

**COMPLEX ESCAPEMENT RETARD
SHUTTER - Part 1**

Student # 13391

1. Review all previous shutter lessons and relate the various methods of operation described.
2. Read and study "COMPLEX ESCAPEMENT RETARD SHUTTER - PART 1."
3. Restudy the lesson "SIMPLE ESCAPEMENT RETARD SHUTTER," with particular emphasis on the Vario shutter.
4. Read and study Nat Cam Manual #276, "THE PRONTOR 500 LK - PROGRAMMED SHUTTER."
5. Read and study ServiSheet #534, "THE COPAL NO. 0 SHUTTER."
6. You should know:
 1. How the number of shutter speeds is increased through the use of the "speed range" system.
 2. The important part played by the pallet adjustment.
 3. How the speed cam controls the various parts of the shutter.
 4. The disassembly steps for the Supermatic shutter.
 5. The functions of the Supermatic parts.
 6. The action of the Supermatic delayed-action mechanism.
 7. Special timing precautions in assembly of the Supermatic retard section and delayed-action mechanism.
 8. Precautions in reassembly of the Supermatic.
 9. The action of the sync delay mechanism in the Flash Supermatic.
 10. The differences between the Supermatic, Kodamatic and Diomatic shutters.
 11. The steps involved in the disassembly of the Compur-Rapid shutter.
 12. The functions of all the parts in the Compur-Rapid.
 13. How to adjust the retard mechanism during reassembly.
 14. The variations in the Compur Rim-Set shutter.
 15. The basic construction of the Rapax shutter.
 16. The function of the Press-Focus lever in the Rapax.
 17. The many retarding devices incorporated into the Rapax.
 18. The function and design of various leaf lever springs.
 19. The purpose and principle of the programmed shutter.
 20. The similarities between the Prontor 500 LK and the Vario.
 21. The steps involved in disassembly and reassembly of the Prontor 500 LK.
 22. The functions of all parts in the Prontor 500 LK.
 23. The operation of the Copal No. 0 shutter.
 24. The steps involved in disassembly and reassembly of the Copal No. 0 shutter.
 25. The variations in the 00-size Copal shutter.

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7. As practice equipment for this lesson, you have received a Copal No. 0 shutter. Disassemble and reassemble the shutter as described in Servi-Sheet #534. Disassemble the shutter only as far as indicated in the ServiSheet. Repeat the disassembly until you are thoroughly familiar with the operation.

NOTE: Production has recently been discontinued on the M and X version of the Copal No. 0 shutter shown in your ServiSheet. The current models contain only the X contacts - the M contact mechanism and associated parts have been deleted.

If you receive the "X contact only" version of the shutter, simply pass over the references pertaining to the M contact parts in the ServiSheet. The balance of the shutter mechanism will be the same as the M and X model.

The elimination of M contacts in the newer shutter designs is becoming a trend rather than an exception to the rule. This is especially true of equipment designed mainly for professional studio use such as the Copal No. 0 shutter. In this situation, the flash bulb has truly become an illumination source of the past.

8. Review your ServiSheet #806, "The Cycle-of-Operation" for the proper method of constructing a cycle-of-operation. Then, using page 3 of this Lesson Procedure, complete the cycle-of-operations on the Copal No. 0. To help you with this project, a major portion of the cycle has already been completed. Simply add the six parts that are missing from the cycle, plus all (21) of the missing springs (and connecting arrows). Your final step in completing the cycle will be to properly connect all the parts (6) controlled by the speed cam.
9. Place your completed Lesson Quiz, form #6611, and pages 1, 2 and 3 of your Lesson Procedure in the return envelope provided. Pack the envelope in a box with the practice shutter and address it to the Instruction Department.

To avoid delays DO NOT include correspondence to other departments in your lesson shipment.

*This envelope was used to protect your lesson text when it was sent to you.

