

# ***VET Express*** VETERINARY CENTRIFUGE

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## **Operator's Manual**

***StatSpin***<sup>®</sup>  
An IRIS Company

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Operator's Manual  
for  
**Vet Express**  
Primary Tube Centrifuge  
Model Number V501-22

**Product Number:**

SSXV Vet Express Centrifuge, for operation on 100 to 240 VAC, 50/60 Hz power source. Includes switching power supply, four-place rotor and tube inserts.

Covered under one or more of the following U.S. patents:

StatSpin and accessories: #4,846,974  
#4,981,585  
StatSpin Express™: #5,566,919

Other patents applied for.

StatSpin is a registered trademark of StatSpin, Inc. an IRIS Company (International Remote Imaging Systems).

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## UNIVERSAL PRECAUTIONS

Universal Precautions should be followed on all specimens, regardless of whether a specimen is known to contain an infectious agent. Universal Precautions have been stated by the Centers for Disease Control in 1987 and updated in 1988 and are reprinted in the National Committee for Clinical Laboratory Standards approved guidelines, "Clinical Laboratory Safety; Approved Guideline." (see references)

### 1.0 DESCRIPTION AND INTENDED USE FOR *IN VITRO* DIAGNOSTIC USE.

The Vet Express is a microprocessor-controlled, high speed bench-top centrifuge designed to rapidly separate blood in original evacuated or syringe type collection tubes. The system produces good quality plasma/serum from whole blood in a two-minute spin. Acceleration and dynamic braking are extremely fast to reduce waiting time. The four-place 30° angle rotor included with the centrifuge is designed to provide rapid separation while minimizing barrier or interface distortion within the tubes.

Vet Express includes a cover interlock system for operator protection. The see-through plastic cover cannot be opened while the rotor is turning and cycles cannot be initiated when the cover is open. The centrifuge operates at a fixed speed of 8500 rpm ( $\pm 250$  rpm), producing centrifugal force of 4440 xg at the maximum tube radius of 5.5 cm. Three factory-set timed cycles may be selected by the operator, the "Quick Spin" is a 30-second cycle; the "Normal" is a 120-second cycle; the "Hard Spin" is a 180-second cycle.

The Vet Express rotor is fabricated of bleach-resistant polypropylene and includes inserts to accept standard glass or plastic 13 x 75 mm blood collection tubes in a variety of closure formats. Additional Rotor inserts for smaller tubes are available separately (see Section 4.2).

Vet Express operates on 24 volts DC, which is supplied from a bench-top switching power supply powered by 100 - 240 VAC.

## 2.0

### UNPACKING & INSTALLATION

## 2.1

#### Check for damage

The centrifuge and accessories are delivered in one carton. Prior to installation, check for damage sustained during transport. If the apparatus or the accessories have suffered any damage in transport, please inform your carrier immediately. Save the shipping carton with all of its components in the event that the instrument needs to be returned for service.

## 2.2

#### Check for complete packaging

Match the contents of the carton with the "Shipping/Packing List" document enclosed. Immediately report any discrepancies to StatSpin or your authorized StatSpin Distributor.

## 2.3

#### Installing the Vet Express Centrifuge

Place the Vet Express on any level, non-porous surface acceptable for laboratory instrumentation. Position the Vet Express away from direct sunlight and sources of heat or cold. The room temperature should be between 15°C and 32°C. Mark a 300 mm clearance around the centrifuge to allow adequate ventilation and safety. Remove foam placed around rotor (for shipping purposes) before operating Vet Express centrifuge. Call StatSpin Customer Service with questions on instrument installation (800-782-8774).



**IMPORTANT:**

The disposable bowl liner (Product No. DL01) must be installed properly before operation of the centrifuge. (See Section 8.2 for installation procedure). Do not attempt to run the centrifuge without the white plastic bowl liner installed.

## 2.4 Power connection

The power supply should be plugged into a grounded outlet within the voltage range indicated on the label on the underside of the power supply. The frequency (Hz) can be either 50 or 60 cycles. When power is connected, the "Quick Spin" light will illuminate and the cover lock (see section 3.2 "Interlock Mechanism") will be released. To turn unit completely off simply disconnect the power plug located at the rear of the unit. The Vet Express utilizes a unique drive and motor suspension system to give you a very quiet, nearly vibration-free operation.



