

Operating the Thermo Scientific Sorvall Legend X1R Centrifuge

Switching on the centrifuge:

1. Turn on the power switch on the back of the device. The device performs a self-check of its software.
 - a. When the centrifuge lid is closed the following display shows:



The top line shows the speed and the time. Both lines display 0. The temperature indicator displays the current temperature inside the rotor chamber. The bottom line shows the values for the last run.

- b. Then the centrifuge lid is open the following display shows:



The top line shows the message "Lid open". The bottom line shows the values for the last run.

Lid Opening

1. Press the "OPEN" key.



Close Lid

Close the lid by pressing down on the lightly in the middle of on both sides of it. One lock closes the lid completely. The lid will close automatically. Note: The lid should audibly click into place.

Entering Parameters

Acceleration curve

The Sorvall Legend X1R offers you a total of 9 acceleration and 10 braking curves with which samples and gradients can be centrifuged.

After the centrifuge is turned on, the last running profile selected is shown.

1. Press the ACC DEC key



Once in order to open the acceleration profile selection menu. The display shows the message "Set acceleration".



2. Select the desired profile by entering a digit between 1-9 on the numeric pad. Curve number 1 is the slowest and curve number 9 the fastest.
3. Confirm your entry by pressing ENTER.

Braking curve

1. Press the ACC DEC key twice in order to open the braking curve selection menu. The display shows the message "Set deceleration".



2. Select the desired curve by entering a digit between 1-9 on the numeric pad. Curve number 1 is the slowest and curve number 9 the fastest.
3. Confirm your entry by pressing ENTER.

Preselecting Speed/RFC (relative centrifugal force)

1. Press the "SPEED" key.
The display shows the "RPM" or the "RFC" value depending on the display setting. Press the CHANGE key



To toggle between the two modes.



2. Enter the desired value using the numeric pad. The digits show in sequential order.
3. Confirm your entry by pressing ENTER.

Note: If an extremely low RCF value has been selected, it will be corrected automatically if the resulting speed is less than 300 rpm. This is because 300 rpm is the lowest selectable speed.

Running time preselection

1. Press the TIME key in order to open the runtime selection menu. The display shows the message "Set Time". Enter the desired runtime in hh:mm



2. Press the TIME key repeatedly to switch over to mm:ss or Hold mode respectively.



3. Enter the desired runtime using the numeric pad. The digits show in sequential order.
4. Confirm your entry by pressing ENTER. Your entry will be automatically confirmed if you do not press any key for 5 seconds.

While the centrifuge is in operation, two different value can be displayed. The total running time and the running time after reaching the maximum speed. Press the CHANGE key to toggle between the two display modes.

Continuous operation

During continuous operation, the centrifuge will continue running until you stop it manually with the STOP key.

Run time mode

Use the CHANGE key to set the run time counter start.

AT START

When AT START is lit, the running time will be counted right from the start.

At SPEED

When AT SPEED is lit, the running time will be counted once the preset speed or the preset RCF-value respectively have been reached. In this case, the selected acceleration curve has no effect on the running time.

Preselecting the temperature

You can preselect temperatures between -10 °C and + 40 °C. While the centrifuge is in operation, two different values can be displayed. The sample temperature and the chamber temperature. Press the CHANGE key to toggle between the two display modes.

AIR

When AIR is lit, the temperature inside the rotor chamber will be controlled. This setting is recommended when using the centrifuges pretemp feature.

SAMPLE

When SAMPLE is lit, the temperature of the sample will be controlled.

To set the temperature, proceed as follows:

1. Press the TEMP key in order to open the temperature selection menu. The display shows the message "Temperature". Depending on the display mode setting, the value shown corresponds either to the sample temperature or to the inside chamber temperature. Press the CHANGE key to toggle between the two modes.



2. Enter the desired temperature using the numeric pad. The digits show in sequential order.
3. Confirm your entry by pressing ENTER. Your entry will be automatically confirmed if you do not press any key for 5 seconds.

Prewarming or Precooling the centrifuge

For setting the pretemp value for the centrifuge, proceed as follows:

1. Hold down the TEMP key for a minimum of three seconds to open the temperature selection menu. The display shows the message "Set PreTemp" and the current temperature inside the rotor chamber.



