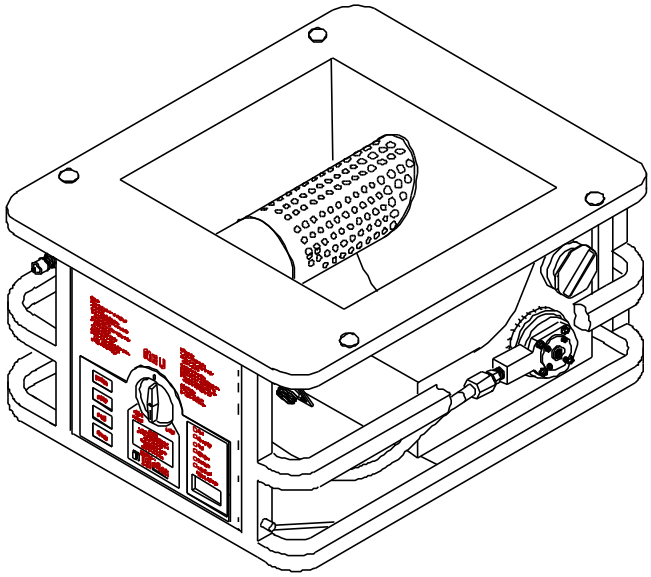
TECHNICAL MANUAL

OPERATOR' S, UNIT AND DIRECT SUPPORT MAINTENANCE MANUAL INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST FOR MODERN BURNER UNIT NSN 7310-01-452-8137



HEADQUARTERS, DEPARTMENT OF THE ARMY
31 MAY 2000

WARNING!
Fire

Do not attempt to connect a fuel line to the MBU in the vicinity of any open flame. Ensure that the fuel hose connections are made properly to avoid fuel spillage. Prevent a possible fire hazard by having rags on hand to absorb any spillage.

WARNING!
Electric Shock

HIGH VOLTAGE is used in the operation of this equipment. **DEATH ON CONTACT** may result if personnel fail to observe safety precautions

Never work on electrical equipment unless there is at least one other person nearby who is familiar with the operation and hazards of the equipment. That person should also be competent in giving first aid. Ask maintenance personnel about any hazardous features of the MBU prior to doing any maintenance.

Whenever possible, external power must be shut off before performing any maintenance. Be careful not to contact high-voltage connections when removing, installing or operating this equipment.

Whenever possible, keep one hand away from the equipment to reduce the hazard of current flowing through vital organs of the body. Voltages as low as 50 volts may cause death.

For artificial respiration, refer to FM 21-11.

Do not stand in water while handling live power cords or electrical shock may result. Position all power cables so that they are out of the way during operation and are not lying in water.

WARNING!
Carbon Monoxide

During operation, the MBU produces harmful carbon monoxide (CO) and other gases. Carbon monoxide is a colorless, odorless, and tasteless gas. Mild cases of carbon monoxide poisoning can cause symptoms such as nausea, dizziness or headaches. Severe cases of carbon monoxide poisoning can result in brain damage, heart damage or death. Remember that although CO has no telltale odor, it may mix with other odors which mask its presence; therefore, CO can be present within a mix of seemingly harmless odors.

To prevent CO poisoning, ensure that the MBU operating space is well ventilated during burner operation. Under no circumstances, should a field kitchen be operated with all tent vents closed.

WARNING!
Hot Surfaces

Do not attempt service procedures on a burner that has recently been in operation. Let the burner cool down before performing these procedures to avoid the possibility of serious burns.

WARNING!
DO NOT USE GASOLINE!

Gasoline should **NOT** be used with the MBU under any circumstance. **Only JP-8 or an approved alternate diesel fuel may be used.** Using gasoline in the MBU will create a fire danger and potential for explosion.

WARNING!
Two Person Lift

The MBU weighs approximately 58 pounds fully fueled (26.3 kg). Two persons must carry the MBU, lifting with legs, not back, to prevent injury.

WARNING!
Two Person Lift

The Battery Pack weighs approximately 80 pounds (36.3 kg). Two persons must carry the Battery Pack, lifting with legs, not back, to prevent injury.

LIST OF EFFECTIVE PAGES/WORK PACKAGES

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Original ….0…31 May 2000

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TM 10-7310-281-13&P

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 31 MAY 2000

TECHNICAL MANUAL

OPERATOR' S, UNIT, AND DIRECT SUPPORT MAINTENANCE MANUAL
INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST
FOR

MODERN BURNER UNIT (MBU)

NSN 7310-01-452-8137

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 together with DA Form 2028 (Recommended Changes to Publications and Blank Forms), located in the back of this manual, directly to: Commander, U.S. Army Soldier and Biological Chemical Command, ATTN: AMSSB-RIM-E(N), Kansas Street, Natick, MA 01760-5052. You may also send in your recommended changes via electronic mail directly to <amssb-rim-e@natick.army.mil> A reply will be furnished to you. Instructions for sending an electronic 2028 may be found at the back of this manual immediately preceding the hard copy 2028.

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CHAPTER 2 - OPERATOR INSTRUCTIONS

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CHAPTER 6 - SUPPORTING INFORMATION

HOW TO USE THIS MANUAL

This Manual contains General Information, Operating Instructions, Operator Preventive Maintenance Checks and Services (PCMS), Troubleshooting, and Maintenance/Repair instructions for the Modern Burner Unit (MBU).

Chapter 1 contains introductory information on the MBU and its associated equipment as well as Theory of Operation. Chapter 2 includes operating instructions under usual and unusual conditions. Chapter 3 contents include operator troubleshooting, PMCS, and service procedures. Chapter 4 contains Unit Maintenance instructions. Direct Support maintenance information can be found in Chapter 5. Chapter 6 contains references and other supporting information. Chapter 6 also includes the Repair Parts and Special Tools List (RPSTL) which identifies those parts or tools which are unique to the operation and maintenance of this equipment.

Manual Organization and Page Numbering System. The Manual is divided into six major chapters that detail the topics mentioned above. Within each chapter are work packages covering a wide range of topics. Each work package is numbered sequentially starting at page 1. The work package has its own page numbering scheme and is independent of the page numbering used by other work packages. Each page of a work package has a page number of the form XXXX YY-ZZ where XXXX is the work package number (e.g. 0010 is work package 10) and YY is the revision number for that work package and ZZ represents the number of the page within that work package. A page number such as 0010 00-1/2 blank means that page 1 contains information but page 2 of that work package has been intentionally left blank.

Finding Information. The Table of Contents permits the reader to find information in the manual quickly. The reader should start here first when looking for a specific topic. The Table of Contents lists the topics contained within each chapter and the Work Package Sequence Number where it can be found.

Example: If the reader were looking for instructions on " Replacing the Flame Sensor" , which is a Unit Maintenance topic, the Table of Contents indicates that Unit Maintenance information can be found in Chapter 4. Scanning down the listings for Chapter 4, " Replacing the Flame Sensor" information can be found in WP 0023 00 (Work Package 23).

An Alphabetical Index can be found at the back of the Manual, and lists specific topics with the corresponding work package.

CHAPTER 1

INTRODUCTION
OF
MODERN BURNER UNIT

MODERN BURNER UNIT (MBU) **0001 00**
GENERAL INFORMATION

SCOPE (Refer to Figure 1-1).

This Technical Manual contains instructions for the operation as well as preventive and corrective maintenance for the Modern Burner Unit (MBU) **(1)** and its associated equipment consisting of a Power Converter **(2)**, Battery Pack **(3)**, 110Vac extension cord **(4)**, 24Vdc Extension Cables **(5)**, NATO Adapter Cable **(6)**, Fuel Can Adapter **(7)**, Fuel Hose **(8)** and Branch Cables **(9)**. The MBU is fielded as a replacement for the M2A Burner and is a safe, versatile heat source for the Army' s field feeding systems.

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

Model Number and Equipment Name: Modern Burner Unit (MBU).

Purpose of Equipment: The MBU is the primary heat source for the kitchen and sanitation equipment found within all Army field feeding systems.

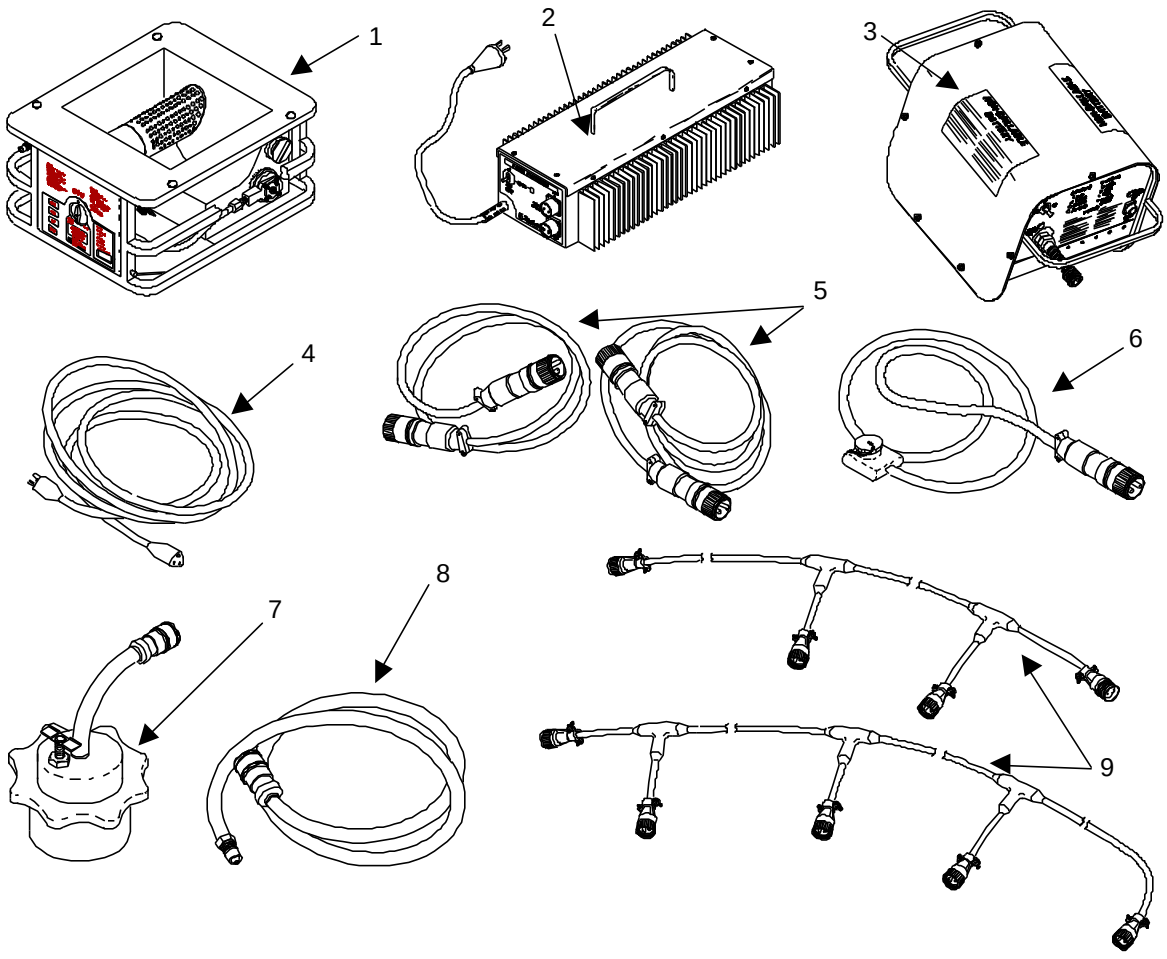


Figure 1-1 Modern Burner Unit and Associated Equipment

MAINTENANCE FORMS RECORDS AND REPORTS.

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

REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIRs).

If your MBU 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 SF368 Product Quality Deficiency Report . Mail it to: Commander U.S. Army Soldier and Biological Chemical Command; ATTN: AMSSB-RIM-E(N), Kansas St. Natick MA 01760-5052. We will send you a reply.

CORROSION PREVENTION AND CONTROL (CPC).

Corrosion Prevention and Control (CPC) of Army materiel is a continuing concern. It is important that any corrosion problems with this item be reported so that the problem can be corrected and improvements can be made to prevent the problem in future items.

While corrosion is typically associated with rusting of metals, it can also include deterioration of other materials, such as rubber or plastic. Unusual cracking, softening, swelling or breaking of these materials may be a corrosion problem.

If a corrosion problem is identified, it can be reported using SF 368, Product Quality Deficiency Report. Use of key words such as corrosion, rust, deterioration or cracking will ensure that the information is identified as a CPC problem. This form should be submitted to the address specified in DA Pam 738-750.

DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE.
For procedures to destroy this equipment to prevent its use by the enemy, refer to TM 750-244-2, Procedures for Destruction of Material to Prevent Enemy Use.

NOMENCLATURE CROSS-REFERENCE LIST.

Common Name	**Official Name**
Burner	Modern Burner Unit

LIST OF ABBREVIATIONS/ACRONYMS .

AAL	Additional Authorization List	lt	Liter
Bll	Basic Issue Item	MBU	Modern Burner Unit
COEI	Component of end item	MFK	Modular Field Kitchen
CPC	Corrosion Prevention Control	MKT	Mobile Kitchen Trailer
cm	Centimeter	MSDS	Material Safety Data Sheet
^{0}C	Degrees Celsius	MTOE	Modified Table of Org and Equipment
^{0}F	Degrees Fahrenheit	NBC	Nuclear, Biological, Chemical
ElR	Equipment Improvement Recommend	POL	Petroleum, Oil and Lubricant
FSC	Food Sanitation Center	ppm	Parts Per Million
gal	Gallons	RPSTL	Repair Parts and Special Tools List
hr	Hour	TMDE	Test, Measurement, Diagnostic Equipment
Hz	Hertz	TOE	Table of Organization and Equipment
IAW	In Accordance With	U/M	Unit of Measure
in	Inches	UOC	Usable On Code
KCLFF	Kitchen, Company Level, Field Feeding	V AC	Volts, Alternating Current
Kg	Kilogram	V DC	Volts, Direct Current
kW	Kilowatt	WP	Work Package
lbs.	Pounds		

SAFETY, CARE AND HANDLING, WARNINGS, CAUTIONS AND NOTES.

Always pay attention to Warnings, Cautions and Notes appearing throughout the manual. They will appear prior to applicable procedures. Ensure you read and understand their content to prevent serious injury to yourself and others, or damage to equipment.

EQUIPMENT CHARACTERISTICS, CAPABILITIES AND FEATURES.

The MBU features modular construction that allows for easy replacement of malfunctioning components. Its external dimensions are similar to the M2A Burner which it replaces. It can be installed into and used with the same kitchen and sanitation equipment as the M2A. The MBU features automated ignition and uses JP-8 or alternate approved diesel fuel.

Characteristics

X Same dimensions as M2A
X Lightweight construction
X Modular assembly
X Infra-red burner

Capabilities

X Generates 18,000 to 60,000 BTU/Hr
X Operation in –25^{0}F (-32^{0}C) to 125^{0}F (52^{0}C)
X Operation in remote location
X Operates approximately 4 hours on full tank of fuel

MODERN BURNER UNIT (MBU) **0001 00**
GENERAL INFORMATION

Features

X Powered ignition
X Fully Adjustable Burner Temperature
X Powered refueling
X Fault Detection and Fuel Level indicators

END OF WORK PACKAGE

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Refer to Figure 1-2)

Frame - The 3/4 inch square aluminum stock frame **(1)** includes lifting handles **(2)**, and base plate **(3)**.

Reflective Heat Shield and High Temperature Insulation - The stainless steel reflective heat shield **(4)** directs radiant heat upward, secures the insulation **(5)** in the burner well **(6)**, and contains food spills during MBU operation. The insulation protects components of the MBU from combustion heat.

Infrared Burner Assembly. - The infrared burner assembly **(7)** projects through the burner well **(6)**, the high temperature insulation **(5)** and the reflective heat shield **(4)**.

Fuel Delivery Block Assembly. – The Fuel Delivery Block assembly **(8)** controls the fuel/air mixture which is provided to the burner tube assembly.

Control Panel. - The hinged control panel **(9)** opens for access to subassemblies. The control panel includes four pushbutton controls, six indicators, and an hour meter.

Power Receptacle. - The power receptacle **(10)** is mounted at an angle to facilitate easy connection of the 24 V DC branch cable.

Fuel Tank. - The two gallon fuel tank **(11)** is welded to the frame **(1)** and contains fuel for combustion. A vent valve assembly **(12)** monitors fuel level. The fuel regulator **(13)** maintains zero pressure fuel for delivery to the fuel nozzle during operation and contains a replaceable fuel filter **(14)**. The fuel tank has a threaded plug **(15)** for manually filling the fuel tank when the MBU is removed from the appliance.

Fuel Supply QD Nipple. – The Fuel Supply QD Nipple **(16)** facilitates the connection off the fuel line, and the flow of fuel into and out of the tank. It is also used when draining the tank of fuel.

Air Compressor. - The air compressor **(17)**, draws air through the air intake filter**,** which is part of the fuel delivery block assembly **(8)**. The compressor also draws fuel through the QD nipple **(16)** during refueling.

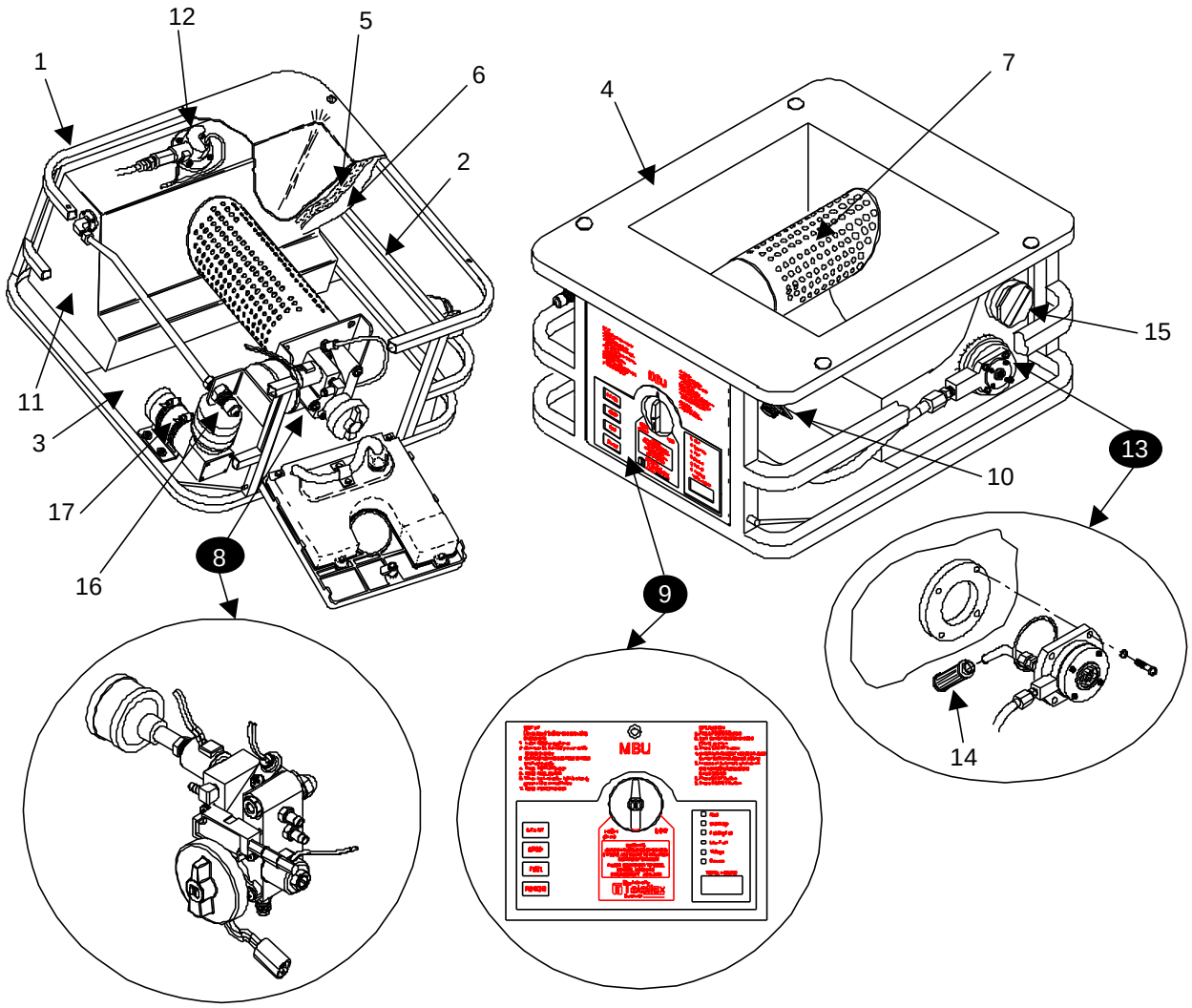
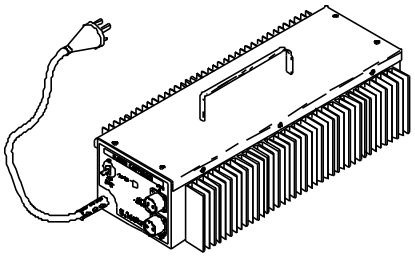


Figure 1-2 Modern Burner Unit Location and Description of Major Components

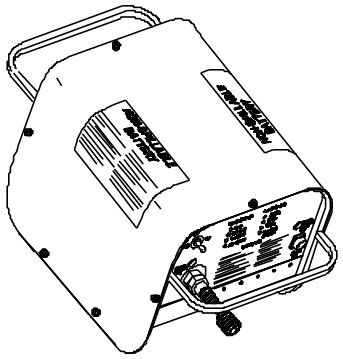
DESCRIPTION OF SYSTEM COMPONENTS

The associated components of the MBU are illustrated and described below:

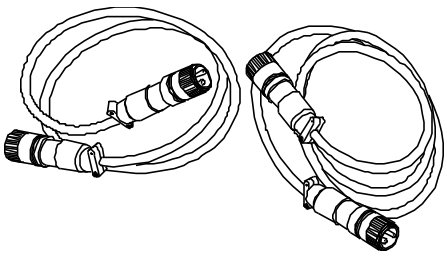
Power Converter. Converts 120 V AC ± 4% to 24 V DC. Four MBUs can be powered through each of two output connectors. Refer to the appropriate power configuration schematic beginning on page 0003. A power switch turns the unit on and off. The converter is capable of operating within the same environmental conditions as the MBU.



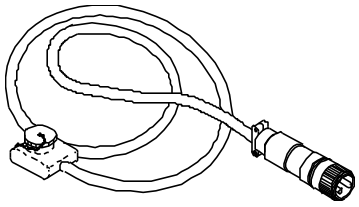
Battery Pack. Contains two sealed lead acid batteries and an internal charger. It provides the electrical storage to start and operate 3 MBUs simultaneously for 3 hours at 75^{0}F, or a 2 hour period at -25^{0}F. The module is rechargeable through the standard NATO vehicular power connector in 2 hours at an ambient temperature of 75^{0}F, and in three hours at -25^{0}F. The battery charger circuit prevents overcharge. A three position function switch controls the charging function as well as the voltage supplied to the output connector. Indicator lights show the state of the battery charge. The batteries and charger are assembled in an aluminum frame with handles and a cover. The pack is capable of operating within the same environmental conditions as the MBU.



24V DC Power Cables. Two types of power cable extensions are furnished, a 15ft length for use in the MKT, and a 25ft length for use with all other systems. In addition, two types of two-branch power cables, one for exclusive use in the MKT and a four-branch power cable are furnished to connect the MBUs to either one of the power cable extensions, or directly to the power converter.

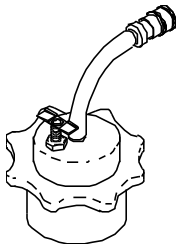


NATO Adapter Cable. To facilitate the connection between a vehicle and the battery module, or between a vehicle and the MBUs directly, a 25ft adapter cable is provided that is compatible with the power-in receptacle of the MBU and battery module, as well as the vehicular output connector.

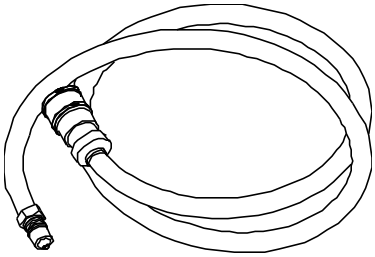


MODERN BURNER UNIT (MBU) **0002 00**
LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

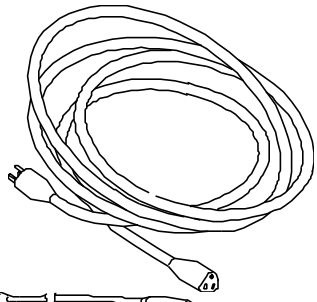
Adapter, Fuel Can. This is a standard fuel can adapter to facilitate fueling and draining of the MBU fuel tank.



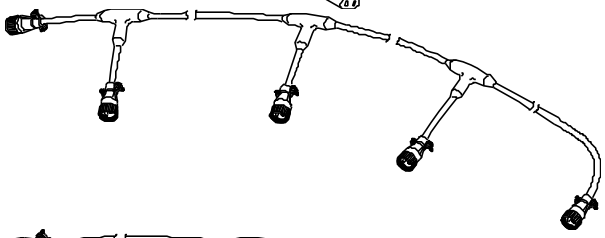
Fuel Hose. A 20ft fuel hose facilitates fueling and draining of the MBU fuel tank and is compatible with the MBU quick disconnect, and the fuel can adapter coupling.



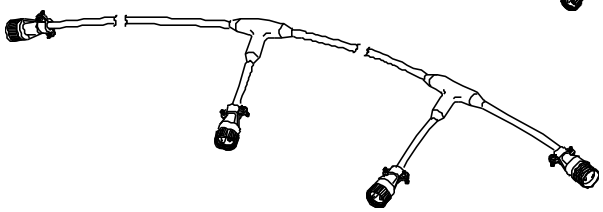
Extension Cord. This 50ft long cable provides the interconnection between a 2 kW Generator and the power converter, as well as commercial power sources and the power converter. The extension cord is also provided in a 25ft length.



4 Branch Cable. This cable permits the connection of a power source to 4 MBU power-in receptacles.



2 Branch Cable. This cable permits the connection of a power source to 2 MBU power-in receptacles.



EQUIPMENT DATA

The following technical and identification data pertains to the MBU and selected support equipment.

Table 1-1 Equipment Data

WEIGHT:	
Fully fueled	58 lbs. (26 Kg)
Without fuel	41.5 lbs. (19 Kg)
DIMENSIONS:	
Height	9.75 in (25 cm)
Depth	23 in (58 cm)
Width	19 in (48 cm)
FUEL CAPACITY (Usable)	2 US gal (7.6 lt)
INPUT CONNECTORS:	
Power-in receptacle	MS3102E-16-11P
Fuel	Parker Double Shut-off Coupling, BH2-60Y

FUEL CONSUMPTION:	
Rate of fuel consumption:	
Operating at maximum firing rate:	2.8 lbs. (1.27 Kg)/hr
Operating at minimum firing rate:	1.2 lbs. (.54 Kg)/hr
MBU operation (full fuel tank)	up to 4 hrs
OUTPUTS:	
Heat (setting dependent)	18,000 to 60,000 BTU/hr
Carbon monoxide (setting dependent)	50 to 120 ppm
FUEL REQUIREMENTS	JP-8
ELECTRICAL REQUIREMENTS	∃22 and #29.5 V DC
ENVIRONMENTAL:	
Operating temperatures	-25^0F to $+125^0$F (-32^0C to $+52^0$C)
Operating elevations to 10,000 ft above sea level	

POWER CONVERTER	
Capacity.	600 Watts continuous, 1000 Watts for 1 Min. at 26 V DC
Input Voltage Range	90 to 132 V AC
Input Frequency.	47 to 63 Hz
BATTERY PACK	
Battery Type.	2 Sealed Lead Acid Batteries, Genesis 0766-2003B0N01
Input Voltage Range	22 to 29.5 V DC
CONNECTORS (24V DC CABLE).	MS 3106F16-11S, 11682338
ADAPTER (FUEL).	NSN 7240-21-912-7125
FUEL LINE CONNECTOR ADAPTER	BH2-61Y, BH2-60Y

EQUIPMENT CONFIGURATION

The MBU and its components are configured depending on the field feeding system in which it is used and the power source available. Refer to the system power supply diagrams beginning on page 0003 and identify the configuration for your application.

COMMON TOOLS AND EQUIPMENT

For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE), CTA 50-970, Expendable/Durable Items (Except: Medical, Class V, Repair Parts, and Heraldic Items), or CTA 8-100, Army Medical Department Expendable/Durable Items, as applicable to your unit.

All Special Tools, TMDE, and Support Equipment for the MBU are listed in WP 0060, Table 1.

Repair parts are listed and illustrated in the repair parts and special tools list located in WP 0039 through 0054.

END OF WORK PACKAGE

THEORY OF OPERATION (Refer to Figure 1-3).

Electrical Supply. A 24V DC supply is connected to the power connector **(1)**. Voltage is then supplied to the main control board **(2)**, which contains all vital electrical circuits.

Fuel Supply. The fuel tank **(3)** is filled either through the fuel tank fill plug **(4)** before the MBU is installed into an appliance, or after installation into an appliance by connecting a quick disconnect hose to the fuel fill nipple **(5)** and the feed adaptor on a fuel can, then pressing the FUEL button **(6).** This energizes the air compressor **(7)** and opens the tank fill valve **(8)** (requires electrical power connection). A full tank of fuel allows up to four hours of operation before the MBU shuts down. A check valve **(9)** prevents fuel from entering the air line during shipping and handling.

Power-Up. MBU power-up is initiated by pressing the power switch **(10)**. This tests the indicator lights **(11)** for 3 seconds. The hour meter **(12)** back light illuminates to indicate the power-up condition. The digital numbers will sequence before setting on actual accumulated operating hours.

Start-Up. With burner control **(13)** in HIGH (START) position, MBU startup is initiated by pressing the START button **(14)**, which energizes the ignitor **(15)**. After two seconds the compressor **(7)** starts, and the fuel valve **(17)** on the fuel delivery block assembly **(18)** opens, allowing fuel to flow to the nozzle **(19)**. The vent valve **(20)** on the fuel tank **(3)** opens, allowing air to enter the fuel tank. The compressor **(7)** draws air through the air filter **(21)**, on the fuel delivery block assembly **(18)**, pressurizing the fuel nozzle **(19)**. Simultaneously, fuel is drawn from the fuel tank **(3)**, through a 30 micron filter **(22)** and a zero pressure regulator **(23)** to the burner control valve **(24)**, which regulates the flow to the nozzle **(19)**. This fuel-air mixture is sprayed into the burner **(25)** in a fine mist and ignited. The ignitor circuit remains energized for 30 seconds.

NOTE!

Fault Detection Override

Holding down the START button will override the fault detection circuitry, preventing shut down for 2 minutes. This allows purging the fuel lines on new units, and units that have been completely drained. It also facilitates troubleshooting.

Actions during Operation (After warm up is complete). Adjust the burner control (**13**), as necessary.

Automatic Shutdown. The following are the usual causes of an automatic shutdown:

X Loss of combustion. If the flame sensor **(26)** fails to verify combustion, the MBU shuts down immediately and the red SERVICE indicator **(27)** lights.

X Low fuel. When the fuel tank level float switch **(28)** reaches a minimum set point, a 30 minute shutdown timer is activated. Control Panel indicators will light as follows: LOW FUEL indicator **(29)** blinks green for 15 minutes, changes to blinking amber for 7.5 minutes, and then changes to blinking red for 7.5 minutes. The indicator **(29)** lights steady red at shut-down.

X Voltage. If input voltage increases to 29.5 V DC or greater or decreases to 22 V DC or less, the MBU will shut down and the VOLTAGE indicator **(30)** will light red.

X
X Electrical Short. An internal circuit breaker is located in the controller **(2)**. The nominal rating of the breaker is 15 amps dependant on ambient temperature. Once the breaker has tripped; it can be reset by turning the power off and eliminating the cause of the short circuit. It will then reset itself in 30 - 60 seconds dependant on ambient temperature. As breakers are typically thermal devices, the point at which they open and close is dependent on the temperature of the internal components. The breaker is connected in series with the POWER Button.

Normal Shutdown. The MBU is shut down by pressing the STOP button.

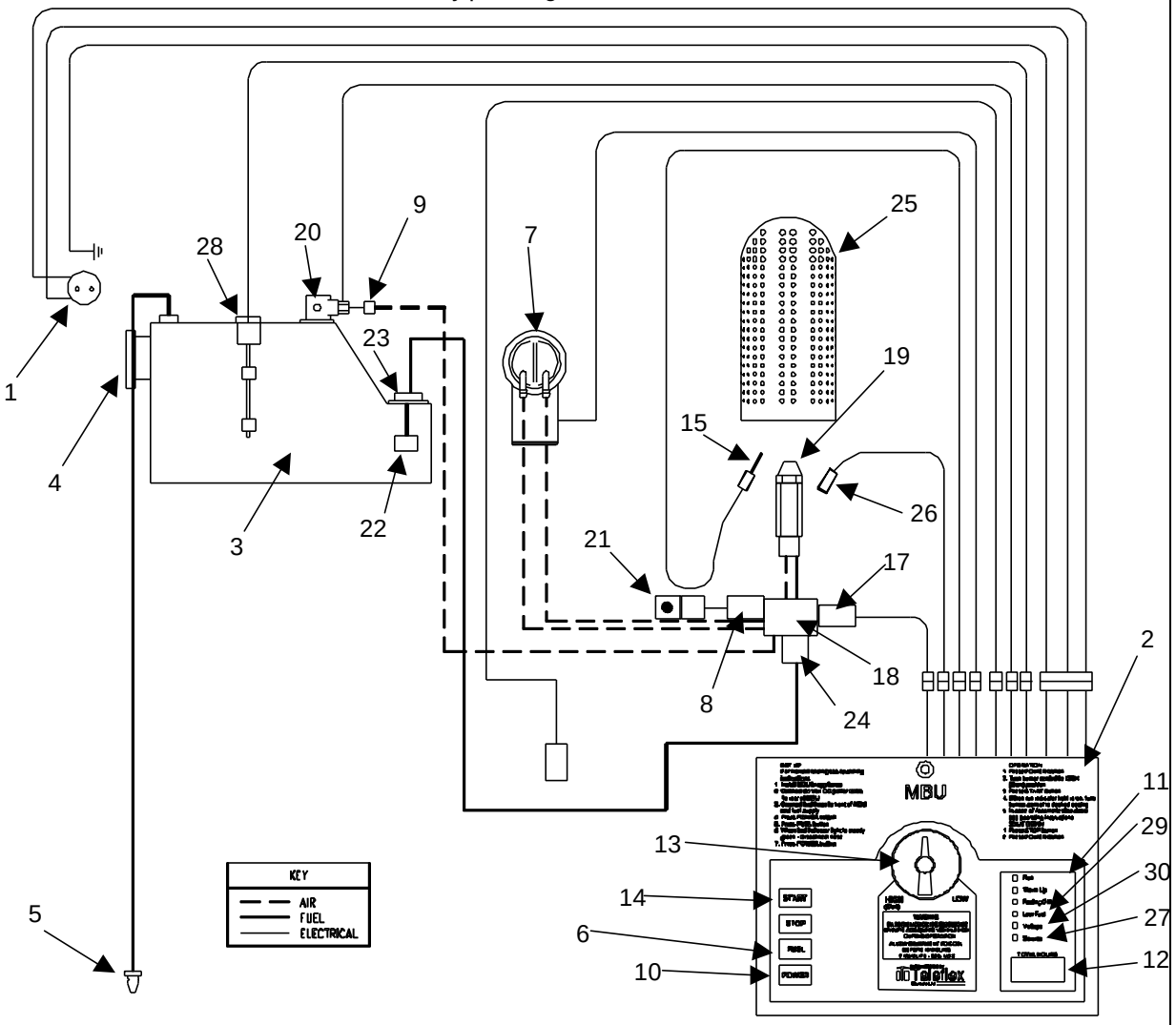
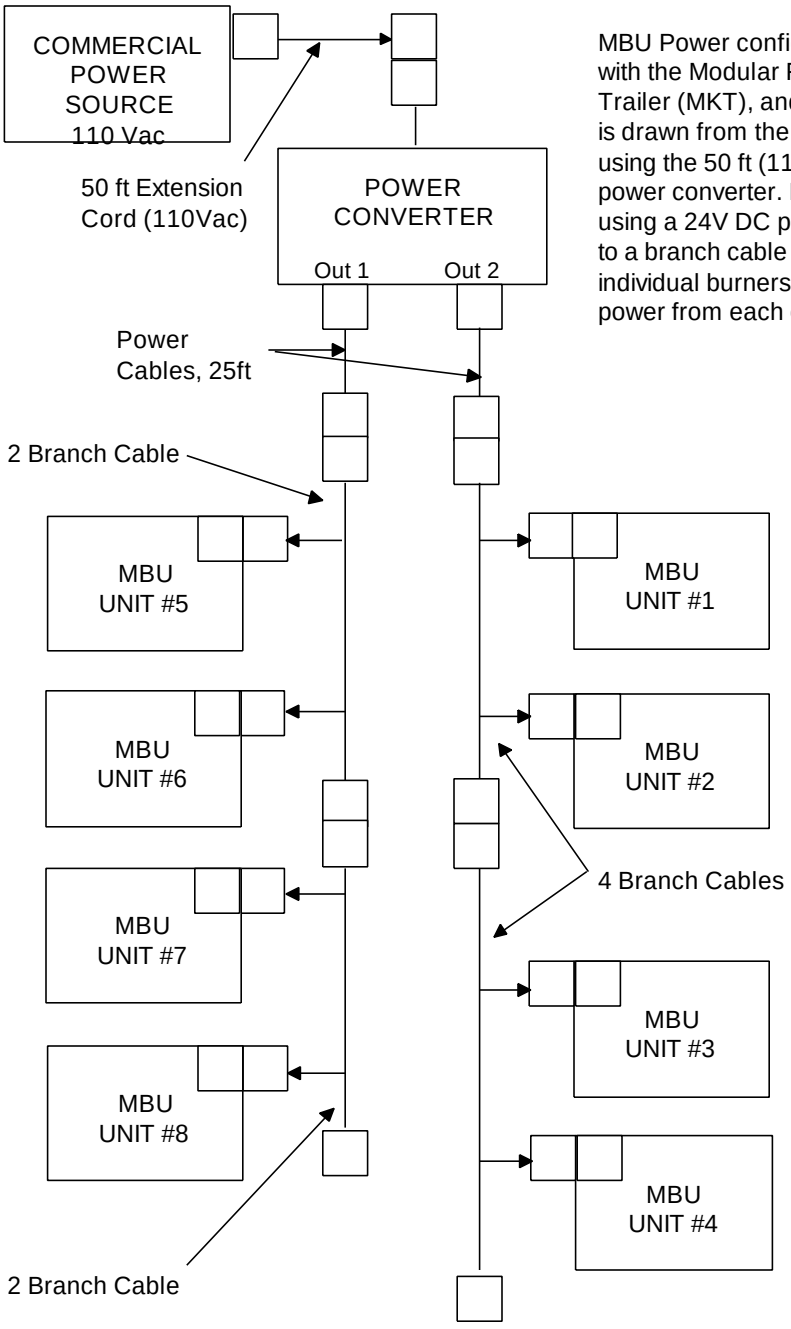


Figure 1-3. MBU Operational Schematic



MBU Power configuration for 110V AC power source used with the Modular Field Kitchen (MFK), Mobile Kitchen Trailer (MKT), and Food Sanitation Center (FSC). Power is drawn from the commercial or other 110V AC source using the 50 ft (110Vac) extension cord connected to the power converter. From the converter, power is distributed using a 24V DC power cable extension that is connected to a branch cable which in turn is connected to the individual burners. Up to 4 burners can be supplied with power from each of the two power converter outlets.

Figure 1-4 MBU Power Configuration for 110V AC Power Source

Primary MBU power configuration for 24V DC power source used with the Kitchen, Company Level, Field Feeding (KCLFF). Power is drawn from the vehicle using the NATO adapter/cable and connected to the battery pack. From the battery pack, power is distributed using a 25 foot (24Vdc) power cable extension connected to a branch cable which in turn is connected to the burner. Up to 3 MBUs can be operated at one time.

Alternate MBU power configuration for 24 V DC power source used with the KCLFF shows power drawn from the vehicle using the NATO adapter cable and connected directly to one or more burners using a 25 foot (24Vdc) power cable extension (as necessary), connected to a branch cable which in turn is connected to burner(s) This configuration can be used if no need to employ the battery module is foreseen.

A second alternate configuration shows the use of the battery pack only. When this power source is used, it is directly connected to the designated burners using a 25 ft (24V DC) extension (if necessary), or directly to the branch cable.

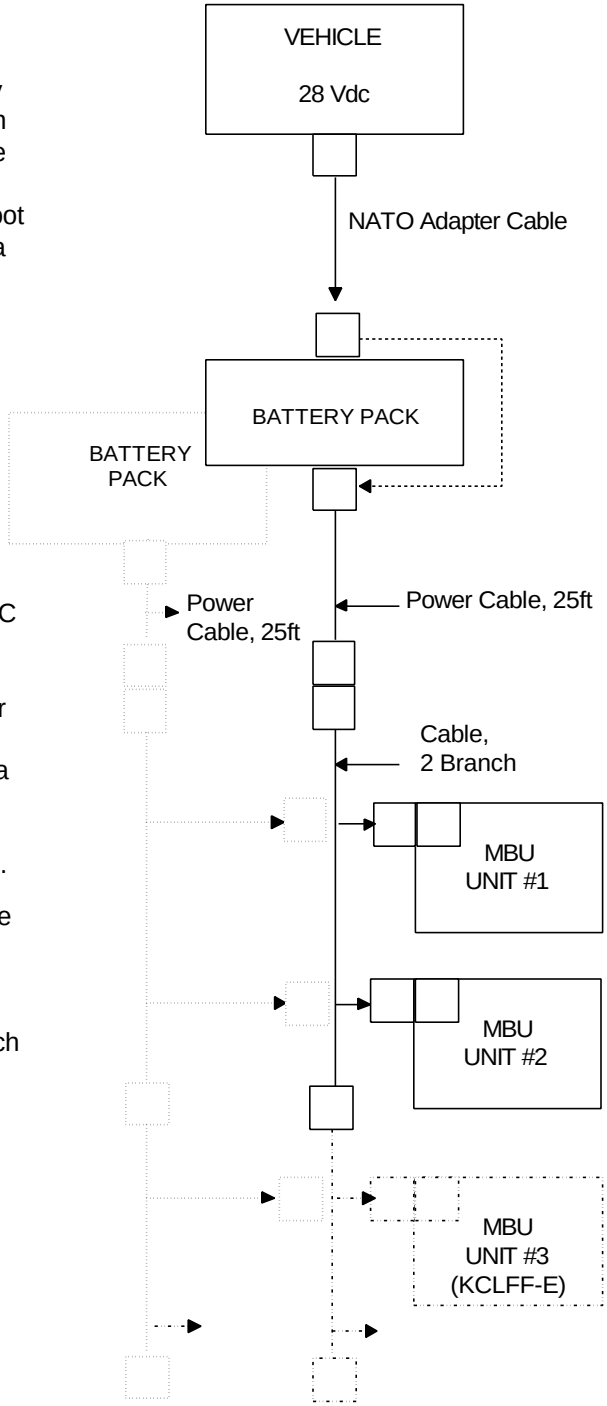


Figure 1-5 MBU Power Configuration for Vehicular or Battery Supplied 24V DC Power

END OF WORK PACKAGE

CHAPTER 2

OPERATING INSTRUCTIONS
FOR
MODERN BURNER UNIT

MODERN BURNER UNIT (MBU) CONTROLS AND INDICATORS

0004 00

GENERAL

The following illustrations and tables show the location and list the function of each control and indicator on the MBU, power converter, and battery pack.

MBU

Table 2-1 describes the controls and indicators for the MBU.

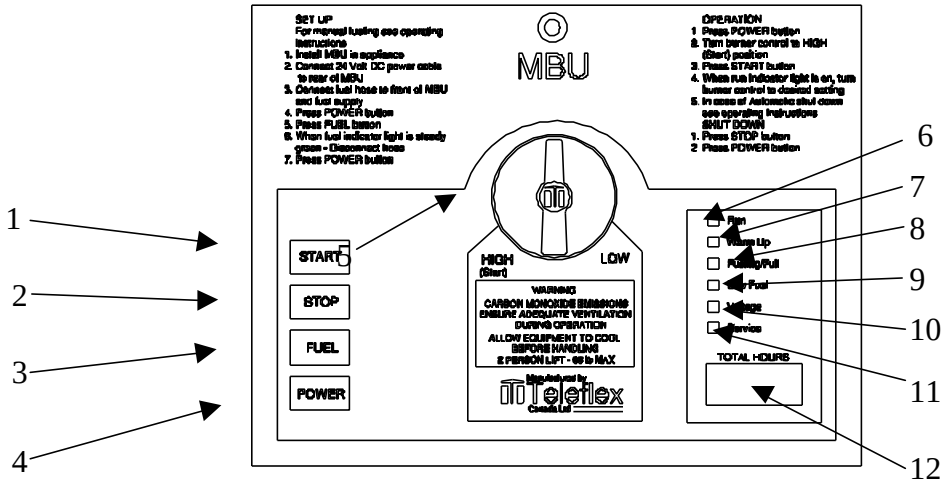


Table 2-1 MBU Controls and Indicators

KEY	CONTROL AND INDICATOR	FUNCTION
1	START	Burner start-up
2	STOP	Burner shut-down
3	Fuel	Starts fueling function
4	Power	Main power on/off button
5	Firing Rate Adjustment (HIGH (Start) LOW)	Adjusts burner firing rate
6	Run	Indicates burner is operating
7	Warm Up	Indicates burner is warming up
8	Fueling/Fuel	Indicates tank is filling (during fueling) or full
9	Low Fuel	Indicates low fuel shut-down sequence active
10	Voltage	Indicates incorrect voltage
11	Service	Indicates mechanical malfunction
12	TOTAL HOURS	Shows accumulated hours of operation. Background light indicates power-on condition.

MODERN BURNER UNIT (MBU)
CONTROLS AND INDICATORS **0004 00**

POWER CONVERTER

Table 2-2 describes the controls and indicators for the power converter.

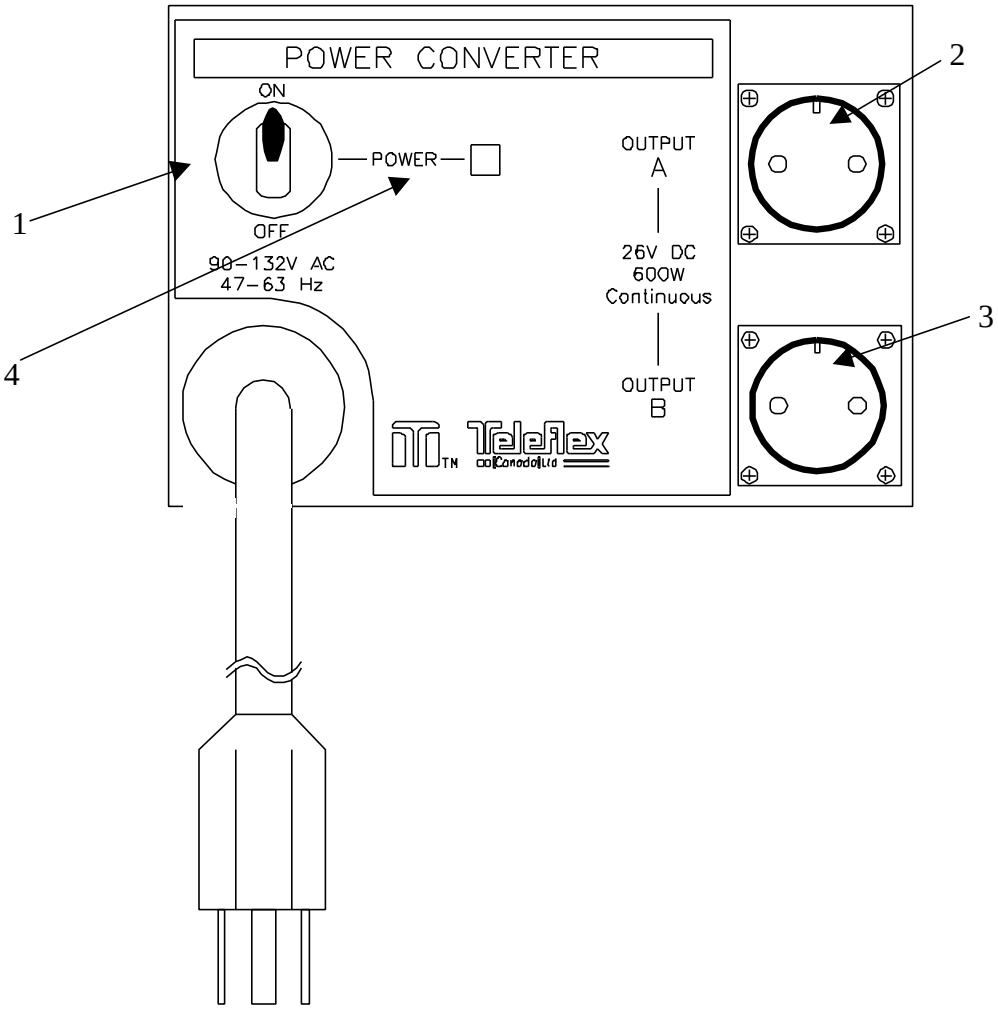


Table 2-2 Power Converter Controls and Indicators

KEY	CONTROL AND INDICATOR	FUNCTION
1	Main Power Switch	Activates Main Power
2	Output A	24V DC Output Connector #1
3	Output B	24V DC Output Connector #2
4	Indicator Light	Indicates when Main Power is On

MODERN BURNER UNIT (MBU)
CONTROLS AND INDICATORS

0004 00

BATTERY PACK

Table 2-3 describes the controls and indicators for the battery pack.

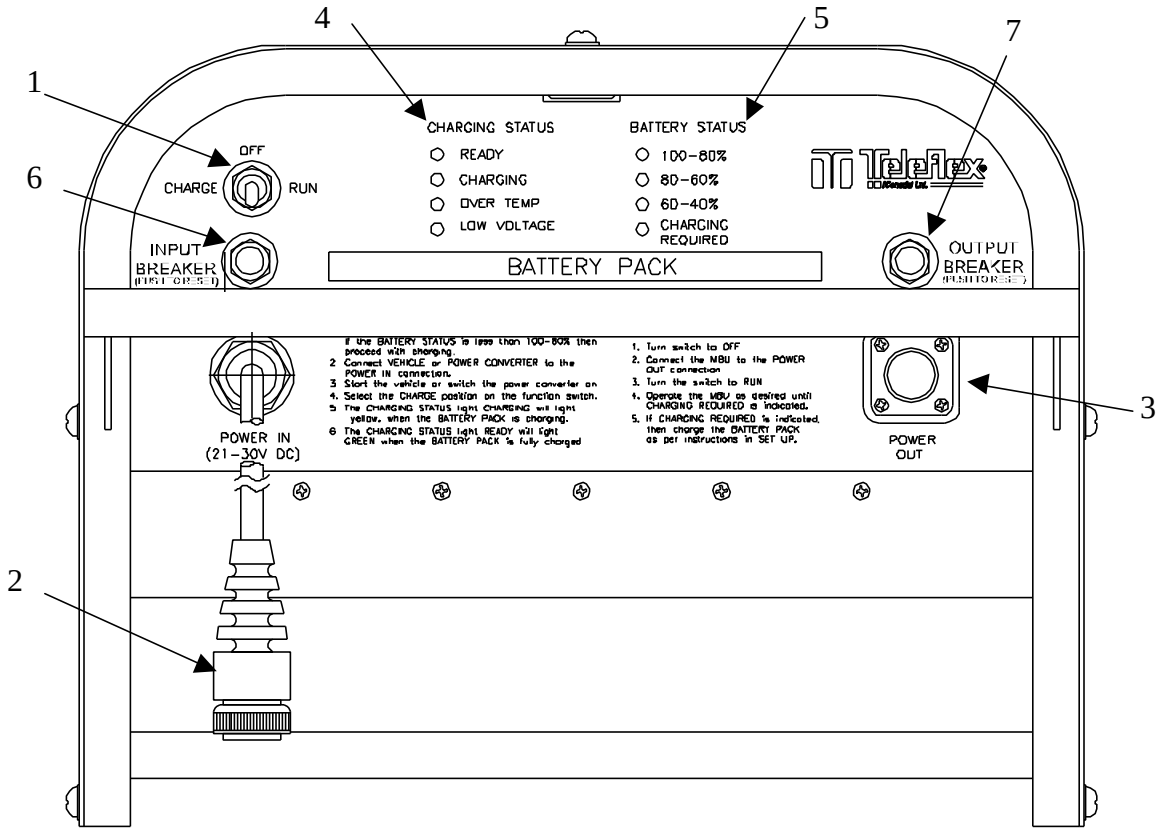


Table 2-3 Battery Pack Controls and Indicators

KEY	CONTROL AND INDICATOR	FUNCTION
1	Three Position Function Switch	Controls Charging and Run Function
2	Charging Power In Connector	Connects 24V DC power to Battery Pack for Charging
3	Power Out Connector	Provides 24V DC Output to power MBU
4	Charging Status Indicators	Indicate Ready, Charging, and Fault conditions
5	Battery Status Indicators	Provides indication of percent charge
6	Input Breaker (push to reset)	Protects Input Charging Circuit from Overload
7	Output Breaker (push to reset)	Protects Output Circuit from Overload

END OF WORK PACKAGE

SITING REQUIREMENTS

This section outlines the siting requirements of field feeding systems determined by the MBU power and fuel requirements, as well as the installation, preparation, and operation of the MBU under usual conditions.

Read all warnings and cautions within this section and follow procedures outlined herein to ensure safe operation of the MBU and associated equipment.

Siting of the field feeding system may be influenced by the power and fuel requirements of the MBU. When using the primary power (110V AC) as with the MFK, MKT, and FSC, the power source must be located within 50ft of the power converter. When a 24V DC power source is used as in the KCLFF, it must be located within 25ft of the MBU (or battery pack, depending on the power configuration used). The internal location/distribution of the burners within each field feeding system must be in accordance with the prescribed layout for that system so that the 24V DC extension and branch cables can reach each burner. In some cases, limited flexibility is possible or additional burners can be connected to the branch cable end plug. Refer to the specific field feeding system technical manual listed in WP 0037.

