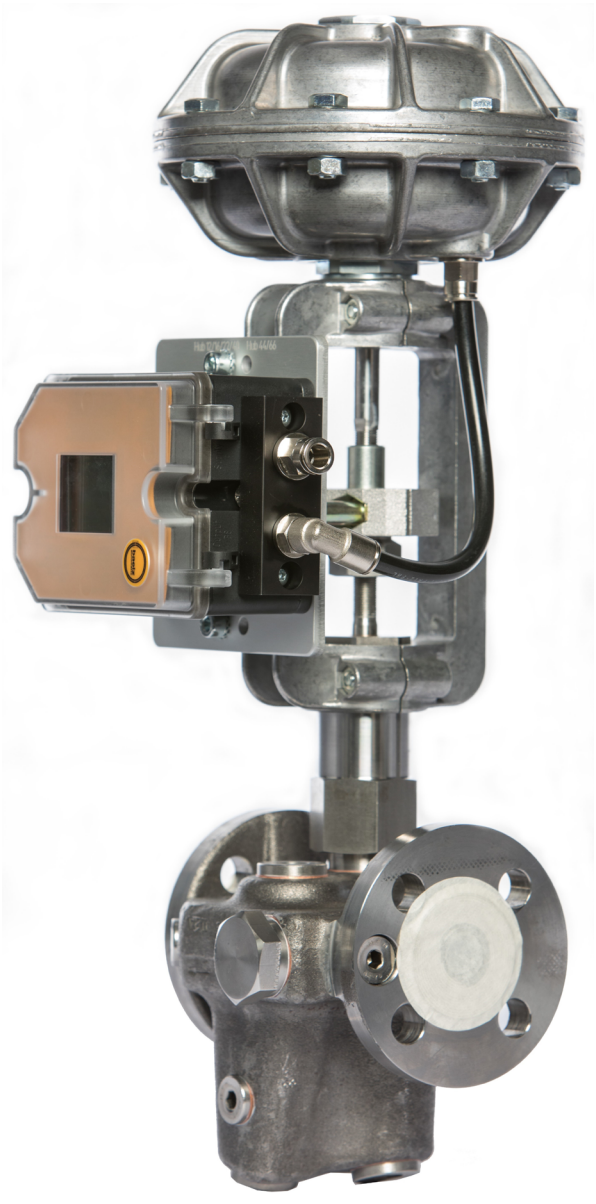
Stainless steel microflow control valve baelz 185



baelz 185 - here with diaphragm actuator baelz 373-P11 and I/P positioner baelz 87

BA_185_00_DEF_MJ_2521

Table of Contents

1. SAFETY

Read these operating instructions carefully, in particular the following safety instructions, before installation and operation.

Beware
Potentially hazardous situation that could result in minor injury. Also indicates a hazard that may result in property damage.

Caution
Potentially harmful situation in which the product or an object in its vicinity may be damaged.

Danger
Imminent danger, which could result in death or serious injury.

Warning
Potentially hazardous situation that may result in death or serious injury.

Tip: Application instructions and other useful information.

1.1 Intended use

baelz 185 is a microflow control valve in stainless steel designed to control low flow rates. It can be used in combination with an electric or pneumatic actuator.
To ensure proper use, make sure that the above type designation corresponds to that on the nameplate of the control valve before starting any actions. The technical specifications of the linear actuators and the requirements for the supply network apply as specified on the nameplate.
Any use for other tasks deviating from the above-mentioned intended use is deemed to be improper use. The operator alone bears the risk to people and devices as well as other material assets in the case of improper use!
Correct use also includes compliance with accident prevention and DIN VDE regulations, as well as safe working practices for all measures described in these operating instructions, taking into account the usual technical rules.

1.2 Instructions for the operator

Always keep the operating instructions to hand in the place where the control valve is used!
During installation, operation and maintenance, observe the applicable occupational safety, accident prevention and DIN VDE regulations. If necessary, observe additional regional, local or internal safety regulations.
Make sure that every person who you entrust with one of the measures described in these operating instructions has read and understood these instructions.

