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SHUTTERS and SYNCHRO SHUTTERS

"NEW PARAGON" LENSES
(for still cameras)

ENLARGING LENSES

PROJECTION LENSES

TELEPHOTO LENSES
(for both still and motion picture cameras)

MOTION PICTURE CAMERA LENSES
(8 mm., 16 mm. and 35 mm.)

OTHER OPTICAL EQUIPMENT

Literature available on request

4th Edition—3M—1145

ILEX ACME SYNCHRO SHUTTER
with Built-in Mechanical Flash Synchronizer

ILEX OPTICAL COMPANY
Rochester 5, N. Y.
A Major Advance in Flash Photography

By Dr. ALFRED SCHWARZ
Director of Research, Ilex Optical Company

This remarkable shutter was developed to rid both amateur and professional photographers of the necessity of using gadgets and attachments in flash work. As shutter manufacturers for more than 30 years, we have had plenty of first-hand experience with the consequences of gadgeteering, with many a shutter coming back to us for repair because some flash attachment subjected it to hard handling. The fault did not necessarily lie in the flash attachment itself but in the fact that shutters were not built to stand the tripping force of sometimes as much as two pounds or more needed to trip them.

The new Ilex Acme Synchro Shutter is so designed that the built-in synchro mechanism operates independently, and is still in absolutely coordinated operation with the regular shutter mechanism. By this independency, the shutter is guaranteed protection from unnecessary wear and tear, since the synchro-mechanism only works if a flash picture is required, and is entirely out of action if regular pictures are taken without flash illumination.

Absolute preparedness is also provided for because the flash bulb can be put in the reflector ready to “shoot,” but is safely protected from being flashed as long as the synchronizing lever has not been set to action. The shutter can be used for regular pictures.
without flash, as usual, and no flash will occur. As soon as the photographer has decided to take a flash picture, however, all he has to do is set the small synchro-lever for action and his next picture will be taken with a perfectly synchronized flash. After the picture has been taken, the synchro-mechanism is automatically put out of action so that a new flash bulb can immediately be placed in the reflector, even if the pictures which follow are not intended to be taken with flash illumination. The Ilex Acme Synchro Shutter also takes care of the photographer’s mistakes in forgetting to change the speed from a time or bulb setting to an instantaneous speed. As soon as the synchro-lever has been set the shutter will automatically work at a speed of 1/25th of a second in spite of a “T” or “B” setting, thus saving the picture.
No special skill is required in handling this new instrument, for the shutter has been so designed as to be used exactly the same as any other regular shutter. Photograph on Page 5 shows two little electric outlet jacks (J) for connecting the cord with the battery case. Above these outlets can be seen the synchro-lever (H).

If a flash picture is desired this synchro-lever is set and the shutter is ready for flash action. Unless this lever has been set the shutter operates regularly without flashing the bulb, no matter whether the connection with the battery case has been made or not.

Behind this synchro-lever is to be seen a segment of a control disc (K). There are flash bulbs with different time delays on the market, varying from 23 to 5 milliseconds. (One millisecond is one thousandth of a second).

On this disc are three dots, one red for synchronizing the shutter with high speed spark lamps such as the Kodatron, one white for synchronizing the shutter for use with SM or SF (5 milliseconds) bulbs and one blue for synchronizing with regular (20 milliseconds) flash bulbs. If flash bulbs requiring 23 milliseconds delay are used the control disc can be turned beyond the blue dot about \(\frac{1}{16}\)". Thus, setting the control disc not only allows accurate adjusting of these four time delays (0, 5, 20 and 23 milliseconds) but gives the photographer the whole range continuously between 0 and 23 milliseconds and more. This continuous range allows setting of any desired time delay, a feature which might prove very useful in solving special photographic problems in connection with flash illumination. Once the control disc has been set for a certain
time delay it will keep accurate synchronization.

There are still other features that demonstrate the careful design and severe practical tests of the Ilex Acme Synchro Shutter. Let us assume that you have set the synchro-lever for action but forgot to cock the settlever of the shutter. The expected mishap that the flash bulb would go off without opening the shutter at all will not occur. The shutter release is automatically locked and the shutter cannot be operated thus reminding the photographer that he forgot something.

