Avanti J-26XP Centrifuge

BECKMAN COULTER
We're better together

Customer FIRST 2011

課程大綱

1. Instrument Introduction 儀器簡介
2. Instrument Operation 儀器操作
3. Rotor Installation 轉子安裝
4. Tubes Operation 離心管簡介
5. Balance 平衡
6. Special Rotor Parts 特殊轉子配件
7. Maintenance 日常保養
8. RPM ⇔ RCF 離心單位轉換

Avanti J-26XP Centrifuge

Door latch

Door

Control panel

Power switch

Chamber

Door open switch

BECKMAN COULTER
We're better together

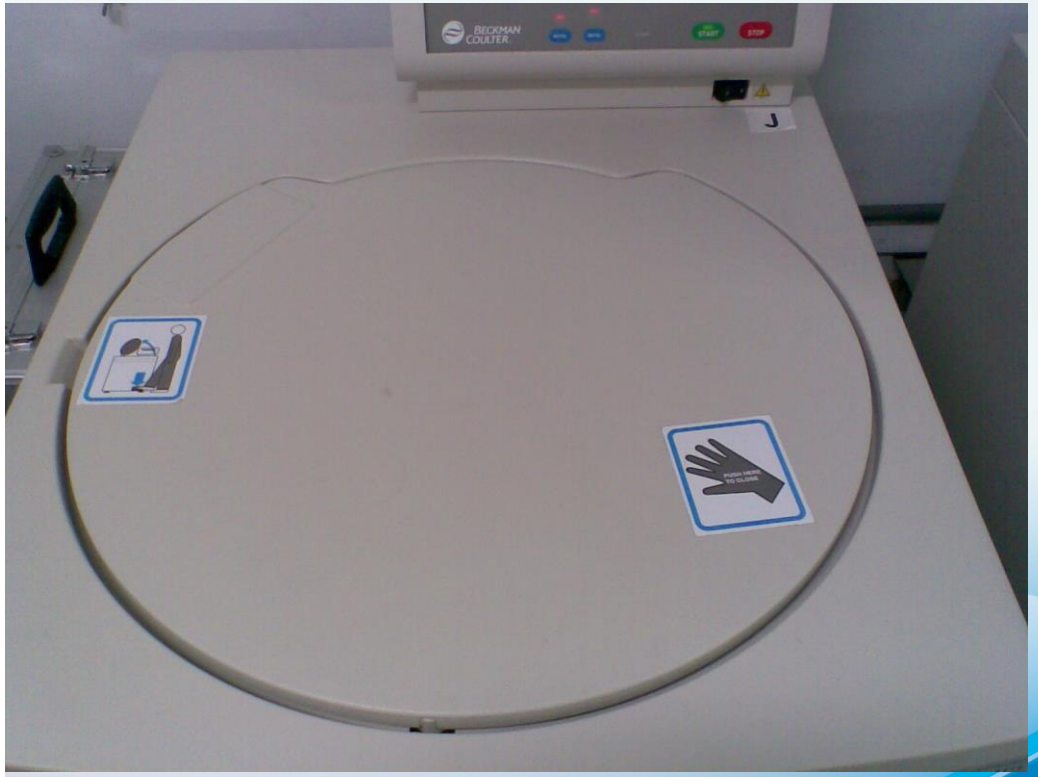
Customer FIRST 2011

儀器規格

- 最高轉速: 26,000RPM
- 時間: 180mins or “hold”
- 溫度: -10~40℃

開關

DOOR OPEN/CLOSE



操作面板


ROTOR ID
SPEED RPM/RCF
TIME HR:MIN
TEMP °C
SET/ ACTUAL
RPM
RCF (xg)
HOLD
ROTOR
JS
JA
JLA
JSP
JV
JCF
JE
SPEED
TIME
TEMP °C
RPM/ RCF
TIME/ HOLD
BECKMAN COULTER™
ACCEL
DECEL
CLEAR
START
STOP

操作程序
operation procedure

1. 打開電源
2. ROTOR置入離心槽，樣品平衡且對稱置入ROTOR
3. **用手鎖緊ROTOR蓋子**
4. 關閉離心機門
5. 設定離心參數

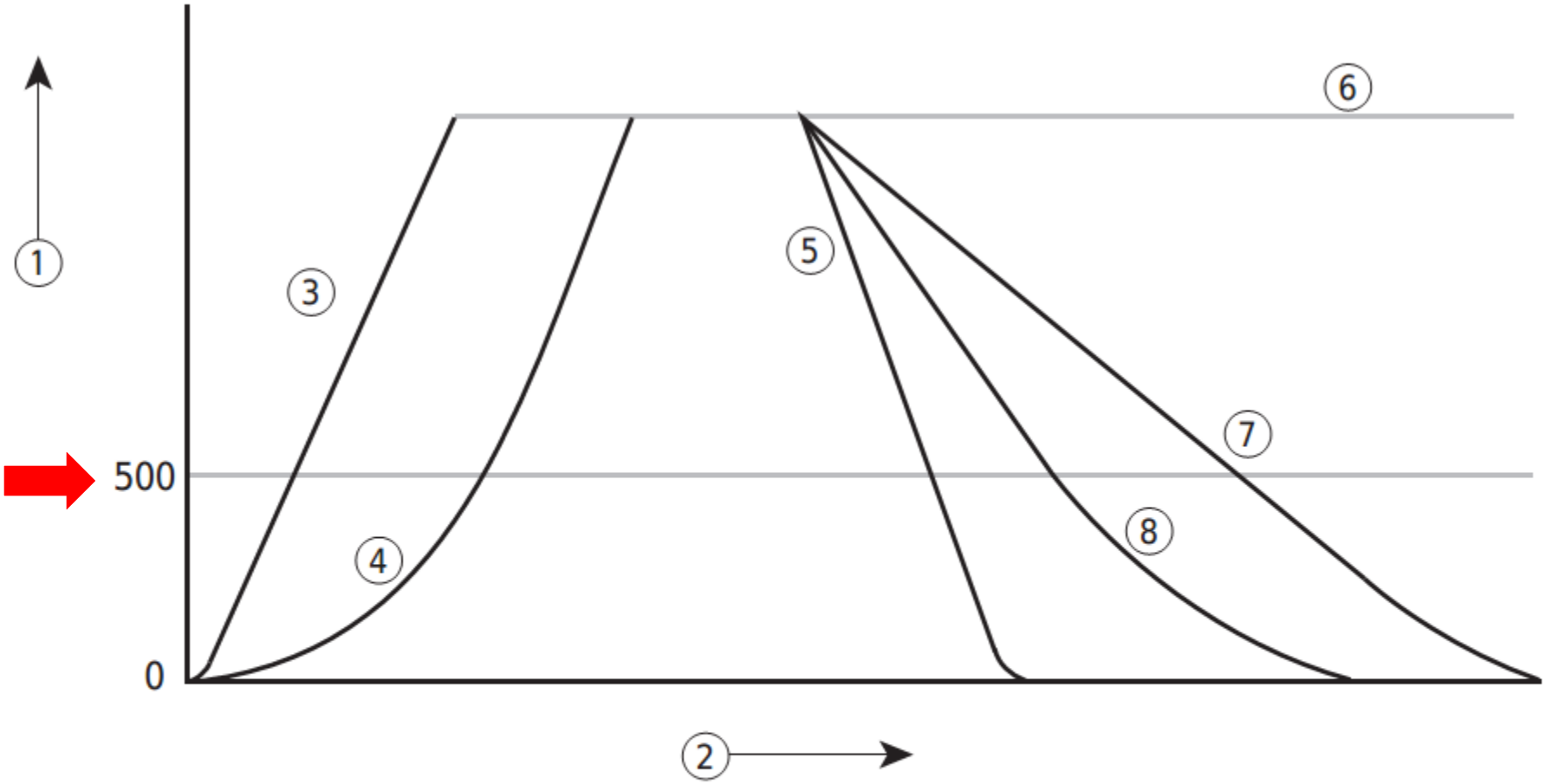
- 【ROTOR】：旋轉此鈕，選擇ROTOR型號
- 【SPEED】：旋轉此鈕，選擇速度。可按【RPM/RCF】鍵選擇速度單位
- RPM：轉 / 分鐘, RCF：離心力g值
- 【TIME】：旋轉此鈕，選擇時間。可按【TIME/HOLD】鍵選擇設定方式
- HR:MIN：最多設定3小時，時間會倒數計時
- HOLD：時間從0開始計時，直到按【STOP】鍵，才會停止
- 【TEMP】：旋轉此鈕，選擇溫度。
- **【ACCLE】**：加速快慢鍵,MAX or SLOW
- **【DECEL】**：減速快慢鍵,MAX,SLOW or OFF

6. 按【START】開始離心，**務必等待轉速到達設定值**。
7. 時間一到自動停止，或可按【STOP】隨時停止

BECKMAN COULTER
We're better together

Customer FIRST 2011

Figure 3.1 Acceleration and Deceleration Settings Graph



1. Rotor Speed (RPM)
2. Time
3. Max Accel
4. Slow Accel
5. Max Decel
6. Run Speed
7. Off (no brake)
8. Slow Decel

Pre-Cooling / Heat

- 儀器預冷
  - 溫度設定並關上門板<至少十分鐘以上>
- 轉子預冷 / 預熱
  - 預冷:需置放於冷房或4°C冰箱<至少一小時以上>
  - 預熱:放置所需溫度環境<至少一小時以上>
  - 轉子運轉預冷：4°C 2000RPM 30Mins
  - 轉子運轉預熱：轉子最高轉速 30Mins

