

TM 9-6015

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

AIMING POST LIGHTS M14, M41 AND M43

DEPARTMENT OF THE ARMY

19 MARCH 1953

AIMING
POST LIGHTS
M14, M41
AND M43



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CHAPTER 1

INTRODUCTION

Section I. GENERAL

1. Scope

a. These instructions are published for the information and guidance of personnel responsible for field and depot maintenance of aiming post lights M14, M41, and M43. This manual does not contain information which is intended primarily for the using organization, since such information is available to ordnance maintenance personnel in the pertinent operator's technical manuals or field manuals.

b. This manual contains a description of and procedures for inspection, disassembly, repair and rebuild, and assembly of the aiming post lights.

c. The appendix contains a list of current references, including supply catalogs, technical manuals, and other available publications applicable to the materiel.

d. Operation, and all maintenance operations allocated to using organizations in performing maintenance work within their scope for the aiming post lights, are contained in the pertinent operator's manuals.

e. This first edition is being published in advance of complete technical review by all concerned. Any errors or omissions will be brought to the attention of Chief of Ordnance, Washington 25, D.C., attention: ORDFM-PUB.

2. Field and Depot Maintenance Allocation

The publication of instructions for complete disassembly and rebuild is not to be construed as authority for the performance by field maintenance units of those functions which are restricted to depots and arsenals. In general, the prescribed maintenance responsibilities will apply as reflected in the allocation of maintenance parts listed in the appropriate columns of Department of the Army Supply Catalog ORD 8 SNL F-205. Instructions for depot maintenance are to be used by maintenance companies in the field only when the tactical situation makes the repair functions imperative. Provisions of parts listed in the depot stock guide column of ORD 8 SNL F-205 will be made to field maintenance only when the emergency nature of the maintenance to be performed has been certified by a responsible officer of the requisitioning organization.

3. Forms, Records, and Reports

a. General. Responsibility for the proper execution of forms, records, and reports rests upon the officers of all units maintaining this equipment. However, the value of accurate records must be fully appreciated by all persons responsible for their compilation, maintenance, and use. Records, reports, and authorized forms are normally utilized to indicate the type, quantity, and condition of material to be inspected, to be repaired, or to be used in repair. Properly executed forms convey authorization and serve as records for repair or replacement of matériel in the hands of troops and for delivery of matériel requiring further repair to ordnance shops in arsenals, depots, etc. The forms, records, and reports establish the work required, the progress of the work within the shops, and the status of the matériel upon completion of its repair.

b. Authorized Forms. The forms generally applicable to units maintaining this matériel are listed in the appendix. For a current and complete listing of all forms, refer to current SR 310-20-6. For instructions on the use of these forms, refer to FM 9-10. Additional forms applicable to the using personnel are listed in the pertinent operator's manual.

c. Field Reports of Accidents. The reports necessary to comply with the requirements of the Army safety program are prescribed in detail in the SR 385-10-40 series of special regulations. These reports are required whenever accidents involving injury to personnel or damage to matériel occur.

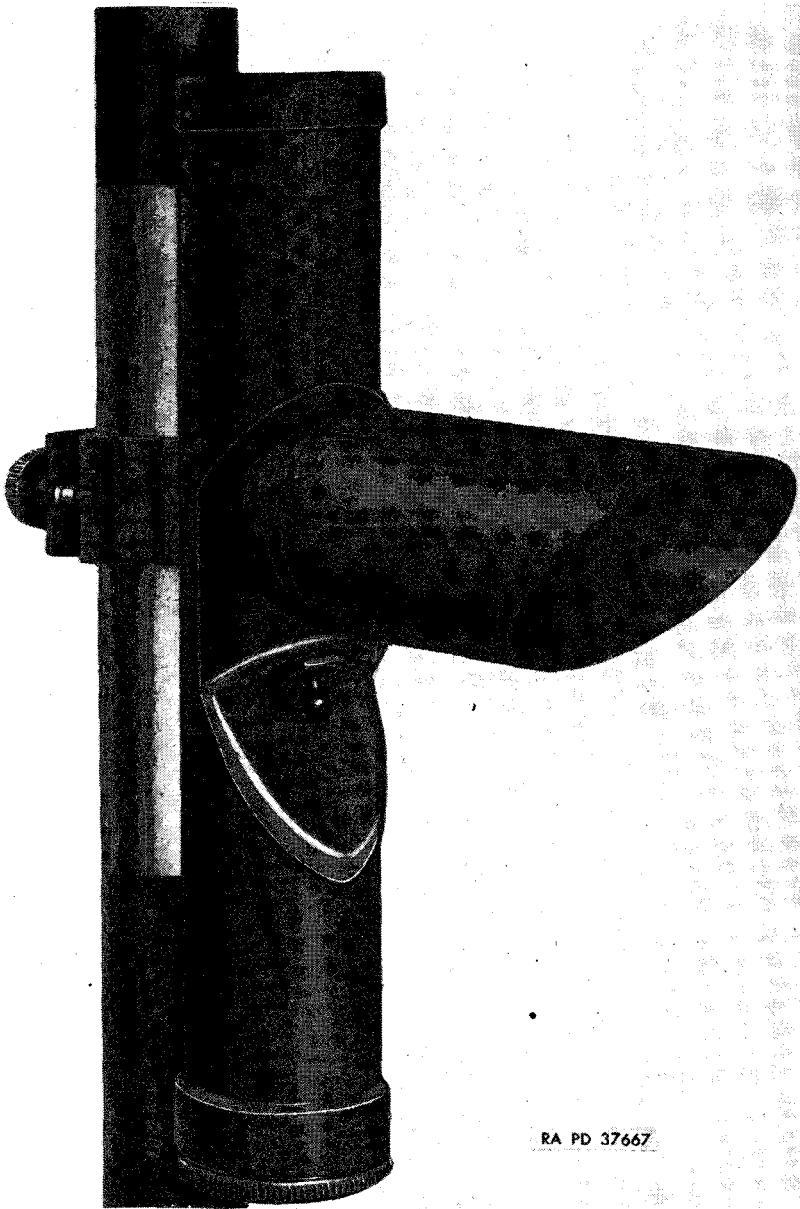
d. Report of Unsatisfactory Equipment of Materials. Any suggestions for improvement in design and maintenance of equipment and spare parts, safety and efficiency of operation, or pertaining to the application of prescribed lubricants, and/or preserving materials, or technical inaccuracies noted in the Department of the Army publications, will be reported through technical channels, as prescribed in SR 700-45-5, to the Chief of Ordnance, Washington 25, D. C., ATTN: ORDFM, using DA Form 468, Unsatisfactory Equipment Report. Such suggestions are encouraged so that other organizations may benefit.

Note. Do not report all failures that occur. Report only REPEATED or RECURRENT failures or malfunctions which indicate unsatisfactory design or material. See also SR 700-45-5 and the printed instructions on DA Form 468.

Section II. DESCRIPTION AND DATA

4. Description

a. Aiming post lights M14, M41, and M43 (figs. 1, 2, and 3) are self-contained lighting units. In actual use, they are fitted to aiming posts during night operations in artillery indirect fire.

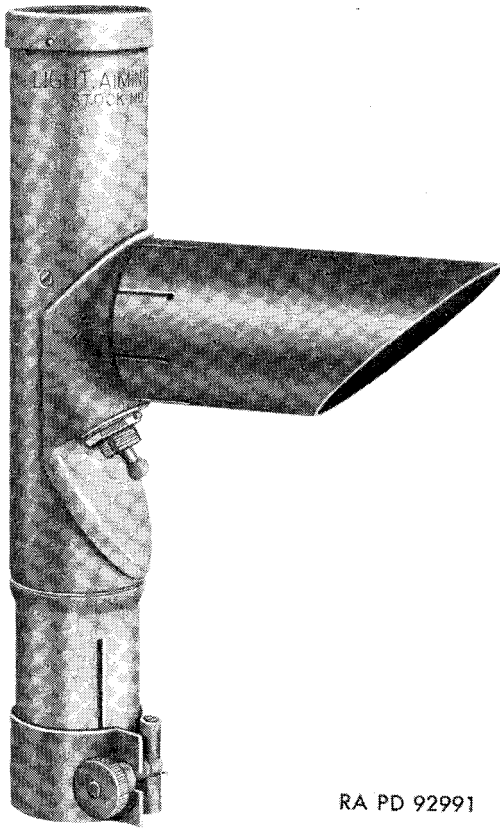


RA PD 37667

Figure 1. Aiming post light M14.

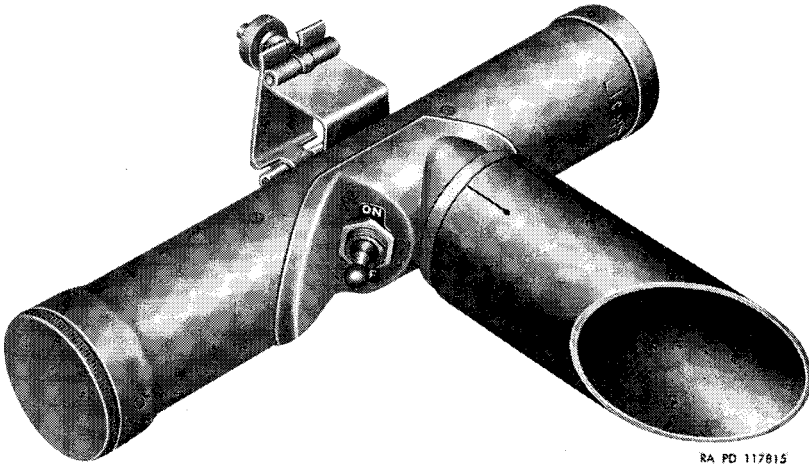
b. The various aiming posts used in conjunction with the three types of aiming post lights described in this manual are listed in table I.

c. Aiming post lights M14, M41, and M43 (figs. 1, 2, and 3) are basically the same in appearance and operation. Each unit consists of a cylindrical metal case that contains the battery cell or cells on



RA PD 92991

Figure 2. Aiming post light M41.



RA PD 117815

Figure 3. Aiming post light M43.

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Table I. Aiming Post Lights and Associated Aiming Posts

Aiming post light	Aiming post
M14	M1 and M1A1.
M41	M4, M6, M7, M8, M9, and M10.
M43	Square Aiming Stakes, Chemical Warfare Service.

which the unit operates. Each is equipped with a colored filter or filters and incorporates a clamp for mounting ON the aiming post.

Note. Batteries used in aiming post lights are issued by the Signal Corps. The batteries are not considered as part of the equipment and should not be stored, packed, or shipped in aiming post lights.

- (1) Figure 4 illustrates the major components of aiming post light M14. The case holds two dry cell batteries similar in type to those used in ordinary flashlights. Each battery enters from opposite ends of the case and is held in position by spring pressure from a cap. The lamp screws into a contact located on the reflector which fits into the case. The window is threaded internally to receive a filter assembly which may be either red or green. The purpose in supplying interchangeable green and red filter is to distinguish between far and near aiming posts during operation. Previously, only one red or green filter was required to make a complete aiming post light. However, this has been changed and future supply of aiming post light M14 will include both a green and red filter. One filter will be mounted in the light and the other included in the aiming post light package. A reflector shade fits over the filter and lamp. During operation, the aiming post light mounts on the aiming post by means of a bracket fixed to the case and the light is turned on or off by means of a toggle switch.
- (2) Aiming post light M41 (fig. 5) utilizes the same basic major components in its system as the aiming post light M14, with the exception described in paragraph 5. Note that this light utilizes only one dry cell battery and is supplied with one filter only.
- (3) Aiming post light M43 (fig. 6) is identical in operation to aiming post light M14, described in (1) above. It utilizes the same major components and has the same appearance and construction with the exceptions listed in paragraph 5. Note that this light is provided with a disk which fits between the glass window filter. The disk has a small round hole in its center that provides the sole means for passage of light from the lamp to the filter.

