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TM 8-610

WAR DEPARTMENT TECHNICAL MANUAL

U.S. Dept. of Army

UNIVERSITY OF CALIFORNIA
JUL 2 1945
ENTS DIVISION

FIELD OPERATING LAMP

WAR DEPARTMENT • MAY 1945

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WAR DEPARTMENT TECHNICAL MANUAL

TM 8–610

This manual supersedes TM 8–610, 28 January 1944.

FIELD OPERATING LAMP

WAR DEPARTMENT • *MAY 1945*

United States Government Printing Office

Washington: 1945

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WAR DEPARTMENT

Washington 25, D. C., 28 May 1945

TM 8–610, Field Operating Lamp, is published for the information and guidance of all concerned.

[AG 300.7 (26 Mar 45)]

BY ORDER OF THE SECRETARY OF WAR:

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Chief of Staff

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The Adjutant General

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Refer to FM 21–6 for explanation of distribution symbols.

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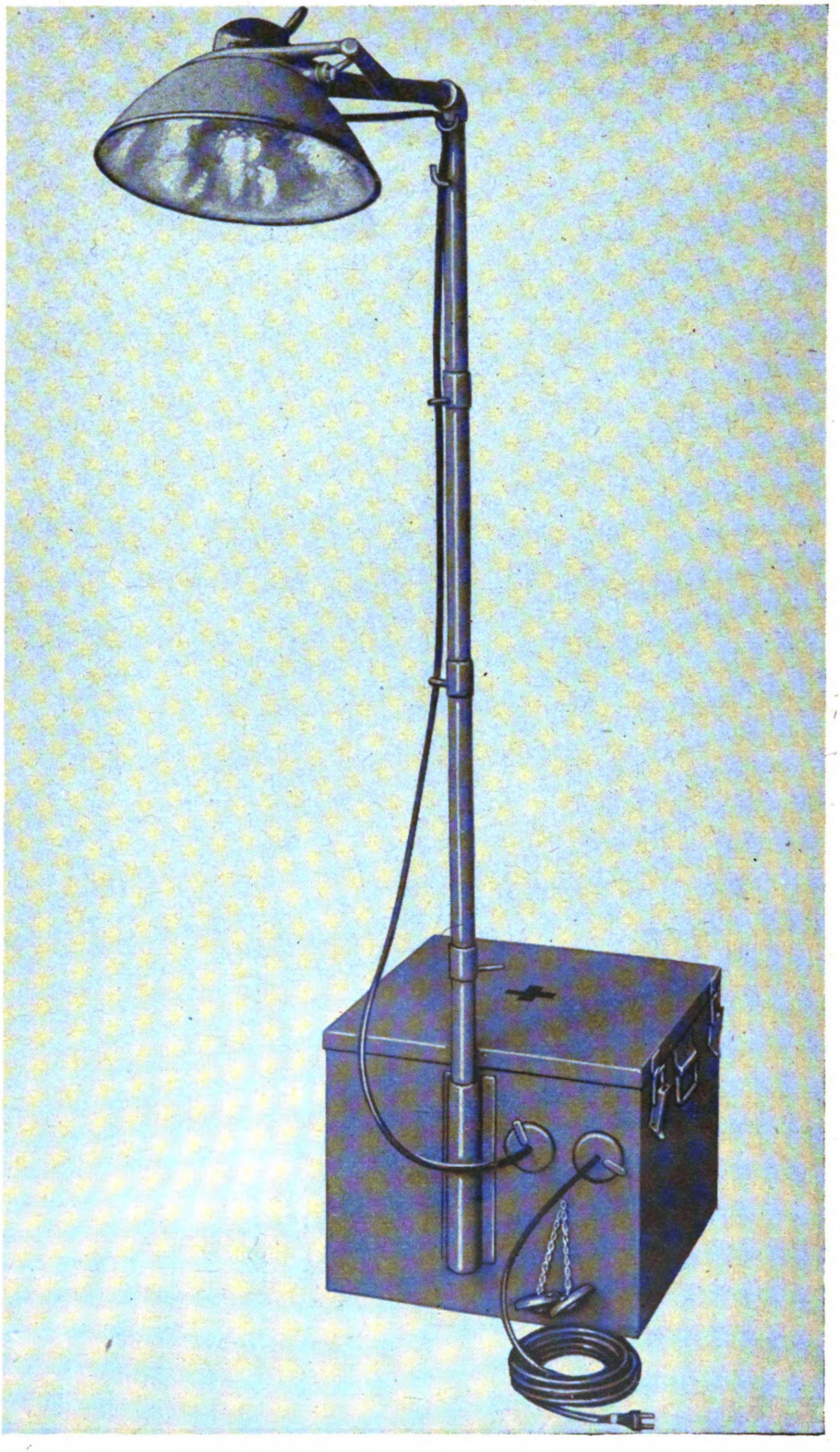


Figure 1. Field operating lamp, front view, case closed.

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PART I

INTRODUCTION

Section I. GENERAL

1. Scope

a. These instructions are published for the information and guidance of the personnel to whom this equipment is assigned.



Figure 2. Field operating lamp, side view, case open.

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They contain information on the operation and maintenance of the equipment, as well as descriptions of the major units and their functions in relation to the other components of the equipment. They apply only to Medical Department item No. 9931500 Lamp, operating, field. (See figs. 1 and 2.)

b. These instructions are arranged in four parts: Part One, Introduction; Part Two, Operating Instructions; Part Three, Maintenance Instructions; Part Four, Auxiliary Equipment.

c. All requisitions for spare parts should be submitted in accordance with the latest revision of ASF Supply Catalog Med 7.

2. Records

No special maintenance forms are required to be kept by the using personnel except as may be prescribed by the medical officer in charge.

Section II. DESCRIPTION AND DATA

3. Description

Lamp, operating, field, is a portable operating lamp used as a medium of illumination for surgical operations performed at field installations. It is so constructed that field personnel may readily set it up by hand. For transport, the lamp and its upright are disassembled and packed in a carrying case. The case is provided with a hinged lid and two handles, and contains three dry-cell batteries wired in series, totaling 135 volts for emergency lighting.

4. Data

a. SOURCES OF POWER. See chart I.

b. TYPES OF BULBS USED. (1) Part No. SR00021 Bulb, 50–50-watt, 115-volt. (See fig. 3 (5).)