BA_185_00_DEF_MJ_2521

1.3 Personnel

Only qualified personnel may work on these control valves or in their vicinity. Qualified persons are deemed to be persons who are familiar with the installation, assembly, commissioning and operation or maintenance of the control valves and have the appropriate qualifications for their job. Necessary or prescribed qualifications include, but are not limited to:

- Training/instruction or qualification to activate and deactivate electrical circuits and devices/systems in accordance with EN 60204 (DIN VDE 0100/0113) and safety technology standards.
- Training or instruction in the care and use of appropriate safety and personal protective equipment in accordance with safety technology standards.
- First aid training.

Work in a safe manner and avoid any operation that would endanger the safety of persons or damage the control valve or other property in any way.

1.4 Before starting work

Before carrying out any work, check whether the types specified here correspond to the information on the nameplate of the control valve:

baelz 185

1.5 During operation

Safe operation is only possible transport, storage, assembly, operation and maintenance are carried out in a safe, proper and professional manner.

1.5.1 Transport, installation and assembly

Observe the general installation and safety regulations for heating, ventilation, air conditioning and piping systems. Use tools properly. Wear the required personal and other protective equipment.

1.5.2 Maintenance and repair

The operator shall ensure that all maintenance, inspection and installation work is performed by authorized and qualified skilled personnel who are familiar with the installation and operating instructions.
Work on valves and their actuators should only be carried out at standstill. During fitting work, do not turn the plug in the valve seat whilst applying contact pressure.The procedure for shutting down the plant as described in the installation and operating instructions must be followed.
Residues in piping and valves (e.g. dirt, welding beads, etc.) cause leakage and / or damage to installations.
Immediately after completion of the work, all safety and protective devices must be refitted or put back into operation.

1.6 Working environment

Note the specifications for the working environment in the technical data.

2. PRODUCT DESCRIPTION

2.1 Identification

Each control valve is fitted with a nameplate. This contains information on the permissible operating conditions of the device and a unique serial number ("M.-Nr.").

Fig. 1: Example of a Baelz nameplate for baelz 185 microflow control valves

Table 1. Key to baelz 185 nameplate

baelz ...		Baelz type number
M.-Nr.		Serial number according to assembly list
Sitz seat siege Ø	**mm**	Valve seat diameter according to the threaded seat drawing
DN 15		Nominal diameter
PN 40		Nominal pressure
Kvs	**m³/h**	Kvs value (flow coefficient) according to the plug drawing
PT	**bar**	Test pressure
PS/TS max	**bar / °C**	max. operating pressure/ max. operating temperature
Bj.		year of manufacture

2.2 Functional principal of the microflow control valve

The baelz 185 is a microflow control valve which is suited to various applications. It has a nominal diameter DN 15 for low volumetric flow rates and can be combined with an electric or pneumatic actuator. The control valve is equipped with an integrated strainer and the valve body and needle stem are made of stainless steel.

The shape and design of the control valve make it possible to attach sensors such as Pt 100, thermometers or manometers using the threaded connection holes provided. For special applications a bypass with a solenoid valve and a separate strainer can be created directly at the valve, for example when a predefined flow rate Q_{min} is required.

For manual dosage, the valve can be fitted with a lockable manual adjustment mechanism with a scale showing stroke or volume flow.

For continuous control tasks, standard Baelz motorized or diaphragm pneumatic actuators can be fitted to the valve. Control signals can be for both types of actuator:

- Impulse Open - Stop - Close (24 V, 115 V, 230 V)
- Control signals 0/4...20 mA or 0/2...10 V or split range operation

BA_185_00_DEF_MJ_2521

2.3 Technical specifications

Table 2. Technical Specifications, baelz 185		
Nominal diameter		DN 15
Nominal pressure		PN 40
Stroke	**mm**	16
Stem diameter	**mm**	10
Leakage class (EN 1349)		metal-to-metal seal: 0.004 % Kvs (better than class IV)
		with PTFE plug: 0.001 % Kvs (better than class VI)
Standard Kvs values	**m³/h**	0.025 / 0.04 / 0.10 / 0.12 / 0.16 / 0.3 / 0.6 / 1.0 / 1.2 / 1.4
Valve body material		Stainless steel 1.4021
T max. / P max.		240 °C / 40 bar ... 50 °C / 40 bar - standard
		350 °C / 34 bar ... 50 °C / 40 bar - with cooling tube
		with solenoid valve pilot baelz 265st: max. ambient temp. 80 °C, max. fluid temp. 300°C
		with solenoid valve pilot baelz 266st: max. ambient temp. 80 °C, max. fluid temp. 130°C
Connection type		Flange EN 1092-1 type B / E / F; further types upon request
Working fluids		Water, hot water, steam

