User guide for sampling and analysis of the Trichloramine in the air

SYCLOPE Electronique

Reference : VAT0002 Rev : 1.2

General information:

SYCLOPE Electronique 2019® User guide of the 10/07/2019 Rev 1.2

Analysis kit for Trichloramine in the air

User guide for sampling and analysis of the Trichloramine in the air
(Ref : DOC0416)

Editor:

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Summary

I. Preamble

The triklorame analysis kit has been designed for use in the industrial sector such as public pools (indoor pool, cloakroom, entrance hall, technical rooms ...) and the food industry (cleaning process (NEP-CIP)).
This is a set of elements that make it possible to make a representative measurement of the concentration of trichloramine in the air in mg/m^3.

The method for carrying out this measurement must be scrupulously respected as indicated in the instructions. **Any drift of the method will generate a drift on the final result or a false result**.

The user that changes or modifications **not expressly approved** by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception which can be determined by turning the equipment off and on, the user is encouraged to try to correct interference by one or more of the following measures:

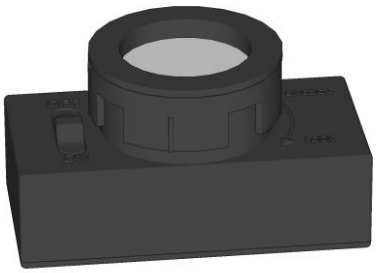
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

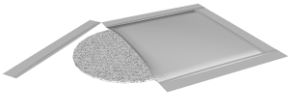
II. Recommendations

Before each use of trikloram, it is imperative that the instrument and the test cell have been left for at least one hour in a constant temperature room before taking the measurement. Ideally, when the blank is done, all measurements made with trikloram should be made at the same temperature.
It is not recommended to take measurements if household products have just been used. In this case wait at least 2 hours * before starting the test.
* *This time is an estimate that depends on the ventilation of the room.*

III. Composition of the cases "Triklorame"

Ref : VAT0002

Reference	Qtt	Designation	Id	Picture
PCC0029	1	Triklorame : measuring device of trichloramine	1	
CHM0072	1	Sampling device	2	
CHM0071	1	Cuvette with cork	3	
OUT2101	1	Tweezers	4	

CHM0039	1	Syringe 10 mL	5	
	20	Sample filters with lot number and expiry date.	6	
SOL0015	1	Dilution solution 500 mL	7	
OUT2218	2	Battery AA (Trihlorame, measuring device)	8	
CSM1052	3	Battery AAA (Sampling device)	9	

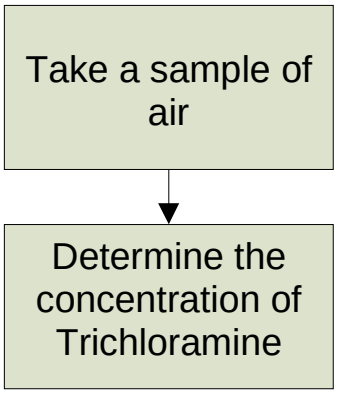
To ensure the reliability of the measures, it is absolutely necessary to use only once the sample filter of the VAT0002. Once an item is used, it is considered as contaminated and must not be use to perform a new analysis. It must be discarded.

Sample filters has an expiry date. A label with the batch number and expiry date is stuck on each sample bag. If used beyond this date the quality of the measurement is not guaranteed.

Ensure that wastes are recycled according to your recycling standard.

IV. Operating procedure to determine the Trichloramine concentration

This analysis tool allows you to measure the average exposure value with a precision that varies according to the exposure time (see "exposure time" in chapter "Capturing trichloramine in the air")



Step 1

Step 2

The determination of the trichloramine concentration uses well defined analysis and sampling techniques. It is therefore mandatory to follow the instructions exactly.
Also, it is imperative to respect the operating modes indicated in the chapter "Technical Support" in order to guarantee the accuracy of the results.

V. Operating procedure to clean the equipment

This step must be done :

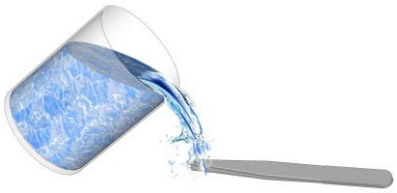
- Before each new sample

Cleaning must be done with **demineralized water** (not provided), this step is essential before sampling.
All utensils in contact with the sample and the test solution must be clean.
Improper cleaning will lead to a flawed analysis!

