



Frontier™ Centrifuge User Guide
For FC5706, FC5707, FC5513, FC5515/R, FC5714,
FC5718/R, FC5816/R, FC5916/R

1. INTRODUCTION

1.1 Description

Thank you for choosing this OHAUS product.

All symbols indicate safety instructions and points to potential dangerous situations. Please read the manual completely before using the Frontier™ centrifuge to avoid incorrect operation.

1.2 Definition of Signal Warnings and Symbols

Safety notes are marked with signal words and warning symbols. These show safety issues and warnings. Ignoring the safety notes may lead to personal injury, damage to the instrument, malfunctions and false results.

The degree of danger is a part of a safety note and distinguishes the possible results of non-observance from each other.

Signal Words

DANGER	Will lead to severe injuries or death if not avoided.
WARNING	For a hazardous situation with medium risk, possibly resulting in injuries or death if not avoided.
CAUTION	For a hazardous situation with low risk, resulting in damage to the device or the property or in loss of data, or injuries if not avoided.
ATTENTION	For important information about the product. May lead to equipment damage if not avoided
NOTE	For useful information about the product

Warning Symbols



General Hazard



Electrical Shock Hazard



Alternating Current



Biohazard



Explosion



Crushing

Warning and information signs on the surface of centrifuge

Warning

Four carrier must be used at all times on four place swing out rotors or damage will occur to the centrifuge. Such damage will not be covered under the product warranty.

Four carrier must be used at all times on four place swing out rotors or damage will occur to the centrifuge. Such damage will not be covered under the product warranty.

Attention! Check the fastening of the rotor nut before each run.

Take off mains plug before opening the housing or the emergency release.

2. INSTALLATION NOTES

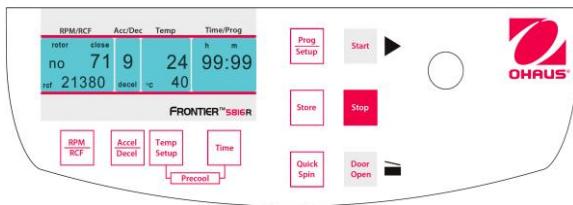
- Placed the centrifuge on a stable and horizontal benchtop surface.
- Allow access to a dedicated power connection as indicated by the name plate.
- Avoid exposing the equipment to direct sunlight or heating devices close-by.
- Avoid obstruction of any ventilation grills and allow at least 30 cm clearance around the centrifuge.
- Remove all packing material from both outside of the equipment and inside the chamber.
- Use precaution when moving or lifting the centrifuge as the equipment is heavy.

2.1 Display Panel

Control panel of different models are shown below.

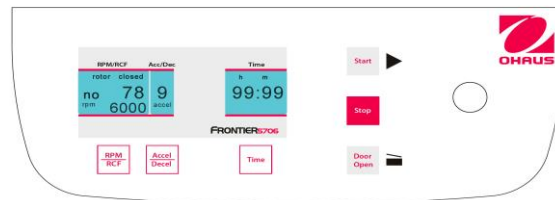
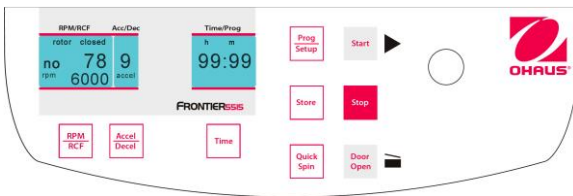
FC5515R, FC5718R, FC5816R, FC5916R

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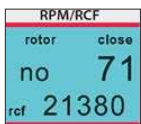
FC5515, FC5714, FC5718, FC5816, FC5916

FC5706



Display functions

Sections of the display are explained as following.



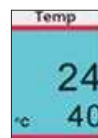
RPM/RCF
Indication of rotor number, lid status, and speed (RPM) or relative centrifugal force (RCF).



Acc/Dec
Indication of acceleration or deceleration level







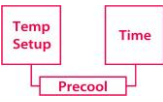







Time
Indication of centrifugation time (max. 99h and 59min, or continuous)



Temp
Indication of actual and preset temperature values (cooled models only)

2.2 Buttons

Functions of buttons on the control panel are listed as below. If a setting is activated by pressing the corresponding button or combination, the display of the parameter will start flashing.

