

# Butterfly valve DKR, butterfly valve with attachment set and actuator IDR

## OPERATING INSTRUCTIONS

· Edition 09.24 · EN · 03251422



### 1 SAFETY

#### 1.1 Please read and keep in a safe place



Please read through these instructions carefully before installing or operating. Following the installation, pass the instructions on to the operator. This unit must be installed and commissioned in accordance with the regulations and standards in force. These instructions can also be found at [www.docuthek.com](http://www.docuthek.com).

#### 1.2 Explanation of symbols

**1, 2, 3, a, b, c** = Action

→ = Instruction

#### 1.3 Liability

We will not be held liable for damage resulting from non-observance of the instructions and non-compliant use.

#### 1.4 Safety instructions

Information that is relevant for safety is indicated in the instructions as follows:



#### DANGER

Indicates potentially fatal situations.



#### WARNING

Indicates possible danger to life and limb.



#### CAUTION

Indicates possible material damage.

All interventions may only be carried out by qualified gas technicians. Electrical interventions may only be carried out by qualified electricians.

#### 1.5 Conversion, spare parts

All technical changes are prohibited. Only use OEM spare parts.

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## 2 CHECKING THE USAGE

### 2.1 Intended use

Butterfly valve DKR is designed to adjust volumes of hot air and flue gas on various appliances and flue gas lines. It is designed for control ratios up to 1:10, and with the mounted actuator IC 50 it is suitable for regulating flow rates for modulating-controlled or stage-controlled combustion processes.

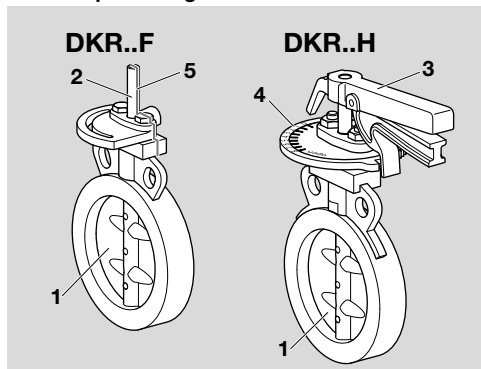
Pre-assembled combinations of actuators and butterfly valves are available as models IDR up to nominal size DN 300.

This function is only guaranteed when used within the specified limits – see page 7 (9 Technical data). Any other use is considered as non-compliant.

### 2.2 Typecode DKR

<b>DKR</b>	Butterfly valve for air and flue gas
<b>15-500</b>	Nominal size
<b>Z</b>	For fitting between two DIN flanges
<b>03</b>	$p_u$ max. 300 mbar
<b>H</b>	With manual adjustment
<b>F</b>	With free shaft end
<b>Temperature range [°C]</b>	
<b>100</b>	100 °C
<b>350</b>	350 °C
<b>450</b>	450 °C
<b>650</b>	650 °C
<b>D</b>	With disc clearance
<b>A</b>	With stop bar

### 2.3 DKR part designations



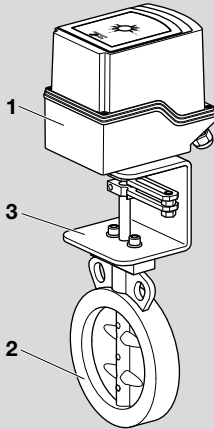
- 1 Valve disc
- 2 Free shaft end
- 3 Locking lever for blocking the setting
- 4 Opening angle scale
- 5 Marking for valve disc position