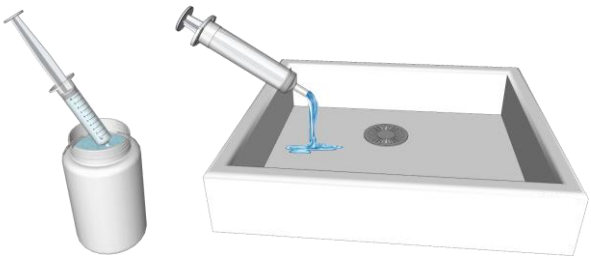
1) Equipment to clean

Id	Designation
3	Cuvette of analysis
4	Tweezers
5	Syringe 10 mL

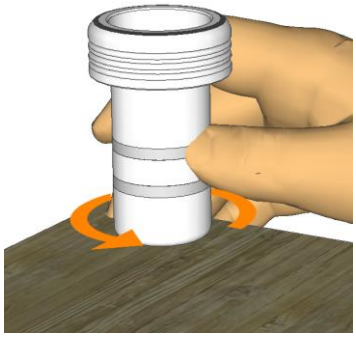
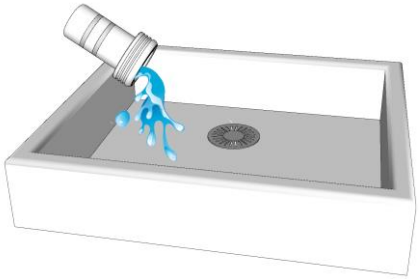
2) Cleaning the Tweezers

N°	Action	Picture
1	Use a clean container such as a glass or other and fill it with **demineralized** water. Clean the tweezers [4] by pouring **demineralized** water over it.	

3) Cleaning the syringe

N°	Action	Picture
1	Use a clean container such as a glass or other and fill it with **demineralized** water. Clean the outside of the syringe [5] by pouring **demineralized** water over it.	
2	Clean the inside of the syringe [5] by filling it and emptying it several times with **demineralized** water.	

4) Cleaning the cuvette

N°	Action	Picture
1	Fill the syringe with **demineralized** water.	
2	Inject the **demineralized** water into the analysis cuvette.	
3	Stir circularly on a flat surface keeping the analysis vat [3] straight for 10 seconds.	
4	Discard the contents of cuvette to the public wastewater system.	

VI. Step 1 : Capturing trichloramine in the air

1) Exposure time

The measurement scale will depend on the exposure time.

It takes a minimum exposure time of 1h30.

Scale of measurement according to the exposure time :

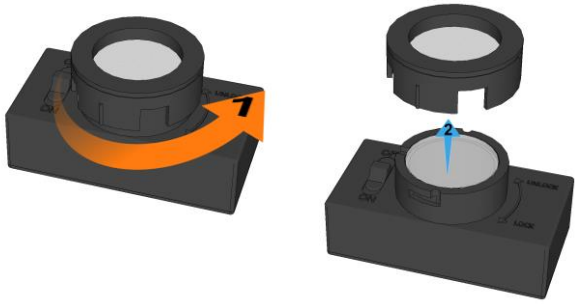
- Exposure time <2h: 0.3 ~ 5mg/m^3 **(WARNING: on a short exposure time the measurement will be very sensitive to pollution during handling).**
  - Case 1 : trichloramine <0.3mg/m^3: the triklorame will indicate the value is <0.3mg/m^3 and will not be able to display the exact value.
  - Case 2 : 0.3 <trichloramine <5mg/m^3: triklorame will indicate the value at ±0.1mg/m3
- Exposure time > or = to 2h: 0 ~ 2mg/m^3
  - Case 1 : 0 <trichloramine <2mg/m^3: trikloramate will indicate the value at ±0.1mg/m^3
  - Case 2 : trichloramine> 2mg/m^3: trikloramate will indicate that the value is> 2mg/m^3 and will not be able to display the exact value

