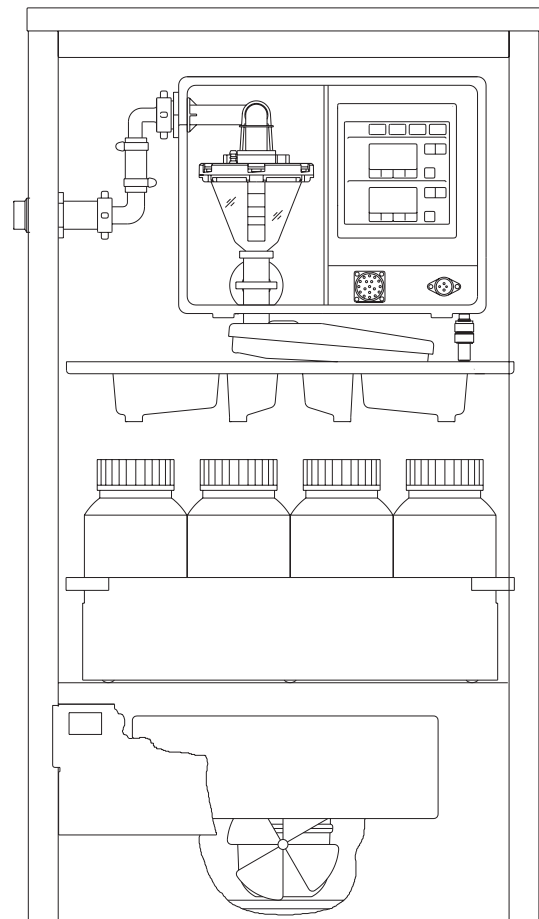
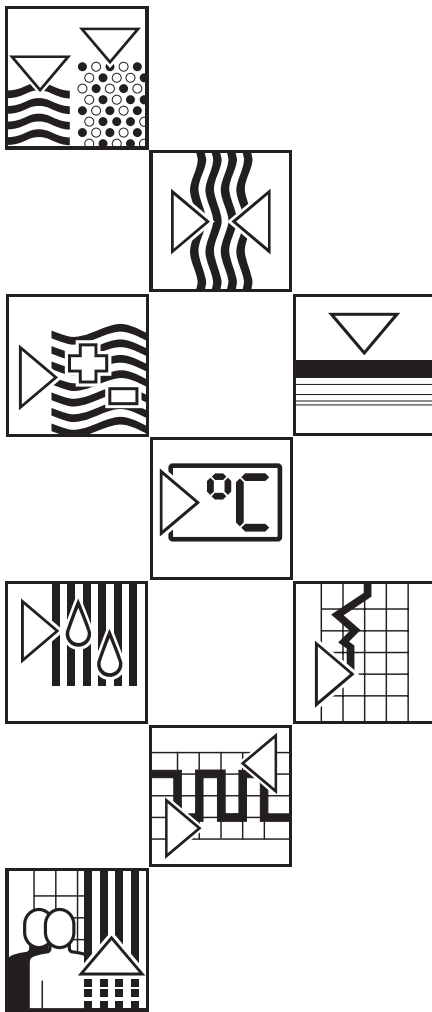


# Water sampler

## *asp-station a 2*

### Installation and operating instructions





**Complete delivery**

- Check: That the delivery note and delivery contents correspond!  
Check the package and contents for external damage.

**Transport insurance**

*Should there be any visible damage you should immediately inform both the transport agency as well as your supplier. If this is not done any later claims cannot be handled under the guarantee.*

**Please take note of the following characters:**



**Hint:** Hints for better installation.



**Attention:** Ignoring this note can lead to damage of the device or faulty operation.

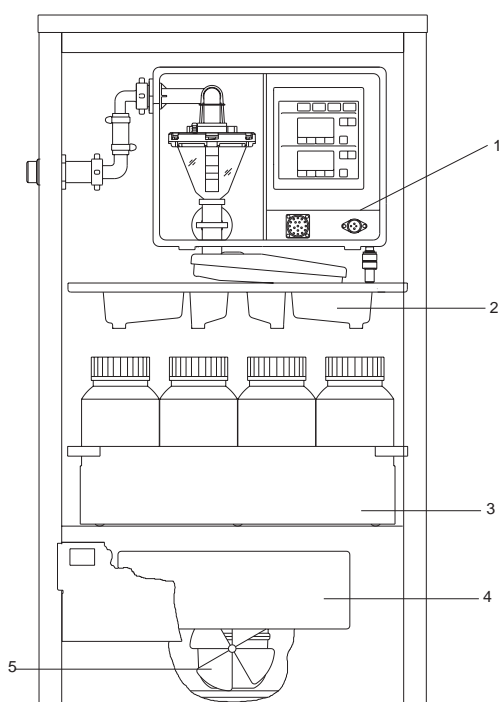
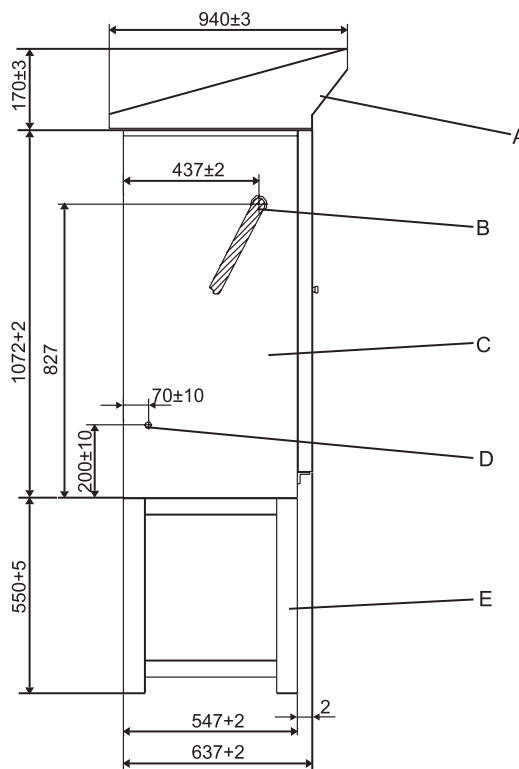
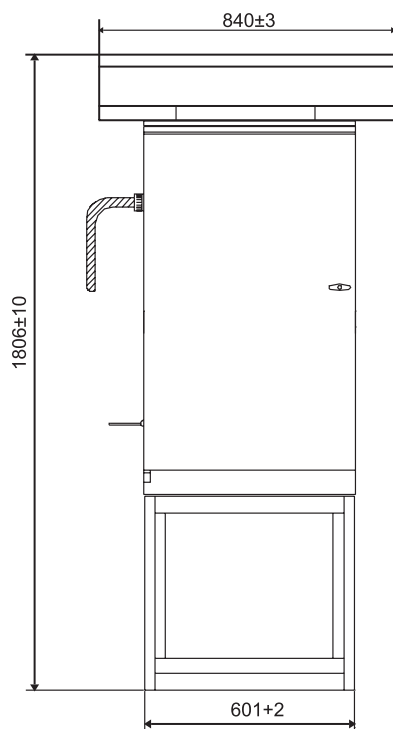


**Danger:** Ignoring this warning can lead to personal injury.



Should the "asp-station a 2" be in storage for more than 6 months please take note of the storage details in chapter "**Maintenance, general**".

### Dimensional drawing, complete unit



### Dimensional drawing, complete unit with all options (above).

- A = Roof (option)
- B = Suction hose (accessories)
- C = Sampler *asp - station a 2*
- D = Power cable
- E = Base (option)

**Note:** All dimensions shown are for the "standard housing".  
For "wide housing" dimensions see technical data.

### Sampler *asp-station a* (left):

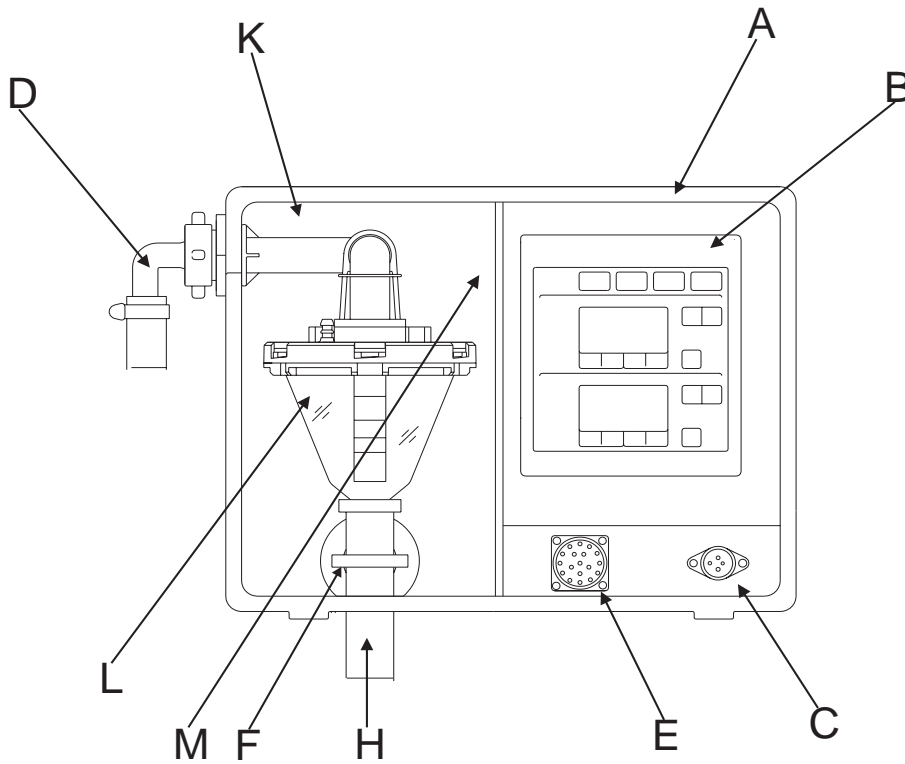
- 1 = Controller *liqui-box a 2*
- 2 = Distribution tray (tap and tray)
- 3 = Bottle tray with bottles and lids
- 4 = Terminal box (behind cover plate)
- 5 = Refrigeration unit (inside lower part of housing)  
Extra: Flow through armature if needed is fitted in the lower right part of the sampler.

