Operating manual

Model PB 8 - .....



ba75544e02 10/2005

Accuracy when going to press

The use of advanced technology and the high quality standard of our instruments
are the result of continuous development. This may result in differences between this operating manual and your instrument. Also, we cannot guarantee that there are absolutely no errors in this manual. Therefore, we are sure you will understand that we cannot accept any legal claims resulting from the data, figures or descriptions.

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The default password is: **6299**

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1 General information

The samplers of the PB 8 -...V series are suitable for use in a frost-free, roofed environment.

The PB 8-.. V samplers facilitate simple and reliable sampling from
liquid media according to time, flow and events. The sample volume can be set in a range of 20 to 250 ml .

The sampling takes place pneumatically using a membrane pump (pressure / vacuum) from hydraulically lower levels up to a suction depth of approx. 6 m (from dosing vessel) under explosion-free conditions. Depending on the accessories, the sample taken is dosed into a collecting container or IsoBox.

Fig. 1



2 Safety

This operating manual contains basic instructions that you must follow during the commissioning, operation and maintenance of the sampler. Consequently, all responsible personnel must read this operating manual before working with the sampler.

The operating manual must always be available within the vicinity of the sampler.

General safety instructions

In the individual chapters of this operating manual, the following safety instructions indicate different danger levels:



Caution
If the instrument is used in biologically or chemically contaminated areas, there is danger to the user's health. In this case, observe the regulations for handling dangerous substances when doing repair or maintenance work.



Caution
indicates instructions that must be followed precisely in order to avoid slight injuries to personnel or damage to the instrument or the environment.

Other labels



Note
indicates cross-references to other documents (e. g. operating manuals).



Note
indicates notes that draw your attention to special features.

2.1 Authorized use

The sampler is authorized exclusively for taking liquid, aqueous, not potentially explosive sample solutions from or in an environment that is not potentially explosive. The technical specifications as given in chapter Technical data must be observed.
Only the operation and running of the measuring instrument according to the instructions given in this operating manual is authorized.
Any other use is considered to be **unauthorized**.

2.2 General safety instructions

The sampler has been built and tested according to the EN 61010 safety regulations. It left the factory in a safe and secure technical condition.

Function and operational safety

The smooth functioning and operational safety of the sampler can only be guaranteed if the generally applicable safety measures and the specific safety instructions in this operating manual are followed during operation.
The smooth functioning and operational safety of the instrument can only be guaranteed under the environmental and electrical operating conditions that are specified in chapter 13 Technical data.

If the instrument was transported from a cold environment to a warm environment, the formation of condensate can lead to the faulty functioning of the instrument. In this event, wait until the temperature of the instrument reaches room temperature before putting the instrument into operation.



Caution
If the instrument is used in biologically or chemically contaminated areas, there is danger to the user's health. In this case, observe the regulations for handling dangerous substances when doing repair or maintenance work.

The signal connections have to be connected by an authorized specialist using the therefore designed PG9 screw couplings (see wiring diagram).



Caution!
Before opening the instrument door the instrument must be disconnected from the power supply!

Dangers in case of noncompliance with the safety instructions

Noncompliance with the safety instructions can endanger the operating personnel and the environment and the instrument as well.

Noncompliance with the safety instructions leads to the loss of any warranty claims.

Safe operation

If safe operation is no longer possible, the sampler must be taken out of service and secured against inadvertent operation!

Safe operation is not possible if the sampler

- has been damaged in transport
- has been stored under adverse conditions for a lengthy period of time
- is visibly damaged
- no longer operates as prescribed.

If you are in any doubt, please contact the Technical Support of WTW.

Technical state of the sampler

It is the responsibility of the purchaser to continuously observe the overall technical condition (externally recognizable deficits and damage as well as alterations to the operational behavior) of the instrument.

Obligations of the operator

The operator of the sampler must ensure that the regulations and guidelines listed below are followed when dealing with dangerous substances:

- EEC directives for protective labor legislation
- National protective labor legislation
- Safety regulations
- Safety datasheets of the chemical manufacturers.

Qualification of the operating personnel

The personnel responsible for commissioning, operation and maintenance must have the necessary qualifications for this work. If the personnel do not have the required skills they have to be instructed.

Furthermore, it must be ensured that the personnel read and completely understand the contents of the present operating manual.

Returning the sampler to WTW

Before returning the sampler, please observe the following points to avoid unnecessary costs and delays:

- Instruments / parts returned must be clean and free of dangerous substances (acids, lyes, biological solutions, etc.).
- WTW will charge for cleaning and disposal if they are necessary.

3 Instrument types and scope of delivery

3.1 Instrument types

Model	Order number	Sample container
PB 8-230 V	000167	Additional accessories
PB 8-115 V	000169	Additional accessories

Note
Information on accessories is given in section 13.6 and in the current WTW catalog or on the Internet http://www.WTW.com

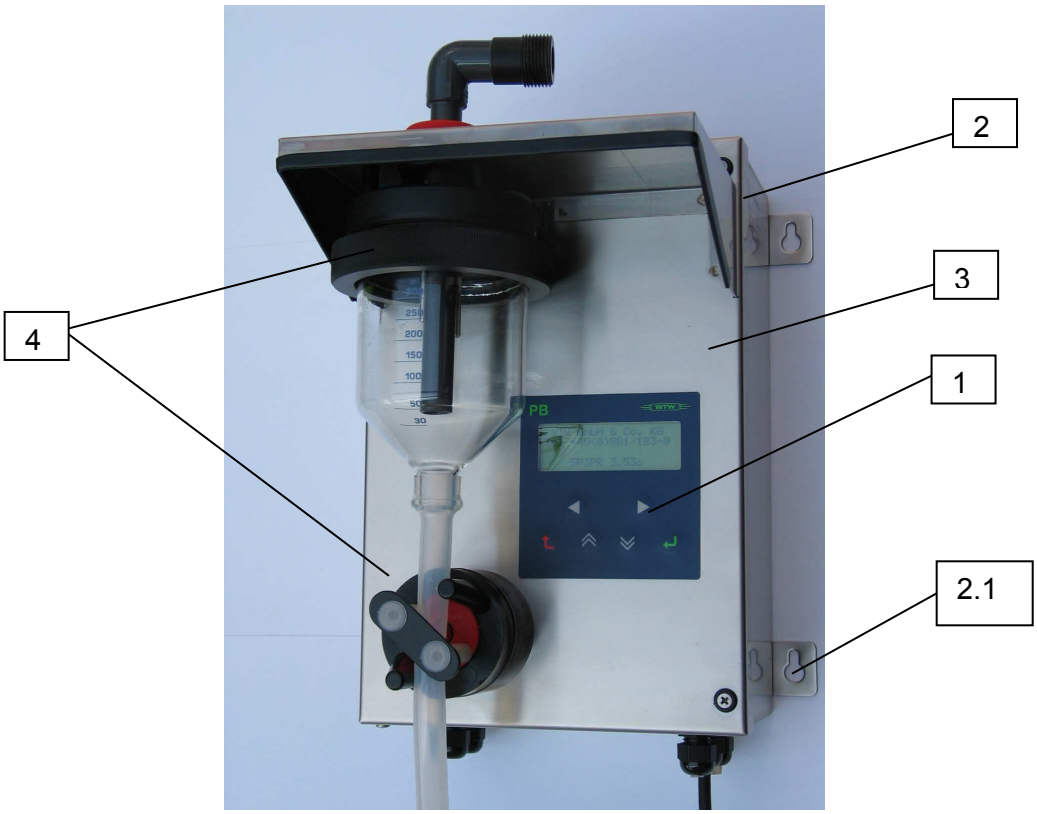
3.2 Scope of delivery

- Sampler PB 8-....V (see above)
- 5 m suction hose
- Operating manual

4 Structure of the instrument

4.1 Components of the sampler

Fig. 2



1	Control panel
2	Enclosure with fixing attachments (2.1)
3	Enclosure door
4	Dosage unit

4.1.1 Enclosure

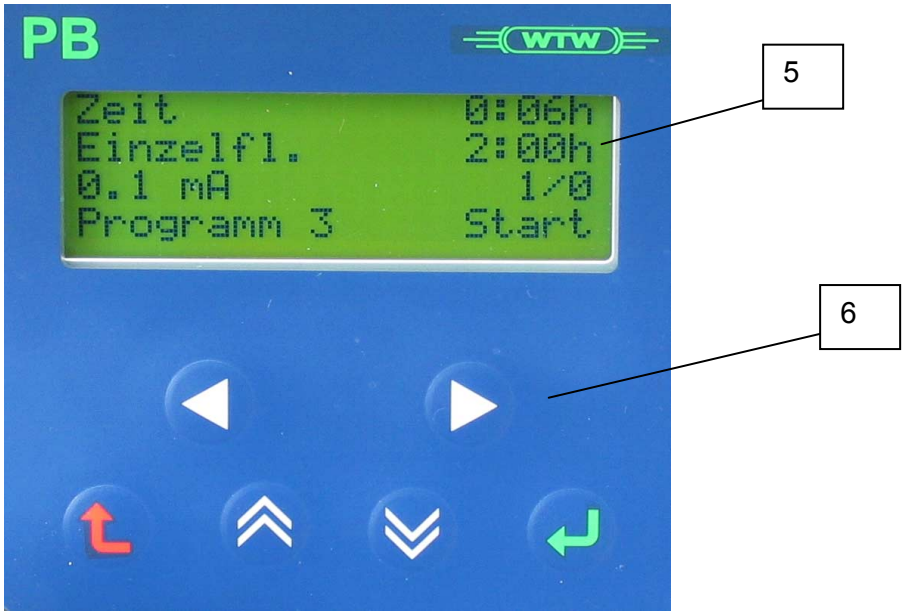
The enclosure consists of stainless steel that is rust-resistant and acid-proof. The door is sealed against the enclosure and can be swiveled out by approx. 120° after removing the door screws. The instrument door serves as a support for the operating display and the corner bracket for the dosing unit. The CPU control unit, power supply unit, terminal strips, valve unit, pneumatic pump and suction filter are within the enclosure. The enclosure is sealed by a circular rubber seal inside. It is fixed to a wall using the fixing attachments. The instrument has to be mounted in a place where it is not subject to direct solar radiation.

4.1.2 Control panel

At the operation field you make all the important settings and start the sampling.

The display shows the current state of the sampler. It also informs you about the current settings. Using the keys you operate the sampler.

Fig. 3



5	Display
6	Keypad

4.1.3 Connection options

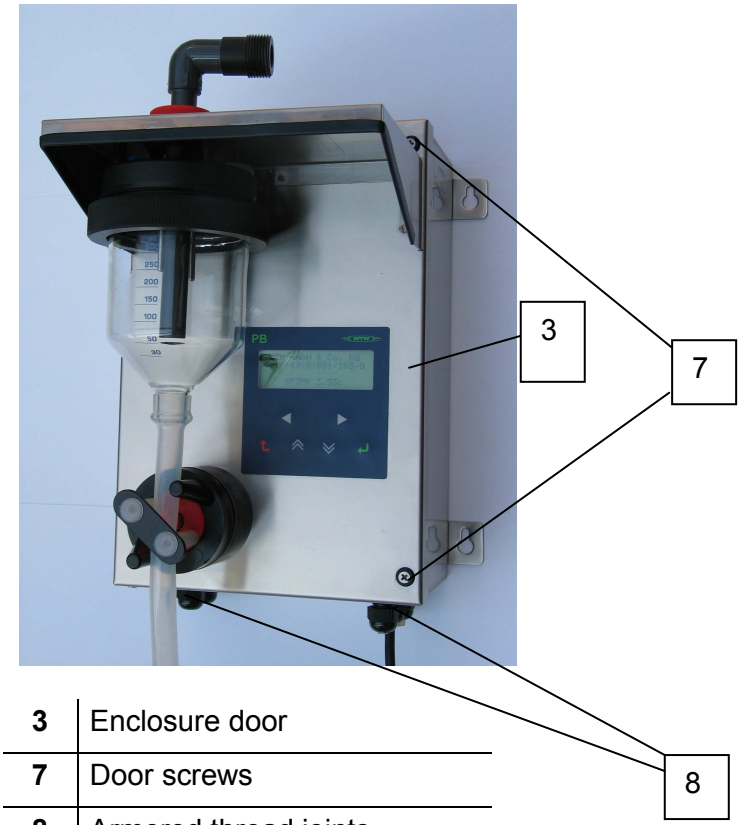
The PB 8 has the following connections (for details, see chapter 13 Technical data):

- Analog input for flow signal (0/4-20 mA)
- Digital input for flow signal
- Digital input for event signal (potential-free)
- Signal output for connection cable KV/PB8 for the IsoBox option (accessory)
- Enclosure overflow valve (integrated in PG screw coupling)

The terminal clamps for the sampling according to flow and events are inside the enclosure. They can be accessed through the PG screw couplings on the underside of the enclosure. For the signal connections, the enclosure door can be tilted after the door screws have been unscrewed.

Caution
Before opening the instrument door the instrument must be disconnected from the power supply!

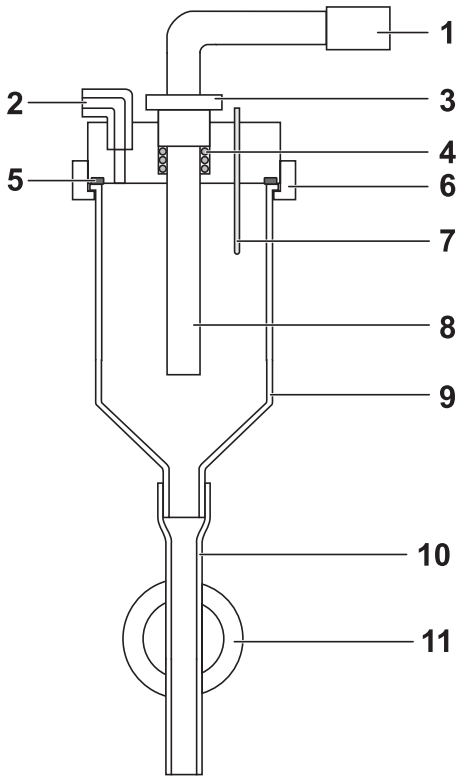
Fig. 4



3	Enclosure door
7	Door screws
8	Armored thread joints

4.1.4 Dosage unit

The dosage unit is mounted on the enclosure door and consists of the following components.



1	Tube connection on the dosage pipe
2	Air connection
3	Fixing screw for the dosage tube
4	Sealing
5	Packing ring
6	Coupling ring
7	Electrodes
8	Dosage tube
9	Duran 50 dosing glass
10	Silicone drain tube
11	Motive squeezing valve

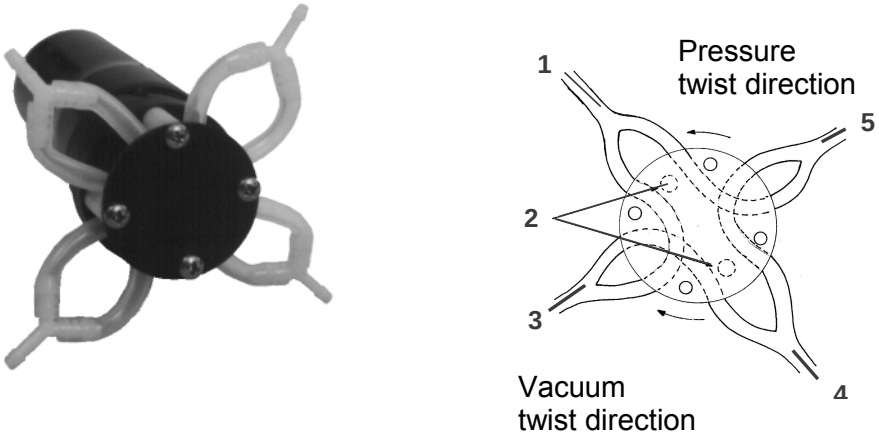
4.1.5 Membrane pump and valve system

The membrane pump and valve system are inside the enclosure.

Membrane pump The membrane pump creates the pressure or vacuum required for sampling. The membrane pump used has proved its worth in samplers for many years and has a high efficiency (suction height 6 m from dosage unit).

Valve system The motor valve system has very little flow wastage and is especially reliable and maintenance and wear free. None of its components comes into contact with the sample medium (water / waste water).

Fig. 5



1	Exit to the pump, vacuum
2	Squeezing rolls
3	Exit to the dosage unit
4	Exit to the pressure pump
5	Exit to the air filter

5 Sampling system

5.1 Steps of the sampling process

1 Blowing free the dosage unit and suction hose:

The squeezing valve closes the sample outlet.
The membrane pump creates pressure and pumps air into the dosing glass. By this, the sample left in the connected suction hose is displaced and the suction hose is blown out.

2 Taking in sample:

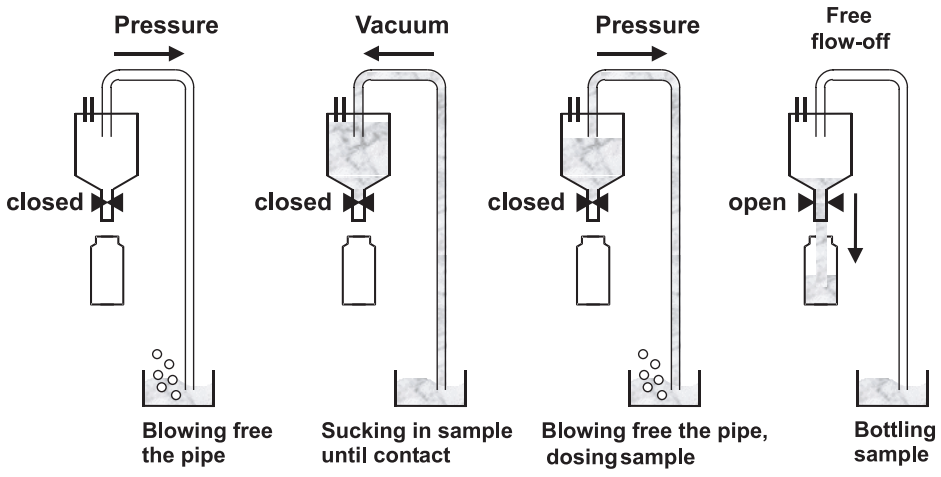
The valve system switches to vacuum. The vacuum in the dosage vessel created by the membrane pump leads to a suction effect at the suction hose connected. The dosing glass is filled with sample.
As soon as the sample reaches the electrodes (conductive filling level measurement via the conductivity of the medium), the membrane pump is switched off.

3 Adjusting the sample volume:

The valve system switches to pressure. The membrane pump creates a pressure in the dosage vessel. This pressure displaces the superfluous sample from the dosing glass. The sample quantity is adjusted to the height of the dosage tube.
The sample left in the connected suction hose is displaced and the suction hose is cleaned.

4 Bottling the sample:

After the adjusted ventilation time the squeezing valve opens and the sample flow off into the sample bottle either directly or via the distributor.



5.2 Operating modes

A sample to be analyzed must be representative for the sampling location and the conditions prevailing there.

The following operating modes are possible:

- Sampling according to "Time“
- Sampling according to "Flow“
  – with analog flow signal **"Flow A“**
  – with digital flow signal **"Flow D“**
- Sampling according to "Event“
- Combined sampling with event interaction

5.2.1 Sampling according to "Time“

Samples are taken at regular intervals, e. g. every 10 minutes. The dosing volume of the individual samples remains the same.

Example:

Setting in the menu:
Time interval: 10 min (00:10h)
Filling of sample bottle: 24:00 h

Result:
Within 24 hours, the sample bottle is filled with the specified dosage volume 6x24 = 144 times.

5.2.2 Sampling according to "Flow“

Note
For sampling according to flow, a flow meter is required.

The sampling according to flow can be performed using an analog or a digital flow signal.

Analog signal: the frequency of sampling corresponds to the strength of the existing current (flow signal)
Digital signal: the frequency of sampling corresponds to the number of flow pulses per time unit

Analog flow signal The number of samples taken per time unit depends on the flow signal. The number of samples is specified with the maximum analog flow signal (0/4-20 mA). The dosing volume of the individual samples remains the same.

Example:

Setting in the menu:
Flow signal: analog 0-20 or 4-20 mA
Maximum number of samples per hour: 20

Result:
With a flow signal of 20 mA, 20 samples per hour are taken.
With a flow signal of 12 or 10 mA, 10 samples per hour are taken.

Digital flow signal The number of samples taken per time unit depends on the flow signal. The number of samples is specified with the maximum digital flow signal (pulse/time unit). The dosing volume of the individual samples remains the same. If the pulse repetition is too high, an internal pulse divider carries out a proportional signal adjustment for sampling.

Example:

Digital output of a flow meter with max. 800 pulses/hour (= 100% flow)
Setting in the menu:
Flow signal: digital
Pulse divider: 40

Result:
With 800 pulses per hour, (800:40) =
20 samples/h are taken.
With a flow quantity of 50%, this corresponds to 400 pulses per hour. Thus, (400:40) = 10 test samples/h are taken.

5.2.3 Sampling according to "Event"

Note!
Sampling according to events is normally used for monitoring. If several oversteppings have to be documented, this is done by means of sample fractionating into several sample containers. The distributor systems and IsoBoxes required for this are listed with the accessories.

For sampling according to events a signal transmitter (e. g. pH meter) is required. During a defined event (e. g. when the measured value is above or below the limit value) this signal transmitter transmits a signal to the sampler. (potential-free closer contact).

If the sampler is set to sampling according to events, samples are only taken when the sampler receives an event signal. During the event signal, samples are taken at regular intervals. The dosing volume of the individual samples remains the same.

Example:
During an event, a sample is taken every 3 minutes, for example. If the criterion for the event is no longer met, the sampling according to event is terminated.

5.2.4 Combined sampling with event interaction

The combined sampling with event interaction guarantees, for example, selective event samples during sampling according to flow.

Note
For combined sampling according to flow and events, a flow meter and a signal transmitter (e. g. pH meter) are required additionally. During a defined event (e. g. when the measured value is above or below the limit value) this signal transmitter sends a signal to the sampler.

Example (with option IsoBox 12x1.0L)**:**
Flow signal: 4-20 mA
Event signal: digital (potential-free)
Maximum number of samples per bottle: 10
Interval of combined event sampling: 2 min

Result:
10 samples per bottle are taken.
If an event occurs, e. g. if a limiting value is exceeded, the event samples are automatically filled into the selected or next free bottle and its succeeding bottles.
During an event, a sample is, for example, taken every 2 minutes. If the measuring instrument sends no more signals to the sampler, the bottle is changed and the sampling according to flow is continued again.

