

# *Instruction Manual for the Comparator 100*



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The JOBO Comparator is an electronic measuring instrument for the determination of exposure times for black and white and color enlargements. It is suited for the following applications:

- Determination exposure time for all black and white enlargements
- Determination of exposure time for color enlargements of slides or negatives

The operation is simplified by the use of LED's to guide you to the proper exposure time.

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## **2. Power Supply**

The JOBO Comparator 100 is powered by a 9 volt battery (not supplied with unit). After loading the battery and switching on the unit, the Comparator is ready for operation.

### **2.1 Loading of the Battery**

The following batteries can be used for the Comparator: e.g. Duracell NN 1 604/6 LR61/9V or equivalent types of other manufacturers. A sliding cover on the back of the unit gives access to the battery compartment

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## **3. Programming the Comparator 100**

Note: During programming and during all measuring processes the safelight and all other darkroom illumination must be off. The photocell will respond to any light. To program the Comparator you must first make what you consider an Ideal print without using the Comparator. The exposure values (enlarger height, F-stop of the lens, paper grade and exposure time) must then be used to program the Comparator for future use. The JOBO Varioformat Easel and Test Printer are valuable aids in determining the exposure values.

### **3.1 Entry of the Determined Exposure Value for Selective (Spot) Measuring for Black and White**

The enlarger height and lens aperture should be the same as for your ideal print and the negative for that Print should be in the negative carrier of the enlarger. Turn on the enlarger.

Turn off all darkroom light. With the main switch 5, turn on the Comparator. At this point one of the two red LED triangles 1 will be lit. The time scale dial 6 is set to the exposure time you used for your ideal print. Place the Comparator on the easel of baseboard so that the measuring cell 3 covers the lightest part of the projected negative still shows some details. Choose this spot as close to the center area of the negative as possible. With the Comparator in place, turn the adjustment knob 2 until the balancing lights 1 change from a red triangle to the green center LED. Individual settings can be noted on the white border in pencil. After that do not change the position of the adjustment knob 2 anymore.

Your Comparator is now set for the paper you have been using. It is programmed. Now you can determine exposure time required for an unknown negative used with this paper.

### **3.2 Entry of the Determined Exposure Value for Full Area (Integrated) Measuring with Black and White and Color**

The diffuser supplied with the Comparator should be placed under the enlarging lens in the light path of the projected negative or slide. The entry of the exposure value should then be entered into the Comparator as described in 3.1 above.

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## **4. Measuring of Exposure Values**

Place an unknown negative or slide in the enlarger, focus, and select the picture details to be printed. The Comparator is placed on the baseboard or easel so that for selective measuring the lightest part of the negative or slide, which still shows some details, is projected onto the measuring cell 3. For full

integration measurement, swing in the diffuser disc. Turn the Comparator on with switch 5, and the exposure value can be determined in two ways:

#### **4.1 Measurement with Constant Exposure Time**

For this method the time determined in making your ideal print is set with the time 3. The aperture of the enlarging lens is now changed until the balancing lights 1 are adjusted to display the green LED only. You may now expose the paper for the time indicated, set in the procedure above.

#### **4.2 Measurement with Constant Lens Aperture**

For this measuring method the enlarging lens is set to the desired aperture, and the time scale 9 is turned until the balancing lights 1 have only the green LED burning. The exposure time thus found is transferred to the timer and the exposure is made. If the unit cannot be adjusted by turning the time scale 3, select a different lens aperture.

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### **5. Special Indications**

- TIME SCALE 6 does not light when unit is turned on... Battery exhausted
- LEFT RED LED lights up, and no adjustment will change it... Too much light
- RIGHT RED LED lights up... Too little light

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### **6. Mounting of the Diffuser for Full Area (Integrated) Measuring**

Remove existing red filter from the mounting, place it on the diffuser, mark and cut out and place diffuser in the mount instead of the red filter.

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### **7. Maintenance and Care**

The Comparator 100 does not need any special maintenance. However, the measuring window should be kept clean, because dust and dirt on this spot can lead to inconsistent results. The measuring window is easiest cleaned with a cotton ball or Q-Tip. When not in use, the instrument should be stored in a cool and dry place. Just like any other precision-measuring instrument, the Comparator, too, must be protected from excessive heat, humidity as well as from shocks and impacts.

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### **8. Dimensions**

- Width: 3 inches (76mm)
- Length: 5-1/2 inches(140mm)

- Height: 1-1/8 inches (28mmn)

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## **9. Service**

If, in spite of sufficient battery power, the Comparator does not work, or shows troubles, we recommend sending it to our service depart for a check and possible repair. Contact your dealer from where you purchased your item.

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## **10. What is Included With the Comparator 100**

- Comparator 100 (#6252)
- Diffuser (#65022)
- Instructions (#66061)

(The battery is not included.)

**Balancing lights** for time adjustment, proper exposure is indicated when center (green) LED is lit

**Adjustment knob** to set paper sensitivity

**Measuring cell**

**White area** an aid in finding a suitable measuring spot

**ON-OFF** switch

**Time Scale** backlighted adjustable dial with range from 1.5 to 30 seconds

**Cover of battery** on back of unit