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# TTL- Penta Prism

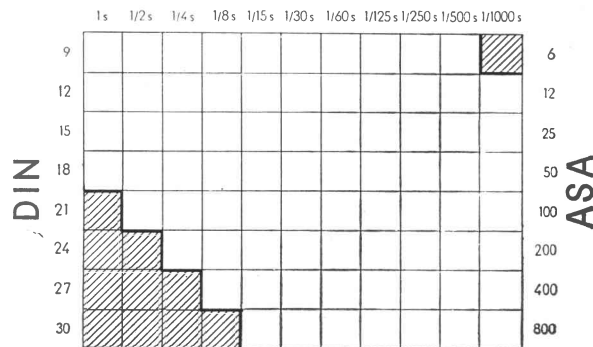
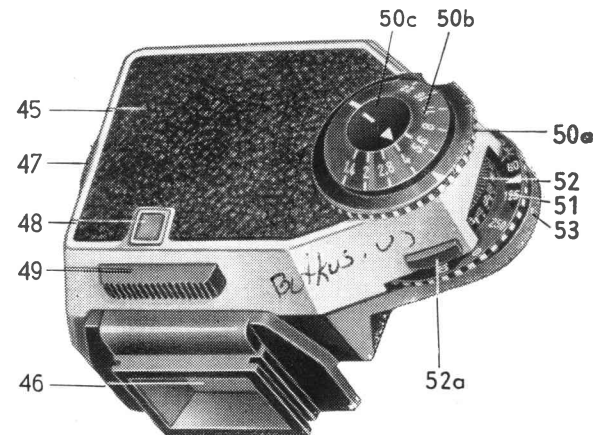
INSTRUCTION MANUAL

automatic exposure control with  
internal measurement for the

**EXAKTA** RTL1000

## Operating controls

- 45 TTL Penta Prism
- 46 Eyepiece
- 47 Lid of the chamber for the mercury oxide element
- 48 Window with signal indicating readiness for measurement
- 49 Switch for measuring device
- 50a Lower disc of aperture-setting device with change-over switch
- 50b Central disc of aperture-setting device
- 50c Internal disc of aperture-setting device
- 51 Shutter-speed setting disc
- 52 Film-sensitivity setting disc
- 52a push button for film-sensitivity setting disc
- 53 Shutter-speed setting mark



## Operating range

of TTL Penta Prism in case of aperture number 2.8 (there can be used any of the unshaded combinations)

The TTL Penta Prism (45) provides the EXAKTA RTL 1000 with an automatic exposure control on the basis of the internal measurement through the lens (Through The Lens = TTL). This automatic system, taking into account film sensitivity, exposure time, and aperture number, will always measure only the light being effective for the photograph to be taken. This method of measurement is of greatest importance above all when employing specialpurpose lenses (angle of view equal to the angle of measurement) as well as when working with extension-increasing accessories and filters (exposure factors are automatically included in the measurements).

The use as a viewfinder unit is identical to that of the Penta Prism: always upright and laterally-correct image in the viewfinder. Photographers who normally wear spectacles should use their distance glasses. For fitting and removing the TTL Penta Prism as well as for exchanging its focusing screens see the instruction manual for the camera.

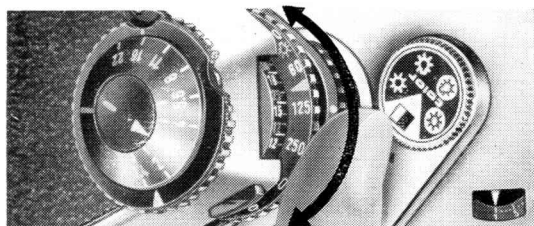
### **Technical Data of the TTL Penta Prism for the EXAKTA RTL 1000**

The TTL Penta Prism is operating on the principle of a integrated light measurement. In that way there is ensured an evaluation of brightness which is in conformity with the subject. The TTL Penta Prism does not effect a reduced brightness of the image in the viewfinder. Its operating range comprises 13 exposure values. There can be measured luminous densities of 4 Apostilb with the aperture number 2 up to the highest values. The measurements apply to the focusing system (Fresnel screen) with microprism and annular field on the ground-glass screen. When a completely matt focusing screen is employed, the film sensitivity must be set higher by 4 DIN, with a matt focusing screen with a bright spot of 6 mm it must be set higher by 3 DIN.

