

**1-CUBE s. r. o.**

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**Accompanying documentation**  
**BEER ANALYZER**  
**Type AP1**

**Contents**

- 1.0 Contents of consignment
- 2.0 Use of the device
- 3.0 Assembly instructions
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## 1.0 BEER ANALYZER – CONTENTS OF CONSIGNMENT

**Standard range of supply** for one unit of device – type AP1:

Beer analyzer AP1 inclusive of a handle for measuring vessel and magnifying glass.....	1 unit
Plastic tank.....	1 unit
Plastic tank with spherical valve – for distilled water.....	1 unit
Densimeter range 1.0000 – 1.0060 g/ml, serial number.....	1 unit
range 1.0060 – 1.0120 g/ml, serial number.....	1 unit
Alcoholometer range 3 – 8 % volume, serial number.....	1 unit

Notice: 1) a part of alcoholometer and densimeter is also a thermometer with range  
0 - +30°C, division of thermometer's scale.....0.2°C

2) division of densimeter's scale.....0.0001

3) division of alcoholometer's scale...0.1

4) densimeters and alcoholometers need to be stored in protective covers(which are part of the consignment) to be not broken !!

glass measuring vessel for densimeter and alcoholometer.....	1 unit
antifoam agent 30 ml.....	1 unit
syringe 5 ml.....	2 units
working filling for steam generator (pack 30 ml).....	1 unit
glass testing flask.....	5 units

### Accessories:

Densimeter range 1.0120 – 1.0180 g/ml, serial number.....	
Densimeter range 1.0180 – 1.0240 g/ml, serial number.....	
Alcoholometer range 8 – 13 % volume, serial number.....	
Alcoholometer range 13 – 23 % volume, serial number.....	
Plastic bottle with nozzle for distilled water.....	
Glass measuring vessel for densimeter and alcoholometer.....	
Testing glass flasks 100 ml.....	
Glass graduated cylinder 100 ml, sort A.....	
Dot printer Epson LQ300 inclusive of interface cables.....	
Interface cable for PC.....	
Refill for steam generator(pack 30 ml).....	
Antifoam agent 30, 100 or 500 ml.....	

### Spare parts:

according to customer's specification and request

Observation:

Accessories and spare parts aren't a part of the consignment and may be delivered only on special request of customer.

## 2.0 USE OF THE DEVICE

The product is dedicated for industrial using.  
It serves for determination in beer:

- apparent, real and original extract in degrees of Plato
- content of alcohol in volume and mass %  
percentage, converted to 20 degrees of Celsius
- energy use efficiency
- beer density converted to 20 deg. of Celsius
- prepares samples for the determination of volatile matters in the drinks

## 3.0 ASSEMBLY AND MAINTENANCE INSTRUCTIONS

### **Assembly of the device:**

The analyzer (see picture 1.) needs to be located to a horizontal base (isolated laboratory table) near to a socket – 230 V/50 Hz, (110 V/60 Hz – holds for supplies to USA and Canada), sink and supply of pressure rinse drinking water.

Hereafter is necessary to ensure rate of illumination at the workplace min. 300Lx.

Observation: It's useful to ensure permanent dry on the desk of working table where the analyzer is located and there mustn't be any chemicals on it; nonobservance of this principle can result in endangerous of safety at work, reduction of service life; the device may also be damaged.

Installation of pressure rinse water has to be made by its connecting through closing valve located near to the analyzer and by installation of water to water filter which is a part of consignment and is located on the back panel.

### **Warning:**

During the assembly of the water filter is necessary to hold metal pipe in the same position like it is mounted on the analyzer, because the pipe hasn't to turn. Nonobservance of this principle can result in leakiness of inner pressure main in the analyzer and its following destruction!!!!

Mount the filter in this way: the arrow on the filter must point to the analyzer.

After the assembly of pressure rinse water test please close connection of installation and do away with contingent leakiness!

Installation of waste: put on the hose on the metal pipe indicated by a sign „waste“ and pack it with tightening clip. The hose must be slanting towards the sink; the analyzer must be more high up than the sink. Installation of waste from developer of steam (plastic hose on the back panel of analyzer indicated „waste“) make by its putting to the sink.

Electric installation of a socket 230 V/50 Hz/16A (110V/60Hz/16A – holds for USA and Canada) for the analyzer must be made in the way of the socket must be safed (for example with hotmelt safety fuse of value 16A and equivalent short-circuiting resistance).

