

VWR Clinical 100 & VWR Compact Star CS4

INSTRUCTION MANUAL

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Legal Address of Manufacturer

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Intended Use:

The Centrifuge is a small bench top centrifuge designed for separation of various samples for research, development, training, and education in the field of chemistry, biotechnology, life-sciences, clinical research and routine diagnostics. The centrifuge is supplied with a 6 x 15ml rotor. Adapters are available for tubes smaller than 10ml. The centrifuge reaches speeds of up to 6,500rpm/4,000 x g.

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Warning:

Please read this manual carefully prior to operating your VWR Centrifuge.

Safety Information:



NEVER use the centrifuge in any manner not specified in these instructions.

NEVER operate the centrifuge without a rotor properly attached to the shaft.

NEVER fill tubes while they are in the rotor. Liquid spillage may harm unit.

NEVER put hands in the rotor area unless the rotor is completely stopped.

NEVER move the centrifuge while the rotor is spinning.

NEVER use solvents or flammables near this or other electrical equipment.

NEVER centrifuge flammable, explosive or corrosive materials

NEVER centrifuge hazardous materials outside of a hood or proper containment facility

ALWAYS load the rotor symmetrically. Each tube should be counterbalanced by a tube of the same type and weight

ALWAYS locate the centrifuge within easy access to an electrical outlet.

ALWAYS use only centrifuge tubes designed to withstand centrifugal forces of at least 4,000 xg.

ALWAYS use a wrench to tighten rotor nut.

If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Do not operate the centrifuge if any of the following conditions exist:

- The centrifuge has not been installed properly
- The centrifuge is partially dismantled
- Service has been attempted by unauthorized or unqualified personnel
- The rotor has not been installed securely on the motor shaft
- Rotors and accessories not belonging to the standard range are being used without permission being obtained from the manufacturer to use such rotors and/or accessories in the centrifuge Exception: Centrifuge tubes, normally available in the laboratory.
- The centrifuge is located in an explosive atmosphere
- Materials to be centrifuged are combustible and/or explosive
- Materials to be centrifuged are chemically reactive
- The rotor load is not properly balanced

Package Contents:

Description	Quantity
VWR Centrifuge	1
Rotor Removal Tool	1
Power Cord	1
Operations Manual	1

Unpacking:

When unpacking your VWR Centrifuge, be sure to remove the protective foam from the rotor chamber prior to operation.



DO NOT RUN THE CENTRIFUGE UNTIL THE FOAM HAS BEEN REMOVED.

The accessories supplied with the centrifuge should be kept with the instruction manual near the centrifuge's place of installation.

Installation:

The centrifuge should be installed on a rigid, even surface such as a stable laboratory bench, cabinet, etc. To guarantee sufficient ventilation, ensure that the centrifuge has at least 15cm of free space on all sides, including the rear.

The centrifuge should not be located in areas subject to excessive heat such as in direct sunlight or near radiators or the exhaust of a compressor, as a buildup of heat may occur within the chamber.

Before operating the centrifuge, check that the power source corresponds to that on the manufacturer's rating label, then connect the power cord to the centrifuge and the power source.

Symbols and conventions:

The following chart is an illustrated glossary of the symbols that are used in this manual.



CAUTION This symbol indicates a potential risk and alerts you to proceed with caution



BioHazard Warning This symbol indicates that BioHazardous Samples may be used in this centrifuge, and proper precautions should be taken to prevent exposure. If BioHazardous material is processed in the centrifuge, use extra caution in handling sample vessels. Always wear gloves, safety goggles, and protective clothing. Safety precautions should be taken to prevent exposure to aerosols or liquids that could be hazardous. In the event of a tube breakage in the centrifuge, stop the centrifuge immediately and properly decontaminate according to BioSafety Guidelines. The rotor and shields should be removed for complete decontamination of these components. Information on decontaminants, their use, etc. are available in the Laboratory Safety Manual published by the World Health Organization.

Product Specifications:

Dimensions: Width 210 mm
 Depth 240 mm
 Height 180 mm

Maximum speed : 6,500rpm

Maximum RCF: 4,000 x g

Maximum volume: 6 x 15ml

Admiss. Density: 1.2kg/dm³

Electrical/fuse rating:

230V~, 50-60Hz, 0.6A/1.25AT

Compliant to:

EN 61010: Safety requirements for electrical equipment for measurement, control, and laboratory use

- Part 1: General requirements.

