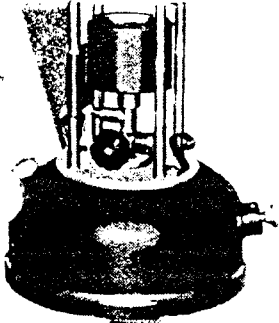
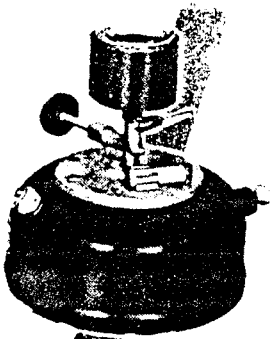


# A Handbook Covering the Operation and Maintenance of


# **Coleman** Military Heating Units



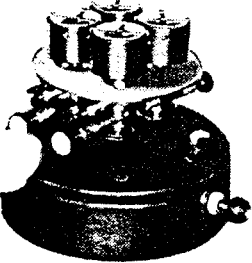
Model  
No. 521  
Single  
5,000  
BTU  
Burner



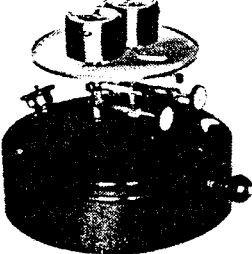
Model  
No. 526  
Same  
as  
No. 521,  
Less  
Grate



Model  
No. 522  
Single  
10,000  
BTU  
Burner



Model No. 524  
Four 10,000 BTU Burners



Model No. 525  
Two 10,000 BTU Burners

General Operating Instructions  
*Pages 5 and 6*

Service and Maintenance  
*Pages 7 to 15 Inc.*

Service Questions and Answers  
*Pages 16 to 18 Inc.*

Numerical Parts List  
*Page 18*

*Manufactured By*

**The Coleman Company, Inc.**

General Office and Factory: WICHITA 1, KANSAS, U. S. A.  
Canadian Office and Factory: Toronto, Canada  
Sales Offices: Philadelphia 8; San Francisco 3; Los Angeles 1;  
Honolulu, Hawaii

F1299 A

Printed in U. S. A.

50¢

COLEMAN MILITARY BURNERS are especially designed for use by the Armed Forces. Every effort has been made to make certain that the units are delivered in perfect operating condition.

This booklet is offered as a guide in the operation and maintenance of Coleman Military Burner equipment. To obtain the most efficient service, operating directions should be carefully followed and this booklet kept for future reference.

If additional copies are required, they will be forwarded promptly upon request.

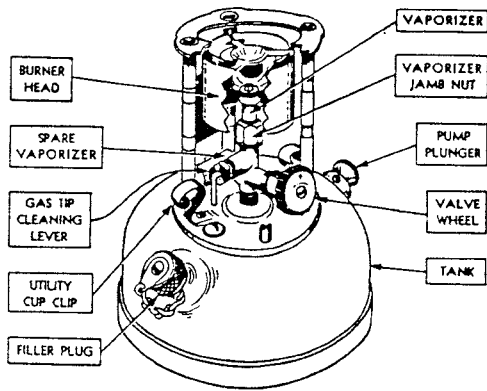
To successfully use a mechanical appliance of any type, it is necessary to understand the basic principles of its operation. Coleman Military Heating units are designed to convert gasoline (motor fuel) to a dry gas which, with the proper mixture of air, will produce a clean, hot flame on the burner.

Conversion of liquid gasoline to a dry gas is accomplished through a vaporizing process. To vaporize gasoline, Coleman Burners first atomize (spray) the gas for instant lighting and then, through application of heat, complete vaporization into a dry gas.

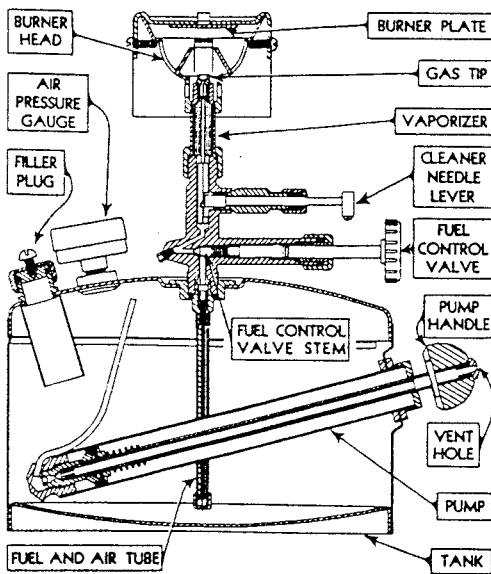
Coleman Military Heating Units are equipped with either 5,000 or 10,000 B.T.U. burners. Several burners are mounted on the same tank to produce units of greater than 10,000 B.T.U. heating capacity.