Detailed information is given in the Memory menu (see 9.1.9).

6 Commissioning

The sampler works at an ambient temperature of 0 °C to +40 °C.
If the instrument was transported from a cold environment to a warm environment, the formation of condensate can lead to the faulty functioning of the instrument. Before commissioning, wait until the sampler has adapted itself to the different environment (see also Technical data13).

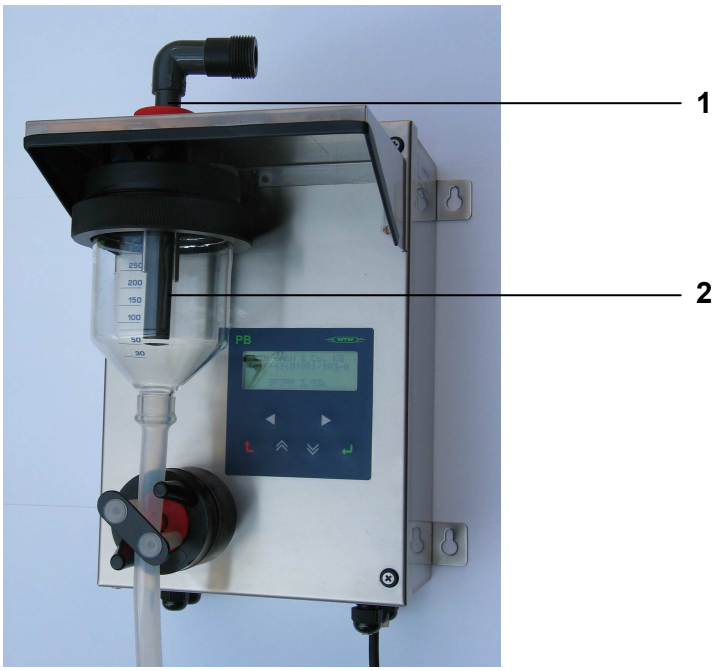
Perform the following activities:

- Prepare the sampling
- Adjust the dosing volume
- Connect the suction hose
- Connecting the signal sources
- Power supply via flexible line power cord
- Program/select sampling program
- Start the sampling

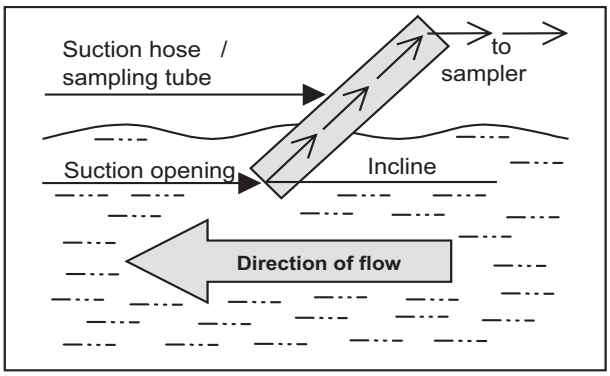
The steps are described in detail on the following pages.

Preparing the sampling

Fig. 6



1	Unscrew the fixing screw (1) of the dosing pipe (2).
2	Adjust the height of the dosage pipe (2) and set the required dosage volume (between 20 and 250 ml).
3	Use the fixing screw (1) to fasten the dosage pipe (2).
4	Lay the suction hose from the instrument to the sampling location at a steady incline as otherwise deposits can form in the hose.
5	Secure the intake opening of the suction hose (sampling tube) in the direction of the flow. This largely avoids any blockage of the suction opening.
6	Screw the suction hose (with sealing) to the dosage pipe
7	Connect the external signal source to the signal input in the sampler
8	Provide the power supply.
9	Select - change - start the program



7 Operation

7.1 General information

The sampler is operated menu guided via the display and the keys on the operation field. The individual steps and settings are shown on the display.

Fig. 7 (operating program, Compact)



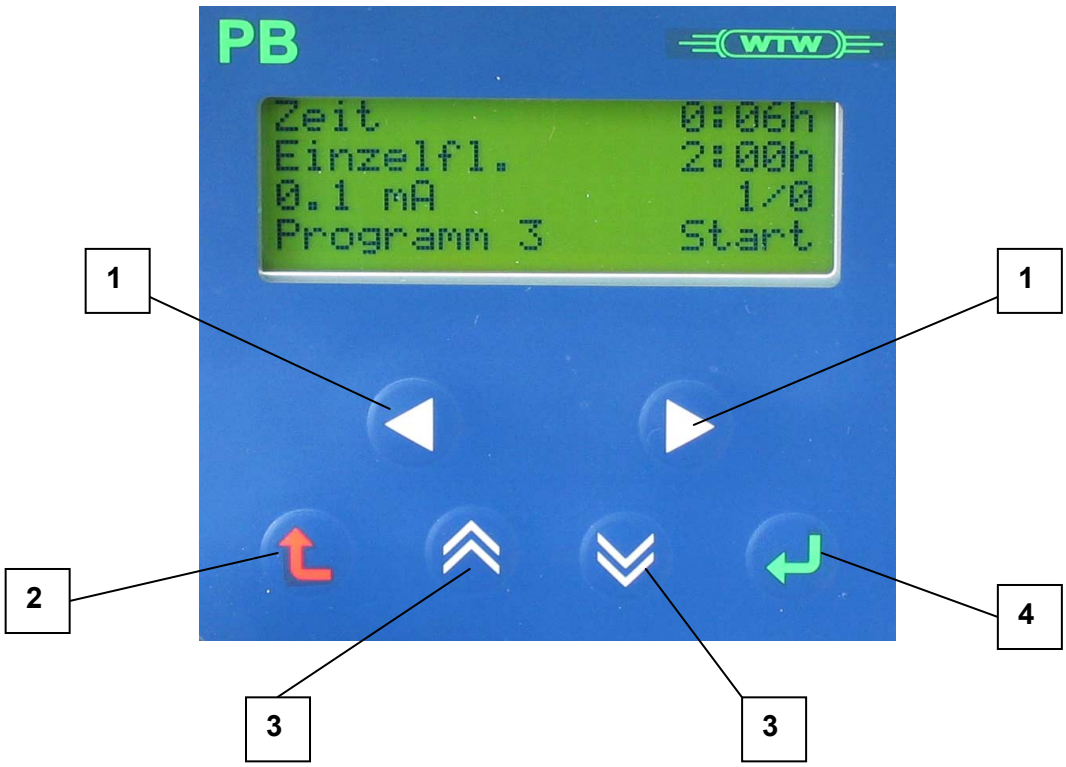
The basic operation courses comprise:

- Programming and starting the sampling according to time or flow in the Compact program (see chapter 8)
- Programming and starting the sampling according to time, flow or events in the Standard program (see chapter 9)
- Selecting the Compact and Standard programs
- Setting and changing system settings

An overview of all operating menus of the sampler with the menu trees is given in chapter 14.

7.2 Keypad

Fig. 8



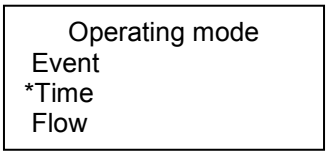
Designation and function

1	**Arrow keys (1) ◄ ► (l e f t - r i g h t)** – change the cursor position within one line
2	**ESC key (2)** – cancel the input – change to the next higher menu level – cancel the automatic sampling
3	**Arrow keys (3) (U P - D O W N)** – select a menu – move the cursor within one selection – change values
4	**ENT key (4)** – modify a menu or numeric value – confirm input values – confirm the selected menu

7.3 User guidance in the main menu and submenus

Various kinds of displays are possible.

Menu with selection



To select a submenu:
- Activate the selection:

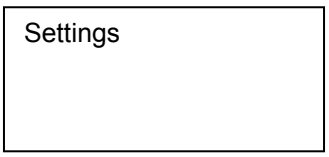
– Activate the active selection with ENT. A flashing cursor appears in front of the selected menu item marked by *.

– Change the selection with UP/DOWN.

– Confirm the selection with ENT.

or:
- Display the next menu with UP/DOWN.

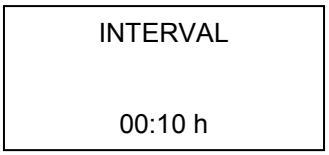
Menu with submenu



Call up the displayed menu:
– Open the displayed menu with ENT.

or:
– Display another menu with UP/DOWN.

Menu with adjustable value



To change the displayed value:
– Modify the displayed value with ENT. The numbers are marked by a cursor.

– Option: Select an individual number with ◄► .

– Change the value with UP/DOWN.
– Confirm the value with ENT.

Note
The display is illuminated.

You cancel any action or change to the next higher menu level with ESC.

7.4 The Compact and Standard programs

Compact program

In the Compact program, all important information is in **one** display (Fig.7).

In this display, you can directly and according to the function matrix, program - change - select - start - stop your programs according to time and flow. The setting is done by means of selection in a flashing field.

The program start is **immediately** without time preselection.

For operation monitoring, it is also possible to select "perm" as permanent operation in addition to the existing time and flow intervals.

All important user information is displayed without the need to scroll in submenus.

Therefore, the Compact program is suitable for routine monitoring operation.
The programs do not have any password protection.

Note!
A filling quantity limitation defined in the Standard program - max. samples per bottle -(flow setting menu), is also effective in the Compact program.

In the Compact program, however, you can also directly and without any change start more complex programs, which were created as programs according to time, flow or events in the Standard program, in all operating modes.

Standard program

The proven Standard program provides universal setting possibilities for all parameters. The values are set and entered via cursor selection with * and the keypad. Due to the comprehensive representation, all information cannot be viewed in one display. Therefore, submenus are available for display and selection.
The modification of existing programs is secured by password protection.

Similarities of Compact and Standard program

The system settings are protected by a password and are set in submenus identical in both programs. Certain information, e. g. messages and memory information, can be selected and hidden by the user. Both programs support the IsoBoxes with distributor available as accessories.
Retrofitting is possible.

Note
The individual menus and entering options are described in detail in chapter 8 and 9 and diagramed as a menu tree in the appendix, chapter 14.

7.5 Switching over between the Compact and Standard program

The programming of automatic sampling is possible in two programs
a) Compact as "simple menu“ and
b) Standard

In the delivery condition of the PB8 ..V sampler, the user interface of the "simple menu“ Compact program appears automatically when the instrument is switched on. Switching over from the Compact program to the Standard program and the other way round is possible as follows.

Informational display

WTW GmbH Tel: +49(0) 881/183-0 PB8 x.xxy

Tel: +49(0) 881-183-0
Fax: +49(0) 881-183 420 and
E-Mail: Info@wtw.com
(display changes every 5 sec)

Software version, e.g. 3.53m

Press the DOWN arrow key until the date display appears as shown below

Weekday DD Month YYYY hh hours mm min ss

In this date display press the right arrow key ► **5 times in a row**.

Instead of the weekday, the

**** simple menu on**** (Compact On) or ****simple menu off**** (Compact Off) display (corresponds to Standard ON) is displayed for approx. 2 sec.

Weekday simple menu on hh hours mm min ss

Programming in the Compact and Standard program is described below (chapter 8 and 9).

Note!
In the Compact program ("simple menu“), programming is only possible in the time and flow modes in the given time and pulse ranges.

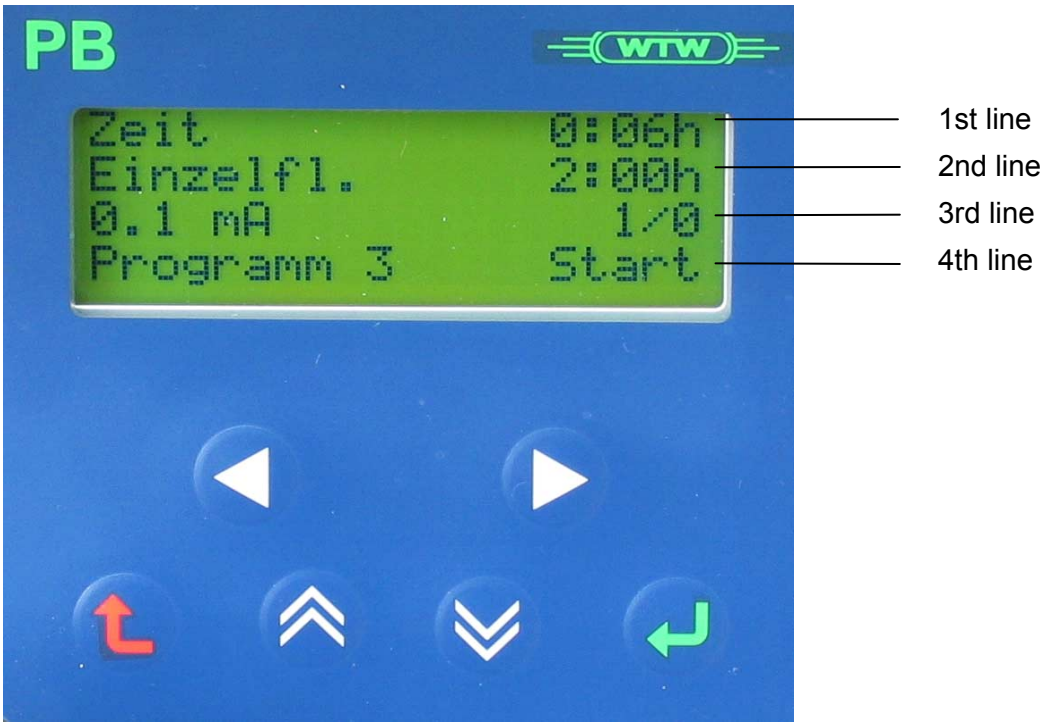
In the Standard program, programming is possible in **all** operating modes.

After programming in the Standard program, you can switch over to the Compact program and there start the sampling program created in the Standard program (without changes).

8 Compact program

8.1 Display with function matrix in the Compact program

Fig. 9



Setting and function matrix

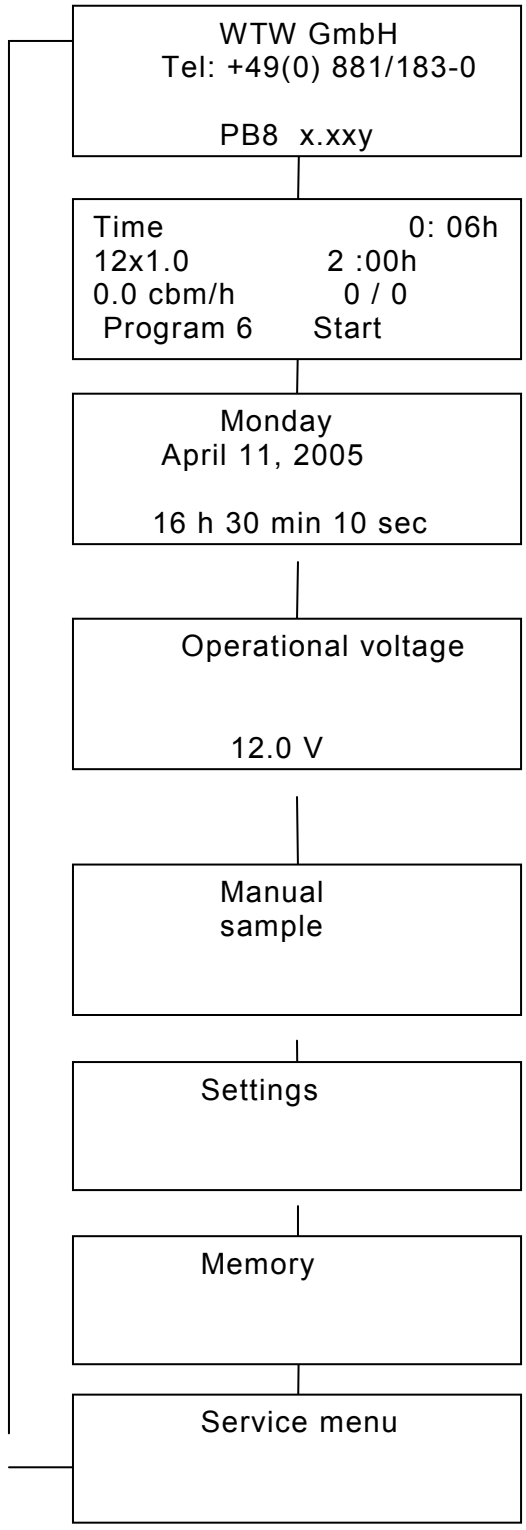
1st line	**Operating mode** according to time	**Sampling interval** 0:01 / 0:02 / 0:05 / 0:10 / 0:20 / 0:30 / 1:00 from start, remaining time in min
	flow A (analog)	samples / h at 20 mA 10 / 20 / 40 / 80 / 120
	flow D (digital)	Imp / sampling 1 / 2 / 5 / 10 / 20 / 30 / 60
2nd line	**Sample bottle** Single bottle /	**Filling time per bottle in h** 0:30 / 1:00 / 2:00 / 4:00 / 6:00 / 8.00 /12:00 /24:00/ perm from start, remaining time in min/h
	Distributor	2x5 / 2x10 / 4x6.5 / 4x25 / 12x1.0 / 12x2.9 / 24x0.4 / 24x1.0 / 24x2.9
3rd line	**Current value** Momentary value Display Error message	**Sampling information** Requested sample / taken sample Digital value in % e.g. "Suction error“
4th line	**Program selection** No. 1 to 6	**Start / Stop**

8.2 Compact program main menu

(Scroll down the display with the DOWN key)

Display	Meaning / explanation	Menu No.
WTW GmbH Tel +49(0) 881/183-0 PB8 x.xxy	**Software version information** Contact and software version Software version	9.1.2
Time 0:06h 12x1.0 2 :00h 0.0 cbm/h 0 / 0 Program 6 Start	**Program information and programming** Program display with program parameter of the selected program. This display appears automatically after the last programming step or after a program change. The selected program can be started (immediate start) or stopped directly. Programming with the◄ ►, DOWN/UP, ENT keys and flashing field	8.1
Weekday DD. MM. YYYY hh hours mm min ss sec	**Date and time information** The date and time are set and changed in the "settings" menu“	9.1.3
Operational voltage 12.0 V	**Voltage display information** Display of the internal Operating voltage (secondary voltage of the power supply unit)	9.1.4
Manual sample	**Manual sampling** Manual sampling triggered immediately or after a running process is completed.	9.1.7
Settings	**Settings** Here, the following is set: Date and time Language Modem communication System settings of the sampler	9.1.8
Memory	**Memory** The stored information can be displayed or erased. Stored are: Info memory (sampling record) Bottles record Analog signal	9.1.9
Service menu	**Service menu** Components check Access for service personnel only	9.1.10

8.2.1 Menu tree of the Compact program



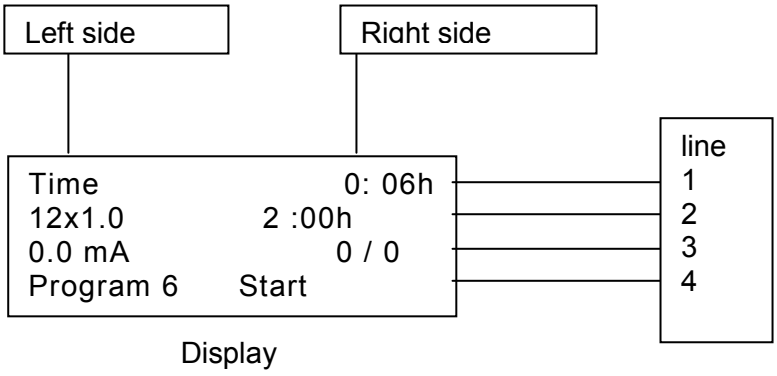
Display sequences 1- 8

1. Informative display on power supply and initialization of the system (menu 9.1.2)
   After pressing the DOWN key, the following display appears:
2. Display of selected program (menu 8.1)
   After pressing the DOWN key, the following display appears:
3. Weekday, date, time (see menu 9.1.8)
   After pressing the DOWN key, the following display appears:
4. Operational voltage for information and as a check function (see menu 9.1.4)
   After pressing the DOWN key, the following display appears:
5. Manual sampling (see menu 9.1.7)
   After pressing the DOWN key, the following display appears:
6. Settings (see menu 9.1.8)
   After pressing the DOWN key, the following display appears:
7. Memory (see menu 9.1.9)
   After pressing the DOWN key, the following display appears
8. Service menu (see menu 9.1.10)
   After pressing the DOWN key, the display 1 appears.
   Note!
   Access for WTW service personnel only

Detailed information on the individual display and menus or submenus with the relevant setting values is given in chapter 9 Standard program.

8.3 Programming of automatic sampling in the Compact program

The sampler can very easily be programmed directly on the display.
The users have all information of the selected or running program available at a glance, i.e. they see all information on the display (without having to scroll in submenus)



Display

In **line 1** Setting of Time or Flow mode. With Time, specification of the sampling interval in clock pulses. With Flow, the flow signal is integrated and displayed as the % of the next sampling. With 100% a sampling procedure is triggered and the display is reset to 0%. This process is repeated with each sampling.

In **line 2** The filling times in clock pulses and the distributor systems can be selected, additional information on the remaining time of a sampling interval till the next sampling.

In **line 3** With sampling according to Flow, the analog flow signal is displayed as the momentary value, or as % with digital input. Furthermore, the number of requested and taken samples is displayed for checking purposes. Additional information "error message“, e.g. "Suction error“

In **line 4** Information of program to be stored or selected with Start and Stop function.

Samplers of the PB 8.... series have programs stored in the delivery condition. They can be used immediately or adjusted to meet your special requirements.
The setting parameters have to be selected or calculated correspondingly!

Fixed programs in the delivery condition, see chapter 10, page 52

8.3.1 Example: Compact program, Time

Storing the sampling according to Time under program no.1

Collecting container	13L
Filling quantity:	10L
Filling time	24 h
Sampling interval:	10 min (corresponds to 6 samples taken per h, equals a sum of (6 x 24 = 144 samples)

specified sample quantity on the dosage vessel: 10000 mL/144= 70 ml

Settings:
Select display view of program (see section 0) with arrow key (DOWN).
After the ENT key has been pressed, the program no. display field of the 4th line flashes.
Select "Program 1" with the UP/DOWN arrow keys.
Press the arrow key◄ several times until the left side of the 1st line flashes.
Select "Time" with the UP/DOWN arrow keys and confirm with ENT.
The right display field of the 1st line flashes.
Select "0:10h" with the UP/DOWN arrow keys and confirm with ENT.
The left display field of the 2nd line flashes.
Select "Single bottle" with the UP/DOWN arrow keys and confirm with ENT.
The right field of the 2nd line flashes.
Select "24:00h" with the UP/DOWN arrow keys and confirm with ENT.
The left display field of the 4th line flashes.
Confirm the selection of program No.1 with ENT.
The right display field, "Start“ flashes.
Confirming with ENT starts the program 1 immediately.



