# THE 0-SIZE PRONTOR SVS

You have already studied the design theory behind the Prontor SVS -- remember, the 00-size Prontor SVS is covered in your lesson, "Complex Escapement Retard Shutter - Part II." In the larger sizes, the Prontor SVS follows the same pattern with a few minor variations. So in this ServiSheet, we'll focus our attention on the variations in the 0-size Prontor SVS, Fig. 1.

The most significant variations are in the delayed-action escapement, the speeds escapement, and the sync contacts. But even though some of the parts are slightly different in appearance, the operating cycle is basically the same.

You'll recall that the main lever in the Prontor SVS automatically cocks the delayed-action escapement during the shutter-cocking cycle. So the delayed-action escapement always restrains the release of the blade operating ring -- regardless of the MXV selector ring setting. The position of the MXV selector ring does, however, determine the actual delay time which the escapement delivers.

At the "V" (self timer) setting, the full gear train goes into action to restrain the blade operating ring. Setting the MXV selector ring to either "M" or "X" then disengages a portion of the gear train (including the star wheel and pallet) to shorten the delay time.

Yet if you'll set the MXV selector ring to "V" and the shutter to "bulb," you'll find that you get the "X" action. In other words, with the shutter set to "bulb," it's impossible to accidentally use the self-timer feature. What happens is that the speed cam blocks the upturned tab on the delayed-action CLUTCH LEVER, Fig. 3. Consequently, the speed cam holds the clutch lever against its spring tension to disengage the pallet and star wheel from the rest of the escapement.

Figure 4, with the speed cam removed, spotlights the similarity between the 0-size SVS and the 00-size covered in your lesson test. The linkage system between the main lever and the first gear segment in the delayed-action escapement is virtually the same. During the cocking cycle, the main lever drives the TRANSFER LEVER toward the center of the shutter. And the transfer lever simultaneously swings the DELAYED-ACTION SETTING LEVER in a counterclockwise direction to tension the delayed-action DRIVE SPRING.

In the cocked position, Fig. 5, the LOCKING LEVER drops into engagement with a stud on the second gear of the delayed-action escapement. Consequently, the drive spring is unable to pull the first gear segment back to the rest position.

One variation you may have already spotted is the position of the delayed-action CATCH LEVER, Fig. 4 and Fig. 5. Remember, the catch lever in the 00-size SVS is on top of the delayed-action escapement. The catch lever in the 0-size SVS is a separate part sitting betwen the delayed-action escapement and the mechanism plate.

When you release the shutter, the blade operating ring travels a slight distance before being arrested by the catch lever. This initial travel is just enough for the blade operating ring stud, Fig. 5, to kick the locking lever out of engagement with the second escapement gear.

Now, the delayed-action drive spring pulls the first gear segment back in a counterclockwise direction -- against the opposition of the escapement. And, at the end of the cycle, the first gear segment swings the delayed-action setting lever against the catch lever tab, Fig. 4, to free the blade operating ring.

Other variations in the shutter are similarly subtle. For example, the speeds escapement uses a flywheel, Fig. 4, for additional retard at two shutter speeds: 1/10 second and 1 second. At these two speeds, the speed cam allows the flywheel pinion to engage a gear at the bottom of

the star wheel. In fact, the only difference between the speeds of 1/10 second and 1/25 second is whether or not the flywheel is engaged; it's engaged at 1/10 second and disengaged at 1/25 second.

To remove the speeds escapement, first cock the shutter. Then, take out the two speeds escapement retaining screws, Fig. 5. Notice that the longer screw goes at the pallet end of the escapement; the pallet, when disengaged, touches the screw head to prevent any chance of contact with the star wheel.

> On reassembly, be certain the long tab on the pallet lever, Fig. 5, hooks to the outside of the "winged" blade operating ring stud. When the blade operating ring rotates to close the blades, the "winged" stud strikes the pallet lever and disengages the pallet; thus, the retard lever moves easily to its "ready" position. Also, hold the long end of the pallet lever spring, Fig. 5, against its tension so it seats against the side of the shutter housing.

You can now see the sync contact assembly, Fig. 6. The flash fires when the CONTACT CLOSING LEVER presses the movable contact blade against the sync post. The only mechanical difference between "X" sync and "M" sync is the position of the contact closing lever.

Try moving the MXV selector ring back and forth between the "M" and "X" settings while watching the contact closing lever. Notice that the contact closing lever is in two sections -- the lower section which is controlled by the MXV selector ring and the upper section which engages the movable contact blade. The upper contact closing lever is free to pivot on the post of the lower section.