	Speed and RCF = Toggle between RPM and RCF; activate speed setting at increment of 10		Temperature = Activate temperature setting from -20°C to 40°C (cooled models only)
	Acceleration and deceleration = Toggle between acceleration and deceleration; activate Accel/Decel setting (level 0-9)		Time = Activate time setting (max. 99h and 59min, or continuous)
	Precooling = Precool the centrifuge and rotor to the preset temperature (cooled models only)		Start = Start the centrifugation (only start if the lid is securely closed)
	Prog = Recall stored programs		Stop = The unit can be stopped at any time
	Store = Store settings as programs including the rotor used (99 programs)		Door Open = Open centrifuge lid (only open if the rotor has stopped completely)
	Quick = For short runs		Dialing knob/dial =Dialing knob for adjusting the activated values

2.3 General operations

Notes:

- To re-start the centrifuge after a run, one must open and close the lid once (If this is not the case, the word “open” inside the rpm/rcf-display will flash), which is a build-in safety feature.
- All liquid handling must be performed outside of the centrifuge to avoid spilling.
- Before using the emergency lock release, please make sure the rotor has stopped completely by check through the see-through port on the lid.
- Use emergency lock release to open the lid as described in the manual if the safety lock was triggered.
- All places of swing out rotors must be occupied with at least buckets and racks.

ATTENTION:



Check that the fixing screw is properly installed before each run.

Do not operate the centrifuge with rotors or buckets which show any signs of corrosion or mechanical damage.

Do not operate with extremely corrosive substances, which could damage the rotor, buckets and materials.

In case of any questions, please contact the manufacturer!

2.4 Installation the rotors

FC5706



- a. Clean the drive shaft as well as the collet with a clean, grease-free piece of cloth.



- b. Place the rotor onto the drive shaft. Make sure that the rotor is fully installed onto the motor shaft.



- c. Hold the rotor with one hand and secure the rotor to the shaft by turning the fixing screw clockwise.

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- a. Clean the drive shaft as well as the collet with a clean, grease-free piece of cloth.



- b. Place the rotor onto the drive shaft. Hold the rotor with one hand and secure the rotor to the shaft by turning the fixing screw clockwise.

FC5515(R), FC5714, FC5716(R), FC5816(R), FC5916(R)

- a. Clean the drive shaft as well as the collet with a clean, grease-free piece of cloth.



FC5515R
Motor shaft and chamber



FC5515
Motor shaft and chamber



FC5714/FC5718/FC5718R/
FC5816/FC5816R/FC5916/
FC5916R
Motor shaft and chamber

- b. Place the rotor onto the drive shaft. Make sure that the rotor is fully installed onto the motor shaft.



Rotor with build-in nut



Rotor with separate nut

- c. Fasten the nut to hand-tight



Tool for rotor with nut



Tool for rotor without nut

d. Put on and secure the lid for the rotor before centrifugation



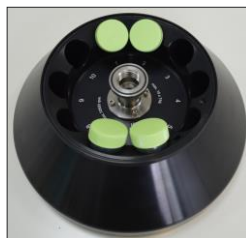
Screw-on lid



Snap-on lid

2.5 Loading samples for angle rotors

Rotors must be loaded symmetrically and with equal weight. The adapter may only be loaded with the compatible containers. The weight differences between the filled vessels should be kept as low as possible. Therefore we recommend weighing them with a balance.



Correct operation



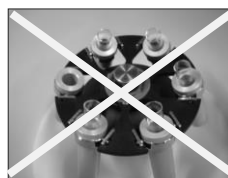
Wrong operation

2.6 Loading samples for swing out rotors

Swing out rotors should only be used if all positions are occupied with buckets and racks, and the diagonally opposing pair must be buckets and racks of the same size and type. Do not mix different types of buckets and racks diagonally! It is allowed to operate e.g. a 4-place-rotor with 2 loaded buckets only but the loaded buckets must be opposite to each other. Make sure that the unloaded racks also be put inside the buckets. The bolts on the rotor must be greased with the "High TEF oil". The sample tubes have to be filled evenly by eye and put into the tube racks.



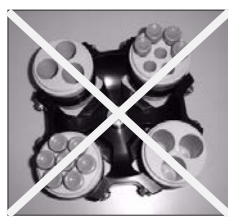
Correct operation



Wrong operation



Correct operation



Wrong operation

2.7 Cleaning

- Keep the chamber and motor of the centrifuge clean, if necessary wipe with a clean, grease-free piece of cloth.
- If any spill happens during use, clean out the liquid immediately to avoid possible corrosion.
- Periodically, wash and inspect the rotors to maintain good rotor condition.
- For cooled models, turn off the centrifuge and keep the lid open to allow moisture to dissipate when finished for the day.

3. SAFETY PRECAUTIONS

3.1 User

OHAUS centrifuges are intended exclusively for indoor use and for use by qualified personnel. This device may only be operated by trained specialist staff. They must have carefully read the operating manual and be familiar with the function of the device.