**IMPORTANT:** Use only the switching power supply included with the unit. Use of other power supplies or transformers will damage the Vet Express electronics and will void the warranty.

StatSpin Product No.	Description	MFG	Model
01-3553-001	Centrifuge Power Supply	APS	AD-740U-1240

## 2.5 Removing and installing the Vet Express rotor

The Vet Express is shipped with the rotor installed. To prevent possible damage to the instrument's motor mount, it is important to either replace foam around rotor or remove the rotor whenever the centrifuge is to be moved to another location. To remove the rotor:

1. Remove the tube inserts from the rotor.
2. Remove the rotor locking nut and washer from the rotor holder located at the center of the rotor.
3. Gently rock the rotor back and forth while gently pulling up to free the rotor from the rotor holder.
4. Return the nut and washer to rotor holder to guard against loss.

To re-install the rotor:

1. Remove the tube inserts from the rotor. Place the rotor on top of the rotor holder, making sure that the two mounting pins on the rotor holder are aligned with the two small holes near the center of the rotor.
2. Gently rock the rotor back and forth to make sure that the rotor seats properly on the rotor holder.
3. Install washer, then nut and secure the rotor by tightening the nut with the 7/16th" nut driver provided.
4. Re-install the tube inserts into the rotor cavities. The instrument is now ready for use.



**CAUTION:** Failure to properly install the rotor may result in damage to the instrument and will void the warranty.

### 3.0

## SAFETY FEATURES & PRECAUTIONS

### 3.1

#### Symbols and definitions



Caution: To reduce risk of injury - do not operate with an unbalanced load.

Caution: Inspect rotor for fatigue.

Caution: Incorrect tubes may damage rotor.



Caution: To reduce risk of shock, do not disassemble. Refer servicing to qualified service personnel. There are no user serviceable parts.

### 3.2

#### Interlock mechanism

The Vet Express incorporates an electrically-operated lock mechanism that:

1. Prevents the centrifuge from being operated unless the cover is completely closed and latched.
2. Prevents the cover from being opened while the rotor is turning.

### 3.3

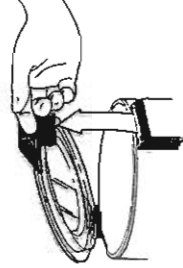
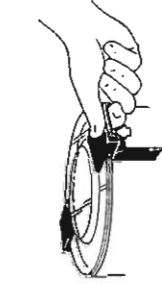
#### Manual latch

Vet Express is also equipped with a manually-operated external latch which continues to hold the cover down after spinning is complete and the electric lock has released.

### 3.4

#### Opening & closing the cover

1. When the cover is completely closed, it is locked shut and can only be released when the "stop/open" button is pushed.
2. The cover is released at the end of the operating cycle. It can also be released by pushing the "stop/open" button. The cover can then be opened by squeezing the black pieces together and lifting (see illustration below).



### 3.4 Opening & closing the cover (cont.)

The cover of the Vet Express is usually left in the down position, but not latched. In the event of a power failure, the automatic lock can be released manually. To do this:

1. Wait for the rotor to come to a complete stop.
2. Unplug the power supply from the electrical outlet.
3. Insert the straightened end of a large paperclip or similar object into the small hole above the "set" button.
4. Manually push the lock lever inward.



**IMPORTANT:** Do not attempt to defeat the safety features of your Vet Express. If the equipment is not used correctly, the protection provided by the equipment may be impaired.

### 3.5 Precautions

To provide StatSpin performance (quiet operation, compact size, rapid processing and convenient use), StatSpin Rotors are designed to be very light weight. All such rotors have a finite lifespan that is dependent on usage. The Vet Express Rotor, Product Number RTX4a, holds the same warranty as the instrument.

Watch for signs of fatigue in your Rotor; cracks or swelling that develop on its surface, or cracks near the insert/sleeve opening. Rotors showing signs of fatigue should be replaced at once.

