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*HANDBOOK OF INSTRUCTIONS
WITH PARTS CATALOG*

FOR

AIRCRAFT SEXTANT

TYPE A-10A

(FAIRCHILD)

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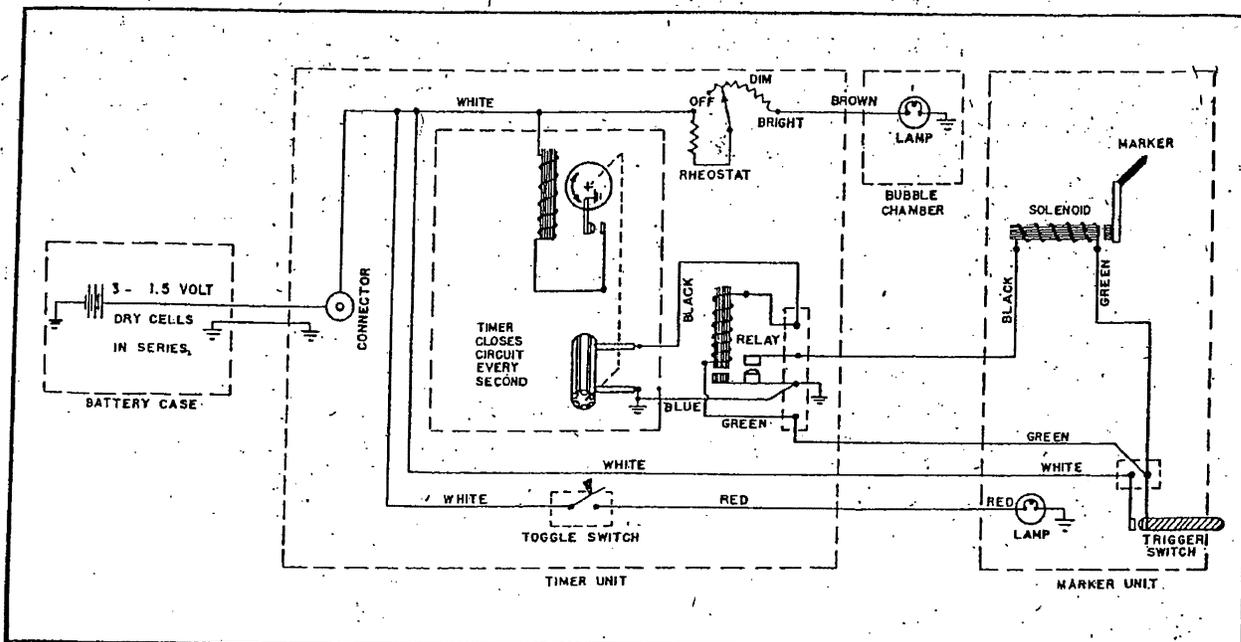


Figure 14—Wiring Diagram

(m) Set the counter to 00 degrees 0 minutes by turning the control knob.

(n) Lower the mounting fixture in such a manner that with the sextant attached, the field prism is in line with the collimating tube.

(o) Center the bubble in relation to target in the collimating tube, by adjusting the fixed prism with the three set screws located on the under side of it, using the special No. 6 Allen wrench provided.

c. INDEX CORRECTION.

(1) GENERAL.—If the bubble chamber is removed or replaced without optical calibration, there is a possibility of a change in index error which may amount to from 15 to 25 minutes. Pending complete adjustment at a maintenance depot, the new index correction should be obtained as soon as possible. If no natural horizon, such as exists on the sea, is available for reference, the following methods of obtaining this correction are suggested.

(2) DAY OBSERVATIONS.—Make at least twenty observations of the altitude of the sun, and note the time of each observation. Plot the observed altitudes against time, and on the same sheet plot the computed altitudes of the sun for that same period of time. Then draw smooth curves through the two series of points; the vertical distance between the curves is the index correction.

(3) NIGHT OBSERVATIONS.—Observe the altitude of a number of different stars of various altitudes and compare these values with the computed values obtained from the navigation tables. Average the differences between the two sets of readings; this average is the index correction.

d. ELECTRICAL SYSTEM. (See figure 14.)—The wiring of the electrical system can be checked by referring to the wiring diagram.

e. CLEANING.

