

Operating, assembly and maintenance instructions for discontinuous sampling valve Series 271



Fig. 1 - Sampling valve series 271



This equipment may only be dismantled and disassembled by skilled staff, who are familiar with the assembly, start-up and the operation of this product.

Skilled staff in the sense of these repair and assembly instructions, are persons who, as result of their training, knowledge, and experience, also their knowledge of the relevant standards, are able to judge the tasks assigned to them and are able to reconise possible dangers.

1. Design, operation and dimensions

Design, operation and dimensions, as well as all further technical details can be found in the **Data sheet < TB 271_EN >** for sampling valves **Series 271 / Seris 27m**

2. Installation, start-up and maintenance

Guidelines for the installation, start-up and maintenance can be found in the respective operating instructions for sampling valves.

0. Introduction

These instructions are intended to support the user in the assembly and repair of sampling valves of series 271.

Technical details, as a result of further development of the valves mentioned in these instructions are subject to modification. The text and illustrations do not necessarily display the scope of supply, or an eventual order of spare parts.

Drawings and graphics are not to scale. Customer related designs, which are not in accordance with our standard offer, are not shown.

The transfer of these instructions to third parties is only allowed with the written approval of Pfeiffer Chemie-Armaturenbau GmbH.

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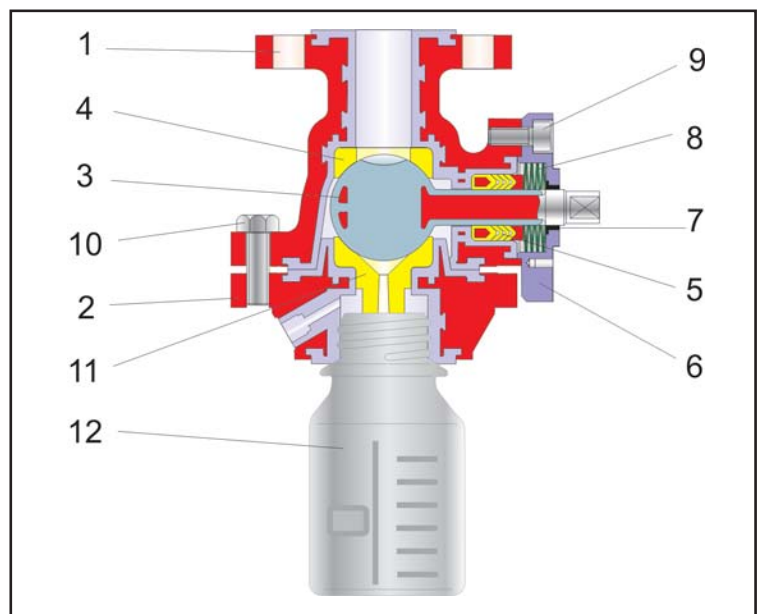


Fig. 2 - Sectional view of sampling valve series 271 => Parts list, see table 1 on page 2

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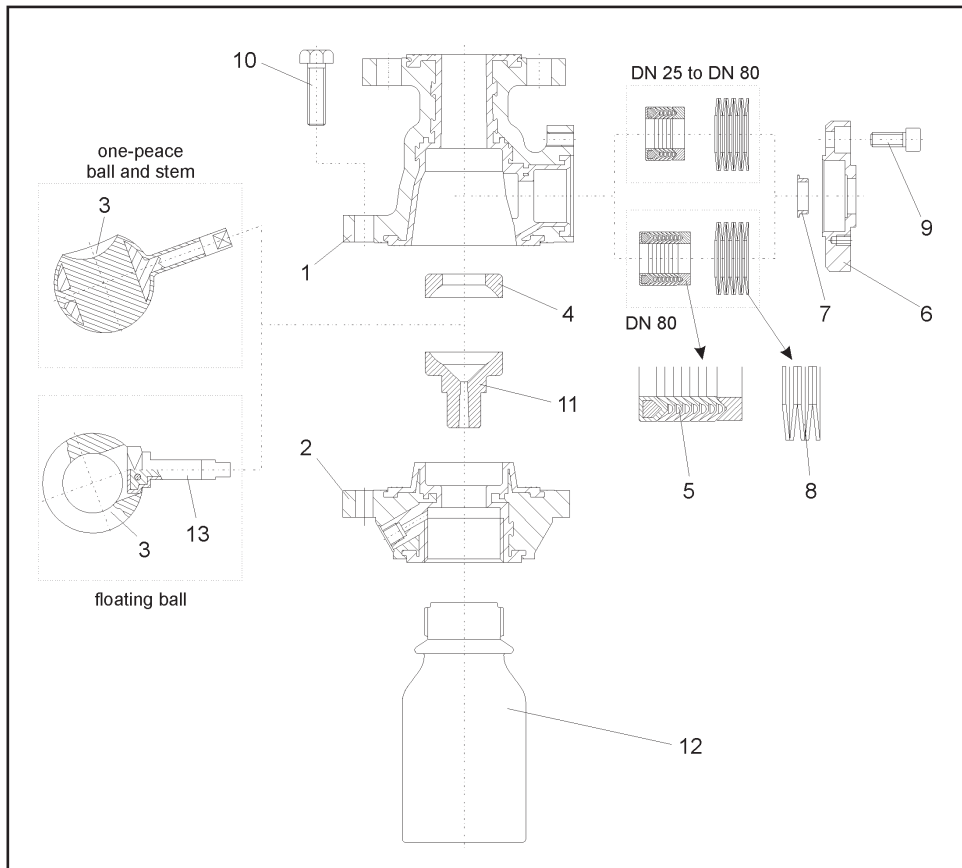