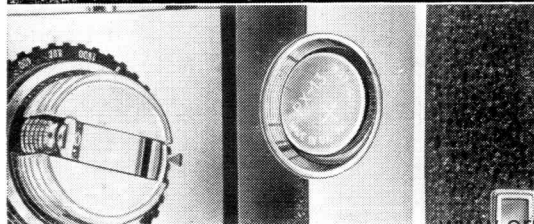
If the measuring device is engaged only for the time of the measuring process, the mercury oxide element will have a service life of approximately 1 year to 1 year and a half. Owing to the use of a bridge circuit voltage fluctuations will be of no influence on the measurement results.

## Preparing the TTL Penta Prism

Employ the TTL Penta Prism (45) as far as possible only with a flexible eyepiece cup. Spectacle-wearers use a vision-correction lens (see the instruction manual for the camera).



After placing the TTL Penta Prism in the camera turn the shutter-speed setting disc (51) once from stop to stop so that the driver pin (44) will engage the grooves on the bottom side of the TTL Penta Prism (45). This has been done correctly if, when the shutter-speed setting disc (51) is turned, the shutter-speed setting knob (10) is turning, too.



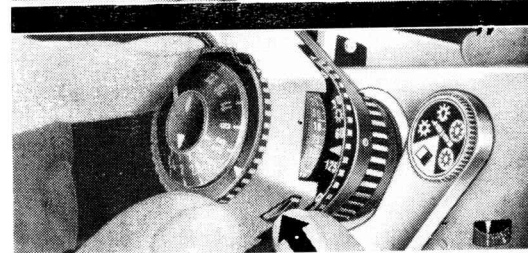
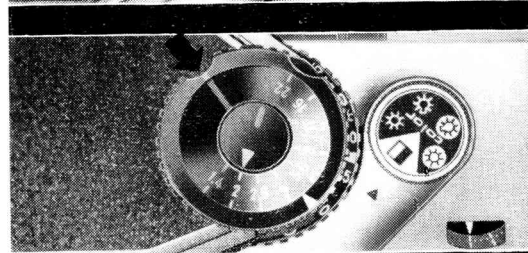
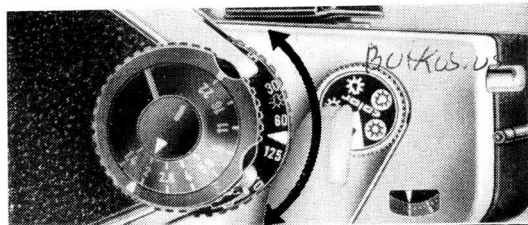
Place the mercury oxide element (Mallory PX 13) in the chamber below the lid (47): plus sign outwards.

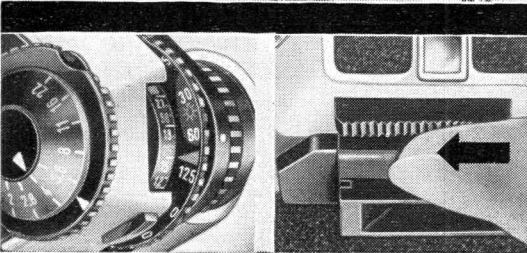
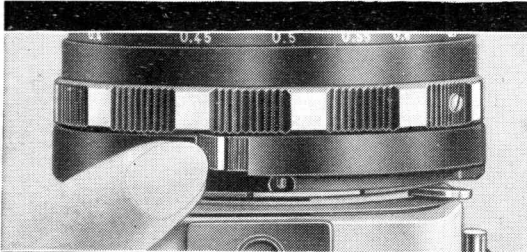
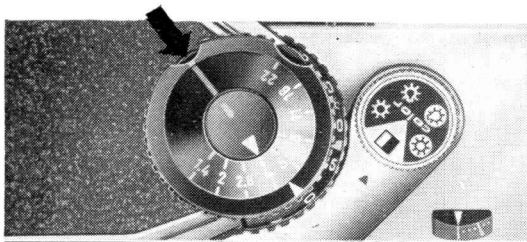
## Setting the film sensitivity

Turn the shutter-speed setting disc (51) until the orange-coloured triangle will be visible.