If you look at the socket from the front, you will following locating of conductors:  
on the left – phase conductor, (L1)

on the right – central conductor, (N)

earthing pin – up – as a protective conductor (PE)

Electrical connection of the analyzer to the printer make in the following way:

Separate interface cable for data transmission (connectors are on both sides of cable) put in with equivalent connector to: connector on the printer and the other connector put into equivalent connector located on the back panel of the analyzer and indicated by „Printer“. The connectors ensure with fixing winders or springs. **Installation of interface cable make in the moment when both devices are off, otherwise it can be damaged.**

- power cable of printer to separate socket 230V/50Hz (110V,60Hz) located on the back panel of the analyzer and indicated by a sign „Printer 230V/50Hz, or 110V/60Hz“.

**Warning:**

The analyzer and printer can be connected to grid not earlier than in 24 hours after their unpacking from transport cover and after balancing of temperature in medium where they will be operated.

Interface cables locate to be protected against mechanical damage.

Following paragraph holds only in case of transport of analyzer when it is transported in space with temperature during the transport is falling below 0° C.

By reason of protection of analyzer against its damage by frost during transport the device is delivered without working filling in steam generator, that's why it's necessary to dose 1.5 ml of filling (part of the consignment) to the developer during installation – see procedure “Change of working filling in steam generator”.

Fill plastic tank **only with distilled water**, close it with plastic closure and locate it to the upper side of the analyzer in the way as the spherical closing valve is oriented to the back side of the analyzer.

By means of transparent hose fastened on the back side of the analyzer and indicated by sign “Distilled water” (and after removing transport closure) connect the analyzer with lower spherical valve of plastic tank. Check if the hose isn't suspended, otherwise you must shorten it! Then open spherical valve and after it check if the connection is tight!

Open the spherical valve on the upper lid of plastic tank and put on it the free tip of thin plastic hose – supply of air from the blaster.

Take off covering holey metal plate(14) from a tank(13) and check if the plastic hose is with its free tip put into the oblong opening in the wall of the tank(13), if it isn't, put its free tip into this opening.

Mount carefully the magnifying glass(16) and the handle of it(15) to the working position indicated on pic. 1. As “A”. Handle of the magnifying glass with the magnifying glass must be in upper position above the analyzer. Magnifying glass with its transparent part must be in touch with measuring bowl. Tighten the plastic part of the handle up by hand towards the cover of analyzer to ensure its fixed position.

Necessary observation height of magnifying glass for accurate subtraction of height level in densimeter or alcoholometer scale can be easily set up always during each reading from scale by shifting the magnifying glass along the handle up to requested height. Set up the observation height of magnifying glass to have an observed level always in the middle of the magnifying glass.

Put the glass measuring vessel(9) into the handle(8) which is located on the right side of the analyzer (look from the front) and fill it with 100 ml of decarbonized drink. Put carefully the densimeter in it (it must begin to swim). Check if the densimeter doesn't hitch the walls of measuring vessel. If it doesn't, it means that the densimeter and the bowl are parallel. In case it isn't like that, it's necessary to unblock carefully by hand lower plastic handle(8) of measuring vessel(9) by means of plastic bolt (part of lower part of plastic handle) and shift carefully the plastic handle to make the densimeter and the vessel parallel. Set up the right position by only

light tighten of the bolt. If you do it, you will always be able to move with lower part of measuring vessel during next measures and make sure that the densimeter or alcoholometer move free in the vessel and don't hitch its walls.

In case the standard touches the walls of measuring vessel during the measure and hitch it during its move, the read value isn't accurate!!

After adjusting the analyzer is ready to measuring.

### **Maintenance:**

The device must be keep in cleanness, it means that after work all painted or glass parts have to be wiped with moist duster to remove the rest of beer and dirt.

#### Densimeters and alcoholometers:

Outside of densimeters and alcoholometers must be keep in perfect cleanness by washing in clear, better distilled water. They must be stored only in protective covers which are a part of consignment.

#### Glass vessels:

Rinse glass testing and measuring vessels at the end of work in distilled water and dry-kiln its outside with temperature about 120°C for about 30 minutes. Store it in the way to prevent its pollution.

#### Change the working filling in steam generator:

Do it in case:

- a sample of beer penetrate to the generator (it may happen if during distillation electricity is disconnected)
- always before beginning of work

#### Procedure of change the working filling in steam generator:

Open the valve(11) on the front panel of the device and you can see falling of filling level through the check window(2), after its complete flowing out close the vent(11) and rinse the steam gen. with distilled water. Switch on the main switch of analyzer(1), push and hold supplying button(3), while you hold it, distilled water from plastic tank is flowing to the steam generator. As early as the level of distilled water is up to 1/2 of check window(2), stop push the button. Let every rinse water flow out from the steam generator only by means of vent(11).

