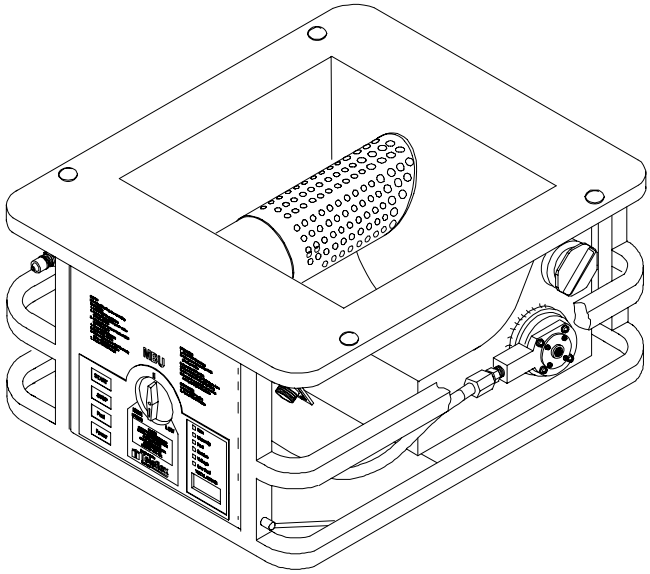
TECHNICAL MANUAL

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

MODERN BURNER UNIT (MBU)
NSN 7310-01-452-8137
MODERN BURNER UNIT (MBU-V3)
NSN 7310-01-507-9310



***This manual supersedes TM 10-7310-281-13&P, 31 May 2000, including all changes.**

HEADQUARTERS, DEPARTMENT OF THE ARMY

31 JULY 2004

WARNING SUMMARY

ELECTRICAL - electrical wire to arm with electricity symbol running through human body shows that shock hazard is present.

EXPLOSION - rapidly expanding symbol shows that the material may explode if subjected to high temperatures, sources of ignition or high pressure.

FIRE - flame shows that a material may ignite and cause burns.

HEAVY OBJECT - human figure stooping over heavy object shows physical injury potential from improper lifting technique.

HOT AREA - hand over object radiating heat shows that part is hot and can burn.

VAPOR - human figure in a cloud shows that material vapors present a danger to life or health.

GENERAL WARNINGS

WARNING

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. Failure to observe safety precautions may result in injury or death to personnel.

WARNING

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

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 an MBU be operated in any enclosure with all vents closed.

WARNING

Do not attempt service procedures on a burner that has recently been in operation. Let the burner cool down before performing these procedures. Failure to observe safety precautions may result in injury or death to personnel.

WARNING

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. Failure to observe safety precautions may result in injury or death to personnel.

WARNING

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

The Battery Pack weighs approximately 93 pounds (42.3 kg). Two persons must carry the Battery Pack, lifting with legs, not back, to prevent injury.

INSERT LATEST CHANGED PAGES / WORK PACKAGES. DESTROY SUPERSEDED DATA

LIST OF EFFECTIVE PAGES / WORK PACKAGES

NOTE

The portion of text affected by the changes is indicated by a vertical line in the outer margins of the page. Changes to illustrations are indicated by miniature pointing hands. Changes to wiring diagrams are indicated by shaded areas.

Dates of issue for original and changed pages / work packages are:

Original .. 31 July 04

TOTAL NUMBER OF PAGES FOR FRONT AND REAR MATTER IS 28. TOTAL NUMBER OF WORK PACKAGES IS 67 CONSISTING OF THE FOLLOWING:

Page / WP* No.	Change No.	Page / WP No.	*Change No.	Page / WP No.	*Change No.
Front Cover	0				
a-d	0				
A-B	0				
i-vi	0				
WP 0001 00 – 0067 00	0				
Index 1 – Index 6	0				
Authentication Page	0				
Sample DA Form 2028	0				
Back Cover	0				

*Zero in this column indicates an original page or work package

TECHNICAL MANUAL

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

MODERN BURNER UNIT (MBU) NSN 7310-01-452-8137 MODERN BURNER UNIT – V3 (MBU–V3) NSN 7310-01-507-9310

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 Tank - automotive and Armament Command, ATTN: AMSTA-LC-CECT, Kansas Street, Natick, MA 01760. You may also send in your recommended changes via electronic mail directly to amssbriml@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.

***This manual supersedes TM 10-7310-281-13&P, 31 May 2000, including all changes.**

DISTRIBUTION STATEMENT A – Approved for public release. Distribution is unlimited.

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Form DA 2028 “Recommended Changes to Publications and Blank Forms”
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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) and the Modern Burner Unit-V3 (MBU-V3).

FRONT MATTER
Front matter consists of front cover, warning summary, title block, table of contents, and how to use this manual page.

CHAPTER 1 – GENERAL INFORMATION
Chapter 1 contains introductory information on the Modern Burner Unit and the Modern Burner Unit-V3 and its associated equipment as well as a Theory of Operation.

CHAPTER 2 – OPERATOR INSTRUCTIONS
Chapter 2 includes operating instructions under usual and unusual conditions.

CHAPTER 3 – OPERATOR TROUBLESHOOTING PROCEDURES
Chapter 3 contains operator troubleshooting.

CHAPTER 4 – OPERATOR MAINTENANCE INSTRUCTIONS
Chapter 4 contains operator maintenance instructions, PMCS, and service procedures.

CHAPTER 5 – UNIT MAINTENANCE TROUBLESHOOTING PROCEDURES
Chapter 5 contains operator troubleshooting.

CHAPTER 6 – UNIT MAINTENANCE INSTRUCTIONS
Chapter 6 contains service upon receipt, maintenance and service procedures authorized at the unit level.

CHAPTER 7 – DIRECT SUPPORT MAINTENANCE INSTRUCTIONS
Chapter 7 contains maintenance instructions and service procedures authorized at the direct/general support level.

CHAPTER 8 – SUPPORTING INFORMATION
Chapter 8 contains references and other supporting information.

REAR MATTER
Rear matter includes the alphabetical index, Form 2028, conversion charts, and the rear cover.

Manual Organization and Page Numbering System
The Manual is divided into eight 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 Compressor Assembly”, which is a Unit Maintenance topic, the Table of Contents indicates that Unit Maintenance information can be found in Chapter 6. Scanning down the listings for Chapter 6, “Compressor Assembly” information can be found in WP 0024 00 (Work Package 24).

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

CHAPTER 1

GENERAL INFORMATION

MODERN BURNER UNIT
AND
MODERN BURNER UNIT-V3

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
GENERAL INFORMATION

SCOPE

This Technical Manual contains instructions for the operation as well as preventive and corrective maintenance for the Modern Burner Unit (MBU and MBU-V3) **(figure 1, item 1)** and its associated equipment consisting of a Power Converter **(figure 1, item 2)**, Battery Pack **(figure 1, item 3)**, 110VAC extension cord **(figure 1, item 4)**, 24VDC Extension Cables **(figure 1, item 5)**, NATO Adapter Cable **(figure 1, item 6)**, Fuel Can Adapter **(figure 1, item 7)**, Fuel Hose **(figure 1, item 8)**, and Branch Cables **(figure 1, item 9)**.

An improved Power Converter **(figure 1, item 10)** is available, and may be used with all MBUs.

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

Equipment Name and Model Number: Modern Burner Unit (MBU100)
Modern Burner Unit-V3 (MBU103)

