Kalstein®

Rotary Microtome

YR418

Instruction Manual

Thank you very much for purchasing our Rotary Microtome YR418.

Please read the “Operating Instructions” and “Warranty” before operating this unit to assure proper operation. After reading these documents, be sure to store them securely together with the “Warranty” at a hand place for future reference.

 Warning: Before operating the unit, be sure to read carefully and fully understand important warnings in the operating instructions.

2. Contents

3. Important Notes

The scientific knowledge and the up-to-date technology we mater have been displayed by the information, data, precautions and the parameters of adjustment provided in this manual through our investigation in the field.

With the rapid development of technology, we are not responsible for providing the renewed manuals or any copy of them to the customers.

We will not shoulder the responsibilities for the results caused by the instructions, drawings and technological requirements in this manual in case they conflict with the laws in the country of the customers, especially we are not responsible for any damage and other bad results caused by abusing instructions of this manual.

The instructions, drawings and technological requirements and other information in the manual should not be taken as the guarantee for the performance of the product. Only those items stipulated in the contract have the legal effect.

We own the right to alter the technological parameters and the processing crafts, and we have no obligation to notify the users about them.

The serial number and date of production are attached on the nameplate at the back of the instrument.

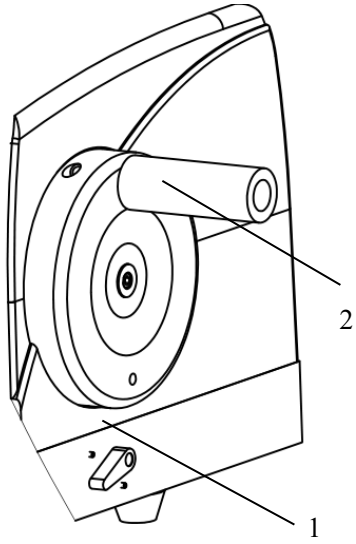
4. Regulations for Handwheel operation

4.1 Safety Device

Attention: *Lock the Handwheel before cleaning!*

4.1.1 Quick locking lever for Handwheel

Attention: *Remember to lock the handwheel and cover the blade with the protection fitting before operating the blade or specimen and changing the blade and specimen.*



The handwheel can be locked at any position with the locking handle (1) at right side of the pedestal of the microtome. The two positions (Up=lock; Down=loosen) of the locking handle are marked at the pedestal of the microtome. Also, you can push in the handle for lock, or pull out it for loosen.

Ways of operations:

- Pull the locking lever (1) to "Up" to mechanically lock the handwheel, the handwheel cannot be turned.
- Pull the locking lever (1) to "Down" to lose the handwheel, and the handwheel can be turned around.
- Push in the handle (2), you can lock the handwheel.
- Pull out the handle (2), you can move the handwheel.

4.1.2 Blade-protecting lever on the blade holder

Attention: *Remember to lock the handwheel and cover the blade with the protection lever before operating the blade or specimen or changing the specimen and during the break.*

There is protecting lever on each blade holder, with which the blade edge can be wholly covered.

Transport and Install

- Pay attention to "Technical Parameters" in Chapter 4.
- The instrument can only be erectly placed in the course of transportation.
- Avoid grasping the handles of the wheel and the handwheel or the knob for adjusting the slice thickness in the course of moving the instrument.
- It is not allowed to remove or change the protecting devices equipped on the instrument and its appurtenance.

Operation

- Be very careful when using the blades and disposable blades. The sharp edge may cause serious injury by mis-operation.
- No blade or the blade-holder with blade is allowed to be randomly placed. The blades should always be kept in blade cases except for use.
- The blade is not allowed to be placed with its edge upward.
- No catching a falling blade with hands at any time.
- Firmly clamp the specimen before installing the blade.
- Remember to lock the handwheel and cover the blade with the protection fitting before operating the blade or specimen or changing the specimen and during the break.
- No liquid is allowed to flow into the instrument.

● There is an alarm function when the handwheel is rotated to the top. but remember to keep the handwheel backward!

Cleaning

- Lock the handwheel before cleaning the instrument.
- Do not clean the instrument with the detergent containing acetone and benzene.
- Make sure to make no cleanser flow into the instrument.
- Please follow the cleaning regulations and rules stipulated by the manufacturer and those in the laboratory for safety.

Maintenance

- Unclosing the instrument is not allowed except the authorized technicians of our Company think it necessary in the course of maintenance.

