



ACVATIX™

## Butterfly Valves PN 6/10/16 for flanged connection

VKF46..

tight-closing

- 
- Grey cast iron housing EN-GJL-250 (to DN 300)  
nodular cast iron housing EN-GJS-400-15 (from DN 350)
  - DN 40...600
  - $k_{vs}$  50...29300 m<sup>3</sup>/h
  - For fitting between PN 6, PN 10, PN 16 counter-flanges to ISO 7005
  - Tight-closing in accordance with EN 12266-1, leakage rate A
  - No maintenance required
  - Optional ASK46.. manual adjuster (to DN 400)
  - Optionally equipped with electromotoric actuators SAL.. or SQL36E..

### Use

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For use as motorized or manual control or shut-off valves in heating, ventilation and air conditioning systems.

- In open and closed circuits
- For 2-position controls (open/closed)
- For 3-position controls
- For boiler, chiller and cooling tower sequencing circuits
- To open or close the flow to a heat exchanger or to complete plant sections

## Type summary





Product type VKF46..	DN	k <sub>vs</sub> [m <sup>3</sup> /h]	Actuator flange EN ISO 5211	Velocity of flow <sup>1)</sup>	
				Water [m/s]	Gas [m/s]
VKF46.40	40	50	F04	4.5	60
VKF46.50	50	85			
VKF46.65	65	215			
VKF46.80	80	420	F05		
VKF46.100	100	800			
VKF46.125	125	1010			
VKF46.150	150	2100	F07		
VKF46.200	200	4000	F10		
VKF46.250	250	6400			
VKF46.300	300	8500	F10 <sup>3)</sup>		
VKF46.350	350	11500			
VKF46.400	400	14500	□ 32 mm		
VKF46.450	450	20500			
VKF46.500	500	21000			
VKF46.600	600	29300			

<sup>1)</sup> recommended maximum velocity of flow and the butterfly valve fully open

k<sub>vs</sub> Nominal flow rate of cold water (5...30 °C) through the fully open butterfly valve by a differential pressure of 100 kPa (1 bar)

### Accessories

Manual adjuster

ASK46.1	ASK46.2	ASK46.3	ASK46.4
			
<ul style="list-style-type: none"> <li>• Lockable level with fixed stops at 0 and 90° as well as precision positioning in 6° increments.</li> <li>• Anti-condensation barrier</li> <li>• Simple installation</li> <li>• For VKF46., DN 40...200</li> </ul> <p>The Mounting Instructions 4 319 0196 0 are enclosed.</p>			<ul style="list-style-type: none"> <li>• Manually operated worm gear, allows infinitely variable adjustment between 0 and 90°.</li> <li>• Self locking</li> <li>• Position indication</li> <li>• Anti-condensation barrier</li> <li>• Simple installation</li> <li>• For VKF46., DN 250...400</li> </ul> <p>The Mounting Instructions 4 319 0197 0 are enclosed.</p>

### Ordering

Example:	Product number	Stock number	Designation	Quantity
	VKF46.50	VKF46.50	Butterfly valve	1
	SAL31.00T20	S55162-A110	Rotary actuator SAL31.00T20	1

Delivery Butterfly valve, actuator, manual adjuster and mounting kit are packed separately.  
The butterfly valves are supplied without counter-flanges

Rev no. See overview, page 8.

## Equipment combinations

Butterfly valve	Manual adjuster	Electromotoric actuators						
		SAL..T20	SAL..T40	E50F04	E50F05	SQL36.. E65	E110	E160
$\Delta p_s$ [kPa]								
VKF46.40	ASK46.1	1600		1600				
VKF46.50								
VKF46.65								
VKF46.80	ASK46.2		1600		1600			
VKF46.100			1200					
VKF46.125			800		1000			
VKF46.150	ASK46.3					1600		
VKF46.200						1000		
VKF46.250	ASK46.4						1000	
VKF46.300							600	
VKF46.350								
VKF46.400							300	
VKF46.450	on request							300
VKF46.500								
VKF46.600								

$\Delta p_s$  Maximum permissible differential pressure at which the motorized butterfly valve will close securely against the pressure (close off pressure)  
 Maximum permissible differential pressure (close off pressure) for single flange mounting see page 5

