

Butterfly valves DKR

Butterfly valves with actuator IDR

TECHNICAL INFORMATION

- For (hot) air and flue gas.
- Low leakage rate and pressure loss
- Wide range of nominal sizes DN 15–500
- Simple installation thanks to clamping between standard flanges
- Pre-assembled combination of actuator, attachment set and butterfly valve
- Suitable for intermittent operation
- Low-maintenance operation
- Robust design for a long service life



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1 Application

Butterfly valve DKR is designed to adjust volumes of hot air and flue gas on various appliances and flue gas lines. It can be used for a control ratio of up to 1:10.



Roller hearth kiln in the ceramics industry



Forging furnace

1.1 DKR..F, butterfly valve with free shaft end

With the mounted actuator IC 50, butterfly valve DKR..F is suitable for regulating flow rates for modulating-controlled or stage-controlled combustion processes.



Butterfly valve DKR..F with free shaft end

1.2 DKR..H, butterfly valve with lever

On butterfly valve DKR..H, flow rates can be set and fixed using a lever, for example to limit the high-fire rate on the burner. A scale indicates the set angle of opening.



Butterfly valve DKR..H with lever

1.3 IDR, butterfly valve DKR with actuator IC 50

Pre-assembled combinations of actuator IC 50, attachment set and butterfly valve DKR are available as models IDR up to nominal size DN 300.

IDR is designed for applications with high torques of up to 30 Nm. The direction of rotation of the valve disc can be switched. The valve disc position can be read from the outside whereby the direction of rotation is indicated using a colour code.

Depending on the application, the actuator can be aligned to the butterfly valve using various attachment sets. See IC 50, Technical Information: Actuators IC 20, IC 30, IC 50.

1.3.1 Axial mounting

The actuator is axially aligned to butterfly valve DKR.

The installation position of the actuator can be selected as follows:

IDR..AU: the electrical connections of the actuator are positioned above the pipe.

IDR..AS: the electrical connections of the actuator are positioned to the side of the pipe.



IDR..AU



IDR..AS

1 Application

1.3.2 Attachment with linkage

If the actuator is to be operated offset to the side of the butterfly valve, an attachment set with linkage can be used.

IDR..GD: the attachment set is used for butterfly valves with disc clearance DKR..D.

IDR..GA: for butterfly valves with stop bar DKR..A, the attachment set with shock suppressor is recommended.



IDR..GD



IDR..GA

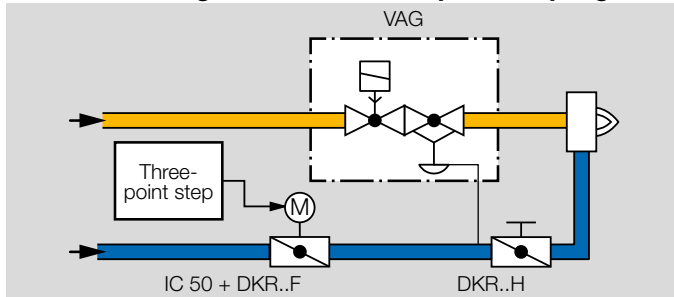
As of a medium temperature $> 250^{\circ}\text{C}$ (482°F), the actuator is to be protected by a heat deflector, see page 22 (8 Accessories).



IDR..GAW

1.4 Application examples

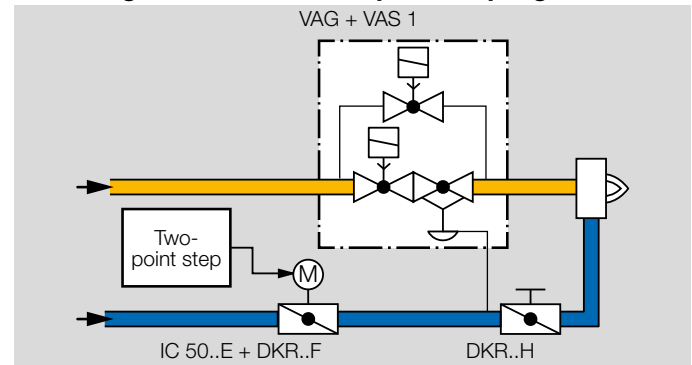
1.4.1 Modulating control via three-point step signal



For processes that require high temperature accuracy and low circulation in the furnace. Actuator IC..E is controlled by a (0)4–20 mA or 0–10 V signal. The continuous signal corresponds to the adjustment angle to be approached and offers the option of monitoring the current position of the actuator.

Butterfly valve DKR..H with manual adjustment is used to adjust the high-fire rate.

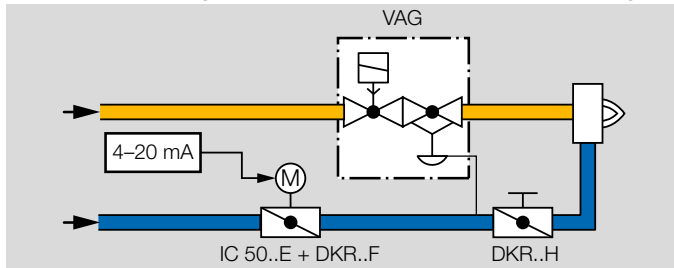
1.4.2 Staged control via two-point step signal



For processes that require a homogeneous temperature distribution in the furnace. Actuator IC..E is controlled by a two-point step controller and operates in On/Off or High/Low intermittent mode. The actuator closes when the voltage is disconnected.

Butterfly valve DKR..H with manual adjustment is used to adjust the high-fire rate.

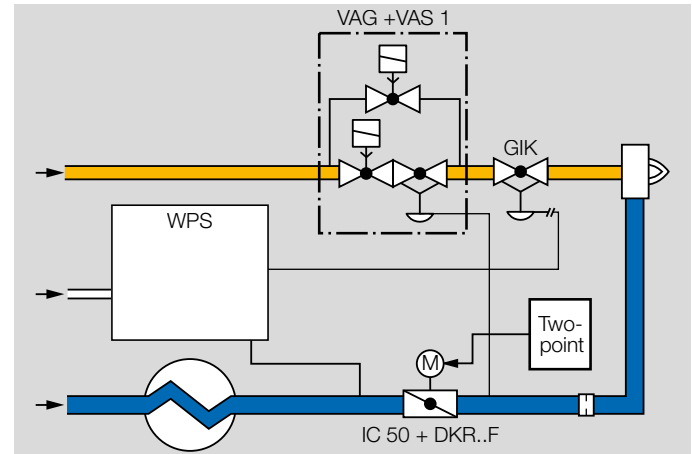
1.4.3 Modulating control with continuous input signal



For processes that require high temperature accuracy and low circulation in the furnace. Actuator IC..E is controlled by a (0)4–20 mA or 0–10 V signal. The continuous signal corresponds to the adjustment angle to be approached and offers the option of monitoring the current position of the actuator.

Butterfly valve DKR..H with manual adjustment is used to adjust the high-fire rate.

1.4.4 Hot air compensation



Butterfly valve DKR is used on burners that are operated with preheated combustion air at temperatures of up to 650°C (1202°F).