At the "X" setting, Fig. 6, the pin on the MXV selector ring does not engage the lower section of the contact closing lever. So the contact closing lever spring swings the lower section in a counterclockwise direction. Now, notice the space gap between the pin on the blade operating ring and the end of the upper contact closing lever, Fig. 6. You can see how far the blade operating ring must travel in the release rotation before its pin strikes the upper contact closing lever.

When you release the shutter, the blade operating ring rotates until the blades reach the full-open position. The blade operating ring pin then strikes the upper contact closing lever, driving the other end of the lever against the movable contact blade.

Moving the MXV selector ring to "M" pushes the lower section of the contact closing lever against its spring tension, Fig. 7. Notice that the lower section of the contact closing lever has only one function -- it positions the upper contact closing lever with respect to the blade operating ring pin. At the "M" setting, the end of the upper contact closing lever sits against the pin on the blade operating ring.

So now the sync contacts close as the blade operating ring begins its release rotation. The catch lever then holds the blade operating ring for the "M"-sync delay while the flashbulb reaches its peak intensity.

> When testing and adjusting the sync delay times, check the action first at the "M" setting. Adjust the "M"-sync delay by reforming the split end of the upper contact closing lever (the end engaged by the blade operating ring pin). Remember, the "M"-sync delay should measure 18 to 20 milliseconds between the time the contacts close and the moment the blades reach the full-open position.
>
> Of course, the length of the "M"-sync delay also depends on the proper operation of the blade operating ring and of the delayed-action escapement. So these parts should be checked -- and recleaned and lubricated, if necessary -- before making any forming adjustments.
>
> The reason for adjusting the "M"-sync delay first is that you have a separate adjustment for "X" sync -- an adjustment that does not affect the "M"-sync delay. At the "X"-sync setting, the lower section of the contact closing lever comes against an eccentric stop, Fig. 6. So by turning the

eccentric stop you can reposition the lower section of the contact closing lever for your "X"-sync adjustment.

At the "M"-sync setting, Fig. 7, the lower section of the contact closing lever moves away from the eccentric stop. That's why the position of the eccentric stop has no effect on the "M"-sync delay.

Like the speeds escapement, the delayed-action escapement is most easily removed and replaced with the shutter in the cocked position. So cock the shutter and notice that you can reach the two delayed-action escapement retaining screws, Fig. 8.

Remove the two screws holding the delayed-action escapement and the shoulder screw holding the transfer lever (there's a washer underneath the shoulder screw). As opposed to the 00-size version, you do not have to remove the delayed-action drive spring in the 0-size SVS.

But you do have to be careful in lifting out the delayed-action escapement -- there are two loose parts underneath. Lift up the escapement and examine the positions of the catch lever and the spacer, Fig. 9. What usually happens is that the catch lever jumps out of position as you remove the delayed-action escapement. So note in figure 9 that the catch lever fits over a post on the mechanism plate; and the spring on the mechanism plate feeds through a hole in the catch lever.

Having examined the proper positions, remove the catch lever and the spacer -- the spacer just sits under the delayed-action escapement at the screw-hole position. The catch lever spring should remain in position on the mechanism plate.

There is one vital precaution in replacing the delayed-action escapement which we'll now explain. On the underside of the escapement, examine the clutch arrangement, Fig. 10. There are two separate clutch levers -- one that carries the clutch gear and one that now floats freely around a post on the delayed-action escapement.

The free-floating INTERMEDIATE CLUTCH LEVER is actually the link between the spring-loaded clutch lever and the tab on the MXV selector ring, Fig. 9. At the "M" and "X" settings, the MXV selector ring tab engages the intermediate clutch lever. And the intermediate clutch lever then pushes the spring-loaded clutch lever toward the center of the shutter. The result is to disengage the pallet and star wheel from the rest of the gear train, turning the delayed-action escapement into an inertia retard.

On reassembly, first set the MXV selector ring to the "V" position. Then, position the intermediate clutch lever as shown in figure 10. As you seat the delayed-action escapement, the intermediate clutch lever must be clockwise of the MXV selector ring tab.

Once you've replaced the delayed-action escapement, check the operation at all three MXV selector ring settings. If the intermediate clutch lever isn't in the proper position, you'll spot the symptom immediately -- you'll get the self-timer delay at all settings of the MXV selector ring. The reason is that the MXV selector ring tab cannot contact the intermediate clutch lever to disengage the pallet and star wheel.

To complete the disassembly of the mechanism plate parts, disconnect and remove the blade operating ring spring, Fig. 11 -- remember, this spring just prevents the blades from opening during the shutter-cocking cycle. Next, examine the position of the contact closing lever spring: the long end hooks under the lip of the lower contact closing lever stud, and the short end hooks to the side of a milled section in the mechanism plate, Fig. 11. Disconnect the long end of the spring first. Then, lifting the short end up and over the milled edge in the mechanism plate, remove the contact closing lever spring from the shutter.