### Actuator overview

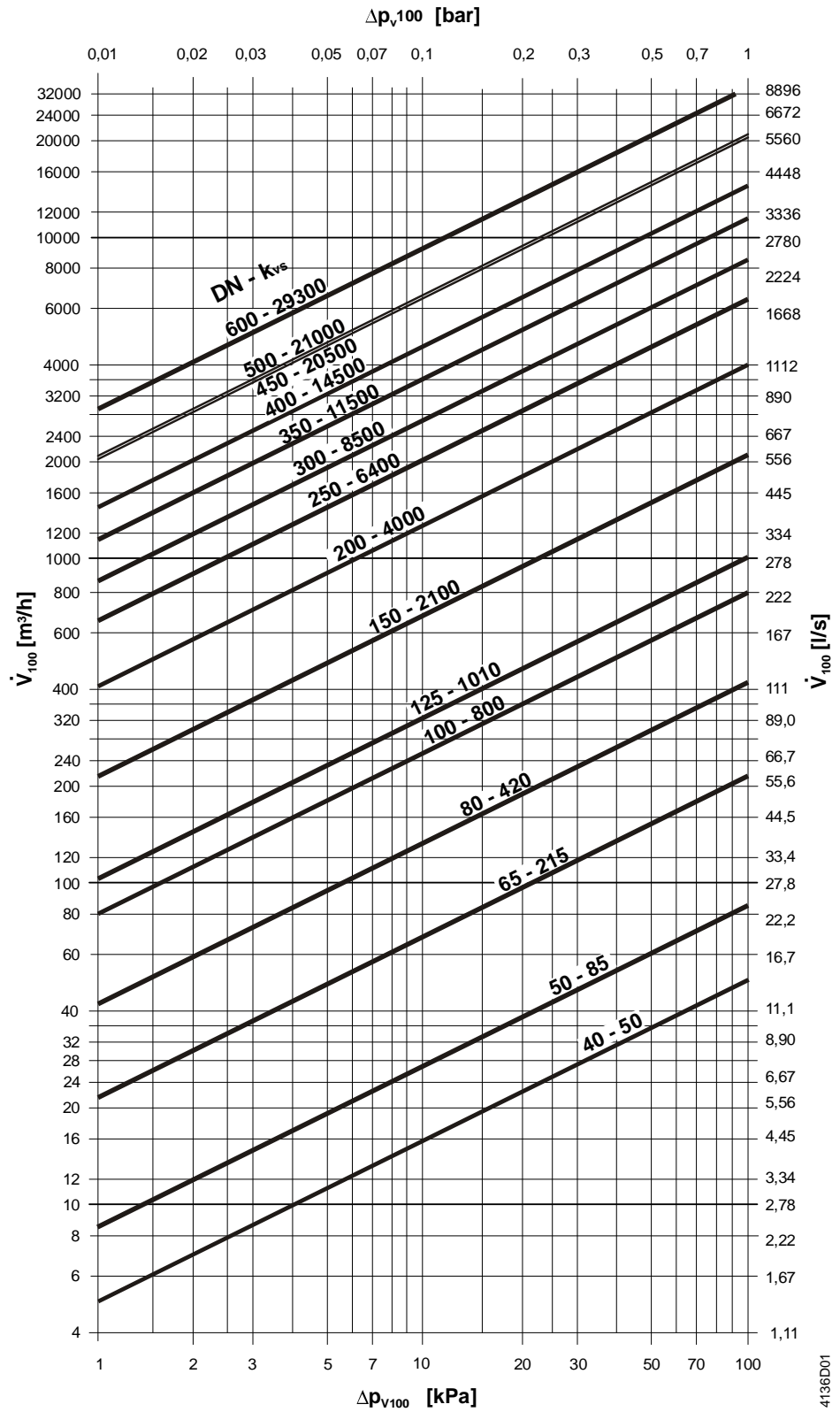
Product number	Actuator type	Operating voltage	Positioning signal	Spring return	Positioning time for 90° at 50 Hz		Positioning force	Date sheet		
					without SEZ31.1	with SEZ31.1				
SAL31.00T20	Electro-motoric	AC 230 V	3-position	No	120 s		20 Nm	N4502		
SAL31.00T40							40 Nm			
SAL81.00T20							20 Nm			
SAL81.00T40		40 Nm								
SAL61.00T20		AC/DC 24 V	DC 0...10 V DC 4...20 mA 0...1000 $\Omega$		20 Nm					
SAL61.00T40					40 Nm					
SQL36E50F04	AC 230 V	3-position		25 s		40 Nm	N4505			
SQL36E50F05				6 s		30...180 s		100 Nm		
SQL36E65								12 s	60...360 s	400 Nm
SQL36E110										24 s
SQL36E160										

## Mechanical design

### Butterfly valve

Ring format, grey cast iron or nodular cast iron housing with EPDM liner and multiple shaft bearing.