Turn the lower disc (50a) of the aperture-setting device until the line will stand against the line on the central disc (50b). Push the change-over switch of the lower disc (50a) home at the two lines.

Push the push button (52a) home into the TTL Penta Prism and turn the lower disc (50a) until the white line of the desired number will be opposite the orange-coloured triangle on the shutter-speed setting disc (51). White figures: DIN, orange-coloured figures: ASA





## Measuring with the Aperture chosen for the Photograph

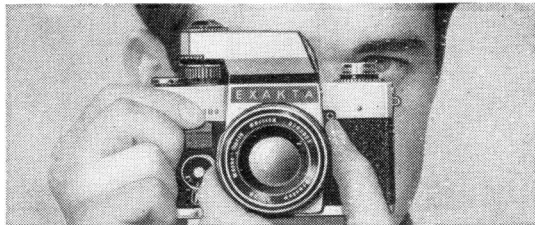
Push the change-over switch of the lower disc (50a) home at the recess with line. Set the shutter-speed setting device so that the lines on all the three discs (50a...c) will be exactly one above the other. For this purpose raise the lower disc (50a) and turn it until the lines on the central and internal discs (50b and c) will stand together. Let the lower disc (50a) return.

Disengage the automatic diaphragm mechanism of the lens by means of the diaphragm switch (40) (see operating the lens in the instruction manual of the camera).

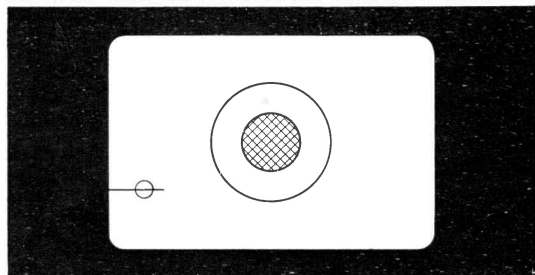
### 1. Preselection of the shutter speed

Turn the shutter-speed setting disc (51) until the shutter speed will be above the mark (53). Do not set intermediate values between the shutter speeds! – Push the switch (49) to the left (now a green signal is visible in the window (48)).

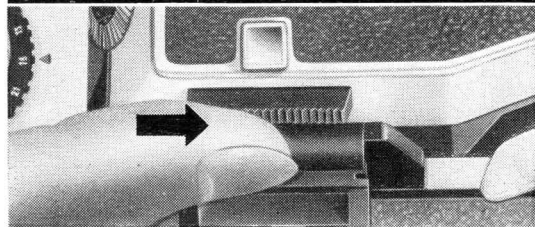
Direct the camera towards the subject to be photographed and turn the aperture-setting ring (17)



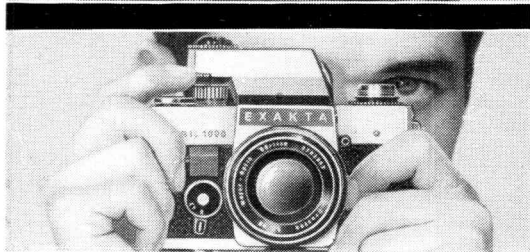
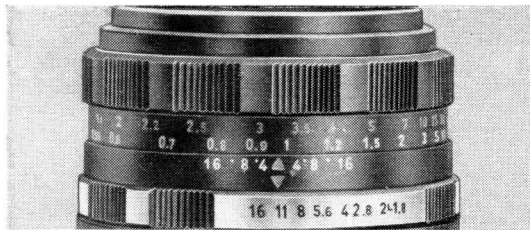
until the pointer on the left on the image in the viewfinder will be in the centre of the circular mark. (If the required position of the pointer cannot be obtained, preselect a slower shutter speed). Release.



Push the switch (49) to the right.







## 2. Preselection of the aperture number

Turn the aperture-setting ring (17) until the desired aperture number will be at the mark.

Push the switch (49) to the left. Direct the camera towards the subject to be photographed and turn the shutter-speed setting disc (51) until the pointer on the left on the image in the viewfinder will be in the centre of the circular mark. (Do not set intermediate values between the shutter speeds. In case of need effect fine correction by means of the aperture-setting ring (17)). If the required position of the pointer cannot be obtained, preselect a smaller aperture number = greater lens aperture. Release. Push the switch (49) to the right.