ASSEMBLY AND PREPARATION FOR USE

Initial fielding and installation of the MBU and associated equipment into field feeding systems, including application of modification work orders for the MKT, will be accomplished through contracting resources. Subsequent MBU or component replacements received at the unit level do not require deprocessing and can be used in the manner prescribed herein, after unpacking. Assembly is limited to the installation of new batteries into the battery pack as described in WP 0031.

Before Operation Preventive Maintenance Checks and Services (PMCS) . Perform the Before Operation PMCS on all MBU system components as outlined in WP 0010, prior to preparing the system for use.

Manual fueling. The MBU fuel tank may be filled manually through the fill plug, prior to installation into an appliance, or as a field expedient if the fuel hose has been damaged. If the MBU is to be fueled manually, proceed as follows:

WARNING!
Fire

Do not attempt to connect a fuel line to the MBU in the vicinity of any open flame. Ensure that the fuel hose connections are made properly to avoid fuel spillage. Prevent a possible fire hazard by having rags on hand to absorb any spillage.

WARNING!
Two Person Lift

The MBU weighs approximately 58 pounds fully fueled (26.4 kg). Two persons must carry the MBU, lifting with legs, not back, to prevent injury.

WARNING!
DO NOT USE GASOLINE!

Gasoline should **NOT** be used with the MBU under any circumstance. **Only JP-8 or an approved alternate diesel fuel may be used.** Using gasoline in the MBU will create a fire danger and potential for explosion.

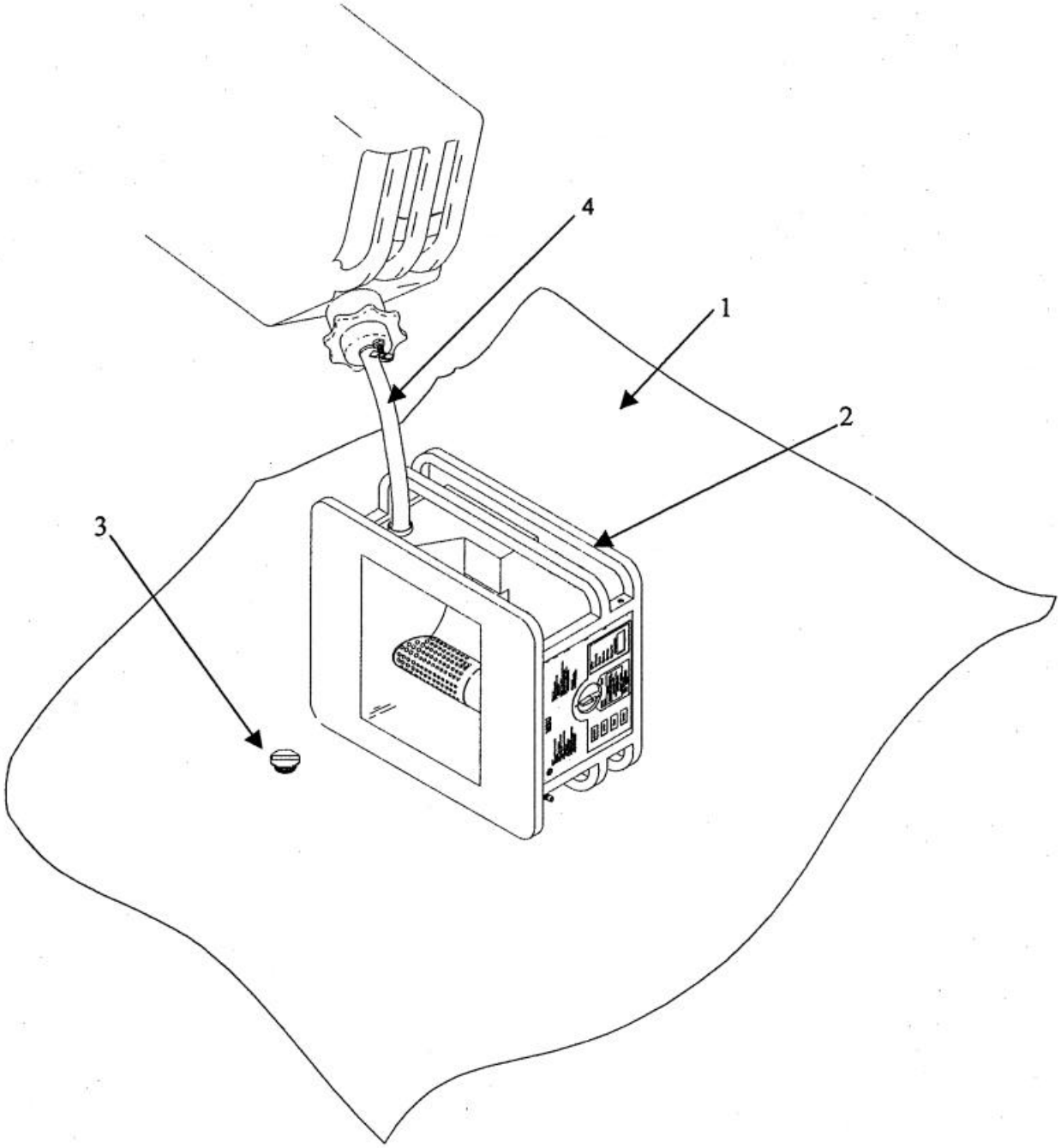
In cases where the MBU is required to be fueled manually, a commercial petroleum absorbent material **(1)**, such as New Pig's Stat-Mat roll, will be placed under the burner to catch any fuel that may be spilled. Additional commercial products are available to contain large spills, such as New Pig's Absorbent Sock.

In the event that fuel is spilled on the ground, immediate action will be taken to contain the spill and the appropriate environmental personnel notified.

To fuel manually, place the MBU **(2)** on the material on its side so that the fill plug **(3)** is on top as shown. Remove the fill plug **(3)**.

Fill fuel tank using a fuel can equipped with spout **(4)** to the bottom of filler neck opening with JP-8 or approved alternate diesel fuel, and re-install fill plug **(3)**.

Clean up any spilled fuel with a rag. Dispose of rag and/or absorbent material in accordance with local Material Safety Data Sheet (MSDS) procedure.

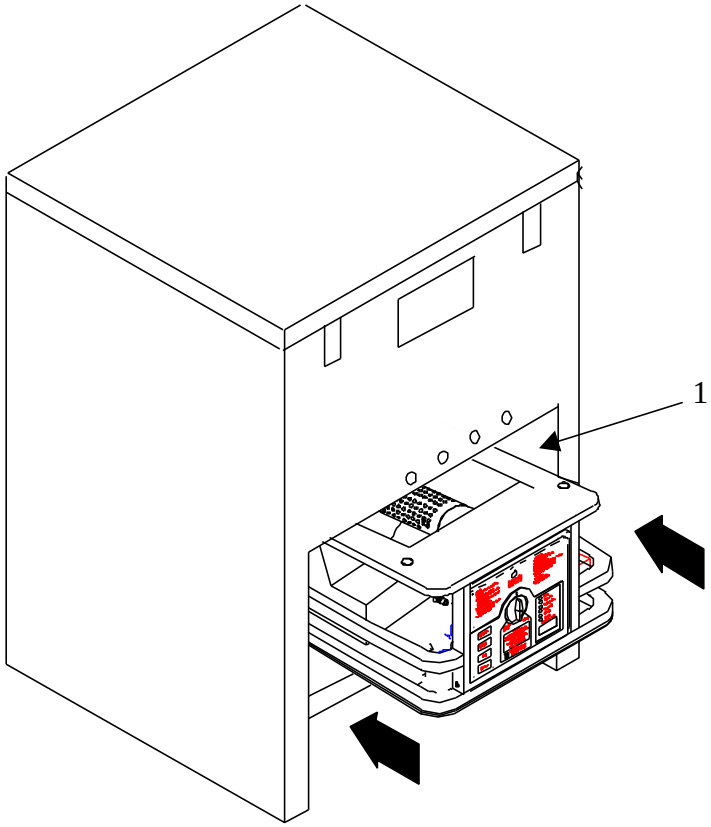


Manual Fueling Procedure

WARNING!
Two Person Lift

The MBU weighs approximately 58 pounds fully fueled (26.4 kg). Two persons must carry the MBU, lifting with legs, not back, to prevent injury.

Installing MBU into Appliance. The MBU will fit into all field kitchen appliances designed to accommodate an external burner that are found in current and future field feeding systems. It slides into the burner space **(1)** of the appliances it is intended to be used with in the same manner as the previously used M2 Burner. Install the MBU into its appliance after performing Before Operation PMCS and after filling the tank (unless power fueling is intended).



Installing MBU into an appliance

CONNECTING CABLES TO THE MBU PRIOR TO OPERATION

Depending on the field feeding system in use, ensure that either 110 V AC commercial or generator power is available and properly connected to the power converter, or a vehicle supplying 28 V DC power through the NATO adapter is properly connected to a 24V DC cable extension/ branch cable, or the battery pack. Alternatively, a fully charged battery pack may be used to start and operate up to three MBU's for 2 to 3 hours, depending an ambient temperatures as described in WP 0005.

WARNING!
Electric Shock

HIGH VOLTAGE is used in the operation of this equipment. **DEATH ON CONTACT** may result if personnel fail to observe safety precautions

Never work on electrical equipment unless there is at least one other person nearby who is familiar with the operation and hazards of the equipment. That person should also be competent in giving first aid. Ask maintenance personnel about any hazardous features of the MBU prior to doing any maintenance.

Whenever possible, external power must be shut off before performing any maintenance.

Be careful not to contact high-voltage connections when removing, installing or operating this equipment.

Whenever possible, keep one hand away from the equipment to reduce the hazard of current flowing through vital organs of the body. Voltages as low as 50 volts may cause death.

For artificial respiration, refer to FM 21-11.

Do not stand in water while handling live power cords or electrical shock may result. Position all power cables so that they are out of the way during operation and are not lying in water.

CONNECTING POWER CABLES IN THE MKT USING 110V AC POWER

Be sure that the 12ft Crossway Cable has been installed in accordance with 0019.

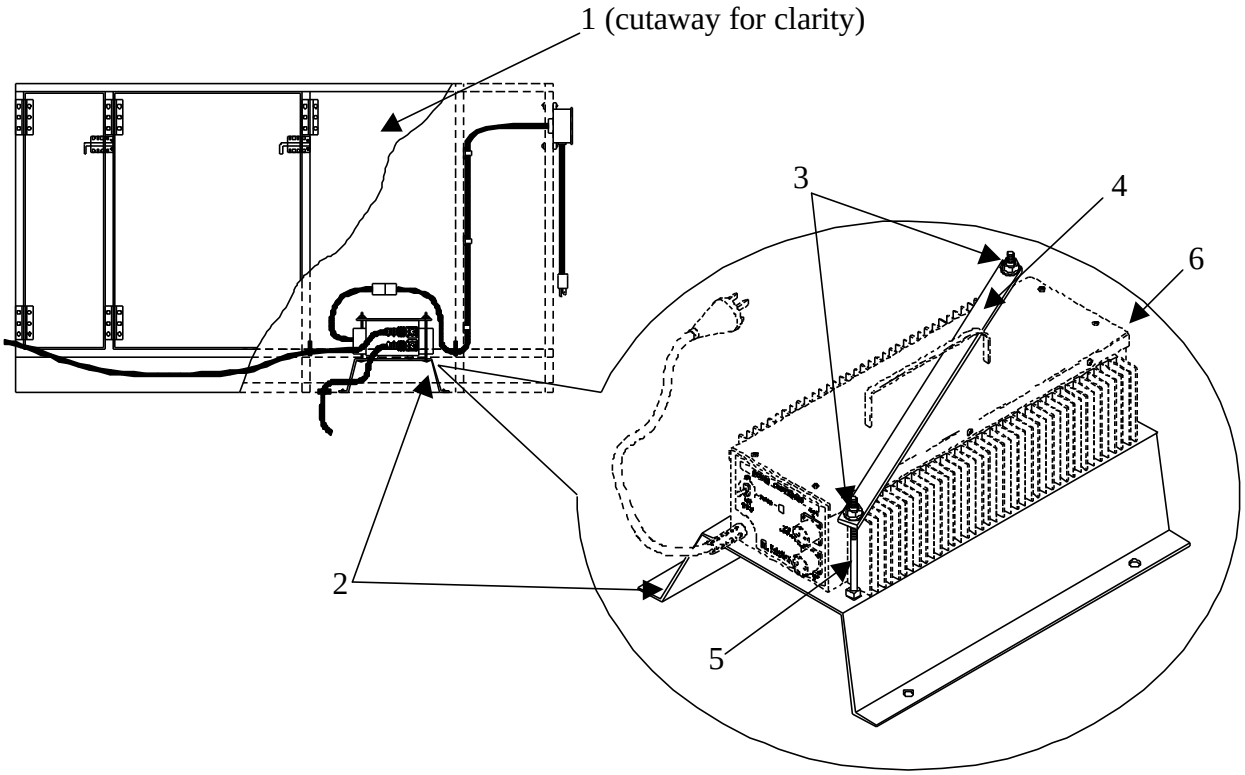
Be sure that all pre-fielding modifications have been done as described in 0018.

Mounting the Power Converter in the MKT cooling cabinet (if not already installed).

Open the MKT Cooling Cabinet door **(1)** and remove the cooling trays. Locate the Power Converter Mounting Bracket **(2)** on the floor of the cooling cabinet.

Remove the two wing nuts **(3)** and slide the retaining bar **(4)** off the shafts **(5)**. Place the Power Converter **(6)** on the mounting bracket **(2)** with the front of the converter facing the front of the cabinet. Push the converter all the way to the back of the cabinet.

Place the retaining bar **(4)** through the handle of the power converter **(6)** and over the two mounting bracket shafts **(5)**. Be sure to keep the bar level while sliding over the shafts to prevent binding. Install the two wing nuts **(3)**.



Power Converter Mounting Bracket With Power Converter Installed

Connecting Cables in the MKT. With the power converter in position on the mounting bracket, connect the end of the Crossway Cable **(1)** extending up through the floor of the cooling cabinet to the lower output connector **(2)** on the power converter **(3).**

Connect the main connector **(4)** of the 2 branch cable to the upper output connector **(5)** of the power converter **(3)**.

Connect the end of the Feedway Cable **(6)** extending up through the floor of the cooling cabinet to the power cord **(7)** of the power converter **(3)**.

Pass the remainder of the 2 branch cable through the left side of the cooling cabinet and distribute it under the two M59 Field Ranges **(8)**.
Pull the individual branch cables **(9)** out the front of each appliance and connect each branch to the power-in receptacle **(10)** of each MBU.
Distribute a 4 branch cable **(11)** along the floor in front of the appliances **(12)** on the opposite side of the MKT.

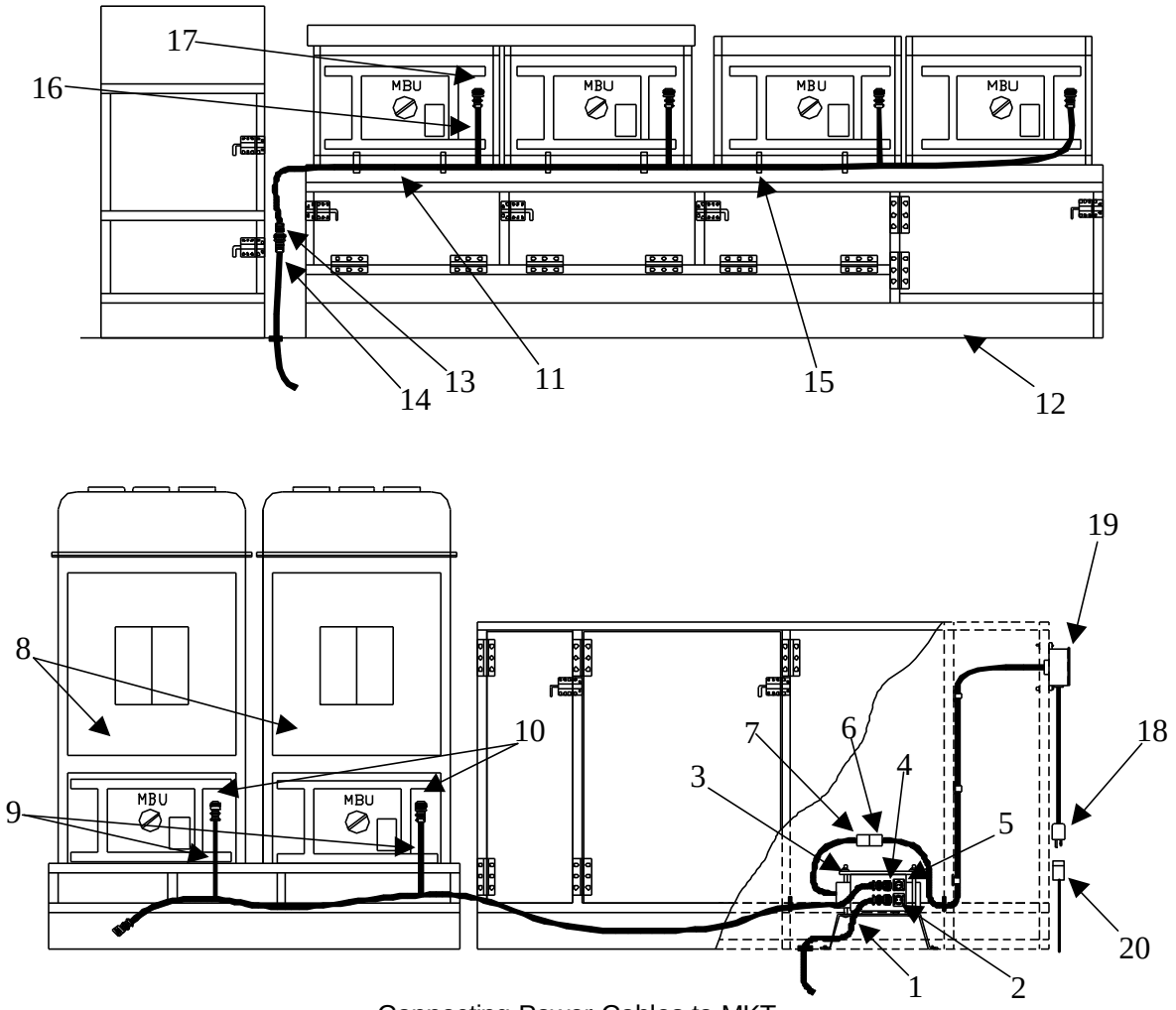
Connect the main connector **(13)** of the branch cable to the end of the Crossway Cable **(14)** extending up through the floor of the MKT opposite the cooling cabinet.

Hang the 4 branch cable along the front of the appliances with cable clips **(15)** provided with the MBU.

Connect each branch **(16)** of the 4 branch cable to the power-in connector **(17)** of each MBU.

Slide the clips **(15)** left or right as needed to organize the cable along the front of the appliances to help prevent the cable from extending into the work area.

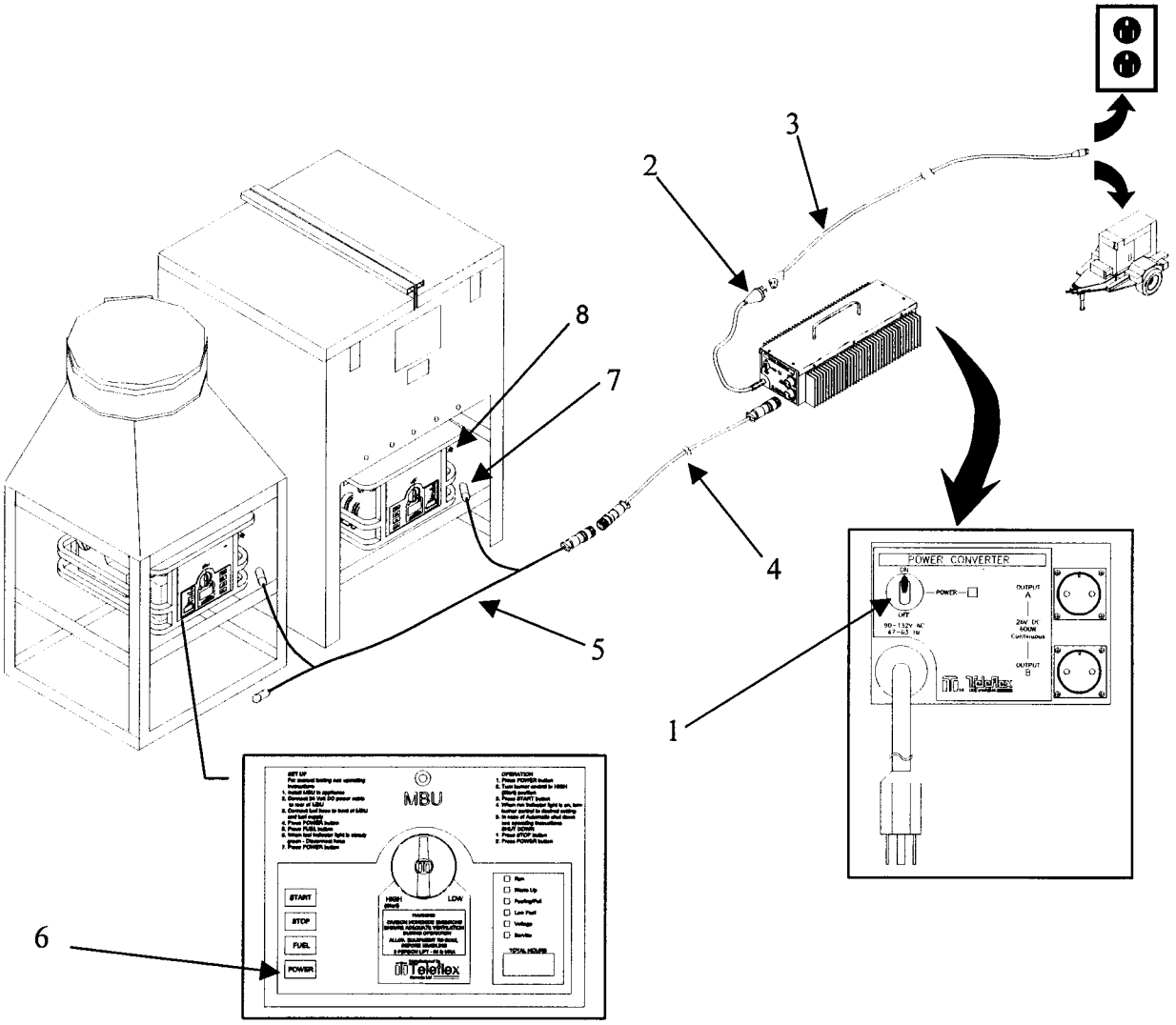
With the power converter main power switch OFF, connect the Feedway Cable receptacle **(18)** located just below the GFCI outlets **(19)** mounted to the side of the cooling cabinet to the designated power source using the 50ft (110V AC) extension cord **(20)** provided.



Connecting Power Cables to MKT

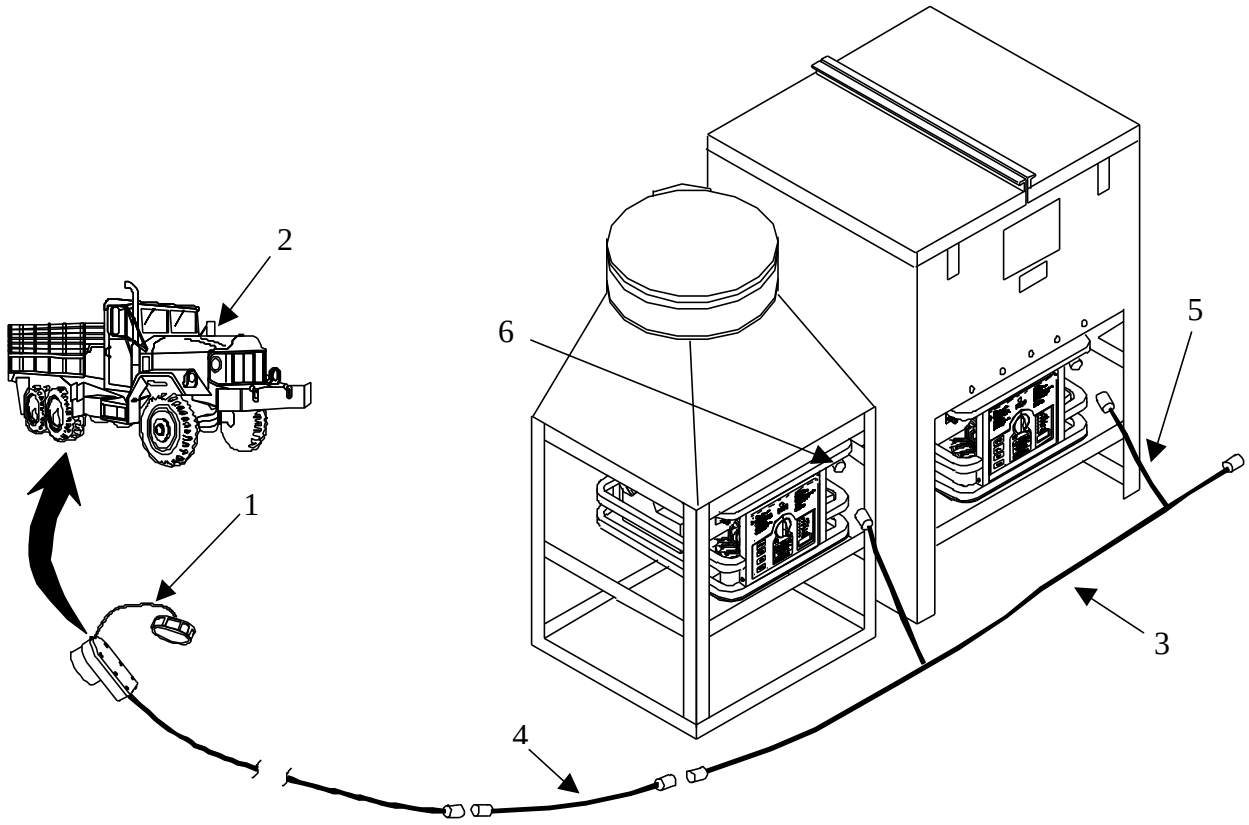
Connecting Power Cables with 110V AC Power for systems other than MKT and KCLFF -(E).
With the power converter input switch **(1)** OFF, connect the power converter power cord **(2)** to the designated power source using the 50ft (110V AC) extension cord **(3)** provided.
Connect the 25ft (24V DC) power cable extension **(4)** (if required) to the power converter **(2)**.
Connect the 2 or 4 Branch cables (24V DC) **(5)** to the other end of the 25ft (24V DC) extension **(4)** (if used).

With MBU Power switches **(6)** OFF, connect the cable branches **(7)** to the power-in receptacle **(8)** on the individual burners.



Connecting Power Cables in the KCLFF-(E) using Vehicular Power (22-29 V DC) alone. Connect the 25ft NATO adapter cable **(1)** (24V DC) between the vehicle supplying power **(2)**, and a 2 Branch power cable **(3)**. If additional length is required, connect the 25ft (24V DC) Extension Cable **(4)** between the branch cable **(3)** and the NATO Adapter cable **(1)**.

Connect the cable branches **(5)** (24V DC) to the individual burners power connectors **(6)**.

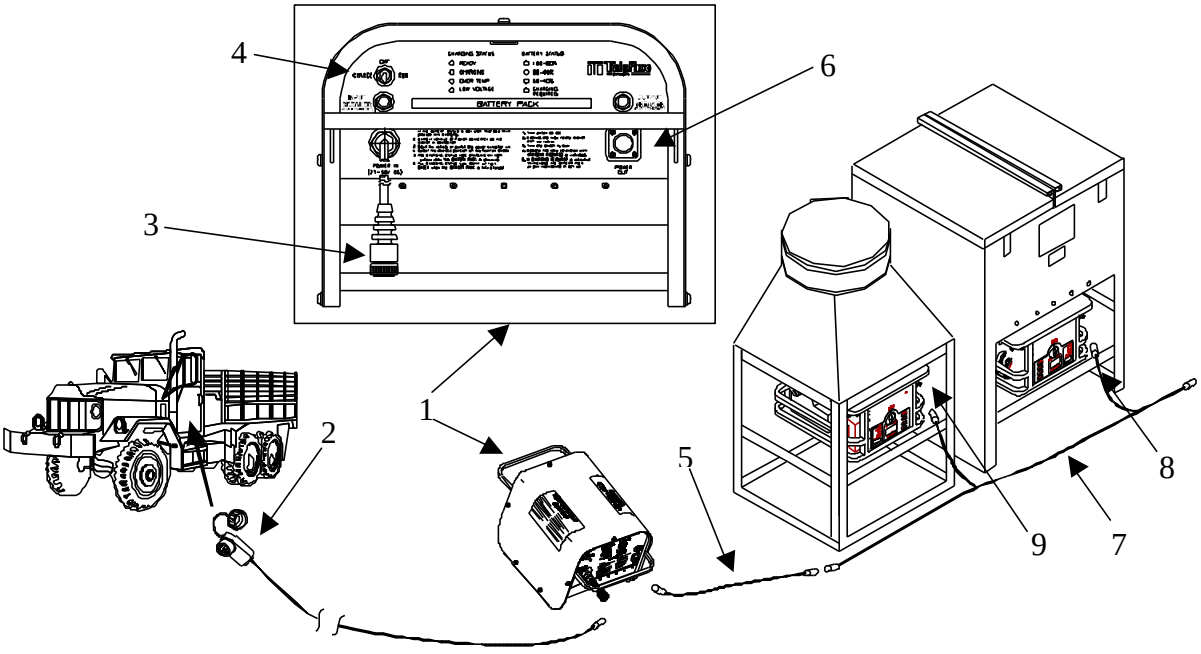


Connecting Power Cables Using Vehicular Power

WARNING!
Two Person Lift

The Battery Pack weighs approximately 80 pounds (36.3 kg). Two persons must carry the Battery Pack, lifting with legs, not back, to prevent injury.

Connecting Power Cables In The KCLFF-(E) Using Vehicular Power and Battery Pack. If the battery pack **(1)** is used to supplement vehicular power, connect the NATO adapter cable **(2)** to the Power Input Connector **(3)** of the Battery Pack **(1)**. Then, with the Battery Pack 3-position function switch **(4)** OFF, connect one end of the 25ft (24V DC) extension **(5)** (if required for additional length) to the Battery Pack Power Output Connector **(6)**. The 2 Branch cable **(7)** can then be connected to the opposite end of the 25ft Extension Cable **(5)**. The cable branches **(8)** are then connected to the power-in receptacle of the individual burners **(9)**.



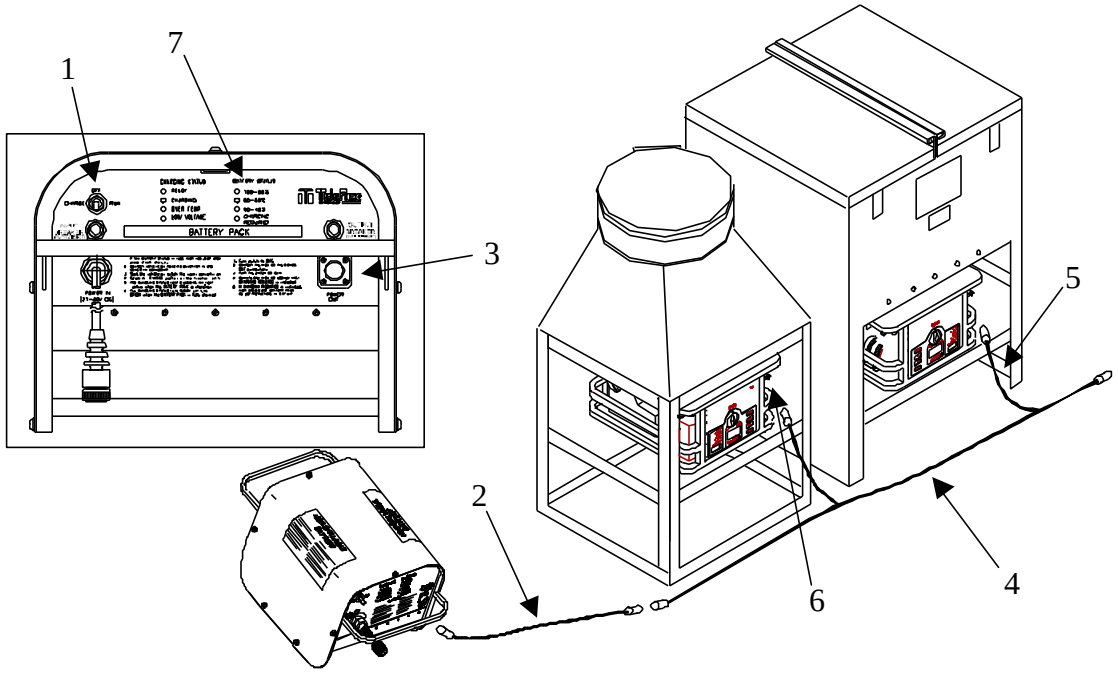
Connecting Power Cables Using Vehicular Power and Battery Pack

WARNING!
Two Person Lift

The Battery Pack weighs approximately 80 pounds (36.3 kg). Two persons must carry the Battery Pack, lifting with legs, not back, to prevent injury.

Connecting Power Cables In The KCLFF-(E) using the Battery Pack alone. With the Battery Pack 3-Position Function Switch **(1)** in the OFF position, connect one end of the 25ft Extension Cable (if used for additional length) **(2)** to the Battery Pack Power Output Connector **(3)**. Then connect the opposite end of the 25ft Extension Cable **(2)** to one end of a 2 Branch power cable **(4)**. If the Extension Cable **(2)** is not used, connect one end of the Branch Cable **(4)** directly to the Power Output Connector **(3)** of the Battery Pack. Connect the cable branches **(5)** to the power-in receptacles **(6)** of the individual burners.

In order to recharge the batteries when and if necessary, a 24 V DC power source, such as a vehicle or power converter, should be made available during operation of the MBUs. When the battery pack is used as the power source to operate the MBUs, the charge indicator lights **(7)** should be checked frequently to monitor the condition of the batteries. To recharge the batteries, connect the 25ft NATO Adapter cable to a vehicle equipped with a NATO connector and the power-in connector on the battery pack as described later in this work package.



Connecting Power Cables Using The Battery Pack

PRE-OPERATIONAL CHECK

Perform this visual check of the MBU after its installation into an appliance but prior to system power-up. This check is particularly important where MBUs have been left installed and are being used after a period of inactivity.

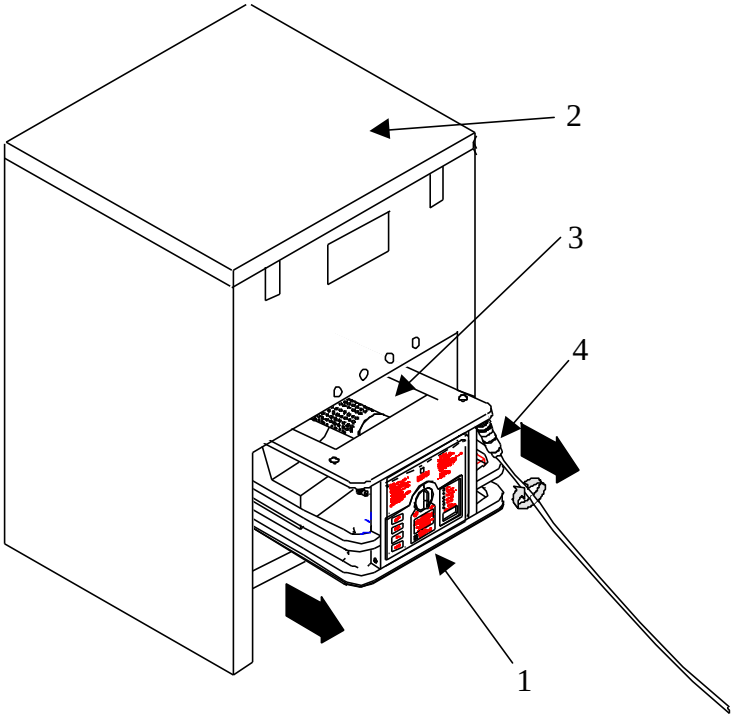
Slide the MBU **(1)** halfway out of the appliance **(2)**.

Check the burner well **(3)** for debris or the remains of spilled food.

Remove any debris from the burner well **(3)** with a damp, soapy cloth if necessary.

Slide MBU **(1)** back into appliance.

Be sure that the system cables **(4)** are securely attached.



MBU Pre-operational Check

POWER-UP SEQUENCE

When the power cables are properly connected and a pre-operational check has been performed, the system is ready for power-up. The power-up sequence should occur as follows:

1. Ensure power is available at the source **(1)**. If 110V AC is used be sure that commercial power is available or that the generator is running. If a vehicle is being used, be sure that it is running.

2. If 110V AC is used, place power converter switch **(2)** to ON.

3. If the Battery Pack is used, make sure the 3-Position Function Switch **(3)** is in the RUN position.

NOTE!

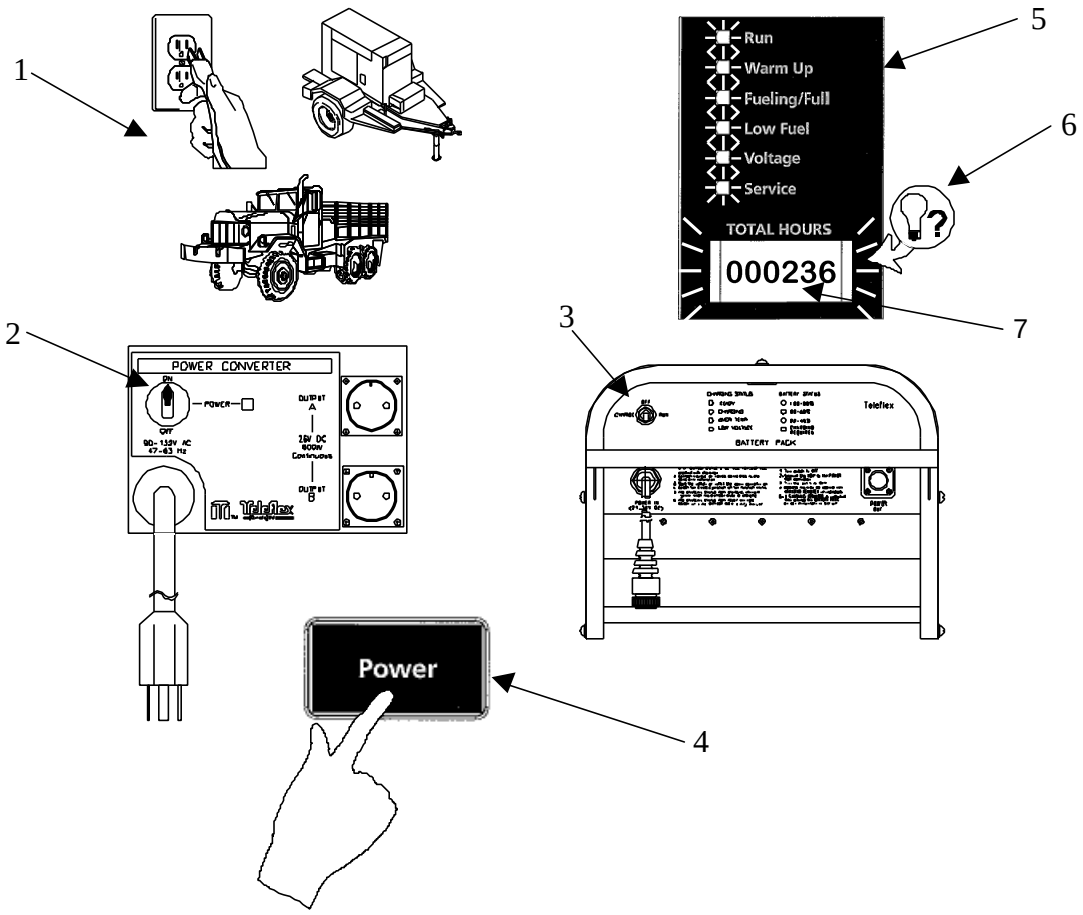
Do Not Hold Power Button Down Longer Than 3 Seconds

When powering up the MBU press the POWER button just long enough to activate the indicator lights on the right side of the Control Panel. Holding the Power button in longer than 3 seconds will cause the MBU to enter a Calibration mode that is used for the maintenance of certain assemblies within the MBU. The calibration procedure is explained in the affected maintenance work packages.

If the MBU enters the Calibration function, the hour meter will display CAL? To exit the Calibration function and return to normal standby mode, either WAIT 10 SECONDS or press the STOP button. Pressing the STOP button will immediately return the MBU to normal standby condition. After returning to standby, resume normal operation.

4. Push POWER button **(4)** on individual MBU' s.

5. Verify that the MBU is under power: Indicator lights **(5)** will flash for about 3 seconds and hour meter background light **(6)** will illuminate. The hour meter will display a series of characters before displaying the actual accumulated number of operating hours. Observe hour meter reading **(7)**. Note that all required service must be done before operation.



MBU and Associated Equipment Power-up Sequence

DECALS AND INSTRUCTION PLATES

The following labels, decals, and instruction plates are found on the MBU components as indicated.

MBU

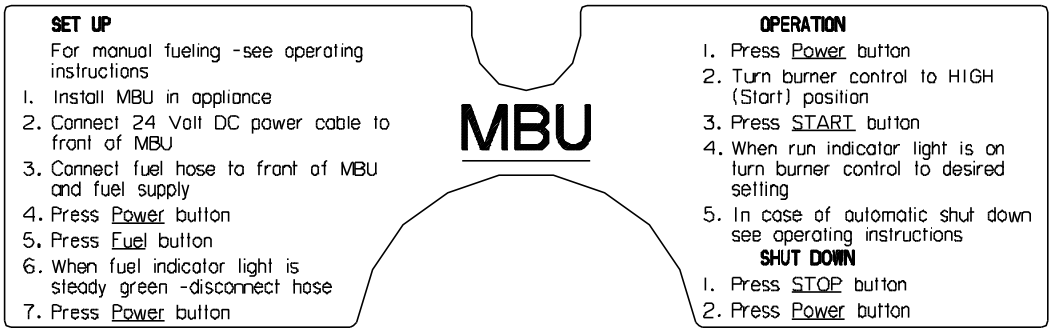


Figure 2-1 MBU Control Panel Set Up, Operation, and Shut Down Label

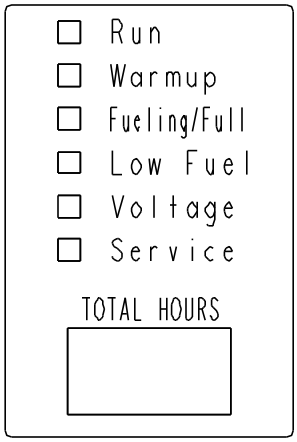


Figure 2-2 Control Panel Indicator Label

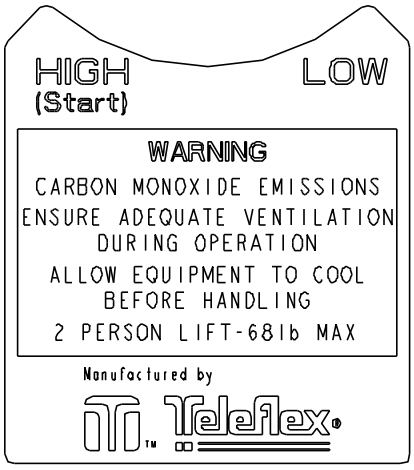


Figure 2-3 Burner Control Valve Label

POWER CONVERTER

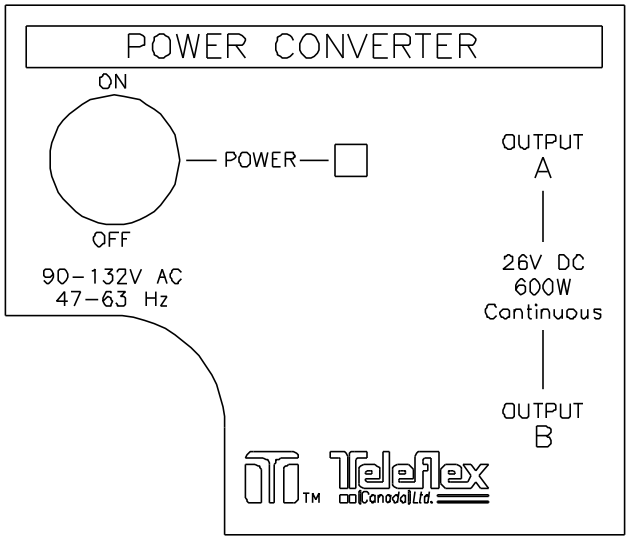


Figure 2-4 Power Converter Front Panel Label

BATTERY PACK

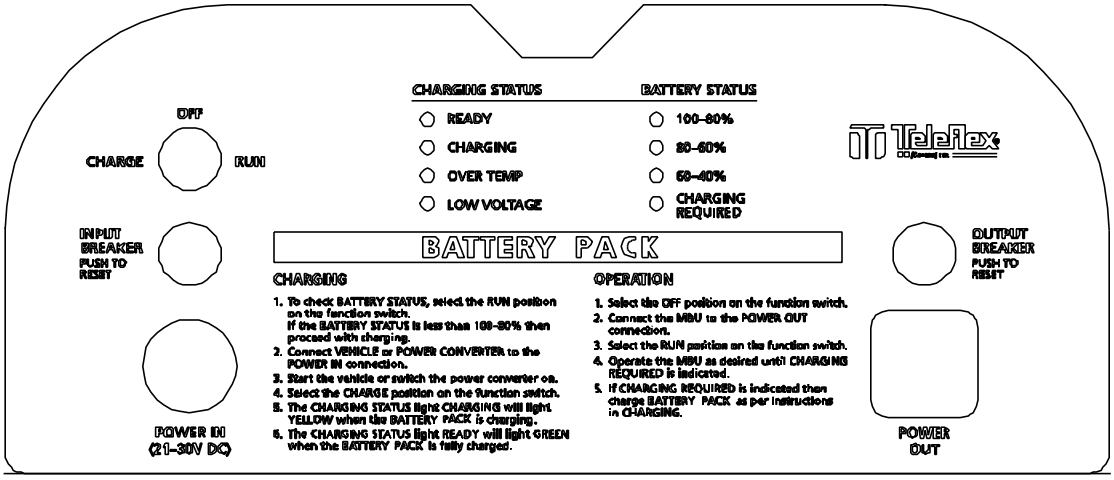


Figure 2-5 Battery Pack Control Panel Label

NON-SPILLABLE BATTERY

In Compliance with	CAUTION
DOT HMR 49 Non-Hazardous Material	Do not store BATTERY PACK • above 86°F (30°C) or • below 32°F (0°C).
International Civil Aeronautics (IACO) and International Air Transport Association (IATA)	Prior to storage - charge the BATTERY PACK.
Packaging Instruction 806, and Special Provision A67	Prior to service - turn all switches to OFF and disconnect batteries.
Vibration and Pressure Differential Tests	When reconnecting batteries - turn all switches to OFF.

Figure 2-6 Battery Pack Non-Spillable Battery Outer Cover Label

POWERED FUELING

The preferred method of re-fueling the MBU is through the use of the built-in powered fueling function. To use the powered re-fueling feature, proceed as follows:

WARNING!
DO NOT USE GASOLINE!

The MBU has been designed to operate with JP-8 and certain approved diesel fuels. The use of gasoline is STRICTLY PROHIBITED and will create an a fire danger and potential for explosion.

WARNING!
Fire

Do not attempt to connect a fuel line to the MBU in the vicinity of any open flame. Ensure that the fuel hose connections are made properly to avoid fuel spillage. Prevent a possible fire hazard by having rags on hand to absorb any spillage.

NOTE!
Powered Fueling

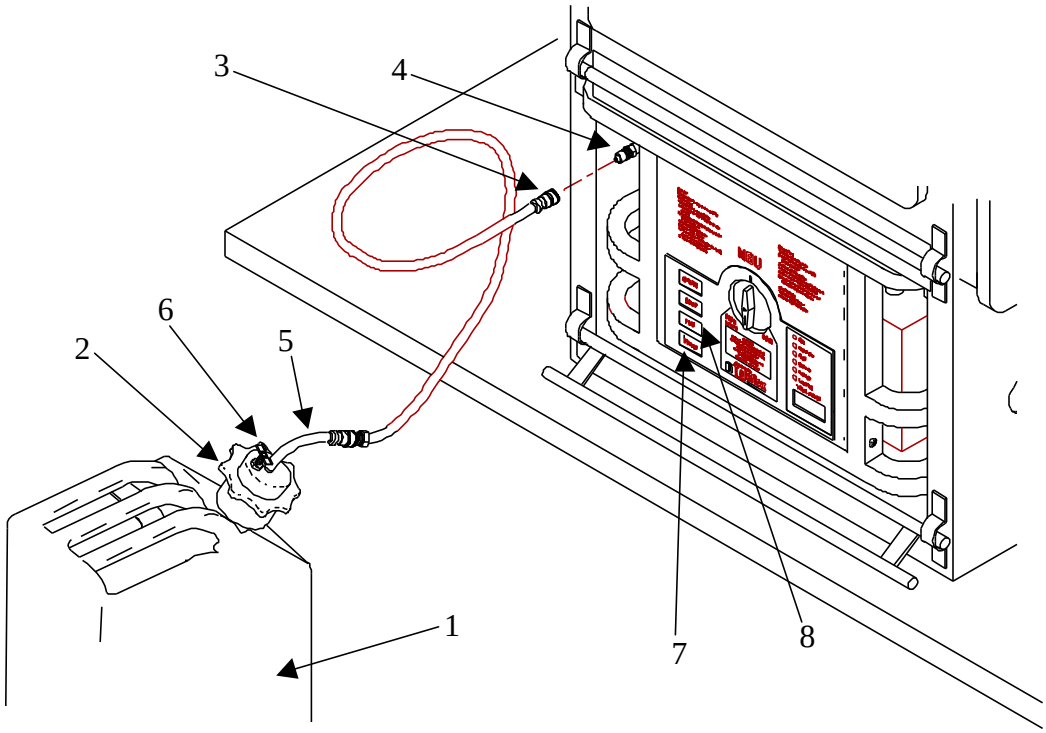
When re-fueling using the built-in powered fuel function, the unit must be under power, with the burner turned OFF.

Position fuel container **(1)** containing JP-8 fuel, equipped with a fuel can adapter **(2)**, within 20ft of the MBU to be fueled. If refueling an MBU on a MKT, the fuel can must be kept on the ground outside the MKT. The fuel can is NOT to be brought onto the MKT.

Connect the coupling **(3)** on the fuel supply hose to the fuel fill nipple **(4)** on the MBU. Connect the connector on other end of the fuel supply hose to the hose connector **(5)** on the fuel can adapter **(2)**. The couplings of the fuel hose should snap onto the fuel fill nipple **(4)** and adapter hose **(5)** securely. Ensure that a positive connection is made to avoid fuel spill and ensure proper operation. Open the manual vent cap **(6)** of the fuel can adapter **(2)**.

Be sure that the MBU is connected to a power source as described earlier and press the POWER button **(7)** on the MBU. Check that the indicators flash and the hour meter illuminates. Press the FUEL button **(8).** Check that the air compressor starts and that the Fueling/Full indicator blinks as the fuel tank fills. The Fueling/Full indicator will stop blinking, and remain steadily lit when tank is full. The air compressor will also turn off when fueling is complete.

When finished re-fueling, disconnect the fuel hose connector **(3)** from the fuel fill nipple **(4)** and adapter hose **(5)**. Connect the two ends of the fuel supply hose **(3)** together when not in use to prevent spillage and avoid contamination.



Powered fueling of MBU

MBU OPERATING PROCEDURES

WARNING!
Carbon Monoxide

During operation, the MBU produces carbon monoxide (CO), a colorless, odorless, and tasteless gas. Prolonged inhalation of CO will cause symptoms of drowsiness, headache, dizziness, and loss of muscular control. This can be avoided by ensuring that operating space is well ventilated.

Start-up: To start a burner that has been properly prepared, proceed as follows:

Push the POWER Button. The indicator lights will flash on and off for 3 seconds, and the hour meter background light will illuminate. The hour meter will display a series of characters before displaying the actual number of hours the MBU has been in operation.

Turn Burner Control to HIGH (START) position.

NOTE!
Fault Detection Override

Holding down the START button will override the fault detection circuitry, preventing shut down for 2 minutes. This allows purging the fuel lines on new units, and units that have been completely drained. It also facilitates troubleshooting.

Press START button. The WARM UP indicator will light for approximately 2 minutes.

When RUN indicator lights, MBU is ready for operation.

Burner Control Temperature Adjustment. The MBU Burner Control has a LOW and a HIGH setting indicator and can be set anywhere in between. The minimum and maximum settings correspond to a heat output of from approximately 18,000 BTUH to 60,000 BTUH respectively.

Each cooking situation is different and the correct burner control setting for that situation must be determined by trial. The correct settings will become apparent with experience and ongoing use of the burners.

MODERN BURNER UNIT (MBU) **0005 00**
OPERATION UNDER USUAL CONDITIONS

Normal Shut-Down. When the burner is no longer required, it should be shut-down. To do so, simply push the STOP button. This will interrupt the ignition cycle and the burner will shut down immediately.

Automatic System Shut-down: The MBU is programmed to shut down automatically when the following conditions exist (appropriate indicator lights will be illuminated). Refer to Table 1 for a detailed description of fault indicators.

Voltage. This indicator lights when the power requirements of the MBU are not being met. The power being supplied to the MBU is either below 22V DC or greater than 29.5V DC. The indicator will light red and the system will shut-down. The power source should immediately be checked in the sequence listed below.

If commercial or generator supplied power is used:

Verify that power source is supplying 110V AC.

Verify that power converter main power switch is ON.

(With power converter switch temporarily in the OFF position) check 24V DC power cable connections between the power converter, 24V DC extension, branch cables, and MBU.

If problem cannot be resolved refer to troubleshooting instructions in WP 0009.

If vehicle or battery power is used:

Verify that vehicle is supplying between 22 and 29.5V DC as measured with a multimeter.

Verify that battery pack 3-Position Function Switch is in the RUN position.