### 2.4 Typecode IDR

<b>IDR</b>	Butterfly valve with actuator
<b>15-300</b>	Nominal size
<b>Z</b>	For fitting between two DIN flanges
<b>03</b>	$p_u$ max. 300 mbar
<b>Temperature range [°C]</b>	
<b>100</b>	100 °C
<b>350</b>	350 °C
<b>450</b>	450 °C
<b>650</b>	650 °C
<b>D</b>	With disc clearance
<b>A</b>	With stop
<b>AU</b>	Attachment set for axial mounting, electr. connection above the pipe
<b>AS</b>	Attachment set for axial mounting, electr. connection to the side of the pipe
<b>GD</b>	Attachment set with linkage for valve with disc clearance
<b>GDW</b>	Attachment set with linkage and heat deflector for valve with disc clearance
<b>GA</b>	Attachment set with linkage for valve with stop bar
<b>GAW</b>	Attachment set with linkage and heat deflector for valve with stop bar
<b>/50</b>	Series 50, with higher torque
<b>Running time [s]/Adjustment angle [90°]</b>	
<b>-03</b>	3.7/90
<b>-07</b>	7.5/90
<b>-15</b>	15/90
<b>-30</b>	30/90
<b>-60</b>	60/90
<b>Mains voltage</b>	
<b>W</b>	230 V AC, 50/60 Hz
<b>Q</b>	120 V AC, 50/60 Hz
<b>40</b>	24 V AC, 50/60 Hz
<b>Torque</b>	
<b>3</b>	3 Nm
<b>7</b>	7 Nm
<b>15</b>	15 Nm
<b>20</b>	20 Nm
<b>30</b>	30 Nm
<b>E</b>	Controlled by continuous signal
<b>T</b>	Three-point step control
<b>R10</b>	With 1000 $\Omega$ feedback potentiometer

## 2.5 IDR part designations, axial mounting

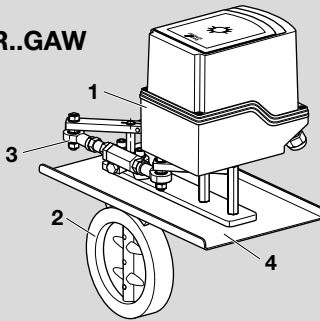
### IDR..AS



- 1 Actuator IC 50
- 2 Butterfly valve
- 3 Attachment set for axial mounting

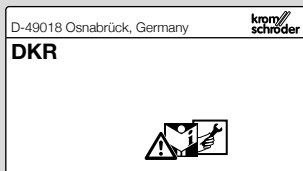
## 2.6 IDR part designations, with linkage

### IDR..GAW



- 1 Actuator IC 50
- 2 Butterfly valve
- 3 Attachment set with linkage (with shock suppressor for DKR..A only)
- 4 Heat deflector (optional)

## 2.7 Type label



Ambient and medium temperature, installation position and inlet pressure, see type label.

## 3 INSTALLATION

### **⚠ CAUTION**

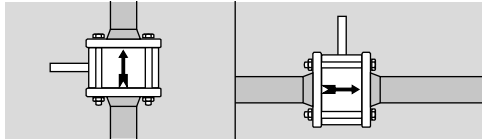
Incorrect installation

Please observe the following to ensure that the unit is not damaged during installation and operation:

- Avoid pressure surges and temperature shocks.
- Dropping the device can cause permanent damage. In this event, replace the entire device and associated modules before use.
- Sealing material and dirt, e.g. thread cuttings, must not be allowed to get into the unit.
- Do not store or install the unit in the open air.
- A maximum flow velocity of 30 m/s is recommended.
- Flange sealing surfaces must not be damaged by mechanical or other effects.
- If the actuator is retrofitted, the torque, direction of rotation and adjustment angles must be adjusted to the butterfly valve.

### 3.1 Installation position

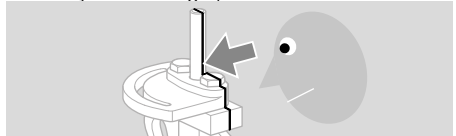
Installation in the vertical or horizontal position, not upside down.



We recommend installing the butterfly valve in the vertical position with the direction of flow from bottom to top in order to prevent condensation and to prevent dirt from accumulating on the stop bar in the case of butterfly valves with stop bar (DKR..A).

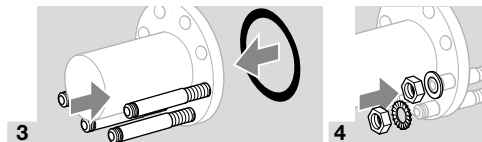
### 3.2 Fitting the butterfly valve between two flanges

- 1** A filter must be installed upstream of every system.
  - The length of the inlet and outlet section should be  $2 \times \text{DN}$ .
  - The butterfly valve is intended to be installed in-between two flanges.
  - The flanges of the pipe must have a smooth sealing surface in accordance with DIN EN 1092-1 (shape B1/B2) or ANSI B16.5. The flanges must be flush and coplanar.
- 2** When installing, align the valve disc with the corresponding marking. Otherwise, the valve disc may stick during operation.

