

StatSpin[®] VT Centrifuge

Operator's Manual



Operator's Manual
StatSpin VT Centrifuge
Model Number V901

FOR *IN VITRO* DIAGNOSTIC USE

	Product Number
SSVT	StatSpin VT for 100-240 VAC, 50/60 Hz
SSVT -1	StatSpin VT for 100-240 VAC, 50/60 Hz (Includes: 1-RT12 rotor)
SSVT -2	StatSpin VT for 100-240 VAC, 50/60 Hz (Includes: 1-RT12 rotor & 2-SV12 adaptors)

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Section 1

Unpacking and Installation

Inspect Packaging

The StatSpin VT and its accessories are delivered in one carton. If the centrifuge or accessories have been damaged in transport, please inform your carrier immediately.

Verify Contents

Product No.:	SSVT (no rotors supplied)
	SSVT-1 (1-RT12 rotor)
	SSVT-2 (1-RT12 rotor & 2-SV12 adaptors)
Each of the above packages contains:	
One Universal Switching Power Supply (Product No. 01-3553-001, APS Product No. AD-740U-1240)	
One grounded line cord (for use in North America only)	
One Operator's Manual	
One Sample Pack of various consumable products	
One Warranty Card – Complete the Warranty Registration Card as directed. (also available at www.proiris.com)	

Install

1. Place the StatSpin VT on a level surface suitable for operation of laboratory instrumentation.
 2. Maintain a 30 cm clearance around the centrifuge for ventilation and safety.
 3. Position the StatSpin VT out of direct sunlight and away from sources of intense heat or cold.
 4. See the Appendix for the acceptable range of operating temperature and humidity.
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Connect Power

Plug the power supply into a grounded outlet supplying the voltage and frequency indicated on the power supply. When power is connected, the Power On LED will illuminate and the cover lock will release.



WARNING - North America: Only use the power supply included with the unit. Use of other power supplies or transformers will damage the StatSpin VT electronics and void the warranty.



WARNING - Outside North America: Do Not Use the Line Cord Supplied. Use power cord for at least 1.0 Amp or more with an IEC320/CEE22 female connector and male connector suitable for the power outlet to be used.

Section 2

System Overview

Principle and Intended Use








For in vitro diagnostic use to produce the rapid separation of whole blood, preparing urine sediment for microscopic analysis and centrifuging microhematocrit tubes for packed cell volume determination.

The StatSpin VT is a small, quiet, high speed centrifuge. Its unique, proprietary drive and suspension system provides nearly vibration-free operation. Light-weight, low mass rotors achieve both top speed and full braking in a few seconds. This instrument is designed to meet international safety standards.

