

# TB QM 47

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## WAR DEPARTMENT TECHNICAL BULLETIN

### LANTERN, GASOLINE, LEADED FUEL

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War Department, Washington 25, D. C.

• • • June 1945

#### Operation and Maintenance

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#### Section I

##### GENERAL DESCRIPTION

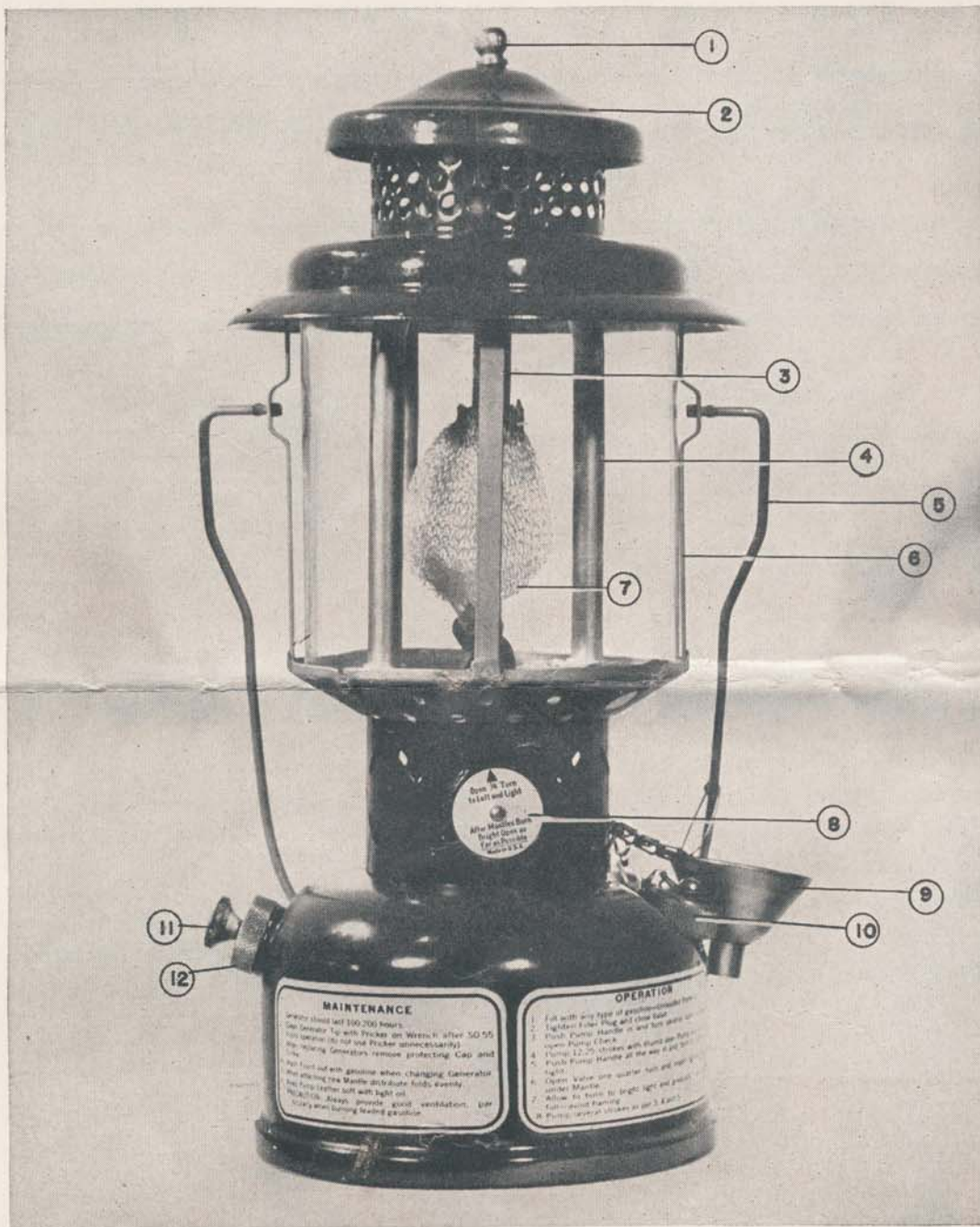
1. GENERAL. *a.* The instructions in this bulletin are designed to insure maximum efficiency in the operation and maintenance of the lantern, gasoline, leaded fuel.

*b.* These instructions are divided into three sections: section I, general description of the operating parts and characteristics of the equip-

ment; section II, operating instructions; section III, maintenance instructions.