Finally, remove the shoulder screw which passes through the lower section of the contact lever, Fig. 11. And lift the entire contact closing lever assembly, containing both the upper and lower sections, out of the shutter.

NOTE: It isn't actually necessary to remove the contact closing lever assembly to take out the mechanism plate. But if you leave the contact closing lever assembly in place, you have an added concern during reassembly -- the end of the upper contact closing lever must be clockwise of the movable contact blade, Fig. 11. So removing the contact closing lever assembly does facilitate replacing the mechanism plate.

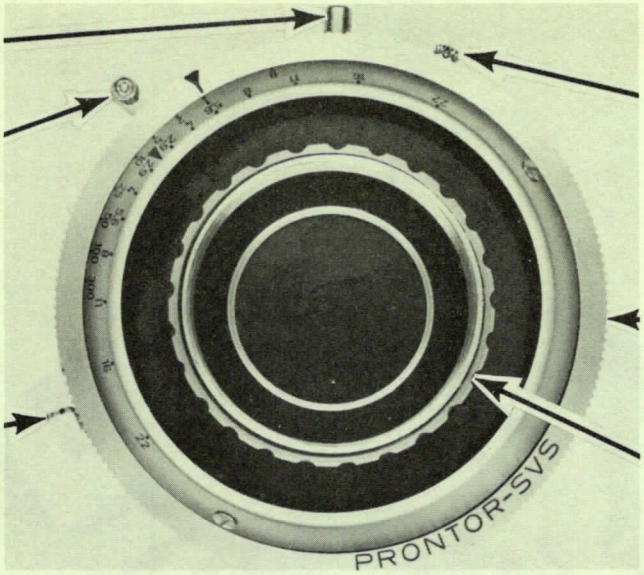
That's as far as you'll normally disassemble the mechanism plate parts. The main lever, release levers, and bulb lever may all be left in place during routine cleaning and lubrication. But for reference in the event you do go further in disassembly, notice that there is an additional lever underneath the bulb lever; this is the RELEASE-LEVER-LOCK LEVER, Fig. 12.

The function of the release-lever-lock lever is the same as that described for the Vario shutter (see your lesson, "Simple Escapement Retard Shutter"). With the shutter in the released position, the release-lever-lock lever engages a tab on the outer release lever. Consequently, you cannot depress the outer release lever, a signal that the shutter has not been cocked.

During the cocking cycle, the main lever stud strikes the tail of the release-lever-lock lever. So the main lever pushes and holds the release-lever-lock lever away from the outer release lever, Fig. 12. Notice also that the same spring serves both the release-lever-lock lever and the bulb lever.

Now, turn over the shutter to remove the mechanism plate. Rotate the MXV selector ring until its three clearance holes are above the mechanism plate screws, Fig. 13. Remove the three screws (all are the same length) and lift the shutter housing from the mechanism plate.

Complete your disassembly by removing the five shutter blades and the blade operating ring. The procedures here are the same as you studied for the Vario shutter in your lesson, "Simple Escapement Retard Shutter." Also, if you have occasion to remove the main lever, refer to the text section covering mainspring replacement in the Vario. The only difference is that the upper end of the mainspring in the 0-size SVS hooks to a post on the underside of the main lever, Fig. 14.