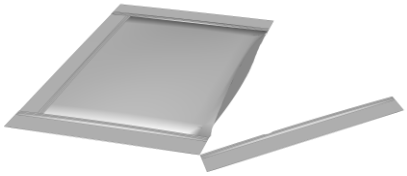
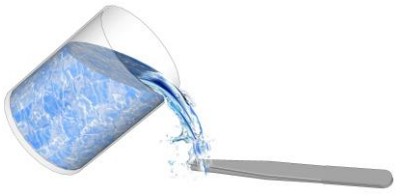
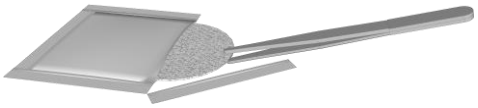
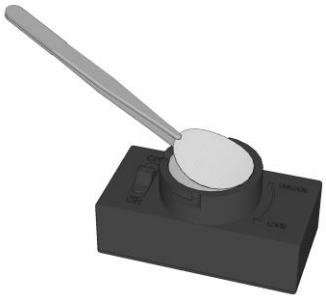
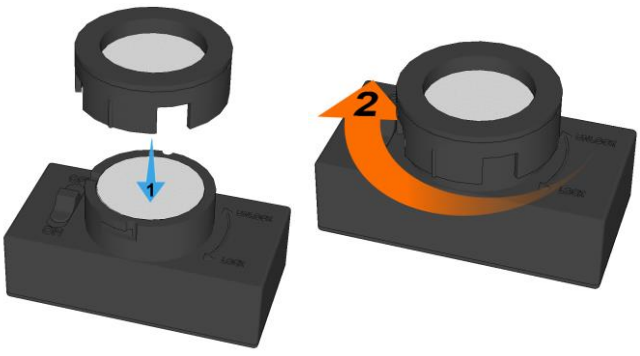
The determination of the trichloramine concentration may vary due to external pollution during handling (examples: postilion, finger on sampling sample, tweezers, vat analysis, syringe not or poorly washed before analysis ...)
The influence of external pollution reduces with the increase of the duration of exposure.

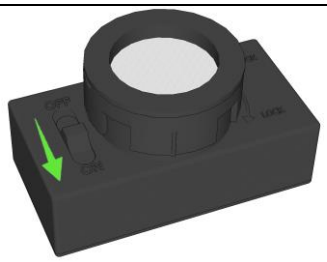
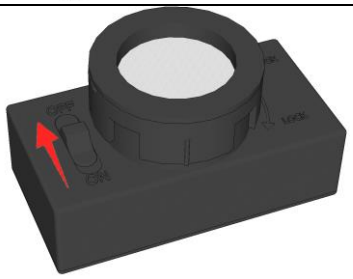
2) Necessary equipment

Id	Designation
2	Sampling device
4	Tweezers
6	Sample filters

3) Method

N°	Action	Picture
1	Unclip the hood of the sample device [2] by turning counter-clockwise.	

2	Open the package of Sample filters [6] and drop it off waiting for the next step.	
3	Clean the tweezers [4] according to the cleaning operation (page 8) **Warning: Keep the tweezers [4] in hand until step4**	
4	Take the sample filter with the tweezers [4] in the packaging [6]	
5	Place the sample filter on the glass in the sample device [2] ***Center the sample filter, you can press lightly with the tweezers to make sure it's in place.***	
6	Close the hood of the sample device [2] by turning clockwise until the clip.	

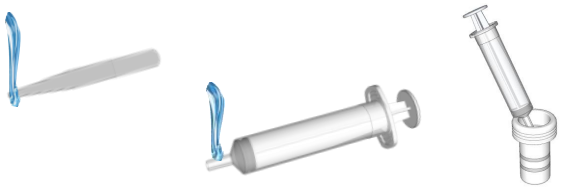
7	Put the device where you want to sample and toggle the button of the sample device "ON/OFF" to "ON". **Remember to note the time to know the duration of exposure.**	
8	Toggle the button of the sample device "ON/OFF" to "OFF" when the desired exposure time is reached. **Remember to note the end of exposure time.**	

