



Strictly physiologic!

PROTOCOL

Please read carefully!



www.a-prf.com



View and download all the videos, click here:

<http://www.a-prf.com/videos/>

and enter:

*Username: **aprf**
password: **prfduo***

select a file and click on:

download

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Duo Quattro Centrifuge



The new centrifuge DUO Quattro has a «push» button that allow you to select various settings mode for the A-PRF and i-PRF. You can choose between 6 different protocols. Simply press the push button to select the desired mode of operation, the corresponding LED will light on.

The DUO is ready. Simply press the **START** button.

You can reset all the positions (*the settings are not definitely locked*)

6 Protocols:

Position 1: **A-PRF +** : 1300 rpm / 8 min

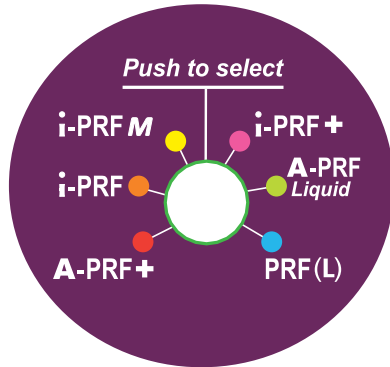
Position 2 : **i-PRF** : 700 rpm / 3 min

Position 3 : **i-PRF M** : 700 rpm / 4 min

Position 4 : **i-PRF +** : 700 rpm / 5 min

Position 5 : **A-PRF Liquid** : 1300 rpm / 5 min

Position 6 : **PRF (L)** : 2300 rpm / 12 min



1st Handling:

1. Switch ON (*power switch at the back*).
2. The lid opens automatically.
3. Remove the foam rubber
4. Close the lid (*press on the right side*)
5. Your DUO is ready for the use.

The settings are already configured, simply press the push button to select the protocol of your choice and press START button.

6. At the end of centrifugation the lid will open automatically

Customizable panels
4 different colors are
included with your DUO

⚠ Closing the lid
PUSH DOWN HERE



Reset:

Instruction to reset settings :

You can reset every position. In the event you need to complete another protocol.

To modify the settings, you just have to set the new values, follow the instructions below :

1. Press the **SELECT** button, the time value will flash, use the selector button to change the value.
2. Press again on the **SELECT** button to set the RMP, the RPM value will flash as well, set the value you need, then the value stops flashing.
3. Press now for 7 seconds on the "PUSH button" after that a symbol will appears few seconds next to the RPM value. The new setting is then configured.
4. Start the DUO by pressing the START button.

Customize your DUO:

Remove the setting wheel and then remove the control panel and hood panel by peeling off the edges. Choose the new color, remove the protective film from the new panel, place and stick it.



The equipment



**Clot
Membrane**



**Liquid
Injectable**



A-PRF[™] + tubes

A-PRF tubes (red tubes) are used to get clots and make membranes of PRF .

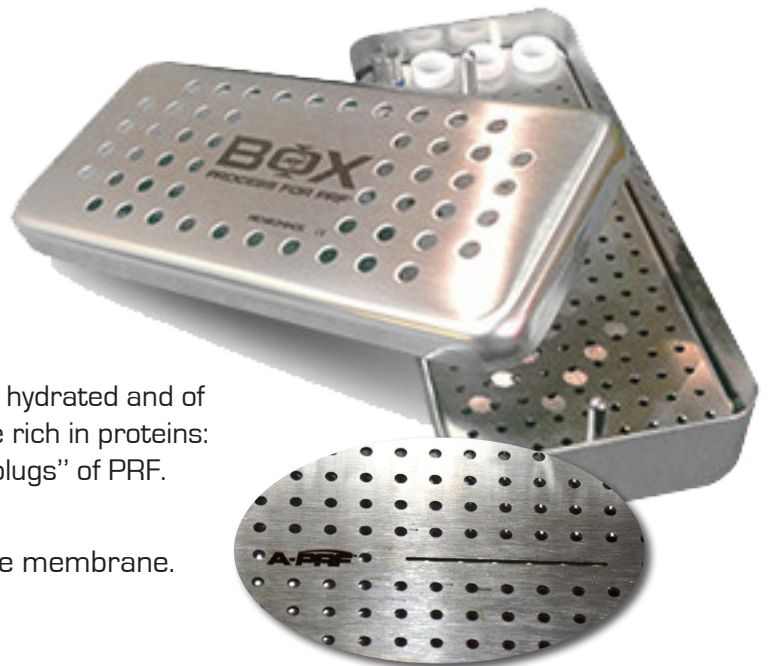
i-PRF[™] tubes

i-PRF tubes (orange tubes) are used to get liquid PRF for injections .

