

# 離心轉子清潔保養說明

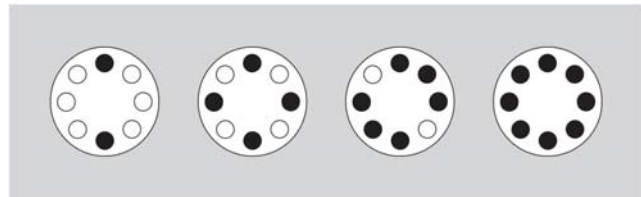
## 日常保養注意事項：

1. 為避免離心管破損：離心樣本密度需在 1.2g/ml 以下
2. 選購專用離心管等配件注意事項：

- 確認 ROTOR 型號
- 詢問樣本容量、離心管材質/類型
- 對照最符合容量之離心管
- 是否需搭配 Adapters/Spacers/Caps

## 3. Rotor 平衡方式：

- 平衡對稱放置
- 重量平衡  
(HP：1 g/ U: mg level)



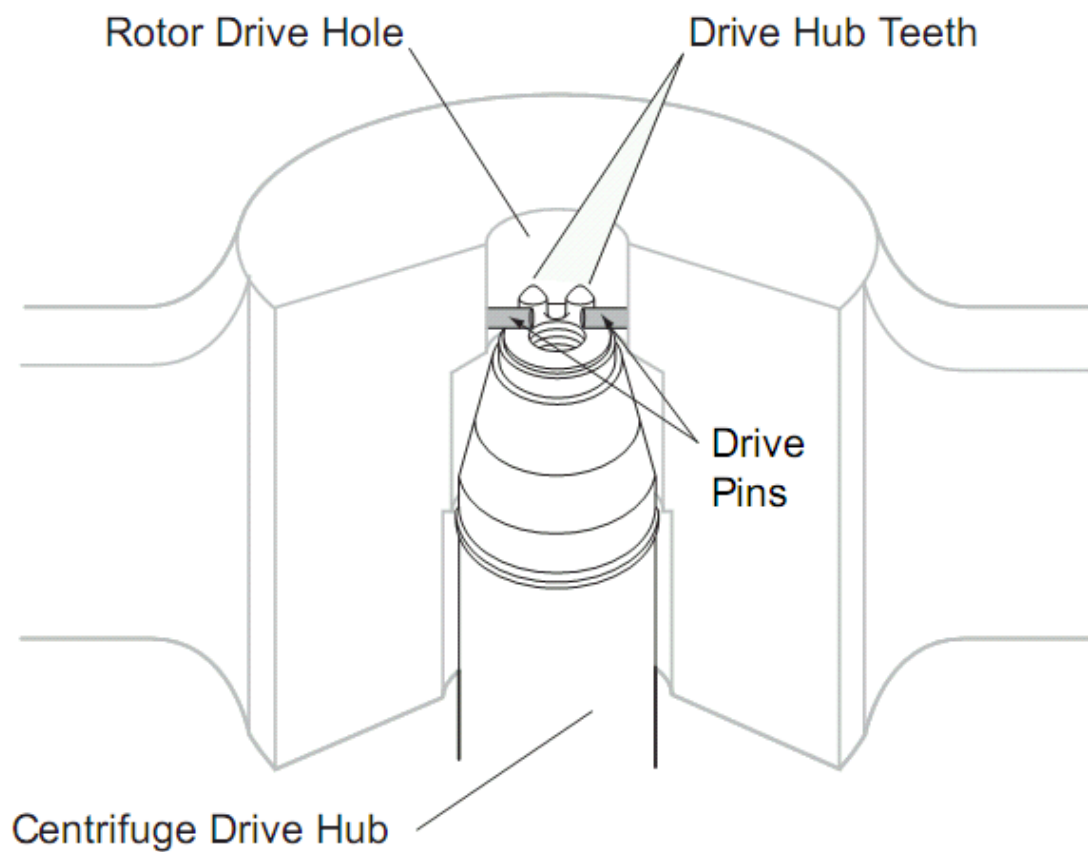
- 水平式離心轉子的 Swinging-Bucket 需全數掛上
  - 避免形變，延長 ROTOR 使用壽命

