SIEMENS

7673

Butterfly valves

VKF10…
VKF11…

Butterfly valves designed in intermediate flange design, for mounting into gas trains

- **Valve either metallically tight or swing thru**
- **DN32...DN200**
- **Effective rotation angle 5…85°**
- **Suitable for gases in the I…III range, air and flue gas up to 180°C**
- **Including coupling for D-shaft Ø 10 mm and ASK33.1 mounting plate**
- **The option is available to install the butterfly valve in the next nominal size up to ensure it is positioned more securely**
- **Installation in ISO 7005-2 (PN10/PN16) and ANSI flange connections**

The VKF10/VKF11 and this data sheet are intended for original equipment manufacturers (OEMs) using the VKF10/VKF11 in or on their products.

Use

As a controlling device in combustion plants, for example:

- As a gas control valve
- As an air control valve
- As a flue gas valve in the case of flue gas recirculation
- For applications with a large control range
- Suitable for slightly aggressive biogases and recycling gases

Warning notes

To avoid personal injury or damage to property or the environment, the following warning notes must be observed.

Interventions and changes are strictly forbidden.

- All activities (mounting, installation, service work, etc.) must be performed by qualified staff
- These valves must not be put back into operation following impact or shock; even if they do not exhibit any visible damage, their safety functions may be impaired

Mounting notes

- Ensure that the relevant national safety regulations are complied with
- Mounting between counter-flanges conforming to ISO 7005-2 (PN10/PN16) and ANSI
- Butterfly valve and actuator can be assembled directly on site with ease
- No special tools or adjustment required
- The butterfly valve can accommodate flow in either direction
- Use flange gaskets that are suitable for the type of gas

Startup notes

- The butterfly valve may only be put into operation if the actuator is correctly fitted
- The direction of rotation when opening the damper should be clockwise (looking towards the front face of the axle)
- Ensure the actuators being combined rotate in the correct direction: Direction of rotation ‘counterclockwise’ (12:00 → 09:00) looking towards the front face of the actuator axles

Disk turns in clockwise direction	Flow increases
Disk turns in counterclockwise direction	Flow decreases

Standards and certificates

Applicable regulations:

- Gas Appliances Regulation (EU)2016/426

Compliance with the regulations of the applied directives is verified by the adherence to the following standards/regulations:

- Safety and control devices for burners and appliances burning gaseous and/or liquid fuels – General requirements DIN EN 13611
- Safety and control devices for gas burners and gas-burning appliances – General requirements ISO 23550

EAC Conformity (Eurasian Conformity)

UKCA conformity mark (UK)

China RoHS
Hazardous substances table:
http://www.siemens.com/download?A6V10883536

Service notes

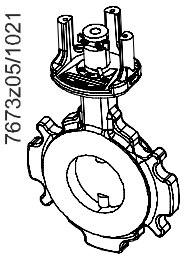
- The VKF10/VKF11 butterfly valve requires no maintenance
- The butterfly valve may only be put back into operation if the actuator is correctly fitted
- The tightness must be checked when mounting or replacing it

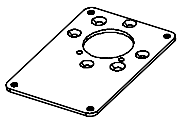
Disposal notes

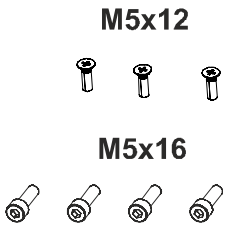
Prior to disposal, the butterfly valve must be dismantled and separated into its various materials. Local and currently valid legislation must be complied with. The VKF10/VKF11 does not contain any electronics.