Note!
If you want to store a new program, you should scroll through all already stored programs first (program location 1-6).
If a program location is already occupied by a program, this program can be overwritten with the above steps. If the program should not be overwritten, a free program location has to be selected first. A program stored in the Standard program (e.g. event program) can be started in the Compact program without any changes.
The entry of samples per bottle max. (Flow menu) is effective in both programs.

8.3.2 Example: Compact program, Flow

Storing the sampling according to Flow under program no.2
Collecting container 13L/ filling quantity 10 L.
Flow input 4-20 mA (medium flow 50% = 12 mA)
Max. samplings/h =20; equals 10 samples per hour with medium flow
Thus, the dosage quantity to be set is 10000mL/10 x 24= 40 mL

Settings:
4th line, left, select "Program 2“. Press the arrow key◄ several times until the left side of the 1st line flashes.
1st line, left, "Flow A“ ENT 1st line, right, "20 samples/ h“ ENT
2nd line, left, "Single bottle ENT 2nd line, right, "24:00h“ ENT
3rd line, no entry required (mA signal)
4th line, left, "Program 2“ ENT 4th line, Start ENT

The settings for sampling according to flow were described in a short form and are carried out in the same way as described in detail in the Time example.

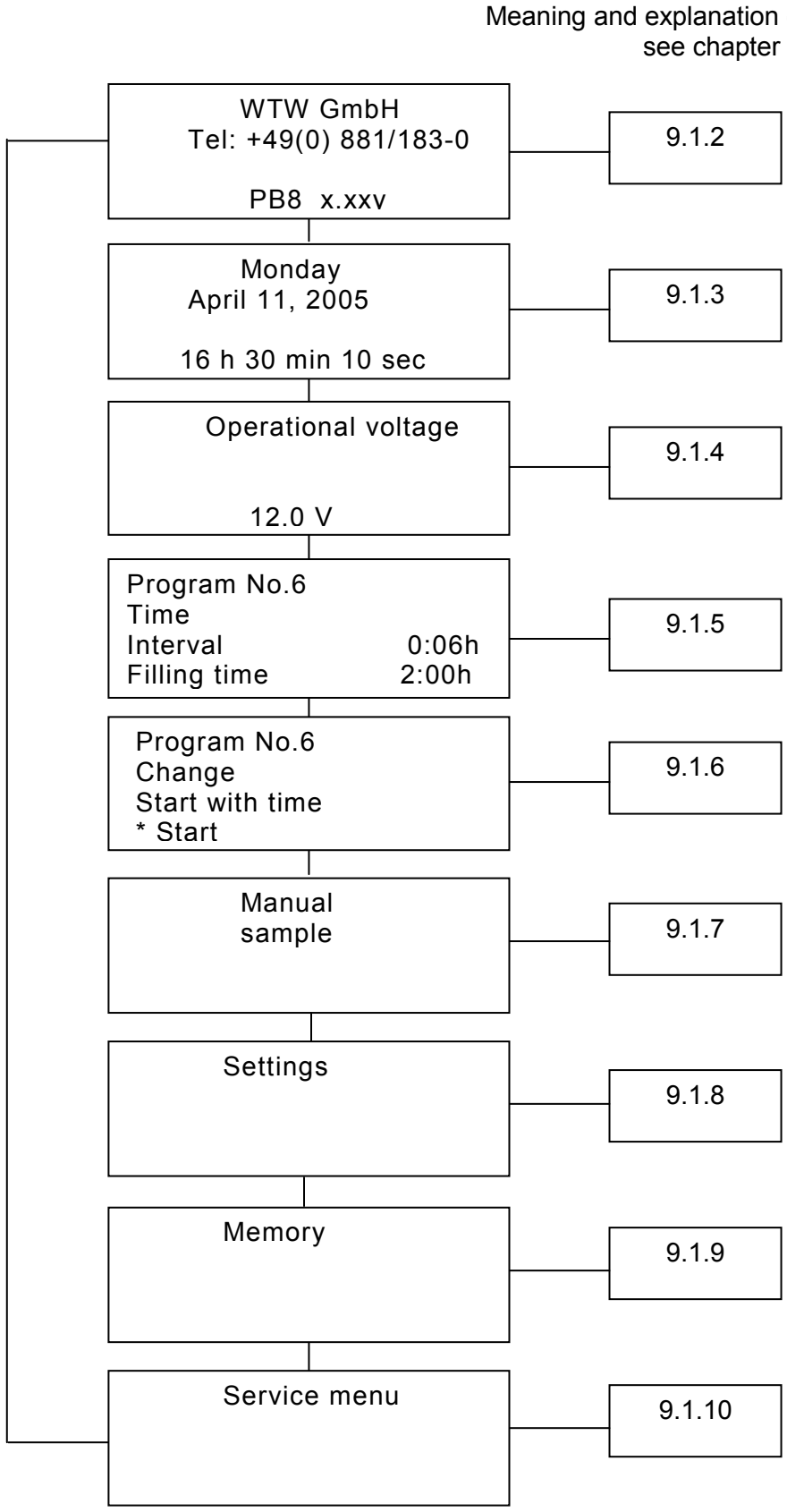
9 Standard program

9.1 Standard program main menu

(Scroll down the display with the DOWN key)

Display	Meaning / explanation	Menu No.
WTW GmbH Tel +49(0) 881/183-0 PB8 x.xxy	**Software version information** Contact and software version Software version	9.1.2
Weekday DD. MM. YYYY hh hours mm min ss sec	**Date and time information** The date and time are set and changed in the "settings" menu“	9.1.3
Operational voltage 12.0 V	**Voltage display information** Display of the internal Operating voltage (secondary voltage of the power supply unit)	9.1.4
Program No. x Time Interval 0:06h Filling time 2:00h	**Program information (1- 6)** Program display with program parameter of the selected program. This display appears automatically after the last programming step or after a program change.	9.1.5
Program No. x Change Start with time * Start	**Programming** With *selection, the selection program can be • started immediately • started delayed • changed.	9.1.6
Manual sample	**Manual sampling** Manual sampling triggered immediately or after a running process is completed.	9.1.7
Settings	**Settings** Here, the following is set: • Date and time • Language • Modem communication • System settings of the sampler	9.1.8
Memory	**Memory** The stored information can be displayed or erased. Stored are: Info memory (sampling record) Bottles record Analog signal	9.1.9
Service menu	**Service menu** Components check Access for service personnel only	9.1.10

9.1.1 Menu tree of the Standard program



9.1.2 WTW information

Display	Meaning / explanation
WTW GmbH Tel +49(0) 881/183-0 PB8 x.xxy	**Software version and WTW information** When the power supply of the instrument has been switched on, the display shows WTW contact with phone no.: +49(0) 881/183-0. Fax: +49(0) 881/183-420 E-mail:Info@wtw.com The display changes every 5 sec Software version, e.g. 3.53m (For queries / service please quote the software version)

9.1.3 Date and time information

Display	Meaning / explanation
Weekday DD. MM. YYYY hh hours mm min ss sec	**Date and time information** Display of the current date with weekday, day, month, year, hours, minutes, seconds The date and time are set and changed in the "settings" menu“ 9.1.8

9.1.4 Operational voltage information

Display	Meaning / explanation
Operational voltage 12.0 V	**Voltage display information** Display of the internal operational voltage Shows the secondary voltage of the power supply unit and thus serves to check the power supply. (voltage of the power supply unit is regulated)

9.1.5 Program information

Display	Meaning / explanation
Program No. x Time Interval 0:06h Filling time 2:00h	**Program information** Program display with program parameter of the selected program. This display appears automatically after the last programming step or after a program change.

9.1.6 "Programming“ menu

9.1.6.1 Entering/changing the operating mode, "Time"

Display	Meaning / explanation
Program No. x *Change Start with time Start	**The selected program No. 1- 6 can be** • started immediately • started delayed • changed. After *changing and confirming with ENT, the following display appears:
Password ****	**Password entry** A password is entered to protect against manipulation and inadvertent program changes (default **6299**) If you have assigned a new password, it is essential to document it as otherwise no access will be possible! After confirming with ENT, the following display appears:
Operating mode Event *Time Flow	**Selection of the Time operating mode** If sampling according to time was selected, the following display appears:
INTERVAL 00:06 h	**Interval** With the operating modes Time or Event, the sampling interval in minutes is entered here. After the entry and confirmation with ENT, the following display appears:
Bottle filling * time related sample related	**Selection of bottle filling mode** Here you select whether the bottle filling should be carried out time related or sample related. After selecting the time related mode and confirming with ENT, the following display appears:
Filling time per bottle 002:00 h	**Time related bottle filling.** Setting after which time the bottle is changed. Example: interval 10min, filling time/bottle 120min, Bottle volume 1000mL. 12 samples are taken. Thus, the dosage volume per sample is approx. 80ml After the entry and confirmation with ENT, the following display appears:
Distributor Single bottle 2x 5.0 L 2x 10.0 L 4x 6.5 /10/14/25 L 4x 25 L * 12x 1.0 L 12x 2.9 L 24x 0.4 L 24x 1.0 L 24x 2.9 L 4x 25.0 L	**Selection of sample containers / distributor** Select the distributor with the cursor and confirm with ENT. The following display appears:

continued: 9.1.6.1 Entering/changing the operating mode, "Time"

Display	Meaning / explanation
Sampling pause 24:00 h	**Sampling pause** Setting a filling pause between bottles. During the filling pause, the started program is interrupted. If 0:00 is entered, the next sample bottle is filled immediately. Example: sampling delayed by the specified filling pause plus filling time per bottle. With filling time 2:00h and filling pause 24:00h, one bottle is filled per day, delayed by 2h each time. After scrolling with the DOWN key, the following display appears:
Combined Event sampling Yes * No	**Event sampling** If Yes is selected, the further procedure and entries are carried out as described under the "Flow“ program with event interaction. (see section 9.1.6.3) If No is selected and ENT is pressed, the following appears:
Program repetition *Yes No	**Program repetition** Selection of "Yes“ means permanent operation. The selected program is permanently restarted automatically. With permanent operation, the sample bottles have to be exchanged in time, as they will be overfilled otherwise. The selected program appears with the program information. On confirmation with ENT or scrolling with the DOWN key, the start window of the selected program xx appears
Program No. x Time Interval 0:06h Filling time 2:00h	**Program information** Program display with program parameter of the selected program. This display appears automatically after the last programming step or after a program change.

9.1.6.2 Entering/changing the operating mode, "Flow "

Display	Meaning / explanation
Program No. xx *Change Start with time Start	**The selected program No. 1- 6 can be** • started immediately • started delayed • changed. After *changing and confirming with ENT, the following display appears:
Password ****	**Password entry** A password is entered to protect against manipulation and inadvertent program changes (default **6299**) If you have assigned a new password, it is essential to document it as otherwise no access will be possible! After confirming with ENT, the following display appears:
Operating mode Event Time * Flow	**Selection of the Flow operating mode** Selection of the operating mode, sampling according to flow. The analog input 0/4-20mA is selected in the system settings. With analog input, the following appears:
Smpls/h at 20mA 030.0	**Entry of samplings per h** In the analog flow (0/4-20mA) operating mode, the frequency of samplings per hour with the maximum flow signal is specified, e.g. at 20mA or after scaling m^3/h under settings.
Operating mode Event Time * Flow	**Selection of the Flow operating mode** Selection of the operating mode, sampling according to flow. The digital input is selected in the system settings. With digital input, the following appears:
Pulse divider 0020	**Entry of pulse divider** Here you specify after how many pulses a sampling should take place. After ENT or DOWN, the following appears:
Bottle filling * time related sample related	**Selection of bottle filling mode** If Time related is selected and ENT is pressed, the following appears:
Filling time per bottle 002:00 h	**Bottle filling quantity** Setting of the bottle change. After the entry and confirmation with ENT, the following display appears:
Maximum number of samples per bottle limited? *Yes No	**Selection of sample limitation per bottle** If No is selected, the distributor selection display appears. If Yes is selected and ENT is pressed, the following appears:
Samples per bottle Maximum 010	**Entry: samples per bottle** This is a protection against overfilling of the bottles if the flow signal is unexpectedly high. After ENT or DOWN, the following appears:

continued: 9.1.6.2

Display	Meaning / explanation
Distributor Single bottle 2x 5.0 L 2x 10.0 L 4x 6.5 /10/14/25 L 4x 25 L * 12x 1.0 L 12x 2.9 L 24x 0.4 L 24x 1.0 L 24x 2.9 L 4x 25.0 L	**Selection of sample container / distributor** Select the distributor with the cursor and confirm with ENT. The following display appears:
Sampling pause 24:00 h	**Sampling pause** Setting a filling pause between bottles. During the filling pause, the started program is interrupted. If 0:00 is entered, the next sample bottle is filled immediately. Example: sampling delayed by the specified filling pause plus filling time per bottle. With filling time 2:00h and filling pause 24:00h, one bottle is filled per day, delayed by 2h each time. After scrolling with the DOWN key, the following display appears:
Combined Event sampling Yes * No	**Combined event sampling** If No is selected and ENT is pressed, the following appears: If Yes is selected, see below
Program repetition *Yes No	**Program repetition** Selection of "Yes“ means permanent operation. The selected program is permanently restarted automatically. With permanent operation, the sample bottles have to be exchanged in time, as they will be overfilled otherwise. The selected program appears with the program information. On confirmation with ENT or scrolling with the DOWN key, the start window of the selected program x appears
Program No. x Time Interval 0:06h Filling time 2:00h	**Program information** Program display with program parameter of the selected program. This display appears automatically after the last programming step or after a program change.

9.1.6.3 Entering/changing the operating mode "Flow" with combined event sampling

Display	Meaning / explanation
Combined Event sampling *Yes No	**Combined event sampling** If No is selected, a program information appears If *Yes is selected, the following appears:
Interval of sampling with combined event sampling 00:02 h	**Interval of combined event sampling** After scrolling with the DOWN key, the following display appears:
Filling time of combined event sampling 02:00 h	**Filling time of combined event sampling**
Event operating mode Program end *Combined parallel	**Program end of combined event sampling** If combined or parallel is selected and ENT is pressed, the following appears:
Event, bottles Defined bottles * In next bottle From last bottle	**Selection of bottles with combined event sampling** Event sample, selectable into defined bottles, into next bottle or from last bottle With ENT, Program repetition appears.
Program repetition *Yes No	**Program repetition** Selection of "Yes“ means permanent operation. The selected program is permanently restarted automatically. With permanent operation, the sample bottles have to be exchanged in time, as they will be overfilled otherwise. The selected program appears with the program information. On confirmation with ENT or scrolling with the DOWN key, the start window of the selected program x appears
Program No. x Flow Smpls/h at 20mA 10 Filling time 2:00h	**Program information** Program display with program parameter of the selected program. This display appears automatically after the last programming step or after a program change.

9.1.6.4 Entering/changing the operating mode, "Event "

Display	Meaning / explanation
Program No. x *Change Start with time Start	**The selected program No. 1- 6 can be** • started immediately • started delayed • changed. After *changing and confirming with ENT, the following display appears:
Password ****	**Password entry** A password is entered to protect against manipulation and inadvertent program changes (default **6299**) If you have assigned a new password, it is essential to document it as otherwise no access will be possible! After confirming with ENT, the following display appears:
Operating mode *Event Time Flow	**Selection of the Event operating mode** Selection of the operating mode, sampling according to events. The contact duration of the event signal (potential-free closer) is defined in the system settings. After ENT, the following appears:
INTERVAL 00:06 h	**Interval** With the operating modes Time or Event, the sampling interval in hours / minutes is entered here. After the entry and confirmation with ENT, the following display appears:
Bottle filling * time related sample related	**Selection of bottle filling mode** If Time related is selected and ENT is pressed, the following appears:
Filling time per bottle 002:00 h	**Bottle filling** Setting of the bottle change. After the entry and confirmation with ENT, the following display appears:
Distributor Single bottle 2x 5.0 L 2x 10.0 L 4x 6.5 /10/14/25 L 4x 25 L * 12x 1.0 L 12x 2.9 L 24x 0.4 L 24x 1.0 L 24x 2.9 L 4x 25.0 L	**Selection of sample container / distributor** Select the distributor with the cursor and confirm with ENT. The following display appears:
Program repetition Yes * No	**Program repetition** Here you select whether the program should be repeated or run only once after being started. After the selection, the following appears:
Program No. x Event Interval 0:06h Event, btl change 2:00h	**Program information** Program display with program parameter of the selected program. This display appears automatically after the last programming step or after a program change.

9.1.6.5 Entering or changing the "event" operating mode with sample related bottle filling selected

Display	Meaning / explanation
Bottle filling time related *sample related	**Selection of bottle filling mode** If sample related is selected and ENT is pressed, the following appears:
Samples per bottle 012	**samples per bottle** Entry (3 digits) of how many samples should be dosed per bottle. After the entry and confirmation with ENT, the following display appears:
Distributor Single bottle 2x 5.0 L 2x 10.0 L 4x 6.5 /10/14/25 L 4x 25 L * 12x 1.0 L 12x 2.9 L 24x 0.4 L 24x 1.0 L 24x 2.9 L 4x 25.0 L	**Selection of sample container / distributor** Select the distributor with the cursor and confirm with ENT. The following display appears:
Program repetition Yes * No	**Program repetition** Here you select whether the program should be repeated or run only once after being started. After the selection, the following appears:
Program No. x Event Interval 0:06h Event bottle change	**Program information** Program display with program parameter of the selected program. This display appears automatically after the last programming step or after a program change.

9.1.6.6 Menu, "Program start“

Display	Meaning / explanation
Program No. x Change Start with time * Start	**Start of the program x.** After pressing the ENT key, set the flashing cursor on Start with the up/down keys. After confirming with the ENT key the program x is started.
Delayed program start DD:MM:YYYY HH:MM	**Delayed program start** After entering the date and time and confirming with the ENT key, the selected program xx is started at the specified point of time
Program No. x Start DD.MM/HH:MM Bottle 1 <Pause with ENT>	**After program start** After the program start the display appears 1. the selected program 2. start with date and time 3. the current bottle 4. information on program interruption (pause) with ENT
Program No. x Start DD.MM/HH:MM Bottle 1 <Pause with ENT>	**Pause mode.** After pressing the ENT key the running program is interrupted. The program continues to run in the background. The interruption is, e.g., for: Cleaning and maintenance activities Manual sampling (single sampling)
Program No. x Pause started Please wait....	**Pause mode information.** This information appears if the instrument is in an active process. The pause mode starts only after the process has been completed. E.g., the current sampling is completed first.
Program No. x Pause (14:02) *Continue program	**Pause mode information.** The displayed time indicates how long the system will be in the pause mode before automatically returning to the active program. With ENT, the interrupted program is continued immediately.
Program No. x Start DD.MM/HH:MM Bottle 1 <Pause with ENT>	**Program information** After leaving the pause mode the program information appears again. On pressing the ESC key, the shown query, abort program, appears.
Program No. x Cancel Yes * No	**Program exit** Program No. x. Set the cursor to Yes or No with the UP/DOWN key and confirm with ENT. With No the program is continued with display information of the program. With Yes, the program is canceled. Note! If the instrument is in a running process (e.g.running sampling), this process is finished before the program is canceled.

Continued: 9.1.6.6, program information after program start (Standard program)

Program No. x Start DD.MM/HH:MM Bottle 1 <Pause with ENT>	**After program start** While the program is running, further information is received by scrolling with DOWN. Manual sampling (single sample) is possible while the program is running without switching off the program After DOWN the following appears
Date Time Next sample or % Next bottle	**Date / time information** When will next sampling take place? When will next bottle change take place? After DOWN the following appears
Date Time Samples req/taken btl x: 5/5 total: 5/5	**Samples information** samples requested / samples taken Bottle x: samples requested / samples taken Total number of samples taken/samples requested After DOWN the following appears
Flow: xx.x mA Flow since start xx.x mAh	**Flow information** Information of which flow in mA momentarily and since the start of the sampling After DOWN the following appears
Program No. x Input signals Bottle memory *Info memory	**Information on input signals, bottle memory and info memory** After DOWN the following appears
Program No. x * Single sample	**Manual sampling** Manual sampling (single sample) during running program After ENT, query into which bottle the single sample should be dosed. (menu tree, programming/start/single sample/Standard program) After DOWN the following appears
Program repetition (currently: Off) Off *On	**Information of program repetition** with activation or confirmation
Program No. x System settings *Programming	**Information on running program** Information on details of running program Information on system settings With ESC return to the display. The following display appears:
Program No. x Start DD.MM/HH:MM Bottle 1 <Pause with ENT>	**After program start** On pressing the ESC key, the shown query, abort program, appears.
Program No. x Cancel Yes * No	**Program exit.** Confirm with ENT, set the cursor to Yes with the UP/DOWN key and confirm with ENT. Note! If the instrument is in a running process, this is completed before the program exit.