PC TERMINAL

COCKING LEVER

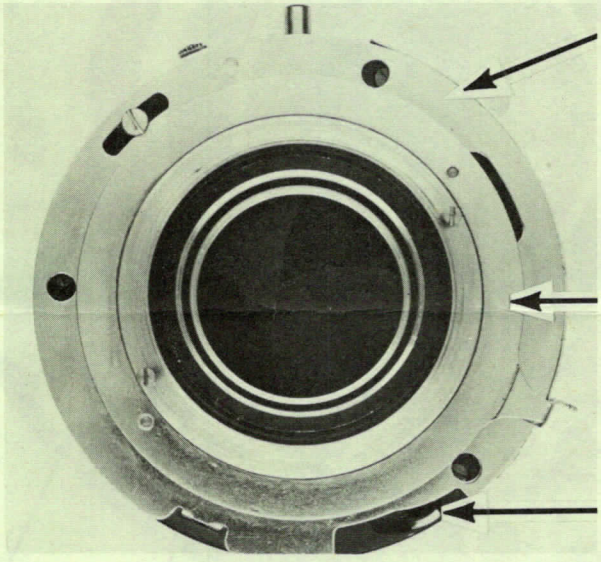
DIAPHRAGM CONTROL RING ARM

MXV SELECTOR RING POINTER ARM

SPEED CAM

SCALLOPED RETAINING RING

FIGURE 1

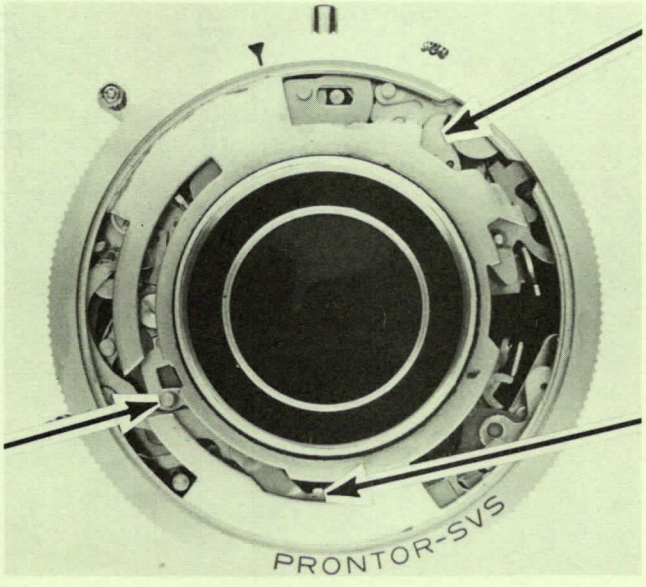


MXV SELECTOR RING