Verify that the battery pack is operating correctly by checking the Charging Status indicators on the front control panel.

With battery pack 3-Position Function Switch temporarily in the OFF position, check all 24V DC power cable connections between the battery pack, branch cable, and MBU.

If problem cannot be resolved refer to troubleshooting instructions in WP 0009.

Service. A fault has occurred in the burner circuitry or mechanical systems that prevents normal operation. The immediate and proper operator response is to perform troubleshooting procedures in accordance with WP 0009.

Low Fuel. This indicator will light green, amber, and red as indicated in Table 1. The burner will shut-down when it has run out of fuel. The MBU must be re-fueled before proceeding.

Table 1. MBU Fault Indicators

Indicator - color	Indicator Normally Lit	If Lit Before Operation	If Lit While MBU Is Operating	If Lit After Automatic Shutdown
WARMUP - amber	First two minutes of MBU operation.	N/A	Normal first two minutes of operation, abnormal after two minutes.	N/A
RUN - green	After two minutes of operation. WARMUP indicator tuns off at the same time.	N/A	Abnormal first two minutes of operation, normal after two minutes.	N/A
FUELING/FULL (green) blinking/steady	When fuel tank is filling/full.	N/A	N/A	N/A
LOW FUEL – indicators light as follows:	After approximately 3 hours of operation, and for ½ hour thereafter, for the times indicated:	Fuel tank needs to be filled.		
- green (blinking)	For 15 minutes	 **NOTE!** If the MBU is manually shut down while the Low Fuel indicator is lit, it will not restart until it is refueled.		
- amber (blinking)	For 7-1/2 minutes			
- red (blinking)	For 7-1/2 minutes			
- red (steady)	On MBU shut-down, hour from when LOW FUEL initially blinked green.			
VOLTAGE (red)	At an automatic shutdown when supply voltage falls to less than 22 V DC or greater than 29.5 V DC.	Check power source for proper operation.	N/A	Check power source for proper operation..
SERVICE (red)		Troubleshoot the problem (WP 0009). Attempt a re-start of MBU.		
HOUR METER BACK LIGHT -green	When power is on.	N/A	N/A	N/A

WARNING!
Two Person Lift

The Battery Pack weighs approximately 80 pounds (36.3 kg). Two persons must carry the Battery Pack, lifting with legs, not back, to prevent injury.

BATTERY PACK OPERATING PROCEDURES.

The battery pack is issued only with the KCLFF and KCLFF-E field feeding systems. When used by itself, it allows operation of MBUs in forward locations as described below. Whenever possible, a vehicle equipped with a NATO connector, should be made available should the battery pack require recharging. Recharging is desirable when the Charging Status indicator reads 40-60% or below.

The battery pack contains two sealed lead acid batteries and an internal charger. When fully charged, it provides the electrical storage to start and operate 3 MBUs simultaneously for 3 hours at an ambient of 60^0F (15.5^0C), and a period of 2 hours at an ambient of -25^0F (-32^0C). The batteries are rechargeable through the standard NATO vehicle power connector in 3 hours in temperatures between 60^0F (15.5^0C), and 120^0F (49^0C), and in five hours at -25^0F (-32^0C). The charger has circuitry that prevents overcharge. A 3-Position Function Switch controls the voltage being supplied to the output connector. The status of the batteries is indicated by the Battery Status lights. The percentage displayed indicates the amount of charge remaining. To use the battery pack proceed as follows:

Flip the 3-Position Function Switch to the OFF position. Connect the main connector of the branch cable to the POWER OUTPUT connector.

Connect the individual branches of the cable to the MBU power-in receptacle.

Flip the 3-Position Function Switch to the ON position.

To re-charge the battery pack proceed as follows:

Turn the 3-Position Function Switch to the RUN position and note the battery status.

If the status shows 40-60% or CHARGING REQUIRED, proceed with charging.

Using the NATO Adapter Cable, connect the battery pack POWER INPUT connector to a vehicle.

Start the vehicle engine.

Turn 3-Position Function Switch to the CHARGE position (The Charging Status indicator light labeled CHARGING will illuminate (yellow) to indicate that the batteries are charging.

The CHARGING STATUS indicator light READY will illuminate (green) to indicate when the batteries are fully charged.

When charging is complete, return the 3-Position Function Switch to the OFF position.

PREPARATION FOR MOVEMENT

When preparing to move from one field location to another for continued operation, the MBU can be left installed in the appliance. In situations where the field feeding system and the MBU' s will be placed in storage or left for longer periods of inactivity, the MBUs should be removed from the appliances and the system components placed in appropriate containers. These should be stored in a dry place, protected from environmental extremes such as dust and rain.

System Shut-Down. Shut the burners down in a normal manner as described previously. Depending on the situation, perform the following steps to disassemble the MBU system, as desired.

Push the POWER button to turn off power to the MBU (the hour meter background light will turn off)

Place power converter (or battery pack) switch to the OFF position.

Disconnect power converter (or battery pack) from power source.

Disconnect Battery Pack from vehicle (if NATO Adapter Cable is used).

Disconnect 110V AC extension cord from power converter.

Disconnect NATO Adapter Cable form Battery Pack.

Disconnect 24V DC extension and branch cables

PREPARING MBU AND ASSOCIATED EQUIPMENT FOR STORAGE

WARNING!
Two Person Lift

The Battery Pack weighs approximately 80 pounds (36.3 kg). Two persons must carry the Battery Pack, lifting with legs, not back, to prevent injury.

WARNING!
Two Person Lift

The MBU weighs approximately 58 pounds fully fueled (26.3 kg). Two persons must carry the MBU, lifting with legs, not back, to prevent injury.

WARNING!
Hot Surfaces

Do not attempt service procedures on a burner that has recently been in operation. Let the burner cool down before performing these procedures to avoid the possibility of serious burns.

Prior to placing the MBU or any component in storage, it must be inspected IAW After Operation PMCS (WP 0010), cleaned, and have had all necessary maintenance performed.

Remove all MBU' s from appliances.

Drain fuel tank IAW WP 0011.

Collect 110V AC and 24V DC extension, branch, and NATO adapter cables as applicable. Inspect and clean as necessary.

Disconnect Battery Lead. If a Battery Pack is used, disconnect the battery leads prior to storage as follows:

Remove the 10 screws and lock washers **(1)** that secure the outer cover **(2)**.

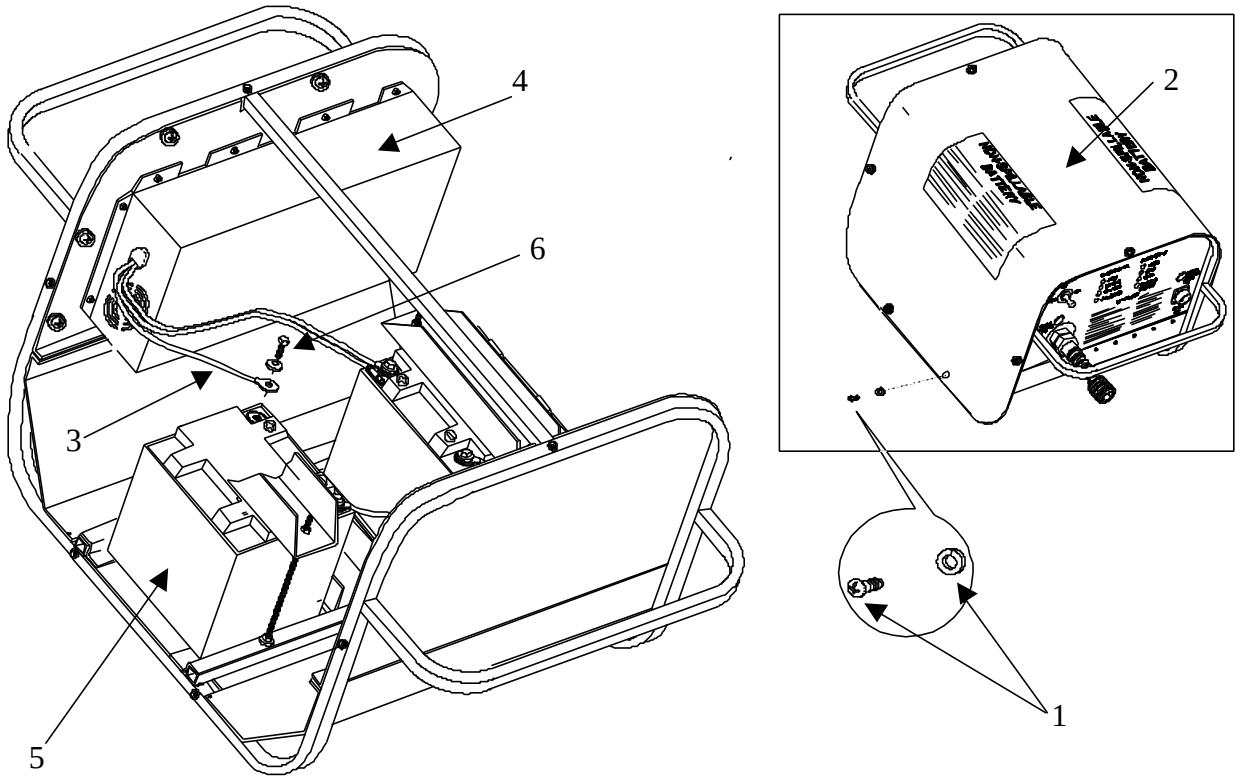
Locate the RED power lead **(3)** that extends from the internal charger **(4)** to the battery **(5)**.

Remove the terminal bolt **(6)** that secures the RED power lead **(3)** to the battery **(5)**. Remove the lead and cover the connector at the end of the lead with electrical tape. Re-install the terminal bolt **(6)**.

Tuck the wire between the battery **(5)** and the internal charger **(4)**.

Install the outer cover **(2)** on the Battery Pack with the 10 screws and lock washers **(1)** removed earlier.

When all components are properly prepared and cleaned, placeMBUs, the battery pack, the power converter (if not permanently installed in MKT, and all cables into containers. Equipment should be dry prior to storage



Disconnecting Battery Lead for Storage

END OF WORK PACKAGE

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OPERATION IN UNUSUAL ENVIRONMENT/WEATHER CONDITIONS

Precautions can be taken to protect the MBU and its associated equipment from the effects of severe weather and to minimize potentially dangerous conditions. The following steps are designed to prevent damage and avoid possible injury to personnel.

High Winds/Dust. During operation in windy and dusty conditions:

X Keep burners and associated equipment protected when not in use.

X Follow service procedures; replace air filter and clean fuel nozzle more frequently.

X Ensure fuel storage is not being contaminated by dust.

X Wipe equipment down more frequently.

X Check air vents on fuel regulator and vent valve orifice frequently; clean if necessary.

Rain/Wet Climate. During operation in rain and in wet climates:

X Check cables for secure connections.

X Avoid letting cable connections remain in running or standing water.

X Keep components protected from rain wherever possible.

X Follow service procedures; replace air filter and fuel nozzle more frequently.

Snow and Extreme Cold. During operation in snow and extreme cold:

X Keep battery pack under cover whenever possible.

X Protect fuel supply from exposure to extreme cold whenever possible.

X Clean fuel nozzle more frequently.

X Check air vents on fuel regulator and vent valve orifice frequently; clean if necessary.

Extreme Heat. During operation in extremely hot conditions:

X Keep equipment shaded whenever possible.

X Do not touch hot metal surfaces with bare hands.

X Be aware that fuel expands as the temperature rises - do not store fully fueled burners where they are exposed to the sun for long periods.

END OF WORK PACKAGE

CHAPTER 3

OPERATOR TROUBLESHOOTING AND SERVICE PROCEDURES FOR MODERN BURNER UNIT

GENERAL INFORMATION.

There are no lubrication requirements for the MBU or associated equipment.

SERVICE PARTS OVERPACK

During initial fielding of the MBU System, each shipment will contain a service and repair parts overpack designed to sustain the equipment during the initial 12 months of service. The overpack will contain the following items:

- Fuel Nozzle
- Air Filter
- Fuel Filter
- Ignitor
- Vent valve O-Ring
- Fuel regulator O-Ring
- Seal, Fuel Tank Cap

During the initial fielding period, repair parts not included in the overpack may be obtained from the following source:

Teleflex (Canada)
3831 No. 6 Road
Richmond, BC V6V 1P6
CANADA

Tel: (604) 270-6899

END OF WORK PACKAGE

MALFUNCTION SYMPTOM INDEX

The malfunction/symptom index is a quick reference index for finding troubleshooting procedures. Associated with each symptom name is a procedure sequence number representing the starting point in a troubleshooting sequence. Should any one symptom require more than one troubleshooting sequence to arrive at the most likely area of investigation, the additional starting point numbers are also provided.

As the troubleshooting activity progresses through to the conclusion of a particular sequence, a reference is made to the next logical troubleshooting sequence by procedural sequence number or by referring to the malfunction/symptom index to locate the next failure symptom procedure. This type of activity continues until successful fault isolation is achieved.

MALFUNCTION/SYMPTOM	TROUBLESHOOTING PROCEDURE
MBU does not start	1
MBU operates poorly	2
MBU shut-down during operation	3
MBU fails to fuel	4

END OF WORK PACKAGE

TROUBLESHOOTING PROCEDURES

The troubleshooting procedures contain tables listing the malfunctions, tests or inspections, and corrective action required to return the MBU to normal operation. Perform the steps in the order they appear in the tables.

Each procedure is headed by an initial setup. This setup outlines what is needed as well as certain conditions which must be met before starting the task.

DO NOT START THE TASK UNTIL:

- You understand the task
- You understand what you are to do
- You understand what is needed to do the work
- You have the things you need

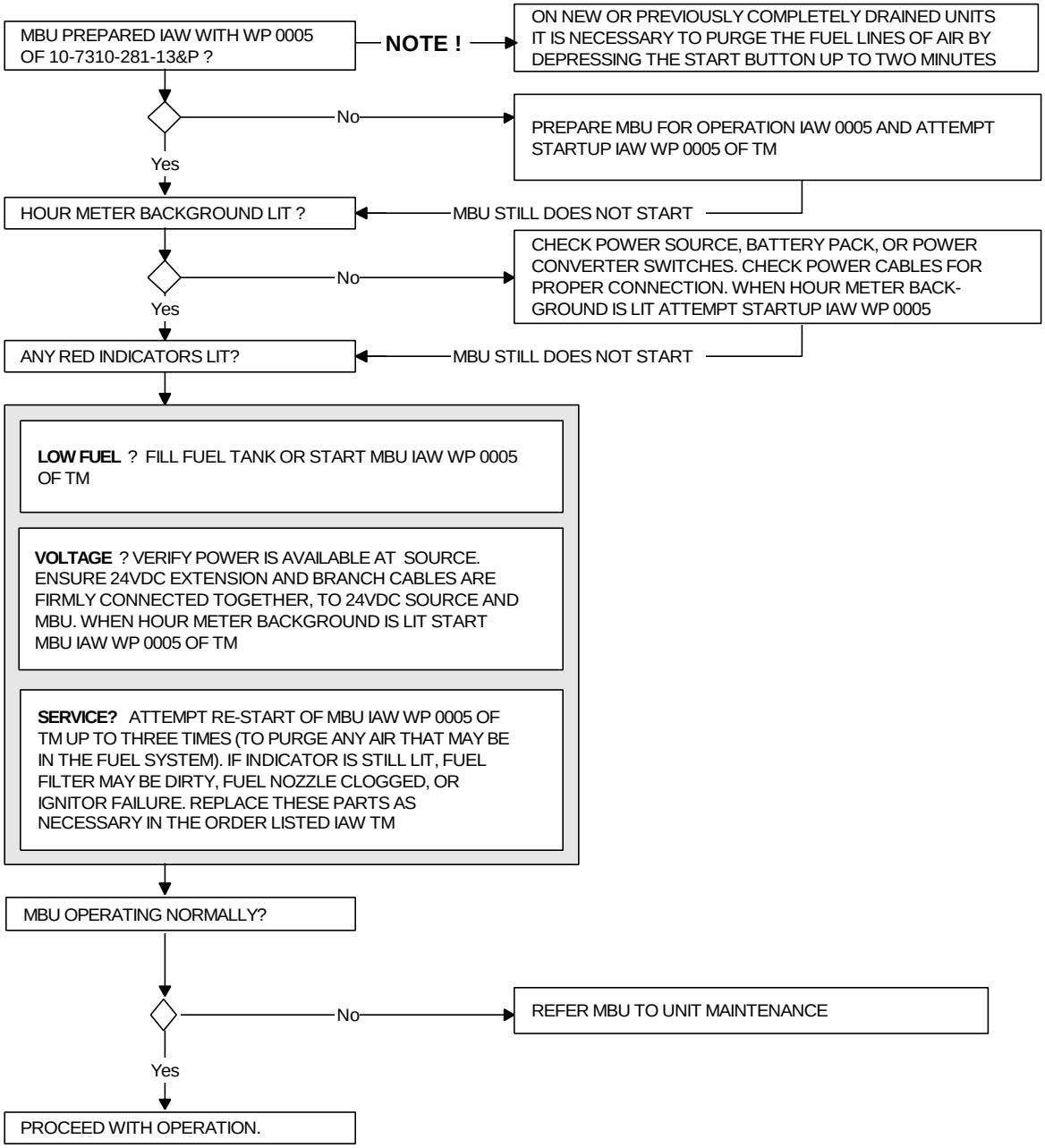
This manual cannot list all malfunctions that may occur, or all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, notify unit maintenance.

MODERN BURNER UNIT (MBU) **0009 00**
TROUBLESHOOTING PROCEDURES

THIS PROCEDURE COVERS:
MBU fails to start

INITIAL SETUP:
Maintenance Level
Operator

Materials/Parts
None

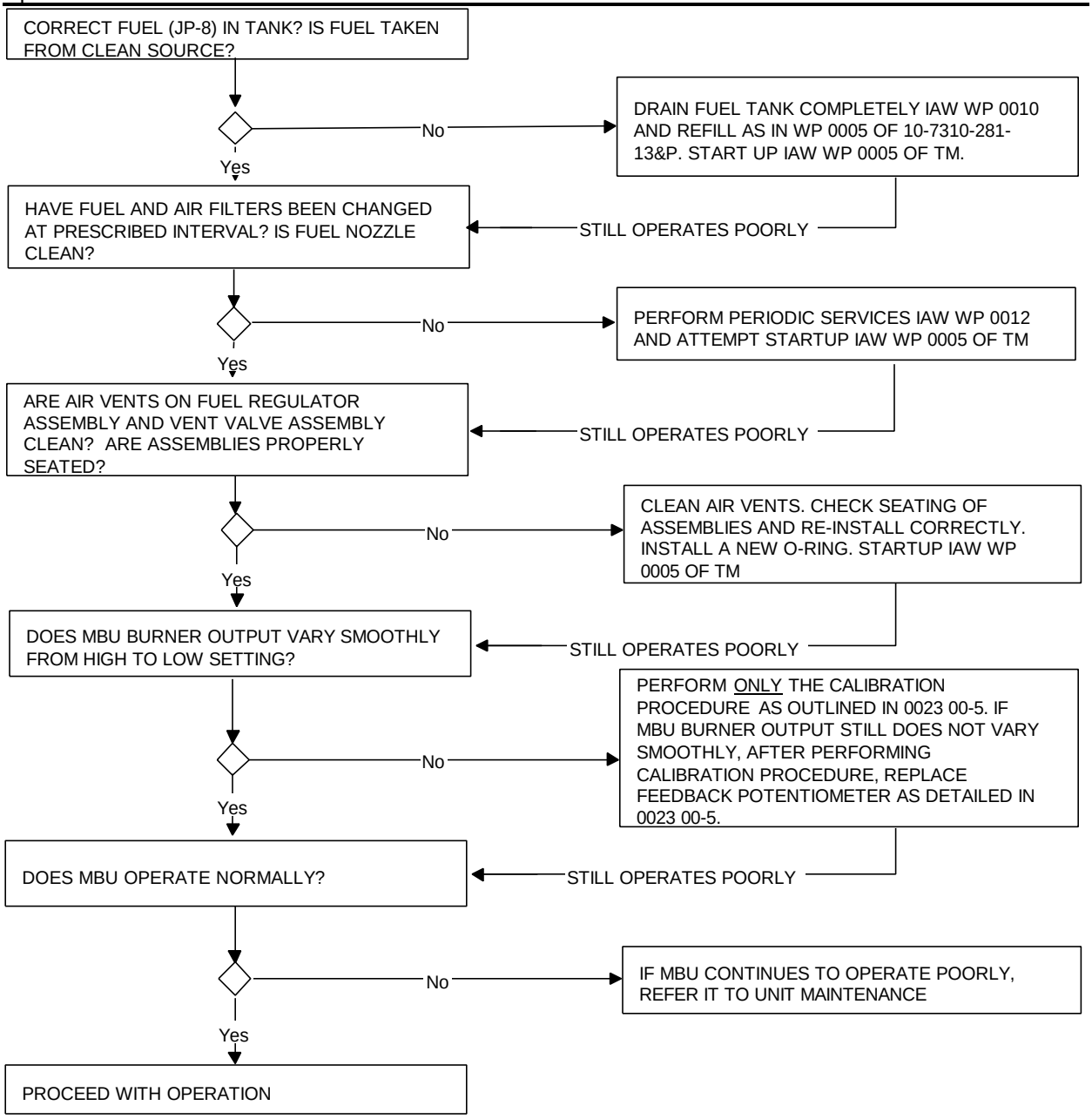


MODERN BURNER UNIT (MBU) **0009 00**
TROUBLESHOOTING PROCEDURES

THIS PROCEDURE COVERS:
MBU operates poorly

INITIAL SETUP:
Maintenance Level
Operator

Materials/Parts
None

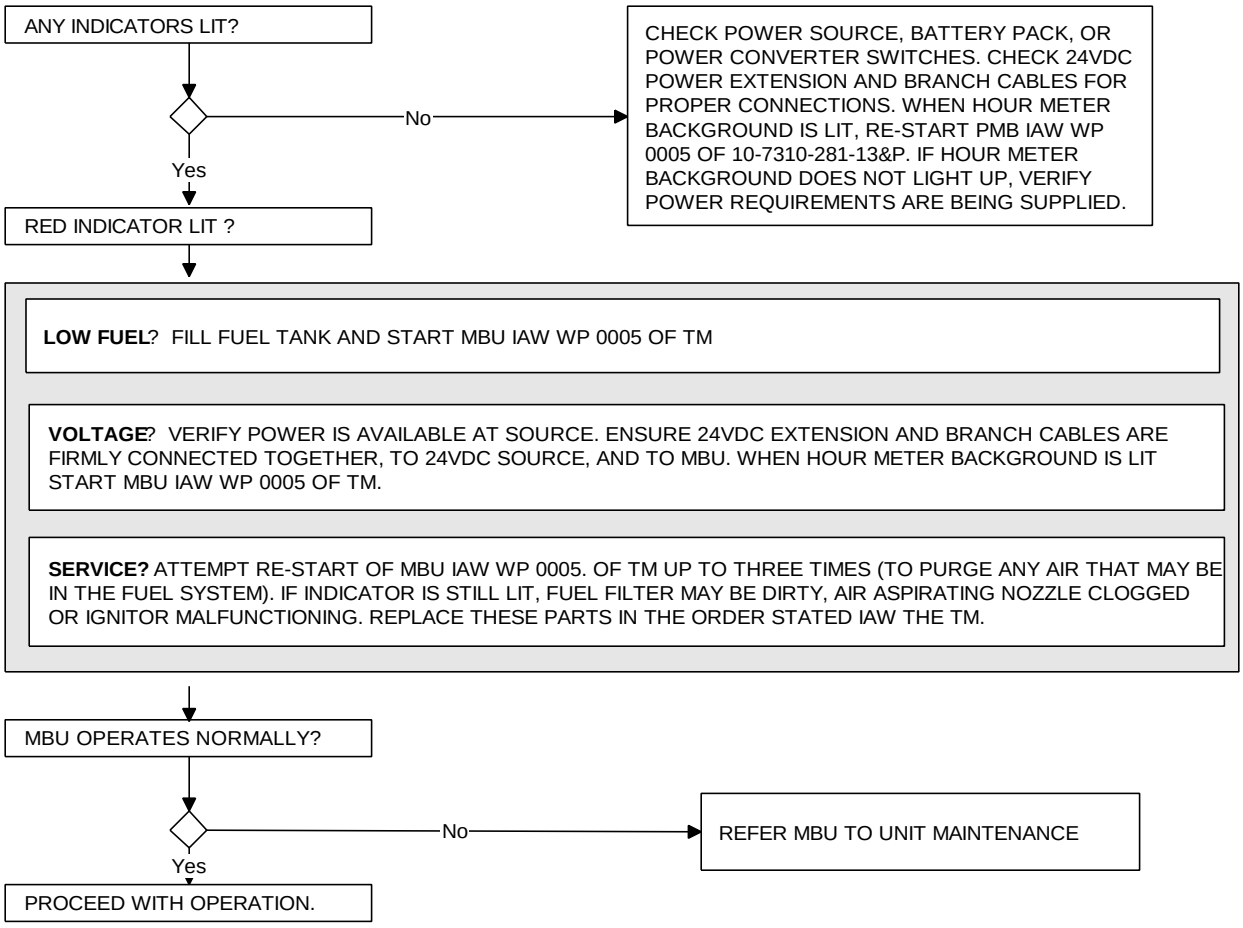


MODERN BURNER UNIT (MBU) **0009 00**
TROUBLESHOOTING PROCEDURES

THIS PROCEDURE COVERS:
MBU Shut-down during operation

INITIAL SETUP:

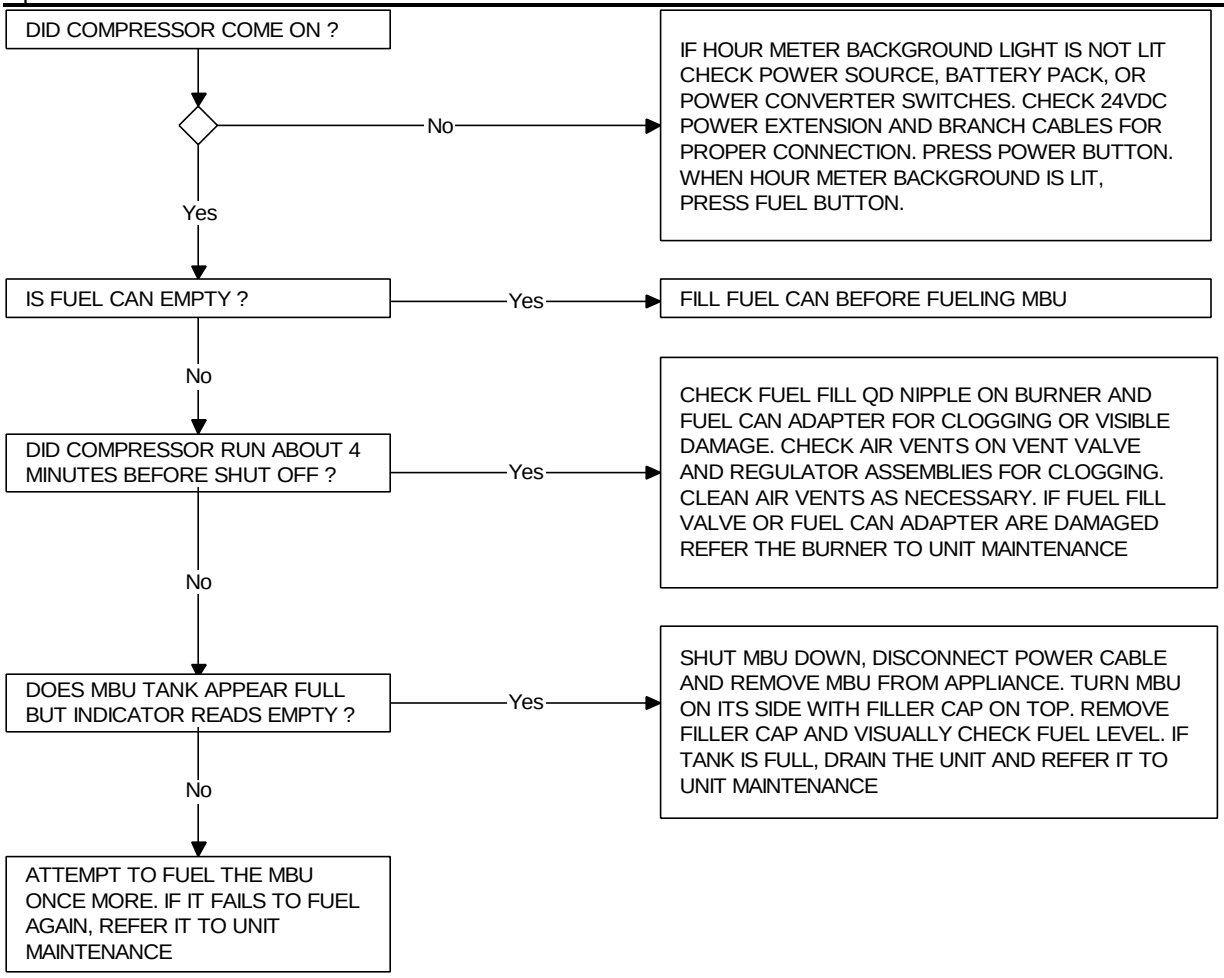
Maintenance Level	Materials/Parts
Operator	None



MODERN BURNER UNIT (MBU) **0009 00**
TROUBLESHOOTING PROCEDURES

THIS PROCEDURE COVERS:
MBU fails to refuel

INITIAL SETUP:
Maintenance Level: Operator
Materials/Parts: None



MODERN BURNER UNIT (MBU) **0009 00**
TROUBLESHOOTING PROCEDURES

THIS PROCEDURE COVERS:
Controller Error Codes

INITIAL SETUP:

Maintenance Level	Materials/Parts
Operator	None

EVALUATE

If any of the internal systems of the MBU experiences a malfunction, an error code may appear on the hour meter display of the control panel. The following table lists the expected error codes and internal systems that may be the cause of the malfunction. These error codes are not designed to specifically pinpoint the actual MBU assembly at fault but may serve as an aid in narrowing down the source of the malfunction. If an error code indicates a problem in an MBU subsystem that is not repairable at the Operator level, it must be referred to Unit Maintenance.

Table 1. Controller Error Codes

Code	Meaning	Suggested Action
ER01	No Flame or flame-out	See troubleshooting procedure " MBU fails to start" or " MBU shuts down during operation"
ER02	Overvoltage	Check voltage at power source. Check cables and connections between power source and MBU.
ER03	Undervoltage	Check voltage at power source. Check cables and connections between Power source and MBU.
ER04	Tank not full after4 minutes of fueling	See troubleshooting procedure " MBU fails to refuel" .
ER05	Flame detected	If there is a flame in the burner (when there should **NOT** be), then extinguish it, or allow to burn out before attempting to operate burner again. If no flame is present, then check flame sensor.
ER06	Fuel sensor	Check fuel sensor connection and wiring. Check fuel sensor.
ER07	Invalid key entry	Press STOP button to cancel error. Proceed with MBU operation. If error persists, then check for sticking buttons.
ER09	Fuel solenoid valve or Vent solenoid valve	Check fuel solenoid connection and wiring. Check vent solenoid connection and wiring. Check fuel solenoid. Check vent solenoid.
ER0A	Air solenoid valve	Check air solenoid connection and wiring. Check air solenoid.
ER11	Compressor	Check compressor connection and wiring. Check compressor.
ER12	Ignitor	Check ignitor connection and wiring. Check ignitor.
ER13	Compressor or Ignitor	Check compressor connection and wiring. Check ignitor connection and wiring. Check compressor. Check ignitor.
ER80	Controller	Cycle power. Attempt operation again. If error persists, replace Controller.
ER81		
ER82		

END OF WORK PACKAGE

MODERN BURNER UNIT (MBU)
PREVENTIVE MAINTENANCE CHECK AND SERVICES (PMCS) **0010 00**

THIS SECTION COVERS:
Introduction, PMCS Procedures

INITIAL SETUP:
MBU Shut-down and cool
Maintenance Level
Operator/Unit
Tools and Special Tools
Cleaning Brush (WP 0060, Table 1, Item 2)
Materials/Parts
Rags
(WP 0038, Table 2, Item 1)

INTRODUCTION

Preventive Maintenance Checks and Services (PMCS) are performed to keep the MBU and its associated equipment in good operating condition. The checks are used to find, correct, or report problems. Operator personnel are to do the PMCS jobs as shown in the PMCS table. PMCS are done every day the MBU is operated, using the PMCS table. Pay attention to WARNING and CAUTION statements. A WARNING means someone could be hurt. A CAUTION means equipment could be damaged.

Before you begin using the MBU, do **Before PMCS**

During use of the MBU, do **During PMCS**

After using the MBU, do **After PMCS**

Once a week, do **Weekly PMCS** if the MBU has been in use

Do **Monthly PMCS** once a month if the MBU has been in use

If you find something wrong when performing PMCS, fix it using troubleshooting and/or maintenance procedures.

The right-hand column of the PMCS table lists conditions that make the MBU not fully mission capable. Write up the faults that cannot be repaired on DA Form 2404 for unit maintenance. For further information on how to use this form, see DA PAM 738-750.

If tools required to perform PMCS are not listed in procedures, notify your supervisor.

INSPECTION

Look for signs of trouble. Senses help here. You can feel, smell, hear, or see many problems that can be eliminated before they get worse. Inspect to see if items are in good condition. Are components correctly installed and secured? Is any damage to the frame or components visible? Correct any faults or notify unit maintenance.

There are some common items to check on the MBU and associated equipment. These include the following:

- MBU burner well, frame, fuel nipple and power connector, control panel, fuel lines, fuel cap and gasket.
- Power converter external damage, serviceability of connectors, power cord, and controls.
- External damage to battery pack, condition of batteries, controls, and connectors.
- 110V AC and 24V DC extension and branch cable and connectors. Fuel adapter and hose serviceability.

LUBRICATION SERVICE INTERVALS

There are no lubrication requirements for the MBU and its associated equipment.

CLEANING

Proper cleaning of the MBU and components is an integral part of maintenance. It will help prevent possible problems in the future, so make it a habit to clean the MBU and its components whenever necessary. The burner can be cleaned with a rag or brush. The burner well must be kept clean at all times. Use a damp rag for this task. Also pay particular attention to the air vents on the regulator and float valve assemblies. These should be kept clean with a brush. Clean all connectors, including those on the power cables with a dry brush. Wipe battery pack and power converter housing with a damp rag to remove dust and stains

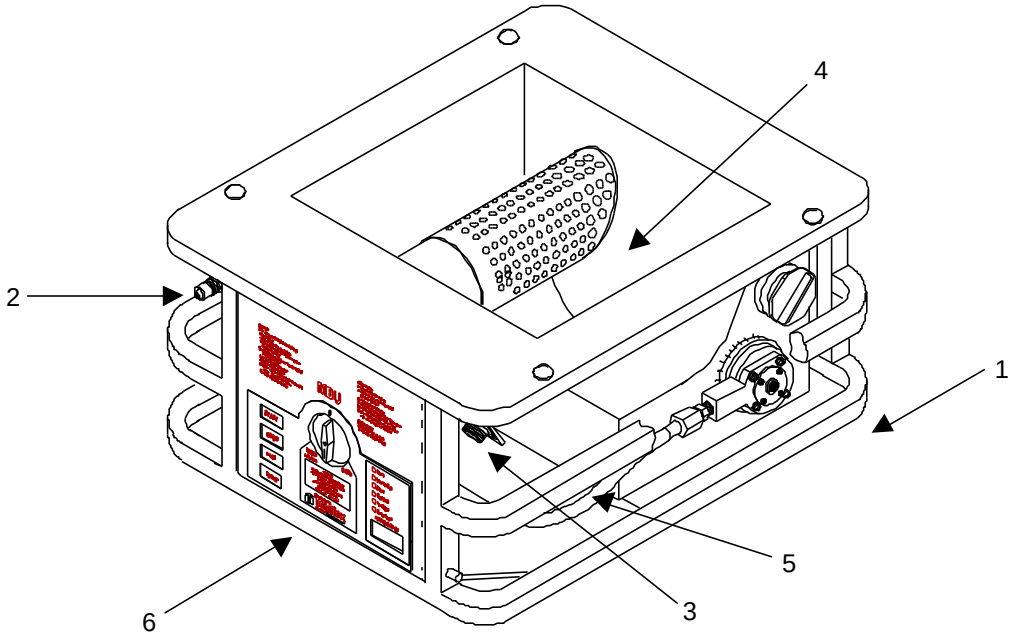
MODERN BURNER UNIT (MBU)
PREVENTIVE MAINTENANCE CHECK AND SERVICES (PMCS) **0010 00**

THIS SECTION COVERS:
Before Operation PMCS Checks and Services

INITIAL SETUP:
MBU cooled down and removed from appliance
Maintenance Level
Operator

Table 1. Preventive Maintenance Checks and Services for MBU.

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
1	Before		MBU	**WARNING!** **Two Person Lift** The MBU weighs approximately 58 pounds (26.3 kg) fully fueled. Two persons must carry the MBU when fully fueled, lifting with legs, not back, to prevent injury. Inspect frame (1) for damage, such as bent frame members, cracks, dents or broken welds. Check for damage to fuel nipple (2) and power connector (3). Check burner well (4) for debris or accumulated food waste. Inspect fuel lines (5) for leaks. Check control panel (6) for damage.	Broken frame weld, fuel nipple or power connector damaged or not secure. Food waste or debris in burner well. Fuel leak or control panel damaged.



MBU " Before Operation" PMCS

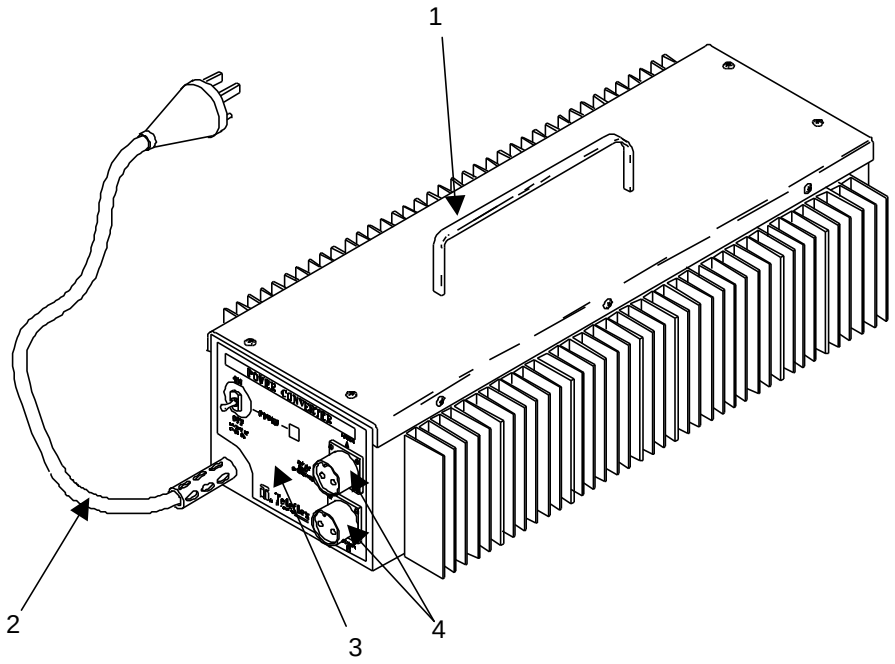
MODERN BURNER UNIT (MBU)
PREVENTIVE MAINTENANCE CHECK AND SERVICES (PMCS) **0010 00**

THIS SECTION COVERS:
Before Operation PMCS Checks and Services

INITIAL SETUP:
Power Converter turned OFF
Maintenance Level
Operator

Table 1. Preventive Maintenance Checks and Services for MBU - continued.

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
2	Before		Power Converter	Visually inspect the converter (1) for external damage, missing or frayed power cord (2) damaged control panel (3) or connectors (4).	Converter damaged, cooling fins bent, power cord missing or frayed, control panel or power connectors damaged.



Power Converter " Before Operation" PMCS

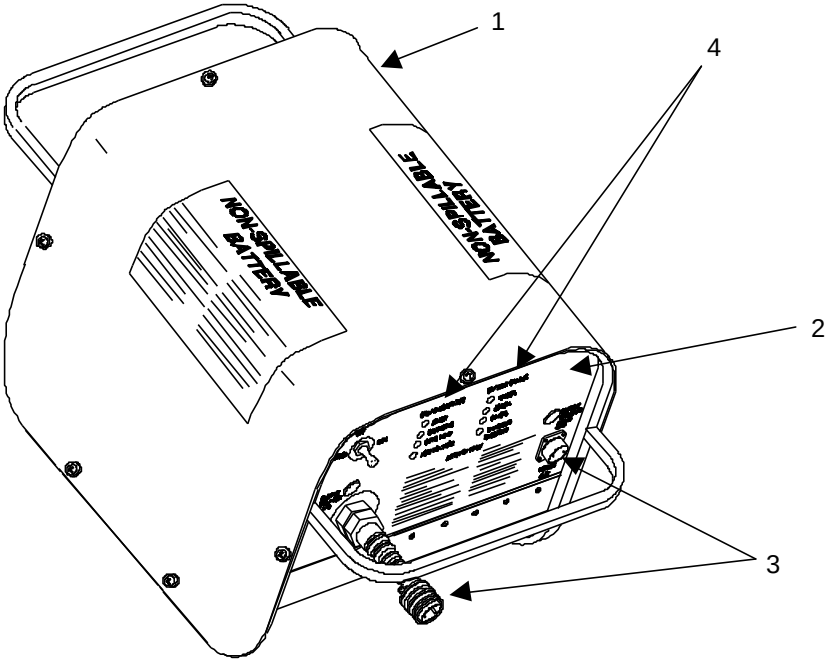
MODERN BURNER UNIT (MBU)
PREVENTIVE MAINTENANCE CHECK AND SERVICES (PMCS) **0010 00**

THIS SECTION COVERS:
Before Operation PMCS Checks and Services

INITIAL SETUP:
Battery Pack not in operation
Maintenance Level
Operator

Table 1. Preventive Maintenance Checks and Services for MBU - continued.

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
3	Before		Battery Pack	**WARNING!** **Two Person Lift** The Battery Pack weighs approximately 80 pounds (36.3 kg). Two persons must carry the Battery Pack, lifting with legs, not back, to prevent injury. Inspect battery pack cover (1) control panel (2) and power connectors (3) for damage. Check condition and charge status of batteries (4).	Control panel or power connectors damaged. Battery charge less than 40%.



Battery Pack " Before Operation" PMCS

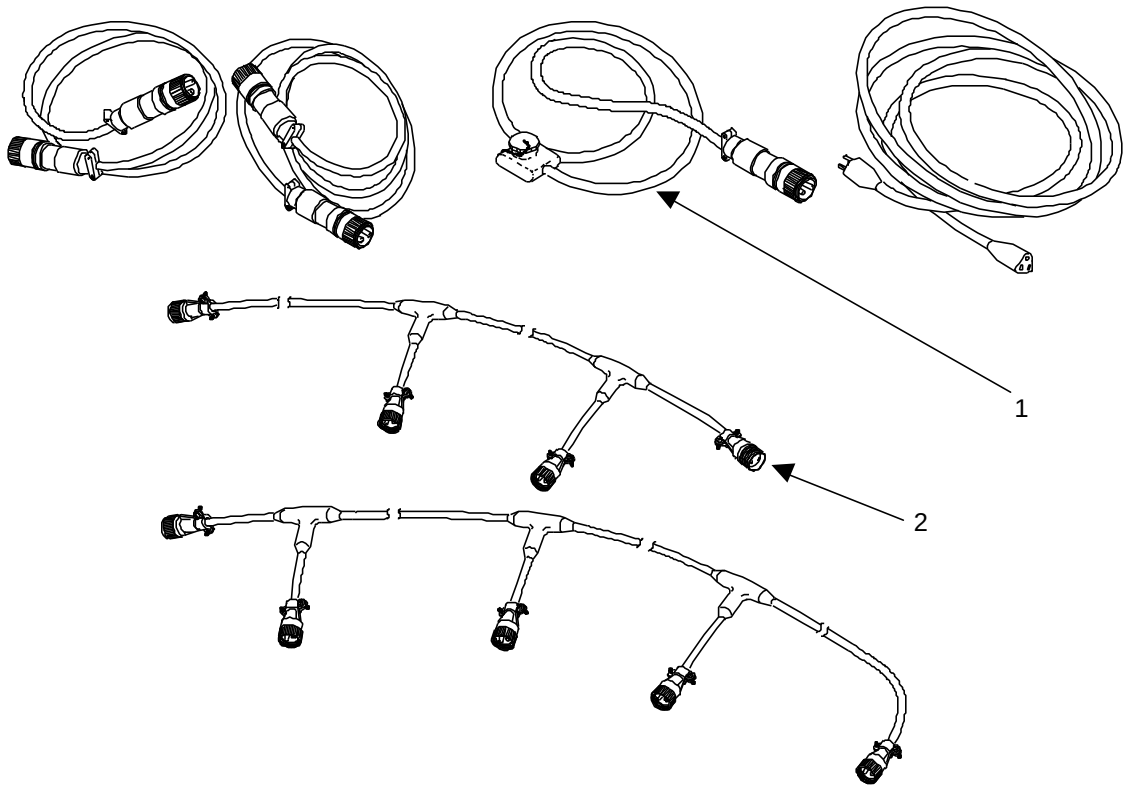
MODERN BURNER UNIT (MBU)
PREVENTIVE MAINTENANCE CHECK AND SERVICES (PMCS) **0010 00**

THIS SECTION COVERS:
Before Operation PMCS Checks and Services

INITIAL SETUP:
NATO adapter, 110V AC and 24V DC extension and branch cables disconnected
Maintenance Level
Operator

Table 1. Preventive Maintenance Checks and Services for MBU - continued.

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
4	Before		110V AC, 24V DC extension and branch cables. NATO adapter cable	Inspect the power cables (1) for frayed cable and damaged or dirty connectors (2).	Frayed cable. Missing or damaged power connectors.



System Cables " Before Operation" PMCS

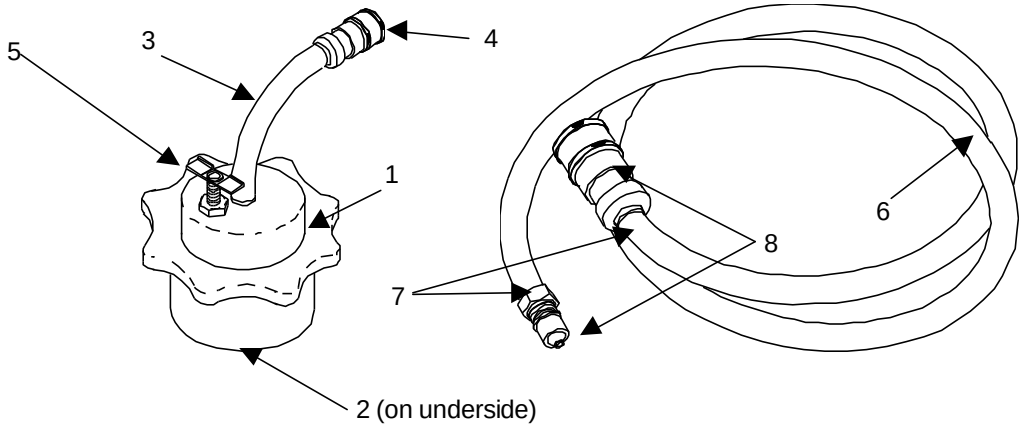
MODERN BURNER UNIT (MBU)
PREVENTIVE MAINTENANCE CHECK AND SERVICES (PMCS) **0010 00**

THIS SECTION COVERS:
Before Operation PMCS Checks and Services

INITIAL SETUP:
Fuel Can Adapter removed from fuel can,
fuel hose disconnected from MBU and Fuel Can Adapter
Maintenance Level
Operator

Table 1. Preventive Maintenance Checks and Services for MBU - continued.

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
4	Before		Fuel Can Adapter and Fuel Hose	Inspect the Fuel Can Adapter **(1)** for any cracks that would cause a fuel leak. Inspect the gasket inside the adapter **(2)** for any cracks that would prevent a proper seal. Inspect the hose **(3)** and QD connector **(4)** at the top of the adapter to ensure that they are securely connected and that the hoses are not cracked or otherwise damaged. Check the condition of the manual relief valve **(5)** for proper operation. Inspect the Fuel Hose **(6)** for any cracking or other deterioration that would cause the hose to leak. Check the condition of the connection **(7)** between the hose and the quick disconnect fitting **(8)** for a secure seal.	Cracked or leaking fuel can adapter housing, cracked, cut, or leaking hose, broken vent cap, broken QD connector. Cut, cracked or leaking fuel hose. Broken QD fittings.



Fuel Can Adapter and Fuel Hose " Before Operation" PMCS

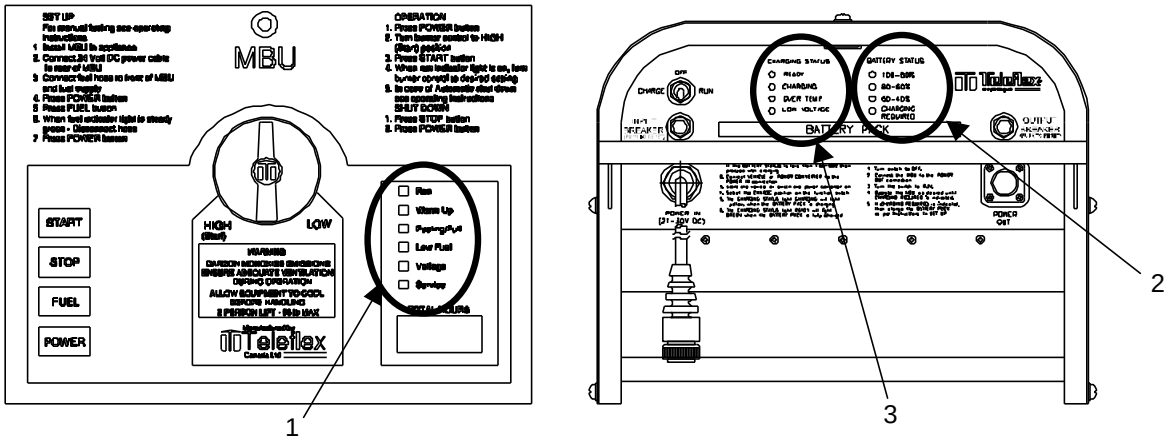
MODERN BURNER UNIT (MBU)
PREVENTIVE MAINTENANCE CHECK AND SERVICES (PMCS) **0010 00**

THIS SECTION COVERS:
During Operation PMCS Checks and Services

INITIAL SETUP:
MBU system in operation
Maintenance Level
Operator

Table 4-1. Preventive Maintenance Checks and Services for MBU - continued.

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
5	During		MBU and Battery Pack	**WARNING! Electric Shock** Lethal voltage is present when the MBU is connected to a power source. Limit procedures to a visual inspection as indicated. Serious injury or death by electrocution may occur if component under power is touched. **WARNING!** **Two Person Lift** The Battery Pack and MBU require two persons to lift. Each should be lifted with legs, not back, to prevent injury. Monitor the control panel **(1)** of the MBU for any fault indicators lit up. Respond as described in WP 0009. Check battery charge **(2)** frequently. Recharge as necessary. Check Charging Status indicators **(3)** for Over temp or Low Charging Voltage fault indicator.	MBU out of fuel. Battery charge less than 40%. Battery Over Temp indicator lit. Low Charging Voltage indicator lit.



MBU and Battery Pack " During Operation" PMCS

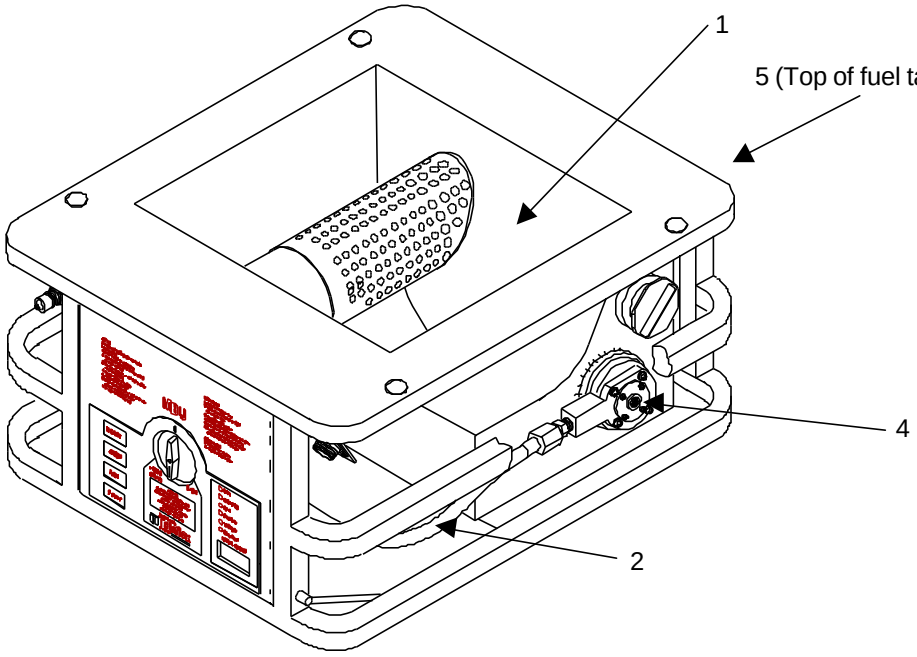
MODERN BURNER UNIT (MBU)
PREVENTIVE MAINTENANCE CHECK AND SERVICES (PMCS) **0010 00**

THIS SECTION COVERS:
After Operation PMCS Checks and Services

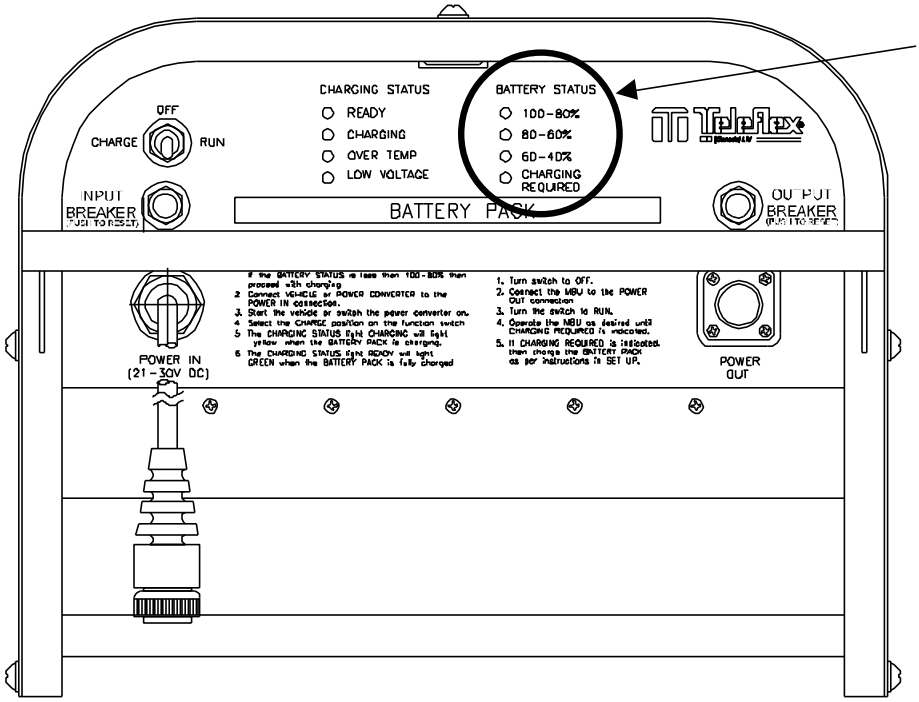
INITIAL SETUP:
MBU System shut-down and cooled off
Maintenance Level
Operator

Table 4-1. Preventive Maintenance Checks and Services for MBU - continued.