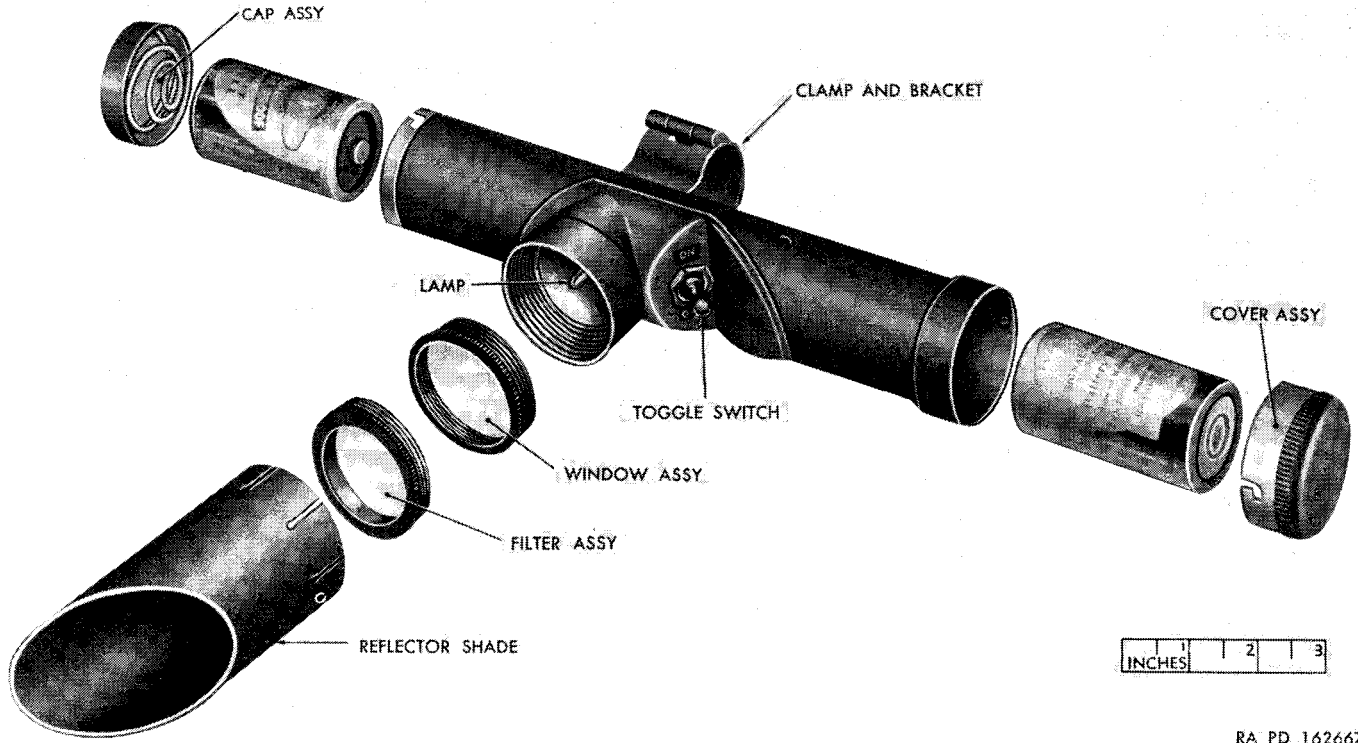


Figure 4. Aiming post light M14 - major components.

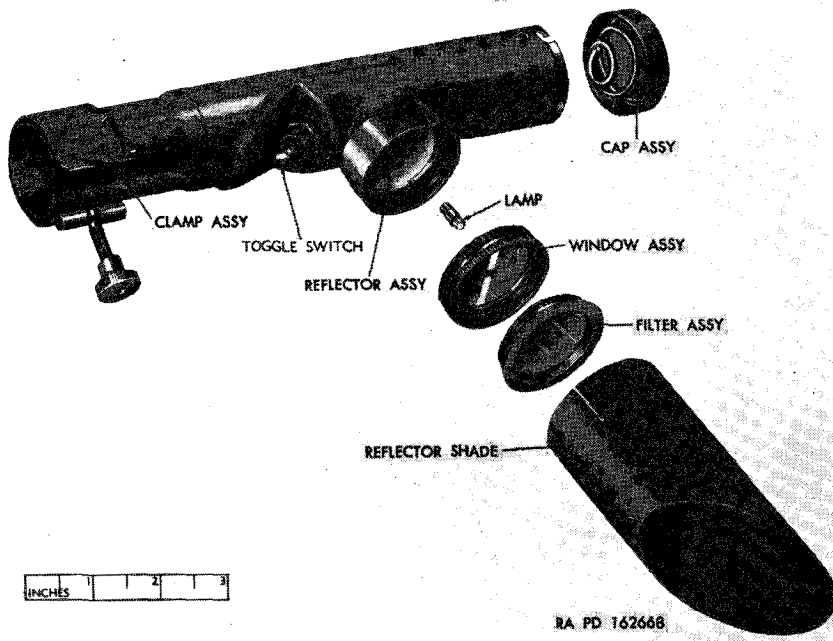


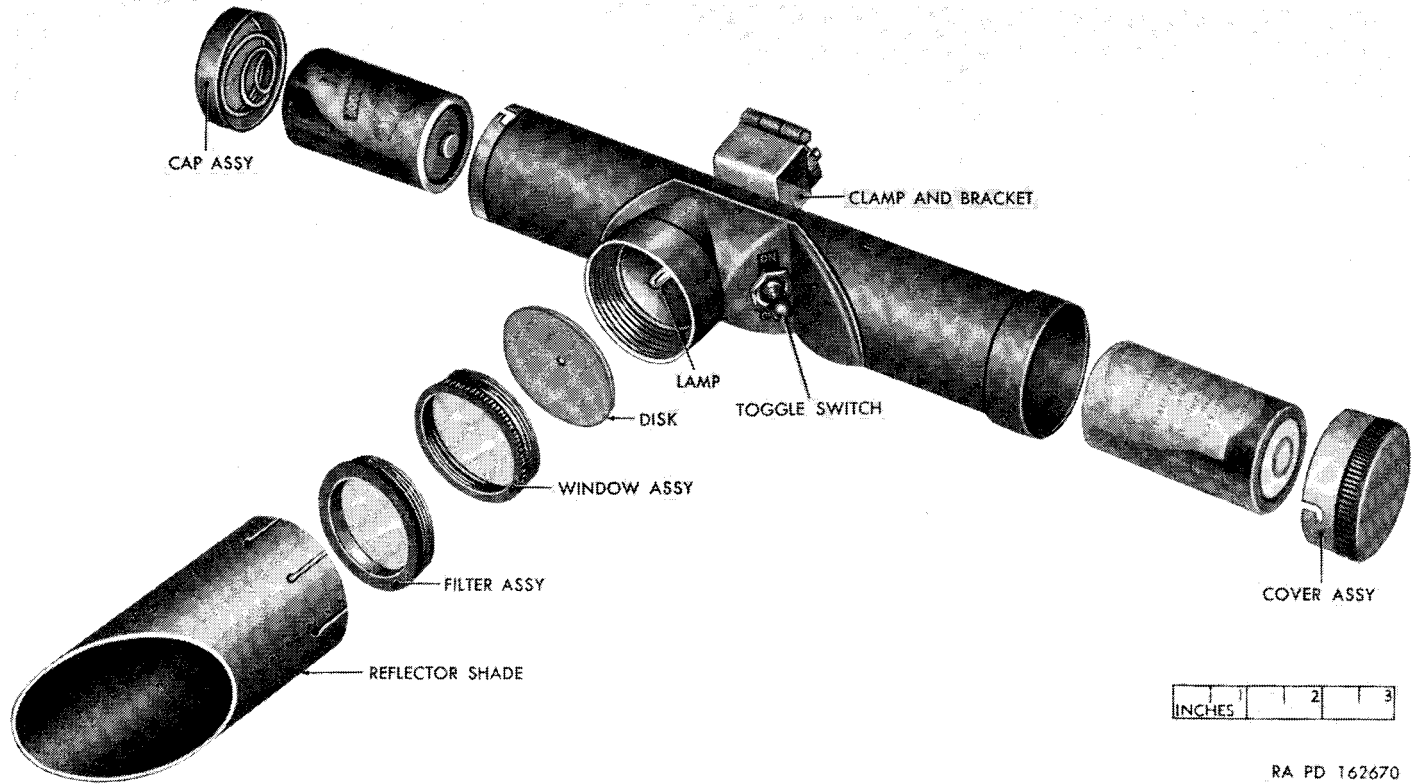
Figure 5. Aiming post light M41-major components.

5. Differences Between Models

a. Major Differences. The major differences between aiming post lights M14, M41, and M43 are in the components that make up their optical systems and in the case constructions with their particular bracket arrangements.

b. Differences Between Cases. Cases differ in their clamp arrangements which are constructed to fit the aiming post used in conjunction with the specific aiming post light. The various cases and their clamps are illustrated in figure 7. Another difference between cases is that aiming post lights M14 and M43 have their clamp at the center of the case and are closed at each end by a cover and cap. The clamp of aiming post light M41 is formed by one open end of the case.

c. Differences in Reflector Assemblies. Reflector assemblies are similar in construction and appearance. The only difference between them is the manufacturing specification of the finish and polishing of the reflector of early manufacture. Reflector assemblies for aiming post lights M14, M41, and are identical and interchangeable. The finish in the reflector assembly (fig. 5) for M41 of early manufacture is a dull unpolished aluminum. Component parts of the optical systems of aiming post lights M14, M41, and M43 are shown in figures 4, 5, and 6.



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Figure 6. Aiming post light M4 - major components.

Table II. Differences Between Aiming Post Lights

Component	Part Nos. for components of aiming post lights		
	M14	M41	M43
CASE, assy	5578793	7673483	7674329
REFLECTOR, assy	6173782	6173782 or 7641305	6173782
FILTER, green, assy	6173860	6173860	6173860
FILTER, red, assy	6173781		6173781
WINDOW, assy	6173787	7641306	6173787
DISK			7586963
COVER	5183429		5183429
BATTERY	SIG CORPS BA-30 or BA-130 TWO USED	SIG CORPS BA-30 or BA-130 ONE USED	SIG CORPS BA-30 or BA-130 TWO USED

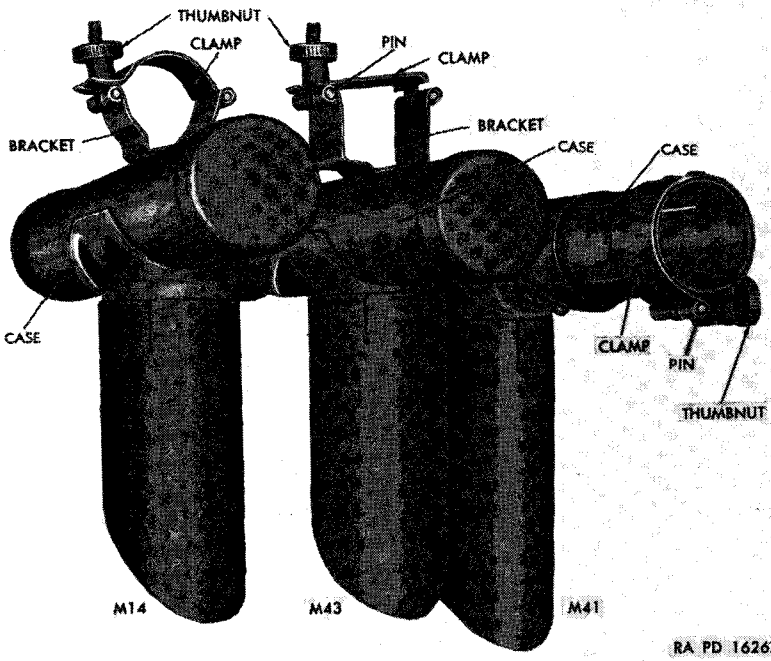


Figure 7. Clamp arrangements on aiming post light cases.

d. Differences Between Optical Systems.

- (1) In operation, aiming post lights M14 (fig. 1) and M43 (fig. 3) are used with either a green filter assembly or a red filter assembly. Aiming post light M41 (fig. 2) is used only with a green filter assembly. Filter Assemblies are inter-

changeable. Aiming post lights M14 and M41 are equipped with a similar type, interchangeable clear glass window assembly. Aiming post light M41 utilizes a black opaque window assembly (fig. 5).

- (2) In addition to a filter assembly and window assembly, aiming post light M43 (fig. 6) is equipped with a metal disk which fits between the lamp and window assembly.

e. Differences Between Covers. Aiming post lights M14 (fig. 1) and M43 (fig. 3) are each provided with a cap assembly and cover assembly (figs. 4 and 6). Aiming post light M41 (fig. 2) is provided with a cap assembly (fig. 5) at one end of the case, the other end being open to form the clamp assembly (fig. 5).

f. Electrical System. Aiming post lights M14 and M43 operate on two 1.5-volt battery cells, while aiming post light M41 operates on one 1.5-volt battery cell. All three lights use a 3-volt lamp. In aiming post lights M14 and M43, the lamp is connected to the batteries in a parallel circuit (fig. 11). Thus, the voltage remains the same and the 3-volt lamp is illuminated by 1.5 volts resulting in a light of low intensity with long lasting battery life. Aiming post light M41 operates on one battery cell only because a portion of the case is utilized for the clamp assembly. Battery cells are interchangeable between aiming post lights. Signal Corps battery BA-130 is physically identical and electrically interchangeable with the BA-30, except that the BA130 has a better service life at low temperatures.