An especially designed safety switch interrupts the electric circuit as long as the shutter is not actually set for synchronization and is not actually tripped for taking the picture. This feature prevents short circuits and protects bulbs as well as the battery from being wasted accidentally.

Here is another advantage of this shutter. You can cock this shutter and set the synchro-lever and have a flash bulb in the reflector ready to shoot. But, suppose at the last moment something occurs that makes you wish to focus again on the ground glass. It is perfectly easy to satisfy this belated desire. Just touch the “press focus button” with one finger and the shutter opens without firing the bulb. You can focus again, reset the shutter and then take the flash picture. Detailed instructions on the use of this feature are on Page 15 & 16.

This new press focus button enables the photographer to open the shutter for focusing with only one finger leaving the other hand free for holding the camera steady. There is no need for resetting the speed cam to T or B. The shutter will open at any speed setting
chosen for the picture to be taken.

Now still a few words about the synchronizing unit itself. It is based on purely mechanical action; that means no magnetic coil is involved. As a consequence the electric current is only used for firing the flashbulb and is interrupted as soon as the flash has occurred. Moreover, it is a matter of fact that temperature changes the resistance of wire and therefore changes the synchronized delay of any electro-magnetic outfit. The Ilex Acme Synchro Shutter, being a mechanical synchronizer, has its delay based entirely on mechanical movements. Therefore it is independent of any possible climatic temperature changes.

Because the synchronizer is independent of the regular shutter mechanism, all shutter speeds will always be accurately maintained whether or not the synchronizer is used.

**SUMMARY OF FEATURES**

1. Fool-proof. Once adjusted, correct synchronization is always maintained.
2. Can be used with any kind of flash bulbs. (From 0 to 23 milliseconds time delay).
3. Can be used with high speed spark lamps.
4. Low battery consumption due to mechanical synchronization. Batteries used only for firing the flash bulb and not tripping the Shutter.
5. Perfect for multi-flash work.
6. Always prepared. Bulb can be set in reflector without danger of firing until synchro lever is set to flash.
7. Speeds accurately maintained whether or not synchronizer is used.
8. One-finger operation with new press-focus button.
10. Ideal for either black-and-white or color work.
11. Furnished mounted on lensboard if desired.
12. Available with Ilex "New Paragon" Lenses in various focal lengths and speeds. Or, can be fitted with any standard, high quality lens of comparable size.
How to Use the New ILEX ACME SYNCHRO SHUTTER

This shutter may be used for instantaneous exposures, time and bulb exposures and for taking flash pictures with the built-in mechanical synchro-chronizer. Also, as explained in the previous pages, the shutter can be opened for focusing after it has been set for making the exposure with or without flash. All these operations are explained below and on the following pages.

I. Instantaneous Exposures

1. Revolve the knurled speed control ring F slowly to the right or left, until the "V" mark is directly over the figure representing the time of instantaneous exposure you desire to make.

Note—For instance, the shutter No. 3 is graduated in fractional parts of a second, thus: 1, 1/2, 1/5, 1/10, 1/25, 1/50, 1/100, and 1/200 parts of a second, also "Bulb" and "Time."

2. Set lever B, controlling diaphragm openings to the desired aperture.

3. Press lever E as in illustration on Page 12. This sets the shutter.

4. Press cable release D, or press down release lever C or special body release L. This makes the exposure. (See photos on Page 14).

II. Time Exposures

1. Revolve the knurled speed control ring F until the "V" mark is directly over the letter "T."

2. Set lever B controlling diaphragm openings to the desired aperture.

3. Press lever E (see illustration on Page 12). This sets the shutter.

4. Use cable release and attach camera to tripod or other solid support to avoid camera movement. Press cable release D. This opens the shutter. Time the exposure by a watch. Again press cable release. This closes the shutter. If desired, shutter may also be opened by pressing release lever C or special body release L and closed by a second pressure. (See photos on Page 14).