Fig. 3 - Explosions drawing of the sampling valve Series 271

Pos.	Description	Materials
1	Main body	GGG 40.3 / PFA
2	Body	C22.8 / PFA
3	Ball	1.4313 / PFA
4	Sealing ring	PTFE
5	V-ring packing	1.4305 / PTFE
6	Stuffing box flange	1.4305
7	Bearing bush	PTFE with carbon
8	Spring washer set	1.8159 / Delta Tone
9	Screw	A2-70
10	Screw	A2-70
11	Sealing ring	PTFE
12	Sampling bottle	Glass
13	Stem	1.4313 / PFA

Table 1 - Parts list

3. Assembly of the sampling valve

3.1 Preparation for assembly

Before assembling the sampling valve, clean all parts thoroughly, and lay them on a soft padded surface (rubber mat etc.). Take into consideration, that parts made of plastic are generally soft and sensitive, in particular the sealing surfaces must be handled with care, and not be damaged.



Attention: To avoid cold corrosion of the screws in the bodies, the manufacturer has used a high performance lubricating grease (i.e. Gleitmo 805. from Fuchs). This grease however, may not be applied to valves, which are used in an oxygen environment. Valves which must be free of grease, especially for use in oxygen, an appropriate lubrication must be used.



Note: The position and arrangement of the individual parts shown in the explosion drawing (Fig. 3) must be observed when assembling the valve.

3.2 Initial assembly of the ball valve

3.2.1 Initial assembly of the single ball

Place the body (1) on a soft surface, with the piping flange facing downwards. The sealing ring (4) is placed in the main body. Gehäuse eingelegt. Guide

the ball (3) with the control shaft slightly inclined into the packing chamber.



Note: When inserting the ball, the bore of the ball, and the bore of the main body must be facing in the same direction.

Further assembly instructions are described under item: „Final assembly of the ball valve“.

3.2.2 Initial assembly of the floating ball

Place the body (1) on a soft surface, with the piping flange facing downwards. The sealing ring (4) is placed in the main body.

Guide the control shaft (13) slightly inclined into the packing chamber. Then insert and position the ball, (3) so that the slot in the ball fits onto the two flats of the control shaft (13).



Note: When inserting the ball, the bore in the ball must be facing diagonally to the bore of the main body.

Further assembly instructions are described under item: „Final assembly of the ball valve“.

3.3 Final assembly of the ball valve

Place the sealing ring (11) in the body (2) Now carefully press the pre-assembled body (2) onto the main body (1)

Turn and position the body (2) so that the bores of both body parts are aligned to each other (1 und 2). Apply grease to the screws, (10) align, and hand tighten. For further assembly, clamp the main body (1) in a vice.

Using the ground ring of the V-ring packing, (5) centre the shaft of the ball (3 i.e.13) in the packing chamber, and push down to sit firmly in the body recess.



Note: Due to the effort required to push the ground ring in position, it may be necessary for this purpose to use an appropriate tool.

Also with this tool each of the V-rings can be inserted separately into the packing of the body.

Now the screws for connecting the middle parts can be tightened.



Note: The tightening sequence, and the tightening torques are shown in fig. 4 and table 2 for the respective nominal diameters.