9.1.7 Menu, "Manual sampling"

Display	Meaning / explanation
Manual sample Bottle xx	**Manual sampling** Here you can start a single sample in the Compact program during a running program at any time. In the Standard program, while a program is running, a single sample is started from the display of the running program by scrolling to "Single sample" with DOWN. (see "Program start" and menu tree, Programming/start/single sample/Standard program) When a distributor program has been selected with a selected distributor of, e.g. 12x1.0 L, the bottle the sample should be dosed into is selected with the entry of the bottle no. xx. This program point also serves to check the sampling system and, e. g., to measure the dosage quantity and to check the functioning of the distributor. After the entry and confirmation with ENT, the following display appears:
Manual sample started	**Information of manual sampling** After the end of the manual sampling, the following appears again:
Manual sample	**Manual sampling** New start possible with ENT. Return to program information via UP key9.1.5

9.1.8 Menu, "Settings"

Display	Meaning / explanation
	Settings of • Date/time • Language • Modem • System settings of the sampler. With ENT, the following display appears.
Date Time DD:MM:YYYY HH:MM	**Setting the date and time** With ENT the cursor flashes on the first digit. Setting with UP/DOWN and confirmation with ENT. With ◄► select the next digit and with ENT confirm etc.. .... till the last digit. After DOWN the following appears
Language English *German	**Setting the language** Language selection with *. After DOWN the following appears
Display *System settings Programming	**Display** Selection of system settings or programming. With selection of *System settings • Select System settings with UP/DOWN • After ENT, the following appears:
Pre-purge 5.0s Post-purge 0.0s Ventilation time 5.0s Max. suction time 60.0s .....to..... Baud rate xxxxx	**Display of system settings** The system settings submenu shows all specified system parameters. When scrolling on with the DOWN key, further lines of the specified values appear. Scroll back with UP. Return to the selection display with ESC.
Display System settings *Programming	**Display** Selection of system settings or programming. With selection of *Program settings • Select Program settings with UP/DOWN • After ENT, the following appears:
Distributor: 12x1.0 L Sampling: Flow ...to... Filling time	**Display of programming** The programming submenu shows all specified program parameters of the selected program. Serves to check the program parameters When scrolling on with the DOWN key, further lines of the specified program parameters appear. Scroll back with UP. Return to the selection display with ESC.



Note
This menu is for display purposes only. Settings can only be done in the "Change system settings" submenu and can be checked under "Show settings".

9.1.8 continued:
"Settings“ menu with "Communication“ submenu

Display	Meaning / explanation
Communication	**Communication settings** • GSM-PIN • Modem • Modbus addressing • Send SMS. With ENT, the following display appears.
GSM-PIN PIN: **** Repeat: ****	**Setting the GSM-PIN** With ENT the cursor flashes on the first PIN digit. Setting with UP/DOWN and confirmation with ENT. With ◄► select the next digit and with ENT confirm etc.. .... till the last digit. After DOWN the following appears
Modem initialization View record *Initialization	**Setting the modem initialization**
DD:MM:YYYY hh:mm:ss	**Display of modem initialization** Return with ESC On scrolling with DOWN, the following display appears:
Modbus address 0	**Modbus address** On scrolling with DOWN, the following display appears:
Send SMS Active *Yes No	**Send SMS** With ENT, the following appears:
Number for SMS: X	**SMS number entry**
Send SMS with: Sampling (man) Sampling (prg) Sampling (remote)	**SMS selection**
Test SMS Send * Start	**SMS test**
Test message is sent	**SMS information**

9.1.8 continued:
"Settings" menu with "change system settings" submenu

Display	Meaning / explanation
System settings Change	**Change of system settings** Select and change system settings of the sampler like running times, restriction, conductivity. With ENT, the following display appears.
Password ****	**Password entry** A password is entered to protect against manipulation and inadvertent program changes (default **6299**) If you have assigned a new password, it is essential to document it as otherwise no access will be possible! After confirming with ENT, the following display appears:
Pre-purge before suction 005.0 s	**Pre-purge** Blowing out the sample line before sampling. Thus, all sediments at the suction opening are removed. Time entry for 1st blowing with ENT, position cursor with ◄►. Confirm with ENT or press DOWN. The following display appears:
Post-purge after sampling 000.0 s	**Post-purge** Serves to blow out sample that might be in the tube. With continuously laid suction tube, setting 0. Entry as above. Enter with ENT or press DOWN. The following display appears:
Aeration time 005.0 s	**Aeration time** The aeration time is the time between measuring the filling level and opening the pinching valve. The time must be sufficient to displace excess sample out of the dosage tube. Entry as above. Enter with ENT or press DOWN. The following display appears:
Maximum suction time 060.0 s	**Maximum suction waiting time** Limitation of maximum suction time. This prevents the pump from running in permanent operation if, for example, the line leaks or sample is missing. Suction process is repeated after the first failed trial. After this the error message, "Suction failed" appears. Entry as above. Enter with ENT or press DOWN. The following display appears:
PINCHING VALVE OPEN 003.0 s	**Pinching valve open** Reflux time of the pinching valve. Entry as above. Confirm with ENT or press DOWN. The following display appears:
PINCH VALVE PAUSE 002.0 s	**Pinching valve pause** While the sample is draining, the pinch-valve is stopped and thus opened partly only. Thus the sample drains more gently. Entry as above. Confirm with ENT or press DOWN. The following display appears:
Conductivity 300	**Conductivity** The electrodes in the dosage vessel recognize the filling level conductimetrically and regulate the pump from vacuum to pressure. The sensitivity of the electrodes has to be set to the conductivity of aqueous samples. The basic setting of 300 is dimension less and corresponds to a conductivity of approx. 50µS/cm. A value set too high causes flooding. A value set too low causes permanent signal (error message, contamination); entry as above. Confirm with ENT or press DOWN. The following display appears:

9.1.8 continued:
"Settings" menu with "change system settings" submenu

Display	Meaning / explanation
Pump capacity 080%	**Pump capacity** The specified pump capacity determines the medium suction speed. The lower the pump speed the longer is the operational life of the pump. If it is set too low, the suction height may not be reached. Confirm with ENT or press DOWN. The following display appears:
Pulse duration Digital flow 0050 ms	**Pulse duration, digital flow** Entry of the minimum pulse duration for the digital signal. It secures the input against signal bouncing. Entry as above. Confirm with ENT or press DOWN. The following display appears:
Flow signal Digital 0-20 mA *4-20 mA	**Selection of flow signal input** After selection with * and ENT, the following appears:
Flow unit None (mA/Pulse) *m3/h l/s	**Selection of flow signal display** If m3/h is selected and ENT is pressed, the following appears: Selection l/s not active.
Flow measurement 20 mA correspond to 000100.0 m3/h	**Scaling the flow measurement** Scaling of the assigned measurement signal. The display will then appear in the scaled reference quantity. After entering the relevant scale value and ENT, the following appears.
Behavior at max. samples per bottle in next bottle *Discard samples	**Selection of sample exceeding** Specification of what the sampler should do if the max. number of samples per bottle is exceeded. After selection with * and ENT, the following appears:
Sequence oriented programs (0-6)	**For special programs only.** Is of no importance here. Setting value 0. With DOWN the following appears.
Prg. sampling delay Random time *Fixed time None	**Selection of sampling delay** Here you can set defined time delays for sampling, for example, after hydraulic delay times. If *Fixed time or Random time is selected and ENT, the following appears: If None is selected, continue with Analog signal calibration
Prg. sampling delay 10 min	**Entry of sampling delay** After entering the relevant value in min and ENT, the following appears:
Analog signal * calibration	**Analog signal calibration** 2-point calibration of the analog flow signal input via adjustment at 4 mA and 20 mA. After ENT the following appears (in English only)
Analog calibration Measured: 0.0 mA Adjus: 4.0 mA and Press ENT	**Setting of analog signal, 1st measuring point (4 mA)** Adjustment of the 1st point of the mA display indication to the given value, 4.0 mA With ENT, the following display appears.
Analog calibration Measured: 0.0 mA Adjus: 20,0 mA and Press ENT	**Setting of analog signal, 2nd measuring point (20 mA)** Adjustment of the 2nd point of the mA display indication to the given value, 20.0 mA With ENT, the following display appears.
Analog calibration Measured: xx.x mA Finished: Press ESC	**Completing the calibration** With ESC, the setting values (1st and 2nd point) are taken over by the system. All intermediate values are linearized.

9.1.8 continued:
"Settings" menu with "change system settings" submenu

Display	Meaning / explanation
Info memory Information Settings *Recording	**Selection of information memory** After selecting *Recording and ENT, all following possible information and messages can be selected and recorded with DOWN and * in the Info memory submenu. The information / positions marked with * are recorded in a log book. Please note that the memory can take a maximum of 1000 entries and the oldest entries are automatically overwritten. **Note! For clearness purposes we recommend to record the most important data only.** The basic pieces of information usual in practice are marked with *. Details, see Info memory submenu With DOWN the following appears:
Generate errors *Error Clogged *Error Level control *Error Distributor *Max. spls./bottle * Power failure * Analog error * Max. filling rime * Door open * Inside temperature * Suction speed *No event bottle * Sample enforced * No sample	**Selection of error information** The selected errors appear as error messages on the display. In combination with door contact switch only Only with PB150-2 / PB150-2/SE With DOWN the following appears:
Displays in CAPITAL LETTERS? Yes * No	**Selection of upper and lower case** With DOWN the following appears:
RS 232 baud rate 38400 *57600 115200	**Selection of baud rate** With DOWN the following appears:
Change password 6299	**Password change**

9.1.8 continued:
"Settings" menu with "change system settings" submenu, info memory

Display	Meaning / explanation
Info memory Information Settings *Recording	**Selection of Info memory** After selecting *Recording and ENT, all following possible information and messages can be selected and recorded with UP and DOWN. The information / positions marked with * are recorded in a log book.
	Selection of info memory recording Using ENT, select individual pieces of information for recording; using UP or DOWN, scroll in the list.
Sampling (man)	Manual sample
Sampling (prg)	Programmed sampling
Sampling (remote)	Remotely controlled sampling
Sampling (event)	Event sampling
*Error Clogged	No sample during suction
*Error Level control	Electrodes contaminated (cleaning required)
*Error Distributor	Distributor disturbed
Max. spls./bottle	Max. number of samples per bottle exceeded
Program started	Program start (date/time)
Program finished	Program finished (date/time)
Program pause	Program interrupted (date/time)
Program continued	Program continued after interruption
Program restart	Program restart
Bottle change	Bottle change
Suction time	Suction time
Sample taken (P)	Sample taken (is displayed in the program display)
Sample started (P)	Sample requested (is displayed in the program display)
Start event	
Event end	
Voltage loss	
Voltage loss end	
Sample taken (btl)	
Sample req. (btl)	
Analog error from	
Analog error to	
First entry	
Max. filling rime	
Door open	A signal contact (opener) is required here
Inside temperature	Combined with PB150-.... Temp control only
No event bottle	
Sample requested	
Sample discarded	
Sample enforced	
No sample	

Note
In the default setting, all listed information is recorded.
We recommend to select the individual pieces of information to be recorded, as the memory can take up to 1000 entries only and the oldest entries are automatically overwritten.
The pieces of information recommended for a minimum selection are marked by *.

9.1.8 continued:
"Settings" menu with "change system settings" submenu

Info memory Information *Settings Recording	**Selection of info memory settings** After selection of *Settings and ENT, the following appears:
Delete info memory With program start? Yes * No	**Selection of info memory erasure** If Yes is selected, all entries are deleted with the program start If *No and Yes is selected with ENT, the following appears:
Info memory *Information Settings Recording	**Selection of info memory information** After selection with *Information and ENT, the following appears:
Info memory Size: 1000 Entries: 75	**Information of memory entries** States how many entries there are. When the max. memory capacity is reached, the oldest entries are automatically overwritten. Continue with ESC

9.1.9 "Memory" menu

Display	Meaning / explanation
Memory	After ENT, the following appears:
Display memory Input signals Bottle memory *Info memory	**Selection of memory display** After selection with *Info memory and ENT, the following appears:
DD.MM.YY hh:mm Error CLOGGED DD.MM.YY hh:mm Voltage loss etc.	**Information of optional parameter** of the parameters selected under Settings Scroll on with UP/DOWN. With permanent actuation, the display runs. Last entry by DOWN key. Oldest entry with UP key. Return to Display memory with ESC
Display memory Input signals *Bottle memory Info memory	**Selection of memory display** After selection of *Bottle memory and ENT, the following appears:
Bottle no. Filled from to X minutes Spls req. / taken yy / zz	**Information on bottle filling** Return to Display memory with ESC
Display memory *Input signals Bottle memory Info memory	**Selection of memory display** After selection of *input signals and ENT, the following appears:
DD. MM.YYYY hh:mm:ss analog flow: Xx mA Inside temperature	**Display of input signals** When scrolling with the DOWN key, the analog flow signal curve is displayed graphically as h-average values from the 10min momentary value and inside temperature (insignificant for PB8). Return to Display memory with ESC

9.1.10 "Service" menu

Note
Changes in the "Service" menu may be carried out by service personnel only.

Changes in the "Service" menu can cause damage of the instrument.
Access to the "Service" menu is protected against inadvertent changes by a password.

In the "Service" menu, further settings are possible, e.g.:

- Manually operating the membrane pump
- Manually operating the pinch-valve
- Manually operating the valve system
- Positioning the distributor directly
- Step operation of distributor
- Self-test
- Single step sampling
- Defrosting cycle
- Inputs
- Outputs
- Input signals
  - Filling level
  - Analog flow
  - Event

10 Programming the sampling procedure

In the Compact program or Standard program, the sampler can be set to meet special local requirements. Altogether, six sampling programs with different sampling modes can be stored.

Fixed programs

Samplers of the PB 8.... series have programs stored in the delivery condition. They can be used immediately or adjusted to meet your special requirements.
The setting parameters have to be selected or calculated correspondingly!

Fixed programs in the delivery condition:

Prog. no.	Operating mode	Interval	Bottle change	Container
1	Time	10 min	24 h	1
2	Flow, 4-20 mA	10 samplings/h at 20mA	24 h	1
3	Digital flow	1 pulse/sample	24 h	1
4	Time	10 min	2h	12x1 L
5	Flow, 4-20 mA	10 samplings/h at 20mA	2h	12x1 L
6	Digital flow	1 pulse/sample	2h	12x1 L

Note
In the Digital flow operation mode, configure the system setting correspondingly under 9.1.8.

Programming

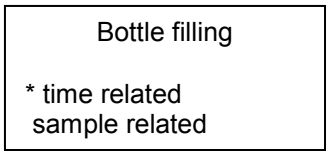
Programming the automatic sampling consists of the following steps:

- Program selection
  - Compact or Standard program
- Selecting the program no.
  - Select program no.
  - Edit / change / start the selected program
- Selecting the operating mode
  - According to time - flow - events
- Determining the parameters for automatic sampling
- Selecting the program settings
  - Time / sample related settings
  - Combined event sampling
  - Program repetition

10.1 Sampling parameters

- INTERVAL
- TIME PER BOTTLE or SAMPLES PER BOTTLE
- DOSAGE VOLUME
  with sampling according to flow:
- Pulse divider or SAMPLES PER HOUR AT 20 mA
- Sampling pause

10.1.1 Interval



The INTERVAL specifies the time between automatic samplings.

The INTERVAL is required to set up a TIME RELATED BOTTLE FILLING.

In the BOTTLE FILLING menu, select TIME RELATED.

The INTERVAL is determined according to the dosing volume. Decrement the exact number of samples determined by 2. Round up the interval determined to the next higher whole number. This prevents a possible overfilling of the bottles.

Calculation

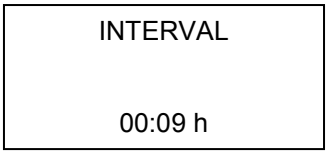
Interval = Filling time per bottle / (Samples per bottle - 2)

Samples per bottle = bottle volume / dosing volume

total:

Interval = Filling time per bottle / [(bottle volume / dosing volume) - 2]

Given:	Number of sample bottles: Volume of a sample bottle: Time between bottle changes: Filling time per bottle: Sampling pause: Dosing volume (specified at the dosing glass):	12 1000 ml 2h 2h 0 min 65 ml
Calculated:	Interval: *120 min / [(1000 ml/65 ml) - 2]* = rounded off:	 *8.96 min* 9 min



In the INTERVAL menu, enter 9 min.

Samples are taken at intervals of 9 minutes.

10.1.2 Samples per bottle

Bottle filling
time related *sample related

The number of samples per bottle specifies after how many samples the bottles will be changed. The number of SAMPLES PER BOTTLE is required for sample related bottle filling.

Determine the number of samples from the given dosing volume. Decrement the determined number of SAMPLES PER BOTTLE by 2 and round down to the next lower whole number. This prevents the bottles from being overfilled.

with fixed dosing volume:

Calculation

Number of samples per bottle = (bottle volume / dosage volume) - 2

Given:	Number of sample bottles: Volume of a sample bottle: Time between bottle changes: Filling time per bottle: Sampling pause: Dosing volume (specified at the dosing glass):	12 1000 ml 2h 2h 0 min 65 ml
Calculated:	Number of samples per bottle *(1000 ml/65 ml) - 2 =* rounded off:	 *13.4* *13*

Thus, each time after 13 samplings the bottle is changed.

10.1.3 Dosing volume

The dosage volume, together with the INTERVAL or number of SAMPLES PER BOTTLE, determines the filling of a sample bottle.

To prevent overfilling, the maximum number of SAMPLES PER BOTTLE that was determined or calculated is incremented by 2 to calculate the dosage volume.

with fixed interval

Calculation

Dosage volume = Bottle volume / Samples per bottle + 2
Samples per bottle = (Filling time per bottle / Interval)

Given:	Number of sample bottles: Volume of a sample bottle: Time between bottle changes: Filling time per bottle: Sampling pause: Interval:	12 1000 ml 2h 2h 0 min 9 min
Calculated:	Dosing volume *1000 ml / [(60 min / 9 min) + 2] =* rounded off:	 *65. 2 ml* *65 ml*

With fixed number of samples per bottle	**Calculation** ***Dosage volume = Bottle volume / (Samples per bottle + 2)***		
	Given:	Number of sample bottles: Volume of a sample bottle: Time between bottle changes: Filling time per bottle: Number of samples per bottle	12 1000 ml 2h 2h 13
	Calculated:	Dosing volume *1000 ml / (13 + 2) =* rounded off:	 *66. 6 ml* *65 ml*

10.1.4 Sampling pause

The program is stopped during the duration of a sampling pause.
No sampling takes place.

Example:
Sampling delayed by 2h daily, starting on Monday from 6.00 hours – 8.00 hours with bottle 1

Number of sample bottles:	12
Sample volume:	1000 mL
Sampling according to time with delayed start	
Start	Monday
Date	dd/MM/YYYY/ 6.00 h/00Min/00Sec
Time per bottle:	2:00 h
Sample interval:	00:10 h
Sampling pause:	24:00 h
Permanent operation.	
Program repetition:	Yes

Result:
The sampler starts with bottle 1 from 6.00 – 8.00 hours,
then waits for 24 h (sampling pause) and fills the next bottle on the following day from 8.00 – 10.00 hours.
Next following day from 10.00 – 12.00 hours etc..

10.2 Programming example of PB 8 with IsoBox 12x1.1 L.

Required:

Over a period of 24 hours, the bottles are to be filled for two hours each.

Number of bottles:	12
Volume of a bottle:	1000 ml
Interval	10 min

Determined:

Bottle filling	Time
Filling time per bottle:	2h
Sampling pause:	0 min

1 Number of samples per bottle

The maximum number of samples per bottle is determined from bottle filling time and interval:
120 min (= 2 h bottle filling time) / **10 min** (= interval) = **12** (samples per bottle)

2 Dosage volume:

The dosage volume is calculated as follows: The maximum number of samples calculated (here: **12**) and **2** additional samples should have room in one bottle. Consequently, to calculate the dosage volume, **14** samples are used:

1000 ml / **14 samples** = **71.4 ml per sample**

The result is rounded down to **70 mL**:

Filling pipe setting on the dosage vessel to dosage volume 70 mL.



Check by means of manual sampling (9.1.7)

11 Cleaning, maintenance, disposal

When dealing with the sampler, please observe the following instructions:

- Follow the local safety and accident prevention regulations
- Only use original spare parts
- Observe the enclosed instructions concerning accessories
- Protect the instrument against dust and dirt as possible
- Check the instrument for mechanical damage regularly.



Caution
If the instrument is used in biologically or chemically contaminated areas, there is danger to the user's health. In this case, observe the regulations for handling dangerous substances when doing repair or maintenance work.

11.1 Cleaning

To maintain the quality of the sampling, we recommend to regularly clean all parts that come into contact with the sample solution. These are:

- Dosing glass
- Electrodes
- Suction hose
- Dosage tube
- Distributor or optional IsoBox



Caution
The instrument may be opened for the activities described in this chapter only. Additional work must only be performed by a specialist authorized by WTW. Noncompliance with this instruction will lead to the loss of warranty claims.



Caution
Before starting maintenance and service work, disconnect the instrument from the electrical supply.

- Do not use a high-pressure cleaner to clean the housing
- Do not use detergents that contain solvents
- Avoid contact with acetone or similar solvents. Remove any splashes immediately.

Occasionally wipe the outside of the sampler with a damp, lint-free cloth. Disinfect the housing with isopropanol as required.

11.2 Maintenance

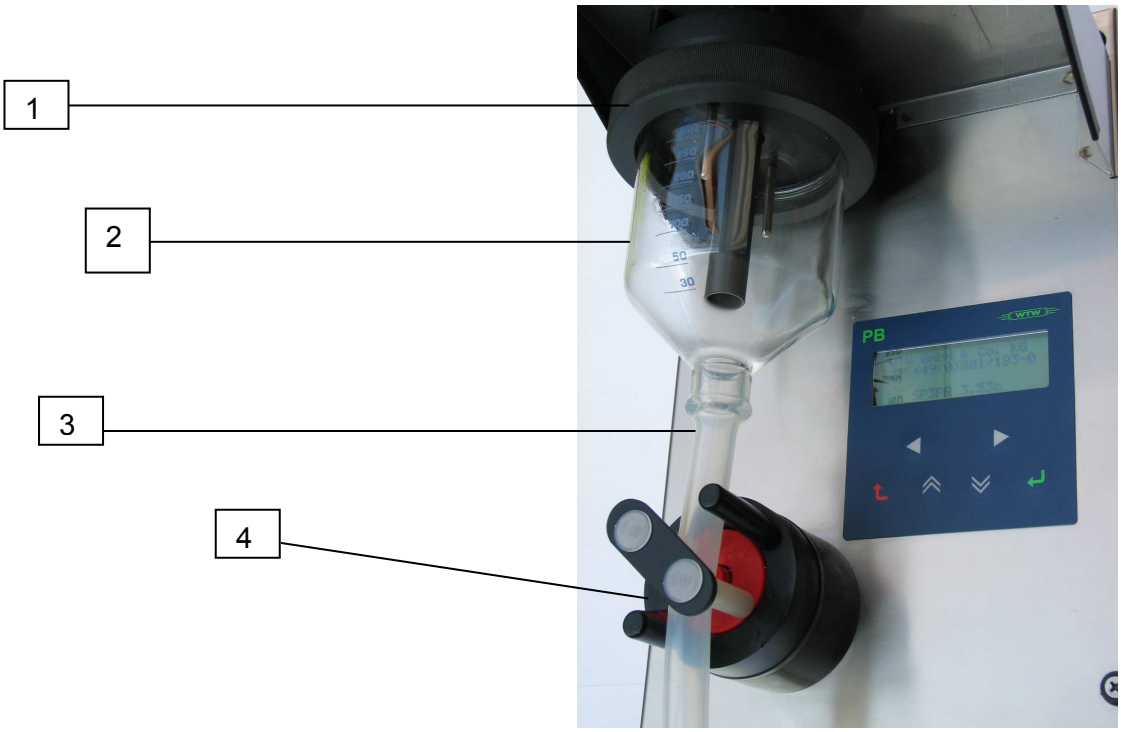
The maintenance activities of the sampler are carried out depending on the medium, lifetime and operating time and
comprise the following:

- Replacing the dosage tube
- Replacing the pump
- Replacing the tubes of the valve system
- Replacing the air filter

The electrical fuse protections of the CPU and power supply unit are maintenance-free.

