



SUBJECT: INSTRUMENT START-UP, OPERATION AND SHUTDOWN

I. POLICY:

Outline to proper operating instructions for equipment used in the cytology laboratory.

II. PURPOSE:

The instruments used in cytology are state of the art pieces of equipment which are extremely safe to operate. However, it can lead to danger for users or others if used by untrained staff, in an inappropriate way or purpose other than that it was designed for.

III. POLICY SCOPE:

This policy applies to all staff that is involved in processing cytopathology specimens on Methodist Campus.

IV. PROCEDURE:

A. Rotina 380 Centrifuge

1. Start-up

a. Switch on the main switch (switch position "I") The LEDs in the keys are blinking.

The following displays appear one after the other:


i. Centrifuge model

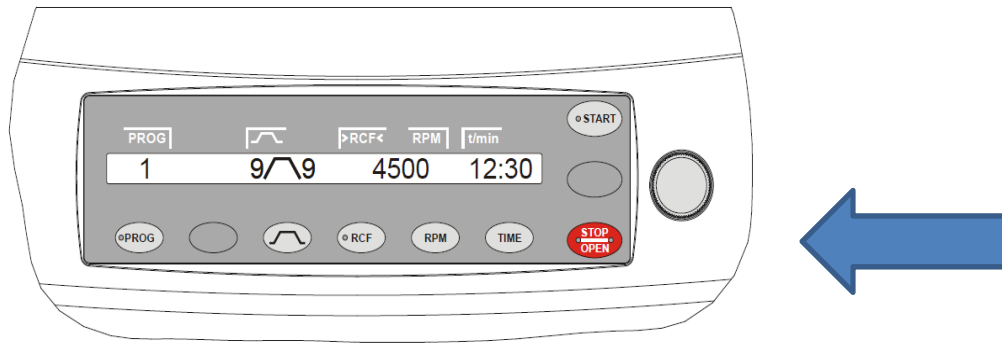
ii. Program version

iii. The rotorcode (rotor), the maximum rotor speed (Nmax) and the preset centrifuging radius (R) of the last rotor that was recognized by rotor recognition.

iv. **OPEN OEFFNEN**

b. Open the lid

i. Press the button . The lid unlocks via the motor and the left LED in the pushbutton.



- c. Load the rotor
  - i. Check the rotor for firm seating.
  - ii. Load hangers with centrifuge containers. The rotors and hangers may only be loaded symmetrically. Distribute the centrifuge containers evenly on all rotor positions.
- d. Close the lid
  - i. Place the lid and lightly press down the front edge of the lid. The left LED in the button | **OPEN / STOP** | lights up.
2. Centrifugation
  - a. Set a run time or call up a program with a preset time.
  - b. Press the | **START** | key. The LED in the | **START** | key blinks until the rotor has been imported, it is subsequently lit.
  - c. Once the time has run up or if the centrifuge run is canceled by pressing the | **OPEN / STOP** | key, run-down takes place with the selected run-down parameter.
 

Once the rotor has come to a standstill, the LED in the | **START** | key switches off and the OPEN OEFFNEN is displayed. The right-hand LED in the | **OPEN / STOP** | key also switches off, the left LED in the | **OPEN / STOP** | key starts blinking and continues blinking until the lid is opened.
3. Emergency Stop
 

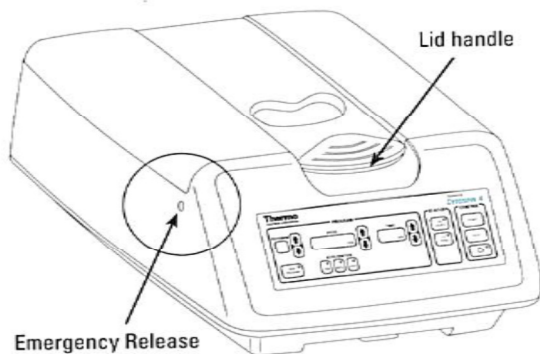
Press the | **OPEN / STOP** | key twice.
4. Safety
  - a. The centrifuge should be installed on a good, stable base.
  - b. Before using the centrifuge absolutely check the rotor for firm placement.
  - c. When the centrifuge is running, no person, dangerous substances or objects may be within the safety margin of 300 mm around the centrifuge.
  - d. The centrifuge may no longer be put into operation when the centrifuging chamber has safety-related damages.