The spring washer set (8) is placed on the V-ring packing. For the assembly arrangement of the spring washers, refer to the explosion drawing. (Fig. 3)

Press the bearing bush (7) into the stuffing box flange. (6)

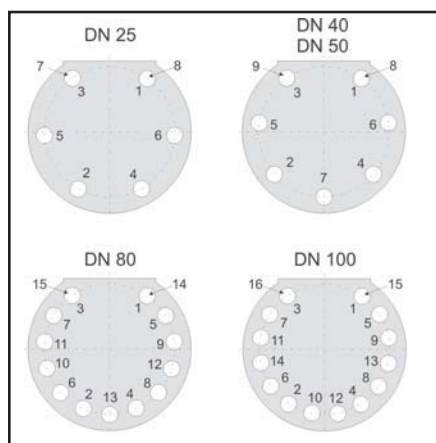
Following this, place the stuffing box flange (6) over the control shaft onto the body, and after applying grease to the screws (9) align and tighten evenly and alternating pattern.



Note: Before testing for leakage tightness, the valve should be operated once or twice, to enable the ball to sit correctly in the sealing rings, therefore ensuring a good sealing function.

Assembly of the sampling valve is now completed.

3.4 Tightening torques for connecting both bodies



When connecting both body halves, please observe the tightening sequence and the tightening torques for the respective nominal diameter

Fig. 4 - Sequence for screw connections

Nominal size	Connection	Tightening torque
DN 25	1 to 6	25 Nm
	7 and 8	30 Nm
DN 50	1 to 7	35 Nm
	8 and 9	40 Nm

Table 2 - Tightening torque

4. Trouble shooting

Action to be taken in the case of malfunction is described in the operating instructions for the sampling valve. You can also contact Pfeiffer Chemie-Armaturenbau GmbH directly if you require help.

5. Repairing the sampling valve

5.1 Replacing the V-ring packing

If leakage is located at the stuffing box, the PTFE-rings of the V-ring packing (5) may be defect. It is therefore recommended to check the condition of the packing. To dismantle the packing, proceed in reverse order to the assembly instructions as described in Section 3. As with all other plastic parts, proceed to check the PTFE-rings of the V-ring packing for damage, and if necessary replace these parts.

5.2 Replacing the sealing seat and the ball,

If the ball valve does not shut-off tightly and leaks, the sealing rings (4 and 13) and the ball (3) may be defect. It is therefore recommended to check these parts.

To dismantle the sealing rings and the ball, proceed in reverse order to the assembly instructions as described in Section 3. As with all other plastic parts, proceed to check the sealing rings and the ball for damage, and if necessary replace these parts.

5.3 Other repairs

We recommend larger repairs to be carried out in our works by our skilled staff at Pfeiffer.

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6. Operating the sample valve

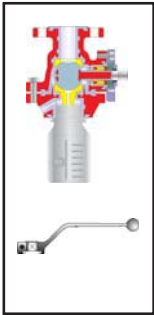
6.1 Important general instructions



Depending on the media being used, it may be necessary to clean the chamber and the through bore after a sample has been taken. The operator must decide if and when this is necessary.

- It is essential to ensure, that before taking a sample, the sampling container (glass bottle etc.) is first adapted to the temperature of media to be taken!
- Safety precautions need to be taken when the media temperature exceeds 60° as a risk of scalding is possible.
- When taking samples, the general accident prevention regulations must be complied with at all times!

6.2 Sampling valve with hand-lever



- Screw on the sample bottle by hand as tightly as possible.
- Turn the hand-lever 180° until the bore is in the media flow.
- Turn back the hand-lever to allow the sample to flow into the bottle.
- Repeat this procedure until the required amount of media has been collected in the bottle.
- Unscrew the sample bottle, and if necessary seal bottle with a lid.

6.3 Sampling valve with hand-lever and protective case



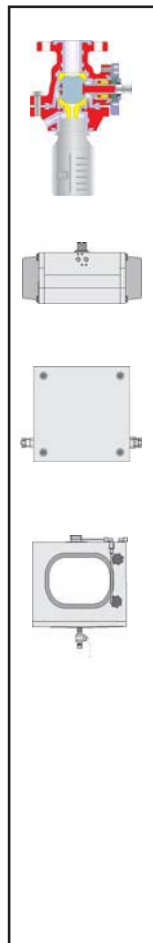
- Open protective case.
- Screw on the sample bottle by hand as tightly as possible.
- Turn the hand-lever 180° until the bore is in the media flow.
- Turn back the hand-lever to allow the sample to flow into the bottle.
- Repeat this procedure until the required amount of media has been collected in the bottle.
- Open the protective case, and remove the sample bottle, if necessary seal bottle with a lid.
- Close protective case.