(1) PRISMS.—Turn the control knob until the counter reads 00 degrees and carefully snap off the shade by pushing up on it while slowly rocking it from side to side. Then turn the control knob to 90 degrees and clean the field prism and the fixed prism with light tissue or a well-washed, clean pocket handkerchief. When replacing the shade, insert it between the fixed

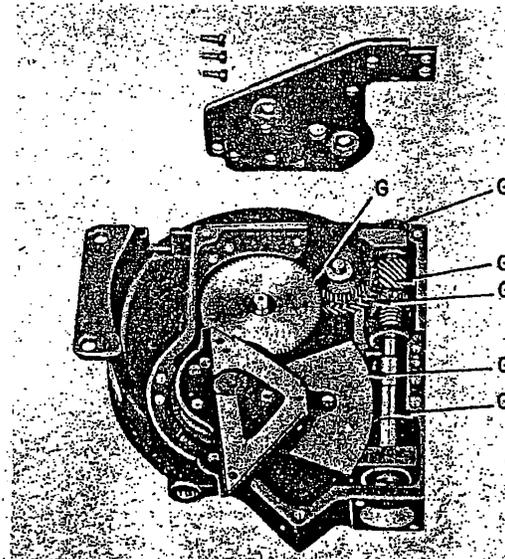


Figure 15—Lubrication

prism and the head of the mounting screw before snapping it on.

CAUTION

Spinning the control knob rapidly, especially by striking it with the palm of the hand, must be avoided; this action exerts a sudden force through the mechanism which may cause damage to the counter mechanism.

(2) REFLECTOR.—The reflector, being enclosed in the glass chamber housing assembly, may be cleaned by removing the eye guard and brushing with a soft brush. The filters may be moved down, to reach the other side of the reflector.

(3) GLASS CHAMBER LENS.—To clean the glass chamber lens in the objective lens assembly, unscrew and lower the housing cover. Through the aperture which is exposed, clean the lens with a soft brush or with lens tissue.

4. LUBRICATION.

(See figure 15.)

a. A very thin film of grease should be applied at the points indicated by "G" on the illustration or where otherwise stipulated. The grease specified is "Grease, Lubricating, Low Temperature, Specification No. AN-G-3a, Special for Camera Use." (Stock No. 7500-242700)

b. The sextant is thoroughly lubricated at the time of assembly and should not require any periodic lubrication. But, if the instrument is disassembled for repair, the following lubrication instructions should be observed:

(1) Apply a thin film of grease to the tapered shaft of the sector assembly.

(2) Apply a very thin film of grease to the teeth of the sector and to the worm.

(3) Apply a thin film of grease to all gear teeth

5. SERVICE TROUBLES AND REMEDIES.

TROUBLE	PROBABLE CAUSE	REMEDY
SECTOR ASSEMBLY BINDS	Taper shaft of sector assembly binding in bushing.	Clean and lubricate thoroughly the tapered shaft and bushing.
PRISMS NOT IN ALIGNMENT WITH ZERO READING OF COUNTER	Counter coupling loose. Fixed prism jarred out of place.	Reset and tighten headless set screw with No. 4 Allen Wrench. Refer to section V, paragraphs 3. b. and 3. b. (2).
MECHANISM JAMMED	Counter drum broken by spinning control knob at too great a speed.	Replace counter. Refer to section V, paragraph 3. b.
FIXED PRISM INTERFERES WITH FIELD PRISM	Incorrect setting of drive assembly.	Detach the drive assembly and reattach. Refer to section V, paragraphs 3. b. and 3. b. (3).
DRIVE ASSEMBLY BINDING	Drive gears meshed too close with pinion of worm assembly.	Loosen the binding head and flat head screws, then reset drive assembly and tighten screws.
COUNTER NOT READING THE SAME AS THE PREDETERMINED ANGLE OF OBJECT SIGHTED	Spherical nut loose. Replacement of bubble chamber, without collimation.	Realign the objective lens assembly and tighten. Refer to section V, paragraphs 3. b. and 3. b. (4).
BUBBLE MOVING AROUND FIELD	Adapter nut and lock ring loose.	Realign the objective lens assembly and tighten. Refer to section V, paragraphs 3. b. and 3. b. (4).
BUBBLE CHAMBER LIGHT FAILS	Weak battery. Bulb burned out. Rheostat connection loose.	Replace battery. Replace bulb. Mechanically anchor and resolder.
MARKER LIGHT FAILS	Weak battery. Bulb burned out.	Replace battery. Replace bulb.
AUTOMATIC MARKER FAILS TO OPERATE	Weak battery. Poor connection of plug and socket. Break in wiring. Trigger switch not closing circuit. Marker solenoid not operating. Relay not operating. Electric timer out of order.	Replace battery. Clean socket and plug and insert plug correctly. Check wiring according to wiring diagram. (See figure 14.) Resolder all loose connections. Clean and adjust contact points. Clean and adjust contact points on relay. Check electric timer. Replace electric timer.