

TM 10-708

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

STOVE, COOKING, GASOLINE, M-1950 ONE-BURNER

DEPARTMENT OF THE ARMY

• OCTOBER 1951

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GASOLINE, M-1950
ONE-BURNER



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OFFICIAL:	J. LAWTON COLLINS
WM. E. BERGIN	<i>Chief of Staff, United States Army</i>
<i>Major General, USA</i>	
<i>The Adjutant General</i>	

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CHAPTER 1

INTRODUCTION

Section I. GENERAL

1. Scope

This manual contains the information and instructions necessary for the operation and maintenance of the one-burner M1950 gasoline cooking stove.

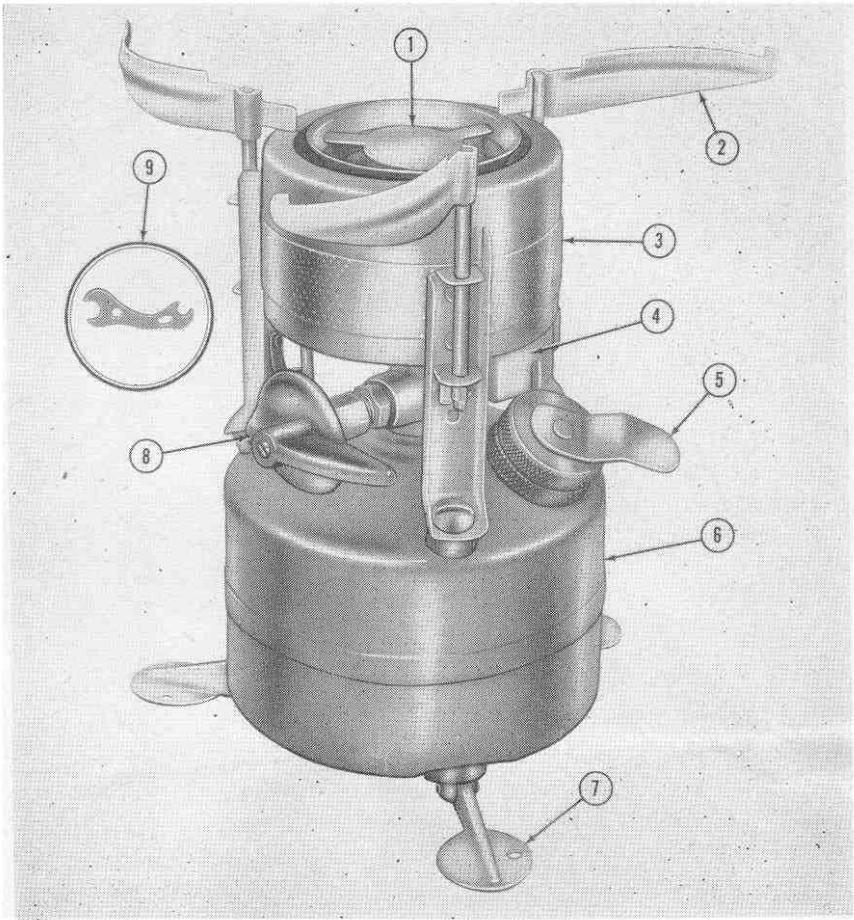
2. Requisitioning

The one-burner M1950 gasoline cooking stove may be requisitioned with or without case or as a component of the one-burner cooking outfit (par. 9). Tools and parts should be requisitioned by standard stock numbers (DA Supply Catalog QM 5-65) when applicable; otherwise, they should be requisitioned by manufacturer's part numbers, indicating the number and date of the manufacturer's catalog as well as the make and model of the stove.

Section II. DESCRIPTION AND DATA

3. General Description

The one-burner M1950 gasoline cooking stove (fig. 1) is a cooking and heating unit for a group of from two to five men operating in an isolated or forward area where the use of heavier equipment is not practical. The stove is small, compact, and light, and will operate on either white or leaded gasoline. The initial pressure for its operation is generated by a few strokes on the hand pump; thereafter, the pressure is generated by heat from the burner evaporating the fuel in the stove tank. The rough, file-like surface of the burner shield provides a convenient match striker when lighting the burner to cook rations, heat water, or melt snow.