2. Enter the desired temperature using the numeric pad. The digits show in sequential order.
3. Confirm your entry by pressing ENTER. Your entry will be automatically confirmed if you do not press any key for 5 seconds. The display shows:



0 0.00 25
Close lid to PreTemp -10

4. Close the centrifuge lid.



0 0.00 25
Press start -10

5. Press the "START" key. The rotor chamber is cooled down or heated up to the preset temperature.



4000 25
PreCooling... -10

6. Press the "STOP" key. The display shows the current temperature.



4000 -10
PreTemp ready -10

Bucket Selection

Bucket selection is only possible for swingOut rotors. The bucket code corresponds to the last four digits of the bucket catalog number.

1. Press the "BUCKET" key.



The display shows the following message:



0 0.00 25
Set bucket code 3608

2. Press the BUCKET key repeatedly until the bucket being used is displayed. Your entry will be automatically confirmed if you do not press any key for 5 seconds.

Bucket radius

Having entered the bucket code, you may want to specify the radius. When you use adaptors, you will have to specify the radius. For appropriate values please refer to the instruction manual for the rotor.

1. Press ENTER to confirm your selection and open the radius input menu.



The default value is marked accordingly. You can either confirm the default value by [pressing ENTER or enter a different radius.

2. Enter the radius using the numeric pad. The digits in sequential order.
3. Press ENTER to confirm the new radius.

Setting up a program

Enter the program parameters.

As described above, please enter braking and acceleration profile. Speed/RCF value, running time, temperatures, bucket code and bucket radius.

Configuring, storing and protecting a program

Programs can be stored and retrieved later by means of the assigned number.

1. Enter the program parameters as described above.
2. Press the program memory key to load any of the programs 1-5. Press the DIRECTORY key



In order to load any of the programs 1-99 by means of the numeric pad. Enter the program number and confirm with ENTER.

3. You may want to enter a passcode to protect the data. After four seconds the display shows the message "Program saved" or "Program locked".



Overwriting a passcode-protected program

If you wish to overwrite a passcode-protected program proceed as follows:

1. Select the program you wish to change.

2. Press the program memory key to load any of the programs 1-5. Press the DIRECTORY key in order to load any of the programs 1-99 by means of the numeric pad. Enter the program number and confirm with ENTER.



PROGRAM LOCKED
Passcode to unlock

3. Enter the passcode. If you enter the wrong password, the following message appears:



PROGRAM LOCKED
Passcode incorrect

The display restores the current values. Return to step 1.

Centrifugation

Once the main switch has been turned on and the lid has been closed, you can start centrifuging.

Starting centrifuge program.

Press the START key on the control panel. The centrifuge accelerated to the pre-set speed with the time display active.

If the speed is higher than the maximum permissible speed or RCF-value for the particular rotor, then the display will show the message CHECK SET SPEED. The centrifuge decelerates. Please enter a new value.

You cannot open the lid as long as the centrifuge is running.

Imbalance indicator.

If a load is imbalances, this will be indicated at speed higher than approx. 300 rpm by the message "Imbalanced load". The run will terminate. Check the loading and start the centrifuge once again. See the information on proper loading in the rotor instruction manual.

Stopping the centrifuge program

With preset running time

Usually the running time is preset and you only have to wait until the centrifuge stops automatically when the preset time limit expires. As soon as the speed drops to zero, the message "END" will appear in the display. By pressing the OPEN key, you can open the lid and remove the centrifuge material. You can also stop the centrifuging program manually at any time by pressing the STOP key.

Continuous operation

If you selected continuous operation you will have to stop the centrifuge manually. Press the STOP key on the control panel. The centrifuge will be decelerated at the designated rate. The message "END" will illuminate, and after pressing the OPEN key, the lid will open and you can remove the centrifuged material.

Temperature Adaption during Standstill

The temperature cannot be adapted until the rotor has been positively identified. For this, the centrifuge must have accelerated to over 500 rpm. The speed display will then show END. When the rotor is not recognized (lid closed and START not yet pressed, speed display "0"), the centrifuge responds by ensuring that the sample cannot freeze regardless of the rotor being used.

Short-term Centrifugation

For short-term centrifugation, the Sorvall Legend X1R has a PULSE-function. By holding down the PULSE key, spinning will start and continue until the key is let go. The centrifuge accelerates and brakes at maximum power. Any rpm or RCF entered beforehand is overridden.

Note: The centrifuge accelerates to maximum speed, regardless of which rotor was installed.

Check carefully whether you have maintained a certain speed for your application. During the acceleration process, time is counted forwards in seconds. The reading stays displayed until the centrifuge lid is opened.

Switching the Centrifuge off

To turn off the centrifuge put the mains switch to "0".