(2) Part No. SR00022 Bulb, 50 C.P., 6–8-volt, single-contact base. (See fig. 3 (6).)

c. MANUFACTURERS. (1) Wilmot Castle Company, Rochester, New York.

(2) American Sterilizer Company, Erie, Pennsylvania.

d. ACCESSORIES. See figure 3.

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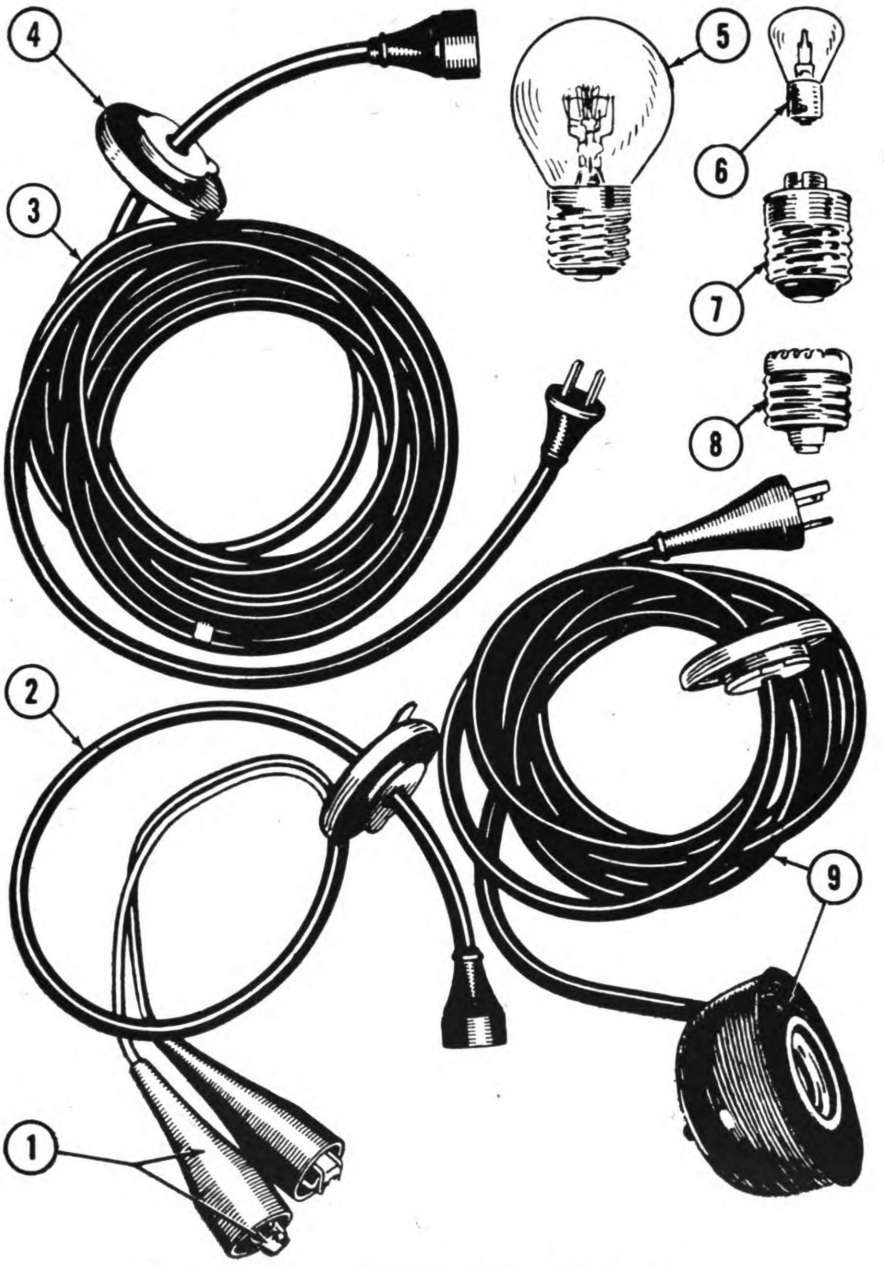


Figure 3. Field operating lamp, accessories.

Med. Dept. No.	*Nomenclature*
1.	CLIP AND COVER.
2. 9R00106	CORD, BATTERY.
3. 9R00104	CORD, LINE.
4.	PERFORATED CORD PORT.
5. SR00021	BULB, 50–50-WATT, 115-V.
6. SR00022	BULB, 50 C.P., 6-8-V., SINGLE-CONTACT BASE.
7. SR00018	ADAPTER, SOCKET, MOGUL TO SINGLE-CONTACT BAYONET.
8. SR00019	ADAPTER, SOCKET, MOGUL TO MEDIUM SCREW BASE.
9. 9R00112	CORD AND CAP, HEAD.

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CHART I

Source of power	Voltage	Approximate duration of power	Bulb used	Use receptacle labeled
Dry cell batteries (three), 45 - volt, 30 - cell, Signal Corps No. 3A26	135	When new—5 hours One year old—21½ hours	50–50-watt, 115-volt, Part No. SR00021.	Emergency battery
Storage battery, wet cell	6–8	Indefinite	50 C.P. 6–8-volt single contact base, Part No. SR00022.	8-v storage battery
Line, a-c–d-c	110–120	Indefinite	50–50-watt, 115-volt, Part No. SR00021.	110–120-v a-c–d-c
Line, a-c–d-c	220–240	Indefinite	50–50-watt, 115-volt, Part No. SR00021.	220–240-v a-c–d-c
Lamp, operating, field generator	110	Indefinite	50–50-watt, 115-volt, Part No. SR00021.	110–120-v a-c–d-c

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PART II

OPERATING INSTRUCTIONS

Section III. GENERAL

5. Scope

Part Two contains information for the guidance of the personnel responsible for the operation of this equipment. It contains information on the operation of the equipment with the description and location of the major parts for operation of the unit.

Note. Failure or unsatisfactory performance of equipment will be reported on WD AGO Form 468. If this form is not available, see TM 38-250. This form will be made out in duplicate by the using or service organization and forwarded in duplicate through command channels to The Surgeon General.

Section IV. SERVICE UPON RECEIPT OF EQUIPMENT

6. Unpacking and Assembling

a. Open the lid of the carrying case as shown in figure 4.

b. Remove the base section (fig. 4 (2)), two of the intermediate sections (fig. 4 (3)), and the elbow section (fig. 4 (4)) of the lamp upright from the carrying case.

c. Screw these sections together as tightly as possible by hand.

d. Insert the upright, with the unthreaded end of the base section down, in the bracket (fig. 4 (12)) provided on the front of the carrying case. The pin head must be at an angle of 45° to the case when the upright is inserted.

e. Lock the pin in place by rotating clockwise.

f. Remove the remaining intermediate section and screw it into the elbow on the upper end of the upright.

