Instructions For **Microtome**

The RH Microtome should be fixed onto a solid bench top with it's clamp. The knife clamping assembly is dismantled by removing the hexagonal socket head screw in the centre of the top of the assembly and lifting off the top disc. The tin containing the knife is then opened by removing the hexagonal socket head screw in the centre of the top. The knife must be handled with extreme care.
The safe working procedure for this operation is as follows and must be adhered to. Remove the lid. Holding the knife in the tin between both hands invert the tin and place the stub of the tin on the stub of the knife assembly. Gently lower the knife so the hole in the knife fits the stub on the knife assembly. Remove the tin and place aside. With care, place the acrylic cover over the knife and place the top disc so it locates correctly on the centre hole of the acrylic cover. Replace the hexagonal socket head screw and tighten slightly. The hinged cover should be closed when not taking sections. Revolve the acrylic cover so the hinged cover corresponds with the area where the stage passes under the knife. Tighten the knife assembly.

Clamp the sample in the stage vice. Ensure the top surface of the sample is below the level of the knife before commencing. Adjustment of the stage advance should only be done when the handle of the swinging stage arm points towards the operator, 6 o'clock position. Quick adjustment to the advance may be made by turning the black knob at the bottom of the advance. This is done to bring the sample to the height just below the level of the knife. When sectioning, the advance is only operated by holding the lower advance knob and the spring loaded calibration ring and turning them together to bring the black mark on the calibration ring to correspond with the desired thickness on the scale. As a rule, the sections being taken to cut down to the level to be examined in the sample should be a maximum of 60 micrometres and no more than 4 times the thickness of the final section. Never take very thick sections as this will damage the sample and/or the knife. When approaching the level to be examined reduce the thickness of the sections to the point that the last 2 or 3 are trials for the final section.

Before taking a section, open the hinged cover over the knife. Advance the stage whilst the handle of the stage arm points towards the seated operator. In this position the stage is in an unlocked state. Attempting to advance the stage in any other position may cause internal damage to the microtome. Holding the handle with the left hand, swing the stage arm away from the operator, when it gets to the 9 o'clock position an internal locking system will have locked the stage, continue so it passes under the knife at a slow steady pace. At a similar pace swing the stage arm back so the handle points once again towards the operator and repeat the stage advance procedure.

When cutting the section for examination, use a moistened fine brush to lift the section off and then place it on a slide. After setting the sample it is ready for examination with transmitted light, the remaining sample may be viewed under reflected light.

To take thin sections of a sample of old paint, use a soldering iron or heated spatula to melt a drop of thermoplastic mounting media on to a wooden block approximately 10 mm square held in the stage vice of the microtome. Melt a tiny pool in the centre of the drop and place the sample in the molten media in the correct orientation for sectioning. After a few minutes the media has solidified and is ready for sectioning. Proceed to cut sections down to the level in the sample that is to be examined. Due to the composition of the mounting media, it slices easily, yet gives sufficient support for the sample to be accurately sectioned. When the level to be examined is reached, coat the surface of the sample with a varnish such as 20% B72 resin in acetone to consolidate the thin section when cut. After a few minutes the resin has hardened, advance the stage to the desired thickness of the section and proceed with sectioning as previously described.

Different materials cut best with different cutting actions and this is why the cutting action may be adjusted on the RH Microtome. To adjust the cutting action, loosen the hexagonal socket head screw under the knife which holds the knife assembly to the black body of the microtome, slide the knife assembly back or forward to give the desired cutting action and then tighten the screw. The position of the hinged opening on the acrylic cover will then need to be altered, see instructions for fitting the knife.

Please Note: RH equipment is intended for use only by professional conservators. Use by inexperienced operators may result in personal injury. The setting up and operation of this piece of equipment may initially seem complicated. If in doubt or further explanation is required, please telephone or fax for advice.

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