5. Technical parameters

Model item: Manual Rotary Microtome YR418

Sectioning thickness setting:

Section thickness setting range: 0-60μm

Setting values: from 0 μm-10 μm in 1μm increments
from 10μm-20μm in 2μm increments
from 20μm-60μm in 5μm increments

Trimming section thickness setting range: 0 - 60 μm

Minimum Setting of Sectioning Thickness: 1μm

Specimen Retraction: 0~28μm

Total Horizontal Specimen Feed:29mm

Vertical Specimen Stroke:60mm

Movement Range of the Base of Blade Holder Base: 0-60mm (front to back)

Movement Range of the Blade Press plate: 0-23mm

Maximum Specimen Size: 60×70mm

Specimen Orientation: XY – 8°

Precisión Error: ±1%

Dimensiones: 570×440×290mm (W×D×H)

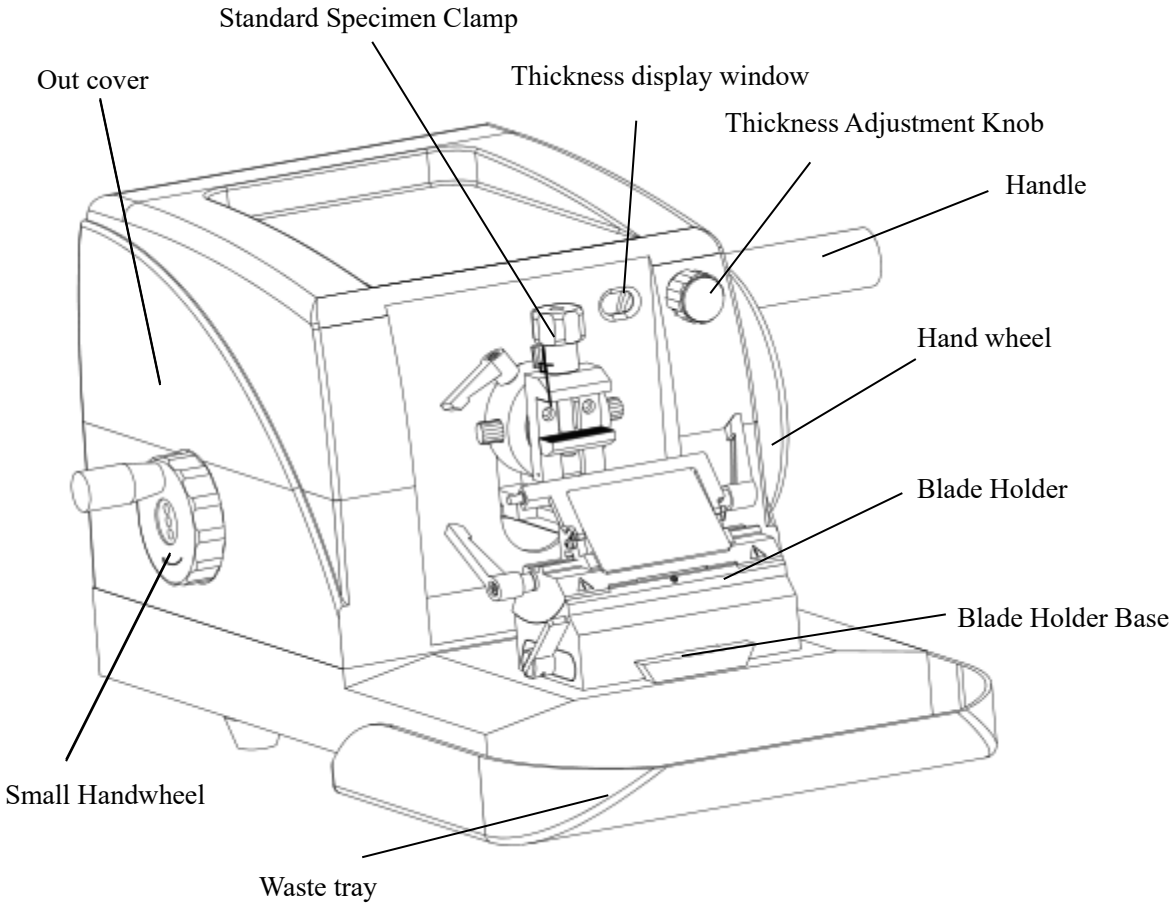
Net weight: 28kg

Appurtenances

- Direction for specimen adjustment: Up/Down and Right/Left
- Forward/Backward: ±65mm
- Left/Right: ±40mm

6. Brief introduction

6.1 Sketch of YR418 Microtome



6.2 Description

Model YR418 is a manually operated microtome by wheel-turning. The guiding-lines for the vertical and horizontal movement of the specimens are seamless and free from maintenance. Specimen is fed by the turning the hand wheel. And all the parts of the instrument are covered into the out cover. The hand wheel can be smoothly turned for slice cutting. Selection of the slice thickness can be adjusted by a knob.