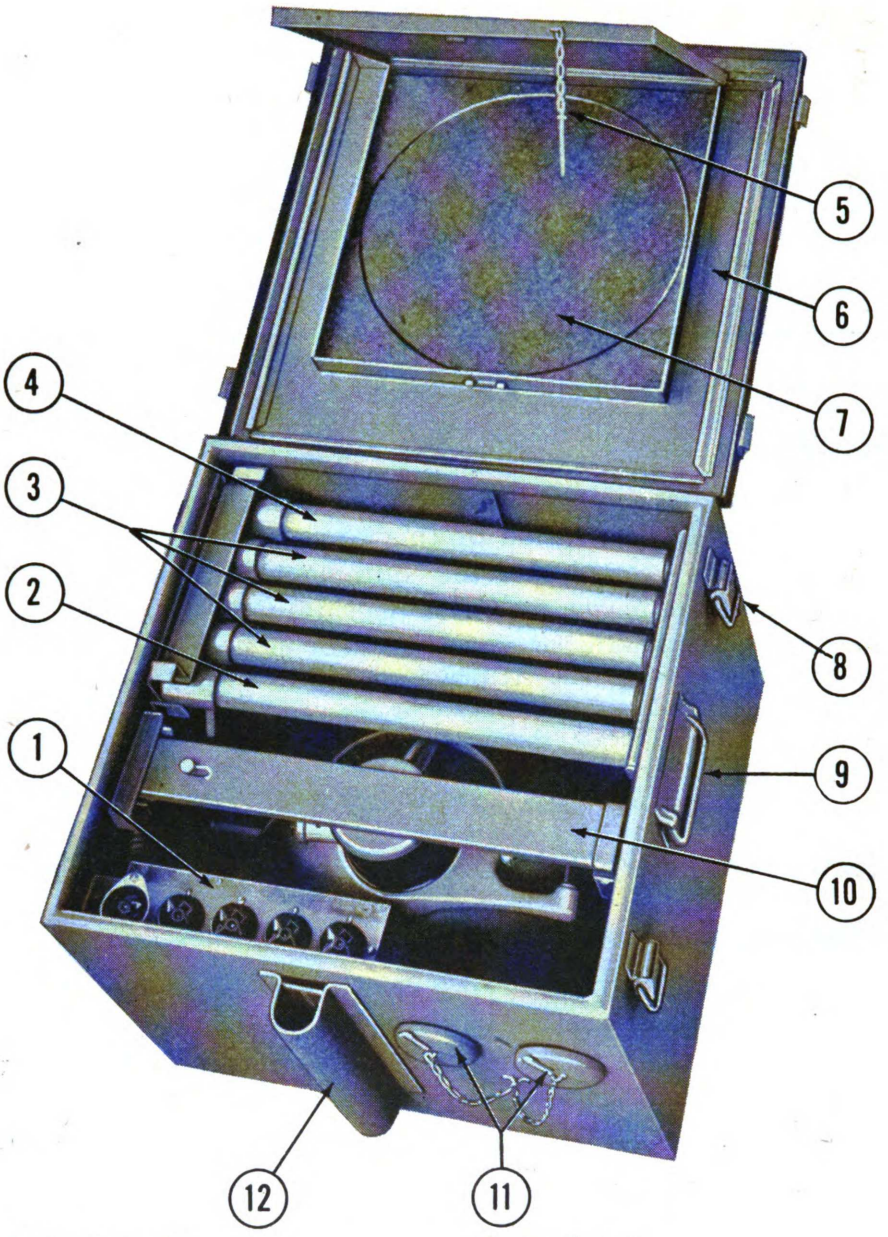
g. Pull back the knob on the head clamp (fig. 4 (10)) and release the head clamp.

h. Remove the lamp head with the adjustable yoke from the case.

i. Screw the head assembly into the coupling on the end of the horizontal intermediate section.

j. Remove the caps from the cord ports. (See fig. 4 (11).)

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Med. Dept. No.	*Nomenclature*
1.	RECEPTACLE BOX.
2.	BASE SECTION.
3.	INTERMEDIATE SECTION.
4.	ELBOW SECTION.
5.	PIN AND CHAIN FOR CASE LID.
6.	LID.
7. 5R00004	LENS, STIPPLED GLASS.
8.	CASE HASP.
9.	CASE HANDLE.
10.	HEAD CLAMP.
11.	CORD PORT CAP WITH CHAIN ATTACHED.
12.	UPRIGHT BRACKET.

Figure 4. Field operating lamp packed in case with lid open.

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k. Hook the cord coming from the mogul socket of the lamp head through a cord-retaining hook at the top of the upright.

l. Pass the three-prong terminal plug at the end of the cord through the left cord port in the front of the case, substituting the perforated water-sealing cap on the cord for the plain cap covering the port during transport.

m. The unit is then connected as described in section V for various sources of power.

Section V. OPERATION

7. Lamp, Operating, Field, Generator as Power Source

a. This generator supplies 110 volts.

b. The lamp head must be fitted with a (SR00021) 115-volt, 50–50-watt mogul-base twin filament marine bulb. (See fig. 3 (5).) The bulb operates with both filaments in parallel.

c. Plug the feeder cord into the input (first) receptacle and the other end into the receptacle on the generator.

d. Insert the lamp head cable plug into the 110–120-volt, a-c–d-c (third) receptacle. (See figs. 5, 6, and 7.)

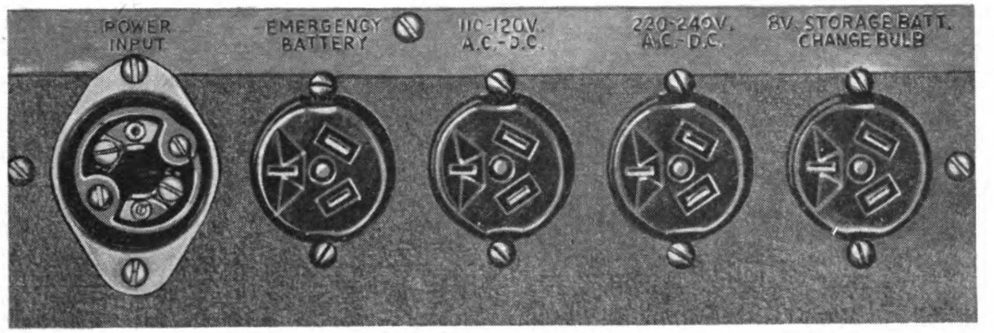


Figure 5. Receptacle panel complete.