6.4 Sampling valve with hand-lever and protective case with support



- Open protective case.
- Pull down the support on the handlever.
- Place the sample bottle in the PTFE-seat of the support.
- Guide the support upwards.
- Close the protective case.
- Turn the hand-lever 180° until the bore is in the media flow.
- Turn back the hand-lever to allow the media to flow into the bottle.
- Repeat this procedure until the required amount has been collected in the bottle.
- Open the protective case, guide the support downwards, remove the sample bottle, and if necessary seal bottle with a lid.
- Close protective case.

6.5 Sampling valve with automatic 180° rotary actuator and protective case



6.5.1 general automated sampling

- Open protective case.
- Screw on the sampling bottle by hand as tightly as possible.
- Close protective case.
- Open the air supply valve of the automation unit.
- **Attention:** Before operating, refer to the respective operating instructions for the automation unit, which can be found in **Section 7**.
- Close the air supply at the automation unit.
- Open protective case, remove the sample bottle, if necessary seal bottle with a lid.
- Close the protective case.

6.5.2 automated sampling with back pressure indication

- Operating this type of sampling is identical to the operating instructions in **Section 6.5.1**
- In addition to the above mentioned version, the following function is included:
 - The automation switches off automatically and no further sample can be taken when the sample in the glass reaches the back pressure tube.



When attaching the bottle, avoid at all times bending the back pressure tube!

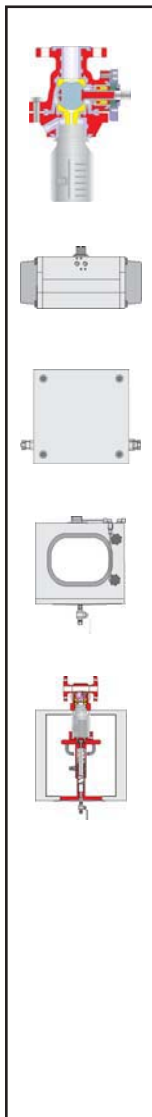
6.5.3 automatic sampling with pneumatic barrier

- Operating this type of sampling is identical to the operating instructions in **Section 6.5.1**
- In addition to the above mentioned version, the following function is included:
 - The automation switches off automatically and no further sample can be taken, if the protective case is opened during the sampling procedure.

6.6.3 automated sampling with pneumatic barrier

- Operating this type of sampling is identical to the operating instructions in **Section 6.6.1**
- In addition to the above mentioned version, the following function is included:
 - The automation switches off automatically and no further sample can be taken, if the protective case is opened during sampling procedure.

6.6 Sampling valve with automated 180° rotary actuator and protective case with support



6.6.1 general automatic sampling

- Open protective case.
- Pull down the support on the handlever.
- Place the sample bottle in the PTFE - seat.
- Guide the suppot upwards.
- Close protective case.
- Open the air supply valve at the automation unit.
- **Attention:** Before operating, refer to the respective operating instructions, which can be found in **Section 7** (Operating the automation units)
- Close the air supply valve at the automation unit.
- Open the protective case, guide the support downwards, remove sample bottle, and if necessary, seal the bottle with a lid.
- Close the protective case.

6.6.2 automatic sampling with back pressure indication

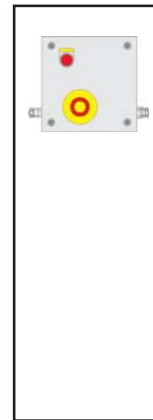
- Operating this type of sampling is identical to the operating instructions in **Section 6.6.1**
- In addition to the above mentioned version, the following function is included:
 - The automation switches off automatically and no further sample can be taken, when the sample level in the bottle reaches the back pressure tube!



When attaching the bottle, avoid at all times bending the back pressure tube!

7. Operating the automation units

7.1 Automation with „ON / OUT“ - Switch



Note: The impuls timing for actuating cycles, and the timing for filling the actuator with air, or venting, are pre-set timings, which were set before leaving our factory.

Any alterations to these settings may only be made after first consulting Pfeiffer Chemie-Armaturenbau GmbH!

- Press the start button. A complete sampling cycle operation is carried out.
- Repeat this procedure until the required amount of media has been collected in the bottle.