Symbols and Definitions

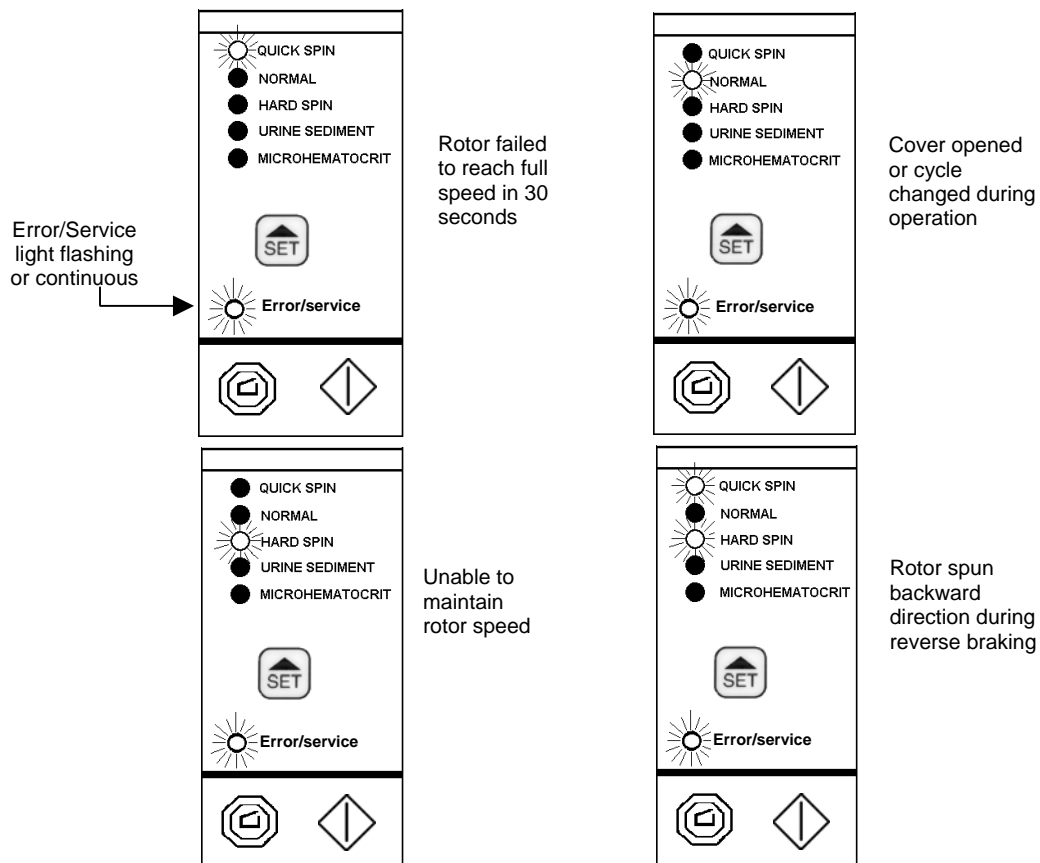
	Start	The Start button initiates a pre-timed cycle at a fixed speed. NOTE: The StatSpin VT does not have an on/off switch and is normally left plugged in and "on".
	Stop/Open	The Stop/Open button interrupts the cycle and releases the cover when the rotor has stopped.
	Cycle selector	This button allows for selection of the appropriate cycle.
	Error/Service	The Error/Service indicator is illuminated continuously or flashing when service is required.
	Power input	DC Power Input: 24V DC Plug-in
	Product/Reference Number	Indicates the product/catalog number
	Caution	Statement of caution/warning: read carefully
	Temperature limitation	Indicates storage or operating temperature restrictions

Symbols and Definitions (cont.)

	For <i>in vitro</i> diagnostic use	Indicates for use only as <i>in-vitro</i> diagnostic device
	Non-sterile	Indicates a non-sterile product
	Serial Number	Indicates instrument serial number
	Consult Instructions	Refers operator to the instruction manual for additional information
	Biological Risk	Universal precautions should be followed on all specimens

Error Indicators

StatSpin VT error conditions are signaled by a flashing red Error/Service indicator on the control panel. The cause of the error condition can be identified by the combination of cycle indicators that are also flashing.



The Error/Service indicator remains continuously illuminated when the centrifuge has achieved a total cycle count of 18,000, which is the useful life of the drive system. The drive mechanism needs replacing. Contact an authorized service center.