轉子安裝注意事項

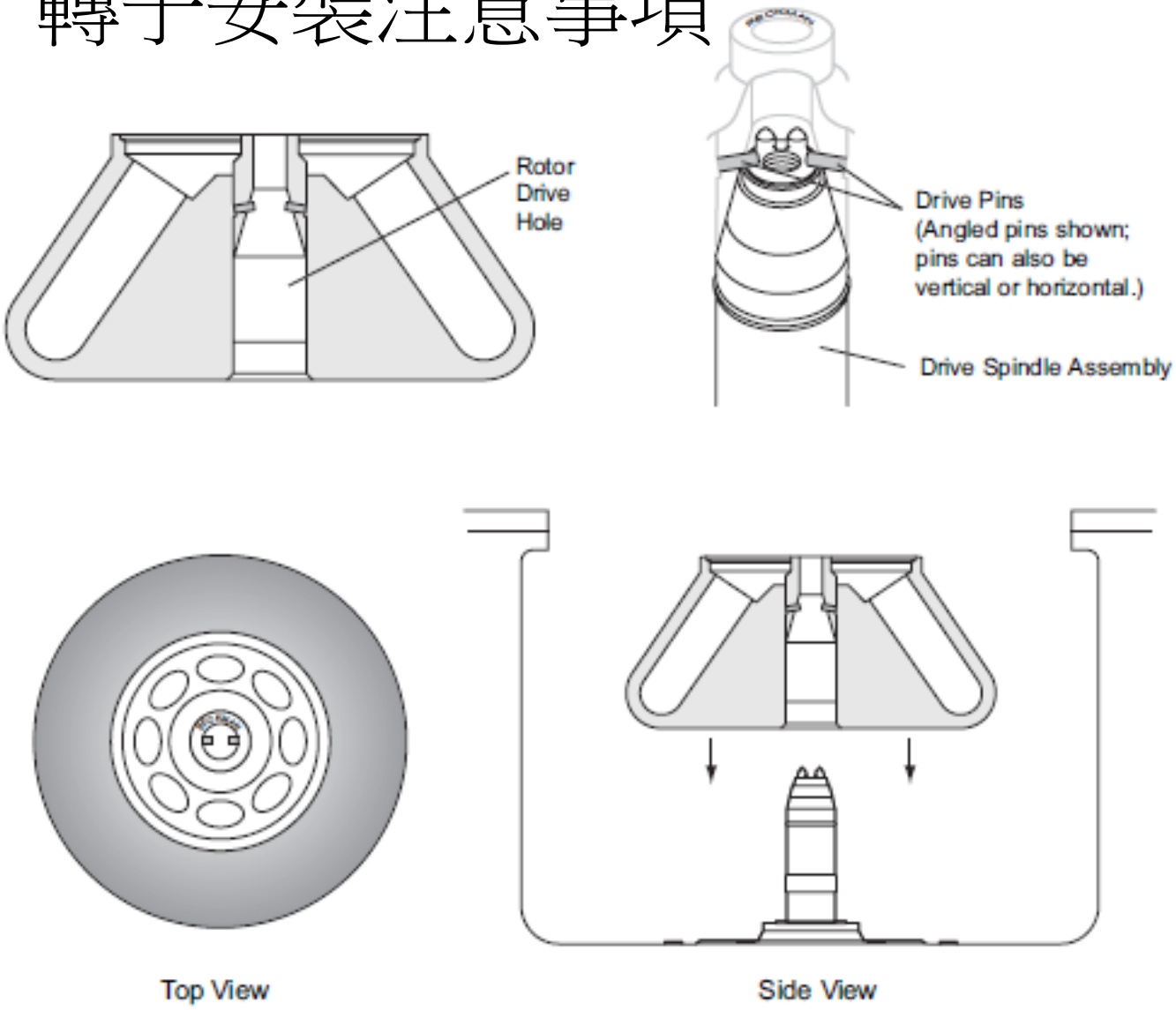
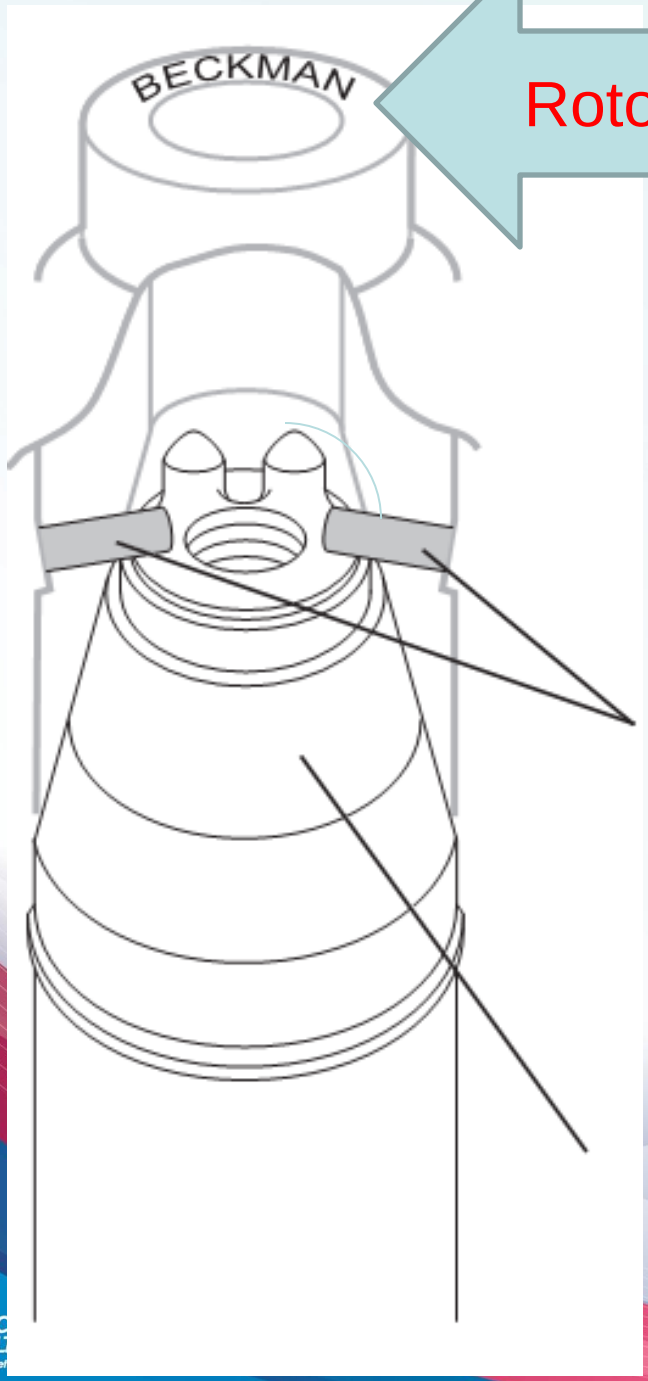