7.2 Automation with counter



Note: The pulse and interval times between actuation cycles, and the timing for filling the actuator with air or venting are pre-set timings, which were set before leaving our factory. Any alterations to these settings may only be made after first consulting Pfeiffer Chemie-Armaturenbau GmbH!

- Select the number of actuating cycles at the counter.



Attention: The selected number of actuating cycles must correspond to the volume of the sample bottle.

- Press the start button. The pre-selected number of actuating cycles to take samples are performed.
- The sampling finishes automatically after the selected number of actuating cycles has been completed.

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Attention! In the case of an operation fault, press the emergency button immediately.

7.3 Automation with counter and timer switch



Note: The pulse and interval times between actuation cycles, and the timings for filling the actuator with air or venting, are pre-set timings, which were set before leaving our factory. Any alteration to these settings may only be made after first consulting Pfeiffer Chemie-Armaturenbau GmbH!

- The required interval between each actuation cycle can be set at the timer switch.

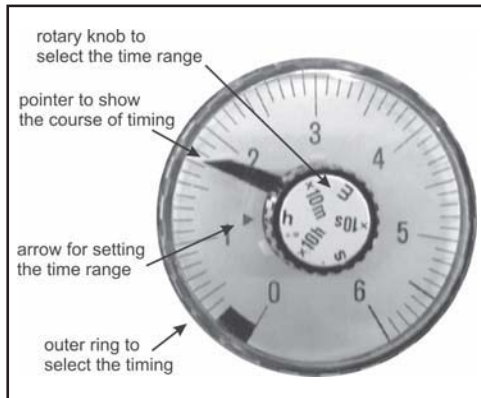


Fig. 4 - Samsomatic - Time switch 3970

- Select time range
The switch-over range is located with the rotary knob located in the middle of the timer. With the dial arrow the required range can be set

Selection	Time range
s	0,3 to 6 seconds
x10s	3 to 60 seconds
m	0,3 to 6 minutes
x10m	3 to 60 minutes
h	0,3 to 6 hours
x10h	3 to 60 hours

Table 2 - Time ranges

- Determine which timing you require. The required cycle time can be set by turning the outer ring. A pointer indicates the cycle time
- Set the number of actuation cycles at the counter.



Attention: The selected number of actuating cycles must correspond to the volume of the sampling bottle.

- Press the start button. The pre-selected number of actuating cycles to take samples, together with the pre-selected intervals are performed.
- The sampling finishes automatically after the selected number of actuating cycles have been completed.



Attention! In the case of an operation fault, press the emergency button immediately.

8. Circuit diagram

Circuit diagram for the automation unit.