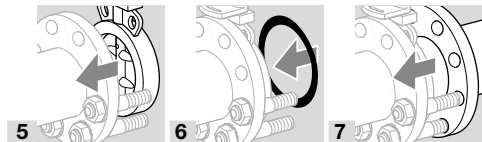


- Install heat deflectors for a medium temperature of  $> 250^\circ\text{C}$  when using an attachment set with linkage, see accessories.

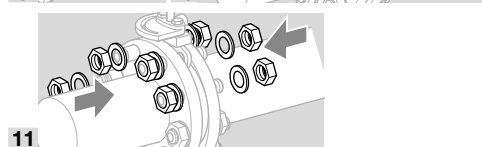
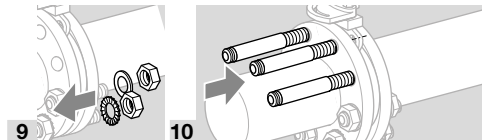
- If you are using an insulated pipeline, ensure that there is sufficient installation space to access the screw connectors near the valve. Do not insulate the butterfly valve with thermal insulation.
- Install the butterfly valve in the pipe free of mechanical stress.



- 3**
- 4**
- Ensure that both serrated lock washers are fitted to the same screw.

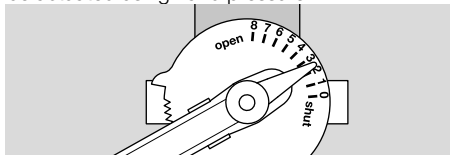


- 5**
- 6**
- 7**
- 8** Centre the butterfly valve.



### 3.3 Butterfly valve with manual adjustment DKR..H

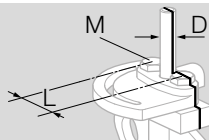
- Do not use extensions as levers on the DKR..H. The locking lever can be actuated using hand pressure.



- The locking lever indicates the valve position.
- If the locking lever is at a right angle to the pipe, the valve is shut.
- If the locking lever is parallel to the pipe, the valve is open.

### 3.4 Butterfly valve with free shaft end DKR..F

- If an actuator other than Elster's IC 50 is to be fitted to butterfly valve DKR..F, the pitch L must be taken into account when attaching the actuator.



	L	M	D
DKR 15–32	40	M8	Ø 8
DKR 40–50	40	M8	Ø 8
DKR 65–125	40	M8	Ø 12
DKR 150–300	60	M12	Ø 12
DKR 350–500	90	M16	Ø 12

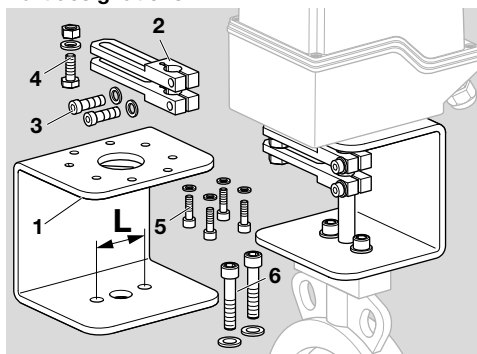
## 4 INSTALLING ATTACHMENT SETS FOR DKR..F

- The attachment sets “Axial mounting” and “Attachment with linkage” can only be fitted to butterfly valves with free shaft end DKR..F.

### Axial mounting

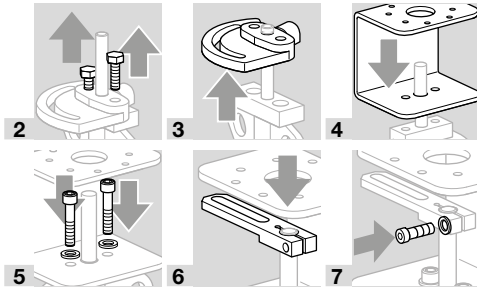
- Depending on the installation position of the butterfly valve, actuator IC 50 can be mounted above or to the side of the pipe.
- The “Axial mounting” attachment set is used for butterfly valves with disc clearance DKR..D only.
- The actuator can be mounted to the U bracket in increments of 90°.

