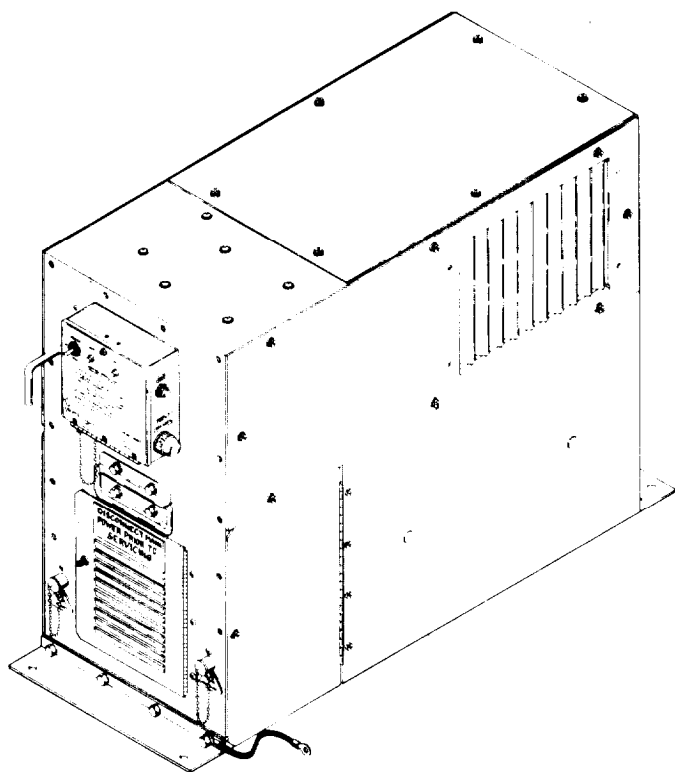


OPERATOR'S, UNIT, AND INTERMEDIATE MAINTENANCE MANUAL



**HEATER, SPACE, MULTIFUEL
WITH BLOWER, 60,000 BTU/HR, 120 V
UH-68G
(4520-01-203-4410)**

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HEADQUARTERS, DEPARTMENT OF THE ARMY

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TECHNICAL MANUAL

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HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 4 November 1986

Operator's, Unit, and Intermediate Maintenance Manual
HEATER, SPACE, MULTIFUEL WITH BLOWER
60,000 BTU/HR, 120 V, MODELS UH-68G AND UH-68G1
(4520-01-203-4410)
(4520-01-297-6803)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in back of this manual direct to: Commander, U.S. Army Troop Support Command, Attention: AMSTR-MCTS, 4300 Goodfellow Boulevard, St. Louis, Missouri 63120-1798. A reply will be furnished to you.