- | | |
|--------------------------|-------------------|
| ① Burner Assembly | ⑥ Gasoline tank |
| ② Grate arm | ⑦ Foot |
| ③ Burner shield | ⑧ Indicating knob |
| ④ Spare generator holder | ⑨ Wrench |
| ⑤ Pump | |

Figure 1. One-burner M1950 gasoline cooking stove.

4. Assemblies

a. PUMP ASSEMBLY. The pump assembly consists of a pump plunger tube with plunger grip and leather cup, and a pump barrel with air check valve. Each stroke on the plunger tube forces air through the check valve in the bottom of the barrel, thus providing the initial pressure necessary to raise the fuel through the valve and generator assemblies to the burner. The hollow pump plunger tube provides a convenient storage space for spare parts. Components of the pump assembly are shown in ⑦ through ⑳, figure 2.

b. GENERATOR ASSEMBLY. The generator assembly consists of a generator tube fitted with a gas tip and holding a generator screen coiled around a cleaner rod. When heated, the generator assembly vaporizes the gasoline flowing through it from the valve assembly and ejects the flammable vapors through the gas tip into the burner assembly. The generator screen provides a vaporizing and heating chamber as well as a filter for the gasoline. The cleaner rod, raised and lowered by the turning of the indicating knob, is pushed into the orifice of the gas tip, thereby cleaning the orifice when the knob is turned off. Components of the generator assembly are shown in ③ through ⑥, figure 2.

c. PREHEATER CUP ASSEMBLY. A preheater cup assembly (fig. 2), screwed to the valve assembly and holding the generator assembly in place, provides a means of warming the generator before lighting the stove. An asbestos wick is glued into the cup.

d. BURNER ASSEMBLY. The burner assembly (fig. 2), screwed to the top of the generator tube, is designed to mix the atomized fuel with air and to shape the flame so that the mixture will burn efficiently.

e. VALVE ASSEMBLY. The valve assembly controls the flow of fuel from the gasoline tank to the generator. The valve body is screwed into the tank and contains an eccentric block which is raised and lowered by an eccentric stem fastened to the indicating knob. When the knob is turned on, the eccentric block pulls the cleaner rod from the gas tip orifice above the valve body and pushes the fuel needle down into the air and fuel tube beneath the valve body. Air pressure pumped into the tank can then force the fuel through the air and fuel tube, past the eccentric block, and into the vaporizing screen of the generator. Components of the valve assembly are shown in figure 3.