## 離心轉子保養計劃：

1. 使用轉子(Rotor)後,需用水清洗後並倒放晾乾，  
且確認轉子離心筒內部之清潔已完成
2. Rotor 之 O-ring 需每季定期清潔和塗抹 vacuum grease
3. Rotor 之螺紋處需每季定期清潔和塗抹 spinkote lubricant
4. Rotor 下方之 Overspeed Disk 請勿磨損並保持乾淨
5. 至少每年通知工程師定期檢查,針對轉子主體與配件清點
6. 根據檢查結果更換配件與耗材

## 離心管使用注意事項

- 型態
- 材質
- 樣品化學性質
- 承裝容量
- 滅菌方式
- 外觀檢視



*Figure 1. Rotor Drive Pin Location and Orientation*

ROTOR 轉子放置於離心機軸心上，  
請注意轉軸位置與馬達軸心，如上圖所示。

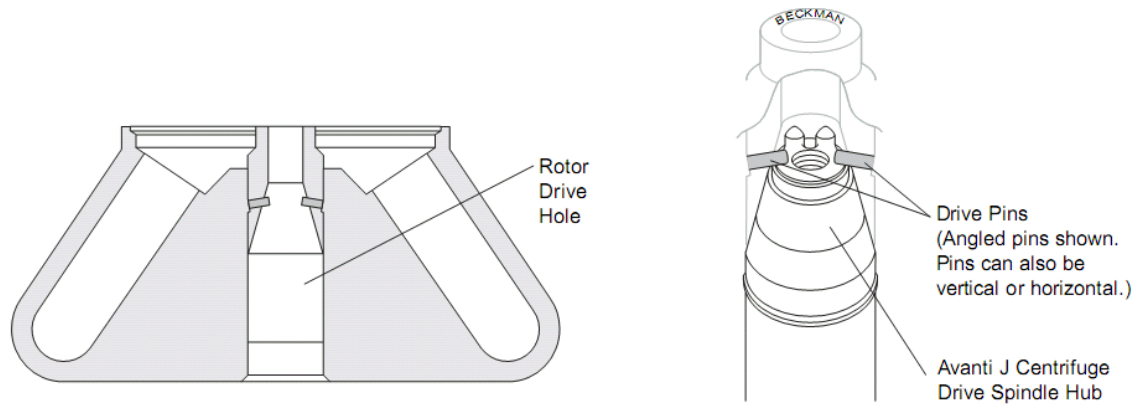


Figure 2. Rotor Drive Pin Location and Orientation

ROTOR 轉子放置於離心機軸心上，  
請注意轉軸位置與馬達軸心，如上圖所示。

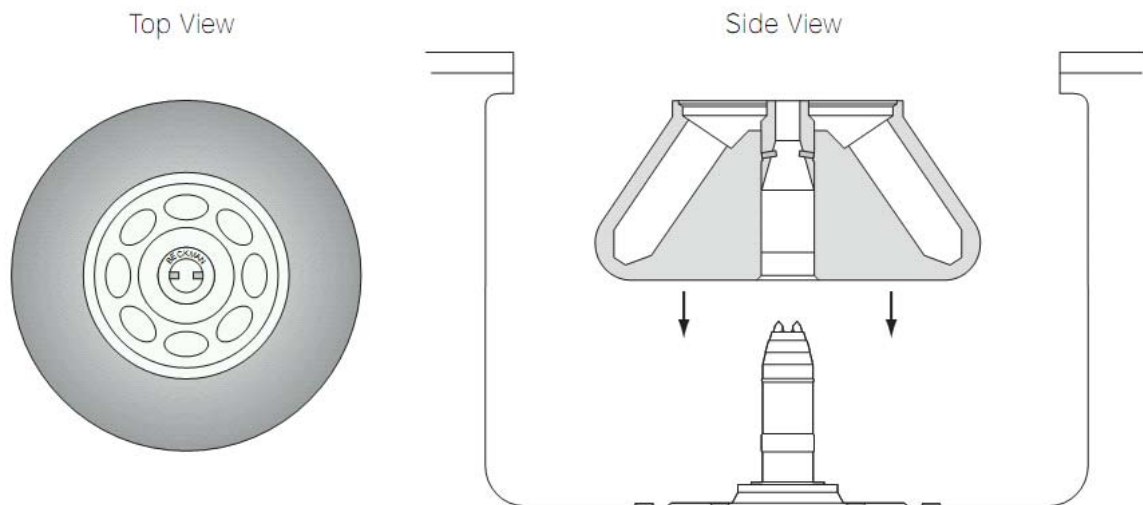


Figure 4. Installing the Rotor

ROTOR 使用前，請注意轉子轉軸是否尚存在？

轉子內部是否過於髒污，待清潔？

轉子上蓋 O-Ring 是否尚在？

**Table 2.1** Characteristics and Chemical Resistances of Tube and Bottle Materials<sup>a</sup>

Tube or Bottle Type	Optical Property	Puncturable	Sliceable	Reusable	Acids (dilute or weak)	Acids (strong)	Alcohols (aliphatic)	Aldehydes	Bases	Esters	Hydrocarbons (aliphatic)	Hydrocarbons (aromatic)	Ketones	Oxidizing Agents (strong)	Salts
thinwall polyallomer	transparent	yes	yes	no	S	U	U	M	S	U	U	U	U	U	S
thickwall polyallomer	translucent	no	no <sup>b</sup>	yes	S	S	S	M	S	M	M	U	M	U	S
Ultra-Clear	transparent	yes	yes	no	S	U	U	S	U	U	U	U	U	U	M
polycarbonate	transparent	no	no	yes	M	U	U	M	U	U	U	U	U	M	M
polypropylene	translucent/ transparent	no	no <sup>b</sup>	yes	S	S	S	M	S	M	S	M	M	M	S
polyethylene	transparent/ translucent	yes	no	yes	S	S	S	S	S	S	U	M	M	M	S
cellulose propionate	transparent	no	no <sup>b</sup>	no	S	U	U	U	U	M	S	S	U	M	S