Accessories

Product No.	Description	Cycle Required
RT12	2 x 1.5 mL Fixed Angle Rotor	Quick, Normal, Hard
TU15-10	1.5 mL Pre-calibrated Urine Tube (10 bags of 50)	Urine
TP1H	1.3 mL Lithium Heparin micro centrifuge tube (Bag of 100)	Quick, Normal, Hard
TP1U	1.3 mL Untreated micro centrifuge tube (Bag of 100)	Quick, Normal, Hard
SS2H	StatSampler® (200 uL, Li Heparin) Chemistry fingerstick collection system	Quick, Normal, Hard
SS2U	StatSampler (200 uL, Untreated) Chemistry fingerstick collection system	Quick, Normal, Hard
SS2X	StatSampler (200 uL, EDTA) Hematology fingerstick collection system with gel	Quick, Normal, Hard
LC10	LipoClear: 0.5 mL Pre-filled reagent tubes for clearing lipemic serum or plasma (Bag of 10)	Hard
LC40	LipoClear: 0.5 mL Pre-filled reagent tubes for clearing lipemic serum or plasma (Bag of 40)	Hard
LC15	LipoClear: 1.5 mL Pre-filled reagent tubes for clearing lipemic serum or plasma (Bag of 40)	Hard
RM02	2 x 0.8 mL Fixed Angle Rotor for BD Microtainers™ and 0.5 mL micro centrifuge tubes	Quick, Normal, Hard
RD01-10	Disposable PlasmaRotor® used for separating up to 3 mL of whole blood. (10 Bags of 50)	Quick, Normal, Hard
RD01-10S	Disposable PlasmaRotor used for separating up to 3 mL of whole blood, includes push on stopper. (10 Bags of 50)	Quick, Normal, Hard
RH12	12 Position microhematocrit rotor with circular reader (HR4C)	Microhematocrit
HP8H-10	SafeCrit Capillary Tube (40 mm, Sodium Heparin), 100% plastic microhematocrit tubes for the RH12 rotor. (10 vials of 100)	Microhematocrit
HP8U-10	SafeCrit Capillary Tube (40 mm, Untreated), 100% plastic microhematocrit tubes for the RH12 rotor. (10 vials of 100)	Microhematocrit
HT9H-10	Glass Capillary tube (40 mm Sodium Heparin), Glass microhematocrit tubes for RH12 rotor. (10 vials of 100)	Microhematocrit
HT9U-10	Glass Capillary tube (40 mm Untreated), Glass microhematocrit tubes for RH12 rotor. (10 vials of 100)	Microhematocrit
HS24-10	Sealant Pad for Capillary tubes (10 pads)	NA
HR05	Hematocrit Reader, Card style for 40 mm hematocrit tubes	NA
HR4C	Hematocrit Reader, Circular designed to be used in conjunction with the RH12 rotor	NA
00-Ring	Replacement O-Rings for rotor holder (5 bags of 3)	NA

Section 3

Operating Instructions

Opening and Closing the Cover

An electronic operated cover interlock mechanism prevents operation if the cover is not completely closed and locked. An operating cycle can be initiated only if the cover latch is engaged.

The centrifuge is also equipped with a manually operated latch that holds the cover down after spinning is complete. The interlock is automatically released at the end of the operating cycle or by pushing the Stop/Open button. Squeeze the black latch pieces together to open cover.

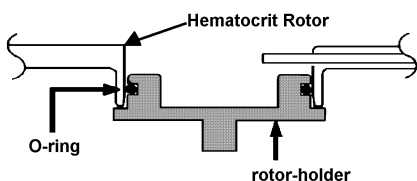
Cover Interlock By-pass

In case of power failure or malfunction, the Stop/Open button may not release the cover. To recover samples in the rotor, the cover interlock mechanism can be released manually by inserting the straightened end of a large paper clip or similar object into the small hole located in the front of the housing. Push the tool inward about one inch (25 mm) to release the latch.



CAUTION - The cover interlock by-pass is designed for emergency use only. Misuse may expose the operator to unsafe conditions.

Installing the Rotor



All rotor bottoms fit over a rubber O-Ring on the rotor-holder. The figure on the left shows a rotor, cross section, in place on the rotor holder. As the rotor turns, the O-Ring is moved outward by centrifugal force enhancing the frictional coupling between the rotor-holder and the rotor.



CAUTION- Do not leave any rotor on the rotor-holder when the StatSpin VT is not in use for an extended period of time. Doing so may compress the O-Ring decreasing its ability to hold rotors.



CAUTION- Failure to properly install the rotor may result in damage to the centrifuge not covered by warranty.



CAUTION- If rotor is left in place between runs, “bottom” the rotor on the rotor-holder before spinning another sample. Failure to properly “seat” the rotor each time may result in the rotor becoming loose during centrifugation.



CAUTION- The RT12 and RM02 tube rotors must be balanced before operation. If only one sample is being processed, a second sample can serve as the balance tube or use a similar tube filled with water as a balance.

Description of Rotors

RT12 Tube Rotor

A 2-place rotor designed to accommodate a variety of Iris Sample Processing tubes for blood and urine separation, in addition to a variety of standard 1.5 mL and 2.0 mL centrifuge tubes with a maximum diameter of 10.9 mm. These tubes should be supported by the collar of the rotor.



CAUTION – DO NOT spin glass tubes of any kind in the RT12 rotor.