5. Tabulated Data

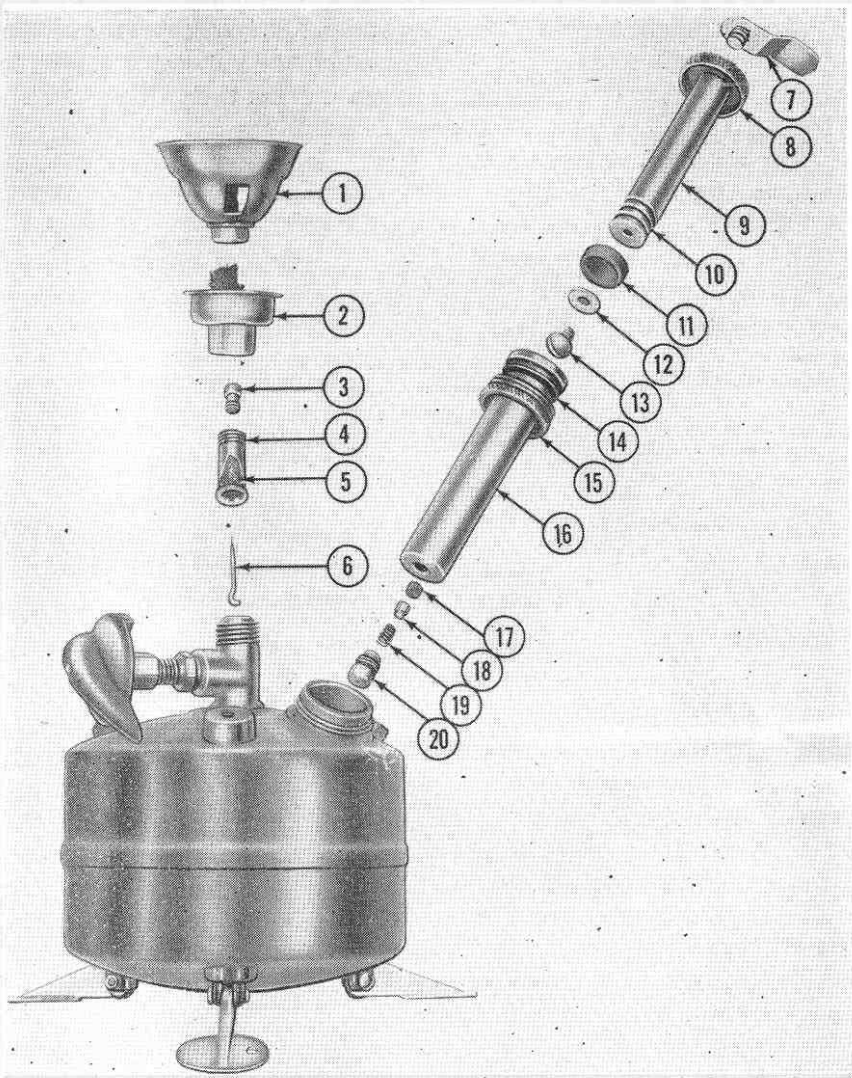
Data for the gasoline cooking stove are tabulated as follows:

a. GENERAL SPECIFICATIONS.

Height (closed)	6 $\frac{5}{8}$ inches
Diameter (tank)	4 inches
Weight (empty)	21 $\frac{1}{2}$ ounces

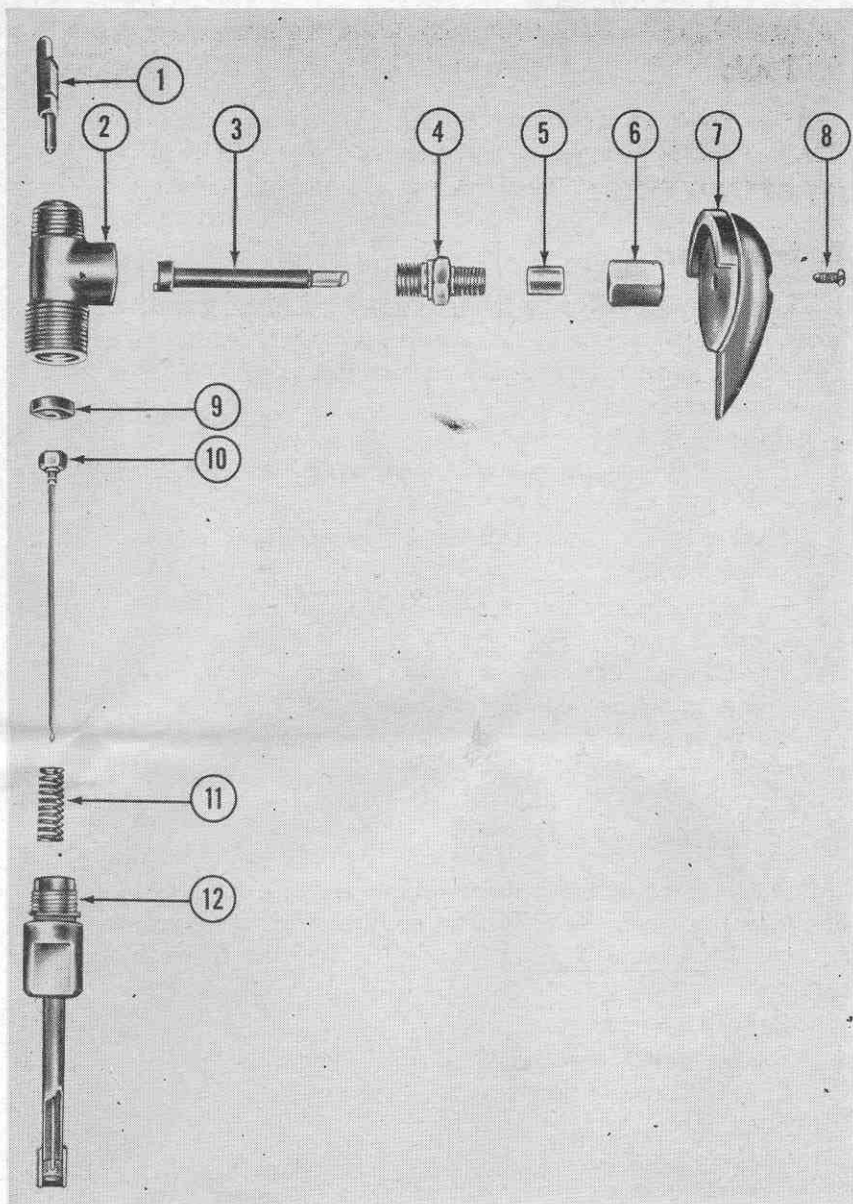
b. CAPACITIES.