6. Tabulated Data

Table III. Tabulated Data

Pertinent information	Aiming post light		
	M14	M41	M43
Battery cell voltage	1.5 volts	1.5 volts	1.5 volts.
Number of batteries required.	2	1	2.
Lamp voltage	3 volts	3 volts	3 volts.
Switch used		Single pole, single throw.	
Type of window used.	Clear	Opaque black with clear center strip.	Clear with metal disk.
Type of filter used	Green or red.	Green	Green or red.
Length, over-all	8¾ inches	8¾ inches	8¾ inches.
Diameter of case	1½ inches	1½ inches	1½ inches.
Width with shade and clamp.	7½ inches	5¾ inches	8 inches.
Weight (without batteries).	16 ounces	16 ounces	16 ounces.

CHAPTER 2

PARTS AND TOOLS FOR FIELD AND DEPOT MAINTENANCE

7. General

Tools and maintenance parts over and above those available to the using organization are supplied to ordnance field maintenance units and depot shops for maintaining and repairing the matériel.

8. Parts

Maintenance parts are listed in Department of the Army Supply Catalog ORD 8 SNL F-205 which is the authority for requisitioning replacements. Parts not listed in an ORD 8 catalog, but required by depot shops in repair operations may be requisitioned from the listing in the corresponding ORD 9 catalog and will be supplied if available, when the need is substantiated.

9. Common Tools and Equipment

Standard and commonly used tools and equipment having general application are listed in ORD 6 SNL J-8, Section 15, and J-10, Section 14, and are authorized for issue by T/A and T/O & E. They are not specifically identified in this manual.

CHAPTER 3

INSPECTION

Section I. INTRODUCTION

10. General

This chapter provides specific instructions for the technical inspections by ordnance maintenance personnel of aiming post lights M14, M41, and M43, either in the hands of troops or when received for repair in ordnance shops. It also defines the in-process inspection of matériel during repair and rebuild and the final inspection after repair and rebuild has been completed. Trouble shooting information is incorporated wherever applicable as a normal phase of inspection.

11. Purpose of Inspection

Inspection is primarily for the purpose of (1) determining the condition of an item, i. e., serviceable or unserviceable, (2) recognizing conditions which would cause failure, (3) assuring proper application of maintenance policies at prescribed levels, and (4) determining the ability of a unit to accomplish its maintenance and supply missions.

12. Categories of Technical Inspections

In general, there are five categories of inspections performed by ordnance maintenance personnel—

a. Overall Inspection. This is an overall inspection performed on *all* matériel in the hands of troops. It is also performed on matériel received for repair in field or depot maintenance shops. Upon completion of an inspection for serviceability, matériel will be declared either serviceable or unserviceable. This inspection may be limited in scope, such as an inspection of matériel in the hands of troops, or detailed in scope, such as an ordnance shop inspection. Detailed procedures are presented in section II.

b. Preembarkation Inspection. This inspection is conducted on matériel in the hands of troops alerted for oversea duty to insure that such matériel will not become unserviceable or worn out in a relatively short time. It prescribes a higher percentage of remaining usable life in serviceable matériel to meet a specific need beyond minimum serviceability.

c. In-process Inspection. This inspection is performed by the repair technician and/or floor inspector in the process of repairing the matériel and its components. It insures that all parts conform to prescribed standards, that the workmanship is in accordance with approved methods and procedures, and that deficiencies not disclosed by the technical inspection are found and corrected. Detailed instructions are contained in chapter 4.

d. Final inspection. This is an acceptance inspection performed by a final inspector, after repair and rebuild has been completed, to insure that the matériel is acceptable according to established standards. Detailed instructions are contained in chapter 5.

e. Spot-Check Inspection. This is a periodic overall inspection performed on only a percentage of the matériel in each unit to determine the adequacy and effectiveness of organizational and field maintenance.

13. Classification of **Matériel**

All ordnance matériel after inspection is classified as follows:

a. Serviceable. Serviceable property consists of all new or used supplies which are in condition for issue for the purpose intended and all supplies which can be placed in such condition through pre-issue tests or inspections, in-storage deprocessing, installation of accessories, correction of minor deficiencies which have developed since the item was last classified as serviceable, application of modification work orders for which parts are available, or assembly of available components.

b. Unserviceable. Unserviceable property consists of all supplies which are not serviceable (a above). The definition of unserviceable property is further broken down into the following subclassifications: property which is unserviceable but economically repairable, property which is unserviceable and not economically repairable.

Section II. INSPECTION STANDARDS

14. General

This section provides specific instructions for the technical inspection by ordnance maintenance personnel of aiming post lights M14, M41, and M43 in the hands of troops, inspection prior to disassembly when received in field or depot maintenance shops for repair, or in the hands of troops alerted for oversea duty.

15. Inspection of Aiming Post Lights in the Hands of Troops

a. General. This paragraph provides specific instructions for the technical inspection by ordnance maintenance personnel of the aiming post lights. Also, this paragraph amplifies the general instructions

contained in TM 9-1100 so far as the instructions pertain to inspection of the aiming post lights. Personnel making these inspections will acquaint themselves with the malfunctions indicated in paragraph 17, which are the most common deficiencies of the aiming post lights. In general, if the aiming post light is complete and performs its intended function properly, if all modification work orders classified as urgent have been completed, and if all defects as disclosed by the inspection have been corrected, the aiming post light may be considered serviceable.

b. Inspection of Mechanical and Optical Parts.

(1) *Completeness.*

(a) Examine the aiming post lights to make certain that each light is complete. Each light must be equipped with a reflector shade (figs. 4, 5, and 6). See that the knurled thumb nut is in position against the bracket or clamp (fig. 7).

(b) Make sure that batteries are in the case and that the cap and cover assemblies are in position on the aiming post lights M14 and M43 (figs. 1 and 3) and that the battery is in the case and that the cap assembly is secure on the aiming post light M41 (fig. 2).

(c) Slip off the reflector shades and check to see that the window and filter assemblies, disk (M43), and lamps are in place. Make sure that the screws holding the battery contact assembly to the case are in position (four screws for aiming post light M14 (fig. 17) and M43 (fig. 20), two screws for aiming post light M41 (fig. 19)).

(2) *Appearance.* The appearance of the aiming post lights will indicate their general condition and will reflect the type of treatment they have received. Any deep dents, cracks or breaks in the aiming post light case may indicate damage to internal parts. On evidence of exterior damage, remove the reflector shades and examine window and filter assemblies, lamps, and reflectors for cracks or breaks. With cover and cap assemblies removed, examine the cases for signs of corrosion. Where dead batteries have been allowed to remain in a case for any length of time, the chemical reaction resulting may have corroded the surfaces of the case, cover and cap assemblies, contacts, and cable. Check the bracket to make sure that it is not twisted or bent and that it is securely attached to the case.

(3) *Functioning of mechanical components* (figs. 4, 5, and 6). Window and filter assemblies must thread into each other and into the case easily and smoothly. Screw threads must be free of grit and dirt. The bracket must swing freely and

easily on the pin (fig. 7) and the thumb nut locks firmly into the bracket. The thumb nut should thread easily on the screw thread which should be coated with lubricant and free of corrosion, grit and dirt.

- (4) *Forms and reports.* Authorized forms and reports for technical inspections are prescribed in TM 9-1100. For additional authorized forms and reports for field and depot maintenance, refer to paragraph 3.
 - (5) *Identification.* Inspect lettering engraved on case to see that it is clearly defined and easily read.
 - (6) *Paint and brush finish.* Inspect for bare spots or damaged finish which expose base metal surfaces and lead to corrosion. The push fit between the reflector shade and case of the aiming post light causes the paint on the case to be scraped off when the reflector shade is removed. This scraped off area and other scrapes or scratches do not require a complete paint refinishing of the light. The area affected should be sanded smooth with a fine grade No. 2 abrasive cloth and touched up as required. Refer to TM 9-2851 for painting procedures.
 - (7) *Lubrication.* With the exception of the clamps on the bracket, aiming post lights have no moving mechanical parts, or parts subject to mechanical friction. Keep the thumbnut or wing nut screw free of dirt and grit and lubricate the pins, and thumbnut and wing nut threads with a drop of light oil applied once weekly.
 - (8) *Cracks.* Stamping and welds should be inspected for cracks and breaks.
 - (9) *Spare parts and equipment.* Spare parts and equipment will be checked against ORD 7 SNL F-205 for completeness.
 - (10) *Condition of optics.* Window and filter assemblies must be free from scratches, pits, dirt, and chips as will interfere with cleaning of their surfaces or which affect optical performance of the aiming post light.
- c. *Inspection of Electrical Components* (figs. 4, 5, and 6).
- (1) Aiming post lights are equipped with only one control which is a single pole, single throw toggle switch. This switch should move easily, with a sharp click, from the "OFF" to "ON" position.
 - (2) Remove cover and cap assemblies and examine interior for dirt, corrosion or acid action.
 - (3) Examine battery cells for cracks and defects. Cylindrical insulating jackets must not be torn, discolored, or contain foreign matter. Be sure not to use batteries on which the service date limit, indicated on the jacket, has passed.

- (4) Examine the interior of the case and the visible surface of the battery contact (fig. 8) for dirt, corrosion or discoloration caused by chemical action.

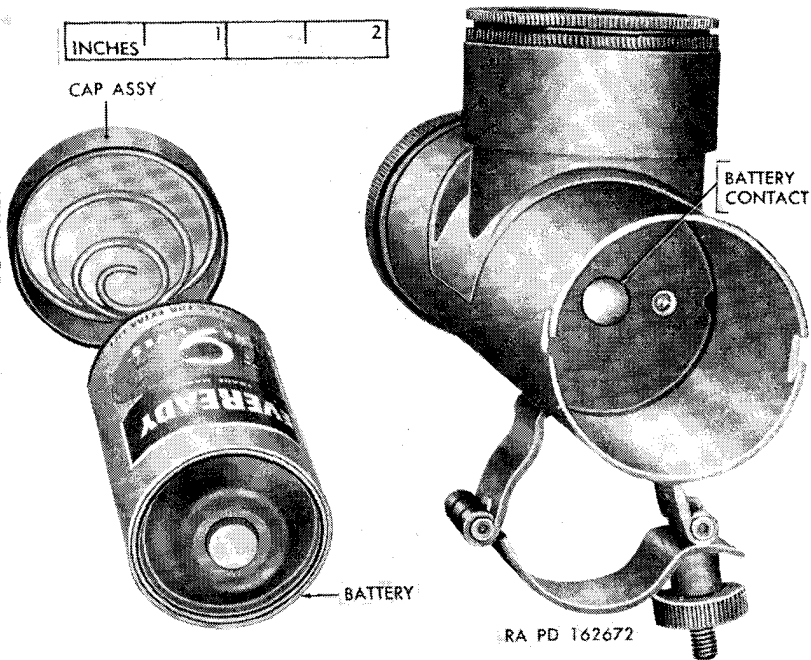


Figure 8. Battery contact in case, battery and cap assembly.

- (5) Slip off reflector shade, unscrew and remove filter and window assemblies and make certain that the lamp is not broken and is firmly screwed in position.

d. Performance Test. The tests described here will enable the inspector to determine whether the aiming post lights are serviceable. Where the matériel fails to function, checking procedures are given to enable the inspector to locate minor troubles within the scope of ordnance maintenance.

- (1) *Testing operation.* Move the toggle switch from the "OFF" to "ON" position. When the lamp lights, as visible from the interior of the reflector shade, and remains lit for 10 seconds without diminishing in intensity of the light, the aiming post light is serviceable.
- (2) *Testing batteries.* If the lamp fails to light when the switch is in "ON" position, obtain a 1.5-volt battery cell that is known to be fresh and in operating condition. Replace a battery in the case with the fresh one. If the lamp lights up, the trouble was caused by a battery.

Note. Where an aiming post light using two batteries has been made to light up by the replacement of only one battery, it is important that the second battery at the opposite end of the case be replaced with a fresh one at the same time.

- (3) *Testing lamp.* Where an aiming post light is known to have fresh batteries and fails to light, remove the reflector shade, filter and window assemblies and screw out the lamp by turning counterclockwise. Obtain a 3-volt lamp, known to be in operating condition, and inspect it to insure that it has the same base as the lamp removed.

Note. To determine whether a lamp is in good condition, where no checking facilities are available, it can be checked by removing the lamp from an aiming post light that is operating and testing the new lamp in that socket. Insert the new lamp in the light being tested and move the switch to "ON" position. The lamp should light up and remain lit for 10 seconds without diminishing in intensity.

- (4) *Testing circuit and contacts.* Wiring inside an aiming post light is not accessible without disassembly which is to be performed only in ordnance repair shops. However, the circuit in a light is completed through ground, that is, through the case and cap assemblies (refer to fig. 11 for wiring diagram of lights M14 and M43). If an aiming post light fails to operate after new batteries and lamp have been installed, check the circuit as described in paragraph 15c. In addition to this check, remove the reflector shade, filter assembly, window assembly, and lamp, and examine the surface where the lamp makes contact (fig. 9) with the reflector assembly. The surface should be clean and bright.