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

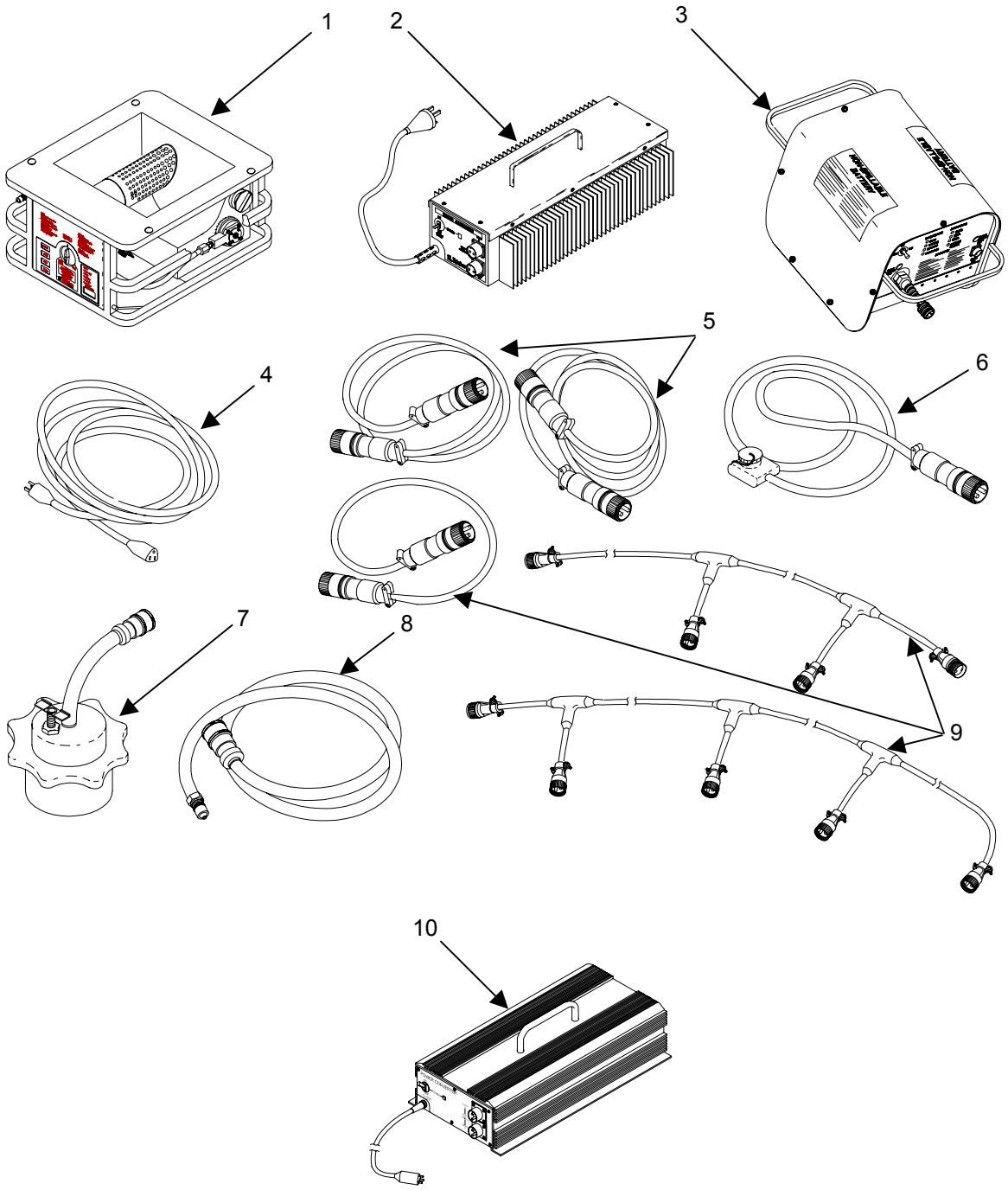


Figure 1. Modern Burner Unit and Associated Equipment

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, Tank – automotive and Armament Command; ATTN: AMSTA-LC-R, 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.

PREPARATION FOR STORAGE OR SHIPMENT

WARNING

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

The Battery Pack weighs approximately 90 pounds (36.3 kg). Two persons must carry the Battery Pack, lifting with legs, not back, to prevent injury.

WARNING

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.

1. Prior to placing the MBU or any component in storage, it must be inspected IAW After Operation PMCS (WP 0010 00), cleaned, and have had all necessary maintenance performed.
2. Remove all MBU's from appliances.
3. Drain fuel tank IAW procedures given in WP 0011 00.
4. If a battery pack is used, ensure the battery has been recharged to 100% capacity IAW procedures given in WP 0005 00.
5. Collect 110VAC and 24VDC 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:

1. Remove the six screws and lockwashers **(figure 2, item 1)** that secure the outer cover **(figure 2, item 2)**.

2. Locate the RED power lead **(figure 2, item 3)** that extends from the internal charger **(figure 2, item 4)** to the battery **(figure 2, item 5)**.

3. Remove the terminal bolt **(figure 2, item 6)** that secures the RED power lead **(figure 2, item 3)** to the battery **(figure 2, item 5)**. Remove the lead and cover the connector at the end of the lead with electrical tape.

4. Tuck the wire between the battery **(figure 2, item 5)** and the internal charger **(figure 2, item 4)**, and re-install the terminal bolt **(figure 2, item 6)**.

5. Install the outer cover **(figure 2, item 2)** on the Battery Pack with the six screws and lockwashers **(figure 2, item 1)** removed earlier.

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

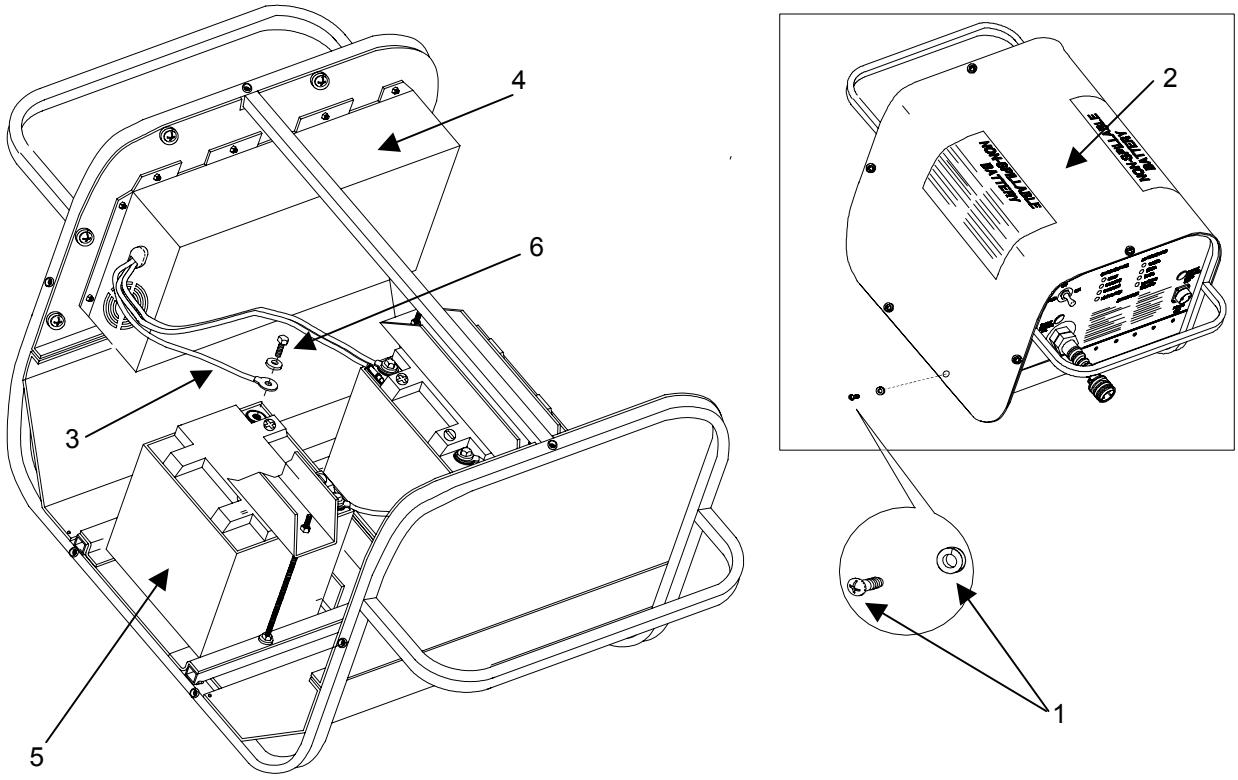


Figure 2. Disconnecting Battery Lead for Storage

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

AC	Alternating Current	KW	Kilowatt(s)
AAL	Additional Authorization List	lb	Pound(s)
BII	Basic Issue Item	lt	Liter(s)
BTU	British Thermal Unit	m	Meter(s)
^{0}C	Degrees Celsius; Degrees Centigrade	MBU	Modern Burner Unit
		MFK	Modular Field Kitchen
COEI	Components of End Item	MKT	Kitchen, Field, Trailer-Mounted
CPC	Corrosion Prevention Control	MSDS	Material Safety Data Sheet
cm	Centimeter(s)	MTOE	Modified Table of Organization and Equipment
CTA	Common Table of Allowances		
DC	Direct Current	N/A	Not Applicable
EIR	Equipment Improvement Recommendations	NATO	North Atlantic Treaty Organization
		NBC	Nuclear, Biological, Chemical
^{0}F	Degrees Fahrenheit	OD	Outside Diameter
ft	foot; feet	POL	Petroleum, Oil and Lubricant
FSC	Food Sanitation Center	ppm	Parts Per Million
gal	Gallon(s)	QD	Quick Disconnect
GFCI	Ground Fault Circuit Interrupter	RPSTL	Repair Parts and Special Tools List
hr	Hour(s)	SOP	Standard Operating Procedure
Hz	Hertz	TMDE	Test, Measurement, Diagnostic Equipment
IAW	In Accordance With		
ID	Inside Diameter	TOE	Table of Organization and Equipment
in	Inch(es)	U/M	Unit of Measure
KCLFF	Kitchen, Company Level, Field Feeding	UOC	Usable On Code
		VAC	Volts, Alternating Current
KCLFF-E	Kitchen, Company Level, Field Feeding-Enhanced	VDC	Volts, Direct Current
		WP	Work Package
Kg	Kilogram(s)		

QUALITY OF MATERIAL

Material used for replacement, repair, or modification must meet the requirements of this manual. If quality of material requirements are not stated in the is manual, the material must meet the requirements of the drawings, standards, specifications, or approved engineering change proposals applicable to the subject equipment.

SAFETY, CARE AND HANDLING

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.

SUPPORTING INFORMATION FOR REPAIR PARTS, SPECIAL TOOLS, TMDE, AND SUPPORT 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.

No Special Tools, TMDE, or Support Equipment is required for the MBU.

Repair parts are listed and illustrated in the repair parts list located in WP 0043 00 through WP 0060 00.

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

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

- Lightweight construction
- Modular assembly
- Infra-red burner

Capabilities

- Generates 22,000 to 52,000 BTU/Hr (MBU)
- Generates 15,000 to 52,000 BTU/Hr (MBU-V3)
- Operation in -25^0F (-32^0C) to 125^0F (52^0C)
- Operation in remote locations
- MBU continuous operation (full fuel tank) (setting max, min)..... 4 hrs; 13 hrs
- MBU-V3 continuous operation (full fuel tank) (setting max, min) ..... 5 hrs; 20 hrs

Features

- Powered ignition
- Fully adjustable burner temperature
- Powered refueling
- Fault Detection and fuel level indicators

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

Frame
The ¾-inch square aluminum stock frame **(figure 1, item 1)** includes lifting handles **(figure 1, item 2)**, and base plate **(figure 1, item 3)**.