Figure 1-5. Checking the Rotor for Drive Pins



Rotor Pin = Beckman 平行

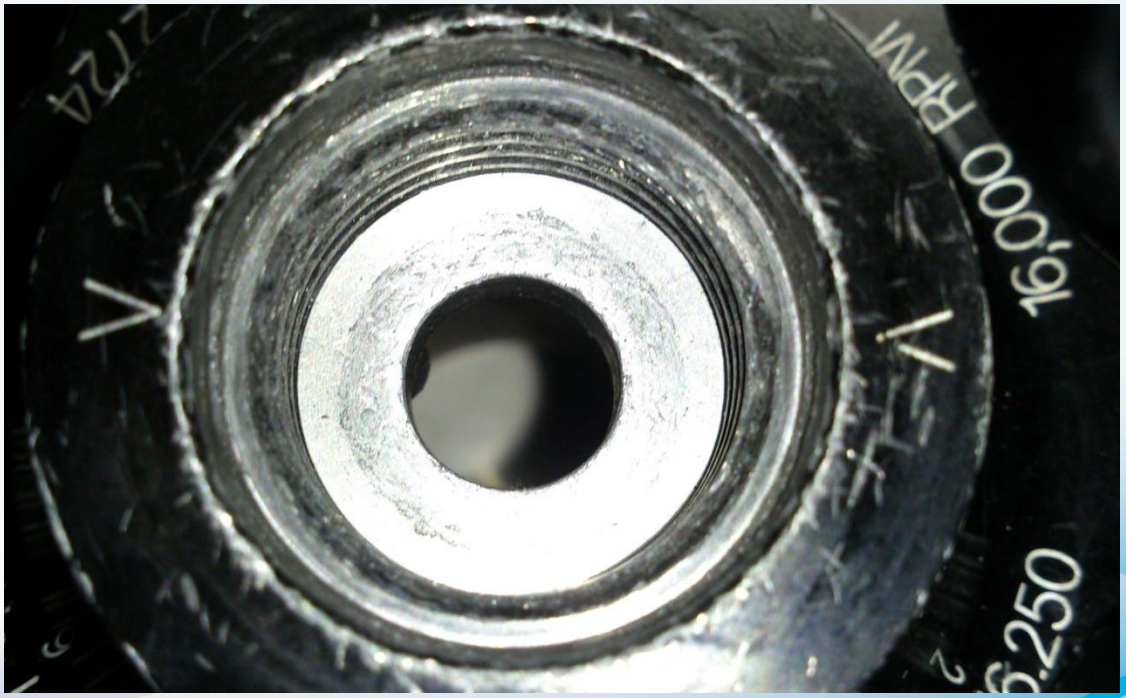
Rotor Pins

Drive Spindle Assembly

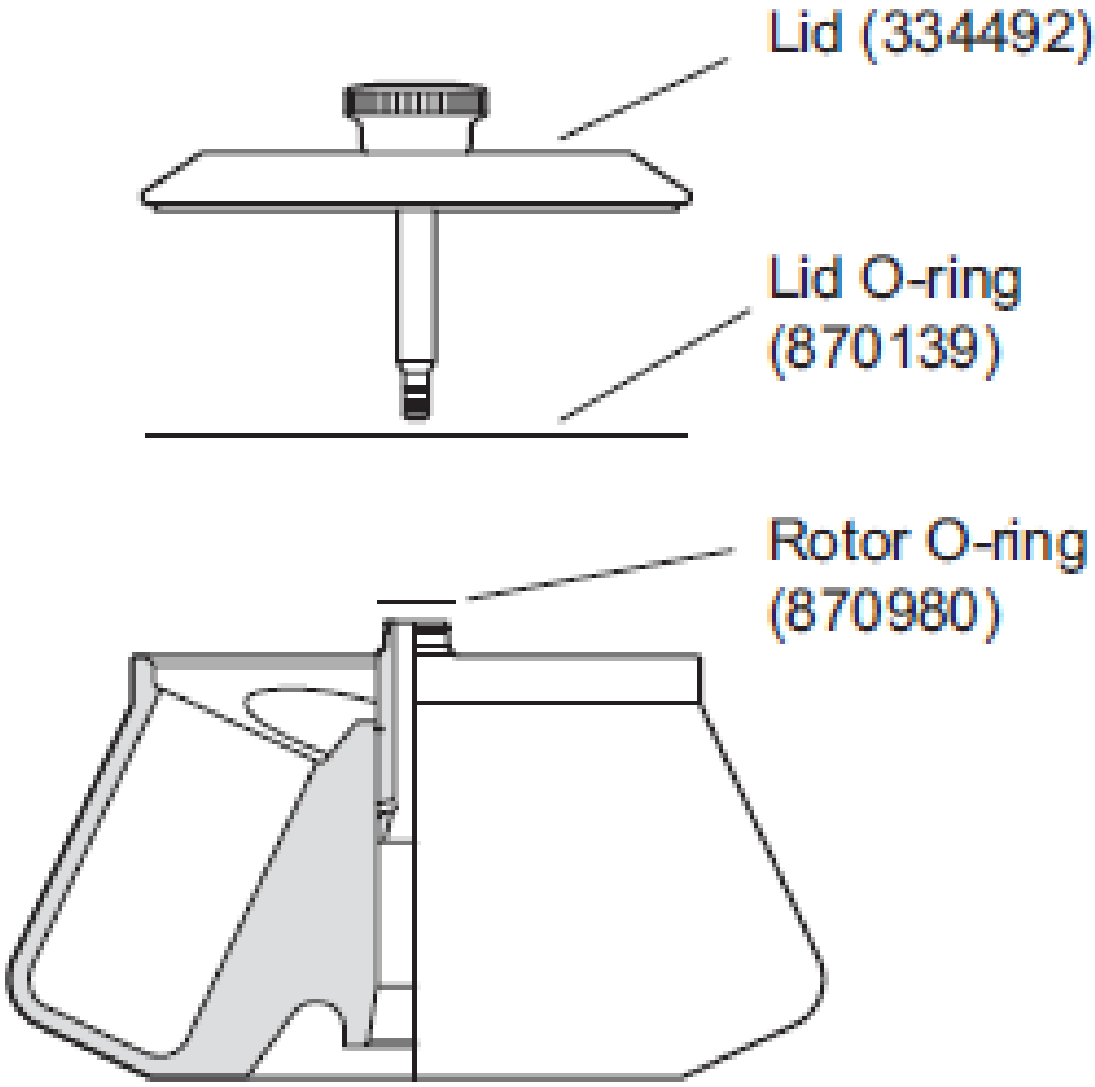
Rotor Pin Mark

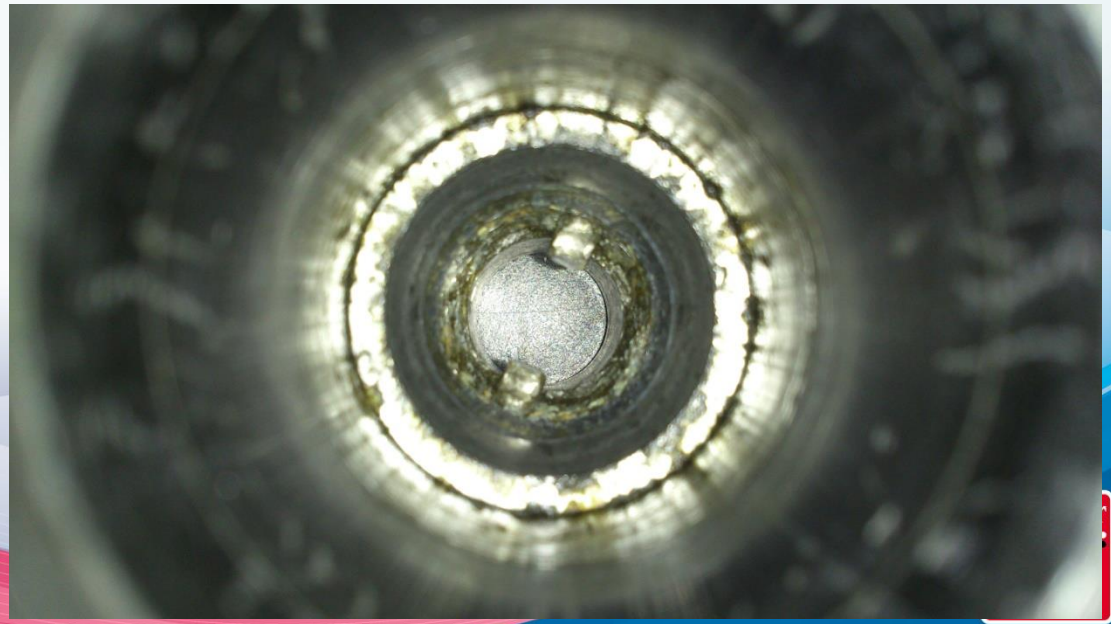
JA25.50

JLA16.250

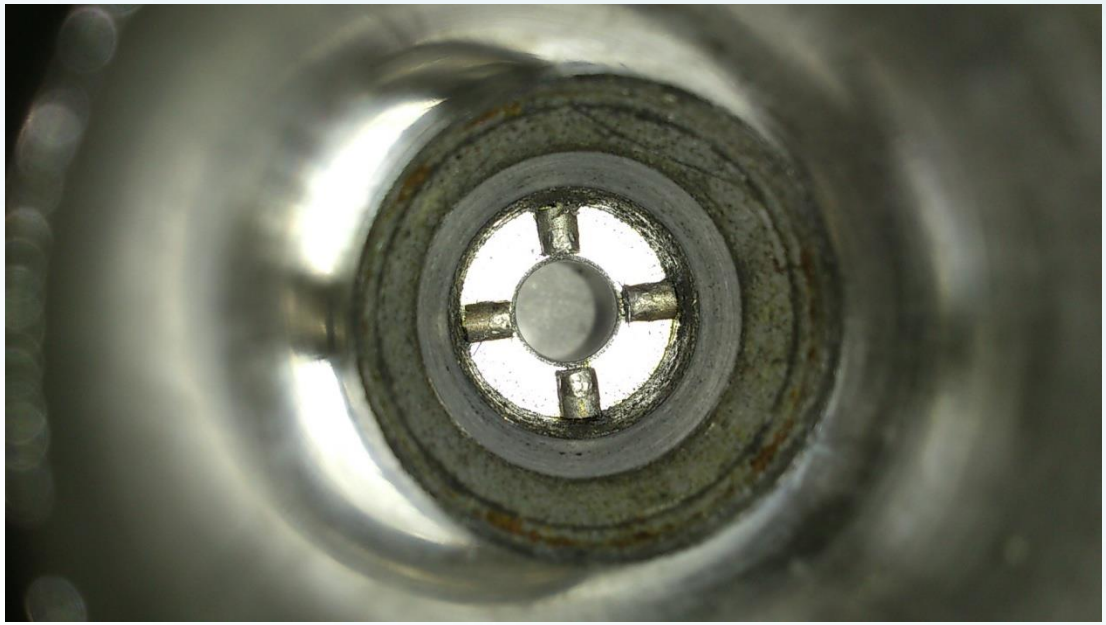


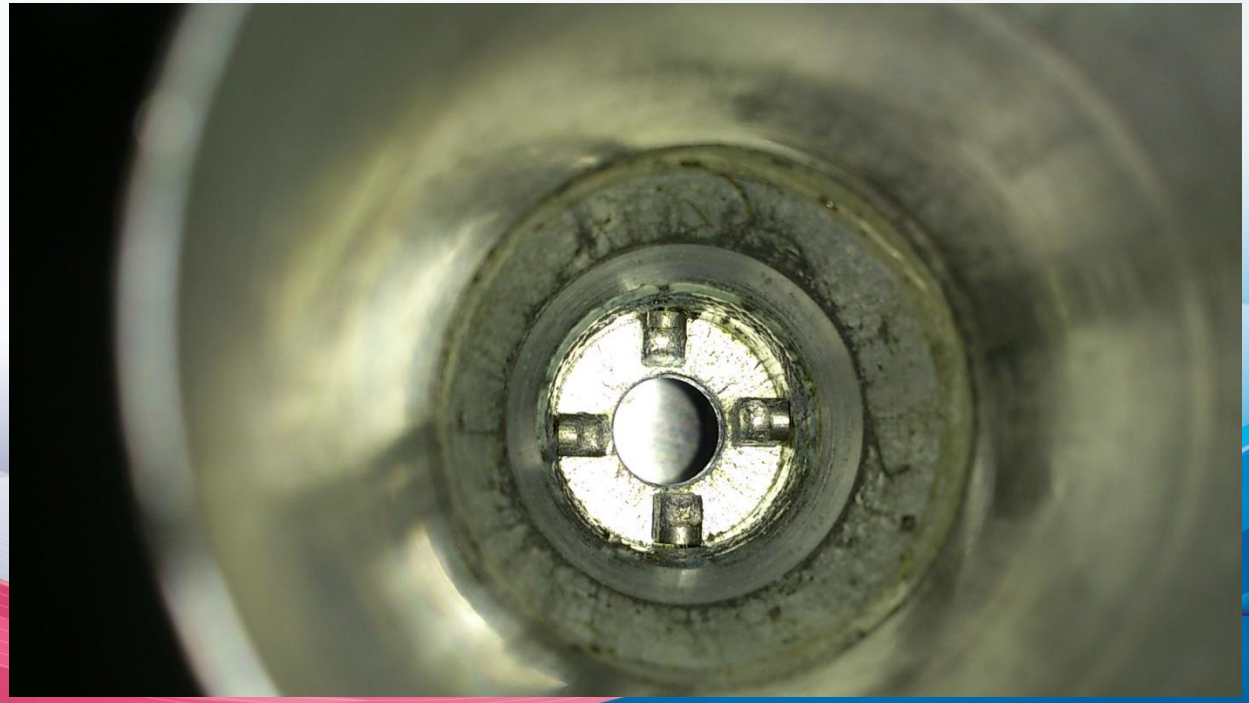
Fixed Angle Rotor





BECKMAN COULTER
We're better together

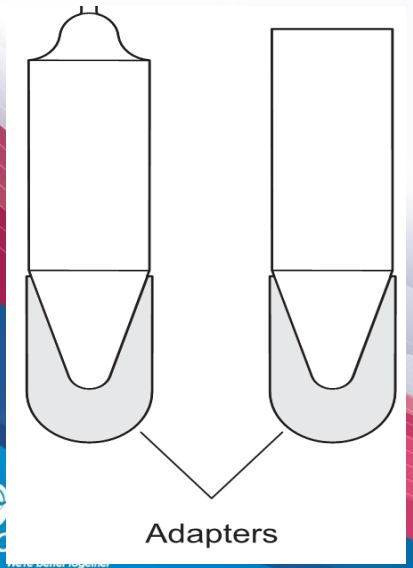


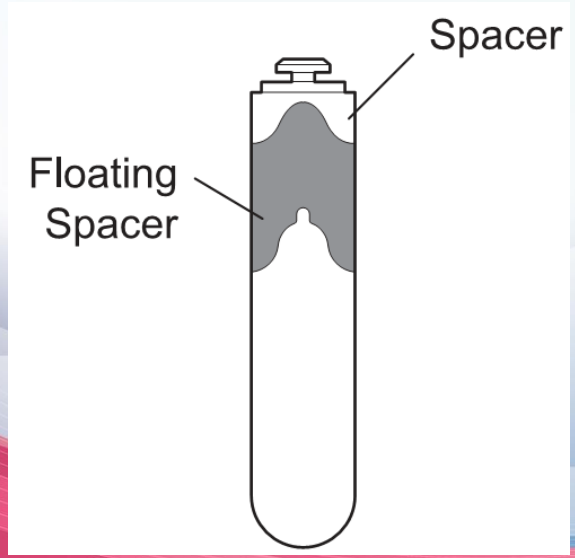


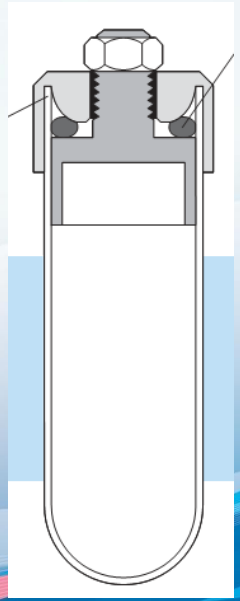
BECKMAN COULTER
We're better together

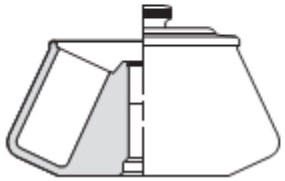
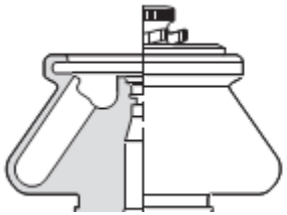
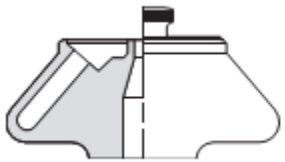
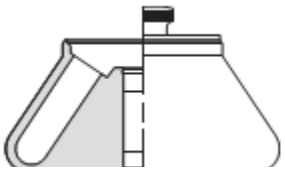
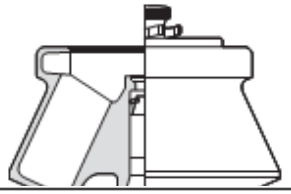
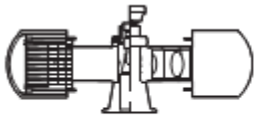
Rotor and Tubes

- 樣品容量與所需轉速（RPM ＆ RCF)
- 選擇合適轉子（ROTOR）
- 選擇離心管 **材質/類型/配件**
  - Adapters/Spacers/Caps



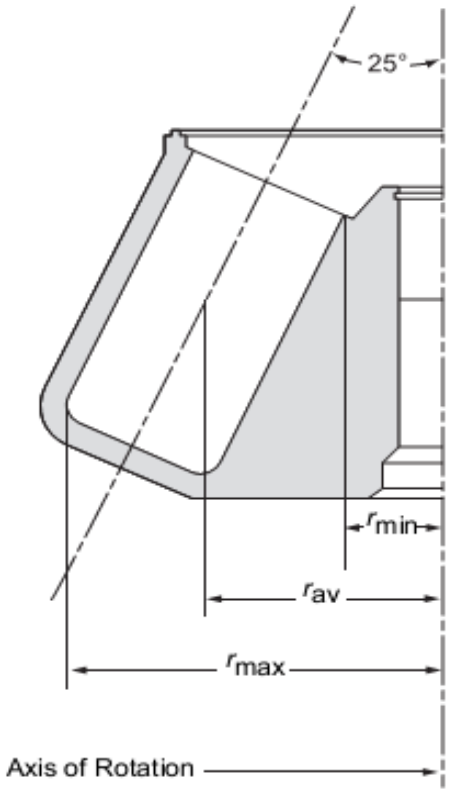




Rotor Profile	Description	Rotor Code	Max RPM[a]	Max RCF (× *g*)	Max Capacity	Rotor Manual Number
	JA-14 Fixed Angle, 25° (6 place) r_{max} = 137 mm	14	14 000	30 100	6 × 250 mL	J-TB-004
	JA-25.50 Ti Fixed Angle, 34° (8 place)[d] r_{max} = 108 mm	25.50	25 000	75 600	8 × 50 mL	J-TB-056
	JA-21 Fixed Angle, 40° (18 place) r_{max} = 102 mm	21	21 000	50 400	18 × 10 mL	J-TB-002
	JA-20 Fixed Angle, 34° (8 place) r_{max} = 108 mm	20	20 000	48 400	8 × 50 mL	J-TB-003
	JLA-16.250 Fixed Angle, 25° (6 place) r_{max} = 134 mm	16.250	16 000	38 400	6 × 250 mL	J-TB-072