2 Certification

2.1 Certificate download

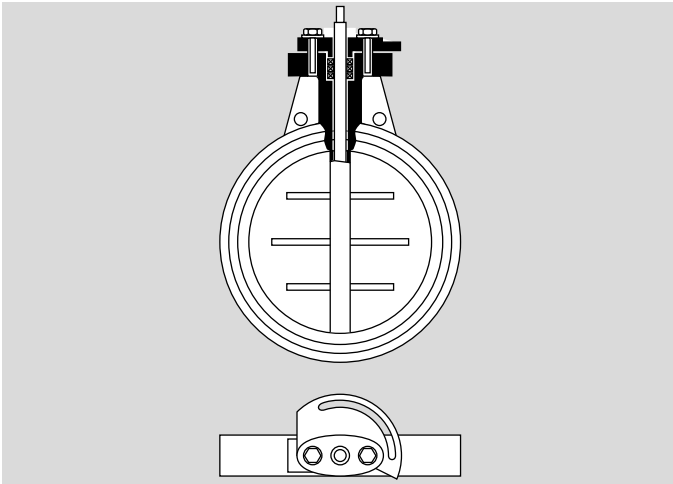
Certificates – see www.docuthek.com

2.2 Eurasian Customs Union

The logo for the Eurasian Customs Union (Eurasian Conformity) is displayed within a grey rectangular box. It consists of the letters 'EAC' in a bold, black, sans-serif font.

The products DKR meet the technical specifications of the Eurasian Customs Union.

3 Function

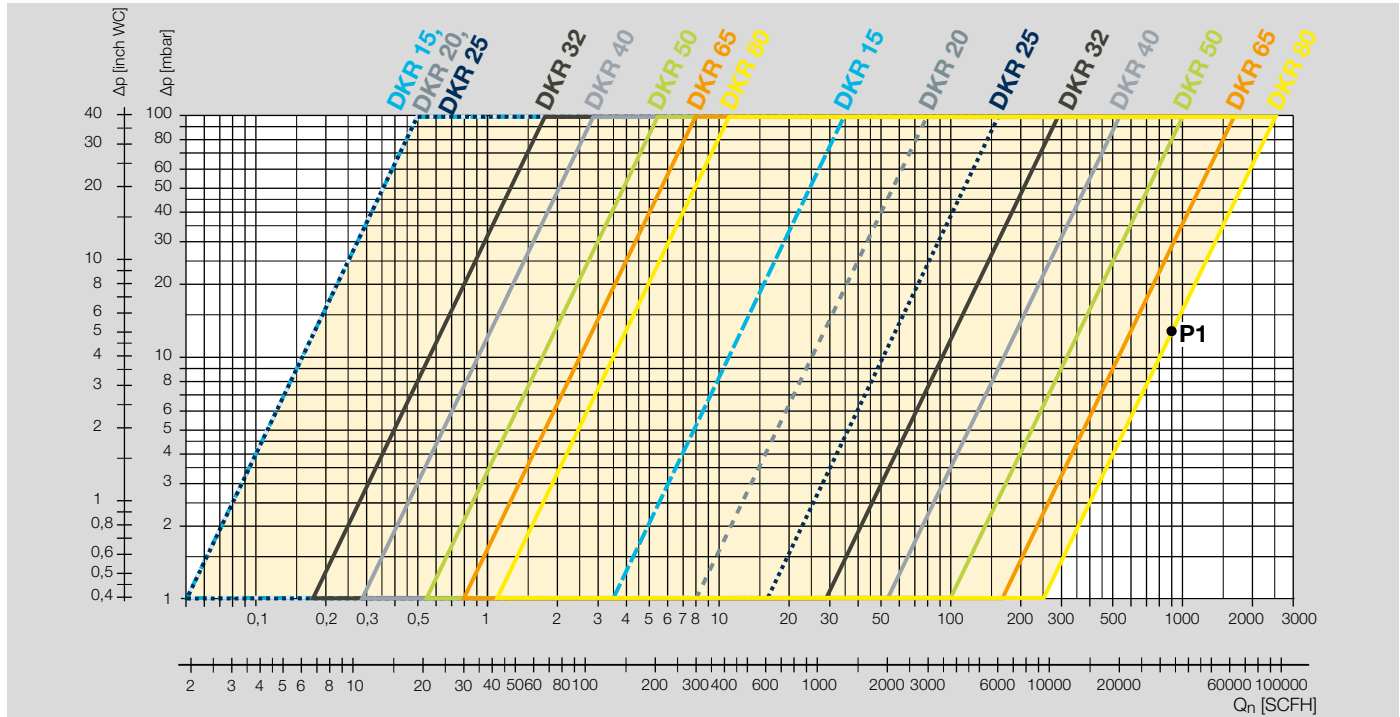


The butterfly valve is designed on the basis of the free-flow principle (no deflection of the flow). It releases a cross-section for the flowing medium, depending on a rotary movement between 0 and 90°.

Butterfly valve DKR..D is with valve disc clearance. DKR..A is equipped with a mechanical stop bar.

4 Flow rate

4.1 Flow rate curves for DKR 15–80

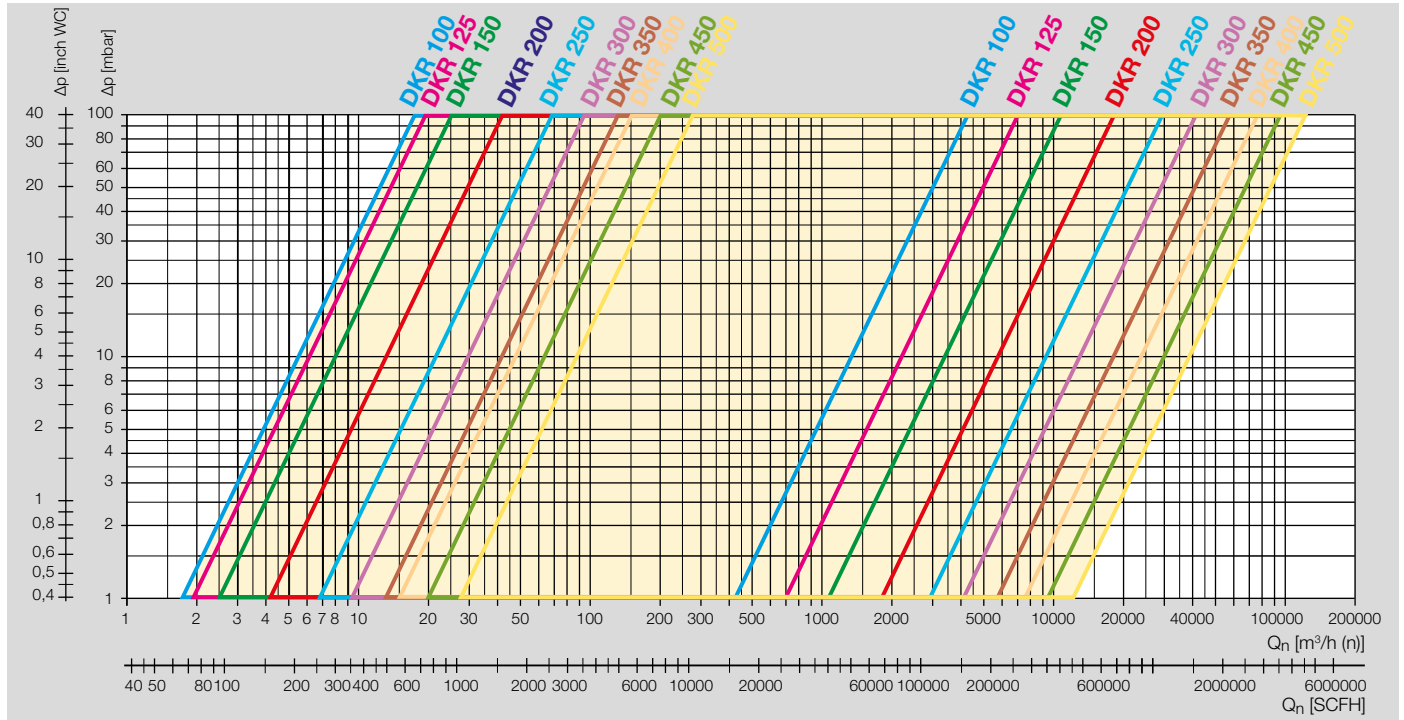


The characteristic curves are measured at 15°C (59°F) with a measurement set-up in accordance with the standards EN 13611/EN 161.