## **B. Shandon Cytospin 4**

1. Start-up
  - a. Press the I (ON) side of the I/O switch inward.

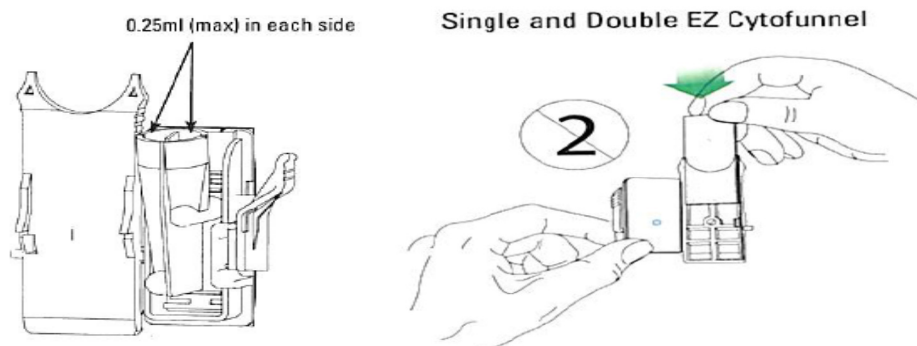
You should notice the following:

- i. All the displays and LEDs will light.
  - ii. The power up tune will be played.
  - iii. The last program used will be displayed.
  - iv. The **LID Open** LED will flash.
- b. Open the lid and remove the sealed head.
- i. The lid handle is situated at the front of the instrument with the latch just underneath it.
  - ii. To open the lid, squeeze the lid handle and latch together.

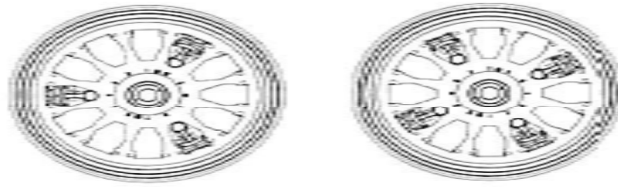


## 2. Loading the Shandon Cytospin 4

- a. Place the slide with the frosted label end to the top and the frosted slide towards the EZ Cytofunnel.



- b. To close the double EZ Cytofunnel, pivot the slide carrier part toward the funnel and press the two halves together. It should close with a positive locking action and an audible click should be heard.
- c. To load the sealed head, remove the lid and place up to 12 EZ Cytofunnels assemblies into the slots. Make sure the EZ Cytofunnels are correctly fitted into the sealed head and that they remain tilted forward. Verify that the cytofunnel assemblies are evenly distributed in the seal head to ensure proper balance.



- d. Add 2 drops of specimen into each EZ Cytofunnel chamber with a pipette.
  - e. Replace the lid of the sealed head and push down the center button to lock.
  - f. Place sealed head into the cytospin chamber.
  - g. Close the instrument lid.
3. Centrifugation
- a. Set a run time, speed required and acceleration required or call up a program with a preset time.
    - i. For cytology specimens the following settings will be used:  
SPEED: 1000 TIME: 5 min ACCELERATION: Med.
  - b. Press the [START] to begin. The lid will automatically lock.
  - c. Once time has run up the centrifuge lid will unlock automatically and can be opened.
  - d. Remove sealed head after the instrument has complete stopped spinning. Open the lid and remove the sealed head.
  - e. To remove slide from the EZ Cytofunnel, press the release lever so that the lock catch is released. Open the EZ Cytofunnel and remove the slide. Spray fix the slide immediately.
  - f. Discard the funnel. DO NOT use the funnel more than once.
4. Switch off/Emergency Release
- a. When instrument is regularly used, the instrument should be switched off using the Standby button on the main control panel.
  - b. If the instrument is to be left unattended for long periods of time, or is to be moved, the power to the instrument should be turned off. Press the O (OFF) side of the power switch.
  - c. If the lid is locked and power is not available, use the Emergency Release.
    - i. Remove the small cap on the left side of the instrument.
    - ii. Insert the lock release tool
    - iii. Push the tool inward to release the lock. Then use the lid handle and latch to open the lid.
    - iv. If the lid of the sealed head becomes locked, push in small ball bearings on underside of unit to release.
5. Safety
- a. The centrifuge should be installed on a good, stable base.
  - b. Make sure the vents on the sides and underneath the cytospin are not covered.
  - c. When the centrifuge is running, no person, dangerous substances or objects may be within the safety margin of 300 mm around the centrifuge.
  - d. The centrifuge may no longer be put into operation when the centrifuging chamber has

safety-related damages.

