



NanoSpin™

Instruction Manual

The Tulip Medical Products NanoSpin is assembled in the USA and is intended for use as a general purpose laboratory or operating room centrifuge.



ADVANCED CLOSED-SYSTEM TISSUE PROCESSING

The Tulip NanoSpin centrifuge with angled 8-place rotor spins up to eight 10cc BD syringes. The NanoSpin is designed to make it easy for you to separate adipose tissue in a completely closed system using Tulip Crowns™ along with 10cc BD syringes. Once centrifuged, the syringes can be removed and used to expel infranatant and then your separated fat, ready for use or further sizing.

Please note that only BD syringes are validated to work with the Tulip Nano System.

Your NanoSpin has 3 built-in pre-set programs. Program #1 is used to separate adipose. See **Page 6** for more information on pre-set programs.

Installation and Set-up

Includes:

- | | | |
|-------------------------------|-----------------------------|-----------------------------------------|
| 1 NanoSpin Centrifuge | 1 8-place rotor (installed) | 8 Autoclavable-aluminum syringe sleeves |
| 1 12v / 8amp AC power adapter | 1 3-prong wall power cord | |

Read the instruction manual in full before operating. Store the operation instructions in a safe place, easily accessible by the trained staff who will be operating the centrifuge.

1. Remove the NanoSpin from the shipping container and inspect for any possible shipping damage. If the centrifuge appears to be damaged from shipping, please contact Tulip immediately and do not discard the container.
2. Read and fill out the warranty form online: http://www.lwscientific.com/warranty_form The warranty form documents your purchase. Failure to complete the warranty form may void any warranty claims on the unit.

3. Place the NanoSpin on a sturdy, level surface. Turn the lid latch to the UNLOCK position (“U”). Open to verify that there are no loose objects or packing materials inside the chamber, and that the 8 large aluminum tube shields are in place and seated in the angled 8-place rotor.
4. Verify the power switch on the front of the unit is in the OFF position. Connect the 3-prong wall power cable to the power supply adapter, and then connect the power supply adapter to the back of the NanoSpin. Plug the power cable into an approved and properly grounded outlet. **Do not insert specimen syringes prior to the initial test run.**
5. Close the lid. Turn the lid latch to the LOCKED position (“L”) and turn power switch ON. Adjust the speed to 3500rpm and set the timer for 10 minutes. Initiate NanoSpin and press RUN. If there is a smooth whirring sound and the unit accelerates with little or no vibration, your NanoSpin centrifuge is ready to operate. If there are loud, unusual sounds or if you experience excessive vibration, immediately turn the unit off. **DO NOT OPERATE.** Contact your distributor or Tulip Medical Products.

Loading and Operating



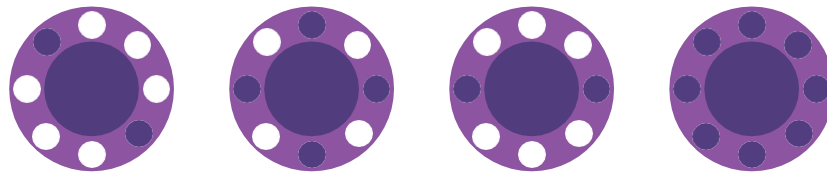
This symbol refers to hazards that may be encountered when using this product.

CAUTION means that damage to product or environment could occur
WARNING means that injury or contamination could occur

1. The anodized 10cc syringe sleeves are designed to hold crowned and capped 10cc BD syringes. Make sure syringe caps are installed and Tulip Crowns™ are secured prior to loading the syringes into the NanoSpin. Insert/Slide syringes into sleeves. **Never force a syringe into the syringe sleeve.** The syringe sleeves are designed to hold 10cc BD syringes.

For detailed instructions on the Tulip Crown System, please reference the Tulip Crown Quick Start Guide, (included) or found at www.tulipmedical.com/getstarted. If you do not have the proper Tulip Crowns™, contact Tulip Medical Products at: sales@tulipmedical.com or call 1.858.270.5900

2. Spin only balanced loads. Make sure that the sleeves contain equal weight. Weigh the loaded syringes and make sure they are equal in weight. Syringes of equal weight and size should be placed opposite each other as pictured below. Use water-filled syringes for balance, if necessary. Proper sample balancing will improve sample separation and will extend the life of the NanoSpin. Out of balance loads may wobble, create excess noise, break or damage the NanoSpin. Please refer to the examples below.



3. After each run cycle has ended, the lid must be opened and closed before the next cycle is run. This allows for re-loading and re-balancing of each load.