DIAPHRAGM CONTROL RING

OUTER RELEASE LEVER

FIGURE 2

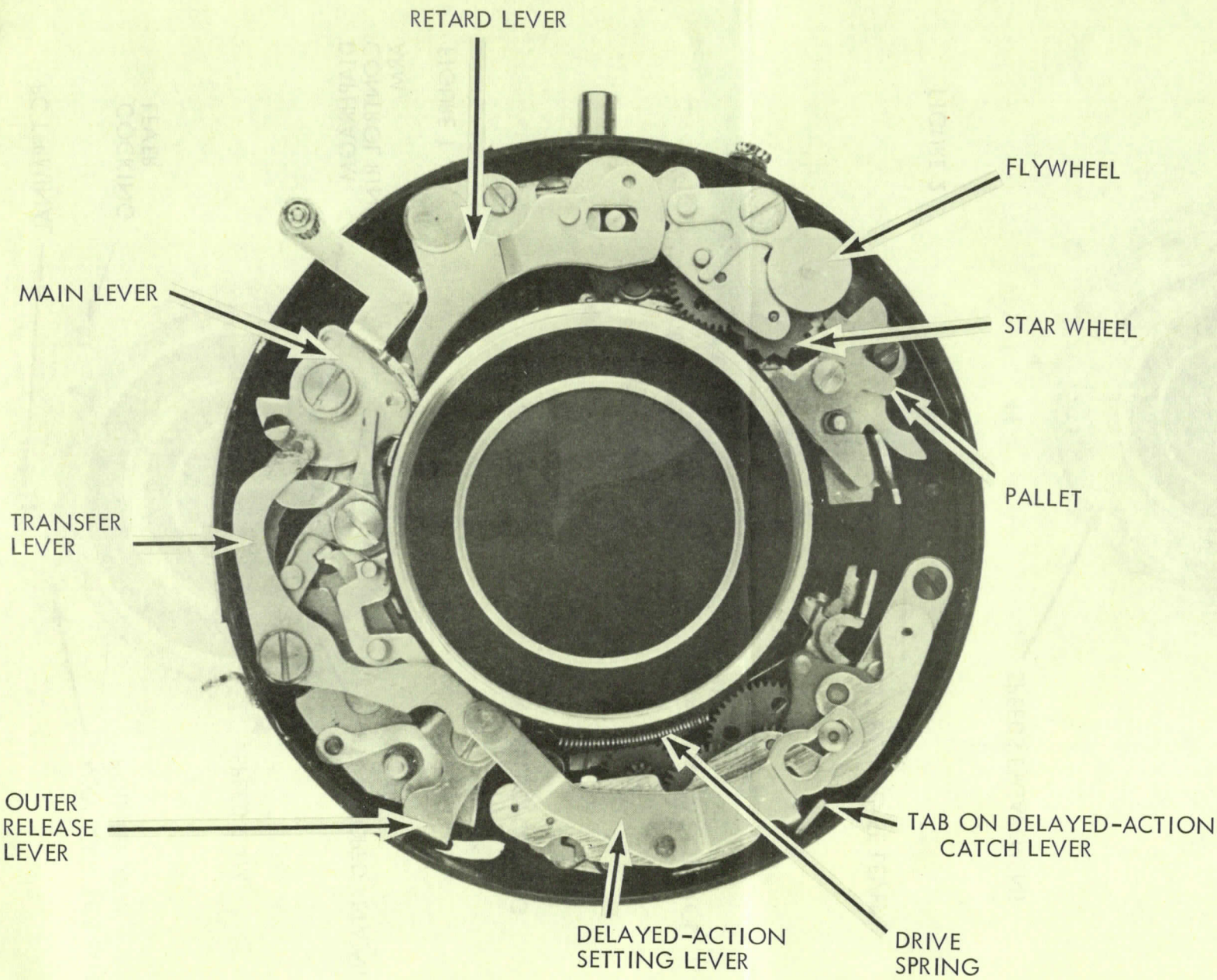



SPEEDS ESCAPEMENT

BULB LEVER

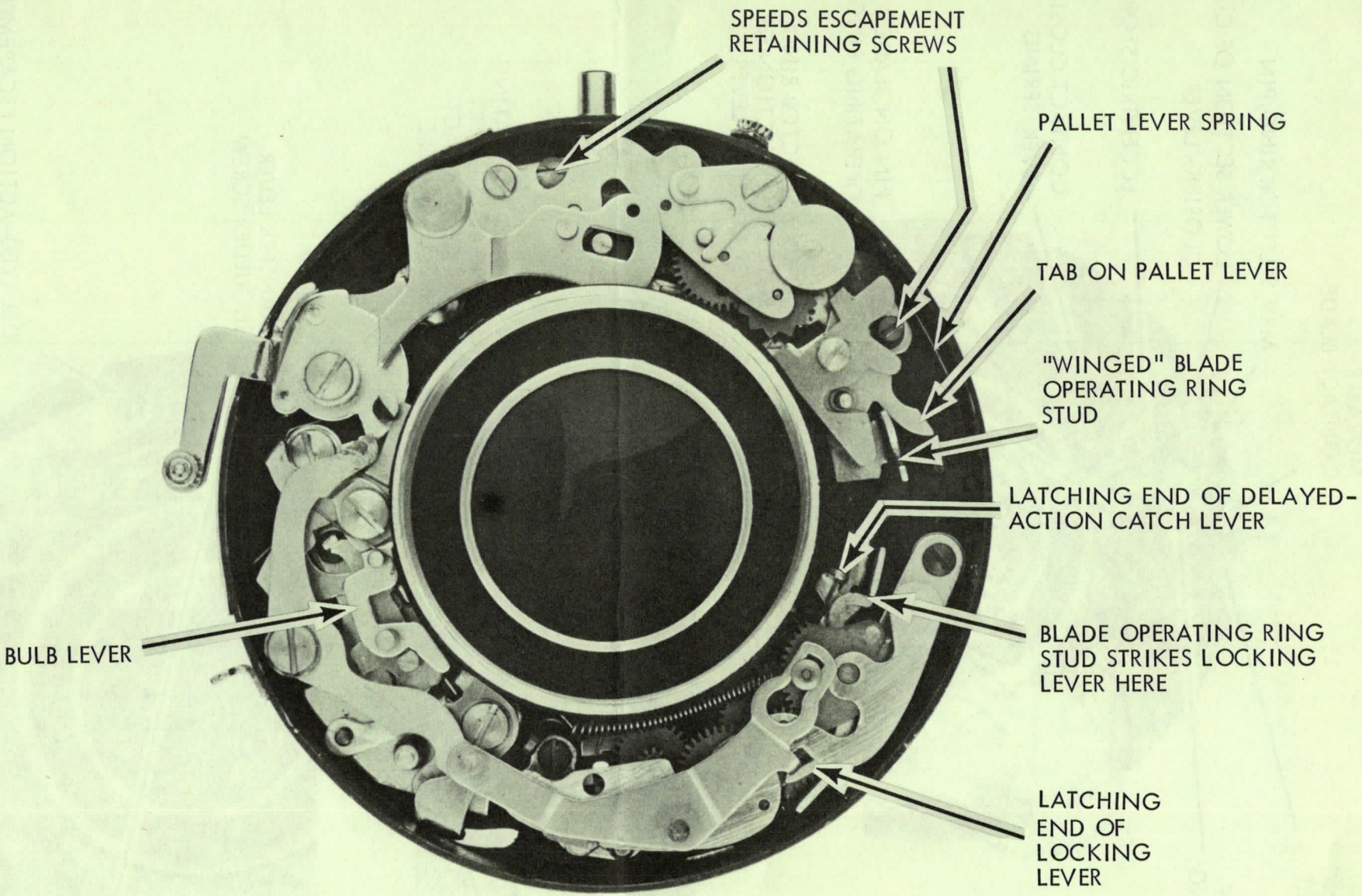
TAB ON CLUTCH LEVER

FIGURE 3 SHUTTER SET TO "BULB"