Models using 5,000 B.T.U. burners  
520-521-523-526

Models using 10,000 B.T.U. burners  
522-524-525

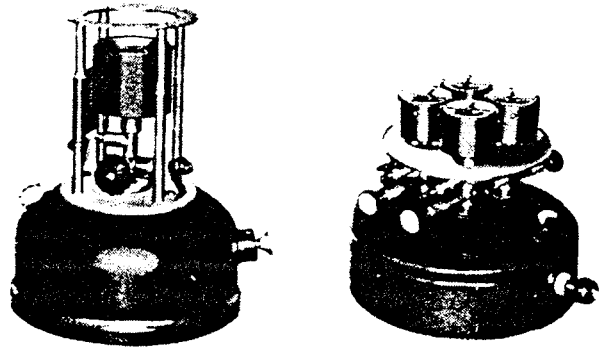


TYPICAL OF 5,000 B.T.U. UNITS  
Models 520, 521, 523, 526



TYPICAL OF 10,000 B.T.U. UNITS  
Models 522, 524, 525

# GENERAL OPERATING INSTRUCTIONS FOR ALL MODELS



## A. TO FILL

Be sure Fuel Valves are tightly closed. Turn the Valve Wheel to the right.

Fill Tank with fresh clean gasoline. We suggest the use of a strainer funnel in filling Tank. For maximum efficiency and vaporizer life, use clean non-leaded gasoline. If non-leaded gas is not available, leaded gas may be used, provided adequate ventilation is provided for when operated in confined space.

Replace Filler Plug Cap and tighten firmly with fingers.

## B. TO PUMP AIR PRESSURE

See that Fuel Valves are closed, then turn Pump Handle to left two turns. Hold thumb or palm of hand over Vent Hole in end of Pump Handle and pump 30 to 35 full strokes of air into the Tank. Turn Pump Handle to right to close. Additional pressure should be added later while burners are generating. Keep Pump Leather soft with a few drops of oil.

## C. TO LIGHT EACH BURNER

1. Clean Gas Tip in Vaporizer by revolving, several times, the Cleaner Needle Lever located above the Valve. Stop Lever in DOWN position.
2. Open Fuel Control Valve a quarter turn to left. After a few seconds apply lighted match at top of Burner Head. In extremely low temperatures allow Burner Head to become moist with gasoline before applying lighted match. 5 to 10 minutes are required for complete generation. Under some conditions flame may blow itself out. Just relight. Flame will soon settle down to steady blue.

Several strokes of the Pump must be added to replace air used in generation.

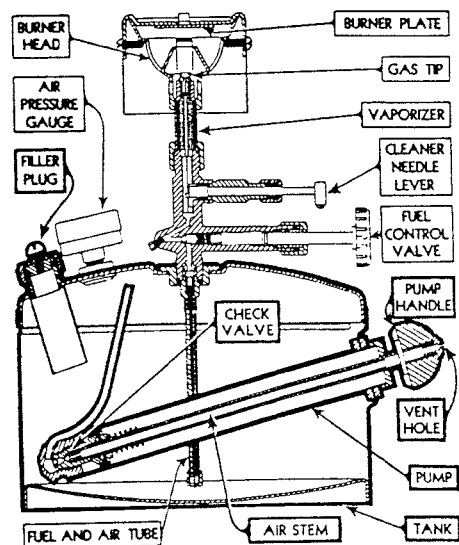
3. After flame burns steady blue for 2 or 3 minutes, open Fuel Control Valve AS FAR AS POSSIBLE.

## D. TO SHUT OFF BURNER

Close Fuel Control Valves.

**NOTE:** An open burner should never be used in a confined space without ventilation, especially when leaded gasoline is used as fuel.

