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^3/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

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_{vs} [m^3/h]	Actuator flange EN ISO 5211	Velocity of flow [1] 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			
VKF46.250	250	6400	F10		
VKF46.300	300	8500			
VKF46.350	350	11500	F10 [3]		
VKF46.400	400	14500			
VKF46.450	450	20500	□ 32 mm		
VKF46.500	500	21000			
VKF46.600	600	29300			

[1] recommended maximum velocity of flow and the butterfly valve fully open

k_{vs} 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

- Lockable level with fixed stops at 0 and 90° as well as precision positioning in 6° increments.
- Anti-condensation barrier
- Simple installation
- For VKF46.., DN 40…200

The Mounting Instructions 4 319 0196 0 are enclosed.

ASK46.2

ASK46.3

ASK46.4

- Manually operated worm gear, allows infinitely variable adjustment between 0 and 90°.
- Self locking
- Position indication
- Anti-condensation barrier
- Simple installation
- For VKF46.., DN 250…400

The Mounting Instructions 4 319 0197 0 are enclosed.

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	SQL36.. E50F05	E65	E110	E160
		Δp_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								
VKF46.350							600	
VKF46.400							300	
VKF46.450	on request							300
VKF46.500								
VKF46.600								

Δp_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

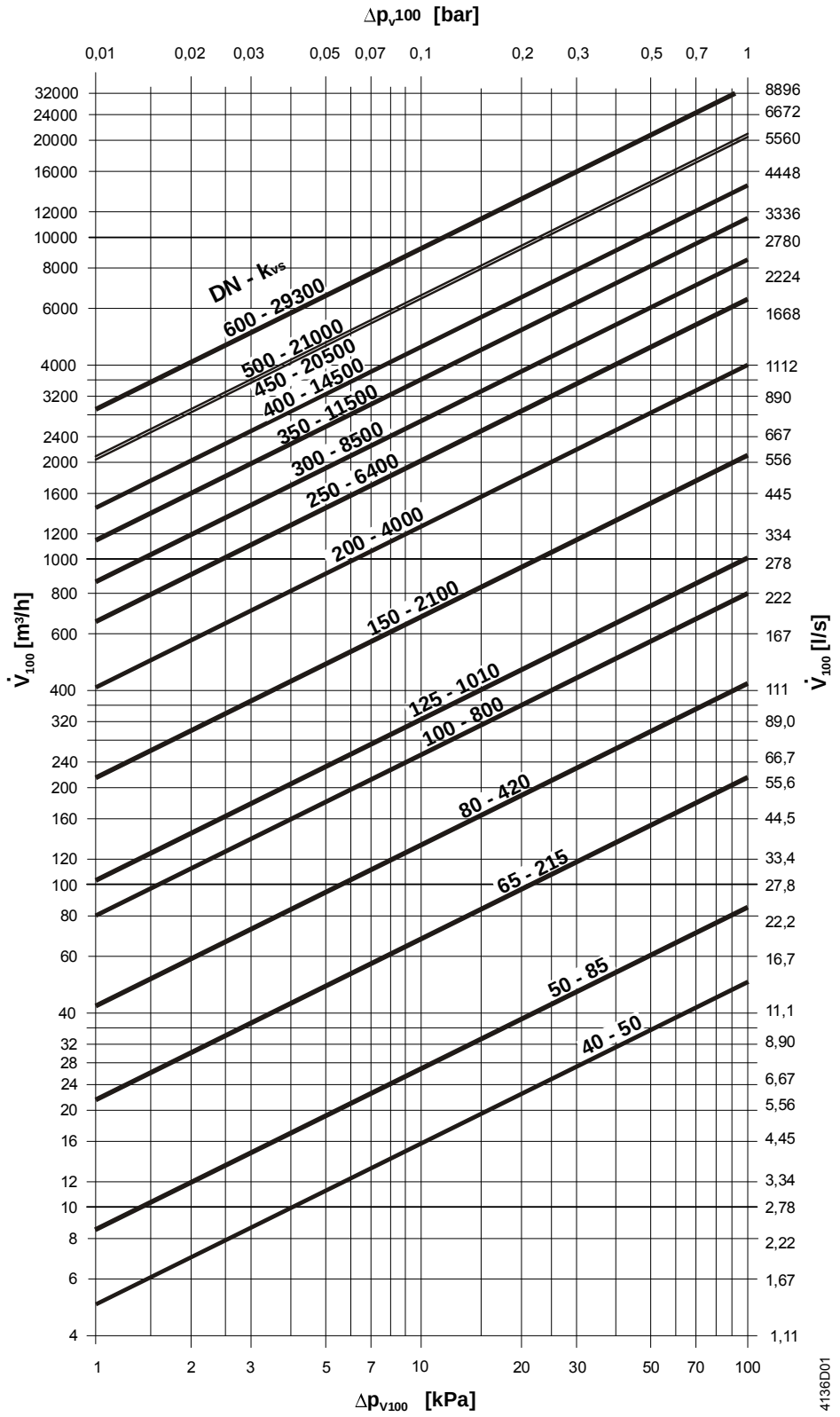
Product number	Actuator type	Operating voltage	Positioning signal	Spring return	Positioning time for 90° at 50 Hz without SEZ31.1	with SEZ31.1	Positioning force	Date sheet
SAL31.00T20	Electromotoric	AC 230 V	3-position	No	120 s		20 Nm	N4502
SAL31.00T40							40 Nm	
SAL81.00T20		AC/DC 24 V					20 Nm	
SAL81.00T40							40 Nm	
SAL61.00T20			DC 0…10 V DC 4…20 mA 0…1000 Ω				20 Nm	
SAL61.00T40							40 Nm	
SQL36E50F04		AC 230 V	3-position		25 s		40 Nm	N4505
SQL36E50F05								
SQL36E65					6 s	30…180 s	100 Nm	
SQL36E110					12 s	60…360 s	400 Nm	
SQL36E160					24 s	120…720 s	1200 Nm	

