



A **centrifuge** is a common equipment in the laboratory. Choosing the correct centrifuge and rotor type can be confusing and challenging. It requires substantial knowledge to distinguish one rotor from another and the application it supports.

It is also vital to provide proper rotor care and **maintenance** as an investment.

FACTORS TO CONSIDER WHEN CHOOSING THE ROTOR TYPE

- ✓ Type of centrifugation (differential, rate-zonal, or isopycnic)
- ✓ Speed
- ✓ Volume range



TCR-1500

TCV-1500



FIXED-ANGLE ROTOR

This type of rotor is the most general rotor used in centrifugation. It holds the tube usually at a fixed 45° angle. The majority are used for basic pelleting applications (differential separations). The bore in these rotors ranges in volume from 0.2 mL to 1 L, with speeds ranging from single digits to 1,000,000 × g.

A fixed-angle rotor would be helpful when the number of tubes used is low or when compact pellets are needed.

A significant specification when choosing a fixed-angle rotor is the *K factor*, which represents the pelleting efficiency of a centrifuge rotor at a maximum rotational speed. A low *K factor* indicates a higher pelleting efficiency; hence, the *K factor* can be a helpful metric in comparing the speed at which particles will pellet across a range of rotors.

ADVANTAGES AND APPLICATIONS

1. It has shorter centrifugation times and also higher possible g-forces.
2. It has lower metal stress (they don't have moving parts during the run like the buckets of the swing-bucket rotor).
3. It has a rigid design made of metal alloy material (that allows the rotor to resist higher gravitational forces).
4. It is used for pelleting applications like pelleting yeast, bacteria, and different mammalian cells. These rotors are also used for isopycnic separations of macromolecules like nucleic acids.



SWING-BUCKET ROTOR

The swing-bucket rotor is also called a horizontal rotor since the buckets can swing out and spin at a 90° angle out from the axis of rotation. Swing-bucket rotors are ideal for separating large-volume of samples (up to 12 L) at low speed.

This type of rotor consists of three framework parts:

1. The **rotor body** attached to the centrifuge drive and four or six arms to support the buckets;
2. The **buckets** placed onto the arms of the rotor body, and;
3. **Trunnion pins** that are used to hold the buckets in place.

Additional accessories are available in swing-bucket rotors to tailor the needs for a specific application (e.g. adapters to hold desired tube size). Screwcap with O-rings are also available which provide biocontainment for potentially hazardous samples.

ADVANTAGES AND APPLICATIONS

1. It provides high vessel capacity and great vessel flexibility since it is adaptable to different sample containers and volumes.
2. It enables easy separation of the phases as sedimentation takes place in the bottom-middle of the tube.
3. It produces higher yield.
4. It is used for high-throughput protocols such as:
 - batch harvesting of whole cells from growth media
 - high-capacity processing of blood collection tubes
 - large-volume tissue culture processing

Regardless of which centrifuge rotor type you are looking for, it is important to find a product you can rely on. Guarantee the best performance possible with Esco's line of centrifuge and rotors.

Invest with the best brand on the market!