Reflective Heat Shield and High Temperature Insulation
The stainless steel reflective heat shield **(figure 1, item 4)** directs radiant heat upward, secures the insulation **(figure 1, item 5)** in the burner well **(figure 1, item 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 **(figure 1, item 7)** projects through the burner well **(figure 1, item 6)**, the high temperature insulation **(figure 1, item 5)** and the reflective heat shield **(figure 1, item 4)**.

Fuel Delivery Block Assembly. – The Fuel Delivery Block assembly **(figure 1, item 8)** controls the fuel/air mixture that is provided to the burner tube assembly.

Control Panel
The hinged control panel **(figure 1, item 9)** opens for access to subassemblies. The control panel includes four pushbutton controls, six indicators, and an hour meter.

Power Receptacle
The power receptacle **(figure 1, item 10)** is mounted at an angle to facilitate easy connection of the 24VDC cable.

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

Fuel Supply QD Nipple
The Fuel Supply QD Nipple **(figure 1, item 16)** provides the connection for the fuel line, allowing 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 **(figure 1, item 17)**, draws air through the air intake filter**,** which is part of the fuel delivery block assembly **(figure 1, item 8)**. The compressor also draws fuel through the QD nipple **(figure 1, item 16)** during refueling.

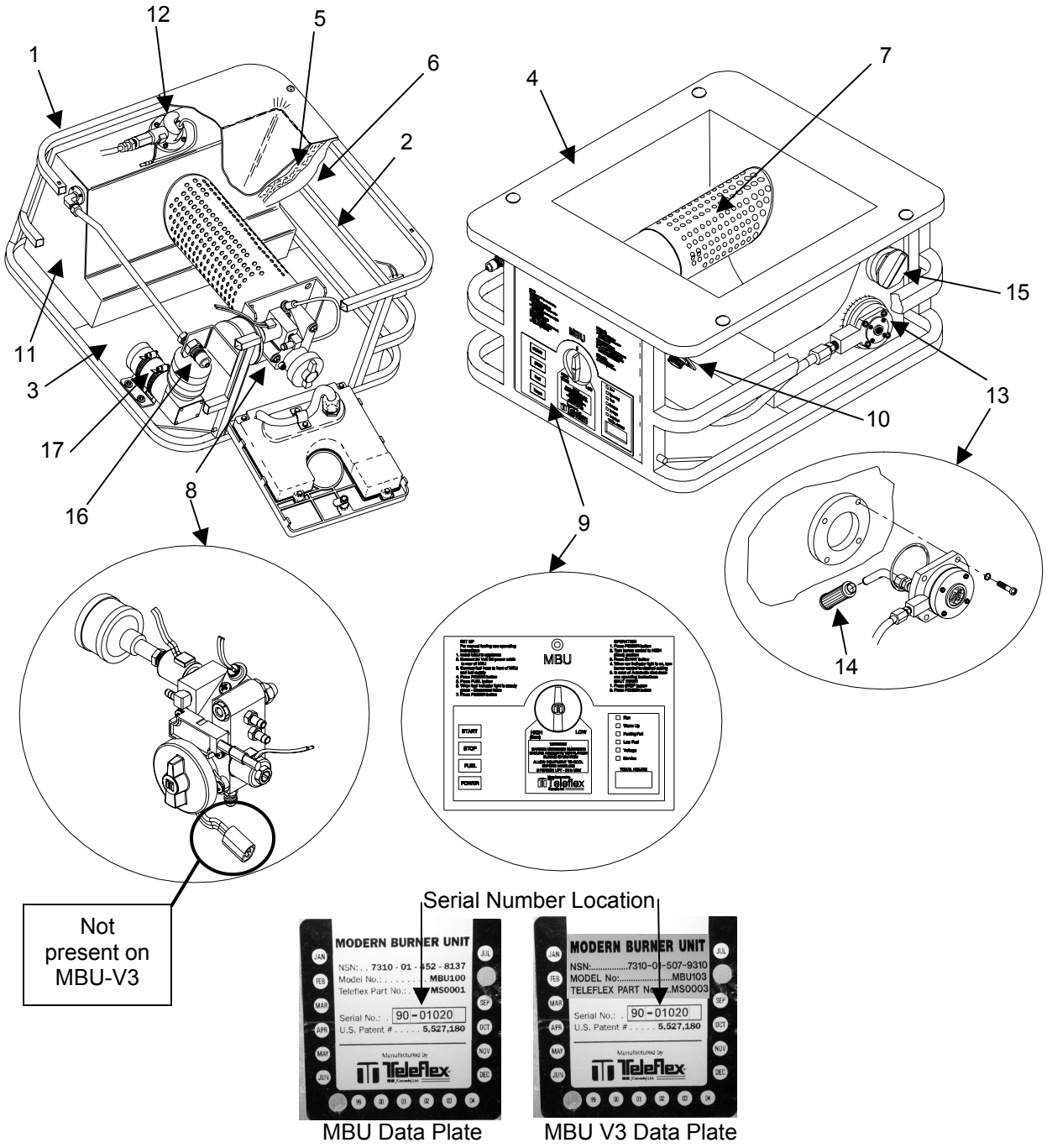


Figure 1. Modern Burner Unit Location and Description of Major Components

DESCRIPTION OF SYSTEM COMPONENTS

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

Power Converter
Converts 120VAC ± 4% to 24VDC. Four MBUs can be powered through each of two output connectors. Refer to the appropriate power configuration schematic beginning in WP 0003 00. A power switch turns the unit on and off. The converter is capable of operating within the same environmental conditions as the MBU.

The original model power converter **(figure 2)** is no longer manufactured. The newer style power converter **(figure 3)** is issued as replacement, and may be used with all MBUs.

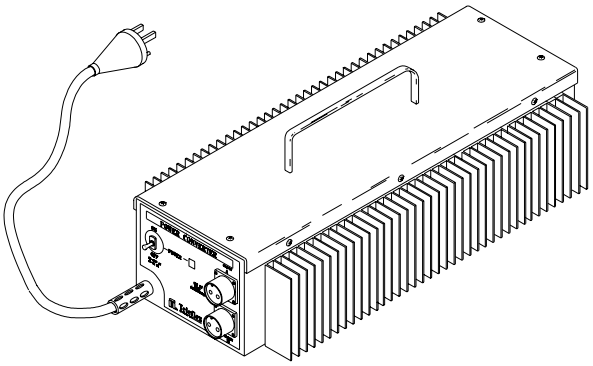


Figure 2. Power Converter MS0150 (Original Model)

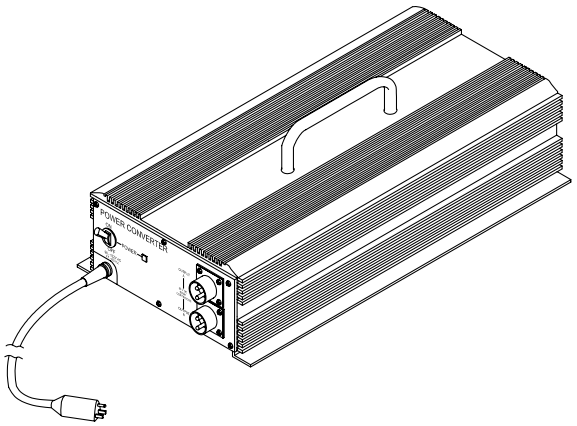


Figure 3. Power Converter MS0160 (Current Model)

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 an ambient of 60^0F(15.5^0C), and a period of 2 hours at an ambient of -25^0F(-32^0C). The module is rechargeable through the standard NATO vehicle power connector in 3 hours with temperatures between 60^0F(15.5^0C) and 120^0F(49^0C), and in 5 hours at -25^0F(-32^0C). 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.

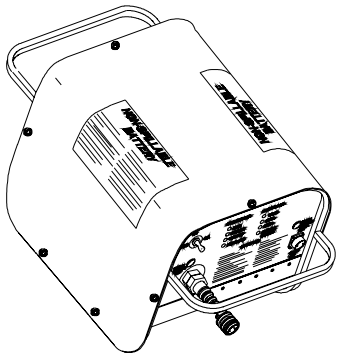


Figure 4. Battery Pack

24VDC Power Cables
Two types of power cable extensions are available; a 15-ft length for use in the MKT, and 3-ft and 25-ft lengths for use with all other systems. These cables cannot be connected directly to the MBU.

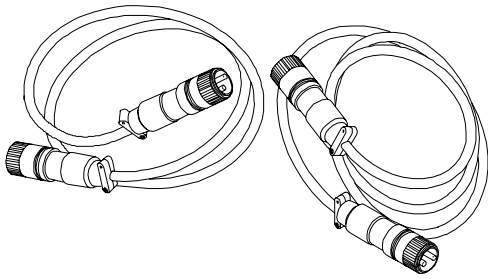


Figure 5. 24VDC Power Cables

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

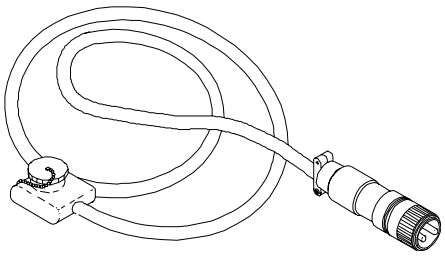


Figure 6. NATO Adapter Cable

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

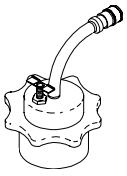


Figure 7. Fuel Can Adapter

Fuel Hose
A 20-ft 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.