SHUTTER RELEASED

FIGURE 4




SHUTTER COCKED

FIGURE 5

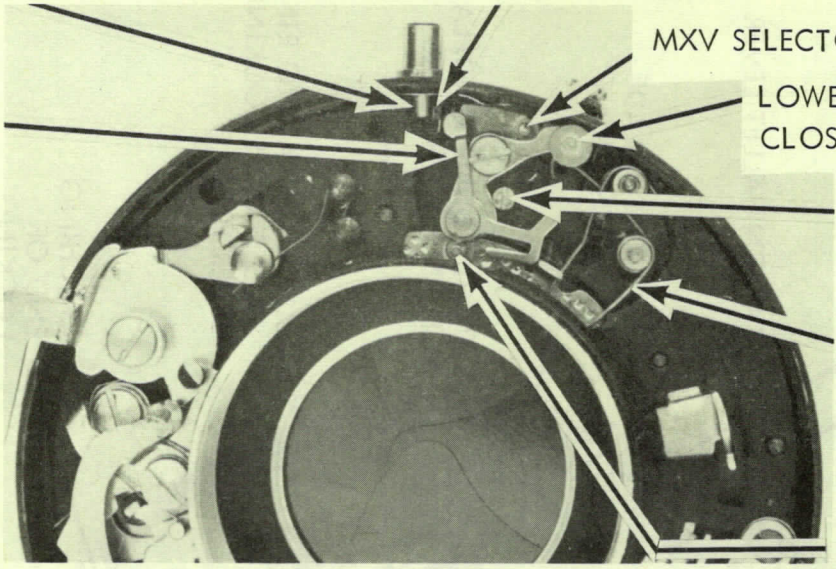



FIGURE 6 "X"-SYNC SETTING

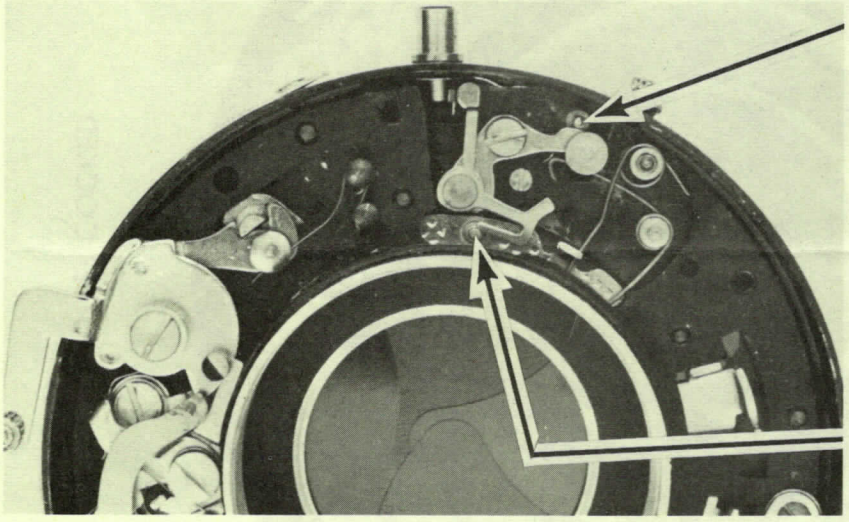



FIGURE 7 "M"-SYNC SETTING

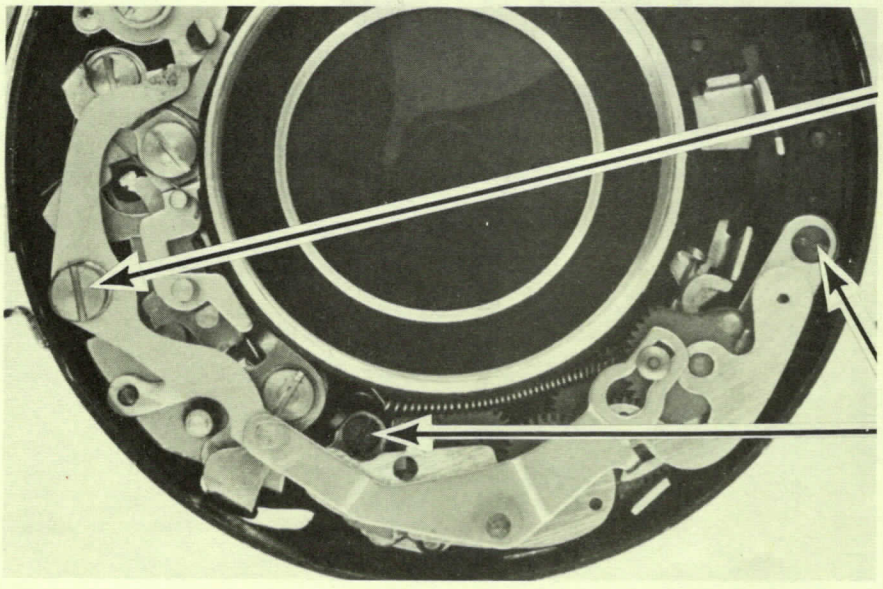



FIGURE 8