This involves measuring the pressure 5 x DN upstream and downstream of the unit under test. The pressure drop of the pipe is also measured but is not compensated for.

Left curve: Leakage volume at a 0° opening angle.
Right curve: Max. flow rate at a 90° opening angle.

4.2 Flow rate curves for DKR 100–500



The characteristic curves are measured at 15°C (59°F) with a measurement set-up in accordance with the standards EN 13611/EN 161.

This involves measuring the pressure 5 x DN upstream and downstream of the unit under test. The pressure drop of the pipe is also measured but is not compensated for.

Left curve: Leakage volume at a 0° opening angle.

Right curve: Max. flow rate at a 90° opening angle.

5 Calculation of the nominal size

5.1 Interactive calculation of the nominal size

A web app for calculating the nominal size is available at www.adlatus.org.

5.2 Determining the nominal size

Determining the size of a butterfly valve using the control characteristic a for normal operation. Control characteristic see page 32 (12 Glossary).

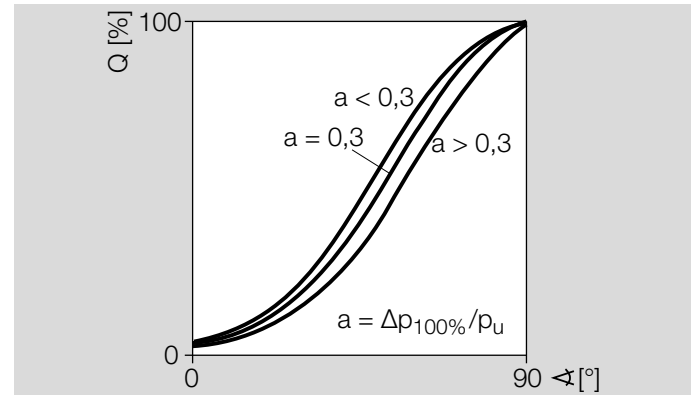
A valve authority of $a = 0.3$ provides good control properties.

Select the required nominal size from the flow rate diagram on the basis of the desired flow rate Q and the calculated Δp .

Example

We want to find the nominal size of the butterfly valve DKR for air to be used for modulating control of a gas burner:

- Outlet pressure: $p_d = 30$ mbar (12.1 "WC)
- Air flow rate: $Q = 900$ m³/h(n) (33,598 SCFH(n))
- Control characteristic: $a = 0.3$.



$$\Delta p_{100\%} = \frac{a \times p_d}{1 - a}$$

$$\Delta p_{100\%} = \frac{0.3 \times 30 \text{ mbar}}{1 - 0.3} = 12.9 \approx 13 \text{ mbar}$$

The flow velocity in the pipes exercises a considerable influence on the pressure loss and the noise development. When designing the butterfly valve, it is recommended that the flow velocity of 30 m/s (5905 ft/min) is not exceeded. A flow rate $Q = 900$ m³/h(n) results in a pipe of DN 100, see page 20 (7.2 Flow velocities in pipes).

In order to obtain the pressure loss $\Delta p = 13$ mbar (5.23 "WC) that has been calculated using the valve authority, valve DKR 80 is selected from the flow rate diagram. See **P1**, page 11 (4.1 Flow rate curves for DKR 15–80).

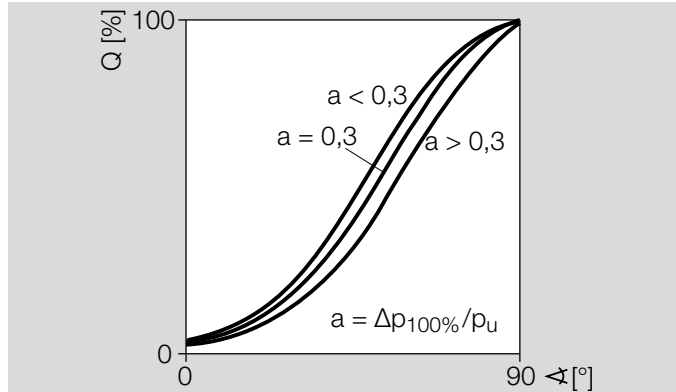
If pipe fittings (reducing fittings) are installed in the pipework, the additional pressure loss must be taken into account.

5.3 Determining the nominal size for operation with preheated air

We want to find the nominal size of the butterfly valve DKR to be used for modulating control of a gas burner using preheated air. Once the required pressure loss has been calculated, the butterfly valve will be designed using the k_V value.

Example

- Outlet pressure: $p_d = 60$ mbar (24.1 "WC)
- Air flow rate: $Q = 1200$ m³/h(n) (44,797 SCFH(n))
- Air temperature: 500°C (932°F)
- Control characteristic: $a = 0.3$.



$$\Delta p_{100\%} = \frac{a \times p_d}{1 - a}$$

The required pressure loss is:

$$\Delta p_{100\%} = \frac{0.3 \times 60 \text{ mbar}}{1 - 0.3} = 26 \text{ mbar}$$

The required k_V value is:

$$k_V = \frac{Q(n)}{514} \cdot \sqrt{\frac{\rho_n \cdot T}{\Delta p_{HF} \cdot \rho_{d HF \text{ absolute}}}}$$

$$k_V = \frac{1200}{514} \cdot \sqrt{\frac{1.29 \cdot (500 + 273)}{0.026 \cdot 1.013 + 0.06}} = 441$$

Select the DKR with the next largest k_V value from the table, see page 26 (9.1 k_V values).