	JS-5.3 Swinging Bucket (2 place) r_{max} = 194.8 mm	5.3	5 300	6 130	24 microplates 8 deep-well plates 4 square-well plates	J-TB-089

JA-14 FIXED ANGLE ROTOR

SPECIFICATIONS



Maximum speed	14 000 rpm
Critical speed range*	600 to 800 rpm
Maximum solution density	1.2 g/mL
Maximum allowable imbalance of opposing loads	10 grams
Relative Centrifugal Field† at maximum speed	
At r_{max} (137 mm)	30 100 × *g*
At r_{av} (86 mm)	18 900 × *g*
At r_{min} (35 mm)	7 680 × *g*
k factor at maximum speed	1764
Number of bottle cavities	6
Available bottles and tubes	see Table 1
Nominal dimensions of largest bottle	62 × 120 mm
Nominal bottle capacity	250mL
Nominal rotor capacity	1.5 liters
Approximate acceleration time to maximum speed (rotor fully loaded)	4 min
Approximate deceleration time from maximum speed (rotor fully loaded, max. brake)	4 min
Weight of fully loaded rotor	13.6 kg (30 lb)
Rotor material	aluminum
Conditions requiring speed reduction	see RUN SPEEDS
Rotor entry code for Avanti J-E centrifuges and microprocessor-controlled J2 and J6 centrifuges	14

U.S. Pat. No. 3,901,434; 4,850,951
British Pat. No. 1,465,099
Canadian Pat. No. 1,001,597
German Pat. No. 2,448,199

Note

- Balance :

g(RCF)：30100 X 1g = 30100g

- Sample Density:避免離心管破損，
  樣本密度需在**1.2g/ml以下**

$$\text{reduced maximum speed} = 14{,}000 \text{ rpm}) \sqrt{\frac{1.2 \text{ g/mL}}{\rho}}$$

- K Factors : Rotors Ex-change Time

$$\frac{t_a}{t_b} = \frac{k_a}{k_b}$$

Table 1. Available Tubes and Bottles for the JA-14 Fixed Angle Rotor.
Use only the items listed here and observe fill volumes and maximum run speeds.