III. Bulb Exposure

For short time exposures, the "bulb exposure" is often advantageous.
1. Revolve the knurled speed control ring F until the “V” mark is directly over the letter “B”. Exposure can be made with the release lever C on the shutter, with a special body release D, conveniently linked to this lever or with a cable release D, shown below.

2. Set lever B controlling diaphragm openings to the desired aperture.

3. Press lever E (see illustration on Page 12). This sets the shutter.

4. Use of cable release to avoid camera movement is suggested. Press cable release D to open the shutter and release to close the shutter. This makes the exposure. The shutter will remain open as long as pressure is maintained. If desired, shutter may also be opened and closed by use of release lever C or special body release D. Bulb and Time Exposures should only be made when camera is attached to a solid tripod or other firm support.

IV. Focusing with Shutter Set for Instantaneous Exposures

It is not necessary to revolve the knurled ring F back to the letter “T” in order to open the shutter for focusing.

With the shutter cocked and set for taking your picture (with or without flash), photo on next page shows how to open the shutter for focusing without changing its speed setting.
1. Simply press lever G as in illustration on opposite page to open the shutter for focusing.

2. Set lever B controlling diaphragm openings to the desired aperture.

3. After having focused, press down set lever E again. This resets the shutter.

4. Press cable release D, or press down release lever C or special body release L. This makes the exposure.

V. Flash Exposures

1. Connect electric outlet J (see illustration on page 5) and the series outlet of the battery case with the connecting cord. This series outlet is always located in the back of the battery case, where the push button is. In some battery cases this series outlet is covered by the push button. In that case the pushbutton can be unscrewed and turned down on a hinge. In other battery cases this series outlet will be found on sides or below the push button in the back of the battery case.

2. Revolve disc K (see illustration on page 5 and on page 18) until the colored dot coincides with the indicating mark, which represents the desired time delay: the red dot for zero milliseconds (Kodatron Speedlamp); the white dot for 5 milliseconds (SM or SF Lamp); the blue dot for 20 milliseconds; for 23 milliseconds, turn disc beyond the blue dot about \( \frac{1}{60} \). Once the disc is set the shutter will always work in perfect synchronization with the same type of flash bulbs. You don’t need to readjust this disc except when you change the type of flash bulb.

3. Follow instructions 1, 2, and 3 under “Instantaneous Exposures.” (See page 12.)
4. Put the flash bulb in the reflector.
5. Depress lever H. This sets the synchronizer. (See page 19).
6. Press cable release D, or press the release lever C, or special body release L. This makes the exposure in combination with the synchronized flash illumination.

The built-in synchronizing unit will work with all instantaneous exposures. If, by mistake, control ring F has been set at “T” or “B,” the synchronizing unit will automatically make an exposure of about 1/25th second. (See page 12).

Synchronization may be adjusted for different types of flash bulbs by moving disc K to the required time delay setting.

Flash bulbs can be set in advance in the reflector to be prepared for a quick flash exposure. The flash bulbs will not be ignited by taking regular pictures unless lever II, which sets the synchronizer, is depressed.
VI. Using the Acme Synchro Shutter for Multi-Flash Photography

The purely mechanical action of the synchro-unit is particularly useful with Multi-flash technique. This synchro-mechanism, not using any current for tripping the shutter, has all the energy of the battery available for firing the bulbs. Therefore, the battery output is able to flash many more flash-bulbs than ever could be flashed with the same battery in connection with an electro-magnetic synchronizer. As long as your batteries are in good condition you don't need additional batteries for multiple flash use.

For Multi-flash photography use the same series outlet in the back of the battery case as with single flash pictures to connect with the shutter. Connect the extension cord that leads to the additional flash-bulb with one of the two parallel outlets in front of the battery case. If another extension is desired, connect it with the other parallel outlet in front of the battery case.