### 3.6 Hazards

The Vet Express is not explosion-proof and should not be used in a potentially explosive atmosphere.

#### 4.0 WORKING WITH VET EXPRESS

##### 4.1 Rotor loading and balancing

For smooth operation and maximum life of the Vet Express, the rotor must be properly balanced before any cycle is initiated.

1. Two or four tubes may be processed at one time.
2. Use the same size and style tubes in opposite positions.
3. Balance liquid in tubes to within 0.5 mL

When processing an odd number of tubes (1 or 3), place a balance tube with equal weight opposite the odd tube.



**CAUTION:** Replace balance tube after 10 cycles to prevent possible breakage due to repeated stress of centrifugation.

##### 4.2 Tube inserts

The Vet Express Rotor is designed to process a variety of blood collection tubes from 2 to 5 mL. **Tube inserts must be used with the rotor when using glass tubes.** The inserts serve to provide added support for tubes and to contain liquid and tube fragments in the event of tube failure.

The Vet Express is provided with four tube inserts for 13 x 75 mm tubes (Product No. SV01). Optional tube inserts for smaller tubes are also available.

##### Tube Inserts for the Vet Express Rotor

Nominal Draw	Tube Dimensions	Use Insert Product No.
1.5 mL ( <i>microtubes</i> )	approx. 13 x 40 mm	SV04 (4 / bag)
2 mL	10.25 x 47 mm	SV03 (4 / bag)
3 mL	10.25 x 64 mm	SV02 (4 / bag)
1.2 mL	<i>Monovette tubes</i>	SV02 (4 / bag)
4 mL	10.25 x 82 mm	SV01 (4 / bag)
5 mL	13 x 75 mm*	SV01 (4 / bag)

\*with conventional or Hemogard\*\* closures

**Note:** The Vet Express cannot be used to spin 13 x 100 mm, 16 x 75 mm, or 16 x 100 mm blood collection tubes. Samples with a specific gravity of over 1.2 must not be centrifuged in the Vet Express.

\*\*Trademark of the Becton Dickinson Company.

### 4.3

#### Operation

The VetExpress has three microprocessor controlled spin cycles that may be selected by the operator. To change the cycle, press the "select" button until the LED next to the desired cycle is illuminated. Press "start" to initiate the cycle. All cycles will stop automatically and the cover will not open until the rotor comes to a complete stop. All cycles spin at 8500 rpm.

- A. Quick Spin Cycle - 30 seconds  
The Quick Spin is intended to provide a short spin to immediately separate the red cells from the plasma/serum.
- B. Normal Spin Cycle - 120 seconds  
The Normal Spin is intended to produce good quality plasma/serum from whole blood for chemistry testing.
- C. Long Spin Cycle - 180 seconds  
The Long Spin cycle provides 50% greater total centrifugal effect than the Normal Spin cycle and is intended for specialized applications requiring a minimum of particles or cells in the supernatant.

### 4.4

#### Spin cycle abort

A cycle in progress can be terminated at any time by pressing the "stop/open" switch. The cover will remain locked until rotor has decelerated to a complete stop. Do not attempt to unlatch the cover until the rotor has stopped and the interlock solenoid has released. A cycle cannot be restarted while the rotor is decelerating.

### 4.5

#### Rotor unloading

1. At the completion of a timed cycle, the rotor decelerates to a complete stop in 25 seconds and the latch interlock automatically unlocks.
2. Squeeze the latch against the handle and lift the cover to open (see section 3.3).
3. Carefully remove tubes so as not to resuspend the sediment.



**CAUTION:** Do not attempt to open the cover before the rotor has decelerated to a complete stop.

## 5.0

### CONTROLS & INDICATORS

## 5.1

### Front Panel Controls

The cycles of the Vet Express are selected by depressing the "set" button until the LED next to the desired cycle is illuminated. When power is first applied, the "Quick Spin" cycle will be illuminated. Spin times are indicated below. To initiate the cycle, install the appropriate rotor, close and latch the cover, select the desired cycle and press the "start" button on the front panel.

#### "Quick Spin"

- A 30 second cycle for immediate separation of red cells.

