

**PUBLISHING SERVICES SUB-DIVISION
CARTOGRAPHIC SERVICES SECTION**

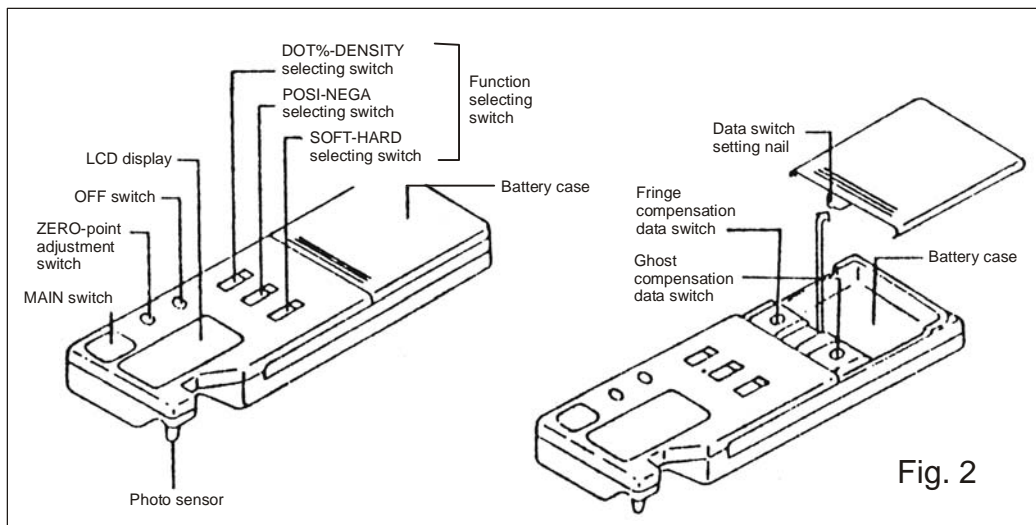
**QUALITY ASSURANCE INSTRUCTIONS
CSS-06 Densitometer**

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1.0 SPECIAL FEATURES OF DOTTIE-II

- DOTTIE-II is the portable Dot Area and Transmission Density Meter with 3 pieces of dry-cell batteries (Size N-ANSI, R1-IEC) as its power source that can achieve measurement by means of the light of normal light table employed as its light source and if in case no light table is available, measurement can be done with the light board which is sold as exclusive light source for DOTTIE-II.
- This device has compensation functions of fringe and ghost dot that can achieve accurate determination of dot area percentages and over with switch converted transmission density can be measured.

2.0 NAME OF EACH PART



3.0 PREPARATION OF MEASUREMENT

3.1 HOW TO INSERT THE BATTERY

- Open battery case cover on the upper part of body like Fig. 2 and you can see battery case.
- Combine 3 pieces of dry-cell batteries (Size N-ANSI, R1-IEC) into the direction as shown in the figure of battery case.
- Check for correct combining of batteries and close battery case cover.

3.2 CHECK FOR BATTERY

- Push the Main switch and some indications are displayed on the LCD display.
- In case if the indication flickers or has (68t) indication, renew batteries with new ones

3.3 SETTING OF THE MEASURING POSITION ON THE LIGHT TABLE

- On the light table, fairly big unevenness of the light can be observed which may cause measurement error. In order to fix the measuring position, have a circle of some 10mm length of diameter on the light table. Zero-point adjustment, transmission density measurement and dot measurement must be conducted within that circle.

3.4 SETTING OF FUNCTION SELECTOR SWITCH

- Set the following 3 switches according to the measured object

3.4.1 DOT % - DENS SELECTOR SWITCH

- Set the switch to DOT % position for dot area measurement and to DENSITY position for transmission density measurement

3.4.2 POSI-NEGA SELECTOR SWITCH

- This is a selector switch relative to dot area measurement. Usually, to be measured at POSI position. If NEGA position is selected, such indication is given for instance as -40%. This value of -40% at NEGA position is the same value as 60% at POSI position.

3.4.3 SOFT-HARD SELECTION

- This is a selector switch relative to dot area measurement. Set the switch to the SOFT position in case you want to make ghost dot compensation (in other words, you want to measure soft dot), and on the HARD position when you don't want to (to measure hard dot).