11.2.1 Replacing the dosage tube

Fig. 10

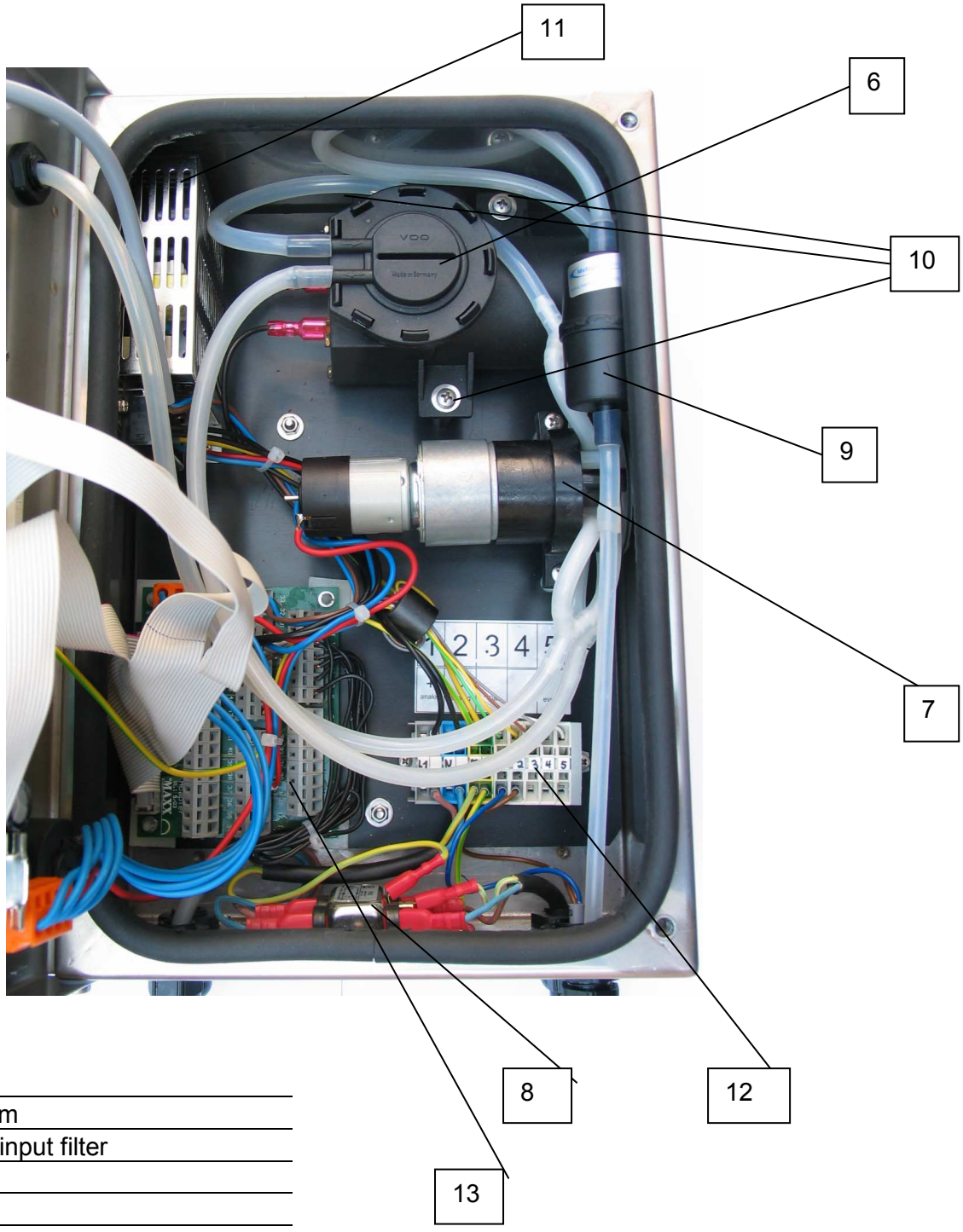


1	Open the support of the dosage vessel (coupling ring - 1)
2	Pull off the hoop guard (4) and remove the dosage vessel (2).
3	Carefully pull off the old dosage tube.
4	Slightly moisten the new dosage tube (3).
5	Push the new dosage tube over the lip of the dosage vessel and cut it to the required length. Put on the hoop guard (4) again

11.2.2 Replacing the pump

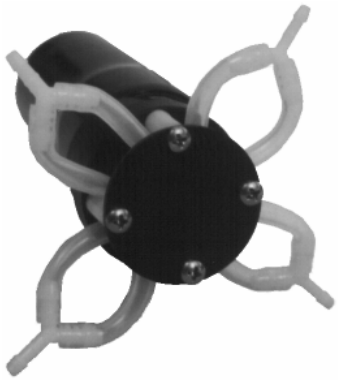
If the pump (6) is defective, it can only be replaced complete.
To do so, loosen the 3 fixing screws (10), the electrical connections and tube connection of the pump and install them on the new pump.

Fig. 11



6	Pump
7	Valve system
8	Line power input filter
9	Air filter
10	Pump fixing
11	Power supply unit
12	Flow - Event signal terminal
13	Terminal board for KV/ PB8

11.2.3 Replacing the tubes of the valve system



Replacing the tubes

Loosen the fixing screws on the valve system (7).
Tilt the valve system upward.
Replace the valve tubes by new tubes cut to the corresponding length. During installation make sure the tubes are not kinked.
Attach the valve system again.

Note
The valve system is exclusively adapted and optimized for the tube with order number 016407. If other tubes are used, instrument malfunctions or damage cannot be excluded.

11.2.4 Replacing the air filter

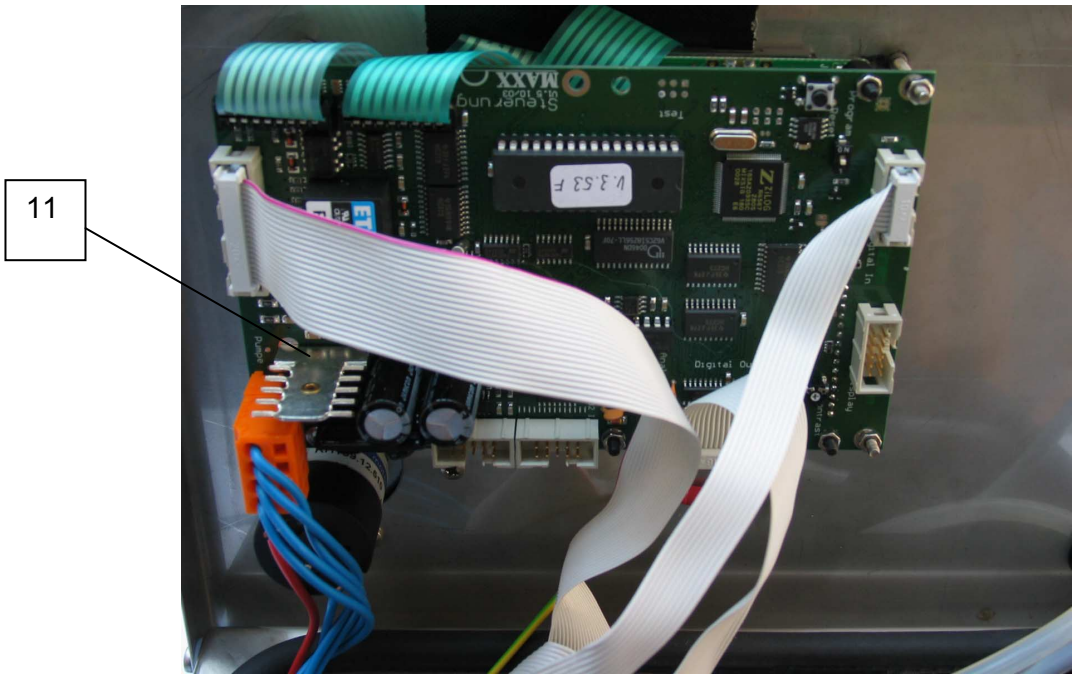
Exchanging the air filter

Pull off the pump suction tube on both sides of the air filter (9). (Put it on again on both sides).

11.3 Fuse protection of the CPU board

The CPU board is protected against overstress by a maintenance-free automatic fuse protection located on the board (11).
After a RESET (power off and power on) the CPU is supplied with power again.

Fig. 12



11.4 Fuse protection of the power supply unit

The power supply unit is protected against overstress by a maintenance-free automatic fuse. After a RESET (power off and power on) the power supply unit supplies the sampler with power again. The output voltage of the power supply unit is regulated to 12 V.

11.5 Disposal

Clean the instrument and dispose of it at a collection point set up for this purpose.

12 What to do if ...

Errors during sampling, possible causes and remedies are listed below.

12.1 Error messages

Error messages in the display point to the following causes.

Error CLOGGED

The instrument has **twice** in a row without success tried to take a sample. Then the following display message appears.

Possible cause	Remedy
– Suction hose is not in the water	– Immerse the suction hose into water
– No water available – Suction hose clogged	– Clean the suction hose
– Tube connection not tight	– Tighten the – If necessary, shorten the worn tube end and reconnect it

The program goes on running and again tries to take a sample according to the programming.

Error ELECTRODES

If this message is displayed immediately after the start of the suction, the filling level electrodes are contaminated.

Possible cause	Remedy
– The conductivity can no longer be measured	– Clean the electrodes
– There is a permanent bridge between the electrodes	– Remove the bridge
– The "Conductivity" value is set too sensitive	– Increase the value under "Settings"

IsoBox option

Error Distributor	Possible cause	Remedy
	– The round distributor does not find any start position – The next position is not reached during the bottle change	– Blockade of the distributor – Remove the blocking of the distributor arm – No distributor selected – Distributor activation or drive defective. – WTW service department

POWER FAILURE This message is displayed if the voltage fails during a running program.

Possible cause	Remedy
– Voltage failure during a running program	– Check power supply – Power failure safe supply

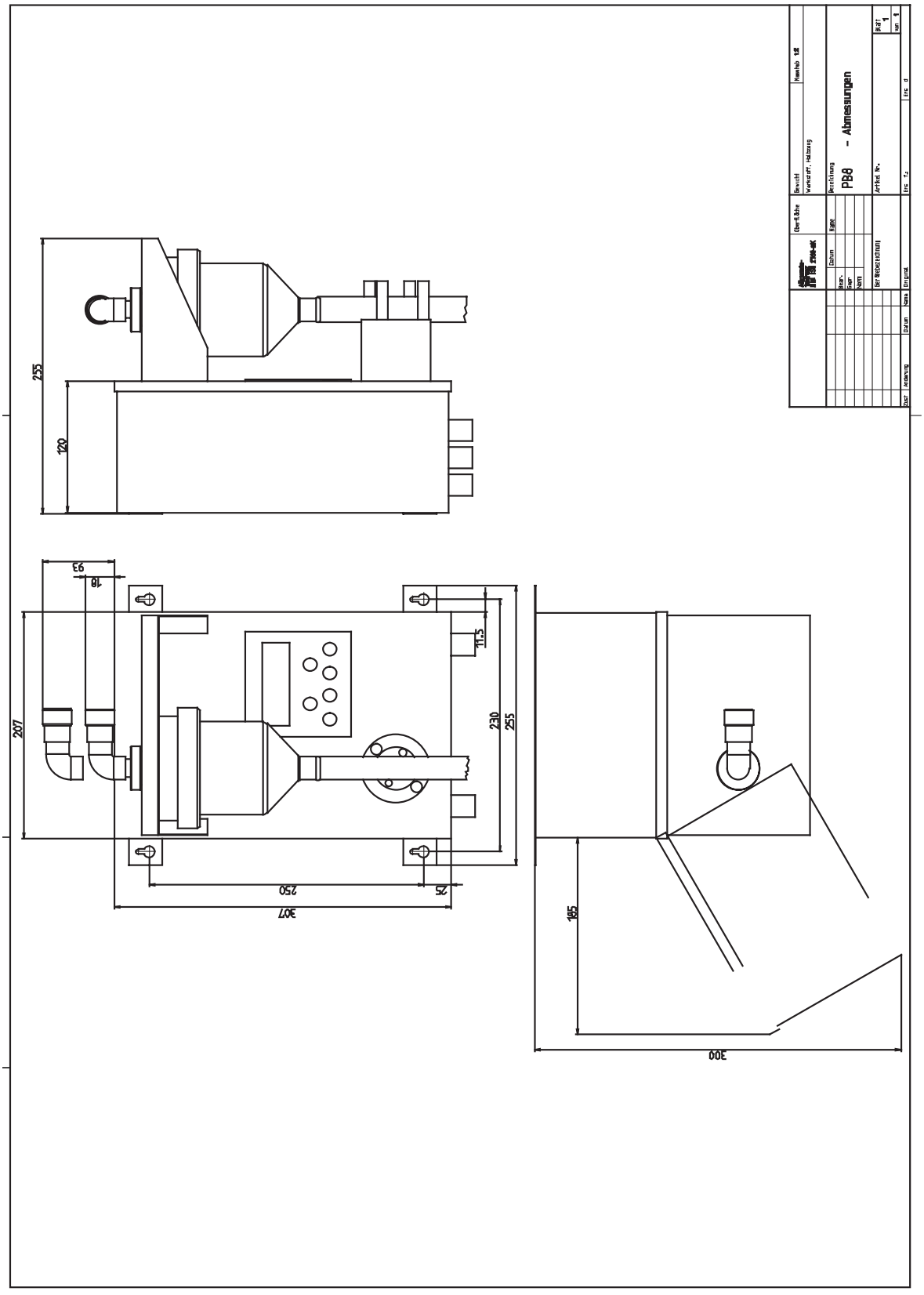
If the voltage is available again, the sampler continues sampling where it should be according to the program cycle. Bottle changes that were left out are made up.

12.2 Problems and solutions

Problems	Possible cause	Proceedings/solutions/remedies
Sampler does not work	Power supply disturbed	Check power supply
Dark display	Power supply disturbed Cable connection disturbed	Check power supply Check cable connection and connector for correct positions, mount replacement display Check fastening and contacts of E-PROM
Sampler does not react to keypressing	Cable connection or control unit defective	Switch off and on again. Reinitialize the system, replacement keypad
Program cannot be started	Program still running	Terminate program See error messages
Display shows rods	Display defective	Replace display (WTW service department)
Sampler does not take samples	– Leakage in the system – Vacuum not sufficient – Pump does not perform – Suction filter blocked – Suction hose is not in the water	– Check dosage vessel for tightness (screw joint and filling pipe, seals, pressure suction connection) – Check the suction hose for leaks – Check the silicone hoses on the dosing unit and valve system for leaks and pass and replace them if necessary – Check the pressure / vacuum side of the pump, exchange if necessary – Replace suction filter – Check the positioning of the suction tube, water level too low, recall error memory (time) – Manual sampling (test)
Sampler blows but does not intake	The filling level electrodes are bypassed	Clean electrodes and dosage unit, less sensitive setting.
Sampler intakes but does not fill the dosage vessel	Pump distance too long / too deep Leakage in the tube system / sample tube (see above)	Increase pump capacity Extend max. intake time. (see settings) Manual sampling test
With IsoBox option Sample is sprayed from distributor	Huge amount of sample Pinch-valve pause too short	Increase pinch-valve pause, e.g. to 5 sec
Sampler does not work according to flow signal in operation mode according to flow	No / incorrect calibration of the analog flow signal	Check calibration Carry out 2-point calibration with 4 mA and 20 mA

13 Technical data

13.1 Dimensions



13.2 Performance data

Enclosure	Rust and acid resistant, 1.4301 steel	
Weight	6.0 kg	
Ambient temperature	Storage -25 °C ... + 50 °C Operation 0 °C ... + 40 °C Sample medium 0 °C ... + 40 °C (aqueous media)	
Power supply	– Power supply	– 230 V/ 50 Hz / 25 VA mobile power supply line with Schuko plug, 1.5 m
	– Power consumption	– approx. 25 VA
Fuses	– Power	– Fuse protection against overstress in the power supply unit
	– CPU	– Automatic fuse protection
Input for flow signal	analog: 0/ 4- 20 mA via optocoupler, threshold voltage 3.3 V digital: potential free closer contact, pulse duration > 50 ms, voltage on the control side: 12 V Pulse divider: automatic (input of max. sample quantity / h)	
Input for event signal	digital: potential free closer contact, pulse duration > 50 ms. Voltage on the control side 12 V	
Microprocessor control	128 kB Eprom, 32 kB RAM (battery buffered), 16 kByte EEprom, 16 digital and 8 analog inputs/outputs, watertight keypad with 4x 20 digit LCD display. Battery-buffered real-time clock.	
Connection	Signal inputs and outputs according to terminal plan	
Overvoltage protection	All inputs are protected against overvoltage.	
Languages	Display indication selectable: German, English	
Dosage vessel	Duran 50 glass (size 350mL), adjustable quantity 20 to 250 mL with motive pinching valve	
Pneumatics	Oil-free membrane pump 12 V DC / 1 A, suction height approx. 6 m, (from dosage vessel), pressure max. 0.5 bar, motive valve system for switching over between pressure/vacuum/ventilation.	

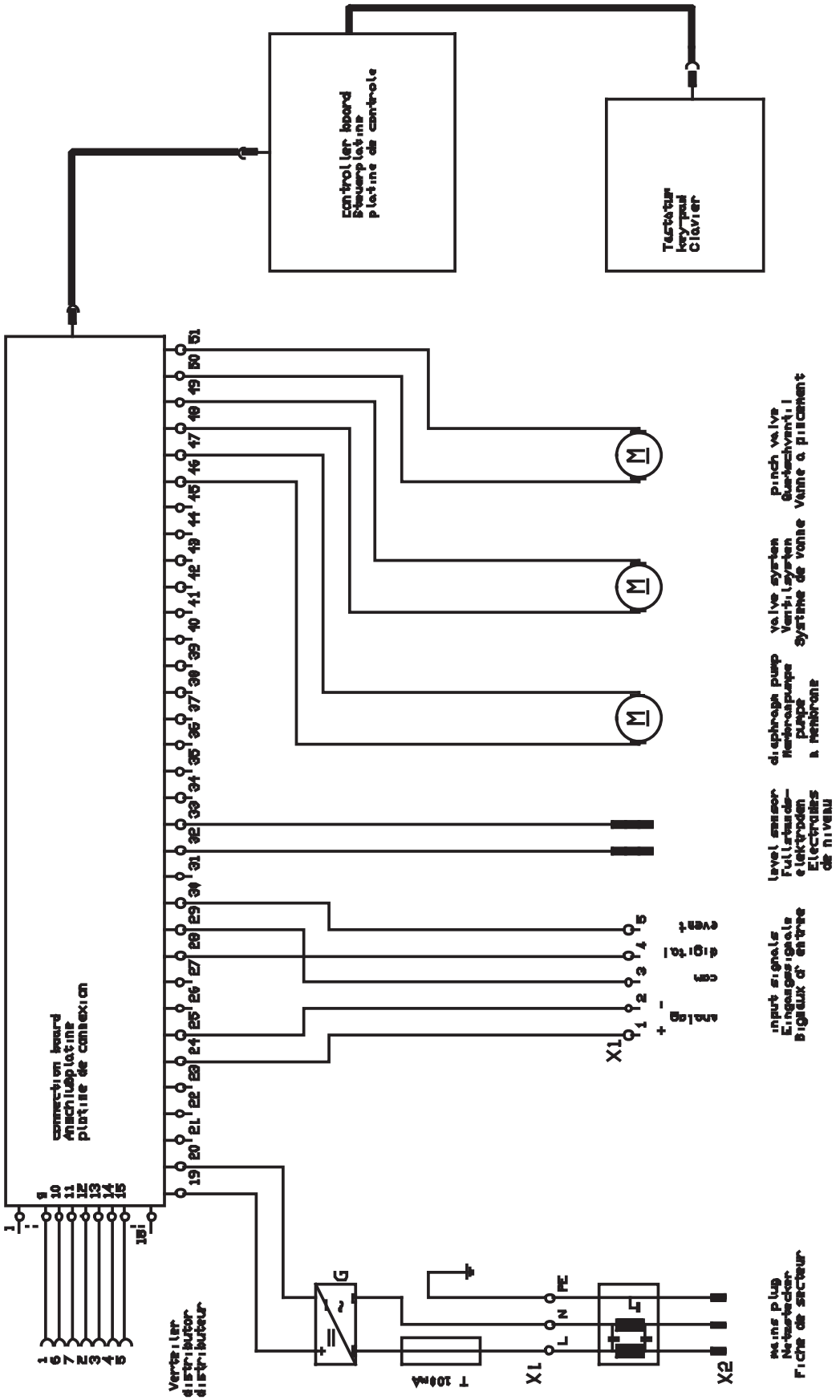
13.3 Default settings

System settings, program settings

Designation System settings	Default setting Values in 1/10s or in %	Customer setting Date
Prepurging (blowing) before sampling	5.0 (5s)	
Postpurging (blowing) after sampling	0.0 (0s)	
Aeration time (dosage vessel)	5.0 (5s)	
Max. suction time	60.0 (60s)	
Pinching valve open	3.0 (3s)	
Pinch valve pause	2.0 (2s)	
Conductivity (electrodes)	300	
Pump capacity	80%	
Pinching valve power	60%	For service only
Valve system power	40%	For service only
Pulse duration, digital flow	50 ms	
Analog flow signal	4-20 mA	
Flow unit	None	
Behavior with max. samples per bottle	Discard sample	
Program sampling delay	None	
Analog signal calibration	2-point calibration at 4 and 20 mA (see note)	
Info memory recording Setting recommendation	Selection see page 50 ff most important selection	
Generate errors Setting recommendation	Selection see page 50 ff most important selection	
Display in CAPITAL LETTERS	No	
RS 232 baud rate	57600	
Password	6299	
Program settings	Distributor Start with time Combined event operation Sampling pause	
System RESET	ESC key >5s	
Stored programs	6 (see page 52)	