- Part 2 -020: Particular requirements for laboratory centrifuges

- Part 2-101: Particular requirements for in vitro diagnostic (IVD) medical equipment

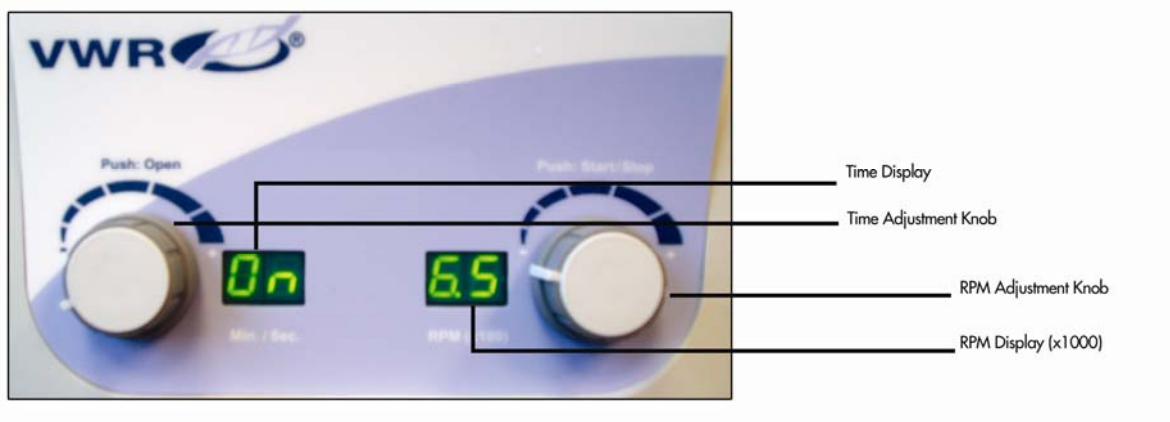
Overview:

This manual provides important safety information for the VWR Laboratory centrifuge. It should be kept near the centrifuge for quick and easy reference.

Instructions for Use:



ATTENTION: Never attempt to operate the centrifuge with rotors or adapters that show signs of corrosion or mechanical damage. Never centrifuge strongly corrosive materials that may damage the rotors or accessories.



Closing the lid:

After the rotor has been properly secured and loaded, close the centrifuge lid, making sure that the interlock has been engaged.

Lid lock:

The centrifuge can be started only with the lid securely closed. Do not attempt to open the lid until the end of run signal “00” is displayed on both the “RPM Display” and “Time Display”.

Speed selection:

The speed (rpm) can be selected from 300 to 6,500rpm with the “RPM Adjustment Knob” (right). The set speed can be viewed at all times on the large “RPM Display” (right).

Selection of operating time and momentary operation:

Time can be selected in half minute intervals from 0.5 to 10 minutes, and in one minute intervals from 11 to 30 minutes. Time can also be set to continuous/hold by turning the “Time Adjustment Knob” (left) past the thirty minute position. The “Time Display” in the continuous setting will read “On”. When the pre-selected time expires, the centrifuge will stop automatically. To stop the centrifuge prior to the expiration of set time, press the “RPM Adjustment Knob” (right).

The centrifuge may be operated manually by pressing and holding the “RPM Adjustment Knob” (right). The centrifuge will continue to run as long as the knob is depressed.

Starting the centrifuge:

Once the time and speed have been selected the centrifuge can be started by pressing the “RPM Adjustment Knob” (right). The centrifuge will then run for the specified amount of time.

Lid release:

Following a run, the centrifuge will display will show flashing “00”. This signals the end of a run and the lid can now be opened by pressing the “Time Adjustment Knob” (left). Note that the lid can not be opened until the display flashes “00” and the rotor has stopped.



WARNING: Do not attempt to open the lid of any centrifuge until the rotor has come to a complete stop.

In the event of a power failure or malfunction, it may be necessary to open the lid manually.

1. Disconnect the power cord from the wall socket.
2. Remove the plastic plug, located on the left side of the unit.
3. Pull the cord (attached to the plug) to open the lid lock manually.

Troubleshooting:

Review the information in the table below to troubleshoot operating problems.

Please refer to this guide before calling for service.

Centrifuge will not start

Possible reason: No power supply

Solution: Check that power is being supplied to the outlet
Check that the power cord is plugged into both the wall outlet and the back of the centrifuge
Check that power cord is not damaged

Possible reason: Blown fuse

Solution: Check fuse and replace if necessary

Lid lock will not release

Possible reason: Defective lid lock

Solution: Open manually and have unit serviced

Possible reason: No power from PC board

Solution: Call for service

Possible reason: Lid lock is jammed

Solution: Call for service

Possible reason: Centrifuge is not receiving power

Solution: See “Centrifuge will not start”

Centrifuge cannot be started, although power is on

Possible reason: Lid not closed correctly

Solution: Close lid correctly

Possible reason: No speed or time has been selected

Solution: Set speed and/or time

Centrifuge displays error “03”

Possible reason: Lid opened prior to signal “00”.