In this case, select the DKR 100 with a k_V value of 494 m³/h (18,442 SCFH). With butterfly valve DKR 100, there is an actual pressure loss of

$$\Delta p = \left(\frac{Q(n)}{514 \cdot k_V} \right)^2 \cdot \frac{\rho_n \cdot T}{p_d}$$

$$\Delta p = \left(\frac{1200}{514 \cdot 494} \right)^2 \cdot \frac{1.29 \cdot (500 + 273)}{(1.013 + 0.06)} = 21 \text{ mbar}$$

5.4 Calculation formulae

5.4.1 kV value

$$k_v = \frac{Q(n)}{514} \cdot \sqrt{\frac{\rho_n \cdot T}{\Delta p \cdot p_d}}$$

Legend		
Q(n)	[m ³ /h]	Standard volumetric flow rate
ρ(n)	[kg/m ³]	Gas density in standard state
Δp	[bar]	Pressure loss via control element
p _d	[bar]	Absolute pressure downstream of the control element
T	[K]	Absolute temperature of the medium

5.4.2 Flow rate Q

$$Q(n) = 514 \cdot k_v \cdot \sqrt{\frac{\Delta p \cdot p_d}{\rho_n \cdot T}}$$

Legend		
Q(n)	[m ³ /h]	Standard flow rate
ρ(n)	[kg/m ³]	Gas density in standard state
Δp	[bar]	Pressure loss via control element
p _d	[bar]	Absolute pressure downstream of the control element
T	[K]	Absolute temperature of the medium

5.4.3 Pressure loss Δp

$$\Delta p = \left(\frac{Q(n)}{514 \cdot k_v} \right)^2 \cdot \frac{\rho_n \cdot T}{p_d}$$

Legend		
Q(n)	[m ³ /h]	Standard volumetric flow rate
ρ(n)	[kg/m ³]	Gas density in standard state
Δp	[bar]	Pressure loss via control element
p _d	[bar]	Absolute pressure downstream of the control element
T	[K]	Absolute temperature of the medium

5.4.4 Valve authority a

$$a = \Delta p_{100\%} / p_u$$

Legend		
Δp	[bar]	Pressure loss via control element
p _u	[bar]	Inlet pressure
a	–	Control characteristic

6 Selection

6.1 ProFi

A web app selecting the correct product is available at www.adlatus.org.

6.2 DKR selection table

Description	Code	DKR
Butterfly valve for air and flue gas	DKR	•
Nominal size DN	15–500	15, 25, 32, 40, 50, 65, 80, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500
For fitting between two DIN flanges	Z	•
Inlet pressure p_{i1} : max. 300 mbar	03	•
With manual adjustment	H	•
With free shaft end	F	•
Temperature range [°C]		
100°C	100	•
350°C	350	•
450°C	450	•
650°C	650	•
Butterfly valve with disc clearance	D	•
Butterfly valve with stop bar	A	•

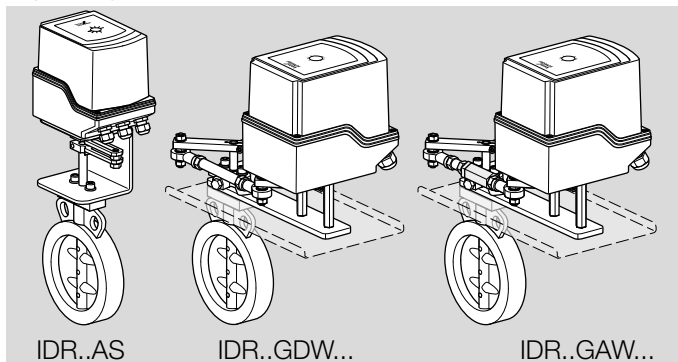
Order example

DKR 250Z03F650D

6.3 Selection table for IDR (butterfly valve DKR..F with actuator IC 50)

Butterfly valve DKR 15-300..F with free shaft end and actuator IC 50 can be delivered ready assembled as model IDR. Various attachment sets (with or without heat deflector) are offered for assembly.

Attachment sets up to nominal size DN 500 can be ordered separately to be delivered enclosed as an additional item.



Description	Code	IDR	Condition
Butterfly valve with actuator	IDR	•	
Nominal size	15-300	15, 25, 32, 40, 50, 65, 80, 100, 125, 150, 200, 250, 300	
For fitting between two DIN flanges	Z	•	
Inlet pressure p_{1i} : max. 300 mbar	03	•	

Description	Code	IDR	Condition
Temperature range [°C]			
100°C	100	•	
350°C	350	•	
450°C	450	•	
650°C	650	•	
Butterfly valve with disc clearance	D	•	
Butterfly valve with stop bar	A	•	
Attachment set			
for axial mounting, electr. connection above the pipe	AU	•	In the case of axial mounting, the actuator can be turned 90°.
for axial mounting, electr. connection to the side of the pipe	AS	•	In the case of axial mounting, the actuator can be turned 90°.
with linkage for valve with disc clearance	GD	•	
with linkage and heat deflector for valve with disc clearance	GDW	•	
with linkage for valve with stop bar	GA	•	For butterfly valves with stop bar, a linkage with shock suppressor is recommended.
with linkage and heat deflector for valve with stop bar	GAW	•	For butterfly valves with stop bar, a linkage with shock suppressor is recommended.
Actuator IC			
Series 50, with higher torque	/50	•	
Running time [s]/Adjustment angle [90°]			
3.7/90	-03	•	
7.5/90	-07	•	
15/90	-15	•	
30/90	-30	•	
60/90	-60	•	

6 Selection

Description	Code	IDR	Condition
Mains voltage			
230 V AC, 50/60 Hz	W	•	
120 V AC, 50/60 Hz	Q	•	
24 V AC, 50/60 Hz	40	•	
Torque			
3 Nm	3	•	
7 Nm	7	•	
15 Nm	15	•	
20 Nm	20	•	
30 Nm	30	•	
Controlled by continuous signal	E	•	
Three-point step control	T	•	
With 1000 Ω feedback potentiometer	R10	•	

Order example

IDR 250Z03350AAU/50-30W20TR10

7 Project planning information

7.1 Installation

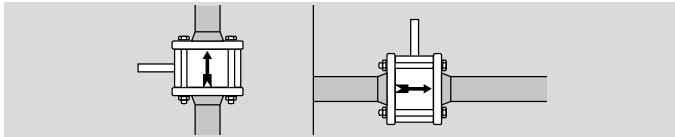
The butterfly valve must be installed in-between two flanges in accordance with EN 1092, PN 16.

The length of the inlet and outlet section should be 5 x DN.

When designing the pipe, it is recommended that a flow velocity of 30 m/s (5905 ft/min) is not exceeded.

7.1.1 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).

7.1.2 Hot air

If the valve is used with hot air, the pipe should be adequately insulated so as to reduce the ambient temperature.

