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**MEASURING DEVICE ICA
OF CO₂ CONTENT AND AIR RESIDUE
IN BOTTLES AND CANS – TYPE ICA:**

USER'S GUIDE

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1. Equipment ICA

Basic Package:

the measuring device ICA.....	1 unit
thermometer.....	1 unit
spare set of rubber sealings.....	1 unit
user's guide.....	1 unit

Accessories

burette.....	1 unit
pressure reducing valve with pressure gauge.....	1 unit
filter 1/2".....	1 unit
PET bottle holder.....	1 unit
ball sample valve 1/2" with outlet for hose.....	1 unit
ball valve 1/2".....	1 unit
fixing sleeves Rabow 1/2".....	1 unit
tightening clamp 13-16 mm.....	1 unit
rubber hoses length according to customer's requirement otherwise by default 1 m	

Note: accessories are not part of the basic package however they are available by request for an additional fee

2. Installation and Maintenance

2.1. Equipment Installation:

Place the apparatus (see pic.1) on the horizontal and flat support plate (table) close to sink and inlet of pressure water. The lighting intensity should be at least 300 Lx at the workplace.

Adjust the height of supporting block (4) over the centring dish (14) by the following way – move the lever (11) into the back position, put a bottle or PET bottle holder with PET bottle on the centring dish (14) then loosen the adjusting screw (6) and shift the supporting block (4) to have the distance of 5 mm between the piercing and withdrawal head (10) and the crown cork of the bottle placed on the centring dish (14). When you adjust the height in such way tighten the adjusting screw (6) to fix the position of supporting block (4). Do it carefully not to strip the thread in the plastic supporting block (4).

In case of using the crown corks place the supplied plastic backstop on the crown cork to get the right distance between the piercing and withdrawal head (10) and the crown cork, otherwise follow the procedure described above.

2.2. Washing water installation

We recommend to attach ball valve 1/2", filter 1/2" on the washing water inlet, the pressure control valve 1/2" on the filter's outlet and slide the corresponding reduction in the plastic hose leading from ICA. Set the max. washing water pressure at 100kPa.

2.3. Cleaning after measurement

Slide in the plastic hose leading from ICA on the corresponding reduction and the on the pressure control valve with pressure gauge (washing water inlet). Place the other plastic hose into the sink.

Clean the apparatus always when you finish working with it. Keep the apparatus and place around it clean. The device cleaning after all measurements (before storing) is easy and fast.

2.3.1. Procedure for the package ICA+burette

Set the plastic three way cross-over valve connected to valve -7 on ICA by moving round a slight amount to reach the direction when the valve -7 is connected to adaptor leading both to the sink and washing water inlet – see pic.5

2.3.1. Procedure for the package ICA+burette or only ICA Jack up the withdrawal probe (3) and place the empty beer bottle on the centring dish (14) and shift the supporting block (4) by means of moving the lever (11). Slide the withdrawal probe (3) in the bottle and open the ball valve (7) of water inlet and start to wash the device with water. The washing water will be trapped into the empty beer bottle. Once the bottle is full of water close the inlet ball valve and pull out and consequently depress button (1) to rinse the pump (2).

After cleaning:

Jack up the withdrawal probe (3) and take out the beer bottle, press down the withdrawal probe (3) and dry it carefully with flannel. After this handling the device is ready for the next measurement.

2.4 O-rings replacement

Spare set of rubber sealings is supplied together with ICA and the user can replace them in case that they are damaged during the equipment lifetime. O-rings damage shows as the pressure leakage of the equipment and affects the measured CO₂ content value (the measured CO₂ will be lower than the real value)

Following O-rings make part of the shipment:

O-ring of pump piston.....1 unit.....see pic.3

O-ring of screw.....1 unit.....see pic.3

O-ring of valve end face.....1 unit.....see pic.4

O-ring of valve body.....1 unit.....see pic.4

O-rings in the set are marked according to their using position. Use the particular O-ring destined for particular position when you replace them!

It is possible to order the replacement by manufacturer.