7. Unpacking and installation

7.1 Unpacking

- Unpack the wooded crate to take out all Appurtenances and the Instruction.
- Hold the base of instrument and take it out.

Attention： *Avoid grasping the handle of the hand wheel and the wheel, or the knob for adjusting the slice thickness in the course of moving of the instrument.*

Instrument setting

- The instrument should be set on the stable platform in the lab.

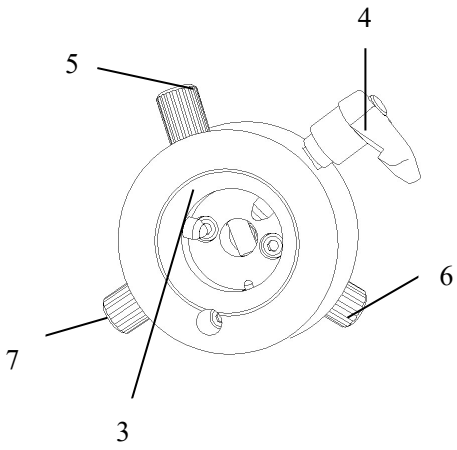
7.2 Requirements for Handle

- Stable and no vibration for experimental platform
- No vibration on the floor.
- Leave enough room for the convenient operation of the hand wheel and the wheel.

8. Installation

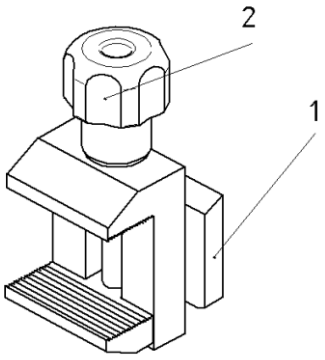
8.1 Installation of specimen clamp

The adjusted setting of specimen clamp has been installed onto the mainframe. But as the ordered component, the setting hasn't preinstalled and adjusted, it needs installation and adjustment.



Standard specimen clamp

- Lock the handwheel



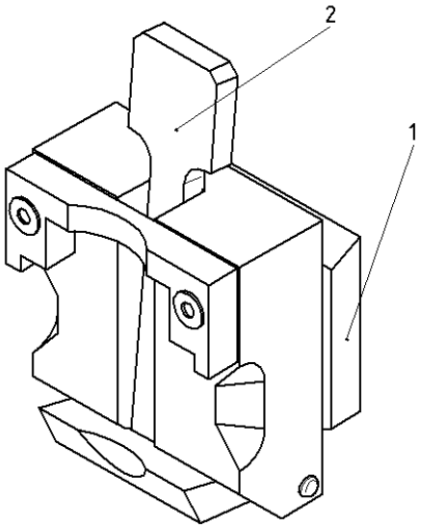
●There is a coattail holder-leading on the standard specimen clamp（1），loosen the clamp handle（4），insert the coattail holder-leading into the coattail slot（3），when completing，lock up the handle（4）.

●Turn downward the locking handle to loosen it（7），the position of the specimen clamp can be adjusted through the screw （5）and（6）. **Attention：** The screw（5）and （6） should be adjusted simultaneously within their range of turning.]

●The screw（5）for Up / Down, and screw（6）for Right / Left. In the course of adjustment, the locking handle (7) should be loosened.

●Once the position of the specimen clamp fixed on, turn upward the locking handle（7） to lock it down. 。

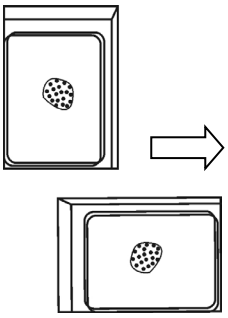
●Change the specimen clamp: Loosen the locking handle（4）to take out the specimen clamp from the coattail slot for a new one.