Solution: Close lid and open lid

General maintenance:



If BioHazardous Materials have been used in the centrifuge, and it is removed from usage for service or disposal, it must be properly disinfected according to standard BioSafety Guidelines. See **Disinfection**, below.

Centrifuge service

The centrifuge requires no routine maintenance other than the occasional routine cleaning. All repairs should be performed by authorized, qualified personnel only. Repairs performed by unauthorized personnel may void the warranty.

Cleaning the centrifuge

Always keep the centrifuge housing, rotor chamber, rotor and rotor accessories clean. All parts should be wiped down periodically with a soft cloth. For more thorough cleaning, use a neutral cleaning agent (pH between 6 and 8) applied with a soft cloth.

Excessive amounts of liquid should be avoided. Liquid should not come into contact with the motor. After cleaning, ensure that all parts are dried thoroughly by hand or in a warm air cabinet (maximum temperature 50°C).

Cleaning the rotor

The rotor should be cleaned after each use. When spinning samples containing phenol or phenol chloroform, the rotor should be cleaned immediately after use.

Disinfection

Should a spill of infectious materials occur within the rotor or chamber, the unit should be disinfected. This should be performed by qualified personnel with proper protective equipment. Information on decontaminants, their use, etc. are available in the Laboratory Safety Manual published by the World Health Organization.

Replacing fuses

Check the fuse when it is recommended in the Troubleshooting Guide located in this manual. The fuse holder is located in the power inlet on the rear of the unit. Disconnect the power cord from the power inlet. Open the fuse holder drawer by inserting a small screwdriver under the tab and prying it open. Remove the innermost (operative) fuse from its retaining tabs and replace the fuse if necessary. A spare fuse is located in the outermost chamber of the fuse drawer. Replace only with a fuse of exactly the same value as the original. (Fuse type may be found in the “Specifications” section of this manual.)

Rotor maintenance

The rotor should be cleaned thoroughly after each use. **Thorough cleaning must be performed when spinning samples containing phenol or phenol chloroform.** Periodically inspect the rotor for dents, dings, scratches, discoloration and cracks. If any damage to the rotor is found, discontinue use of the rotor immediately and replace.

Removing and Installing the angle rotor

Remove the rotor screw from the motor shaft by turning the screw counterclockwise. Lift the rotor upward and remove from the centrifuge. Ensure that the motor shaft adapter remains on the motor shaft (Figure 1). Clean the motor shaft and motor shaft adapter (see figure 1). Place the rotor on the motor shaft (figure 1) and over the motor shaft adapter (see figure 1 and 2). Note: Figure 1 and 2 are located on the following page. When loading the rotor, refer to figure 3 (located on the following page). Loading in the pattern indicated will ensure a balanced load. Tubes to be loaded should be filled equally by eye. The difference in the weight between the tubes should not exceed 5 grams. A partially loaded rotor may be centrifuged if the loading scheme for balancing a rotor given in figure 3 is followed.

Overloading the rotor

The maximum load of the rotor and maximum speed has been established by the manufacturer. Do not attempt to exceed these values. The maximum speed of the rotor has been measured for liquids having a homogeneous density of 1.2g/ml or less. In order to centrifuge liquids with a higher density it is necessary to reduce the speed. **Failure to reduce the speed may result in damage to the rotor and centrifuge.**

The revised maximum speed can be calculated with the following formula

$$\text{Reduced speed (n}_{\text{red}}) = \sqrt{\frac{1.2}{\text{higher density value}}} \times \text{max speed}$$

Example:

Where the density of the liquid is 1.7, the new maximum speed would be calculated as follows:

$$n_{\text{red}} = \sqrt{\frac{1.2}{1.7}} \times 6,500 = 5,461 \text{ rpm}$$

If in doubt concerning maximum speeds, please contact the manufacturer for assistance.