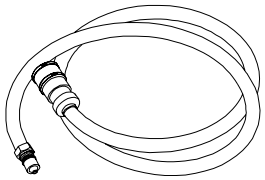


Figure 8. Fuel Hose

Extension Cord
This 50-ft 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 available in a 25-ft length.

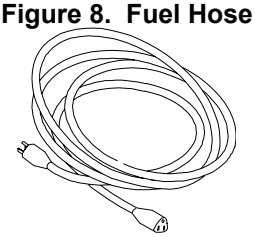


Figure 9. Extension Cord

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

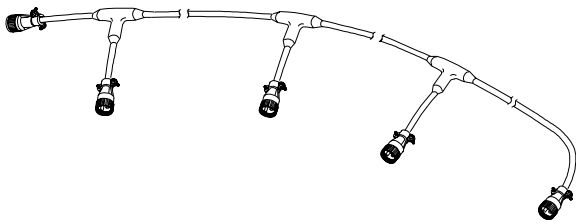


Figure 10. 4-Branch Cable

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

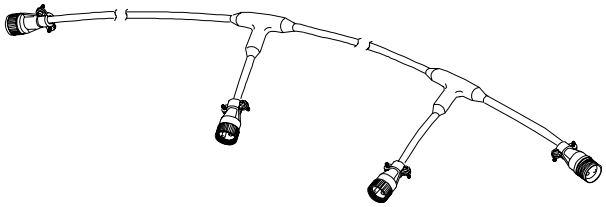


Figure 11. 2-Branch Cable

1-Branch Cable
This cable permits the connection of a power source to a single MBU power-in receptacle.

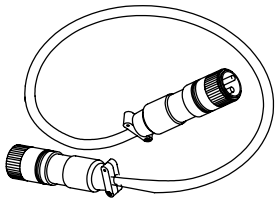


Figure 12. 1-Branch Cable

DIFFERENCES BETWEEN MODELS

The MBU and the MBU-V3 are identical with the exception of an improved fuel delivery block on the MBU-V3. The feedback potentiometer has been omitted from the MBU-V3. An improved power converter is also available for the MBU-V3.

The MBU-V3 is easily identified by the control panel decal. Refer to WP 0005 00 for illustrations of the control panel decals.

EQUIPMENT DATA

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

Table 1. Equipment Data.

WEIGHT:	
MBU Fully fueled	58 lbs (26 Kg)
MBU Without fuel	42 lbs (19 Kg)
MBU-V3 Fully fueled	60 lbs (27.2 Kg)
MBU-V3 Without fuel	42 lbs (19.1 Kg)
DIMENSIONS:	
Height	9.75 in (25 cm)
Depth	19 in (48 cm)
Width	23 in (58 cm)
FUEL CAPACITY (Usable)	2 US gal (7.6 lt)
INPUT CONNECTORS:	
Fuel	Parker Double Shut-off Coupling, BH2-60Y

FUEL CONSUMPTION:	
Rate of fuel consumption:	
Operating at maximum firing rate:	0.34 gal (1.29 l)/hr
Operating at minimum firing rate:	0.1 gal (0.38l)/hr
MBU continuous operation (full fuel tank) (setting max, min)	4 hrs; 13 hrs
MBU-V3 continuous operation (full fuel tank) (setting max, min)	5 hrs; 20 hrs
OUTPUTS:	
MBU Heat (setting dependent)	22,000 to 52,000 BTU/hr
MBU-V3 Heat (setting dependent)	15,000 to 52,000 BTU/hr
Carbon monoxide (setting dependent)	50 to 120 ppm
FUEL REQUIREMENTS	JP-8 and approved diesel fuels
ELECTRICAL REQUIREMENTS	22 - 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	

Table 1. Equipment Data – Continued.

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

EQUIPMENT CONFIGURATION

The MBU and its associated 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 in WP 0003 00 and identify the configuration for your application. Additional configuration information is provided in WP 0005 00, WP 0020 00, and WP 0021 00.

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
THEORY OF OPERATION

THEORY OF OPERATION

Electrical Supply
A 24VDC supply is connected to the power connector **(figure 1, item 1)**. Voltage is then supplied to the controller **(figure 1, item 2)**, which contains all vital electrical circuits.

Fuel Supply
The fuel tank **(figure 1, item 3)** is filled either through the fuel tank fill plug **(figure 1, item 4)** before the MBU is installed into an appliance by connecting a quick disconnect hose to the fuel fill nipple **(figure 1, item 5)** and the feed adaptor on a fuel can, turning the burner control **(figure 1, item 6)** to HIGH (START), then pressing the FUEL button **(figure 1, item 7).** This energizes the air compressor **(figure 1, item 8)** and opens the tank fill valve **(figure 1, item 9)** (requires electrical power connection). A full tank of fuel allows up to a minimum of five hours of operation before the MBU shuts down. A check valve **(figure 1, item 10)** prevents fuel from entering the air line during shipping and handling.

Power-Up
MBU power-up is initiated by pressing the power switch **(figure 1, item 11)**. This tests the indicator lights **(figure 1, item 12)** for 3 seconds. The hour meter **(figure 1, item 13)** 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 **(figure 1, item 6)** in HIGH (START) position, MBU startup is initiated by pressing the START button **(figure 1, item 14)**, which energizes the ignitor **(figure 1, item 15)**. After two seconds the compressor **(figure 1, item 8)** starts, and the fuel valve **(figure 1, item 17)** on the fuel delivery block assembly **(figure 1, item 18)** opens, allowing fuel to flow to the nozzle **(figure 1, item 19)**. The vent valve **(figure 1, item 20)** on the fuel tank **(figure 1, item 3)** opens, allowing air to enter the fuel tank. The compressor **(figure 1, item 8)** draws air through the air filter **(figure 1, item 21)**, on the fuel delivery block assembly **(figure 1, item 18)**, pressurizing the fuel nozzle **(figure 1, item 19)**. Simultaneously, fuel is drawn from the fuel tank **(figure 1, item 3)**, through a 30-micron filter **(figure 1, item 22)** and a zero pressure regulator **(figure 1, item 23)** to the burner control valve **(figure 1, item 24)**, which regulates the flow to the nozzle **(figure 1, item 19)**. This fuel-air mixture is sprayed into the burner **(figure 1, item 25)** in a fine mist and ignited. The ignitor circuit remains energized for 30 seconds.

NOTE

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 (**figure 1, item 6**), as necessary.

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

- Loss of combustion. If the flame sensor **(figure 1, item 26)** fails to verify combustion, the MBU shuts down immediately and the red SERVICE indicator **(figure 1, item 27)** lights.

- Low fuel. When the fuel tank level float switch **(figure 1, item 28)** reaches a minimum set point, a 30 minute shutdown timer is activated. Control Panel indicators will light as follows: LOW FUEL indicator **(figure 1, item 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 **(figure 1, item 29)** lights steady red at shut-down.

- 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 **(figure 1, item 30)** will light red.

- Electrical Short. An internal circuit breaker is located in the controller **(figure 1, item 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.