2.4 Options and accessories

Table 3. Options and Accessories, baelz 185	
Option / Accessory	**Type**
Plug in stainless steel + PTFE	MP185-TK-15
Cooling tube	MP185-K
Threaded plugs in stainless steel 1.4401 (Standard: galvanized steel)	MP185-VA-15
Pneumatic linear diaphragm actuator	baelz 373-P21
electric linear actuator	baelz 373-E07 / 373-E07-OSD/OSZ
Pressure measuring and control element	baelz 206r
Manual valve pilot	baelz 260st
Solenoid valve pilot	baelz 266st, baelz 265st

2.5 Key to type names

baelz 185	**-**	**DN15**	**-**	**PN40**	**-**	**Kvs1,2**	**-**	**P21-3-Fo**	**-**	**2x260st**
valve type		nominal diameter		nominal pressure		flow coefficient		actuator type		control elements

2.6 Operating conditions

Operating limits: Please refer to the nameplates of the valve and the actuator and see the technical specifications (above and in the technical documentation of the actuator).

Caution

The valves are designed for the specified operational limits and working fluids. Incorrect use can cause damage to the product or its surroundings.

Only valves and fittings in perfect working condition are suitable for use.

2.7 Warnings

Warning

Fluids being transported at high (> 50 °C) or low (< 0 °C) temperatures can cause danger of injury upon contact with the valve. Apply clearly visible warning signs or insulation where necessary!

Warning

If the fluid temperature in the valve is high, the actuator yoke and the stem can also become hot.

Caution

Actuators with safety functions must be checked regularly for correct functionality (test run).

Caution

If failure of the actuator could cause damage, further protective measures must be taken.

3. TRANSPORT AND STORAGE

Beware

Risk of injury due to non-compliance with safety regulations!

- Wear the required personal and other protective equipment.
- Leave the control valve on the pallet or in its transport container for transportation.
- Protect the control valve and fittings from external influences such as impact.
- Protect the control valve and fittings from moisture and dirt.
- If an actuator and a controller are fitted, please see the accompanying documentation for the required storage conditions.
- Cover unused connections during storage.

BA_185_00_DEF_MJ_2521

4. FITTING AND COMMISSIONING

4.1 Fitting notes

To prevent damage to valve seats during transport and storage, the valves are supplied in closed condition.
Remove protective caps on flange openings, threaded sleeves or welding ends before installation.
Upon installation, the seals on the connecting flanges must be well centred.

Piping should be routed such that no damaging thrust and bending forces can be transferred to the valve body.

When painting the pipeline, do not paint gland screws, spindles and plastic parts. If construction work is still in progress, cover the valves to protect them from dust, sand or pieces of building material (e.g. with a plastic cover).

4.2 Installation in the plant

1. Rinse the piping out thoroughly so that no impurities or foreign bodies can enter the control valve baelz 185.
2. Note the direction of flow (Fig. 2, right).
3. Ensure that the control elements and valve pilots are fitted to the correct VA or VU connections according to Fig. 4 (below).
4. When using valve pilots baelz 206r, 260st, 265st oder 267st check the following:

Fig. 2: Direction of flow

- Short pilots (100 mm): Installation pointing downwards or upwards
- Medium length (200 mm): Installation pointing downwards
- Long pilots (300 mm): Installation pointing downwards
  (except for electric and pneumatic actuators)