**"liqui-box a 2" construction**

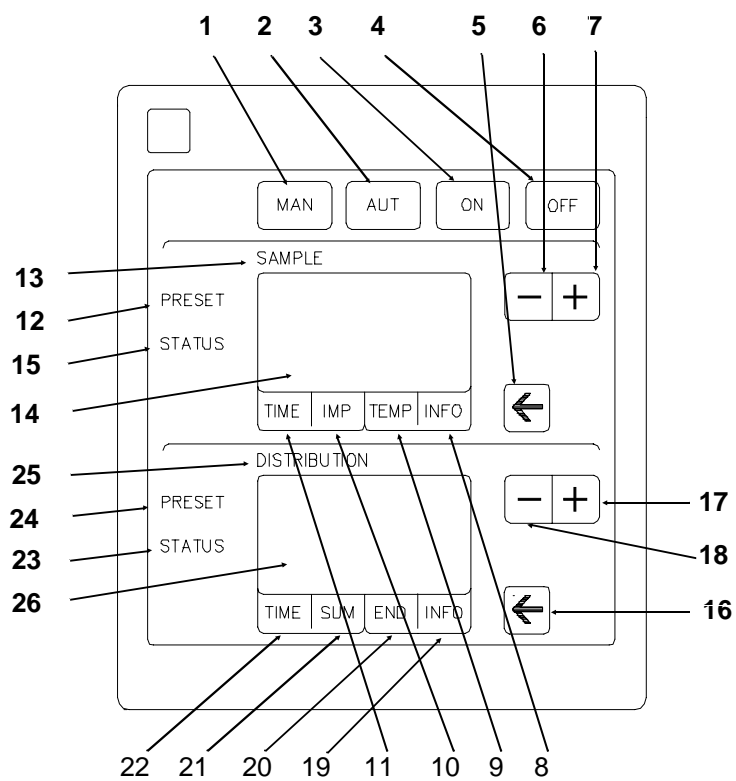
<b>A</b>	Housing
<b>B</b>	Display and operating components (controller)
<b>C</b>	Power supply socket (connected to terminal box in lower part)
<b>D</b>	Elbow connector (for suction hose)
<b>E</b>	Signal in and output socket (connected to terminal box)
<b>F</b>	Hose clamp
<b>H</b>	Sample release hose (for connection to sample distribution system)
<b>K</b>	Wet compartment
<b>L</b>	Dosing system
<b>M</b>	Legend plate (unit number, supply voltage, power consumption of functional module)

**Operating elements and display**

<b>1</b>	<b>MAN</b> -push button:	Immediate sample start
<b>2</b>	<b>AUT</b> -push button:	Automatic sample sequence start
<b>3</b>	<b>ON</b> -push button:	Switches unit on
<b>4</b>	<b>OFF</b> -push button:	Switches unit off
<b>5</b>	⇐ push button:	Operation mode selection
<b>6</b>	- push button:	Reduce target value
<b>7</b>	+ push button:	Increase target value
<b>8</b>	<b>INFO</b> - display field:	Information (pump running times etc.)
<b>9</b>	<b>TEMP</b> - display field:	Cabinet temperature display
<b>10</b>	<b>IMP</b> - display field:	Quantity proportional sampling
<b>11</b>	<b>TIME</b> - display field:	Time proportional sampling
<b>12</b>	<b>PRESET</b>	Sample and temperature target values
<b>13</b>	<b>SAMPLE</b>	Sample selection (heading)
<b>14</b>	Sampling display fields (total)	
<b>15</b>	<b>STATUS</b>	Sample and temperature actual values
<b>16</b>	⇐ push button	Operation mode selection
<b>17</b>	+ push button	Increase target value
<b>18</b>	- push button	Reduce target value
<b>19</b>	<b>INFO</b> - display field:	Information (samples not taken)
<b>20</b>	<b>END</b> - display field:	Sample sequence end or continuous operation
<b>21</b>	<b>SUM</b> - display field:	Number of samples per container
<b>22</b>	<b>TIME</b> -display field:	Fill time per container
<b>23</b>	<b>STATUS</b>	Actual value for sample sequence end
<b>24</b>	<b>PRESET</b>	Target value for sample sequence end
<b>25</b>	<b>DISTRIBUTION</b>	Sample distribution (heading)
<b>26</b>	Sample sequence end and distribution display fields (total)	



**Operating components and display**



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## Safety



This unit is constructed and tested according to EN 61010-1 / VDE 0411 Part 1 and left our works in perfect and safe condition. In order to maintain this condition and operate safely the user must take note of the following safety information and warnings contained in these instructions.

First check that the power supply to be used corresponds with that on the unit legend plate.

This unit is supplied with a loose power cable including plug and socket arrangement and is therefore classified to protection class I.

The power supply plug must only be connected to a socket with an earth protection connection. This protection must be continued when using extension leads. Any breakage of the earth conductor within or outside the unit or loosening the earth connections can make the unit potentially dangerous. Intentional disconnection or an open circuit of this earth connection is not permissible.

There are no components in the unit that can be repaired by the user. All repairs must be made by trained service personnel.

Removing covers or components, except where this can be done by hand, must only be carried out by skilled personnel.

If it is assumed that the unit cannot be safely operated it must be immediately taken out of operation and secured against unintentional use.

It can be assumed that the unit cannot be safely operated,

- if the unit is visibly damaged
- if the unit no longer operates
- if the unit has been in storage under adverse conditions for a longer period of time
- after long transport under adverse conditions.

The manufacturer does not accept liability for any damage that has been made due to the unit not having been used in accordance with these safety instructions.



Remove the external protection film as soon as possible as this can stick due to sun rays.

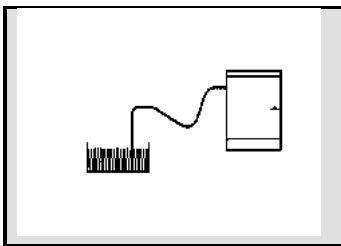
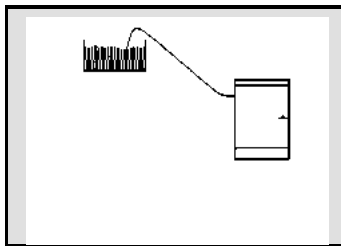
The water sampler must be installed so that it stands higher than the sampling point. It can be installed outside and mounted on a concrete foundation or solid level ground. The unit can be levelled by using the four levelling screws fitted in the bottom of the sampler. All components are mounted in a lockable, thermostatically controlled stainless steel cabinet.

The cabinet must be installed in an area where an additional heating effect from external sources (eg. radiators, etc.) is avoided. In order to ventilate the built in refrigeration system the sampler, when mounting next to a wall, must be fitted with the 50mm long spacers supplied in the accessory pack.

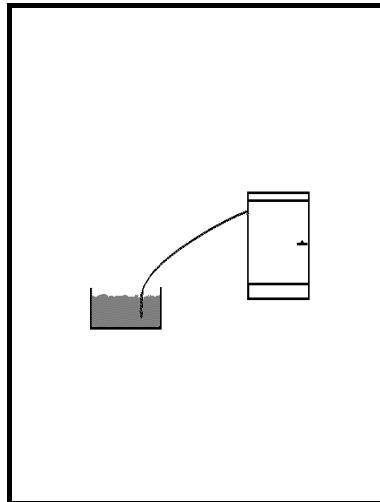
Do not install the sampler close to large magnetic fields (eg. motors, transformers, large contactors, etc). Do not install the sampler in areas where it can be subject to high mechanical vibration. Avoid shocks when transporting the sampler.

The suction hose must be installed so that it always **rises** from the sampling point to the hose connection on the sampler !

**Syphons must be avoided between the sampling point and sampler !**



**Wrong**



**Right**

The sampler must not be connected to a **pressurised system !**

For sample lift less than 2 m we recommend using a 15 mm suction hose. Both 13 mm and 15 mm connections are delivered.