After finishing the rinse close the vent and closing valve on the tank with distilled water, disconnect the transparent hose near the vent of tank for distilled water and after flowing out of distilled water from hose dose 1.5 ml of working filling to the hose going to empty steam generator. Put carefully the hose back to the closing valve. The whole contain of dosed working filling stays in the hose. Open closing valve of tank for distilled water again.

Push the supplying button(3) and let the distilled water flow to the steam generator up to 1/2 of check window(2).

**Warning: Don't change working filling in the steam generator in the moment when the distillation of the sample is slipping, otherwise an injury of staff and destruction of the analyzer is possible.**

#### **Procedure of water filter's cleaning:**

From time to time it is necessary to close a supply of water to the filter and then screw out the covering bolt which is holding the filter screen and remove sediments from it by rinsing in clear water, then mount back carefully filter screen again. During the assembly and disassembly of water filter's filter screen by mounting wrench No. 18 hold the filter on a metal pipe in position like it is mounted on the analyzer because it mustn't turn. Nonobservance of this principle can result to leakiness of inner pressure main in the analyzer and its following destruction!!!

#### **Procedure of still's cleaning (7):**

Between individual distillations of samples and at the end of working hours:

After finishing the distillation of sample let the rest of sample flow out of analyzer by opening the vent(4). Take carefully the rubber plug from pouring opening(6) on the still(7) and by means of a plastic bottle with nozzle rinse carefully inner walls of the bowl with distilled water. Let flow the rinse water out of still(7). Close the vent(4) and put the rubber plug to pouring opening(6). The rubber plug must pack well and carefully.

*Warning:*

During closing the vent(4) and pouring opening(6) always act sensible to the first resistance, then stop closing, otherwise the glass device can crash!!

Check the height of level in developer through the check window(2) on the front panel of analyzer, if the level is below 1/2 of the check window, push and hold supplying button(3) till the distilled water is up to requested height. At this moment stop pushing the button!!!

After switching on the main switch of analyzer the analyzer is régime of “main menu”. By repeated pushing of key “Cycling” (called “C”) you get to state when on the display of analyzer is a text: “Analysis”. Then push a green key “Start”. The steam begins to flow to the inner space of still(7), appeared condensate dips the walls and flows to the vent. The device will automatic switch off after about 40 seconds. Open the vent(4) and set the condensate flow out of still(7).

Then close the vent(4). Check the height of level in developer and complete the height, see the previous procedure.

The device is ready to next distillation of sample or to its putting out of order.

#### **Procedure of analyzer’s cleaning:**

After each finishing of working day do cleaning (by means of moist duster and following drying with soft flannel duster) of all out parts of the analyzer, which were in touch with samples or rinse water.

#### **Adjusting of vent(4):**

If the vent(4) isn’t tight, or turning with control head of vent isn’t easy, you must define the right rate of turning of teflon ring in glass saddle of vent.

Defining of rate of turning needs to be done carefully to not damage glass part of vent and not to injure, so for the first loosen ensuring nut and then turn adjustment nut on the teflon ring of the vent(4) in requested direction. Hold the adjustment nut in adjusted position and tighten up the ensuring nut on it. Test if the defect was removed. If the defect lasts, you must do defining of rate of turning again.

## **4.0 SAFETY OF WORKING**

Operating with measuring device can do only skilled person, person acquainted with the documentation and able to operate with caustics and electrical things.

During the manipulation with the device and samples after distillation attend to it because the staff can be burned or scalded!!

Measuring device can be used only for measurements definite by its technical specification, only in range of measuring values definite by technical conditions of device. Never connect the device to pressure cooling water with pressure more than 6 bar and to another grid and another voltage than it is written on the label of analyzer! Otherwise the analyzer can be damaged and staff can be injured!!!

Before starting every measuring check if the device isn’t visible damaged and if the cover of it is located in right position to prevent the staff.

Don’t do any measuring with damaged device and consign it to professional firm to repair.

### Warning:

Before starting of distillation always put on the rubber plug go the pouring opening(6) of still(7) and close the vent(4), otherwise you can scald yourself by hot steam getting out of non-closed pouring opening.

Don't change the working filling in steam generator in a moment when distillation of sample is lasting because the staff can be injured and the analyzer can be destroyed.