# SERVICE & MAINTENANCE

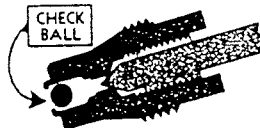


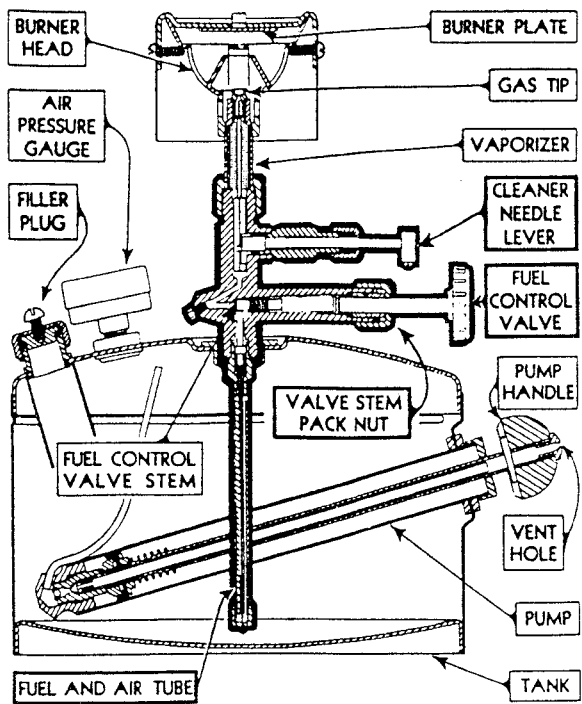
## (1) Fount and Pump Assembly:

**IMPORTANT:** Empty Tank frequently and rinse with fresh gasoline to remove any accumulation of water and dirt.

Examine Filler Plug Gasket at intervals and replace if it is cracked or worn. Pump Plunger should be removed occasionally and a few drops of lubricating oil worked into the Pump Leather to maintain peak efficiency.

If Check Ball Sticks, remove Check Valve and clean or, if necessary, replace with new one. Replace Air Stem and Check Valve, if threads will not hold when Pump is turned to OFF position.

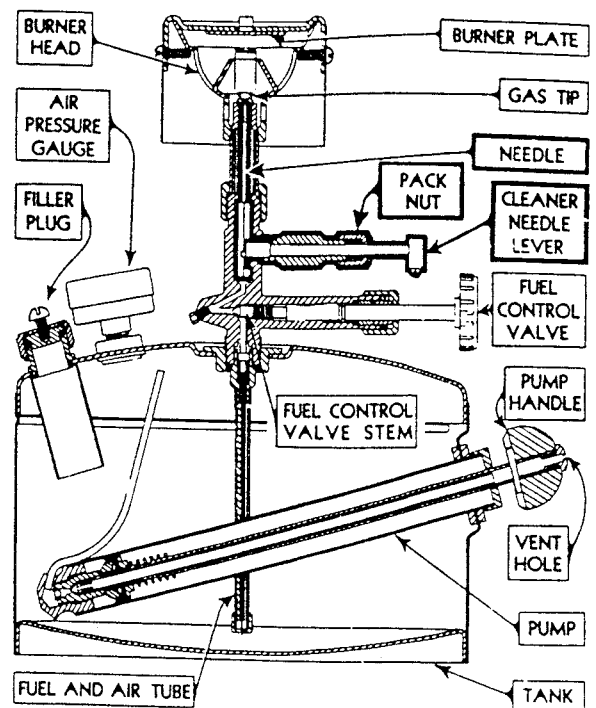




### (2) Fuel Valve:

Valve Stem Packing will usually shrink after appliance has been in use, resulting in a gas leak at the Valve Stem Pack Nut. Tighten Pack Nut a few turns to hold packing firmly in contact with Valve Stem. If Pack Nut is tightened too firmly, the Valve Stem will be difficult to turn. Back Pack Nut off slightly. Replace packing when leak can no longer be stopped by tightening Pack Nut.

- 8 -



### (3) Tip Cleaner Assembly:

This mechanism operates the Tip Cleaning Needle in the Vaporizer. The Tip Cleaning Lever should be revolved several turns before lighting the burner and at frequent intervals during its operation to prevent Vaporizer Tip stoppage. If a leak develops at Pack Nut, tighten Nut a few turns until leak stops. Replace packing if leak cannot be stopped by tightening Pack Nut.

- 9 -

#### (4) Vaporizer Assembly:

When hydro-carbon fuel (gasoline) is vaporized and burned, a residue in the form of carbon is produced from the gum content of the fuel.

