

## Installation and Operating Manual

KEMPER KHS quarter turn stop valve with servo drive  
(24 V AC/DC-version),  
Figure 686 00

KEMPER KHS quarter turn stop valve with servo drive  
(230 V AC-version),  
Figure 686 04



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## 1 INFO



### Safety instructions for installation and maintenance

#### Installation and use

Read the manual carefully and follow the instructions before installation!

Only specialists with electrical system qualifications are permitted to carry out electrical installation!

Always pass these instructions on to current the device operating organisation and retain for later reference!!

The product must only be used in closed, frost free and dry rooms.

#### Warranty

Warranty or liability are voided through:

- Disregard of installation instructions.
- Damage due to faulty installation.
- Unauthorised product modifications.
- Other incorrect operation.

#### Use

The product must only be used for the described purpose. Any other use is not as intended.

The KEMPER KHS quarter turn stop valve with servo drive is designed for use in drinking water installations with the KHS-Hygiene system and is suitable for maintenance, stop and protection valve.

Important advice to the operator

The valve is controlled by:

**24 V AC/DC Figure 686 00**

- Building management system
- LOGIC system control (without shut-off function)

**230 V AC Figure 686 04**

- KHS Timer
- KHS Mini system control MASTER 2.0
- Leak Security System

To prevent uncontrolled loss of water (in case of power failure, the valve is opened) the KHS-Maximum flow isolating ball valve should not be used as a terminal flushing valve. For this case a KEMPER KHS-Maximum flow isolating ball valve with spring-reset servo drive Fig. 686 01 / Fig. 686 05 (normally closed) is recommended.

#### Maintenance

According to DIN EN 806 Part 5, the operator has to make an annual inspection.

Labelling of important warning information:



**Danger! Electricity!**  
Indicates hazards that might result in severe or fatal injury.



**Warning!** Highlights risks that may result in injury, material damage or contamination of drinking water.



**Note!** Indicates hazards that may lead to damages to the system or malfunctions.

#### Disposal



Local regulations on waste recycling and disposal must be followed. The product must not be disposed of with household waste but must rather be disposed of appropriately.

## 2 Properties | Technical data

### 2.1 Properties

#### Figure 686 00 | 686 04

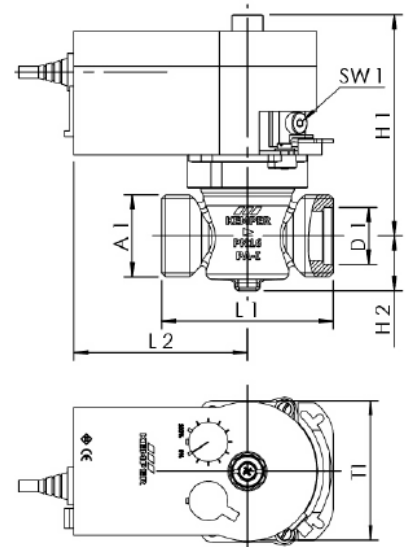
- ☉ Parts having contact with fluid are made of gunmetal and stainless steel as well as for drinking water approved elastomers and plastics
- ☉ Removable `Top Entry` interior head part
- ☉ KHS quarter turn stop valve DIN-/DVGW approved according to DIN EN 13828, W 570
- ☉ Pressure stage PN 16
- ☉ Free from dead spots
- ☉ Drive can be positioned on the valve in 45° steps
- ☉ Manual operation possible

### 2.2 Technical data | Dimensions | Materials

Description	Figure 686 00	Figure 686 04
Torque	5 Nm	
Hold torque	5 Nm	
Transit time for 90°	35 sec.	30 sec.
Voltage	24 V (+/- 20%) (AC/DC)	230 V~ (+/- 15%), 50 Hz
Power consumption	5 W / 9 VA	2,4 W / 4,5 VA
Rotate angle	90°	
Permissible ambient temperature	Up to 55°C	
Permissible ambient humidity	< 85% relative humidity without condensation	
Protection class	IP54	
Operating noise	< 30 dB(A)	
Drive weight	0,7 kg	
Feedback	Position feedback 0...10 V	
Connection cable	1,2 m, 5 x 0,5 mm <sup>2</sup>	1,2 m, 3 x 0,75 mm <sup>2</sup>