If required, additional flash lights can be extended from the extra outlet to be found on most clamp
side light units. The drawing on page 21 shows how the shutter is connected with the series outlet in the back of the battery case. The parallel outlets on both sides of the battery case are connected with the other light sources. The diagram also shows how the extra outlets on these light units can be used to connect additional light units, if so desired. After these connections have been established, tripping of the shutter, if set for flash exposure, will operate the shutter and fire all the connected flash bulbs at the correct time.

If, for some particular reason, you have to use flash bulbs with 5 milliseconds, 20 milliseconds and 23 milliseconds time delay at the same time, you can do this by setting the disc K for the shortest (5 millisecond) delay and provide a sufficiently slow speed (1/50 second or slower). This slower speed will keep the shutter open long enough to take care of the bulbs with the longer delay.

If "open flash" exposures are desired, set the shutter at the 1 second speed. The shutter will stay open for 1 second, thus providing plenty of time for an "open flash" exposure.

VII. Remote Control of the Acme Synchro Shutter

As illustrations above show, the operator need not necessarily be at the camera. A cable release of sufficient length enables the photographer to use the flash light source that is usually attached to the camera, at any desired position and to control the shutter from a remote place.

Cable releases of various lengths may be obtained from your photographic supply house.
Important: 1. Do not oil any part of the shutter.

   2. For 23 milliseconds bulbs the control disc (k) can be turned beyond the blue dot about 1/16”.

In case of accident, return shutter to your dealer or to us for repairs.

Camera can be closed without detaching connecting cord from shutter.

Can be Used on Many Cameras

The illustrations in this booklet show the Ilex Acme Synchro Shutter on a 4 x 5 Speed Graphic Camera. We wish to point out, however, that this shutter can be used on many different types of cameras. In general, the Ilex Acme Synchro Shutter may be used on any camera having a lensboard of sufficient size to accommodate it.

What Lenses May be Used with the NEW SYNCHRO SHUTTER?

Ilex, at present, has available three lenses which may be used interchangeably for the No. 3 Shutter. A special stop plate for this purpose is provided. They are the Ilex “New Paragon” f.4.5 in focal lengths of 5½”, 6½” and 7½”. Available for the No. 4 Shutter are Ilex “New Paragon” Anastigmats in these focal lengths—8½” f.4.5, 10” f.6.3, 12” f.6.3. Specification chart for No. 3 and No. 4 Ilex Acme Synchro Shutters is shown on page 27.

Lenses of makes other than Ilex can be installed in the shutter, provided that their general construction permits this procedure.

In fitting other makes of lenses to the Ilex Acme Synchro Shutter, special adapters are required to
maintain the exact separation between the elements as established by its manufacturer. This is necessary to insure the lens performing at its original efficiency. It is therefore desirable whenever possible to send us the lens in its original mounting which will not be altered or tampered with in any manner, making it possible to use the lens interchangeably in its original mounting and the new shutter. This work is performed by a corps of experts, enabling us to guarantee absolute optical and mechanical correctness in every detail. A reasonable charge is made for this extra work.

*Illex f.4.5 lenses in focal lengths of 5½", 6½" and 7½" can be used interchangeably in the Synchro Shutter No. 3.*

<table>
<thead>
<tr>
<th>SHUTTER NUMBER</th>
<th>LIGHT APERTURE</th>
<th>LENS OPENING</th>
<th>OUTSIDE DIAMETER</th>
<th>FLANGE THREAD DIAMETER</th>
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</thead>
<tbody>
<tr>
<td>3</td>
<td>1⅛&quot;</td>
<td>1⅜&quot;</td>
<td>3⅜&quot;</td>
<td>1⅞⅝&quot;</td>
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<tr>
<td>4</td>
<td>1¼&quot;</td>
<td>2⅝&quot;</td>
<td>4&quot;</td>
<td>2⅜&quot;</td>
</tr>
</tbody>
</table>

*Other (smaller) sizes in preparation.*

*Special body release available at present only for No. 3 Shutter*
Denver, Colo., Dec. 17, 1943

The shutter has completely sold itself to everyone who has seen it. The mechanical synchronization has caused no end of comment, and is an outstanding improvement in flash photography. The choice of timing in milliseconds is a major point in its usability. The mechanical shutter trip or body release makes a very smooth-acting trip device.