Fuel tank capacity	10 ounces
Fuel consumption per hour	4 ounces
Heat units per hour	5,500 B.T.U.



- | | |
|---------------------------|---------------------------------|
| ① Burner assembly | ⑪ Cup, leather, pump |
| ② Preheater cup assembly | ⑫ Washer, plunger cup |
| ③ Tip, gas, generator | ⑬ Screw |
| ④ Tube, generator | ⑭ Gasket, filler cap |
| ⑤ Screen, generator | ⑮ Cap, lower |
| ⑥ Rod, cleaner, generator | ⑯ Barrel, pump |
| ⑦ Grip, plunger | ⑰ Gasket, air check pump |
| ⑧ Cap, upper | ⑱ Seat, gasket, air check, pump |
| ⑨ Tube, plunger | ⑳ Spring, air check pump |
| ⑩ Spring, pump plunger | ㉑ Body, air check, pump |

Figure 2. Components of pump and generator assemblies.



- | | |
|--------------------------------|------------------------------|
| ① Block, eccentric | ⑦ Knob, indicating |
| ② Body, valve | ⑧ Screw, indicating knob |
| ③ Stem, eccentric | ⑨ Gasket, check, fuel needle |
| ④ Body, eccentric stem | ⑩ Needle, fuel |
| ⑤ Packing, eccentric stem | ⑪ Spring, check, fuel needle |
| ⑥ Nut, packing, eccentric stem | ⑫ Tube, air and fuel |

Figure 3. Components of valve assembly.

Section III. TOOLS, PARTS, AND EQUIPMENT

6. Tools

A $\frac{3}{8}$ - by 9/16-inch wrench (fig. 1) is issued with each stove. The wrench is coupled to the stove by nesting it between two of the legs that support the burner shield and grate bars.

7. Spare Parts

The following spare parts are issued with the gasoline cooking stove and are packed in the pump plunger tube, with the exception of one generator which is packed in a metal holder clipped to one of the grate legs.