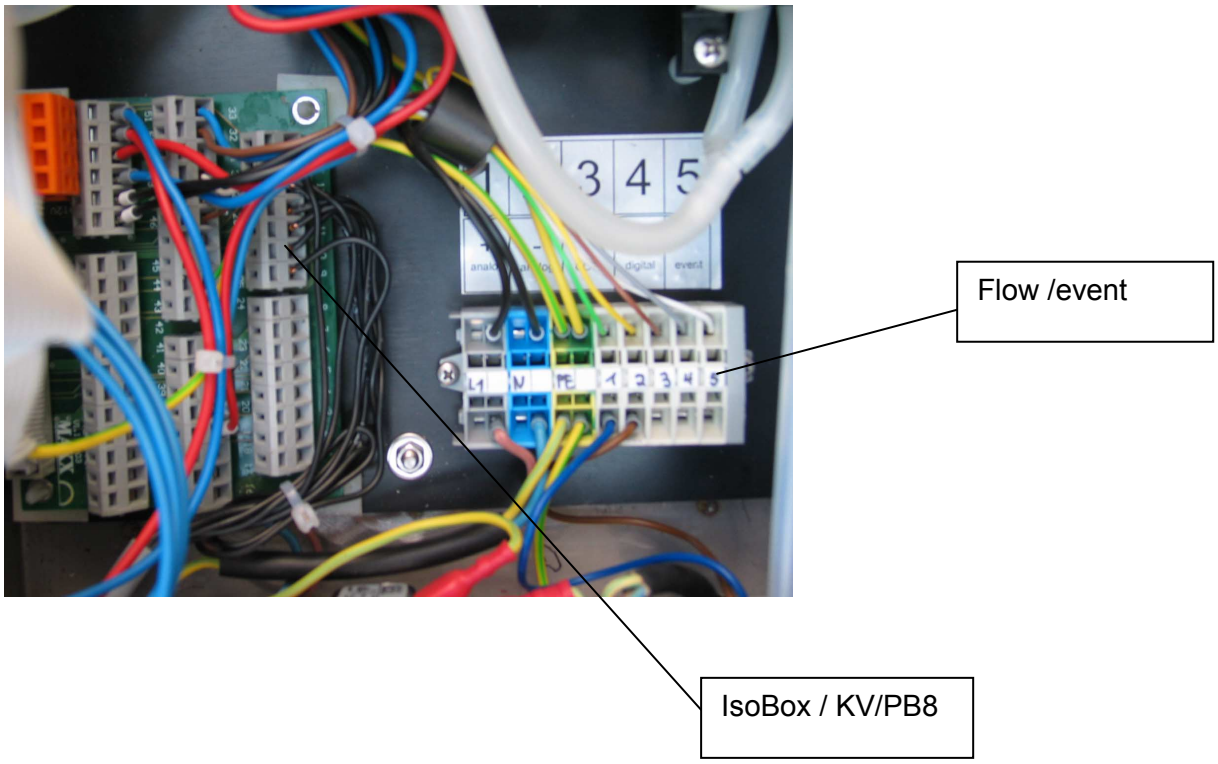
Note
With a system RESET, all customer settings are reset to above default settings.
The system RESET is carried out by pressing the ESC key for at least 5 sec.
A system RESET is required, for example, after an EPROM replacement.

13.4 Circuit diagram



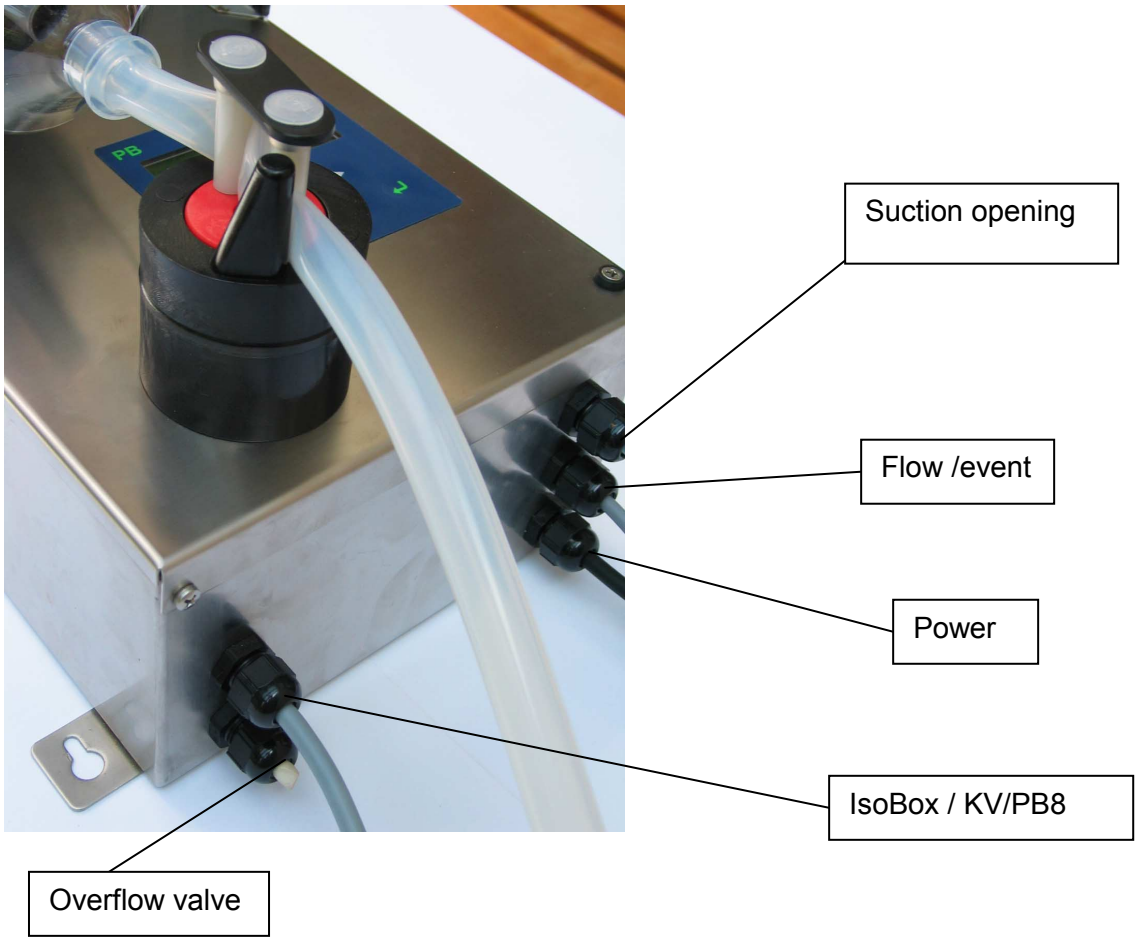
13.5 Terminals

Fig. 13



13.6 Assignment of PG screw couplings

Fig. 14



13.7 Replacement parts

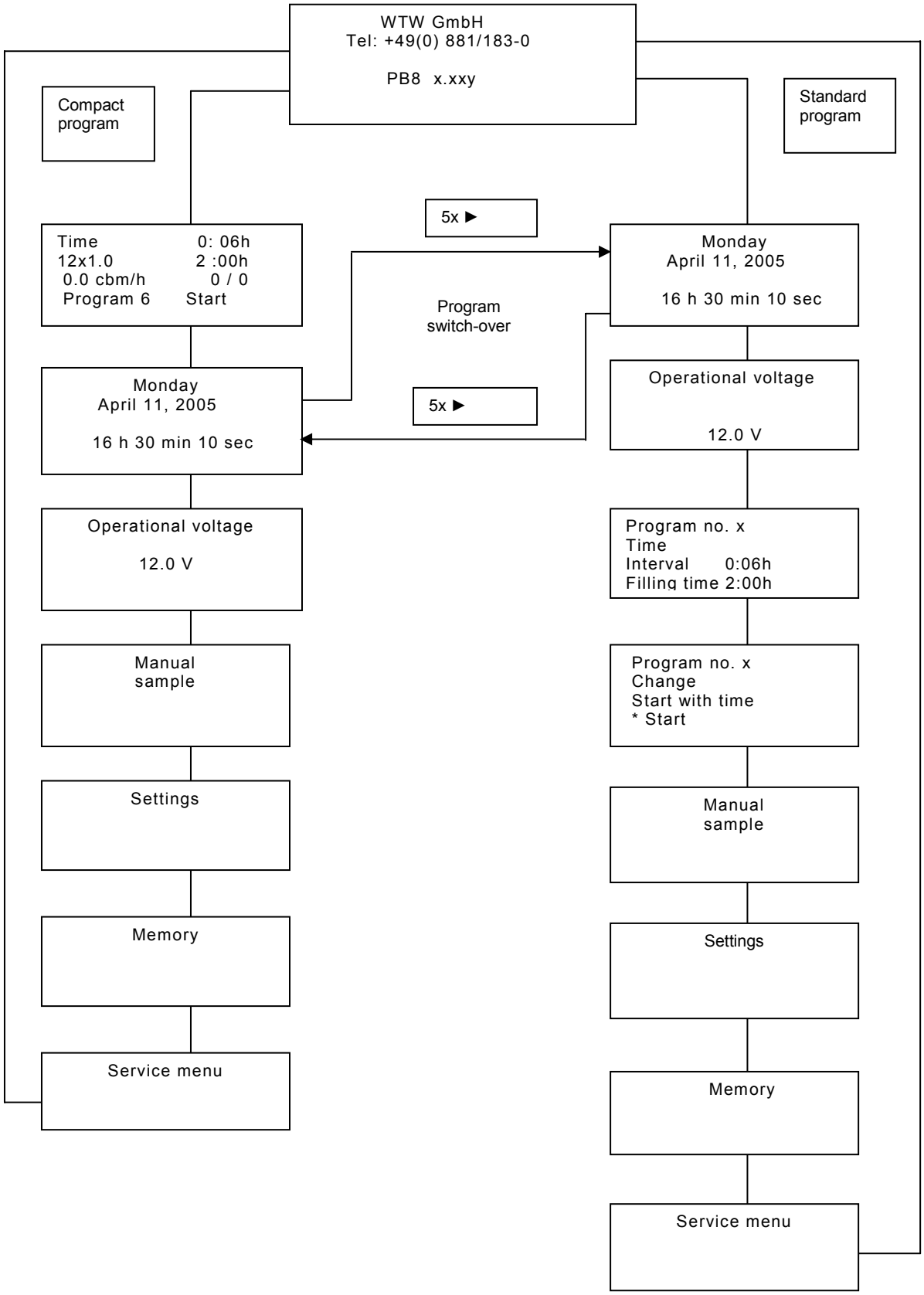
Designation of replacement part	Order no.
Dosing glass, 350 ml	016395
Pump	60054
Air filter for the pneumatic unit	016400
Silicone tube (12x2) for pinching valve	016407
Silicone tube (4x1.5) for multifunction valve	016408
12.7x20 PVC tube	016409
O Ring 16x4, NBR (3 pieces are required)	016410
Quadring B1, 92x5, 33, NBR, for dosage vessel	016411
Flat packing 25x15x2 EPDM	016412
Filling pipe for dosage vessel	016423

13.8 Accessories

Designation	Model	Order no.
PB8 accessories		
Set of console brackets	KS/PB8	000 380
Cable connection for IsoBox/R2/R12/R12G	KV/PB8	000 382
IsoBoxes		
IsoBox/1 with 10 l sample container	IsoBox/1	000 555
IsoBox/R2 with 2x5.0 l PE sample bottles	IsoBox /R2	000 556
IsoBox/R12 with 12x1.1 l PE sample bottles	IsoBox /R12	000 557
IsoBox/R12G with 12x1.0 l glass sample bottles	IsoBox /R12G	000 558
Containers and bottles		
1.0 l Duran 50 glass bottle without closing cap	FG/1,0/PB/IS12	000 615
1.1 l PE sample bottle with closing cap	FP/1,1/PB/IS12	000 616
10 l PE collecting container with screw cap	SP/10/IS1	000 561
13 l PE collecting container with screw cap	SP/13/PB	000 617
25 l PE collecting container with screw cap	SP/25/PB	000 618
Sample feed		
5m PVC suction hose with screw fitting, ½" ID, textile reinforced	Schlauch/PB/5	000 630
PVC intake tube ½" ID, fabric reinforced	Schlauch/PB/1	000 631
Tube end piece, stainless steel	SE/PB V2A, 180	000 632
Screen basket to put on the SE/PB tube end piece, length 300 mm, diameter 76 mm	SK/PB	000 633
Immersion device for suction tube holder	EV/PB150	000 723

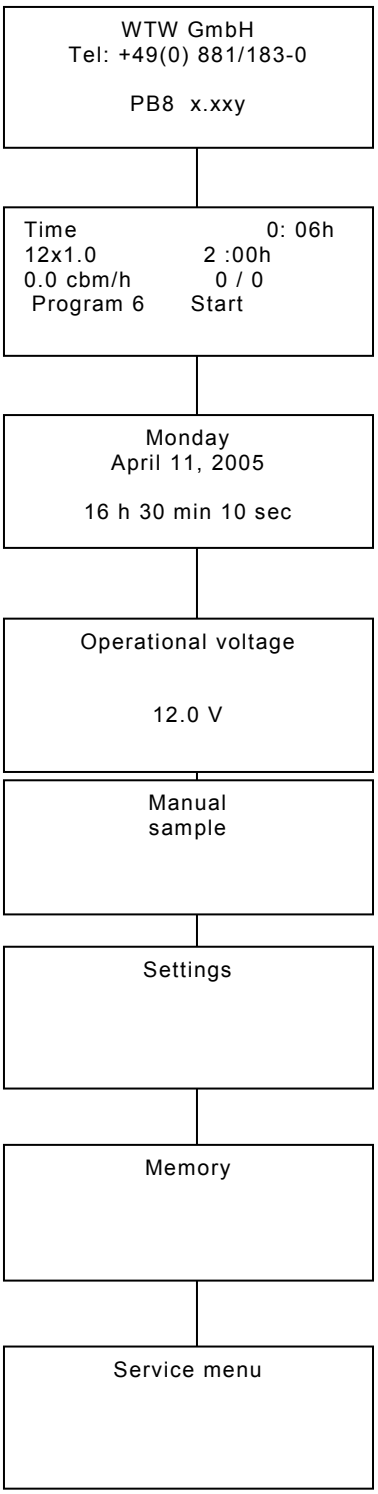
14 Appendix: menu tree diagrams

14.1 Switch-over between the Compact and Standard program



14.2 Compact program main menu

Scroll on with UP/DOWN key



WTW information
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Fax : +49(0) 881/183-420
E-mail:Info@wtw.com
changes every 5 sec
Information of software version 9.1.1

Selected program
Select - start - change program no. x
(see section 8.1)

Weekday, date, time
(see section 9.1.3 Date and time information)

Operational voltage information
(see section 9.1.4 Operational voltage information)

Manual sample
(see section 9.1.7,)

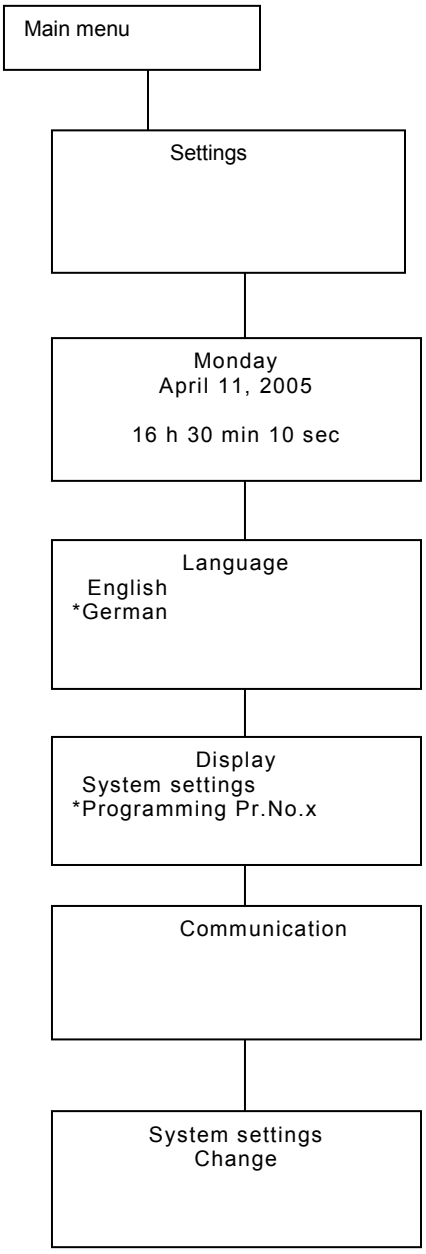
Settings
(see section 9.1.8)

Memory
(see section 9.1.9 "Memory" menu)

Service menu
(see section 9.1.10 "Service" menu)

Note
Access for service personnel only

14.3 Settings of Compact or Standard program



Setting
Weekday, date, time

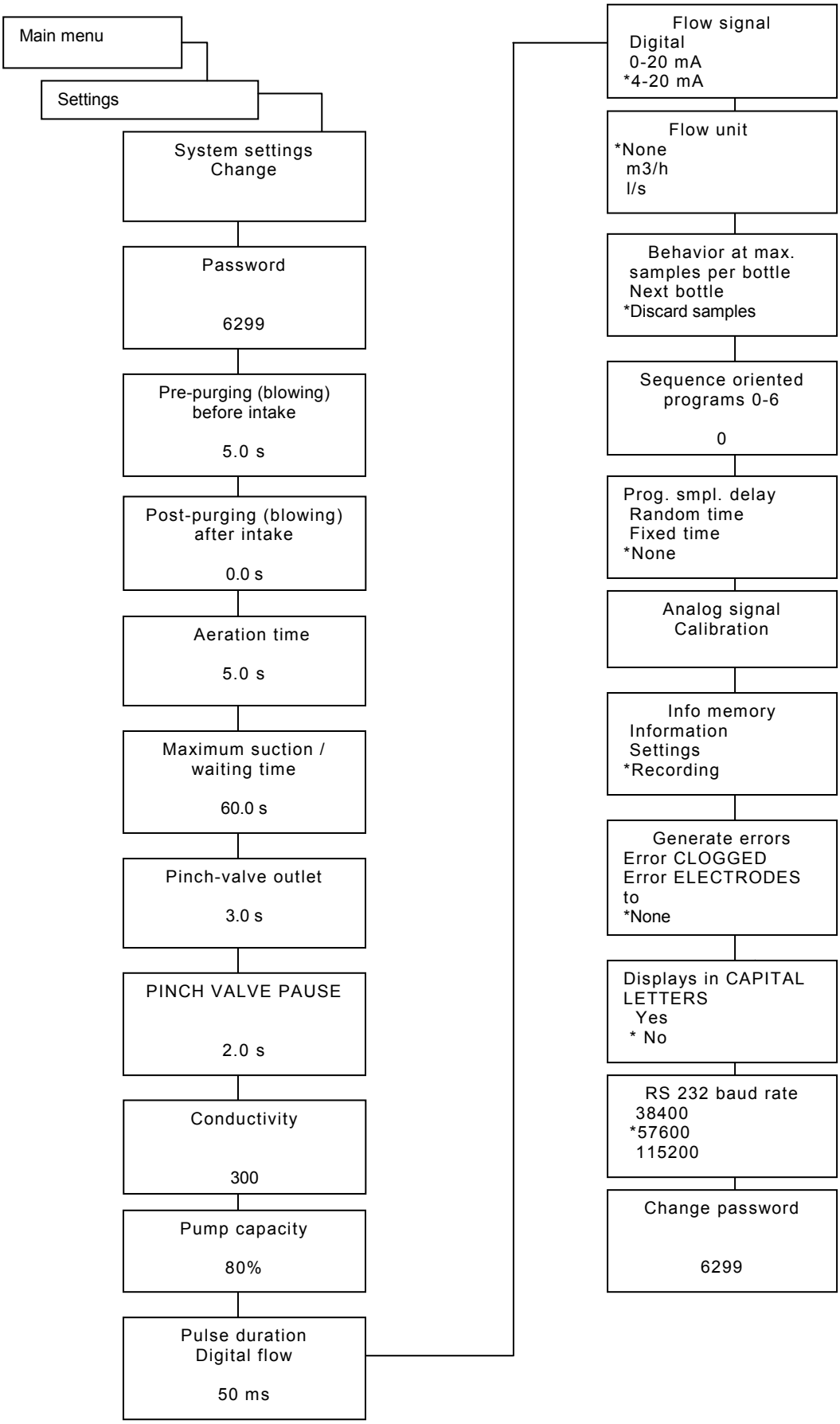
Language selection
German, English

Manual sample
(see section 9.1.7)