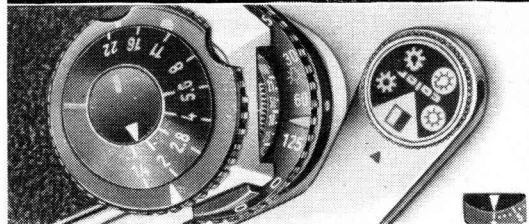
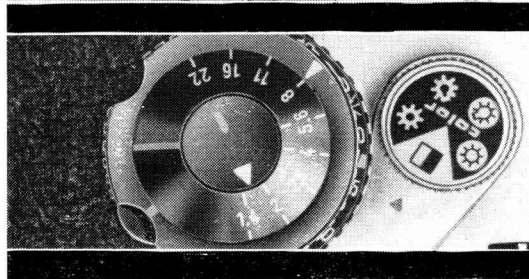
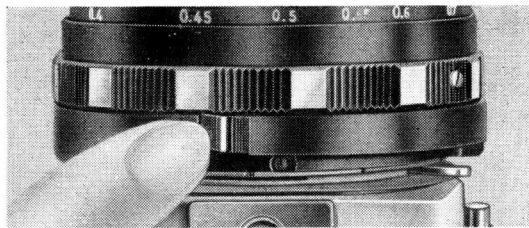
## Measuring with Open Diaphragm

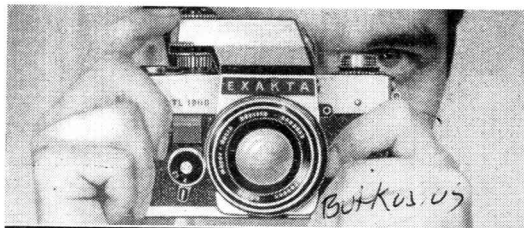
Engage the automatic diaphragm mechanism of the lens by means of the diaphragm switch (40) (see Operating the lens in the instruction manual of the camera).

Push the change-over switch the lower disc (50a) home at the recess without line. Raise the lower disc (50a) of the aperture-setting device and turn it until the smallest aperture number of the lens employed will stand at the triangular mark on the internal disc (50c). There can be set the aperture numbers from 1.4 to 5.6 as well as intermediate values. Let the lower disc (50a) return. It is not permissible to effect the measurement with an aperture differing from the open diaphragm of the lens employed.

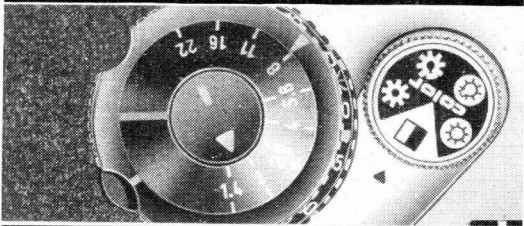
### 1. Preselection of the shutter speed

Turn the shutter-speed setting disc (51) until the desired shutter speed will stand above the mark (53). Do not set intermediate values between the shutter speeds!

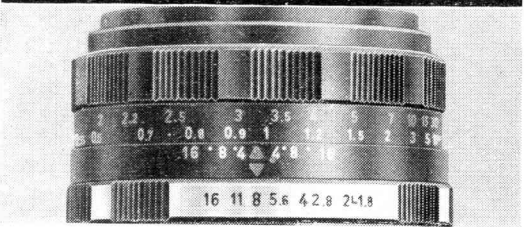




Push the switch (49) to the left. Direct the camera towards the subject to be photographed, and turn the lower disc (50a) of the aperture-setting device until the pointer on the left on the image in the viewfinder will stand in the centre of the circular mark. If the required position of the pointer cannot be obtained, preselect a slower shutter speed.



On the aperture setting device read the aperture number at which the triangular mark on the lower disc (50a) is standing.