<i>Spare part</i>	<i>Quantity</i>
Cup, leather, air pump, stove, cooking, gasoline, M1950, one-burner.	1
Gasket, filler cap, stove, cooking, gasoline, M1950, one-burner.	1
Generator assembly, stove, cooking, gasoline, M1950, one-burner.	2
Packing, eccentric stem, valve assembly, stove, cooking, gasoline, M1950 one-burner.	1
Valve assembly, air check, pump, stove, cooking, gasoline, M1950, one-burner.	1

8. Replacement Parts

For servicing and reconditioning the one-burner M1950 gasoline cooking stove, the following replacement parts may be requisitioned by standard stock numbers obtained from DA supply catalogs:

- Burner assembly
- Burner shield assembly
- Cup, leather, air pump
- Foot, stove
- Gasket, filler cap
- Generator assembly
- Holder, spare generator
- Knob, indicating
- Packing, eccentric stem, valve assembly
- Preheater cup assembly
- Pump assembly
- Tip, gas, generator assembly
- Valve assembly, air check, pump

Valve assembly
Wrench

9. Equipment

a. CASE. A two-piece telescopic case, stove, cooking, gasoline, 1 burner, may be requisitioned by standard stock number obtained from DA supply catalogs. Designed as a protective carrier for the gasoline cooking stove, the case may also serve as a cooking container, the bottom section holding 3 pints, the top section 11½ pints.

b. MOUNTAIN COOKSET. The mountain cookset is combined with the one-burner M1950 gasoline cooking stove to make the one-burner cooking outfit. The mountain cookset consists of two nested cooking pots and a frying pan, which is also used as the cover for the cookset.

CHAPTER 2

OPERATING INSTRUCTIONS

Section I. SERVICE UPON RECEIPT OF EQUIPMENT

10. Initial Handling and Inspection

a. NEW STOVE. When a new stove is received, maintenance personnel should inspect it to make sure that all components are properly assembled and correctly adjusted. The assemblies and components should be checked against paragraphs 4, 6, and 7 to be sure they are all present. Whenever practicable, operating personnel should assist in this inspection.

b. USED STOVE. If the stove has been used or has undergone repairs, it should be thoroughly inspected (*a* above) and operated to make sure that it is properly assembled and will burn efficiently.

11. Correction of Deficiencies

Deficiencies disclosed during the initial inspection will be corrected as follows:

a. Correct deficiencies within the scope of organizational maintenance before the stove is used.

b. Refer deficiencies beyond the scope of organizational maintenance to a higher echelon for correction.

c. Bring deficiencies of more serious nature, such as mechanical imperfections or missing components, to the attention of the supplying organization by using DA AGO Form 468, Unsatisfactory Equipment Report.

Section II. OPERATION UNDER USUAL CONDITIONS

12. Setting-Up Procedure

In setting up the gasoline cooking stove, proceed as follows:

a. Snap out the three feet and set the stove on a level surface.

b. Raise the grate arms and turn them outward so that the inner tabs can be engaged in the slots in the burner shield.

- c.* Close the valve by turning the indicating knob to the right (clockwise) to the OFF position.
- d.* Unscrew the pump caps and remove the pump assembly.
- e.* Fill the gasoline tank three-fourths full (7 or 8 ounces). Do not tip the tank while filling.
- f.* Replace pump assembly and tighten caps securely.
- g.* Wipe off any gasoline that may have been spilled during filling.

13. Operating Procedure

After the stove has been set up and fueled, light the stove as follows:

- a.* Pump 10 strokes to build up initial pressure.
- b.* Turn the indicating knob to ON position (extreme left) for 3 seconds. This allows the gasoline to rise through the generator to the burner and preheater cup.
- c.* Turn the indicating knob to OFF position (extreme right) to prevent excess fuel from accumulating in the burner assembly.
- d.* Light the wick in the preheater cup and allow flame to burn for about 3 minutes or until flame turns blue.
- e.* Turn the indicating knob to LIGHT position (vertical). Keep a second match ready to relight burner immediately if flame goes out.
- f.* When flame in burner turns blue, turn indicating knob to ON position (extreme left).
- g.* Pump an additional 10 strokes to maintain operating pressure within the tank. Stove is now ready for use.
- h.* If flame burns unevenly or dies down during operation, turn valve to OFF and ON positions several times, relight quickly, and pump several additional strokes.
- i.* To turn stove off, turn indicating knob to OFF position (extreme right) and allow flame to extinguish itself.