3. Safety recommendations

Measuring device of CO₂ content - types ICA may be operated only by person who became completely acquainted with its function within the framework of the training, or who became thoroughly acquainted with the user's guide of this device. The person has to be acquainted with the work with lyes (type as potash lye, soda lye).

During handling the beverage bottles and lye use the safety aids.

Measuring device ICA can be used only for determination of CO₂ content in the range of measured values determined by technical conditions. Never connect the measuring device to the withdrawal spots where measured parameters are over measuring capacity of the device. It could cause device destruction and staff injury.

Check device before each measurement. Do not use visibly damaged device and contact the qualified service personnel who provides service for delivered device.

Warning! It is forbidden to use the device for pressure higher than 400kPa and temperatures different from 0 – + 30 degrees Celsius.

4. Technical data:

measurement range of CO₂2 - 7,8 g/litre

measurement range of temperature0,2 - +30 degrees Celsius

measurement range of pressure0 - 400kPa

accuracy of CO₂ content measurement.....+ - 0,2g/litre

accuracy of temperature measurement.....+ - 0,2 degrees Celsius

accuracy of pressure measurement.....+ - 2,5%

dimensions.....565x220x220 mm

weight (of empty device).....about 2,0 kg

measurement range of air residue in the headspace.....0 - 12 ml (scale division 0,01)

measurement range of oxygen in the headspace.....0 - 2,2ml (scale division 0,01)

dimensions of the burette.....400 x1520 x 150 mm

weight of empty buretteabout 1 kg

The device is industrial and working measuring instrument.

5.0 Operating Instructions

Measuring device makes it possible to determine CO₂ content in beer, saturated soft drinks packed in bottles NRW, EURO of 0,7 l, 0,33 l, 0,5 l etc.... PET bottles and cans.

5.1.1. Before measurement check visually if the device is not damaged.

5.1.2. Set the plastic cross-over valve connected to valve -7 on ICA by moving round a slight amount to reach the direction when the valve -7 is connected with adaptor leading both to the sink and washing water inlet – see pic.5 applies only for the package ICA+burette

5.1.3.

Measurement in beer:

Button (1) on the top of the device must be ensured in the secured position (by moving round a slight amount) before measurement.

Jack up the withdrawal probe (3) to the upper position to have the lower part of the withdrawal probe and the piercing and withdrawal head (10) at the same level. Close the valve (7). Place the crowned beer bottle on the centring dish (14).

Move the lever (11) from the back position to have the bottle neck very close to piercing and withdrawal head (10). Place the bottle in the way having its crown just right in the middle of the piercing and withdrawal head (10) to avoid any inclination. Move the lever (11) in the direction to you to its very end. The crown is pierced with this movement. Slide the withdrawal probe (3) in the bottle. Open shortly and close consequently the valve (7) to set the inner pressure of the bottle (can) to zero. Unlock the button (1) on the top of the device and pull out and consequently depress (twice) the button (1) after this step the dissolved CO₂ is fluttered. Arrest the button (1) of pump in secured position by moving round a slight amount. **Notice!** Always turn the button (1) in clock-wise direction. Read the value of pressure in kPa on pressure gauge-8.

5.1.4. **Measurement in sugarless carbonated drink:**

Dip the lower end of the withdrawal probe – 3 into a vessel with prepared saccharic solution or juice. Sugar or juice dosage is necessary to achieve a balance state in sugarless carbonated drink. Jack up the button of the pump (1) into the upper position to suck saccharated solution or juice in the pump. Jack up the withdrawal probe (3) to the upper position to have the lower part of the withdrawal probe and the piercing and withdrawal head (10) at the same level. Close the valve (7). Place the crowned beer bottle or PET bottle holder with PET bottle on the centring dish (14). The PET bottle (12) has to be hung in the PET bottle holder (18) over the neck of the twist lock. Move the lever (11) from the back position to have the bottle neck very close to piercing and withdrawal head (10). Place the bottle in the way having its crown just right in the middle of the piercing and withdrawal head (10) to avoid any inclination. Move the lever (11) in the direction to you to its very end. The crown is pierced with this movement. Slide the withdrawal probe (3) in the bottle. Open shortly and close consequently the valve (7) to set the inner pressure of the bottle (can) to zero. Unlock the button (1) on the top of the device and pull out and consequently depress (three times) the button (1) after this step the dissolved CO₂ is fluttered. Arrest the button (1) of pump in secured position by moving round a slight amount. **Notice!** Always turn the button (1) in clock-wise direction. Read the value of pressure in kPa on pressure gauge-8.