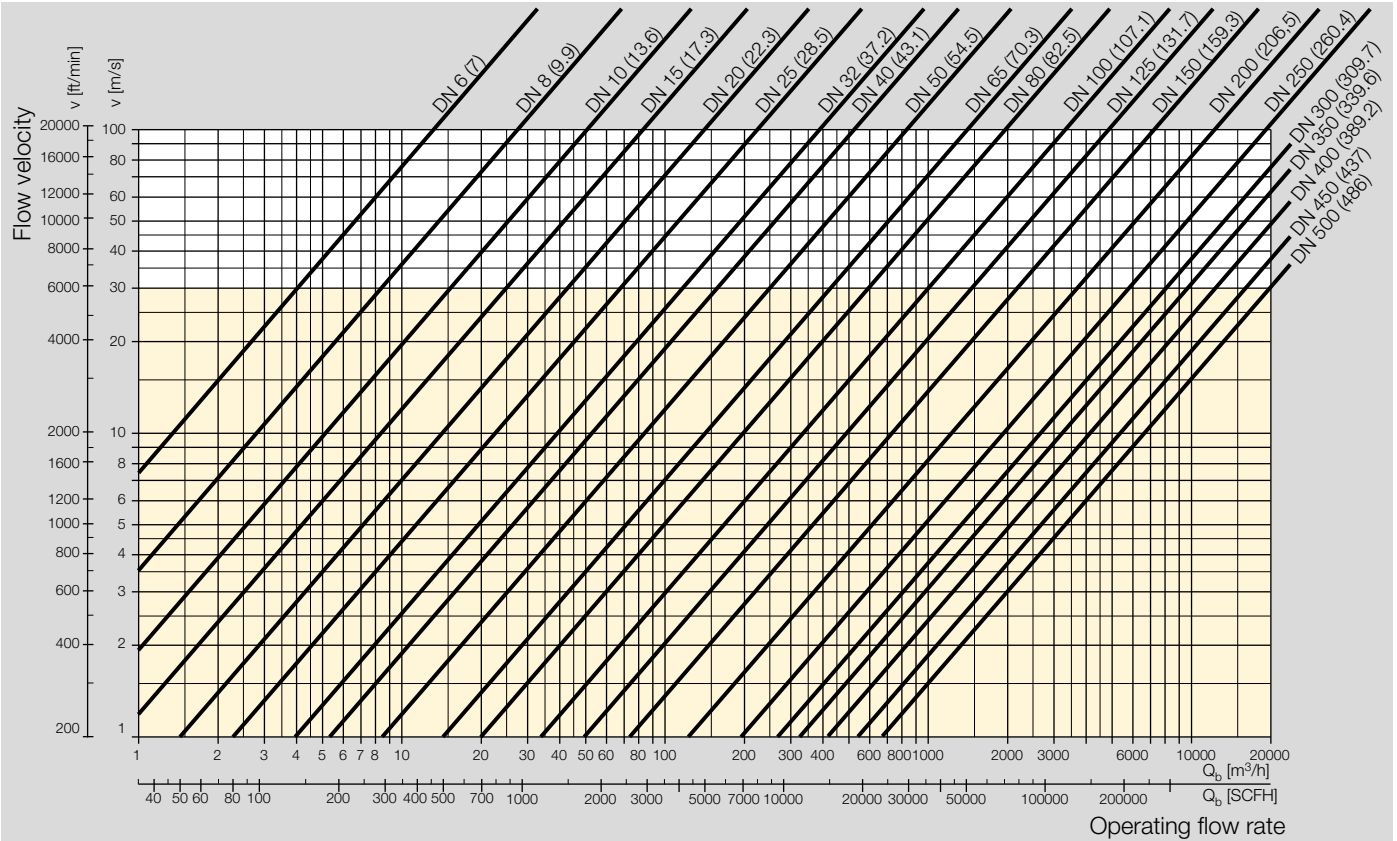
If you are using an insulated pipeline, ensure that there is sufficient installation space to access the screw connectors near the valve.

The flanges and the butterfly valve must be kept free of insulating material.

Install the butterfly valve in such a way that rising hot air does not circulate around the actuator.

Use heat deflectors for a medium temperature of $> 250^{\circ}\text{C}$, see accessories.

7.2 Flow velocities in pipes



It is recommended that flow velocities of 30 m/s (5905 ft/min) are not exceeded when using the valve on thermoprocessing equipment.

The details on the internal diameter correspond to the conventional dimensions for gas pipes as stipulated in the

standard EN 10220. Different cross-sections will result in flow velocities that differ correspondingly.

7.3 Actuator running time

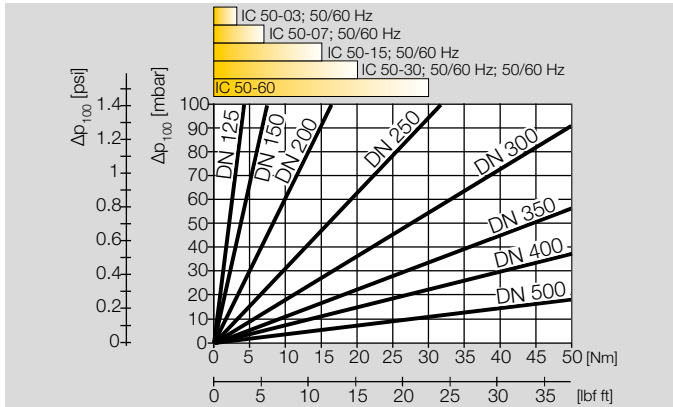
Butterfly valve DKR is controlled by actuator IC 50.

The running time of the actuator per 90° depends on the required torque.

The characteristic curves relate to the maximum torque produced by the flow rate. In general, maximum torque is reached at approx. 70°.

Example: for butterfly valves DKR 125 or DKR 150, any running time could be used.

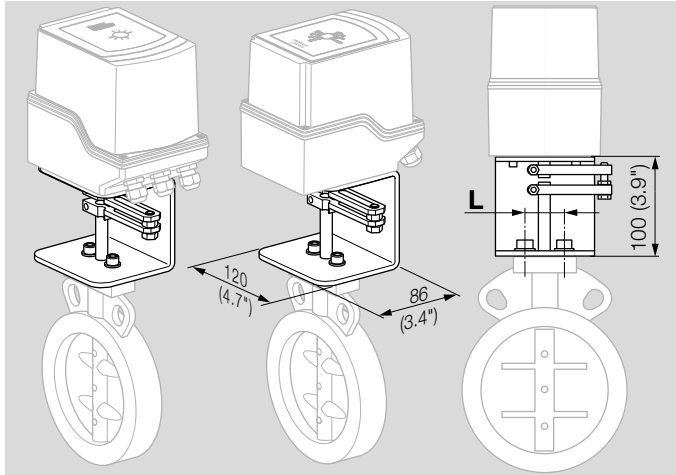
The running time is reduced by a factor of 0.83 at a frequency of 60 Hz on the actuator.



8 Accessories

8.1 Axial mounting

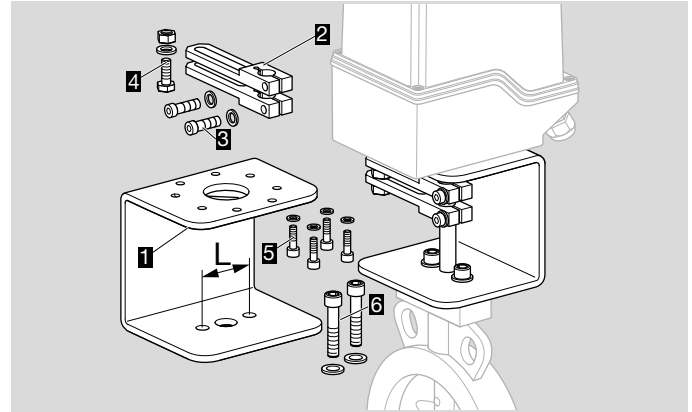
Attachment set for axial assembly of butterfly valve DKR..F and actuator IC 50. The actuator can be mounted to the attachment set in increments of 90°.



DKR nominal size	L		Weight		Order No. for attachment set (enclosed)
	mm	inch	kg	lbs	
DN 15–20	36	1.4	1.3	2.9	74924940
DN 25–32	36	1.4	1.3	2.9	74924941
DN 40–50	40	1.6	1.3	2.9	74924942
DN 65–125	40	1.6	1.3	2.9	74924943
DN 150–250	60	2.4	1.3	2.9	74924944
DN 300	60	2.4	1.3	2.9	74924945
DN 350	90	3.5	1.4	3.1	74924946
DN 400–500	90	3.5	1.4	3.1	74924947

8.1.1 Part designations

Can be delivered enclosed as an additional item up to DN 500.