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
6	After		MBU and Battery Pack	 **WARNING! Hot Surfaces** Let the MBU cool down before performing After Operation PMCS . This will prevent burn injuries.  **WARNING!** **Two Person Lift** The Battery Pack and MBU weigh approximately 80 (36.3 kg) and 58 (26.3 kg) pounds respectively. Two persons must carry each unit, lifting with legs, not back, to prevent injury. Inspect the MBU burner well (1) for spilled food waste. Check the MBU for evidence of fuel leaks (2). Check Regulator Assembly Air Vent (4), and clean if necessary. Check Air Vent Assembly Orifice (5), and clean if necessary. Check the battery charge (3). Clean equipment components and re-charge batteries if necessary. Check cables for any damage, and replace if necessary.	MBU out of fuel. Burner Well dirty. Any fuel leaks in MBU. Clogged Fuel Regulator or Vent Valve Assembly Orifice air vents. Battery charge less than 40%. Cables damaged.



MBU " After Operation" PMCS



Battery Pack " After Operation"

PMCSTable 2. Mandatory Replacement Parts (every 300 hours of operation)

Item No.	Part Number	NSN	Nomenclature	Qty
1	346126	--	Air Filter	1
2	038052-08	--	In-Tank Fuel Filter	1

Table 3. Mandatory Replacement Parts (every 2000 hours of operation)

Item No.	Part Number	NSN	Nomenclature	Qty
1	980260K	--	Ignitor	1
2	928428K	--	Fuel Nozzle	1

END OF WORK PACKAGE

DRAIN FUEL TANK

THIS SECTION COVERS:
Draining the fuel tank

INITIAL SETUP
MBU shut down and cooled off
Maintenance Level **Materials/Parts**
Operator
Tools and Special Tools
Fuel Can(WP 0060, Table1, Item 5), Fuel Can Adapter, Fuel Hose

Drain Fuel Tank. The fuel tank should be drained prior to any service operation that would cause fuel to leak from the system. The tank must also be drained prior to sending to Unit or Direct Support Maintenance.

WARNING!
Two Person Lift

The MBU weighs approximately 58 pounds fully fueled (26.3 kg). Two persons must carry the MBU when fully fueled, lifting with legs, not back, to prevent injury.

WARNING!
Fire / Fuel Contamination

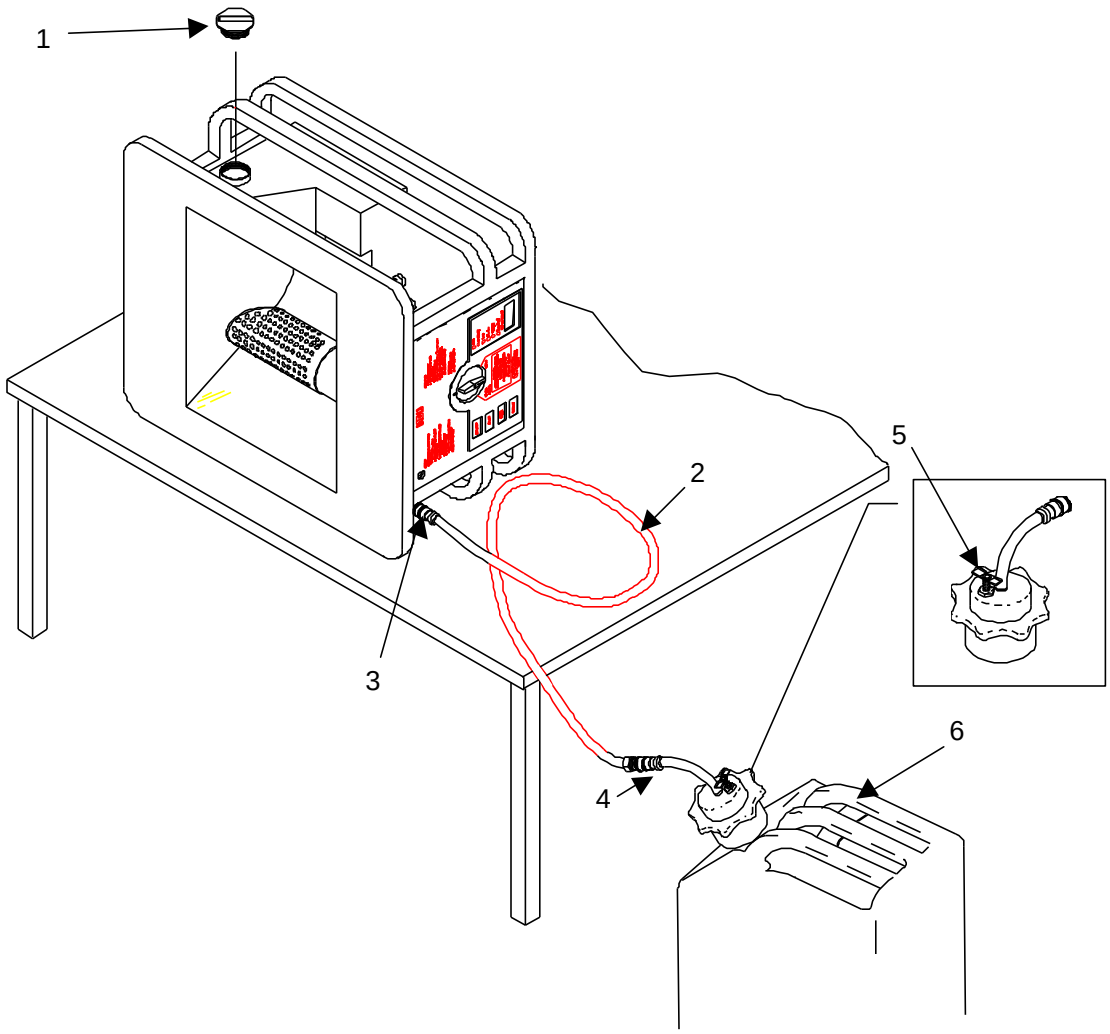
Have rags on hand to clean up fuel spillage that may occur to prevent contamination. Do not perform this procedure near an open flame to prevent fire.

Place MBU on its left side so the fuel tank fill plug **(1)** is on top.

Connect the fuel hose **(2)** to the fuel fill nipple **(3)** on the burner, and connect the other end to the fuel can adapter **(4)**. The fuel can **(6)** must be located close to and **lower** than the MBU to allow the fuel to drain out. Coil the excess fuel hose and place on table beside MBU.

Open tank fill plug **(1)**. Open manual relief vent **(5)** on Fuel Can Adapter **(4)**.

When fully drained, replace fill plug **(1)** and disconnect fuel hose **(2)** . Close manual relief vent **(5)**.



Draining the MBU Fuel Tank

END OF WORK PACKAGE

MODERN BURNER UNIT (MBU) **0012 00**
OPERATOR SERVICES

REPLACE AIR FILTER

THIS SECTION COVERS:
Replace (300 Hours)

INITIAL SETUP
MBU shut down and cooled off (WP 0005)
Maintenance Level **Materials/Parts**
Operator
Tools and Special Tools
M-59 Accessory Kit (WP 0038, Table 2, Item 1)

Replace Air Filter. Replace the air filter more often in dusty or extremely humid conditions or whenever recommended as part of the troubleshooting procedures.

WARNING!
Two Person Lift

The MBU weighs approximately 58 pounds fully fueled (26.3 kg). Two persons must carry the MBU, lifting with legs, not back, to prevent injury.

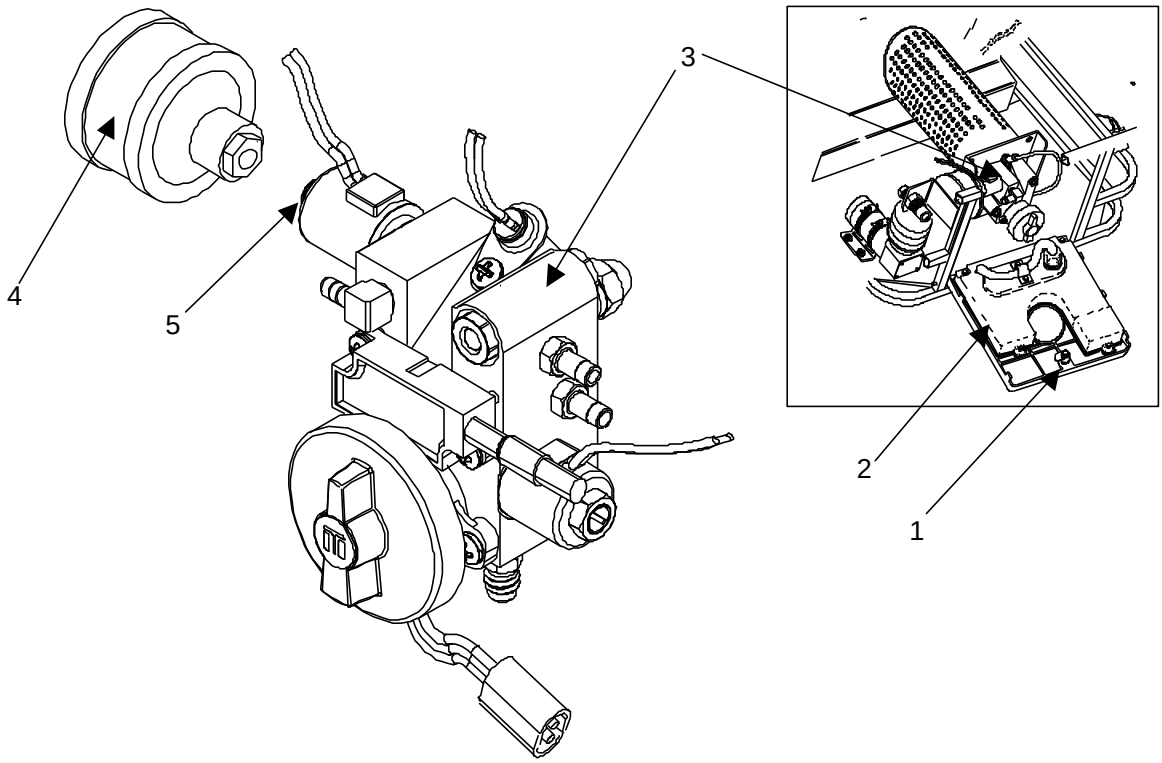
Turn locking latch **(1)** on top of front panel **(2)** counter clockwise. Lower front panel of MBU to gain access to Fuel Delivery Block **(3)** and Air Filter **(4).**

Grasp air filter **(4)** and rotate counterclockwise to unscrew from the threaded fitting **(5)** on the air/fill solenoid valve of the fuel delivery block **(3)**.

Screw the new air filter **(4)** onto the threaded fitting **(5)** until it is securely in place.

Close and secure front panel **(1).**

END OF WORK PACKAGE



Replacing the Air Filter

END OF TASK

REPLACE FUEL FILTER

THIS SECTION COVERS:
Replace (300 Hours)

INITIAL SETUP
MBU shut-down and cooled (WP 0005)
Drain MBU Fuel Tank (WP 0011)

Maintenance Level
Operator

Tools and Special Tools
Cross tipped Screwdriver (WP 0038, Table 2, Item 1)
Cleaning Brush (WP 0060, Table 1, Item 2)

Materials/Parts
O-Ring (WP 0061, Table 1, Item 3)
Rags (WP 0060, Table 1, Item 1)

Replace in-tank fuel filter. Replace the in-tank fuel filter on the regulator assembly more often in dusty or extremely humid conditions or whenever recommended as part of a troubleshooting procedure.

WARNING!
Fire / Fuel Contamination

Before proceeding with this procedure, the MBU fuel tank must be drained completely as described in work package 0011. Have rags on hand to clean up fuel spillage that may occur to prevent contamination. Do not perform this procedure near an open flame to prevent fire.

Remove four screws **(1)** holding fuel regulator assembly **(2)** to tank **(3)**.

Remove fuel regulator assembly **(2)** from tank **(3)** as shown.

Discard O-ring **(7)**.

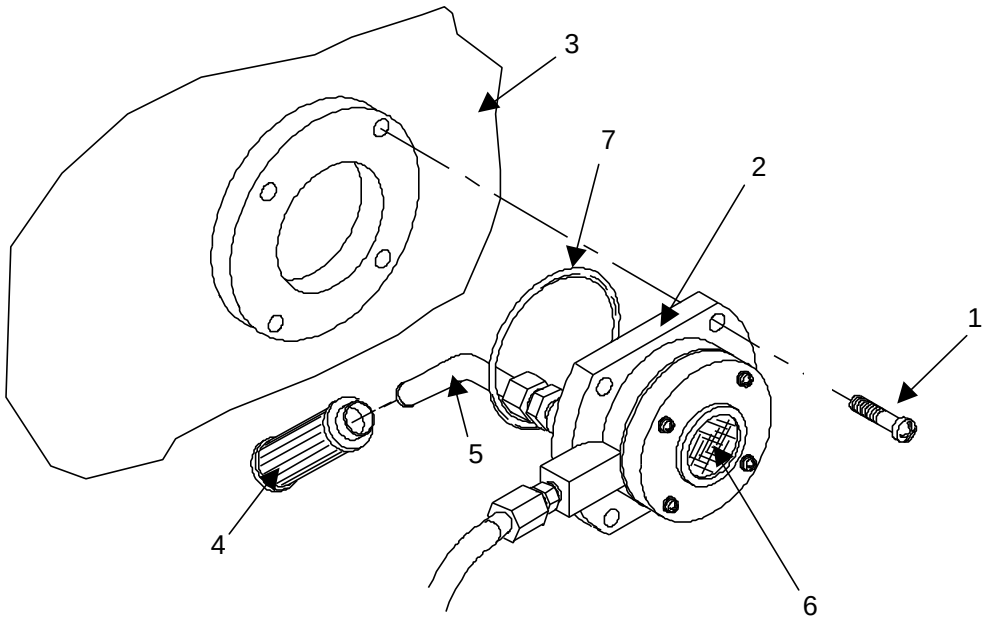
Pull fuel filter **(4)** off the regulator shaft **(5)**.

Install new fuel filter **(4)** onto regulator shaft **(5)**.

Lubricate with a small amount of fuel and install new O-ring **(7)**.

Check the fuel regulator air vent **(6)** for dirt or debris and clean with a small soft-bristle brush. Do not use any tool that will force the debris into the filter surface or damage it in any way.

Re-install fuel regulator assembly **(2)** into tank **(3)** and secure with four screws **(1)**.



Replacing the Fuel Filter

END OF WORK PACKAGE

REPLACE IGNITOR

THIS SECTION COVERS:
Replace (2000 Hours)

INITIAL SETUP
MBU shut-down and cool (WP 0005)

Maintenance Level
Operator

Materials/Parts
Rags (WP 0060, Table 1, Item 1)

Tools and Special Tools
Cross tipped Screwdriver (WP 0038, Table 2, Item 1)

Replace Ignitor. Replace the ignitor every 2000 Hrs of operation or whenever recommended as part of a troubleshooting procedure.

WARNING!
Hot Surfaces

Do not attempt service procedures on a burner that has recently been in operation. Let the burner cool down before performing these procedures to avoid the possibility of serious burns.

Open control panel **(1)** of MBU to gain access to the fuel delivery block **(2)**.

Remove 2 hex nuts and washers **(3)** securing fuel delivery block **(2)** to the burner tube **(4)**.

Move fuel delivery block **(2)** out of the way to gain access to the ignitor **(5)**.

Disconnect ignitor power lead **(6)**.

Loosen ignitor retainer screw **(7)** and remove ignitor **(5)** from the fuel delivery block **(2)**.

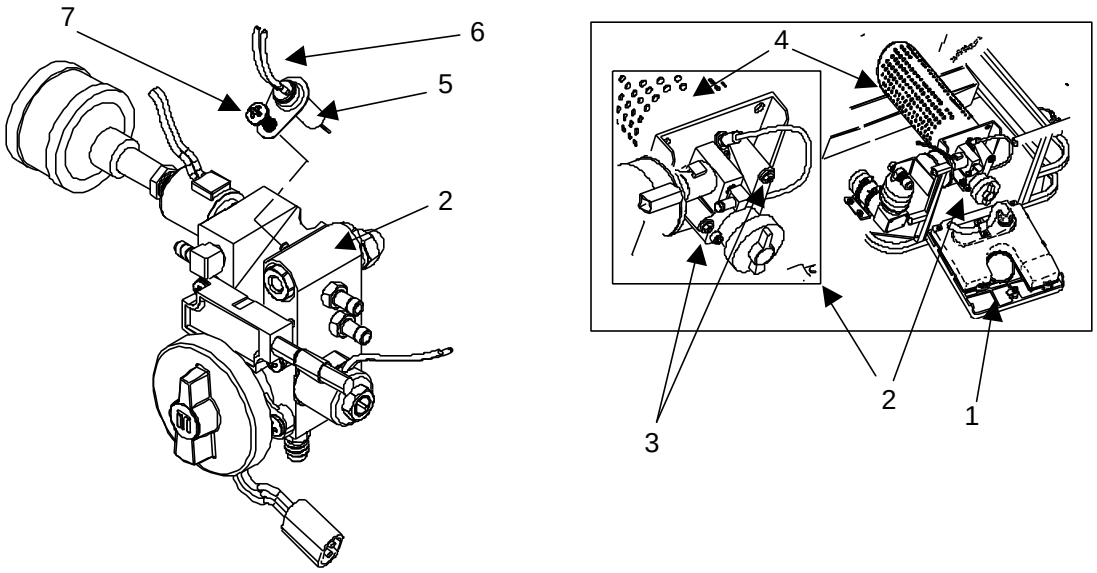
CAUTION!
Ignitor Damage
When replacing the nozzle, be careful not to damage the ignitor.

Install new ignitor assembly **(5)**, and tighten the retainer screw **(7)**.

Connect the ignitor power lead **(6)**.

Move fuel delivery block **(2)** into position and install 2 hex nuts and washers **(3)** while holding the block **(2)** against the burner tube assembly **(4)**.

Close control panel **(1)**, and secure.



Replacing the Ignitor Assembly

END OF WORK PACKAGE

CLEAN/REPLACE FUEL NOZZLE

THIS SECTION COVERS:
Clean as required, Replace (2000 Hours)

INITIAL SETUP
MBU shut-down and cool (WP 0005)
Drain Fuel Tank (WP 0011)

Maintenance Level
Operator

Materials/Parts
Rags (WP 0060, Table 1, Item 1)

Tools and Special Tools
Adjustable Wrench (WP 0038, Table 2, Item 1)

Clean/Replace Fuel Nozzle. Replace the nozzle every 2000 hours of operation or whenever recommended as part of a troubleshooting procedure. Clean as necessary.

WARNING!
Fire

Do not attempt to connect a fuel line to the MBU in the vicinity of any open flame. Ensure that the fuel hose connections are made properly to avoid fuel spillage. Prevent a possible fire hazard by having rags on hand to absorb any spillage.

WARNING!
Hot Surfaces

Do not attempt service procedures on a burner that has recently been in operation. Let the burner cool down before performing these procedures to avoid the possibility of serious burns.

Open control panel **(1)** to gain access to fuel delivery block **(2)**.

Remove 2 hex nuts and washers **(3)** securing fuel delivery block **(2)** to the burner tube assembly **(4)**.

Move fuel delivery block **(2)** out of the way to gain access to the nozzle **(5)**.

If cleaning, wipe the nozzle **(5)** to remove any accumulated residue.

CAUTION!
Ignitor Damage
When replacing the nozzle, be careful not to damage the ignitor.

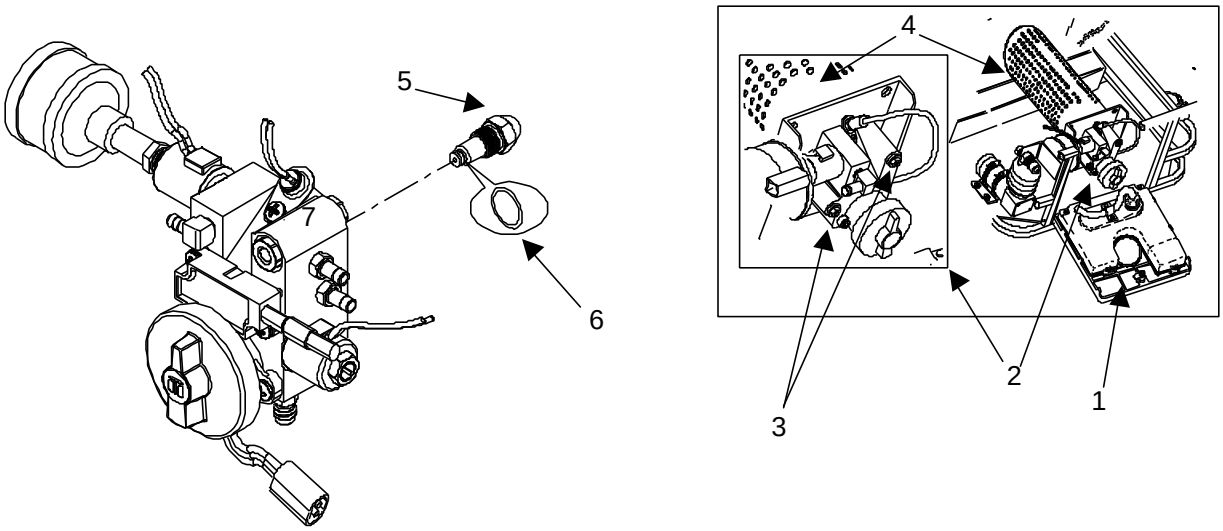
If replacing the nozzle **(5)**, unscrew it from the fuel delivery block **(2)**.

Lubricate the O-ring **(6)** on the fuel nozzle **(5)** with a small amount of fuel. The O-ring is supplied in place on the fuel nozzle.

Screw the new or cleaned fuel nozzle **(5)** into the fuel delivery block **(2).**

With a new (or cleaned) and nozzle **(5)** installed, move the fuel delivery block **(2)** into position and install 2 hex nuts and washers **(3)** securing it tightly to the burner tube **(4)**.

Close control panel **(1)** and secure.



Cleaning and/or Replacing the Fuel Nozzle

END OF WORK PACKAGE

MODERN BURNER UNIT (MBU) **0016 00**
OPERATOR SERVICES

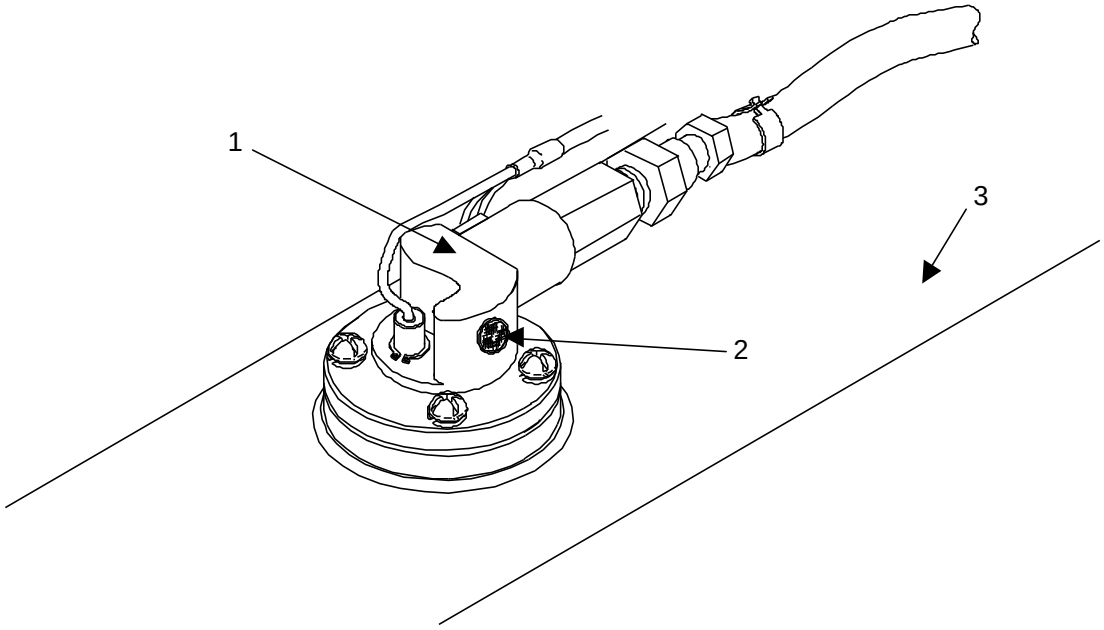
CLEAN AIR VENT ASSEMBLY ORIFICE

THIS SECTION COVERS:
Service (as required)

INITIAL SETUP
MBU shut-down and cool (WP 0005)

Maintenance Level **Materials/Parts**
Operator
Tools and Special Tools
Accessory Outfit, Gasoline, Field Range with Baking Rack (WP 0038, Table 2, Item 1)

Clean Air Vent Assembly Orifice. Locate the Air Vent Assembly **(1)** on the top surface of the fuel tank **(3)**. The Air Vent Orifice **(2)** is the 3/8 inch diameter hole located on the side of the assembly facing the rear of the MBU. Ensure that the orifice is clear of any dust or debris as this would prevent venting of the fuel tank and affect fuel flow. **DO NOT** use any tool or object that would push any debris further into the orifice. Use a small cleaning brush to clean the debris out of the orifice.



Cleaning the Air Vent Valve Orifice

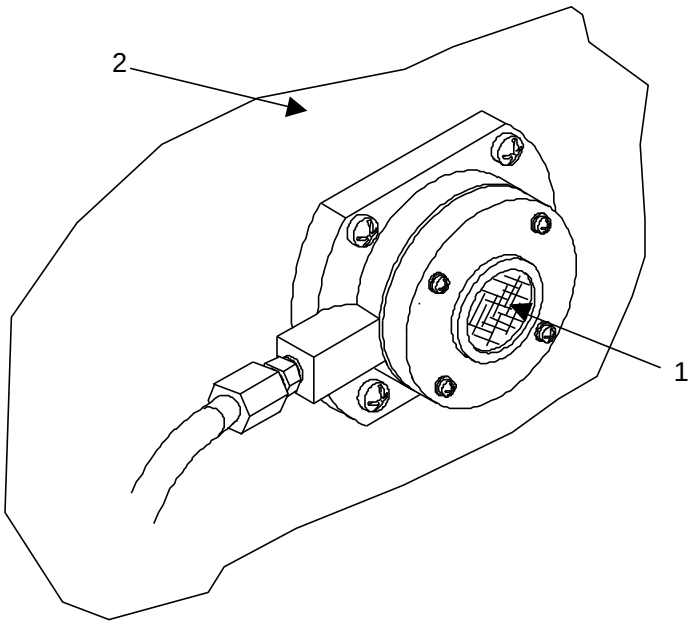
END OF WORK PACKAGE

CLEAN FUEL REGULATOR ASSEMBLY AIR VENT

THIS SECTION COVERS:
Service (as required)

INITIAL SETUP
MBU shut-down and cool (WP 0005)
Maintenance Level **Materials/Parts**
Operator
Tools and Special Tools
Accessory Outfit, Gasoline, Field Range with Baking Rack (WP 0038, Table 2, Item 1)

Clean Fuel Regulator Assembly Air Vent. Locate the Regulator Assembly Air Vent **(1)** on the right side of the fuel tank **(2)** just below and to the left of the fuel tank filler cap. The air vent **(1)** is located on the top center of the assembly and is a gold colored metallic material. Ensure that the vent is clean and unobstructed by using a small cleaning brush to gently remove any dirt or debris that might be found.



Cleaning the Fuel Regulator Air Vent

END OF WORK PACKAGE

CHAPTER 4

UNIT MAINTENANCE INSTRUCTIONS
FOR
MODERN BURNER UNIT

UNPACKING

The initial fielding of the MBU and its associated components, including equipment modifications to the MKT to accommodate the system, will be accomplished using contractor resources. Subsequent shipments containing replacement items will be individually packaged. None of these components require any kind of de-processing. They should be removed from their packing containers and used as outlined in WP 0005.

INSPECTION

Inspect the shipment, noting any damage sustained during shipping or handling. Report all discrepancies in accordance with DA PAM 738-750. Unpack the box and inventory its contents against the packing slip to see if the shipment is complete. Also inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on SF 361, Transportation Discrepancy Report.

FOOD SERVICE SYSTEM EQUIPMENT MODIFICATION

The adaptation of the MBU to the field feeding systems indicated above does not require modification of any equipment, except the Mobile Kitchen Trailer (MKT). Three modifications to that system are necessary. All three will be applied by the fielding contractor prior to issue of the MBU equipment to the using unit. These modifications involve the installation various components as described in the sections that follow.

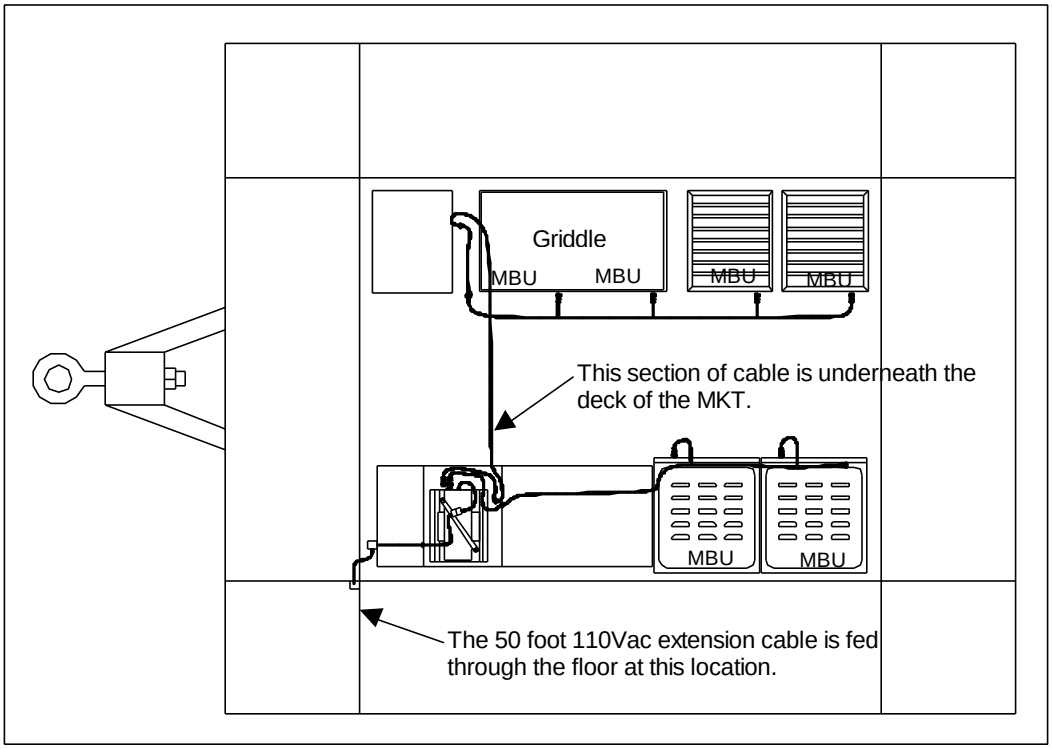


Figure 4-1 Overview of MKT Modification

Crossway Cable (24VDC). The 15ft crossway cable connects the power converter and the 24VDC, 4 branch cable. The fielding contractor will drill the necessary holes in the trailer frame and install cable clamps below the deck in preparation for this installation. The cable will be furnished with the MBU equipment and installed by the unit. For instructions on installing the Crossway Cable, refer to WP 0019.

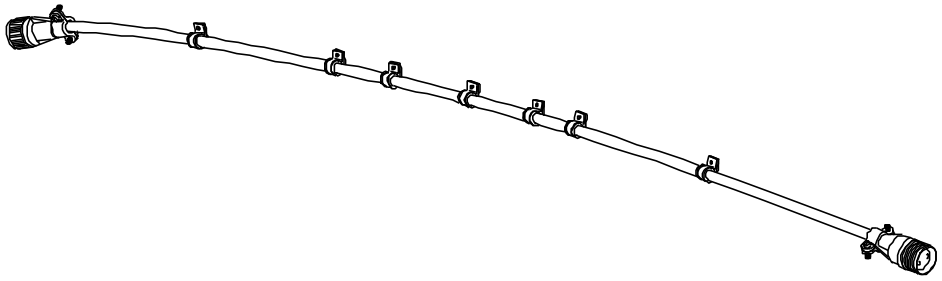


Figure 4-2 MKT Modification (Crossway Cable)

Feeder Cable Harness. The second modification involves the installation of a feeder cable harness connecting the 110Vac power cord extension to the power converter. The modification also provides two ground fault circuit interupt (GFCI) 110 VAC utility outlets. The fielding contractor will complete this installation. There are no unit responsibilities involved in this modification.

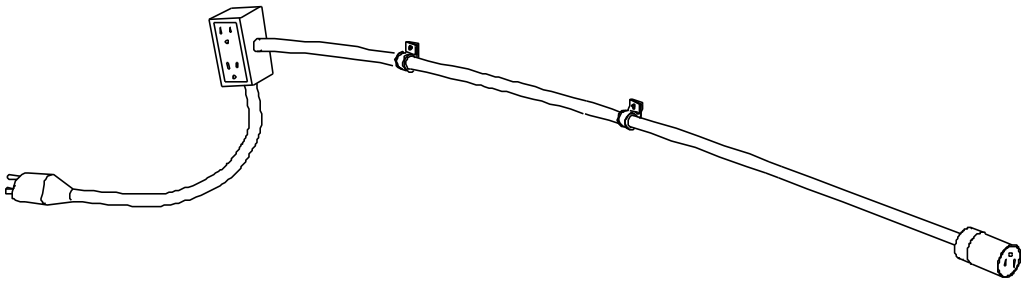


Figure 4-3 MKT Modification (Feeder Cable Harness)

Power Converter Mounting Bracket. A third modification involves the installation of a power converter mounting bracket assembly onto the floor of the MKT cooling cabinet. The fielding contractor will install the bracket into which the unit will install the power converter received with the MBU shipment.

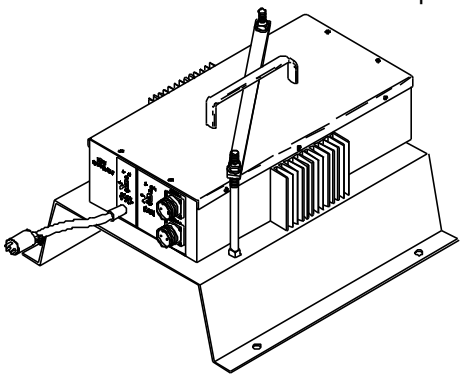


Figure 4-4 MKT Modification (Power Converter Mounting Bracket)

MKT Grounding Rod. A 2kW Generator is typically used to provide 110V AC power to the power converter. In additional to the grounding provided by the generator grounding rod, the MKT trailer may be grounded if desired. The grounding rod (WP 0059) kit is available as an Additional Authorized Item for the MKT. The grounding rod is supplied in sections that are connected together via threaded fittings. The grounding rod is driven into the ground in the vicinity of the MKT grounding lug which is located on the front driver' s side of the frame. The grounding cable is then connected between the MKT grounding lug and the grounding rod. For complete detailed instructions, refer to TM 9-6115-673-13&P entitled " Operator' s, Unit, and Direct Support Maintenance Including Repair Parts and Special Tools List, 2kW Military Tactical Generator Set" .

MKT Grounding Rod

END OF WORK PACKAGE

INSTALL 15FT CROSSWAY CABLE

THIS SECTION COVERS:
Installation (one time procedure)

INITIAL SETUP
Cable mounting brackets installed by fielding contractor
Maintenance Level **Materials/Parts**
Unit
Tools and Special Tools
Shop Equipment Automotive Maintenance and Repair:
Organizational Maintenance, Common No. 1 (WP 0038, Table 2, Item 2)

INSTALL

Before the MBU can be used with the MKT, the Crossway Cable **(1)** must be installed under the trailer. This is a one time procedure performed when the MBU is initially fielded. Once installed, the Crossway Cable remains in place unless the cable is damaged in some way and requires replacement.

The cable clamps **(2)** that secure the Crossway Cable to the MKT support beam **(3)** are installed by the fielding contractor and will be in place prior to installing the Crossway Cable.

To install the Crossway Cable **(1)**, take position with the required tools under the right, rear end of the MKT in the vicinity of the cooling cabinet which houses the Power Converter Mounting Bracket.

Locate the support beam **(3)** on which the cable clamps **(2)** are mounted.

Distribute the Crossway Cable **(1)** along the ground under the trailer support beam **(3)** so that an equal amount of cable is available to pass up through the trailer floor under the cooling cabinet as well as under the left side between the cabinet and griddle.

Approximately 1 to 1-1/2 ft of cable should be available on each end to pass through the trailer floor.

Once the cable has been distributed to allow a sufficient amount to pass up through the floor of the trailer, move to the far left end of the support beam and remove the screw **(4)** that secures the first cable clamp **(5)**.

Place the cable in position on the support beam **(3)** and reinstall the clamp.

Move down the support beam, installing the cable under each clamp, one at a time, until the entire cable has been installed under all the clamps.

While under the cooling cabinet area on the right side of the trailer, remove the rubber grommet **(6)** mounted in the trailer floor.

Cut the grommet and install over the Crossway Cable **(1)**.

Push the connector **(7)** of the Crossway Cable up through the hole in the floor of the trailer and reinstall the rubber grommet **(6)**.

Move to the left end of the support beam **(3)** and remove the second rubber grommet **(8)**. Cut as before and wrap around the cable.

Pass the connector end **(9)** of the cable up through the floor of the trailer and reinstall the grommet in the floor of the trailer.

REPLACE

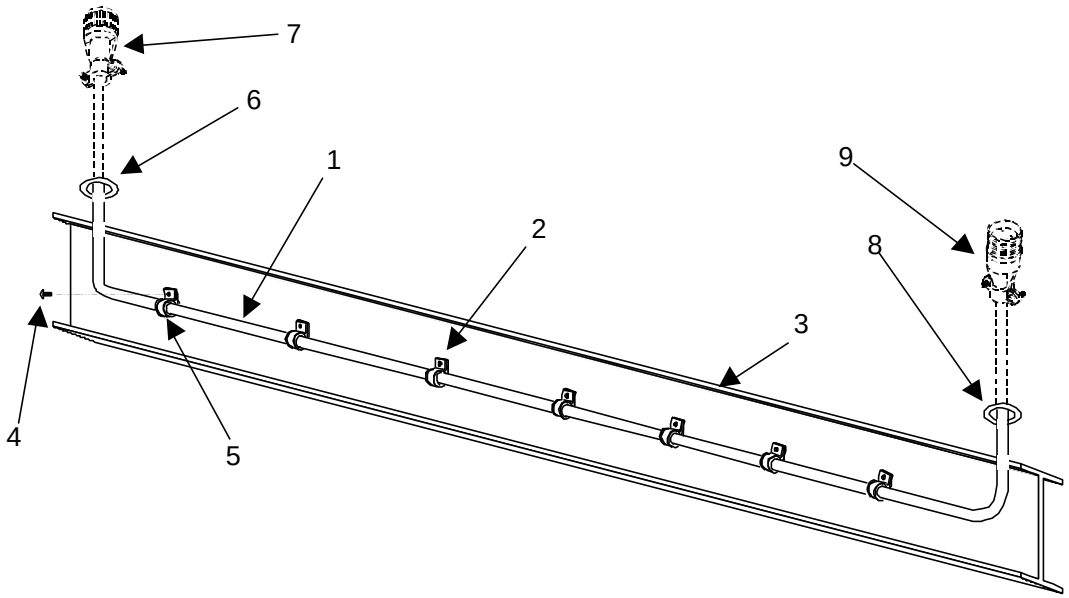
To replace a damaged Crossway Cable, remove the rubber grommets **(6,8)** at each end of the cable **(1)** and pull the cable through the trailer floor at both ends.

Remove the rubber grommets and set aside.

Remove the cable clamps **(2)** mounted to the trailer support beam.

Remove the damaged cable.

Install as new cable as described above.



Installing 15ft MKT Crossway Cable

END OF WORK PACKAGE

MODERN BURNER UNIT (MBU) **0020 00**
UNIT MAINTENANCE PROCEDURES

ELECTRICAL CONNECTOR ASSEMBLY

THIS SECTION COVERS:
Inspect, Test, Replace

INITIAL SETUP
MBU shut-down, cool, and disconnected from power source
Maintenance Level **Materials/Parts**
Unit
Tools and Special Tools
Shop Equipment Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1 (WP 0038, Table 2, Item 2)

GENERAL

This procedure contains information and instructions to keep the MBU in good working order by inspecting and replacing the electrical connector assembly.

WARNING!
Two Person Lift

The MBU weighs approximately 58 pounds fully fueled (26.3 kg). Two persons must carry the MBU, lifting with legs, not back, to prevent injury.

INSPECT

Inspect the electrical connector for dents, loose or missing fasteners, and other damage that may prevent proper connection of a power cable. Inspect the connector power feed for loose wires and frayed insulation.

TEST

Disconnect electrical connector assembly **(1)** and using a multimeter **(2)**, test the leads for continuity. If necessary, replace the electrical connector assembly.

REPLACE

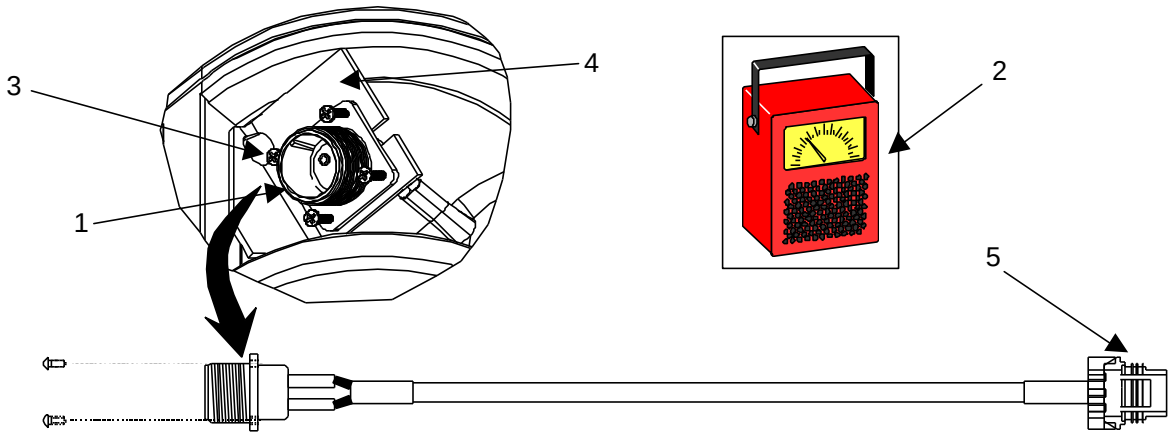
Replace the connector assembly **(1)** by removing four retainer screws **(3)**.

Slide connector assembly **(1)** from bracket **(4)**.

Disconnect power feed **(5)** from harness.

Slide new connector assembly **(1)** into place on bracket **(4)**, and secure with four retainer screws.

Connect power feed **(5)** to harness.



Replacing the Connector Assembly

END OF WORK PACKAGE

CONTROLLER ASSEMBLY

THIS SECTION COVERS:
Inspect, Repair, Replace

INITIAL SETUP
MBU disconnected from power source and cooled down
Maintenance Level **Materials/Parts**
Unit
Tools and Special Tools
Shop Equipment Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1 (WP 0038, Table 2, Item 2)

GENERAL

This procedure contains information and instructions to keep the MBU in good working order by inspecting and replacing the controller hinge pins or the entire controller assembly, consisting of the controller, control panel, controller harness, and hinge pins.

WARNING!
Two Person Lift

The MBU weighs approximately 58 pounds fully fueled (26.3 kg). Two persons must carry the MBU when fully fueled, lifting with legs, not back, to prevent injury.

INSPECT

Inspect condition of controller assembly including the control panel, harness and connector housing, and hinge pins for damage such as a broken or cracked housing, or loose, missing or bent hinge pins, frayed insulation, loose or exposed wires or broken connector on harness.

REPLACE

Open hinged controller assembly **(1)**.

Follow the cable harness **(2)** from the back of the controller assembly into the MBU. Note that the wires exiting each connector are color coded. Disconnect the eight connectors **(3)** at the opposite end of the harness. Remove green ground cable **(7)** and screw **(8)** from controller assembly **(1)**

To remove the hinge pins, proceed as follows:

Remove snap rings **(4)** from hinge pins **(5)** with flathead screwdriver and remove hinge pins from frame **(6)**.

Remove the entire controller assembly **(1)** from system.

To install new hinge pins **(5)**, place controller assembly **(1)** into position and insert hinge pins **(5)** through frame **(6)**.
Secure hinge pins **(5)** with snap rings **(4).**

Attach green ground cable **(7)** with screw **(8)** onto controller assembly **(1)**

Reinstall the connectors **(3)** at the end of the controller harness assembly **(2)**. Be sure to follow the color coding of the wires.

Close and secure hinged controller assembly **(1)**.

NOTE!
Calibration May Be Required

The calibration procedure outlined below in NOT REQUIRED if the Controller Assembly software version is 2.0 or higher. The software version is displayed on the liquid crystal display on the lower right front corner of the Controller Assembly on power up.

To check the software version, be certain that the MBU is powered down, the press the power button on the front of the MBU. After the normal power-up display sequence, the software version will be displayed if the version is 2.0 or higher. If the software version is NOT displayed on power-up, the calibration procedure detailed below MUST be performed.

If the Calibration function is selected in error (by pressing and holding the Power button longer than 3 seconds), either wait 10 seconds or press the STOP button to return to standby mode.

CALIBRATION

After replacing the Controller Assembly perform a calibration procedure by first making sure that the MBU is powered down and cool.

Press and HOLD the Power button until the power-up routine is complete (approximately 3 seconds) and the hour meter displays CAL?

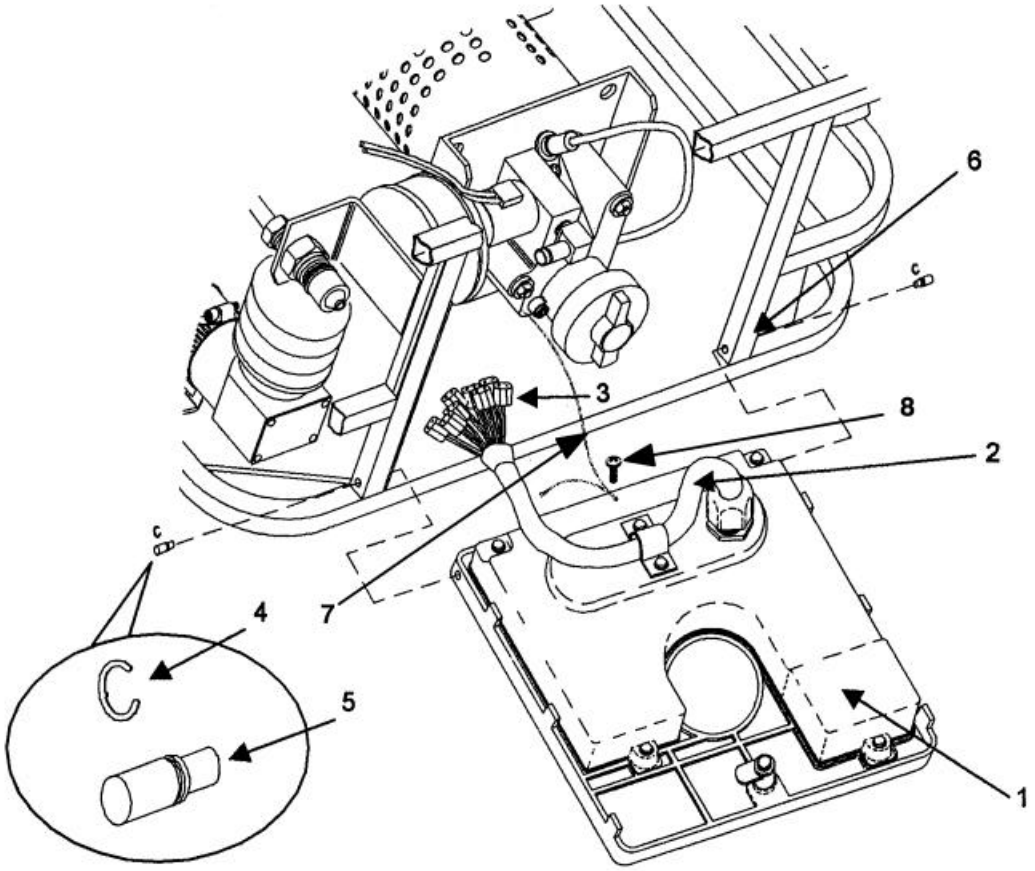
Release the Power button.

Press the Start key. The hour meter will display CAL.

Turn the Burner Control Valve through its complete rotation from HIGH (Start) to LOW.

Wait approximately 3 seconds for automatic return to standby.

MBU is ready to use.



Replacing Controller Assembly

END OF WORK PACKAGE

COMPRESSOR ASSEMBLY

THIS SECTION COVERS:
Inspect, Test, Replace

INITIAL SETUP
MBU shut-down, cool, and disconnected from power source (WP 0005)
Fuel tank drained (WP 0011)
Maintenance Level **Materials/Parts**
Unit
Tools and Special Tools
Shop Equipment Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1 (WP 0038, Table 2, Item 2)

GENERAL

This procedure contains information and instructions to keep the MBU in good working order by inspecting and replacing the entire compressor assembly, consisting of the compressor, hose clamps, vibration grommets, mounting plate, self locking nylon nuts and washers.

WARNING!
Two Person Lift

The MBU weighs approximately 58 pounds fully fueled (26.3 kg). Two persons must carry the fully fueled MBU, lifting with legs, not back, to prevent injury.

INSPECT

Inspect compressor assembly for damage, excessive rust or contamination to the compressor housing, mounting plate, hose clamps, vibration grommets, or mounting hardware. Also inspect the compressor wires for frayed insulation or exposed wires.

WARNING!
Fire / Fuel Contamination

Before proceeding with this procedure, the MBU fuel tank must be drained completely as described in work package 0011. Have rags on hand to clean up fuel spillage that may occur to prevent contamination. Do not perform this procedure near an open flame to prevent fire.

REPLACE

Remove the Reflective Heat Shield and Burner Assembly from the MBU frame as described in WP 0024. Set the assembly aside.

Disconnect compressor power wire harness connector **(1)**.

NOTE!

Different Hose Sizes

The Air Compressor has two different size hose fittings that accommodate two different size neoprene air hoses. Note that the upper fitting requires a 3/8 inch ID neoprene hose and that the lower fitting requires a ¼ in ID neoprene air hose.

Disconnect air lines **(2)** from compressor **(3)**.

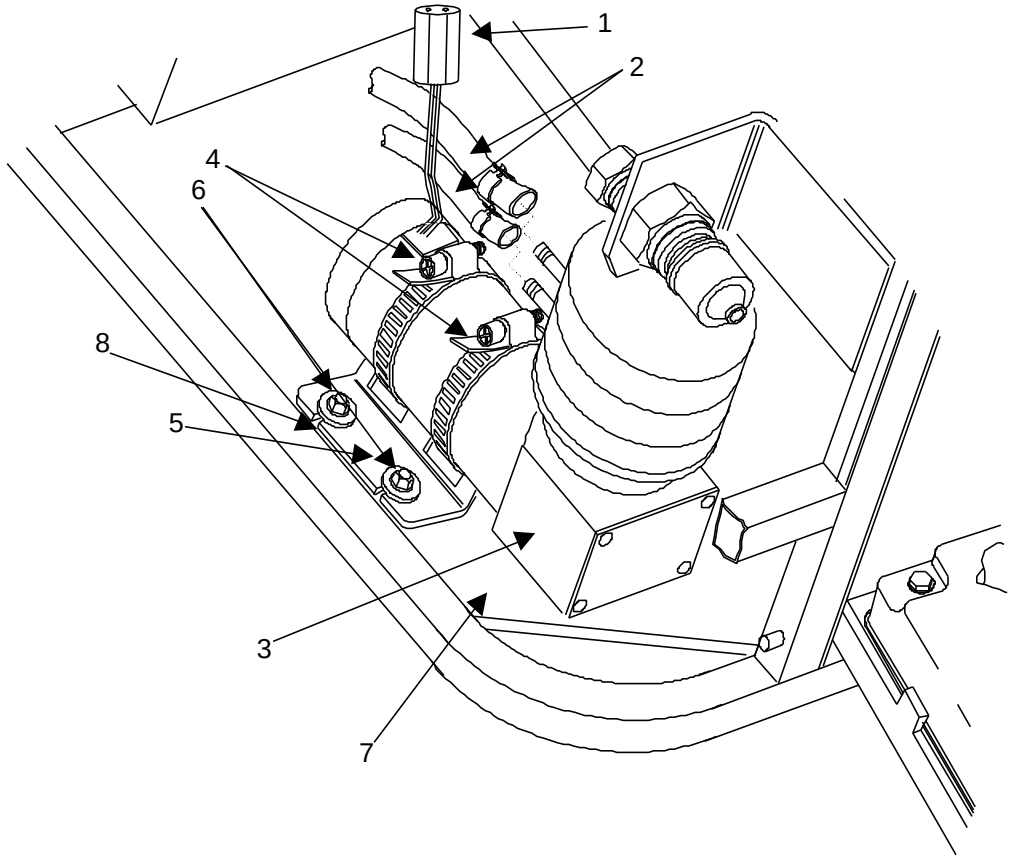
To remove compressor **(3)** **ONLY**, loosen and remove two hose clamps **(4)** and lift compressor **(3)** off the mounting plate **(5)**.