The minimum conductivity of the sample liquid must not be less than **30 microsiemens !**

- The 13 mm internal  $\varnothing$  hose must be of a spirally reinforced type.
- The hose can be connected to the connector on the top left hand side of the cabinet.
- Maximum height difference: **6m** from sampling point to sampler.
- Maximum hose length: **30m**

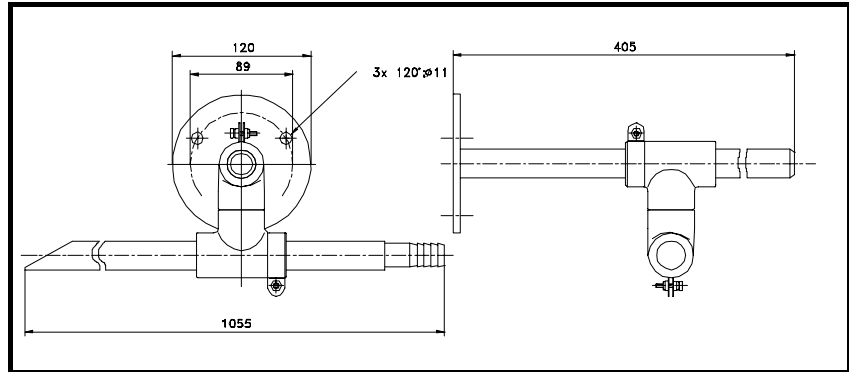
## General



**Recommendations and accessories**



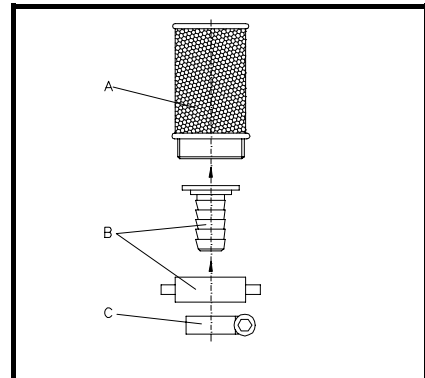
The suction hose must always be submerged in liquid at the sampling point. Suitable measures for this are:  
 Weight the end of the hose using a short length of V2A tubing or fixing the hose to the channel (tank) wall using a hose saddle or the submersion armature (can be ordered as an accessory).



Submersion armature: PVC. is pivoted to move in all directions. Order No. 50038168

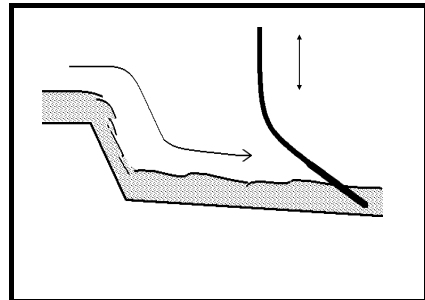
A suction filter can be used in applications where large solids particles are not required in the sample.

- A= Filter
- B= Connector
- C= Jubilee clip



Filter order No. 50038327

Recommendation:  
 Never submerge the hose against the flow direction !



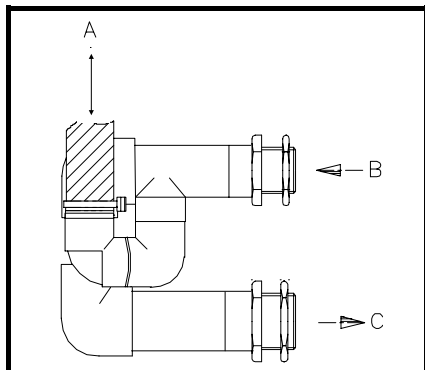
If possible always sample with the flow.

**Sampler with flow through armature**

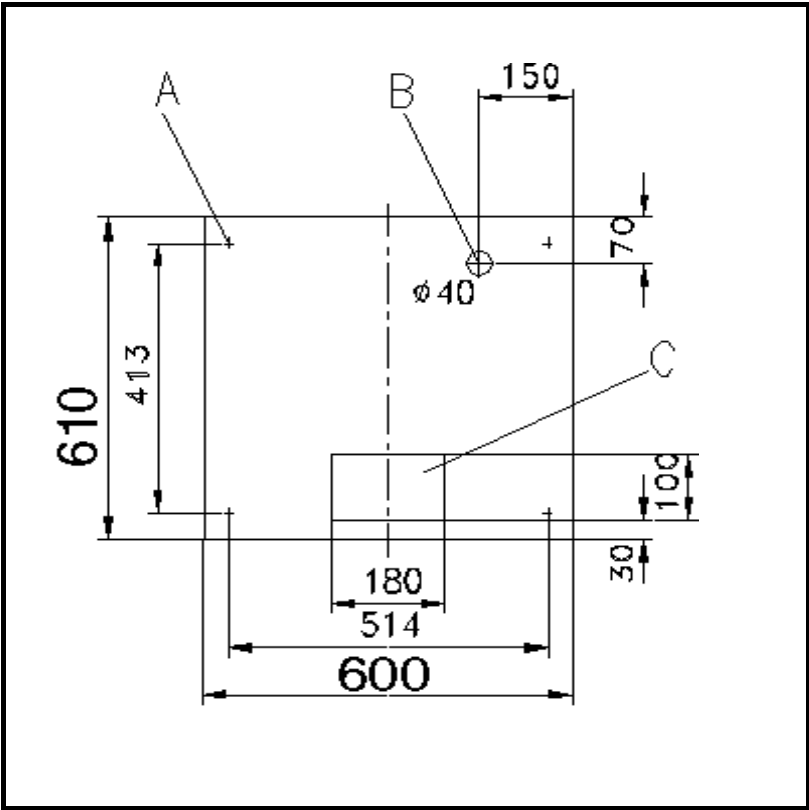


Flow rate min.200l/h max.1500l/h  
 Vacuum sampling from **A**  
 Inlet **B** 3/4"  
 Outlet **C** 1 1/4"

**Attention:** It must be guaranteed that liquid flow at the outlet C is free to atmosphere. Should the system come under pressure the water head at A will rise and can lead to flooding the sampler.

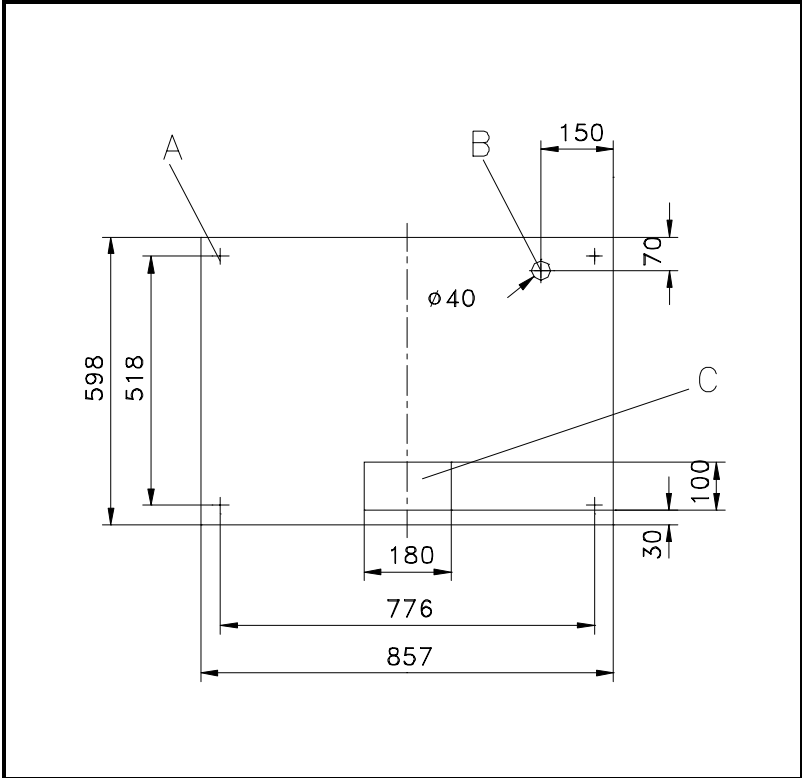


We accept no liability for damage caused by ignoring this information !



**Foundation recommendation**  
(For standard units)

- A = Fixing dimensions (There are four 10 mm dia holes in the base of the cabinet)
- B = Defrost water drain.
- C = Possible cable entries.

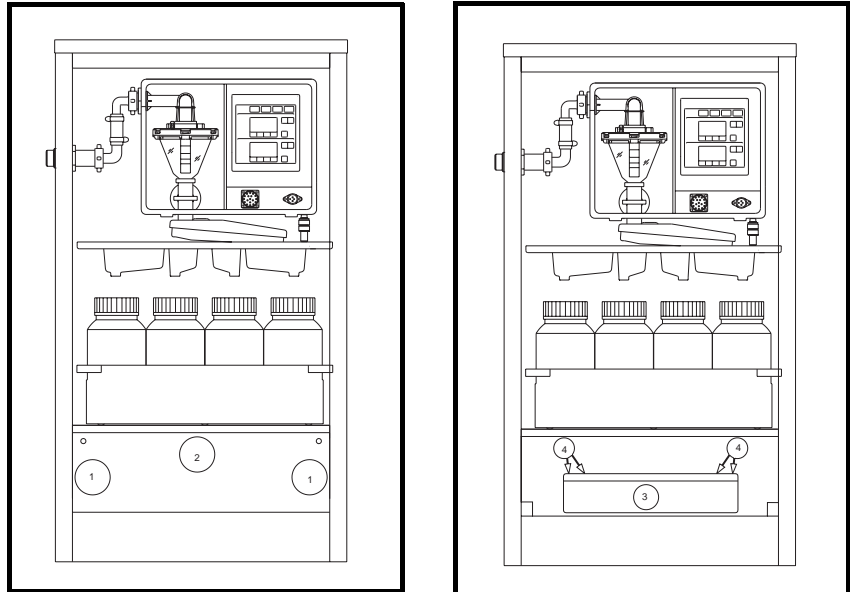


The sampler is delivered with a 3core mains cable (length approx. 1.4m) connected to a 2 pin plug with earth contact. This cable is fed through the sampler left side panel and is already connected to the mains terminals in the terminal box.