Fast Release clamp

●Lock up the handwheel

● The way for installation and adjustment is the same of the above.



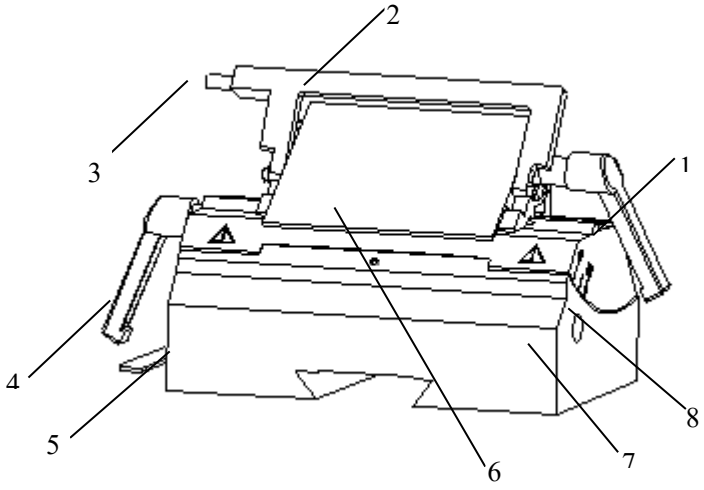
● The general specimen case clamp can horizontally or vertically clamp for all kinds of the general specimen cases commercially acquired.

● Pulling forward the Board Pole（2）.

● Horizontally or vertically put in the specimen case.

● Loosen the Board Pole（2）to clamp the specimen case.

8.2 Installation of Accessories



Attention: please don't insert the disposable blade before the Blade holder is securely and properly installed on the Microtome! The disposable blade shall be taken out before dismantling the blade holder

for safety concern.

8.2.1 Installation of Blade holder and its Base

●Move the blade holder base (5) forward and backward, and counterclockwise turn the clamping lever (1).

●Install it on the T-block on the base of the Microtome, and clockwise turn the clamping lever (1).

●Loosen the screw (7), turn the copper threaded sleeve in the middle and the clamping positions of the lever could be adjusted.

●The appropriate clamping angle for the blade holder shall be approximately 8～10° for cutting.

●The screw (7) could be loosened before adjusting the cutting angle

Loose the locking lever (4) and move the pressure board (6) left or right to move the disposable blade to any position.

The blade holder can be used for the low-profile disposable blades.

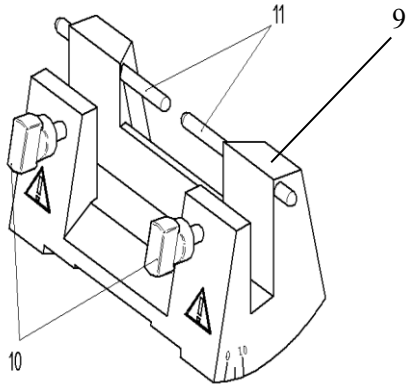
●Turn and loosen the locking lever (1), and insert the blade into the groove edgeways, and turn the locking lever (4) after putting into proper place and make the blade clamp (3) to fix the blade at its position

The knife guard on disposable knife holder consists of a red adjustable handle (2). To cover the cutting edge, fold the knife guard handle (2) upwards as illustrated in Fig

When changing the disposable blade, fold the knife guard handle upwards, loosen the locking lever (1), push the strip (3) inside and the blade will be push out.

Attention: *Remember to lock the handwheel and cover the blade with the protection fitting before changing the specimen and during the break of operations.*

8.2.2 Installation of steel knife holder



- Loosen allen screw (7) by wrench, take off disposable blade holder, fix the steel knife holder (9) as above picture show. Then adjust the cutting angle, the proper angle we recommend is 8°.
- Loosen allen screws (7), Before adjusting cutting angle.

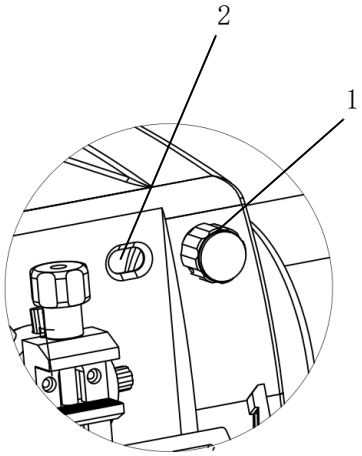
- Fix steel knife to the holder (9), then, fasten locking handle (10).