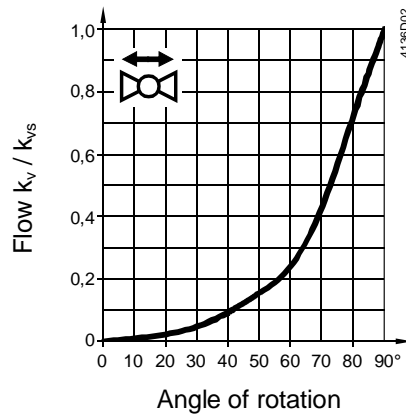
The liner is also used to seal the flange. There is thus no contact between the medium and the valve housing. The valve has a swing-through disc (angle of rotation 360°). The position of the valve disc is indicated by a notch on the front of the shaft.



$\Delta p_{v100}$  = Differential pressure across the fully open butterfly valve by a volume flow  $\dot{V}_{100}$   
 $\dot{V}_{100}$  = Volume flow through the fully open butterfly valve  
 100 kPa = 1 bar  $\approx$  10 mWC  
 $1 m^3/h$  = 0.278 l/s water at 20 °C

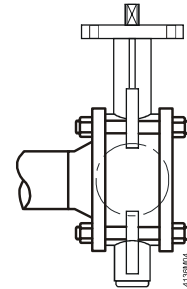
4136D01

## Flow characteristic



## Engineering notes

Single flange mounting is possible:    DN 40...250: 300 kPa  
     DN 300...600: 200 kPa



The VKF46.. butterfly valves can accommodate flow in either direction.

### Warning

To avoid pressure shocks on the butterfly valve, the VKF46.. must be driven to its fully open position (either manually or via positioning signal Y1) prior to activating the pump(s).

## Mounting notes

The Mounting Instructions 4 319 0198 0 are enclosed in the product packaging.

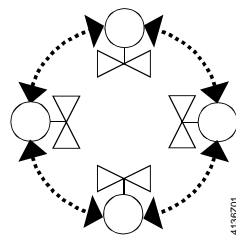


VKF46.. butterfly valves can be mounted in PN 6, PN 10, PN 16 applications.  
 Use VKF46.450...600 in PN 16 applications only!

Do not use additional flange sealings.

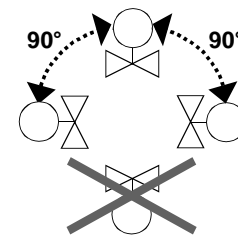
## Orientation

### VKF 46.. + SQL36E..



Any

### VKF46.. + SAL..T20/T40



Upright to horizontal

## Maintenance

The VKF46.. butterfly valves require no maintenance.

### Caution

Before performing any service works on the valve, actuator or mounting kit:

- Switch off the pump and power supply
  - Close the main shut-off valves in the pipework
  - Release pressure in the pipes and allow them to cool down completely
- If necessary, disconnect electrical connections from terminals.

The valve must be re-commissioned only with the manual adjuster or the actuator correctly assembled.

## Disposal



Before disposal the valve must be dismantled and separated into its various constituent materials.

Legislation may demand special handling of certain components, or it may be sensible from an ecological point of view.

**Current local legislation must be observed.**

## Warranty

The technical data given for these applications is valid only in conjunction with the Siemens actuators as detailed under "Equipment combinations", page 3.

All terms of the warranty will be invalidated by the use of actuators from other manufacturers.