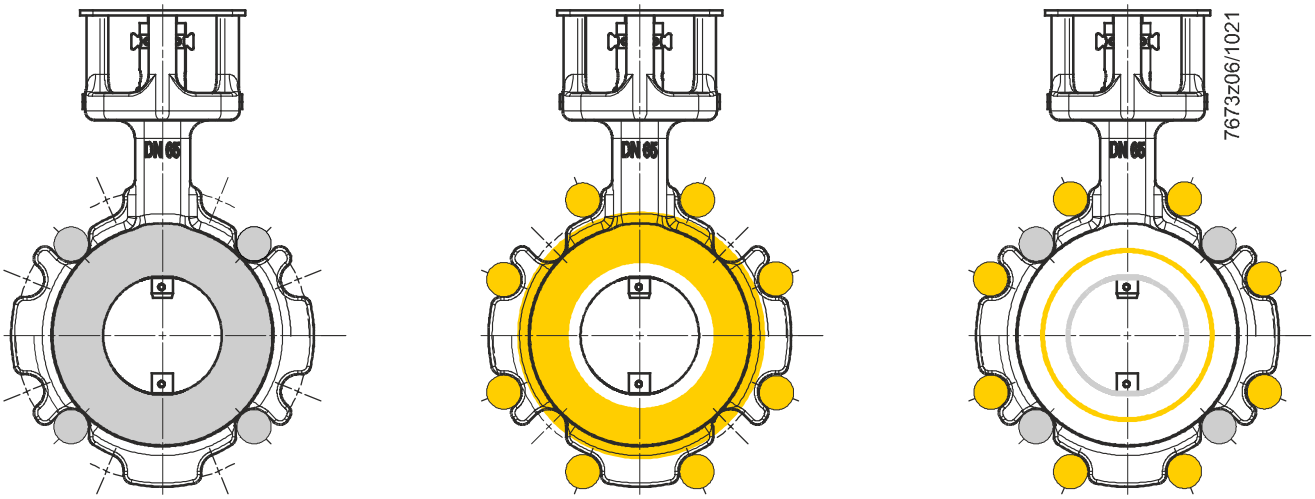
VKF10 / VKF11

VKF10/VKF11 contents







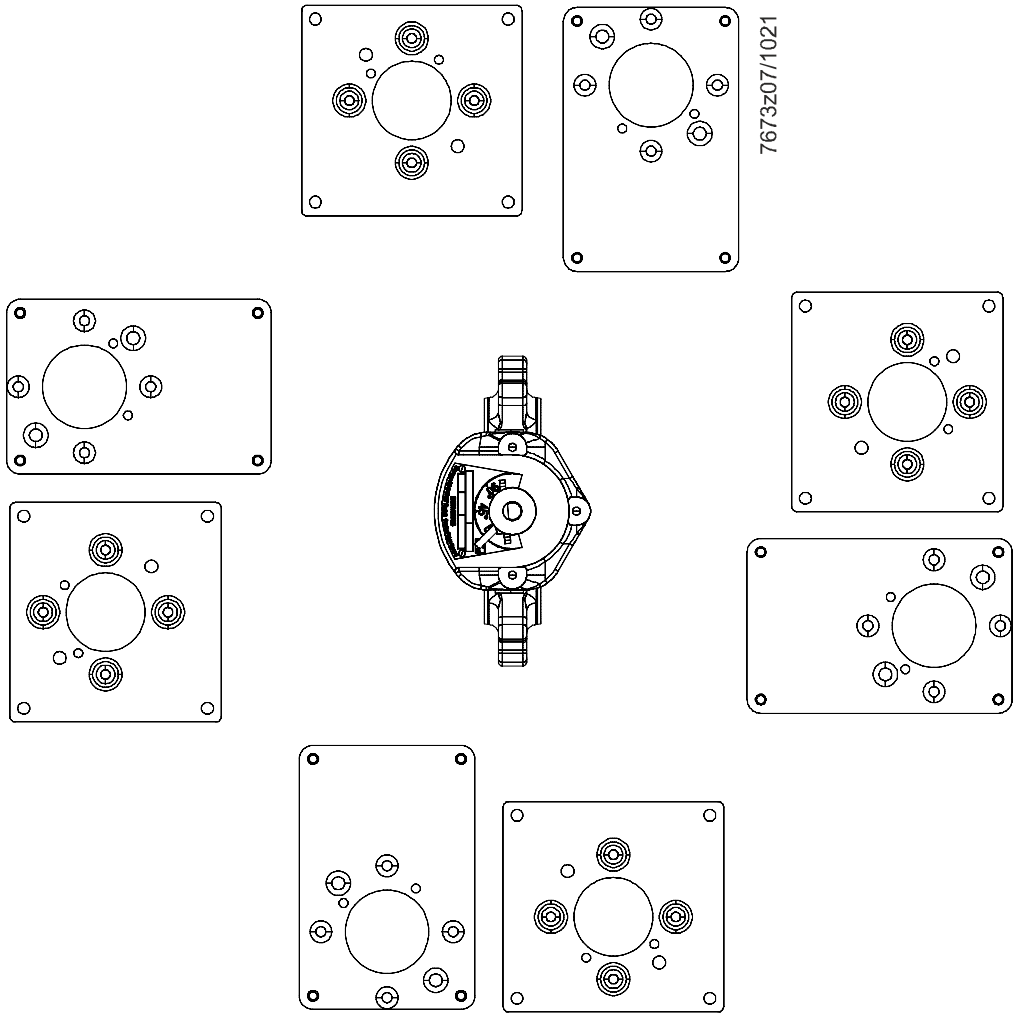


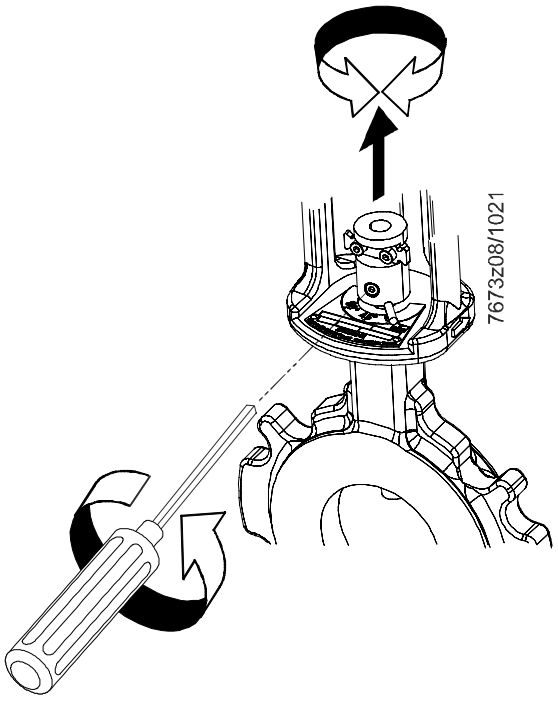
Nominal size	Swing thru	With mechanical stop	Suitable for flange size	Tightening torque	Mounting			
DN					DN ISO	DN ASME	DN+1 ISO	DN+1 ASME
32	VKF10.032	VKF11.032	DN32 + DN40	50 Nm	4 x M16	4 x ½	4 x M16	4 x ½
40	VKF10.040	VKF11.040	DN40 + DN50	50 Nm	4 x M16	4 x ½	4 x M16	4 x 5/8
50	VKF10.050	VKF11.050	DN50 + DN65	50 Nm	4 x M16	4 x 5/8	4 x M16	4 x 5/8
65	VKF10.065	VKF11.065	DN65 + DN80	50 Nm	4 x M16	4 x 5/8	8 x M16	4 x 5/8
80	VKF10.080	VKF11.080	DN80 + DN100	50 Nm	8 x M16	4 x 5/8	8 x M16	8 x 5/8
100	VKF10.100	VKF11.100	DN100 + DN125	80 Nm	8 x M16	8 x 5/8	8 x M16	8 x ¾
125	VKF10.125	VKF11.125	DN125 + DN150	160 Nm	8 x M16	8 x ¾	8 x M20	8 x ¾
150	VKF10.150	VKF11.150	DN150 + DN200 *)	160 Nm	8 x M20	8 x ¾	12 x M20	8 x ¾
200	VKF10.200	VKF11.200	DN200	160 Nm	12 x M20	8 x ¾	---	---

*)

Please note!
Reduction of the sealing surface!
The mounting of a VKF1x.150 with a flange size of DN150 in a DN200 flange connection results in a significant reduction of the overlapping sealing surface. It is therefore essential to ensure that the mounting conditions factor in tight tolerances for alignment, angular offset, and parallel offset. The effectiveness of the reduced seal must be checked on site (for example, increased test pressure).

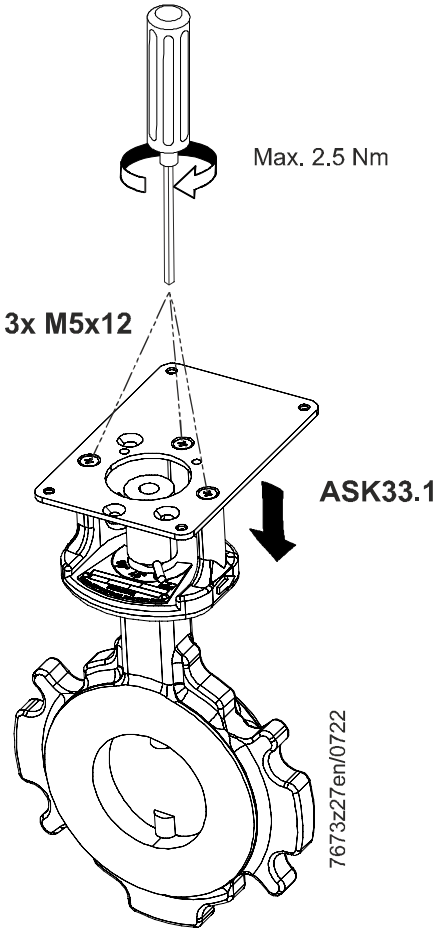
Mounting position of the mounting plate



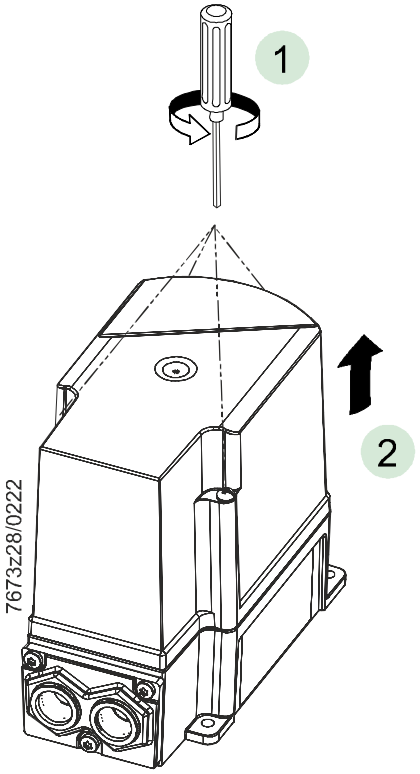


Loosen the screw. Align the coupling to suit the mounting position of the mounting plate. Tighten the screw again (max. 2 Nm).

1.a

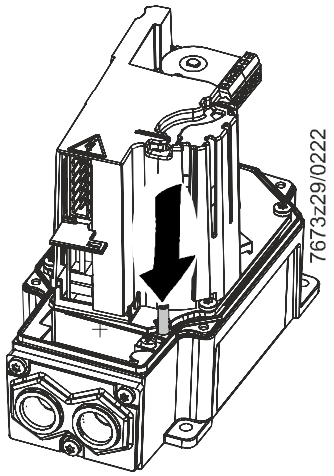


1.b

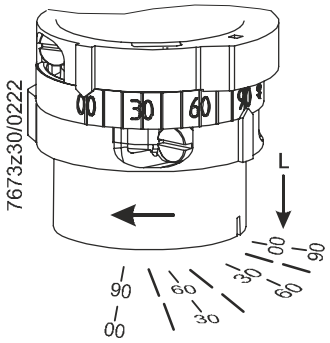


1.c

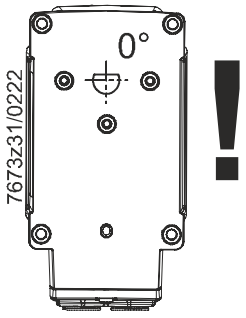
Release the coupling while pressing the pressure pin down.



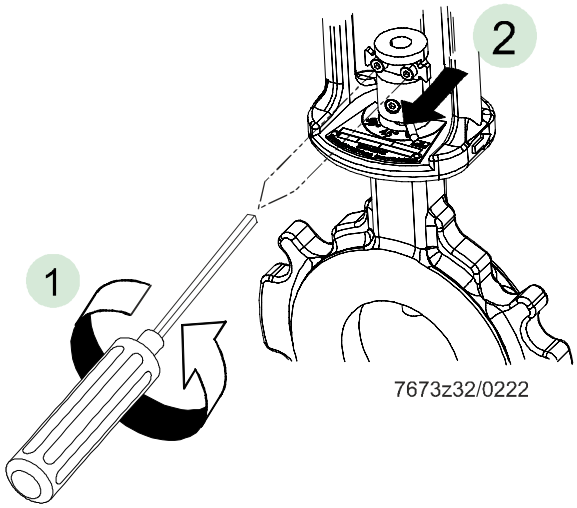
1.d



Zero position



1.e

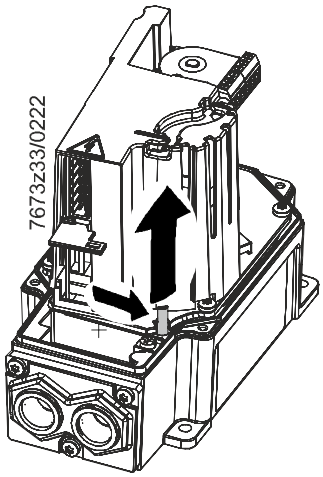


1 Loosen the screws.

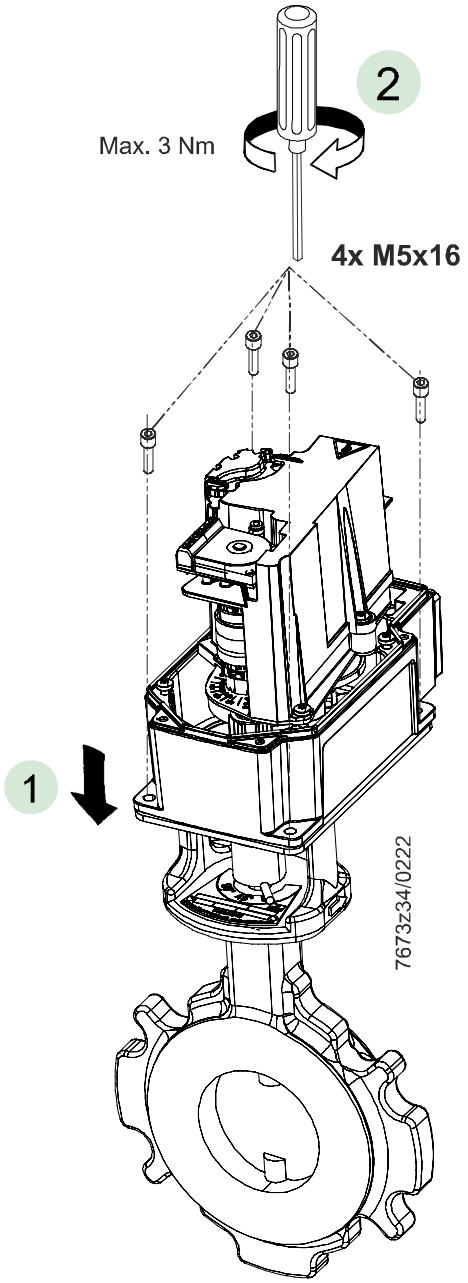
2 Pull the plate in the direction of the arrow and mount the actuator.