Blood Collectors

Blood collectors are used to make the blood drawing.

A-PRF[™]
Platelet Rich Fibrin
BOX



« PRF Box » allow you to get the membranes always hydrated and of constant thickness, but also to recover the exsudate rich in proteins: Vitronectin and Fibronectin. You can also produce “plugs” of PRF.

PRF box with a line hole for the punching of the membrane.

PRF Tool kit



PRF Scissors

Allows to separate easily the fibrin clot from the red cells and to cut membranes into small pieces.



PRF Forceps

Is used to remove and manipulate membranes.



PRF Forceps giraffe

The forceps giraffe is intended to tunneling the PRF membranes for surgical soft tissues procedures: introduce the forceps in the tunnel, open the forceps, block the PRF membranes and pull to place the membranes in the correct position.



Pad PRF

Is used to position the PRF membranes easily, anywhere, using the pad as a cake server. Drag the PRF membrane on Pad 2 and place it on the desired surgical area.

In the Sinus: this plate is used to retrieve the PRF membrane (always) folded twice and slide it into the sinus to the desired location easily. Introduce the pointed end of the pad 1 in the sinus window and drag the PRF membrane on the Schneiderian membrane. Same process for a collagen membrane.



Compactor Small

Allows to compact and tamp the bone filling materials in the recipient sites (alveoli, sinus, goshawks implants).



Compactor Big

Allows to compact and tamp the bone filling materials in the recipient sites (alveoli, sinus, goshawks implants).



Double Spoon

Allows to collect and handle the bone filling materials in the recipient sites (alveoli, sinus, goshawks implants).



PRF Mini Tray

Used to prepare membranes and to:

- Separate the fibrin clot from the red blood cells
- Cut the membranes
- Fold the membranes
- Make «punches»



PRF Bowl

Is used to mix the membranes cut into small pieces with biomaterials. It can also be used for the cutting: Put the membrane into the bowl and cut it with PRF scissors. It can be used also to mix the biomaterial with liquid PRF.



Tube-holder

Is used to hold the tubes and let them rest after the blood drawing



Tourniquet

It must be tightened to the patient's forearm 10 cm above the site of venipuncture.



Sticker

Is used to maintain in place the collector during the blood drawing

POLYSTERIBOX®



The polysteribox® is a sterilization reusable container, transport and storage of your instruments. This box is made of «DURADEX» (PPSU), This material allows higher stability, durability and resistance. (up to 150°C)

Filter duration **5 years** or **1250 sterilizations**
Duration of sterilization: **6 months**

Cleaning:

Clean with an alkaline detergent and rinse with water.

Sterilization:

- ✓ Autoclave sterilization up to 134°C
- ✓ Chemical disinfection at a maximum temperature of 60°C.
- ✓ Thermal disinfection at a maximum temperature of 93°C

Do not use drying aids! Risk of damage! The material becomes opaque.

The polysteribox L can contain the entire PRF tool kit.



Caution: Remove the crusher from the PRF BoX before sterilization



Arrange all Instruments in the Polysteribox®



Close, seal with the safety seals, place the sterilization label. Then proceed with the sterilization.

Blood Drawing:

Who can draw the blood? Surgeons, Dentists, Nurses, Doctors, Lab technicians.

**One single rule: The blood drawing has to be as fast as possible.
It's essential for the PRF clot quality.**

Without anticoagulant in the tube, the blood starts to coagulate after 1 or 2min.
Over this time, the blood coagulates progressively and it becomes difficult to separate the elements .

Warning: For patients on anticoagulants:

- Don't change the settings
- At the end of centrifugation, let the tubes rest, they will coagulate with a small delay.

- It's not recommended to do the blood aspiration with a syringe!

- The tubes are under vacuum. The blood stops being collected when the tube is full.
When the tube is full, place it in the centrifuge.

- **Number of tubes collected:** at least 2, max 12, always BALANCED 2 by 2.

You **MUST** balance the tubes in the centrifuge (opposite, 2 by 2).

If you do not respect this statement, you'll get important vibrations during the centrifugation.