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CHAPTER 1 INTRODUCTION

Section I. GENERAL INFORMATION

1-1. SCOPE

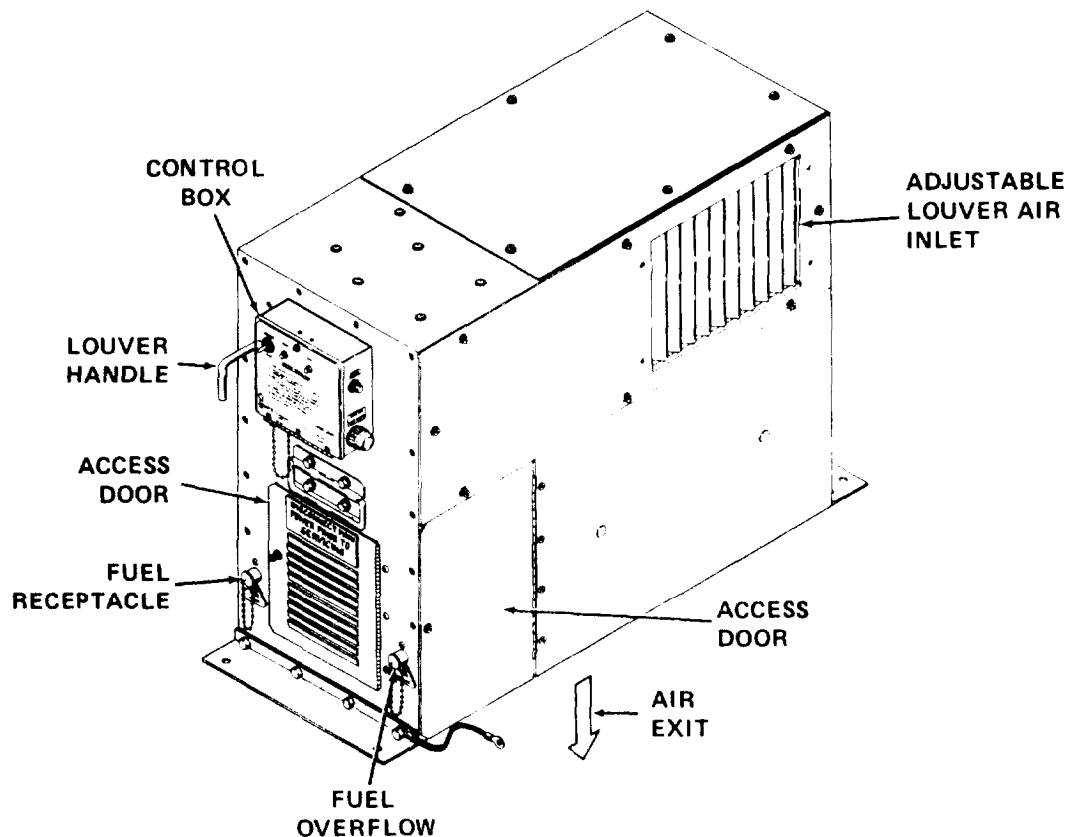
Type of Manual: Operator's, Unit, and Intermediate Maintenance Manual.

Model Number and Equipment Name: Model UH-68G and Model UH-68G1 Heater, Space, Multi-fuel With Blower, 60,000 Btu/Hour, 120 Volt, manufactured by Hunter Manufacturing Company, Cleveland, Ohio 44139.

Purpose of Equipment: Circulates heated air in enclosed spaces to maintain temperature within desired range. Designed to provide safe heating for both equipment and personnel.

1-2. MAINTENANCE FORMS AND RECORDS

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA Pam 738-750, The Army Maintenance Management System (TAMMS).



MODEL UH-68G AND UH-68G1 SPACE HEATER

1-3. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR'S)

If your space heater needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Put it on an SF 368 (Quality Deficiency Report). Mail it to us at Commander, Headquarters, U.S. Army Troop Support Command, Attention: AMSTR-QX, 4300 Goodfellow Boulevard, St. Louis, Missouri 63120-1798. We will send you a reply.

1-4. DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

Command decisions, according to tactical situation, will determine when destruction of the space heater will be accomplished. A destruction plan will be prepared by the using organization, unless one has been prepared by higher authority. For general destruction procedures for this equipment, refer to TM 750-244-3, Procedures for Destruction of Equipment to Prevent Enemy Use.

1-5. PREPARATION FOR STORAGE OR SHIPMENT

Contact unit maintenance for preparation for storage or shipment. Refer to paragraphs 3-20 through 3-22.

1-6. NOMENCLATURE CROSS-REFERENCE LIST

For precise identification, simplified nomenclature has been established for clarity and is shown in the nomenclature cross-reference list.

NOMENCLATURE CROSS-REFERENCE LIST

This listing includes nomenclature cross-references used in this manual.

Common NameOfficial Nomenclature

Space heater

Heater, Space, Multifuel With Blower, 60,000 BTU/HR,
120 V

Section II. EQUIPMENT DESCRIPTION AND DATA**1-7. PURPOSE OF HEATER**

Model UH-68G and UH-68G1 space heaters burn gasoline or diesel fuel to generate heated air. Fuel is pumped from a remote source by an external fuel pump, forced through a spray nozzle, ignited, and burned in the combustion chamber of a heat exchanger. A fan blows air across the heat exchanger and into the space to be heated. Temperature is controlled by a room thermostat. Model UH-68G and UH-68G1 have the following applications:

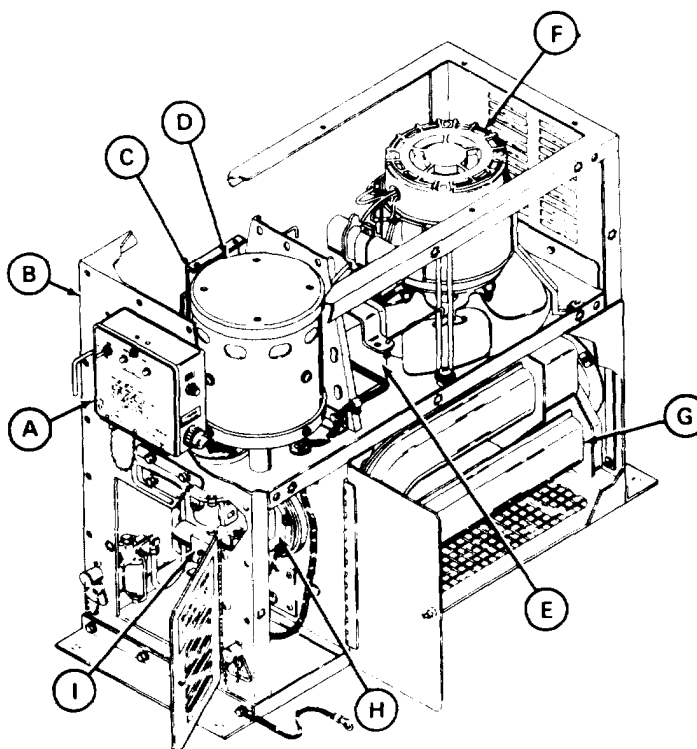
- To heat rooms, maintenance buildings, storage facilities, shop, maintenance and communication vans.
- To supply forced fresh air ventilation without heating.

1-8. CAPABILITIES AND FEATURES

- Multifuel capability.
- Variable temperature range.
- Variable mounting attitude capability.
- Remote room thermostat control.
- Automatic shutdown to prevent overheating.

1-9. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

- (A) CONTROL BOX. Provides controls for operating heater or fan, reset buttons, and indicator lights.
- (B) HEATER CASE ASSEMBLY. Houses components of space heater.
- (C) PC BOARD CONTROL. Monitors and controls all functions of the space heater.
- (D) COMBUSTION BLOWER. Provides combustion air to burner of heat exchanger assembly.
- (E) IGNITION TRANSFORMER. Provides current for the igniter.
- (F) VENTILATING MOTOR ASSEMBLY. Blows fresh air across heat exchanger.
- (G) HEAT EXCHANGER. Fuel burns inside heat exchanger. Air flows over exterior of heat exchanger and is heated. Heated air is blown out of heat exchanger.
- (H) BURNER HEAD. Generates air-fuel mixture which burns inside heat exchanger.
- (I) CARBURETOR. Delivers controlled amount of fuel to burner head.



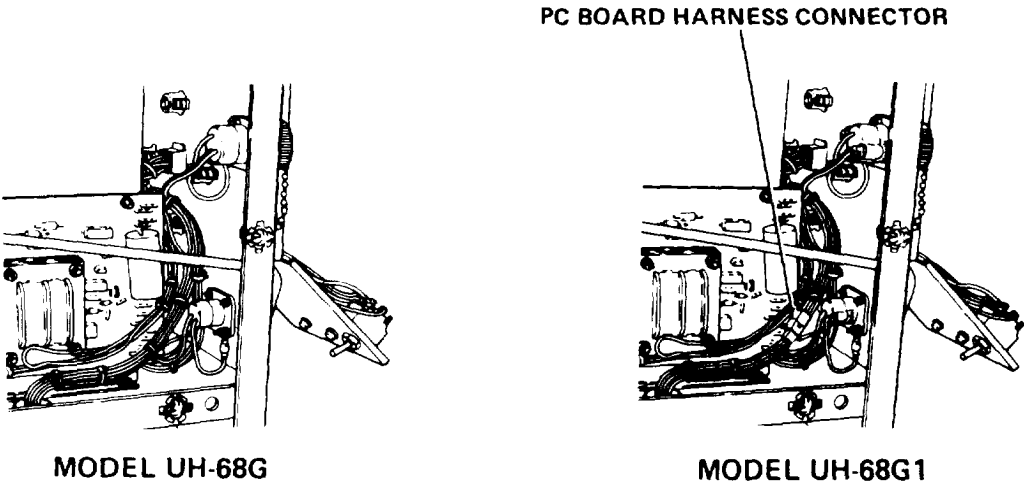
COMPONENTS OF UH-68G AND UH-68G1 SPACE HEATER