#### "Normal"

- A 90 second cycle for most blood separation, achieves good quality plasma/serum.

#### "Hard Spin"

- A 150 second cycle for achieve particle poor plasma/serum, (e.g. will greatly reduce presence of fibrin strands and platelets in plasma/serum).



#### "set" button

- The "set" button allows for selection of different cycles



#### "start" button

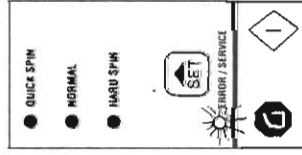
- The "start" button initiates one of the pre-selected cycles.



#### "stop/open" button

- The "stop/open" button interrupts the cycle and stops the centrifugation. The "stop/open" button is rarely used as the cycles are automatically timed. It can be used to release an accidentally latched cover.

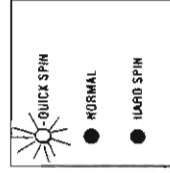
## 5.2 Indicators



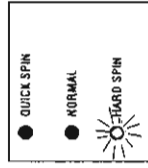
### System Malfunction Codes

Error codes for the Vet Express are specified by a combination of the "Error/Service" LED flashing and 1, 2 or 3 LEDs on the front panel illuminating.

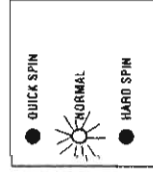
<--- Error/Service Light flashing



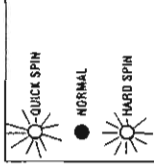
rotor failed to reach rpm within thirty seconds



insufficient power to maintain rpm and/or use of incorrect rotor



cover opened or cycle changed during operation

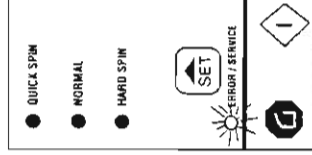


rotor spun backward during reverse braking

----> To reset the instrument from an error message mode, depress the "stop/open" button.

### Scheduled Instrument Service Code

The Vet Express includes a microprocessor controlled cycle counter which will continuously illuminate the "Error/Service" LED on the control panel after 18,000 cycles (+/- 5%) have been completed. A continuous illumination of this LED indicates that the useful life of the instrument's drive system is near an end. While the instrument may continue to function normally with the "Error/Service" LED illuminated, the user is advised to immediately contact StatSpin or an Authorized Distributor to arrange scheduled replacement of the instrument's drive system.



<--- Error/Service Light continuously illuminated

## 6.0 SPECIFICATIONS

### 6.1 Technical specifications

Product No.:	SSXV
Model No:	V501-22
Speed:	8500 rpm $\pm$ 250
Force:	4440 x g
Spin Time:	"Quick Spin": 30 seconds Normal : 120 seconds "Hard Spin": 180 seconds
Acceleration Time:	Approximately 20 seconds
Deceleration Time:	Approximately 25 seconds
Electrical:	24 Volts DC, 1.7 amps. Includes switching power supply for 100-240 VAC, 50/60 Hz.
Dimensions:	Height 6 1/4" 16 cm Diameter 6 5/8" 16.3 cm 5 lbs. 1.8 kg
Weight:	
Environmental	
Conditions:	- Indoor use. - Altitude up to 2000m - Temperature 5°C to 40°C - Maximum relative humidity 80% for temperatures up to 31°C decreasing linearly to 50% relative humidity at 40°C. - Main supply voltage fluctuations not to exceed +/- 10% of the nominal voltage. - Transient overvoltages according to installation category II - Pollution degree 2

## 6.2 Features

- Low-voltage centrifuge motor.
- Microprocessor-controlled.
- Green light indicates when cycle in progress.
- Cover interlock system with mechanical bypass (usable during power failure).
- High strength see-through cover.
- Disposable bowl liner, bleach compatible rotor.
- Designed to meet centrifuge safety requirements of International Electrotechnical Commission Standard 1010-2-020.

## 7.0 MAINTENANCE

### 7.1 General

StatSpin recommends that instrument operators perform periodic inspections and preventive maintenance on all StatSpin instruments.