2. DESCRIPTION AND USE. *a.* The lantern, gasoline, leaded fuel is designed to be used when electricity is unavailable as source of light. The lantern operates successfully with leaded motor gasoline, but will give better performance with white gasoline.

*b.* The following illustrations and labeled parts are included here to acquaint the operating personnel with the parts of the lantern and their proper locations.

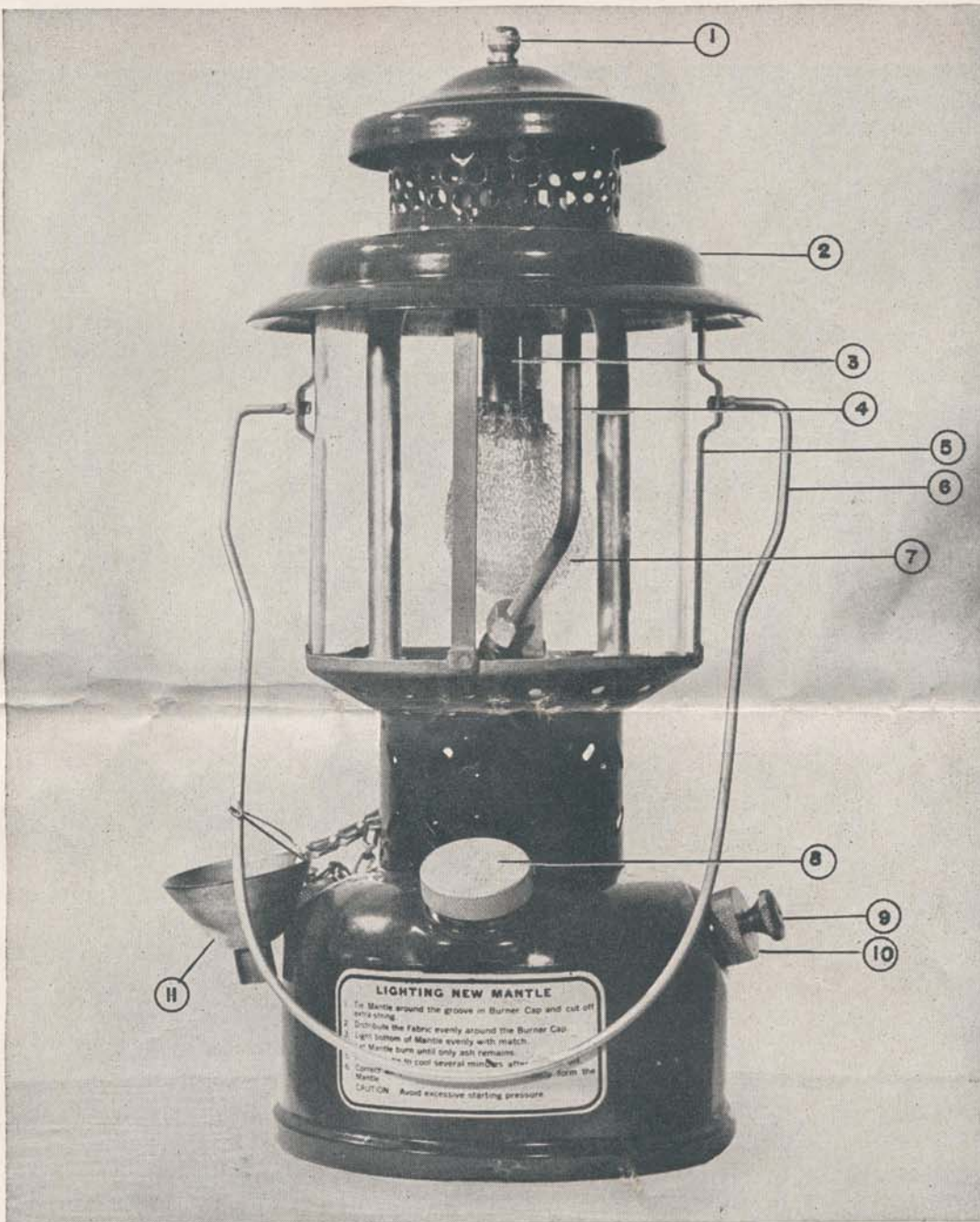


- 1. Top ball.
- 2. Ventilator hood.
- 3. Manifold tube.
- 4. Air supply tube.
- 5. Bail.
- 6. Frame.