**Terminal box**

Open the cabinet door.

The terminal box is situated behind the hinged blanking plate (2) at the base of the sampler.



Remove the mains plug from the power supply (the system must be without power).

Push both snap locks (1) inwards and hinge the blanking plate (2) downwards. The terminal box (3) can now be seen.

Undo screws (4) and remove the terminal box lid. (There is a terminal connection diagram stuck to the inside of the lid).

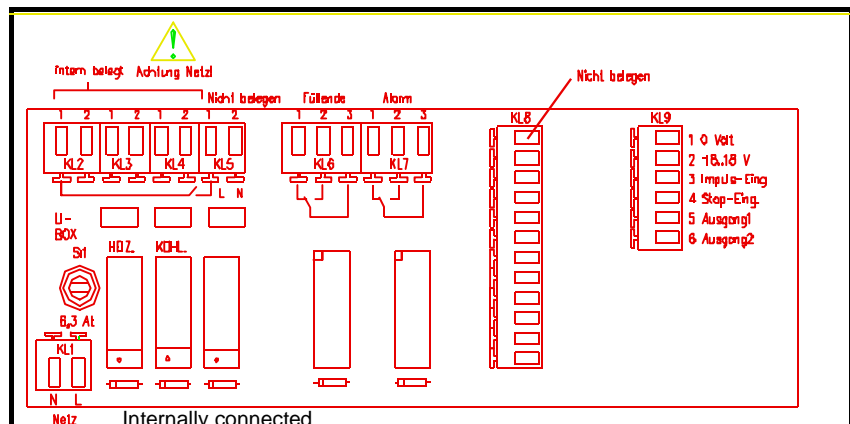
The terminal box contains all in/output terminals, internally connected cables to the functional module, alarm and sample sequence end relay outputs (for retransmission), heating and cooling relays (internal) as well as the mains fuse SI1 (6,3AT).



**For skilled personnel only:**

**Cable connections through PG glands. Only use terminal strips KL6, KL7, KL9.**

**Connection sticker inside terminal box lid**



KL 9/1	Auxiliary voltage 0 Volt
KL 9/2	Auxiliary voltage +8...+18,5 Volt (max. 200 mA)
KL 9/3	Impulse input (pos. quantity impulses)
KL 9/4	Stop input (logic high stops sampling sequence)
Sample sequence end output, potential free changeover contact:	
KL 6/1	Normally closed
KL 6/2	Normally open
KL 6/3	Common (Power failure, sample sequence end: 1 and 3 closed)
Alarm output, potential free changeover contact:	
KL 7/1	Normally closed
KL 7/2	Normally open
KL 7/3	Common (Power failure, Alarm: 1 and 3 closed >30 seconds.

**Terminal connections****In / outputs****Outputs**

The controller has 2 outputs for alarm and sample sequence end. These outputs are individual potential free changeover contacts. When active (in alarm) or during a power failure terminal 1 is connected to terminal 3 (valid for KL6 and KL7)

Limit data:  $U_{max.}: 300V\text{-}/250V\text{-}$   $I_{max.}: 8A$   $P_{max.}: 50 / 220W$

Output (KL6) signals sample sequence end (changeover from 2-3 to 1-3):

- \* When the preset sample sequence has finished.
- \* On power failure
- \* The contact returns to 2-3 when a new automatic sampling sequence programme is started.

**Sample sequence end**

Output (KL7) signals Alarm (changeover from 2-3 to 1-3 as a  $\geq 30\text{sec}$  impulse contact.):

- \* When a fault has occurred during a sample cycle.

The respective error message appears in the display.

For fault descriptions see chapter "**Problems and solutions**"

**Alarm****Inputs****Flow impulse inputs**

1 Impulse input (KL9, terminal 3 via opto coupler) max.25Hz (+7 to +27 Volt).

For connecting an external quantity measuring system

1 Stop input (KL9, terminal 4 via optocoupler).

A voltage between +7 to +27 Volt on the input stops all sampler functions (eg. for connection to an external timer)

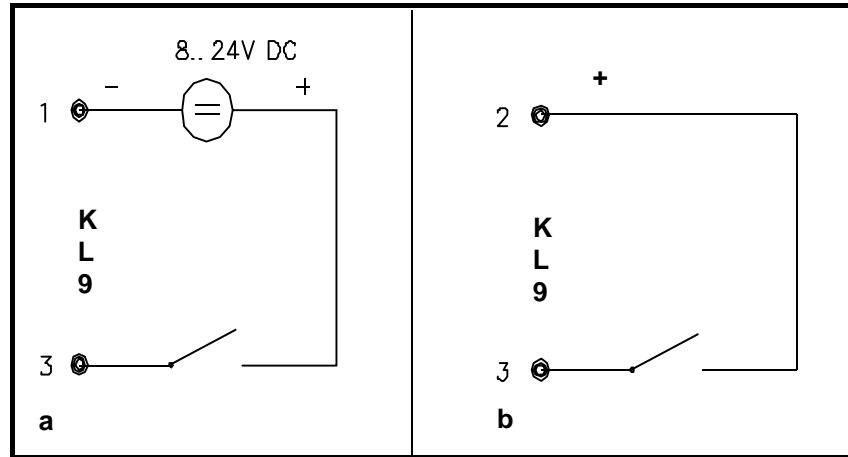
0 Volt (or open circuit) to +3 Volt initiates normal operation (the status display restarts at zero, the next sample is taken once the target value is reached). For further information to this function see chapter

"**Interrupt/restart sample cycle**".

**External stop**

**Connection examples**

Alternatives: In example "Impulse input for flow input"



**a:** Using external aux. voltage      **b:** Using internal aux. voltage

**Output**

The outputs (KL6/KL7) are individual (potential free) changeover contacts and can be directly connected to either DC or AC sources. (KL9 terminals 5/6 are normally not to be connected = Transistor output max.20mA DC)

**What happens on power up ?**

a) The display shows "INIT", unit does a self test (start up). Display shows "OFF". Switch sampler on by operating the "ON" push button. The unit continues to operate using the data from before the power failure. If required reset data by operating and restart the sampler by operating the "AUT" push button.

**Power failures**

- b) **Short term** power failures during operation:  
The sampler continues to operate as normal after power return. The auxiliary output power supply is not available during power failure (the inputs continue to be scanned). Samples are not taken, but the internal electronics continue to operate and the lost samples are added into the "INFO" counters. See chapter "Additional information". Missed distribution switchings are done on power return.
- c) **Long term** power failures (internal buffer accumulator discharge):  
The error message "E09PrES" is displayed and the distribution arm goes to its zero position (between last and first bottle). Operate push button OFF, followed by push button ON, set up operation data again. The system restarts at the first bottle when "AUT" is operated.  
Note: The internal buffer accumulator is automatically recharged on return of power.

**On/off switching using the ON and OFF push buttons**

- a) Switch off (operate OFF): This switches the operating cycle off. The system should not be switched off during a sample cycle, always wait until the unit has completed the cycle. Display shows "OFF", the sampler is switched off (mains power is still available). The refrigeration system continues to operate as normal.
- b) Switch on (operate ON): Display shows "END". The sampler can be restarted (using new data if required). The sampler starts operating using the first bottle.

See drawings at the front of these instructions ("**Operating components and display**")

**Operating elements**

**Operating principle**

Push button "**ON**" (3) activates the "*liqui-box a 2*" controller

- The display shows the last operation sequence values.

**"ON" push button**

Push button "**OFF**" (4) switches the "*liqui-box a 2*" off.

- The display (14) shows "**OFF**"

**"OFF" push button**

Push buttons "←" (5 and 16) change the mode of operation

- Display arrowhead ▼ changes to the next field.
- Display arrowhead ▼ flashes for a few seconds, then the new settings are accepted (always wait for the arrowhead to stop flashing).

**"←" push button**

Push buttons "+" (7 and 17) and "-" (6 and 8) change the target value (12 and 24)

- Simultaneous operation of "+" and "-" changes the display to auf **0001** (Reset).
- If the target value is changed the arrowhead ▼ flashes.
- Once the arrowhead ▼ is stable the new values are accepted and stored.

**"+" and "-" push buttons**

Push button "**AUT**" (2) starts an automatic sampling sequence.

**"AUT" push button**

**"Count down"** to sample sequence start:

**Count down**

If the "**AUT**" (2) push button is operated for more than approx 5 seconds a preset counter appears in the display. Once this counter has be set the arrowhead ▼ flashes.

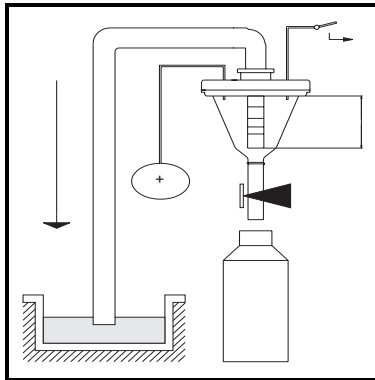
Once the arrowhead is stable the counter counts down in a minute cycle. The sampler is now blocked. Once 0000 is reached the sampler starts automatic sample operation using the preset sampling data.

Push button "**MAN**" (1) initiates an immediate sample cycle.