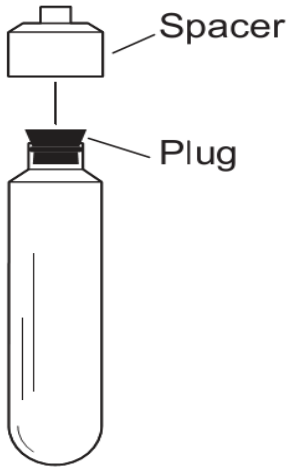
Tube			Max Fill Vol (mL)	Required Accessory		Max No. Tubes per Adapter	Max Speed[a]/ RCF/ *k* Factor
Dimensions and Volume	Description	Part Number		Description	Part Number		
62 × 120 mm 250 mL	polypropylene wide- mouth bottle w/cap assy	356011	250	none	—		14 000 rpm 30 100 × *g* 1764
62 × 120 mm 250 mL	polycarbonate wide- mouth bottle w/cap assy	356013	250	none	—		14 000 rpm 30 100 × *g* 1764
60 × 120 mm 230 mL	conical polycarbonate bottle w/screw cap	356987	230	adapter	356983[b]	1	7 500 rpm 8 600 × *g* —
60 × 120 mm 230 mL	conical polyal- lomer bottle w/ screw cap	356989	230	adapter	356983[b]	1	7 500 rpm 8 600 × *g* —
29 × 104 mm 50 mL	polycarbonate bottle assy, liquid-tight cap assy	357000	45	adapter	356997[c]	1	14 000 rpm 30 100 × *g* —
29 × 104 mm 50 mL	polyallomer bottle assy, liquid-tight cap assy	357001	45	adapter	356997[c]	1	14 000 rpm 30 100 × *g* —

Tube 使用注意事項

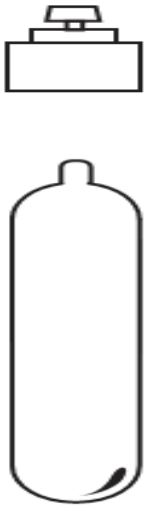
- **型態**
- 材質
- 樣品化學性質
- 承裝容量
- 滅菌方式
- 外觀檢視

Tube Type

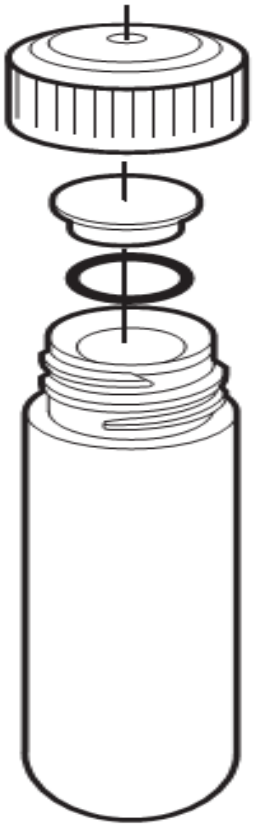
OptiSeal™ Tubes



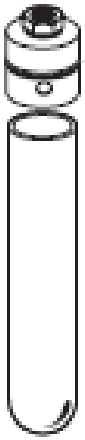
Quick-Seal® Tubes



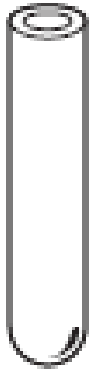
Bottles



Thinwall Tubes



Thickwall Tubes



Tube 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

Tube Material

1. PA (Polyallomer) ：軟材質/半透明/可高壓滅菌/可耐醇類、DMSO與部分有機溶劑
2. PC (Polycarbonate) ：硬材質/透明
3. PP (Polypropylene)：半透明/耐酸鹼/耐醇類
4. PE (Polyethylene)：透明/半透明/耐酸鹼
5. Ultra-clear：超透明薄壁/可穿透/不可高壓滅菌/不耐醇類、 DMSO與有機溶劑

Tube 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

Table 2.1 Characteristics and Chemical Resistances of Tube and Bottle Materials[a]

Tube or Bottle Type	Optical Property	Puncturable	Sliceable	Reusable	Acids (dilute or weak)	Acids (strong)	Alcohols (aliphatic)	Aldehydes	Bases	Esters	Hydrocarbons (aliphatic)	Hydrocarbons (aromatic and halogenated)	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[b]	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[b]	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[b]	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.

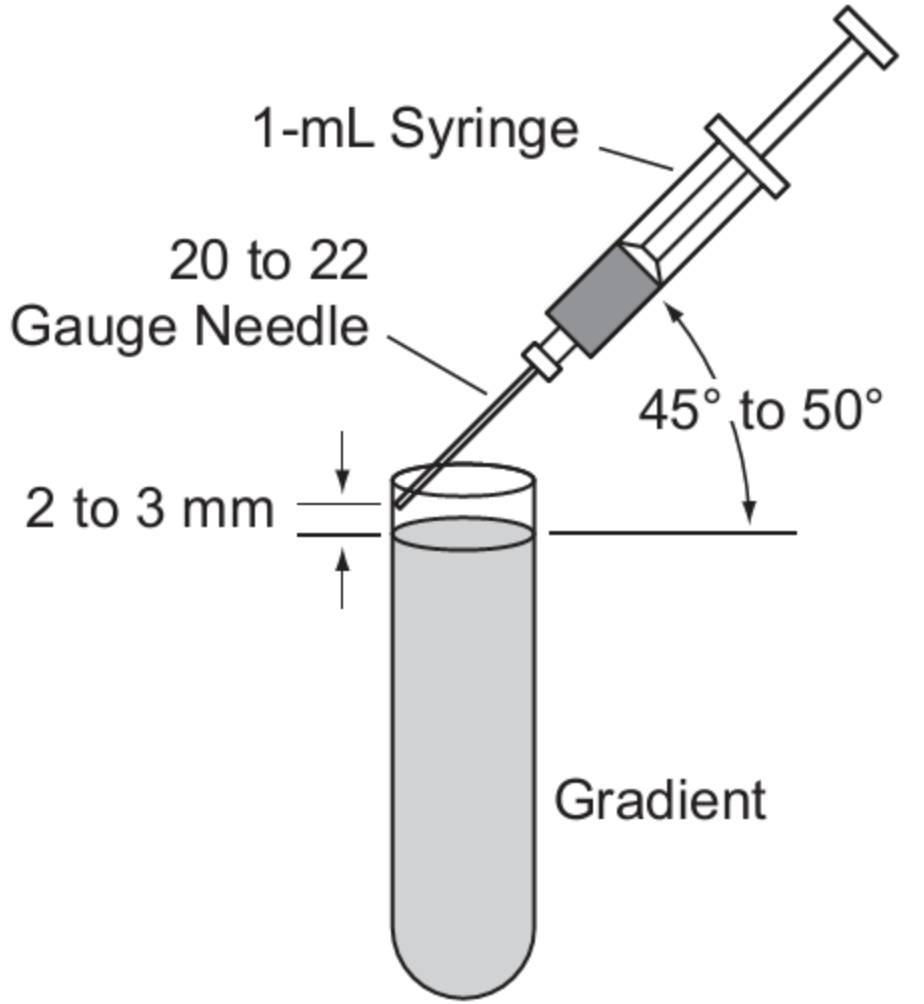
Tube 使用注意事項

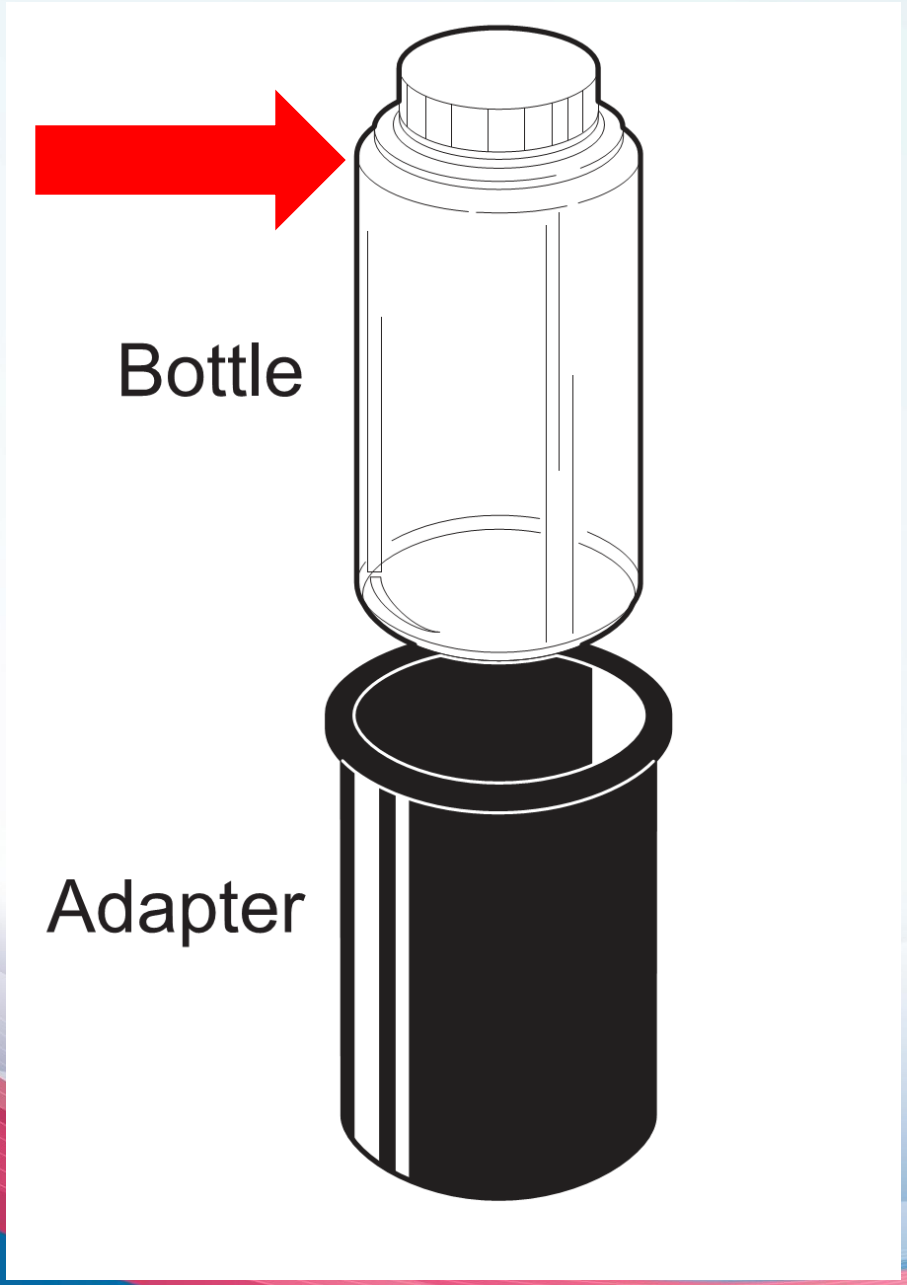
- 型態
- 材質
- 樣品化學性質
- **承裝容量**
- 滅菌方式
- 外觀檢視