## Dimensions

Description	Figure 686 00   686 04				
Nominal width	[DN]	15	20	25	32
Connection dimension (A1)	[Zoll]	G 3/4	G 1	G 1 1/4	G 1 1/2
Durchmesser	[mm]	18	22,5	29	35
Overall height (H1)	[mm]	110	110	112,5	115,5
Overall height (H2)	[mm]	25	25	28	31
Length (L1)	[mm]	68	73	88	93
Length (L2)	[mm]	89	89	89	89
Depth (T1)	[mm]	72	72	72	72
Hexagon socket (SW1)	[mm]	4	4	4	4



## Materials

Description	Figure 686 00   686 04
Housing, interior head part	Gunmetal and stainless steel
Spindle	Gunmetal
Sealing elements	EPDM
Coupling	Gunmetal
Drive housing	Self-extinguishing plastic
Axis adapter	Steel
Flange adapter	Polyamide
Flow limiter	POM Hostaform

## 3 Installation



The advice of system manuals (e.g. LOGIC system control, KHS Mini system control, Leak Security System, KHS Timer-Set) in which the valve is to be integrated, must be observed.

### Recommendations:

#### a) Quarter turn stop valve

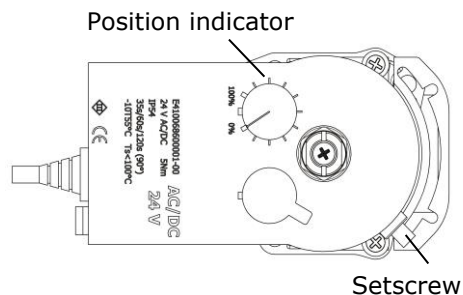
It is recommended to install the quarter turn stop valve PLUS in the pipeline in advance without the servo drive to protect the servo drive from being

damaged or getting dirty. Make sure the valve is installed in the pipeline tension free.

## b) Servo drive



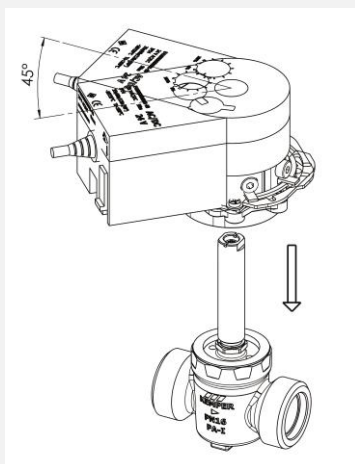
Before installing the servodrive, make sure the home position is set (position indication is 0%).



1

### Adjust servo drive

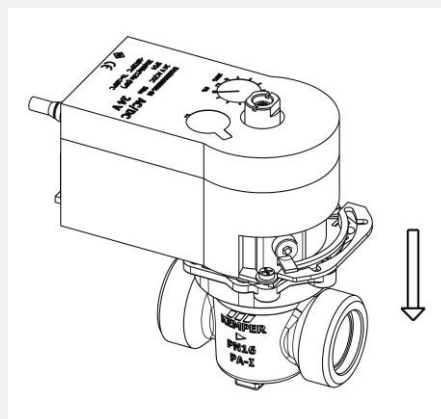
The servo drive has 8 alignment steps that can be aligned in 45° steps. To do that, select the appropriate servo drive position, depending on the amount of space.



2

### Put on servo drive

Press the drive firmly onto the cone.

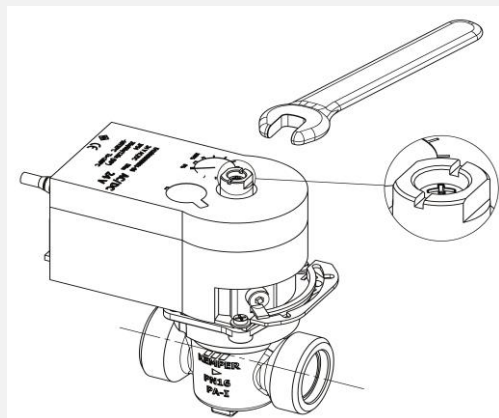


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### Setting the valve home position

Home position:

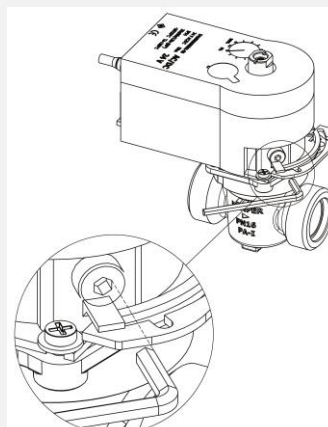
- Check that the home position of the valve is closed.
- Make sure the position indicator is vertical to the pipe axis