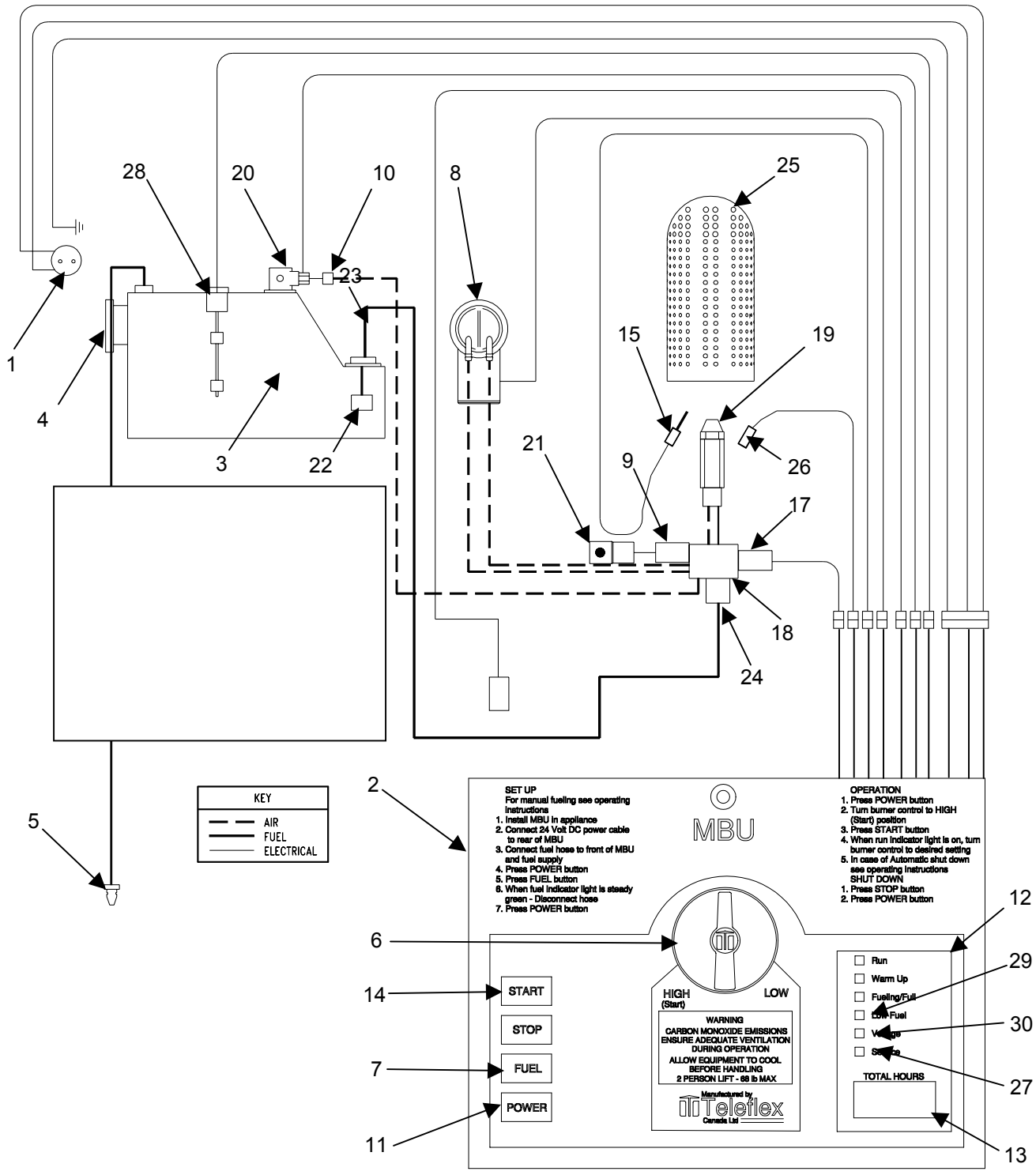


Figure 1. MBU Operational Schematic

MBU Power Configuration for 110VAC Power Source

Power is drawn from the 110VAC power source using the 50-ft 110VAC extension cord connected to the power converter. From the converter, power is distributed using a 24VDC power cable extension that is connected to a branch cable, which is in turn connected to the individual burners. A maximum of four burners can be supplied by each of the two power converter outlets, supporting a total of eight burners per power converter.

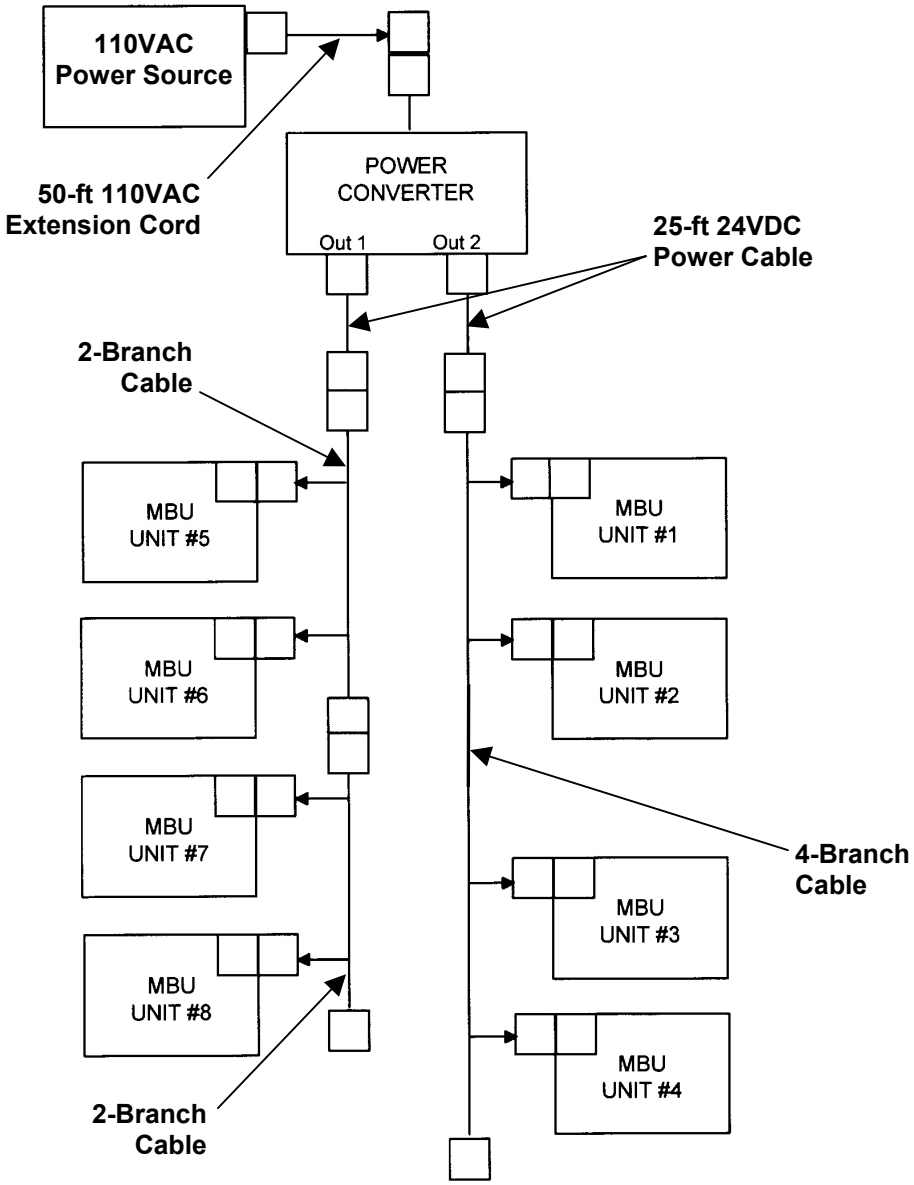


Figure 2. MBU Power Configuration for 110V AC Power Source

MBU Power Configuration for Vehicular or Battery Supplied 24VDC Power

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 three MBUs can be operated at one time.

Alternate MBU power configuration for 24VDC 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-ft (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.

NOTE

A maximum of seven MBUs may be connected to a single power source.

A second alternative 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 (24VDC) extension (if necessary), or directly to the branch cable.

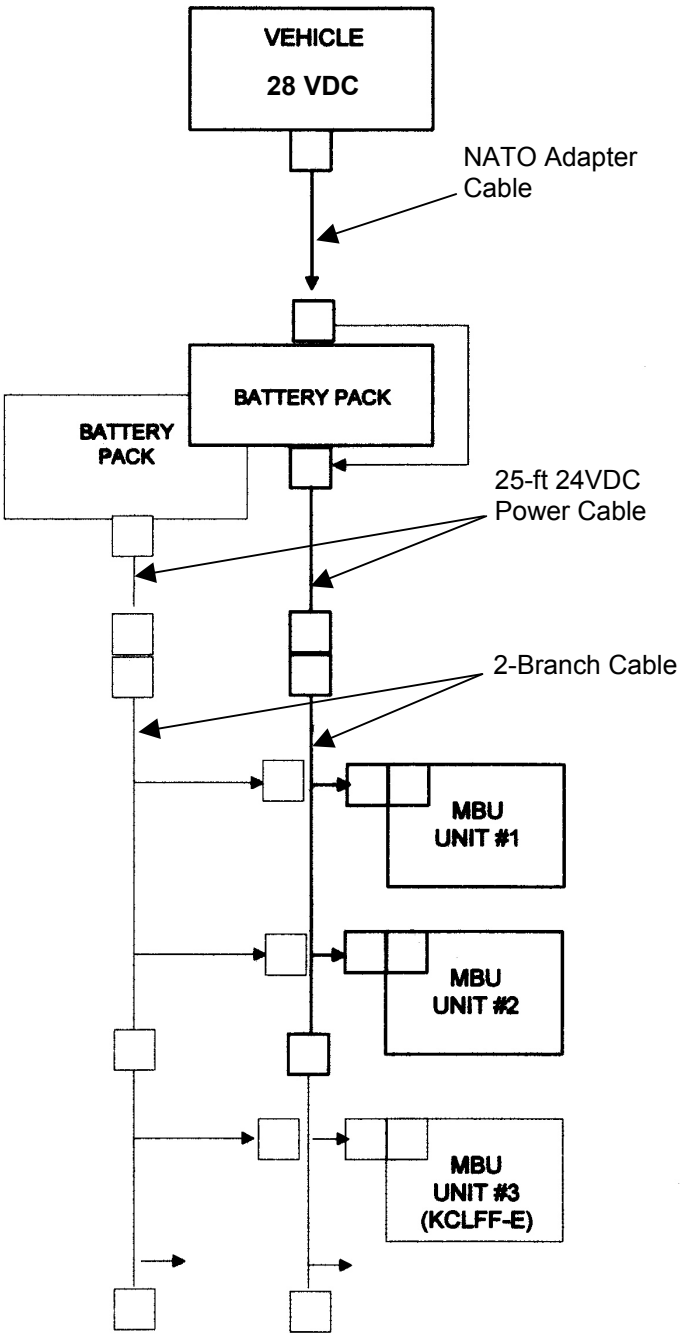


Figure 3. MBU Power Configuration for Vehicular or Battery Supplied 24VDC Power

CHAPTER 2

OPERATOR INSTRUCTIONS
FOR
MODERN BURNER UNIT
AND
MODERN BURNER UNIT-V3

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS

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.