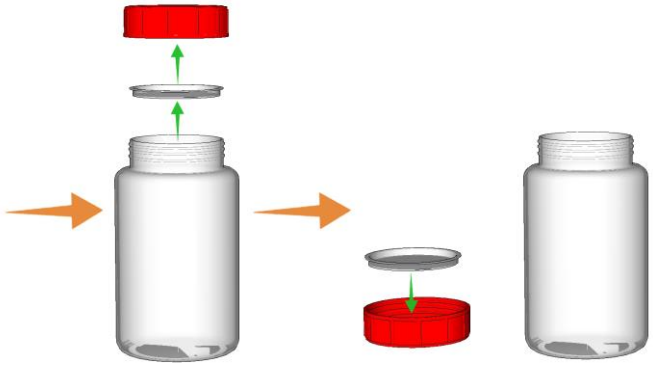
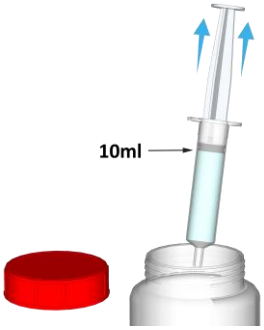
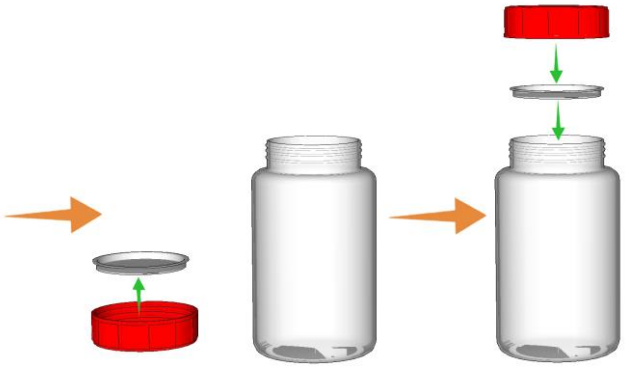
VII. Step 2 : Determine the concentration of trichloramine in the air

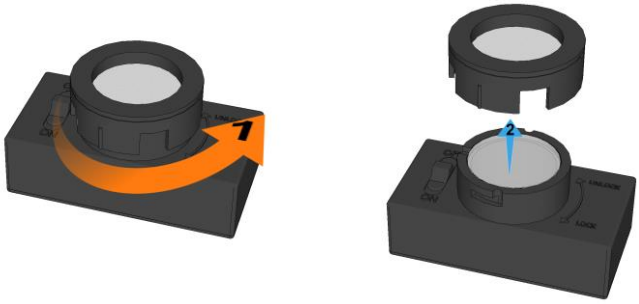
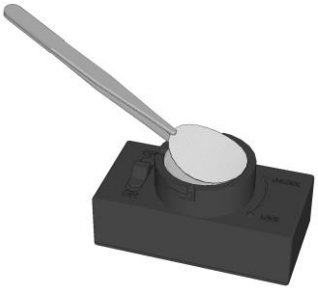
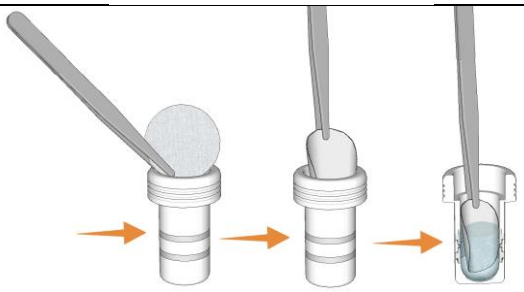
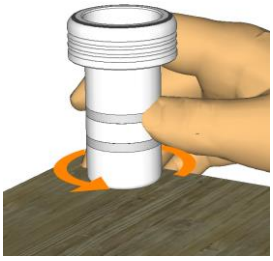
1) Necessary equipment

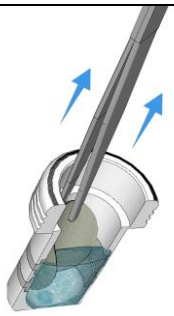
Id	Designation
1	Triklorame measuring device
2	Sampling device
3	Sampling Cuvette
4	Tweezers
5	Syringe 10 mL
6	Sampling filter (exposed)
7	Dilution bottle 500 mL

2) Method

N°	Action	Picture
1	Clean the tweezers [4], the syringe [5] and the sampling cuvette [3] according to the cleaning operation (page8) and drop them on a clean place.	
2	Push the button "On" of the Triklorame measuring device [1]	
3	Select "Measure Trichloramine" with the up and down arrows then push the button "OK" From there, follow the steps indicated by Triklorame device.	