To **ALSO** replace the compressor mounting plate **(5)**, remove 4 self locking nuts and washers **(6)** securing plate **(5)** to the threaded studs mounted to the MBU base plate **(7)**.

Slide new vibration grommets **(8)** onto mounting plate **(7)**, insert spacers, and secure assembly with four self locking nuts and washers **(6)** to the threaded studs mounted to the MBU base plate **(7)**.

Place new compressor onto mounting plate **(5)** and secure with two hose clamps **(4)**. Connect air lines **(2)** previously removed. Note that the 3/8 ID hose installs on the larger fitting.

Connect compressor power wire harness connector **(1)**.



Replacing Air Compressor Assembly

END OF WORK PACKAGE

FUEL DELIVERY BLOCK ASSEMBLY

THIS SECTION COVERS:
Inspect, Replace

INITIAL SETUP
MBU shut-down, cool, and disconnected from power source (WP 0005)
Fuel tank drained (WP 0011)

Maintenance Level **Materials/Parts**
Unit

Tools and Special Tools
Shop Equipment Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1 (WP 0038, Table 2, Item 2)

GENERAL

This procedure contains information and instructions to keep the MBU in good working order by inspecting and replacing the air filter, fuel shut-off solenoid valve, air/fill solenoid valve, ignitor, flame sensor, fuel nozzle, needle valve, controller knob and spring, delivery block, nylon nuts, washers, and mounting screws, or the entire fuel delivery block assembly.

WARNING!
Two Person Lift

The MBU weighs approximately 58 pounds fully fueled (26.3 kg). Two persons must carry the fully fueled MBU, lifting with legs, not back, to prevent injury.

INSPECT

Inspect the fuel delivery block assembly for damage to individual components, including leaking or loose fuel hoses and frayed or loose power leads, damage to the solenoids, flame sensor, ignitor, and air filter. Check the control knob for free movement.

WARNING!
Fire / Fuel Contamination

Before proceeding with this procedure, the MBU fuel tank must be drained completely as described in work package 0011. Have rags on hand to clean up fuel spillage that may occur to prevent contamination. Do not perform this procedure near an open flame to prevent fire.

REPLACE

NOTE!

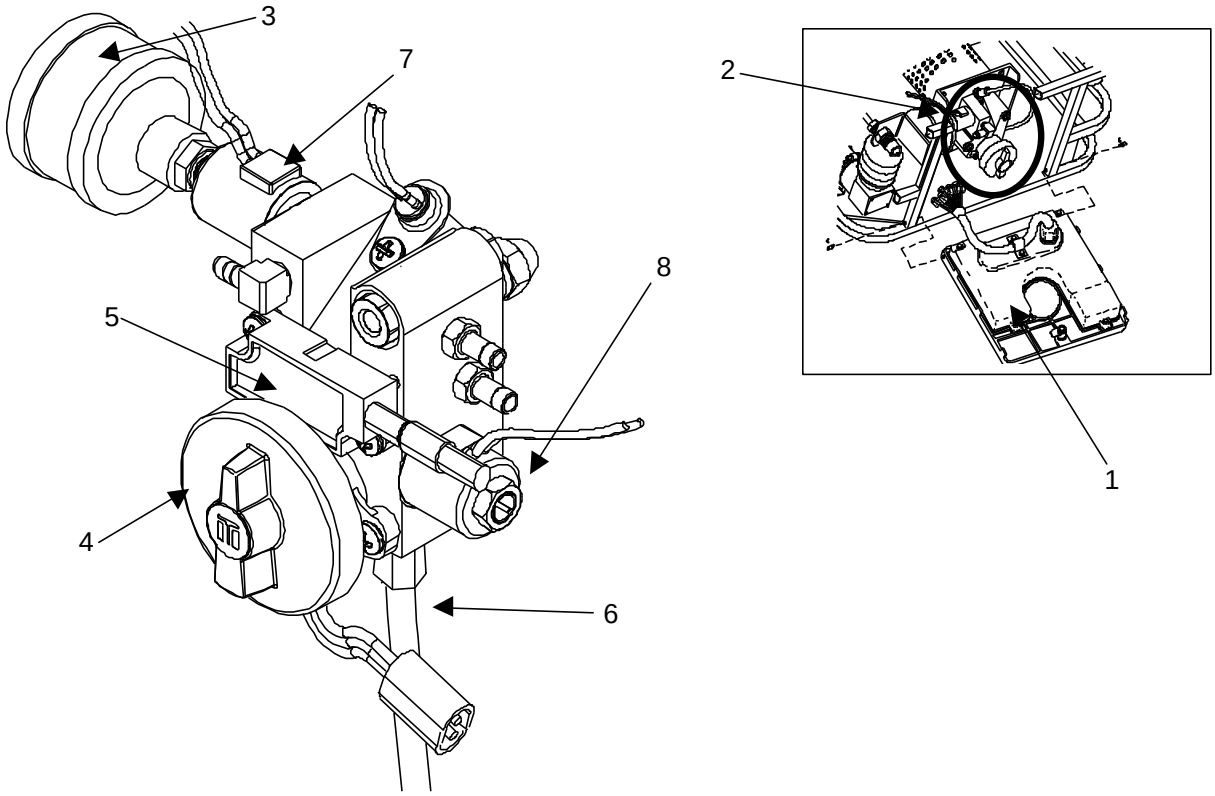
Removing Fuel Delivery Block

The air filter **(3)**, control knob assembly **(4)**, flame sensor **(5)**, fuel feeder line **(6)**, fuel shut-off solenoid **(8)**, and air fill solenoid **(7)** may be removed and replaced **WITHOUT** removing the entire fuel delivery block assembly from the frame.

Replacement of all other components requires removing the fuel delivery block **(2)** from the burner tube mounting shafts while still connected to all wire harnesses and hoses.

The replacement procedure for the air filter **(3)** is described in WP 0012.

Replacing Parts Without Removing Fuel Delivery Block. Open control panel **(1)** to gain access to the fuel delivery block assembly **(2).**

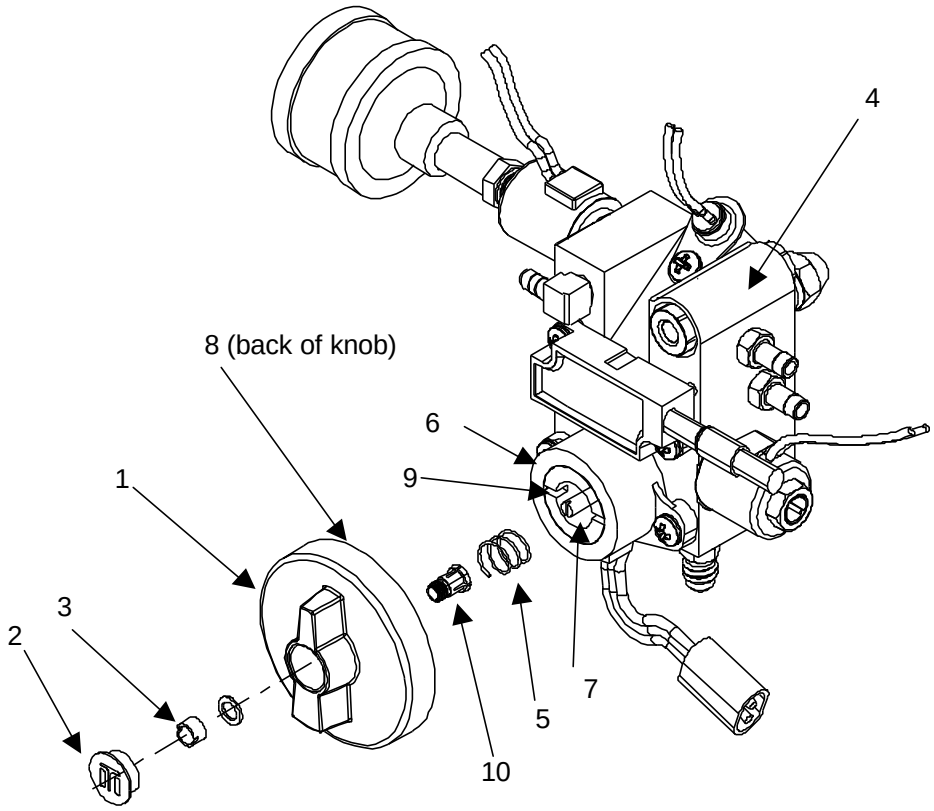


Replacing Parts Without Removing Fuel Delivery Block

Replace Control Knob. To replace the control knob assembly **(1)**, remove the cap **(2)**, and loosen the retainer nut **(3)** ONLY enough to release the knob from the Fuel Delivery Block **(4)**. Do not disassemble the knob components. Remove the control knob assembly **(1)** taking care not to drop the spring **(5)** located behind the knob.

Loosen the retainer nut **(3)** on the new knob with a screwdriver until it is just held in place. Make sure that the spring **(5)** is in place on the Feedback Potentiometer **(6)**. Using a screwdriver placed in the slot of the retainer nut to hold it steady, press new control knob assembly **(1)** onto the needle valve shaft **(7)** aligning the pins **(8)** on the back of the Control Knob with the two slots **(9)** in the face of the Feedback Potentiometer. Press the Control Knob until the collet **(10)** on the back of the Control Knob is firmly engaged on the needle valve shaft **(7)**.

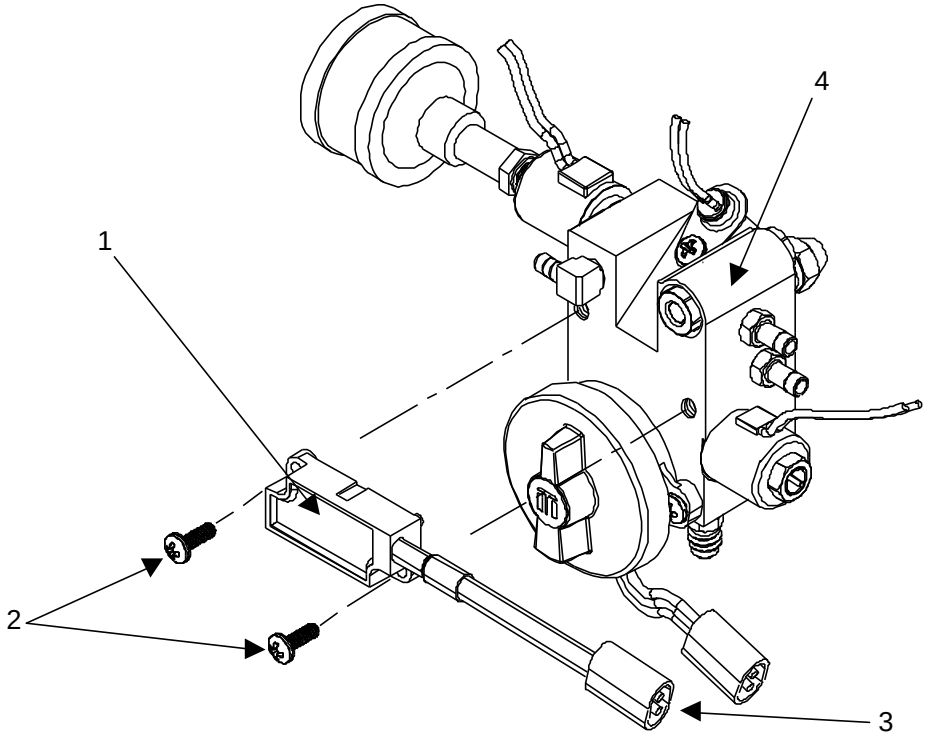
Secure the control knob assembly **(1)** by tightening the retainer nut **(3)** with a screwdriver. Replace the cap **(2)**.



Replacement of Control Knob Assembly

Replace Flame Sensor. To replace the flame sensor assembly **(1)**, remove the two screws and lockwashers **(2)** with a crosstip screwdriver. Disconnect the flame sensor wiring harness **(3)** by separating the connector at the end of the harness. Remove the flame sensor assembly.

Install a new flame sensor assembly **(1)** on the fuel delivery block **(4)**. Secure the two screws and lockwashers **(2)** with a crosstip screwdriver. Reconnect the flame sensor wiring harness assembly connector **(3)**.



Replacement of Flame Sensor

Replace Feedback Potentiometer. To replace the feedback potentiometer assembly **(1)**, remove the Control Knob **(2)** as described earlier . Remove the two screws **(3)** with a crosstip screwdriver. Disconnect the feedback potentiometer wiring harness **(4)** by separating the connector at the end of the harness. Remove the feedback potentiometer assembly.

Install a new feedback potentiometer assembly **(1)** on the fuel delivery block **(5)**. Secure the two screws **(3)** with a crosstip screwdriver. Reconnect the feedback potentiometer wiring harness assembly connector **(4)**. Install Control Knob **(2)** as described earlier.

NOTE!

Calibration Required

The calibration procedure outlined below in NOT REQUIRED if the Controller Assembly software version is 2.0 or higher. The software version is displayed on the liquid crystal display on the lower right front corner of the Controller Assembly on power up.

To check the software version, be certain that the MBU is powered down, the press the power button on the front of the MBU. After the normal power-up display sequence, the software version will be displayed if the version is 2.0 or higher. If the software version is NOT displayed on power-up, the calibration procedure detailed below MUST be performed.

If the Calibration function is selected in error (by pressing and holding the Power button longer than 3 seconds), either wait 10 seconds or press the STOP button to return to standby mode.

CALIBRATION

After replacing the Feedback Potentiometer perform a calibration procedure by first making sure that the MBU is powered down and cool.

Press and HOLD the Power button until the power-up routine is complete (approximately 3 seconds) and the hour meter displays CAL?

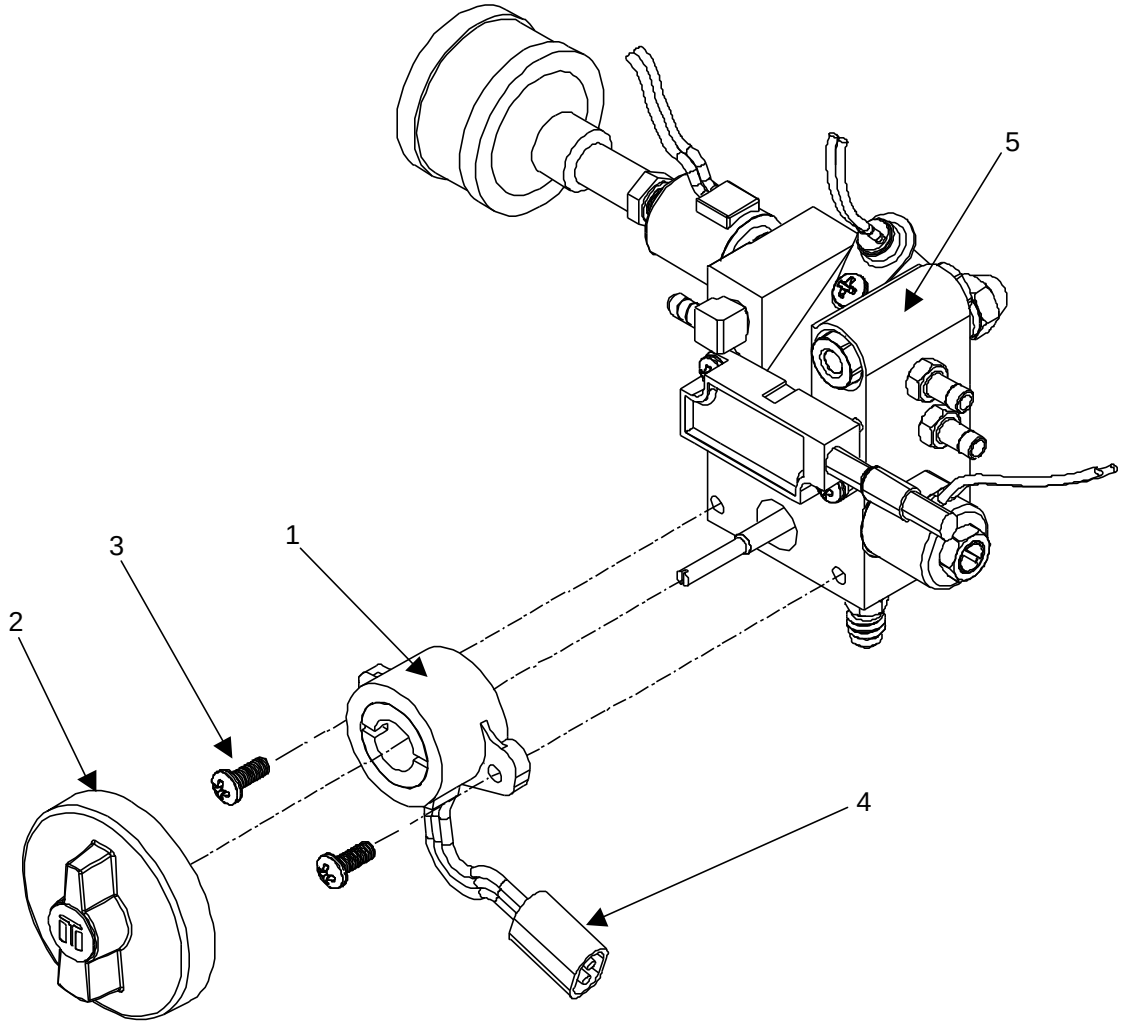
Release the Power button.

Press the Start key. The hour meter will display CAL.

Turn the Burner Control Valve through its complete rotation from HIGH (Start) to LOW.

Wait approximately 3 seconds for automatic return to standby.

MBU is ready to use.



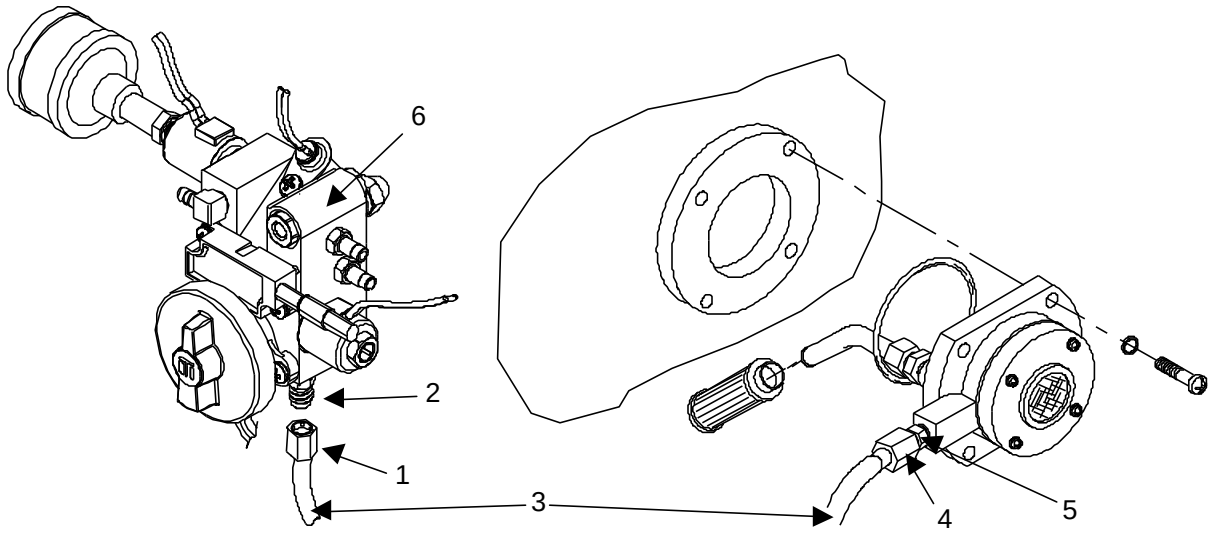
Replacing the Feedback Potentiometer

Replace Fuel Feeder Line. Loosen the nut **(1)** attached to the fuel delivery block fitting **(2)** with a wrench. Drain any fuel remaining in the line into an approved container. Wipe up any fuel that may have spilled.

Remove the opposite end of the fuel feeder line **(3)** by loosening the nut **(4)** attached to the regulator assembly fitting **(5)**. Remove the fuel feeder line **(3)**.

Install a new fuel feeder line **(3)** by threading the nut **(1)** onto the fitting **(2)** of the fuel delivery block **(6)**. Tighten using a wrench.

Install the nut **(4)** on the opposite end of the fuel feeder line **(3)** onto the regulator assembly fitting **(5)**. Tighten using a wrench.



Replacing Fuel Feeder Line

NOTE!

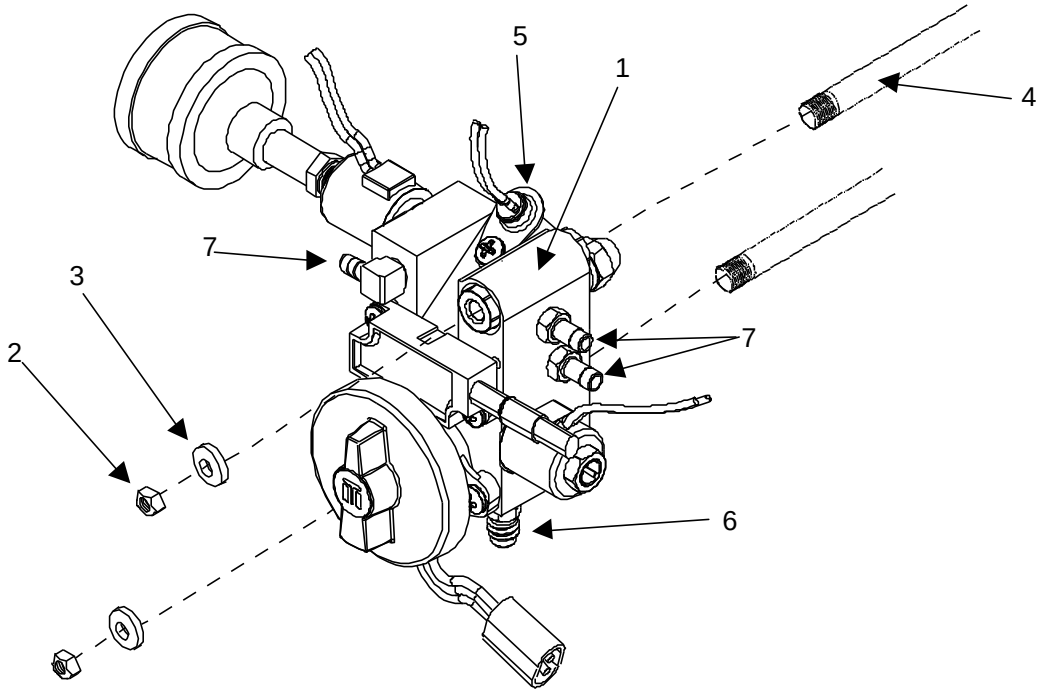
Temporarily Removing Fuel Delivery Block

The fuel delivery block **(1) MUST BE TEMPORARILY REMOVED** from the burner tube mounting shafts **(2)** when replacing the ignitor **(5)**, fuel lines **(6)**, air lines **(7)**, or when replacing the entire fuel delivery block assembly **(1)**.

Prior to removing the fuel delivery block assembly **(1)** or any of its components, the fuel tank must be drained as described in work package 0011.

Temporarily Removing the Fuel Delivery Block from Burner Tube Mounting Shafts. To remove fuel delivery block assembly **(1)**, remove two self locking nuts and washers **(2,3)** that secure the fuel delivery block assembly **(1)** to the burner tube mounting shafts **(4)**.

Slide the fuel delivery block assembly **(1)** off the threaded studs of the burner assembly **(4)**.



Temporarily Removing the Fuel Delivery Block from Burner Tube Mounting Shafts

Replacing Air/Fill Solenoid Valve. To replace the air/fill solenoid valve **(1)**, remove the air filter from the threaded end **(2)** of the solenoid valve as described in 0012.

Disconnect the solenoid valve wiring harness **(3)** by separating the connector at the end of the harness assembly.

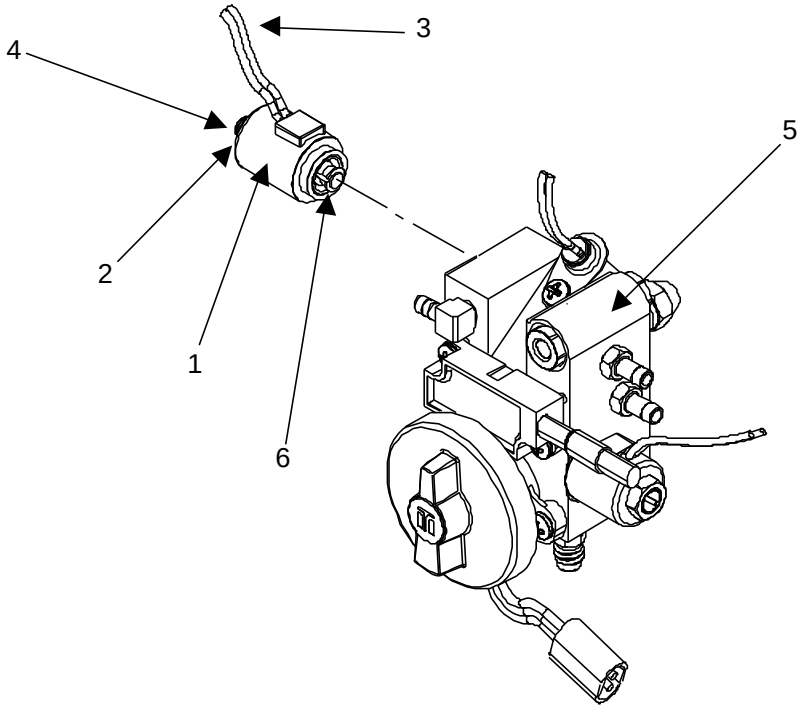
It may be necessary to grasp the body of the solenoid valve **(1)** to keep it from turning prior to the next step. Loosen and remove the retaining screw **(4)** securing the air/fill solenoid valve **(1)** to the fuel delivery block **(5)** with a flat blade screwdriver. Note the position of the harness exiting the solenoid for proper reconnection later in the procedure.

A small spring tensioned plunger **(6)** is located inside the solenoid valve. Take care not to drop the plunger into the MBU. Carefully remove the solenoid valve assembly **(1)** by pulling straight out.

Install a new air/fill solenoid valve **(1)** in the fuel delivery block **(5)**. Be certain that the plunger **(6)** is installed in the solenoid body so that the end of the plunger with the spring is inserted into the solenoid body first. The end of the plunger with the small rubber pad should face out of the solenoid.

The base of the solenoid valve **(1)** should be flush with the fuel delivery block **(5)** when properly installed. Rotate the body of the solenoid so that the wiring harness **(4)** is oriented as it was prior to removal.

Reinstall the retaining screw **(4)** through the body of the solenoid and tighten. Reconnect the connector at the end of the solenoid wiring harness **(3)**. Reinstall the air filter on the threaded end **(2)** of the solenoid valve as described in 0012.



Replacement of Air/fill Solenoid Valve

Replacing the Fuel shut-off Solenoid Valve. To replace the fuel shut-off solenoid valve **(1)**, disconnect the solenoid valve wiring harness **(2)** by separating the connector at the end of the harness assembly.

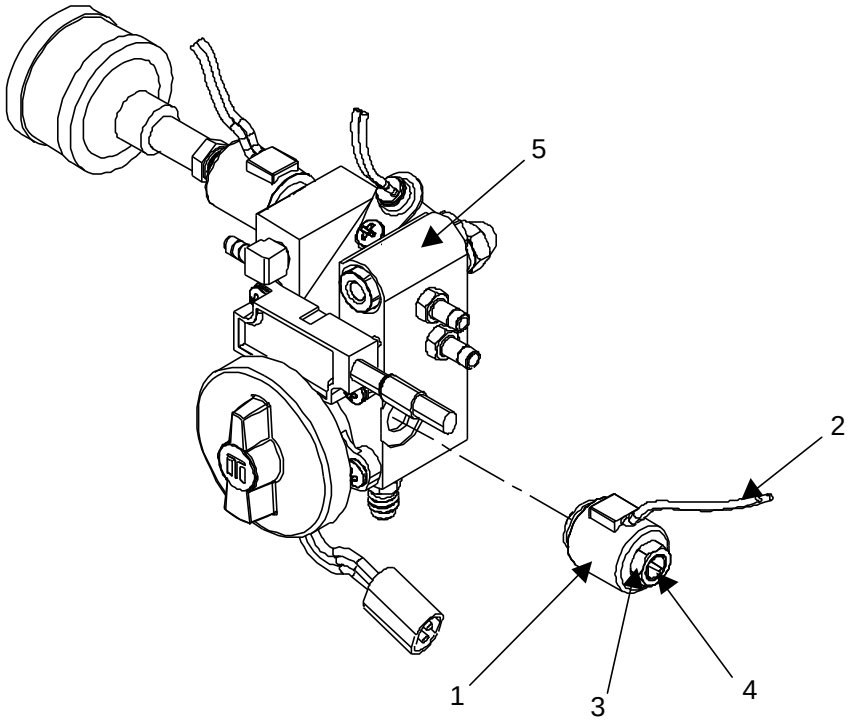
It may be necessary to grasp the body of the solenoid valve **(1)** to keep it from turning prior to the next step. Loosen and remove the nut **(3)** on the end of the solenoid valve **(1)**. Loosen and remove the retaining screw **(4)** securing the fuel shut-off solenoid valve **(1)** to the fuel delivery block **(5)** with a flat blade screwdriver. Take note of the orientation of the wiring harness **(2)** so that it may be installed in its proper position later in this procedure.

A small spring tensioned plunger is located inside the solenoid valve. Take care not to drop the plunger into the MBU. Carefully remove the solenoid valve assembly by pulling straight out.

Install a new fuel shut-off solenoid valve **(1)** in the fuel delivery block **(5)**. Be certain that the plunger is installed in the solenoid body so that the end of the plunger with the spring is inserted into the solenoid body first. The end of the plunger with the small rubber pad should face out of the solenoid.

The base of the solenoid valve **(1)** should be flush with the fuel delivery block **(5)** when properly installed. Rotate the body of the solenoid so that the wiring harness assembly **(2)** is as it was prior to removal.

Reinstall the retaining screw **(4)** through the body of the solenoid and tighten. Reinstall the nut **(3)** and tighten. Reconnect the connector at the end of the solenoid wiring harness assembly **(2)**.



Replacement of Fuel shut-off Solenoid Valve

Replace Ignitor. Replace the ignitor every 2000 Hrs of operation or whenever recommended as part of a troubleshooting procedure.

WARNING!
Hot Surfaces

Do not attempt service procedures on a burner that has recently been in operation. Let the burner cool down before performing these procedures to avoid the possibility of serious burns.

Remove Fuel Delivery Block **(1)** from burner tube mounting shafts as described earlier.

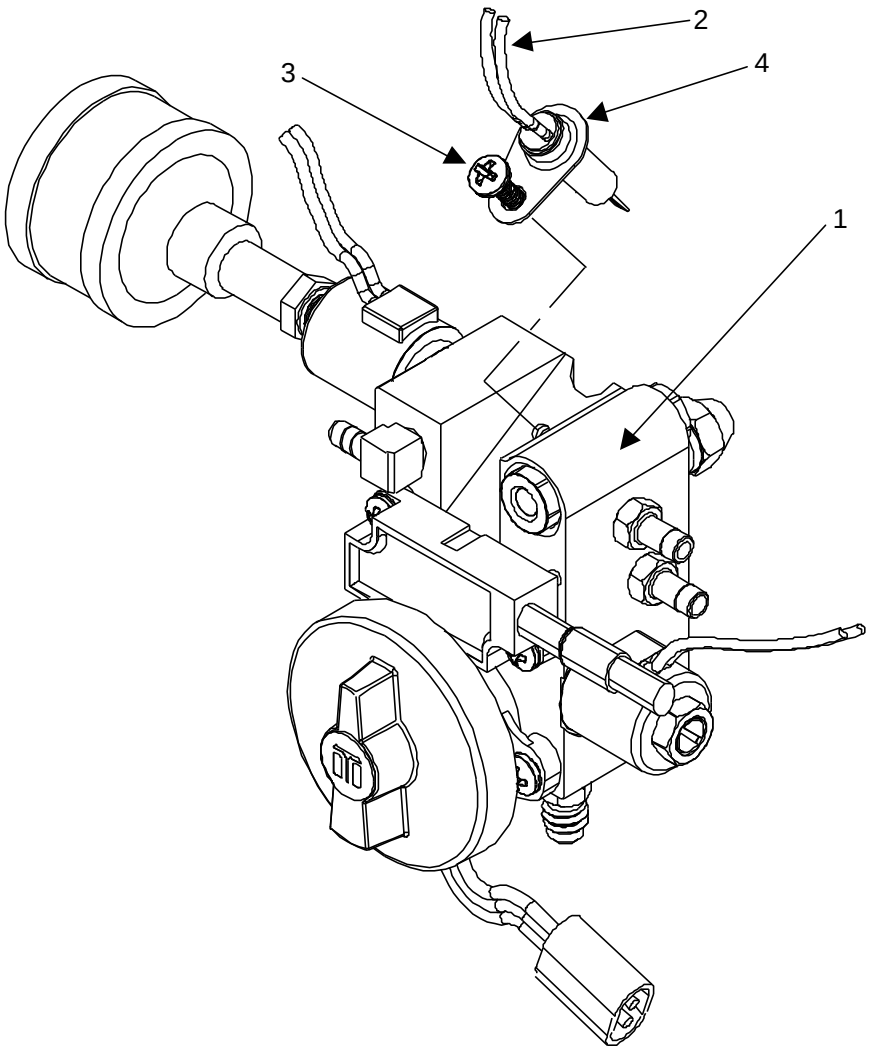
Disconnect ignitor power lead **(2)**.

Loosen ignitor retainer screw **(3)** and remove ignitor **(4)** and bracket from the fuel delivery block **(1)**.

CAUTION!
Ignitor Damage
When replacing the nozzle, be careful not to damage the ignitor.

Install new ignitor assembly **(4)**, and tighten the retainer screw **(3)**.

Connect the ignitor power lead **(2).**



Replacement of Ignitor Assembly

Replacing Neoprene Fuel Line. To replace the neoprene fuel line **(1)**, temporarily remove the Fuel Delivery Block from the Burner Tube mounting shafts as described earlier.

Squeeze the tabs on hose clamp **(2)** with a pair of pliers and slide the clamp off the fuel delivery block fitting **(3)** and onto the neoprene line **(1)**. If it is necessary to replace the fitting **(3)**, remove with a wrench and install a new fitting .

Squeeze the tabs on hose clamp **(4)** with a pair of pliers and slide the clamp off the vent valve fitting **(5)** and onto the fuel line **(1)**.

After removing the clamp, grasp the end of the fuel line **(1)** connected to the fuel delivery block fitting **(3)** and pull while wiggling from side to side, until the line is free.

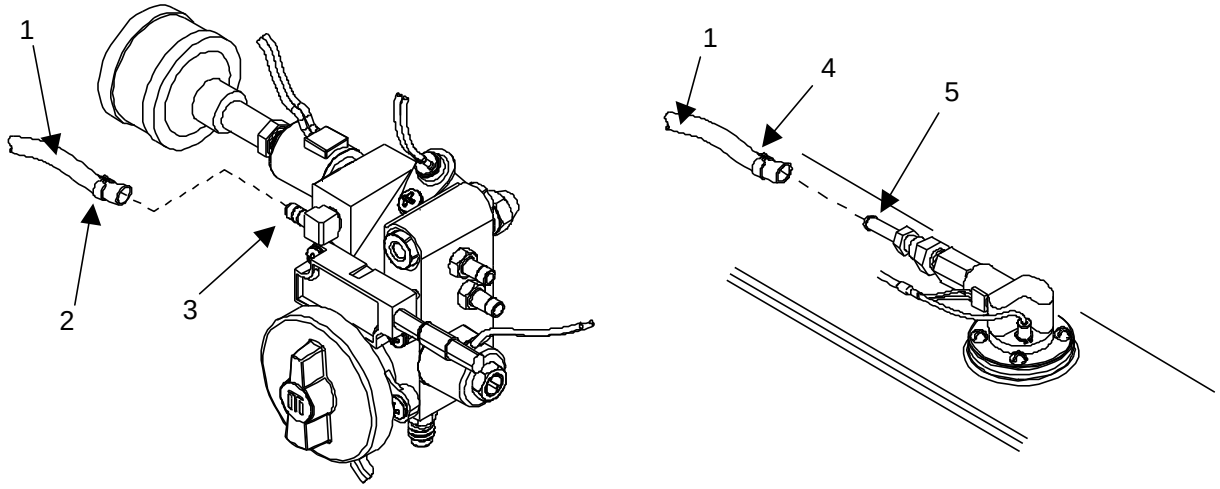
Remove the end of the fuel line **(1)** connected to the vent valve fitting **(5)** in a similar manner. Be sure to wipe up any fuel that may have dripped from the line. If the vent valve fitting **(5)** needs replacement, unscrew and install a new vent valve fitting.

Using the damaged fuel line as a size guide, cut a new piece of fuel line of the same size from the bulk supply of neoprene hose.

Remove the clamps **(2,4)** from the damaged fuel line and install on the new line, sliding each about 1-1/2 to 2 inches from the end.

Reinstall the new line, pushing one end fully onto the fuel delivery block fitting **(3)** and the other end onto the vent valve fitting **(5)**.

Squeeze the tabs on the clamps **(2,4)** with a pair of pliers and slide one clamp up on the fuel delivery block fitting **(3)** and the other end onto the vent assembly fitting **(5)**. Be sure to position the tabs so that they can be easily accessed should service be required at a later date.



Replacement of Neoprene Fuel Line

Replacing Neoprene Air Lines. There are two neoprene air lines extending from the fuel delivery block **(1)** assembly to the air compressor **(2)**. Note that the two lines are different sizes (WP 0054). The replacement procedure for both air lines is identical.

To replace either of the neoprene air lines **(3)**, squeeze the tabs on hose clamp **(4)** with a pair of pliers and slide the clamp off the fuel delivery block fitting **(5)** and onto the air line **(3)**.

Squeeze the tabs on hose clamp **(6)** with a pair of pliers and slide the clamp off the air compressor fitting **(7)** and onto the air line **(3)**.

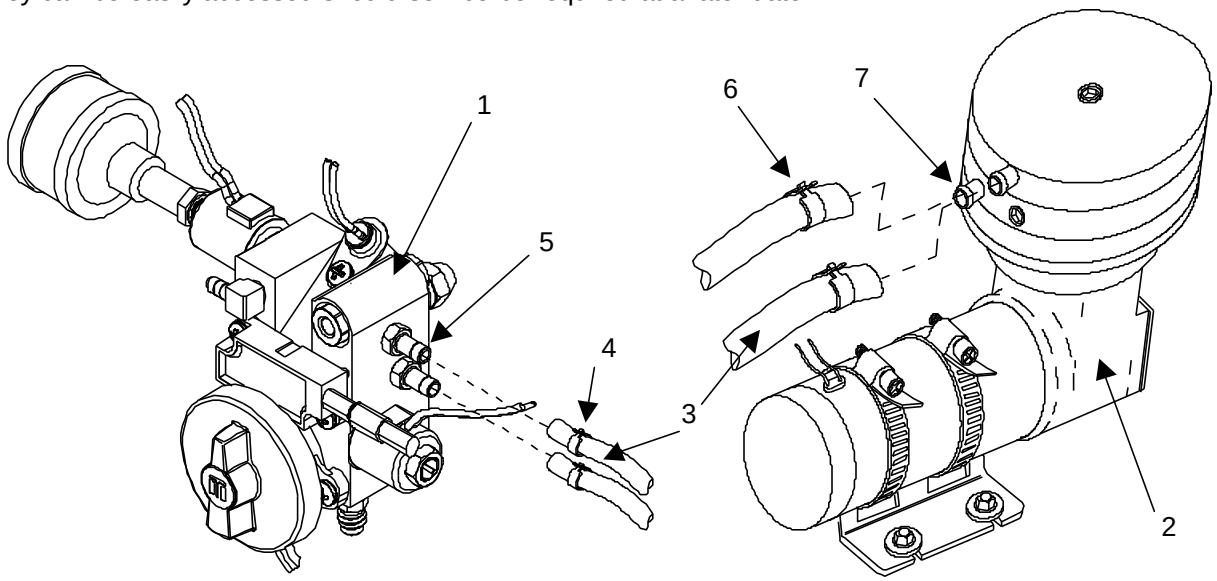
After removing the clamp, grasp the end of the air line **(3)** connected to the fuel delivery block fitting **(5)** and pull while wiggling from side to side, until the line is free. If any of the fuel delivery block fittings **(5)** require replacement, simply loosen with an open end wrench and install a new fitting.

Remove the end of the air line **(3)** connected to the air compressor fitting **(7)** in a similar manner. Be sure to wipe up any fuel that may have dripped from the line. If any of the air compressor fittings **(7)** require replacement, simply loosen with an open end wrench and install a new fitting. Be sure to clean the area where the fittings install into the compressor of pipe sealer residue. Apply new joint sealer compound (WP 0060, Table 1, Item 6) to the fitting threads before installation.

Using the damaged air line as a size guide, cut a new piece of air line of the same size from the bulk supply of neoprene hose. Remove the clamps **(4,6)** from the damaged air line and install on the new line, sliding each about 1.5 to 2 inches from the end.

Reinstall the new line, pushing one end fully onto the fuel delivery block fitting **(5)** and the other end onto the air compressor fitting **(7)**.

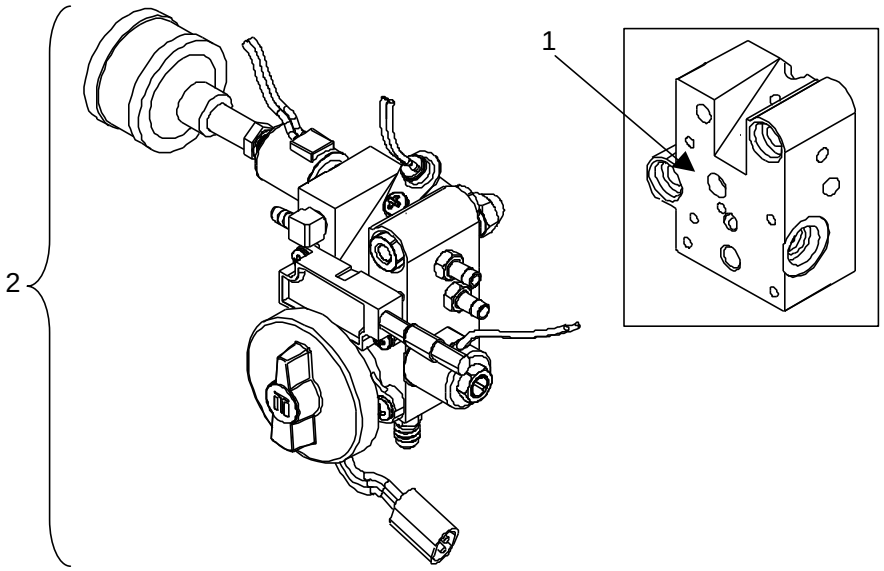
Squeeze the tabs on the clamps **(4,6)** with a pair of pliers and slide one clamp up on the fuel delivery block fitting **(5)** and the other end onto the air compressor fitting **(7)**. Be sure to position the tabs so that they can be easily accessed should service be required at a later date.



Replacement of Neoprene Air Lines

Replacing the Machined Aluminum Block. To remove the Machined Aluminum Block **(1)** of the Fuel Delivery Block assembly **(2)**, remove the Fuel Delivery Block from the burner tube mounting shafts as described earlier. Remove all of the components installed on the block as described in the previous sections.

Install the new Machined Aluminum Block **(1)** by installing all of the attached components as described in the previous sections. Install the entire assembly **(2)** in the MBU frame as described earlier.



Replacing the Machined Aluminum Block

Replacing Entire Fuel Delivery Block Assembly. Remove Fuel Delivery Block **(1)** from the burner tube mounting shafts as described earlier. To replace the entire fuel delivery block assembly **(1)**, disconnect the fuel line **(2)**, fuel feeder line **(3)** and air hoses **(4,5)** from the fuel delivery block assembly **(1)**.

Disconnect the air/fill solenoid harness connector **(6)** and the fuel shut-off solenoid harness connector **(7)**. Disconnect the flame sensor harness connector **(8)**. Disconnect the Feedback Pot connector **(9).** Disconnect the Ignitor Assembly **(10).** Remove the Control Knob **(11)** and the Ground Wire **(12)**.

Remove the fuel delivery block assembly from the MBU frame **(13)**.

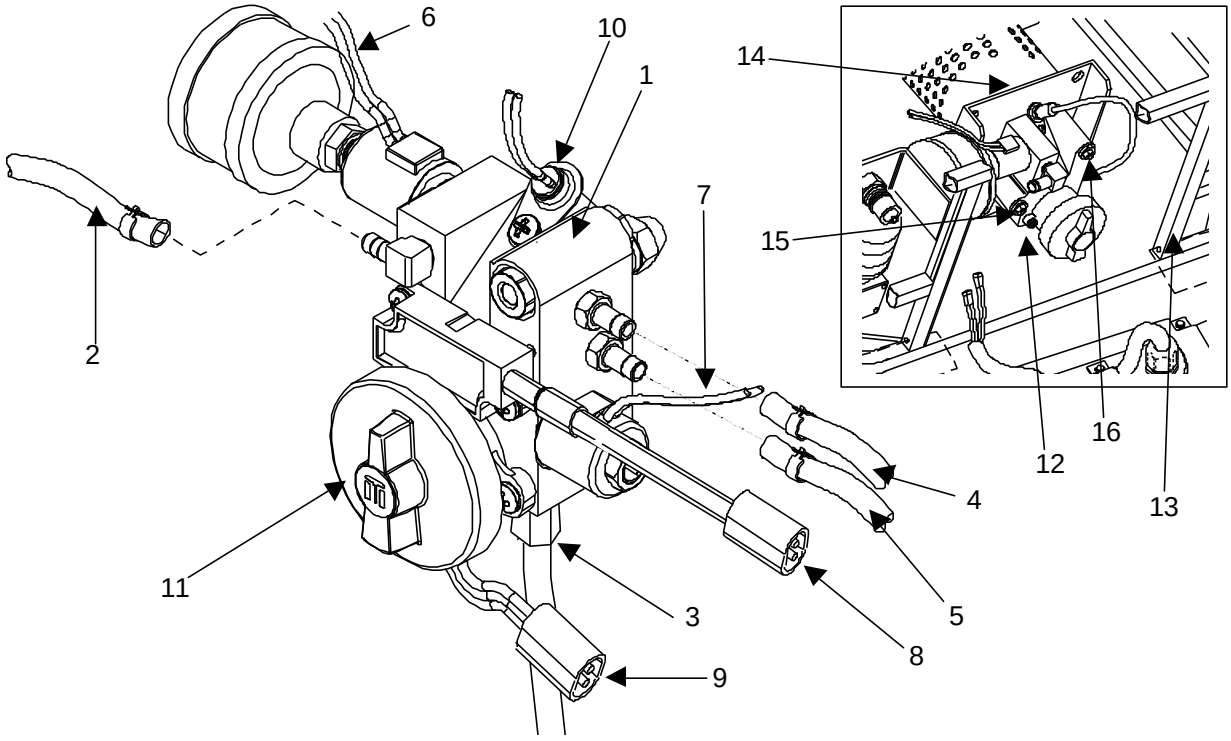
To install the new fuel delivery block assembly **(1)**, place the assembly in the MBU frame **(13)** with the control knob **(11)** facing toward the front of the MBU.

Connect the fuel line **(2)**, fuel feeder line **(3)** and air hoses **(4,5)** to the fuel delivery block assembly **(1)**. Note that neoprene hoses are two sizes (WP 0054). Install correct size hose on correct size fitting.

Connect the air/fill solenoid harness connector **(6)** and the fuel shut-off solenoid harness connector **(7)**. Connect the flame sensor harness connector **(8)**. Install the Ground Wire **(12)**.

Reinstall the fuel delivery block assembly **(1)** onto the burner tube mounting shafts.

Secure the fuel delivery block assembly **(1)** to the burner assembly **(14)** using two self locking nuts and washers **(15,16)**.



Replacement of Entire Fuel Delivery Block Assembly

END OF WORKPACKAGE

REFLECTIVE HEAT SHIELD AND BURNER TUBE ASSEMBLY

THIS SECTION COVERS:
Inspect, Replace

INITIAL SETUP
MBU shut-down, cool, and disconnected from power source
Maintenance Level **Materials/Parts**
Unit
Tools and Special Tools
Shop Equipment Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1 (WP 0038, Table 2, Item 2)

GENERAL

This procedure contains information and instructions to keep the MBU in good working order by inspecting and replacing the reflective heat shield top fasteners, or the entire reflective heat shield assembly, consisting of the reflective heat shield, insulation layer, burner well, carriage bolts, and self locking nuts.

WARNING!
Two Person Lift

The MBU weighs approximately 58 pounds fully fueled (26.3 kg). Two persons must carry the fully fueled MBU, lifting with legs, not back, to prevent injury.

WARNING!
Hot Surfaces

Do not attempt service procedures on a burner that has recently been in operation. Let the burner cool down before performing these procedures to avoid the possibility of serious burns.

INSPECT

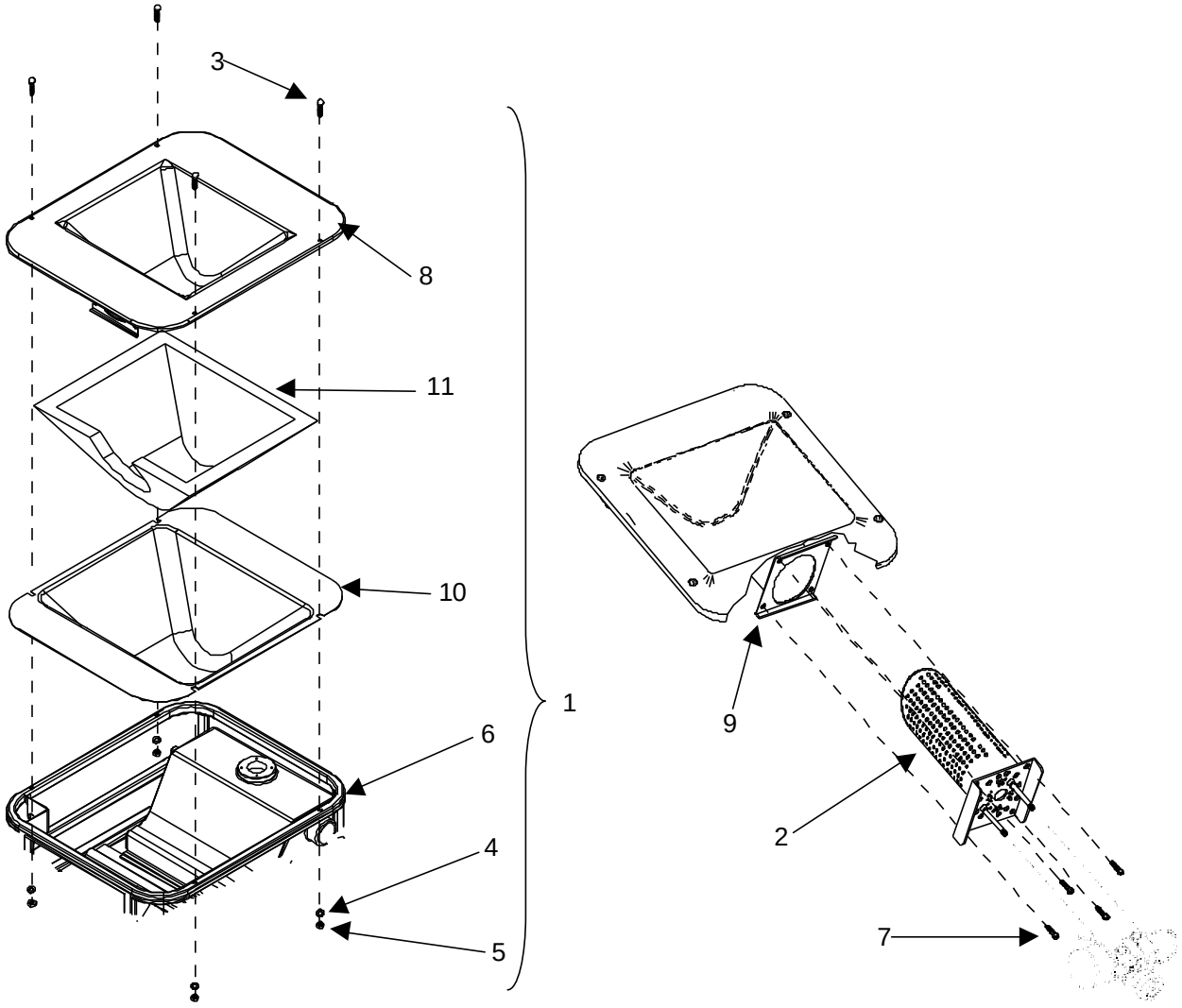
Inspect the reflective heat shield and burner tube assembly for physical damage, such as dents, perforations or severe warping. Check mounting hardware for security.

REPLACE

Temporarily remove the Fuel Delivery Block from the burner tube mounting shafts as described in WP 0023.

To replace any part of the reflective heat shield assembly **(1)** or burner tube assembly **(2)**, remove four carriage bolts **(3)**, washers **(4)** and self-locking nylon nuts **(5)** holding the reflective heat shield assembly to the frame **(6)**.

Lift the entire reflective heat shield and burner tube assembly **(1,2)** off MBU frame **(6)**.



Removing Reflective Heat Shield and Burner Tube Assembly

Remove the burner tube assembly by removing four screws **(7)**. Place new burner tube **(2)** or reflective heat shield assembly **(8)** into position, making sure that the flange **(9)** of the heat shield **(8)** fits through the opening on the burner well **(10)** and that the insulation **(11)** is not pinched between the heat shield **(8)** and burner well **(10)**.