New York, N. Y., Oct. 8, 1944

I have made over fifty tests with this shutter, under various conditions and at various speeds, always getting a perfectly normal negative and not once missing.

Los Angeles, Cal., Oct. 23, 1944

He used the lens and shutter mainly for color, both Kodachrome and Ansco. He appreciated the certainty of the synchronization very much—as a lot of this stuff was shot with three or more lamps—and he could feel certain that if the lamps flashed all right, the synchronization was 100%.

Hammond, Ind., Oct. 20, 1944

We have had the shutter in operation now for about a month and have not had any difficulty in synchronization at all. The lens is plenty sharp and has given us some very excellent negatives.

New York, N. Y., Dec. 7, 1944

For convenience, speed of operation, and that most helpful feeling of confidence in the equipment—well, words fail me. I am more than pleased—and I shall say so as loudly and as widely as possible.

Hollywood, Cal., Feb. 14, 1944

I like very much the ease with which the shutter may be operated for focusing, plus the facility with which the whole assembly may be operated. Speed and ease of camera operation is an important asset for the photographer today, and your synchronized shutter is a great improvement over the old system.

Budd Lake, N. J., Nov. 24, 1944

In fact, I think you have an—

In fact, I think you have an—

Congratulations on the shutter synchronizing arrangement. I have taken hundreds of flash photos since the lens has been received, and not one blank; that is a record.
ILEX "NEW PARAGON" LENSES

Sharp definition, covering power, lack of distortion, astigmatism and other aberrations characterize these remarkable lenses. As highly corrected anastigmats, they are ideal for color work.

ILEX ENLARGING LENSES

Your good negatives deserve enlargement with lenses that preserve their tonal values and reproduce their minutest details. Painstaking photographers use Ilex enlarging lenses to produce work of finest quality. Each Ilex lens represents years of intensive research, rigid testing and exacting standards of workmanship. If you delight in outstanding photographic work, choose Ilex.

ILEX TELEPHOTO LENSES

Ilex Telephoto Lenses add greatly to the enjoyment of taking motion or still pictures by enabling you to explore many new and fascinating fields. These lenses give a flat field of exceptional definition and sharpness. Corrected for astigmatism, color and other aberrations. A splendid telephoto for either black-and-white or color.

ILEX PROJECTION LENSES

Ilex projection lenses have definitely raised the standard of motion picture projection. By their clean cut sharpness and even illumination over the entire picture area, they add greatly to the enjoyment and quality of home movies. Absolute sharpness of definition and maximum illumination give a performance that is truly professional.

www.orphancameras.com
Price List

ILEX ACME SYNCHRO SHUTTER

<table>
<thead>
<tr>
<th>Description</th>
<th>List</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 3 or No. 4 Acme Synchro Shutter</td>
<td>$68.00</td>
</tr>
<tr>
<td>5½&quot; Ilex Paragon Anastigmat f.4.5 lens in No. 3 Acme Synchro Shutter</td>
<td>$95.00</td>
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<tr>
<td>6½&quot; Ilex Paragon Anastigmat f.4.5 lens in No. 3 Acme Synchro Shutter</td>
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<tr>
<td>7½&quot; Ilex Paragon Anastigmat f.4.5 lens in No. 3 Acme Synchro Shutter</td>
<td>$108.00</td>
</tr>
<tr>
<td>8½&quot; Ilex Paragon Anastigmat f.4.5 lens in No. 4 Acme Synchro Shutter</td>
<td>$123.00</td>
</tr>
<tr>
<td>12&quot; Ilex Paragon f.6.3 lens in No. 4 Acme Synchro Shutter</td>
<td>$128.00</td>
</tr>
<tr>
<td>Special Body Release for No. 3 Shutter extra</td>
<td>$2.50</td>
</tr>
</tbody>
</table>

(These prices do not include Federal Excise Tax)

ILEX OPTICAL COMPANY
ROCHESTER, N. Y.