1.g

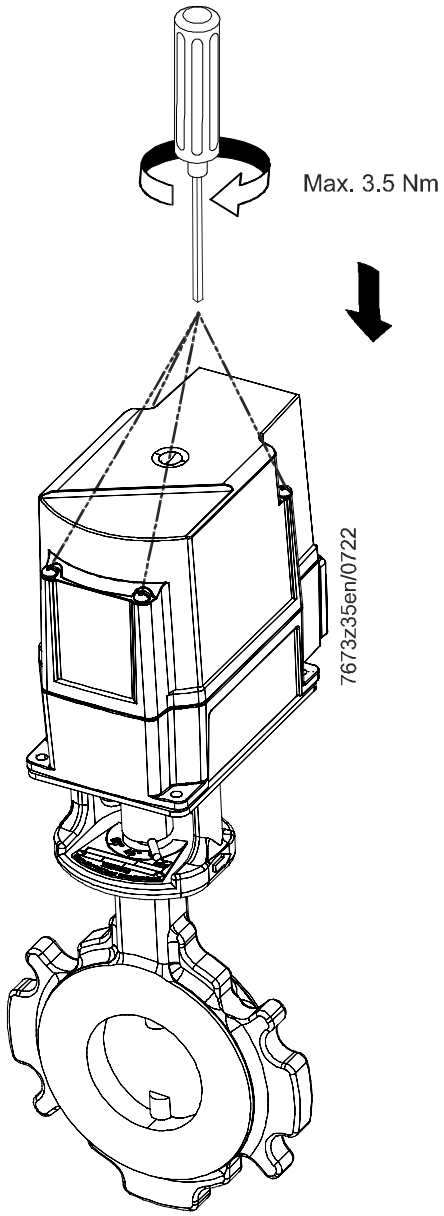
Lock the coupling while loosening the pressure pin.



1.f

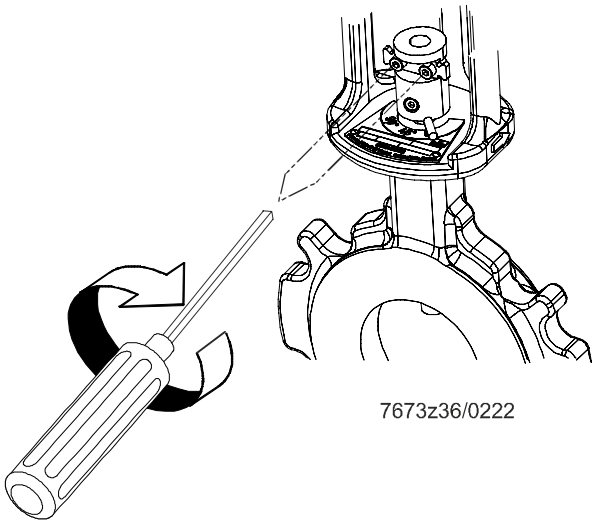


1.h



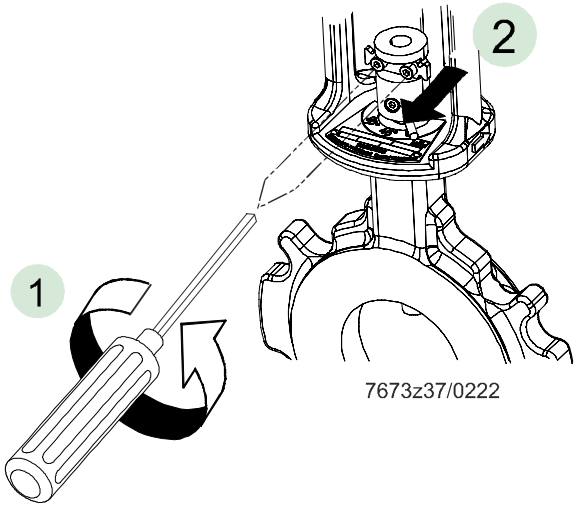
1.i

Tighten the screws (max. 2 Nm).



2.a

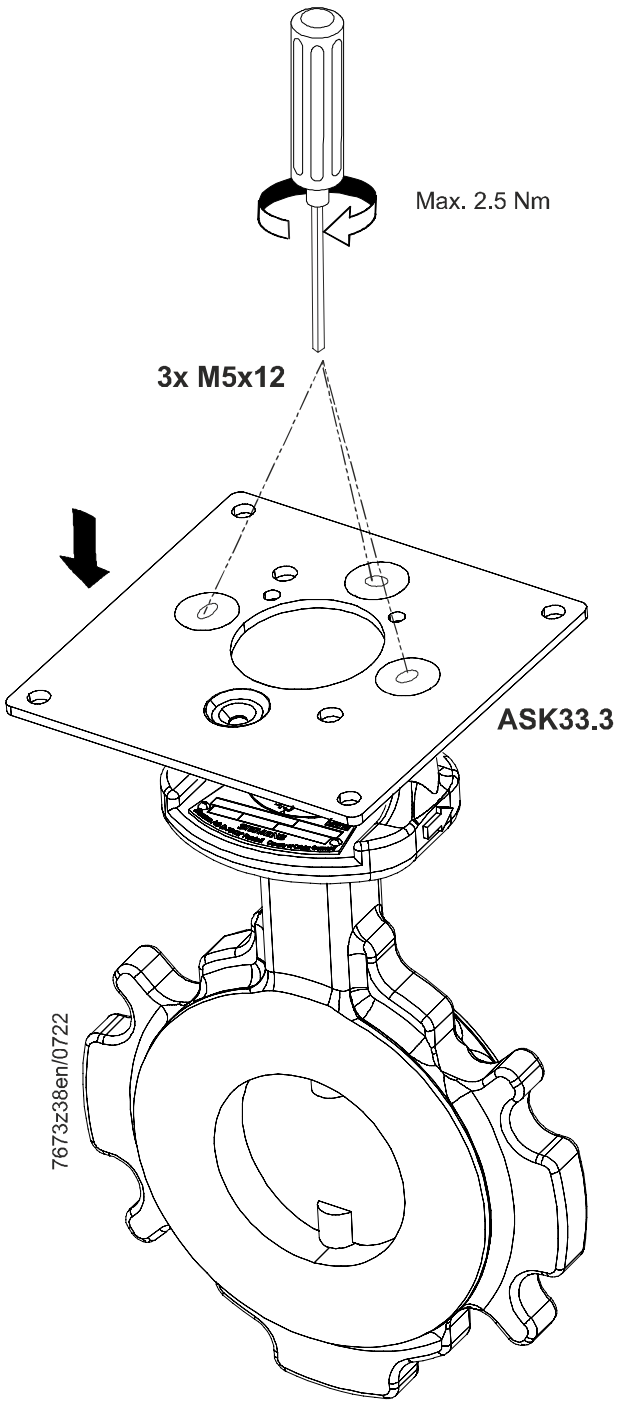
→ **ASK33.3 (for SQM5)**



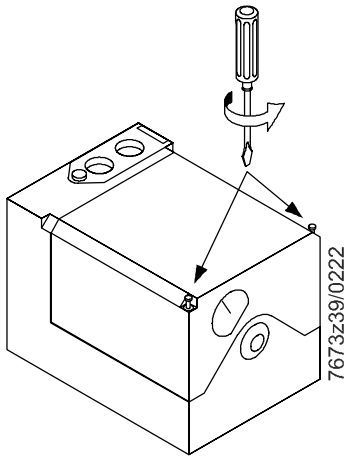
1 Loosen the screws.