1-10. EQUIPMENT DATA

Manufacturer	Hunter Manufacturing Company
Model numbers	UH-68G and UH-68G1
Voltage	120 V ac
Cycles	50 to 60 Hz
Current draw	7.0 amp
Heating rate	60,000 Btu/hr
Air delivery rate	675 cfm (0.319 cu m/s) - 50 Hz 575 cfm (0.271 cu m/s) - 60 Hz
Fuel	Gasoline (up to 100-octane grade) Diesel fuel, VV-F-800, Class DF-1, DF-2, or DF-A
Overall dimensions and weight	
Height	21.187 in. (53.815 cm)
Width	10.875 in. (27.623 cm)
Depth	24.125 in. (61.278 cm)
Weight	120 lb (54.43 kg)

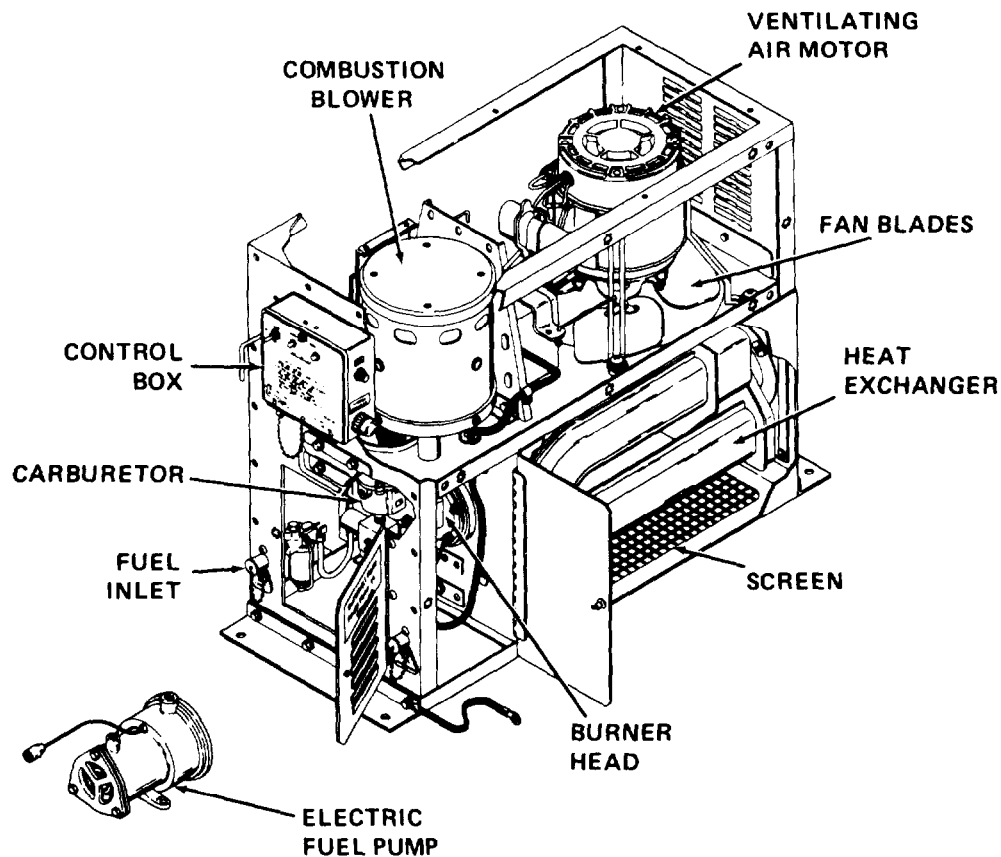
1-10.1 DIFFERENCES BETWEEN MODELS

Model UH-68G and UH-68G1 do not differ with regard to purpose, capabilities, features, or location and description of major components. Model UH-68G1 has a receptacle and plug connector added to the printed circuit (PC) board wiring harness. Model UH-68G has no connector in the harness. The receptacle and plug connector reduces the time and effort needed to replace the PC board assembly. If the PC board assembly must be replaced in a Model UH-68G space heater, a Model UH-68G1 printed circuit board assembly may be used. Electrical receptacles for power, external fuel pump, and room thermostat, located on the control box and heater case assembly, are soldered and potted connectors for the Model UH-68G. Electrical receptacles for the Model UH-68G1 are soldered and sealed with a grommet, ferrule, and endbell.



Section III. TECHNICAL PRINCIPLES OF OPERATION

1-11. HEATER OPERATING PRINCIPLES



CONTROL BOX - contains controls and indicators. One control sets in motion a sequence of events which causes startup and operation of the heater.

CARBURETOR - controls flow of fuel to burner head.

COMBUSTION BLOWER - provides air to mix with fuel for combustion.

HEAT EXCHANGER - provides chamber where fuel is burned and heat generated. Combustion fumes are exhausted outside enclosure being heated.