## 5.0 TECHNICAL DESCRIPTION

range of alcohol contain measurement.....3 – 23 % vol., on 20°C  
range of density measurement.....1.0000 – 1.0240 g/ml on 20°C  
range of original extract measurement.....0 – 23 °Plato

### Observation:

The ranges of measurement hold only for complete consignment of analyzer inclusive of accessories

proportion of device..... 540 x 440 x 480 mm (length x ponder x height)

weight of empty device..... about 20 kg

pressure of cooling water.....in range of 1 – 6 bar – constant

maximal temperature of cooling water..... +18°C

temperature of surrounding environment..... 20°C ±5°C

relative dampness of air.....max. 80 %

voltage system..... TN-S 230 V, 50 Hz , 1+PE+N

or (110V, 60Hz) holds only for USA and Canada),

prevention against dangerous touching voltages – by automatic disconnection from grid TN-S

## 6.0 OPERATING INSTRUCTIONS

Analyzer AP1 serves for determination of apparent, real and original extract in degrees of Plato, content of alcohol in volume and mass percentage, on 20 degrees of Celsius, energy use efficiency in kJ/100 g, kcal/100 g, apparent and real level of fermentation.

The analyzer can be also used for preparing of samples for determination of volatile matters in beer, for example diacetyl.

Before starting the analysis check if the analyzer isn't damaged.

Open a vent on a supply of cooling water (it isn't a part of the consignment)

Switch on the main switch(1) to a position of „I“, if everything is OK, the main switch(1) will light up. Check the height of level in the steam generator through the check window(2) on the front panel of the analyzer, if the level is below 1/2 of check window, push and hold the supplying button(3) to the moment of supply the distilled water up to requested height, in this moment immediately stop pushing the button!!!

Check and close vent(4) on the still(7).

Every day , before starting the work and after finishing the work with analyzer do so-called **blind analysis**, when you do the whole cycle of the analysis idly. In this case pour to the still(7)

only 100ml of water instead of sample. After the blind analysis like this the device warm up to the working temperature and clean up of the rest of samples; then you can already do your routine analysis of samples or finish the work with the analyzer.

### **6.1 Procedure of blind analysis:**

Switch on the main switch(1) to the position of „I“, if everything is OK, the main switch will light up. Check the height of level in developer through the check window(2) on the front panel of the analyzer, if the level is below 1/2 of check window, push and hold the supplying button(3) to the moment of supply the distilled water up to requested height, in this moment immediately stop pushing the button!!!

Check and close vent(4) on the still(7). Close the pouring opening(6) of still(7) with rubber plug. Check if the vent on cooling water main is opened, after finishing the work with analyzer close it again.

Push repeated the key „Cycling“ (called „C“) till there is a text „Analysis“ on the display, then push the green key „START“ (called „S“).

A text „Fill in“ appears on the display for a short time and in the same time you can see a time on the second line.

After elapsing the adjusted time the text will automatic change to „Cleaning“ and on the second line of display there is a time of about 40 sec. After its elapsing the text will change to „Warming up“, on the second line there is time of about 120 sec. During this time you must: open the vent(4), let flow the condensate from the still and close it again, put off the rubber plug from the pouring opening(6) of the still(7) and pour about 100 ml of distilled water into the still(7). Close the pouring opening (6) with rubber plug, place a retaining vessel under the outlet from the cooler to collect a condensate; push the key “S”.

After pushing the key “S” the text on display changes: first line – “Analysis”, second line – on the left is elapsing time and on the right is indicated the heating output in %. After finishing the “Analysis” the device finishes automatic the distillation and a siren starts to hoot. On the display a text “End of analysis” appears. Now open the vent(4) and let all warm water flow out of still. Push repeated the red key “Stop” and you will see a text “Analysis” on the display again; in the same time the siren stops hooting.

### **6.2 Brief procedure of work with samples before and after their distillation:**

*Before distillation:*

- a) clear the samples of saturated drinks of carbon dioxide by their decarbonization
- b)balance the temperature of distillate ( distilling flask) in the plastic tank with water
- c)measure the density and temperature of this sample in measuring vessel (see pic. 2) and write it down
- d)pour measured sample back to the same testing flask and do the same like in b) again
- e)measure out accurately its volume in the testing flask – to the lower mark (see pic. 3). Remove the stuck drops of the sample (by absorbing it with strip of filter paper) from outer walls of testing flask
- f)pour the whole sample inclusive of its rinse water to the still(7)
- g)put several drops of antifoam agent to the distilling flask , close it with rubber plug and do the distillation of sample, collect the distillate into the same testing flask

*After distillation:*

- h) complete the distillate with distilled water to the volume of about 5 mm below lower mark (see pic. 3)
- i) balance the temperature of distillate ( distilling flask) in the plastic tank with water
- j) after this complete accurately the volume to the lower mark of testing flask with distilled

water (see pic. 3)