- 7. Mantle, gasoline, lantern.
- 8. Knob, valve, gasoline, lantern.
- 9. Funnel, gasoline, lantern.
- 10. Cap, filter, gasoline, lantern.
- 11. Pump handle.
- 12. Pump cap.

Figure 1. Lantern, gasoline, leaded fuel (front view).





- |  |                                |
|--|--------------------------------|
| 1. Top ball.                                 | 7. Mantle, gasoline, lantern.  |
| 2. Ventilator hood.                          | 8. Spare parts container cap.  |
| 3. Manifold tube.                            | 9. Pump handle.                |
| 4. Generator, gasoline lantern, leaded fuel. | 10. Pump cap.                  |
| 5. Frame.                                    | 11. Funnel, gasoline, lantern. |
| 6. Bail.                                     |                                |

Figure 2. Lantern, gasoline, leaded fuel (rear view).

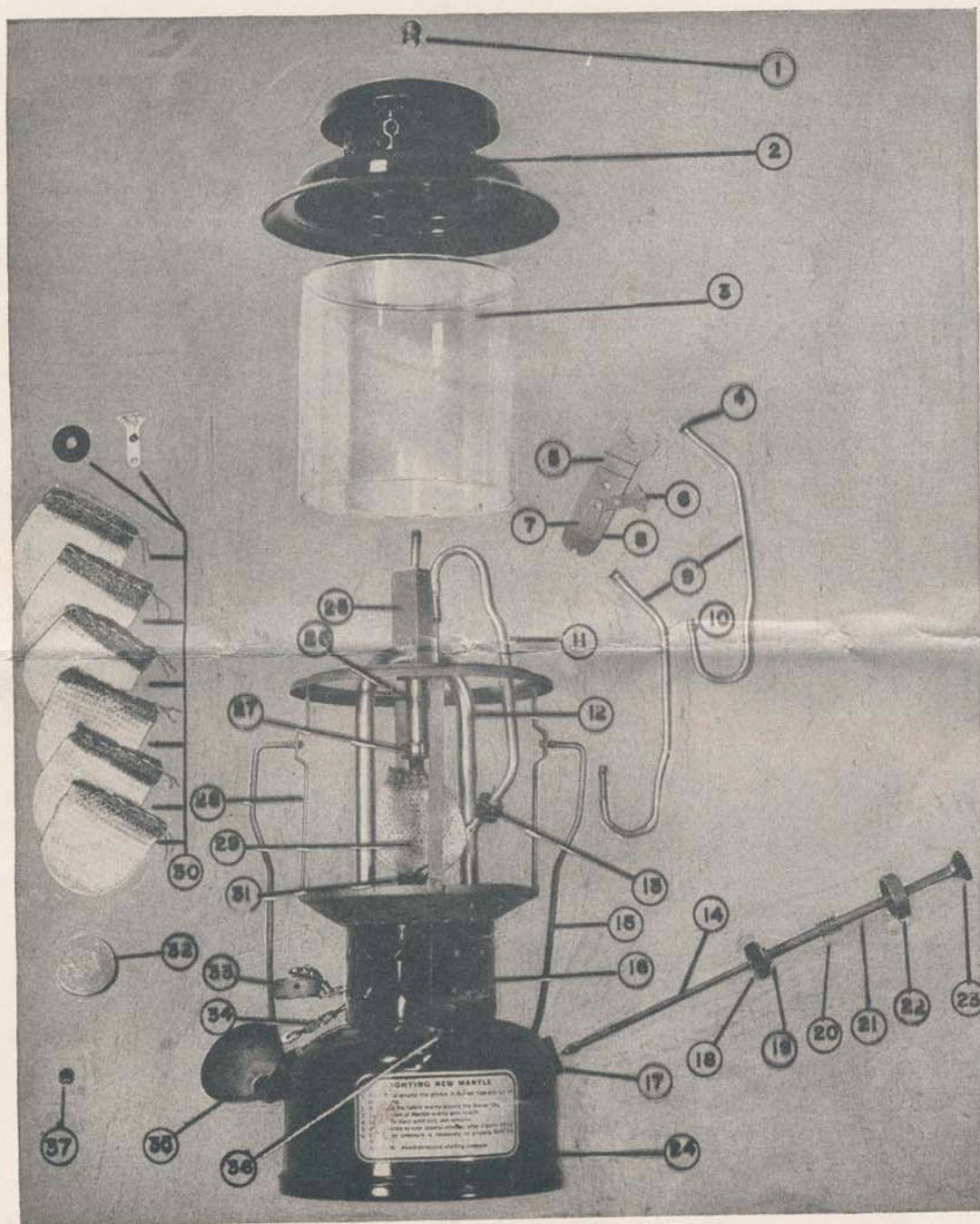


Figure 3. Lantern, gasoline, leaded fuel (exploded view with spare parts).