3.2 Rotor and accessories

Only OHAUS original rotors and accessories shall be used. Any other use or intended use is considered improper. OHAUS is not liable for damage resulting from improper use.

**CAUTION:**

Read all safety warnings before installing, making connections, or servicing this equipment. Failure to comply with these warnings could result in personal injury and/or property damage. Retain instructions for future reference.

3.3 Measures for your protection



WARNING: Never work in an environment subject to explosion hazards! The housing of the instrument is not gas tight. (Explosion hazard due to spark formation, corrosion caused by the ingress of gases)



WARNING: When using chemicals and solvents, comply with the instructions of the producer and the general lab safety rules.



WARNING: The centrifuge is not sealed. Use suitable protection measures when using the centrifuge for infectious and pathogenic samples. Follow appropriate safety precautions when handling these samples.

3.4 Exclude the following environmental influences

- Powerful vibrations
- Direct sunlight
- Atmospheric humidity greater than 80%
- Corrosive gases present
- Temperatures below 2 °C and above 35 °C
- Powerful electric or magnetic fields

**WARNING:**

Electrical shock hazards exist within the housing. The housing should only be opened by authorized and qualified personnel. Remove all power connections to the unit before opening.

3.5 Measures for operational safety

- Do not attempt to run the centrifuge with the lid open.
- Do not override or disable the safety interlock.
- Do not unscrew the two halves of the housing.
- Dry off any liquid spills immediately! The instrument is not watertight.
- Verify that the equipment's input voltage range and plug type are compatible with the local power supply.
- Only connect the power cord to a properly grounded power receptacle.
- Only use a power cord with a rating that exceeds the specifications on the equipment label.
- Do not position the equipment such that it is difficult to disconnect the power cord from the power receptacle.
- Make sure that the power cord does not pose a potential obstacle or tripping hazard.
- The equipment is for indoor use only. Use the equipment only in dry locations.
- Use only approved accessories.
- Operate the equipment only under ambient conditions specified in these instructions.
- Disconnect the equipment from the power supply when cleaning.
- Do not operate the equipment in hazardous or unstable environments.
- Service should only be performed by authorized personnel.

3.6 Danger and precautions





To protect people and environment the following precautions should be observed:

- During centrifugation, the presences of people are prohibited within 30 cm around the centrifuge according to the regulations of EN 61010-2-020.
- Frontier™ centrifuges are not explosion-proof and must therefore not be operated in explosion-endangered areas or locations. Centrifugation of flammable, explosive, radioactive, or such substances, which chemically react with high energy, is strictly prohibited. The final decision on the risks associated with the use of such substances is the responsibility of the user of the centrifuge.
- Never spin toxic or pathogenic material without adequate safety precautions, i.e. centrifugation of buckets / tubes with missing or defective hermetic sealing is strictly prohibited. The user is obliged to perform appropriate disinfection procedures in case dangerous substances have contaminated the centrifuge and or its accessories. When centrifuging infectious substances, always pay attention to the general laboratory precautions. If necessary, contact your safety officer!
- It is prohibited to run the centrifuge with rotors other than listed for this unit.
- Under no circumstances open the lid of the centrifuge while the rotor is still running or rotating with a speed of > 2m/s.

4. COMPLIANCE

Compliance to the following standards is indicated by the corresponding mark on the product.

Mark	Standard
	This product conforms to the RoHS Directive 2011/65/EU, the EMC Directive 2014/30/EU and the Low Voltage Directive 2014/35/EU. The complete Declaration of Conformity is available online at www.ohaus.com/ce .

	<p>Disposal</p> <p>In conformance with the European Directive 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE) this device may not be disposed of in domestic waste. This also applies to countries outside the EU, per their specific requirements.</p> <p>Please dispose of this product in accordance with local regulations at the collecting point specified for electrical and electronic equipment.</p> <p>If you have any questions, please contact the responsible authority or the distributor from which you purchased this device.</p> <p>Should this device be passed on to other parties (for private or professional use), the content of this regulation must also be related.</p> <p>For disposal instructions in Europe, refer to www.ohaus.com/weee.</p> <p>Thank you for your contribution to environmental protection.</p>
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FCC Supplier Declaration of Conformity

Unintentional Radiator per 47CFR Part B

Trade Name: OHAUS CORPORATION

Model: FC

Party issuing Supplier's Declaration of Conformity:

Ohaus Instruments (Changzhou) Co., Ltd.

Responsible Party – U.S. Contact Information:

Ohaus Corporation

FCC Compliance Statement:

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 instructions, 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 the 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 a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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