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.

Flow diagram



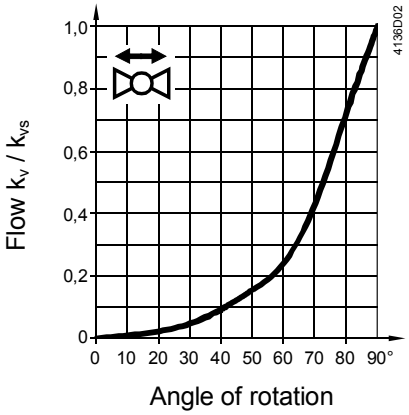
Δp_{v100} = Differential pressure across the fully open butterfly valve by a volume flow $\dot{V}_{100}$

$\dot{V}_{100}$ = Volume flow through the fully open butterfly valve

100 kPa = 1 bar ≈ 10 mWC

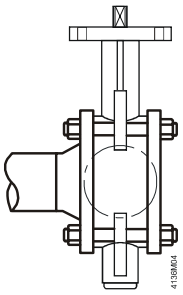
1 m^3/ h = 0.278 l/s water at 20 °C

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

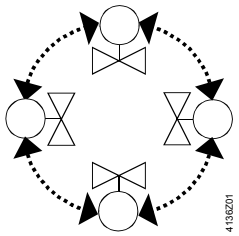
The Mounting Instructions 4 319 0198 0 are enclosed in the product packaging.

⚠ 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.

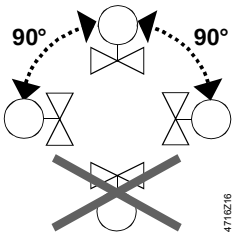
Orientation

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

Do not dispose of the device as household waste.

- Special handling of individual components may be mandated by law or make ecological sense.
- Observe all local and currently applicable laws and regulations.

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

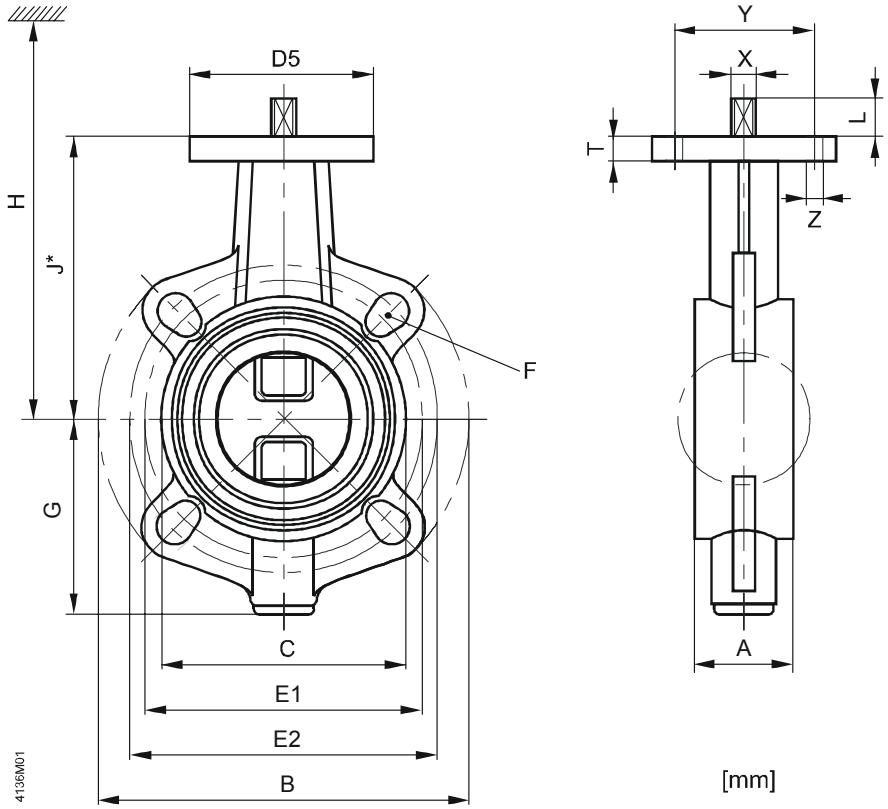
Operating data	PN class		PN 16 to EN1333
	Permissible operating pressure		1600 kPa (16 bar)
	Flow characteristic		according to the diagram on page 5
	Leakage rate		A to EN 12266-1 (tight-closing)
	Permissible media		chilled water, low temperature hot water, cooling water, brine, demineralised water (softened), water with anti-freeze, air recommendation: water treatment to VDI2035
	Medium temperature		–10…120 °C
	Flanged connection for pipes [1]		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, directives and approvals	Pressure Equipment Directive Pressure-carrying accessories		PED 2014/68/EU Scope: Article 1, section 1 Definitions: Article 2, section 5
	Fluid group 2:	DN 65…200	Category I, Modul A, with CE-marking as per article 14, section 2
		DN 250…300	Category II, Modul A2, with CE-marking as per article 14, section 2, notified body number 0036
		DN 350…600	Category III, module H, with CE-marking, notified body number 0036
	EU conformity (CE)	DN 65…600	A5W00006397 [2]
	EAC Conformity		Eurasia Conformity
Environmental compatibility	The product environmental declaration contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal).		
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		stainless steel 1.4408
	Manual adjuster	ASK46..	die-cast aluminum
	Liner		EPDM
Dimensions			refer to "Dimensions", page 7
Weight			refer to "Dimensions", page 7