Table 3.1 General Filling and Sealing Requirements for Tubes and Bottles

Tube or Bottle	Filling Level Requirements		
	Swinging Bucket Rotors	**Fixed Angle Rotors**	**Vertical Tube Rotors**
Polyallomer			
thinwall tubes	within 2 to 3 mm of top	full with cap	not used
thickwall tubes	at least 1/2 full	1/2 full to max capless level or full with cap	not used
Quick-Seal tubes	full and heat sealed	full and heat sealed	full and heat sealed
bottles	min to max (see rotor manual) with screw-on cap or cap assembly	1/2 full to max (see rotor manual) with screw-on cap or cap assembly	not used
Ultra-Clear			
open-top tubes	within 2 to 3 mm of top	full with cap	not used
Quick-Seal tubes	not used	full and heat sealed	full and heat sealed
Polycarbonate			
thickwall tubes	at least 1/2 full	1/2 full to max capless level or full with cap	not used
bottles	at least 1/2 full	min to max (see rotor manual) with screw-on cap or cap assembly	not used
Stainless Steel			
tubes	any level	any level with cap or cap assembly	not used
Polypropylene			
tubes and bottles	at least 1/2 full	1/2 full to max capless level or full with cap or cap assembly	not used
Polyethylene			
tubes	at least 1/2 full	1/2 full to max capless level or full with cap	not used
Cellulose Propionate			
tubes and bottles	at least 1/2 full	1/2 full to max capless level	not used

Open Top




Bottle
Adapter

Tube 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

Table 7.1 Tube and Bottle Sterilization and Disinfection[a]

Tube/Bottle Material	Autoclave[b] (121°C)	UV Irradiation	Ethylene Oxide	Formal-dehyde	Ethanol (70%)[c]	Sodium Hypo-chlorite (10%)	Hydrogen Peroxide (10%)	Glutaral-dehyde (2%)	Phenolic Deriva-tives
polyallomer	yes	no	yes	yes	yes	yes	yes	yes	no
Ultra-Clear	no	no	yes	yes[d]	yes	yes	yes	yes	no
polycarbonate	yes[e]	no	yes	yes[d]	no	yes[f]	yes	yes	no
polypropylene	yes	no	yes	yes	yes	yes[g]	yes[h]	yes	no
polyethylene	no	no	yes	yes	yes[i]	yes	yes	yes	yes
cellulose propionate	no	no	no	no	no	yes	yes	yes	no
stainless steel	yes	yes	yes	yes	yes[j]	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 centrifuges.

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.

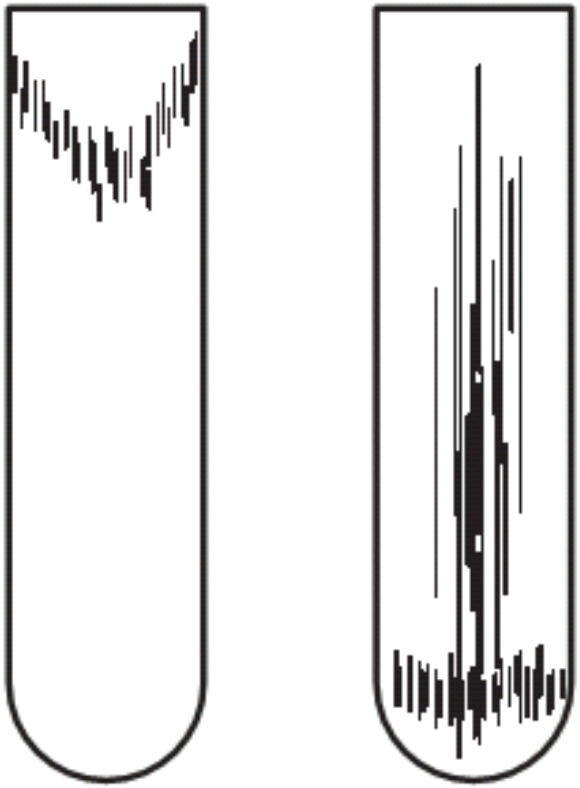
h. Below 26°C only.

i. Below 21°C only.