C. AutoCyte Prep Operating Procedure

1. See cytology procedure #28 "Autocyte Prep Operating Procedure for GYN"

D. Tissue-Tek DRS 2000 Automated Stainer

1. Start-up

- a. Before starting a run, verify the water supply and drain hose are securely connected; the robotic arm is free to move; and the cover and lower door are properly closed.
- b. Verify all required solutions are filled to an adequate volume. A minimum of 620mls (bottom of two lines) is required for a run with 2 slide baskets.
- c. Turn on the instrument by pressing the power switch to the "I" position, which is located on the lower right side of the instrument.
- d. When the DRS 2000 is first turned on, the Main Menu is displayed

2. Starting a staining program

- a. Place slides in the basket with the labels facing "UP SIDE."
- b. The robotic arm can accommodate up to two baskets of twenty slides each, at one time.
- c. Secure each basket to the metal hook slide adapter.
- d. Press the [START] key from the main menu.
- e. Place the basket set to be run in the appropriate Start Station labeled, S1 or S2.
- f. If the "BATCH" message is displayed on the monitor as "MODE: BATCH," switch it to continuous mode pressing [MODE]
- g. If the desired method is not currently displayed at the top of the screen, press the [METHOD] key to view your options. Select "Papanicolaou" stain by using the arrow keys to scroll and the [SELECT] key.
- h. To start the desired method, press the [START] key.
- i. The robotic arm will pick up the basket set and move it to the first programmed station.

3. Adding basket sets

- a. To add additional baskets during the continuous staining mode, press the [ADD] key from the process monitor screen.
- b. The message will read "PLACE THE BASKETS FOR THE 1<sup>ST</sup> RUN AT S1 AND PRESS START."
- c. If you wish to change the method, press the [METHOD] key and select the desired method to be run.
- d. Add the basket (s) by pressing the left side of the door and placing the basket set in the appropriate start station.
- e. Close the door and press the [START] key.

4. Monitoring a staining process

- a. The Process Monitor screen is displayed during the staining process. The Process Monitor is a visual display which identifies where all staining runs are located at any given time.
- b. Each basket set will be moved through the stainer according to the specific staining method selected.

- c. Each run will be given a number and the number will appear in the current staining station at any given time.
5. Interrupting or canceling a staining process
  - a. Press [PAUSE] from the Process Monitor screen
  - b. If the robotic arm is moving, the message, "PLEASE WAIT" will appear. When the arm has stopped, the Process Cancellation screen will be displayed
  - c. [EXIT] will return you to the Process Monitor screen and staining will resume
  - d. [STATUS] will provide an end time report of a specific run in progress.
  - e. [ABORT] will cancel a staining run.
  - f. If staining is aborted, the basket set will need to be removed from the upper or lower level of the instrument.
6. End of a staining process
  - a. When a staining process is complete, the message "THE STAIN PROCESS COMPLETED. PLEASE REMOVE THE BASKET FROM E1, E2, OR PE" is displayed and an audible tone is triggered.
  - b. Remove the basket from the end station and press the [CONFIRM] KEY.
7. Shutdown
  - a. If the instrument is not operating, turn the power to the off position "O".
  - b. Cover all solutions when not in use to prevent evaporation.
8. Safety
  - a. The instrument must be located in a well-ventilated area, avoiding exposure to corrosive vapors or temperature extremes.
  - b. The bench must have a firm, level surface capable of supporting at least 130kgs (287lbs) of weight.

#### E. Tissue-Tek Automated cover slipper

**Before using a roll of coverslipping film, the film must be allowed to acclimate for at least one full day (24 hours) to the laboratory conditions in which it will be used.**

1. Start-up
  - a. Turn the instrument on by firmly pressing the power switch to the "I" position. The power switch is located on the front of the instrument on the control panel.
  - b. Load film if not already done.
  - c. Press the [FILM] key and feed the film so the film tip is 1-2mm past the cutter blade edge.

NOTE: Film will be continuously fed as long as the [FILM] key is pressed.

    - i. Depress the front end of the blade cutter handle with a finger and cut the film. The cutter blade handle must be pressed down when the "Press [FILM] to feed and cut film" message is displayed.
    - ii. Remove the film end with forceps or fingers.

- iii. Close the film door.
- d. Load the 12-basket unloading unit located under the cover on the top of the instrument.
- e. Perform priming function.
  - i. Press the [PRIME] key and confirm that the xylene is being dispensed.  
NOTE: The [PRIME] key must be pressed until xylene dispensing is confirmed.
- f. Press the [START] key on the control panel. This action starts instrument initialization. Once initialization is complete, the standby screen will appear.
- g. Verify the film length, dispensing amount, and the counter number.