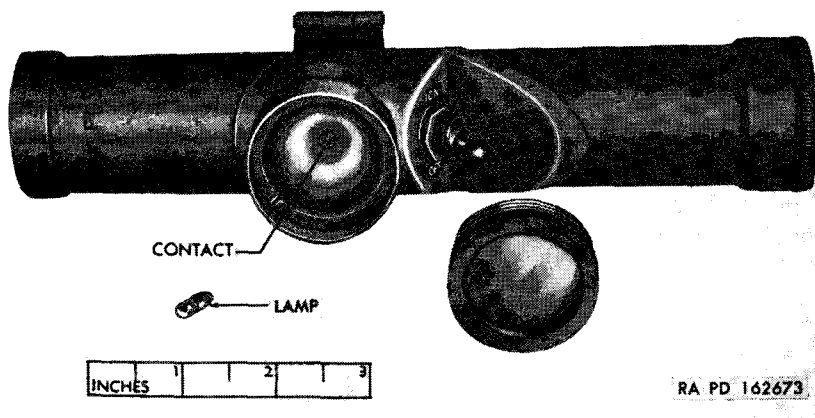


Figure 9. Lamp contact surface on reflector assembly.

- (5) *Cause for rejection.* Where testing has proved that an aiming post light does not light up after checking batteries, lamp, and cleanliness, the unit shall be considered unserviceable in the field and be forwarded to repair shop.

16. Ordnance Shop Inspection

a. General. Technical inspection performed by the ordnance repair shop upon receipt of matériel turned in for repair, determines the extent of repairs required, and provides the basis for requisitioning the parts, assemblies, or supplies necessary to accomplish the repairs. Often this inspection in the shop may be the same as that performed by inspectors in the field. It may disclose additional necessary repairs not indicated by the using organization.

b. Inspection. Aiming post lights received by ordnance shop for repair have one, or more, or all of three types of defects.

(1) *Mechanical damages.* External and visible mechanical damages such as cracked or dented cases, broken filter or window assemblies, damaged brackets, and other defects which are apparent to the eye through external examination without having to perform disassembly or tests. All damages of this type will be detected by following the inspection procedure described in paragraph 15.

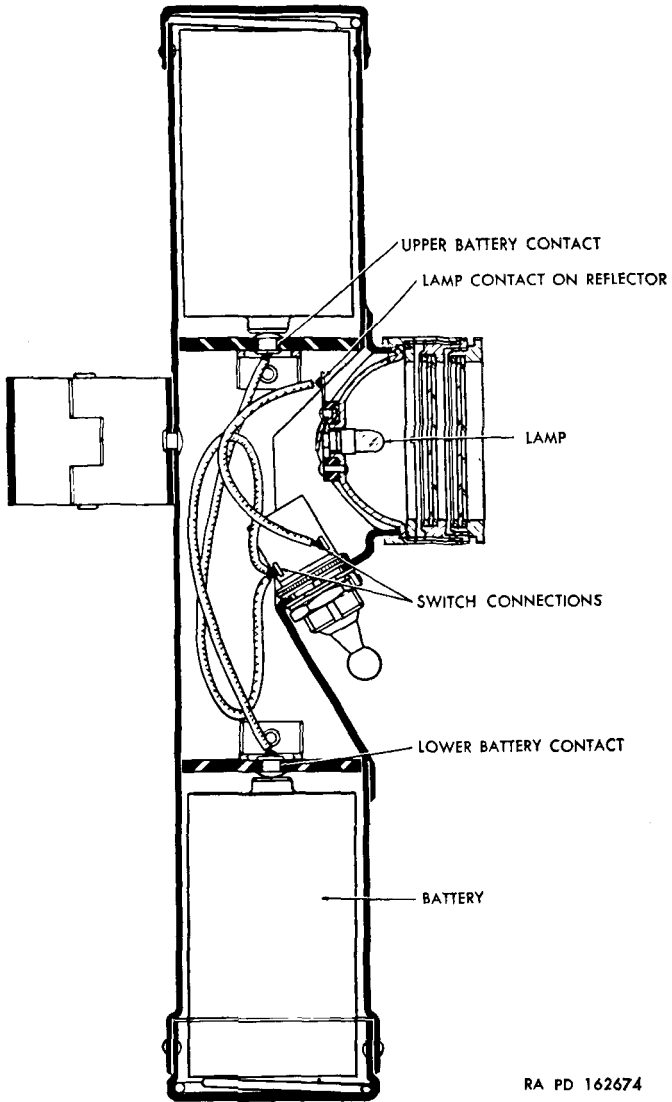
(2) *Electrical damages.* External and visible electrical damages such as a broken switch, corroded contacts, case, cap assemblies and other defects that prevent proper electrical contact or break the electrical circuit. Damages of this type will be detected by following the inspection procedure described in paragraph 15*b* and by performance tests described in paragraph 15*d*.

(3) *Internal and hidden damages.* Internal and hidden damages which affect electrical connections and/or components that can only be made accessible upon disassembly of the matériel and that can be detected by visual inspection or test are covered in *c* below.

c. Testing. When an aiming post light received by the ordnance shop for repair does not light up after performing the tests described in paragraph 15*d*, additional tests for determining the cause of unserviceability shall be performed by disassembly.

(1) *Electrical circuits and connections.* Aiming post lights M14 and M43 are equipped with two 1.5-volt batteries. Aiming post light M41 is equipped with a single 1.5-volt battery. All three units utilize a 3-volt lamp. A diagram of the physical wiring connections of the aiming post lights M14 and M43 are shown in figure 10 and the schematic diagram on figure 11.

Note. The electrical circuit for aiming post light M41 is identical to that shown in figure 11, with the exception that only one battery is used.



RA PD 162674

Figure 10. Diagram of aiming post lights M14 and M13 showing internal wiring and connections.

One side of the battery is grounded to the case through the spring on cap and cover assemblies. The other side of the battery is connected through a contact to one side of a single pole, single-throw switch. Where two batteries are used, they are connected in the same manner to the switch, making a

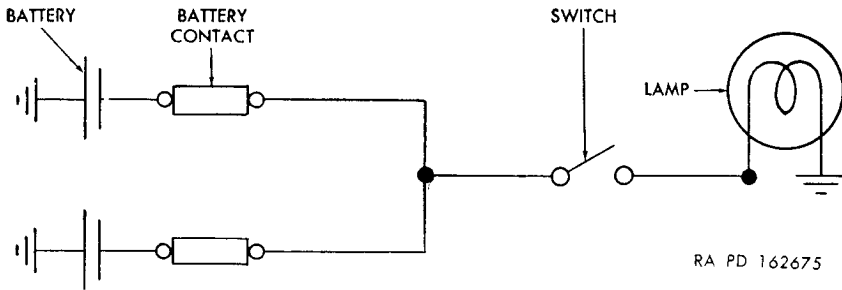


Figure 11. Schematic wiring diagram, aiming post lights $M14$ and $M13$.

parallel connection of the batteries. The other side of the switch is connected to a 3-volt lamp socket through the insulated side of a contact plate. The other side of the plate is grounded. Thus, when the switch is closed, current flows from the battery through the switch to one side of the lamp and returns to the battery through the grounded side of the lamp contact. In a parallel circuit, the voltage remains the same. This means that although two batteries of 1.5 volts each are use, the 3-volt lamp is operated only by 1.5 volts. This results in a light of low intensity for which the equipment was designed. In addition, in a parallel circuit the current adds up, resulting in low current drain on the batteries and long battery life.

- (2) *Checking the switch.* Snap the toggle switch (fig. 4) to "ON" position. If lamp does not light, proceed as follows:
 - (a) Remove the reflector shade, filter assembly and window assembly (par. 22c).
 - (b) Loosen the switch from its mounting by removing the nut, lock washer and plate (par. 22f).
 - (c) Remove the retaining ring from the reflector assembly and withdraw the reflector assembly together with the switch (pars. 22c and 22f). This will expose the cable connections to the switch and reflector assembly.
 - (d) Insert a fresh battery in the case and replace the cap or cover assembly.
 - (e) Insert a 3-volt lamp, known to be in good condition, into the reflector socket.
 - (f) Using an 8-inch length of cable, ground the reflector to the case.

Note. Make certain that the cable end on the reflector is firmly attached with a piece of tape and that the other end of the cable (fig. 12) is fixed to an unpainted surface on the case.

- (g) Using a short length of cable, connect the two switch connections of the switch together (fig. 12).
- (h) If the lamp in the aiming post light lights up, the switch is defective and must be replaced.

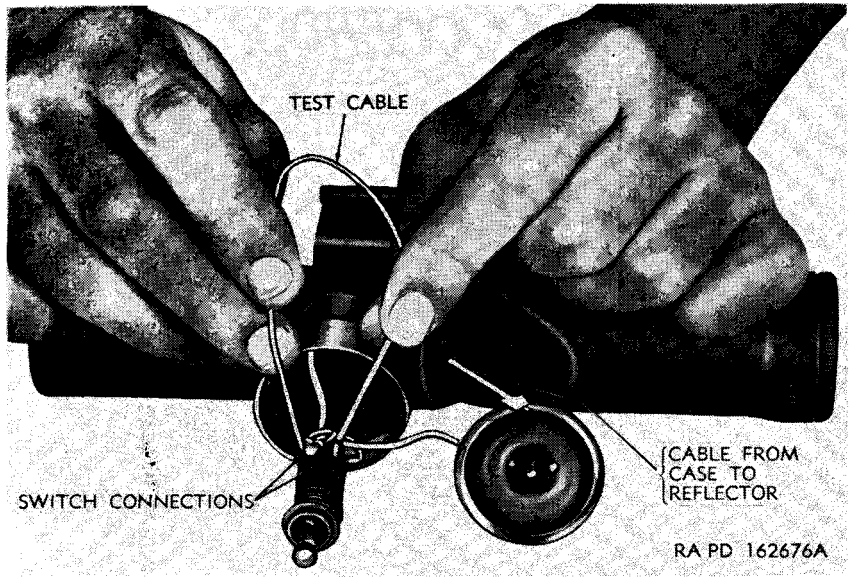
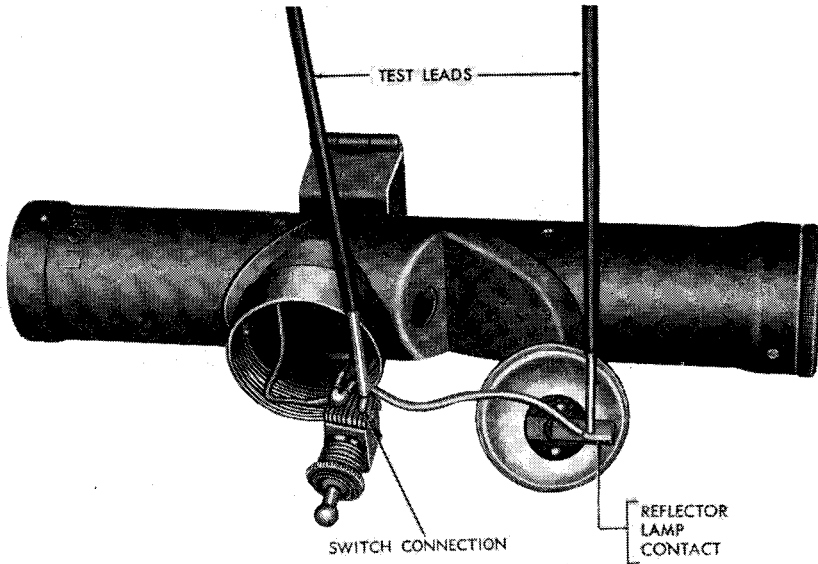


Figure 12. Checking the switch for electrical continuity.

(3) *Checking cables and soldered connections.*

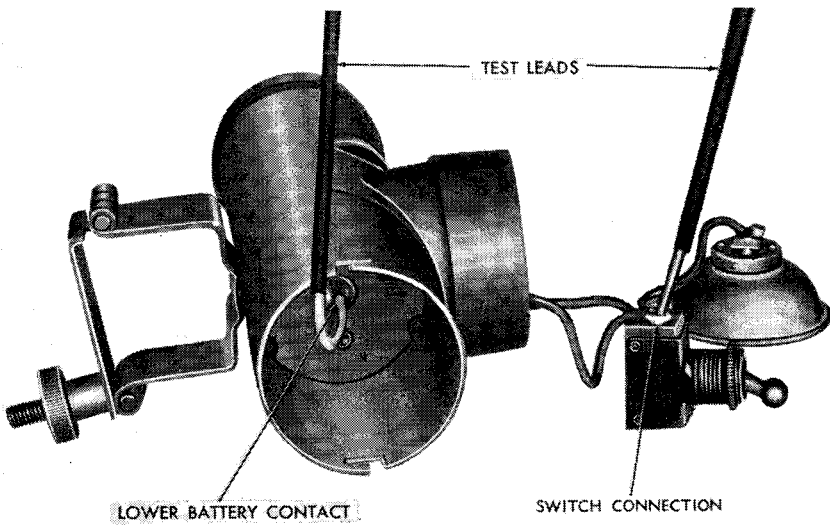
- (a) Expose the wiring as described in (2) (c) above.
- (b) Examine all visible soldered joints between cables and contacts, cables and switch, and cables and reflector. Soldered connections must be good and firm. Inspect the cable leads carefully for breaks and cracked insulation.
- (c) Using a 6-volt test light, test each cable for continuity. Test the cable connecting the upper contact to the switch by placing the switch in the "OFF" position and touching one lead of the test light on the soldered joint of the contact and the other on the soldered connection of the cable to the switch (fig. 12). If the lamp does not light, the cable or its connection is defective. Check the cable leading from the other side of the switch to the contact or the reflector assembly. Snap toggle switch to "OFF" position and place one lead of the test light on the soldered connection on the switch and the other lead to the soldered connection on the reflector lamp contact (fig. 13). The test lamp should light or the cable is defective.