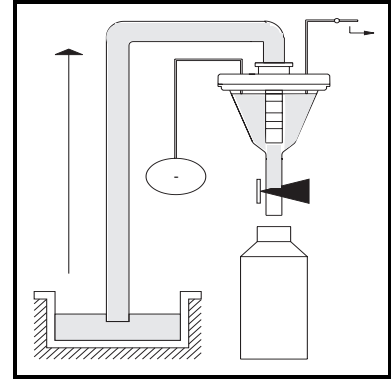
**"MAN" push button**

Sampling principle

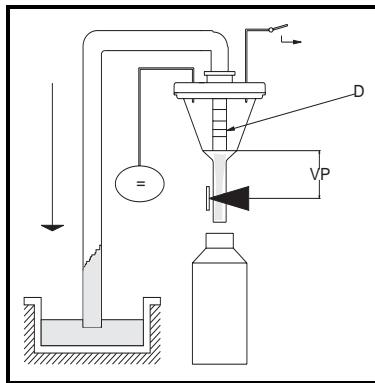
Vacuum principle



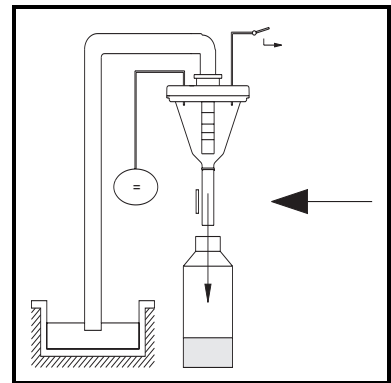
**1** The dosing system is pneumatically sealed at the beginning of each sample cycle. The diaphragm pump then blows the suction hose free of obstructions via the dosing chamber



**2** A fresh sample is then sucked into the dosing chamber until the conductivity level switch is activated (sensors in the dosing chamber flange)



**3** The sample is now dosed to the preset volume (VP). This is dependent on the dosing tube position (D). Excess liquid flows back to the sampling point due to a syphonic effect.



**4** The hose clamp is released and the sample flows into the composite container or bottles if operating using sample distribution.



Follow the next steps.

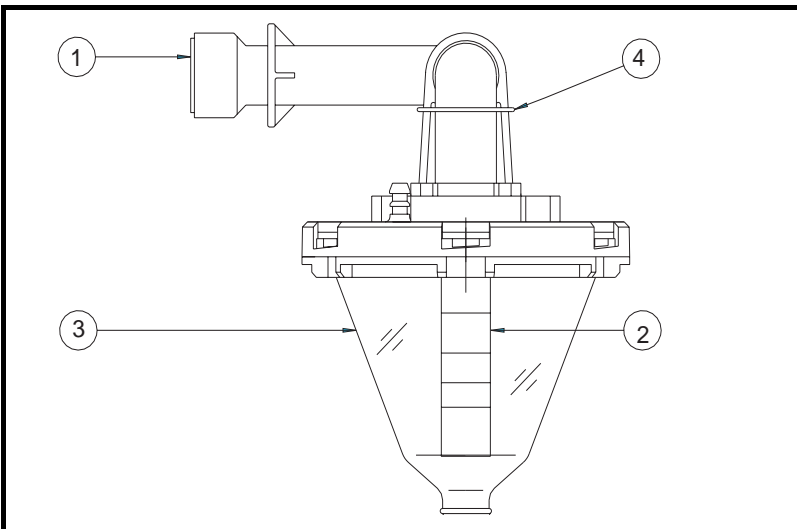
### Varying sample volume

1. Open controller door

Operate the - OFF- (4) push button at the "liqui-box a 2".

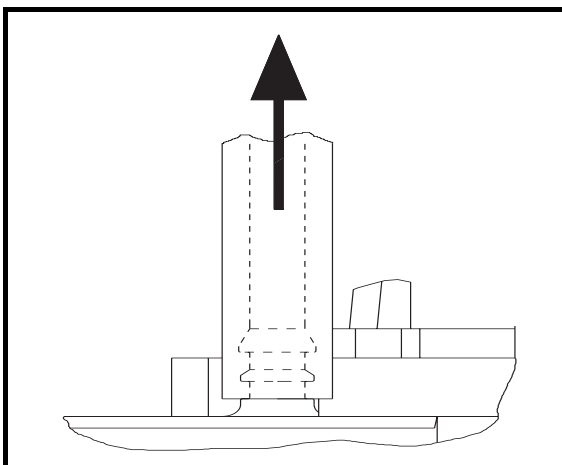
2. Switch unit off

Dosing system:



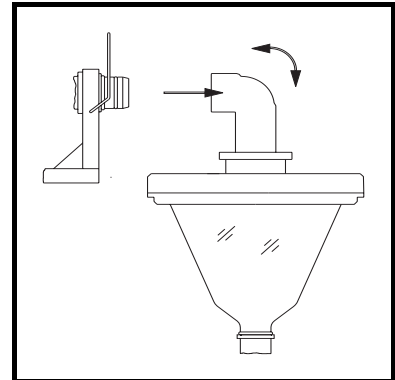
- ① = Elbow
- ② = Dosing tube
- ③ = Dosing chamber
- ④ = Piping clamp

3. Remove air hose



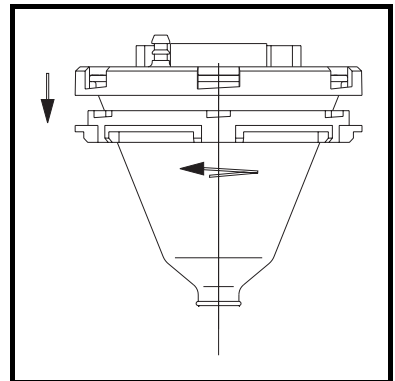
#### 4. Remove dosing system

Lift clamp from pipe elbow.  
Pull dosing system forwards  
and remove from controller.



#### 5. Remove flange

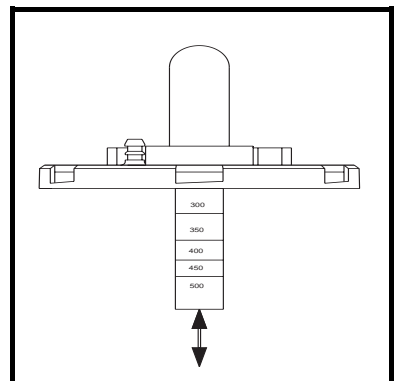
Release the bayonet fitting by  
turning the lower part of the  
flange as shown. Remove the  
flange from the dosing chamber.



#### 6. Set sample volume

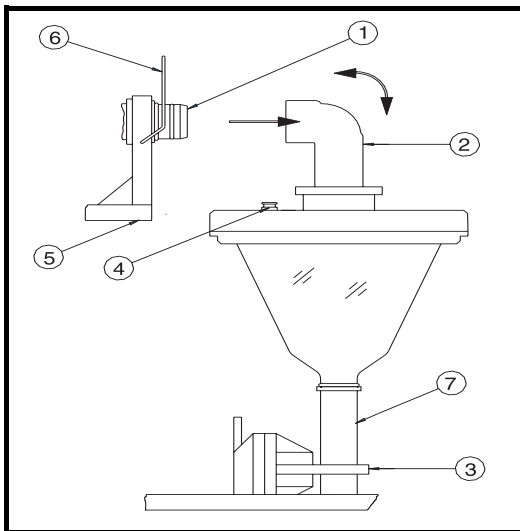
Set the dosing tube to the  
required sample volume by  
pushing it in or out. Take note  
of the engraved quantities on  
the tube. (The further the tube  
is pulled out of its retainer the  
smaller the sample volume)

(Only move the dosing tube.  
**NEVER** loosen the nut and  
**NEVER** move the upper elbow.)



Use the following calculation in order to avoid overfilling the sample  
containers:

$$\text{Preset sample volume} \times \text{number of samples} = \text{Container volume}$$



- ① = Nipple
- ② = Suction pipe elbow
- ③ = Hose clamp
- ④ = Contacts
- ⑤ = Spring contacts
- ⑥ = Fixing clamp
- ⑦ = Silicon hose

## 7. Dosing system

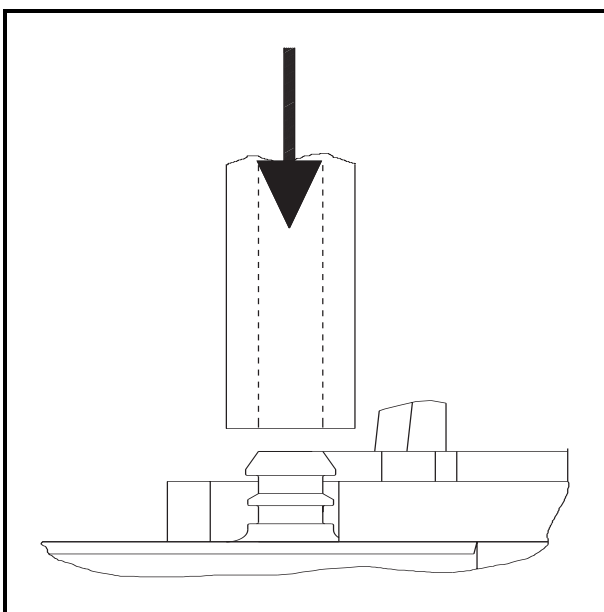
- Push silicon hose ⑦ into the hose clamp ③.
- Push suction pipe elbow ② onto the nipple ①. (Make sure that the spring contacts and flange contacts are made).
- Push fixing bracket ⑥ downwards.

**"The contacts ④ and contact springs ⑤ must be made (otherwise faults can occur)."**

We cannot be held responsible for damage caused by not complying with these instructions !



## 8. Replace air hose



## Methods of sampling

### Manual sampling

Operate push button **MAN**.