8. 110-volt Line as Power Source

a. The lamp head must be fitted with a 115-volt, 50–50-watt mogul-base twin filament marine bulb. The bulb operates with both filaments in parallel.

b. Plug the feeder cord plug into the input (first) receptacle and the other end into the receptacle of the incoming line.

c. Plug the lamp head cable into the 110–120-volt, a-c–d-c (third) receptacle.

9. 220-volt Line as Power Source

a. The lamp head must be fitted with a 115-volt, 50–50-watt

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mogul-base twin filament marine bulb. The bulb operates with both filaments in series.

b. Plug the feeder cord female plug into the input (first) receptacle and the male plug into the receptacle of the incoming line.

c. Plug the lamp head cable into the 220–240-volt, a-c–d-c (fourth) receptacle.

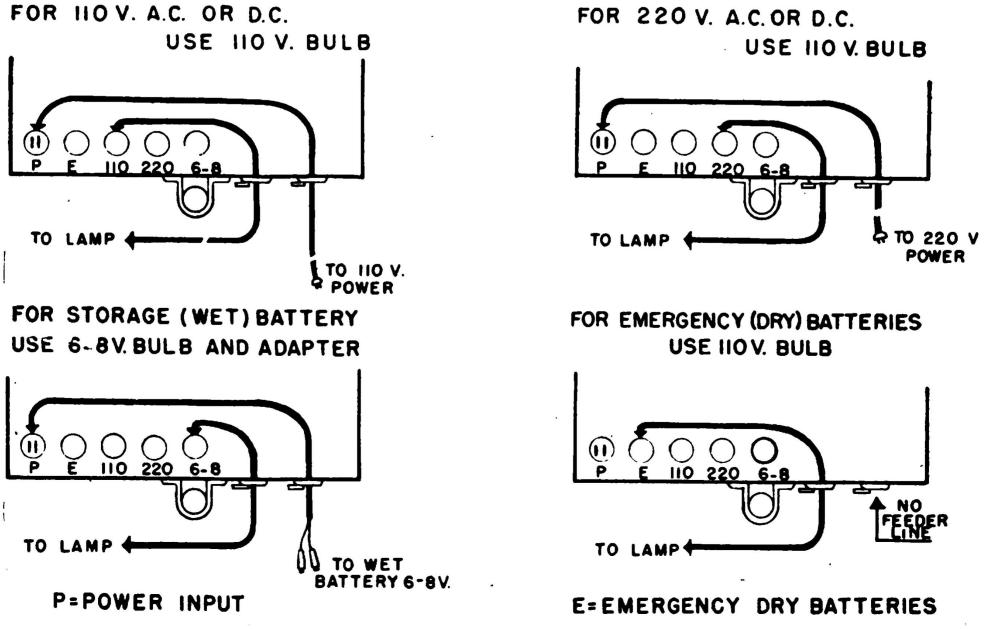


Figure 6. Power hook-up diagrams.

10. Storage Battery as a Power Source

a. The lamp head must be fitted with a 6–8-volt, 50-candlepower bayonet base bulb. (See fig. 3 (6).)

b. Remove the input cord and substitute the female plug of the short storage battery cord (fig. 3 (2)) into the input (first) receptacle.

c. Attach the two rubber covered clamp type terminal clips to the posts of any size storage battery to obtain 6- to 8-volt current. When using 12- to 24-volt batteries, it is advisable to shift the terminal clips from one set of cells to another frequently to equalize the power of the various cells.

d. Insert the lamp head cable plug into the 8-volt storage battery (fifth) receptacle.

Note. The sulfuric acid used as part of the electrolyte of the storage battery attacks and destroys practically anything with which it comes in contact. Use rubber aprons to protect clothes and a solution of ammonia water or soda to neutralize any spilled solution. Cotton clothes are particularly susceptible to attack by acid. A quantity of soda solution or ammonia water should be kept readily available in all battery rooms, tents, trucks, or trailers for emergency use in treating acid burns. Pure sulfuric acid is exceedingly

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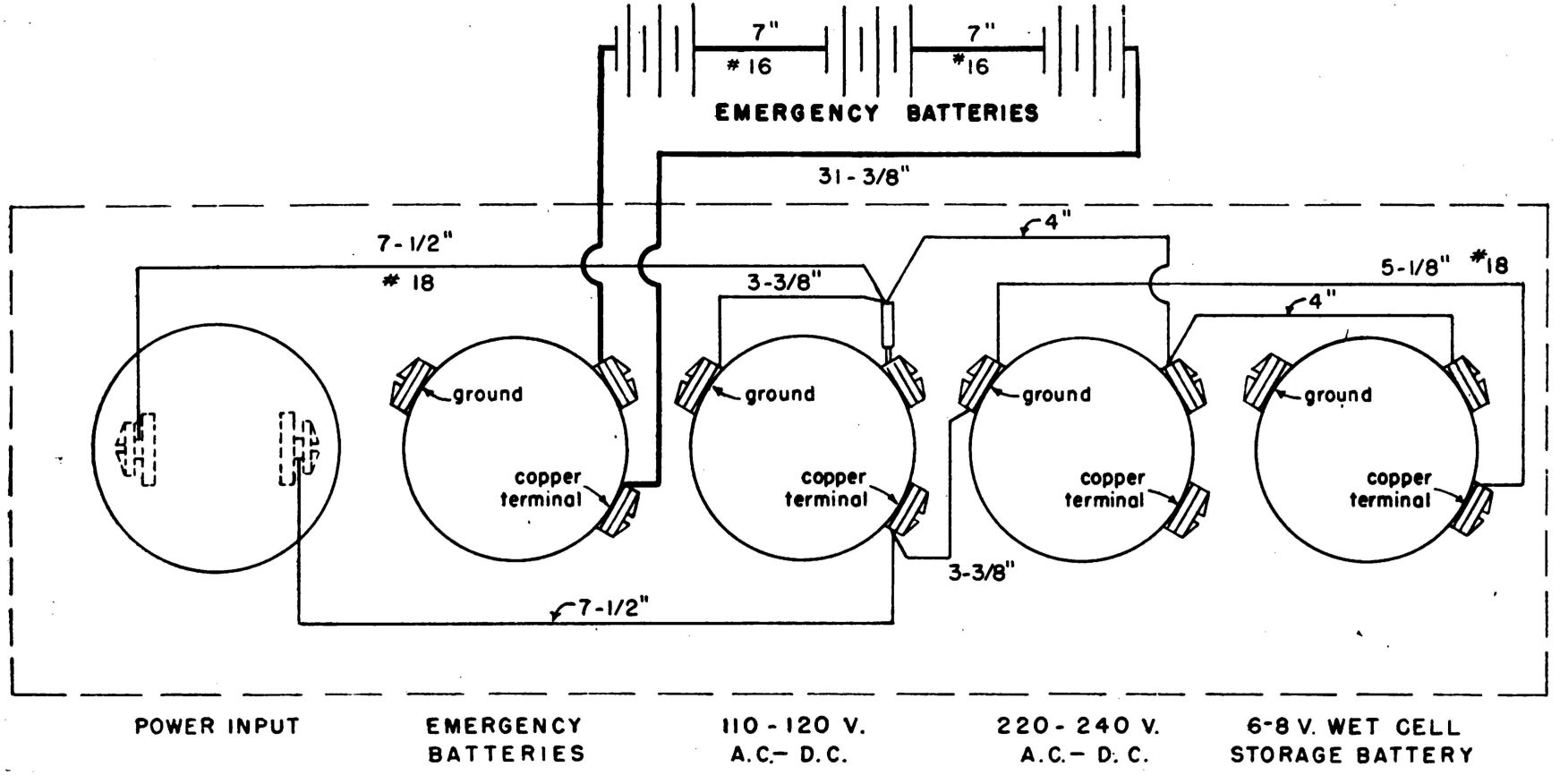