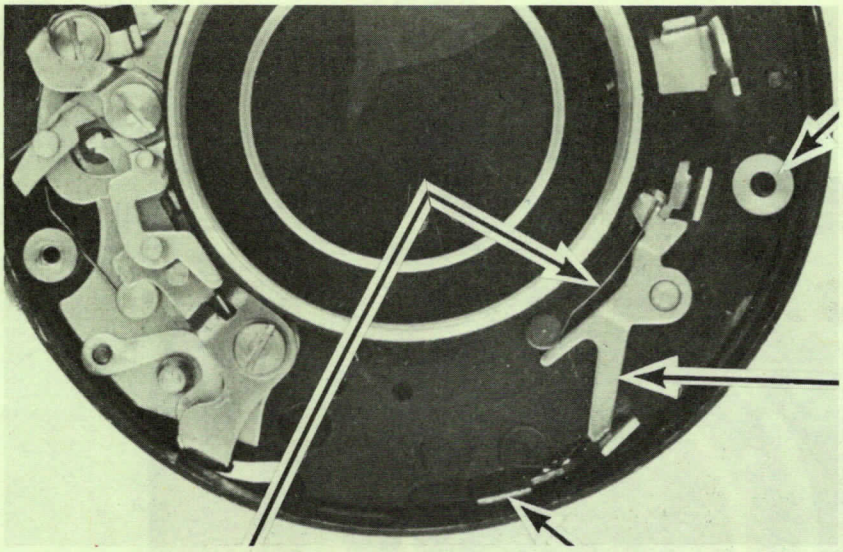



FIGURE 9 CATCH LEVER SPRING

TAB ON MXV SELECTOR RING THAT ENGAGES INTERMEDIATE CLUTCH LEVER

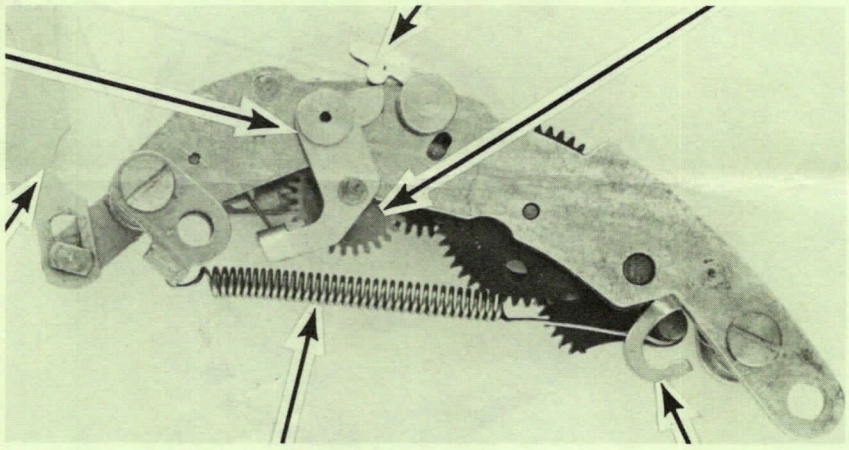



FIGURE 10

DRIVE SPRING

LOCKING LEVER

CONTACT CLOSING LEVER SHOULDER SCREW