The following tubes are approved for use with the RT12 rotor:

- ✓ Prepared Microtubes: (our Product Nos.) TP1H, TP1U, TP5G and CH03
- ✓ StatSamplers[®]: (our Product Nos.) SS2H, SS2E, SS2U, SS2X, SS1E
- ✓ Precalibrated Urine Tube: (our Product No.) TU15-10
- ✓ LipoClear Reagent Tubes: (our Product Nos.) LC10, LC40 and LC15.
- ✓ Standard 1.5 – 2.0 mL microcentrifuge tube (e.g. Eppendorf[®])

RM02 Tube Rotor

Designed specifically for B-D Microtainer[®] tubes, this 2-place rotor also accepts standard 0.5 mL microcentrifuge tubes. Maximum tube diameter is 8.3 mm. The following tubes are approved for use in this rotor:

- ✓ B-D Microtainer[®] Tubes with flow-top collector ONLY.
- ✓ 0.5 mL microcentrifuge tubes (7.5 mm O.D. x 35 mm L)

RH12 Microhematocrit Rotor

A 12-place covered rotor used to centrifuge capillary tubes for microhematocrit testing. Maximum tube size is 1.7 mm O.D. x 42 mm L. It is recommended that rubber cushions provided with the rotor be replaced twice a year or whenever a tube breaks in the rotor. Order part number 01-2002-04 for a replacement set of twelve cushions. The following tubes are approved for use in the rotor:

- ✓ Glass capillary tubes: (our Product Nos.) HT9H, HT9U
- ✓ SafeCrit[®] plastic capillary tubes: (our Product Nos.) HP8H, HP8U

RD01 Plasma Rotor

Used to separate a single blood sample with a volume between 1 – 3 mL for chemistry or coagulation testing. Plasma rotors are for single use only.

Consult the insert sheets provided with these rotors for instructions for use.

IMPORTANT: The RT12, RM02, and RH12 rotors have a finite lifespan that is dependent on usage. The RT12 and RM02 rotors should be replaced after approximately 3600 cycles, which is equivalent to 18 months of service running an average of 10 cycles per day. The RH12 rotor should be replaced after approximately 2600 cycles, which is equivalent to 12 months of service running an average of 10 cycles per day. Rotors should be inspected routinely and replaced immediately when any crack or visible wear occurs.

Cycle Selection

Table 1: StatSpin VT Cycle Settings. The operator should experiment with different settings to achieve optimum performance for specific applications. The following are general guidelines:

Setting	RPM/RCF	Time	Rotor
Quick Spin	15,800/12,000	30 seconds	RT12/RM02/RD01
Normal	15,800/12,000	90 seconds	RT12/RM02/RD01
Hard Spin	15,800/12,000	150 seconds	RT12/RM02/RD01
Urine Sediment	9,800/3,900	45 seconds	RT12
Microhematocrit	15,800/13,700	120 seconds	RH12

Instructions for Use

1. Lift cover and install rotor.
2. Close and latch cover.
3. Choose desired cycle by depressing the "SET" button until the appropriate LED is illuminated.
4. Press Start button.
5. Upon completion of the cycle, the rotor decelerates to a complete stop in 10 seconds and the latch interlock automatically unlocks.
6. Squeeze the black latch pieces together to open cover.

Section 4

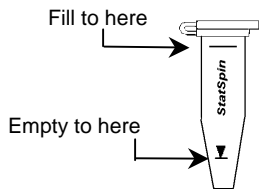
Specimen Processing

Venous Blood for Coagulation and Chemistry

The PlasmaRotor® (RD01) provides a means for the rapid separation of plasma from anticoagulated whole blood, between 1 and 3 mL. To prepare plasma for chemistry testing use the Quick Spin cycle and for Coagulation testing use the Hard Spin cycle.

Preparation of Urine Sediment for Microscopic Examination

The StatSpin VT quickly prepares urine sediment for microscopic examination. This is accomplished with the precalibrated urine tubes. (Product No. TU15)



Procedure

1. Add fresh urine to a urine tube and fill to the top mark (representing 1.5 mL).
2. Cap the tube using the attached stopper and centrifuge in the Tube Rotor, RT12.
3. Balance the rotor either with another sample or with a water-filled tube.
4. Select the "Urine Sediment" setting.
5. When the cycle is complete the cover will release. Remove the tube from the rotor and remove the stopper.
6. Invert the tube to drain fluid to the lower mark. (The surface tension will retain 0.1 mL.)
7. Recap the tube and re-suspend the sediment at the bottom of the tube by holding the tube with the index finger and thumb and "flicking" the tube with the opposite hand.
8. After sediment has been re-suspended, apply one drop to a microscope slide, apply a cover slip and examine slide. Follow the protocol used in your laboratory.

