



# ZipCombo Centrifuge

## Instruction Manual



- A** Lid
- B** "Open" Button
- C** Speed Adjustment
- D** "Start/Stop" Button
- E** Time Adjustment
- F** LCD Display
- G** Rotor
- H** Power Button
- I** Fuse
- J** Plug

### Replacement Parts:



EZ Reader Card  
ZCP-EZRD-HEM7



40mm x 0.85mm Capillary Tubes  
CNT-ZPC7-40HE

## Features

The LW Scientific ZipCombo is a multi-function micro-centrifuge available with a choice of three rotors to meet all your micro-centrifugation needs in one unit. The flat microhematocrit rotor spins shorter capillary tubes and eliminates angled separation lines, clay blow-outs, and broken tubes. The six place microtube rotor spins 1.5/2.0ml tubes for serum and urine separations and comes with adapters for smaller sized tubes (0.2ml-1.5ml). The optional 16-place PCR strip rotor spins two 8-tube strips. Designed with robust construction for long life, the ZipCombo is well-suited to accomplish blood and urine separations, microfiltrations, and DNA preparations. The small footprint makes the LWS ZipCombo centrifuge the perfect addition to any clinic or lab.

## Warranty

LW Scientific instruments have a one (1) year limited warranty. This warranty is not valid on normal wear and tear, cosmetic damages caused by chemicals, solvents, and/or cleaning solutions, as well as acts of God.

Please register your product online at: [www.lwscientific.com/warranty\\_form](http://www.lwscientific.com/warranty_form).

**Important:** Warranty information must be completed within 30 days of purchase.

## Before Operating

- 1 Read the instruction manual in full before operating. Store the operation instructions in a safe place, easily accessible by the trained staff who will be operating the centrifuge.
- 2 Remove the centrifuge from the shipping container and inspect for any possible shipping damage. If the centrifuge appears to be damaged, please contact your distributor immediately.

### **RECOMMENDED FLUID SPEEDS & TIMES:**

Microhematocrits:	12,000 rpms – 3 minutes
Blood serum (Microtubes):	12,000 rpms – 3 minutes
Urine (Microtubes):	3000 rpms – 5 to 10 minutes

**\*Note:** Please refer to your own procedures and/or specific test tube requirements.

## Selecting and Changing Rotors

For a video on how to change rotors, please visit the following link: <https://youtu.be/LEndwHsd99g>



Place the centrifuge on a sturdy, level, non-slip surface. Verify that there are no loose objects or packing material in the tube chamber. **DO NOT PLUG UNIT IN.**

- 1 Press the open button to disengage the lid.
- 2 Lift the lid. If the desired rotor is already installed, ensure that it is secured to the rotor shaft by inserting the included allen wrench into the set screw on the underside of the rotor and turning it clockwise to tighten the screw. **Do not over-tighten, as doing so may cause cracks in the underside of the rotor near the set screw.** **NOTE:** Always store the allen wrench and extra rotors in a safe place.
- 3 To change rotors, insert the included allen wrench into the set screw on the underside of the rotor and turn it counter-clockwise to loosen the screw. Do not remove the set screw from the rotor. Simply loosen it until you are able to lift the rotor.
- 4 Lift off the rotor and set it aside in a safe place.
- 5 Select a rotor and slide it down over the motor shaft.
- 6 Insert the included allen wrench into the set screw on the underside of the rotor and turn clockwise to tighten the screw. **Make certain rotor is secure on the motor shaft (especially after changing rotors) but do not over-tighten.**

If you are using the hematocrit rotor, be certain to install the plastic cover plate and secure it in place by turning the green thumbscrew on the rotor cover before spinning samples.

## Operation

- 1 Close and latch the lid by pressing on the front center of the lid until it clicks. DO NOT push down hard, as it could damage the lid safety switch.
- 2 Plug the AC power cord into the appropriate approved and properly grounded AC outlet.
- 3 **DO NOT INSERT TUBES AT THIS TIME!** With rotor installed, turn the power switch on, set the speed dial to the lowest setting, and turn the timer to 10 minutes. The unit should begin spinning with a smooth whirring sound with little or no vibration. Next, increase the speed. If there are loud or unusual sounds, or if you experience excessive vibration, DO NOT OPERATE -- contact your dealer or LW Scientific, Inc.
- 4 Spin only balanced loads. Make sure that tubes are placed opposite each other. Proper sample balancing will improve sample separation and will extend the life of the centrifuge. Out of balance loads may damage the centrifuge.  
**\*NOTE:** The 6-place microtube rotor can be balanced with 2, 3, 4, or 6 tubes (3 tubes can be placed in a triangle configuration). The 12 place microhematocrit rotor can also spin 3 tubes in a balanced triangle configuration.
- 5 Ready for operation: Load your tubes and use the digital controls to set time and speed. Press the "Start/Stop" button to begin spinning.