- k) pour carefully the distillate from flask to the measuring vessel and measure the alcohol contain , its temperature and write it down

*Observation: in following text the procedure will be describe more in detail.*

### **6.3 Principle for right laboratory work during the analysis of sample:**

Samples cleared of carbone dioxide by decarbonization pour to numbered *dry* testing flasks in quantity of more than 100 ml to every flask from every sample (up to the top mark) and locate the testing flask with the sample to the hangings of plastic temperate tank with water in it . We recommend you to pour water in the tank sufficiently long time before the analysis because its temperature has to balance with the temperature of environment. Change this water only in case it is dirty. Recommended quantity of water : 2 – 3 cm below brim of the tank (on the occupying of all positions in the tank, it means 5x testing flask, 2x measuring vessel, 5x (densimeters and alcoholometers. ).

Locate testing flasks on to the handle of tank till the temperature divergences of samples and water are balanced. Balance in this tank also measuring glass vessel (called vessel), densimeters, alcoholometer and plastic bottle with nozzle with distilled water in it, this things are also located on the handle.

After balance of the temperatures put off the measuring vessel(9), dry perfect its inner and outer area with flannel duster and pour carefully measured sample from testing flask in it. Every testing flask has its own number (1 – 5), in the same way you will identify your samples. The sample pour carefully along the wall of measuring vessel(9) to not appearing of bubbles, relevant bubbles must be removed before measuring! Put measuring vessel(9) with the sample into the handle(8) on the analyzer. Put off the densimeter of supposed range from the plastic tank, dry perfect its area with soft suction flannel and put it carefully to the vessel(9) with measured sample. Walls of densimeter mustn't touch the walls of vessel(9). Densimeter starts diving to the sample, during this phase we recommend you hold it with two fingers on its stalk and orient it in direction to have its scale facing your eyes. After its stabilization in the sample (within about 2 minutes) read the values of density and temperature and write it by keyboard into the analyzer (see description of operating with analyzer). Put the densimeter in the middle of measuring vessel by means of lower bolt's loosening and shifting of handle's lower part(8) in right direction so the stalk of densimeter is the same to the axis of vessel. You can easy check it by looking at the measuring vessel from above. So you have a guarantee that the densimeter doesn't hitch the walls of measuring vessel(9). The way of right reading is illustrated on the pic. 2. The line between eye of the observer and read level must be vertical with axis of densimeter's scale to do accurate reading. The mounted magnifying glass(16) makes reading of density value easier. Regulate the observation height of magnifying glass by its shifting along the handle(15) to make the observated level in the middle of the magnifying glass(16). After the reading take the densimeter out, rinse with water and put it back to the handle in the plastic tank to make its temperature the same to measured samples.

After measuring pour the sample back to the same testing vessel; try to not have bubbles in it. Remove relevant bubbles from the sample by turning of testing vessel, the vessel with sample put back to the plastic tank, after balancing measure accurately the volume of sample to the lower mark on the testing vessel by its sucking with syringe (the way of right reading of level is illustrated on pic. 3).

Check the height of level in steam generator through the check window(2) on the front panel of analyzer, if the level is below 1/2 of check window, push and hold the supplying button(3) till the distilled water is up to 1/2 of check window, in this moment stop pushing the button(3)!!!

Check and close the vent(4) on the still(7). Close the pouring opening(6) of still(7) with rubber plug. Check if the closing valve on the main of cooling water is opened, after finishing work with the analyzer close it again.

Push repeated the key “Cycling”(called “C”) till a text “Analysis” appears on the display and then push the green key „START“ (called „S“).

A text „Fill in“ appears on the display for a short time and in the same time you can see elapsing time on the second line.

After elapsing of adjusted time the text changes automatic to “Cleaning” and on the second line of display there is elapsing time of about 40 seconds. After elapsing this time the text changes automatic to “Warming up”, on the second line there is elapsing time of about 120 seconds.

Siren starts to hoot. During this time you must: open the vent(4), let flow the condensate from the still and close the vent (4) again. Put off the rubber plug from pouring opening(6) of the still (7) and drop carefully 2 – 3 drops of antifoam agent (by means of stainless stick) to the inner space of it and then pour the whole sample from testing flask into the still(7), rinse inner walls of testing flask with a little of distilled water from the plastic bottle with nozzle. Do it this way: after supplying about 20 ml of distilled water to the testing flask spin carefully the rinse water in testing flask with circular move to make it dip the whole inner walls of the flask. Then pour carefully all rinse water to the pouring opening(6) of the still(7). We recommend to rinse inner walls of the testing flask for two times.