Lipemia Clearing with LipoClear®

StatSpin VT can be used to centrifuge samples treated with LipoClear (LC10, LC40, LC15). LipoClear is a non-toxic, non-carcinogenic, lipemia-clearing reagent, pre-filled in microcentrifuge tubes. The kit is available for 0.5 mL and 1.5 mL sample sizes (See table below). After sample is added, mixed and allowed to stand for 5 minutes, the tubes are spun on the Hard Spin cycle in the RT12 Tube Rotor. See LipoClear Product Insert Sheet for details.

Product No.	Sample Size	Packaged As
LC10	0.5 mL	10 tubes/ pack
LC40	0.5 mL	40 tubes / pack
LC15	1.5 mL	40 tubes / pack

Determination of Packed Red Cell Volume or Microhematocrit

Both glass and plastic micro-capillary tubes are available. Product Nos. HT9H (glass) & HP8H (plastic) have been pretreated with heparin and should be used for capillary blood. Product Number HT9U (glass) & HP8U (plastic) are untreated and used for venipuncture (anticoagulated) samples.

Procedure

- 1a. Capillary ("fingerstick") blood – sample is collected directly from the puncture site using heparinized tubes, Product No. HT9H or HP8H.
or
- 1b. Venous blood – sample is collected from a well-mixed anticoagulated sample from a syringe or vacuum blood collection tube using untreated tubes, Product No. HT9U or HP8U.
2. Hold the micro-capillary tube by the end with the color-coded band. (See Figures, page 12)
3. Fill to the color-coded band. Remove tube from the sample and tilt the banded end downward until the blood moves half-way between the band and the end of the tube.
4. Hold the tube in a horizontal position and push the **dry** (banded) end of the tube fully into the vertically held sealing compound. Twist and remove.
5. Using a laboratory tissue, wipe off any blood that is forced from the other end.
6. Put the tube, sealed end towards the outer rim, in any of the twelve positions on the Hematocrit Rotor, RH12. This rotor does not need to be balanced. Screw cover in place.
7. Holding the rotor by the black "cover knob", attach the rotor to the rotor-holder.
IMPORTANT: Always hold hematocrit rotor by the black knob on the rotor cover, when pressing it firmly in a downward motion onto the rotor-holder and when removing the rotor from the centrifuge. Pressing on the outer edges of the rotor may result in damage to the rotor.
8. Centrifuge the rotor.
9. After the rotor stops, remove it from the centrifuge. Tubes inside the rotor can be read with the circular reader, Product No. HR4C, or removed from the rotor and read with the card-style reader, Product No. HR05.

Quality Control

1. The Quality Control procedures established for your laboratory should be followed.
2. To verify the adequacy of cell packing, on a daily basis, select one or more tubes, (preferably with a hematocrit over 50%), centrifuge and read. Spin these tubes a second time. The difference between the initial reading and the second reading should be 1 percent or less.

Normal Values

The following table represents commonly accepted hematocrit values:

Children

Age	%
Birth	44 - 64
14 - 90 days	35 - 49
6 months - 1 year	30 - 40
4 - 10 years	31 - 43

Adults

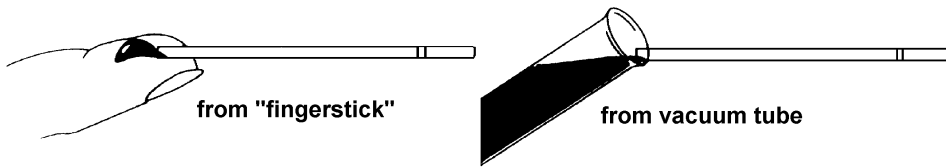
Gender	Mean %	Range (2 s.d.)
Males	47	40 - 54
Females	42	37 - 47

Animals

Species	%
Canine	37 - 55
Feline	24 - 45
Equine	32 - 52
Bovine	32 - 38
Porcine	32 - 50
Ovine	24 - 45