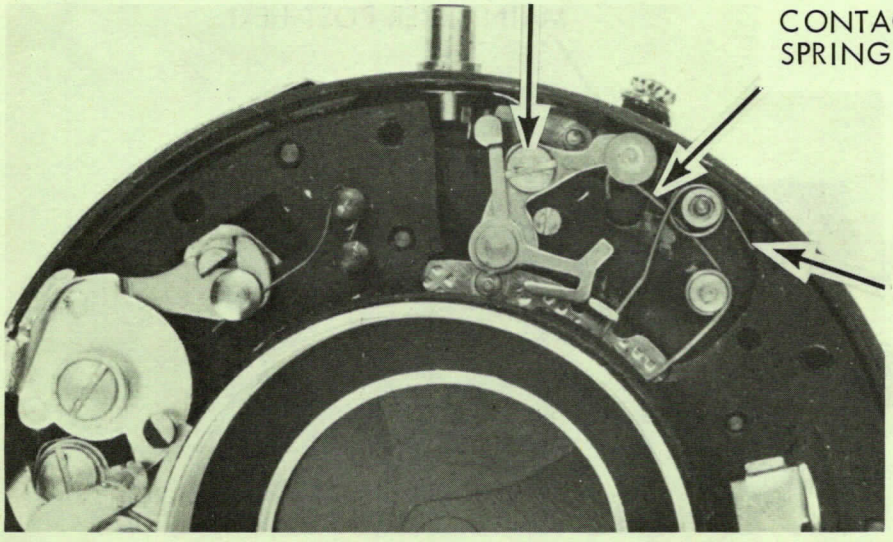



FIGURE 11

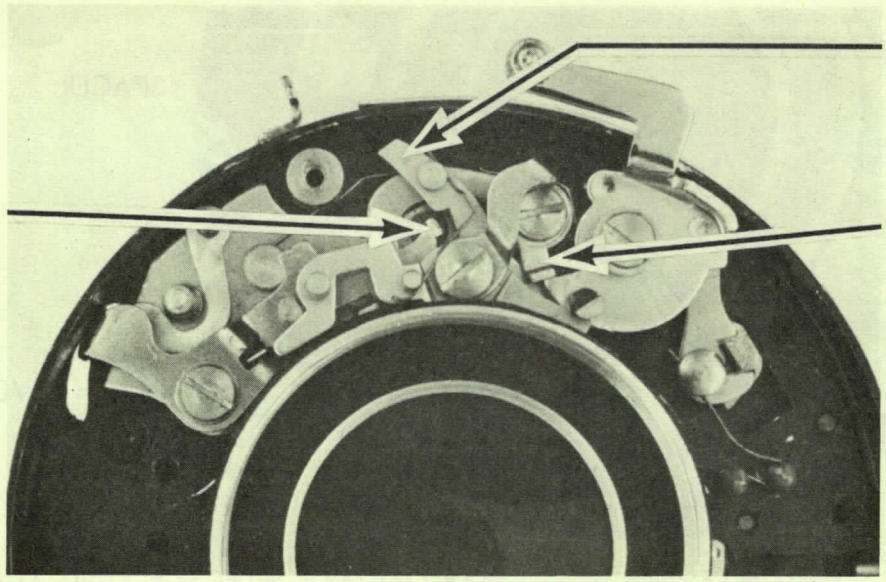



FIGURE 12 SHUTTER COCKED

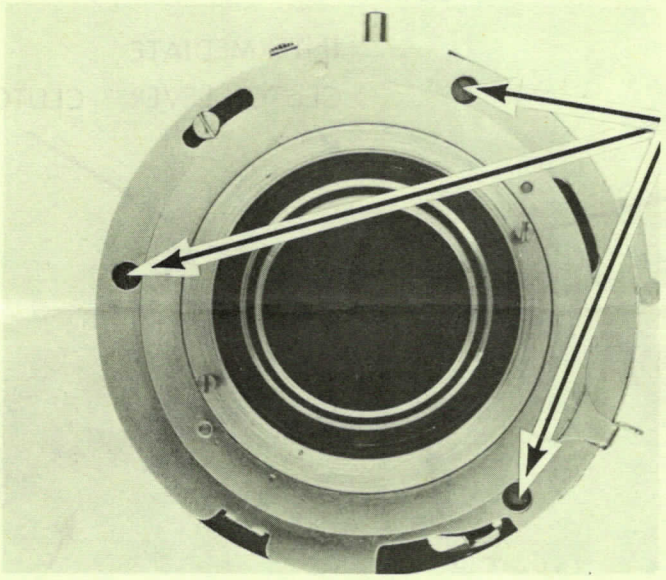



FIGURE 13

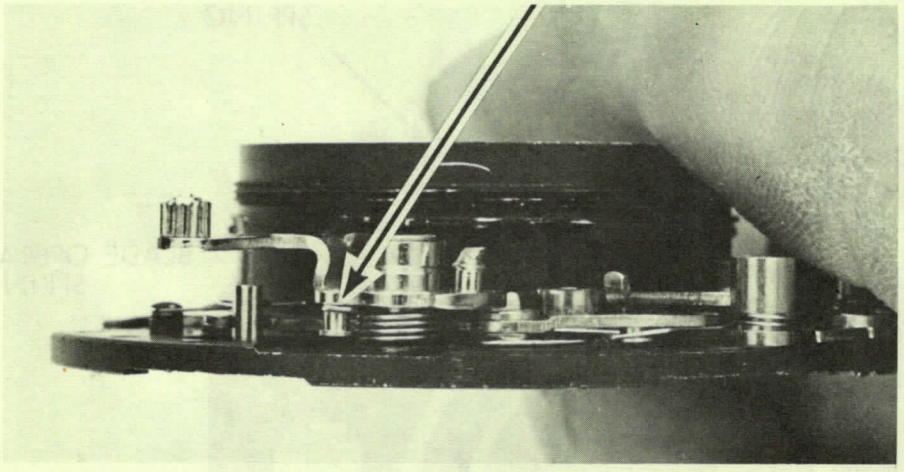



FIGURE 14