2 Pull the plate in the direction of the arrow and mount the actuator.

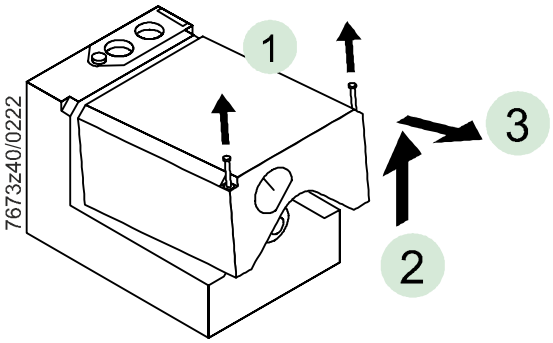
2.b



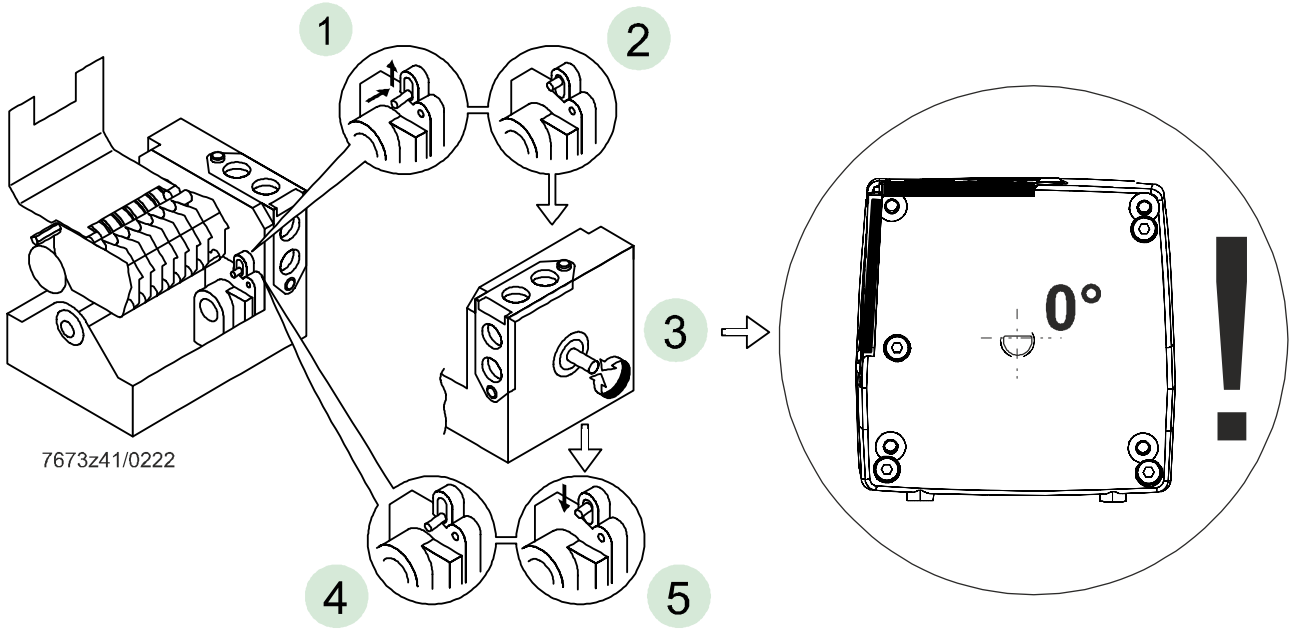
2.c


7673z39/0222

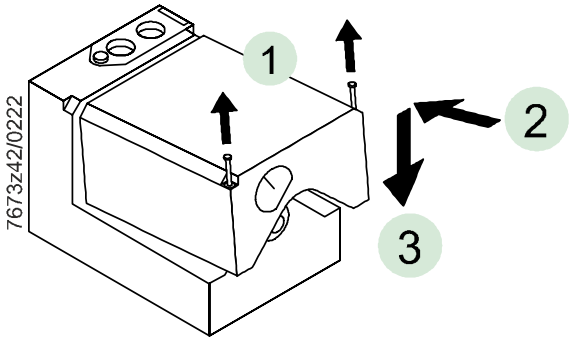
2.d


1
2
3
7673z40/0222

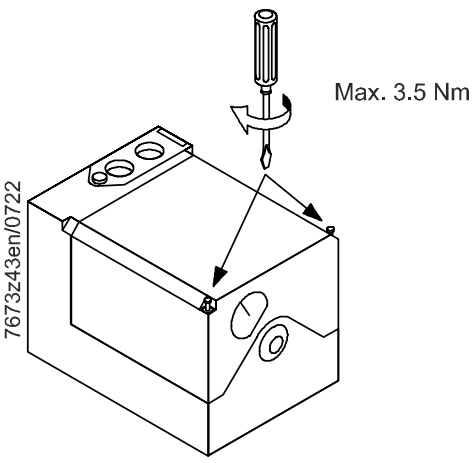
2.e


1
2
3
4
5
7673z41/0222
0°
!

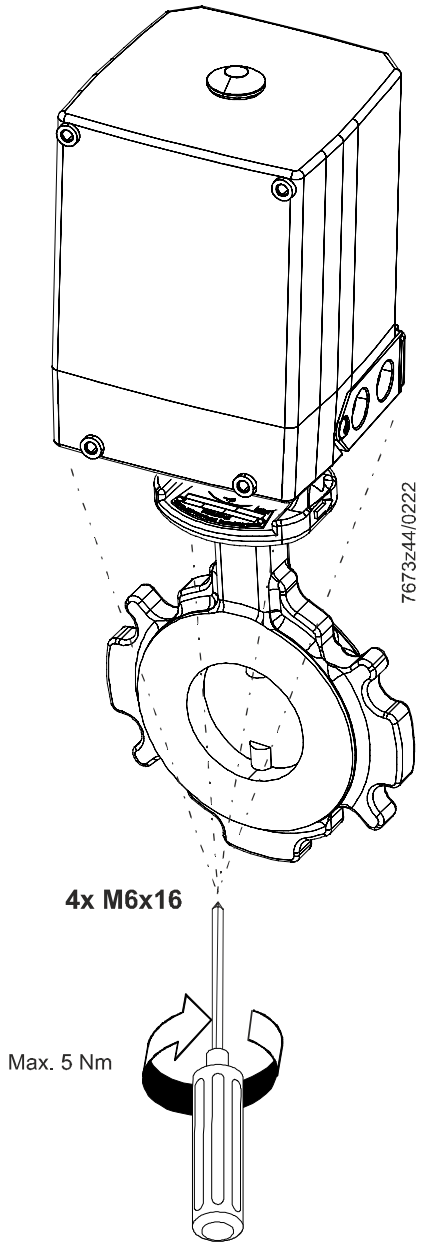
2.f


1
2
3
7673z42/0222

2.g

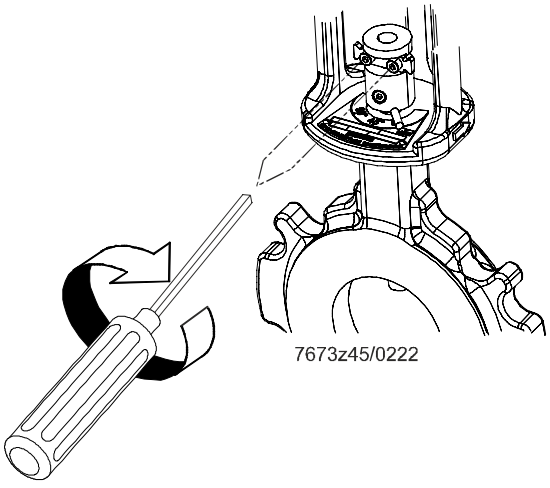

Max. 3.5 Nm
7673z43en/0722

2.h



2.i

Tighten the screws (max. 2 Nm).



Mechanical design

VKF10 butterfly valve

The valve disk and shaft are made of stainless steel. The valve disk does not close against an end stop. After mounting the actuator, the position indicator and valve disk are both at 5° so that the effective setting range can be used.

VKF11 butterfly valve

The valve disk and shaft are made of stainless steel.
The valve disk closes against an end stop (approx. 5° position).

Type summary

Article no.	Type **VKF10**	DN [mm]	Leakage rate where Δp = 0.5 kPa air
S55592-G101-A100	**VKF10.032**	32 + 40	< 2%
S55592-G102-A100	**VKF10.040**	40 + 50	< 2%
S55592-G103-A100	**VKF10.050**	50 + 65	< 2%
S55592-G104-A100	**VKF10.065**	65 + 80	< 2%
S55592-G105-A100	**VKF10.080**	80 + 100	< 2%
S55592-G106-A100	**VKF10.100**	100 + 125	< 2%
S55592-G107-A100	**VKF10.125**	125 + 150	< 2%
S55592-G108-A100	**VKF10.150**	150 + 200	< 2%
S55592-G109-A100	**VKF10.200**	200	< 2%

Article no.	Type **VKF11**	DN [mm]	Leakage rate where Δp = 0.5 kPa air
S55592-G110-A100	**VKF11.032**	32 + 40	< 0.5%
S55592-G111-A100	**VKF11.040**	40 + 50	< 0.5%
S55592-G112-A100	**VKF11.050**	50 + 65	< 0.5%
S55592-G113-A100	**VKF11.065**	65 + 80	< 0.5%
S55592-G114-A100	**VKF11.080**	80 + 100	< 0.5%
S55592-G115-A100	**VKF11.100**	100 + 125	< 0.5%
S55592-G116-A100	**VKF11.125**	125 + 150	< 0.5%
S55592-G117-A100	**VKF11.150**	150 + 200	< 0.5%
S55592-G118-A100	**VKF11.200**	200	< 0.5%

Key
DN Nominal diameter

Suitable actuators	**Required mounting plate *)**	**Data sheet no**
SQM33	ASK33.1	N7813
SQM40.xx5xxx	ASK33.1	N7817
SQM45.295B9	ASK33.1	N7814
SQM50 with AGA58.5	ASK33.3	N7815
SQN7x.xxxxx1	ASK33.5	N7804 / N7802

*) ASK33.1 included in scope of delivery

Caution!
Only counterclockwise actuators may be used for the VKF10/VKF11.

Ordering

Butterfly valve and actuator must be ordered as individual items.
Please specify the quantity, names, and type references when ordering.

Example:
1 Butterfly valve VKF10.040
Article no. S55592-G102-A100
1 SQM40.245A11 actuator

Delivery

Butterfly valve and actuator are packed as individual items.

Accessories

Actuator

SQM33 actuator
(to be ordered separately)
Refer to data sheet N7813.

SQM40 actuator
(to be ordered separately)
Refer to data sheet N7817.

SQM45 actuator
(to be ordered separately)
Refer to data sheet N7814.