Contact the manufacturer customer service department if, at any time, the instrument is not functioning properly. (e.g. not cycling at selected time or speed, etc.)



**IMPORTANT:**

Unplug the Vet Express(from the wall outlet) before starting any maintenance work.



**IMPORTANT:**

DO NOT SPRAY the bowl or outer surfaces with detergent or bleach. Excess liquid will harm the electronics; subsequent problems **will not** be covered under warranty.



**WARNING:**

Do not expose Vet Express and its rotor to strong or concentrated acids, bases, esters, aromatic or halogenated hydrocarbons, ketones or strong oxidizing agents.



## Centrifuge disinfecting and general cleaning

The Vet Express is supplied with a disposable bowl liner to simplify routine cleaning. Additional bowl liners are available from your authorized StatSpin distributor. Order Product Number DL01 (10/box). The liner should be replaced monthly or whenever a spill occurs.

1. Open the centrifuge cover.
2. Unplug the power supply from electrical outlet.
3. Remove all tubes and inserts from the rotor.
4. Remove the rotor (see Section 2.5).
5. Carefully remove the black gasket surrounding the chamber opening by pulling up one of the gasket ends at the rear of the unit.
6. Remove the chamber (bowl) liner and dispose of it in a proper receptacle.
7. Clean the chamber interior and cover with a cloth lightly dampened with a detergent, a commercial disinfectant (e.g. Bacdown<sup>\*\*\*</sup>) or a 10% bleach solution.
8. Install a new disposable liner in the chamber.
9. Replace the black gasket around the chamber opening, on top of the liner flange.
10. Reinstall the rotor (see Section 2.5)
11. Plug in the power supply.

## 7.3 Rotor disinfecting procedures

1. Open the centrifuge cover.
2. Unplug the power supply from electrical outlet.
3. Remove all tubes and inserts from the rotor. If a tube has cracked or fractured, this operation should be performed in a manner to minimize aerosols. Carefully remove the insert containing the broken tube and dispose of the insert with broken tube in a suitable receptacle.



**IMPORTANT: DO NOT ATTEMPT TO CLEAN THE INSERT.**

Glass fragments imbedded in the insert material will cause subsequent tube breakage. Replace with a new insert. Do not run instrument without rotor inserts in place.

4. Remove the rotor (see Section 2.5).

<sup>\*\*\*</sup>Bacdown is a trademark of Decon Lab, Inc.

### 7.3

#### **Rotor disinfecting procedures (cont.)**

5. The rotor and inserts may be soaked in detergent and warm water, or a 10% bleach solution. Use a sponge or soft bristle brush to clean the rotor, tube cavities and tube insert. **DO NOT USE A WIRE BRUSH.**
6. Dry the rotor and inserts with a clean absorbent towel or allow to air dry.
7. Re-install the rotor (see Section 2.5)

### 7.4

#### **Service**

There are no user-serviceable parts in the Vet Express. Refer to the Warranty or your StatSpin distributor for explicit instructions. Be sure to complete and return the Warranty Card as directed.

#### **Decontamination**

Any instrument or accessory containing accumulated blood and/or other chemical deposits must be cleaned prior to shipment to the manufacturer/dealer for service. This decontamination is required by Federal Law (Title 48 and 49 of the Federal Regulations) and in accordance with the E.P.A.'s Regulations for Biohazard Waste Management. This decontamination cannot be performed by IRIS/StatSpin personnel.

### 8.0

#### **REFERENCES**

1. National Committee for Clinical Laboratory Standards. Clinical Laboratory Safety; Approved Guideline, Document GP17-A, Vol. 16, No. 6.
2. National Committee for Clinical Laboratory Standards. Proposed Guideline. Protection of Laboratory Workers from Infectious Disease Transmitted by Blood, Body Fluid, and Tissues. Document M29-T2, Vol. 11, No. 14.
3. CDC. Recommendations for prevention of HIV transmission in health care setting. MMWR (Supp. No. 2S): 2S-18S, 1987.
4. CDC. Update: Universal precautions for prevention of transmission of human immunodeficiency virus, hepatitis B virus and other blood borne pathogens in health care settings. MMWR 37:377-387, 1988.

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