Figure 7. Receptacle box panel-wiring diagram.

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dangerous to the flesh. Normal battery electrolyte will not burn seriously if immediately neutralized or thoroughly washed off with cold water. The eyes are particularly sensitive and any quantity of electrolyte splashed or rubbed into them can cause loss of sight. They should be washed with water immediately and this condition reported to the medical officer. Never rub the eyes after working on a storage battery.

11. Emergency Batteries as Power Source

a. The lamp head must be fitted with a 115-volt, 50–50-watt mogul-base twin filament marine bulb.

b. The feeder cord is removed from the input (first) receptacle and is not used.

c. The lamp head cord is plugged into the emergency battery (second) receptacle.

Section VI. OPERATION OF AUXILIARY EQUIPMENT

12. Field Operating Lamp Generator

Operation of the lamp, operating, field, generator, Medical Department Item No. 9931700 is described in TM 8–626.

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PART III

MAINTENANCE INSTRUCTIONS

Section VII. LUBRICATION

13. Monthly

a. The threaded ends of the upright sections should be lightly coated with oil, lubricating, preservative, special (PS) to prevent corrosion and to facilitate hand assembly.

b. Apply a few drops of oil, lubricating, preservative, special (PS) to the lamp head bearing screw and the yoke tension washer.

Section VIII. PREVENTIVE MAINTENANCE SERVICES

14. Operator Maintenance First Echelon (Daily)

a. Inspect the interior of the carrying case and clean if necessary.

b. Dry all sponge rubber or gum cushions and check to see that they are securely cemented in place to provide a watertight seal.

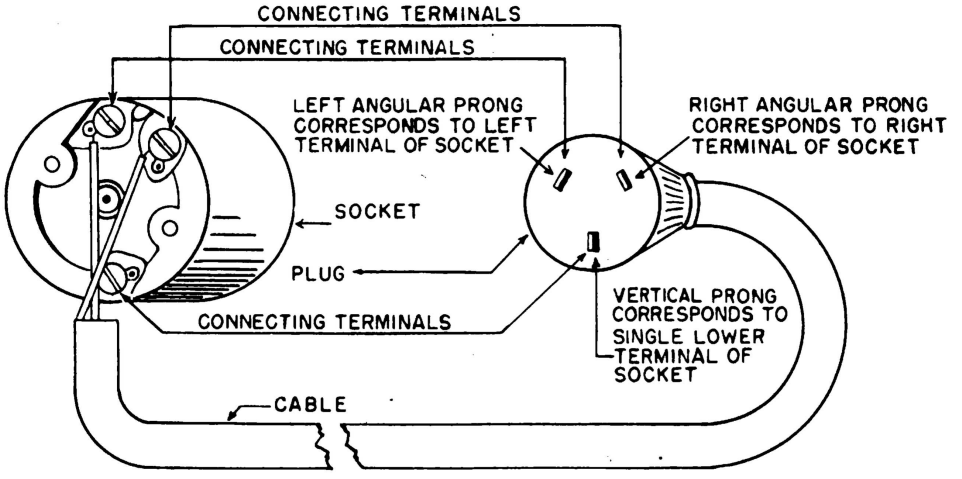


Figure 8. Wiring of lamp head.

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15. Organizational Maintenance Second Echelon (Monthly)

a. Inspect the dry batteries and compartment for corrosion and freshness of the batteries.

b. Inspect the lens and heat cylinder for cleanliness.

c. Inspect the socket contacts and threaded collar for corrosion.

d. Inspect spare lens, bulbs, and adapters, and replace any lost or damaged parts. (See ASF Supply Catalog Med 7.)

e. Inspect cords.

Section IX. TROUBLE SHOOTING

16. Lamp Fails to Operate With Generator as Power Source

Possible causes	*Possible remedies*
a. Bulb burned out.	*a.* Replace with 50–50-watt, 115-volt marine bulb.
b. Plugs not securely plugged in.	*b.* Plug in securely.
c. Damaged or broken wires.	*c.* Repair or refer to higher echelon. (See fig. 8.)
d. Power source fails.	*d.* See TM 8–626 for operation and maintenance of generator.
e. Socket contacts corroded.	*e.* Clean. (See par. 25.)
f. Threaded collar corroded.	*f.* Clean. (See par. 25.)
g. Plugs in wrong receptacles.	*g.* Plug in proper receptacle. (See par. 7.)