SQM50 actuator
(to be ordered separately)
- Mounting sets must be ordered separately, see *Accessories – Mounting plate*

Refer to data sheet N7815.

SQN7x.xxxxx1 actuator
(to be ordered separately)
- Mounting sets must be ordered separately, see *Accessories – Mounting plate*

Refer to data sheet N7802/N7804.

Mounting plate

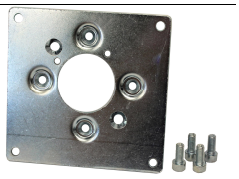
ASK33.1 mounting plate
Article no: **BPZ:ASK33.1**
(included in scope of delivery)

- Mounting plate for mounting actuators SQM33, SQM40 and SQM45

Note!
The required screws (3x M5 countersunk screws and 4x M5 screws) are included in the packaging for the ASK33.1.

ASK33.3 mounting plate
Article no: **BPZ:ASK33.3**
(to be ordered separately)

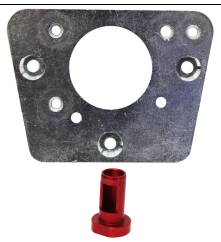
- Larger mounting plate required to replace existing mounting plate
- Required for mounting the actuators SQM5 with AGA58.5



Note!
The required screws (4x M6x15) are included in the packaging for the ASK33.3.

ASK33.5 mounting plate
Article no: **S55857-Z101-A100**
(to be ordered separately)

- Mounting plate for mounting the actuator SQN7x.xxxA21
- Reducing sleeve included in scope of delivery



Note!
The required screws are included in the standard scope of delivery.

Drive shafts

AGA58.5 drive shaft
Article no: **BPZ:AGA58.5**

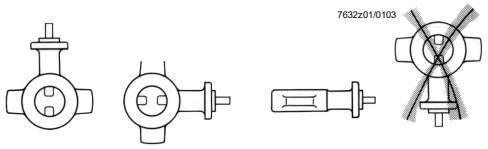
- For installation in the SQM50 and mounting on the VKF1x
- D shaft Ø 10 mm

Technical data

General unit data

Gas types	Suitable for gases of family I…III, air and flue gas • Up to a maximum of 1% by volume H2S, dry • Up to a maximum of 1 vol.% NH3, dry
Highest inlet pressure (Pmax)	Max. 270 kPa (2.7 bar)

Note on the pressure test during production!
The pressure test during production is carried out with 1.5 times the highest inlet pressure (Pmax).

Mounting positions	
Leakage rate at VKF11 (internal)	Refer to *Type summary*
Effective rotation angle	85° butterfly valve
Torque	For low pressures (up to 300 mbar), actuators with 2.5 Nm or 3 Nm can be used. For high operating pressures, the use of actuators with 10 Nm is recommended.
Materials	
• Valve body	GGG40.3 Cast iron with nodular graphite according to DIN EN 1563
• Shaft and valve disk	Stainless steel
• Shaft seal	2 O-rings
• No non-ferrous metals	
Weight	Refer to *Dimensions*

Environmental conditions

Caution!
Condensation, formation of ice, and ingress of water are not permitted. Failure to observe this information poses a risk of damaging the safety functions.

Storage	
Temperature range	-20…+60°C
Humidity	< 95% r.h.
Transport	
Temperature range	-20…+60°C
Humidity	< 95% r.h.
Operation	
Temperature range	
• Air and flue gas	-15…+180°C
• Gas	-15…60°C

Flow chart

Illustration of the VKF10.032 to VKF10.080, characteristic curve for the effective positioning range (5°…85°)

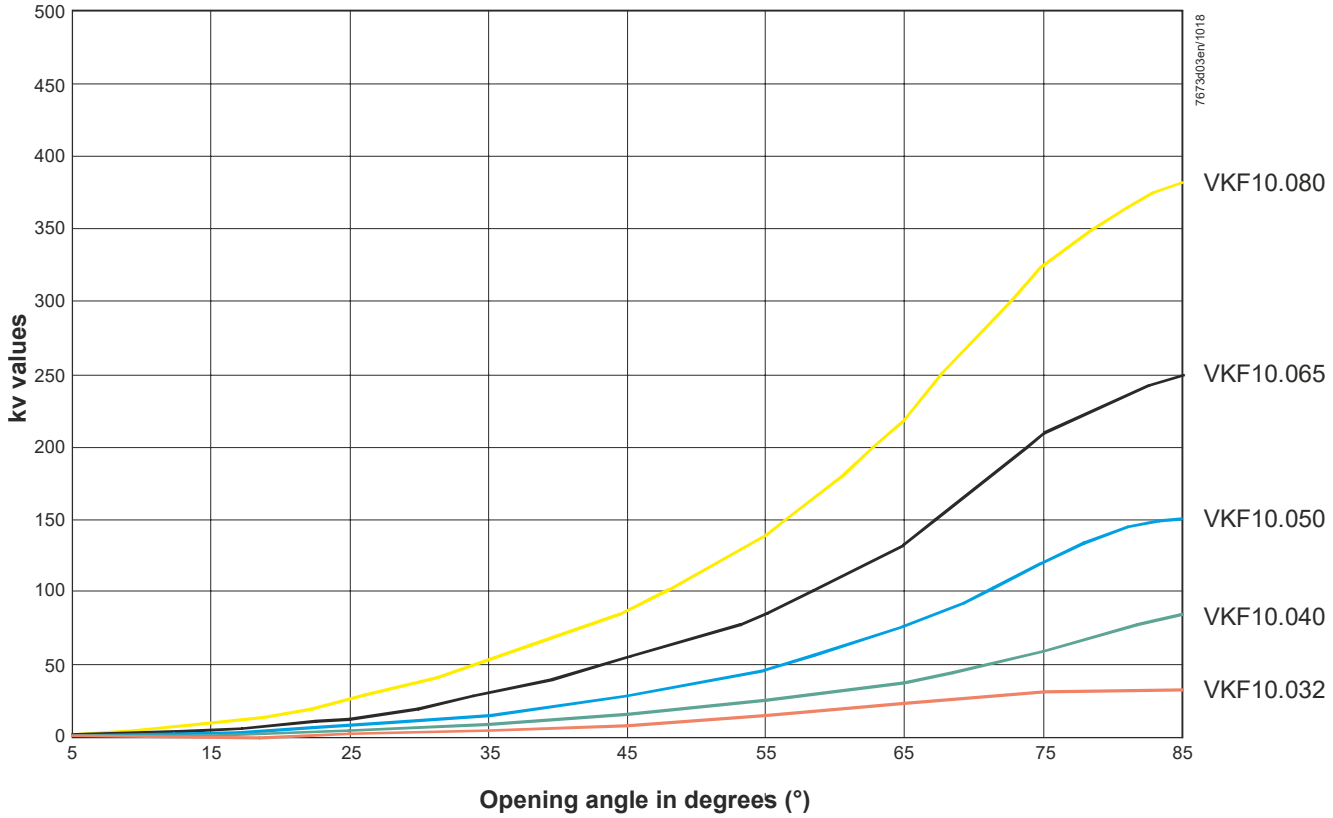
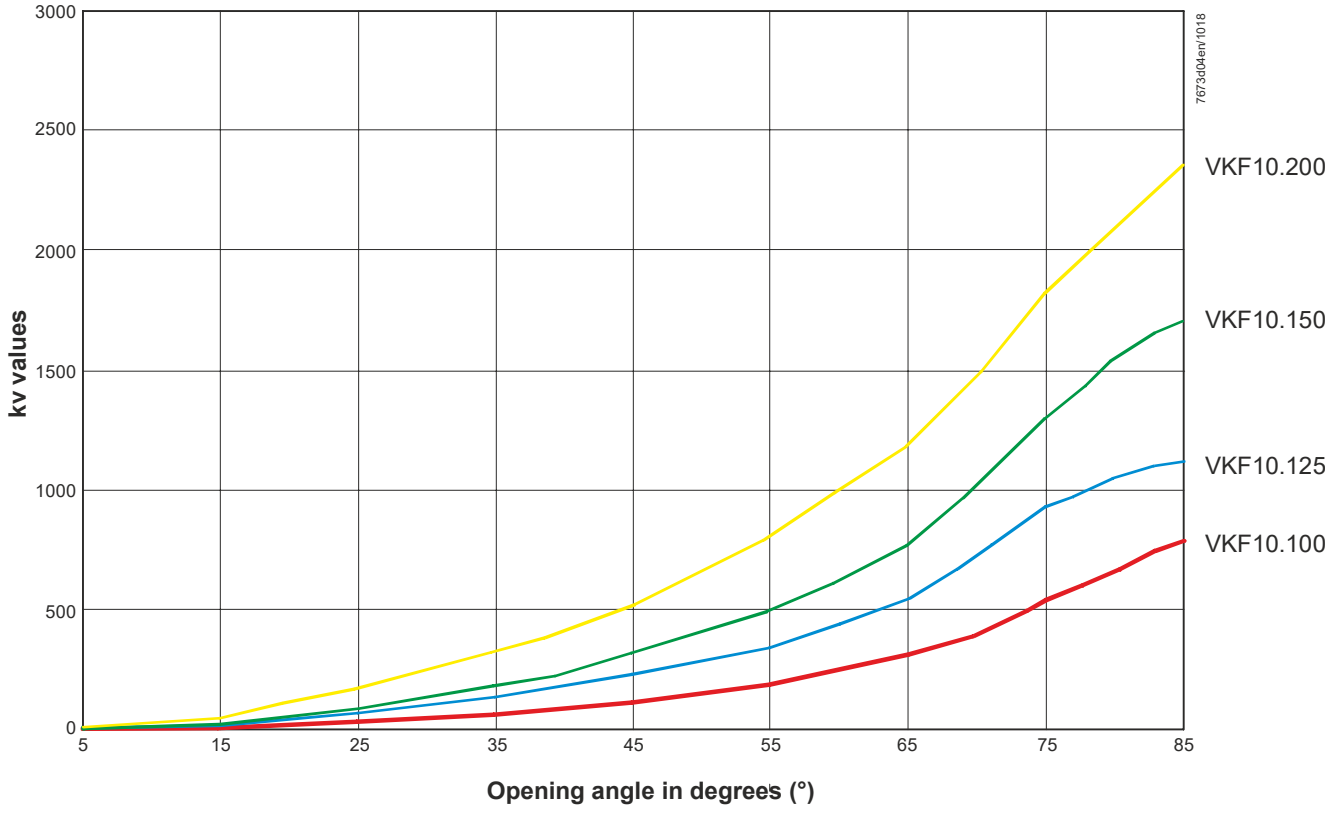
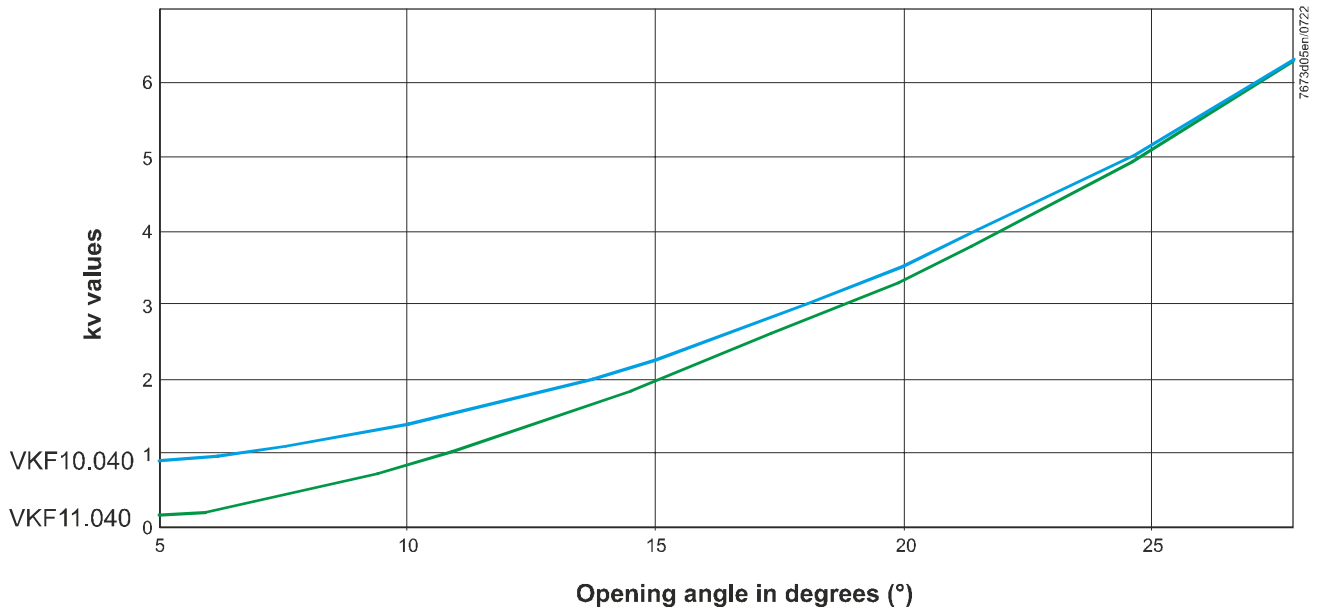