4

### Fixate the servo drive on the valve

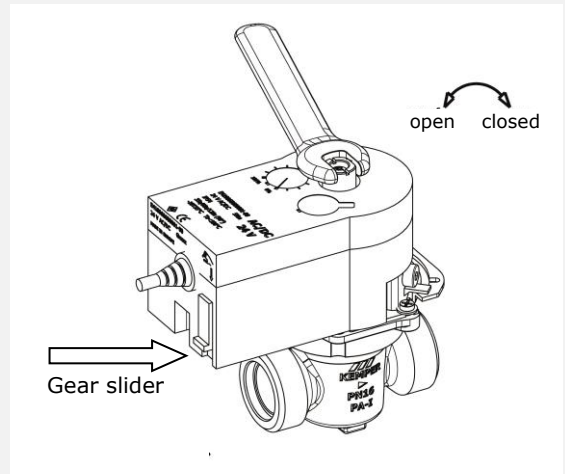
Fixate the servo drive using an 4 mm hexagonal wrench (Allen key), tightening torque 7...9 Nm.



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## Manual operation

- Gear slider ↑ = Disengaged gear.
- Gear slider ↓ = Engaged gear.



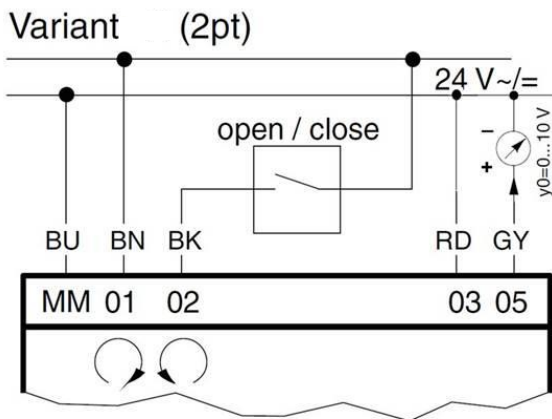
## 4 Connection as a 2-point controller

**Figure 686 00**

The OPEN/CLOSE control is made using 2 wires. The drive is applied permanently to the voltage using the blue and brown wires (valve CLOSED).

When a voltage is applied to the black wire, the valve opens and travels to the limit position (90° OPEN).

After switching off the voltage (black wire), the drive moves into the opposite limit position (90° CLOSED).



- BK = black
- BU = blue
- RD = red, position feedback
- GY = grey, position feedback, 0...10V
- 0V = drive OFF
- 10V = drive OPEN

**Figure 686 04**

The drive can be put into any desired position by applying the voltage to the lead.

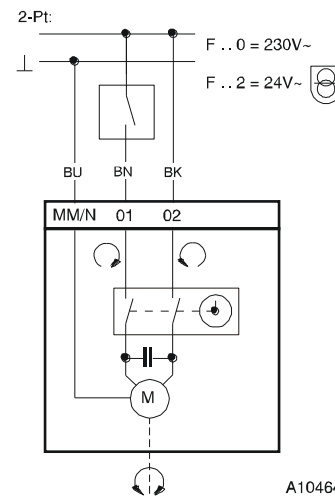
The black wire is always under tension.

Without voltage on the brown wire, the drive opens the valve counter clockwise.

With voltage on the brown wire, the drive closes the valve clockwise.

In both final positions and during overload, the magnetic coupling triggers.

The drive position signal is switched off by the switch-off electronics after 60 sec.



- BN = brown
- BK = black
- BU = blue



- Work is to be carried out by authorised specialists only!
- Opening the housing is prohibited!
- When installing outdoors, KEMPER recommends to protect additionally the devices against weather effects.

## 5 Directive ▪ CE-Conformity servo drive

Figure 686 00	Figure 686 04
<ul style="list-style-type: none"> <li>▪ RoHS-Directive 2011/65/EU</li> <li>▪ Directive 2004/108/EG (2014/30/EU) for the electromagnetic compatibility</li> </ul>	<ul style="list-style-type: none"> <li>▪ RoHS-Directive 2011/65/EU</li> <li>▪ Directive 2004/108/EG (2014/30/EU) for the electromagnetic compatibility</li> <li>▪ Directive 2006/95/EG (2014/35/EU) Low voltage directive</li> </ul>
EN 61000-6-1	EN 60730-1
EN 61000-6-2	EN 60730-2-14
EN 61000-6-3	EN 61000-6-1
EN 61000-6-4	EN 61000-6-2
	EN 61000-6-3
	EN 61000-6-4

## 6 Maintenance

According to DIN EN 806 Part 5, the operator has to make an **annual inspection**.