If anti-knock compounds are added to gasoline to improve the operating efficiency of motorized equipment, the resulting fuel will, when used in gasoline pressure appliances, form a residue of both carbon and lead in the Vaporizer. It can be readily understood, therefore, that anti-knock compounds added to gasoline containing gum will form varying amounts of residue in direct proportion to the gum content and the amount of anti-knock compounds added.

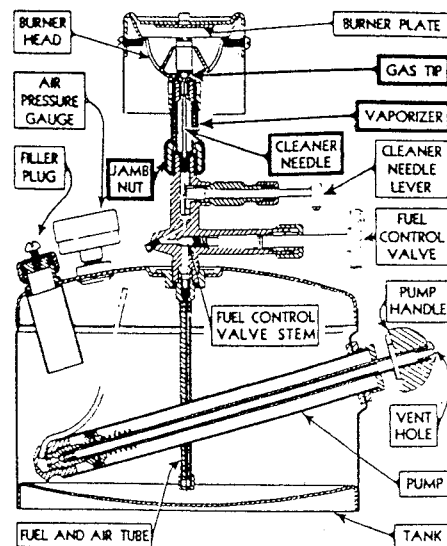
When Burners are kept in continuous operation from fifteen to twenty hours daily, using fuel having a heavy gum content and high percentage of lead, naturally, it will be necessary to clean or replace Vaporizers every two to five days.

Vaporizers on Burners used only a few hours daily will require cleaning or replacement only at intervals of a month to six weeks.

When anti-knock gasoline is used, the average time a Vaporizer can be used without cleaning or replacement is fifty to one hundred hours—depending on gum and lead content of the fuel. The use of Regular (unleaded) gasoline having a normal gum content, will substantially increase vaporizer life.

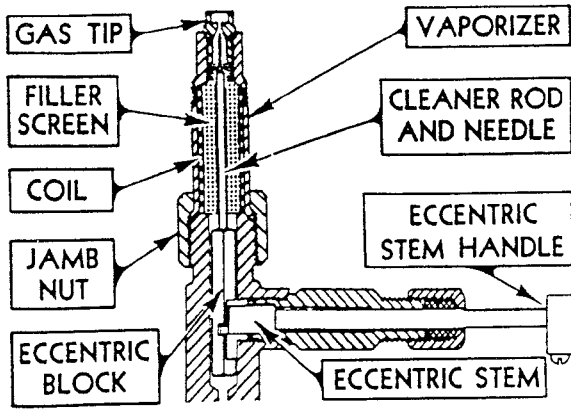
As an accumulation of residue is built up in the Vaporizer Tube, flame strength on the Burner will be noticeably decreased. When an efficient flame

can no longer be maintained, it is usually an indication that the Vaporizer Tube is clogged and requires either cleaning or replacement.



#### TO REMOVE VAPORIZER:

1. Remove Burner Head by unscrewing to the left.
2. Take off Jamb Nut at the base of Vaporizer—hold Valve Body so that it will not be loosened in Tank.
3. Lift Vaporizer Tube straight up with care to avoid damage to Needle Assembly.
4. Unscrew Needle Lock Nut on Models Nos. 520, 521, 523, 526. On Models Nos. 522, 524, 525, the Needle is screwed directly into the Eccentric Block, without Lock Nut.



### TO CLEAN VAPORIZER:

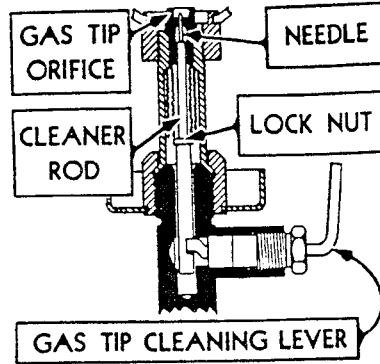
- Remove Filler Screen and scrape all carbon from inside of Vaporizer. Do not force anything through gas tip hole, as this would increase size of opening. If a new Filler Screen is available, insert in Vaporizer Tube; however, old screen may be cleaned and reused if care is taken in unrolling and re-rolling. Screen must be rolled tightly around Cleaner Rod before being put back into Vaporizer to insure proper lighting.

Care must be taken not to damage the needle when re-assembling Vaporizer over the needle.

**NOTE:** Before reinstalling the Vaporizer, test operation of Fuel Valve by opening Valve, one-fourth turn (lighting position), to determine if Valve is unclogged and gasoline sprays freely. If gas does not spray freely, it is an indication that the Valve should be removed and cleaned, or replaced with a new one, if cleaning is not practical.

