



Rotor Selection Guide:

Which ultracentrifuge rotor type is most efficient for my needs?

Unique variations in rotor design can improve your overall efficiency and throughput. Therefore, it is important to select the best rotor for your specific use case, whether separating via pelleting, flotation, or density gradient.

	At Speed in Rotor	At Rest in Rotor	At Rest Outside Rotor
Swinging Bucket <ul style="list-style-type: none"> • Ideal for rate zonal density gradient, because the pathlength is longest • Lowest shear force of rotor types, ideal for protecting the integrity of shear-sensitive samples • Can run open-top tubes at partial and full volumes • Pellet is most concentrated, beneficial for pelleting small sample masses (e.g., EVs / exosomes) • Run time for isopycnic and equilibrium zonal density gradients is longest 			
Fixed Angle (~20-45°) <ul style="list-style-type: none"> • The balance of pathlength, speed, and volume makes fixed-angle rotors a suitable option for both density gradients and pelleting • Pellets material faster than in swinging-bucket rotors • Greatest variety of tube sizes and number of tubes per rotor • Highest volume tube options • Ideal for labs requiring versatility 			
Near-vertical (~7-9°) <ul style="list-style-type: none"> • Ideal for purifying crude plasmids • Can float or sediment contaminants away from the sample of interest in a density gradient while maintaining higher efficiency than fixed angle rotors • Limited use for pelleting applications 			
Vertical Rotors (0°) <ul style="list-style-type: none"> • Highest resolution density-based separations, ideal for isolating empty vs full particles (e.g., viral vectors) • Most efficient rotor for density gradient separations due to its short path length and high density tolerance • Should not be used when sample solution has contaminants that will fully float / sediment • Not used for pelleting 			

light orange = floated material, dark orange = pelleted material, red lines = bands

Time required to separate

Find rotors + tubes compatible with your centrifuge at Beclis.co/intellifuge



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