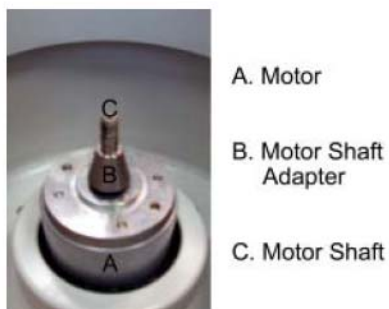


Figure 1. Chamber and motor shaft



Figure 2. Bottom of angle rotor

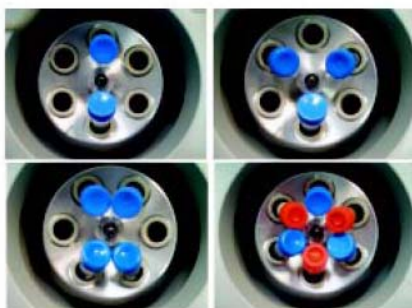


Figure 3. Loading the rotor

User replaceable accessories and spare parts

The following accessories are available for the Centrifuge:

Angle rotor for 6 x 15ml tubes

Order no.:	C0060-RTR (Included with Unit)	Qty.1
Tube measurement:	15ml (17x120mm)-10ml (16x100mm)	
Max. speed:	6,500rpm	
Centrifuging radius:	8.5cm	
RCF (g-value):	4,000 x g	
Rotor angle:	30°	

Adapter for 5ml(12x75mm) and 7ml (13x100mm) tubes

Order no.:	521-2856 (Included with CS4 model)
Tube measurement:	12x75mm, 13x100mm, or common Sarstedt style tubes

Use of tube adapters:

- **Centrifuging 7ml tubes (13 x 100mm)**
or any tube with a diameter of less than 14mm and
a height above 90mm. (Figure A.)

- Configure combination adapter so that the single line mark lines up with the double line mark.
- Place the adapter in the rotor shield with the hollow side up (per figure A.)

- **Centrifuging 5ml tubes (13 x 75mm)**
or any tubes with a diameter less than 14 and
a height below 90mm.

- Take the larger half of the combination adapter and place it in the rotor shield with the double line mark up and the single line mark down (per figure B.)

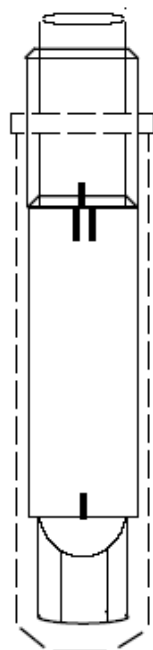


Figure A.

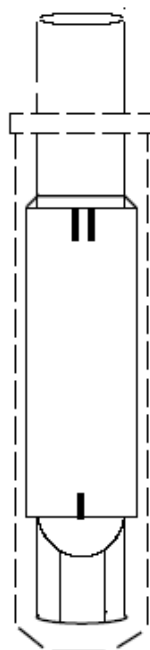













Figure B.

Tube Compatibility Chart:

		Standard Blood Collection Tubes				Sarstedt Blood Collection Tubes							
Dimensions (mm)	17 x 120	16 x 100	13 x 100	12 x 75	15 x 102	16 x 92	15 x 92	13 x 90	11 x 92	11 x 66	13 x 65	8 x 66	
Capacity *	15ml	10ml	7ml	5ml	10ml	9-10ml	7-8ml	4.9ml	4-5ml	2-3ml	2-3ml	1-1.4ml	
Tube Image													
Radius (cm)	8.2	8.5	7.7	7.7	8.5	8.5	8.5	7.7	7.7	7.7	7.7	7.7	
Max. RCF	3,873	4,015	3,637	3,637	4,015	4,015	4,015	3,637	3,637	3,637	3,637	3,637	
Adapter	-	-	82013-820	82013-820	-	-	-	82013-820	82013-820	82013-820	82013-820	82013-820	