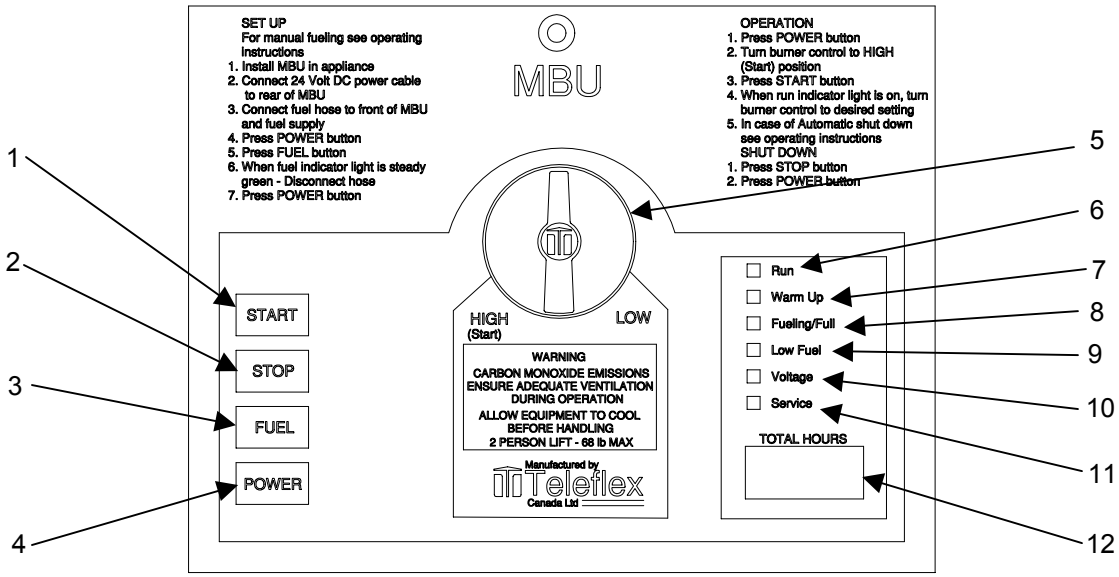


Figure 1. MBU Controls and Indicators (MBU)

KEY	CONTROL OR 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.

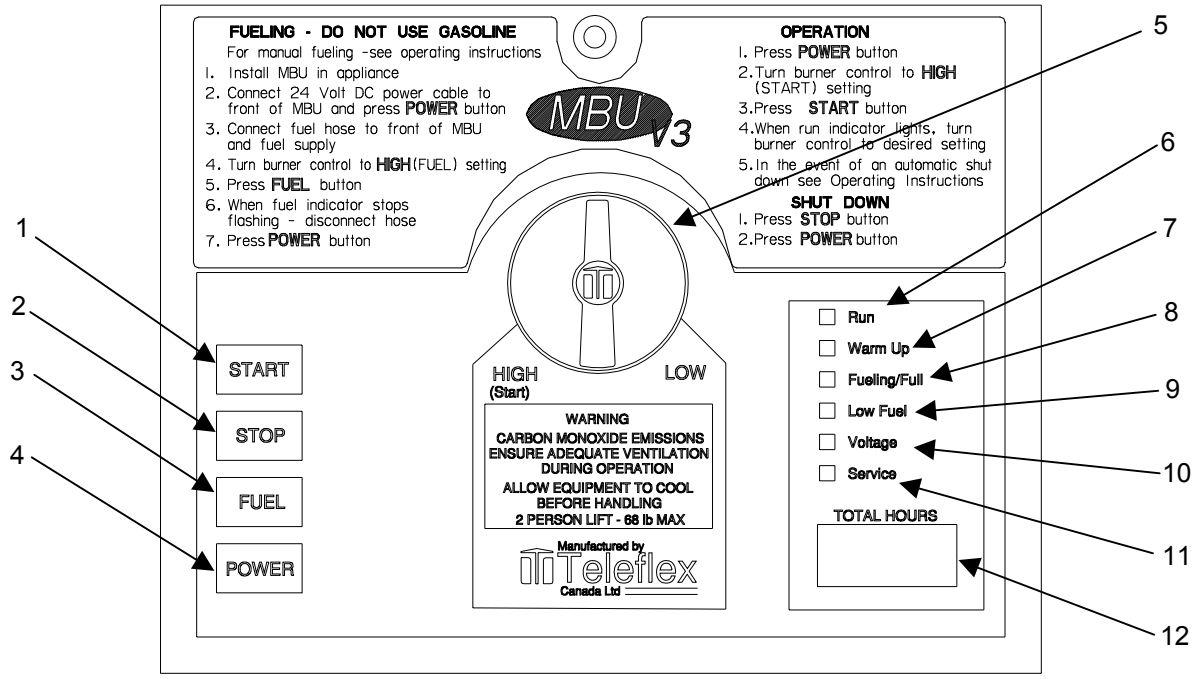
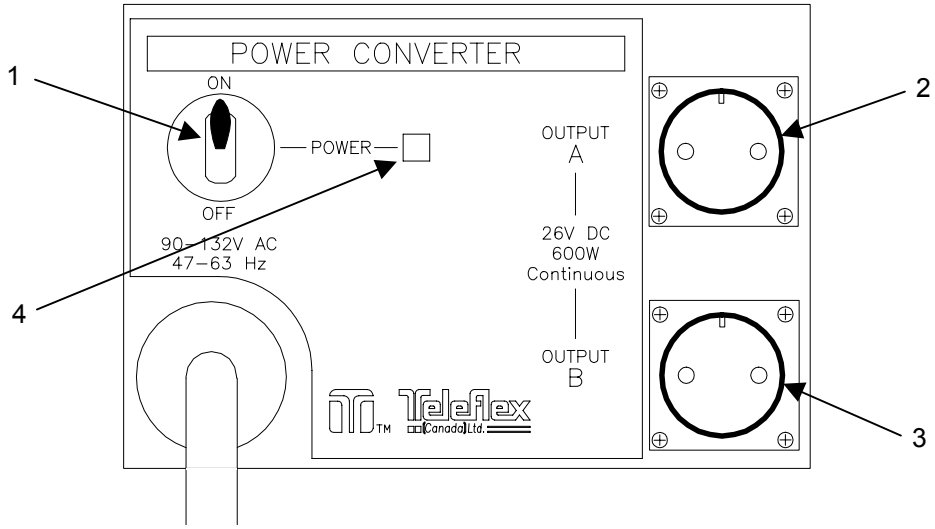
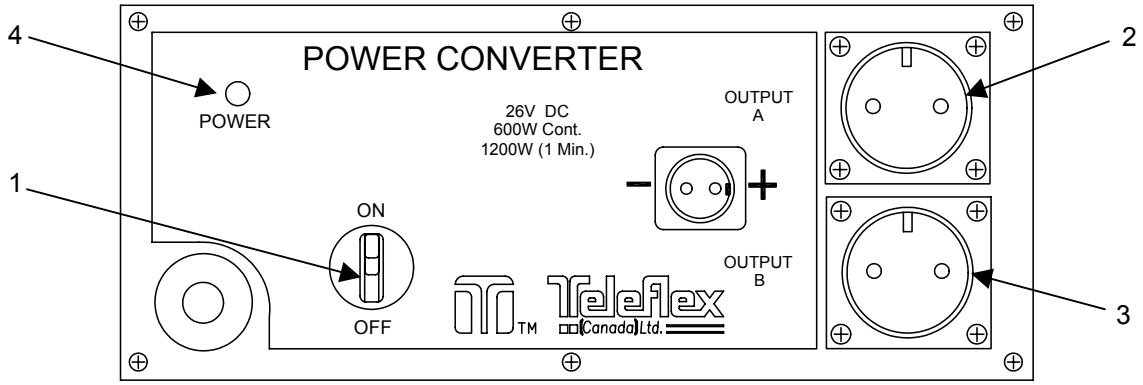


Figure 2. MBU Controls and Indicators (MBU-V3)

KEY	CONTROL OR 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.