Flip the entire assembly face down on a work surface and press down on the burner well to expose the burner tube mounting plate **(9)**. Install the burner tube assembly **(2)** making sure that the holes in the burner tube face out of the reflective heat shield when the assembly is mounted back on the MBU frame **(6)**.

Place the entire reflective heat shield and burner tube assembly back in place on the MBU frame **(6)**. Install four carriage bolts **(3)**, washers **(4)**, and self locking nylon nuts **(5)** securing the reflective heat shield assembly **(1)** to the frame **(6)**.

END OF WORK PACKAGE

MODERN BURNER UNIT (MBU) **0025 00**
UNIT MAINTENANCE PROCEDURES

VENT VALVE ASSEMBLY

THIS SECTION COVERS:
Inspect, Replace

INITIAL SETUP
MBU shut-down, cool, and disconnected from power source

Maintenance Level
Unit

Materials/Parts
" O" ring

Tools and Special Tools
Shop Equipment Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1 (WP 0038, Table 2, Item 2)

GENERAL

This procedure contains information and instructions to keep the MBU in good working order by inspecting and replacing the entire vent valve assembly, consisting of a solenoid, level switch, overfill check-valve, valve body, O-ring, and four mounting screws.

WARNING!
Two Person Lift

The MBU weighs approximately 58 pounds fully fueled (26.3 kg). Two persons must carry the fully fueled MBU, lifting with legs, not back, to prevent injury.

INSPECT

Inspect the vent valve assembly for proper seating on the fuel tank. Check for damage to the valve head, and solenoid. Check for loose power leads to the solenoid and float switch. Ensure vent orifice is not clogged.

WARNING!
Fire / Fuel Contamination

Before proceeding with this procedure, the MBU fuel tank must be drained completely as described in work package 0011. Have rags on hand to clean up fuel spillage that may occur to prevent contamination. Do not perform this procedure near an open flame to prevent fire.

REPLACE

To replace vent valve assembly **(1)** remove the reflective heat shield assembly as described in WP 0024.

Remove nylon retainer clips from the fuel line assembly **(2)**.

Remove four cross tip screws **(3)** securing vent assembly to fuel tank **(4)**.

Remove fuel line from fitting **(5)**.

Remove fitting **(5)** from vent valve assembly solenoid **(6)** using wrench.

Disconnect power lead **(7)** from harness **(8)**.

Remove vent valve assembly **(1)** from fuel tank **(4)**.

Discard old O-ring **(9)**.

Install new O-ring **(9)**.

Place new vent valve assembly **(1)** into position in fuel tank **(4)**.

Install four cross tip screws **(3)** holding vent valve assembly to fuel tank **(4)**.

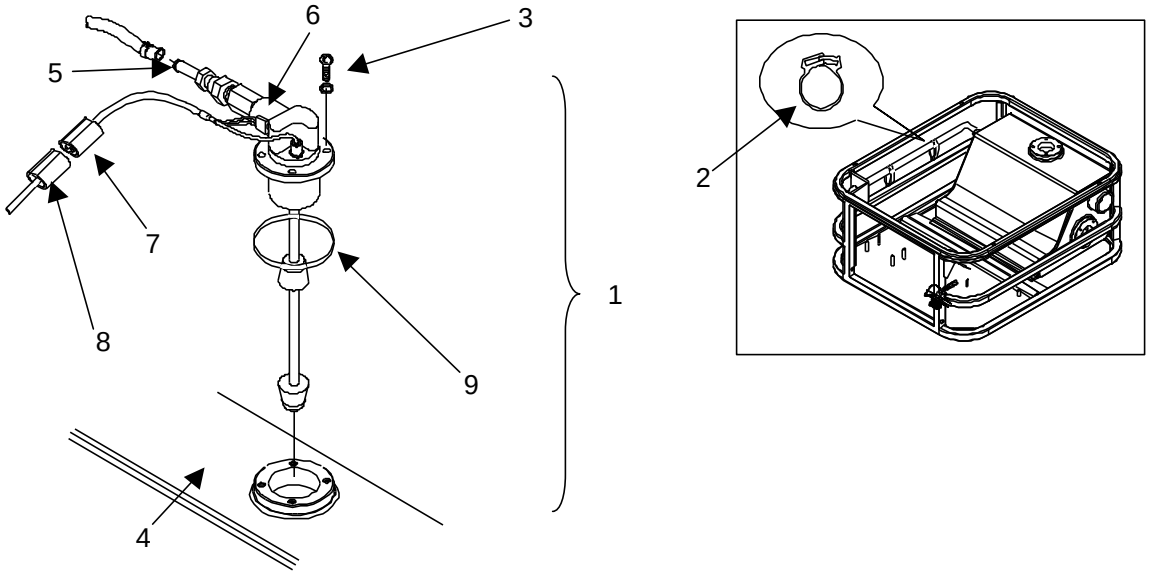
Install fuel fitting **(5)** onto vent valve assembly **(1)** using wrench.

Install fuel line onto fitting **(5).**

Connect power lead **(7)** to harness **(8).**

Install nylon retainer clips around fuel line assembly **(2)**, fuel line **(5)**, and power lead **(8)**.

Install the reflective heat shield and burner tube assembly as described in WP 0024.



Replacing Vent Valve Assembly

END OF WORK PACKAGE

FUEL INTERFACE FITTING

THIS SECTION COVERS:
Inspect, Replace

INITIAL SETUP
MBU shut-down, cool, and disconnected from power source (WP 0005)
Drain Fuel Tank (WP 0011)

Maintenance Level
Unit

Tools and Special Tools
Shop Equipment Automotive Maintenance and Repair:
Organizational Maintenance, Common No. 1
(WP 0038, Table 2, Item 2)

Materials/Parts
Joint Sealer Compound
(WP 0060, Table 1, Item 2)

GENERAL

This procedure contains information and instructions to keep the MBU in good working order by inspecting and replacing the fuel interface fitting.

WARNING!
Two Person Lift

The MBU weighs approximately 58 pounds fully fueled (26.3 kg). Two persons must carry the MBU, lifting with legs, not back, to prevent injury.

INSPECT

Inspect the fitting for physical damage and secure attachment. Check free movement of the valve stem.

WARNING!
Fire / Fuel Contamination

Before proceeding with this procedure, the MBU fuel tank must be drained completely as described in work package 0011. Have rags on hand to clean up fuel spillage that may occur to prevent contamination. Do not perform this procedure near an open flame to prevent fire.

REPLACE

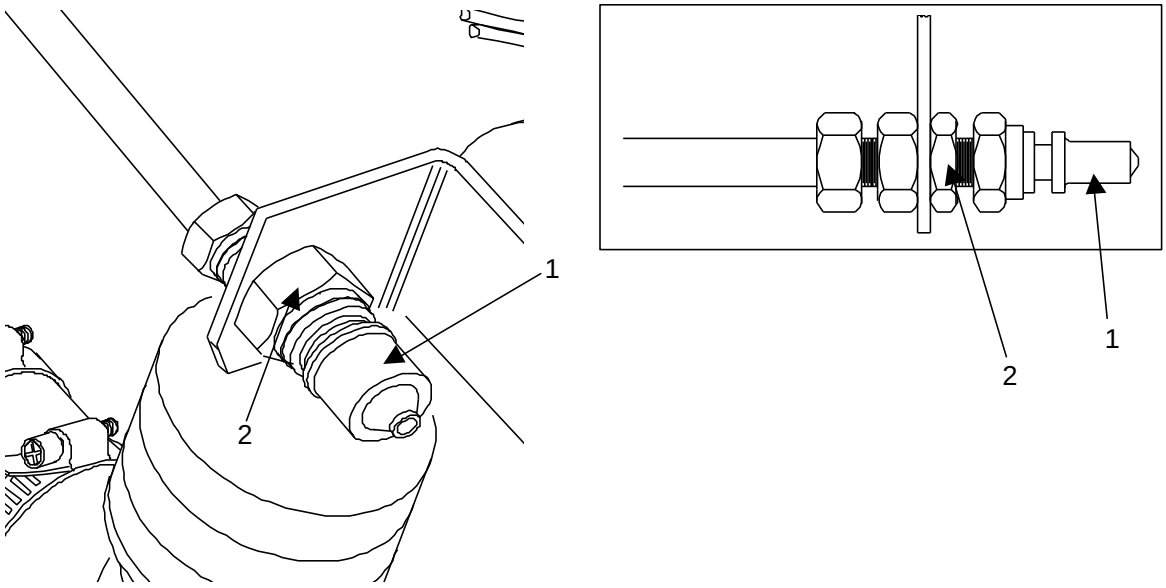
To replace the fuel interface fitting **(1)** loosen and remove the fitting from the union **(2)** using a wrench, while holding the union in place with a second wrench.

Remove joint sealer compound residue from union **(2)**.

CAUTION!
Do Not Use Teflon Tape.

Teflon Tape is **NEVER** to be used as a substitute for the approved Pipe Sealer Compound. Teflon Tape may shred and clog the fuel delivery system of the MBU.

Apply new joint sealer compound to union **(2)** and thread new fuel interface fitting **(1)** onto union, while holding the union in place with a wrench.



Replacing the Fuel Interface Fitting

END OF WORK PACKAGE

FUEL REGULATOR ASSEMBLY

THIS SECTION COVERS:
Inspect, Replace

INITIAL SETUP
MBU shut-down and cool (WP 0005)
Drain Fuel Tank (WP 0011)

Maintenance Level
Unit

Materials/Parts
O-ring (WP 0061, Table 1, Item 3)

Tools and Special Tools
Shop Equipment Automotive Maintenance and Repair:
Organizational Maintenance, Common No.1 (WP 0038, Table 2, Item 2)

GENERAL

This procedure contains information and instructions to keep the MBU in good working order by inspecting and replacing the entire fuel regulator assembly, consisting of the regulator, fuel pick-up tube, connector fitting, fuel filter, 45^0 elbow fitting, four mounting screws, and an O-ring.

WARNING!
Two Person Lift

The MBU weighs approximately 58 pounds fully fueled (26.3 kg). Two persons must carry the fully fueled MBU, lifting with legs, not back, to prevent injury.

WARNING!
Fire / Fuel Contamination

Before proceeding with this procedure, the MBU fuel tank must be drained completely as described in work package 0011. Have rags on hand to clean up fuel spillage that may occur to prevent contamination. Do not perform this procedure near an open flame to prevent fire.

INSPECT

Inspect the regulator assembly for proper seating on the fuel tank. Check for security of the valve head, and fuel line fitting. Ensure vent is not clogged.

To replace the Fuel Regulator Assembly **(1)**, disconnect the fuel feeder line **(4)** by loosening the compression fitting nut **(3)** from the fuel regulator fitting **(7)**.

Remove the four retaining screws **(5)**.

Remove the Fuel Regulator Assembly **(1)** from the fuel tank **(2)**.

Discard O-ring.

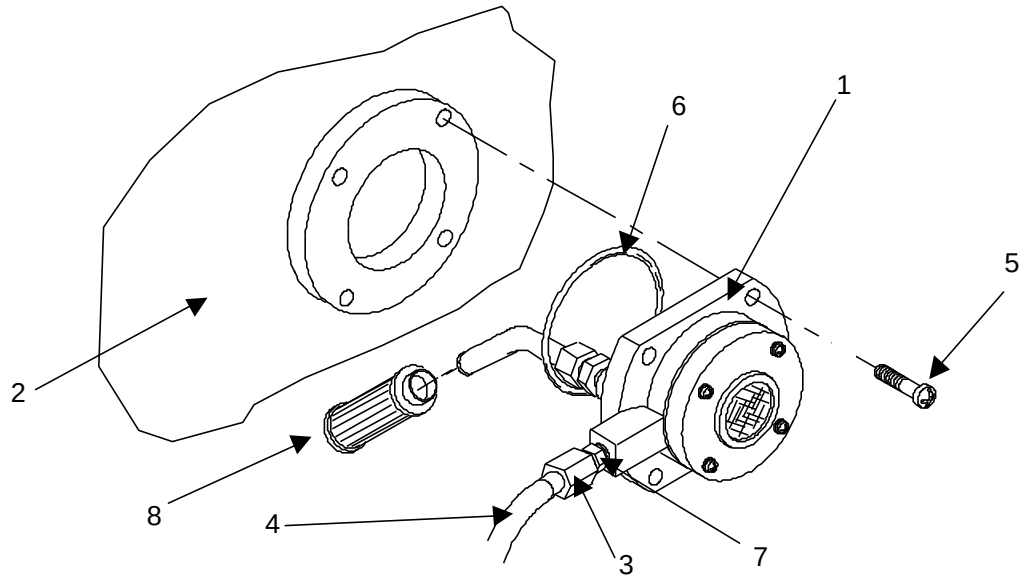
REPLACE

Install a new regulator assembly by installing a new o-ring **(6)** between the fuel regulator **(1)** and fuel tank **(2)**.

Lubricate the o-ring **(6)** with a small amount of fuel. Be sure to install a new fuel filter **(8).**

Insert the fuel regulator assembly **(1)** into the fuel tank **(2)** and secure with 4 retaining screws **(5)** using a cross tipped screwdriver.

Reconnect the fuel feeder line **(4)** by tightening the compression nut **(3)** to the fuel regulator fitting **(7)**.



Replacing Fuel Regulator Assembly

END OF WORK PACKAGE

MODERN BURNER UNIT (MBU) **0028 00**
UNIT MAINTENANCE PROCEDURES

FUEL LINE ASSEMBLY

THIS SECTION COVERS:
Inspect, Replace

INITIAL SETUP
MBU shut-down and cool (WP 0005)
Drain fuel tank (WP 0011)

Maintenance Level
Unit

Materials/Parts
Pipe Sealer Compound
(WP 0060, Table 1, Item 2)

Tools and Special Tools
Shop Equipment Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1 (WP 0038, Table 2, Item 2)

GENERAL

This procedure contains information and instructions to keep the MBU in good working order by inspecting and replacing the entire fuel line assembly, consisting of two compression fittings, an elbow fitting, the fuel line, a union w/nut, and a locking nut .

WARNING!
Two Person Lift

The MBU weighs approximately 58 pounds fully fueled (26.3 kg). Two persons must carry the MBU when fully fueled, lifting with legs, not back, to prevent injury.

INSPECT

Inspect the fuel line assembly for damage to the fuel line, and fittings. Check for leaks, loose connections or a dented fuel line. Dents or kinks in the fuel line can restrict or prevent proper fuel flow.

WARNING!
Fire / Fuel Contamination

Before proceeding with this procedure, the MBU fuel tank must be drained completely as described in work package 0011. Have rags on hand to clean up fuel spillage that may occur to prevent contamination. Do not perform this procedure near an open flame to prevent fire.

REPLACE

To replace the fuel line assembly **(1)**, remove the fuel interface fitting **(2)** as described in WP 0026.

Remove the two nylon snap-it hose clamps from the fuel line **(1)**.

Loosen the 5/8 compression fitting **(3)** on the fuel line **(1)** mounted to the elbow fitting **(5)**.

Loosen the union locking nut **(7)** while holding the union nut **(6)** with a second wrench.

Loosen the compression fitting **(8)** while holding the union nut **(6)** with a second wrench.

Remove the union **(9)** from the bracket **(10).**

Make note of the angle at which the ½ elbow fitting **(5)** is mounted in the fuel tank port **(4)**. Remove the 2 inch elbow fitting **(5)** from fuel tank port **(4)**. Clean pipe sealer compound residue with rag.

CAUTION!
Do Not Use Teflon Tape.

Teflon Tape is **NEVER** to be used as a substitute for the approved Pipe Sealer Compound. Teflon Tape may shred and clog the fuel delivery system of the MBU.

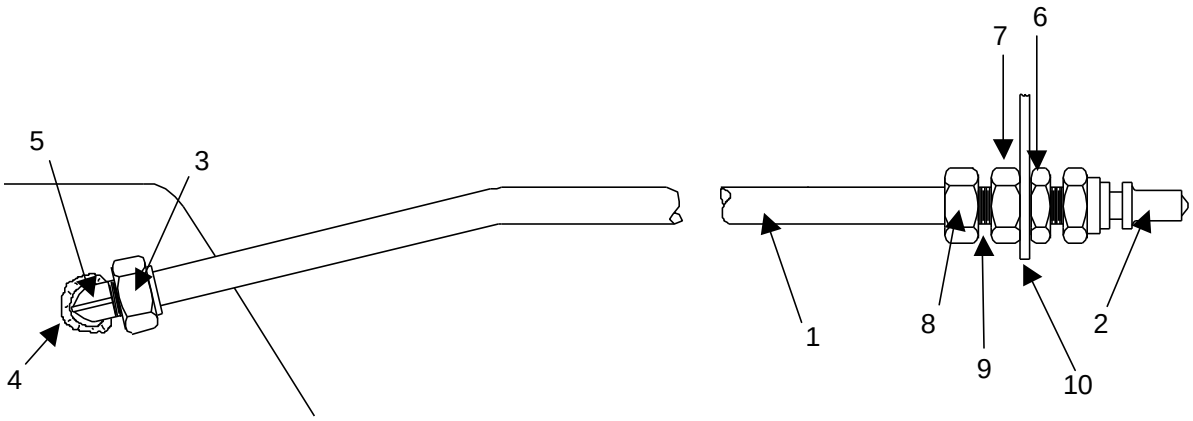
Apply new pipe sealer compound to new elbow fitting **(5)** and screw in place on fuel tank port **(4)**. Make sure that elbow is installed at same angle as before removal. Install new fuel line assembly **(1)** into elbow fitting and hand tighten compression fitting.

Install the union **(9)** through the bracket **(10)** and hand tighten the compression fitting **(8)** and the union locking nut **(7)**.

Connect the fuel line **(1)** to the elbow fitting **(5)** by hand tightening the compression fitting **(3)**.

Making sure that there is no stress on the fuel line **(1)** tighten compression and union fittings **(3,7)**.

Install fuel interface QD fitting **(2)** as described in WP 0026.



Replacing Fuel Line Assembly

END OF WORK PACKAGE

INSPECT/REPLACE NYLON CABLE STRAPS

THIS SECTION COVERS:
Inspect/Replace

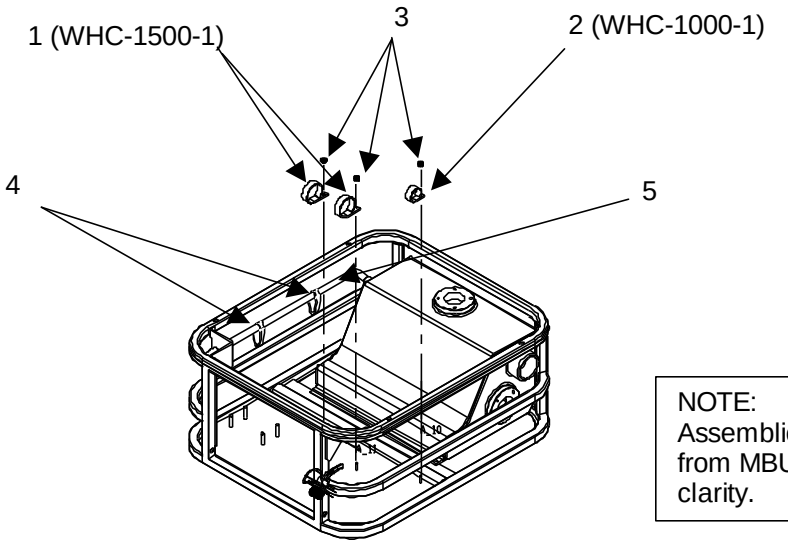
INITIAL SETUP
MBU shut-down and cool (WP 0005)

Maintenance Level **Materials/Parts**
Operator

Tools and Special Tools
Shop Equipment Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1 (WP 0038, Table 2, Item 2)

Inspect/Replace chassis cable straps. Locate the three chassis mounted cable straps **(1,2)** on the bottom surface of the MBU. Take note that there are two sizes. Inspect each strap to ensure that it is not cracked, cut, or otherwise damaged. Replace the chassis cable straps by removing the cables/hoses retained by the strap. Remove the nut **(3)** securing the cable strap to the chassis. Install a new cable strap in place on the threaded chassis stud and fasten with the nut **(3)** removed earlier. Reinstall the hoses/cables inside the cable strap.

Inspect/Replace fuel line hose clamps. Locate the two snap-it hose clamps **(4)** that secure the hose and electrical wires to the copper fuel line **(5)**. Inspect each clamp to ensure that it is not cracked, cut, or otherwise damaged. Replace the fuel line cable clamp by removing the damaged clamp. Slide the replacement clamp over the fuel line, hose, and wire assembly. Engage the locking mechanism of the strap so as to retain the hoses and cables securely without squeezing or otherwise deforming them.



NOTE:
Assemblies removed from MBU frame for clarity.

Replacing Hose Clamps and Chassis Mounted Cable Straps

END OF WORK PACKAGE

BATTERY PACK

THIS SECTION COVERS:
Inspect, Replace, Repair

INITIAL SETUP
Battery pack disconnected from power source
Maintenance Level **Materials/Parts**
Unit
Tools and Special Tools
Shop Equipment Automotive Maintenance and Repair:
Organizational Maintenance, Common No. 1 (WP 0038, Table 2, Item 2)

GENERAL

This procedure contains information and instructions to keep the battery pack in good working order by inspecting and replacing the entire battery pack or repairing the battery charger or replacing the batteries.

WARNING!
Two Person Lift

The Battery Pack weighs approximately 80 lbs. (36.2 kg). Two persons must carry the Battery Pack, lifting with legs, not back, to prevent injury.

INSPECT

Inspect the Battery Pack etc, if frame welds are broken or loose, remove Batteries per WP 0031 and remove Battery Charger per WP 0032. Refer to Direct Support Maintenance.

REPLACE

Replace the entire Battery Pack if damaged beyond repair.

REPAIR

Remove Batteries per WP 0031. Remove Battery Charger per WP 0032. Refer to Direct Support for welding.

When returned from Direct Support, Install Batteries per WP 0031. Install Battery Charger per WP 0032.

END OF WORK PACKAGE

BATTERIES

THIS SECTION COVERS:
Inspect, Replace

INITIAL SETUP **Materials/Parts**
Battery Pack disconnected from external power source
Maintenance Level
Unit
Tool s and Special Tools
Shop Equipment Automotive Maintenance and Repair:
Organizational Maintenance, Common No. 1 (WP 0038, Table 2, Item 2)
Multimeter (WP 0038, Table 2, Item 3)

GENERAL

This procedure contains information and instructions to keep the battery pack in good working order by inspecting and replacing the batteries.

INSPECT

Inspect the outer casing of the lead acid batteries inside the Battery Pack for any damage that could lead to leaking. Check the condition of the battery terminals for corrosion. Remove the power lead terminal and clean as necessary.

TEST

If the Battery Pack is not capable of powering the MBU for a length of time consistent with the specification (WP 0005), one or both of the batteries may be defective and require replacement. To determine the status of the batteries, attempt to charge the battery pack until the Ready indicator is lit. If the Ready indicator does not light after approximately 2 hours of charging, discontinue the charging operation and disconnect the power source from the Power Input connector. Remove the Battery Pack cover and disconnect the power leads that extend from the charger to the battery terminals so that the batteries are no longer connected to the charger or each other. With a Multimeter set to measure DC Volts, place the (+) positive lead of the Multimeter on the (+) positive terminal of the battery and the (-) negative lead of the Multimeter on the (-) negative terminal of the battery. Read the output voltage of the battery on the Multimeter. If the voltage is 11 V DC or less, the battery is most likely no longer capable of holding a full charge and requires replacement.

WARNING!
Two Person Lift

The Battery Pack weighs approximately 80 pounds (36.3 kg). Two persons must carry the Battery Pack, lifting with legs, not back, to prevent injury.

REPLACE

To replace the Battery Pack batteries **(1)**, remove the Battery Pack outer cover **(2)** by removing the 10 cover retaining screws **(3)** with a cross tipped screwdriver.

Remove the two nylon locking nuts and washers **(4)** on the hold-down bracket **(5)** of the battery being replaced.

Slide the hold-down bracket **(5)** off the threaded shafts **(6)** and remove.

Loosen and remove the battery terminal hex head bolts **(7)** that secure the power leads **(8)** to the battery terminals of the battery being replaced.

Remove the defective battery and set aside. Take care in handling the batteries, as each weighs approximately 35 pounds. Due to their weight, the batteries may stick to the neoprene cushion of the Battery Pack base plate and make require a moderate amount of force to break the bond.

Install the new battery **(1)** onto the Battery Pack bottom plate **(9)**.

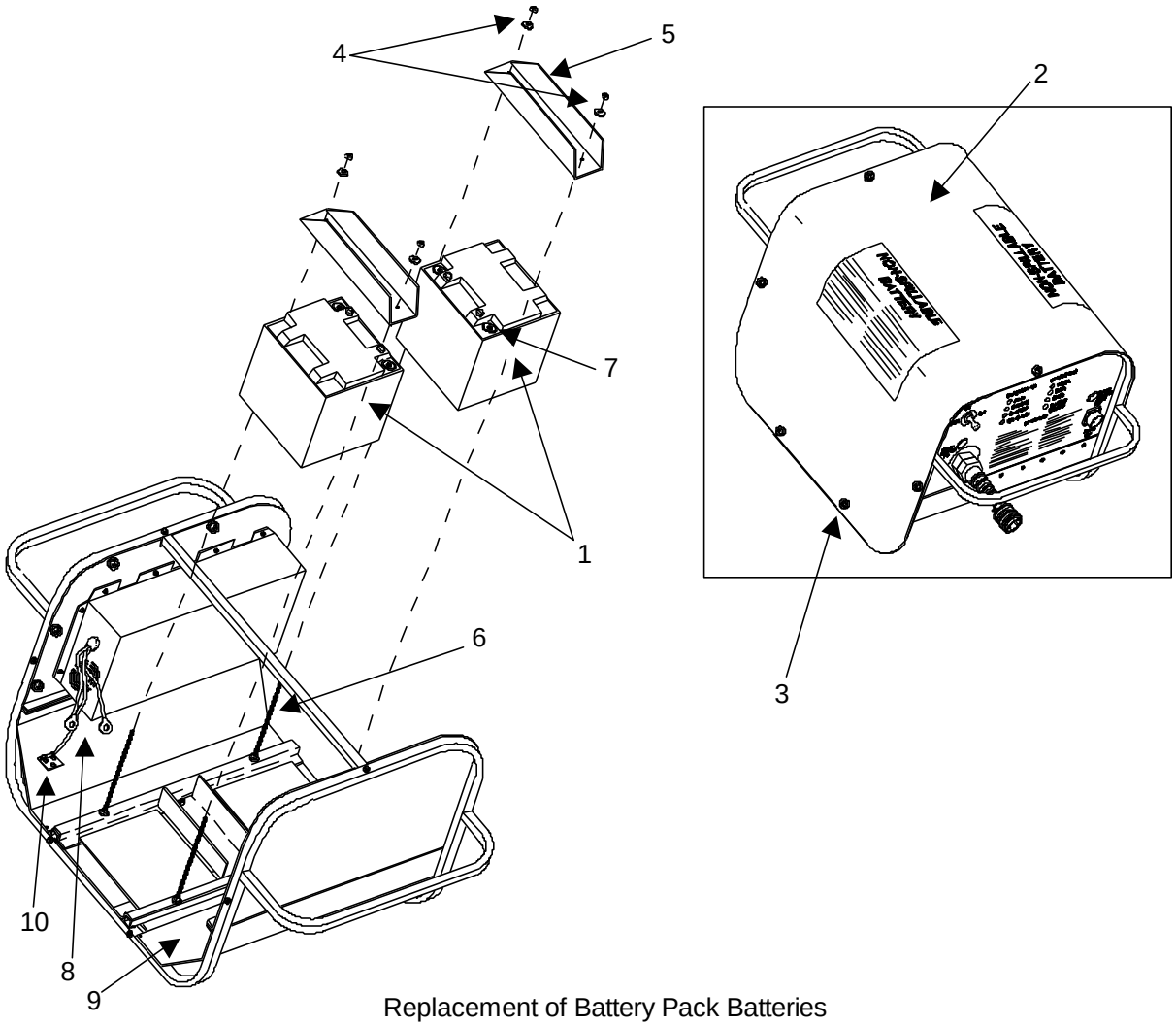
Slide the hold-down bracket **(5)** onto the threaded shafts **(6)**.

Reinstall the two nylon locking nuts **(4)** on the hold-down bracket **(5)** of the battery.

CAUTION!
Battery Damage

Batteries may explode if connected incorrectly. Red power lead MUST be connected to positive (+) terminal of battery. Black power lead MUST be connected to negative (-) terminal of battery.

Reconnect each power lead **(8)** making sure to attach the RED lead to the positive (+) battery terminal and the temperature sensor **(10)** under the BLACK negative lead of the negative (-) battery terminal. Secure the power lead to the battery terminals with hex head bolts **(7)**. Install the battery pack outer cover with the 10 cover retaining screws **(3)** removed earlier. Be certain to dispose of the defective battery in an environmentally approved manner.



Replacement of Battery Pack Batteries

END OF WORK PACKAGE

MODERN BURNER UNIT (MBU) **0032 00**
UNIT MAINTENANCE PROCEDURES

BATTERY CHARGER

THIS SECTION COVERS:
Inspect, Replace

INITIAL SETUP
Battery Pack Cover and Batteries Removed (WP 0031)
Maintenance Level **Materials/Parts**
Unit
Tools and Special Tools
Shop Equipment Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1 (WP 0038, Table 2, Item 2)

GENERAL

This procedure contains information and instructions to keep the battery pack in good working order by inspecting and replacing the electrical connectors, fasteners, graphics, or the entire battery charger assembly.

INSPECT

Inspect the front panel assembly of the battery pack internal assembly. Check the condition of the Power Out connector for dents or other damage that would prevent the proper connection of a cable connector. Check the condition of the Power In cable for cuts or other damage that expose the wiring. When in operation, ensure that all front panel LED indicators are functional. Ensure that the 3-Position Function Switch is operational.

WARNING!
Two Person Lift

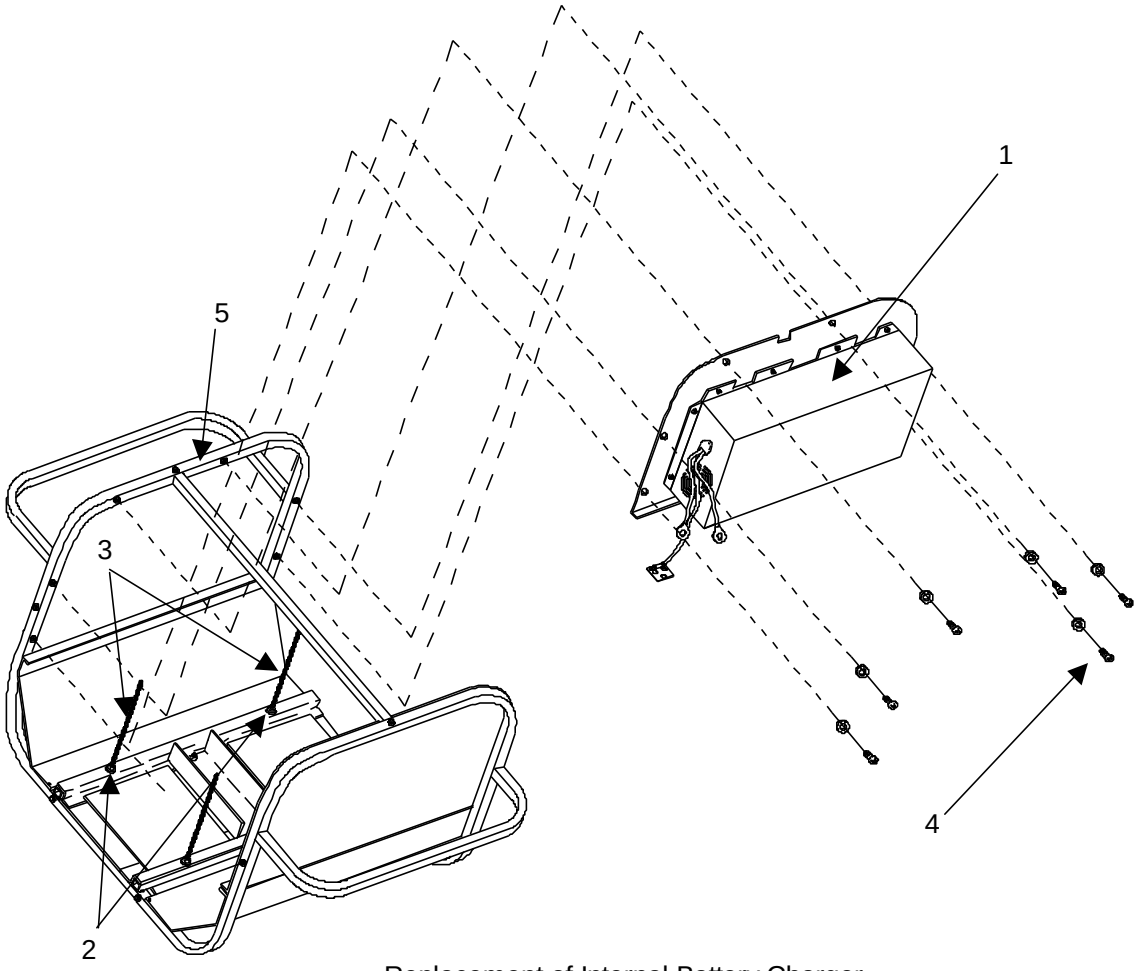
The Battery Pack weighs approximately 80 pounds (36.3 kg). Two persons must carry the Battery Pack, lifting with legs, not back, to prevent injury.

REPLACE

To replace the internal battery charger **(1)**, remove batteries as detailed in WP 0031 and loosen the two hex nuts **(2)** at the base of the threaded shafts **(3)** just behind the charger assembly. Remove the two shafts **(3)** (it is not necessary to remove rear shafts), making sure not to drop the nuts and washers under the battery pack base plate that secure the shafts to the frame. Remove the 6 retaining screws and washers **(4)** that secure the battery charger **(1)** to the battery pack frame **(5)**. Remove the defective charger assembly.

Install a new charger **(1)** in place on the battery pack frame **(5)**. Secure in place with the 6 retaining screws and washers **(4)**. Install two threaded shafts **(3)** removed earlier and secure.

Reinstall the batteries and battery pack cover as described in WP 0031.



Replacement of Internal Battery Charger

END OF WORK PACKAGE

NATO ADAPTER CABLE

THIS SECTION COVERS:
Inspect, Replace

INITIAL SETUP
NATO Adapter Cable disconnected from power source
Maintenance Level **Materials/Parts**
Unit
Tools and Special Tools
Shop Equipment Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1 (WP 0038, Table 2, Item 2)

GENERAL

This procedure contains information and instructions to keep the MBU System in good working order by inspecting and replacing the NATO Adapter Cable assembly.

INSPECT

Remove the outer cap **(1)** of the large power connector **(2)** and inspect the interior surfaces for any dirt, damage, or corrosion that would prevent a good electrical connection. Inspect the connection point **(3)** between the large power connector **(2)** and the cable **(4)** for any cracks, separations, or exposed wires. Inspect the length of the cable jacket **(5)** for any cracks, cuts, or other damage that would expose the inner wires. Inspect the small power connector **(6)** for any cracks, dents, or damage to the outer collar that would prevent a proper and secure electrical connection. Inspect the interior surfaces of the connector **(6)** for dirt or damage to the internal contacts. Ensure that the outer cable jacket **(7)** is securely attached to the connector and that there are no exposed wires.

REPLACE

To replace the NATO Adapter Cable power cable, or the main power connector head **(2)** remove the 6 screws that secure the back cover of the main connector head **(2)** and remove the protective cap **(1)**.

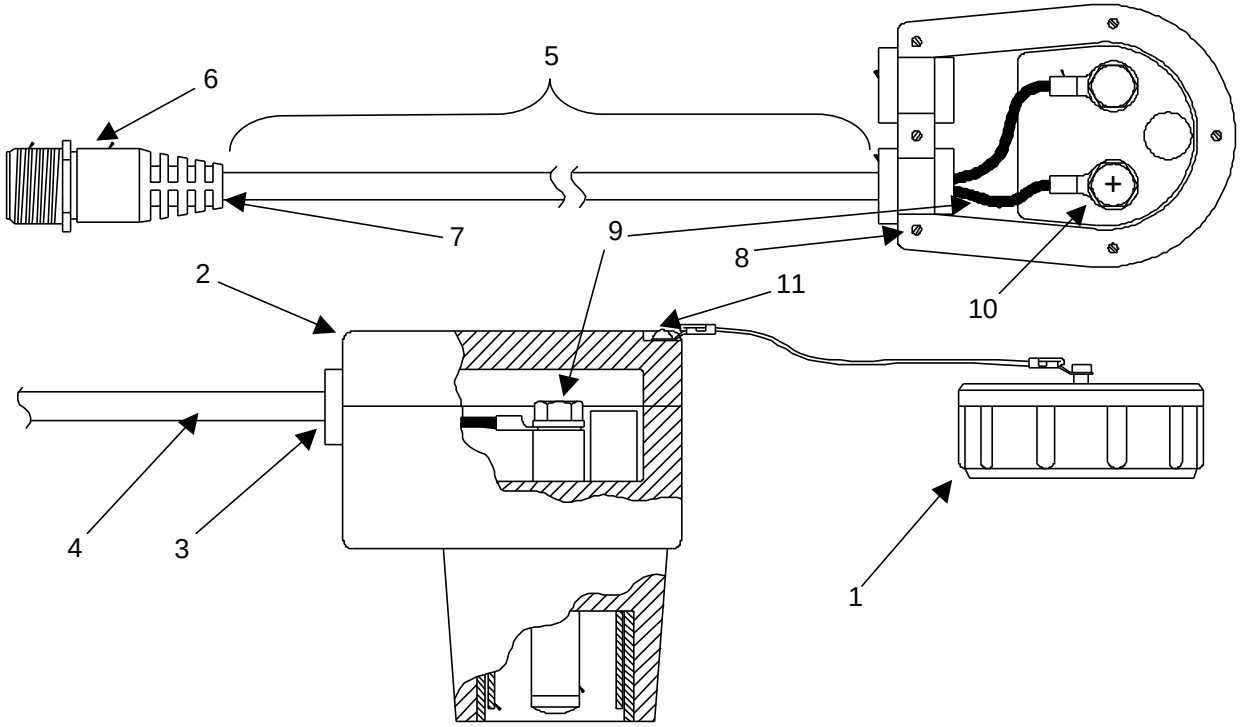
Remove the two hex head bolts **(9)** that secure the power cable **(4)** to the main power connector head **(2)** and remove the cable assembly.

Install a new power cable or new main connector head **(2)** making sure to place the power cable strain relief **(3)** into the slot on the main power connector head.

Place the power cable terminals in position by aligning the **(+)** positive lead of the cable with the **(+)** terminal **(10)** on the main connector head **(2)** and install the two hex head bolts **(9)**.

Place the back cover of the main connector head **(2)** into position. Place a new cap or the cap removed earlier into position over the top screw hole **(11)** and secure the six cover screws **(8)**.

If the main power connector head and power cable are both damaged, replace the entire NATO Adapter Cable assembly.



NATO Adapter Cable

END OF WORK PACKAGE

CHAPTER 5

DIRECT SUPPORT MAINTENANCE INSTRUCTIONS FOR MODERN BURNER UNIT

MODERN BURNER UNIT (MBU) **0034 00**
DIRECT SUPPORT MAINTENANCE PROCEDURES

THIS SECTION COVERS:
Inspect, Repair

INITIAL SETUP
MBU shut-down, cool, and disconnected from power source
Maintenance Level **Materials/Parts**
Direct Support
Tools and Special Tools
Shop Equipment Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1 (WP 0038, Table 2, Item 2)
Welding Shop, Trailer Mounted (WP 0038, Table 2, Item 4)

GENERAL

This procedure contains information and instructions to keep the MBU in good working order by inspecting and repairing the MBU frame as necessary.

WARNING!
Two Person Lift
The MBU weighs approximately 58 pounds fully fueled (26.3 kg). Two persons must carry the MBU, lifting with legs, not back, to prevent injury.

REPAIR

Remove all components per WP 0020 through WP 0028. In WP 0023, perform only the final procedure entitled " Replacing Entire Fuel Delivery Block Assembly" .

Perform welding operations as specified in TM 9- 237, Welding Theory and Application.

END OF WORK PACKAGE

BATTERY PACK

THIS SECTION COVERS:
Inspect, Repair

INITIAL SETUP
Battery Pack disconnected from source, batteries and internal charger removed (WP 0031 and WP 0032)

Maintenance Level **Materials/Parts**
Direct Support

Tools and Special Tools
Shop Equipment Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1 (WP 0038, Table 2, Item 2)
Welding Shop, Trailer Mounted (WP 0038, Table 2, Item 4)

GENERAL

This procedure contains information and instructions to keep the battery pack in good working order by inspecting and repairing the frame and body parts.

WARNING!
Two Person Lift
The Battery Pack weighs approximately 80 pounds (36.2 kg). Two persons must carry the Battery Pack, lifting with legs, not back, to prevent injury.

REPAIR

Remove components as described WP 0031 and WP 0032.

Perform welding operations as specified in TM 9- 237, Operator' s Manual: Welding Theory and Application.

Perform repairs to the sheet metal cover as described in TM 9-510, Metal Body Repair and Related Operations.

END OF WORK PACKAGE

POWER CONVERTER

THIS SECTION COVERS:
Inspect, Replace, Repair

INITIAL SETUP
Power converter disconnected from power source
Maintenance Level **Materials/Parts**
Direct Support
Tools and Special Tools
Shop Equipment Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1 (WP 0038, Table 2, Item 2)
Multimeter (WP 0038, Table 2, Item 3)

GENERAL

This procedure contains information and instructions on maintaining the power converter in good working order by inspecting and replacing the power input cable, main power switch, or the entire power converter if required.

INSPECT

Inspect the outer case of the power converter for any damage that would expose or damage the internal components. Inspect the power cable is not cut, frayed, or other wise damaged. Ensure the plug on the power cord has not been damaged. Ensure that the Power Output connectors are not bent, or damaged in any way that would prevent the proper of cable connectors. Ensure that the LED indicator operates properly.

If it is suspected that the Power Converter is not operating properly, verify that the output voltage of the Power Converter is 24VDC with a multimeter.

REPLACE

Replacing the Main Power Switch. To replace the Power Converter Main Power Switch **(1)**, remove the top cover **(2)** of the power converter by removing the ten screws and washers **(3)**.

Loosen and remove the hex nut with protective rubber cap **(4)** of the main power switch **(1)**.

Make note of the location, color, and connection point of the two wires connected to the main power switch inside the power converter to ensure that the wires are reconnected properly when the switch is replaced.

Reach inside the power converter case and disconnect the spade connector **(5)** which connects one terminal **(6)** of the power switch to the AC filter block **(10)**.

Loosen and remove the screw **(7)** that secures the wire **(8)** to the second terminal. Set this wire aside.

Remove the main power switch **(1)** from the power converter. Test for continuity through the power switch with a multimeter. If the power switch is not found to be defective, check for continuity through the power cord. If both are not found to be defective, the entire power converter should be replaced.

To install a new main power switch **(1)**, install the short wire **(8)** set aside earlier on the switch terminal **(9)** labeled LOAD. Secure with screw.

Place the switch **(1)** in position in the power converter' s front panel. Be sure to position the switch so that the screw terminal **(9)** labeled LOAD is facing up and out of the case while the terminal **(11)** labeled LINE is facing down into the power converter case.

Install the hex nut with protective rubber cap **(4)** on the front of the power switch **(1)**.

Connect the spade terminal **(5)** to the lug **(19)** on the AC Filter **(10)**.

Connect the second wire **(16)** to the switch terminal **(11)** marked LINE and secure with screw.

Secure power converter cover **(2)** with screws and lockwashers **(3)**.

Replacing the power cord. To replace the power cord, remove the screws and lockwashers **(3)** that secure the power converter cover **(2)**.

Remove the main power switch **(1)** as described above.

Take note of the color of the power cord wires and where they are connected to ensure that the cord is reconnected properly.

Disconnect the power cord spade terminal **(12)** from the lower lug **(20)** of the AC Filter **(10)**.

Loosen and remove the hex nut **(13)** on the grounding stud **(14)** and remove the power cord lead **(15)**.

Loosen and remove the plastic hex nut **(19)** on the inside of the power converter front panel that secures the power cord strain relief **(17)**.

Pull the entire power cord assembly **(18)** out of the power converter. Remove the strain relief **(17)** from the power cord **(18)**.

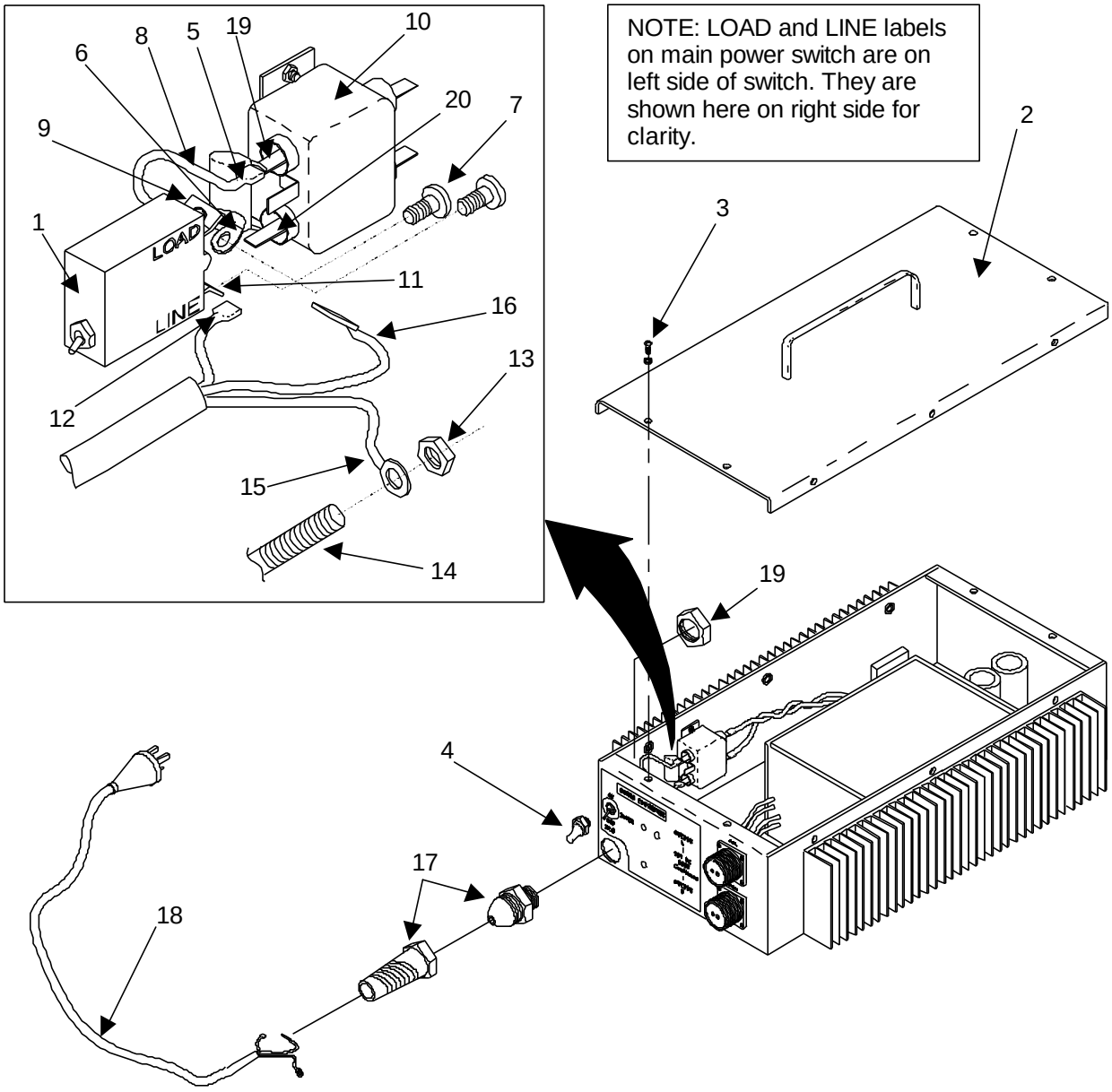
Install the strain relief over a new power cord (Note that the strain relief must be replaced if it shows signs of wear or damage).

Insert the power cord **(18)** and strain relief assembly **(17)** through the hole in the front panel of the power converter. Secure with plastic strain relief hex nut **(19)**.

Connect the spade terminal **(12)** of the BLUE wire to the lower terminal **(20)** of the AC Filter **(10)**. Connect the GREEN/YELLOW wire **(15)** to the grounding stud **(14)** on the inside surface of the front panel. Secure with nut **(13)** removed earlier.

Reinstall the main power switch **(1)** as described above and connect terminal **(16)** of the BROWN power cord wire to the terminal **(11)** on the power switch labeled LINE. Secure with screw.

Reinstall the power converter cover **(2)** and secure with screws and lockwashers **(3)** removed earlier.



Power Converter Maintenance

END OF WORK PACKAGE

CHAPTER 6

SUPPORTING INFORMATION FOR MODERN BURNER UNIT

MODERN BURNER UNIT (MBU) **0037 00**
REFERENCES

SCOPE

This section lists all field manuals, forms, technical manuals and miscellaneous publications referenced in this manual.

FIELD MANUALS

Basic Cold Weather Manual ..... FM 31-70
First Aid for Soldiers ..... FM 21-11
Mountain Operations ..... FM 90-6
Northern Operations ..... FM 31-71
Basic Doctrine for Army Field Feeding ..... FM 10-23

FORMS

Equipment Control Record ..... DA Form 2408-9
Equipment Inspection and Maintenance Worksheet ..... DA Form 2404
Hand Receipt ..... DA Form 2062
Product Quality Deficiency Report ..... SF 368
Recommended Changes to Equipment Technical Publications ..... DA Form 2028-2
Recommended Changes to Publications and Blank Forms ..... DA Form 2028

TECHNICAL MANUALS

Destruction of Army Material to prevent Enemy Use ..... TM 750-244-2
Administrative Storage of Equipment ..... TM 740-90-1
Preservation, Packaging, and Packing of Military Supplies and Equipment ..... TM 38-230-2
Operator's Manual: Welding Theory and Application ..... TM 9-237
Metal Body Repair and Related Operation ..... TM 9-510
Operator's, Organizational and Direct Support Maintenance Manual
Including Repair Parts and Special Tools List for Range Outfit M59 ..... TM 10-7360-204-13&P
Operator's, Organizational and Direct Support Maintenance Manual
Including Repair Parts and Special Tools List for Kitchen, Field, Modular ..... TM 10-7360-208-13&P
Operator's, Organizational and Direct Support Maintenance Manual
Including Repair Parts and Special Tools List for Food Sanitation Center ..... TM 10-7360-211-13&P
Operator's, Organizational and Direct Support Maintenance Manual
Including Repair Parts and Special Tools List for Mobile Kitchen Trailer ..... TM 10-7360-206-13&P
Operator's, Organizational and Direct Support Maintenance Manual
Including Repair Parts and Special Tools List for Kitchen, Company
Level Field Feeding (KCLFF) ..... TM 10-7360-209-13&P
Operator's Manual for Truck, 1 1/4 ton, M998 Series ..... TM 9-2320-280-10
Operator's, Organizational and Direct Support Maintenance Manual
Including Repair Parts and Special Tools List for Generator Set
DED 2KW DC Model MEP-501A/531A ..... TM 9-6115-673-13&P

REFERENCES

PAMPHLETS

Functional User' s Manual for the Army Maintenance Management System (TAMMS) ..... DA Pam 738-750

MISCELLANEOUS PUBLICATIONS

Occupational and Environmental Health Food Service..... .... TB MED 530
Dishwashing Operations..... .... MIL/HDBK 740

END OF WORK PACKAGE

MODERN BURNER UNIT (MBU) **0038 00**
MAINTENANCE ALLOCATION CHART

INTRODUCTION.

The Army Maintenance System MAC

This introduction provides a general explanation of all maintenance and repair functions authorized at various maintenance levels under the standard Army Maintenance System concept.

The MAC (immediately following the introduction) designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component shall be consistent with the capacities and capabilities of the designated maintenance levels, which are shown on the MAC in column (4) as:

Unit - includes two subcolumns, C (operator/crew) and O (unit) maintenance
Direct Support - includes an F subcolumn
General Support - includes an H subcolumn
Depot - includes a D subcolumn

The tools and test equipment requirements (immediately following the MAC) list the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from the MAC.

The remarks (immediately following the tools and test equipment requirements) contain supplemental instructions and explanatory notes for a particular maintenance function.

Maintenance Functions

Maintenance functions will be limited to and are defined as follows:

(1) Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination (e.g., by sight, sound, or feel.)

(2) Test. To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards

(3) Service. Operations required periodically to keep an item in proper operating condition, i.e. to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases.

(4) Adjust. To maintain or regulate, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to specified parameters.

(5) Align. To adjust specified variable elements of an item to bring about optimum performance.

(6) Calibrate. To determine and cause corrections to be made, or to be adjusted on instruments, tests, measuring, and diagnostic equipment used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

(7) Remove/Install. To remove and install the same item when required to perform service or other maintenance functions. Install may be the act of emplacing, seating, or fixing into position a spare, repair part, or module (component or assembly) in a manner to allow the proper function of equipment or system.

(8) Replace. To remove an unserviceable item and install a serviceable counterpart in its place. Replace is

authorized by the MAC and is shown as the 3rd position code of the SMR code.

(9) Repair. The application of maintenance services, including fault location/troubleshooting, removal/installation, and disassembly/assembly procedures, and maintenance actions to identify troubles, and restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

NOTE!

The following definitions are applicable to the repair maintenance function:

Services-Inspect, test, service, adjust, align, calibrate, and/or replace.

Fault location/troubleshooting-The process of investigating and detecting the cause of equipment malfunctioning; the act of isolating a fault within a system or Unit Under Test (UUT).

Disassembly/assembly-The step by step breakdown (taking apart) of a spare/functional group coded item to the level of its least component, that is assigned an SMR code for the level of maintenance under consideration (i.e. identified as maintenance significant).