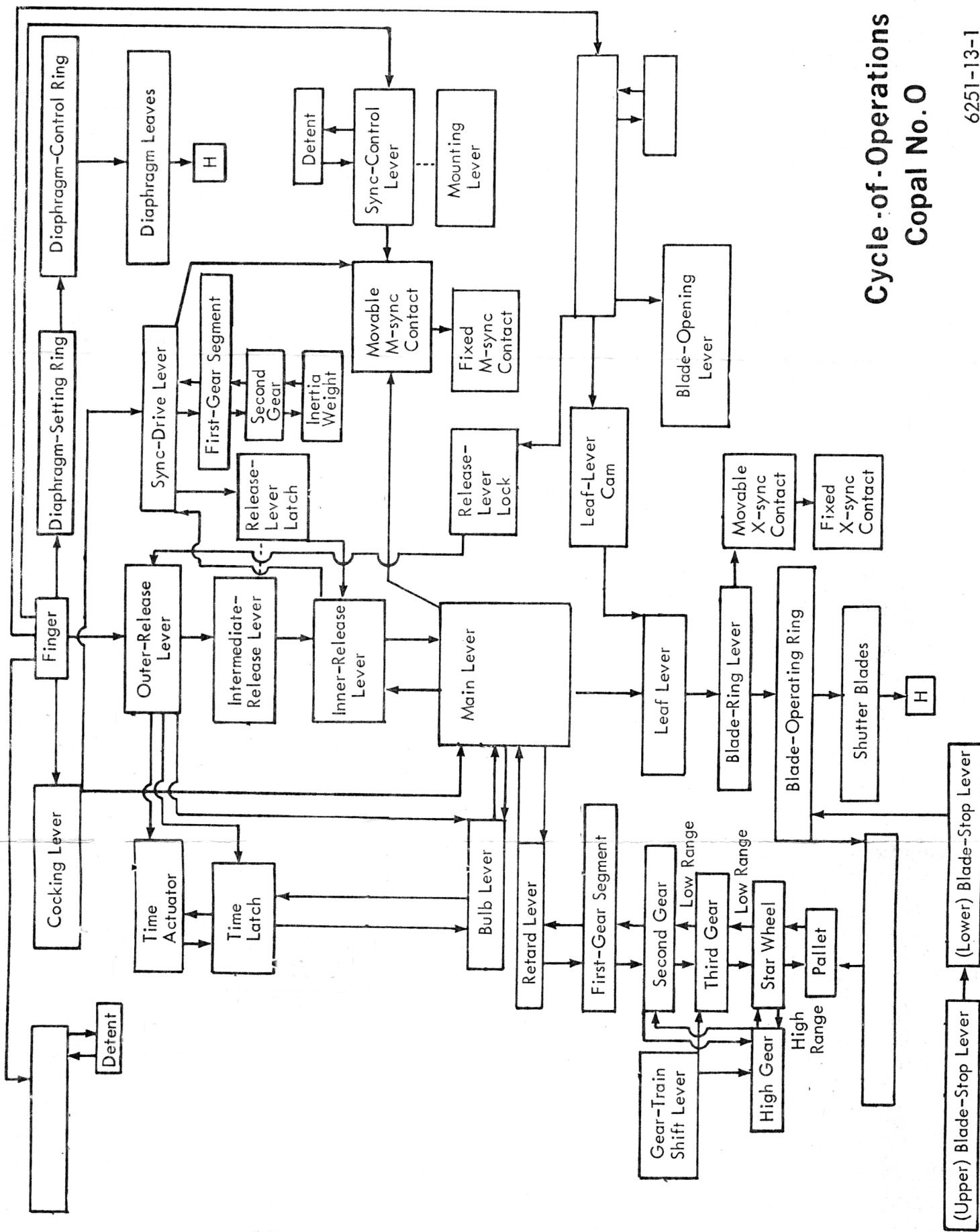
The rung of a ladder was never meant to rest
upon, but only to hold a man's foot long enough to
enable him to put the other somewhat higher.

Thomas Henry Huxley

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Cycle-of-Operations
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