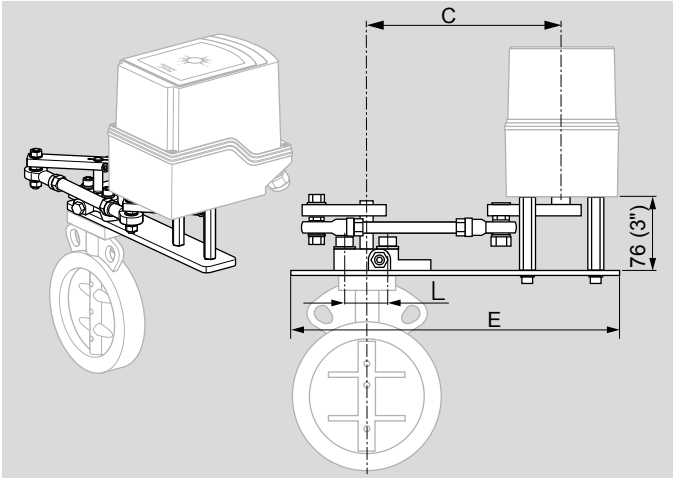


Scope of delivery

- 1 1 x U bracket
- 2 2 x levers
- 3 2 x screws, 2 x washers for the levers
- 4 1 x screw, washer and nut
- 5 4 x screws, 4 x washers (IC 50 mounting)
- 6 2 x screws, 2 x washers (DKR mounting)

8.2 Attachment with linkage

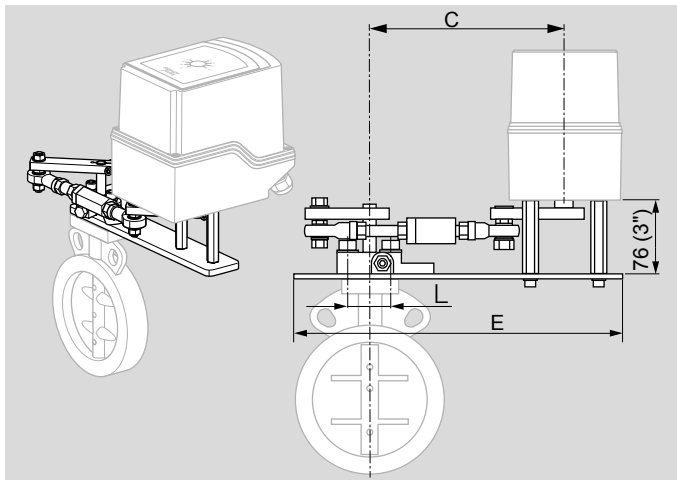
The attachment set without shock suppressor is used for butterfly valves with disc clearance DKR..D.



DKR nominal size	L		E		C		Weight		Order No. for attachment set
	mm	inch	mm	inch	mm	inch	kg	lbs	
DN 15–20	36	1.4	285	11.2	194	7.6	1.3	2.9	74924948
DN 25–32	36	1.4	285	11.2	194	7.6	1.3	2.9	74924949
DN 40–50	40	1.6	285	11.2	194	7.6	1.3	2.9	74924950
DN 65–100	40	1.6	285	11.2	194	7.6	1.3	2.9	74924951
DN 125	40	1.6	330	13.0	239	9.4	1.5	3.3	74924952
DN 150–250	60	2.4	340	13.4	239	9.4	1.5	3.3	74924953
DN 300	60	2.4	395	15.6	294	11.6	1.7	3.7	74924954
DN 350	90	3.5	435	17.1	319	12.5	1.9	4.2	74924955
DN 400–500	90	3.5	495	19.5	380	15	2.1	4.6	74924956

8.3 Attachment with linkage and shock suppressor

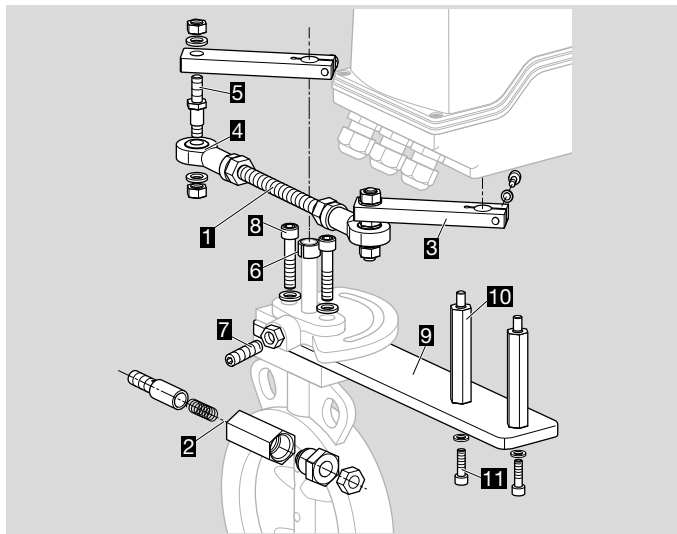
For butterfly valves with stop bar DKR..A, the attachment set with shock suppressor is recommended.



DKR nominal size	L		E		C		Weight		Order No. for attachment set (enclosed)
	mm	inch	mm	inch	mm	inch	kg	lbs	
DN 25–32	36	1.4	285	11.2	194	7.6	1.5	3.3	74924958
DN 40–50	40	1.6	285	11.2	194	7.6	1.5	3.3	74924959
DN 65–100	40	1.6	285	11.2	194	7.6	1.5	3.3	74924960
DN 125	40	1.6	330	13.0	239	9.4	1.6	3.5	74924961
DN 150–250	60	2.4	340	13.4	239	9.4	1.7	3.7	74924962
DN 300	60	2.4	395	15.6	294	11.6	1.9	4.2	74924963
DN 350	90	3.5	435	17.1	319	12.5	2.1	4.6	74924964
DN 400–500	90	3.5	495	19.5	380	15	2.3	5.1	74924965

8.3.1 Part designations

Can be delivered enclosed as an additional item up to DN 500.



Scope of delivery

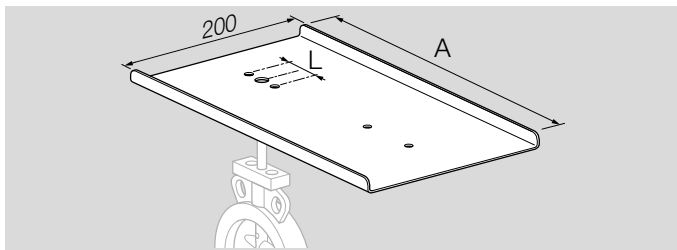
- 1 1 x threaded rod, 2 x nuts (without shock suppressor)
- 2 Shock suppressor (for DKR..A only)
- 3 2 x levers, 2 x screws, 2 x washers
- 4 2 x rod ends
- 5 2 x stud bolts, 4 x washers, 4 x nuts
- 6 Sleeve for shaft end (for DN 15–50 only)
- 7 Setscrew with nut (DKR)
- 8 2 x screws, 2 x washers (DKR mounting)
- 9 1 x flat iron mounting bracket
- 10 2 x spacer bolts for actuator

11 2 x screws, 2 x washers (IC 50 mounting)

8.4 Heat deflector

Install heat deflectors in order to protect the actuator from overheating if the medium temperature is $> 250^{\circ}\text{C}$.