5.1.5. Further common for beer, carbonated sweetened and sugarless drinks

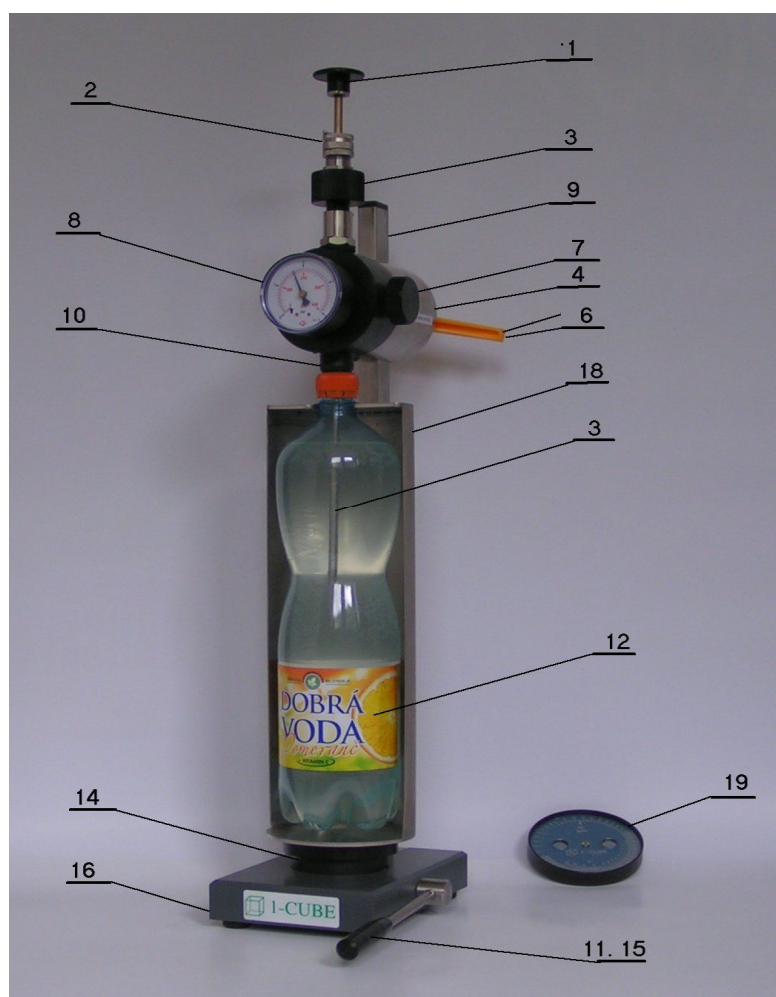
5.1.5.1. **Procedure for the package ICA+burette**

Set the plastic cross-over valve connected to valve (7) on ICA by moving round a slight amount to reach the direction when the valve (7) is connected to adaptor leading both to the sink and washing water inlet – see pic.5

5.1.5.2. **Procedure for the package ICA+burette or only ICA**

Open the valve (7) (water inlet and outlet) to depressurize the inner space of the bottle. Bring the outlet hose to the sink and let the foam go out (with its own inner overpressure) – applies only for the foaming beverages. Then move the lever into the back position. Jack up the withdrawal probe (3) into the upper position. Take the bottle out and slide the mercury thermometer into the bottle (the thermometer must be submerged to the marked scale line). Read the value of temperature on device's thermometer (after 20-30 seconds). Adjust the measured pressure against the measured temperature on device's nomogram (19). Then one can read corresponding CO₂ content in g/l on CO₂ scale.