VENTILATING AIR MOTOR - rotates fan blades and directs stream of air across heat exchanger and through screen. Continues operation after heater is turned off at control box until heater has cooled. Can be used to circulate unheated air.

ELECTRIC FUEL PUMP - not mounted on heater. Pumps fuel from remote supply to fuel inlet.

1-12. ELECTRICAL SEQUENCE OF OPERATION

FUNCTIONS. The heater has five functions: (1) START, (2) RUN, (3) PURGE, (4) FAULT, and (5) FAN.

START. With the heater connected to a 120 volt power source, potential is applied through circuit breaker CB1, the line side of HEATER-OFF-FAN switch S1, and flame switch FS1. Circuit breaker CB1 protects the heater circuitry from direct shorts or overloads.

RUN. When HEATER-OFF-FAN switch is turned to the HEAT position, three parallel circuits are closed. One circuit powers white HEAT light DS2. One circuit powers carburetor heater HR1 through carburetor thermostat-S2. This circuit is completed when the temperature is below 400° F. The third circuit sends power through connector J2 to the room thermostat. When the thermostat contacts are closed, calling for heat, power passes back through connector J2 to circuit breaker CB2. When pressed, circuit breaker CB2 allows current to flow to three circuits necessary for combustion: air, ignition, and fuel.

COMBUSTION. Combustion blower B2 supplies air needed for burning fuel. Combustion blower B2 is electrically suppressed by two feed-through capacitors C1 and C2. Combustion blower B2 also incorporates normally closed thermal overload switch S5.

IGNITION. Ignition transformer T1 supplies the spark necessary to ignite the fuel for burning. Transformer T1 increases the applied 120 volts to 6000 volts across igniter plug E1, which is much like an automobile spark plug.