17. Lamp Fails to Operate With 110- or 220-volt Line as Power Source

Possible causes	*Possible remedies*
a. Bulb burned out.	*a.* Replace with 50–50-watt, 115-volt marine bulb.
b. Plugs not securely plugged in.	*b.* Plug in securely.
c. Damaged or broken wires.	*c.* Repair or refer to higher echelon.
d. Power source fails.	*d.* Check line fuses or report to post engineers.
e. Socket contacts corroded.	*e.* Clean. (See par. 25.)
f. Threaded collar corroded.	*f.* Clean (See par. 25.)
g. Plugs in wrong receptacles.	*g.* Plug in proper receptacle. (See pars. 8 and 9.)

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18. Lamp Fails to Operate With Storage Battery as Source of Power

Possible causes	*Possible remedies*
a. Bulb burned out or improper size.	*a.* Replace with 6–8-volt bulb.
b. Plugs not securely plugged in.	*b.* Plug in securely.
c. Clip and battery terminals corroded.	*c.* Clean.
d. Battery weak or dead.	*d.* Replace storage battery.
e. Socket contacts corroded.	*e.* Clean. (See par. 25.)
f. Threaded collar corroded.	*f.* Clean. (See par. 25.)
g. Plugs in wrong receptacles.	*g.* Plug in proper receptacle. (See par. 10.)

19. Lamp Fails to Operate With Emergency Batteries

Possible causes	*Possible remedies*
a. Bulb burned out or improper size.	*a.* Replace with 6–8-volt bulb.
b. Plug not securely plugged in.	*b.* Plug in securely.
c. Batteries weak or dead.	*c.* Replace dry batteries. (See par. 27.)
d. Socket contacts corroded.	*d.* Clean. (See par. 25.)
e. Threaded collar corroded.	*e.* Clean. (See par. 25.)

Section X. MAINTENANCE OPERATIONS

20. To Replace Lens

a. Remove the retainer screw and retainer (fig. 9 (2) and (10)), and clean all foreign matter out of the retainer.

b. Secure new lens and tape the rim of the lens with adhesive or electrician's tape about ½ inch wide. Be sure that the tape has equal overlap on both sides of lens and that tape ends meet. In some cases it may be necessary to use two layers of tape to provide a tight fit in the retainer ring.

c. Install new lens with stippled face inward. (See fig. 9 (1)).

d. Replace lens retainer and tighten retainer screw.

e. A spare lens is packed in the cover of the carrying case.

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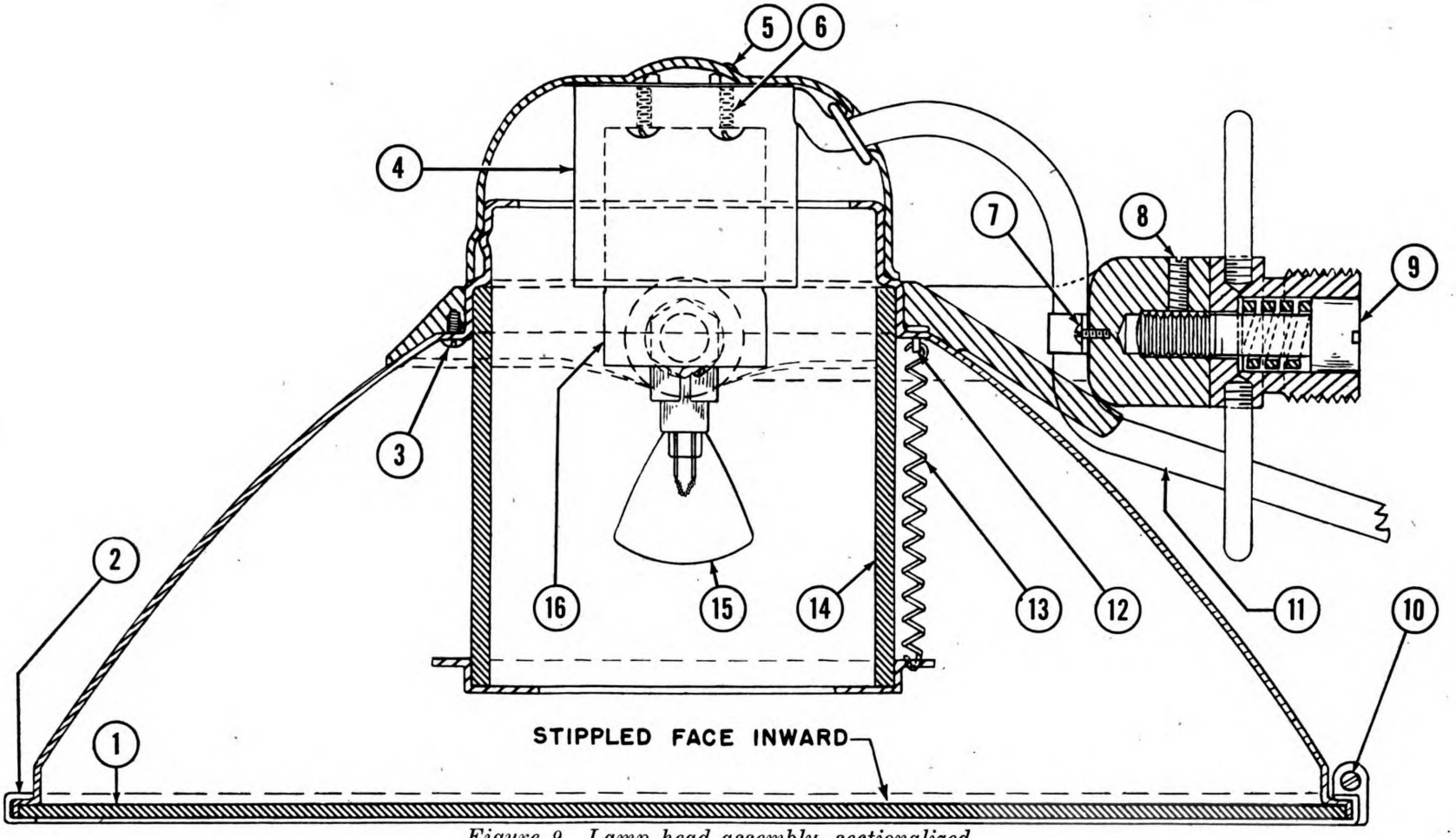


Figure 9. Lamp head assembly, sectionalized.