Starts an immediate sample cycle

This can be done as often as required and can be repeated at any time.

### Automatic sampling

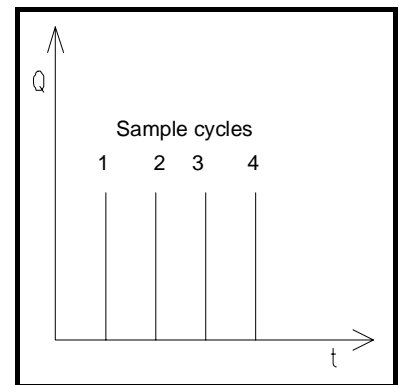
One of three possible sampling methods can be selected

- a) Time proportional sampling
- b) Quantity proportional sampling
- c) Event controlled sampling

#### a) Time proportional sampling

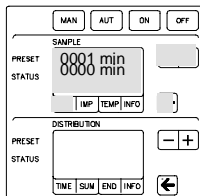
$Q$  = Sample volume

$t$  = Time intervals



#### Principle:

Samples of identical volume are taken in preset identical time cycles. Time spans of 0001 min. to 9999 min. are possible!



Operate push button  $\leftarrow$  as often as required to bring the flashing arrowhead  $\blacktriangledown$  over the display field marked as **TIME** .

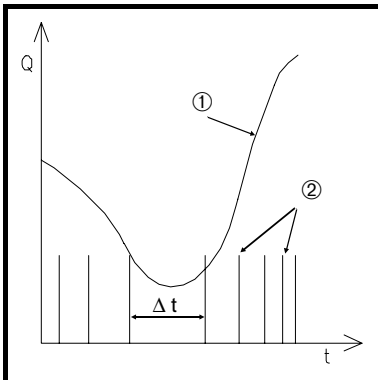
Set the time span between each sample cycle in minutes using push buttons - or +.

Continuous operation of push buttons - or + causes the numbers in the display to scroll at a faster speed.

The controller has accepted and stored the new values once the arrowhead  $\blacktriangledown$  over the display field **TIME** has stopped flashing.

*Do not select a sample time span smaller than the time it takes to complete a sample cycle.*

Continue with "**Setting up bottle change**" and "**Setting up sequence end**".



Q = Quantity (Flow)  
 t = Time  
 $\Delta t$  = Time interval  
 ① = Flow rate  
 ② = Samples

### b) Quantity proportional sampling

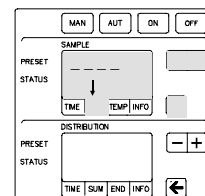
Here an external flow meter with an impulse output must be connected to terminal strip KL 9/3. The flow meter transmits quantity proportional impulses to the sampler. When the flow rate varies the sample cycles are initiated at varying time intervals:

More flow = More samples  
 Less flow = Fewer samples  
 (Volume per sample is always constant).

Sample start is presettable between 0001 and 9999 impulses.

Operate push button  $\leftarrow$  as often as required to bring the flashing arrowhead  $\blacktriangledown$  over the display field marked as **IMP**.

Using push buttons - or + set the number of impulses (target value) at which a sample cycle is to be initiated.



Continuous operation of push buttons - or + causes the numbers in the display to scroll at a faster speed.

The controller has accepted and stored the new values once the arrowhead  $\blacktriangledown$  over the display field **TIME** has stopped flashing.

*Do not select a sample time span smaller than the time it takes to complete a sample cycle.*

Continue with "**Setting up bottle change**" and "**Setting up sequence end**".

An external signal initiates an immediate sample cycle.  
 (Connect to terminal strip KL 9/3).

Operate push button  $\leftarrow$  as often as required to bring the flashing arrowhead  $\blacktriangledown$  over the display field marked as **IMP**.

Using push buttons - or + set the target value of 0001.

### c) Event controlled sampling

Continue with "**Setting up bottle change**" and "**Setting up sequence end**".

**Set up sequence end**

The sampler can operate with or without a preset sample sequence end (continuous operation). Continuous operation = non stop distribution arm cycles.

**... With sample distribution**

Operate push button  $\Leftarrow$  as often as required to bring the flashing arrowhead  $\blacktriangledown$  over the display field marked as **END** .

The display indicates either **ON** or **OFF**.

**ON** = Sample sequence end (after last bottle)

**OFF** = No sample sequence end time (continuous operation).

Important: Plan emptying and changing bottles !

Using push buttons - or + select **ON** or **OFF**.

Start sampler automatic sequence by operating the **AUT** push button

If **ON** was selected the display indicates **END** and the sampler stops once the last bottle has been filled

Restart the sampler by operating the **AUT** push button. (Do not forget to either empty or change the filled bottles)

**... With composite container without distribution**

**Without stop:**

**OFF** = Continuous operation



Always plan when the sample container is to be changed or emptied. The sample sequence can be ended at any time by operating the **OFF** push button.

Restart the sampler by first operating the **ON** push button followed by the **AUT** push button.

**Or with automatic stop:**

**ON** = Automatic sequence stops after either a preset time or number of samples taken.

Wait until the arrowhead  $\blacktriangledown$  over the display field **END** stops flashing.

Using push button  $\Leftarrow$  bring the arrowhead  $\blacktriangledown$  over the display field **TIME** or **SUM**.

**TIME** = Automatic stop after preset time.

**SUM** = Automatic stop after a preset number of samples has been taken.

Using push buttons - or + set the required stop value.

Start an automatic sampling sequence by operating the **AUT** push button.

Actual **STATUS** value (lower display) increases in time spans of 1 minute (when set to **TIME**) or by 1 after each sample cycle (when set to **SUM**).

The automatic sampling sequence stops once the **STATUS** display equals that in the **PRESET**.

The word **END** is displayed in the **PRESET** value display until a new sequence is started by operating the **AUT** push button.

Filling a sample bottle tray starts by placing the first sample in the first bottle in the tray.

The number of samples per bottle or the filling time per bottle is presettable.

Once this preset value is reached the distribution tap moves to the next bottle.

This sequence is repeated until all bottles have been filled.

**Setting up bottle change**

Only used with sample distribution and not with composite container.

Operate push button  $\Leftarrow$  as often as required to bring the flashing arrowhead  $\blacktriangledown$  over the display field marked as **TIME** .

Set the required time in minutes using push buttons - or +.

Effect (after sample start):

The status value increases by one each minute.

Once the status value reaches the preset value the distribution tap moves to the next bottle.

The status display is reset to zero and the sequence is repeated.

Continue by following the instructions in section "Setting up sequence end"

**... on time base**

Operate push button  $\Leftarrow$  as often as required to bring the flashing arrowhead  $\blacktriangledown$  over the display field marked as **SUM** .

Set the required number of samples per bottle using push buttons - or +.

Effect (after sample start):

The status value increases by one after each sample cycle.

Once the status value reaches the preset value the distribution tap moves to the next bottle.

The status display is reset to zero and the sequence is repeated.

Continue by following the instructions in section "Setting up sequence end"

or

**... on number of samples taken**

Set up and operate the sampler is such a way that there is no danger of the bottles overflowing. We do not accept any liability for damage caused through neglect !



Multiplying the dosing volume by the number of samples to be taken per bottle (container) equals the container volume.

Or dividing the bottle (container) volume by the dosing volume equals the maximum number of samples that will fit into the bottle (container). For safety reasons always calculate 10% less than the bottle capacity.

Attention: Calculation is not required when operating using sample modes "Quantity proportional" or "Event controlled" and distribution "Bottle change on time base".

### Countdown for automatic sample start

If the automatic sampling sequence is to start with a time delay, set up the sampler as follows:

Calculate the required delay in minutes (from now to the required sample sequence start time). Hold the **AUT** push button for at least 5 seconds until the upper display indicates "**hold**" and the number "**0001**" appears (the lower display is empty). Using the - and + push buttons set the required time delay value, then wait ! Once the arrowhead in the display stops flashing the counter will count down one digit per minute. Once the counter has reached "0000" the countdown has finished and the sampler starts its automatic sampling sequence !

Correction: The counter can be reset at any time during the countdown phase (+ - push buttons).

Abort: Enter counter value "**0000**" or switch the unit on and off  
*Short term power failures do not abort the countdown, it continues to operate as normal.*



### Sample sequence interrupt / restart

Application: This input can be used to start and stop the sampler using an external contact, eg. an external timer can be connected and this will start and stop the sampling sequence at preset times.

A voltage of +7...+27 Volt (terminal strip KL 9/4) has the following function:

- The *asp-station a 2* function is stopped. The actual value display **15 (STATUS)** in the sample field is reset to zero. The display indicates "**hold**". There are no further quantity proportional or event controlled samples taken and the time counter remains at zero.  
The counter values (**PRESET** and **STATUS**) in the distribution field are "frozen" and are therefore unaffected.
- An initiated sample cycle is finished.
- The thermostat control continues to operate.

A voltage of 0...3 Volt, or open circuit at the input allows the *asp-station a 2* to continue operating normally. The sampling status value restarts at zero, the next sample is taken once this value has reached the target (**PRESET**) value. The distribution status value continues to operate from the "**frozen**" value.

### Alterations during operation

All target (**PRESET**) values and operational modes can be changed at any time, even during a sample sequence programme.

The *asp-station a 2* then continues sampling using the the new values. Should the sampler be switched off during a sampling cycle the medium in the dosing chamber is released.

