/black: The valve pressure plate remains in its current position

We recommend the following cable lengths for installing a 24 V system:

Cable	Section	Length
Standard DDC line	0.22 mm <sup>2</sup>	20 m
J-Y(ST)Y	0.8 mm	45 m
NYM / NYIF	1.5 mm <sup>2</sup>	136 m

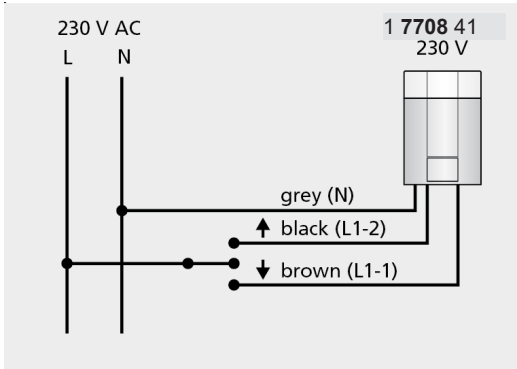
**Transformer / power supply:**

A safety isolating transformer according to EN 61558-2-6 (for AC type) or a switching power supply according to EN 61558-2-16 (for DC type) must always be used

The dimensioning of the transformer, or the switching power supply, results from the maximum operating power of the HERZ Motor Valve Drives.

Rule-of-thumb formula:  $P_{\text{transformer}} = 3 W \times n$   
 n = Number of HERZ actuators

**Electric connection 230 V AC 1 7708 41**



Grey (N)	Ground
Voltage to brown (L1-1)	The valve pressure plate retracts until the end position
Voltage to black (L1-2)	The valve pressure plate extracts until the end position
No voltage to black/brown	The valve pressure plate remains in current position

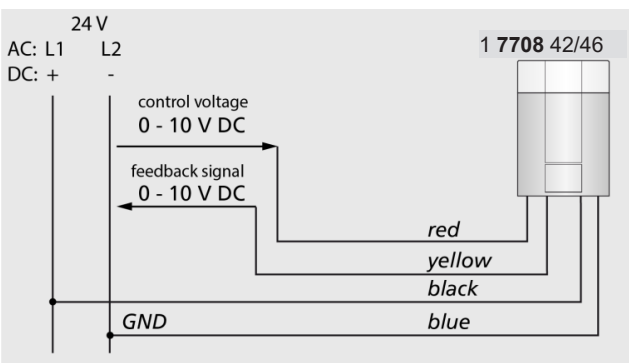
**Attention**

Provided by the customer, the supply line must be adequately suppressed.

We recommend the following cables for installing a 230 V system:

Light plastic-sheathed cable:	NYM 1,5 mm <sup>2</sup>
Flat webbed building wire:	NYIF 1,5 mm <sup>2</sup>

**Electric connection 24 V AC/DC 1 7708 42/46**



We recommend the following cable lengths for installing a 24 V system:

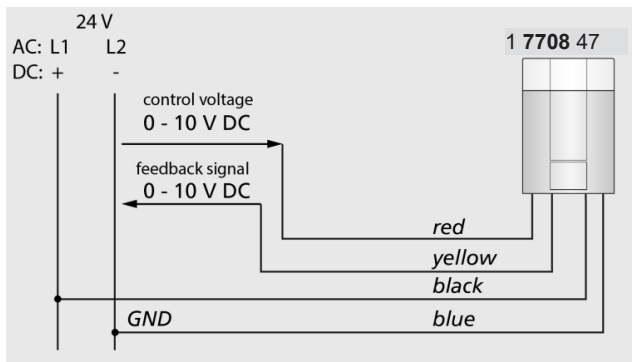
Cable	Section	Length
Standard DDC line	0.22 mm <sup>2</sup>	20 m
J-Y(ST)Y	0.8 mm	45 m
NYM / NYIF	1.5 mm <sup>2</sup>	136 m

**Transformer / power supply:**

A safety isolating transformer according to EN 61558-2-6 (for AC type) or a switching power supply according to EN 61558-2-16 (for DC type) must always be used

The dimensioning of the transformer, or the switching power supply, results from the maximum operating power of the HERZ Motor Valve Drives.

**Electric connection 24 V AC/DC 1 7708 47**



We recommend the following cable lengths for installing a 24 V system:

Cable	Section	Length
Standard DDC line	0.22 mm <sup>2</sup>	20 m
J-Y(ST)Y	0.8 mm	45 m
NYM / NYIF	1.5 mm <sup>2</sup>	136 m

**Transformer / power supply unit:**

A safety isolating transformer according to EN 61558-2-6 or a switching power supply according to EN 61558-2-16 must always be used.

The dimensioning of the transformer or the switching power supply results from the maximum making capacity of the Actuators.

The Motoric Valve Drive Proportional Failsafe is controlled via a 0-10 V control unit or a building management system.

**Safety notes**

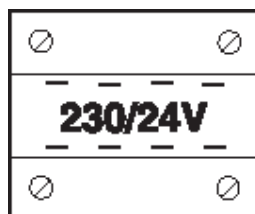
The actuator has been designed for use in heating, ventilation and air conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport  
Caution: Power supply voltage!

- It may only be installed by suitably trained personnel. All applicable legal or institutional installation regulations must be complied with.
- The actuator must be protected against moisture. It is not suitable for use in outdoor applications.
- Check that the strain relief of the cable in the actuator housing functions correctly.
- The device may only be opened at the factory. It does not contain any parts that can be replaced or repaired by the user.
- The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.

**Accessories**

1 **7796** 04 HERZ Transformer 230/24 V

The overload-proof HERZ safety transformer 230/24 V is designed for the connection of HERZ room thermostats and HERZ actuating drives and suitable for operation of 8 HERZ actuating drives max.



Version	as per VDE 0551
Protection class	II
Protection class	IP 20
ISO Cl.	T40/E
Input voltage	230 V
Fuse in input circuit	50-60 Hz, 315 mA
Output voltage	24 V
Power	50 VA
Quick installation on device rail	ref. DIN 42227/3
Dimensions	106 x 90 x 74 mm (B x H x T)

**Please note:** all diagrams and schemes are indicative in nature and do not claim to be complete.

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