Use the color code to balance the tubes easily

Prepare a tube filled with water. If you haven't collected an even number of tubes, this tube will be used to obtain an even balance with the other tubes.

If you want to draw **more than 12 tubes**, see the protocol to maintain the vein permeable, please refer to the video in the USB key (*watch the video multiple puncture*)

If you want to collect 8, 10 or 12 tubes:

1. Start immediately the centrifugation of the first 4 or 6 tubes.
2. Start the collection of the 4 or 6 following tubes. Stop the machine while the 7, 9 or 11th tube are filling.
3. The rotor will stop at the same time of the eighth or the twelfth full blood filling.
4. Put the last 4 or 6 tubes and restart the spin.

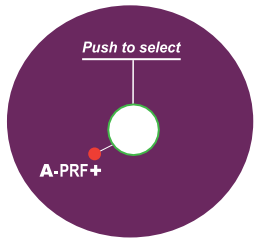
The 4 or 6 first tubes will be centrifuged 1min more than the last ones. It doesn't change the clots quality.

However, if you collect 12 tubes once, the first tubes will be partially coagulated before you start centrifugation.

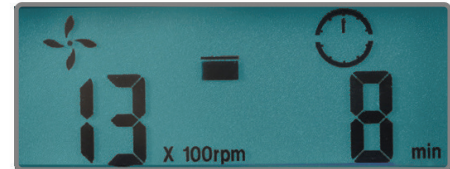
Class IIa medical device.

Glass tubes without anticoagulant or additives

To become familiar with the technique, we advise you to do the first PRF procedure and blood drawing on the practitioner himself.



Press on the «push» button **position 1**
the red LED lights up : **A-PRF +**

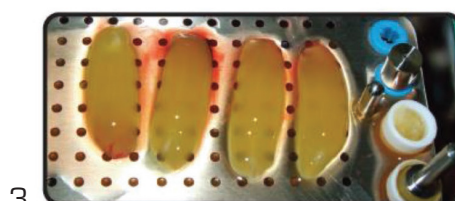
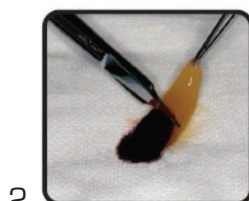


1. Press the **ON/OFF** button: on position **ON** at the back of the machine
2. The lid opens automatically
3. Take off the rubber
4. Place the tubes in a balanced way in the centrifuge
4. Close the lid
5. Press the push button on position 1: A-PRF+, the red LED lights on.
Your DUO is ready for use. The settings are already preset.
Details : **13** x 100 rpm / **8** minutes
7. To start the spin, press the **START** button
8. At the end of the spin, the lid opens automatically
9. **Remove the tube and the caps, place the tubes in the sterile tube holder and let them «rest» around 5 minutes.**

⚠ **Caution!** Starting the spin without removing the rubber may destroy the motor.

PRF Clots removal:

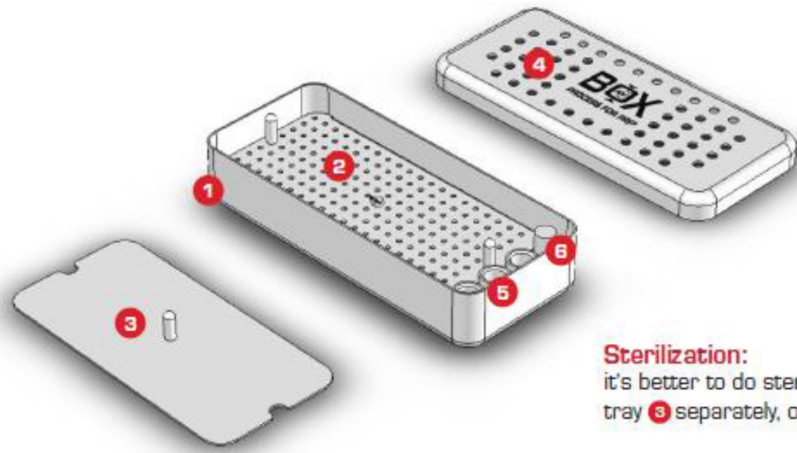
1. Take the fibrin clot into the opened tube with the sterile PRF forceps.
2. To separate easily the fibrin clot from the red cells: Put the clot on the mini-tray covered with a gauze and use the closed scissors to peel off the red clot.
3. Put the PRF clots on the BoX grid and cover them with the tray, then put the lid on (always).