Attention: Before changing blade steel knife or specimen, or during rest, lock the handwheel, and the knife guard should be push to upward position for safety.

8.3 Installation of waste tray

Push waste tray paralleled to bottom of base of machine until the end.

9.Ways of Operation



9.1 Selection of slice thickness

The selection of the slice thickness can be done by adjusting the knob located on the right upside of the front part of the microtome.

Each grade of the selection of the slice thickness can be efficiently positioned（1）.

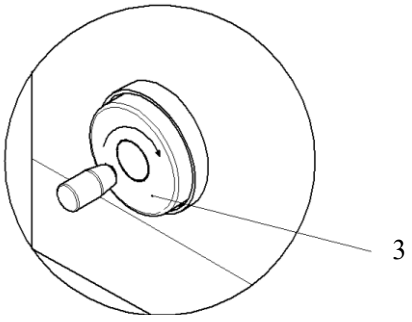
9.2 Handwheel

The provision can be quickly done by the handwheel located on the side of the instrument.

Turn the handwheel clockwise to make the specimen move to direction for the slice cutting.

Handwheel is designed to make the specimen horizontally quick move to or departure from the slice cutting. When the handwheel move to the forward and backward utmost position, it will become heavier, but when the handwheel move to the forward utmost position, no specimen will be provided.

Attention：Be careful enough to ensure the specimen is on the specimen clamp. Damage will be done to the blade if the blade meets the metal specimen clamp.



9.3 Trimming

- The handwheel（3） is located on the left side of the microtome. Turn the handwheel according to the indication of the arrowhead to make the specimen move to the direction of the blade, try to make the specimen approach the edge of the blade, but avoid meeting

the edge of the blade.

● Turn the handwheel slowly to make the specimen move into slumping when the specimen is at the highest position, then turn the big wheel for the slice trimming. Do as this repeatedly until the ideal specimen surface acquired.

9.4 Slicing

Attention：Be sure to turn the handwheel evenly and the speed of handwheel turning should match the rigidity of the specimen. The harder, the slower.

The ideal thickness of the slice can be chosen by the thickness adjusting knob located on the right upside of the instrument.

●Choose the appropriate angle of slice cutting. Normally start from the smaller angle selection. and the harder the specimen, the bigger the cutting angle.

●The marked line on the right of the blade holder basal is for the selection of the cutting angles.

●Evenly turn the big wheel to cut slice. And get out the slice for specimen-making.

10. Regular Operation

Instruction to the procedure of paraffin slice-cutting

Attention：Be sure to lock the handwheel and cover the edge of the blade with the blade protecting fitting in the course of operating of the blade and specimen or before changing the specimen.

● Lock the handwheel

Attention：Firmly clamp the specimen before installing the blade.

● Put the pre-frozen paraffin onto the specimen clamp.

Attention：Be sure to be careful enough to avoid maloperation which will cause serious hurt in the course of using the blade and disposable blade, because the edge of the blade is very sharp.

● Turn the handwheel to move the specimen to the backward utmost position.

● Insert the blade into the blade holder and firmly clamp it.

● Adjust the cutting angle (try once from 0°to 8°)

● Try to move the blade holder approaching the specimen.

● Adjust the surface position of the specimen to make it parallel to the edge of the blade.

● Loosen the handwheel.

Attention：Be sure to turn the handwheel evenly in the course of the slice cutting. The harder, the slower.

- Turn the handwheel to start the slice-trimming for the ideal surface of the specimen.
- Select the ideal thickness of the slice or take the former ones as reference.
- Evenly turn the handwheel clockwise to cut slice.
- Change the specimen or stop the operation.

Attention: *Be sure to lock the handwheel and cover the edge of the blade with the blade protecting fitting in the course of operating of the blade and specimen or before changing the specimen or during the break.*

- Lock the handwheel.
- Cover the edge of the blade with the blade protecting fitting.
- Take out the specimen from the specimen-clamp for another operation.

End the operation

- Lock the handwheel.
- Take out the blade from the holder and put it into the blade-case.
- Take out the specimen from the specimen-clamp.
- Scrub away the wastes and clean up the instrument.