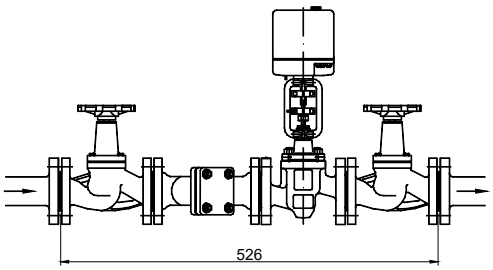


Fig. 3: conventional configuration
wih 4 units
Face-to-face length: 526 mm

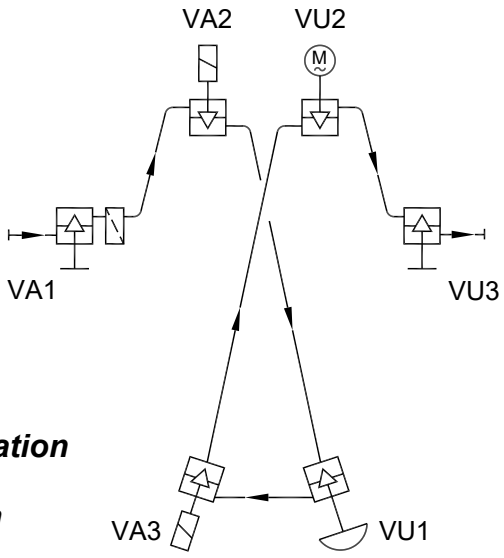


Fig. 4: 185 configuration
1 unit instead of 4
Face-to-face length: 130 mm

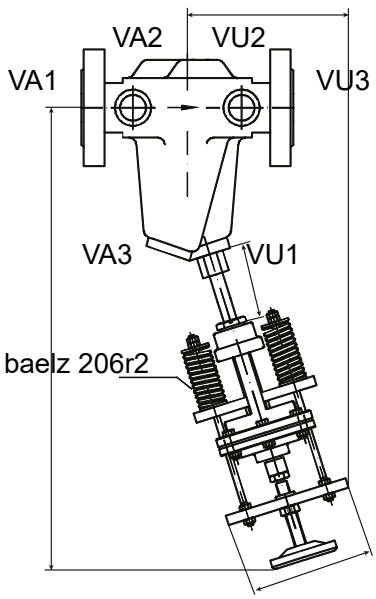


Fig. 5: baelz 185-206r2

5. Check the electrical connections. For this, please also refer to the operating instructions for the control devices.
6. If the microflow control valve baelz 185 is being used for condensate control: After setting the condensate flow rate, fix the handwheel position at "Outlet" and then set the stroke of the electric or pneumatic actuator. For electric actuators, use the limit switches to this end.
7. If pressure pulses are to be attenuated before or after the baelz 206r, the water trap capacity needs to be sufficient for the impulse membrane. This means that the pulses should be intercepted at least 2 m before or after the baelz 206r.