WARNING: Always ensure rotor is secure before each use!
DO NOT OPEN WHILE SPINNING!

The following instructions describe the touchscreen Graphical User Interface (GUI) usage for the Tulip NanoSpin Centrifuge. Upon plugging in the unit and flipping the red power switch to ON, the touch screen will activate and display the Home Page.

The various display pages are noted throughout the Touch Screen Operation Instructions and refer to corresponding sections. It is recommended to refer to these sections for guidance.

1. Home Page

The Home Page shows the following sections:



Idling at the **Home Page** for 60 seconds will activate the sleep screen. Touching the screen or unlocking/locking the lid will return the user to the **Home Page**.

Run Button:

The status of the lid (LOCK or UNLOCK) is displayed at the top of the screen.

When the lid latch is in the UNLOCK position, the Run Button will display red RUN text and a red open symbol. Attempting to press the Run Button at this stage will cause the unit to not run and instead display the **Error Page**. Pressing the Error Button will return the user to the **Home Page**.

To prepare the centrifuge for use, set the lid to the LOCK position. The Run Button will display green RUN text and a green closed symbol. Pressing the Run Button at this stage will begin centrifuge operation with the currently active time and RPM settings and display the **Running Page**.

Preset Buttons

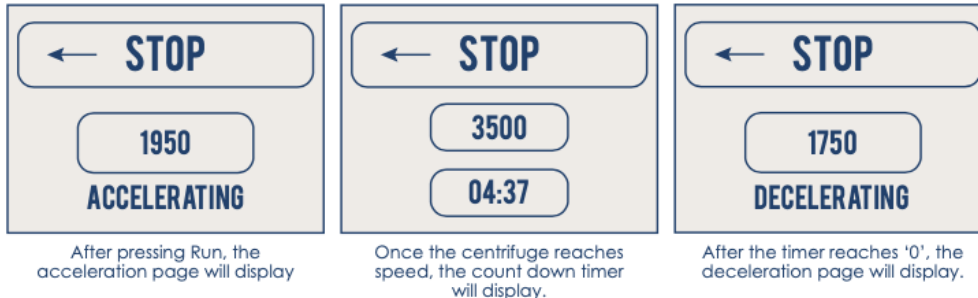
The currently active preset is highlighted. Selecting a different preset will highlight the selected preset and change the Time and RPM to the corresponding settings. Entering **Centrifuge Settings Page** will cause the currently active preset to be deselected. Any changes made through the **Centrifuge Settings Page** will be reflected in the Time and RPM until a preset is reselected or the unit is power cycled.

To Set Time and RPM

The current centrifugation time and RPM parameters are displayed at the bottom of the screen. Pressing the Time or RPM buttons will display the **Centrifuge Settings Page**.

2. Running Page

The **Running Page** shows the following sections:



Current RPM

Displays the Current RPM. The Current RPM updates as the rotor

accelerates or decelerates.

Acceleration

Displays whether the motor is accelerating or decelerating. When the motor reaches the desired RPM, this section is replaced with the Display Timer.

Display Timer

Displays the remaining time, counting down from the set starting time, after the centrifuge reaches the RPM.

When the Display Timer reaches 00:00, the motor begins deceleration until coming to a complete stop. The "Done" screen will display.

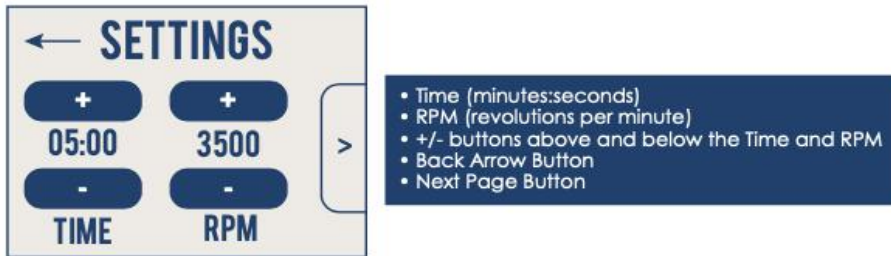
Back Arrow Button

Pressing the Back Arrow Button during acceleration or Display Timer countdown will begin deceleration until the motor comes to a complete stop. The "Done" screen will display.

To exit the **Running Page** and return to the **Home Page**, press the Back Arrow Button when the "Done" screen is displayed.

3. Centrifuge Settings Page

The **Centrifuge Settings Page** shows the following sections:



The **Centrifuge Settings Page** allows the user to set a specific time and RPM without changing a preset default. Reselecting a preset or power cycling the unit will cause the changes made in **Centrifuge Settings Page** to be lost.