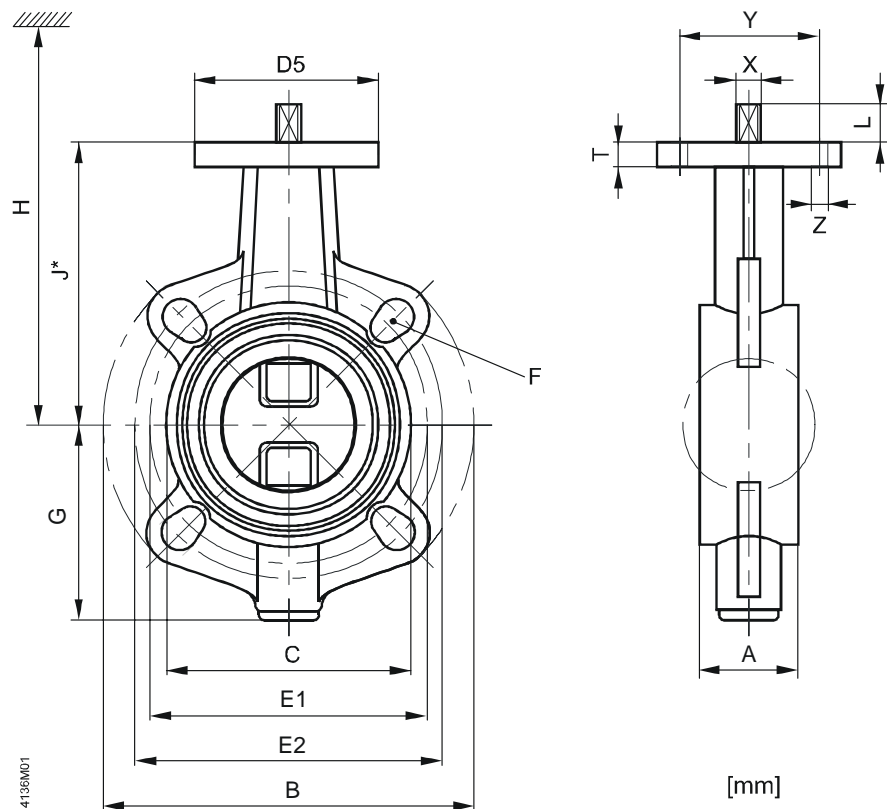
## Technical data

Operating data	PN class	PN 16 to EN1333	
	Permissible operating pressure	1600 kPa (16 bar)	
	Flow characteristic	according to the diagram on page 5	
	Leakage rate	A to EN 12266-1 (tight-closing)	
	Permissible media	chilled water, low temperature hot water, cooling water, brine, demineralised water (softened), water with anti-freeze, air recommendation: water treatment to VDI2035	
	Medium temperature	-10...120 °C	
	Flanged connection for pipes <sup>1)</sup>	PN 6, PN 10, PN 16 to ISO7005	
	Overall length	DIN EN 558, series 20	
	Flange for actuator or manual adjuster	EN ISO 5211	
	Angle of rotation	90°	
	Standards	Pressure Equipment Directive	PED 97/23/EC
		Pressure Accessories	as per article 1, section 2.1.4
		Fluid group 2:	DN 65...200 • category I, with CE-marking DN 250...300 • category II, module H, with CE-marking, test authority number 0036 DN 350...600 • category III, module H, with CE-marking, test authority number 0036
Environmental compatibility		ISO 14001 (Environment) ISO 9001 (Quality) SN 36350 (Environmentally compatible products) RL 2002/95/EG (RoHS)	
Materials	Housing	to DN 300 grey cast iron EN-GJL-250 from DN 350 nodular cast iron EN-GJS-400-15	
	Shaft	stainless steel 1.4101	
	Valve disc	to DN 300 stainless steel 1.4408 from DN 350 nickel-plated steel St 52.3	
	Manual adjuster	ASK46.. die-cast aluminum	
	Liner	EPDM	
Dimensions		refer to "Dimensions", page 7	
Weight		refer to "Dimensions", page 7	

<sup>1)</sup> VKF46.450...600 are not suited for PN 6 and PN 10

## Dimensions

Dimensions in mm



Type	DN	A	B ∅	C ∅	G	J*	T	D5 ∅	L	PN 6		PN 10		PN 16		X	Y EN 5211 ∅	Z ∅	m <sup>3</sup> [kg]	
										∅E1	F	∅E2	F	∅E2	F					
VKF46.40	40	33	140	82	66	113	10	54	11.5	100	M12 (4x)	110	M16 (4x)	110	M16 (4x)	11	F04	42	6	1.8
VKF46.50	50	43	157	95	85	126	10	54	11.5	110	M12 (4x)	125	M16 (4x)	125	M16 (4x)					2.2
VKF46.65	65	46	177	115	93.5	134.5	10	54	11.5	130	M12 (4x)	145	M16 (4x)	145	M16 (4x)					2.9
VKF46.80	80	46	192	138	104.5	157	10	65	15.5	150	M16 (4x)	160	M16 (8x)	160	M16 (8x)	14	F05	50	7	4.0
VKF46.100	100	52	221	158	115.5	167.5	10	65	15.5	170	M16 (4x)	180	M16 (8x)	180	M16 (8x)					5.2
VKF46.125	125	56	256	188	128	180	10	65	15.5	200	M16 (8x)	210	M16 (8x)	210	M16 (8x)					6.9
VKF46.150	150	56	281	212	152	203	12	90	18.5	225	M16 (8x)	240	M20 (8x)	240	M20 (8x)	17	F07	70	9	9.5
VKF46.200	200	60	320	268	177.5	228.5	12	90	18.5	280	M16 (8x)	295	M20 (8x)	295	M20(12x)					13.2
VKF46.250	250	68	403	320	213	266	15	125	23.5	335	M16(12x)	350	M20(12x)	355	M24(12x)	22	F10	102	11	22.5
VKF46.300	300	78	478	370	238	290.5	15	125	23.5	395	M20(12x)	400	M20(12x)	410	M24(12x)					31.5
VKF46.350	350	78	522	408	269	332	20	125	28.5	445	M20(12x)	460	M20(16x)	470	M24(16x)					39.4
VKF46.400	400	102	596	470	313	363	20	125	28.5	495	M20(16x)	515	M24(16x)	525	M27(16x)	32		165	22	58.7
VKF46.450	450	114	630	530	335	397	25	210	34					585	M27(20x)					91
VKF46.500	500	127	710	574	371	437	23	210	34					650	M30(20x)					107
VKF46.600	600	154	830	675	435	498	24	210	34					770	M33(20x)	171				