4.3 Fitting position

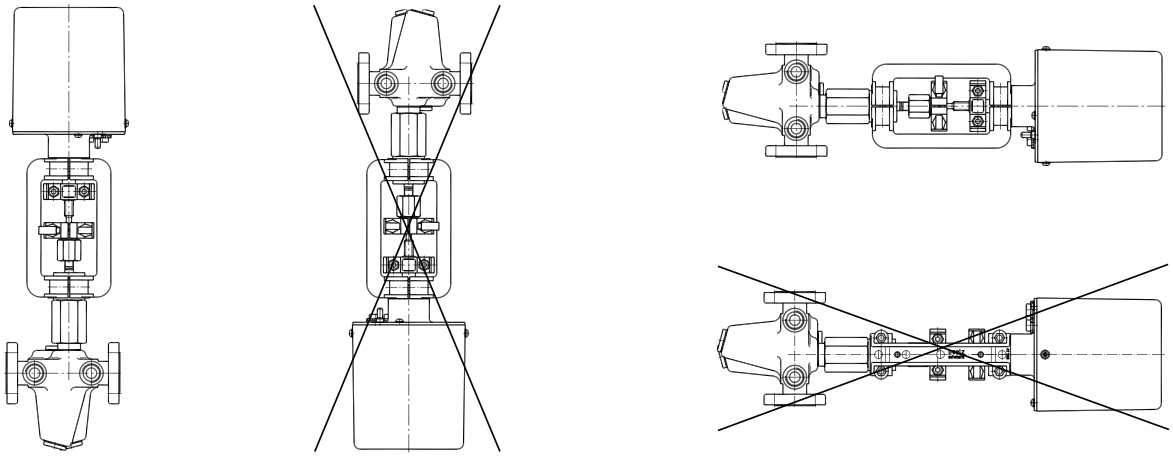


Fig. 6: Correct fitting positions baelz 185

4.4 Insulation

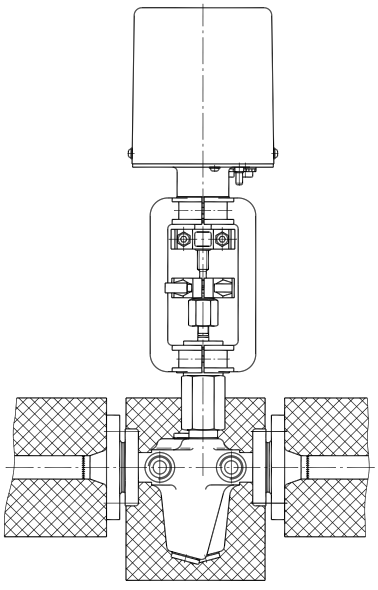


Fig. 7: Insulation baelz 185 and piping

5. ELECTRICAL CONNECTION

Please refer to the separate operating instructions regarding our electric actuators.


Caution

Electrical fitting and connection should only be carried out by qualified personnel!

6. MAINTENANCE


Danger

If an actuator is fitted: Interrupt the power supply and ensure that it cannot be reconnected before the maintenance work is completed in order to avoid injury due to moving parts. Danger of crushing!


Beware

Only use suitable cleaning agents for parts and valves in order to prevent damage to materials and sealing elements!

6.1 Maintenance of the microflow control valve

The microflow control valves are maintenance free. The stem seal is permanently lubricated for life. Nevertheless, should a spindle seal develop leaks, it must be replaced completely and the cause eliminated (dirt, welding beads, other foreign bodies).

6.2 Maintenance of the electric actuators

Only an annual functional check is necessary. Refer to the relevant operating instructions and check the safety actuators baelz E07-OSD/OSZ according to their function:

- normally closed (NC) *oder*
- normally open (NO)

Renew the lubrication of the threaded actuator spindle using high-performance grease G 805 (Article number 92000-101).

6.3 Unauthorized modification and replacement parts

Modifications or changes to the valves and actuators are only allowed with the express permission of the manufacturer. Original replacement parts and accessories approved by the manufacturer ensure safe operation. The manufacturer accepts no reponsibility for accidents or damage resulting in the use of any other spare or replacement parts.


Caution

Only use original spare parts!

Please give the data on the nameplate when enquiring about any product.
When ordering, please give the full name of the part and the KT or KS number.

7. CHANGING THE VALVE STEM SEAL (V-RING SEAL SET)

After dismantling the drive, the pressure screw with the V-ring seal set can be unscrewed.
Change the V packings only complete with spring.
Examine the valve stem carefully carefully for damage. If there are grooves or scratches in the packing area, replace the valve stem as well.

Tip: *For instructions on dismantling and refitting of the actuator and yoke, see the operating instructions for the actuator.*