Why the «BoX» ?

- To get membranes of constant thickness and always hydrated
- To remain them intact for 2 or 3 hours (no dehydration)
- To recover the exsudate (in the BoX): rich in proteins: Vitronectin and Fibronectin
- To produce "plugs" of PRF, for socket extraction filling (in the white cylinders, with the piston)

- 1 Box for exsudate recovery
- 2 Grid
- 3 Tray
- 4 Lid
- 5 White Cylinder
- 6 Metal piston



With the PRF «BoX» you can:

- **Make membranes** : Put the clots after separation on the grid. Cover with the tray and then put the lid. The membranes will be ready for use after 2 min. The membranes remain intact (without any dehydration and with a constant thickness...)

The exsudate collected in the bottom is very rich in proteins (Fibronectin and Vitronectin).

- **Make plugs of PRF**: Place a clot in each cylinder and push it with the metal piston. The piston mustn't be partially or fully depressed (photo 1 and 2). It must be stopped at the edge of the white Teflon cylinder (photo 3). The plugs can be used immediately for socket extractions filling.



- Keep the exsudate recovered at the bottom of the box:
- To hydrate Biomaterials
- To flush the surgical sites, sockets and cysts.
- To preserve the autogenous bone blocks (rather than in saline)

The PRF used as membranes:

As a whole membrane : on the implants after being «punched», on bone graft, under the gingiva, on the palate: covering the harvest area of the connective tissue (membrane will then be sutured), etc...

Membrane(s) cut into small pieces: with the scissors supplied. These fragments will be mixed with biomaterials.

In the sinus-lift: apply one or two PRF membranes folded twice under the Schneiderian membrane with the PRF Pad. Mix 1 to 2 membranes cut into small pieces with the biomaterial.

Use 1 or 2 membranes for a lateral closure of the sinus.

If the sinus membrane is punctured, it can be repaired using 1 or 2 PRF membranes folded twice. PRF immediately sticks to the Schneiderian membrane.

In the extraction sites, it is preferable to use the cylinders prepared in the PRF BoX. To compress the «PRF plugs» in the socket, use a gauze hydrated and not a metal instrument.

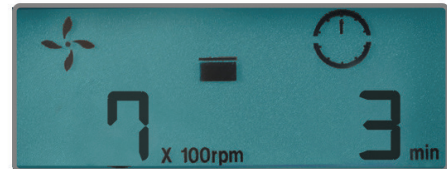
Class IIa medical device.

Tubes without anticoagulant or additives

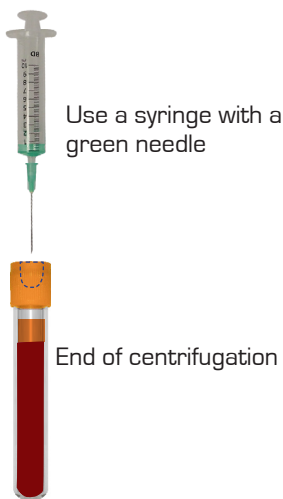
To become familiar with the technique, we advise you to do the first PRF procedure and blood drawing on the practitioner himself.



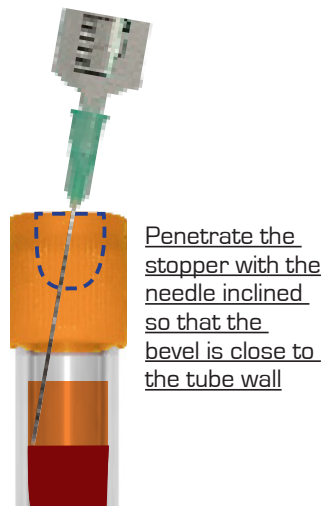
Press on the «push» button **position 2** the orange LED lights up : **i-PRF**



1. Use the i-PRF tubes (orange).
2. Press on the push button on position 2: i-PRF, the orange LED lights on. The DUO is ready for the use of i-PRF. The settings are already preset. Details: **7** x 100 rpm / **3** minutes for the i-PRF. To start centrifugation, press **START** button
3. At the end of the spin, a orange supernatant will form on the surface.
4. Penetrate the cap with a 21G needle (green) mounted on a syringe.
5. Place the bevel of the needle in the middle of the i-PRF supernatant, against the wall of the tube (better visibility).
6. Aspirate until the level of the red blood cells raises up to the needle bevel.
7. Remove the needle maintaining suction.
8. i-PRF remains liquid for about 10 -12 minutes, then it will clot. The injection will have to be done before the end of these 10 -12 minutes.