Aiming post lights M14 and M43 have two contacts inside the case, the lower one of which is not easily accessible for visual inspection or checking. To check the cable leading from the lower battery contact to the switch, without further disassembly, place one lead of the test light on the contact from the battery side of the case and the other on the switch connection (fig. 14). The test lamp should light or the cable or soldered connection, is defective.



RA PD 162677

Figure 13. Checking continuity of switch-to-lamp cable.



RA PD 162678

Figure 14. Testing electrical continuity of cable from lower contact to switch.

- (4) *Checking contacts and reflector assembly.* When the switch, cables, and soldered connections have been proved in good condition after checking, as described in *c*(2) and *c*(3) above.

check condition of contacts and reflector assembly with a 6-volt test lamp.

- (a) Place one lead of the test light on the reflector lamp contact (fig. 15) and the other lead on the reflector. The test lamp should *not* light up. If the test lamp does light up, the contact is not insulated from the reflector, and the reflector assembly must be replaced.

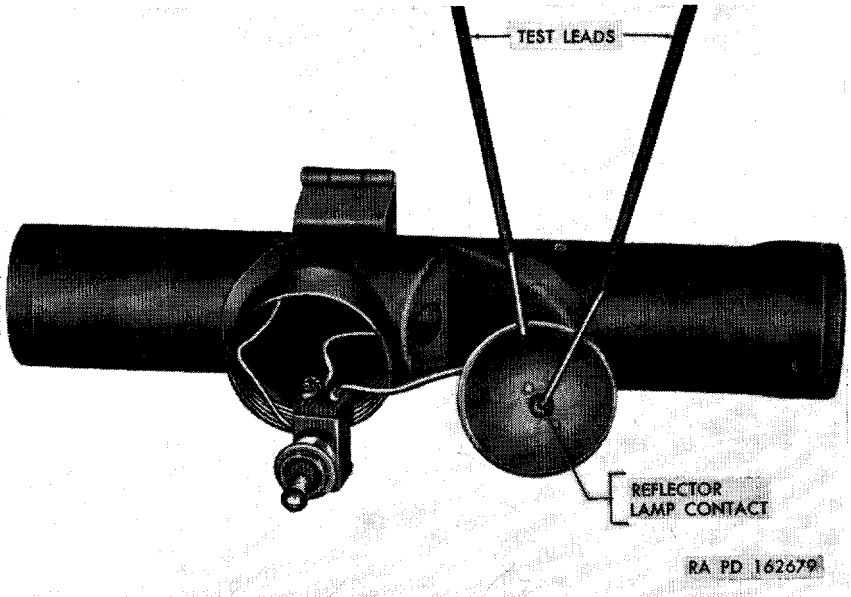


Figure 15. Testing insulation between contact and reflector.

- (b) Remove the two screws (C, fig. 17 (for M14) C, fig. 19 (for M41), and C, fig. 20 (for M43)) holding the contact assembly to the case and withdraw this upper contact assembly. This is accomplished by pushing the switch and reflector back into the case as far as possible and tapping the end of the case until the contact assembly drops out.

Note. It is not necessary to undolder the cable leads.

- (c) Test the upper battery contact (as shown on fig. 16 for lower battery contact) with a 6-volt test light. Place one lead of the test light on one side of the contact and the other lead on the other side of the contact. The lamp should light up or the contact is defective.
- (d) Install the contact assembly in the case (par. 24c). This is a typical installation and applies to all aiming post lights. Remove the two screws holding the contact assembly in the other end of the case for lights M14 and M43 only. Light M41 is operated by one battery, thereby having only one contact assembly.

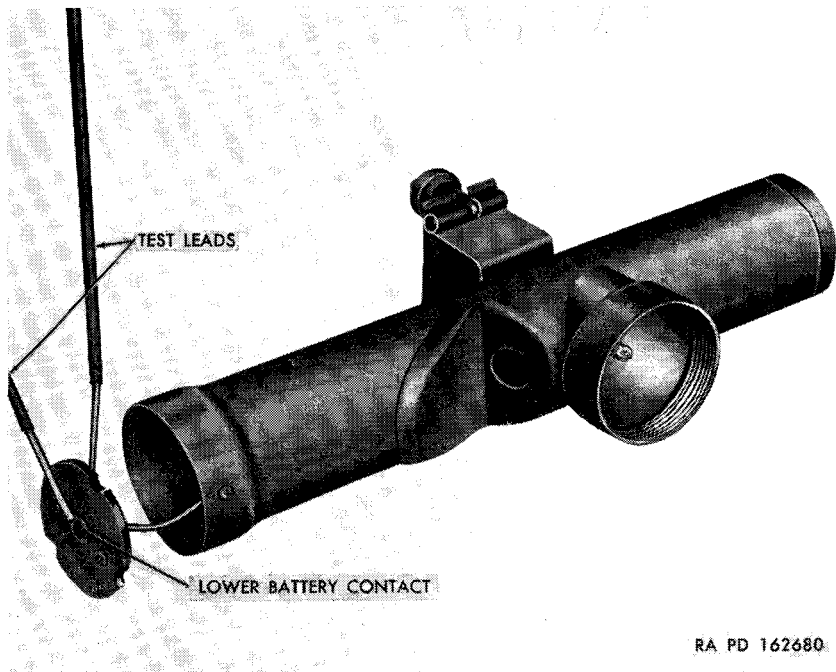


Figure 16. Testing lower battery contact.

- (2) Test the lower battery contact (fig. 16) by following the same procedure as for the upper battery contact.

Note. Illustrations showing testing of aiming post lights are of the M43 which adequately show the necessary procedures since all the aiming post lights are basically the same.

17. Trouble Shooting

a. General. Trouble shooting is a systematic isolation of defective components by means of symptoms, tests to determine the defective component and corrections. Corrections provided herein are governed by the scope of the level of ordnance maintenance.

b. Types of Troubles. Aiming post lights are subject to physical damage and malfunction, as described in paragraph 16*b*. Paragraph 16*b* also contains instructions on the inspection procedure to be followed.

c. Use of Trouble Shooting Chart. External physical damages to aiming post lights are visible to the eye upon inspection (pars. 15*a*, *b*, and *c*). Defective parts shall be replaced, as described in sections II, III, and IV of this chapter. All other troubles and defects in the aiming post lights will resolve into one of three malfunctions: The lamp will not light up, the lamp flickers, or the lamp cannot be turned off. Refer to table IV under the pertinent malfunction to determine probable cause and corrective action.

Table IV. Trouble Shooting

Malfunction	Probable causes	Corrective action
Lamp does not light or lamp flickers on and off.	<p><i>a</i> Dry cell battery dead</p> <p><i>b</i> Lamp burned out or loose in socket.</p> <p><i>c</i> Dirt or corrosion in case and on contacts.</p> <p><i>d</i> Springs missing from cover or cap. Spring flattened or broken.</p> <p><i>e</i> Defective switch</p> <p><i>f</i> Broken or loose cables or connections.</p> <p><i>g</i> Defective battery contacts.</p> <p><i>h</i> Defective reflector assembly.</p>	<p><i>a</i>. Check by inserting new dry cell batteries (par. 15<i>d</i>).</p> <p><i>b</i>. Check by replacing with new lamp (par. 24<i>f</i>).</p> <p><i>c</i>. Check condition and cleanliness (par. 15<i>b</i>). Clean affected parts (par. 20<i>c</i> and <i>e</i>).</p> <p><i>d</i>. Install new spring (par. 24<i>h</i>).</p> <p><i>e</i>. Test switch (par. 16<i>c</i>+ (2)). Replace defective switch (pars. 22<i>f</i> and 24<i>d</i>).</p> <p><i>f</i>. Check cables and soldered connections (par. 16<i>c</i> (3)). Replace defective cables (par. 24<i>c</i>). Resolder connections.</p> <p><i>g</i>. Check contacts (par. 16<i>c</i>+ (4)). Replace defective contact (pars. 22<i>g</i> and 24<i>c</i>).</p> <p><i>h</i>. Check reflector assembly (par. 16<i>c</i>(4)). Replace defective reflector assembly (pars. 22<i>e</i> and 24<i>d</i>).</p>
Light does not switch off.	<p><i>i</i>. Defective switch</p>	<p><i>i</i>. Test switch (par. 16<i>c</i>(2)). Replace defective switch (pars. 22<i>f</i> and 24<i>d</i>).</p>

18. Preembarkation Inspection

a. Inspection for outward appearance of aiming post lights is of importance as well as inspection of mechanical condition.

b. Where any doubt exists as to the utility of an assembly or of the aiming post light, that assembly or the aiming post light must be replaced by a truly serviceable item. Equipment, when inspected, must approach new equipment standards of operation and appearance, and the workmanship and quality of the end product must reflect the highest standards obtainable. To assure that all items, so far as practicable, possess original appearance, it is desired that items

normally painted be repainted if the painted surfaces show signs of damage.

c. The inspections, tests and protective measures intended as a guide to insure satisfactory performance and acceptability of an aiming post light, are as follows:

Technical inspection and performance test. Follow procedures described in paragraph 15.

Caution: Dry cell batteries must be removed from the aiming post lights when the unit is not in use. Batteries allowed to remain in the case for any length of time will deteriorate and cause damage to the matériel.

CHAPTER 4

REPAIR AND REBUILD

Section I. GENERAL MAINTENANCE

19. General

a. Information and instructions contained herein are supplementary to instructions for the using organizations contained in the pertinent operator's manuals.

b. This chapter contains general and specific maintenance instructions for the repair and rebuild of each major component. In the following sections, specific adjustments, repairs and rebuild procedures are described in order to restore each aiming post light to a serviceable condition.

20. General Methods

a. Handling of Disassembled Parts. A parts tray or suitable receptacle should be provided so that parts, as removed, can be placed in their respective positions in relation to the assembled aiming post light. Always keep the relative position of parts until the light is completely assembled. This is especially important where the matériel is assembled by a technician other than the one who disassembled it.

b. Removal of Burs. Burs on the screw threads of filter and window assemblies are to be removed by rubbing down with crocus cloth. Be sure to remove filings from threads by brushing with a camel's hair brush or blowing with compressed air.

c. Removal of Corrosion or Rust.

(1) *Materials required:*

WASTE, cotton, white.

SOLVENT, dry-cleaning.

SPIRITS, volatile mineral.

CLOTH, abrasive, aluminum oxide, grade 2/0.

REMOVER, paint and varnish, type II.

- (2) External parts. Where the painted surfaces of an aiming post light have been scraped off to expose the bare metal, the unit is subject to corrosion. Aiming post lights received in a corroded condition, externally, by ordnance shops, shall be processed to return the original finish to the unit, as follows:

- (a) Using waste cotton dipped in dry-cleaning solvent, or volatile mineral spirits paint thinner, wipe off dirt, grease, and loose rust or corrosion from the affected area.
 - (b) Rub down with abrasive cloth to the clean bare metal.

Note. Where a large area of the case or reflector shade is corroded, requiring a complete new finish of the part, work can be expedited by removing damaged paint with paint remover.
 - (c) When corrosion has been removed and the metal is clean, wipe thoroughly dry of solvent or paint thinner, grit, and remover and repaint.
- (3) *Internal parts.* Defective batteries or exhausted batteries that have been allowed to remain in the case, may have caused chemical action that corroded the interior case, cap assembly and cover assembly. Parts affected shall be cleaned as follows:
- (a) Remove excessive foreign matter by swabbing parts with waste cotton dipped in dry-cleaning solvent or volatile mineral spirits paint thinner.
 - (b) Immerse springs in dry-cleaning solvent or volatile mineral spirits paint thinner, wipe dry, and rub down remaining corrosion with abrasive cloth.
 - (c) Form a cylinder of the abrasive cloth and polish the interior walls of the case.
 - (d) Be sure to remove grit and dirt from interior of case by blowing out with compressed air.
 - (e) Wipe dry and clean.