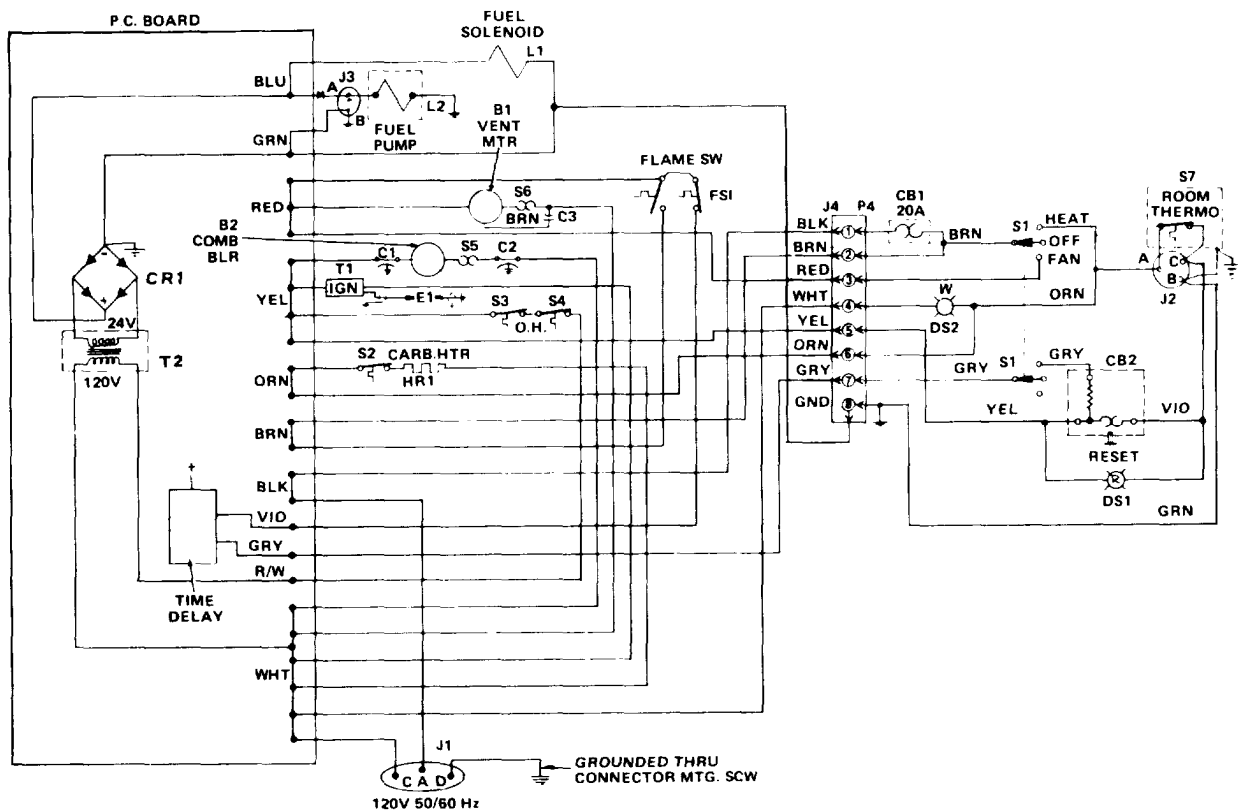
FUEL. The power from circuit breaker CB2 passes through two overhear switches S3 and S4 before going to stepdown transformer T2 which decreases 120 volts to 24 volts. The 24 volts alternating current is converted to 24 volts direct current by bridge rectifier CR1. The 24 volts direct current powers fuel solenoid L1 and fuel pump L2, used to supply fuel for combustion.

HEAT. If all three items (spark, fuel, and combustion air) are present in their proper amounts, combustion takes place in the heat exchanger, producing heat. If heat is sensed by flame switch FS1 within a preset time after main HEATER-OFF-FAN switch S1 is closed, the heater will continue to operate and ventilating air motor B1 will operate.

FLAME SWITCH. Flame switch (FS1) is a normally open (NO), normally closed (NC) thermal switch. The NC contacts complete the circuit for the time delay through the windings of the vent motor (B1). When the heat exchanger reaches approximately 125°F the FS1 contacts reverse. The FS1 reversing action opens the circuit to the time delay and activates the B1 motor to circulate warm air.

PURGE. When the contacts of room thermostat S7 are opened or HEATER-OFF-FAN switch S1 is turned to the OFF position when the heater is hot, the unit will go into its purge cycle. Potential is applied through circuit breaker CB1 to the normally open contacts of flame switch FS1, now closed because of the hot heat exchanger, to ventilating air motor B1. Ventilating air motor B1 will stay in the circuit until the heat exchanger cools enough to allow the contacts of flame switch FS1 to open.

FAN. When HEATER-OFF-FAN switch S1 is placed in the FAN position, ventilating air motor B1 will be started with the aid of start capacitor C3. Capacitor C3 is disconnected by the RPM increase of ventilating air motor B1. Ventilating air motor B1 is protected by overload switch S6, connected to the windings.



MODEL UH-68G