Close the pouring opening(6) with rubber plug. Pour a little of distilled water (about 10 ml) into the testing flask of the same number(by means of plastic bottle with nozzle) and locate it under the outlet from the cooler(12) to collect all distillate to this testing flask and push a green key “S”.

After pushing “S” the text on the display changes: the first line – “Analysis”, the second line: on the left – elapsing time, on the right – heating output in %. After finishing of “Analysis” the device automatic finishes the distillation and a siren starts to hoot. The text “End of analysis” appears on the display. Now open the vent(4) and let the whole hot sample flow out of still. Push repeated a red key “Stop” and the text “Analysis” is on display again; the siren stops hooting.

Observation: after each pushing of “Start” the electro-magnet vent on the supply of the cooling water automatic opens and water starts to flow through the cooler to the waste.

After finishing the distillation let the distillate fall to the testing flask, then put off the flask, complete it with distilled water from the bottle with nozzle (about 5 mm below lower mark) to rinse the stuck drops of distillate on the wall of testing flask to the distillate. Close the testing flask with rubber plug (with not dipping it by distillate) and put it on the hangings of the balance bowl. After balancing the temperature of distillate and water in the plastic tank take off carefully the testing flask out of the hangings, dry its outside and put it on the horizontal base in the height of eyes and complete accurately its volume up to the lower mark (see pic. 3) with distilled water from the syringe. Then pour the distillate to clean and dry measuring vessel(9) and locate it to the handle(8) – proceed similar to the measuring of density. Put off the alcoholometer with requested range from the balance tank, dry its outside by means of flannel duster, put it carefully into the measuring vessel(9) with the distillate. Following procedure is the same to the procedure with densimeter. Read following values on the scales of alcoholometer: alcohol contain and temperature (see similar procedure for densimeter). Write this values for each sample down to the memory of computer by means of keyboard (see the procedure in following paragraph). Between measurements put the alcoholometer on the handle in the balance tank to make it have the same temperature to the samples.

Pour the measured distillate out of vessel(9), rinse the outside of vessel with distilled water from the bottle with nozzle and dry it with cellulose or dry duster, then the next measuring can follow or the vessel(9) can be put aside in the plastic tank if the work is over.

Warning: before each distillation it is necessary to complete distilled water by means of supplying button(3)(see one of the previous procedures).

#### **6.4. Service of analyzer microcomputer:**

You can operate with microcomputer of the analyzer by means of keyboard. For your better orientation there is a text on the display, which replies to state the microcomputer is in. Logic of work with the microcomputer enables you to work in various levels. After switching on the main switch(1) a text "Beer analyzer AP1"

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appears on the display for about 3 seconds. Then the text changes to one of three following steps in the main level. The steps form a loop and you can move among them by means of repeated pushing key "C".

"Operator name".... push "C"...."Analysis"....push "C"....."Parameters"..... push "C"

"Operator name".... push "C".....and so on.....

If you are at the step: "Operator name", you can write down the name of operator of experiment.

Observation: The group of nine keys on the keyboard may have several meanings, the basic meaning always replies to respective number, the other three meanings reply to respective letter, for which is the key characterized:

For example, the record "ABC" is written in this order:

Push keys "SHIFT A"

Push keys "ALT B"

Push keys "CTRL C"

If you are at the step "Analysis", proceed according to the instruction in point 6.3., this step serves for operating course of sample's distillation.

If you are at the step "Parameters", this step serves for:

- marking the sample by number; use the figures from 1) to 5)
- writing measured values to the respective sample
- inspection of analysis results
- printing of analysis results

The procedure for marking the sample at the step "Parameters".

For example the record "4" push the key"4", the text on the second line of display changes to "Active set: 4". If you make mistake (wrong number),you must continue:

Press the keys : "( E) 4 "

To this number write measured values of density and alcohol inclusive of respective temperatures like this:

Push the key "Enter" (called "E"), you get to the menu, which forms closed loop and consists of following steps, among which you move by means of repeated pushing key "C":

"Density of sample

xxxxxx g/ml

xxxxxx g/ml

Active set: 4"

- here do record of measured value of sample's density, for example 1.0059 write by means of pushing the keys in this order: " 1 , 0 0 5 9 "

push "C" and go to:

"Sample temper.

xxxx °C

xxxx °C

Active set:4”

- here do record of measured temperature of sample, for example 19.1 write by means of pushing the keys in this order: “1 9 , 1 “  
push “C” and go to:

„Alcohol of distil.

xxxx % vol.

xxxx % vol.