Note. Under extreme conditions, chemical action of batteries may have corroded contacts, cables, and connections. On evidence of heavy corrosion, the battery contacts, the internal parts, wiring, and switch must be removed (par. 22f and g) and the affected parts replaced with new ones.

d. Handling Optics as Removed. When filter or window assemblies are to be laid aside, they must be wrapped in a piece of lens tissue paper. When storing filter or window assemblies always clean and wrap them in lens tissue paper.

e. Cleaning. General cleaning instructions are as follows:

- (1) Use volatile mineral spirits paint thinner or dry-cleaning solvent to clean or wash grease or oil from all metal parts of the aiming post lights.
- (2) Use carbon tetrachloride for cleaning all electrical parts.
- (3) After the parts are cleaned, rinse and dry them thoroughly.
- (4) Remove dust or grit from filter and window assemblies by brushing them with a camel's hair brush. Remove oil, grease, or other foreign matter, by applying lens cleaning liquid soap with a tuft of lens tissue paper and wipe gently with clean lens tissue paper.

f. General Precautions in Cleaning.

- (1) Provide adequate ventilation both during and after use of carbon tetrachloride. Workrooms must not be closed in. Avoid prolonged inhalation of vapor; headache and nausea may result. On contact with skin, it may cause irritation.
- (2) Volatile mineral spirits paint thinner and dry-cleaning solvent are inflammable and should not be used near an open flame. Fire extinguishers should be provided when these materials are used. Use only in well ventilated places.
- (3) These cleaners evaporate quickly and have a drying effect on the skin. If used without gloves, they may cause cracks in the skin and, in the case of some individuals, a mild irritation or inflammation.
- (4) The use of Diesel fuel oil, gasoline, or benzene (benzol) for cleaning is prohibited.

Section II. AIMING POST LIGHT M14

21. General

Aiming post lights contain no moving parts and there are no adjustments to perform internally that are essential to the maintenance of a unit. For these reasons no aiming post light should be disassembled unless the tests described in paragraph 15*d* indicate the need for further check or replacement of a part not accessible without disassembly.

22. Disassembly

Note. The key letters noted in parenthesis refer to figure 17.

a. Batteries. Rotate the cap (A-2) and cover (E-2) slightly counterclockwise and pull off. Remove batteries.

b. Springs in Cap and Cover. Pull the spring (E-1) out of cover (E-2), and, with a screwdriver, pry spring (AL-3) over the pins (A-1) inside the rim of the cap (A-2).

c. Filter Assembly and Window Assembly. Slide the reflector shade (N) from the case assembly (D) to give access to the filter assembly (M). Screw out the filter assembly from the window assembly (L) by turning it counterclockwise. Remove the window assembly from the case by turning it counterclockwise.

d. Lamp. Turn the lamp (J) counterclockwise with thumb and forefinger and remove front reflector assembly (H).

e. Reflector Assembly. A retaining ring (K) secures the reflector assembly (H) in the case assembly. Insert a screwdriver in the slot of the retaining ring and tap slightly to start the ring turning counterclockwise. Screw the ring out of the case assembly and remove the reflector assembly.

f. Switch.

- (1) Using a small screwdriver, bend back the two edges of the lock washer (F-3) that act as a retainer for the switch nut (F-4).
- (2) With a $\frac{9}{16}$ -inch open end wrench, unscrew the switch nut that holds the switch (F-1) to the case assembly.
- (3) Slip off the lock washer (F-3) and switch plate (F-2).
- (4) Push the switch back into the case assembly and remove it through the reflector opening in the case assembly.
- (5) Where required, disconnect the cables (G) leading from the switch to the contact, by unsoldering the connections at the switch terminal lugs.

Note. Unsoldering the connection from the switch terminal lugs instead of at the contact, will facilitate soldering the connection when a new switch is installed. When disconnecting the contact cable leads and the reflector cable lead at the switch, be sure to note the side of the switch to which the contacts and reflector must be reconnected.

g. Contact Assembly.

- (1) Each contact assembly (B) is held in position in the case assembly by two flat-head screws (C) which pass from both sides of the case assembly into the contact assembly. Remove the two screws.
- (2) Unsolder the cable (G) leading from contact assembly (B) to switch (F-1) at the switch side. This will facilitate soldering the connection.

Note. Where the contact on the cup side of the case is being removed for checking purposes only, it is not necessary to unsolder the cable connection, since the length of the cable is enough to permit a removal of the contact when the reflector and switch are inserted back into the case opening.

- (3) Withdraw the contact by pushing it out of the case with the finger or by tapping the case lightly against the edge of the work table.
- (4) The contact on the cover side of the case assembly is removed in the same manner, but it is necessary to unsolder the cable at the switch in order to permit the removal of the contact.

h. Clamp and Thumb Nut or Wing Nut.

- (1) Remove peened end of pins and drive out pins (D-2).
- (2) Remove clamp (D-3) and wing nut (D-1).

Note. On aimi post lights of early manufacture, thumb nut (riveted) was used; lights of present manufacture use wing nut (peened).

- A**—CAP, INSTRUMENT LIGHT TUBE (RIVETED)—6138914
 1—PIN, BR, 0.070 DIAM x 9/64 OVERALL—5179396
 2—CAP—5179397
 3—(SPRING, CONICAL, MUSIC WIRE, 0.071 DIAM WIRE,
 {1-9/16 OD, 3-3/4 COILS, 11/16 FREE LGH—5048770
- B**—CONTACT, ASSY—6173780
- C**—(SCREW, MACH, FL-HD, BR, NO 2 (0.086)—
 {64NF-3 x 1/8—503984
- D**—CASE, ASSY—5578793
 1—NUT, WING (PEENED)—7647615
 2—PIN, STGHT, BR, 0.125 x 1-1/16 LONG—5182981A
 3—CLAMP, BODY TUBE BRACKET—5183432
 4—TUBE, INSTRUMENT LIGHT (SWEATED AND RIVETED)
- E**—COVER, ASSY—7199466
 1—(SPRING, CONICAL, MUSIC WIRE, 0.071 DIAM WIRE,
 {1-9/16 OD, 3-3/4 COILS, 11/16 FREE LGH—5048770
 2—COVER (CASE)—5183429
- F**—SWITCH, ASSY—6175787
 1—SWITCH, TOGGLE, SINGLE POLE, SINGLE THROW—5183485
 2—PLATE, SWITCH, DATA (ON-OFF)—5049715
 3—(WASHER, LOCK, BR, 15/32 ID, 19/32 OD, 0.025 THK,
 {INTER AND EXTER LUGS—5179402
 4—NUT, HEX (PART OF SWITCH)
- G**—(CABLE, SYNTHETIC COMPOUND, NYLON
 JACKETED, SGLE-COND APPARATUS,
 STRANDED, AWG NO 18, NO OF
 STRANDS 7, CODE NO 1, COLOR
 BLACK—15-C-31196-150
- H**—REFLECTOR, ASSY—6173782

- J**—LAMP, ELEC, INCAND, MIN, 3 V,
 SGLE-TUN-FIL, NO 325, 0.19 AMP
 (NO 956 SGLE-CONTACT BASE,
 T-1-1/4 BULB)—193145
- K**—RING, RETAINING, BR, 1-37/64-32NS-
 {2 OD x 0.08 THK—5184534
- L**—WINDOW, ASSY—6173787
- M**—(FILTER, GREEN, ASSY—6173860
 {FILTER, RED, ASSY—6173781
- N**—SHADE, REFLECTOR—6173778

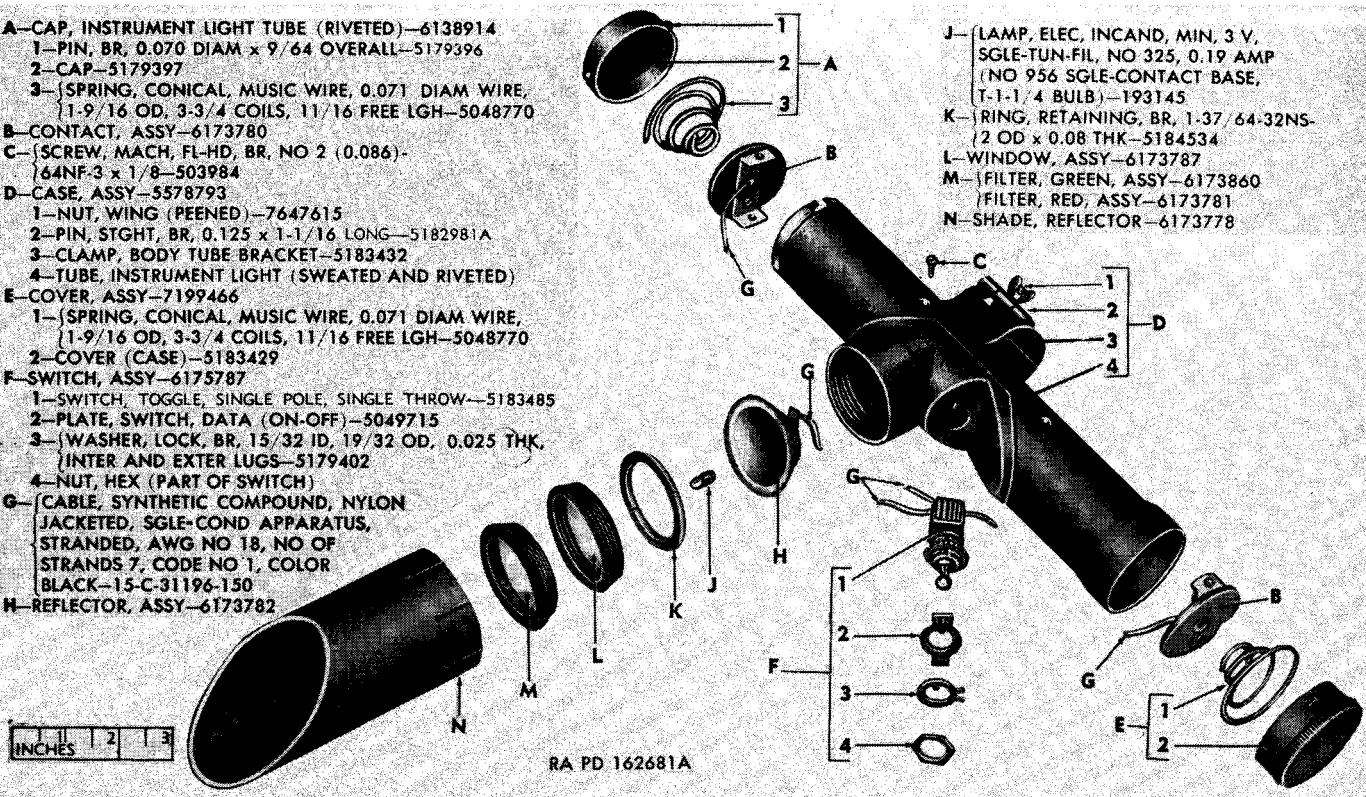


Figure 17. Aiming post light M14—exploded view.

23. Rebuild

With the exception of cleaning and removal of corrosion, component parts of an aiming post light cannot be rebuilt. All parts that are broken, cracked or defective in any way will be replaced. Rebuild of an aiming post light, therefore, consists of the following operations:

- a. Ordnance shop inspection (par. 16).
- b. Removal of corrosion or rust (par. 20).
- c. Replacing defective or physically damaged components with new ones.
- d. Replace all unserviceable wing nuts (or thumb nuts) with wing nuts.
- e. Replacing defective cable.
 - (1) Unsolder the defective cable from the connections and remove old solder from terminals.
 - (2) Cut a length of cable to the same measurement of the cable being replaced and solder the ends of the cable to the terminals.

Note. Do not solder cable to switch terminal lugs before assembly of switch.

24. Assembly

Note. The key letters noted in parentheses are for **figure 17**, except where otherwise noted.

a. *General.* Aiming post lights are composed of a small number of simple parts that are not governed by any critical fits or tolerances. In replacing parts or assembling them to the case assembly, the parts will go into position easily, without forcing or distortion of the part. Where an aiming post light has been completely disassembled, it is important that the contacts, with wire leads already soldered in position, shall be the first parts assembled to the case.

Note. When a cable, contact, reflector, or switch has been replaced in an aiming post light, perform the tests described in paragraph 16c before proceeding with complete assembly of the unit.

b. *Clamp and Thumb Nut or Wing Nut.*

- (1) Install clamp (D-3) on case bracket and secure with 0.125 x $1\frac{1}{16}$ straight pin (D-2). Peen over ends of pin.
- (2) Install wing nut or thumb nut (D-1) on clamp and secure with 0.125 x $1\frac{1}{16}$ straight pin. Peen over ends of pin.