Actions-Welding, grinding, riveting, straightening, facing, machining, and or resurfacing,

10) Overhaul. That maintenance effort (service/action) prescribed to restore an item to a completely serviceable/operational condition as required by maintenance standards in appropriate technical publications (i.e., DMWR). Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

(11) Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of material maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours/miles, etc.) considered in classifying Army equipment/components.

c. Explanation of Columns in the MAC

(1) Column 1, Group Number. Column 1 lists functional group code numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the next higher assembly. End item group numbers are 00.

(2) Column 2. Component/Assembly. Column 2 contains the names of components, assemblies, subassemblies, and modules for which maintenance is authorized.
(3) Column 3, Maintenance Function. Column 3 lists the functions to be performed on the item listed in Column 2. (For detailed explanation of these functions, see paragraph b. above)

(4) Column 4. Maintenance Level. Column 4 specifies, by the listing of a work time figure (expressed as man-hours shown as whole hours or decimals) in the appropriate subcolumn(s), the level of maintenance authorized to perform the function listed in Column (3). This figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or the complexity of the tasks within the listed maintenance function vary at different maintenance levels, appropriate work time figures will be shown for each level. The work time figure represents the average time required to restore an item (assembly,

subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes item preparation (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. The system designations for the various maintenance levels are shown below:

C ..... Operator or crew
O ..... Unit Maintenance
F ..... Direct Support Maintenance
H ..... General Support Maintenance
D ..... Depot Maintenance

(5) Column 5, Tools and Equipment. Column 5 specifies, by code, those common tool sets (not individual tools) common TMDE, and special tools, special TMDE, and support equipment required to perform the designated function.

(6) Column 6, Remarks. This column, when applicable, contains a letter code, in alphabetic order, which is keyed to the remarks contained in Table 6-3.

d. Explanation of Columns in the Tools and Test Equipment Requirements

Column (1) - Tool or Test Equipment Reference Code. The tool or test equipment reference code correlates with a code used in column (5) of the MAC.

Column (2) - Maintenance Level. The lowest level of maintenance authorized to use the tool or test equipment.

Column (3) - Nomenclature. Name or identification of tool or test equipment.

Column (4) - National Stock Number (NSN). The NSN of the tool or test equipment.

Column (5) - Tool Number. The manufacturer' s part number, model number, or type number.

e. Explanation of Columns in Remarks

Column (1) - Remarks Code. The code recorded in Column (6) of the MAC.
Column (2) - Remarks. This column lists information pertinent to the maintenance function being performed as indicated in the MAC.

MAINTENANCE ALLOCATION CHART FOR MBU SYSTEM

Table 1. MAC for MBU SYSTEM.

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REF CODE	(6) REMARKS CODE
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT		
			C	O	F	H	D		
00	MBU SYSTEM	INSPECT SERVICE REPLACE TEST REPAIR							
01	MBU	INSPECT SERVICE REPLACE TEST REPAIR	.10 .5	.10 .10 .10 .50	.10 .50			 1 2 3 4	 A
0101	FRAME ASSEMBLY	INSPECT REPAIR	.10		.10 .50			 4	 A
0102	CONNECTOR HARNESS ASSEMBLY	INSPECT TEST REPLACE	.10	.10 .10 .25				 3 2	
0103	CONTROLLER ASSEMBLY	INSPECT REPAIR REPLACE	.10	.10 .25 .25				 2 2	
0104	COMPRESSOR ASSEMBLY	INSPECT TEST REPLACE	.10	.10 .10 .25				 2,3	
0106	FUEL DELIVERY BLOCK ASSEMBLY	INSPECT REPAIR REPLACE	.10	.10 .50 .50				 1	
0107	VENT VALVE ASSEMBLY	INSPECT SERVICE REPLACE	.10 .10	.10 .10					
0108	BURNER ASSEMBLY	INSPECT REPLACE	.10	.10 .25					
0109	FUEL INTERFACE FITTING	INSPECT REPLACE	.10	.10 .25					
0110	REGULATOR ASSEMBLY	INSPECT REPLACE REPAIR	.10 .10	.10 .10 .10				 1	
0111	REFLECTIVE HEAT SHIELD	INSPECT REPLACE	.10	.10 .10					
0112	FUEL LINE ASSEMBLY	INSPECT REPLACE	.10	.10 .50					

MAINTENANCE ALLOCATION CHART FOR MBU SYSTEM (continued)

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REF CODE	(6) REMARKS CODE
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT		
			C	O	F	H	D		
02	POWER CONVERTER	INSPECT REPAIR REPLACE	.10	.10 .5					
03	BATTERY PACK	INSPECT REPLACE	.10	.10	.10				A,B
0301	BATTERIES	INSPECT REPLACE	.10 .25	.10 .25					
0302	BATTERY CHARGER	INSPECT REPLACE	.10 .25	.10 .25					
04	FUEL CAN ADAPTER AND FUEL HOSE	INSPECT REPLACE	.10	.10 .10					
05	NATO ADAPTER	INSPECT REPLACE	.10 .10	.10 .10					
06	24VDC EXTENSION AND BRANCH CABLES	INSPECT REPLACE	.10	.10 .10					
07	110VAC EXTENSION	INSPECT REPLACE	.10	.10 .10					

TOOLS AND TEST EQUIPMENT REQUIREMENTS FOR MBU

Table 2. Tools and Test Equipment for MBU.

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL STOCK NUMBER	TOOL NUMBER
1	O		5180-00-177-7033	
2	O	SHOP EQUIPMENT AUTOMOTIVE MAINTENANCE AND REPAIR: ORGANIZATIONAL MAINTENANCE, COMMON NO. 1 (NSN 4910-00-754-0654)	4910-00-754-0654	SC 4940-95-A74
3	O	MULTIMETER	6625-01-139-2512	AN/PSM-45
4	F	WELDING SHOP, TRAILER MOUNTED	3431-01-090-1231	SC 3431-95-CL-A04

REMARKS FOR MBU

Table 3. Remarks for MBU

REMARKS CODE	REMARKS
A	Perform welding operations as directed in TM 9-237, Welding Theory and Application
B	Perform repairs to the body as directed in TM 9-510, Metal Body Repair and Related Operations

END OF WORK PACKAGE

MODERN BURNER UNIT (MBU) **0039 00**
REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL)

SCOPE

This RPSTL lists and authorizes spare and repair parts; special tools; special tests, measurement and diagnostic equipment (TMDE); and other special support equipment required for performance of unit and direct support maintenance of the MBU. It authorizes the requisitioning, issue, and disposition of spares, repair parts, and special tools as indicated by the source, maintenance, and recoverability (SMR) codes.

GENERAL

In addition to this section, this RPSTL is divided into the following additional sections:

a. Repair Parts Sections. These sections contain lists of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. These sections also include parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in ascending alphanumeric sequence, with the parts in each group listed in ascending figure and item number sequence. Hardware is listed with the components used. Bulk materials are listed by item name in FIG. BULK at the end of the sections. Repair parts kits are listed separately in their own functional group and section. Repair parts for reparable special tools are also listed in a separate section. Items listed are shown on the associated illustrations.

b. Special Tools List Sections. Sections containing lists of special tools, special TMDE, and special support equipment authorized by this RPSTL (as indicated by Basis of Issue (BOI) information in the DESCRIPTION AND USABLE ON CODE (UOC) column). Tools that are components of common tool sets and/or Class VII are not listed.

c. Cross-Reference Index Sections. There are two cross-reference indexes in this RPSTL ; the National Stock Number (NSN) Index, and the Part Number Index. The NSN index refers you to the figure and the item number. The part number index also refers you to the figure and item number.

EXPLANATION OF COLUMNS IN THE RPSTL

a. ITEM NO. (Column (1)). Indicates the number used to identify items called out in the illustration.

b. SMR Code (Column (2)). The Source, maintenance, and recoverability (SMR) code is a 5-position code containing supply / requisitioning information, maintenance category authorization criteria and disposition instruction, as shown in the following breakout.

Source Code	Maintenance Code		Recoverability Code
XX		XX	X
1st two Positions: How you get an item	3rd Position: Who can install replace or use the item	4th Position: Who can do complete repair on the item	5th Position: Who determines disposition action on an item

* Complete Repair: Maintenance capacity, capability, and authority to perform all corrective maintenance tasks of the " Repair" function in a use/user environment in order to restore serviceability to a failed item.

Source Code. The source code, tells you how to get an item needed for maintenance, repair, or overhaul of an end item/equipment. Explanation of source codes follows.

Source Code	Explanation
PA PB PC** PD PE PF** PG	Stock items; use the applicable NSN to request/requisition items with these source codes. They are authorized to the category indicated by the code entered in the third position of the SMR code. NOTE: Items coded PC are subject to deterioration.
KB KD KF	Items with these codes are not to be requested/requisitioned individually. They are part of a kit which is authorized to the maintenance category indicated in the 3rd position of the SMR code. The complete kit must be requisitioned and applied.
MO-(Made at unit/ AVUM Level) MF-(Made at DS/ AVIM Level) MH-(Made at GS in this RPSTL. If the item is authorized to you by the 3rd position Level) ML-(Made at Specialized Repair Act. (SRA)) MD-(Made at Depot)	Items with these codes are not to be requested/requisitioned individually. They must be made from bulk material that is identified by the part number in the DESCRIPTION AND USABLE ON CODE (UOC) column and listed in the Bulk Material group of the repair parts list code of the SMR code, but the source code indicates it is made at a higher level, order the item from the higher level of maintenance.
AO-(Assembled by Unit/AVUM Level) AF-(Assembled by DS/AVIM Level) AH-assembled by GS level AL-(Assembled by SRA) AD-(Assembled by Depot)	Items with these codes are not to be requested/requisitioned individually. The parts that make up the assembled item must be requisitioned or fabricated and assembled at the level of maintenance indicated by the source code. If the third position code of the SMR code authorizes you to replace the item, but the source code indicates the item is assembled at a higher level, order the item from the higher level of maintenance.

XA	Do not requisition an "XA" coded item. Order its next higher assembly. (Also, refer to the NOTE below.)
XB	If an "XB" item is not available from salvage, order it using the CAGEC and part number given.
XC	Installation drawing, diagram, instruction sheet, field service drawing, that is identified by ma nufacturer's part number.
XD	Item is not stocked. Order an "XD" coded item through normal supply channels using the CAGEC and part number given, if no NSN is available.

NOTE!

Cannibalization or controlled exchange, when authorized, may be used as a source of supply for items with the above source codes, except for those source coded "XA" or those aircraft support items restricted by requirements of AR 750-1.

Maintenance Code. Maintenance codes tell you the level(s) of maintenance authorized to use and repair support items. The maintenance codes are entered in the third and fourth positions of the SMR Code as follows:

Third Position. The maintenance code entered in the third position tells you the lowest maintenance level authorized to remove, replace, and use the support item. The maintenance code entered in the third position will indicate authorization to one of the following levels of maintenance.

Maintenance Code	Application/Explanation
C	Crew or operator maintenance done within unit/AVUM maintenance.
O	Unit level/AVUM maintenance can remove, replace, and use the item.
F	Direct support/AVIM maintenance can remove, replace, and use the item.
H	General support maintenance can remove, replace, and use the item.
L	Specialized repair activity can remove, replace, and use the item.
D	Depot level can remove, replace, and use the item.

Fourth Position. The maintenance code entered in the fourth position tells whether or not the item is to be repaired and identifies the lowest maintenance level with the capability to do complete repair (i.e., perform all authorized repair functions).

NOTE!

Some limited repair may be done on the item at a lower level of maintenance, if authorized by the Maintenance Allocation Chart (MAC) and SMR codes.)

Maintenance

Code	Application/Explanation
O	Unit/AVUM is the lowest level that can do complete repair of the item.
F	Direct support/AVIM is the lowest level that can do complete repair of the item.
H	General support is the lowest level that can do complete repair of the item.
L	Specialized repair activity (designate the specialized repair activity) is the lowest level that can do complete repair of the item.
D	Depot is the lowest level that can do complete repair of the item.
Z	Nonrepairable. No repair is authorized.
B	No repair is authorized. (No parts or special tools are authorized for the maintenance of a "B" coded item.) However, the item may be reconditioned by adjusting, lubricating, etc., at the user level.

Recoverability Code. Recoverability codes are assigned to items to indicate the disposition action on unserviceable items. The recoverability code is entered in the fifth position of the SMR Code as follows:

Code	Application/Explanation
Z	Nonrepairable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in 3rd position of SMR Code.
O	Repairable item. When uneconomically repairable, condemn and dispose of the item at organizational or aviation unit level.
F	Repairable item. When uneconomically repairable, condemn and dispose of the item at the direct support or aviation intermediate level.
H	Repairable item. When uneconomically repairable, condemn and dispose of the item at the general support level.
D	Repairable item. When beyond lower level repair capability, return to depot. Condemnation and disposal of item not authorized below depot level.
L	Repairable item. Condemnation and disposal not authorized below Specialized Repair Activity (SRA).
A	Item requires special handling or condemnation procedures because of specific reasons (e.g., precious metal content, high dollar value, critical material, or hazardous material). Refer to appropriate manuals/ directives for specific instructions.

c. NATIONAL STOCK NUMBER (NSN) (Column (3)). The NSN for the item is listed in this column.

d. CAGEC (Column (4)). The Commercial and Government Entity Code (CAGEC) is a 5-digit numeric code which is used to identify the manufacturer, distributor, or Government agency/activity that supplies the item.

e. PART NUMBER (Column (5)). Indicates the primary number used by the manufacture, (individual company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items.

NOTE!

When an item with an assigned NSN is requisitioned, the part number for the item received may be different than the part number of the item being replaced.

f. DESCRIPTION AND USABLE ON CODE (UOC) (Column (6)). This column includes the following information:

(1) The federal item nameand , when required, a minimum description to identify the item.

(2) Part numbers of bulk materials are referenced in this column in the line entry to be manufactured/fabricated.

(3) Hardness Critical Item (HCI). A support item that provides the equipment with special protection from electromagnetic pulse (EMP) damage during a nuclear attack.

(4) The statement END of FIGURE appears just below the last item description in Column (5) for a given figure in both the repair parts list and special tools list.

g. QTY (Column (8)). The QTY (quantity per figure) column indicates the quantity of the item used in the breakout shown on the illustration/figure, which is prepared for a functional group, subfunctional group, or an assembly. A V appearing in this column instead of quantity indicates that the quantity is a variable with each application.

EXPLANATION OF CROSS REFERENCE INDEX FORMAT AND COLUMNS

a. National Stock Number (NSN) Index.

STOCK NUMBER Column. This column lists the NSN in national item identification number (NIIN) sequence. The NIIN consists of the last nine digits of the NSN, i.e.

NSN
5305-01-574-1467
NIIN

When using this column to locate an item, ignore the first four digits of the NSN. Use the complete NSN (13 digits) when requisitioning by stock number.

FIG. COLUMN. This column lists the number of the figure where the item is identified/located. The figures are in numerical order in Section II and Section III.

ITEM COLUMN. The Item number identifies the item associated with the figure listed in the adjacent FIG. Column. This item is also identified by the NSN listed on the same line.

b. PART NUMBER INDEX. Part numbers in this index are listed by part number in ascending alphanumeric sequence (i.e. vertical arrangement of letter and number combination which place the first letter or digit of each group in order A through Z, followed by the numbers 0 through 9, and each following letter or digit in like order).

PART NUMBER COLUMN. Indicates the primary number used by the manufacturer (individual, firm, corporation, or government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards and inspection requirements to identify an item or range of items.

FIG. COLUMN. This column lists the number of the figure where the item is identified/located in the repair parts list and special tools list.

ITEM COLUMN. The item number is that number assigned to the item as it appears in the figure referenced in adjacent figure number column.

c. REFERENCE DESIGNATOR Column. Indicates the reference designator assigned to the item.

FIG. COLUMN. This column lists the number of the figure where the item is identified/located in the repair parts list and special tools list.

ITEM COLUMN. The item number is that number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

END OF WORK PACKAGE

SPECIAL INFORMATION.

USABLE ON CODE (UOC). The useable on code appears in the lower left corner of the Description Column heading. Useable on codes are shown as " UOC" in the Description Column (justified left) on the first line under the applicable item description/nomenclature. Uncoded items are applicable to all models. Identification of the usable on codes used in this RPSTL are:

Code	Used On
PAA	MFK KIT
PAB	MKT KIT
PAC	FSC KIT
PAD	KCLFF-E KIT

HOW TO LOCATE REPAIR PARTS.

a. When National Stock Numbers or Part Numbers are NOT known.
First, using the table of contents, determine the assembly or subassembly group to which the item belongs. This is necessary since figures are prepared for assembly groups and subassembly groups, and listings are divided into the same groups.

Second, find the figure covering the assembly group or subassembly group to which the item belongs.

Third, identify the item on the figure and note the number(s).

Fourth, look in the repair parts list for the figure and item numbers. The NSNs and part numbers are on the same line as the associated item numbers.

b. When National Stock Number or Part Number is Known.

First, if you have the NSN, look in the STOCK NUMBER column of the NSN index. The NSN is arranged in NIIN sequence. Note the figure and item number next to the NSN.

Second, turn to the figure and locate the item number. Verify that the item is the one you are looking for.

c. When Part Number is Known.

First, if you have the P/N and not the NSN, look in the PART NUMBER column of the P/N index. Identify the figure and item number.

Second. Look up the item on the figure in the applicable repair parts list.

END OF WORK PACKAGE

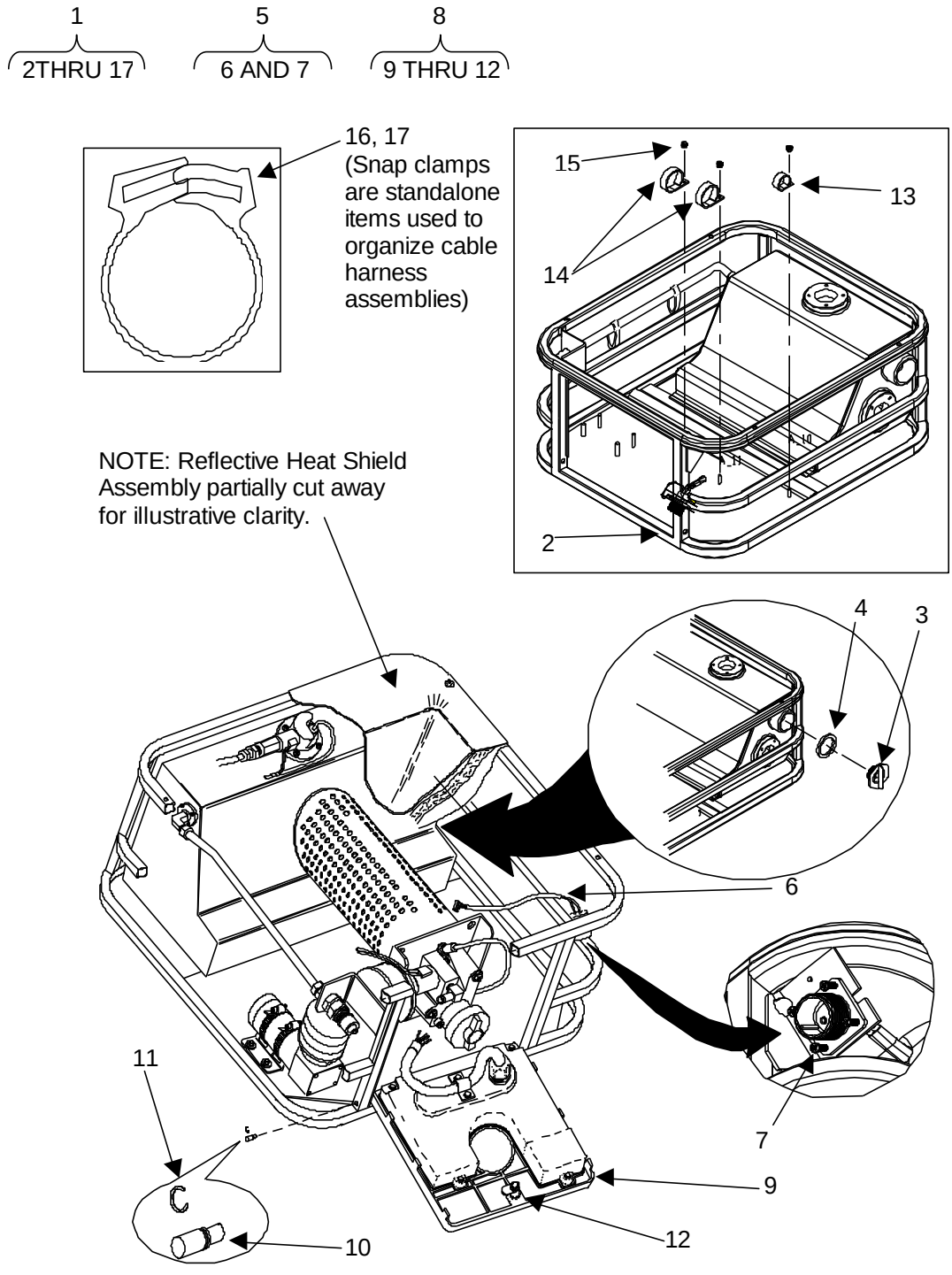


Figure 1. Frame, Connector Harness, and Controller Assemblies.

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 01 MODERN BURNER UNIT	
					FIGURE 1. FRAME, CONNECTOR HARNESS and CONTROLLER ASSEMBLIES	
1	PAOFF	7310-01-452-8137	3AD06	MS0001	MODERN BURNER UNIT	1
2	XAFFF	7310-01-462-4864	81349	980250	. ASSY, FRAME/TANK/PLATE	1
3	PAOOO	7310-01-462-4865	81349	935631	. CAP, FILLER FUEL TANK	1
4	PAOOO	7310-01-462-4867	81349	GK-42	. SEAL, FUEL TANK CAP	1
5	PAOOO	7310-01-462-4868	81349	930740K	. ASSY, CONNECTOR HARNESS W/SCREWS	1
6	PAOOO		3AD06	930740	. . HARNESS, CONNECTOR	1
7	PAOZZ		9W655	491-100	. . SCREW, #4-40X1/4ZP	4
8	PAOOO	7310-01-462-4869	81349	980240K	. ASSY, CONTROLLER	1
9	PAOOO		3AD06	980240	. . CONTROLLER	1
10	PAOZZ	7310-01-462-4871	81349	930929	. . PIN, HINGE CONTROLLER	2
11	PAOZZ		59199	5137-37	. . RETAINING RING	2
12	PAOZZ		94222	48-99-221-92N	. . LATCH, CONTROLLER	1
13	PAOZZ		3AD06	WHC-1000-01	. CLIP, SMALL WIRE	1
14	PAOZZ		3AD06	WHC-1500-01	. CLIP, LARGE WIRE	2
15	PAOZZ	5310-00-984-6610	72962	79NTE-040 ZYTEL 103 INS.	. NUT, NYLON LOCKING	3
16	PAOZZ		3AD06	SHC-50	. CLAMP, SMALL SNAP	2
17	PAOZZ		3AD06	SHC-80	. CLAMP, LARGE SNAP	2
					END OF FIGURE	

END OF WORK PACKAGE

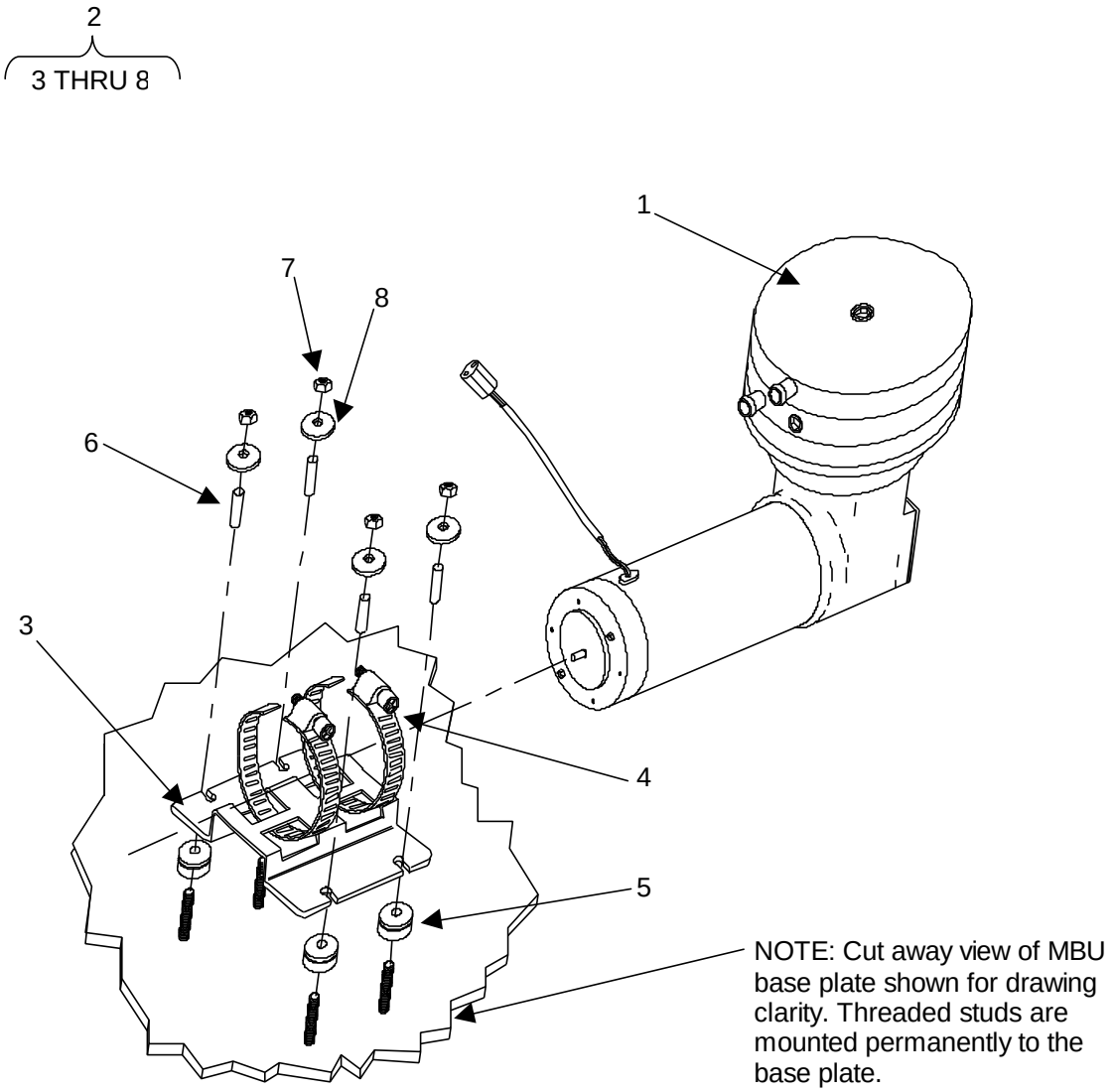


Figure 2. Compressor Assembly

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 01 MODERN BURNER UNI FIGURE 2. COMPRESSOR ASSEMBLY	
1	PAOOO	7310-01-462-4899	81349	980124K	ASSY, COMPRESSOR 24V	1
2	PAOZZ	7310-01-462-4902	81349	933827K	ASSY, BRACKET COMPRESSOR	1
3	PAOZZ		3AD06	933827	. BRACKET, COMPRESSOR	1
4	PAOZZ		3AD06	HC6-36	. CLAMP	2
5	PAOZZ		76385	Z-103 TYPE SC	. GROMMET, VIBRATION	4
6	PAOZZ		9W655	607-085	. SPACER	4
7	PAOZZ	5310-00-984-6610	72962	79NTE-040 ZYTEL 103 INS.	. NUT, NYLON LOCKING	4
8	PAOZZ		9W655	¼ TYPE B WIDE ZP STL	. WASHER, ¼ TYPE B WIDE ZP	4
					END OF FIGURE	

END OF WORK PACKAGE

1
2 THRU 26

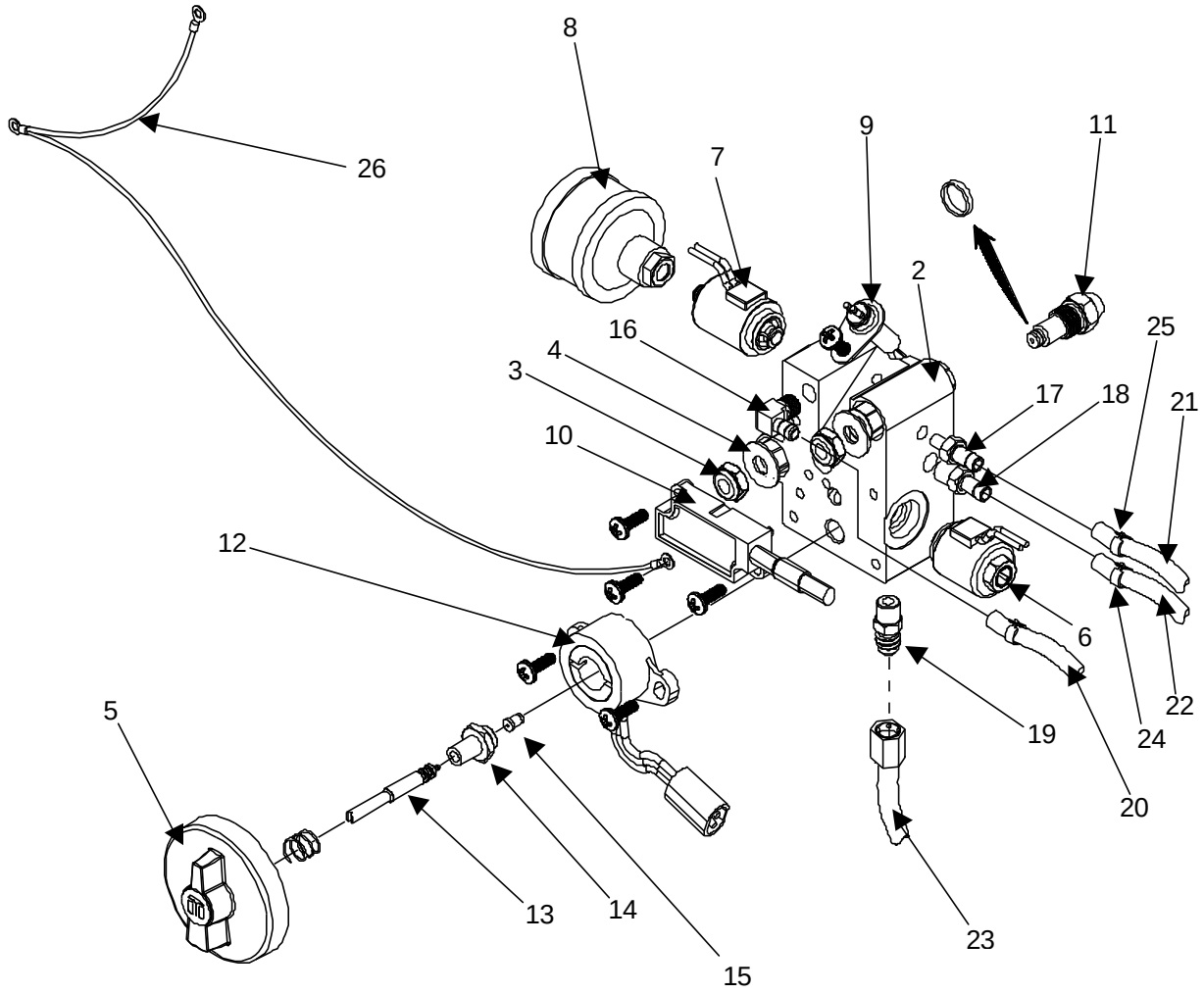


Figure 3. Fuel Delivery Block Assembly

FUEL DELIVERY BLOCK ASSEMBLY PARTS LIST - Continued

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
1	PAOOO	7310-01-462-4905	81349	980230K	ASSY, FUEL DELIVERY BLOCK	1
2	XAOZZ		3AD06	930700	. FUEL DELIVERY BODY	1
3	PAOZZ	5310-00-984-6610	72962	79NTE-040 ZYTEL 103 INS.	. NUT, NYLON LOCKING	2
4	PAOZZ		9W655	¼ FLAT SS 5/8 OD	. WASHER, ¼ FLAT SS	2
5	PAOOO	7310-01-462-4907	81349	880150K	. ASSY, CONTROL KNOB	1
6	PAOZZ		73212	1X1024-24VDC	. SOLENOID, FUEL SHUT OFF	1
7	PAOZZ		73212	2X1323-24VDC	. SOLENOID, AIR/FILL	1
8	PAOZZ	7310-01-462-4913	81349	346126	. FILTER, AIR INLET	1
9	PAOOO	7310-01-462-4915	81349	980260K	. ASSY, IGNITOR	1
10	PAOOO	7310-01-462-4918	81349	930125K	. ASSY, FLAME SENSOR	1
11	PAOOO	7310-01-462-4919	81349	928428K	. ASSY, FUEL NOZZLE	1
12	PAOOO	7310-01-462-4928	81349	980610K	. ASSY, POTENTIOMETER FEEDBACK	1
13	PAOZZ	7310-01-462-4922	81349	930720	. NEEDLE VALVE STEM	1
14	PAOZZ	7310-01-462-4931	81349	930715	. CAP, NEEDLE VALVE	1
15	PAOZZ	7310-01-462-4934	81349	930725	. NEEDLE VALVE SEAT	1
16	PAOZZ		3AD06	842123	. FTG, ELBOW 3/8 TUBE X 1/8 NPT	1
17	PAOZZ		3AD06	125-4A	. FTG, ¼ BARB X 1/8 NPTM	1
18	PAOZZ		3AD06	125-6B	. FTG, 3/8 BARB X ¼ NPTM	1
19	PAOZZ		3AD06	48-4A	. FTG, 1/8-#4 STRAIGHT	1
20	MOOZZ		3AD06	G611-038	. HOSE, NEOPRENE FUEL LINE 3/8 ID	1
21	MOOZZ		3AD06	G611-025	. HOSE, NEOPRENE AIR LINE ¼ ID	1
22	MOOZZ		3AD06	G611-038	. HOSE, NEOPRENE AIR/FUEL LINE 3/8 ID	1
23	PAOZZ		40223	02BB0402-0200	. HOSE, FUEL FEEDER	1
24	PAOZZ		3AD06	UM5010-103	. CLAMP, 3/8 ID HOSE	2
25	PAOZZ		3AD06	UM5008-103	. CLAMP, 1/4 ID HOSE	4
26	PAOZZ	7310-01-462-4936	81349	910729K	. ASSY, GROUND WIRE	1
					END OF FIGURE	

END OF WORK PACKAGE

1
2 THRU 4

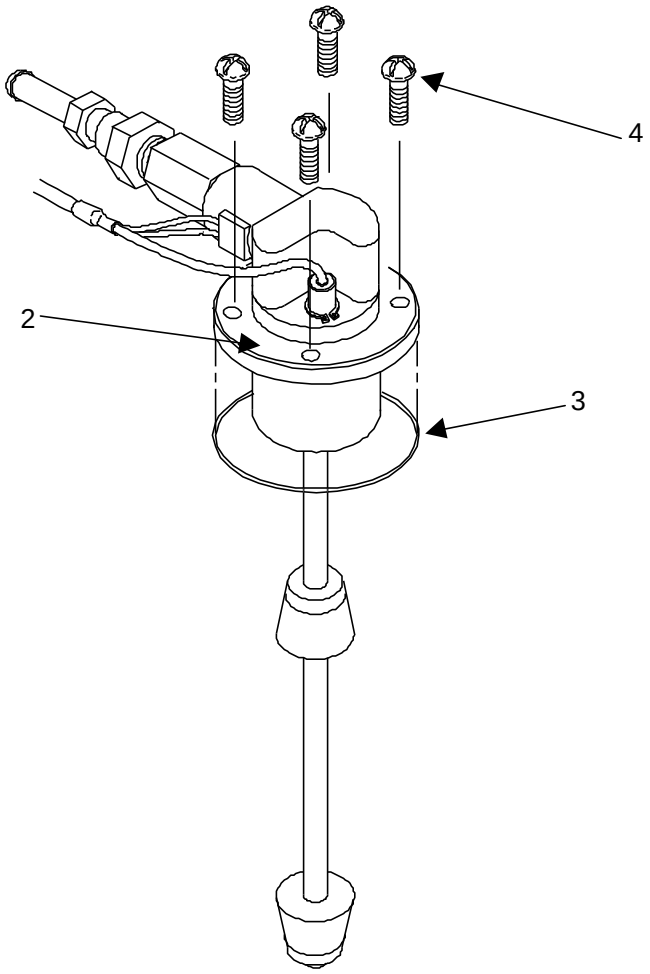


Figure 4. Vent Valve Assembly

VENT VALVE ASSEMBLY PARTS LIST - Continued

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
1	PAOOO	7310-01-462-4942	81349	980280K	ASSY, VENT VALVE/LEVEL	1
2	PAOZZ		3AD06	980280	. VENT VALVE	1
3	PAOZZ		3AD06	ORING-223	. ORING-233 COMP 1	1
4	PAOZZ		9W655	180629	. SCREW, #10 C/W L/WASHER	4
					END OF FIGURE	

END OF WORK PACKAGE

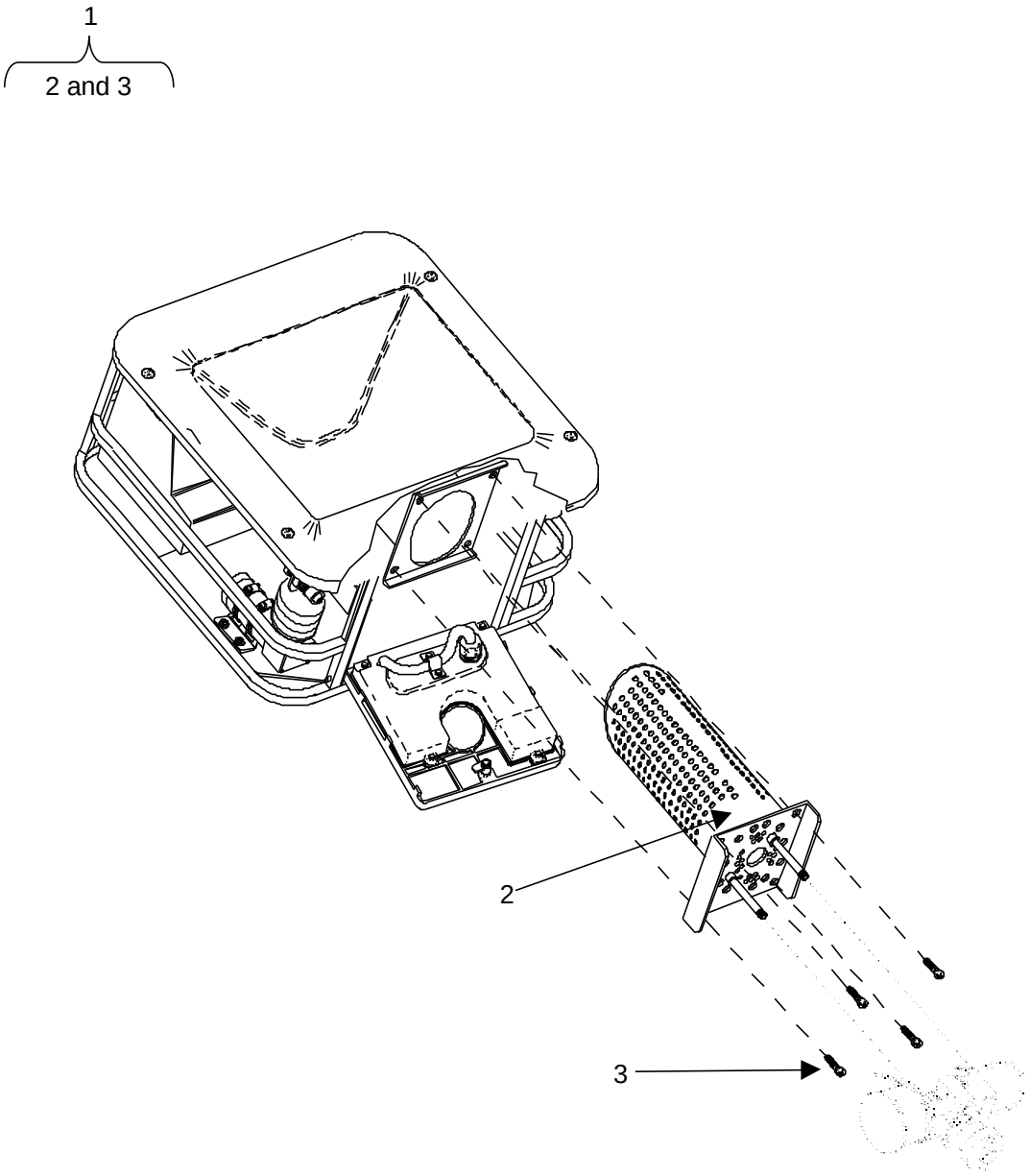


Figure 5. Burner Assembly

BURNER ASSEMBLY PARTS LIST - Continued

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
1	PAOOO	7310-01-462-4943	81349	880110K	ASSY, BURNER TUBE	1
2	PAOZZ		3AD06	880110	. BURNER TUBE	1
3	PAOZZ		9W655	29422	. SCREW, PHMS 1/4NC X 5/8 SS	4
					END OF FIGURE	

END OF WORK PACKAGE

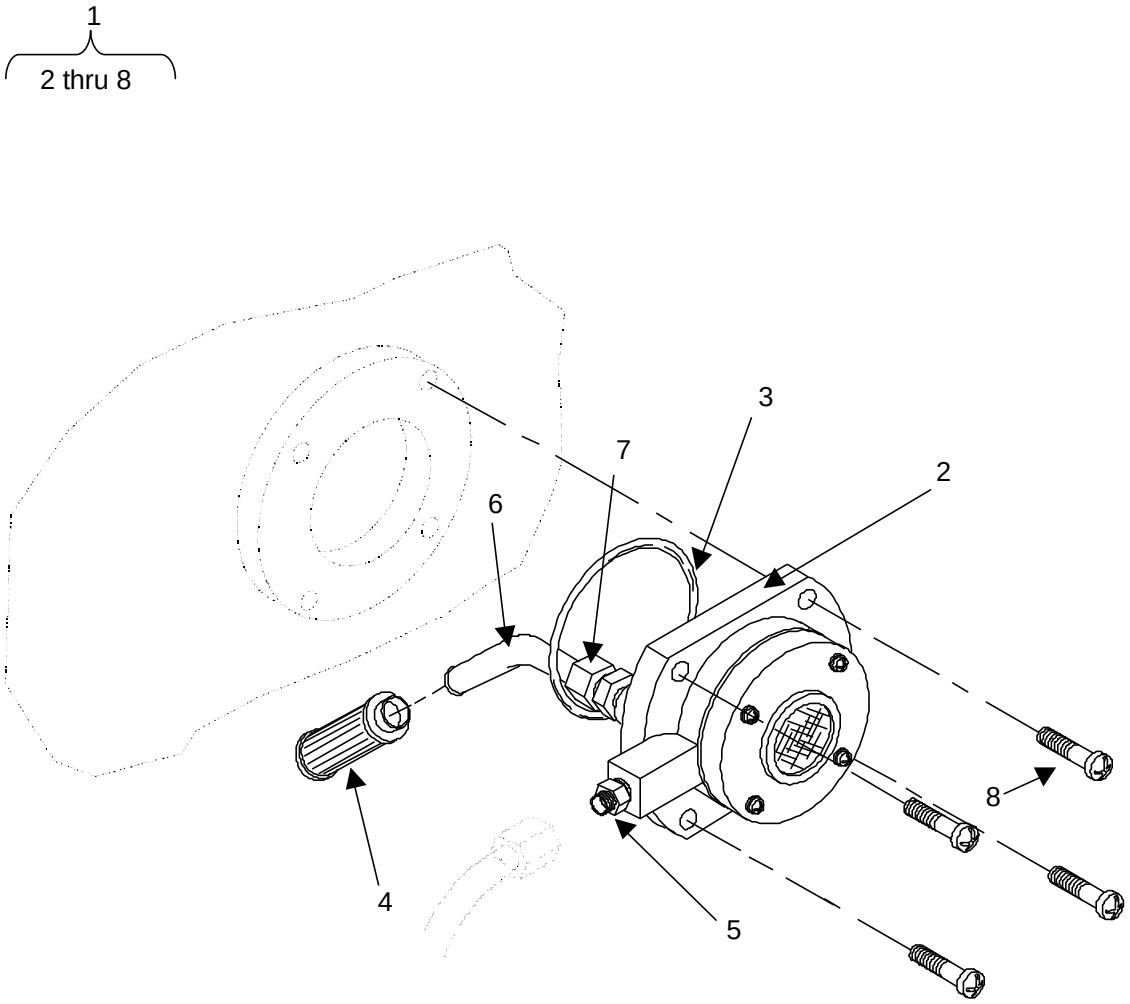


Figure 6. Fuel Regulator Assembly

MODERN BURNER UNIT (MBU) **0045 00**

FUEL REGULATOR ASSEMBLY PARTS LIST - Continued

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
1	PAOOO	7310-01-462-4944	81349	880050K	ASSY, FUEL REGULATOR/FILTER	1
2	PAOZZ		3AD06	980270	. FUEL REGULATOR	1
3	PAOZZ	5331-01-183-0991	81349	ORING-223	. ORING-233 COMP #1	1
4	PAOZZ	7310-01462-6765	81349	038052-08	. FILTER, FUEL PICKUP	1
5	PAOZZ		3AD06	B68-6A	. FTG, 3/8T - 1/8 NPTM	1
6	PAOZZ	7310-01-462-4946	81349	980101	. FUEL PICKUP TUBE	1
7	PAOZZ		3AD06	48-4A	. FTG, 1/8-#4 STRAIGHT	1
8	PAOZZ		9W655	180629	. SCREW, #10 C/W L/WASHER	4
					END OF FIGURE	

END OF WORK PACKAGE

MODERN BURNER UNIT (MBU) **0046 00**
REFLECTIVE HEAT SHIELD PARTS LIST

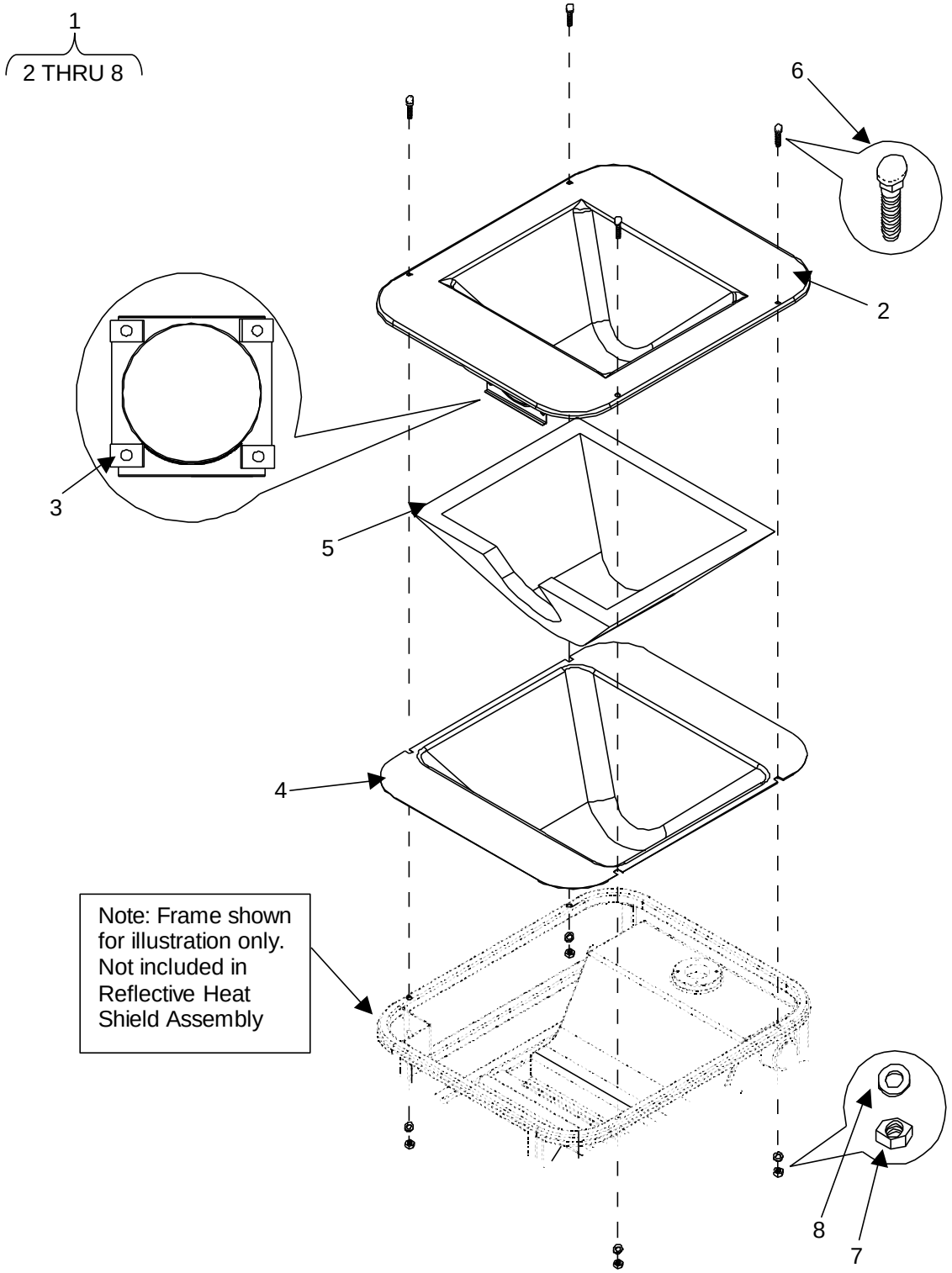


Figure 7. Reflective Heat Shield Assembly

MODERN BURNER UNIT (MBU) 0046 00
REFLECTIVE HEAT SHIELD PARTS LIST- Continued

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
1	PAOOO	7310-01-462-4948	81349	880004K	ASSY, REFLECTIVE HEAT SHIELD	1
2	PAOZZ	7310-01-462-4949	81349	880004	. REFLECTIVE HEAT SHIELD	1
3	PAOZZ		59165	202-026	. NUT, SPRG	4
4	PAOZZ	7310-01-462-4955	81349	880080	. BURNER WELL INNER LINER	1
5	XBOZZ	7310-01-462-4959	81349	880090	. INSULATION, STOVETOP	1
6	PAOOZ		9W655	CB ¼ NC X 1-1/4 SS	. BOLT, CARRIAGE 1/4NC X 1-1/4 SS	4
7	PAOZZ	5310-00-984-6610	72962	79NTE-040 ZYTEL 103 INS.	. NUT, NYLON LOCKING	4
8	PAOZZ		9W655	67528	. WASHER, ¼ FLAT SS 5/8 OD	4
					END OF FIGURE	

END OF WORK PACKAGE

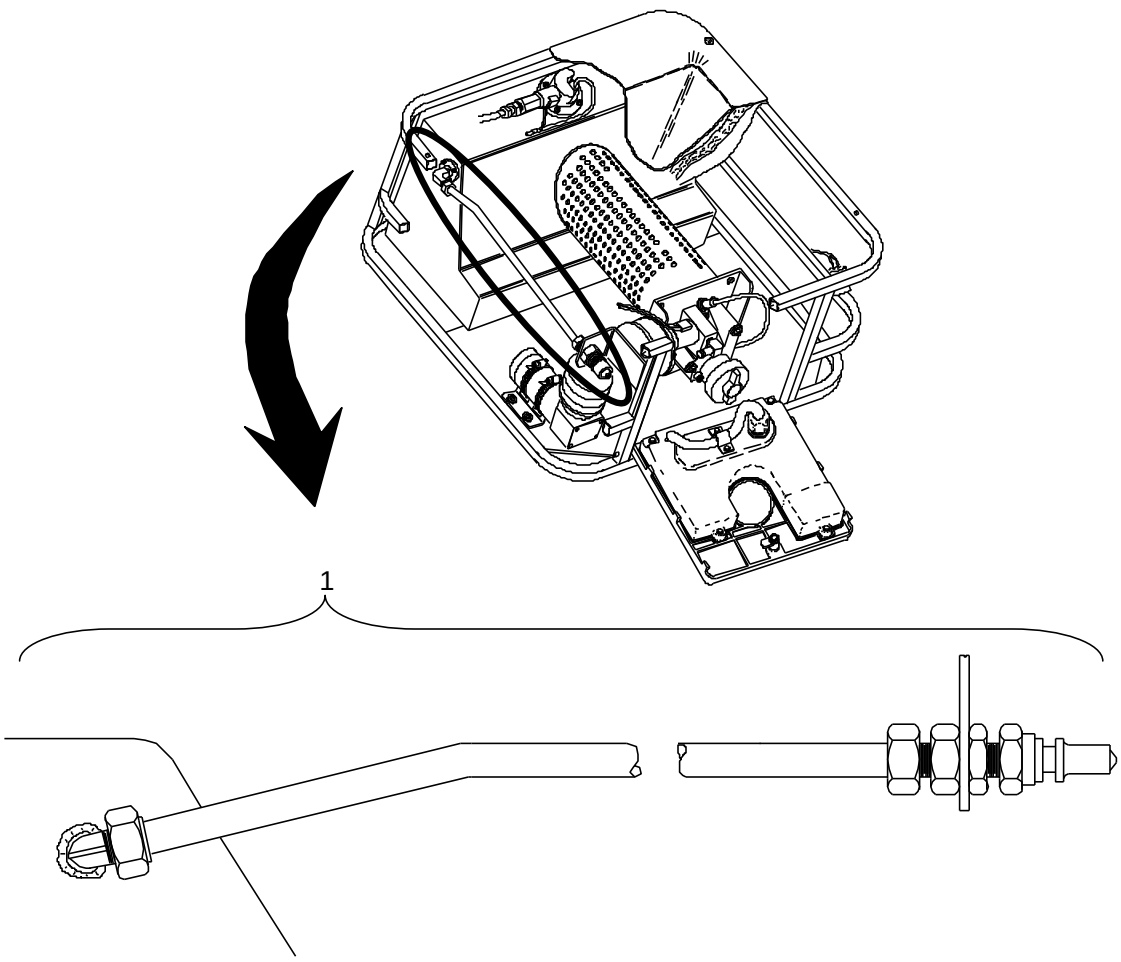


Figure 8. MBU Fuel Line Assembly

FUEL LINE ASSEMBLY PARTS LIST - Continued

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
1	PAOOO	7310-01-462-4964	81349	980103K	ASSY, FUEL LINE	1
					END OF FIGURE	