**Note: Always ensure rotor is secure before each use.**

## Spinning Microhematocrits

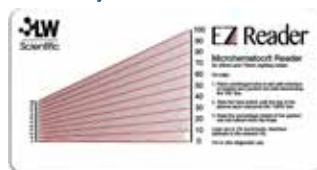
If you purchased a microhematocrit rotor, an EZ Reader card and a starter pack of 200 40mm tubes are included. Additional capillary tubes are available from your LW Scientific distributor.

- 1 To load, remove the rotor cover plate by unscrewing the green thumb screw.
- 2 Make sure the capillary tube is plugged with clay. Lay the tube into a slot with the clay outward.
- 3 Install the rotor cover plate by turning the green thumb screw, ensuring the cover plate seats down onto the rotor and is finger tight.
- 4 Close the centrifuge lid and run the unit for **3 minutes at 12,000 rpm**.

**NOTE:** The maximum tube size for the hematocrit rotor is 40mm (length) by 0.95mm (diameter). Using tubes larger than 0.95mm in diameter can prevent the rotor cover from seating properly and cause blood and sealant to spin out of the tubes during the spinning process.

## Reading Microhematocrits

- 1 After the rotor has stopped, remove the cover plate by unscrewing the green thumb screw and lifting the cover plate straight up.
- 2 Place the EZ Reader Card on a countertop. Carefully remove one of the tubes and place it into the tube slot on the card and adjust the tube until the 0% line is aligned with the bottom of the fluid in the tube.



- 3 While the card is still resting on the countertop, and keeping the bottom of the fluid at the 0% line, slide the scale card until the top of the fluid is aligned with the 100% line.
- 4 Read the separation line in the middle for your microhematocrit results.

## Care, Maintenance, and Trouble-Shooting

The ZipCombo is designed to be maintenance-free. With proper care, this centrifuge will provide years of service. However, if repairs should be needed, please contact LW Scientific, Inc.

Please follow these recommended guidelines:

- 1 Use only quality test tubes. Lower-quality plastic or glass tubes may fracture and release their contents into the tube chamber.
- 2 Never force a tube into the tube shields or slots in the hematocrit rotor.
- 3 Use only 30mm - 40mm long capillary tubes with a maximum diameter of 0.95mm. Replacement tubes are available from your LW Scientific distributor.
- 4 Clean with common disinfectants or isopropyl alcohol. Do not allow moisture to seep into the centrifuge or do not immerse the electrical components in any liquid during the cleaning process.
- 5 Because of safety issues with high g-forces in a centrifuge, it is recommended that rotors be inspected monthly for wear and fatigue. If there is any indication of wear, the rotor should be removed from service. Contact LW Scientific for return instructions so the rotor can be evaluated by a technician for repair or replacement. After 2 years of service, it is recommended that rotors be returned to LW Scientific for inspection. Following these procedures will ensure safety of lab personnel as well as extend the life of the centrifuge.
- 6 Never touch the rotor before it comes to a complete stop.
- 7 Disconnect plug from socket before changing rotors.
- 8 Reduce speed if:
  - Fluid escapes from tubes during spinning.
  - The centrifuge is not running smoothly.
  - The centrifuge moves or vibrates during spinning.

**CAUTION:** Using tubes larger than 0.95mm in diameter can prevent the rotor cover from seating properly and cause blood and sealant to spin out of the tubes during the spinning process.

## Specifications

<b>Speed range:</b>	1000-12000rpm
<b>Maximum RCF:</b>	Microtubes - 6900g Microhematocrits - 7500g
<b>Max. Volume:</b>	
<i>Hematocrit rotor:</i>	12) 30mm - 40mm capillary tubes
<i>Microtube rotor:</i>	6) 0.2ml/0.5ml; 0.6ml/1.5ml; 1.5ml/2.0ml microtubes
<i>Microplate rotor:</i>	2) 8x0.2ml strips
<b>Input Voltage:</b>	100-240VAC; 50-60Hz
<b>Output Voltage:</b>	24V DC
<b>Timer:</b>	15 sec - 99 min / Continuous
<b>Display:</b>	LCD Digital
<b>Height:</b>	5.1" (130mm)
<b>Length:</b>	7.9" (200mm)
<b>Width:</b>	6.3" (160mm)
<b>Weight:</b>	2 lbs (0.9 kg)

## G-Force Chart

Speed (rpm)	Hematocrit Rotor	Microtube Rotor	Microplate Rotor
1000	50g	48g	26g
2000	220g	190g	100g
3000	470g	430g	230g
4000	840g	770g	400g
5000	1300g	1200g	600g
6000	1900g	1700g	900g
7000	2600g	2350g	1300g
8000	3400g	3100g	1600g
9000	4200g	3900g	2100g
10000	5200g	4800g	2600g
11000	6300g	5800g	3100g
12000	7500g	6900g	3700g

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