Illustration of the VKF10.100 to VKF10.200, characteristic curve for the effective positioning range (5°…85°)



Flow chart (continued)

Illustration of the comparison between the VKF10.040 and VKF11.040, lower opening range (5°…25°)



Note
Configurator for calculating the kv value!
To facilitate the dimensioning of the VKF1x butterfly valves, a configurator for calculating the kv value is included in the appendix of this data sheet (last page). The appropriate VKF1x can be selected from the following table using the calculated kv value.

Type	Opening angle								
	5° *)	15° *)	25° *)	35°	45°	55°	65°	75°	85°
VKF10.032	0.6	1.6	2.8	5.6	9.5	15.3	23.7	30.9	33.7
VKF10.040	0.8	2.2	5.1	9.7	16.5	26.4	40.1	60.2	84.1
VKF10.050	0.8	3.0	7.6	15.7	29.0	47.5	74.3	120.3	150.1
VKF10.065	1.5	4.9	12.7	29.4	54.0	83.4	131.0	208.2	249.8
VKF10.080	2.7	9.4	25.4	53.6	87.4	140.9	220.0	325.6	382.9
VKF10.100	3.7	12.0	34.0	65.3	118.9	193.1	308.3	532.4	785.5
VKF10.125	5.9	23.5	69.3	135.8	229.3	350.2	545.6	921.6	1120.1
VKF10.150	6.2	26.0	90.2	182.2	322.9	499.3	767.2	1287.4	1702.4
VKF10.200	9.8	46.9	177.3	320.5	517.7	809.9	1186.8	1813.4	2337.8
VKF11.032	0.2	1.0	2.8	5.6	9.5	15.3	23.7	30.9	33.7
VKF11.040	0.2	1.9	5.1	9.7	16.5	26.4	40.1	60.2	84.1
VKF11.050	0.2	2.6	7.6	15.7	29.0	47.5	74.3	120.3	150.1
VKF11.065	0.3	4.3	12.7	29.4	54.0	83.4	131.0	208.2	249.8
VKF11.080	0.3	9.0	25.4	53.6	87.4	140.9	220.0	325.6	382.9
VKF11.100	0.3	11.4	34.0	65.3	118.9	193.1	308.3	532.4	785.5
VKF11.125	0.3	19.5	69.3	135.8	229.3	350.2	545.6	921.6	1120.1
VKF11.150	0.4	21.3	90.2	182.2	322.9	499.3	767.2	1287.4	1702.4
VKF11.200	0.6	39.2	177.3	320.5	517.7	809.9	1186.8	1813.4	2337.8

*) The characteristic curves follow the same course above 25°

Caution!

- **In the case of burners operating with small low-fire volumes, select a tightly sized valve**
- **If the gas pressure exceeds the maximum permissible operating pressure, reduce the gas pressure with a pressure controller**
- **The pressure drop (maximum flow characteristic) is based on a fully open valve**

Conversion of air flow rate to a corresponding gas flow rate (natural gas)

Basis for scale

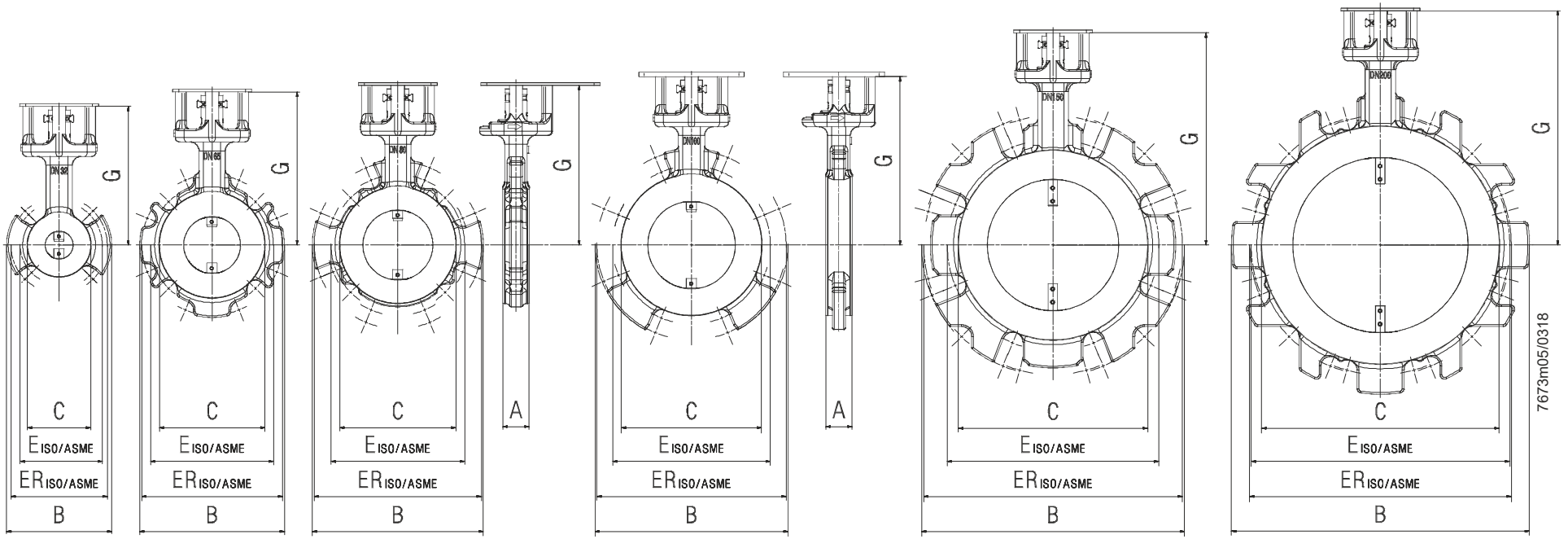
Abscissa	Medium 'volumetric flow (QG)' in m³/h	Density ratio (dv) to air	Conversion factor $f = \sqrt{\frac{1}{d_v}}$
1	Air	1	1
2	Natural gas	0.61	1.28
3	Propane	1.562	0.8
4	City gas	0.46	1.47

Conversion to air (m³/h) from other types of gases: $QL = \frac{QG}{f}$

QL = air volume in m³/h that produces the same pressure drop as "QG".