### TO REPLACE VAPORIZER:

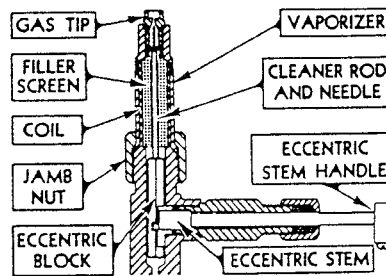
- On Models 520, 521, 523, 526; turn Tip Cleaner Lever up and loosen Lock Nut at base of Cleaner Rod, then unscrew rod to left. The new



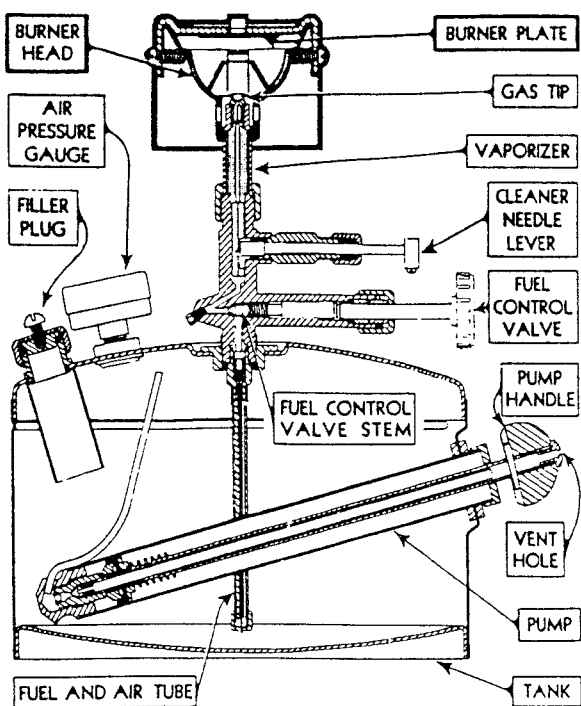
Cleaner Rod and Needle can now be put in and adjusted to the proper length. Be sure and lock in place after adjustment is made by using Lock Nut from old Needle. When Tip Cleaner Lever is turned up, the Needle should

come through the Gas Tip Orifice about 1/32" but should not extend above the top of Gas Tip. Do not try to service a bent or otherwise damaged needle.

- On Models 522, 524, 525, which use the Needle, less Lock Nut, screw the Needle firmly into the



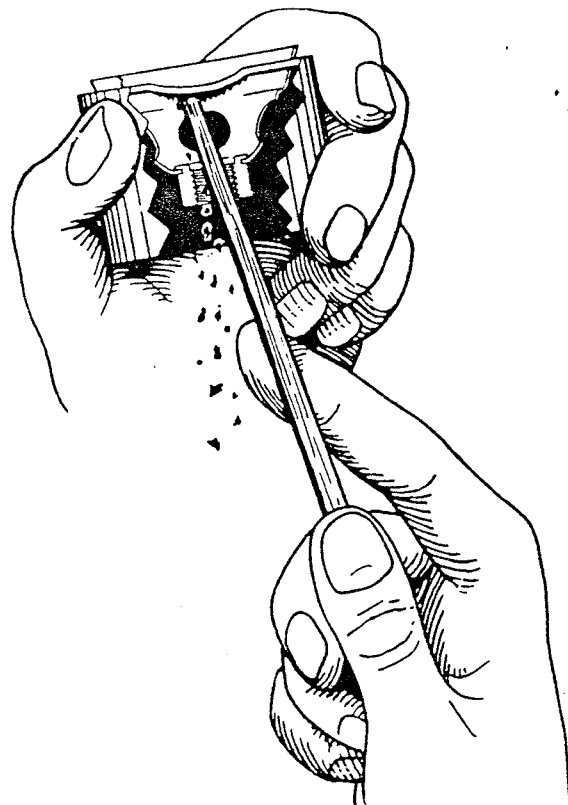
Eccentric Block. Replace Vaporizer Tube and Filler Screen over Needle and tighten firmly on Valve Body with Vaporizer Jamb Nut. Replace Burner Head and tighten firmly on Vaporizer.