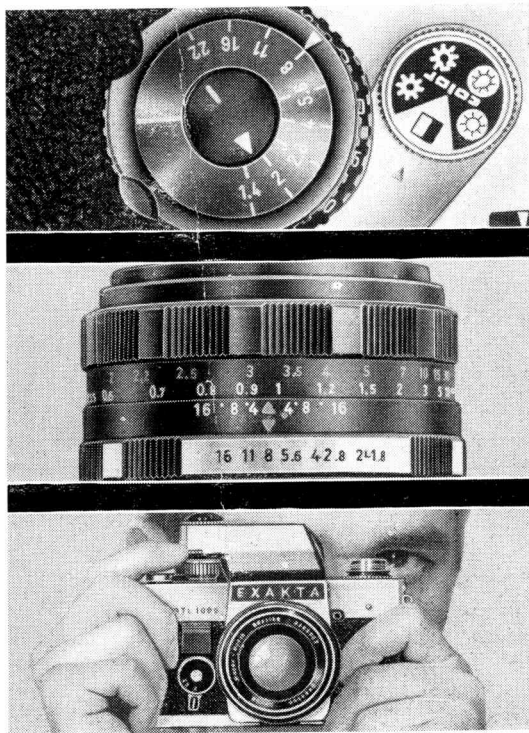
Set the aperture-setting ring (17) of the lens to this aperture number. Release. Push the switch (49) to the right.

## 2. Preselection of aperture number

Turn the aperture-setting ring (17) until the desired aperture number will stand at the mark.

Push the switch (49) to the left, direct the camera towards the subject to be photographed and turn the lower disc (50a) of the aperture-setting device until the pointer will stand on the left in the image in the viewfinder in the centre of the circular mark. Turn the shutter-speed setting disk (51) until the selected aperture number on the central disc (50b) of the aperture-setting device will stand opposite the triangular mark on the lower disc (50a) of the aperture-setting device.

If this opposition is not possible to a full aperture number, readjust the aperture number on the lens in accordance with the value indicated on the central disc (50b) of the aperture-setting device by turning the aperture-setting ring (17). Do not set intermediate shutter-speed values. If the required position of the pointer cannot be obtained, preselect a smaller or greater aperture number. Release. Push the switch (49) to the right.



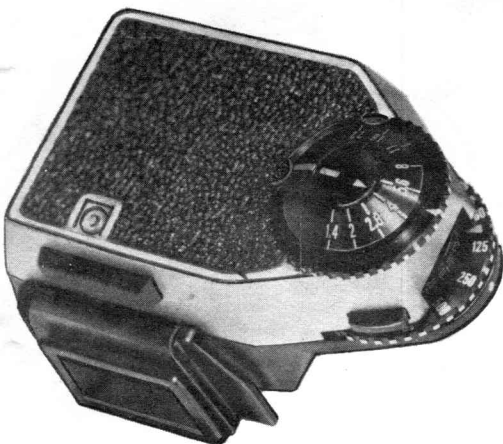
Please pay attention to all directions in this instruction. Incorrect handling of the camera can result in damages whose elimination is not performed within the frames of our guarantee.

Technical improvements of the TTL Penta Prism for the EXAKTA RTL 1000 can lead to insignificant deviations from this publication.



German Democratic Republic

# EXAKTA RTL 1000 METER INSTRUCTIONS



## EXAKTA RTL METER INSTRUCTIONS

Please do not attempt to operate the Exakta RTL 1000 Lightmeter until you have read and fully understand the instructions.

1. Important: The RTL Pentaprism Lightmeter will give you automatic exposure control through-the-lens (TTL). It will measure the light with all lenses and extension increasing accessories, as well as with filters.

**CAUTION: Do Not Turn Dials Rapidly!**  
You must operate all meter controls gently and with care. Each dial and disc has an electronic contact which makes light readings possible. Each dial and disc is part of the complete circuit in the sensitive electrical measuring instrument and therefore, must be handled with care. Failure to do so may strip the fine electrical "contacts" which could make the meter inoperative.