Note. On aiming post lights of early manufacture, thumb nut (riveted) was used; lights of present manufacture use wing nut (peened).

c. *Battery Contacts.*

- (1) Make sure that the cable lead is firmly soldered to the contact surface of the contact assembly.

- (2) Insert the contact assembly (B) into the end of the case assembly (D) with the angle strip facing into the case. Draw the free end of cable lead out through the reflector opening in case.
- (3) Rotate the contact assembly until the threaded holes of the angle strip are alined with the two threaded holes in the case assembly.
- (4) Secure the contact assembly by installing the two No. 2 (0.086)-64NF-3 x 1/8 flat-head screws (C) from the outside of the case assembly into the hole in each side of the angle strip.
- (5) The upper and lower contact assemblies of aiming post lights M14 and M43 are assembled to the case assembly in the same manner.

d. Switch.

- (1) Solder the cables (G) to the correct side of the switch (F-1) as noted in paragraph 22f. Reversing the connections will result in the light being lit when the switch is in the "OFF" position as indicated by the switch plate.
- (2) Insert the switch into the case through the reflector opening and fit the toggle switch (F-1) through the switch aperture in the case assembly.

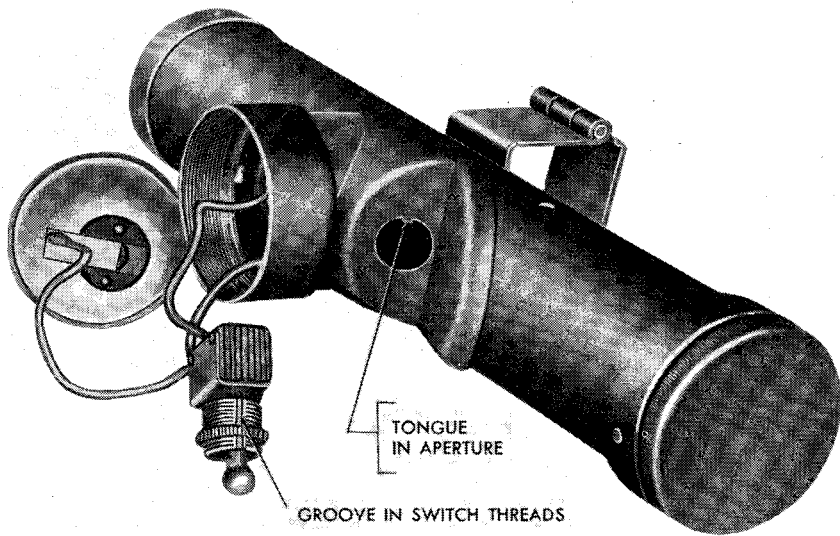
Note (1). Adjust the hex nut (F-4) on switch so that switch protrudes through aperture sufficiently enough to install switch plate (F-2), lock washer (F-3) and nut.

Note (2) The switch aperture is provided with a small projecting tongue (fig. 18), and a slot is machined into the switch screw threads. Be sure to mate the tongue and slot when inserting the switch into position.

- (3) With the threaded position of the switch in place in the aperture, slide on the switch plate (F-2). Aline tongue on switch plate with groove in threads on switch and drop switch plate in position on switch.
- (4) Aline internal lug (tang) on lock washer (F-3) with groove in threads on switch and instal the washer.
- (5) Screw the switch nut on the switch and tighten with a 9/16-inch open-end wrench.
- (6) Bend the lugs of the washer over the flat edge of the nut with a screwdriver..

e. Reflector Assembly.

- (1) Make sure that cable lead from the reflector lamp contact to the switch is securely soldered at both ends of the lead (fig. 15).
- (2) Insert the reflector assembly (H) into position in the case assembly.



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Figure 18. Assembly of switch into case.

- (3) Start the retaining ring (**K**) in the threads of the case assembly by clockwise rotation. Thread the ring in by hand as far as possible.
- (4) Tighten the retaining ring on the threads by inserting a screw driver into the slot of the ring and tapping lightly with a mallet until the ring is tight.

f. Lamp. The lamp (**J**) is screwed into the socket of the reflector assembly (**H**) by turning clockwise with the thumb and forefinger.

g. Filter and Window Assemblies.

- (1) Screw the filter assembly (**M**) into the window assembly (**L**) by turning in a clockwise direction.
- (2) Install the combined units into the case assembly by screwing the threads of the window assembly into the case.

h. Spring into Cap or Cover. Install springs (**A-3** and **E-1**) by inserting the wide end of the spring into cap (**A-2**) and cover (**E-2**) and snapping into position.

i. Cap and Cover Assemblies.

- (1) Install the cap (**A-2**) by positioning the brass pins (**A-1**) into the slots in the end of the case assembly.
- (2) Push in on cap and rotate clockwise to lock.
- (3) Install the cover assembly (**E**) by lining up the slots on the cover with the pins inside the end of the case. Push in on cover and rotate clockwise to lock.

Section III. AIMING POST LIGHT M41

25. Test, Disassembly, Rebuild, and Assembly

Follow procedures described for aiming post light M14, given in paragraphs 21, 22, 23, and 24.

26. Differences-Aiming Post Light M41

Refer to table II for differences between aiming post light M41 and other models.

Note. Only one battery is used in this unit. Therefore, only one battery contact assembly is provided in the case, and the wiring arrangement differs as shown in figures 11 and 12. Otherwise, assembly and disassembly of the unit is identical with aiming post light M14.

27. Interchangeability-Aiming Post Light M41

Aiming post light M41 is equipped with a green filter only and a black opaque window (K of fig. 19) with a clear center strip which may not be used with other lights.

Section IV. AIMING POST LIGHT M43

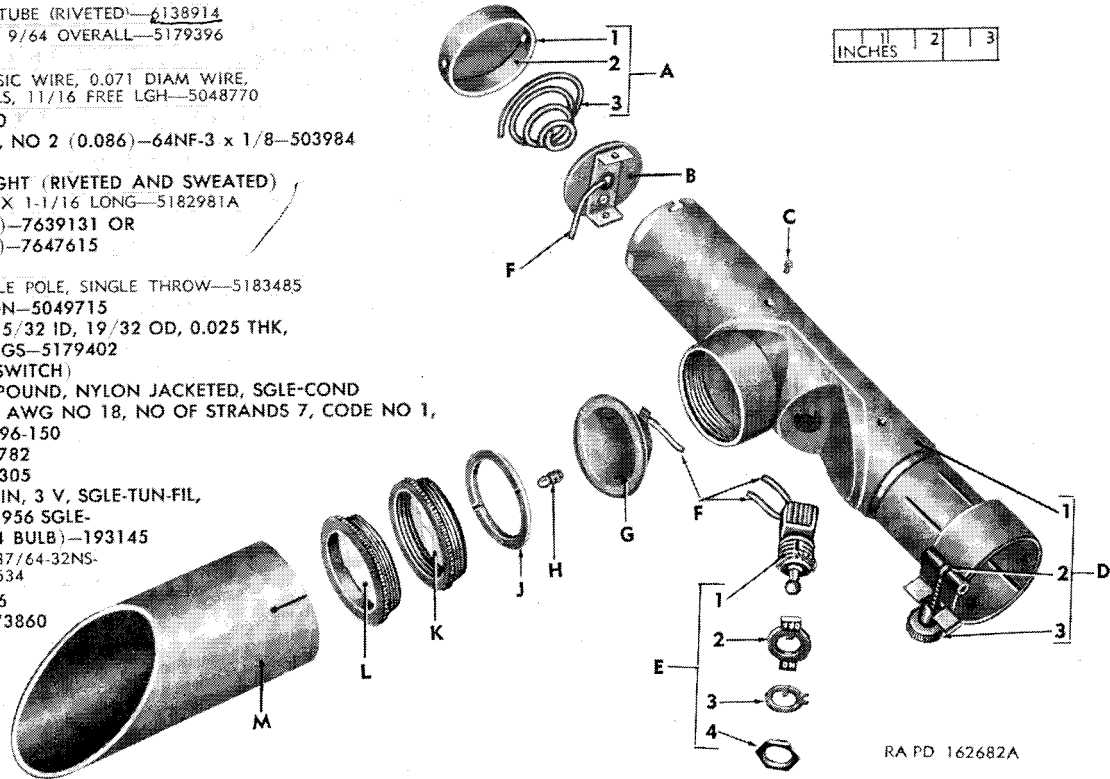
28. Test, Disassembly, Rebuild, and Assembly

Follow procedures described for aiming post light M14, described in paragraphs 21, 22, 23, and 24.

29. Interchangeability-Aiming Post Light M43

With the exception of the case, all parts used in this unit are interchangeable with parts used in other models. The reflector disk (L, fig. 20) is used only in aiming post light M43 (fig. 20) and is not installed into other models.

- A**—CAP, INSTRUMENT LIGHT TUBE (RIVETED)—6138914
 1—PIN, BR, 0.070 DIAM X 9/64 OVERALL—5179396
 2—CAP—5179397
 3—(SPRING, CONICAL, MUSIC WIRE, 0.071 DIAM WIRE,
 {1-9/16 OD, 3-3/4 COILS, 11/16 FREE LGH—5048770
- B**—CONTACT, ASSY—6173780
- C**—SCREW, MACH, FL-HD, BR, NO 2 (0.086)—64NF-3 x 1/8—503984
- D**—CASE, ASSY—7673483
 1—TUBE, INSTRUMENT LIGHT (RIVETED AND SWEATED)
 2—PIN, STGHT, BR, 0.125 X 1-1/16 LONG—5182981A
 3—(THUMBNUIT (RIVETED)—7639131 OR
)NUT, WING (PEENED)—7647615
- E**—SWITCH, ASSY—6175787
 1—SWITCH, TOGGLE, SINGLE POLE, SINGLE THROW—5183485
 2—PLATE, SWITCH, OFF-ON—5049715
 3—(WASHER, LOCK, BR, 15/32 ID, 19/32 OD, 0.025 THK,
)INTER. AND EXTER. LUGS—5179402
 4—NUT, HEX (PART OF SWITCH)
- F**—CABLE, SYNTHETIC COMPOUND, NYLON JACKETED, SGLE-COND
)APPARATUS, STRANDED, AWG NO 18, NO OF STRANDS 7, CODE NO 1,
)COLOR BLACK—15-C-31196-150
- G**—REFLECTOR, ASSY—(6173782
)7641305
- H**—(LAMP, ELEC, INCAND, MIN, 3 V, SGLE-TUN-FIL,
)NO 325, 0.19 AMP (NO 956 SGLE-
)CONTACT BASE, T-1-1/4 BULB)—193145
- J**—RING, RETAINING, BR, 1-37/64-32NS-
)2 OD X 0.08 THK—5184534
- K**—WINDOW, ASSY—7641306
- L**—FILTER, GREEN, ASSY—6173860
- M**—(SHADE, REFLECTOR—
)6173778

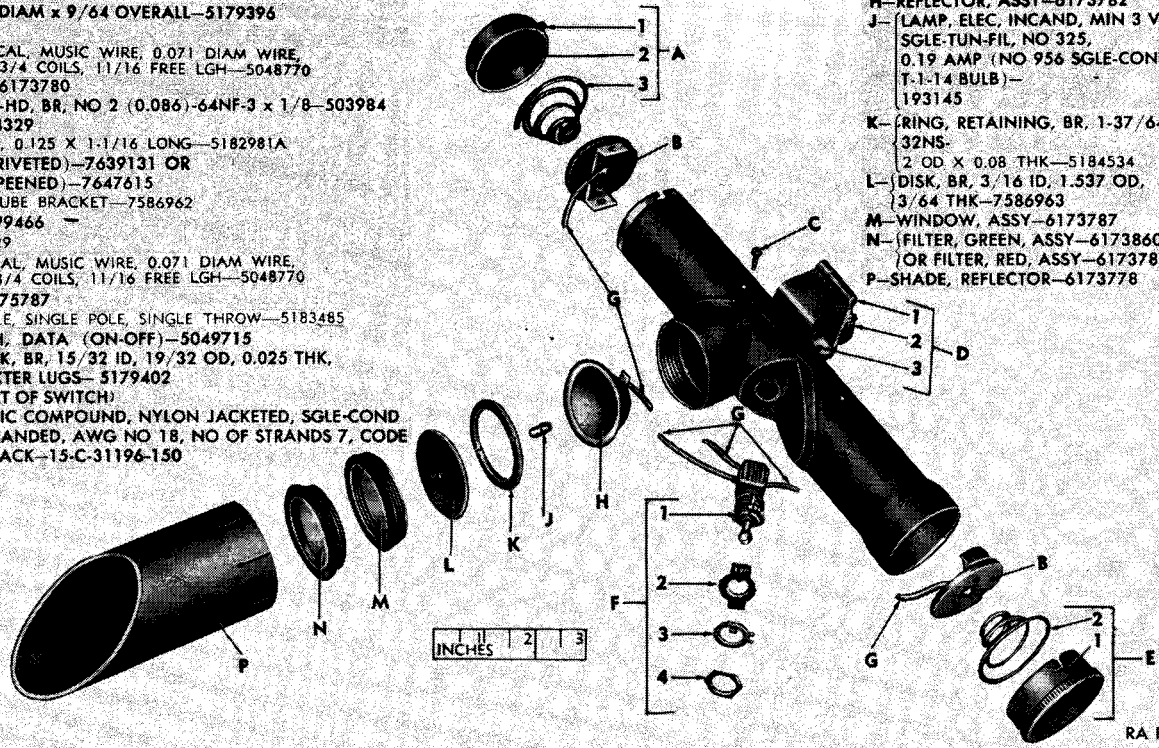


RA PD 162682A

Figure 19. Aiming post light M41—exploded view.