### Part designations

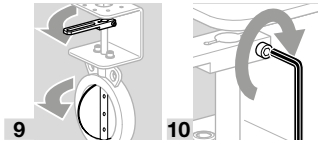


- 1 U bracket
  - 2 2 x levers
  - 3 2 x screws and washers for the levers
  - 4 1 x screw, washer and nut
  - 5 4 x screws and washers for the actuator
  - 6 2 x screws and washers for the butterfly valve
- 1** Lay out all the individual parts of the attachment set.

→ 2 hexagon screws are to be unscrewed from the butterfly valve. They are no longer required.

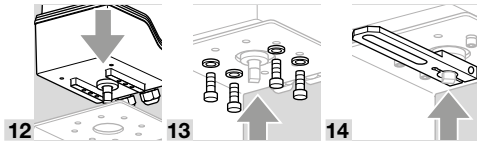


**8** If the butterfly valve is fully open, align the lever parallel to the valve disc and then secure it in position. Do not fully tighten the screw.



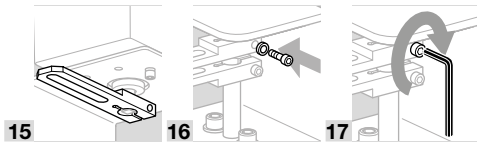
**11** Close the butterfly valve again. Observe marking for valve position.

→ When fitting the actuator, it is necessary to take into account its direction of rotation. Movement of the levers must not be obstructed.

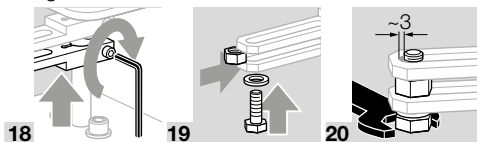


→ Before fully tightening the screw which attaches the lever for the actuator, ensure that the levers have been aligned parallel to one another.

→ The lever must be flush with the end of the square shaft of the actuator.



→ Now slide the lever of the butterfly valve far enough towards the lever of the actuator to allow the nut in figure 15 to be inserted. The screw on the lever for the butterfly valve can then be fully tightened.



→ The screw which draws along the lever for the actuator must not be pushed right to the end of the oblong hole. The clearance of approx. 3 mm ensures unobstructed lever movement.

→ Assembly of attachment set with butterfly valve and actuator is now complete.

→ Continue with page 7 (5 Commissioning).

### Attachment with linkage

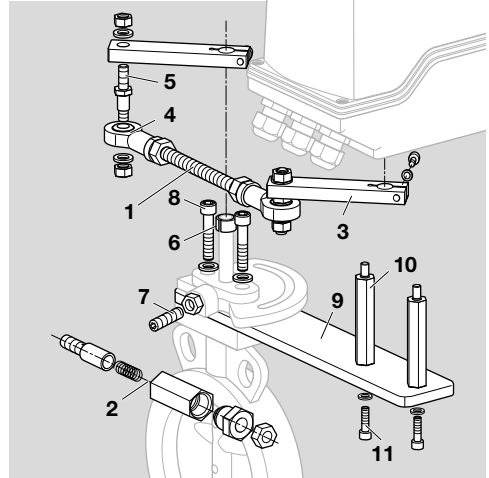
#### ⚠ CAUTION

Incorrect installation

Please observe the following to ensure that the unit is not damaged during operation:

- Do not install butterfly valves with stop DKR..A without a shock suppressor. Otherwise, the actuator could be damaged if it is set incorrectly.