Should you have any questions, please contact Pfeiffer Chemie-Armaturenbau GmbH

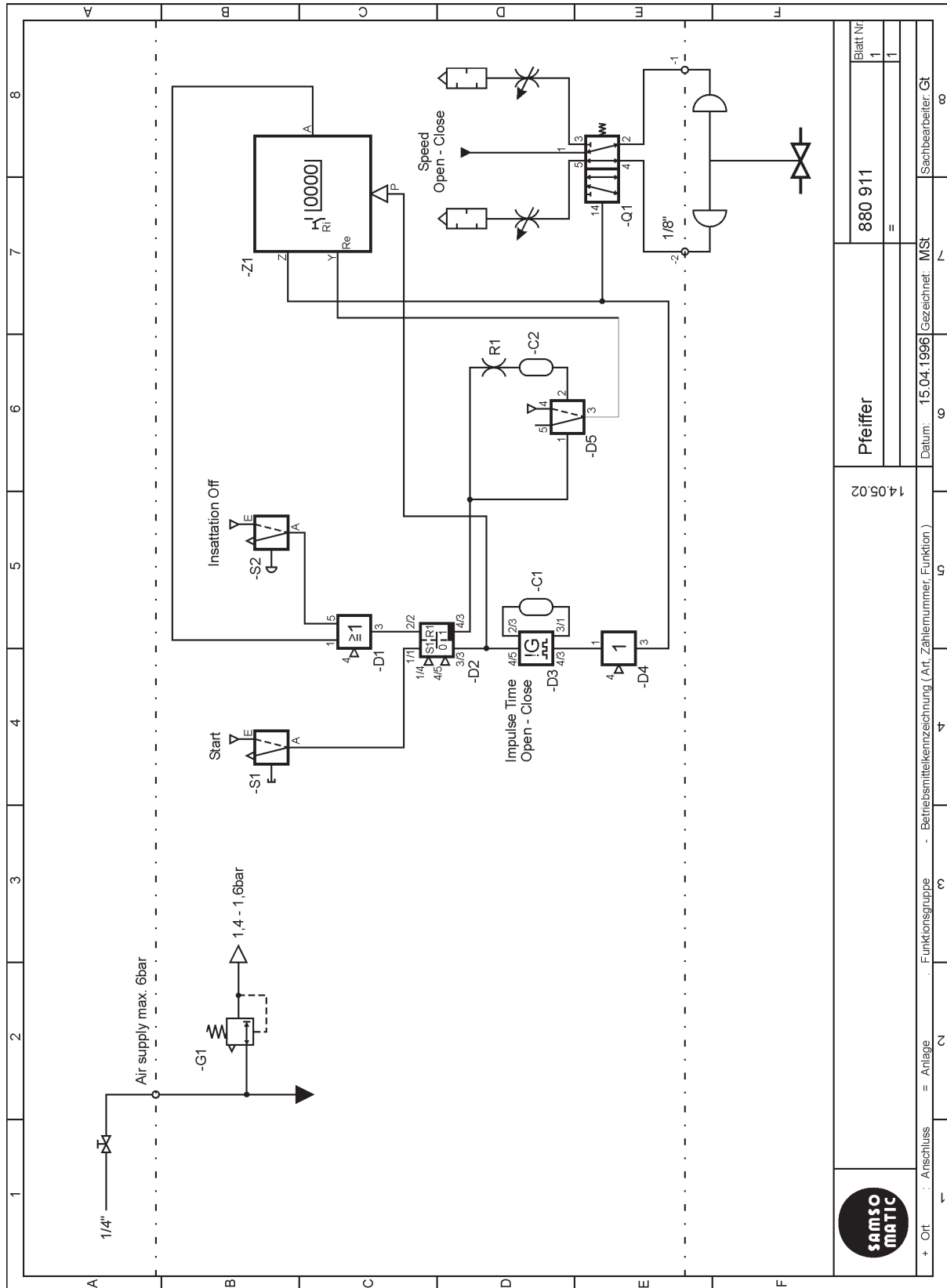


Fig. 5 - Circuit diagram

9. Customer inquiries

Details as per check list for repairs and inquiries.

Check list for repairs and inquiries for sampling valve series 271	
General	Commissions number: embossed on the type platen) _____ Customer: _____ Telephone: _____ Fax: _____
Media	Media: _____ Temperature: _____ °C op pressure: _____ bar Viscosity: <input type="checkbox"/> like water <input type="checkbox"/> like Honey <input type="checkbox"/> like oil <input type="checkbox"/> others: _____ Characteristict: <input type="checkbox"/> toxic <input type="checkbox"/> caustic <input type="checkbox"/> corrosiveness <input type="checkbox"/> abrasiv <input type="checkbox"/> foaming <input type="checkbox"/> others: _____
Valve	Nominal size: <input type="checkbox"/> DN 25 <input type="checkbox"/> DN 50 <input type="checkbox"/> sampling volume 1 to 13 ml _____
Option	Ball: <input type="checkbox"/> haste alloy C4 <input type="checkbox"/> titanium <input type="checkbox"/> others: _____ <input type="checkbox"/> zirkonium oxid <input type="checkbox"/> titanium 0,2% Pd Others: <input type="checkbox"/> heating jacket <input type="checkbox"/> others: _____
Ad-on Components	Bottle connection: <input type="checkbox"/> Duran GL45 <input type="checkbox"/> others: _____ <input type="checkbox"/> others: _____
Accessories	Protection case: <input type="checkbox"/> standard <input type="checkbox"/> 1" Venting <input type="checkbox"/> others: _____ <input type="checkbox"/> support (not for Bajonet lockings) Automation: <input type="checkbox"/> with counter <input type="checkbox"/> ON / OFF <input type="checkbox"/> time switch Actuator: <input type="checkbox"/> multi-turn actuator (DAP 60 - 180°) <input type="checkbox"/> hand-lever <input type="checkbox"/> actuator manufacturer: _____ type: _____ Sampling container: <input type="checkbox"/> sample bottle DIN 4796 GL45 Duran clear glasss <input type="checkbox"/> will be supplied by customer <input type="checkbox"/> others: _____ Others: _____ _____ _____

Table 3 - Check list

For your special requirements, please contact our technical sales department.

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