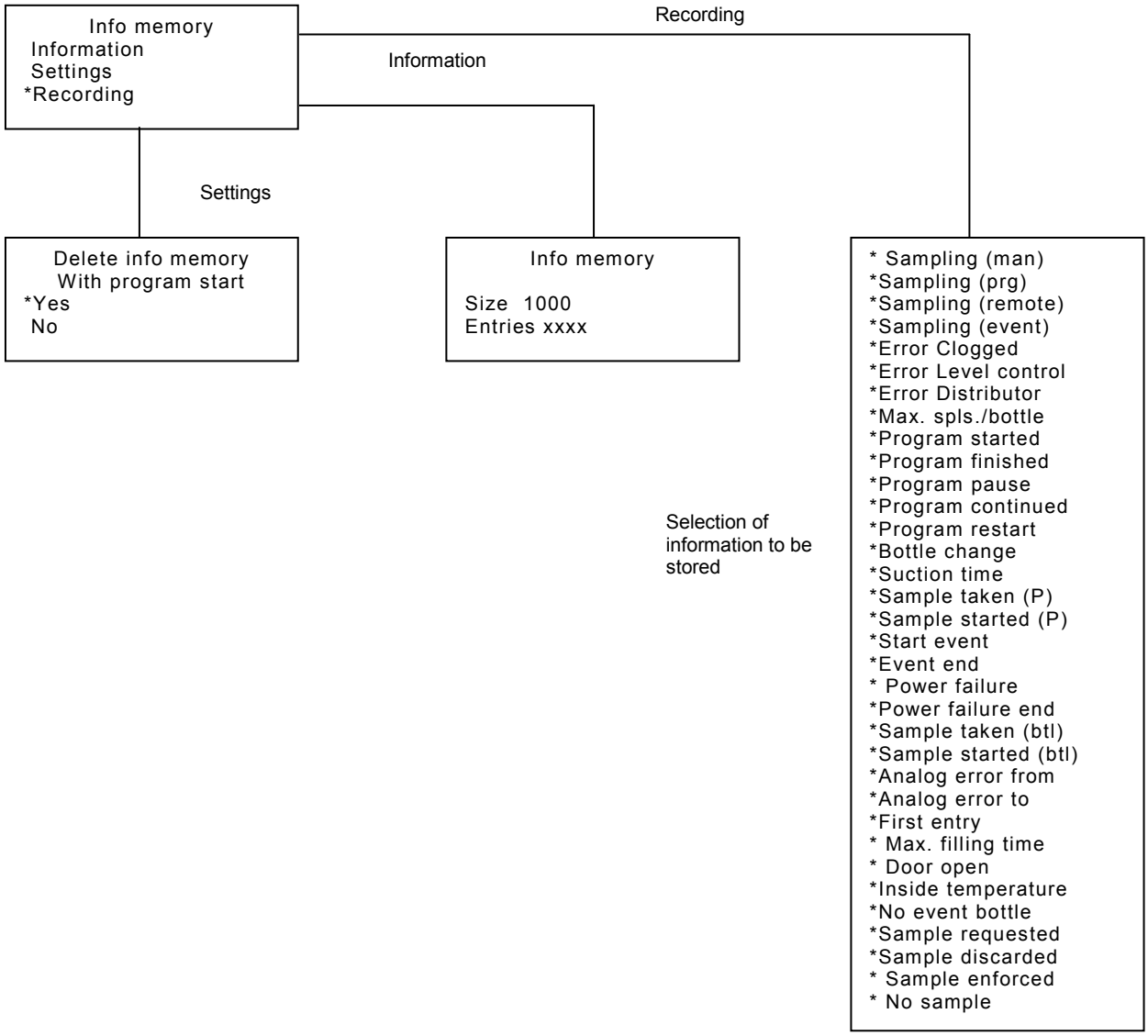
GSM-PIN settings
Modem/ SMS

See Change of system settings

14.4 System settings of Compact or Standard program

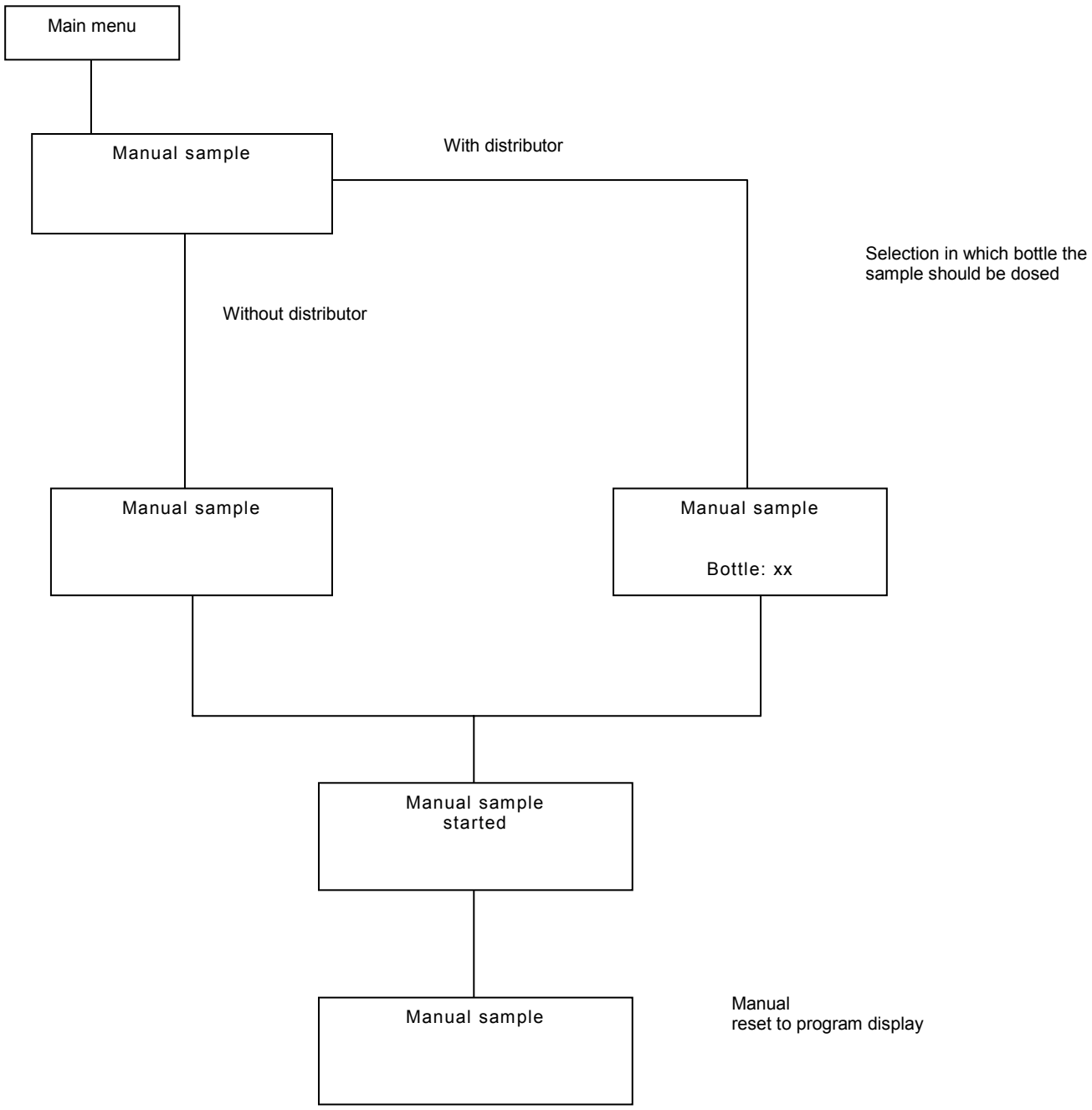


continued: 14.4
Info memory

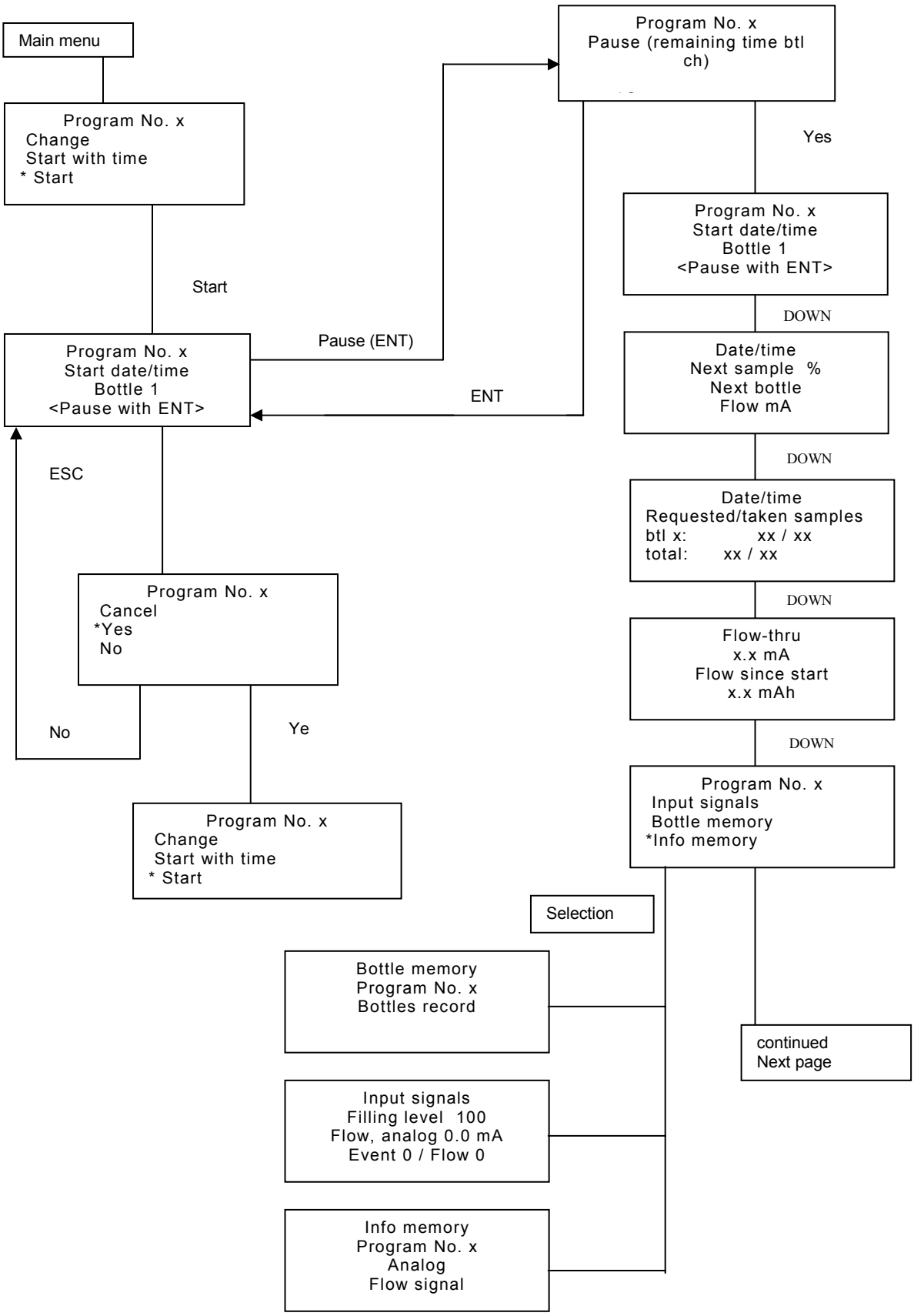


14.5 Manual sampling, Compact/Standard program

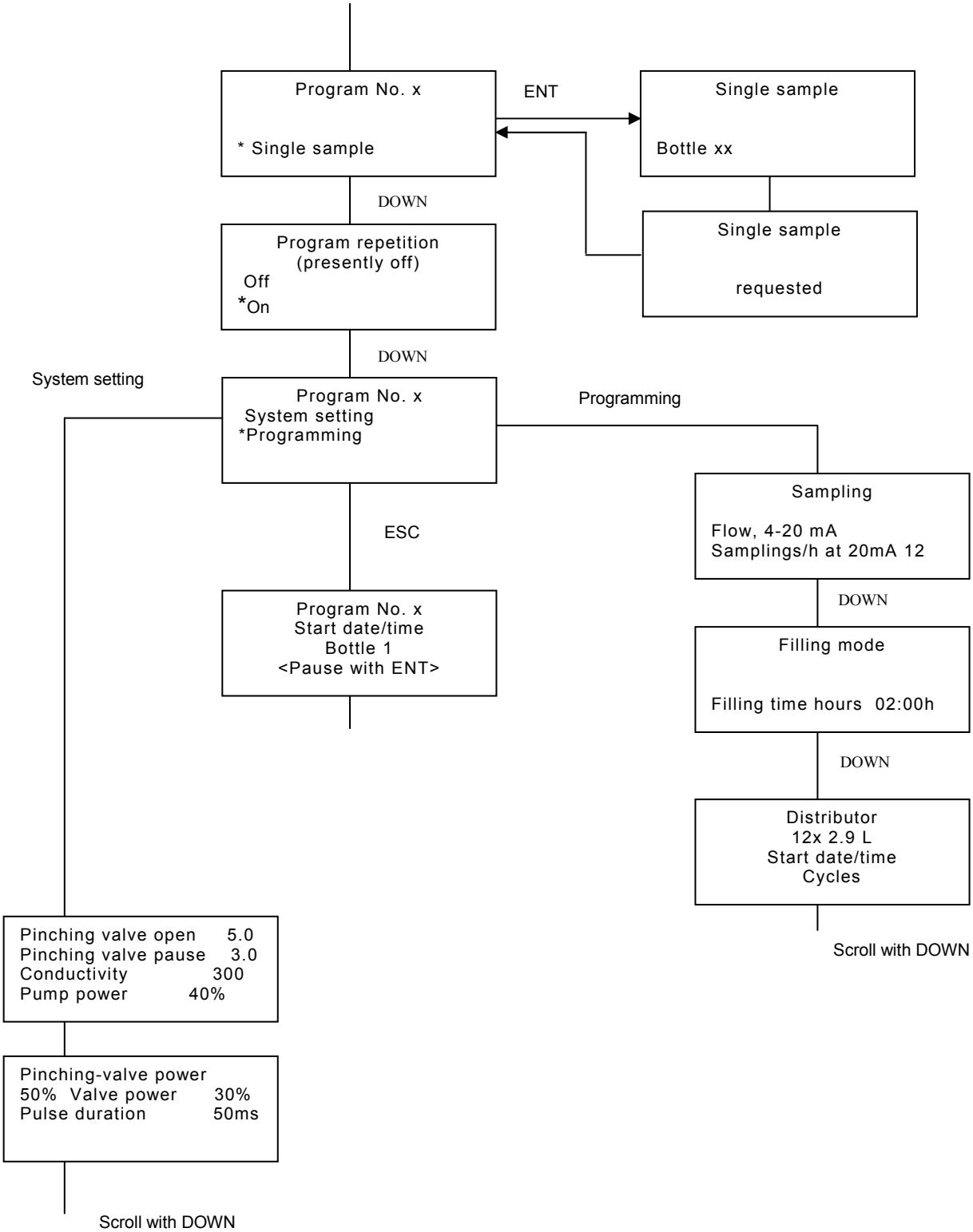
Note
The running Compact program does not have to be interrupted!
Manual sampling (single sample) during the running standard program is only possible from the Program start menu (see menu tree, Programming / Start / Single sample Standard program).



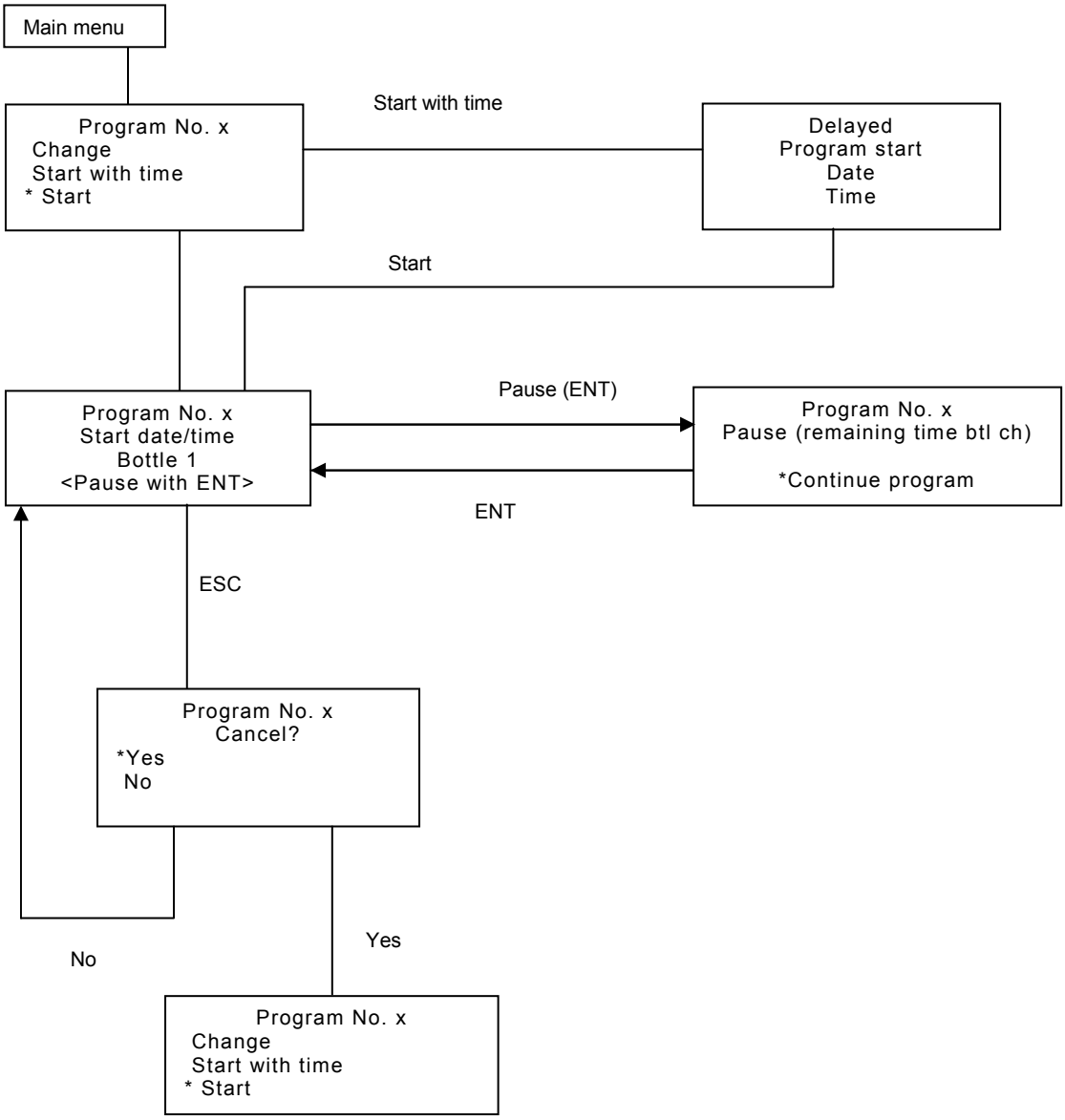
14.6 Programming/ Start / Single sample / Standard program