Active set:4“

- here do record of measured value of sample’s distillate alcohol content, for example 4.05 write by means of the keys in this order: „4 , 0 5“

push key „C“ and go to:

„Distillate temper.

xxxx °C

xxxx °C

Active set:4“

- here do record of measured value of sample’s distillate temperature, for example 19.1 write by means of the keys in this order: „1 9 , 1 „

push „C“ and go to:

„Sample description

Xxxxxx

Active set:4“

- here do record of sample’s description for example „ALE1“ write by means of keys in this order: „SHIFT A CTRL L ALT E 1“

push key „C“ and go to:

Observation:

If you make mistake in record in the text :density, temperature ,alcohol, sample description (wrong number or letter ),

Than right procedure is:

Press the keys : “( E) and now all correct record - numbers and letters “

„Results

Active set:4“

Push key „E“ and go to:

„Print protocol

press START

Active set:4“

- switch on the printer, put the paper of size A4 in it and push the green key „S“, the printer prints complete protocol of sample No 4 analysis (on the page of size A4 two protocols are usually printed)

push key „C“ and go to:

„Beer density /20 °C

xxxxxxxxx g/ml

Active set:4“

- the density of beer on 20 °C is written on the second line

push key „C“ and go to:

Relative beer density

xxxxxxx

Active set:4“

- relative density of beer is written on the second line

push key „C“ and go to:

„alcohol of dist./20 °C  
 xxxxxxx % vol.  
 Active set:4“  
 - alcohol content in sample % vol. on 20 °C is written on the second line  
 push key „C“ and go to“  
 „Relative alc. density  
 xxxxxxx  
 Active set:4“  
 - relative density of alcohol is written on the second line  
 push key „C“ and go to  
 „Relative remains.dens.  
 xxxxxxx  
 Active set:4  
 - relative density of the rest is written on the second line  
 push key „C“ and go to  
 „Apparent extract  
 xxxxxxx % w/°PLATO  
 Active set:4“  
 - apparent extract in %w/°PLATO is written on the second line  
 push key „C“ and go to:  
 „Real extract  
 xxxxxxx % w/°PLATO  
 Active set:4“  
 - real extract in %w/°PLATO is written on the second line  
 push key „C“ and go to:  
 „Alcohol of dist/20°C  
 xxxxxxx %w/°PLATO  
 Active set:4“  
 -alcohol content in sample %w/°PLATO on 20°C is written on the second line  
 push key „C“ and go to:  
 „Original extract  
 xxxxxxx %w/°PLATO  
 Active set:4“  
 - original extract in %w/°PLATO is written on the second line  
 push key „C“ and go to:  
 „Apparent ferment  
 xxxxxxx %  
 Active set:4“  
 - apparent fermentation of sample in % is written on the second line  
 push key „C“ and go to  
 „Real ferment.  
 xxxxxxx %  
 Active set:4“  
 - real fermentation of sample in % is written on the second line  
 push key “C” and go to:  
 “Energy  
 xxxxxxx kJ/100 g  
 xxxxxxx kcal/100 g  
 Active set:4”  
 - energy of sample is written on the second line

push key “C and go back to:

“Print protocol

press START

Active set:4”

Observation:

-If you want to go through the results again push repeated the key “ C “ see previous description.

-If you want to go back from any position on this lower level of operating to the main level, push red key “STOP” and the text:

“Parameters

Active set:4”

appears on the display.

You are in the main level again, move there (see the description)

### **6.5 Getting the analyzer out of order:**

Close vents on the supply of:

- cooling water for device
- distilled water for device

Put off the supplying plug from the socket.

**Warning:** the device has water in its glass parts so it must be located in a space where the temperature never drops below 0 °C , otherwise the device may be destroyed!!!

### **6.6 Explanatory notes of used symbols:**

symbol on a keyboard

the whole word in text

abbreviation in text



Cycling

“C”

ENTER

“E”



Thank you for your attentive reading the whole instruction, detailed reading took much your costly time though, but on the other side it will make your working with analysis of samples easier.

## 7.0 SERVICE

Service of measuring device is provided by firm:

**1-CUBE s. r. o., 580 01 Havl. Brod, Czech republic**

**tel. +420 569 433 620 fax +420 569 422 144**

**e-mail: [1-cube@1-cube.com](mailto:1-cube@1-cube.com)**

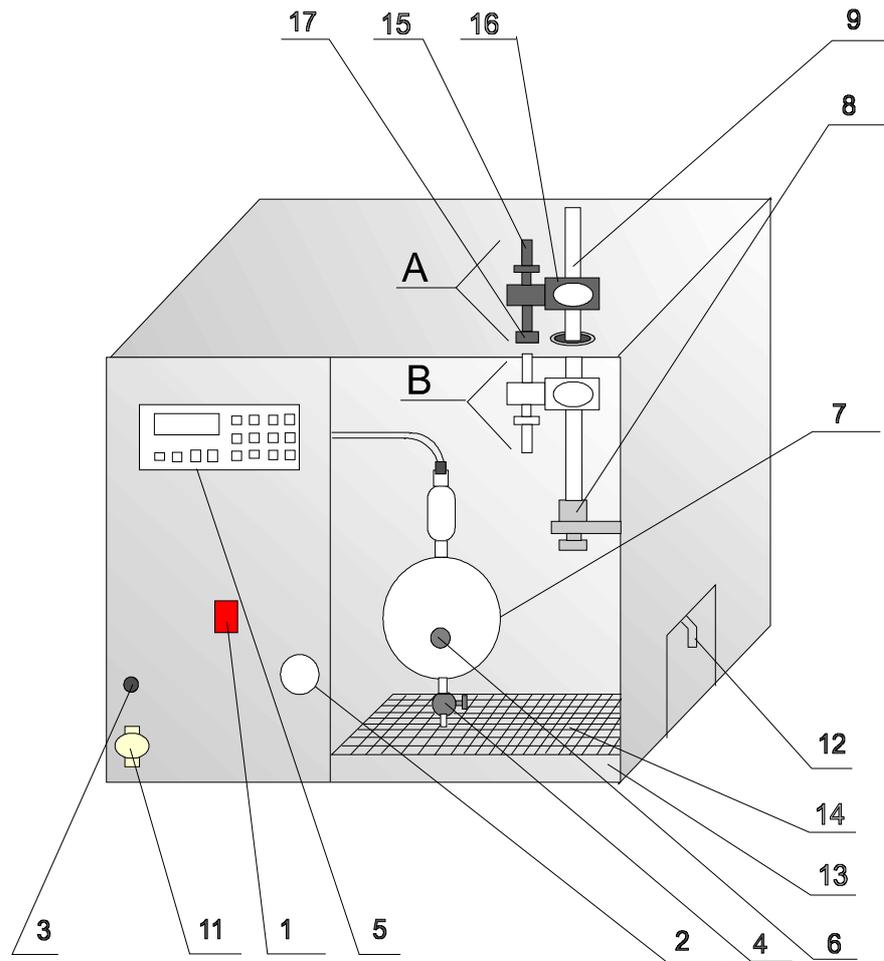
### **Liquidation of waste:**

After the end of service life of product we recommend to proceed during the liquidation according to respective classification of waste by course of law about waste. The device doesn't content:

- precious metals
- toxic matters
- matters unhealthy for environment (excepting little storage battery on the panel of microcomputer; dismount it and liquid as a dangerous waste)

Give the metal parts made of brass and iron, plastic and rubber parts, glass and covering material over to the separated salvage as a secondary raw material. You can also order the liquidation by

firm 1-CUBE s.r.o., which ensures its liquidation by course of law about waste.

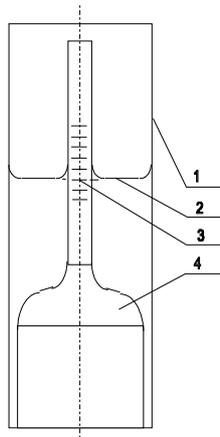


**Picture 1. Arrangement of analyzer**

**Legend:**

- 1 – main switch
- 2 – check window
- 3 – supplying button “Filling”
- 4 – vent
- 5 – keyboard with display
- 6 – pouring opening
- 7 – still
- 8 –rubber plug
- 9 – measuring vessel
- 10-magnifying glass
- 11-turbidity removal (in text also valve or vent )
- 12-cooler
- 13-tank
- 14-holey metal plate
- 15-handle of magnifying glass
- 16-magnifying glass
- 17-plastic nut

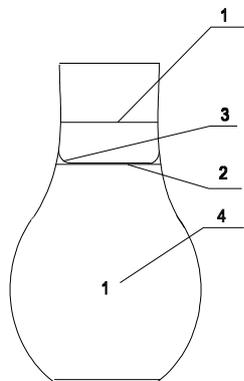
**Picture 2.**



**Legend:**

- 1 - measuring vessel
- 2 - the level of reading the scale of densimeter - height is read by looking under level!
- 3 - scale of densimeter (alcoholometer)
- 4 - axis of densimeter and axis of measuring vessel

**Picture 3.**



**Legend:**

- 1 - upper mark
- 2 - lower mark - height is read by looking under level!
- 3 - level
- 4 - number of vessel (and also sample)