4	Open the Dilution bottle [7]	
5	Take 10 mL of solution in the dilution bottle [7] with the syringe [6] **Warning: Keep the syringe in hand until step 6**	
6	Inject the 10 mL in the sampling cuvette [3] **Warning: Inject slowly in the sampling cuvette to avoid creating bubbles on the inner walls.**	
7	Close the dilution bottle [7]	
8	Insert the sampling cuvette [3] in the triklorame device and push on the button "OK"	

		
9	Unclip the hood of the sampling device [2] by turning counter-clockwise	
10	Retrieve the sampling filter [6] in the sampling device [2]	
11	Insert the sampling filter [6] with the tweezers [4] in the sampling cuvette [3]	
12	Stir circularly on a flat surface keeping the sampling cuvette [3] straight for 10 second.	

13	Carefully remove the sampling filter [6] with the tweezers [4] and throw it. **Warning: avoid touching the dilution solution with the tweezers. To do this, tilt the sampling cuvette**	
14	Insert the sampling cuvette in triklorame device and push the button "OK"	
		
15	Use up and down arrows to enter the exposure time then push the button "OK" Once each digit selected	
		

16	Note the rate of trichloramine in the air	
17	Push the button "OK" to make a new measurement of trichloramine. OR Push the button "Back" to return to the main menu OR Push the button "OFF" to turn off the device	

3) Interpretation of the result

The measurement scale will depend on the exposure time.

After a minimum exposure time of 1h30, trichloramine can be measured.

Scale of measurement according to the exposure time :

- Exposure time <2h: 0.3 ~ 5mg/m^3 **(WARNING: on a short exposure time the measurement will be very sensitive to pollution during handling).**
  - Case 1 : trichloramine <0.3mg/m^3: the trikloram will indicate the value is <0.3mg/m^3 and will not be able to display the exact value.
  - Case 2 : 0.3 <trichloramine <5mg/m^3: trikloramate will indicate the value at ±0.1mg/m3
- Exposure time > or = to 2h: 0 ~ 2mg/m^3
  - Case 1 : 0 <trichloramine <2mg/m^3: trikloram will indicate the value at ±0.1mg/m^3
  - Case 2 : trichloramine> 2mg/m^3: trikloram will indicate that the value is> 2mg/m^3 and will not be able to display the exact value

The determination of the trichloramine concentration may vary due to external pollution during handling (examples: postilion, finger on sampling sample, tweezers tweezer, vat analysis, syringe not or poorly washed before analysis ...)
The influence of external pollution reduces with the increase of the duration of exposure.

4) Error messages

"Error: trichloramine concentration below the measurement scale" :

This message may appear if:
- the measurement made at a trichloramine level which is too low and is not within the minimum measuring range that can be measured
- the analysis cuvette is poorly positioned in the triklorame and contacts with the electrodes are not well done
    - Reposition the sampling cuvette, the cork must fit perfectly into the intended housing

"Error: trichloramine concentration above the measurement scale":

This message may appear if:
- the measurement carried out has a trichloramine rate that is too high and is not within the maximum measuring range that can be measured