Dimensions in mm

DN32...DN50 DN65 DN80 DN100...DN125 DN150 DN200



Type	DN	A	BØ	CØ	E_{ISO}	E_{ASME}	ER_{ISO} *)	ER_{ASME} *)	DN ISO	DN ASME	DN+1 ISO	DN+1 ASME	G	Weight [kg]
VKF1x.032	DN32	30	120	72	100	88.9	110	98.4	4xM16	4x1/2	4xM16	4x1/2	158	2.3
VKF1x.040	DN40	30	130	81.5	110	98.4	125	120.7	4xM16	4x1/2	4xM16	4x5/8	162	2.5
VKF1x.050	DN50	30	155	101	125	120.7	145	139.7	4xM16	4x5/8	4xM16	4x5/8	167	2.9
VKF1x.065	DN65	30	165	120	145	139.7	160	152.4	4xM16	4x5/8	8xM16	4x5/8	174.5	3.4
VKF1x.080	DN80	30	195	132.5	160	152.4	180	190.5	8xM16	4x5/8	8xM16	8x5/8	182	3.6
VKF1x.100	DN100	30	220	160	180	190.5	210	215.9	8xM16	8x5/8	8xM16	8x3/4	192	4.3
VKF1x.125	DN125	40	250	190	210	215.9	240	241.3	8xM16	8x3/4	8xM20	8x3/4	229.5	7.6
VKF1x.150	DN150	40	300	216	240	241.3	295	298.5	8xM20	8x3/4	12xM20	8x3/4	242	9.6
VKF1x.200	DN200	40	340	271	295	298.5	-	-	12xM20	8x3/4	-	-	267	12.8

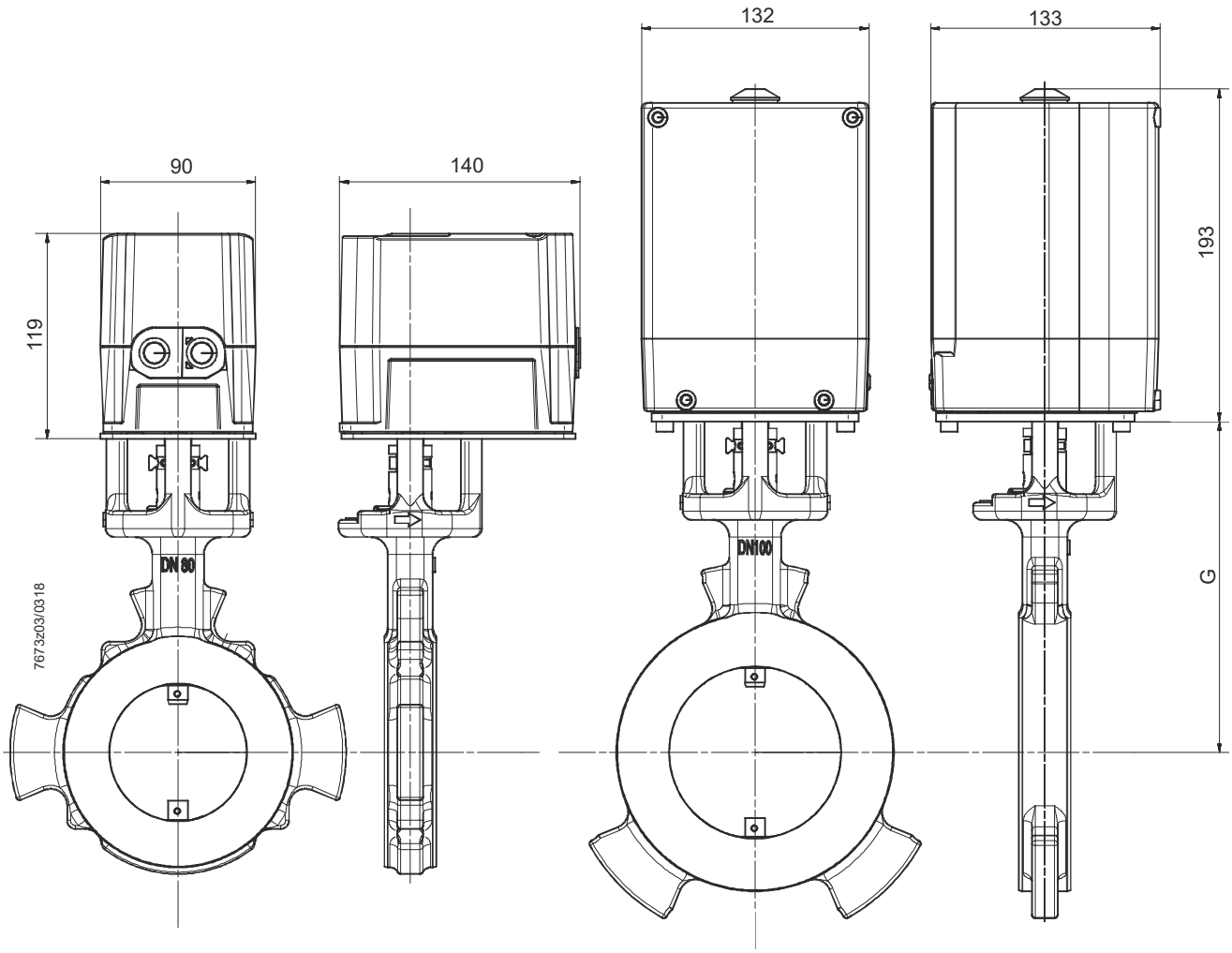
*) Reference circle for installation in one flange size higher

Dimensions in mm

Installation examples for VKF1x with actuator

VKF10/VKF11 with SQM45

VKF10/VKF11 with SQM50 and ASK33.3/AGA58.5

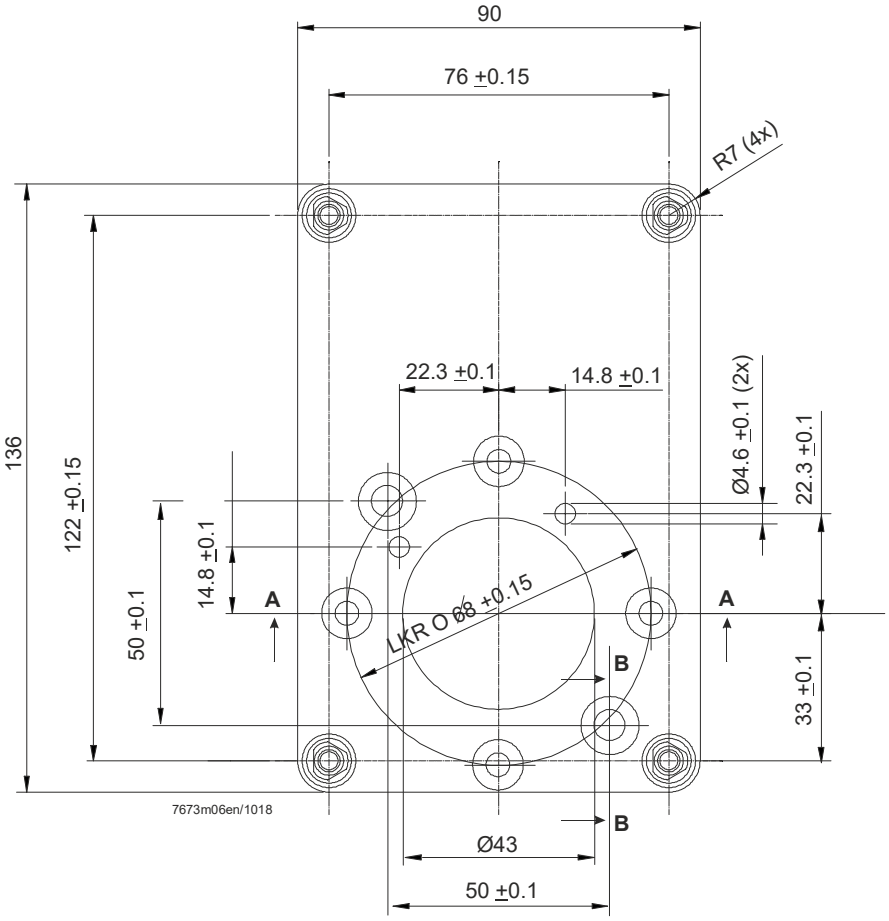


Type	DN	G
VKF1x.032	DN32	158
VKF1x.040	DN40	162
VKF1x.050	DN50	167
VKF1x.065	DN65	174.5
VKF1x.080	DN80	182
VKF1x.100	DN100	192
VKF1x.125	DN125	229.5
VKF1x.150	DN150	242
VKF1x.200	DN200	267

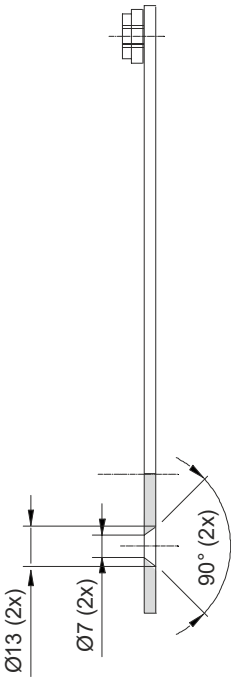
Dimensions (continued)