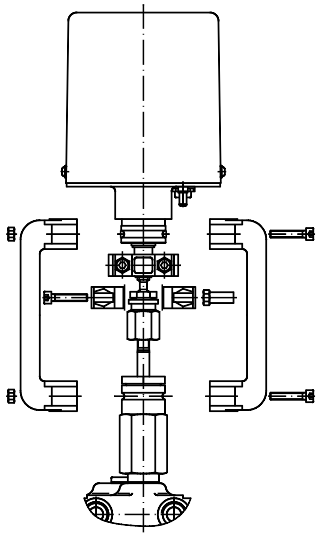


Fig. 8: Linear actuator baelz 373-E07 with yoke baelz 373-S21

1

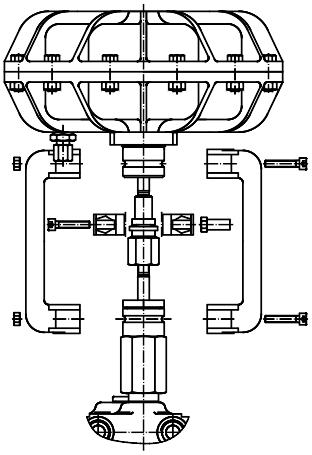
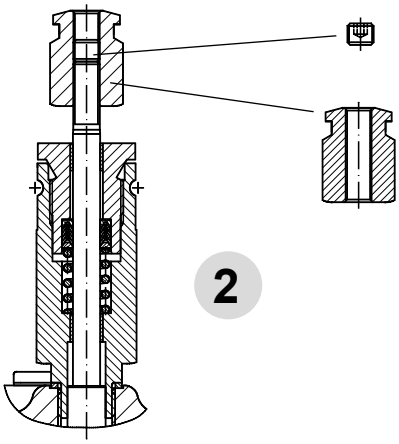
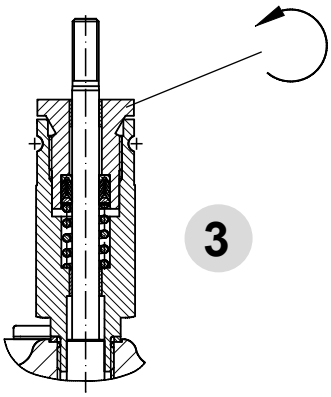


Fig. 9: Linear diaphragm actuator baelz 373-P21/P22 with yoke baelz 373-S21



2

Fig. 10:



3

Fig. 11:

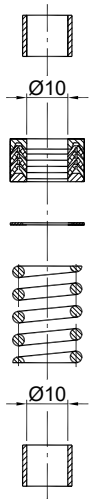


Fig. 12: V-ring seal set Article no. 99185-021

Caution

The spring in the safety actuators baelz 373-E07-OSD/OSZ is loaded. When dismantling the valve and actuator, it is essential to observe the operating instructions for baelz 373-E07-OSD/OSZ.

7.1 Greasing upon refitting

Cutting edges and threaded connections should be treated with HT 1200 assembly grease, baelz 92200.
Order number 92200-001

The rims of the V-packing seals and the surface of the spindle in the vicinity of the packing should be treated with high temperature long-term grease baelz 92000-L55/3. Order number 92000-001

For processes involving foodstuffs or drinking water and in the pharmaceutical industry, assembly grease baelz 92300 should be used. Order number 92300-001

7.2 Refitting and tightening torque

Check all cutting edges and sealing surfaces for damage and replace or re-finish as necessary. Dab the sealing edge of the head piece and the sealing surface of the pressure bushing generously with "Interflon-Paste HT 1200". Also grease the thread of the pressure bushing with "Interflon-Paste HT 1200". Ensure that the spindle turns easily, so that the washers and ring are centered. Then slide the valve gland carefully onto the spindle and screw it onto the head piece by hand.
Using a torque wrench, **first gently tighten the connection and loosen it again by at least 90°. Do this twice.** Then tighten fully to 80 Nm.

8. DIMENSIONAL DRAWINGS AND WEIGHTS

Dimensions of actuators baelz 373 (mm)					
Baelz-Type	**L**	**x**	**Ød**	**l**	**ØD**
E07	320	145	129		
E07-OSX	354	145	129		
P11				244	160
P21				268	242

Weight baelz 185	
Type	**Weight, ≈ (kg)**
baelz 185	5.2
baelz 185-K	6.2
with 1 manual valve pilot baelz 260st	+ 0.4
with 2 manual valve pilots baelz 260st	+ 0.8