Power Converter – Model MS0150



Power Converter – Model MS0160

Figure 3. Power Converter Controls and Indicators

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

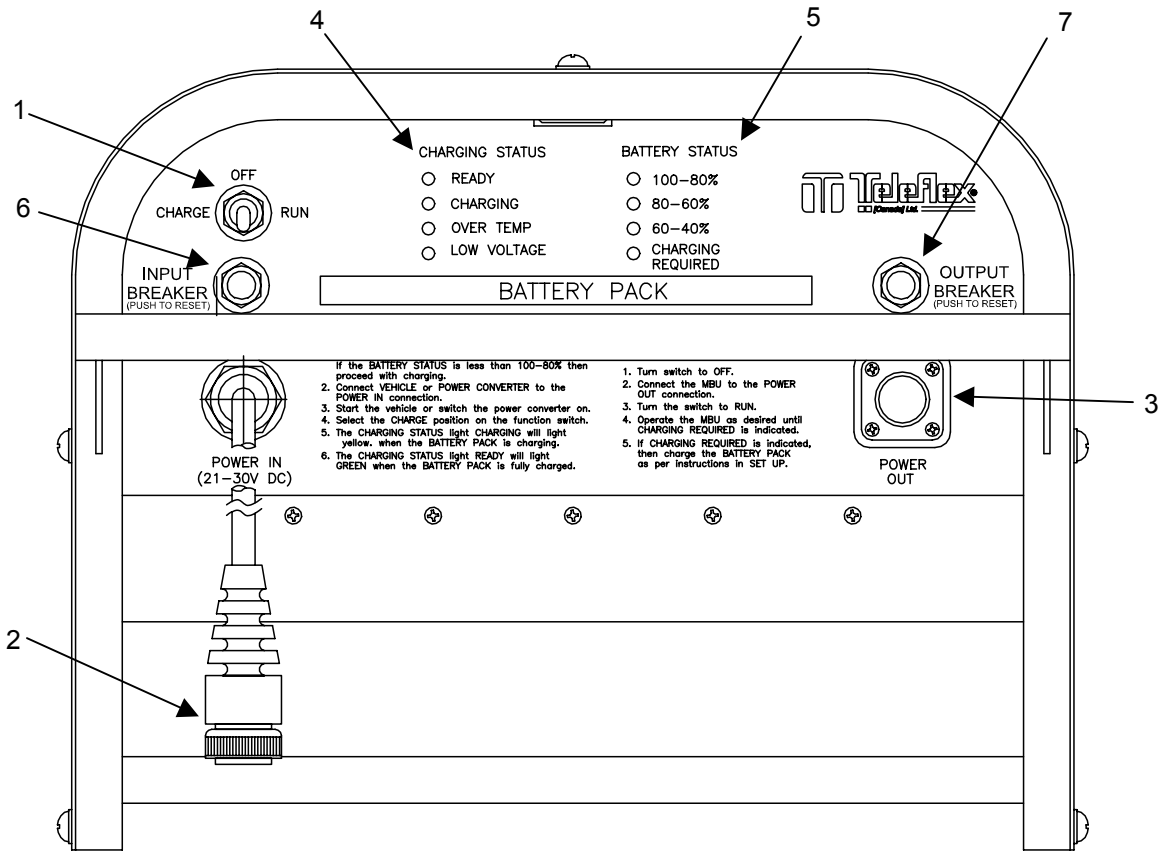


Figure 4. Battery Pack Controls and Indicators

KEY	CONTROL OR INDICATOR	FUNCTION
1	Three Position Function Switch	Controls Charging and Run Function
2	Charging Power In Connector	Connects 24VDC power to Battery Pack for Charging
3	Power Out Connector	Provides 24VDC 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

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
OPERATION UNDER USUAL CONDITIONS

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.

SECURITY MEASURES FOR ELECTRONIC DATA

There are no security measures for electronic data required for the MBU or MBU-V3.

SITING REQUIREMENTS

Siting of the field feeding system may be influenced by the power and fuel requirements of the MBU. When using the primary power (110VAC) as with the MFK, MKT, and FSC, the power source must be located within 50ft of the power converter. When a 24VDC 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 24VDC 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 0039 00.

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 0034 00.

Installing MBU into Appliance

WARNING

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.

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 **(figure 1, item 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).

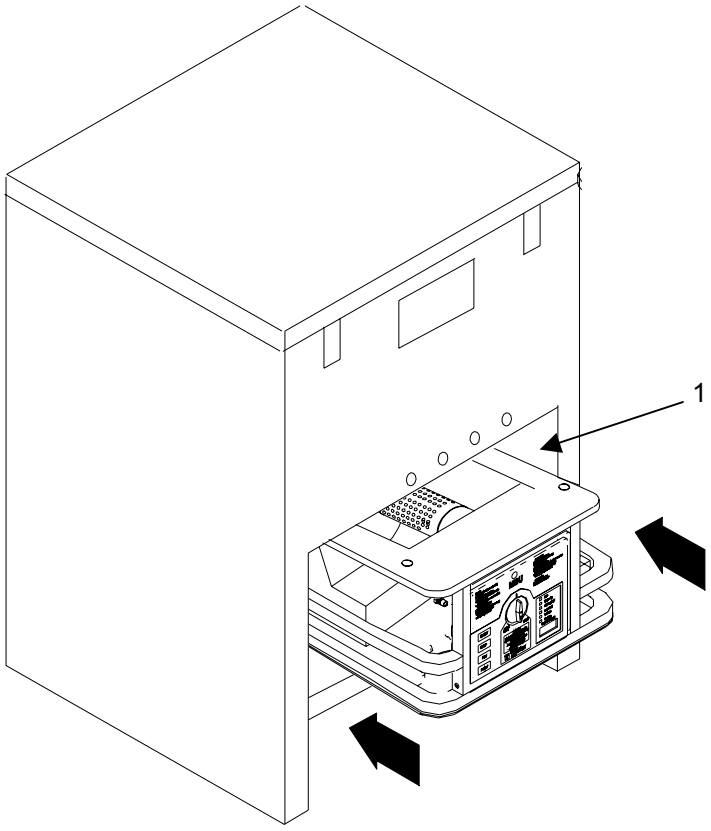


Figure 1. Installing MBU Into An Appliance

Kits are available to enabler the user to utilize the MBU in the Modular Field Kitchen (MFK), Mobile Kitchen Trailer (MKT), Food Sanitation Center (FSC), and the Kitchen, Company Level Field Feeding (KCLFF). The following information lists the kits and associated components:

7310-01-455-5718 **MFK MBU KIT**
(3AD06) MS0600

NATIONAL STOCK NUMBER	DESCRIPTION, CAGEC, AND P/N	U/M	QTY	CHECK
7310-01-453-6513	POWER CONVERTER, MBU (3AD06) MS0150	EA	1	
	OR			
7310-01-502-9455	POWER CONVERTER, MBU (3AD06) MS0160	EA	1	
7310-01-455-0665	CORD LONG, MBU, CABLE A (4), 25 FT EXTENSION (3AD06) MS0101	EA	3	
7310-01-255-1017	HARNESS BRANCH, MBU CABLE D (3), 2 BRANCH, (24 VDC) (3AD06) MS0104	EA	5	
7310-01-458-5060	EXTENSION CORD SHORT, MBU 25 FT (110VAC) (3AD06) MS0425	EA	1	
7310-01-455-3736	FUEL ADAPTER, MBU (3AD06) MS0300	EA	2	
7310-01-455-3735	FUEL LINE, MBU, 20 FT. (3AD06) MS0350	EA	2	

7310-01-455-5675 **MKT MBU KIT**
(3AD06) MS0450

NATIONAL STOCK NUMBER	DESCRIPTION, CAGEC, AND P/N	U/M	QTY	CHECK
7310-01-453-6513	POWER CONVERTER, MBU (3AD06) MS0150	EA	1	
	OR			
7310-01-502-9455	POWER CONVERTER, MBU (3AD06) MS0160	EA	1	
7310-01-455-0896	HARNESS BRANCH, MBU CABLE B (1), 4 BRANCH, (24VDC) (3AD06) MS0102	EA	1	
7310-01-455-1014	WIRING HARNESS, BRANCHED CABLE C (2), 2 BRANCH, (24VDC) (3AD06) MS0103	EA	1	
7310-01-255-1206	CORD SHORT, MBU CABLE E (5), (24VDC)15 FT EXTENSION (3AD06) MS0105	EA	1	
7310-01-454-1241	ELECTRICAL ADAPTER, MBU NATO (24VDC) (3AD06) MS0250	EA	1	
7310-01-454-1281	EXTENSION CORD, MBU 50FT,(110VAC) (3AD06) MS0400	EA	1	
7310-01-455-3736	FUEL ADAPTER, MBU (3AD06) MS0300	EA	2	
7310-01-455-3735	FUEL LINE, MBU, 20 FT. (3AD06) MS0350	EA	2	

7310-01-455-5703 **FSC MBU KIT**
(3AD06) MS0500

NATIONAL STOCK NUMBER	DESCRIPTION, CAGEC, AND P/N	U/M	QTY	CHECK
7310-01-453-6513	POWER CONVERTER, MBU (3AD06) MS0150	EA	1	
	OR			
7310-01-502-9455	POWER CONVERTER, MBU (3AD06) MS0160	EA	1	
7310-01-455-0665	CORD LONG, MBU, CABLE A (4), 25 FT EXTENSION (3AD06) MS0101	EA	1	
7310-01-255-1017	HARNESS BRANCH, MBU CABLE D (3), 2 BRANCH, (24 VDC) (3AD06) MS0104	EA	1	
7310-01-509-4453	MBU EXT CABLE CABLE 6, 3 FT EXTENSION,(24 VDC) (3AD06) MS0106	EA	1	
7310-01-454-1281	EXTENSION CORD, MBU 50FT,(110VAC) (3AD06) MS0400	EA	1	
7310-01-455-3736	FUEL ADAPTER, MBU (3AD06) MS0300	EA	1	
7310-01-455-3735	FUEL LINE, MBU, 20 FT. (3AD06) MS0350	EA	1	

7310-01-455-5710 **KCLFF MBU KIT**
(3AD06) MS0500

NATIONAL STOCK NUMBER	DESCRIPTION, CAGEC, AND P/N	U/M	QTY	CHECK
7310-01-453-6565	BATTERY PACK (3AD06) MS0200	EA	1	
7310-01-454-1249	BATTERIES, PAIR (3AD06) MS0225	PR	1	
7310-01-455-0665	CORD LONG, MBU, CABLE A (4), 25 FT EXTENSION (3AD06) MS0101	EA	1	
7310-01-255-1017	HARNESS BRANCH, MBU CABLE D (3), 2 BRANCH, (24 VDC) (3AD06) MS0104	EA	1	
7310-01-509-4453	MBU EXT CABLE CABLE 6, 3 FT EXTENSION,(24 VDC) (3AD06) MS0106	EA	1	
7310-01-454-1241	ELECTRICAL ADAPTER, MBU NATO (24VDC) (3AD06) MS0250	EA	1	
7310-01-455-3736	FUEL ADAPTER, MBU (3AD06) MS0300	EA	1	
7310-01-455-3735	FUEL LINE, MBU, 20 FT. (3AD06) MS0350	EA	1	

CONNECTING CABLES TO THE MBU PRIOR TO OPERATION

Depending on the system in use, ensure that either 110VAC commercial or generator power is available and properly connected to the power converter, or a vehicle supplying 28VDC power through the NATO adapter is properly connected to a 24VDC 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 two to three hours, depending on ambient temperatures as described in WP 0005 00.

WARNING

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

Never connect 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.

External power must be shut off before connecting any cables or performing maintenance.