14. Precautions

In using the gasoline cooking stove, take the following precautions:

- a.* Provide adequate ventilation when using the stove in confined quarters. Burning gasoline, particularly leaded fuel, gives off noxious vapors, and any incomplete combustion will cause the formation of odorless, poisonous carbon monoxide gas.

b. Avoid overpumping the stove before lighting. Excess pressure within the tank may cause fuel to leak or to flow too fast through the valve.

c. Avoid spilling gasoline when filling or emptying the gasoline tank. Wipe up all spilled fuel immediately.

d. Do not fill the tank more than three-fourths full. Excess fuel under pressure will cause flame to flare up when lighted.

e. Never fill the tank near an open flame. Keep any reserve supply of gasoline outside the shelter or at least 10 feet away from stove.

f. After using the stove, turn indicating knob to OFF position and release pressure in tank by loosening pump caps. Retighten caps after pressure has been released.

g. Disassemble the stove only for necessary maintenance.

Section III. OPERATION UNDER UNUSUAL CONDITIONS

15. Extreme Cold

In extreme cold weather it may be necessary to preheat stove twice in rapid succession in order for it to properly vaporize and burn the fuel in the burner. Repeat steps *a* through *e* in paragraph 13. It may also be necessary to pump a few additional strokes at periodic intervals in order to maintain operating pressure in the tank. In very cold weather, or when melting snow, the combustion of the fuel may be incomplete producing odorless, poisonous carbon monoxide gas. Adequate ventilation must therefore be provided regardless of outside temperatures.

16. Strong Winds

Shield the gasoline cooking stove from winds that may extinguish the flame or reduce the efficiency of the burner.

17. High Altitude

When using the stove at high altitude, pump fewer strokes to build the initial pressure and to maintain operating pressure within the tank. Since gasoline vaporizes more readily at higher altitudes, the excessive pressure caused by this vaporization in addition to the pumping may flood the burner or produce too high a flame.

CHAPTER 3

MAINTENANCE INSTRUCTIONS

Section I. PREVENTIVE MAINTENANCE

18. Before-Operation Service

Before-operation service consists of those procedures outlined in paragraphs 10 and 12.

19. During-Operation Service

a. If the flame should grow weak or turn yellow, pump additional strokes to increase the pressure in the tank.

b. If flame burns unevenly, turn indicating knob OFF and ON several times, relight quickly, and pump several additional strokes.

c. If a leak occurs, shut off the flame immediately and repair leak. On the spot repair of leaks should be confined to tightening of stuffing-box or replacement of gaskets only. Repairs of all other types should be done by higher echelon.

d. Always use clean gasoline, and provide adequate ventilation.

20. After-Operation Service

a. Clean the burner and tighten all loose connections.

b. Loosen pump caps and release pressure.

c. Lubricate the air pump leather cup with a few drops of light oil.

d. When stove is not going to be used again for an extended period, drain the gasoline tank and clean the stove thoroughly.

Section II. DISASSEMBLY OF COMPONENTS

21. Air Pump Assembly

When preparing to disassemble the air pump for the replacement or servicing of parts, unscrew the pump caps from the gasoline tank and proceed as follows:

a. Unscrew upper pump cap from lower pump cap and pull pump plunger tube from pump barrel.

b. Loosen the screw in the bottom of the pump plunger tube and remove screw, washer, and leather cup.

c. Using the wrench provided with the stove, loosen the air check body from the bottom of pump barrel and remove the air check assembly consisting of the air check body, spring, gasket seat, and gasket.

d. To remove filler gasket from pump barrel, slide off the lower pump cap and pull gasket from its seat beneath the top edge of the pump barrel.

e. To gain access to the spare parts stored within the hollow pump plunger tube, unscrew the plunger grip.