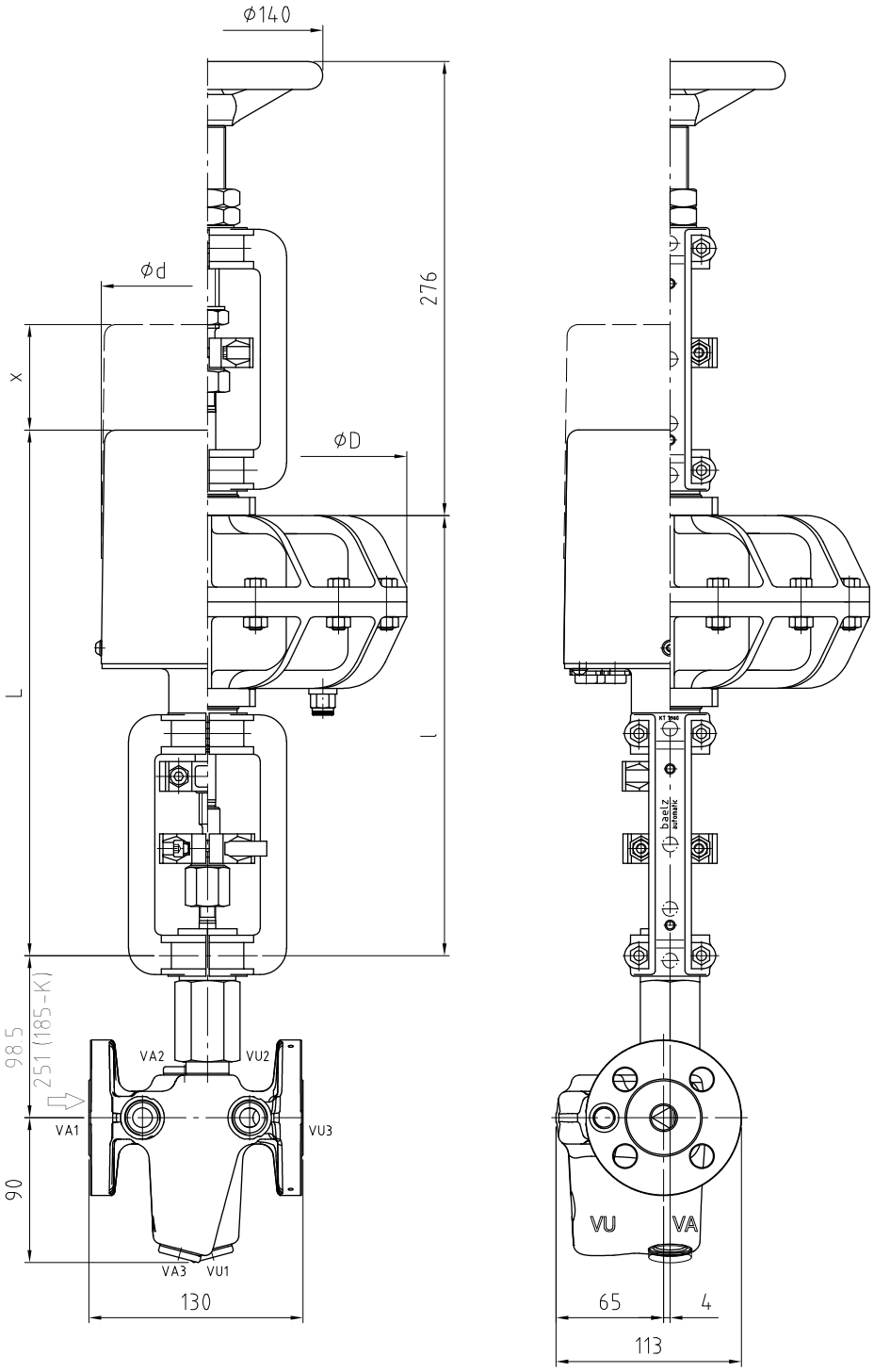
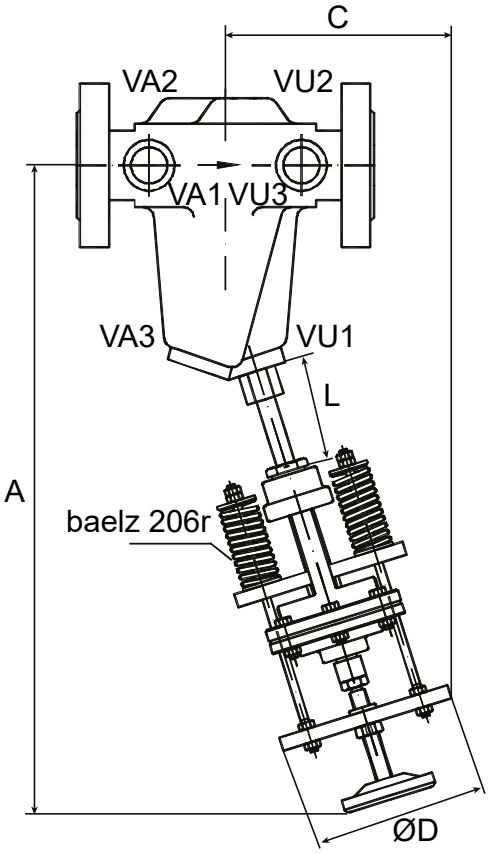