To Set Time and RPM

To increase or decrease the Time, press the + or - button respectively. The maximum/minimum time is 60:00/00:15. To increase or decrease the RPM, press the + or - button respectively. The maximum/minimum RPM is 3500/500. Press and hold the + or - buttons to continuously change the Time or RPM in increments.

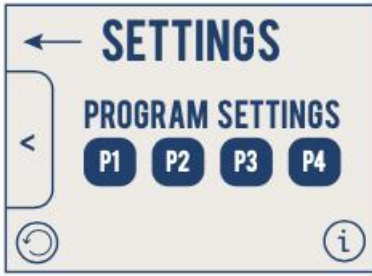
Back Arrow Button

To save any changes made to the Time and RPM, exit the **Centrifuge Settings Page**, and return to the **Home Page**, press the Back Arrow Button.

Next Page Button

To enter **Centrifuge Additional Settings Page**, press the Next Page Button.

4. Centrifuge Additional Settings Page



- Run Button
- Time (minutes:seconds)
- RPM (revolutions per minute)
- Preset Buttons

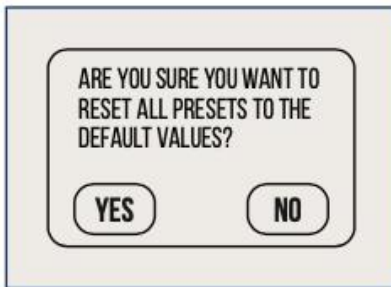
Program Presets (P1, P2, P3, P4)

To change the default Time and RPM values of a preset, press the corresponding program preset button. Changes made to preset defaults will remain unless preset defaults are reset.



Reset Preset Defaults Icon

To reset all changes made to the preset defaults, press the reset preset defaults icon.



Selecting “Yes” on the following confirmation window will reset all preset settings to their default values:

PRESET	TIME (MINUTES)	RPM	APPLICATIONS
P1	3:00	2800	Adipose Separation
P2	12:00	1800	Blood Plasma PPP
P3	08:00	1800	Blood Plasma PRP
P4			Open

Information Icon

To enter the **Diagnostics Page**, press the information icon.



Back Arrow Button

To return to the **Home Page**, press the Back Arrow Button.

Previous Page Button

To return to the **Centrifuge Settings Page**, press the Previous Page Button

5. Programming Page - For programming the presets (P1, P2, P3, P4)

The **Programming Page** shows the following sections:



There is a **Programming Page** for each preset (P1, P2, P3, P4). The **Programming Page** can be entered by selecting a preset on the **Centrifuge Additional Settings Page**.

To Set Time and RPM

To increase or decrease the Time, press the + or - button respectively. The maximum/minimum time is 60:00/00:15.

To increase or decrease the RPM, press the + or - button respectively. The maximum/minimum RPM is 3500/500.

Press and hold the + or - buttons to continuously change the Time or RPM in increments.

Changes made to the Time and RPM in the Programming Page are NOT reset after the unit is turned off and on again.

Back Arrow Button

To save any changes made to the Time and RPM, exit the **Centrifuge Settings Page**, and return to the **Home Page**, press the Back Arrow Button.

6. Diagnostics Page

To enter the **Diagnostics Page**, press the information icon on the bottom right corner of the **Centrifuge Additional Page Settings**.

The **Diagnostics Page**, displays the following sections:



The screenshot shows the Diagnostics Page with two main sections. The left section is a light gray box with the title 'DIAGNOSTICS' in blue. It lists the following information:

Parameter	Value
SOFTWARE VERISON:	E8 V1.00
DATE BUILT:	APR 20, 2022
MOTOR RUNTIME:	0:20:25.632
ACCELERATION ERRORS:	0
OVERSPEED ERRORS:	3
LID ERRORS:	10

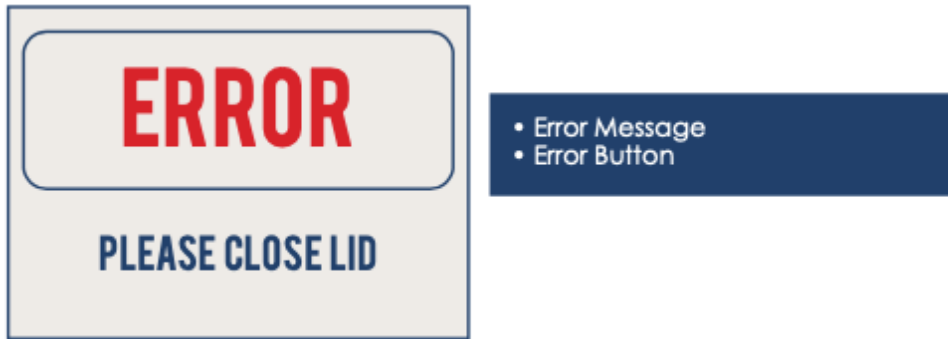
The right section is a dark blue box with a white list of items:

- Software Version #
- Date Built
- Motor Runtime
- Acceleration Error Count
- Overspeed Error Count
- Lid Error Count

To exit the **Diagnostics Page** and return to the **Home Page**, press the screen.