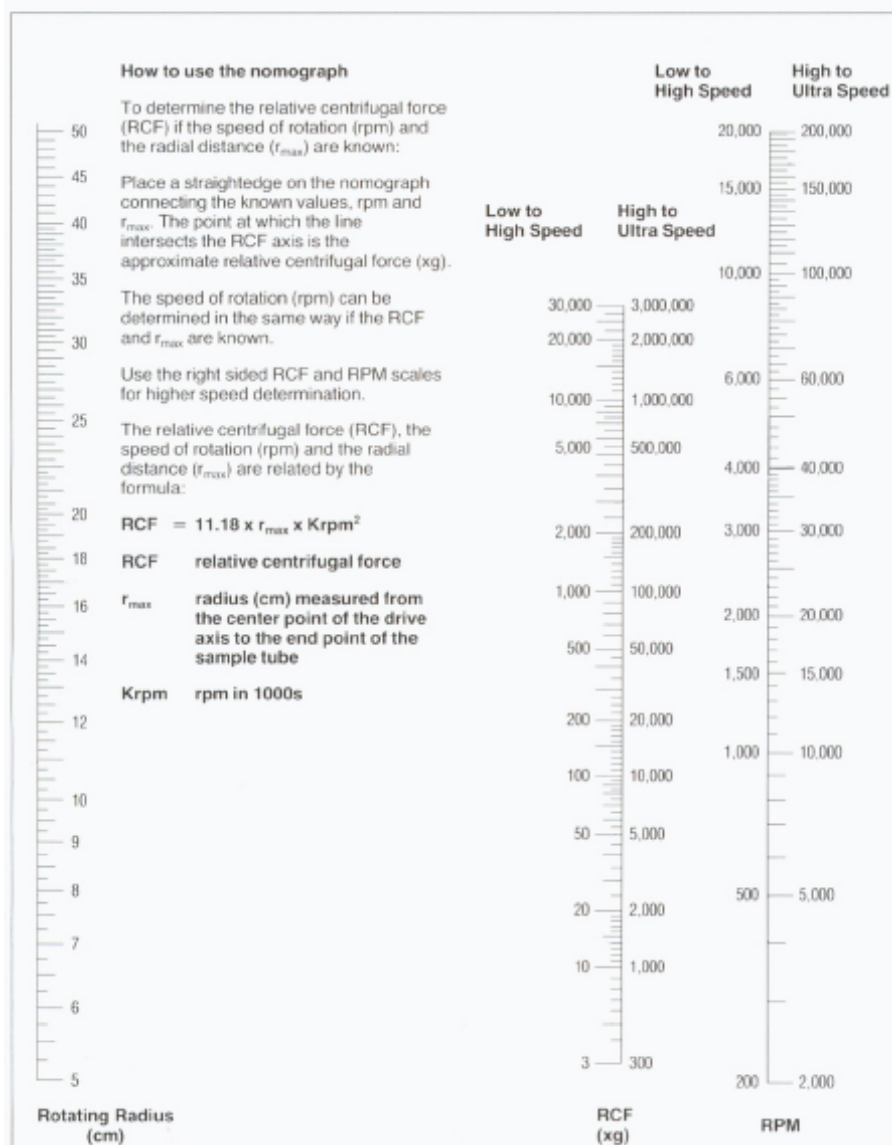
Determination of G-Values:

The centrifuging radius of the rotor is 8.5cm. See the tube compatibility chart for the correct radius when using adapters and smaller tubes. The chart on the next page can be used to determine g-values.

To use this chart, find the radius value on the radius scale. Place the edge of a ruler on the value. Place the right side edge of the ruler on the speed scale at the desired speed. The estimated RCF can then be read from the RCF scale where the ruler edge passes through it. This chart can also be used to determine the proper speed for the desired RCF value.

Nomograph

Relative Centrifugal Force



Technical service

Web Resources

Visit the VWR's website at www.vwr.com for:

- Complete technical service contact information
- Access to VWR's Online Catalogue, and information about accessories and related products
- Additional product information and special offers

Contact us For information or technical assistance contact your local VWR representative or visit.

www.vwr.com.

Warranty

VWR International warrants that this product will be free from defects in material and workmanship for a period of two (2) years from date of purchase. If a defect is present, VWR will, at its option, repair, replace, or refund the purchase price of this product at no charge to you, provided it is returned during the warranty period. This warranty does not apply if the product has been damaged by accident, abuse, misuse, or misapplication, or from ordinary wear and tear.

For your protection, items being returned must be insured against possible damage or loss. This warranty shall be limited to the replacement of defective products. IT IS EXPRESSLY AGREED THAT THIS WARRANTY WILL BE IN LIEU OF ALL WARRANTIES OF FITNESS AND IN LIEU OF THE WARRANTY OF MERCHANTABILITY.

Equipment disposal



This equipment is marked with the crossed out wheeled bin symbol to indicate that this equipment must not be disposed of with unsorted waste.

Instead it's your responsibility to correctly dispose of your equipment at lifecycle -end by handling it over to an authorized facility for separate collection and recycling. It's also your responsibility to decontaminate the equipment in case of biological, chemical and/or radiological contamination, so as to protect from health hazards the persons involved in the disposal and recycling of the equipment.

For more information about where you can drop off your waste of equipment, please contact your local dealer from whom you originally purchased this equipment.

By doing so, you will help to conserve natural and environmental resources and you will ensure that your equipment is recycled in a manner that protects human health.

Thank you

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