### Part designations



**1** Threaded rod, 2 nuts (without shock suppressor)

**2** Shock suppressor (for DKR..A only)

**3** 2 x levers, 2 x screws, 2 x washers

**4** 2 x rod ends

**5** 2 x stud bolts, 4 x washers, 4 x nuts

**6** Sleeve for shaft end (for DN 15–50 only)

**7** Setscrew with nut

**8** 2 x screws, 2 x washers for butterfly valve

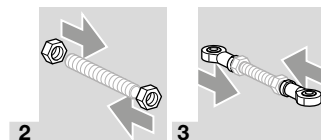
**9** Flat iron mounting bracket

**10** 2 x spacer bolts for actuator

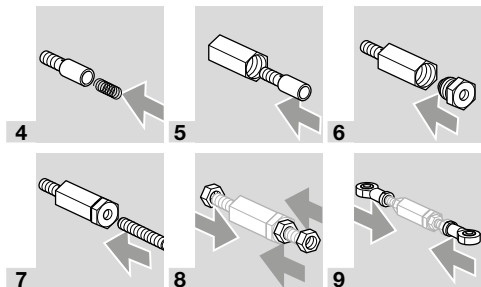
**11** 2 x screws, 2 x washers for actuator

**1** Lay out all the individual parts of the attachment set.

### Mounting the threaded rod without shock suppressor

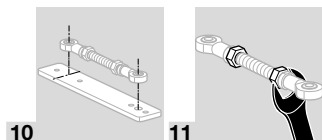


## Mounting the threaded rod with shock suppressor

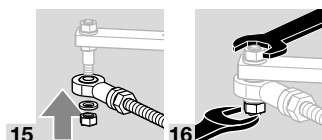
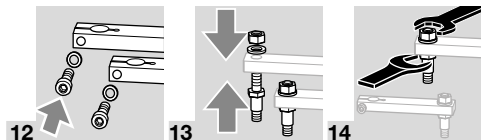


→ Assembly of threaded rod and rod ends is now complete.

→ Align the threaded rod and rod ends with the openings in the flat iron mounting bracket. Only then should the nuts be secured.

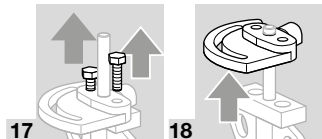


→ In the case of an attachment set with shock suppressor for DKR..A, the pictures below may not be applicable. The procedure is the same, however.

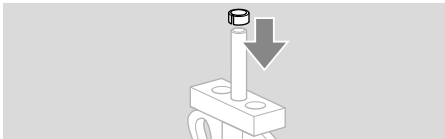


→ Assembly of threaded rod, rod ends and levers is now complete.

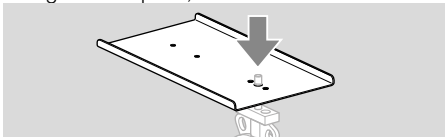
→ 2 hexagon screws are to be unscrewed from the butterfly valve. They are no longer required.



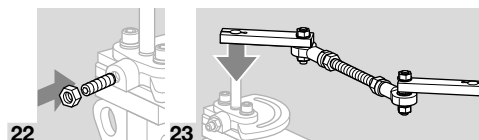
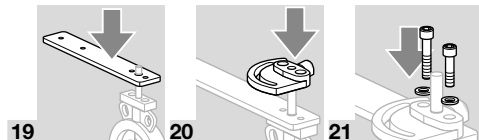
→ Up to DN 50, a sleeve is enclosed which increases the diameter of the shaft for further mounting operations. The fitted sleeve must be flush with the end of the shaft.



→ Install a heat deflector for a medium temperature of > 250°C. Heat deflectors are available for attachment sets with linkage as an option, see accessories.

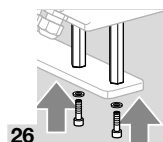
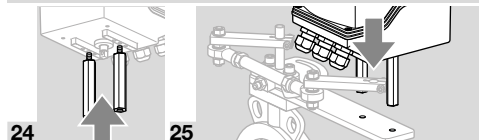


→ In the case of an attachment set with shock suppressor or heat deflector, the pictures below may not be applicable. The procedure is the same, however.



→ Do not fully tighten the lever for the butterfly valve.

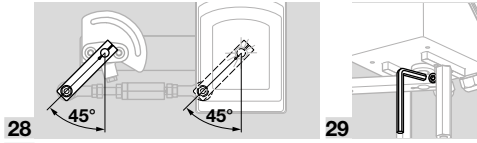
**⚠ CAUTION**  
When mounting the actuator, it is necessary to take into account its direction of rotation.



27 Align the threaded rod and flat iron mounting bracket so that they are parallel.

→ Ensure that the levers can move unobstructed.