1. Top ball.
2. Ventilator hood.
3. Globe, gasoline lantern.
4. Screw plug.
5. Guard for pricker.
6. Pricker, gasoline lantern.
7. Pricker clip.
8. Wrench, gasoline lantern w/pricker.
9. Spare generators.
10. Burner tip.
11. Generator, gasoline lantern, leaded fuel.
12. Air supply tube.
13. Lock nut.
14. Pump plunger assembly.
15. Bail.
16. Collar.
17. Pump-barrel.
18. Leather, pump, gasoline, lantern.
19. Leather support washer.

Note.—For authorized allowances for replacement and repair parts refer to ASF Supply Catalog QM 7—MISC 1A.

## Section II

### OPERATING INSTRUCTIONS

3. GENERAL. The principle of the lantern is simple. The liquid gasoline is forced under pressure from the *fount* through the valve and then through a continually heated *generator*. The gasoline is changed to a vapor in the generator. The vapor passes through the *generator tip* where it is mixed with air coming through the *air supply tube*. This mixture then passes through the *manifold tube* and burns in the *mantle*. (The mantle is made of artificial silk which is treated in a bath of special chemicals. When a new mantle is first lighted the silk fibre burns and the brittle, delicate ash which forms becomes the source of illumination.)

4. LIGHTING OPERATION. *a. Filling the lantern.* (1) Turn fuel valve (fig. 1) to the right and close it tight.

(2) Remove the filler plug and fill the fount. (If possible, strain the gasoline before pouring it into the fount (fig. 1).)

(3) Replace the filler plug and tighten firmly with fingers (do not use wrench or pliers).

(4) Be sure that the fuel valve is closed.

(5) Turn pump plunger two full turns to the left. This will open the air check valve which is inside the pump barrel (fig. 1).

(6) With thumb over small hole in end of pump plunger, pump 15–20 strokes of air into the fount.

20. Cushion spring.
21. Plunger tube.
22. Pump cap.
23. Pump handle.
24. Fount.
25. Yoke.
26. Manifold tube.
27. Mantle holder.
28. Frame.
29. Mantle, gasoline lantern.
30. Spare parts.
31. Adapter.
32. Spare parts containing cap.
33. Cap, filler, gasoline, lantern.
34. Safety chain.
35. Funnel, gasoline lantern.
36. Spare parts container.
37. Packing, valve stem, performed, graphited, asbestos,  $\frac{1}{4}$ -in. ID,  $\frac{3}{8}$ -in. OD,  $\frac{3}{8}$ -in. long.

(7) Push the pump plunger all the way back into the pump barrel.

*b. Replacing the mantle.* (1) Unscrew hood retaining nut on top of lantern and remove hood and globe.

(2) Tie mantle to groove in burner cap with string and cut off surplus string.

(3) Apply flame of match to mantle and leave mantle to burn until only white ash remains. Allow mantle to cool off about two minutes before lighting lantern.

*c. Lighting the lantern.* (1) To light the lantern, hold the lighted match below the mantle. At the same time open the fuel valve one-fourth turn only. The mantle will light as soon as the gas reaches it. This may take 20 to 30 seconds.

(2) After the mantle burns bright, open the fuel valve as far as possible, which will be about three full turns.

(3) After opening fuel valve as far as possible pump in additional air to maintain maximum brightness of light.

(4) To turn out light, turn fuel valve to right until closed.

## Section III

### MAINTENANCE INSTRUCTIONS

5. GENERAL. Troubles with the gasoline lamp illumination may be traced to various factors such as: improper mixture of gasoline



and air in the mixing chamber over the mantle, a plugged generator, impure gasoline, or damaged mantle.

6. GENERATOR. *a.* The generator should last from 100 to 200 hours. After 50 to 75 hours of operation the generator will need cleaning. A carbonized generator or plugged tip usually gives warning by a gradual dimming of the light.

*b.* To remove the generator for cleaning, unscrew the locknut at the bottom of the generator with the wrench provided (fig. 3). Lift the generator from its seat; *try not to injure the mantle* (fig. 3).

