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Microprojector

Instruction Manual
X-1000-1
TRIG

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Using the Microprojector

General Notes:

Your Microprojector is a very stable technology that has been available for many years but still incorporates many advances in the microprojection field. Uniquely, it will project an image either vertically or horizontally. For small groups or an individual, it is best to project vertically. When using the Microprojector with a large group or entire class, project from the horizontal position. For showing wet demonstrations, use the unit in the vertical position, and then use the mirror to reflect the image onto a screen for whole class viewing. Use your Microprojector whenever possible, as it allows everyone to see the same image simultaneously, making it ideal for study, discussion and lectures.

Setting up Microprojector:

1. Make sure all electrical cords, plugs are in good shape with no fraying and loose prongs
2. Suggestion - Wrap cord around table leg a few times. If a student accidentally pulls on cord, then the Microprojector will not be pulled off the table.
3. Plug Microprojector into proper electrical outlet.
4. Turn on Switch in base of Microprojector unit.

Revolving the Dustproof Disk:

The Revolving Dustproof Disk (5) is located under the nosepiece of the objective, and has four options for the microprojector. These must "click" into place at the red line (7) (left side as you face the front of the Microprojector) on the metal base of the revolving nosepiece.

C Clear View (no additional lens in light pathway)

E Eyepiece 10x

P Polarizer (used in conjunction with Revolving Polarizing Analyzer)

A Auxiliary 5X lens

Figure 1

Figure 2

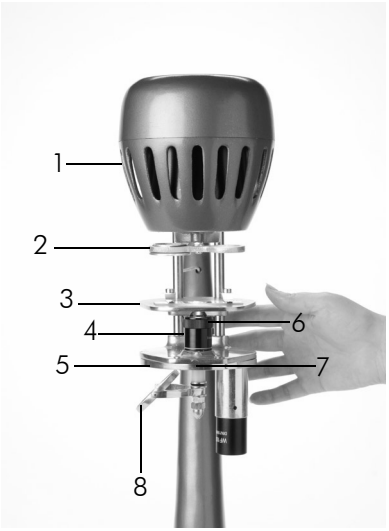

Figure 3. Labeled diagram of Microprojector.

1. Light Source
2. Revolving Polarizer Analyzer
3. Stage with Stage Clips
4. 16mm Objective Lens
5. Revolving Dustproof Disc
6. Knurled Focusing Knob
7. Red Line
8. Mirror

Table Projection:

1. Turn the switch to the "ON" position.
2. Place a white sheet of paper between the legs of the base, or focus on a white or light colored surface.
3. Be sure the mirror is out of the way of the light beam coming straight through the stage and going to the table surface.
4. Be sure that the Revolving Polarizing Analyzer (7) is out of the light path.
5. Rotate the Revolving Dustproof Disk (5) until the RED "C" on the left side of the disk is directly under the RED line (7) on the upper disk. Feel the Revolving Disk (5) "click" into position.
6. Place the specimen slide on the stage and hold in place with the stage clips (3).
7. Focusing - Use the knurled focusing knob (6), located under the stage (3), at the back of the unit behind the 16mm objective to focus image onto

the desktop. First lower the stage to the lowest position, and then reverse direction until the specimen is brought into focus.

8. To gain an additional 5X magnification, rotate the Revolving Dustproof Disk (5) until the RED "A" is under the red line (7) on the upper disk. Again feel the Revolving Disk "click" into position.
9. The Microprojector may be used in a lighted room or in a darkened room, depending on the nature of the specimen being looked at or the experiment being done.