11. Error checking and solution

11.1 Possible Faults, causes and eliminations

Faults	Causes	Eliminations
Uneven slices produced and sometimes no slice can be cut	1. Inappropriate angle of the blade, the angle of cutting is too small 2. Not firmly locked the specimen clamp or/and the blade holder. 3.Blunt of the blade	1.Adjust the angle of cutting until the appropriate angle acquired. 2. Check and firmly locked the screw of the specimen locking and the blade holder. 3. Use the other section of the blade or change for a new one.
Slices are compressed or corrugated or extruded	1. Blunt of the blade. 2. The specimen is too hot. 3. The angle of cutting is too big. 4. The cutting is too fast.	1. Use the other section of the blade or change for a new one. 2. Freeze the specimen on the freezing platform. 3. Adjust the cutting angle. 4. Turn the handwheel slowly.
When cutting hard specimen, the blade holders; nicks or vibrant marks are left on the slice	1. The cutting is too fast. 2. The angle of cutting is too big. 3. Not firmly locked the specimen clamp or/and the blade holder.	1. Turn the handwheel slowly. 2 Adjust the cutting angle. 3. Check and firmly locked the screw of the specimen locking and the blade holder or the locking handle.

12. Cleaning

Attention: Be sure to lock the handwheel before cleaning

Brush off the slice crumbs with a dry brush.

Take down the blade basal and the blade holder for cleaning.

Attention: ◆Only the cleanser for domestic use or the soap lye can be used for cleaning the instrument.

◆Acetone and benzene will damage the paint on the surface of the instrument.

◆No leakage of the cleaning liquid allowed into the instrument.

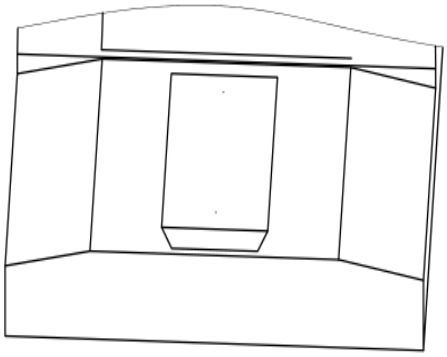
◆A moist cloth is needed for the cleaning.

13. Maintenance

Regular maintenance

Generally, the microtome can work normally for a long time without any maintenance. But the preventive maintenance is also needed to ensure that the instrument can work normally in a longer period. The regular maintenance should follow the advice listed below:

1. Have the technician authorized by our company check the instrument at least once a year.
2. After the free service period a successive maintenance contract should be made to ensure the service. The detail can be consulted with the Kalstein service agencies.
3. Clean the microtome daily.
4. Monthly lubricate the following parts with the oil we offered (one or two drop is enough): "T" part on the base of the instrument.



5. The maintenance should be done by the authorized technicians. And no self-repair is allowed, or we will not be responsible for the result of self-repair and further maintenance.

14. Appendix

Improvement of the instrument

Our company has the right to change the technical parameters of any Model for improving the function of the instruments. Excuse us for not informing the customers in advance.

Quality guarantee

It is for sure that every instrument we sell has been strictly examined to ensure that every instrument is qualified and matches its technical standard.

The free service terms which are favorable to the customers are made for the sales agencies.

Free service terms are only provided for those who regularly use of the instrument and operate the instrument according to the Instructions.

We will not be responsible for the damage and other results caused by abuse and maloperation of the instrument.

Discards and disposition

The discarded microtome and its fittings should be disposed according to the current laws or regulations.

For the sake of environmental protection, we are willing to give you some advice on discarding 2258 microtome.

Service information for customers

If you need any service or fittings of the instrument in the guaranteed usable period, please consult the agencies of our company or the sellers. But you should provide them the specification, model, the serial number and the time of the buying.

Attention:

If you mail the instrument or its fittings back to Kalstein company, please make sure the following:

1. If the instrument or its fittings has handled the substance with virus and bacteria or contacted with radiation resources, please disinfect them or eliminate the radioactivity before mailing back. Our technicians will examine and verify for sure.
2. If you are sure that the instrument or its fittings you want to send back to our company is safe from infection of virus, bacterium or radiation, please tell our technician the possible ways you will use to disinfect them or eliminate the radioactivity. Any possible infection of dangerous bacterium and virus or radiation will lead to sending back the instrument or its fittings without any maintenance.

For technical service, please inform us:

- The type and the serial number of the instrument
- Address and the person for contacting
- The causes for the service.