- Before fitting the levers securely, align them at an angle of 45° and in accordance with the direction of rotation of the actuator.
- Ensure that the valve disc is closed. Observe marking for valve position.
- The pictures below may not correspond to the actual application.



**28**  
**30** Tighten both levers.

- Assembly of the attachment set with butterfly valve and actuator is now complete.

## 5 COMMISSIONING

- The valve disc must open and close unobstructed.
- Purge the pipes thoroughly to remove any foreign particles from the system.
- For further information on commissioning the butterfly valve with actuator IC 50, see Actuator IC 50 operating instructions at [www.docuthek.com](http://www.docuthek.com).

## 6 MAINTENANCE

The products DKR suffer little wear and require little servicing. We recommend a function check once a year.

## 7 PRESSURE TEST



### CAUTION

Incorrect operation

Please observe the following to ensure that the butterfly valve is not damaged during the pressure test:

- Valve open: the test pressure must not exceed 1.5 x inlet pressure  $p_{U_1}$ .
- Valve closed: the test pressure must not exceed 1.1 x inlet pressure  $p_{U_1}$ .

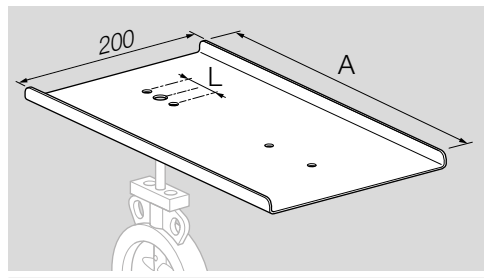
## 8 ACCESSORIES

### 8.1 Heat deflector

Install heat deflectors in order to protect the actuator from overheating if the medium temperature is > 250°C.

Heat deflectors are only used in combination with an attachment set with linkage.

If used in conjunction with butterfly valves DKR, heat deflectors of various dimensions can be installed.



	L	A	Order No.
DKR 15–20	40	366	74924966
DKR 25–32	40	366	74924967
DKR 40–50	40	366	74924968
DKR 65–100	40	366	74924969
DKR 125	40	459	74924970
DKR 150–250	60	459	74924971
DKR 300	60	566	74924972
DKR 350	90	619	74924973
DKR 400–500	90	758	74924974

## 9 TECHNICAL DATA

### 9.1 DKR

Icing, condensation and dew in and on the unit are not permitted.

Gas type: air, flue gas.

Inlet pressure  $p_{U_1}$ : max. 300 mbar.

Medium temperature:

DKR..100: -20 to +100°C (-4 to +212°F),

DKR..350: -20 to +350°C (-4 to +662°F),

DKR..450: -20 to +450°C (-4 to +842°F),

DKR..650: -20 to +650°C (-4 to +1202°F).

Transport and ambient temperature: -20 to +60°C (-4 to +140°F).

Storage temperature: -20 to +40°C (-4 to +104°F).

This unit is not suitable for cleaning with a high-pressure cleaner and/or cleaning products.

Seals: free of asbestos.

### DKR..100/350/450

Housing material: grey cast iron,

valve disc: up to DN 100: steel,

valve disc: from DN 125: grey cast iron,

drive shaft up to max. 350°C: steel,

drive shaft up to max. 450°C: stainless steel,

packing: graphite.

### DKR..650

Housing material: heat-resistant cast iron,

valve disc: up to DN 65: stainless steel,

valve disc: from DN 80: heat-resistant cast iron,

drive shaft: stainless steel,

packing: aluminium silicate.

## 10 LOGISTICS

### Transport

Protect the unit from external forces (blows, shocks, vibration).

Transport temperature: see page 7 (9 Technical data).

Transport is subject to the ambient conditions described.

Report any transport damage on the unit or packaging without delay.

Check that the delivery is complete.

### Storage

Storage temperature: see page 7 (9 Technical data).

Storage is subject to the ambient conditions described.

Storage time: 6 months in the original packaging before using for the first time. If stored for longer than this, the overall service life will be reduced by the corresponding amount of extra storage time.

### Packaging

The packaging material is to be disposed of in accordance with local regulations.

### Disposal

Components are to be disposed of separately in accordance with local regulations.

## FOR MORE INFORMATION

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