

NDMRB – University of Oxford NDMRB-SOP-033 Issue 001 – May 2017 (JA/AKK)

**NDM Research Building
Use of the microtome**

1.0 Introduction

The Leica RM2135 is rotary microtome used to prepare very thin slices of formalin fixed paraffin embedded tissues.

Only trained people are authorised to use the microtome.

Microtome blades are VERY SHARP!

Utmost care must be used when the blade is not in use. Use blade guard.

It is very important not to be distracted when using the microtome because of the risk of injury.

Lab coat, safety glasses gloves and a brush for cleaning must be used during operation of the microtome.

2.0 Procedure

2.1 Safety features

You must be familiar with the safety features of the microtome you are using and observe some basic rules when cutting sections.

1. Microtome knives and disposable blades are extremely sharp and can inflict serious injuries unless appropriate care is taken when working with them. Accidents often occur when a user is distracted and not concentrating fully.
2. Use forceps or brush instead of your fingers to pick up sections or wax fragments from blade or block face.
3. The safety guard can be positioned to cover the whole length of the cutting edge. See picture below :



**Blade guard down,
knife is in working
position (unprotected)**

**Blade guard up is
protecting knife**



Nuffield Department of Medicine Research Building, Old Road Campus OX3 7FZ

The Leica RM2135 Microtome does have a safety guard to cover the cutting edge of the blade.

4. The handwheel lock will lock the object head at the top of the cutting stroke and must be used when changing blocks. See picture below.



The handwheel lock is shown here with the handwheel in the 12 o'clock position and the lock engaged. This lock will only engage in this position at the top of the cutting stroke.

5. The guard must be in place and the handwheel lock engaged when a block is being placed into or removed from the cassette clamp, or when any manipulation of the block is being undertaken while the knife or blade is in place.
6. The guard must also be used when the microtome is left unattended.
7. The handwheel brake will lock the microtome when the handle is in any position and is used when realigning a block face or adjusting the coarse feed.
8. The knife or blade should be protected when cleaning the instrument. This is best done by unclamping the blade, then using the blade ejector on the left side of the guard to start moving the blade laterally out of the clamp. It can then be grasped with forceps (not fingers) or picked up with the magnet at the end of the Leica brush and safely removed. Used blades should be disposed of appropriately in a "sharps" container or into the "used blades" slot in the base of the blade dispenser.
9. Never place a knife or blade on the bench or in a box with the cutting edge facing up. If you happen to drop a blade, let it fall. On no account try to catch it (a natural reflex action that you must guard against).

3.0 Use of microtome

3.1 Preparation of Paraffin block and Sectioning of block

1. Insert block into holder of microtome and advance the holder to the blade.
2. Lift the knife guard to examine if the blade is locked into place.
3. Carefully line up block and slowly begin to trim into block. If the block has been previously cut, adjust block holder to minimize tissue loss during facing.
4. Trim into tissue to desired depth. Use forceps or fingers to pull the ribbon from the blade and lay it on the tissue float bath. Do not touch the blade with fingers.
5. Put the safety blade guard up.

3.2 Clean Up

1. Blades must be cleaned carefully and changed frequently during sectioning to maintain high quality slides.
2. When cleaning the blade avoid dragging anything along the cutting edge. Even cellulose fibres can cause damage to the blade.
3. Discard damaged microtome blade in the base of the blade dispenser. Full dispenser will go in sharps bin.
4. Avoid touching the edge with any hard objects such as forceps or brush.
5. Use the blade systematically, working from one end to the other. This will give you maximum life from every part of the blade.
6. Use one part of the blade for trimming and another new part for final sectioning, or use separate blades for these two procedures.
7. The blade with holder can be removed from the microtome when cleaning the instrument.
8. A retracting microtome extends blade life by moving the specimen away from the blade on the upstroke and preventing the build-up of debris on the back of the blade.
9. Remove stray paraffin from the waste catcher of the microtome and throw away. Use a brush (large paintbrush) to brush off the microtome and remove stray wax. Discard.
10. Cover the microtome after use.

4.0 Risk Assessment

[NDMRB-RA-060](#) Use of Microtome

5.0 Review

This document should be reviewed by the relevant person every three years

6.0 References WTCHG Use of Leica Microtome Procedure E001