Illustrations

Filling Capillary Micro-Hct Tube

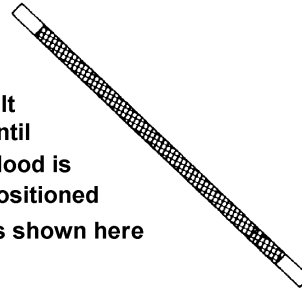


The Filled Capillary Tube

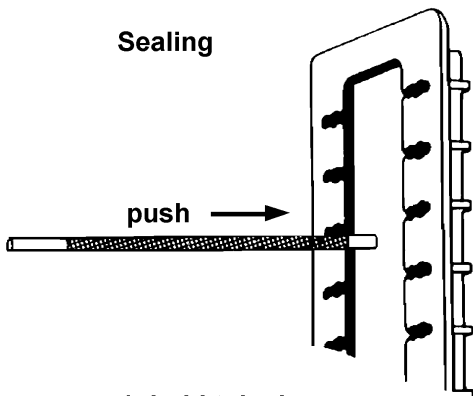


Color-coded band

Tilt until blood is positioned as shown here



Sealing



1. hold tube in a horizontal position
2. hold sealant in a vertical position
3. push tube until bottomed - twist and remove

Position of blood sample

after filling



after positioning

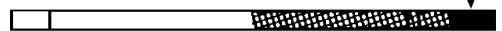


after sealing



sealant

after spinning



top of plasma

top of red cells

bottom of red cells

Section 5

Maintenance

Overview

It is recommended that instrument operators perform periodic inspections and preventative maintenance on all Iris Sample Processing instruments. Contact the customer service department or distributor at any time if the instrument is not functioning properly.



CAUTION - *Unplug the StatSpin VT from the wall outlet before cleaning or performing maintenance.*



WARNING - *Do not expose the StatSpin VT or its rotor to strong or concentrated acids, bases or oxidizing agents, aromatic or halogenated hydrocarbons, esters or ketones.*

Cleaning

Clean the outside surfaces and switch overlay panel with a water-dampened cloth and mild detergent. Clean the inner surface or bowl, a powder-coated steel surface, with a mild detergent, and if necessary, a disinfectant, wiping surfaces with a **dampened** cloth using 70% alcohol or 10% bleach solution.

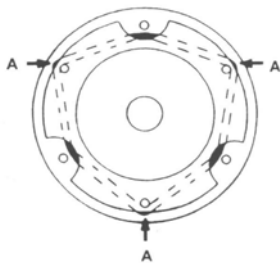


CAUTION - *Do not spray cleaning solutions directly onto the centrifuge bowl or housing; overspray could reach the motor bearings or internal circuitry. Subsequent damage may not be covered by warranty.*

Checking the Rotor Speed

The rated speeds can be checked with a stroboscope or photoelectric tachometer. If the StatSpin VT fails to achieve an operating speed ($\pm 5\%$), contact your distributor or our Customer Service department.