[1] VKF46.450…600 are not suited for PN 6 and PN 10

[2] The documents can be downloaded from http://siemens.com/bt/download

Dimensions

Dimensions in mm



Type	DN	A	B ø	C ø	G	J *	T	D5 ø	L	PN 6 øE1	PN 6 F	PN 10 øE2	PN 10 F	PN 16 øE2	PN 16 F	X	EN 5211	Y ø	Z ø	kg [kg]
VKF46.40	40	33	140	82	66	113	10	54	11.5	100	M12 (4x)	110	M16 (4x)	110	M16 (4x)					1.8
VKF46.50	50	43	157	95	85	126	10	54	11.5	110	M12 (4x)	125	M16 (4x)	125	M16 (4x)	11	F04	42	6	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)					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)	14	F05	50	7	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)					22.5
VKF46.300	300	78	478	370	238	290.5	15	125	23.5	395	M20(12x)	400	M20(12x)	410	M24(12x)	22	F10	102	11	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)					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)	32		165	22	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

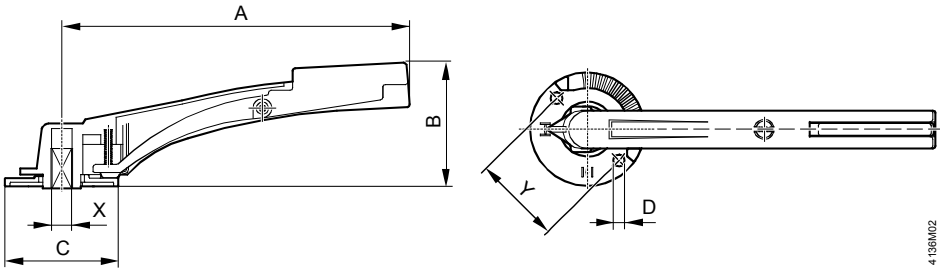
= Valve installation height (J*) from middle of pipe

\+ 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)

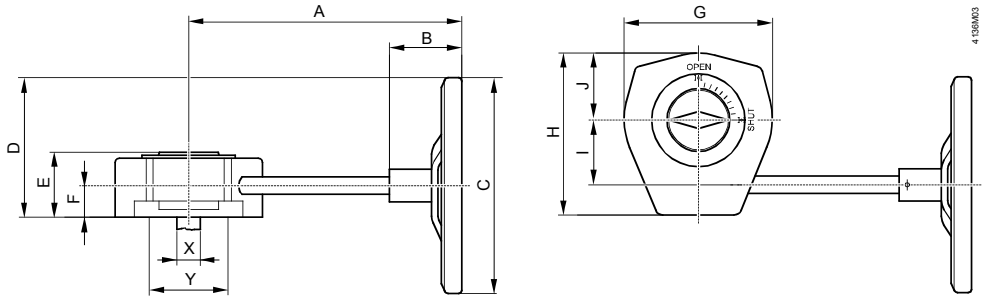
\+ Minimum clearance (> 200 mm) from ceiling or wall for mounting, connection, operation, service etc.

ASK46.1
ASK46.2
ASK46.3



Type	DN	A	B	C	D ø	X	Y ø	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 ø	D	E	F	G	H	I	J	X	Y ø	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	C
VKF46.80	B	VKF46.400	C
VKF46.100	B	VKF46.450	C
VKF46.125	B	VKF46.500	C
VKF46.150	B	VKF46.600	C
VKF46.200	B		

Issued by
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