- A**—CAP, INSTRUMENT LIGHT TUBE (RIVETED)—6138914
- 1—PIN, BR, 0.070 DIAM x 9/64 OVERALL—5179396
- 2—CAP—5179397
- 3—(SPRING, CONICAL, MUSIC WIRE, 0.071 DIAM WIRE, 1.9/16 OD, 3-3/4 COILS, 11/16 FREE LGH—5048770
- B**—CONTACT, ASSY—6173780
- C**—SCREW, MACH, FL-HD, BR, NO 2 (0.086)-64NF-3 x 1/8—503984
- D**—CASE, ASSY—7674329
- 1—PIN, STGHT, BR, 0.125 X 1-1/16 LONG—5182981A
- 2—(THUMBNUIT (RIVETED)—7639131 OR NUT, WING (PEENED)—7647615
- 3—CLAMP BODY TUBE BRACKET—7586962
- E**—COVER, ASSY—7199466
- 1—COVER—5183429
- 2—(SPRING, CONICAL, MUSIC WIRE, 0.071 DIAM WIRE, 1.9/16 OD, 3-3/4 COILS, 11/16 FREE LGH—5048770
- F**—SWITCH, ASSY—6175787
- 1—SWITCH, TOGGLE, SINGLE POLE, SINGLE THROW—5183485
- 2—PLATE, SWITCH, DATA (ON-OFF)—5049715
- 3—(WASHER, LOCK, BR, 15/32 ID, 19/32 OD, 0.025 THK, INTER AND EXTER LUGS—5179402
- 4—NUT, HEX (PART OF SWITCH)
- G**—CABLE, SYNTHETIC COMPOUND, NYLON JACKETED, SGLE-COND APPARATUS, STRANDED, AWG NO 18, NO OF STRANDS 7, CODE NO 1, COLOR BLACK—15-C-31196-150

- H**—REFLECTOR, ASSY—6173782
- J**—(LAMP, ELEC, INCAND, MIN 3 V, SGLE-TUN-FIL, NO 325, 0.19 AMP (NO 956 SGLE-CONTACT BASE, T-1-14 BULB)—193145
- K**—RING, RETAINING, BR, 1-37/64-32NS—2 OD X 0.08 THK—5184534
- L**—DISK, BR, 3/16 ID, 1.537 OD, 3/64 THK—7586963
- M**—WINDOW, ASSY—6173787
- N**—(FILTER, GREEN, ASSY—6173860 OR FILTER, RED, ASSY—6173781
- P**—SHADE, REFLECTOR—6173778



RA PD 162683A

Figure 20. Aiming post light M43—exploded view.

CHAPTER 5

FINAL INSPECTION

30. Visual

Perform a visual inspection after repair, replacement of a part or rebuild has been completed to insure that the matériel is serviceable. Inspect as follows:

- a. Reflector.* The reflector must be tight in the housing.
- b. Lamp.* The lamp must be firmly screwed in place.
- c. Window and filter.* The correct window and filter must be assembled into the pertinent unit. In aiming post light M43, the brass disk must be located between the reflector and window.
- d. Springs.* Springs must be installed in the cap and/or cover. Caps and covers must be assembled to the case.
- e. Shade.* The shade must be assembled to the case.
- f. Bracket.* The bracket must open easily on its hinge pin. The thumb nut or wing nut must be on the bracket stud and must not bind.
- g. Paint.* The aiming post light must be free of scratches and scrapes, and shall be painted to give the appearance of new units.

31. Operational

Check operational of an aiming post light by operating the switch. The lamp should light when the switch is moved to the "ON" position. Moving the switch to the "OFF" position should cause the light to go off. Where a unit fails to operate in this matter, locate the trouble by referring to the trouble shooting chart, table IV, par. 17, and correct failure.

APPENDIX

REFERENCES

1. Publication Indexes

The following publication indexes and lists of current, issue should be consulted frequently for latest changes or revisions of references given in this appendix and for new publications relating to matériel covered in this manual:

Index of Administrative Publications_____	SR 310-20-5
Index of Army Motion Pictures, Kinescope Recordings, and Film Strips.	SR 110-1-1
Index of Training Publications _____	SR 310-20-3
Index of Blank Forms and Army Personnel Classification Tests.	SR 310-20-6
Index to Tables of Organization and Equipment, Reduction Tables, Tables of Organization, Tables of Equipment, Type Tables of Distribution, and Tables of Allowances.	SR 310-20-7
Index of Technical Manuals, Technical Regulations, Technical Bulletins, Supply Bulletins, Lubrication Orders, and Modification Work Orders.	SR 310-20-4
Introduction and Index (supply catalogs)_____	ORD 1
Military Training Aids _____	FM 21-8
Ordnance Major Items and Combination and Pertinent Publications.	SB 9-1

2. Supply Catalogs

The following catalogs of the Department of the Army Supply Catalog pertain to this matériel:

a. Destruction to Prevent Enemy Use.

Ammunition Land Mines and Components: Demolition Explosives and Related Items; and Ammunition For Simulated Artillery, Booby Trap, Hand (Grenade, and Land Mine Fire.

b. Repair and Rebuild.

Cleaners, Preservatives, Lubricants, Recoil (ORD 3 SNL K-1 Fluids, Special Oils, and Related Maintenance Materials.

Items of Soldering, Metalizing, Brazing, and Welding Materials; Gases and Related Items. (ORD 3 SNL K-2

Light, Aiming Post, M14, M41, and M43; Light Instrument, M2, M10, M12, M13, M18, M19, M20, M22, M28, M30, M31, M32, M33, M34, M35, M36, M37, M38, M42, M44, M45, M46, and M47.	ORD (*) SNL F-205
Lubricating Fittings, Oil Filters, and Oil Filter Elements.	ORD 5 SNL II-16
Miscellaneous Hardware-----	ORD 5 SNL II-2
Standard Hardware-----	ORD 5 SNL H-1
Shop Sets, Instrument and fire control, field maintenance.	ORD 6 SNL J-8, Sec 15
Tool Set, instrument repairman (MOS 3922)----	ORD 6 SNL J-10, Sec 14

3. Forms

The following forms pertain to this matériel:

- DA AGO Form 9-71, Locator and Inventory Control Card.
- DA AGO Form 9-72, Ordnance Stock Record Card.
- DA Form 9-76, Request for Work Order.
- DA Form 9-77, Job Order Register.
- DA Form 9-78, Job Order.
- DA Form 9-79, Parts Requisition.
- DA Form 9-80, Job Order File.
- WD AGO Form 9-81, Exchange Part or Unit Identification Tag.
- DA Form 446, Property Issue Slip.
- DA Form 447, Property Turn-in Slip.
- DA Form 468, Unsatisfactory Equipment Report.
- DA Form 811, Work Request and Job Order.
- DA Form 811-1, Work Request and Hand Receipt.
- DA AGO Form 828, Job Time Ticket—Individual.
- WD AGO Form 829, Rejection Memorandum.
- WD AGO Form 865, Work Order.
- WD AGO Form 866, Consolidation of Parts.
- WD AGO Form 867, Status of Modification Work Order.
- DD Form 6, Report of Damaged or Improper Shipment.

4. Other Publications

The following explanatory publications contain information pertinent to this matériel and associated equipment:

<i>a. Camouflage.</i>	
Camouflage, Basic Principles-----	FM 5-20
<i>b. Decontamination.</i>	
Decontamination-----	TM 3-220
Defense Against Chemical Attack-----	FM 21-40

(*) See ORD 1, Introduction and Index for published catalogs of the ordnance section of the Department of the Army Supply Catalog.

<i>c. Destruction to Prevent Enemy Use.</i>	
Explosives and Demolitions-----	FM 5-25
Ordnance Service in the Field-----	FM 9-5
<i>d. General.</i>	
Inspection of Ordnance Matériel in the Hands of Troops.	TM 9-1100
Safety: Report of Accident Experience-----	SR 385-10-0
Standard Artillery and Fire Control Matériel---	TM 9-2300
Supplies and Equipment: Unsatisfactory Equip- ment Report.	SR 700-45-5
<i>e. Repair and Rebuild.</i>	
Abrasive, Cleaning, Preserving, Sealing, Adhe- sive, and Related Malterials Issued for Ordnance Matériel.	TM 9-850
Electrical Testing Apparatus for Fire Control Equipment.	TM 9-1672
Instruction Guide: Elementary Optics and Appli- cations to Fire Control Instruments.	TM 9-2601
Instruction Guide: Instrument Repairman-----	TM 9-2602
Maintenance and Care of Hand Tools-----	TM 9-867
Modification of Ordnance Matériel-----	SB 9-38
Ordnance Maintenance and General Supply in the Field.	FM 9-10
Painting Instructions for Field Use-----	TM 9-2851
<i>f. Shipment and Stand-by and Long-Term Storage.</i>	
Army Shipping Document-----	TM 38-705
Instruction Guide: Ordnance Packaging and Shipping (Posts, Camps, and Stations).	TM 9-2854
Maintenance of Supplies and Equipment: Main- tenance Responsibilities and Shop Operation.	AR 750-5
Military Standard-Marking of Shipments-----	MIL-STD-129 ¹
Preparation of Supplies and Equipment for Ship- ment: Processing of Unboxed and Uncrated Equipment for Oversea Shipment.	AR 747-30
Preservation, Packaging, and Packing of Military Supplies and Equipment.	TM 38-230
Processing of Motor Vehicles and Related Un- boxed Matériel for Shipment and Storage.	SB 9-4
Protection of Ordnance General Supplies in Open Storage.	TB ORD 379
Shipment of Supplies and Equipment: Report of Damaged and Improper Shipment.	SR 745-45-5
Standards for Oversea Shipment and Domestic Issue of Ordnance Matériel Other than Ammu- nition and Army Aircraft.	TB ORD 385

¹ Copies may be obtained from Aberdeen Proving Ground, Aberdeen, Md.

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RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS



THEN...JOT DOWN THE
DOPE ABOUT IT ON THIS FORM.
CAREFULLY TEAR IT OUT, FOLD IT
AND DROP IT IN THE MAIL.

SOMETHING WRONG WITH PUBLICATION

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER

PUBLICATION DATE

PUBLICATION TITLE

BE EXACT PIN-POINT WHERE IT IS

PAGE
NO.

PARA-
GRAPH

FIGURE
NO.

TABLE
NO.

IN THIS SPACE, TELL WHAT IS WRONG
AND WHAT SHOULD BE DONE ABOUT IT.

TEAR ALONG PERFORATED LINE

PRINTED NAME, GRADE OR TITLE AND TELEPHONE NUMBER

SIGN HERE

THE METRIC SYSTEM AND EQUIVALENTS

WEIGHT MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
 1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
 1 Kilometer = 1000 Meters = 0.621 Miles

WEIGHTS

1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
 1 Kilogram = 1000 Grams = 2.2 lb.
 1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
 1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

SQUARE MEASURE

1 Sq. Centimeter = 100 Sq. Millimeters = 0.155 Sq. Inches
 1 Sq. Meter = 10,000 Sq. Centimeters = 10.76 Sq. Feet
 1 Sq. Kilometer = 1,000,000 Sq. Meters = 0.386 Sq. Miles

CUBIC MEASURE

1 Cu. Centimeter = 1000 Cu. Millimeters = 0.06 Cu. Inches
 1 Cu. Meter = 1,000,000 Cu. Centimeters = 35.31 Cu. Feet

TEMPERATURE

$5/9(^{\circ}\text{F} - 32) = ^{\circ}\text{C}$
 212° Fahrenheit is equivalent to 100° Celsius
 90° Fahrenheit is equivalent to 32.2° Celsius
 32° Fahrenheit is equivalent to 0° Celsius
 $9/5^{\circ}\text{C} + 32 = ^{\circ}\text{F}$

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
its	Liters	0.473
arts	Liters	0.946
allons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
ers	Gallons	0.264
ms	Ounces	0.035
ograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pounds-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
ometers per Liter	Miles per Gallon	2.354
ometers per Hour	Miles per Hour	0.621



IM 9-5015, AIMING POST LIGHTS M14, M41, AND M43, MARCH 1953