4.0 MEASURING METHOD

4.1 ON AND OFF OF POWER SOURCE

- Keep the MAIN switch pushed down and (-888) indication is displayed on the LCD display and then you get (---) indication on it. When the power source is to be put off, push on the OFF switch. While under (---) indication is displayed on the LCD display, if no switch operation is given, the electric power source is cut off after 20 minutes elapsed. When measurement is finished and if no operation is given for about 5 minutes, the electric power source is cut off automatically.

4.2 ZERO POINT ADJUSTMENT

- Whenever you want to measure dot area percentages, place the transparent area of the film in the measuring position on light table, register the photo sensor and keep the ZERO switch pushed down.
- Whenever you want to measure transmission density, register the photo sensor in the measuring position of light table and keep the ZERO switch pushed down.
- When correct zero point adjustment is obtained, LCD display will have (000) indication.
- In case light table is too dark, and zero adjustment cannot be obtained, the (-L-) indication is given on the LCD display; and in case of too light, (-H-) is displayed. Thereby in case of (-L-), select lighter position of the light table and in case of (-H-), select darker position of the light table to obtain re-adjustment of the zero point.

4.3 MEASUREMENT

- Place the measuring area of the film in the measuring position of light table and register the photo sensor. Keep the MAIN switch pushed down until the measured value is indicated. Just after the Main switch is pushed on, (") is indicated on LCD display, but when the measuring operation is finished the measured value is indicated on it, and even if the Main switch is let off, the measured value is maintained for a while.
- For the measurement of other areas of the film, repeat the above measuring operation.

5.0 MEANING OF LCD INDICATIONS

- The meaning of each sort of indications are as follows:
 - No indication Power source is OFF
 - -888 Power is ON
 - --- Zero point adjustment is needed
 - 68t Batteries has run out
 - Flicker Notice that batteries will run out but still successively workable
 - 000 Zero point adjustment is over
 - -H- Light table is too light to obtain zero point adjustment
 - -L- Light table is too dark to obtain zero point adjustment
 - “ During measuring operation, keep the MAIN switch or the ZERO switch pushed down
 - 35 Dot area percentage is 35%, when measured at POSI position
 - -65 Dot area percentage is 65%, when measured at NEGA position
 - 046 Transmission density is 0.46
 - -F- The measurement value of transmission density beyond the full scale (3.50)

6.0 SETTING OF DATA SWITCH

- When you want to measure the dot area percentage, have the Fringe compensation data switch F as well as Ghost dot compensation data switch G set each for its own respective compensation data. Because this device has the average value (F.G. both being 4%) adjusted, you need not to re-adjust the compensation data in most cases. But if you want to use any other values, give the setting by means of these 2 switches. Turn the switch F or G with Data switch setting nail attached to the battery case or a small- (minus) driver.

7.0 CAUTION FOR HANDLING

- Since this DOTTIE-II incorporates LSI's, IC's and other high-precision electronic parts, please be sure to comply with the following instructions:
 - Avoid operation or storage at locations indicated below:
 - Locations where temperatures undergo rapid changes
 - Highly humid locations
 - Locations where the temperature is extremely high or low
 - Locations exposed to direct sunlight
 - Locations subjected to heavy dust
 - Locations subjected to severe vibrations
 - An accurate measurement of a dot area percentage is not possible when a fluorescent lamp in the light table is flickering. Immediately replace the fluorescent lamp tube with a new one on such an instance
 - Never use DOTTIE-II on a sink-top light table
 - When DOTTIE-II is not used for over a month, remove batteries without fail. Also be sure to turn off the switch when not used
 - To replace dry-cell batteries, remove the battery case cover (referring to the backside) and properly insert new batteries after confirming their polarities
 - Use 3 dry-cell batteries (Size N-ANSI, R1-IEC) available on the market (1.5v)
 - Use a piece of dry cloth to clean this meter. Never use damp cloth or apply organic solvent.

8.0 SPECIFICATIONS

Range and precision	Dot area percentage 0-100%, $\pm 2\%$ Transmission density 0-3.5, ± 0.05
Measured area	\varnothing 3 mm
Range of light source	400 1x – 4000 1x
Photo sensor	Silicon photo diode
Display	Digital display liquid crystal
Zero-point adjustment	Push button type
Power source	3 dry-cell batteries (Size N-ANSI, R1-IEC)
Power consumption	0.007 Watts
Battery life	About 100 hours
Dimensions	131 x 36.5 x 15.5 mm
Weight	67g (excluding batteries)
Housing	ABS plastic

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