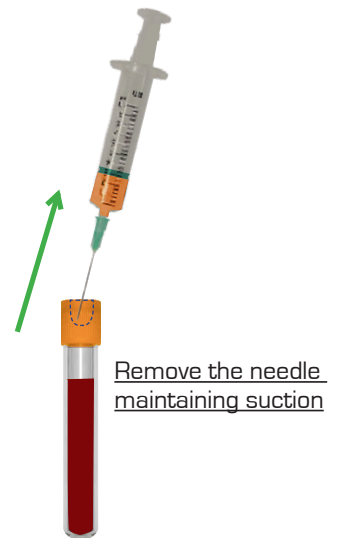
End of centrifugation



Penetrate the stopper with the needle inclined so that the bevel is close to the tube wall



Aspirate and collect the supernatant



Remove the needle maintaining suction

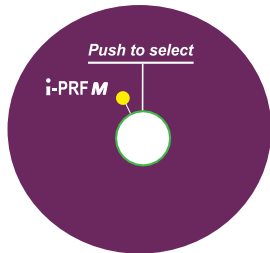
Instruction of use:

1. The blood for i-PRF must be drawn just before injection. It cannot be prepared in advance.
2. To make the drawing after the A-PRF, watch the video on our website www.a-prf.com called «multiple punctures». This video explains how to collect, simply and several times, with the same butterfly needle, in the meantime of several minutes or hours.
3. The i-PRF can be injected:
 - a. Into the soft tissues
 - b. In the bone graft. Mix the granules with the A-PRF (as usual), and pour the i-PRF drop by drop to avoid an overflow. Wait a few seconds and go on until you obtain the complete coagulation of the biomaterials (in less than a minute). If you inject too fast, the i-PRF will overflow from the bone graft!
 - c. Into the sinus, after the filling . The granules will be fixed and coagulated.
 - d. The i-PRF can be used to coagulate the biomaterials before application. This is the «steak» technique: Use the same technique of dropwise preparation.
- e. Several videos are available on our website www.a-prf.com

Class IIa medical device.

Tubes without anticoagulant or additives

To become familiar with the technique, we advise you to do the first PRF procedure and blood drawing on the practitioner himself.



Press on the «push» button **position 3**
the yellow LED lights up : **i-PRF M**



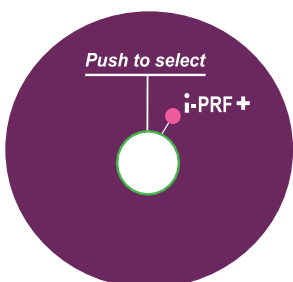
1. Use the i-PRF tubes (orange).
2. Press on the push button to position 3 **i-PRF M**, the yellow LED lights on.
The DUO is ready for the use of i-PRF M. The settings are already preset.
Details: **7** x 100 rpm / **4** minutes for the **i-PRF M**.
To start centrifugation, press **START** button.
3. At the end of the spin, a orange supernatant will form on the surface.
4. Penetrate the cap with a 21G needle (green) mounted on a syringe.
5. Place the bevel of the needle in the middle of the supernatant, against the wall of the tube (*better visibility*).
6. Aspirate until the level of the red blood cells raises up to the needle bevel.
7. Remove the needle maintaining suction.
8. i-PRF M remains liquid for about 10 -12 minutes, then it will clot. The injection will have to be done before the end of these 10 -12 minutes.

Protocol **i-PRF +** : i-PRF+ tubes

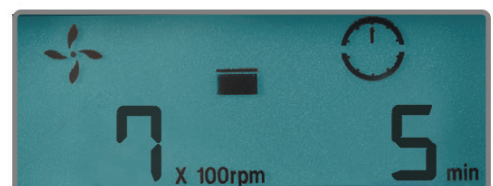
Class IIa medical device.

Tubes without anticoagulant or additives

To become familiar with the technique, we advise you to do the first PRF procedure and blood drawing on the practitioner himself.