stainless steel	opaque	no	no	yes	S	U	S	S	M	S	S	S	M	S	M

S = satisfactory resistance

M = marginal resistance

U = unsatisfactory resistance

a. Refer to Appendix A for information about specific solutions.

b. Polyallomer, polypropylene, and cellulose propionate tubes with diameters of 5 to 13 mm may be sliced using the Centritube Slicer (part number 347960) and appropriate adapter plate.

**NOTE** This information has been consolidated from a number of sources and is provided *only* as a guide to the selection of tube or bottle materials. Soak tests at 1 *g* (at 20°C) established the data for most of the materials; reactions may vary under the stress of centrifugation, or with extended contact or temperature variations. To prevent failure and loss of valuable sample, ALWAYS TEST SOLUTIONS UNDER OPERATING CONDITIONS BEFORE USE.



### WARNING

**Do not use flammable substances in or near operating centrifuges.**

## Labware Material Compatibility with Solvents and Sample

The chemical compatibility of tube or bottle materials with the gradient-forming medium or other chemicals in the solution is an important consideration. Although neutral sucrose and salt solutions cause no problems, alkaline solutions cannot be used in Ultra-Clear tubes or in polycarbonate tubes and bottles. Polycarbonate and Ultra-Clear tubes are incompatible with DMSO, sometimes used in the preparation of sucrose gradients for sedimentation of denatured DNA.