Screen Projection- Direct Projection

Figure 2. Position of Head for Screen Projection

1. Turn the switch to the "ON" position. Room may need to be darker for horizontal projection then for vertical projection.
2. Carefully rotate the entire head of the unit into a horizontal position. Do this by placing one hand on the base, just below the hinge joint to stabilize the base. Then position the head assembly with your other hand by pushing gently on THE BACK of two metal bars which support the stage and lens assembly. DO NOT FORCE anything, as it should move smoothly.
3. Be sure the mirror (8) is out of the way of the light beam coming straight through the stage and going to screen or wall on which you wish to project the image.
4. Be sure that the Revolving Polarizing Analyzer (2) is out of the light path.
5. Rotate the Revolving Dustproof Disk (5) until the RED "C" on the left side of the disk is directly under the RED line (7) on the upper disk. Feel the Revolving Disk "click" into position.
6. Place the specimen slide on the stage and hold in place with the stage clips (3).
7. Focusing - Use the knurled focusing knob (6), located under the stage, at the back of the unit behind the 16mm objective to focus image onto the desktop. First lower (move away from light source) the stage to the lowest position, and then reverse direction until the specimen is brought into focus.

8. To gain an additional 5X magnification, rotate the Revolving Dustproof Disk (5)until the RED "A" is under the red line (7) on the upper disk. Again feel the Revolving Disk "click" into position.
9. In general, the higher the magnification, the darker the room needs to be. NOTE: sometimes it is easier to set up for Vertical projection first and then tip the assembly up for Horizontal projection

Horizontal Projection- Using the mirror

Figure 1. Position for Horizontal Projection

1. The most common reason for using the Microprojector in this position is for "wet" specimen's such as depression slides with pond water, or any specimen where water, oil, etc. would flow off the slide because unit is in the Horizontal position.
2. Turn the switch to the "ON" position.
3. Be sure that the Revolving Polarizing Analyzer (2) is out of the light path.
4. Rotate the mirror (8) into position so that it intersects with the light beam coming through the stage. The light should now be reflected onto the screen or wall on to which you intend to project.
5. Rotate the Revolving Dustproof Disk (5) until the RED "C" on the left side of the disk is directly under the RED line (7) on the upper disk. Feel the Revolving Disk "click" into position.
6. Place the specimen slide on the stage and hold in place with the stage clips (3).
7. Focusing - Use the knurled focusing knob (6), located under the stage, at the back of the unit behind the 16mm objective to focus image onto the

desktop. First lower the stage to the lowest position, and then reverse direction until the specimen is brought into focus.

8. To gain an additional 5X magnification, rotate the Revolving Dustproof Disk (5) until the RED "A" is under the red line (7) on the upper disk. Again feel the Revolving Disk "click" into position.
9. In general, the room needs to be darker when using the mirror to project the image.

To Polarize Light - Using the Microprojector as a polarizing microscope:

Figure 3.

1. Set up the microprojector in either the vertical or horizontal position as noted above.
2. Move the Revolving Polarizing Analyzer (2) so that the polarized lens (dark tinted) into the light path (located just below the light source).
3. Turn the Revolving Dustproof Disc (5) until the P (Polarizer) clicks into place. This places the lower or second polarized lens in place.
4. Use the focusing knob (6) to focus image onto desk top.
5. Rotate the Analyzer lens located within the ring of the Revolving Polarizing Analyzer (2) to change orientation of the polarized light. (Remember to achieve polarization of light two polarizing lenses in the same optical plane must rotate so that the lines of the lenses alternately move between being parallel to each and perpendicular to each other).

Using Microprojector as a standard microscope -

1. Turn the switch to the "ON" position.
2. Carefully rotate the entire head of the unit into a horizontal position. Do this by placing one hand on the base, just below the hinge joint to stabilize the base. Then position the head assembly with your other hand by pushing gently on THE BACK of two metal bars which support the stage and lens assembly. DO NOT FORCE anything, as it should move smoothly
3. Rotate the Polarizer analyzer (2) so that the opaque (not the polarizing lens) is in the light path from the light source.
4. Rotate the Revolving Dustproof Disk (5) until the RED "E" on the left side of the disk is directly under the RED line (7) on the upper disk. Feel the Revolving Disk "click" into position.
5. Place the specimen slide on the stage and hold in place with the stage clips (3).
6. With the assembly in the horizontal position, now look through the eyepiece back towards the light assembly.
7. Using the knurled focusing knob (6), lower the stage to the lowest position, and then reverse direction until the specimen is brought into focus
8. This will be the image normally seen in a standard microscope.

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