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Med. Dept. No.	*Nomenclature*
1. 5R00004	LENS, STIPPLED GLASS.
2. 9R00092	RING, RETAINER, LENS.
3. SR00024	SCREW, 6–32 x 3/16 INCH, WASHER H.M., 144 TO PKG.
4. SR00016	SOCKET, MOGUL.
5. SR00017	NUT, 8 x 32, HEX., 144 TO PKG.
6. SR00015	SCREW, 8–32 x 1 INCH, R.H.M., 144 to PKG.
7. SR00012	SCREW, 4 x 3/16 INCH, SHEET METAL, R.H., 144 TO PKG.
8. SR00011	SETSCREW, 8–32 x ½ INCH, HEADLESS, CUP PT., 100 TO PKG.
9. 9R00056	SCREW, BEARING, LAMP HEAD, STEEL.
10. SR00020	SCREW, 4–40 x ¾ INCH, FILL. H.M., 144 TO PKG.
11. SR00009	CORD, JACKET, NO. 18, THREE-CONDUCTOR.
12. 9R00086	PIN, LAMP HEAD.
13. 9R00088	SPRING, HAT, LAMP HEAD.
14. SR00023	CYLINDER, HEAT, 4 x 4 INCHES, AKLO.
15. SR00022	BULB, 50 C.P., 6–8-V., SINGLE-CONTACT BASE.
16. SR00018	ADAPTER, SOCKET, MOGUL TO SINGLE-CONTACT BAYONET.

Figure 9. Lamp head assembly, sectionalized.

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21. To Replace Bulbs

a. Remove the reflector cap at the back of the lamp head by a slight counterclockwise turn.

b. If the 50–50-watt, 115-volt bulb is to be replaced with a new bulb of the same size, unscrew and replace with a new one.

c. If a 6–8-volt, bayonet base bulb is to be used, remove the 50–50-watt bulb and its socket adapter and replace with a (SR00018) socket adapter and insert the 6–8-volt bulb.

d. If a 6–8-volt bulb is replaced with a 50–50-watt bulb, remove the bulb and adapter and replace with a 50–50-watt mogul-base bulb.

e. If the 50–50-watt, mogul-base bulb is not available, a common 50-watt bulb may be substituted when using 110-volt current, by using the socket adapter (SR00019) furnished with the lamp.

f. Replace the reflector cap, bearing the lamp head cord to the lamp head by turning clockwise.

Caution: Use only bulbs of the proper size, voltage, and wattage recommended. A bulb too small will not give sufficient light and a bulb with wattage too great will overload the circuit or cause the lens to break.

22. To Clean Corrosion From Carrying Case

If the emergency batteries are old, they must be replaced and any corrosion must be cleaned out from the carrying case.

a. Remove the old batteries.

b. Scrape out any corroded areas.

c. Apply a solution of sodium bicarbonate to the corroded areas to neutralize any acid that may be present.

d. Dry the carrying case thoroughly.

e. Apply a thin coating of vaseline to the corroded areas and wipe off the excess with a dry rag.

f. Replace with fresh batteries, Signal Corps Number 3A26.

23. To Replace Rubber Cushions

a. All sponge rubber cushions must be in place for lamp to stand transportation properly, and all gaskets in place to waterproof the unit completely.

b. Loose cushions may be cemented in place with ordinary tire patch cement. If compartment cushions are lost and new sponge rubber cushions are not available, they may be replaced by cushions cut from ⅛-inch hair or cotton felt.

c. Gaskets may be cemented in place with tire patch cement. Care should be taken when cementing to be certain that the sec-

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tions where gaskets meet are cemented together to make a water tight joint. The gaskets must be replaced with new gaskets of the same material. See ASF Supply Catalog Med 7.

24. To Adjust Lamp Head Yoke Tension

a. To increase tension so as to hold reflector more firmly in a given position, adjust as follows:

(1) Loosen setscrews on both sides of yoke.

(2) Tighten the yoke tension screws until desired tension is reached.

(3) Tighten setscrews.

b. To decrease tension on lamp head yoke, adjust as follows:

(1) Unscrew setscrews.

(2) Loosen yoke tension screws until yoke moves easily.

(3) Tilt back and forth several times to free washers.

(4) Tighten screws to desired tension.

(5) Tighten setscrews.

25. To Clean Socket Contacts and Threaded Collar

If socket contacts or threaded collar are dirty or corroded they should be cleaned to brightness with crocus cloth or very fine emery paper.

26. To Clean or Replace Heat Cylinder

a. Remove the retainer ring and lens.

b. Remove the cap from the back of the lamp.

c. Turn the reflector up and remove the hat springs (fig. 9 (13)) from the pins. (See fig. 9 (12).) Do not lose the pins which will drop out of reflector. Hold the hat in place until all the springs are removed from the pins.

d. Wash the heat cylinder (fig. 9 (14)) with soap and water or Acetone, Med. Dept. No. 1003000. Rinse thoroughly with water to remove any film and dry carefully.

e. Clean the reflector each time the heat cylinder is washed. Clean and polish with a nongritty metal polish such as Polish, metal, type 3, paste, 1-lb container: Ord. No. K001–10–81090, Fed. Stock No. P–P–556A. Do not use gritty cleansers of any kind.

f. To replace heat cylinder proceed as follows:

(1) Hook two of the hat springs to their respective pins and holes of the hat.

(2) Place the heat cylinder underneath the hat.

(3) Secure the third spring.

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(4) Wipe the cylinder surface free from fingerprints before replacing lens.

27. To Replace Dry Batteries

a. Remove the cover plate which will expose the dry batteries.

b. Clean any corrosion from the case. (See par. 22.)

c. Obtain three 45-volt dry batteries, type BA26, Signal Corps Number 3A26.

d. Connect these batteries in series in the case.

e. Replace cover plate.

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PART IV

AUXILIARY EQUIPMENT

Section XI. GENERAL

28. Description

a. LAMP, OPERATING, FIELD, DOLLY. A dolly mounted on casters and equipped with a handle, as shown in figure 10, is available for easy movement of the lamp in the operating room and from room to room; it is listed as Medical Department Item No. 9931600 Lamp, operating, field, dolly.