END OF WORK PACKAGE

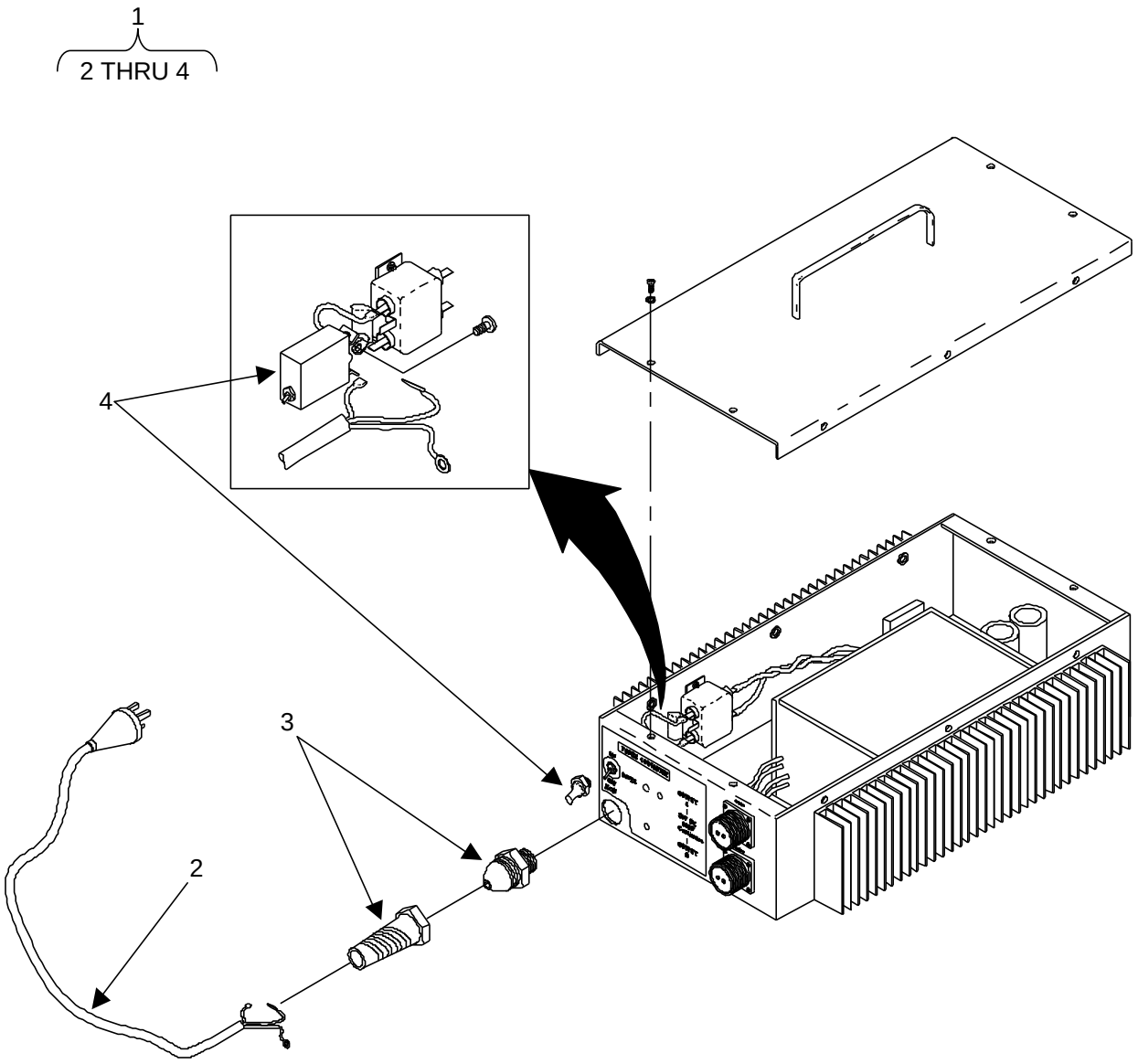


Figure 9. Power Converter

POWER CONVERTER PARTS LIST - Continued

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
1	PAOZZ	7310-01-453-6513	3AD06	MS0150	ASSY, POWER CONVERTER (PAA,PAB,PAC)	1
2	PAOZZ	6150-01-267-5488	2W733	17516	. POWER CORD (PAA,PAB,PAC)	1
3	PAOZZ		28520	3249	. STRAIN RELIEF, POWER CORD (PAA,PAB,PAC)	1
4	PAOZZ	7310-01-462-4990	81349	W31X2M5G-15	. POWER SWITCH (PAA,PAB,PAC)	1
					END OF FIGURE	

END OF WORK PACKAGE

MODERN BURNER UNIT (MBU) **0049 00**
BATTERY PACK PARTS LIST

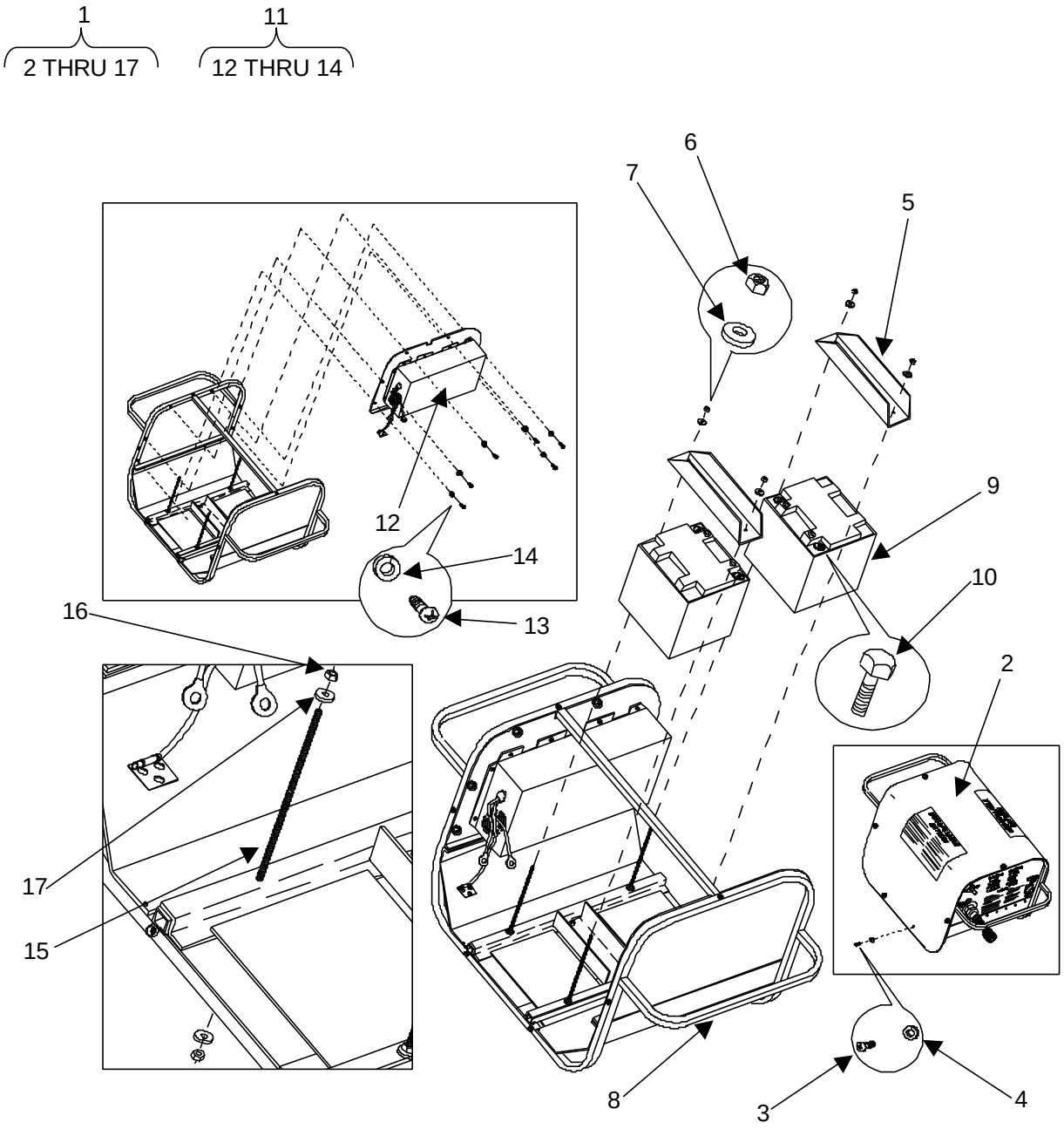


Figure 10. Battery Pack

BATTERY PACK PARTS LIST - Continued

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
1	PAOOO	7310-01-452-6565	3AD06	MS0200	ASSY, BATTERY PACK (PAD)	1
2	PAOOO	7310-01-462-4992	81349	800207	. COVER	1
3	PAOZZ		9W655	¼-20 X 5/8 LG SS PHLP	. SCREW, ¼-20 X 5/8 LG SS	6
4	PAOZZ		9W655	¼ID SPRING LOCKWASHER	. WASHER, SPRING LOCKWASHER	6
5	PAOZZ	7310-01-462-4994	81349	800205	. HOLD DOWN BRACKET	2
6	PAOZZ		9W655	NUT, ¼-20 SS HEX NYLOK	. NUT, ¼-20 SS HEX NYLOK	4
7	PAOZZ		9W655	1/4ID X 5/8OD SS FLT	. WASHER, 1/4ID X 5/8OD SS FLT	4
8	XAFFF	7310-01-462-4997	81349	800203	. FRAME	1
9	PAOZZ	7310-01-454-1249	3AD06	MS0225	. BATTERIES (PAD)	2
10	PAOZZ		9W655	M6X1.0X12MM LG SS HEX	. BOLT, TERMINAL HEX	4
11	PAOOO	7310-01-462-4998	81349	980611K	. ASSY, BATTERY CHARGER INTERNAL W/SCREWS (PAD)	1
12	PAOOO		3AD06	980611	. . BATTERY CHARGER, INTERNAL (PAD)	1
13	PAOOO		9W655	¼-20 X 5/8 LG SS PHILLIPS	. . SCREW, ¼-20 X 5/8 LG SS PHLP	6
14	PAOOO		9W655	1/4ID SPRING LOCKWASHER	. . LOCKWASHER, SPRING	6
15	PAOOO		3AD06	ROD ¼-20 X 7.5	. ROD, SS THREADED ¼-20 X 7.5 IN	4
16	PAOOO		9W655	NUT ¼-20 HEX SS	. NUT, SS HEX ¼-20	8
17	PAOOO		9W655	1/4ID SPRING LOCKWASHER	. LOCKWASHER, SPRING	8
					END OF FIGURE	

END OF WORK PACKAGE

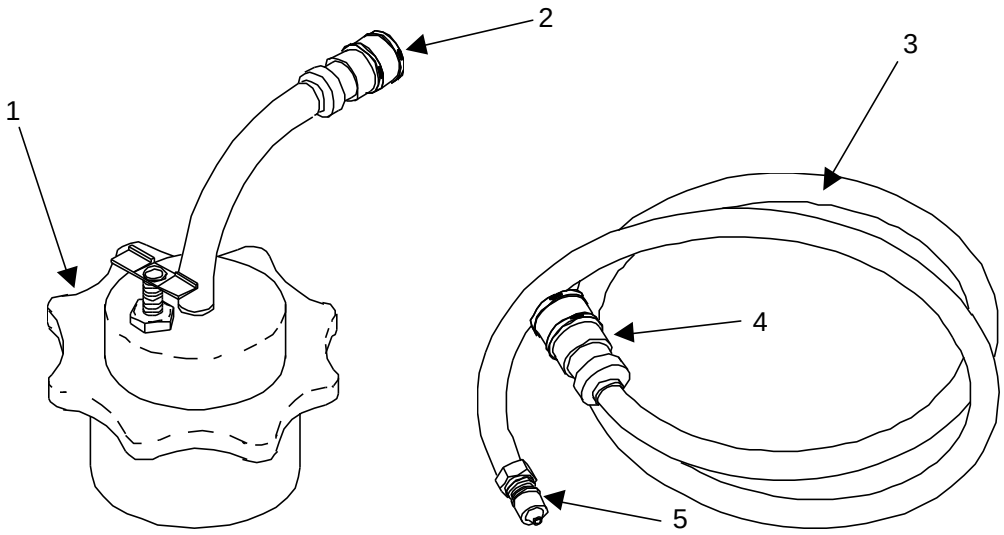


Figure 11. Fuel Can Adapter and Fuel Hose

MODERN BURNER UNIT (MBU) 0050 00
FUEL CAN ADAPTER AND FUEL HOSE (20FT) PARTS LIST - Continued

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
1	PAOZZ	7310-01-455-3736	36976	MS0300	ADAPTER, FUEL CAN SUCTION FEED	1
2	PAOZZ		0UCE8	BH2-60Y	. CONNECTOR, FEMALE QD	1
3	PAOZZ	7310-01-455-3735	3AD06	MS0350	HOSE, FUEL	1
4	PAOZZ		0UCE8	BH2-60Y	. CONNECTOR, FEMALE QD	1
5	PAOZZ		0UCE8	BH2-61Y	. CONNECTOR, MALE QD	1
					END OF FIGURE	

END OF WORK PACKAGE

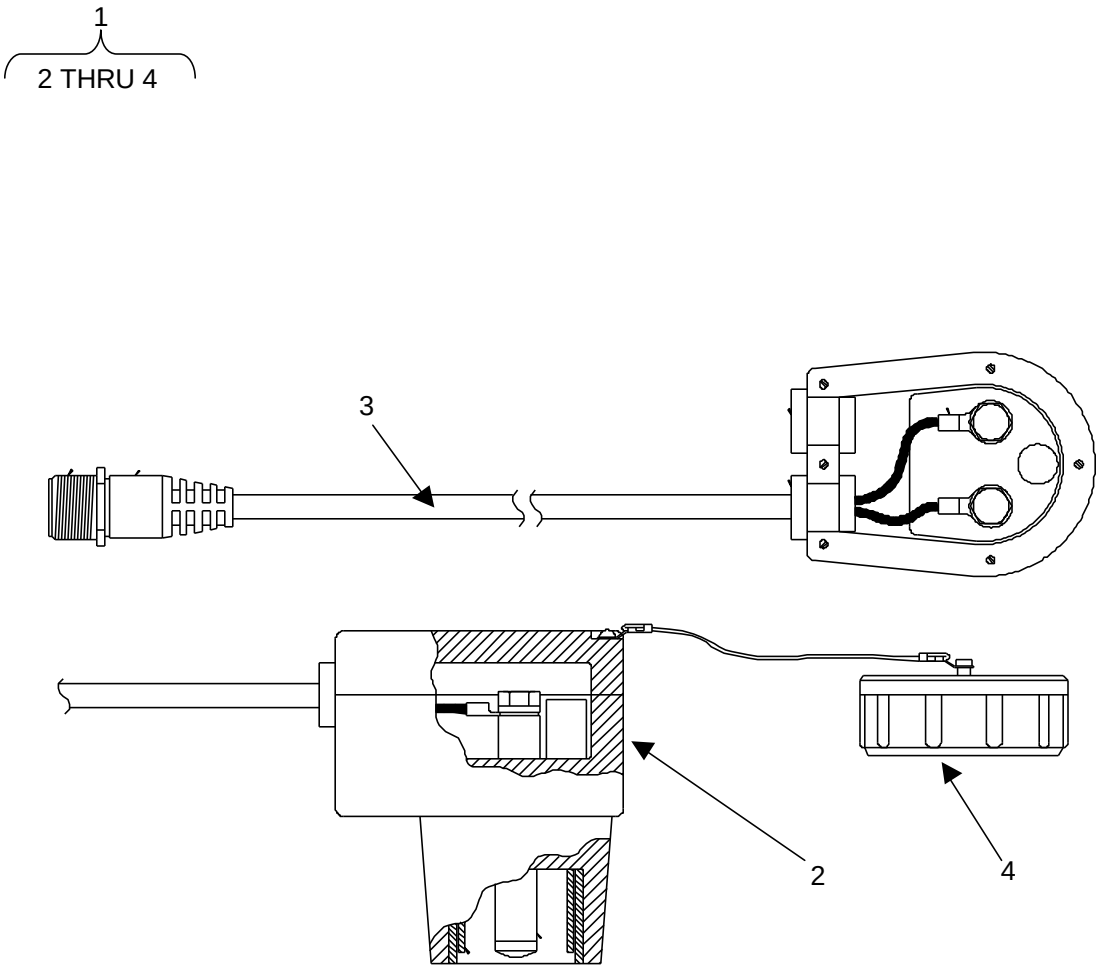


Figure 12. NATO Electrical Adapter Cable

NATO ADAPTER CABLE PARTS LIST - Continued

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
1	PAOZZ	7310-01-454-1241	3AD06	MS0250	ADAPTER, NATO ELECTRICAL CABLE (PAD)	1
2	PAOZZ	2510-00-567-0128	3AD06	990080	. HEAD, NATO PLUG	1
3	PAOZZ		3AD06	981026	. CABLE, POWER	1
4	PAOZZ	5340-01-316-1624	3AD06	990060	. CAP, NATO CABLE	1
					END OF FIGURE	

END OF WORK PACKAGE

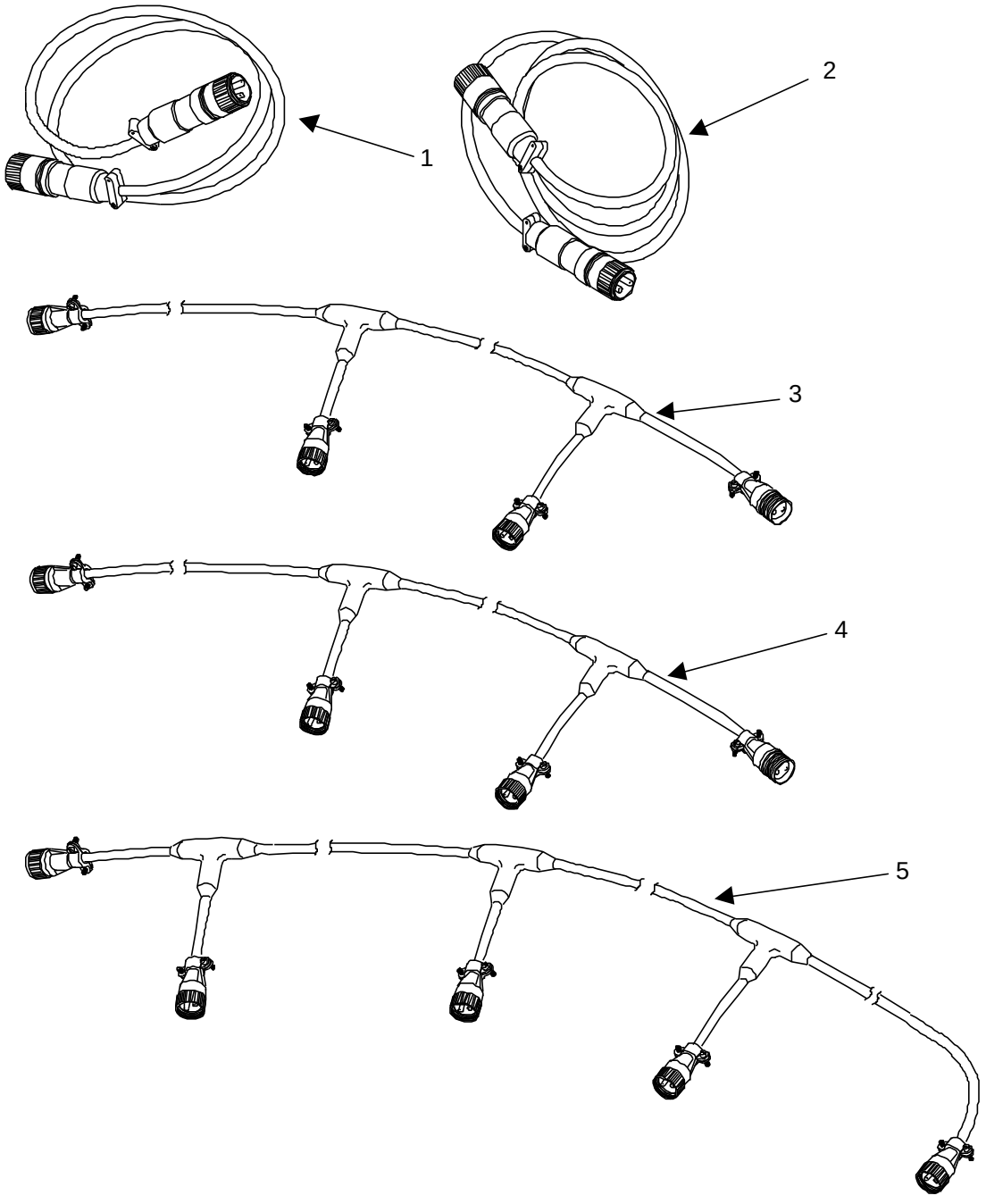


Figure 13. 24Vdc Extension and Branch Cables

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
1	PAOZZ	7310-01-455-0665	3AD06	MS0101	CABLE A, EXTENSION, 24V DC (25FT) (PAA, PAC, PAD)	1
2	PAOZZ	7310-01-455-1206	3AD06	MS0105	CABLE E, MKT EXTENSION (15FT) (PAB)	1
3	PAOZZ	7310-01-455-1014	3AD06	MS0103	CABLE C, MKT, 2 BRANCH (PAB)	1
4	PAOZZ	7310-01-455-1017	3AD06	MS0104	CABLE D, 2 BRANCH (PAA, PAC, PAD,)	1
5	PAOZZ	7310-01-455-0896	3AD06	MS0102	CABLE B, MKT, 4 BRANCH (PAB)	1
					END OF FIGURE	

END OF WORK PACKAGE

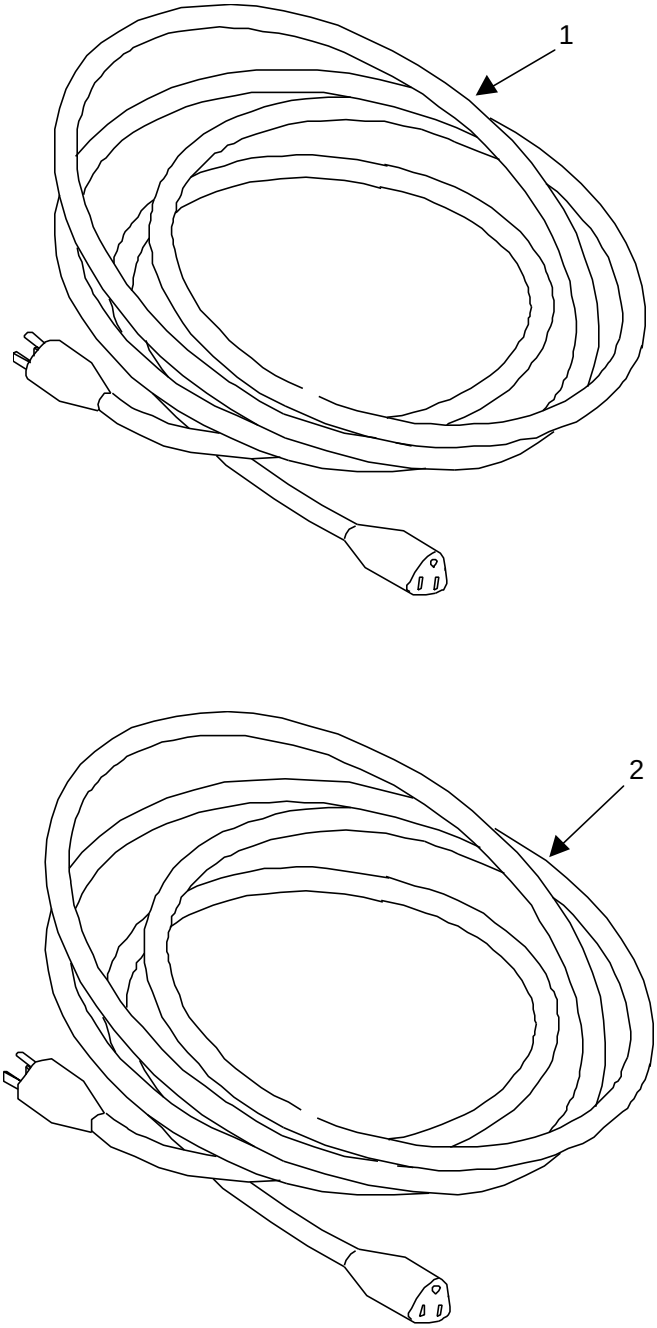


Figure 14. 110V AC Extension

110V AC EXTENSION CORD PARTS LIST - Continued

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
1	PAOZZ	7310-01-454-1281	23633	MS0400	CORD, 110V AC EXTENSION (50 FT) (PAA, PAB, PAC)	1
2	PAOZZ	7310-01-458-5060	23633	MS0425	CORD, 110V AC EXTENSION (25 FT) (PAA, PAB, PAC)	1
					END OF FIGURE	

END OF WORK PACKAGE

BULK MATERIAL REPAIR PARTS LIST

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
1	PAOZZ			G611-025	HOSE, NEOPRENE AIR/FUEL 1/4 ID	AR
2	PAOZZ			G611-038	HOSE, NEOPRENE AIR/FUEL 3/8 ID	AR

END OF WORK PACKAGE

MODERN BURNER UNIT (MBU) **0055 00**
SPECIAL TOOLS LIST

STOCK NUMBER	FIG.	ITEM

There are no special tools required for the MBU or its associated equipment.

END OF WORK PACKAGE

MODERN BURNER UNIT (MBU) **0056 00**
NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG.	ITEM
2510-00-567-0128	12	2
5310-00-984-6610	1	15
5310-00-984-6610	2	7
5310-00-984-6610	3	3
5310-00-984-6610	7	7
4730-01-071-9080	8	3
6150-01-267-5488	9	2
5340-01-316-1624	12	4
7310-01-452-6565	10	1
7310-01-452-8137	1	1
7310-01-453-6513	9	1
7310-01-454-1241	12	1
7310-01-454-1249	10	9
7310-01-454-1281	14	1
7310-01-455-0665	13	1
7310-01-455-0896	13	5
7310-01-455-1014	13	3
7310-01-455-1017	13	4
7310-01-455-1206	13	2
7310-01-455-3735	11	3
7310-01-455-3736	11	1
7310-01-458-5060	14	2
7310-01-462-4864	1	2
7310-01-462-4865	1	3
7310-01-462-4867	1	4
7310-01-462-4868	1	5
7310-01-462-4869	1	8
7310-01-462-4871	1	10
7310-01-462-4899	2	1
7310-01-462-4902	2	2
7310-01-462-4905	3	1
7310-01-462-4907	3	5
7310-01-462-4913	3	10
7310-01-462-4915	3	11
7310-01-462-4918	3	14
7310-01-462-4919	3	17
7310-01-462-4922	3	23
7310-01-462-4928	3	20
7310-01-462-4931	3	24
7310-01-462-4934	3	25
7310-01-462-4936	3	36
7310-01-462-4942	4	1
7310-01-462-4943	5	1
7310-01-462-4944	6	1
7310-01-462-4946	6	6
7310-01-462-4948	7	1
7310-01-462-4949	7	2
7310-01-462-4955	7	4
7310-01-462-4959	7	5
7310-01-462-4964	8	1
7310-01-462-4990	9	4
7310-01-462-4992	10	2
7310-01-462-4994	10	5
7310-01-462-4997	10	8
7310-01-462-4998	10	11

END OF WORK PACKAGE

MODERN BURNER UNIT (MBU 0057 00
PART NUMBER INDEX

PART NUMBER	FIG.	ITEM
02BB0402-0200	3	33
038052-08	6	4
¼ FLAT SS 5/8 OD	3	4
¼ TYPE B WIDE ZP STL	2	8
¼-20 X 5/8 LG SS PHILLIPS	10	13
¼-20 X 5/8 LG SS PHLP	10	3
¼ID SPRING LOCKWASHER	10	4
1/4ID SPRING LOCKWASHER	10	14
1/4ID SPRING LOCKWASHER	10	17
1/4ID X 5/8OD SS FLT	10	7
125-4A	3	27
125-6B	3	28
17516	9	2
180629	3	13
180629	3	16
180629	3	22
180629	3	38
180629	4	4
180629	6	8
1X1024-24VDC	3	8
202-026	7	3
29422	5	3
2X1323-24VDC	3	9
30609-45	3	18
3249	9	3
346126	3	10
48-4A	3	29
48-4A	6	7
48-99-221-92N	1	12
491-100	1	7
5137-37	1	11
607-085	2	6
61CA-6	8	3
67528	7	8
69-6B	8	2
79NTE-040 ZYTEL 103 INS.	1	15
79NTE-040 ZYTEL 103 INS.	2	7
79NTE-040 ZYTEL 103 INS.	3	3
79NTE-040 ZYTEL 103 INS.	7	7
800203	10	8
800205	10	5
800207	10	2
842123	3	26
880004	7	2
880004K	7	1
880050K	6	1

PART NUMBER	FIG.	ITEM
880080	7	4
880090	7	5
880110	5	2
880110K	5	1
880150	3	6
880150K	3	5
910729	3	37
910729K	3	36
928428K	3	17
930125	3	15
930125K	3	14
930700	3	2
930710	8	5
930715	3	24
930720	3	23
930725	3	25
930740	1	6
930740K	1	5
930929	1	10
933827	2	3
933827K	2	2
935631	1	3
980101	6	6
980103	8	4
980103K	8	1
980105	8	6
980124K	2	1
980230K	3	1
980240	1	9
980240K	1	8
980250	1	2
980260	3	12
980260K	3	11
980270	6	2
980280	4	2
980280K	4	1
980610	3	21
980610K	3	20
980611	10	12
980611K	10	11
981026	12	3
981028	3	7
990060	12	4
990080	12	2
B68-6A	6	5
BH2-61Y	8	7

MODERN BURNER UNIT (MBU 0057 00
PART NUMBER INDEX

PART NUMBER	FIG.	ITEM
CB ¼ NC X 1-1/4 SS	7	6
G611-025	3	30
G611-025	3	31
G611-025	BULK	1
G611-038	3	32
G611-038	BULK	2
GK-42	1	4
HC6-36	2	4
HOSE CONNECTOR 1	11	2
HOSE CONNECTOR 2	11	4
HOSE CONNECTOR 3	11	5
M6X1.0X12MM LG SS HEX	10	10
MS0001	1	1
MS0101	13	1
MS0102	13	5
MS0103	13	3
MS0104	13	4
MS0105	13	2
MS0150	9	1

PART NUMBER	FIG.	ITEM
MS0200	10	1
MS0225	10	9
MS0250	12	1
MS0300	11	1
MS03501	11	3
NUT ¼-20 HEX SS	10	16
NUT, ¼-20 SS HEX NYLOK	10	6
ORING-006	3	19
ORING-223	4	3
ORING-223	6	3
ROD ¼-20 X 7.510	10	15
SHC-50	1	16
SHC-80	1	17
UM5008-103	3	35
UM5010-103	3	34
W31X2M5G-15	9	4
WHC-1000-01	1	13
WHC-1500-01	1	14
Z-103 TYPE SC	2	5

END OF WORK PACKAGE

MODERN BURNER UNIT (MBU) **0058 00**
COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII) LIST

INTRODUCTION

Scope

This section lists COEI and BII for the MBU to help you inventory items for safe and efficient operation of the equipment.

General

The COEI and BII information is divided into the following lists:

1. Components of End Item (COEI). This list is for information purposes only and is not authority to requisition replacements. These items are part of the MBU. As part of the end item, these must be with the end item whenever it is issued or transferred between property accounts. Items of COEI are removed and separately packaged for transportation or shipment only when necessary. Illustrations are furnished to help you find and identify the items.

2. Basic Issue Items (BII). These essential items are required to place the MBU in operation, operate it, and to do emergency repairs. Although shipped separately packaged, BII must be with the MBU during operation and when it is transferred between property accounts. Listing these items is your authority to request / requisition them for replacement based on authorization of the end item by the TOE/MTOE. Illustrations are furnished to help you find and identify the items.

Explanation of Columns in the COEI List and BII List

Column 1, Illus Number, gives you the number of the item illustrated.

Column 2, National Stock Number, identifies the stock number of the item to be used for requisitioning purposes.

Column 3, Description, CAGEC, and Part Number, identifies the Federal item name (in all capital letters) followed by a minimum description when needed. The last line below the description is the CAGEC (commercial and Government entity code) (in parenthesis) and the part number.

Column 4, Usable on code, gives you a code if the item you need is not the same for different models of equipment. These codes are identified below:

Code	Used On
PAA	MFK KIT
PAB	MKT KIT
PAC	FSC KIT
PAD	KCLFF-E KIT

Column 5, UM (unit of measure), indicates how the item is issued for the National Stock Number shown in column 2.

Column 6, Qty Rqr, indicates the quantity required.

MODERN BURNER UNIT (MBU) **0058 00**
COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII) LIST

COMPONENTS OF END ITEM (COEI) LIST

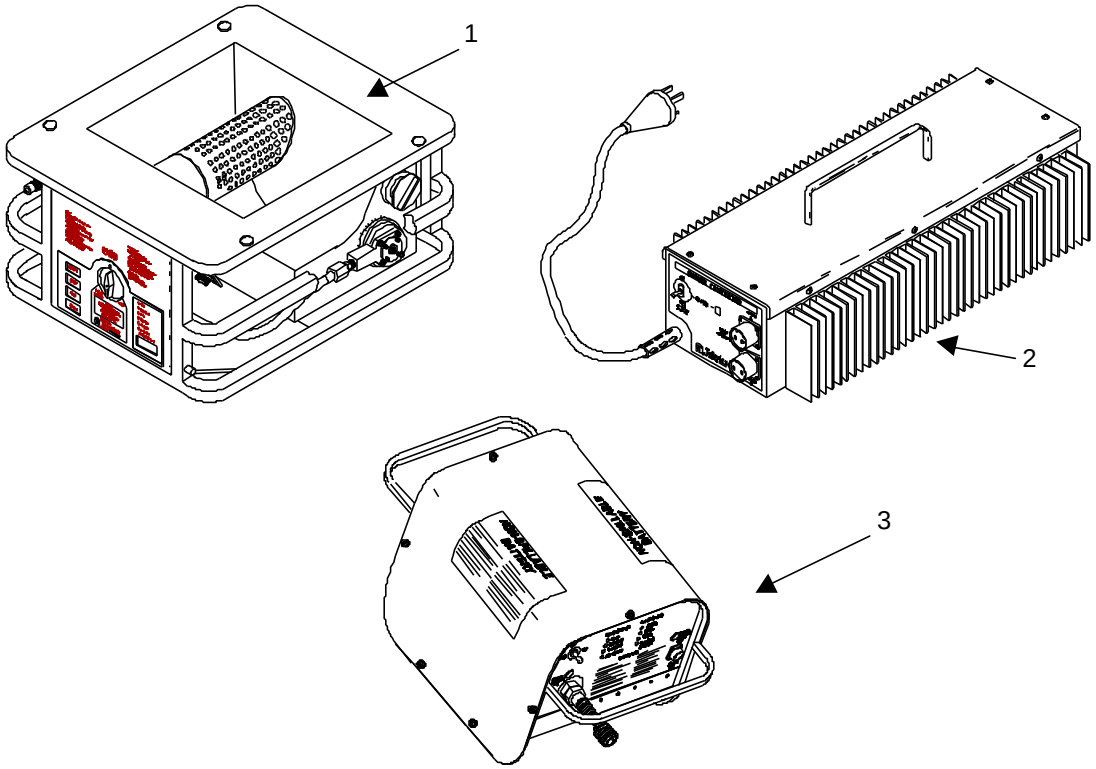


Table 1. Components of End Item List.

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, LOCATION, PART NUMBER, AND CAGEC	(4) USABLE ON CODE	(5) U/M	(6) QTY RQR
1	7310-01-452-8137	MBU	PAA PAB PAC PAD	EA EA EA EA	6 6 3 3
2	7310-01-453-6513	POWER CONVERTER	PAA PAB PAC	EA EA EA	1 1 1
3	7310-01-453-6565	BATTERY PACK	PAD	EA	1

MODERN BURNER UNIT (MBU) **0058 00**
COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII) LIST

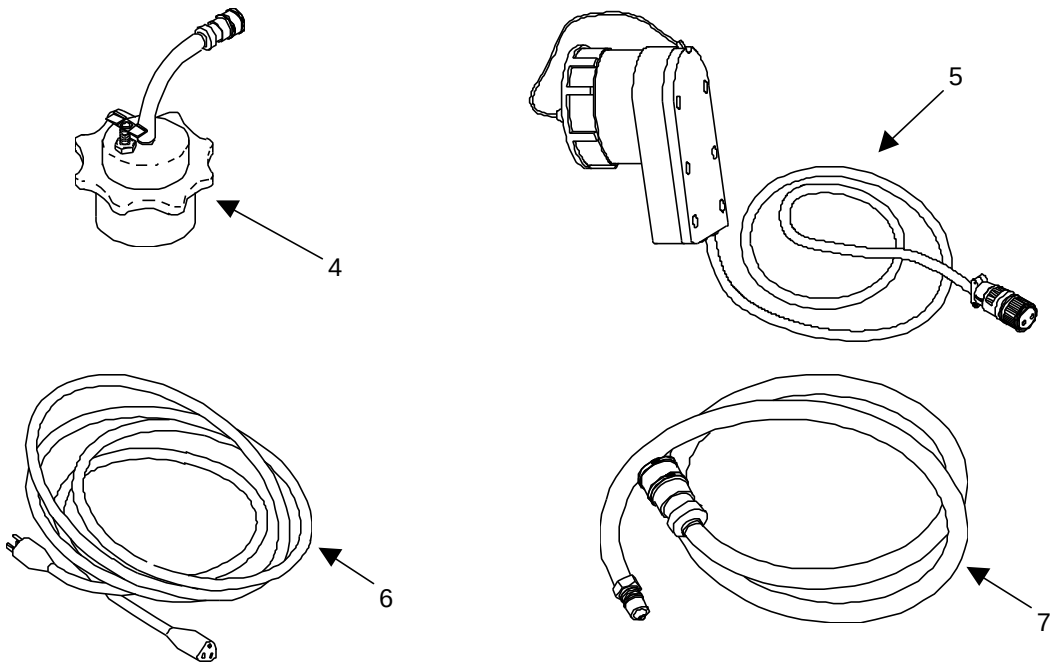


Table 1. Components of End Item List - Continued.

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, LOCATION, PART NUMBER AND CAGEC	(4) USABLE ON CODE	(5) U/M	(6) QTY RQR
4	77240-21-912-7125	FUEL CAN ADAPTER	PAA PAB PAC PAD	EA EA EA EA	2 2 1 1
5	7310-01-454-1241	NATO ELECTRICAL ADAPTER (24Vdc)	PAD	EA	1
6	7310-01-454-1281	EXTENSION CORD, 50FT (110Vac)	PAA PAB PAC	EA EA EA	1 1 1
7	7310-01-455-3735	FUEL HOSE, 20FT	PAA PAB PAC PAD	EA EA EA EA	2 2 1 1

MODERN BURNER UNIT (MBU) **0058 00**
COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII) LIST

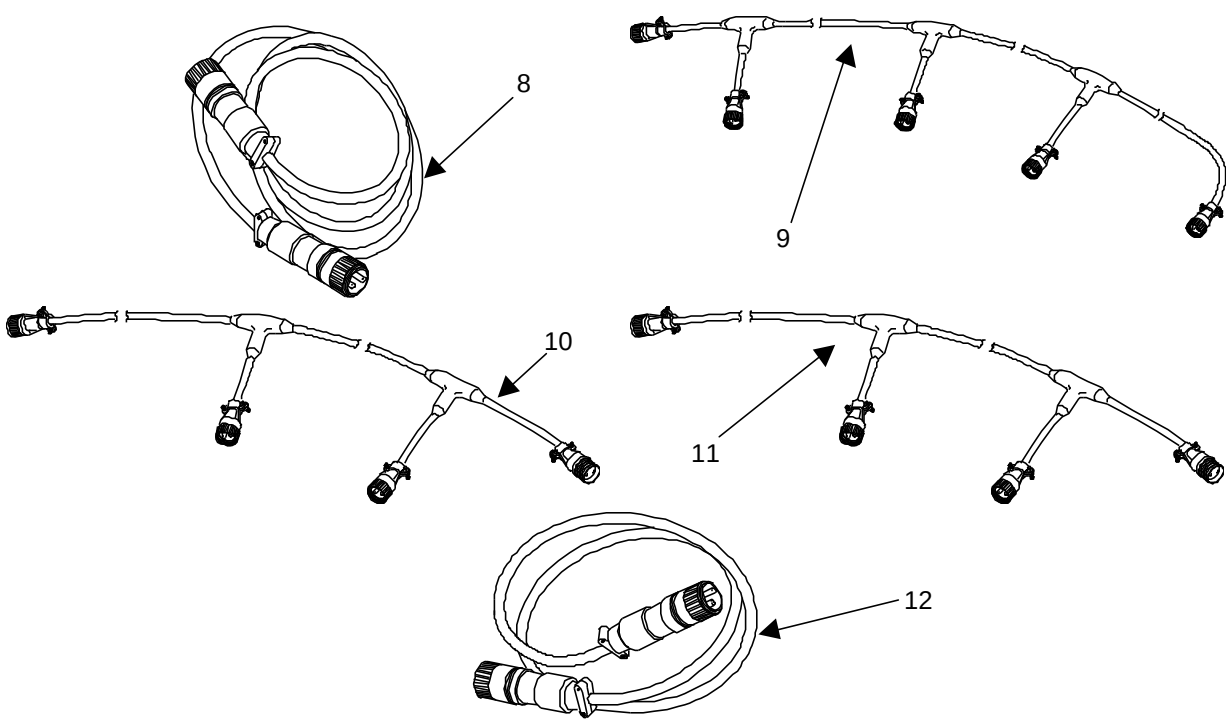


Table 1. Components of End Item List - Continued

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, LOCATION, PART NUMBER AND CAGEC	(4) USABLE ON CODE	(5) U/M	(6) QTY RQR
8	7310-01-455-0665	CABLE A, EXTENSION 25FT, 980101	PAA PAC PAD	EA EA EA	3 1 1
9	7310-01-455-0896	CABLE B, MKT, 4 BRANCH	PAB	EA	1
10	7310-01-455-1014	CABLE C, MKT, 2 BRANCH	PAB	EA	1
11	7310-01-255-1017	CABLE D, 2 BRANCH	PAA PAC PAD	EA EA EA	5 2 2
12	7310-01-255-1206	CABLE E , MKT EXTENSION 12FT	PAB	EA	1

MODERN BURNER UNIT (MBU) **0058 00**
COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII) LIST

BASIC ISSUE ITEMS (BII) LIST

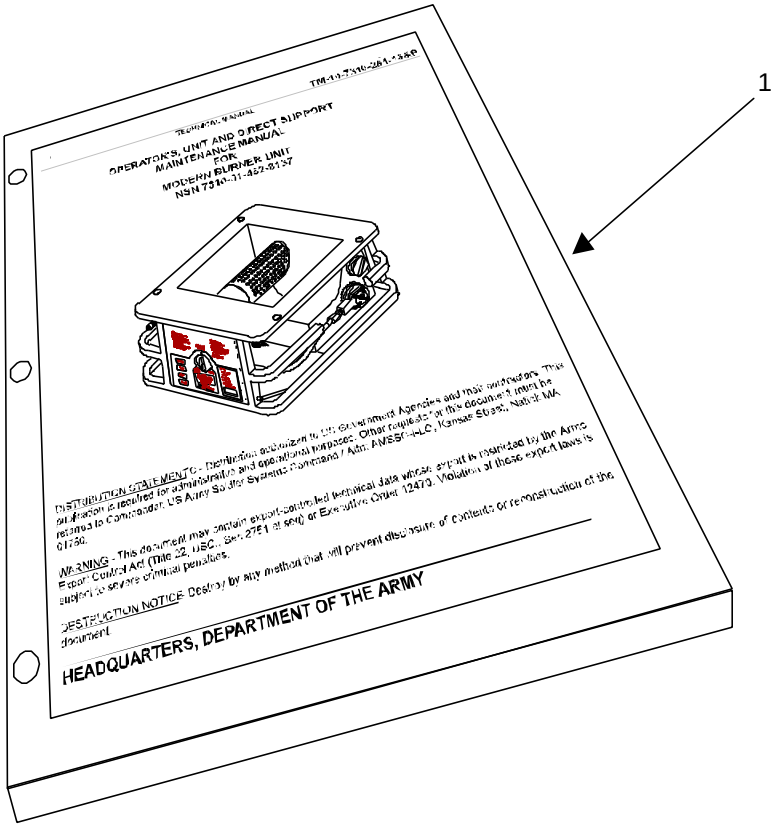


Table 2. Basic Issue Items List

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, PART NUMBER AND CAGEC	(4) USABLE ON CODE	(5) U/M	(6) QTY RQR
1	N/A	TM 10-7310-281-13&P		EA	1

END OF WORK PACKAGE

INTRODUCTION

Scope

This section lists additional items you are authorized for the support of the MBU.

General

This list identifies items that do not have to accompany the MBU and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

Explanation of Columns in the AAL

Column (1) National Stock Number, identifies the stock number of the item to be used for requisitioning purposes.

Column (2) Description, CAGEC, and Part Number, identifies the Federal Item Name (in all capital letters) followed by a minimum description when needed. The last line below the description is the CAGE (Commercial and Government Entity Code) (in parenthesis) and the part number.

Column (3), Usable On Code, when applicable, gives you a code if the item you need is not the same for different models of equipment.

Column (4), UM (unit of measure) indicates how the item is issued for the National Stock Number shown in column (1).

Column (5), Qty Recm, indicates the quantity recommended.

ADDITIONAL AUTHORIZED LIST ITEMS

Table 1. Additional Authorization List.

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION, PART NUMBER and CAGEC	(3) USABLE ON CODE	(4) U/M	(5) QTY RECM
7310-01-454-1281	EXTENSION CORD, 110 VAC, 50FT	PAA	EA	1
		PAB	EA	1
		PAC	EA	1
7310-01-458-5060	EXTENSION CORD, 110VAC, 25 FT	PAA	EA	1
		PAB	EA	1
		PAC	EA	1
5975-00-249-6796	ROD, GROUNDING	PAA	EA	1

END OF WORK PACKAGE

MODERN BURNER UNIT (MBU) **0060 00**
EXPENDABLE AND DURABLE ITEMS LIST

INTRODUCTION

Scope

This section lists expendable and durable items that you will need to operate and maintain the MBU. This list is for information only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expendable/Durable Items (Except Medical, Class V Repair Parts, and Heraldic Items), or CTA 8-100, Army Medical Department Expendable/Durable Items.

Explanations of Columns in the Expendable / Durable Items List

Column (1) Item Number. This number is assigned to the entry in the list and is referenced in the narrative instructions to identify the item (e.g., Use lubricating oil (item 25, Expendable and Durable Items List.).

Column (2) Level. This column includes the lowest level of maintenance that requires the listed item (C = Operator/Crew).

Column (3) National Stock Number. This is the NSN assigned to the item which you can use to requisition it.

Column (4) Item Name, Description, CAGEC, and Part Number. This column provides the other information you need to identify the item.

Column (5), U/M (unit of measure) indicates how the item is issued for the National Stock Number shown in column (1).

EXPENDABLE AND DURABLE ITEMS LIST

Table 1. Expendable and Durable Items List.

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION, CAGE, PART NUMBER	(5) U/M
1	O	7920-00-205-1711	WIPING RAGS	BL
2	O		COMPOUND, SEALER PIPE	EA
3	O	7310-01-454-1249	BATTERIES (2) MS0225	PR
4	O	7240-00-177-6154	SPOUT, CAN FLEXIBLE	EA
5	O	7240-01-337-5268	FUEL CAN	EA

END OF WORK PACKAGE

INTRODUCTION

Scope

This work package includes a list of all mandatory replacement parts referenced in the task initial setups and procedures. These are items that must be replaced during maintenance whether they have failed or not. This includes items based on usage intervals such as miles, time, rounds fired, etc.

MANDATORY REPLACEMENT PARTS LIST

Table 1. Mandatory Replacement Parts List (every 300 hours of operation)

Item No.	Part Number	NSN	Nomenclature	Qty
1	346126	7310-01-462-4913	Air Filter	1
2	038052-08	7310-01-462-6765	In-Tank Fuel Filter	1
3	Oring-223 per MIL-P-83461	5331-01-183-0991	Fuel Regulator O-ring	1

Table 2. Mandatory Replacement Parts List (every 2000 hours of operation)

Item No.	Part Number	NSN	Nomenclature	Qty
1	980260K	7310-01-462-4915	Ignitor	1
2	928428K	7310-01-462-4919	Fuel Nozzle	1

END OF WORK PACKAGE

ALPHABETICAL INDEX

A

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MODERN BURNER UNIT (MBU
ALPHABETICAL INDEX

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MODERN BURNER UNIT (MBU
ALPHABETICAL INDEX

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P

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T

U

V

W

By Order of the Secretary of the Army:

ERIC K. SHINSEKI
General, United States Army
Chief of Staff

Official:

JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army
9917502

DISTRIBUTION:

To be distributed in accordance with initial distribution (IND 256531), requirements for TM 10-7310-281-13&P.

These are the instructions for sending an electronic 2028

The following format must be used if submitting an electronic 2028. The subject line must be exactly the same and all fields must be included; however only the following fields are mandatory: 1, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 17, and 27.

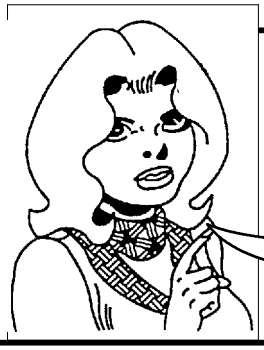
From: "Whomever" <whomever@avma27.army.mil>
To: amssb−rim−e@natick.army.mil

Subject: DA Form 2028

1. ***From:*** Joe Smith
2. *Unit:* home
3. ***Address:*** 4300 Park
4. ***City:*** Hometown
5. ***St:*** MO
6. ***Zip:*** 77777
7. ***Date Sent:*** 19−OCT−93
8. ***Pub no:*** 55−2840−229−23
9. ***Pub Title:*** TM
10. ***Publication Date:*** 04−JUL−85
11. *Change Number:* 7
12. *Submitter Rank:* MSG
13. ***Submitter FName:*** Joe
14. *Submitter MName:* T
15. ***Submitter LName:*** Smith
16. ***Submitter Phone:*** 123−123−1234
17. ***Problem:*** **1**
18. *Page:* 2
19. *Paragraph:* 3
20. *Line:* 4
21. *NSN:* 5
22. *Reference:* 6
23. *Figure:* 7
24. *Table:* 8
25. *Item:* 9
26. *Total:* 123
27. ***Text:***

This is the text for the problem below line 27.

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS



THEN . .JOT DOWN THE DOPE ABOUT IT ON THIS FORM, CAREFULLY TEAR IT OUT, FOLD IT AND DROP IT IN THE MAIL!

SOMETHING WRONG WITH THIS PUBLICATION?

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)
PFC John DOE
CO A 3rd Engineer Bn
Ft. Leonardwood, MO 63108

DATE SENT
22 August 1992

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 1–1520–250–10	15 June 1992	Operator's manual MH60K Helicopter

BE EXACT PIN–POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO
6	2-1 a		
B1		4-3	

IN THIS SPACE, TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

In line 6 of paragraph 2–1a the manual states the engine has 6 cylinders. The engine on my set only has 4 cylinders. Change the manual to show 4 cylinders.

Callout 16 on figure 4–3 is pointed at a bolt. In key to figure 4–3, item 16 is calle a shim. Please correct one or the other

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER

JOHN DOE, PFC (268) 317–7111

SIGN HERE

JOHN DOE John Doe

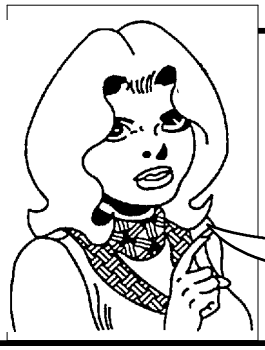
DA FORM 1 JUL 79 2028–2

PREVIOUS EDITIONS ARE OBSOLETE.

DRSTS-M verprint2, 1 Nov 80

P.S.- - IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION, MAKE A CARBON COPY OF THIS AND GIVE TO YOUR HEADQUARTERS.

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS



SOMETHING WRONG WITH THIS PUBLICATION?

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 10–7310–281–13&P	31 July 1999	Modern Burner Unit

BE EXACT PIN–POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO

IN THIS SPACE, TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER

SIGN HERE

DA FORM 1 JUL 79 2028–2

PREVIOUS EDITIONS ARE OBSOLETE.

DRSTS-M verprint2, 1 Nov 80

P.S.- - IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION, MAKE A CARBON COPY OF THIS AND GIVE TO YOUR HEADQUARTERS.

REVERSE OF DA FORM 2028–2 Reverse of DRSTS-M Overprint 2, 1 Nov 80

TEAR ALONG PERFORATED LINE

FILL IN YOUR UNITS ADDRESS

FOLD BACK

DEPARTMENT OF THE ARMY

OFFICIAL BUSINESS

COMMANDER
U.S. ARMY SOLDIER SYSTEMS COMMAND
ATTN: AMSSB–RIM–E
KANSAS STREET
NATICK, MA 91760–5000

The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
1 hectometer = 10 dekameters = 328.08 feet
1 kilometer = 10 hectometers = 3,280.8 feet

Liquid Measure

1 centiliter = 10 milliliters = .34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 33.81 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

Weights

1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigrams = .035 ounce
1 dekagram = 10 grams = .35 ounce
1 hectogram = 10 dekagrams = 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals = 1.1 short tons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
1 cu. meter = 1000 cu. decimeters = 35.31 feet

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce–inches	newton–meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29.573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound–feet	newton–meters	1.356	metric tons	short tons	1.102
pound–inches	newton–meters	.11296			

Temperature (Exact)

_F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	_C

PIN: 077378-000