Replacing the O-Ring

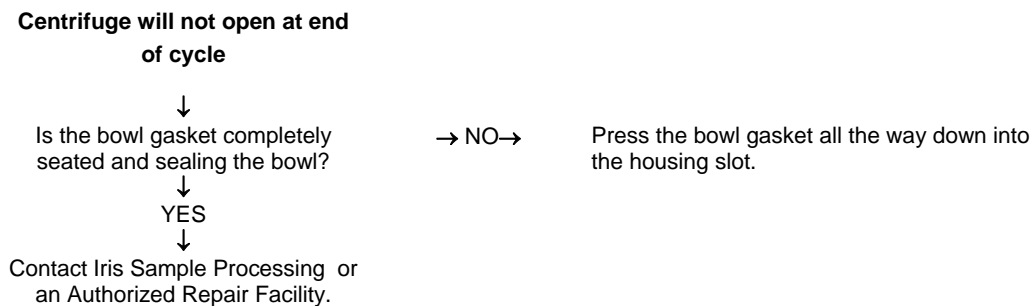
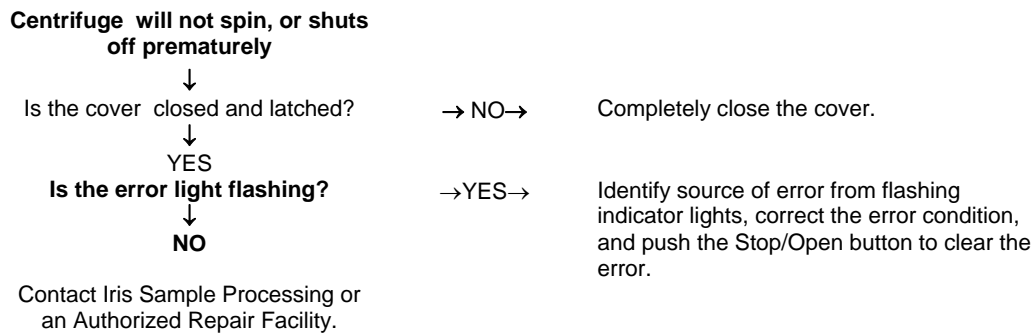
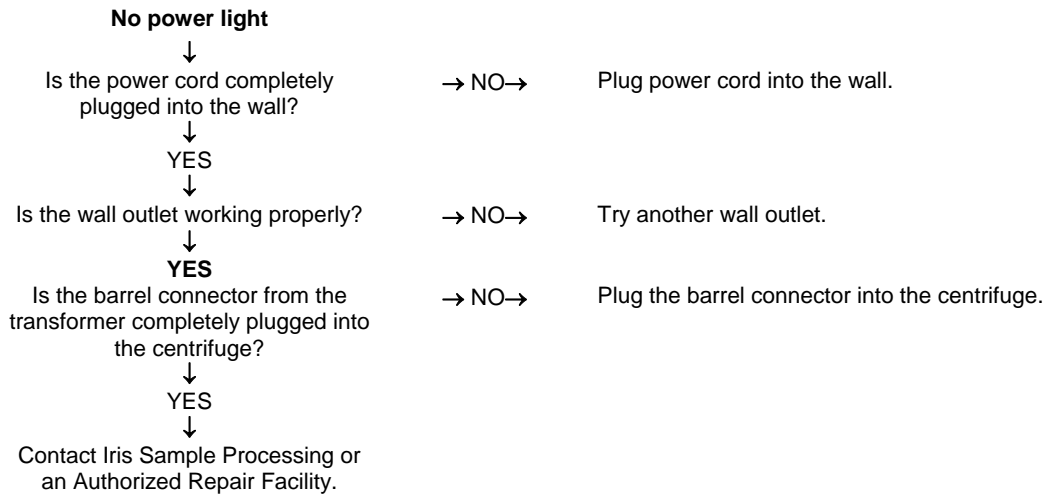


The figure on the left illustrates the position of the rubber O-Ring that is attached to the rotor-holder. If the rotor becomes difficult to install, apply a very small amount of silicone-type lubricant to the 3 points on the O-ring gasket. The O-ring should be inspected regularly and replaced when it appears "flattened" or worn. The O-ring should be replaced as preventative maintenance at least once a year.

A new O-ring can be installed as shown, by weaving it behind and in front of the 6 pins on the rotor-holder.

The points at which the O-Ring touches the rotor are indicated by the letter "A". Extra O-Rings have been included with this manual.

Troubleshooting



Service

Refer all service to Iris Sample Processing (1-800-782-8774) or an Authorized Repair Facility.

Decontamination before returning for service

Any instrument or accessory that has been exposed to blood or other biological materials must be cleaned prior to shipment to the manufacturer or dealer for service. This decontamination is required by Federal Law (Title 48 and 49 of the Federal Regulations) and in accordance with the Environmental Protection Agency's Regulations for Biohazard Waste Management. Iris Sample Processing personnel cannot perform this decontamination.