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



	L	A	Order No.
DKR 15–20	36	366	74924966
DKR 25–32	36	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

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

Gas type: air, flue gas.

Inlet pressure p_U : 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: GG,

valve disc: up to DN 100: steel,

valve disc: from DN 125: GG,

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,

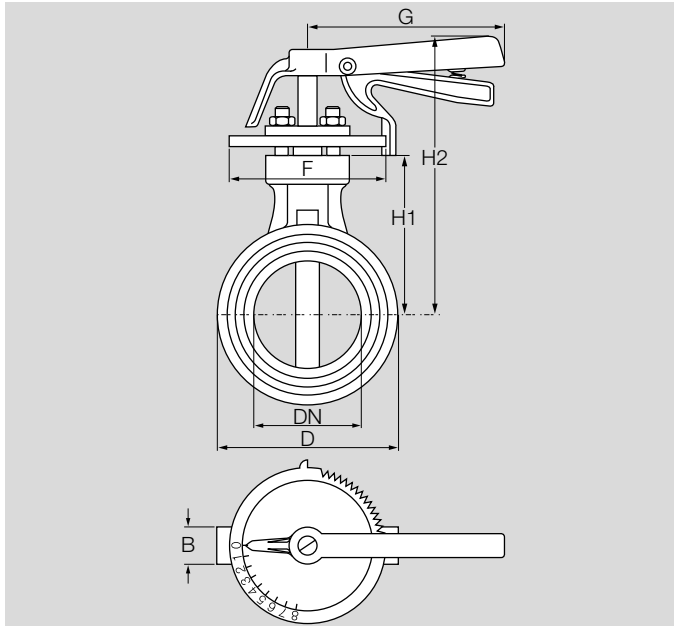
packing: aluminium silicate.

9.1 k_V values

	Opening angle	
	0°	90°
DKR 15	0.11	4.0
DKR 20	0.11	9.2
DKR 25	0.11	12.6
DKR 32	0.18	32
DKR 40	0.32	62
DKR 50	0.63	115
DKR 65	0.92	195
DKR 80	1.3	287
DKR 100	2	494
DKR 125	2.3	804
DKR 150	2.8	1260
DKR 200	5	2060
DKR 250	8	3450
DKR 300	11	4820
DKR 350	15	6420
DKR 400	20	8600
DKR 450	24	10800
DKR 500	31	13700

10 Dimensions

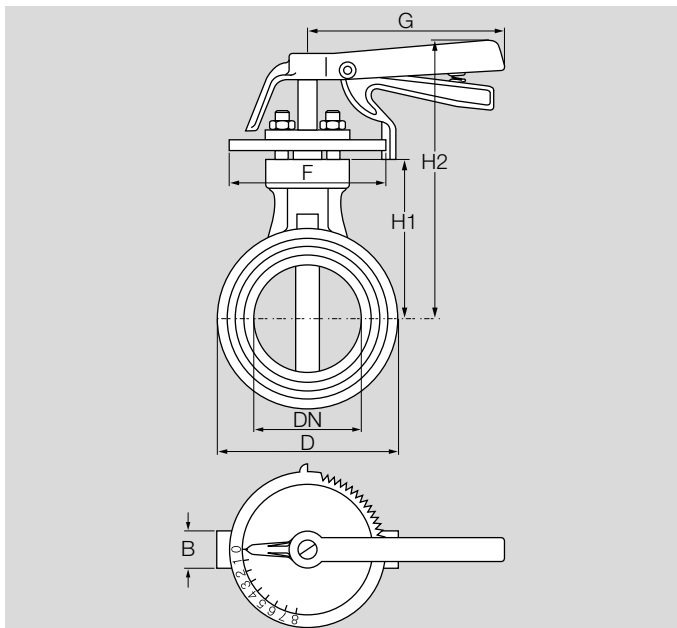
10.1 DKR..H in mm



Type	DN	H1	H2	D	B	G	F	Weight
		mm	mm	mm	mm	mm	mm	kg
DKR 100..H	100	115	180	140	30	120	100	2.8
DKR 125..H	125	135	205	170	35	150	115	5.0
DKR 150..H	150	150	220	195	40	150	115	6.3
DKR 200..H	200	175	245	255	40	150	115	9.3
DKR 250..H	250	220	305	310	40	150	115	13.9
DKR 300..H	300	240	325	360	45	220	160	22.6
DKR 350..H	350	290	410	415	45	220	160	27
DKR 400..H	400	335	455	465	50	220	160	39
DKR 450..H	450	360	480	520	50	220	160	45
DKR 500..H	500	400	520	620	55	220	160	56

Type	DN	H1	H2	D	B	G	F	Weight
		mm	mm	mm	mm	mm	mm	kg
DKR 15..H	15	60	125	44	25	105	100	1.14
DKR 20..H	20	60	125	44	25	105	100	1.14
DKR 25..H	25	75	140	60	25	105	100	1.14
DKR 32..H	32	80	145	67	25	105	100	1.4
DKR 40..H	40	83	148	75	25	105	100	1.5
DKR 50..H	50	85	150	85	25	105	100	1.6
DKR 65..H	65	95	160	105	25	120	100	2.2
DKR 80..H	80	105	170	120	30	120	100	2.5

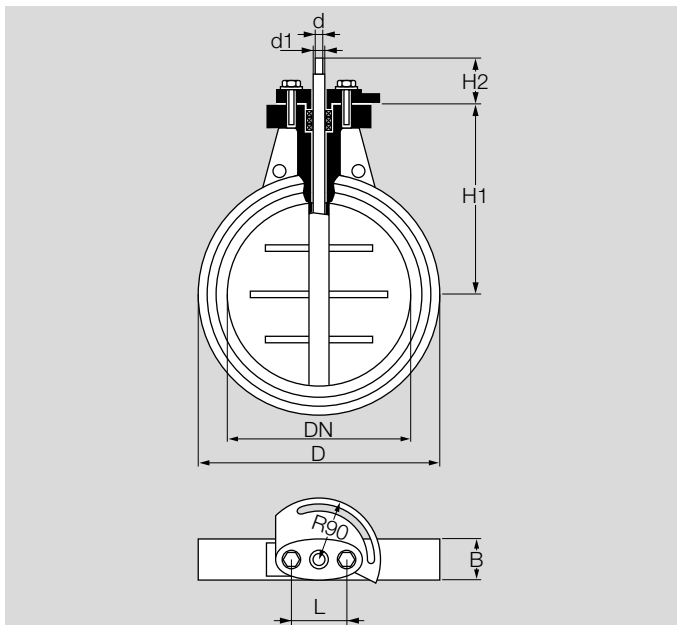
10.2 DKR..H in inches



Type	DN	H1 inch	H2 inch	D inch	B inch	G inch	F inch	Weight lbs
DKR 200..H	200	6.9	9.6	10.0	1.6	5.9	4.5	20.5
DKR 250..H	250	8.7	12.0	12.2	1.6	5.9	4.5	30.9
DKR 300..H	300	9.4	12.8	14.2	1.8	8.7	6.3	50.7
DKR 350..H	350	11.4	16.1	16.3	1.8	8.7	6.3	59.5
DKR 400..H	400	13.2	17.9	18.3	2.0	8.7	6.3	86.0
DKR 450..H	450	14.2	18.9	20.5	2.0	8.7	6.3	99.2
DKR 500..H	500	15.7	20.5	24.4	2.2	8.7	6.3	123.5