Press on the «push» button **position 4**
the pink LED lights up : **i-PRF+**

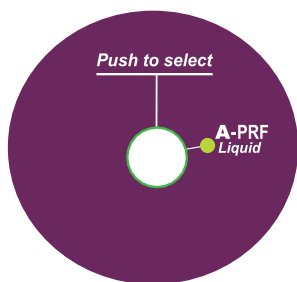


i-PRF+ is a protocol using different type of tubes. These i-PRF+ tubes are **coming soon !**

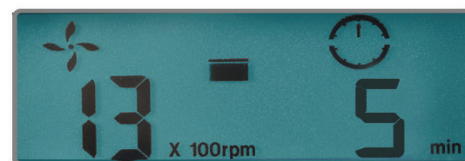
Class IIa medical device.

Tubes without anticoagulant or additives

To become familiar with the technique, we advise you to do the first PRF procedure and blood drawing on the practitioner himself.



Press on the «push» button **position 5** the green LED lights up : **A-PRF Liquid**



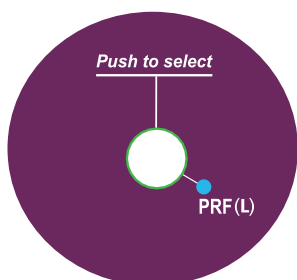
1. Use the A-PRF+ tubes (red) . 10mL tubes
2. Press on the push button to **position 5 : A-PRF Liquid**, green LED is on.
The DUO is ready for the use of A-PRF Liquid. The settings are already preset.
Détails : **13** x 100 rpm / **5** minutes for **A-PRF Liquid**.
To start centrifugation, press **START** button.
3. At the end of the spin, the lid will open automatically. Remove 2 tubes and start again the DUO for 3 minutes
(you can reset the 6th position at 1300rpm for 3 min) refer to page : 1
3. Remove the cap and draw the Liquid A-PRF with a syringe and a needle. (21G or 18G)
4. Put the A-PRF Liquid on the bone graft and mix.
5. After a short time a full gel is formed in the bowl. Press it and shape it as you desire.
6. You can store the graft for 1- 2 h. in the bowl covered.

Protocol **L-PRF**™ : red tubes

Class IIa medical device.

Glass tubes without anticoagulant or additives

To become familiar with the technique, we advise you to do the first PRF procedure and blood drawing on the practitioner himself.

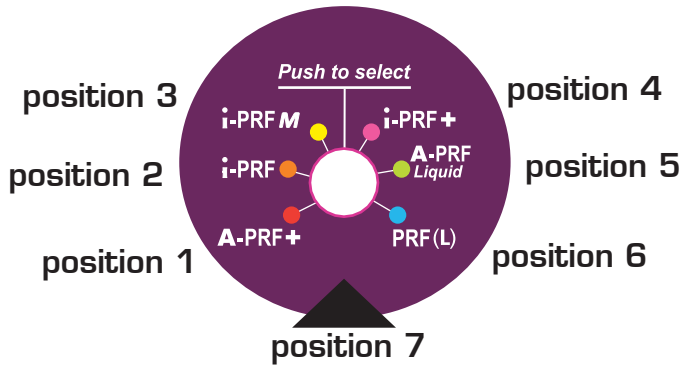


Press on the «push» button **position 6** the blue LED lights up : **PRF (L)**



PRF (L) : is the old PRF protocol.
Use the tubes A-PRF (red) .

Free settings



Press on the «push» button to position 7: **free settings**.

There is no indicative LED

The 7th position is situated after the PRF (L) position



Press the button **SELECT**. When the program flashes, the settings can be changed. Turn the programming button (fig 1.) on the right to increase the value and on the left to decrease it.

For setting the speed and time.

Press the button **SELECT**. The speed in rev / min flashes. Set the speed. The minimum value of the speed you can set is 500 rev / min.



(fig 1.)

Press the button **SELECT**. The time value flashes.

Set the time with the button (fig 1.). You can adjust the centrifugation time from 30 seconds to 99 minutes. Once the settings are completed, press the button **START** to start centrifugation.

To stop the centrifugation before the end of the program, press the button **START**. The hood will open automatically once the rotor has stopped.

The settings remains in memory after pressing the push button for 7 seconds. A symbol will appear next to the value RPM. The new setting is now configured.

Sterilization:

Used method	Description	Explanation / Notes
• Cleaning	Mechanical alkaline cleaning	Instruments with joints or metal
• Disinfection	Thermodisinfection 5 min at 90°C	
• Desiccation	Desiccation up to 120°C / 248°F.	
• Sterilization	Fractional vacuum process, hold time 5 min at 134°C	
• Other		Sliding surfaces should be oiled to prevent friction before each sterilization.