### Cooling and heating

The internal temperature of the thermostat controlled cabinet is presettable. Set the arrowhead ▼ over the display field **TEMP**. The display indicates the target (**PRESET**) and actual (**STATUS**) temperatures. Using the - or + push buttons set the required temperature.

Recommendation: approx + 4°C (to DIN 38 402 part 11)

If the arrow push button is operated again the arrowhead ▼ remains above the **TEMP** field and the lower display line indicates "**DEFR**".

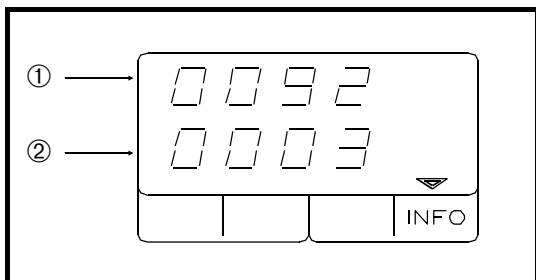
Now the defrost time can be set up. The unit always defrosts once per hour. A defrost time of 10 minutes is set at the works. This value should only be increased if ice builds up on the cooler fins.



The display field **TEMP** is automatically exited after approx. 30 seconds if no further changes are made. Either the temperature sensor (when using a composite container) or the distribution cable must be connected to the socket on the underside of the controller ! **If not connected the refrigeration system will not operate !** The display will then indicate 54° C.



The following values are displayed when the **INFO** field is selected:



**Display (upper)**

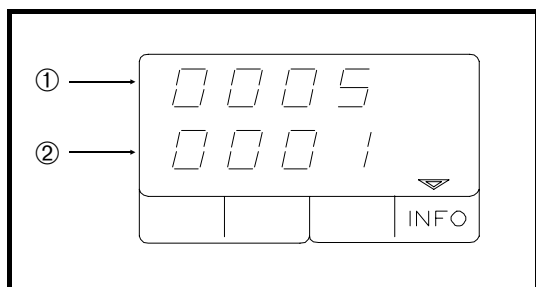
**Additional information that can be indicated**

**Pump running times and faults (Upper display)**

- ① Pump running time in hours (Non resettable counter)
- ② Number of faults

- a) No medium in the dosing chamber within the required suction time (eg. sampling point is dry, suction hose is blocked, leaks in the suction system)
- b) Power failure
- c) Samples that cannot be taken because the start signal is received whilst a sampling cycle is active. This would occur mainly when operating on quantity proportional sampling when the time between two sample commands can be too short.

**Faults:**



**Display (lower)**

**Number of not taken samples (Lower display)**

- ① During power failures
- ② Through start commands when sampling is already active

- To ① If an automatic sample start should have been initiated. If an externally controlled sample cycle should have been initiated (only on external auxiliary power source).
- To ② If the sampling time cycle selected is too short. If the flow rate (external measurement) is too high. If events (external alarms) happen too frequently.

The display is reset to 0000 when the unit is restarted into a new automatic sampling sequence (operating the AUT push button).

Counter reset:

**Requirement:**

**2 hour composite sample over 1 day using the "asp-station a 2" 12 x 2,5l distribution. Quantity measurement is not available.**

**Solution:**

- \* Automatic bottle change every 2 hours, making sure that the bottles are not totally filled.
- \* Sample sequence ends after filling the last bottle.
- \* Automatic time proportional sampling sequence.

Calculate and set up a feasible relationship between the sample volume (per sample) and the preset time cycle (sample every x minutes) to bottle capacity (do not overfill) !

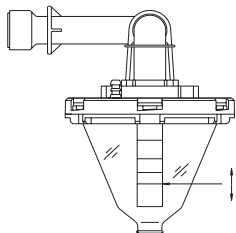
**Example:**

200ml            10 minutes    =    2400ml            in 2 Stunden  
 Dosing volume    time cycle            Container (bottle) volume

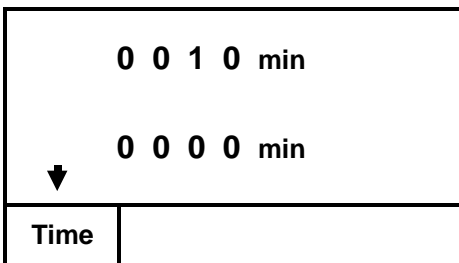
or

100ml            5 minutes        =    2400ml            in 2 Stunden  
 Dosing volume    time cycle            Container (bottle) volume

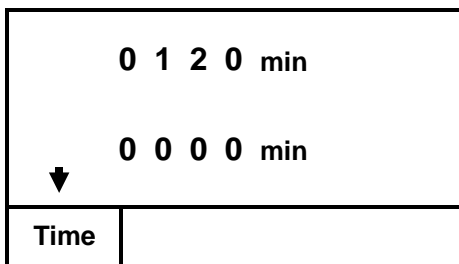
**Settings for this example:**



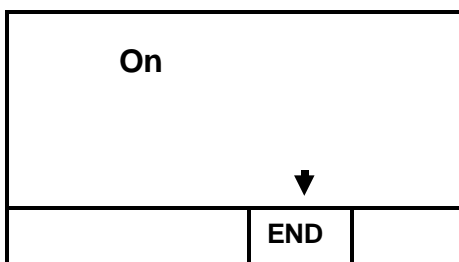
1. Set "dosing volume to 200 ml" (= volume per sample)



2. Upper display field:  
 Set "time interval to 10 minutes" (= sample every 10 minutes) \*



3. Lower display field:  
 Set "bottle change to 2 hours"  
 enter (120 minutes). \*

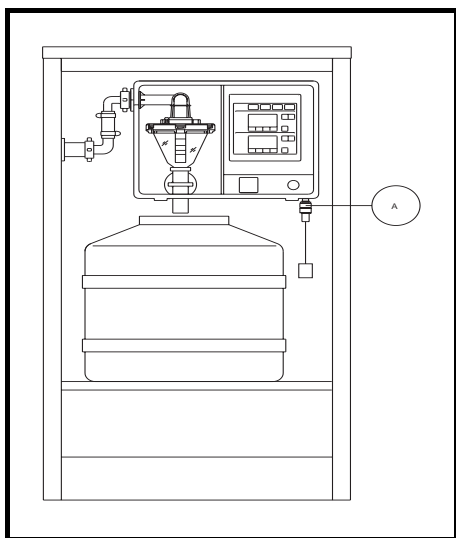


4. Activate "sample sequence end" after last bottle filled  
 Select "ON"
5. Operate the "AUT push button", automatic sampling sequence is started.

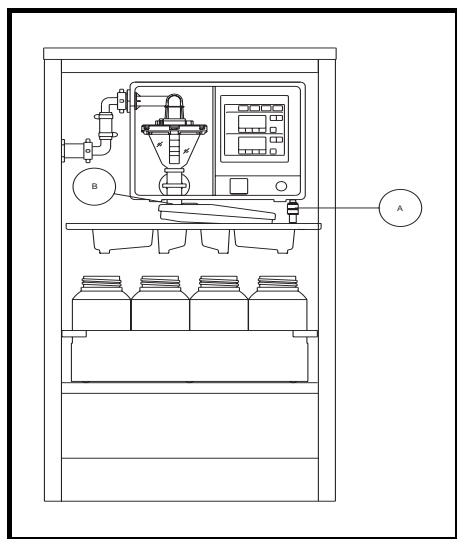
\* = Zero display counters: simultaneously operate +/- push buttons

The sampler can operate using a composite container or can distribute the samples into a number of discrete bottles using a sample distribution system.

Changing from one form of distribution to another can be done by simply exchanging one form for another.



1. Disconnect temperature sensor from **A**.  
(Reason: there is a temperature sensor built into the distribution tray).
2. Remove the composite container and replace with new bottle tray (first remove the bottle lids).
3. Push distribution tray in using the guides and plug in cable **A**.
4. Make sure that the sample outlet hose **B** fits into the distribution tap.



1. Remove bottle tray.
2. Unplug distribution tray cable from **A** and replace tray with the composite container
3. Plug in temperature sensor into **A**. This can be purchased as an accessory. (order No. 50069496).

1. Unplug distribution tray cable from **A**.
2. Remove bottle tray and distribution system and replace with new system. Then connect cable to **A**.
4. Make sure that the sample outlet hose **B** is placed inside the distribution tap **C**.

- a) Only use "bottles/bottle tray/distribution" that belong to each other.
- b) 4x10l system operates with single bottles and no distribution tray.
- c) Do not forget to remove the bottle lids.

### Changing number of bottles

### Changing from composite container to distribution

### Changing from sample distribution system to composite container

### Changing to other distribution types



**General**

Maintain your *asp-station a 2* regularly. Clean and protect the outside cabinet using a stainless steel cleaning agent. Regularly oil the door hinges.

**Sample distribution**

Clean the distribution tray and tap with soap and water (do not use solvents, spirits, etc.). In order to clean the distribution system: disconnect the plug from the controller; remove the distribution tray; pull the distribution tap off the tray; undo the side clamps; split the tap and clean both halves. To reassemble reverse these instructions.

**Dosing system**

Always clean the dosing chamber and flange after approx. 1000 samples or sooner dependent on soiling. Clean this with soap and water (do not use solvents, spirits, etc.). Make sure the system is dry before reassembly. Ensure the system is assembled correctly.

**Power cable**

Check for visible damage and replace if needed.

**Plugs and sockets**

Always keep covered using the protective covers when not in use.