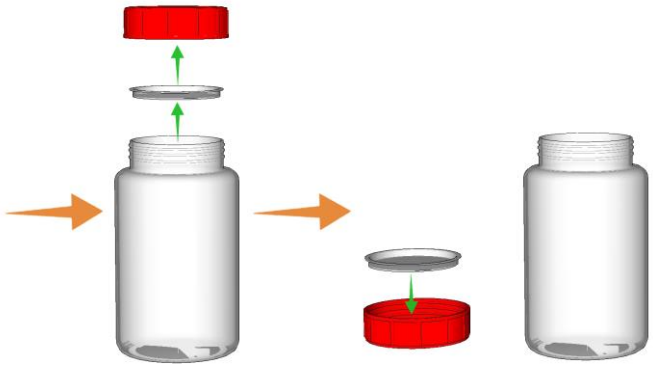
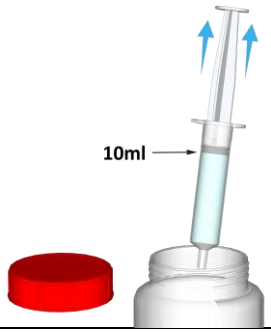
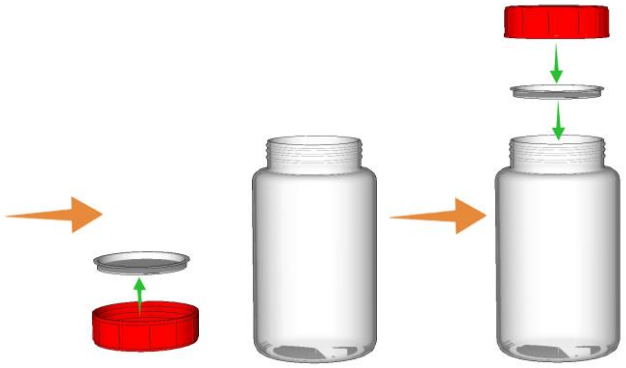
"Error: Polluted analysis solution, try again or use a new solution":

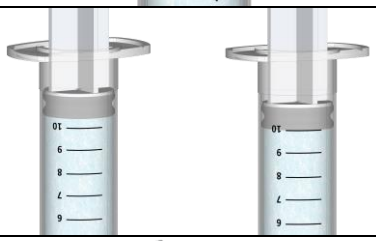
This message may appear if:
- The sampling cuvette was not cleaned according to the recommended method before handling:
    - Clean the sampling cuvette according to the recommended method and redo the handling.
- The analysis solution has been polluted leaving the lid of the bottle open too long:
    - Change the analysis solution by a new one.
- The syringe was not cleaned according to the recommended method before taking a sample:
    - Clean the syringe according to the recommended method and change the analysis solution by a new one.

For any other value, contact the SYCLOPE Electronique technical department

VIII. Technical support

1) Liquid sampling technique with 10 mL syringe

N°	Action	Picture
1	Open the Dilution bottle [7]	
2	Take a little more than the desired volume of solution in the dilution bottle [7] with the syringe **Warning: Keep the syringe in hand until step 7**	
3	Close the dilution bottle [7]	
4	Return the syringe vertically	

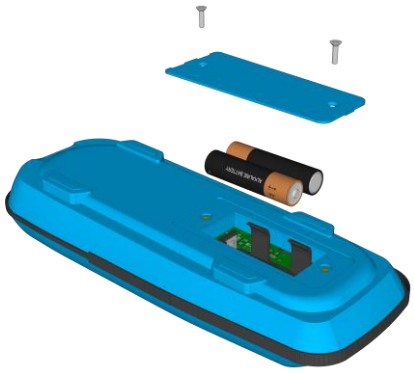
5	Expel the residual air from the top of the syringe	
6	Expel excess volume of liquid by positioning the bottom of the piston at the required volume scale	
7	Fully depress the piston to inject the calibrated volume	

2) Battery life and change

Battery life of trikloram:

Trikloram has an expected operating time of 100h (screen backlight off). Beyond that, it is advisable to change the batteries.

Changing the batteries of trikloram:

N°	Action	Picture
1	Unscrew the 2 screws of the hood, change the batteries and screw the hood	

Battery life of the dosimeter:

The dosimeter has an expected life of 1200h. Beyond that, it is advisable to change the batteries.

This represents about 300 samples of 4h per year.

Changing the batteries of the sampling device:

N°	Action	Picture
1	Unscrew the 2 screws of the hood, change the batteries and screw the hood	

3) Maintenance

ASS Code: SAV0017

The trikloram and the sampling device must be returned once a year to Syclope Electronic for a complete revision.

The devices will be checked, cleaned and calibrated according to the following steps:

- Cleaning the sampling device
- Changing the filter of the sampling device
- Changing the batteries
- Calibration of electronics
- Verification of the correct functioning of the devices

General information:

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