*c.* Unscrew the tip with the wrench. Insert pricker needle into front of tip. (The hole in the tip is extremely small and is located at the center of the tip.) Care must be used to avoid bending the needle. Blow from the back to remove carbon particles. Check clearness of tip by looking through it toward a bright light source.

*d.* Screw clear tip back into generator and replace the generator on the lantern. Proceed to light.

*e.* If cleaning the tip does not improve the operation, then replace the generator.

(1) To replace the generator, unscrew the ball nut from the ventilator rod which permits removal of the ventilator and globe.

(2) Loosen the generator locknut and remove the generator.

(3) Remove the locknut from the spent generator and slide it over the top of the new generator. Insert the generator into manifold. Be sure to remove the tip protector and screw plug before installing the new generator. When the new generator is inserted into the manifold, make sure that the flared end is properly seated on to the adaptor nipple, and then tighten the locknut. Tighten the generator locknut securely to prevent leakage of gasoline.

7. MANTLE. *a.* The mantle, which is another vital part of the gasoline lantern, needs very special care. The most serious cause of breakage of the mantle has been traced to the violent flow of the gasoline vapor stream which enters the mantle from the generator, especially during the starting period.

*b.* In starting to light, be sure the fount is not

overpumped. The gaseous mixture flows into the mantle with considerable pressure and will damage the mantle if it is excessive.

8. KEEPING FOUNT CLEAN. *a.* Wash out the fount with clean gasoline each time a generator is replaced.

*b.* To drain the fount, remove the filler plug and pour gasoline out through filler plug opening.

9. PUMP. *a.* Always keep the pump leather (pump cup) well oiled to prevent hardening.

*b.* Unscrew the pump plunger cap and draw the pump plunger out until the leather is visible. Oil leather with a light lubricating oil, replace and tighten plunger cap. If leather is hard pull pump plunger all the way out and work oil into leather with fingers.

10. VALVE PACKING NUT. *a.* After the lantern has been used for some time, the valve stem packing may shrink allowing leakage at that point.

*b.* To stop leakage tighten pack nut a few turns to hold packing in firm contact with valve stem.

*c.* Replace packing if leak is not stopped.

11. SPECIAL PRECAUTIONS. *a.* Be sure to remove the protecting cap before replacing with new generator (fig. 3).

*b.* Always tighten the locknut as much as possible with fingers; then tighten firmly with wrench.

*c.* Be sure to hold the generator in correct position while tightening locknut to avoid twisting the generator.

*d.* Do not overpump the fount *before lighting*.

(1) To avoid guesswork in pumping it is always better to release all pressure before starting, by loosening and tightening the filter cap.

(2) After the lantern has been started and is generating properly the pressure may be pumped up until the light is at the maximum intensity.

*e.* Remember that when starting the lantern, excessive air pressure may break a new mantle.

*f.* Avoid carrying the lantern on its side. The safest position for the mantle is vertical.

*g.* Avoid jarring the lantern.

*h.* Always provide good ventilation particularly when burning leaded gasoline.

## TROUBLE SHOOTING

Trouble	Cause	Correction
1. LANTERN BURNS DIMLY.	<ol style="list-style-type: none"> <li>1. Low air pressure.</li> <li>2. Lack of fuel.</li> <li>3. Generator tip clogged.</li> <li>4. Generator tube clogged.</li> <li>5. Manifold tube clogged.</li> </ol>	<ol style="list-style-type: none"> <li>1. Add air pressure by pumping.</li> <li>2. Refuel.</li> <li>3-4. Clean the generator tip by use of the pricker. (If cleaning does not remedy the trouble then replace the generator.)</li> <li>5. Clear deposits from inside of manifold tube.</li> </ol>
2. LOSS OF AIR PRESSURE IN THE FOUNT.	<ol style="list-style-type: none"> <li>1. Leakage in pump check valve.</li> <li>2. Leakage between valve and fount.</li> <li>3. Leakage between valve and adapter.</li> <li>4. Leakage at the generator locknut.</li> <li>5. Leak in filler cap.</li> <li>6. Valve not opened fully.</li> </ol>	<ol style="list-style-type: none"> <li>1-5. These parts should be checked before replacement of any part is made.</li> <li>6. Open valve full after mantle burns bright.</li> </ol>
3. MANTLE BREAKS.	Excessive starting pressure.	Avoid overpumping before lighting.
4. MANTLE BURNS WITH YELLOW FLAME.	Clogged air supply tube.	Remove burner assembly from valve and clean out air supply tube.

[AG 300.5 (28 May 45)]

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