### Burner Head:

8. Vaporization of the gas delivered through the Vaporizer Tube is completed when the gas stream strikes the Burner Plate in the center of the Burner Head. When leaded fuel is used, particles of the anti-knock compounds are deposited on the underneath side of Burner Plate. To maintain operating efficiency, this residue must be cleaned frequently, or, every few days. Note: Clean every 15 to 20 hours when fuel having heavy lead content is used.

— 14 —



### TO CLEAN BURNER PLATES:

9. a. Unscrew and remove the Burner Head.
- b. Insert a sharp stick or wire through the hole in the bottom of the Burner Head to clean or scrape carbon accumulation off the underside of the burner plate.
- c. Replace and tighten firmly on the Vaporizer.

IT IS IMPORTANT that the underside of the burner plates be cleaned frequently or every few days. Failure to do this regularly will reduce the efficiency of the burners.

— 15 —



# QUESTIONS & ANSWERS

Q. Pump does not operate properly.

A. (1) Before attempting to apply pressure to the Tank, open Pump Assembly by turning a few turns to the left. Hold thumb or palm of hand over vent hole in end of Pump Plunger.

(2) Pump Leather dried out. Remove Pump Plunger and work lubricating oil into leather, or, replace if leather is worn out.

(3) Check Ball stuck. Remove Check Valve and clean. Replace if Check Ball does not work freely after cleaning.

Q. Will not hold air when Pump Plunger is in OFF position.

A. Threads on Air Stem and Check Valve worn out. Replace.

Q. Leaks around Filler Plug.

A. Filler Plug Gasket damaged or worn out. Replace.

Q. Leak at Valve Stem Pack Nut.

A. Tighten Pack Nut a few turns to hold packing in firm contact with Valve Stem. *Note:* If Pack Nut is drawn up too tightly, Valve will not turn. Back off slightly. Replace packing if leak is not stopped by tightening Pack Nut.

Q. Leak at Pack Nut on Tip Cleaner Assembly.

A. Tighten Pack Nut a few turns to hold packing in firm contact with Valve Stem. *Note:* If Pack Nut is drawn up too tightly, lever will not turn. Back off slightly. Replace packing if leak is not stopped by tightening Pack Nut.

Q. Tip Cleaner Lever will not turn.

A. Continuous use of fuel having a high gum and anti-knock compound content will cause an accumulation of carbon on Eccentric Block, causing it to "freeze" in the valve assembly. Models Nos. 522, 524, 525, have an easily removable Eccentric Block and Tip Cleaning mechanism. Remove and clean, or, if necessary replace.

Q. Tip Cleaning Needle does not work.

A. (1) Needle broken off. Replace.

(2) Tip Cleaning mechanism worn out. Replace.

(3) Needle loose in Eccentric Block. Tighten.

Q. Burner will not light.

A. (1) Out of fuel.

(2) Not enough pressure in Tank.

(3) Vaporizer Tip clogged. Revolve Tip Cleaner Lever several turns. Be sure Cleaning Lever is in DOWN position when lighting burner.

(4) Vaporizer clogged. Clean or replace.

(5) If burner does not light after checking above suggestions, the valve complete should be removed and inspected. Clean tip on end of Fuel and Air Wire. Replace Valve if gum has clogged Valve Body.

Q. Burner burns but produces "red, lazy" flame.

A. (1) Tank pressure too low. Pump several additional strokes.

(2) Vaporizer Needle bent. Replace.

(3) Vaporizer almost clogged. Clean as above, or replace.

- (4) Burner Plate corroded. Unscrew and remove Burner Head. Insert a sharp stick or wire through the hole in the bottom of Burner Head to clean or scrape carbon accumulation off the underside of the Burner Plate. Replace and tighten firmly on the Vaporizer.

IT IS IMPORTANT that the underside of the burner plates be cleaned frequently or every few days. Failure to do this regularly will reduce the efficiency of the burners.

- (5) Burner loose on Vaporizer. Tighten.