Appendix

Appendix A - Specifications

Product No.	SSVT (no rotors supplied)
	SSVT-1 (1-RT12 rotor) SSVT-2 (1-RT12 rotor & 2-SV12 adaptors)
Model No.	V901
Cycles/Speeds	
Quick Spin	30 seconds @ 15,800 rpm / 12,000 xg
Normal	90 seconds @ 15,800 rpm / 12,000 xg
Hard Spin	150 seconds @ 15,800 rpm / 12,000 xg
Urine	45 seconds @ 9,800 rpm / 3,900 xg
Hematocrit	120 seconds @ 15,800 rpm / 13,700 xg
Acceleration Time	Approximately 6 seconds
Deceleration Time	Approximately 10 seconds
Electrical	24 Volts, DC, 1.7 amp. Includes switching power supply for 100-240 VAC, 50/60 Hz
Dimensions	Diameter 6.6"/16.25 cm Height 6.3"/13.2 cm Weight 5.5 lbs/2.5 kg
Environmental	For indoor use only Maximum altitude up to 2000 m Ambient temperature 5°C to 40°C Maximum 80% RH up to 31°C decreasing to 50% RH at 40°C Main supply voltage fluctuations should not exceed +/- 10% Transient over-voltages according to installation category II Pollution degree 2

Specifications are subject to change without notice.

References

1. CLSI. "Protection of Laboratory Workers from Occupationally Acquired Infections; Approved Guideline-Second Edition." CLSI document M29-A2 [ISBN 1-56238-453-8]. CLSI, 940 West Valley Rd, Suite 1400, Wayne, Pennsylvania 19087-1898 USA, 2001.
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4. CLSI. "Procedure for Determining Packed Cell Volume by the Microhematocrit Method. Approved Standard-Third Edition." CLSI document H7-A3 [ISBN 1-56238-413-9]. CLSI, 940 West Valley Rd, Suite 1400, Wayne Pennsylvania 19087-1898 USA, 2000.
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6. CLSI. "Procedures and Devices for the Collection of Diagnostic Capillary Blood Specimens ; Approved Standard-Fifth Edition" CLSI document H4-A5 [ISBN 1-56238-538-0]. CLSI, 940 West Valley Rd, Suite 1400, Wayne, Pennsylvania 19087-1898 USA, 2004.
7. CLSI. "Collection, Transport, and Processing of Blood Specimens for Testing Plasma-Based Coagulation Assays; Approved Guideline – Fourth Edition." CLSI document H21-A4 [ISBN 1-56238-521-6]. CLSI, 940 West Valley Rd, Suite 1400, Wayne, Pennsylvania 19087-1898 USA, 2003.



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55-003786-001 Rev. C

Warranty

Iris Sample Processing a division of IRIS International Inc., Chatsworth, CA, takes pride in its products and believes they are manufactured to the highest possible standards. Consequently, Iris Sample Processing warrants to the original purchaser that the instruments shall be free from defects in material and workmanship under normal and proper use, (as defined in the Operator's Manual). For instruments sold outside the United States, contact the authorized dealer in your area for warranty details. This warranty shall extend for a period of 12 months from the date of installation at an end-user site. Provided that the purchaser has filled out and forwarded the Warranty Registration Card, Iris Sample Processing will, at its option, repair or replace any unit covered by this warranty returned to Iris Sample Processing with shipping costs prepaid. Repaired or replaced instruments supplied under this warranty carry only the unexpired portion of the original warranty.

Iris Sample Processing shall not be responsible for damage to an instrument resulting from misuse, negligence, accident, or resulting from unauthorized repairs, alterations, or improper installation. Additionally, Iris Sample Processing shall not be liable for any claims, losses or damages of any third party or for lost profits or indirect or consequential damages of any kind even if Iris Sample Processing has been advised of the possibility of such damages. The purchaser shall be deemed liable for any and all claims, losses, or damages incurred by the use or misuse of the Iris Sample Processing instrument by the purchaser, its employees or others, following receipt of the instrument or other items.

THIS WARRANTY IS GIVEN EXPRESSLY AND IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. THE PURCHASER AGREES THAT THERE IS NO WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR ANY INTENDED PURPOSE AND THAT THERE ARE NO OTHER REMEDIES OR WARRANTIES, EXPRESSED OR IMPLIED, WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE OF THIS AGREEMENT. NO AGENT OR EMPLOYEE OF IRIS SAMPLE PROCESSING IS AUTHORIZED TO EXTEND ANY OTHER WARRANTY OR TO ASSUME FOR IRIS SAMPLE PROCESSING ANY LIABILITY EXCEPT AS SET FORTH ABOVE. THIS WARRANTY IS ONLY APPLICABLE TO THE ORIGINAL PURCHASER, RESIDING IN NORTH AMERICA AND IS NOT TRANSFERABLE.