**Storage**

Always connect and switch the unit on for at least 48 hours if the unit has been out of operation for 6 months (protects the internal accumulator from total discharge).

If this is not possible the accumulator isolation switch must be opened (only by skilled personnel).

This switch can be found on the CPU board next to the "data security accumulator" behind the controller front keypad and display plate.

**Repairs**

Should you need to return an *asp-station a 2* or part of it to your Endress+Hauser service department for repair please take note of the following:

**Cleaning the asp-station a 2**

Remove all deposits.

This is most important if the unit has been used in areas containing health hazardous waste or substances, eg. corrosive, poisonous, carcinogenic, radioactive etc. We must ask you not to return the unit if it is impossible to totally remove these substances from the unit, eg. if they have seeped into cracks or have been diffused into the plastics used on the sampler.



**Information about application area and fault**

Please include a small description of the application conditions, installation area and medium properties. Also include a fault description as this will make fault finding simpler and faster and will, in the long run, save you money.

Many thanks for your assistance.

Fault messages are indicated in the display in coded form. The codes have the following meanings:

Conductivity sensor **LF1** is short circuit (dirty).

- Remove dosing chamber and remove flange.
- Clean the flange, conductivity sensors inside and the gold plated contact pins.
- Reassemble the dosing chamber.
- Operate the **OFF** push button.
- Operate the **ON** push button.

Display message **E03 LF1** goes out, the unit continues to operate to the preset conditions.

The sequence of operating the **OFF**, **ON** push buttons acknowledges the fault, counters are not reset.

Safety switch off due to conductivity sensor **LF2** !

If this fault message appears in the display conductivity sensor **LF1** **has not** been activated (open circuit, insulated).

- Remove dosing chamber and remove flange.
- Clean the flange, conductivity sensors thoroughly with soap and water, also clean the gold plated contact pins.
- Reassemble the dosing chamber.
- Operate the **OFF** push button.
- Operate the **ON** push button.

Display message **E04 LF2** goes out, the unit continues to operate to the preset conditions.

The sequence of operating the **OFF**, **ON** push buttons acknowledges the fault, counters are not reset.

Fault in the pneumatic controller.

- Operate the **OFF** push button.
- Operate the **ON** push button.

There is a fault in the controller if the display message **E05 PnEu** does not go out. This fault can only be repaired by

**Endress+Hauser-Service** personnel.

(Possible cause: Distribution tray has not been connected to the *liqui-box a 2*)

Distribution tap start position has not been found. Can only be repaired by **Endress+Hauser Service** personnel.

Distribution tap start position message has occurred unexpectedly (eg. moved by hand).

- Operate the **OFF** push button.
- Operate the **ON** push button.

### Fault messages

**E 0 3**  
**L F 1**

**E 0 4**  
**L F 2**

**E 0 5**  
**P n E u**

**E 0 7**  
**T A P 0**

**E 0 7**  
**T A P 1**

**E 0 8  
C O D E**

Bottle code has been changed.  
eg.: Distribution was exchanged during automatic operation, or the distribution tray plug (tray/controller) has been, or is disconnected.

- Operate the **OFF** push button.
- Operate the **ON** push button.

**E 0 9  
P r E S**

There has been loss of data.

- Operate the **OFF** push button.
- Operate the **ON** push button.

Display message **E09 PrEs** goes out.  
Reset operation condition data.



*This message occurs if for example:*

- Over voltage has occurred (eg. lightning)
- Operating outside the allowable ambient temperature range
- Internal data security back up accumulator is defective or empty (after longer power failures).

*Check: Connect the unit to the mains power supply continuously for at least 48 hours (accumulator will be charged). Remove power for approx. 1 minute, return power; if the fault message reappears the accumulator is defective.*

*If the fault message reappears sooner then the fault is not to be found in the accumulator area.*

*Please check the application area !*

There is a fault if the display message **E09 PrEs** does not go out or reoccurs. This fault can only be repaired by **Endress+Hauser Service** personnel.

**S 0 1**

This message appears if the **LF1** conductivity sensor does not switch within a precalculated automatic suction time.

This message automatically goes out after a short time.

The counter in the bottom line of the upper Info display field (number of faults) is increased by one.

Check the suction hose for obstructions, whether the sampling point is dry or if the hose is no longer covered by water.

Check all hoses and pneumatic and water connections for leaks. This includes the complete dosing system (chamber, lid etc.)

**E O b  
C P u**

There is a fault in the controller.

Call on the **Endress+Hauser Service** technician to repair the unit, or replace it

**Others**

- No heater or :                      Check if the temperature sensor is connected.
- refrigeration:                      Check fuse in the terminal box
- Pump does not operate:          Check fuse in the terminal box as well as in the controller.

Do not manually move the distribution tap! (Start up)

Only trained maintenance staff or **Endress+Hauser** service technicians should check and repair other faults occurring in the **asp-sation a 2!**

Description	Ordercode
<b>liqui-box a 2 control module...</b>	
Complete control module (standard)	RPF1A-2H1
<b>Cabinet and external components:</b>	
External elbow fitting 13 mm	50062334 + 50042066
External elbow fitting 15 mm	50042066
Jubilee clip 13 mm	50031883
Jubilee clip 15 mm	50031887
Suction hose 13 mm	50074496
Suction hose 15 mm	50031904
O ring for elbow fitting	50031700
<b>Dosing system and pneumatic:</b>	
Dosing chamber 200 ml	50072149
Dosing chamber 350 ml	50038228
Outlet silicon hose 6,5 cm	50037923
Clip for silicon hose	50031087
Hose clamp	50042508
Hose clamp diaphragm	50031633
350 ml volume dosing kit	UE-LD4
200 ml dosing chamber flange	50072151
200 ml dosing chamber bayonet ring	50072150
O ring set	UE-LDB
Vacuum pump 230 V AC	UE-LPK
Pump spare parts set	50076467
<b>Distribution systems / bottle trays:</b>	
12 bottle distribution system	UE-SVB
24 bottle distribution system	UE-SVC
4 bottle distribution system	UE-SVA
12 x 2,5 l PE bottle tray	FLKORB-P
24 x 1 l PE bottle tray	FLKORB-D
24 x 2 l glass bottle tray	FLKORB-Q
<b>Sample distribution:</b>	
Complete distribution tap	UE-SDA
<b>Others:</b>	
Temperature sensor for composite container	50069496
Current/frequency convertor	UE-RLA

**Please give order code when requesting prices or ordering components !**

<b>Cabinet:</b>	Stainless steel cavity wall insulated cabinet, materials: 1.4301 (V2A), 30mm Styropor insulation. Cabinet internal temperature thermostat controlled. H x W x D approx. 1072 x 601 x 637 mm (Wide cabinet) approx. 1072 x 868 x 665 mm Weight approx. 100 kg
<b>Protection class</b>	Controller (Keypad): IP 55 to DIN 40050
<b>Allowable ambient temperature:</b>	-20...+50°C
<b>Allowable medium temperature:</b>	0°C ... +50°C
<b>Minimum liquid conductivity:</b>	≥ 30 µS/cm (others optional)
<b>Power supply:</b>	230 V AC + 10% -15%, 50/60 Hz
<b>Power consumption:</b>	max. 300 VA, wide cabinet max. 250 VA
<b>Safety:</b>	To VDE 0411 Teil1/EN 61010-1, protection class I Over voltage category II
<b>EMC/immunity:</b>	To EN 50082-1
<b>RF:</b>	To EN 55011 class A (Industrial surroundings)
<b>Data security:</b>	>500h during power failure (condition: powered for at least 7 days previously)
<b>Feed system:</b>	Built in diaphragm pump
<b>Feed conditions:</b>	Feed height : max. 6m at 1013 hPa Feed distance : max. 30m at 1013 hPa Suction velocity : 0,6m/sec, 13 mm diameter hose
<b>Sample volume:</b>	20 ml to 200 ml presettable (option 350ml)
<b>Sampling modes:</b>	Time proportional : 1 min. bis 9999 min Quantity proportional : 1 Imp. bis 9999 Imp. Event controlled : 1 Imp. Manual start : Via <b>MAN</b> push button
<b>Sample distribution:</b>	Via presettable filling time or number of samples in bottle or container With presettable sequence end after last bottle or continuous operation.



Presettable time delay for automatic sample sequence start from 0...9999 minutes

**Countdown:**

Opto coupler input: Positively flanked, galvanically isolated, min. impulse length 10 ms  
Low: 0 ... 3 Volt High: 7 ... 27 Volt

**Impulse input:**

Opto coupler input: Galvanically isolated, stop when high  
Low: 0 ... 3 Volt High: 7 ... 27 Volt

**Stop input:**

Alarm, sample sequence end: Each with one potential free changeover contact  
 $U_{max}$ : 300V~/250V~  $I_{max}$ : 8A

**Outputs:**

$U_{ext}$  : + 8 bis + 18,5 V DC(200 mA)

**Auxiliary voltage from unit:**

<b>liqui-box a 2:</b>	Housing:	ABS
	Dosing chamber:	PMMA
	- Flange:	PP/PPN
	- Sensors:	1.4305
	Dosing tube:	PVC
	Connection tube:	PP
	Outlet hose:	Silicon
	Pneumatic controller:	
	- Block:	Polycarbonate
	- Gasket:	Silicon
Distribution system:	Polystyrol	
Sample bottles:	Polyethelene or glass	
Bottle tray:	1.4301 (st. st.)	

**Material used (partial)**

**Technical modifications reserved!**

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