After **20,000** opening and closing cycles, check the valve head-part for wear and replace it if necessary.

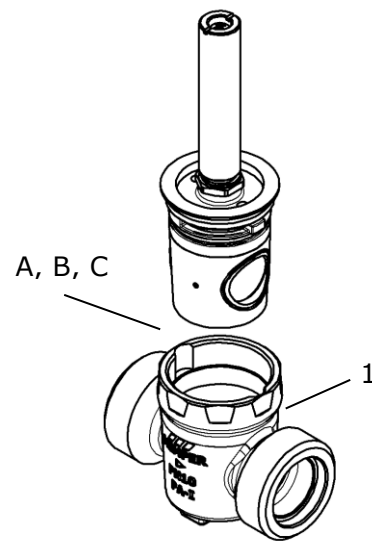
### Removal of the head-part

Dismantle the servo drive in the reverse sequence described in Point 3. Unscrew the head part (A) from the housing (1) with a 17 mm wrench and remove it.

Visually check the body and sealing surfaces and replace as necessary.

### Installation

Insert the head-part (A) into the housing (1) and position at the limit stop. Tighten the head-part with a 17 mm wrench using 20 Nm torque. Install the servo drive as described in Point 3.



## 7 Spare parts

Spare parts list		Figure 686 00   686 04
Position	Designation	Art.-No.
A	Head-part DN 15/20	E012068600020KP
B	Head-part DN 25	E012068600025KP
C	Head-part DN 32	E012068600032KP



## 8 Cabling for KEMPER KHS components with electrical connection

This list of cables only shows examples of applications. The exact design of the cables in questions must be carried out on site by the

planner on the basis of the ambient conditions (temperature, frequency, routing type, mechanical load).

Designation	Art.-No.	Cable cross-section / diameter	Max. cable length	Cable type*
[-]	[-]	[mm <sup>2</sup> ] [mm]	[m]	[-]
KHS quarter turn stop valve PLUS with spring reset servo drive (24 V)	686 01 015...032	3 x X mm <sup>2</sup> (power supply) + 2 x 2 x 0.80 mm ** (position feedback)	700 (X=1,50) 1000 (X=2,50)	NYM-J + J-Y(ST)Y
KHS quarter turn stop valve with servo drive (24 V)	686 00 015...032	5 x X mm <sup>2</sup> (power supply) + 2 x 2 x 0.80 mm ** (position feedback)	250 (X=1,50) 450 (X=2,50)	NYM-J + J-Y(ST)Y
KHS quarter turn stop valve PLUS with spring reset servo drive (230V)	686 05 015...032 685 15 032...050	3 x 1.50 mm <sup>2</sup>	1000	NYM-J
KHS quarter turn stop valve with servo drive (230 V)	686 04 015...032	5 x 1.50 mm <sup>2</sup>	1000	NYM-J
KHS free drain with overflow sensor	688 00 020...032	2 x 2 x 0.80 mm **	1000	J-Y(ST)Y
Kemper CONTROL PLUS flow measurement valve Vortex principle	138 4G 015...050	4 x 2 x 0.80 mm **	300	J-Y(ST)Y
Kemper CONTROL PLUS flow measurement valve Vortex principle	138 6G 015...050	4 x 2 x 0.80 mm **	300	J-Y(ST)Y
KHS flow and temperature sensor Pt 1000	628 0G 015...050 629 0G 015...050	2 x 2 x 0.80 mm **	1000	J-Y(ST)Y
Leakage water sensor	620 00 00100	2 x 2 x 0.80 mm **	500	J-Y(ST)Y
CAN bus cable The application is based on the ISO 11898 international standard.		1 x 2 x 0.34 mm <sup>2</sup> ** 1 x 2 x 0.50 mm <sup>2</sup> ** 1 x 2 x 0.75 mm <sup>2</sup> **	300 500 1000	CAN bus cable

\* Possible cable type for fixed routing, without mechanical load

\*\* Shielded cable lead



According to VDE 0815: The specification of signal transmission cables with respect to the diameter is specified in mm.

  
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