A Corresponds to overall length acc. to EN 558, series 20 (except DN 350)

\* Dimension for actuator connection from centre of pipe

H, overall height of valve and actuator

= Valve installation height (J\*) from middle of pipe

+ Installation height of actuator

- SAL..T20/T40

= 160 mm (DN 40...125)

- SQL36E50..

= 210 mm (DN 40...125)

- SQL36E65

= 235 mm (DN 150...200)

- SQL36E110

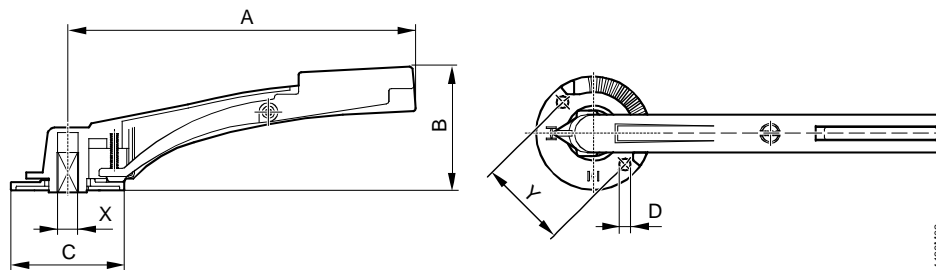
= 257 mm (DN 250...400)

- SQL36E160

= 282 mm (DN 450...600)

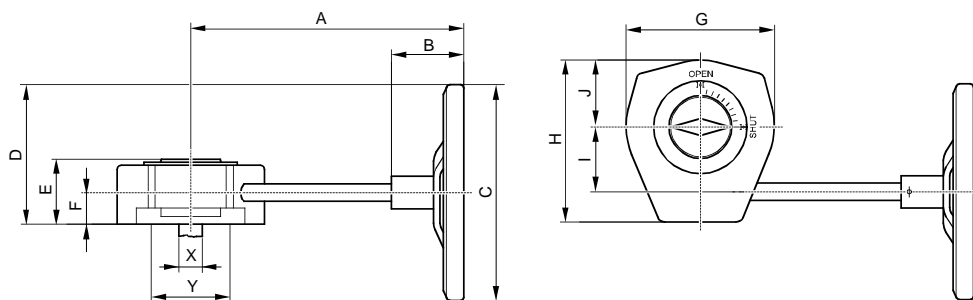
+ Minimum clearance (> 200 mm) from ceiling or wall for mounting, connection, operation, service etc.

ASK46.1  
ASK46.2  
ASK46.3



Type	DN	A	B	C	D ∅	X	Y ∅	kg [kg]
ASK46.1	40...65	155	68.5	67.5	5.5	11	42	0.11
ASK46.2	80...125	195	79.5	72.5	6.5	14	50	0.16
ASK46.3	150...200	276	98	90	9.0	17	70	0.50

ASK46.4



Type	DN	A	B	C ∅	D	E	F	G	H	I	J	X ∅	Y ∅	kg [kg]
ASK46.4	250...400	252	67	200	129	60	29	137	150	60	62	22	100	3.38

Revision numbers

Product type	Valid from rev. no.	Product number	Valid from rev. no.
VKF46.40	B	VKF46.250	B
VKF46.50	B	VKF46.300	B
VKF46.65	B	VKF46.350	B
VKF46.80	B	VKF46.400	B
VKF46.100	B	VKF46.450	B
VKF46.125	B	VKF46.500	B
VKF46.150	B	VKF46.600	B
VKF46.200	B		