7. Error Page

The **Error Page** shows the following sections:



Improper usage of the unit will cause the interface to display the Error Page.

Error Message

Displays the method to resolve the error.

ERROR	MESSAGE	CAUSE
Overspeed	Aborted. Motor over max speed.	Unit accelerates beyond acceptable RPM.
Acceleration	Aborted. Motor not accelerating.	Unit cannot accelerate to set RPM.
Lid UNLOCK	PLEASE CLOSE LID Aborted. Please close lid (if running) Please close lid (try to run with open)	Lid unlocked during run.
Start	CANNOT BEGIN WHILE ROTOR IS SPINNING.	Attempting to start run while rotor is spinning.

Error Button

Pressing the error button will return the display to the **Home Page**.

Cleaning, Maintenance & Sterilization

NanoSpin Centrifuge

With proper care and maintenance, the NanoSpin centrifuge will provide years of service. Please follow these recommended guidelines:

1. Motor and electrical maintenance: The NanoSpin utilizes a PMDC motor and its bearings are permanently lubricated. It should not need servicing for the life of the centrifuge. Likewise, the electrical components were designed for high reliability and should not need regular service. However, if repairs should be needed, please contact LW Scientific.

Contact LW Scientific at: 770-270-1394 or Support.lwscientific.com

2. Never force a syringe into the syringe sleeve. The syringe sleeves are designed to hold 10cc BD syringes.

The NanoSpin utilizes a PMDC motor and its bearings are permanently lubricated. It should not need servicing for the life of the NanoSpin. Likewise, the electrical components were designed for high reliability and should not need regular service. However, if repairs should be needed, please contact LW Scientific. Because of the safety issues with high g-forces in the NanoSpin, it is recommended that rotors and syringe sleeves be inspected every 6 months for corrosion and fatigue. If there is any indication of wear, the rotor and sleeves should be removed from service. Contact LW Scientific for return instructions of rotor and sleeves for evaluation by a technician for repair and replacement. It is also recommended that after 2 years of service, rotors and syringe sleeves be returned to LW Scientific for inspection. Following these procedures will ensure product quality and ensure laboratory/operating room safety.

Sleeves & Tulip Crowns

1. Clean and sterilize syringe sleeves according to Tulip Reusable Instruments Instructions for Use (included) or www.tulipmedical.com/getstarted. Use only 10cc BD syringes with syringe caps and the 10cc BD Tulip Crowns.
2. Keep the syringe sleeves clean. If fluid leakage occurs, safely dispose of the fluid and thoroughly clean and disinfect the inside and outside of the syringe sleeve per Tulip Reusable IFU.

Additional syringe sleeves are available for purchase from Tulip Medical Products.

Syringe Caps

1. The syringe caps are intended to be single use. Please dispose of the caps after use.

Additional syringe caps are available for purchase from Tulip Medical Products.

Specifications

Maximum nominal:	3,500 RPM (+10% -5%)
Maximum nominal RCF:	1,534g
Max. Volume (8-Place Rotor):	120ml
Max Power:	12V, 8.0A
Height:	9.5 inches
Width:	11 inches
Weight:	9.5 lbs.
Boxed Dimensions:	13.5 x 12 x 15 inches
Boxed Weight:	12 lbs.

The Tulip NanoSpin is intended for use as a general purpose laboratory and operating room centrifuge.

Quality

Built for Tulip Medical Products by:

LW Scientific
 865 Marathon Parkway
 Lawrenceville, GA 30046
 info@lwscientific.com
 Phone: 800-726-7345

G-Force

RCF (g's)	Radius (mm)	RPM
31	112	500
80	112	800
125	112	1000
180	112	1200
245	112	1400
282	112	1500
321	112	1600
406	112	1800
501	112	2000
606	112	2200
721	112	2400
846	112	2600
982	112	2800
1127	112	3000
1282	112	3200
1364	112	3300
1450	112	3400
1534	112	3500



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