## 2.Loading of Slides

- a. Specimen side of the slide must face forward, toward the words "UP SIDE" on the basket.
- b. The label end of the slide must be to the outside (top) of the basket.
- c. Each slide must be in parallel grooves.
- d. Each basket holds 20 slides.
- e. Keep the slide totally immersed in clean xylene when positioned in the loading station of the instrument.

## 3.Coverslipping

- a. Confirm that the [LOAD] LED located on the right side of the control panel is lit. The standby screen is displayed.
- b. Open the loading door and *gently* pull the loading drawer out of the loading station. The loading station should be filled with xylene.
- c. To position slide baskets in the loading station, set the basket into the drawer with the "upside" marking on the slide basket directed toward the right side of the instrument. The loading drawer can hold up to three baskets at time.
- d. When all slide baskets are loaded into the loading station, the drawer may be pushed into the loading area and close the door. Once the door has been closed, coverslipping operation will start automatically.
- e. As operation begins, the robotic arm moves downward to the loading drawer and picks up the slide basket in the first position.
- f. The basket is ratcheted up one slide position at a time until a slide is detected in a slot. An ejector arm pushes the slide onto the coverslipping staging area where a predetermined amount of xylene is dispensed on the slide.
- g. After the slide is coverslipped, it is returned to its original position in the slide basket. The coverslipping action is repeated until all of the slides in the basket have been coverslipped.
- h. The basket is then transported upward where it is placed into an open position in the 12-basket storage area.

## 4.Emergency Stop

- a. Open all doors and covers.
- b. Remove all slides and baskets needed.
- c. Return all slides that were not coverslipped to the loading station.

- d. Close all doors and covers.
  - e. Press the power switch to the "I" position.
  - f. A caution screen appears after the power is restored to indicate that the system has experience a power failure.
  - g. Press the [EXIT] key to return the display to the Standby Menu.
  - h. Confirm film placement.
  - i. If baskets remain in the loading station, coverslipping will being after the initialization.
5. Setup Procedures
- The operator has access to a setup menu, which allows for programming various functions. On the control panel, the [<] and [>] keys move the cursor up and down, and left and right respectively.
- There are seven options available from the setup menu:
- a. Prime Volume
  - b. Film length
  - c. Extended prime
  - d. Count reset
  - e. Key sound
  - f. Alarm
  - g. Software version

To access the setup menu:

- i. From the main menu, press the [MENU] key located on the control panel under the display.
- ii. The cursor blinks on the number of the first option. The following menu options are available:
  1. Prime Volume
  2. Film Length
  3. Extended Prime
  4. Count Reset
  5. Alarm Volume
  6. Software Version

## V. REFERENCES

*Thermo Shandon Cytospin 4 Operator Guide*

*Rotina 380 Centrifuge Operator Guide*

*Tissue-Tek DRS 2000 Automated Slide Stainer Operating Manual*

*Tissue-Tek Film Automated Coverslipper Operating Manual*



UnityPoint Health Methodist Laboratory is a CAP accredited facility, as of 7/1/11 the responsibility of new and/or substantially revised policies and procedures will be restricted the Laboratory Director whose name appears on the CLIA certificate, whose signature appears below. The biennial review will be completed by the Administrative Director.

**POLICY CREATION :**

**Author:** *Shea Moore, CTNG* *January 15, 2018*

**Medical Director:** *Elizabeth Bauer-Marsh, MD* *Elizabeth A. Bauer (au) MD* *January 25, 2018*

| REVISION HISTORY |                       |          |                |
|------------------|-----------------------|----------|----------------|
| Rev              | Description of Change | Author   | Effective Date |
| 1                | New Release           | S. Moore | 1/15/18        |
|                  |                       |          |                |

**REVIEWED BY**

| Lead       | Date    | Coordinator/<br>Manager                      | Date               | Medical Director                  | Date    |
|------------|---------|--|--------------------|-----------------------------------|---------|
| Shea Moore | 1/15/18 | <i>Bobbi J. Deppolder</i><br><i>Deb Deeb</i> | 1/25/18<br>1/25/18 | <i>Elizabeth A. Bauer (au) MD</i> | 1/25/18 |
|            |         |  |                    |                                   |         |
|            |         |  |                    |                                   |         |