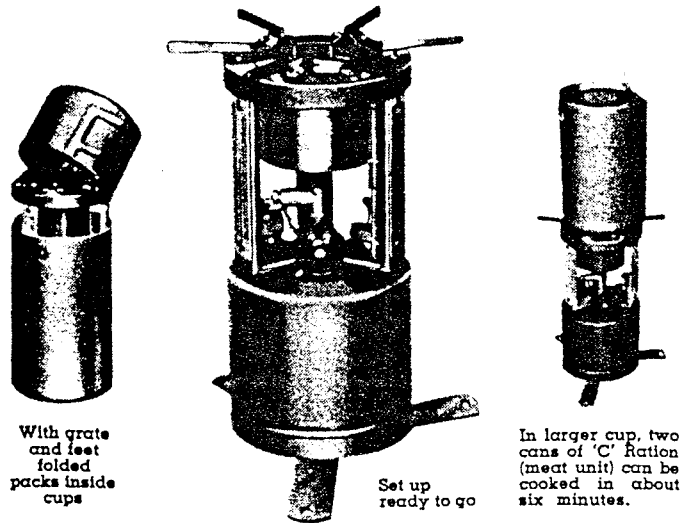
Q. Burner backfires or burns with red flashes.

- A. (1) Burner loose on Vaporizer. Tighten.  
(2) Burner Plate corroded. Clean as above.

**NUMERICAL LIST OF SPARE PARTS MOST FREQUENTLY USED IN THE MAINTENANCE AND REPAIR OF MILITARY HEATING UNITS**

Part. No.	Description	Model Nos. on Which Used
104-136	Filler Plug Gasket.....	523
118B136	Filler Plug Gasket.....	520, 522
118B620	Packing.....	520, 521, 523, 526
216-509	Pump Leather.....	520, 521, 522, 523, 525, 526
216-532	Pump Air Stem.....	523
216-538	Check Valve Assembly.....	522, 523, 524, 525
216-620	Eccentric Stem Packing.....	522, 524, 525
242B532	Pump Air Stem.....	521, 526
242B538	Check Valve Assembly.....	520, 521, 526
390-532	Pump Air Stem.....	524, 525
451-140	Filler Plug.....	522-375S (American Sterilizer)
451-509	Pump Leather.....	522-375S (American Sterilizer)
451-522	Pump.....	522-375S (American Sterilizer)
520-140	Filler Plug.....	521, 526
520-259	Filler Screen.....	520, 521, 523, 526
520-299	Vaporizer.....	520, 521, 523, 526
520-375S	Burner Head.....	520, 521, 523, 526
520-657	Fuel Valve Complete.....	520, 521, 523
520-950	Wrench.....	520, 521, 523, 526
522-140	Filler Plug.....	522
522-251	Cleaner Rod and Needle.....	522, 524, 525
522-260	Coil and Screen.....	522, 524, 525
522-299	Vaporizer.....	522, 524, 525
522-373S	Burner Head Complete.....	522, 524, 525 (American Sterilizer)
522-532	Pump Air Stem.....	522
522-657	Fuel Valve Complete.....	522, 524, 525
522-950	Wrench.....	522, 524, 525
523-140	Filler Plug.....	523
524-520	Pump Plunger.....	524, 525
575-125	Air Pressure Gauge.....	522, 524, 525
603-136	Filler Plug Gasket.....	521, 526
650-136	Filler Plug Gasket.....	524, 525
650-140	Filler Plug.....	524, 525
701-220	Valve Stem Packing.....	522, 524, 526

# Coleman Military Heating Units

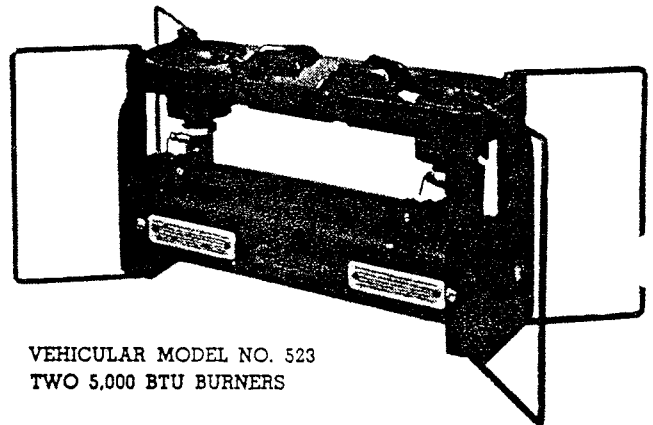


With grate and feet folded packs inside cups

Set up ready to go

In larger cup, two cans of 'C' Ration (meat unit) can be cooked in about six minutes.

MODEL NO. 520 WITH ACCESSORIES  
SINGLE 5,000 BTU BURNER



VEHICULAR MODEL NO. 523  
TWO 5,000 BTU BURNERS