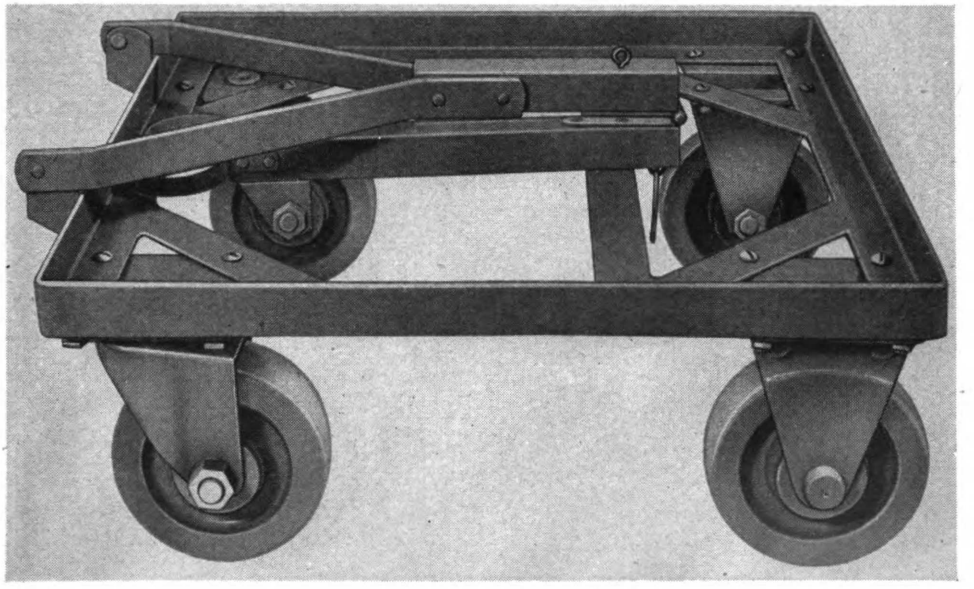


Figure 10. Dolly for field operating lamp.

b. LAMP, OPERATING, FIELD, GENERATOR. A portable gasoline motor-generator unit, as shown in figure 11, is used as an emergency power source and listed as Medical Department Item No. 9931700 Lamp, operating, field, generator. TM 8–626 covers the operation and maintenance of this generator.

c. STORAGE BATTERIES. Storage batteries are not provided with the lamp. Spare batteries for use in trucks may be used with the lamp.

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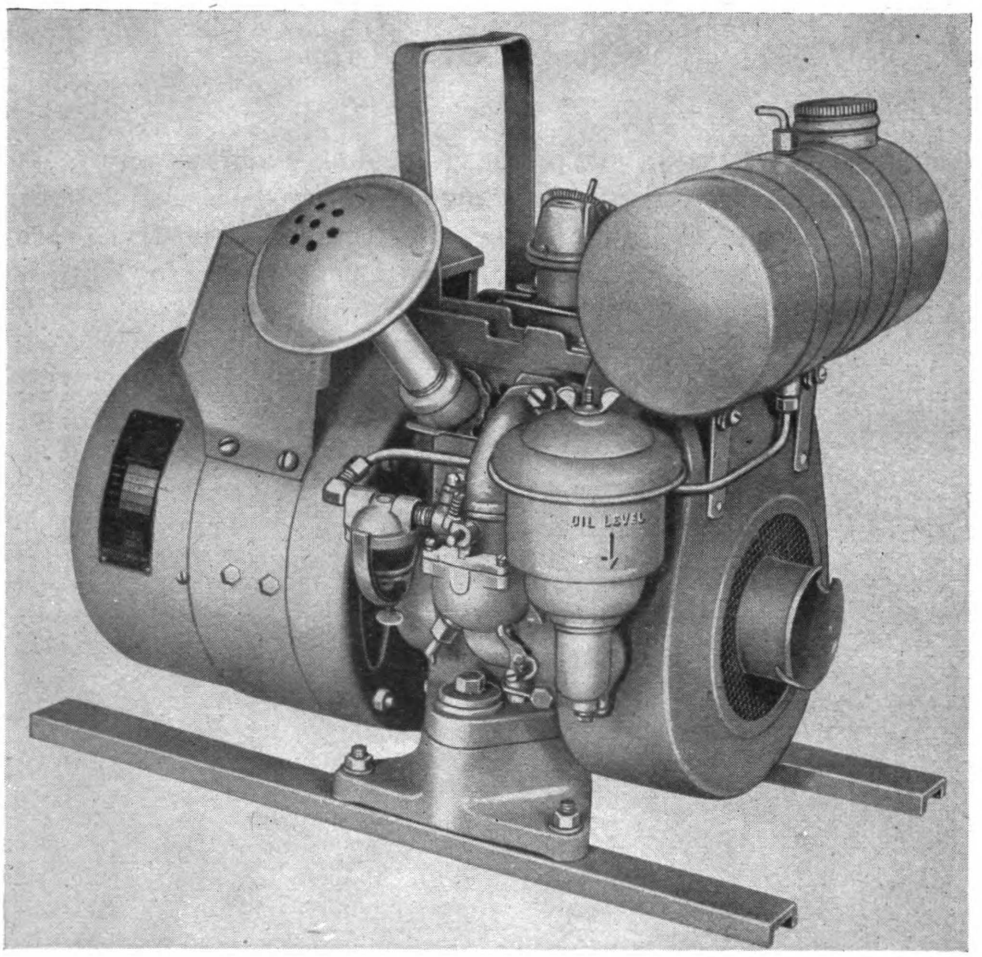


Figure 11. Portable gasoline motor generator unit.

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APPENDIX

SHIPMENT AND STORAGE

Disassembling and Packing

a. Detach the feeder cord from the receptacle box panel. Remove the water-sealing cap and pull the cord through the port.

b. Detach the lamp head cord from the receptacle and remove it from the cord port.

c. Cover both cord ports by means of the two plain caps suspended by chains at the ports.

d. Place the cords in one of the compartments in the case.

e. Unscrew the head locking bushing from the coupling on the outer end of the horizontal intermediate section and make sure that the 50–50-watt, 115-volt marine bulb is in the lamp head unless it is known that 110 or 220 volts will not be available when the lamp is used again. Do not store the lamp head with the 6–8-volt bulb in place.

f. Place the lamp head with the lamp head cord carefully coiled in its position under the head clamp in the case. Latch the head clamp in place.

g. Place all extra bulbs and socket adapters as well as the storage battery cord in their respective compartments.

h. Unscrew the horizontal intermediate section and disassemble the remaining sections of the upright.

i. Remove the base section by a slight counterclockwise turn and lift it out of its bracket.

j. Place the sections in the case in the following order, from back to front: elbow, horizontal intermediate, two other intermediates, base. Latch the locking bar in place.

k. Lower the lid and latch the hasps.

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