Fig. 13: baelz 185 with pneumatic / electric actuator

BA_185_00_DEF_MJ_2521



Dimensions baelz 185 + 206r (mm)				T max
L	A	C	ØD max	°C
100	450	135	130	110
200	550	165	130	200
300	650	195	130	240

Fig. 14: baelz 185 with pressure measuring and control element baelz 206r

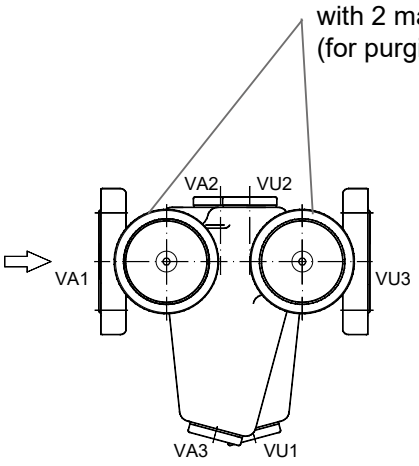


Fig. 15: baelz 185-2x260st

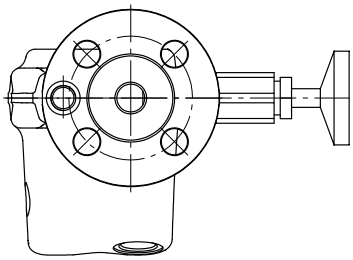


Fig. 16: baelz 185-260st

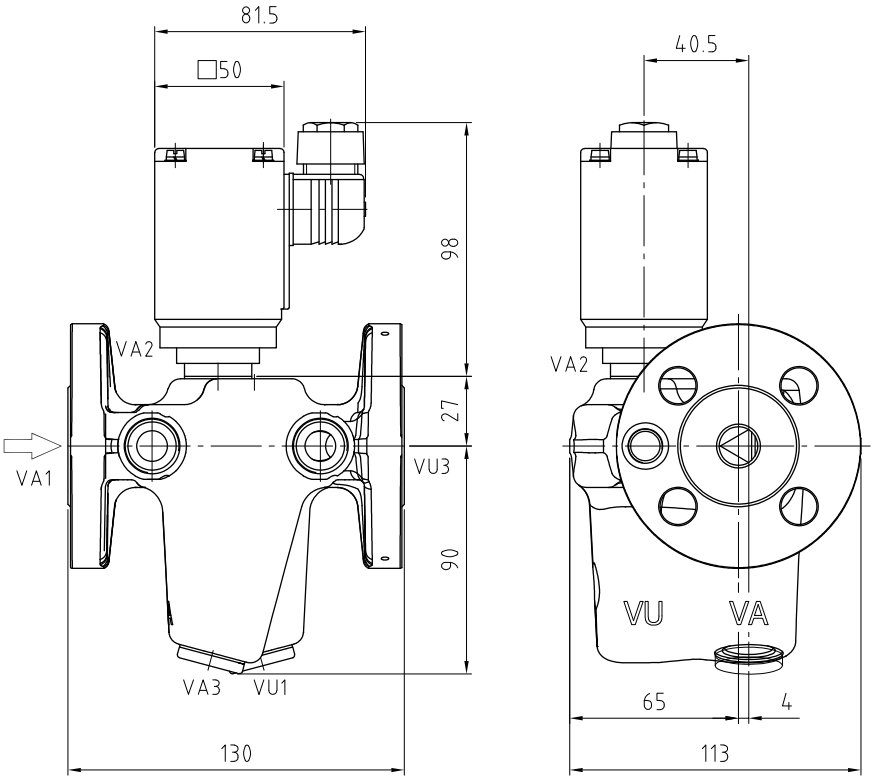


Fig. 17: baelz 185 with solenoid valve pilot baelz 266st