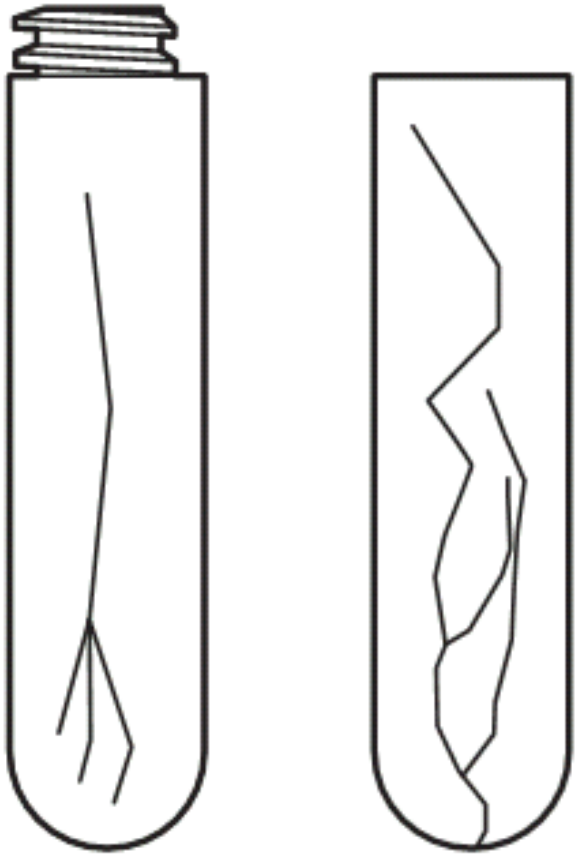
Autoclaveable :
121°C,20 min,15 psi

Tube 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**



Crazing

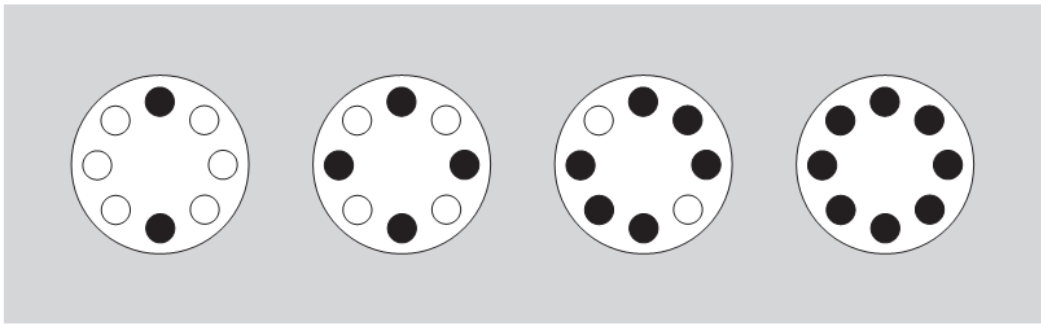


Cracking

Balance

- Rotor Sample 平衡步驟：

1. 平衡對稱放置



2. 重量平衡：視轉子規格<**建議小於1 g**>

- Swinging Rotor的Bucket一定要全數掛上

特殊轉子配件

- JS5.3
- JLA8.1000 / 9.1000 / 10.500

JS 5.3 ROTOR

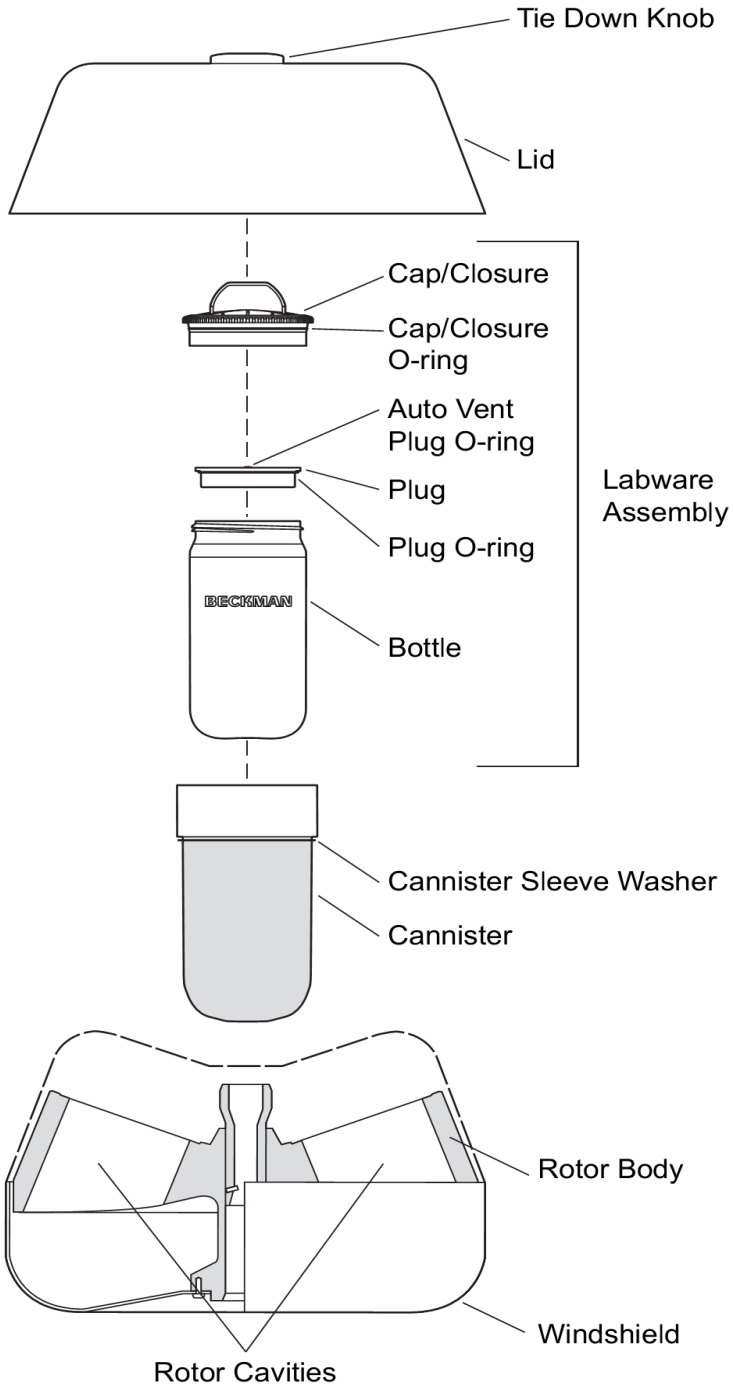
- 4個bucket都要掛上
- 確定bucket都有掛好

- Tube or Microplate 高度不可過高 Bucket

- 每次使用前都要重新鎖緊

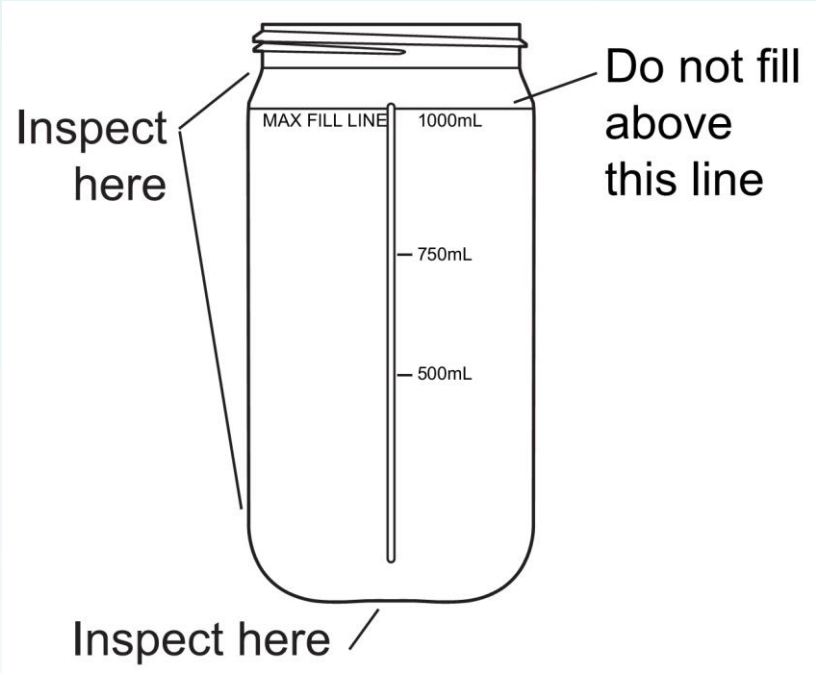
JLA 8.1000 / 9.1000 /10.500

- 6個Cannisters需全數放置
- 對稱位置 重量平衡須小於3g
- Cannisters Exp. Date

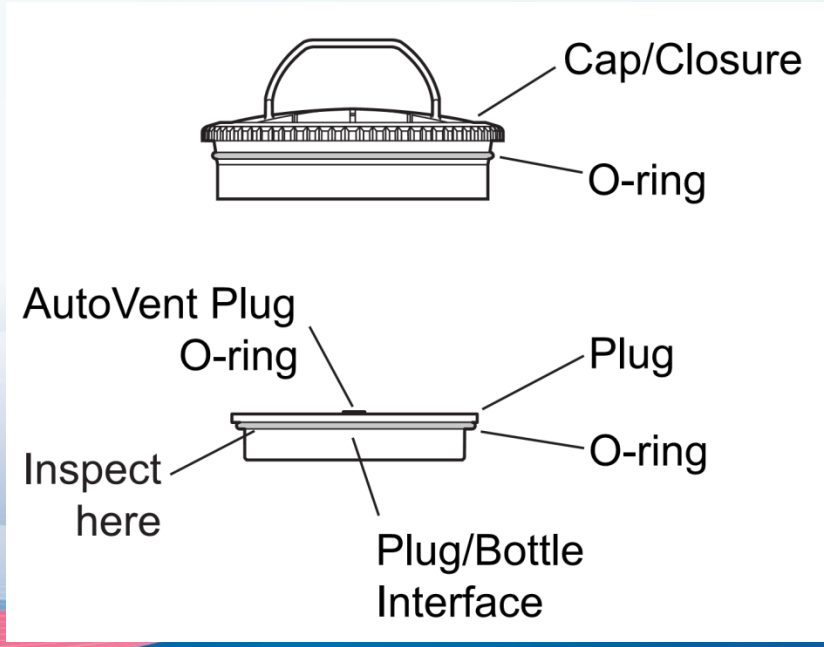


離心瓶

- Bottle Check
  - 1. 使用前檢查離心瓶，有任何損傷或變形，請勿使用
  - 2. 裝入樣品於離心瓶，勿超過上限值標線

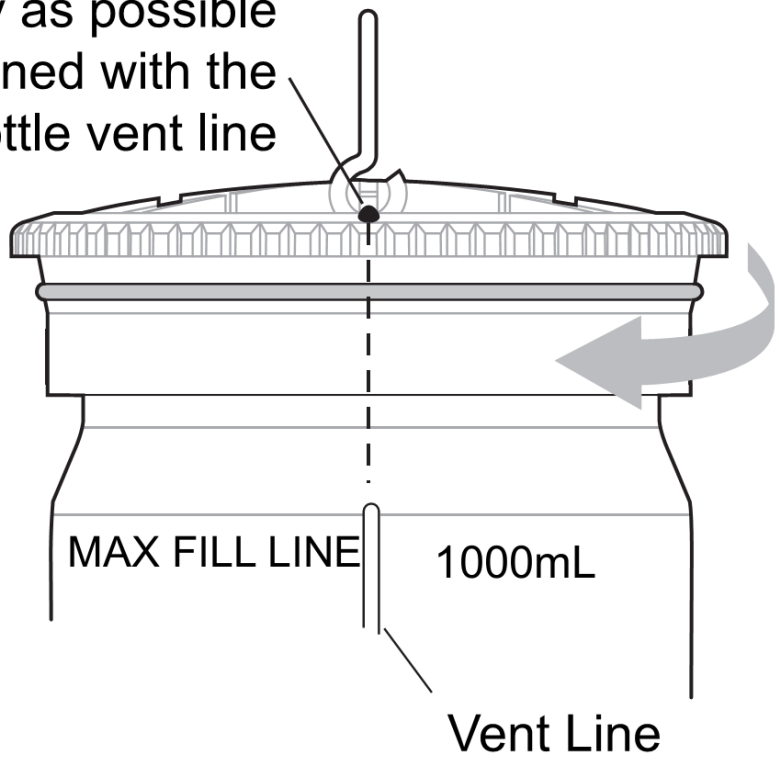


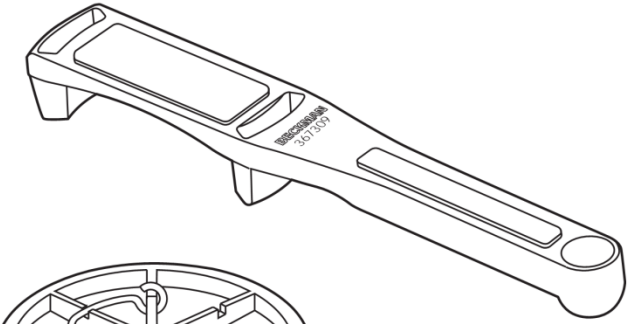
- O-ring(Cap & Plug)
  - No Vac. Grease

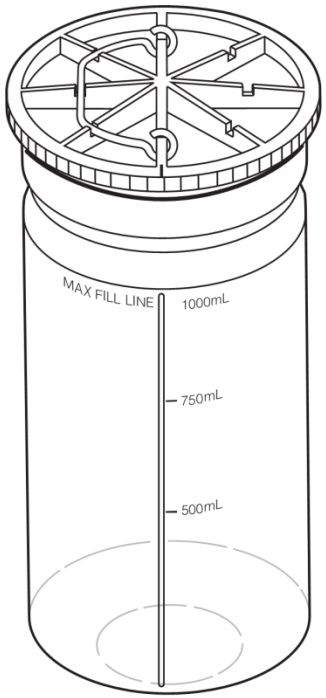


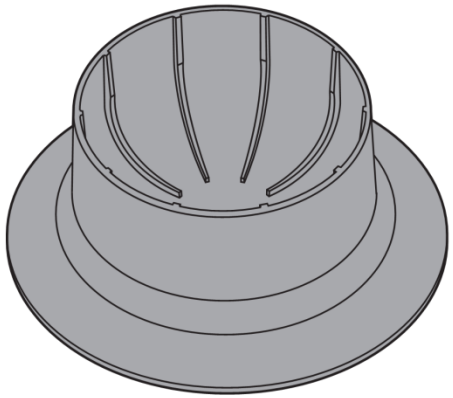
Cap Install

Tighten the cap/closure until this mark is as closely as possible aligned with the bottle vent line





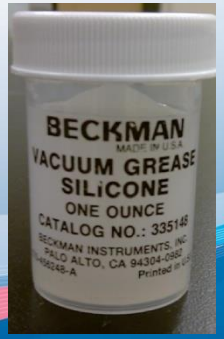




BECKMAN COULTER
We're better together

日常保養
Maintenance

- 保持離心機槽內清潔，保持門板打開
- Rotor 使用後,用水清洗後倒放晾乾
- Rotor之O-ring需定期清潔和塗抹vacuum grease（請戴手套使用）
- Rotor Lid桿柄之螺紋處需定期清潔和塗抹spinkote lubricant （請戴手套使用）
- Door latch需清潔和塗抹spinkote lubricant