Dimensions in mm

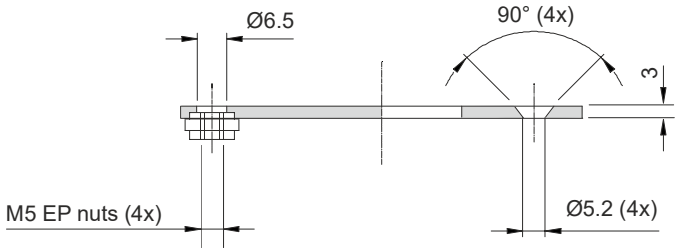
ASK33.1



Sectional view B-B



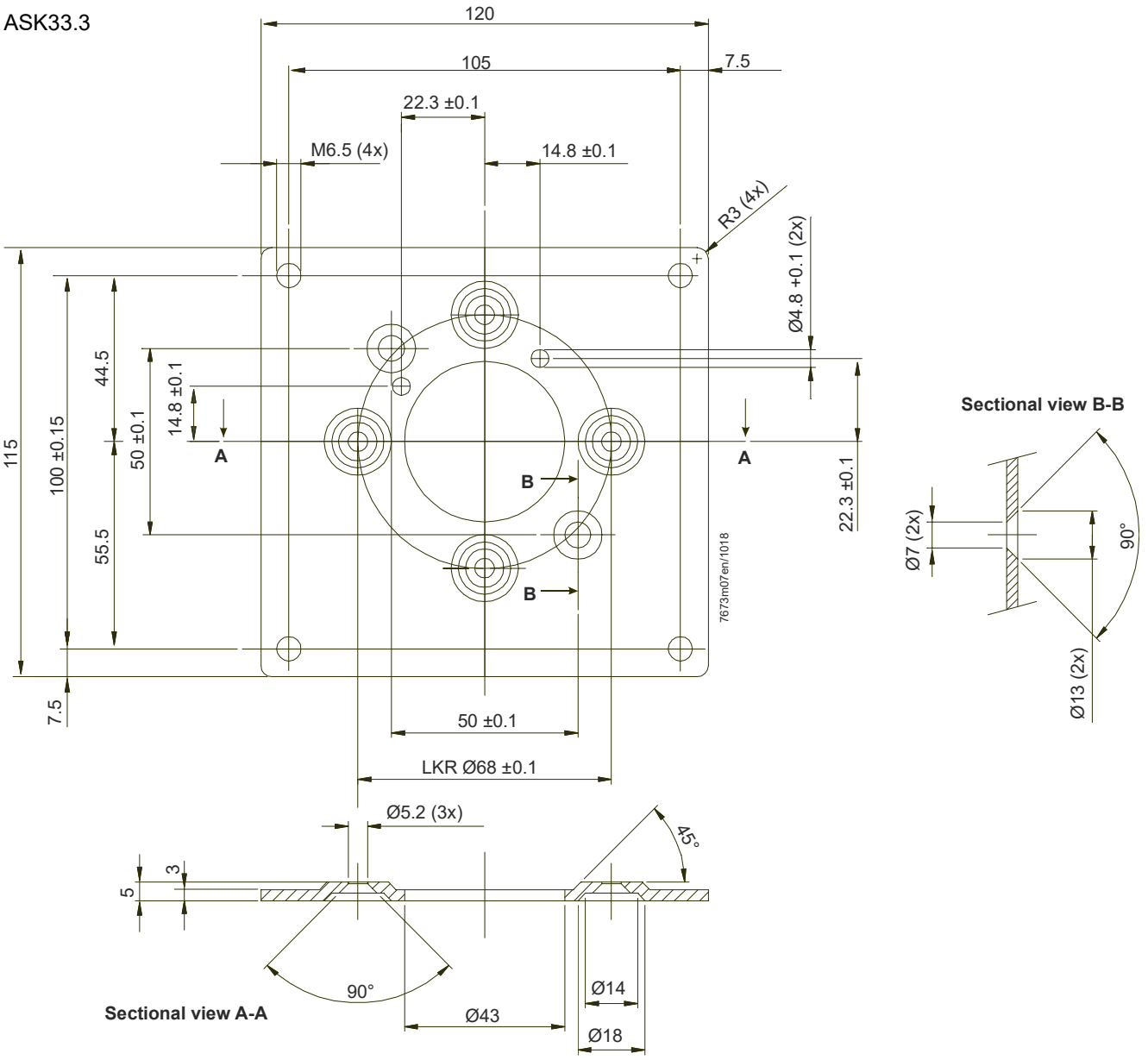
Sectional view A–A



Dimensions (continued)

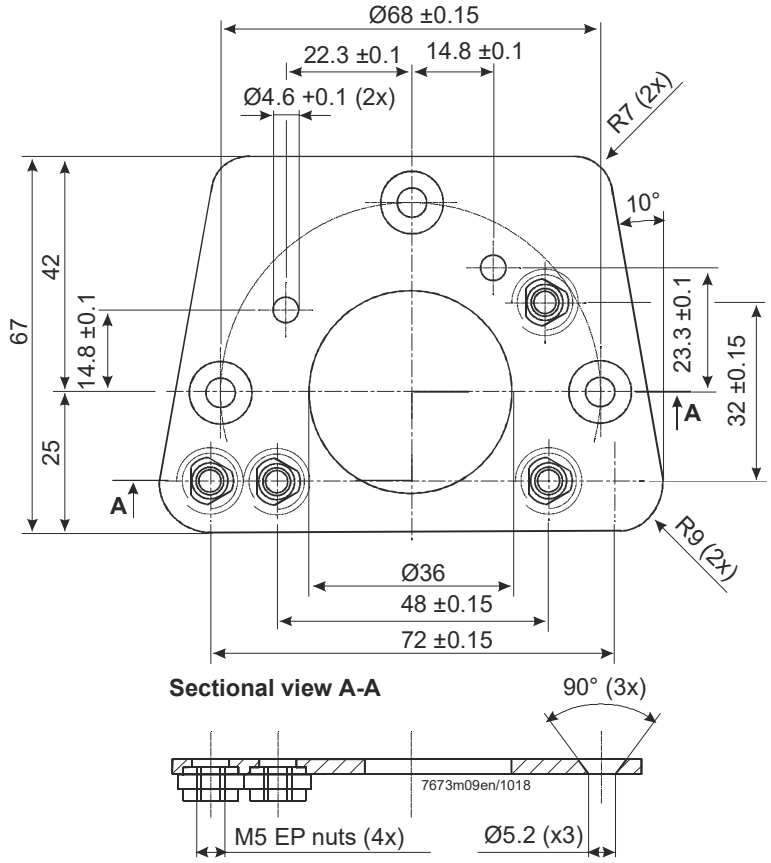
Dimensions in mm

ASK33.3

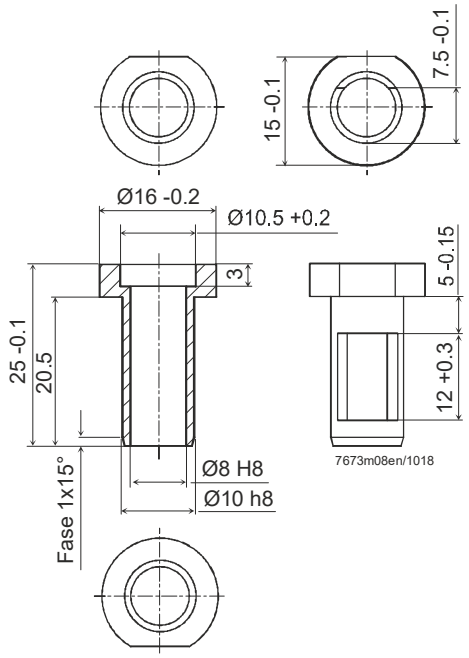


Dimensions in mm

ASK33.5



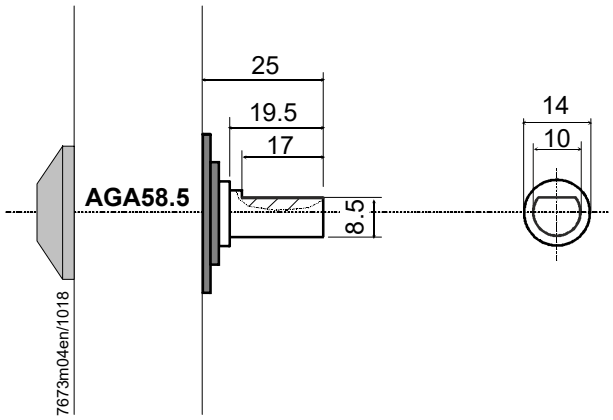
Reducing sleeve



Dimensions (continued)

Dimensions in mm

AGA58.5



SIEMENS

Kv value
Configurator

● Subcritical flow

$p2 > \frac{p1}{2}$ $\Delta p < \frac{p1}{2}$

○ Supercritical flow

$p2 < \frac{p1}{2}$ $\Delta p > \frac{p1}{2}$

p1 = inlet pressure in bar (absolute)

p2 = outlet pressure in bar (absolute)

Volumetric flow (Qn) in m³/h

Temperature in °C

● Select gas

Select gas

Gas / density standardized in kg/m³

○ Specify own gas

Density standardized in in kg/m³

Kv value

No values entered yet