continued: 14.6 Programming/ Start / Single sample / Standard program

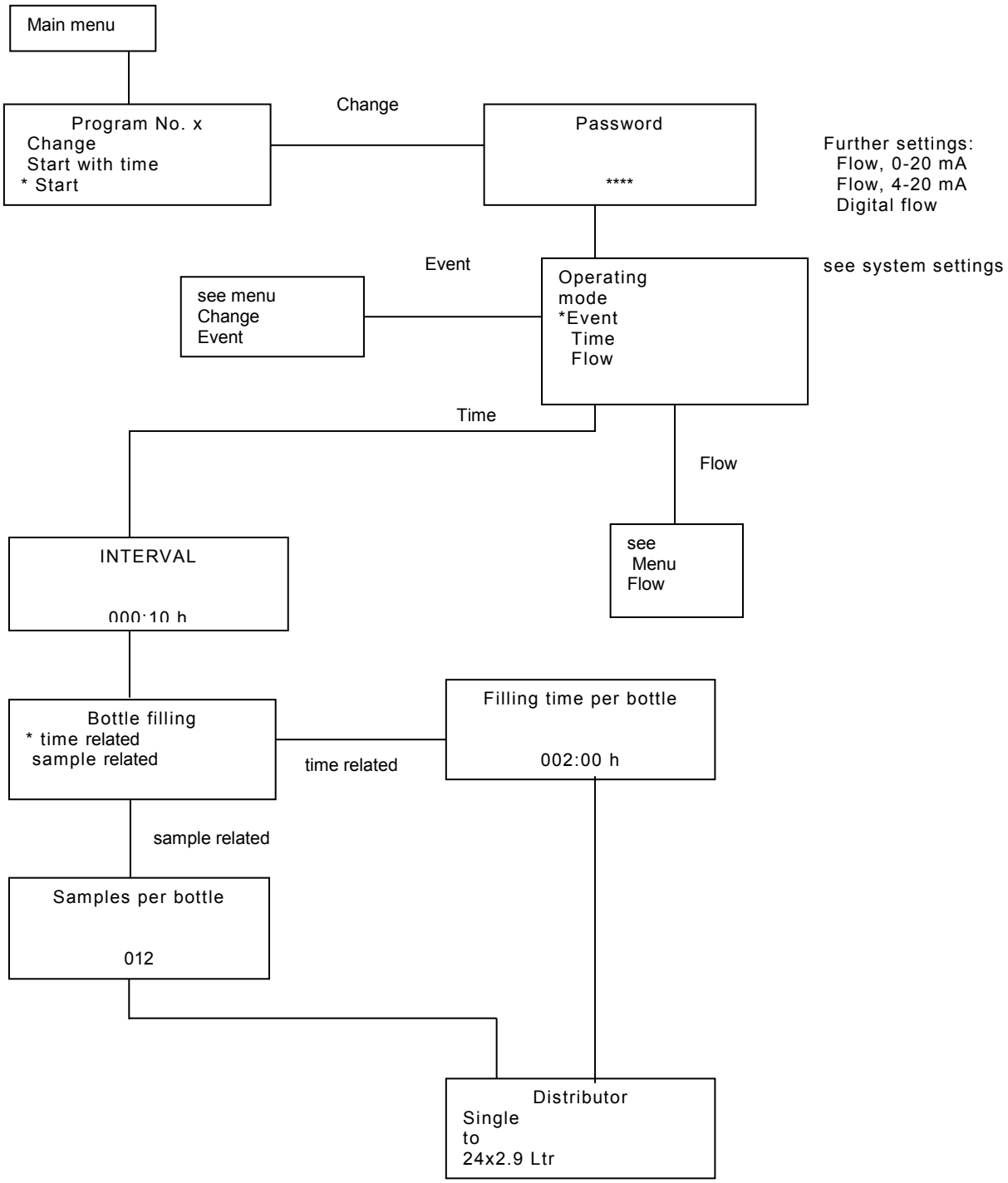


14.6.1 Programming menu / Start sampling (Standard program)

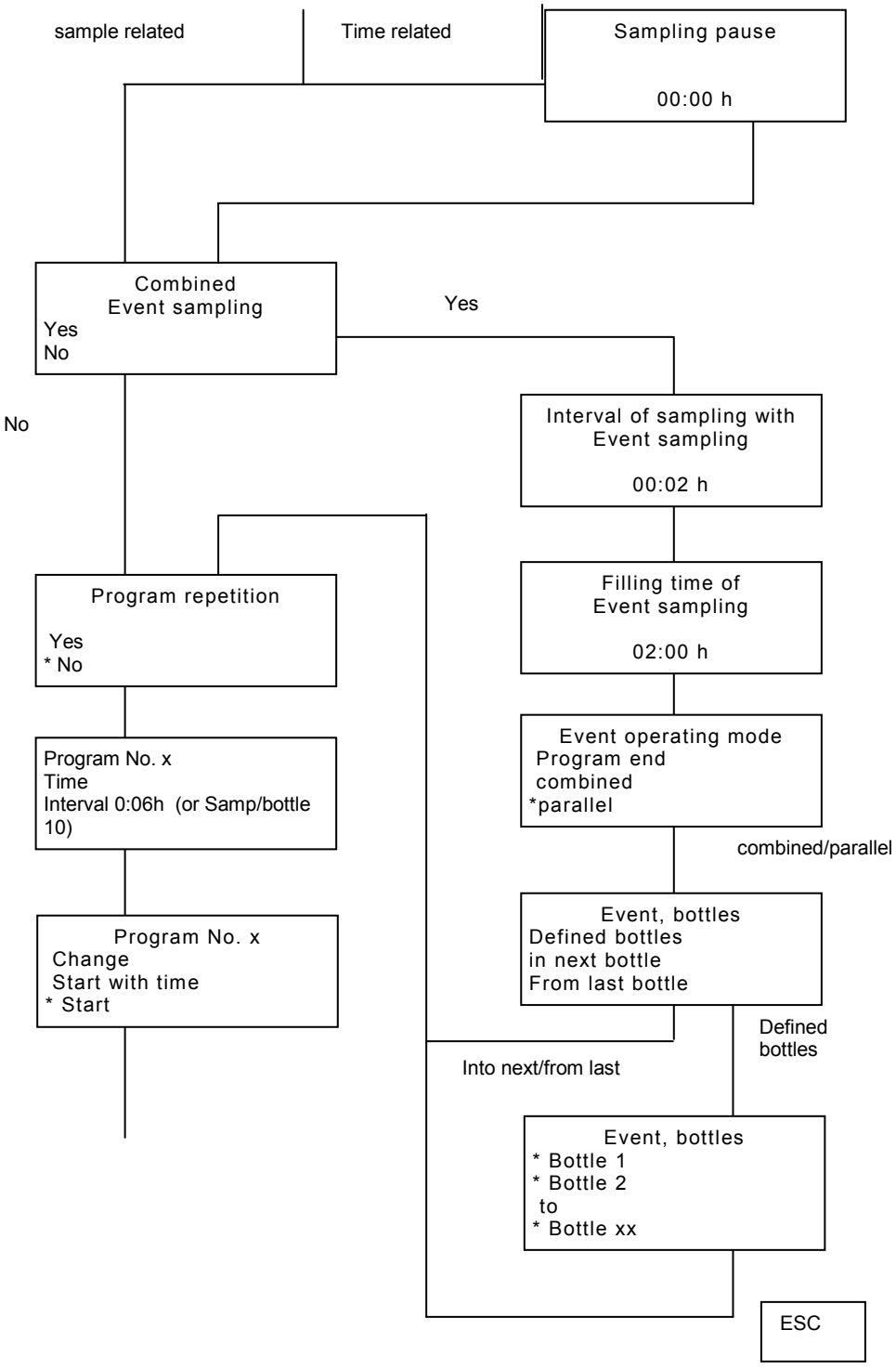


14.7 Programming: changing the Standard program

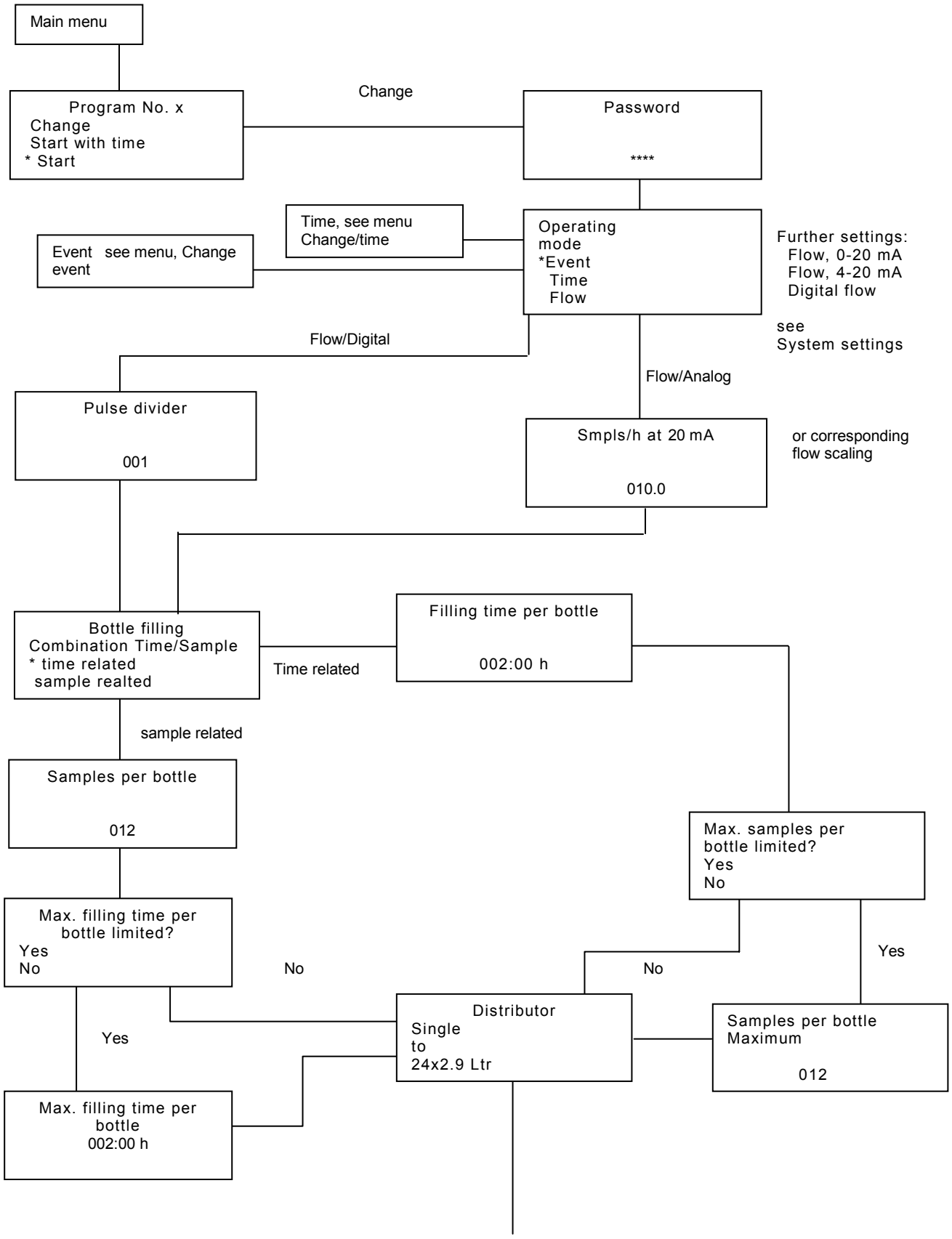
14.7.1 Programming: changing the Standard program time



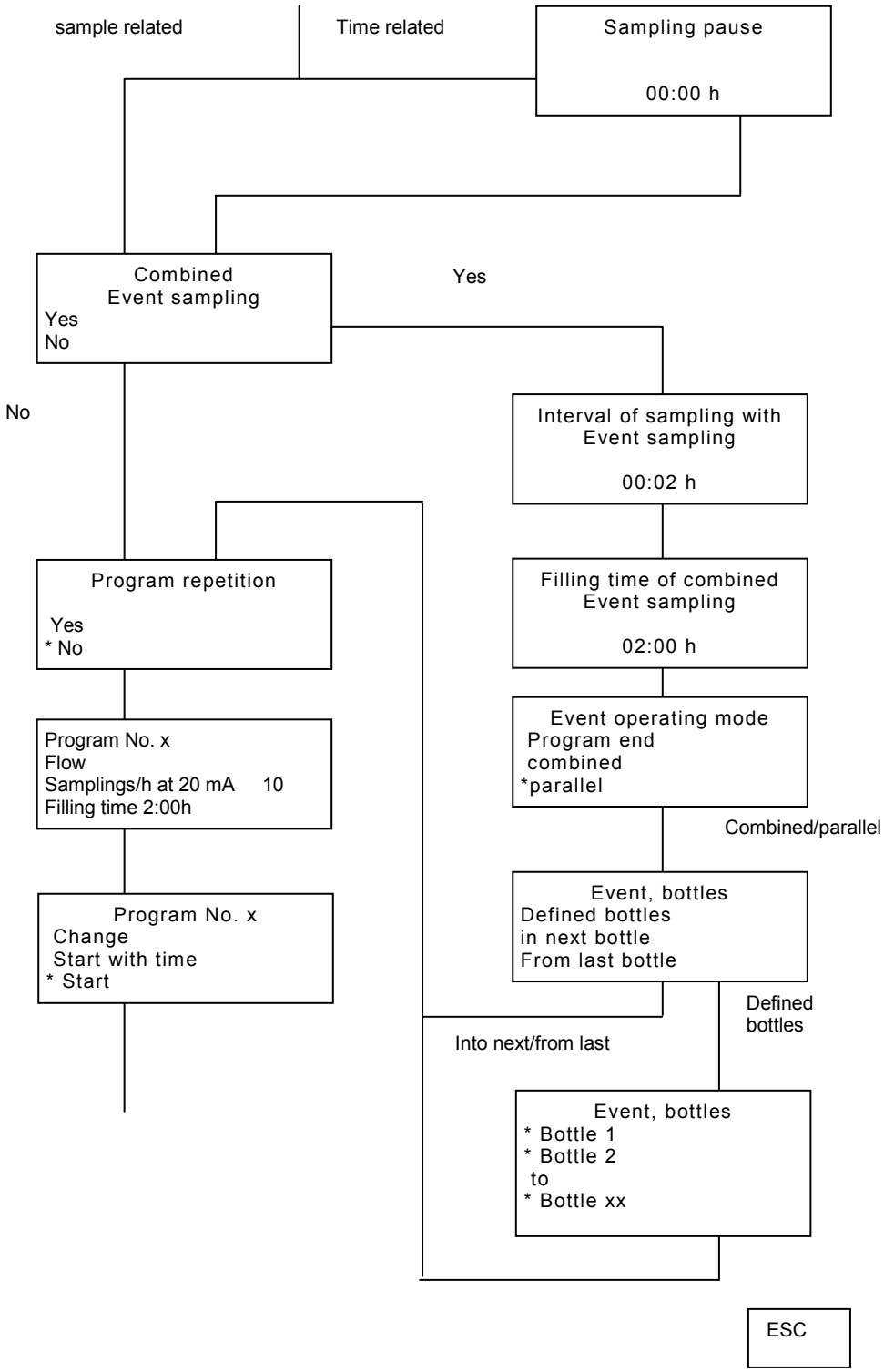
continued: 14.7.1



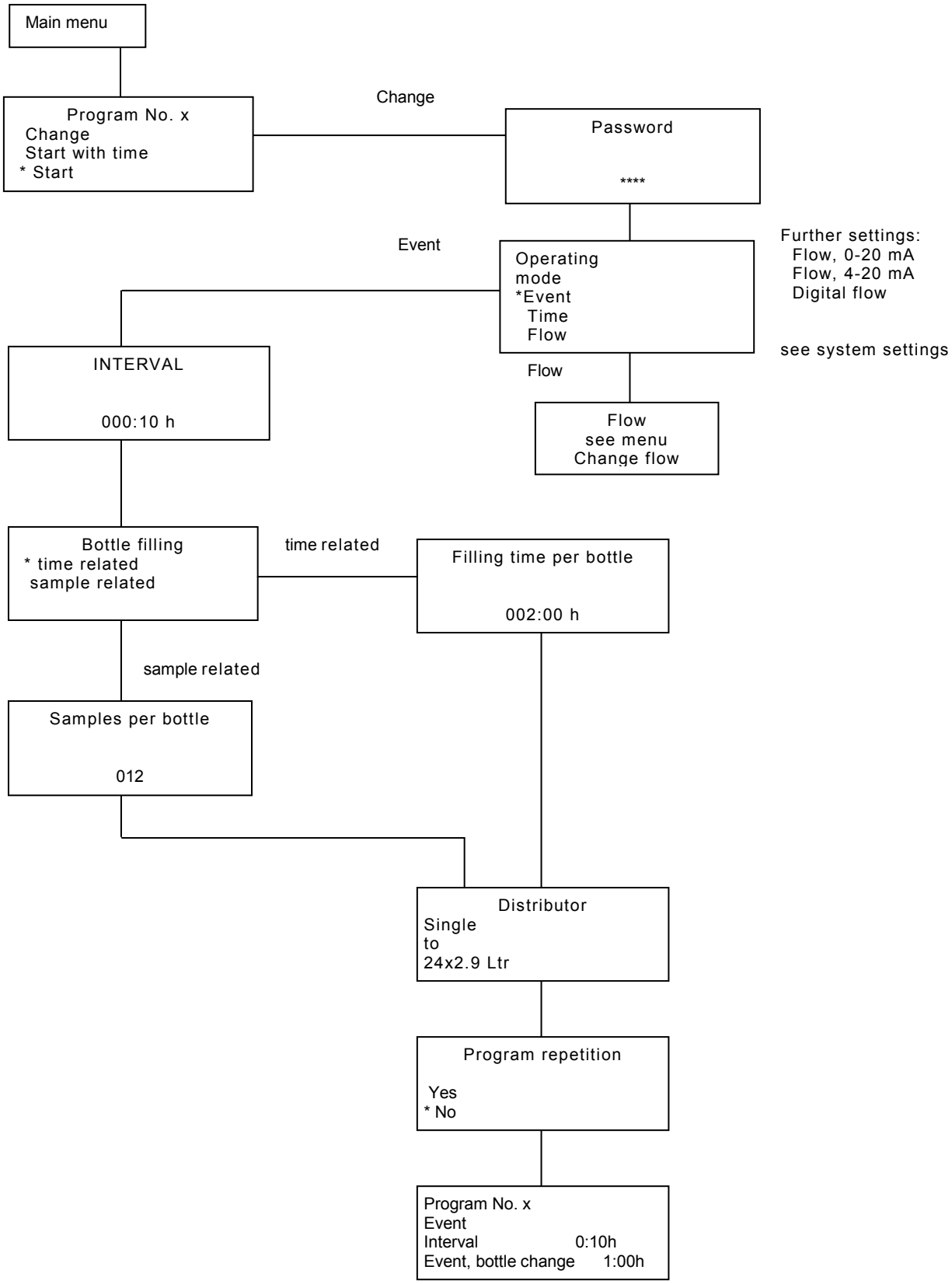
14.7.2 Programming: changing the Standard program flow



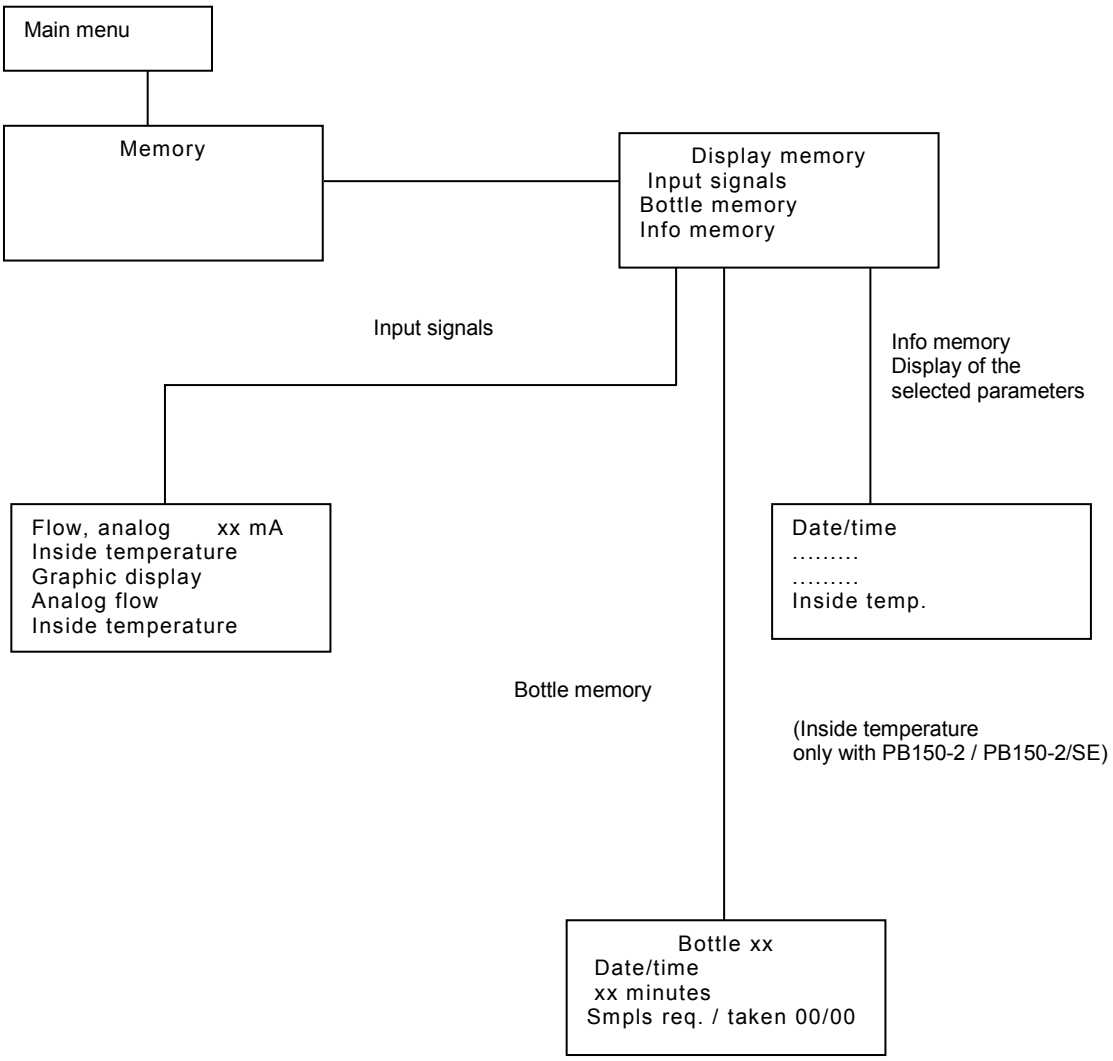
continued: 14.7.2



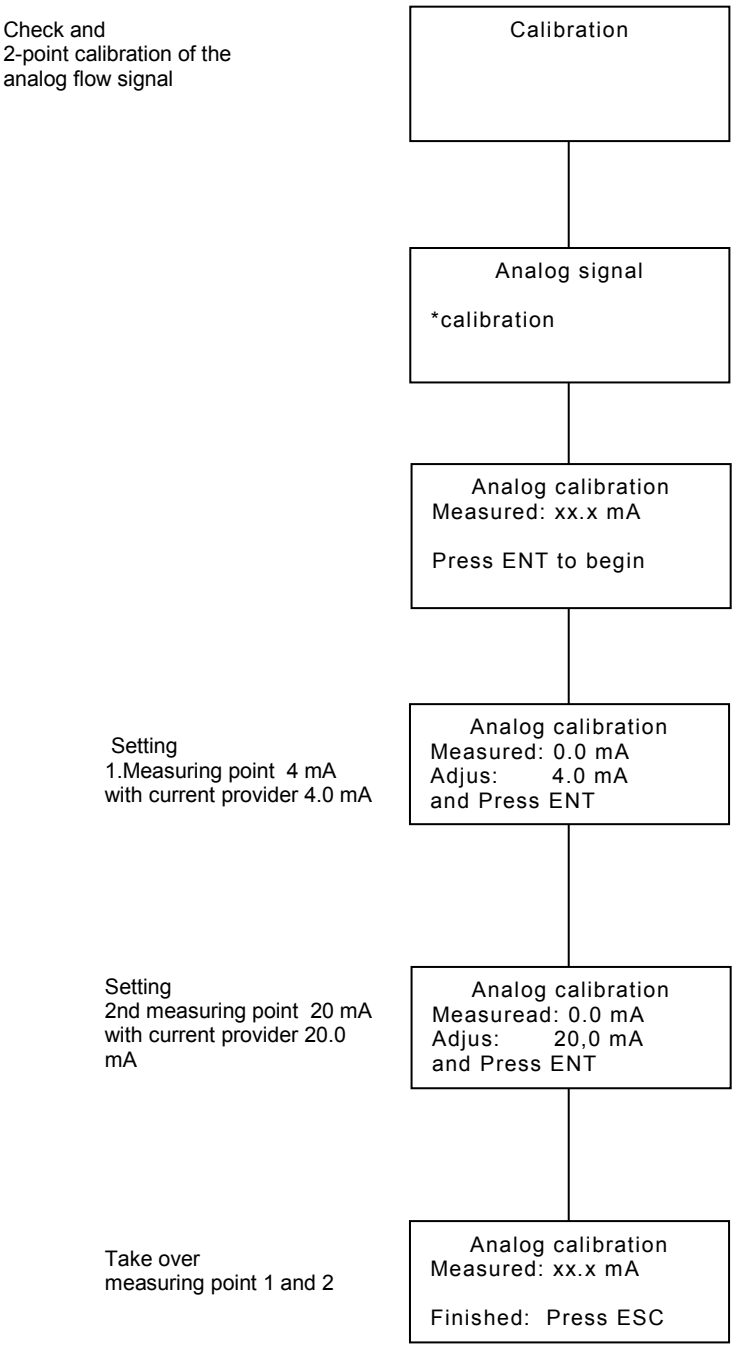
14.7.3 Program settings: changing the Standard program event



14.8 Memory of Compact or Standard program



14.9 Menu, Settings / Change of system settings / Analog signal calibration



Note!
The flow measuring input is 2-point calibrated in the factory (4 mA and 20 mA).

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