Pic. 1:



Symbol description:

- | | | | |
|----------------------|------------------------------------|------------------------|--------------------------|
| 1 – button | 5 - valve (CO2 inlet into burette) | 10–piercing and | 16 - base |
| 2 – pump | 6 - adjusting screw | withdrawal head | 17 – mercury thermometer |
| 3 – withdrawal probe | 7 –valve (water inlet) | 11-lever | 18 - PET bottle holder |
| 4 – supporting block | 8 – pressure gauge | 14 - centring dish | 19 - nomogram |
| 9 - column | | 15 - raising mechanism | |

8.0 Service

Service is provided by company:

1-CUBE s.r.o., Hamry 3567, 580 01 Havl.Brod

tel 569433 620, fax 569422 144, e-mail. 1-cube@1-cube.com

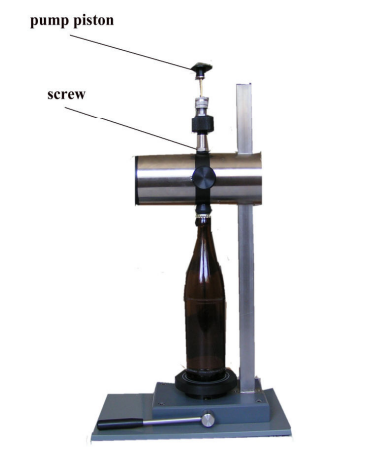
At the end of the apparatus life we recommend proceed in the liquidation of the waste according to Waste Act.

Mercury thermometer has to be treated as hazardous waste, all the other parts of the equipment are not dangerous neither to health nor environment.

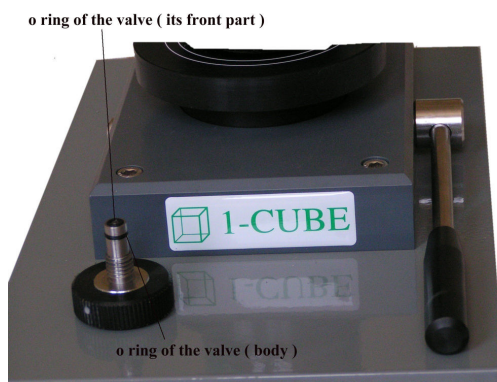
KOH solution (alternatively NaOH) in the burette has to be treated as dangerous chemical according to Waste Act

The metallic parts made of iron, brass, plastic elements and packing material comes to the sorted waste as a secondary raw material.

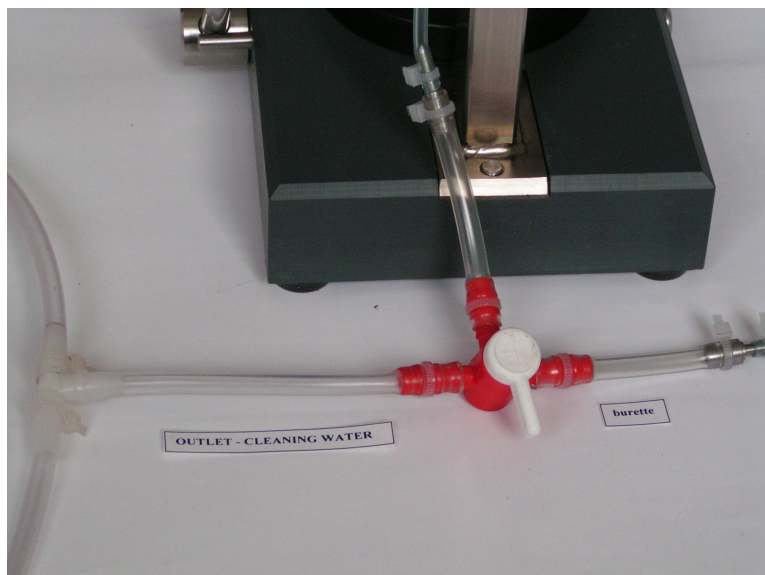
Picture 3.



Picture 4.



Picture 5.



Picture 6.