22. Burner and Preheater Cup Assemblies

To remove burner and preheater cup assemblies from the stove, proceed as follows:

a. Remove the three screws holding the burner shield legs to the stove tank, and lift off burner shield.

b. Hold preheater cup firmly and unscrew burner assembly from the top of the generator tube.

c. Unscrew preheater cup from top of valve body.

23. Generator Assembly

After removal of the burner and preheater cup assemblies (par. 22), the generator assembly may be removed and replaced as follows:

a. Lift generator slightly and unhook cleaner rod from its retaining hole in the eccentric block of the valve assembly. Generator may then be lifted off the valve body. To aid in reassembly, notice how the cleaner rod is hooked to the eccentric block.

b. Replace old generator with one of the spare generators. Do not remove cleaner rod from the spare generator, but pull it out only enough to hook into the eccentric block of the valve assembly.

c. If a new generator is not available, additional service may be obtained from an old generator that has been disassembled and cleaned as follows:

(1) Remove cleaner rod.

(2) Unscrew gas tip from generator tube.

(3) Push out the generator screen.

- (4) Unroll the screen and wash in dry-cleaning solvent. Be careful not to damage the screen or alter the size of the screen mesh.
- (5) Reroll screen tightly around the cleaner rod and insert in generator tube.
- (6) Replace the gas tip. Be careful not to damage the needle of the cleaner rod.

24. Valve Assembly

The valve assembly is seal-threaded to the stove tank and should be removed only by experienced personnel with proper tools. After removal of the other assemblies mounted above the valve (pars. 22 and 23), the valve may be removed and disassembled as follows:

a. Remove retaining screw from the indicating knob and slide the knob off the eccentric stem.

b. Unscrew and remove the packing nut from the eccentric stem. Slide the stem packing off the stem.

c. Unscrew the eccentric stem body.

d. Slide the eccentric stem out of the valve body. To aid in reassembly, notice how the cam tip on the eccentric stem fits into the cam slot on the eccentric block inside the valve body.

e. Lift out the eccentric block.

f. Unscrew the valve body from the gas tank, being careful not to damage the threads or tank, and then lift out the lower section of the valve assembly.

g. Unscrew the air and fuel tube from beneath the valve body.

h. Remove the check gasket and lift the fuel needle and spring out of the air and fuel tube.

Section III. TROUBLE SHOOTING

25. Information

The information contained in this section is designed to assist organizational personnel in determining and eliminating the causes of unsatisfactory performance.

26. Chart

The following chart lists various troubles, their possible causes, and suggested remedies. If application of the suggested remedy fails to eliminate the trouble, refer to a higher echelon for correction.

Trouble	Possible cause	Remedy
Yellow flame -----	Clogged gas tip -----	Turn valve OFF-ON several times, relight stove, pump 10 strokes.
	Clogged generator --	Replace generator or clean generator in solvent. In <i>emergency</i> clogged generator can be cleaned by laying it on a flame for 3 minutes.
	Underside of burner plate coated with lead oxide.	Scrape plate with piece of wire or metal, or wipe with cloth.
Flame too large ---	Pressure too high ---	Turn stove OFF, release pressure by loosening pump caps, retighten caps, pump 10 strokes, and relight stove.
	Generator orifice too large.	Replace generator or gas tip.
Flame too small ---	Pressure too low -----	Pump several strokes.
	Clogged gas tip -----	Turn valve OFF-ON several times, relight stove. If necessary, scrape gas tip with knife or wire, being careful not to enlarge hole.
Pump not functioning.	Pump leather cup too hard.	Soften with a light, silicone-base oil or replace.
	Pump leather cup too loose or worn.	Replace.
Leakage around pump.	Faulty gasket -----	Replace gasket.
Leakage around pump plunger tube.	Faulty air check valve.	Replace.

CHAPTER 4

SHIPMENT AND DEMOLITION

27. Shipment

No special preservation or packing processes are required for the shipment of the stove.

28. Demolition

When orders are given by the proper authority for the demolition of the stove to prevent the enemy from using or salvaging it, the stove and all its components will be completely smashed with an ax or sledge.