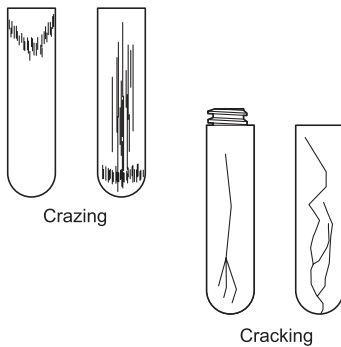
**Table 3.1** Filling and Capping Requirements for Tubes and Bottles

Tubes or Bottles	Filling Level Requirements		
	Swinging Bucket Rotors	Fixed Angle Rotors	Vertical and Near Vertical Tube Rotors
Polyallomer			
thinwall tubes	within 2–3 mm of top	full with cap	—
thickwall tubes	at least $\frac{1}{2}$ full	$\frac{1}{2}$ full to max capless level or full with cap (Table 3.3)	—
OptiSeal tubes	full or plugged	full and plugged	full and plugged
Quick-Seal tubes	full and heat sealed	full and heat sealed	full and heat sealed
konical Quick-Seal tubes	full and heat sealed	—	—
konical open-top tubes	within 2–3 mm of top	—	—
bottles	—	min to max with screw-on cap or cap assembly (Table 3.3)	—
Ultra-Clear			
open-top tubes	within 2–3 mm of top	full with cap	—
Quick-Seal tubes	—	full and heat sealed	full and heat sealed
Polycarbonate			
thickwall tubes	at least $\frac{1}{2}$ full	$\frac{1}{2}$ full to max capless level or full with cap or cap assembly (Table 3-3)	—
thickwall bottles	—	min to max with screw-on cap or cap assembly (Table 3.3)	—
Stainless Steel			
tubes	any level	any level with cap or cap assembly (Table 3.3)	—
Cellulose Propionate			
tubes	full	$\frac{1}{2}$ to max capless level; no cap	—
Polypropylene			
tubes and bottles	at least $\frac{1}{2}$ full	$\frac{1}{2}$ to max capless level or full with cap or cap assembly	—
Polyethylene			
tubes	at least $\frac{1}{2}$ full	$\frac{1}{2}$ to max capless level or full with cap	—
Corex/Pyrex			
tubes and bottles	at least $\frac{1}{2}$ full	$\frac{1}{2}$ to max capless	—

**Table 7.1** Tube and Bottle Sterilization and Disinfection<sup>a</sup>

Tube/Bottle Material	Autoclave <sup>b</sup> (121°C)	UV Irradiation	Ethylene Oxide	Formaldehyde	Ethanol (70%) <sup>c</sup>	Sodium Hypochlorite (10%)	Hydrogen Peroxide (10%)	Glutaraldehyde (2%)	Phenolic Derivatives
polyallomer	yes	no	yes	yes	yes	yes	yes	yes	no
Ultra-Clear	no	no	yes	yes <sup>d</sup>	yes	yes	yes	yes	no
polycarbonate	yes <sup>e</sup>	no	yes	yes <sup>d</sup>	no	yes <sup>f</sup>	yes	yes	no
polypropylene	yes	no	yes	yes	yes	yes <sup>g</sup>	yes <sup>h</sup>	yes	no
polyethylene	no	no	yes	yes	yes <sup>i</sup>	yes	yes	yes	yes
cellulose propionate	no	no	no	no	no	yes	yes	yes	no
stainless steel	yes	yes	yes	yes	yes <sup>j</sup>	no	yes	yes	no

- a. This information is provided as a guide to the use of sterilization and disinfection techniques for tube materials. Cold sterilization results shown are for short-duration (10-minute) soak periods; reactions may differ with extended contact. Refer to Appendix A of this manual for information about specific solutions
- b. To avoid deformation, autoclave tubes or bottles open-end down in a tube rack at 15 psig for no more than 20 minutes (allow to cool before removing from tube rack). DO NOT autoclave capped or sealed tubes or bottles.
- c. Flammable; do not use in or near operating ultracentrifuges.
- d. Do not use if there is methanol in the formula.
- e. Tube life will be reduced by autoclaving.
- f. Discoloration may occur.
- g. Can be used if diluted.
- h. Below 26°C only.
- i. Below 21°C only.
- j. Marginal.



Inspect containers and accessories before use.

- Inspect tubes and bottles for cracks or any major deformities before using them.
- Do not use a tube that has become yellowed or brittle with age or excess exposure to ultraviolet light.
- Crazing—the appearance of fine cracks on tubes and bottles—is the result of stress relaxation. If a crack approaches the outer wall of the tube or bottle, discard it.
- Discard any deformed or cracked adapters.