### 2. Readiness for Operation

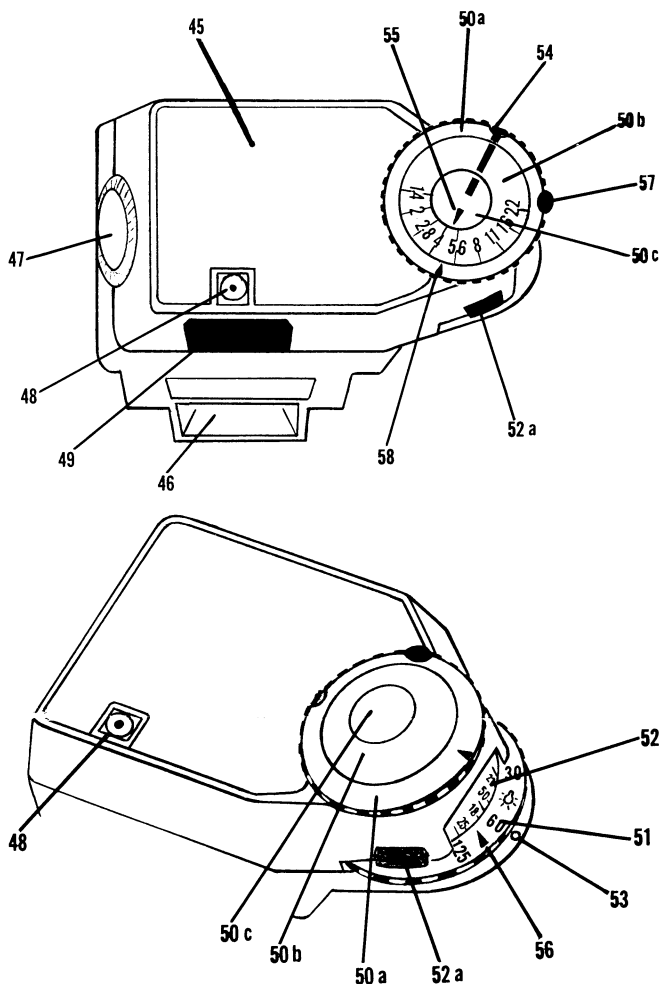
Type of Battery and How to Insert it.  
The light is measured by a photo electric cell. The voltage source is a Mallory PX-13 Battery (mercury oxide cell). The battery should be inserted into the lightmeter before inserting the lightmeter into the camera.

Remove battery cover (47) by turning it to the left. Insert battery with the '+' sign outwards (facing you) then screw cover into position again. The life of the battery varies from about one to one and a half years, provided the measuring mechanism is switched off after each measurement. Spare batteries are available from Photographic Dealers.

### 3. Inserting the Lightmeter Into The Camera

Insert the Lightmeter into the camera exactly as the normal prism finder. Insert the Lightmeter from above and push it down gently until it clicks into place. Please do not use force. After placing the Lightmeter in the camera, turn the shutter speed setting dial (51) once, slowly, from speed to speed so that the meter pin on the camera shutter dial engages the meter. As you turn dial (51) slowly, you'll note the shutter speed dial on camera turns too.

# PARTS OF THE EXAKTA RTL 1000 LIGHTMETER



46- Eyepiece

47- Lid of Chamber for Mercury PX  
13 Battery

48- Window with Signal indicating  
when Meter is On and Off

49- On-Off Meter Switch

50a- Outside disc of meter-aperture  
setting device

50b- Central disc of meter-aperture  
setting device

50c- Inside disc of meter-aperture  
setting device

51- Shutter speed setting dial

52- ASA- DIN Film speed dial

52a- Button to lock (stop) ASA-DIN  
Film speed dial

53- White Dot indicator for shutter  
speed setting

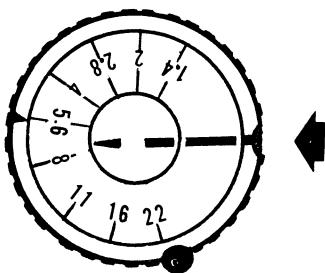
54- Semi-circular button notch lock

55- Silver Triangle Marker (indicates  
maximum speed of lens for auto-  
matic operation)

56- Triangular pointer for ASA film  
setting

57- Semi-Circular button notch release

58- Silver triangular pointer shows  
diaphragm stop for particular shot.  
Set it on lens. Method 3



## Meter Setting for Method 1 and Method 2.

### 4. To Set Meter

Line up the orange lines on Disc 50a, 50b, and 50c, in a straight line. To do this, carefully raise the outside disc (50a) and turn it until the orange lines on 50a, 50b, and 50c, are in a row, one next to the other. Note: it is not necessary to keep Disc 50a raised at all times in order to line up the orange lines on all three discs. When correctly set, all discs will appear to be in a straight line with the inside silver triangle (55). Then lock them in place by pressing in on the semi-circular notched button (54) with the short orange line on it.

Please note: The numbers on disc (50b) are not used except for the automatic operation settings which will be explained later in Method 3.