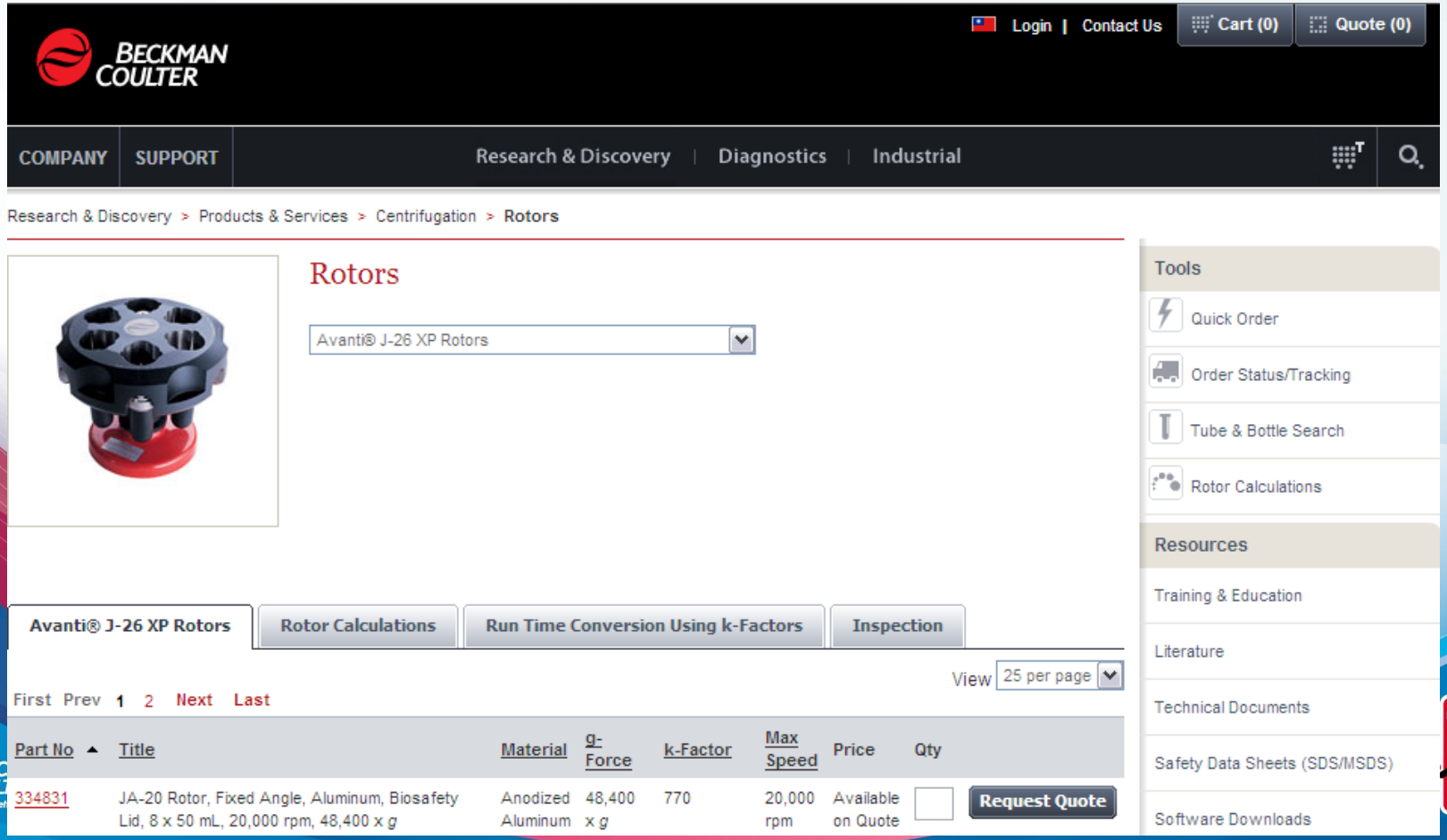


BECKMAN COULTER
We're better together

Customer FIRST 2011

Rotor & Tubes Info. Search

- Beckman Coulter 官方網頁：
  Research & Discovery > Products & Services > Centrifugation > Rotors



RPM&RCF換算

Airfuge® Rotors | Rotor Calculations | Run Time Conversion Using k-Factors | Inspection

Select a Rotor

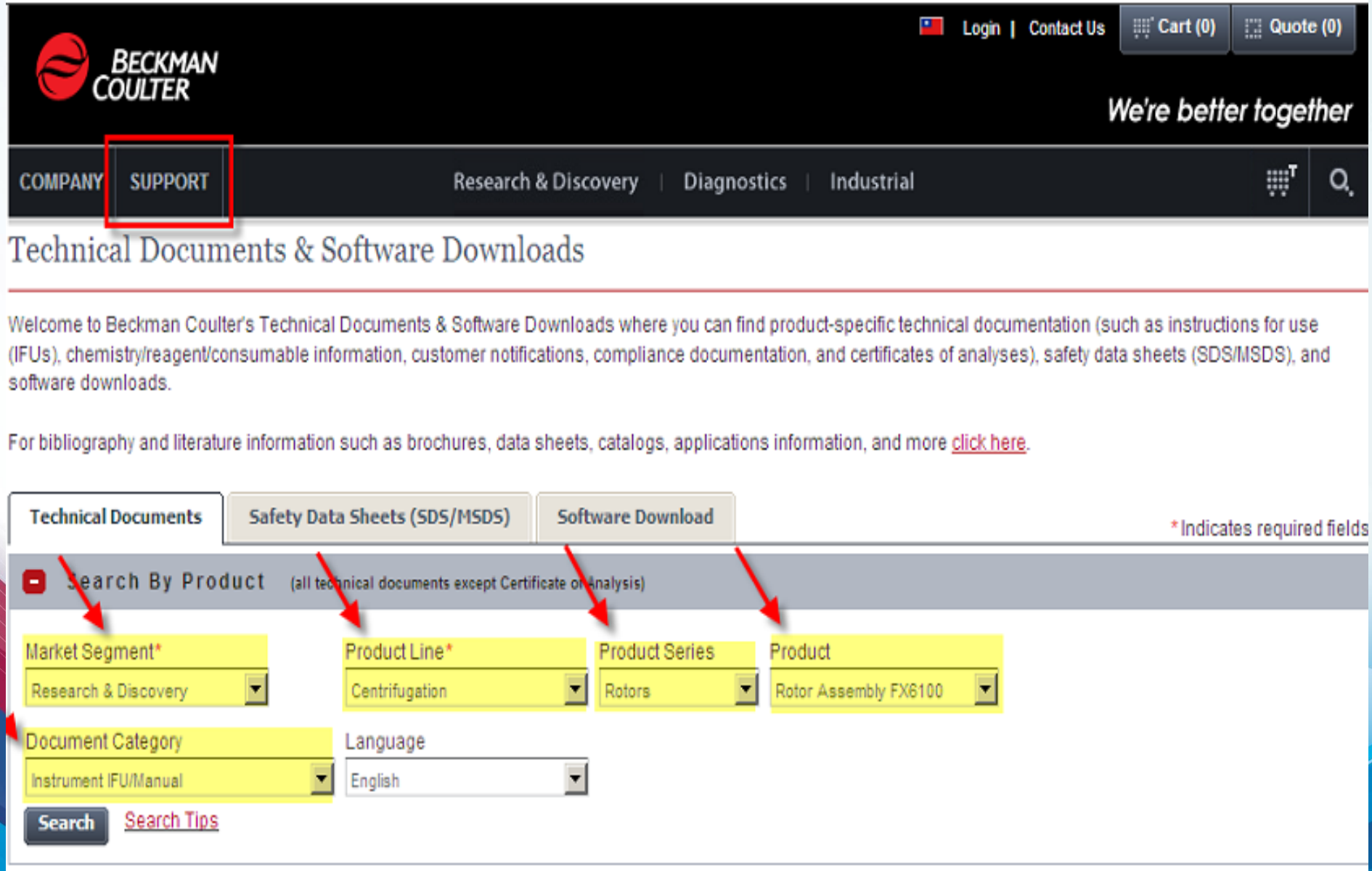
JA-25.50

For a "Custom" Rotor

Selected Rotor	JA-25.50	
* Radius (min)	38.5	mm
* Radius (max)	108	mm
* Max. Rotor speed	25000	rpm

To calculate the Unknown quantities, enter the known value and select its"Compute from ..." button.
When entering RPM,RCF or k-Factor values, only numeric and decimal characters are allowed.

RPM	25000	Calculate
RCF (avg)	51275	Calculate
RCF (max)	75600	Calculate
k-Factor	418	Calculate


Login | Contact Us
Cart (0)
Quote (0)
BECKMAN COULTER
We're better together
COMPANY
SUPPORT
Research & Discovery
Diagnostics
Industrial
Technical Documents & Software Downloads
Welcome to Beckman Coulter's Technical Documents & Software Downloads where you can find product-specific technical documentation (such as instructions for use (IFUs), chemistry/reagent/consumable information, customer notifications, compliance documentation, and certificates of analyses), safety data sheets (SDS/MSDS), and software downloads.
For bibliography and literature information such as brochures, data sheets, catalogs, applications information, and more click here.
Technical Documents
Safety Data Sheets (SDS/MSDS)
Software Download
*Indicates required fields
Search By Product
(all technical documents except Certificate of Analysis)
Market Segment*
Research & Discovery
Product Line*
Centrifugation
Product Series
Rotors
Product
Rotor Assembly FX6100
Document Category
Instrument IFU/Manual
Language
English
Search
Search Tips

Thanks