Type	DN	H1 inch	H2 inch	D inch	B inch	G inch	F inch	Weight lbs
DKR 15..H	15	2.4	4.9	1.7	1.0	4.1	3.9	2.5
DKR 20..H	20	2.4	4.9	1.7	1.0	4.1	3.9	2.5
DKR 25..H	25	3.0	5.5	2.4	1.0	4.1	3.9	2.5
DKR 32..H	32	3.1	5.7	2.6	1.0	4.1	3.9	3.1
DKR 40..H	40	3.3	5.8	3.0	1.0	4.1	3.9	3.3
DKR 50..H	50	3.3	5.9	3.3	1.0	4.1	3.9	3.5
DKR 65..H	65	3.7	6.3	4.1	1.0	4.7	3.9	4.9
DKR 80..H	80	4.1	6.7	4.7	1.2	4.7	3.9	5.5
DKR 100..H	100	4.5	7.1	5.5	1.2	4.7	3.9	6.2
DKR 125..H	125	5.3	8.1	6.7	1.4	5.9	4.5	11.0
DKR 150..H	150	5.9	8.7	7.7	1.6	5.9	4.5	13.9

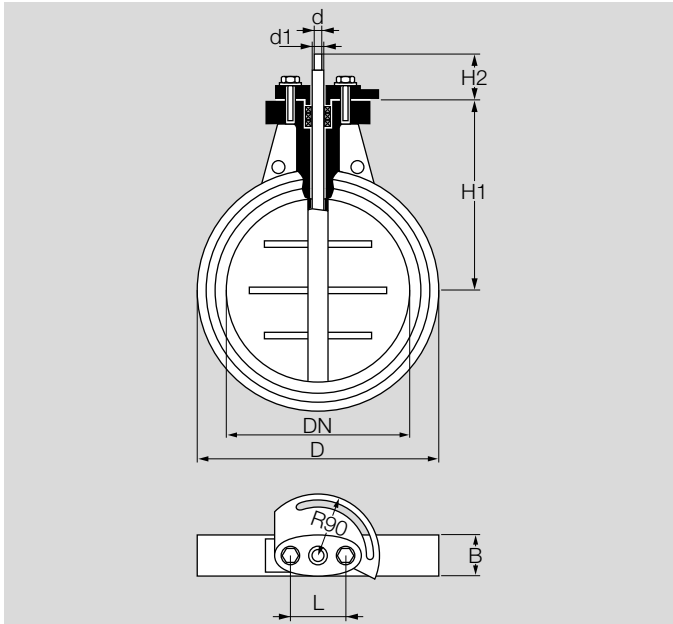
10.3 DKR..F in mm



Type	DN	L	H1	H2	D	B	d	d1	Weight
					mm				kg
DKR 200..F	200	60	175	75	255	40	12	15	9.3
DKR 250..F	250	60	220	75	310	40	12	15	14
DKR 300..F	300	60	240	75	360	45	12	20	23
DKR 350..F	350	90	290	75	415	45	12	25	27
DKR 400..F	400	90	335	75	465	50	12	30	39
DKR 450..F	450	90	360	75	520	50	12	30	45
DKR 500..F	500	90	400	75	620	55	12	30	56

Type	DN	L	H1	H2	D	B	d	d1	Weight
					mm				kg
DKR 15..F	15	36	60	75	44	25	8	8	1.14
DKR 20..F	20	36	60	75	44	25	8	8	1.14
DKR 25..F	25	36	75	75	60	25	8	10	1.14
DKR 32..F	32	36	80	75	67	25	8	10	1.4
DKR 40..F	40	40	83	75	75	25	8	10	1.5
DKR 50..F	50	40	85	75	85	25	8	10	1.6
DKR 65..F	65	40	95	75	105	30	12	12	2.2
DKR 80..F	80	40	105	75	120	30	12	12	2.5
DKR 100..F	100	40	115	75	140	30	12	12	2.8
DKR 125..F	125	40	135	75	170	35	12	12	5.0
DKR 150..F	150	60	150	75	195	40	12	12	6.3

10.4 DKR..F in inches



Type	DN	L	H1	H2	inch				Weight lbs
					D	B	d	d1	
DKR 200..F	200	2.4	6.9	3	10.0	1.6	0.5	0.6	20.5
DKR 250..F	250	2.4	8.7	3	12.2	1.6	0.5	0.6	30.9
DKR 300..F	300	2.4	9.4	3	14.2	1.8	0.5	0.8	50.7
DKR 350..F	350	3.5	11.4	3	16.3	1.8	0.5	1.0	59.5
DKR 400..F	400	3.5	13.2	3	18.3	2	0.5	1.2	86.0
DKR 450..F	450	3.5	14.2	3	20.2	2	0.5	1.2	99.2
DKR 500..F	500	3.5	15.7	3	24.4	2.2	0.5	1.2	123.5

Type	DN	L	H1	H2	inch				Weight lbs
					D	B	d	d1	
DKR 15..F	15	1.4	2.4	3	1.7	1	0.3	0.3	2.5
DKR 20..F	20	1.4	2.4	3	1.7	1	0.3	0.3	2.5
DKR 25..F	25	1.4	3.0	3	2.4	1	0.3	0.4	2.5
DKR 32..F	32	1.4	3.1	3	2.6	1	0.3	0.4	3.1
DKR 40..F	40	1.6	3.3	3	3	1	0.3	0.4	3.3
DKR 50..F	50	1.6	3.3	3	3.3	1	0.3	0.4	3.5
DKR 65..F	65	1.6	3.7	3	4.1	1	0.5	0.5	4.9
DKR 80..F	80	1.6	4.1	3	4.7	1.2	0.5	0.5	5.5
DKR 100..F	100	1.6	4.5	3	5.5	1.2	0.5	0.5	6.2
DKR 125..F	125	1.6	5.3	3	6.7	1.4	0.5	0.5	11.0
DKR 150..F	150	2.4	5.9	3	7.7	1.6	0.5	0.5	13.9

11 Converting units

See www.adlatus.org

12 Glossary

12.1 Control characteristic, valve authority

In order for the butterfly valve to be able to influence the flow rate, a proportion of the pressure loss Δp from the entire system has to be caused by the butterfly valve. Taking into consideration that the overall pressure loss Δp should be kept to a minimum, a valve authority $a = 0.3$ is recommended for the butterfly valve.

This means that of the overall pressure loss Δp , there is a 30% drop on the fully open butterfly valve.

12.2 Hot air compensation

The volume of air increases with the addition of hot air. The oxygen content contained in the air decreases with every m^3 . In order to maintain a constant oxygen content, additional air has to be added to the combustion gas.

For more information

The Honeywell Thermal Solutions family of products includes Honeywell Combustion Safety, Eclipse, Exothermics, Hauck, Kromschroder and Maxon. To learn more about our products, visit ThermalSolutions.honeywell.com or contact your Honeywell Sales Engineer.

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