### 5. Setting Film Speed

Push in button (52a) and simultaneously turn shutter speed setting dial (51) slowly until the orange triangle marker (56) on the shutter speed dial (51) is visible. Then place the orange marker (56) next to the orange number on dial (52) which coincides with the ASA film speed for the film loaded in the camera.

Please note: The ASA film speed dial (52) always moves together with the shutter speed dial (51). However, when changing the ASA speed, you must press in on button (52a) as this acts as a lock for ASA speed dial (52), thereby permitting you to change the ASA film speed for film loaded in camera. After performing this operation, remove your finger from button (52a).

### 6. Checking for Readiness of Operation

Switch on meter by moving the switch (49) to the left. A green target will appear in Window (48). Set the lens on the manual diaphragm setting and turn diaphragm slowly. If meter needle on left side in viewfinder moves, the camera is ready for operation. If needle fails to move although all operating instructions have been closely observed, it may be necessary to replace the battery, or reset shutter speed higher or lower (as suggested on page 4)

### 7. Methods of Operation

The RTL Lightmeter offers three ways of measuring, and therefore, can be adopted to any particular shooting situation:

Method 1. Varying the diaphragm (aperture) setting (preselect the shutter speed).

Method 2. Varying the shutter speed setting (preselect the lens diaphragm stop).

Method 3. Shutter speed/aperture combinations.

### 8. Method 1. Varying The Aperture Setting

In varying the diaphragm setting, you must pre-select the shutter speed. To pre-select the shutter speed, do the following: Turn the shutter speed setting dial (51) until the speed you select will be above the white dot marker (53). Hold the camera on left side to see white dot. Set camera lens on manual operation.

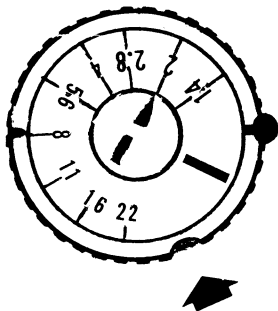
Be sure the meter is set as explained in paragraph 4. (Con't.)



Push switch (49) to the left. The green target signal is visible in the window (48). Direct camera toward subject to be photographed, and turn iris diaphragm ring on lens until the pointer on left side of viewfinder is in the center of the circular mark. Push switch (49) to the right. Take your picture.

#### 9. Method 2. Varying The Shutter Speed Setting

The f-stop is pre-selected. Be sure to set meter exactly as explained in paragraph 4. Move diaphragm on lens to manual setting and then set the lens for the opening (f-stop) you want. Move switch (49) to the left. Turn shutter speed dial (51) until the pointer in viewfinder moves to center of circular mark. Switch off by pushing (49) to the right. Take your picture.



#### Meter Setting for Method 3.

#### 10. Method 3. Lightmeter Measuring on Automatic Diaphragm

This method offers the great advantage that only such light is measure as actually effects the quality of the photographic image.

- A. Set lens on Automatic Setting
- B. Push in the non-marked semi-circular button notch (57) on dial (50a)

- C. Lift dial (50a) so that the silver triangle (55) on the inside of disc (50c) points to the fastest speed of the camera lens. If the lens is an F1.4, set the dial so that the triangle (55) points to F1.4. If the lens is a F1.8 or an F2, put the silver triangle (55) next to F2.

Note: only lenses with a maximum speed up to F5.6 (ie: F1.4, 1.8, 2.0, 2.8, 3.5, 4.5 and 5.6) may be employed in Method 3. An F6.3 lens cannot be used in Method 3.

- D. Push switch (49) to the left
- E. Turn the dial (50a) slowly and watch the pointer in the viewfinder move to the center of the circular mark.
- F. Stop, and read on the outer disc (50a) the diaphragm number which appears next to the outside silver pointer (58). Then set your lens to the same diaphragm stop and take your picture.

- G. Push switch (49) to the right.

#### Proper Preselection of Shutter Speed

For preselecting shutter please use the following as a guide.

Movement	Suggested Speeds
Moderate (pedestrian)	1/60, 1/125
Fast (traffic, Sports)	1/175, 1/250, 1/500
Very fast (racing cars, airplanes)	1/1000

For further information and literature, write to Exakta, 705 Bronx River Rd. Bronxville, N.Y. 10708