For artificial respiration, refer to FM 21-11.

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

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

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.

CONNECT POWER CABLES IN THE MKT USING 110VAC POWER

1. Be sure that the 12-ft Crossway Cable has been installed IAW with procedures given in WP 0021 00.

2. Be sure that all pre-fielding modifications have been done IAW with procedures given in WP 0020 00.

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

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

2. Remove the two self locking nuts **(figure 2, item 3)** and slide the retaining bar **(figure 2, item 4)** off the shafts **(figure 2, item 5)**.

3. Place the Power Converter **(figure 2, item 6)** on the mounting bracket **(figure 2, item 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.

4. Place the retaining bar **(figure 2, item 4)** through the handle of the power converter **(figure 2, item 6)** and over the two mounting bracket shafts **(figure 2, item 5)**. Be sure to keep the bar level while sliding over the shafts to prevent binding.

5. Install the two self locking nuts **(figure 2, item 3)**.

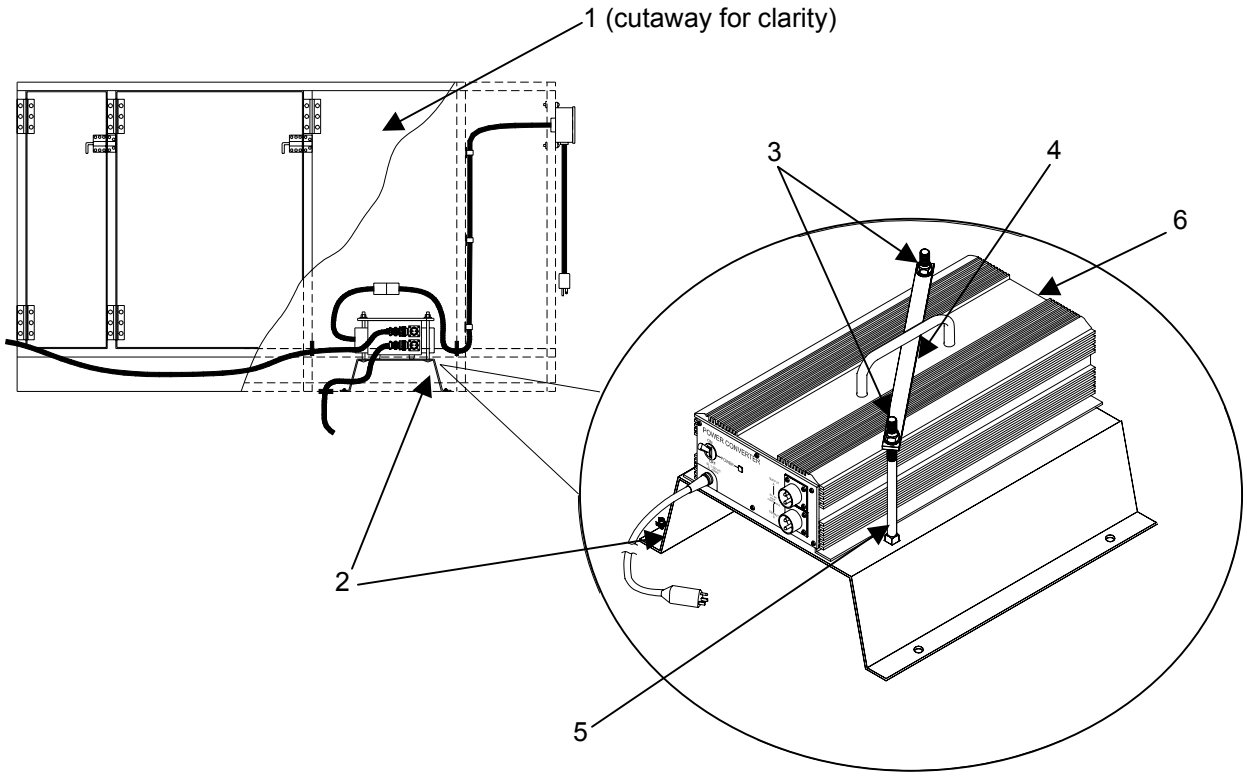


Figure 2. Power Converter Mounting Bracket with Power Converter Installed

Connect Cables in the MKT

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

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

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

4. 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 **(figure 3, item 8)**.

5. Pull the individual branch cables **(figure 3, item 9)** out the front of each appliance and connect each branch to the power-in receptacle **(figure 3, item 10)** of each MBU.

6. Distribute a 4-branch cable **(figure 3, item 11)** along the floor in front of the appliances **(figure 3, item 12)** on the opposite side of the MKT.

7. Connect the main connector **(figure 3, item 13)** of the branch cable to the end of the Crossway Cable **(figure 3, item 14)** extending up through the floor of the MKT opposite the cooling cabinet.

8. Hang the 4-branch cable along the front of the appliances with cable clips **(figure 3, item 15)** provided with the MBU.

9. Connect each branch **(figure 3, item 16)** of the 4-branch cable to the power-in connector **(figure 3, item 17)** of each MBU.

10. Slide the clips **(figure 3, item 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.

11. With the power converter main power switch OFF, connect the Feedway Cable receptacle **(figure 3, item 18)** located just below the GFCI outlets **(figure 3, item 19)** mounted to the side of the cooling cabinet to the designated power source using the 50-ft (110VAC) extension cord **(figure 3, item 20)** provided.

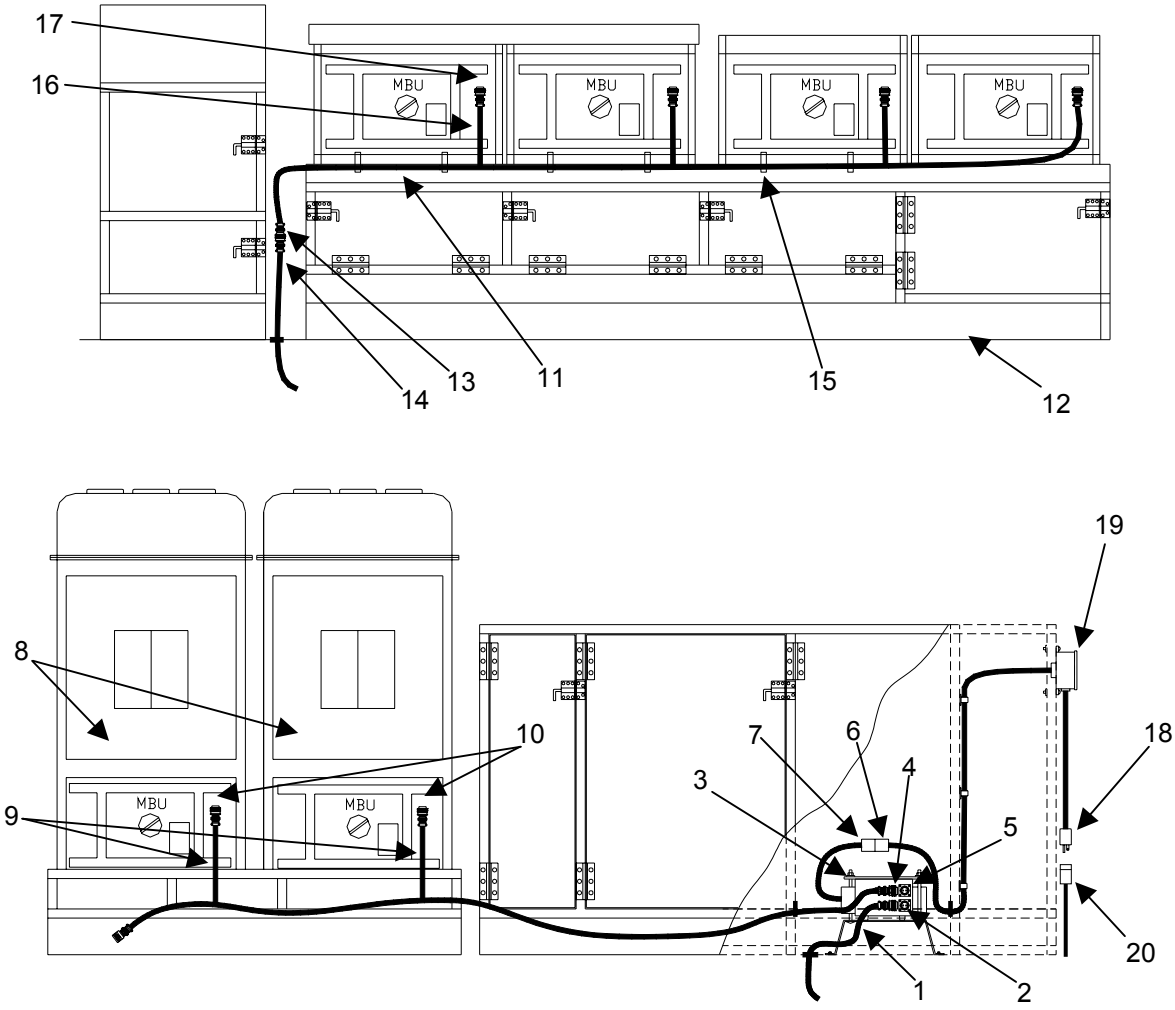


Figure 3. Connecting Power Cables to MKT

CONNECT POWER CABLES WITH 110VAC POWER

1. With the power converter input switch **(figure 4, item 1)** OFF, connect the power converter power cord **(figure 4, item 2)** to the designated power source using the 50-ft (110VAC) extension cord **(figure 4, item 3)** provided.

2. Connect the 25-ft (24VDC) power cable extension **(figure 4, item 4)** (if required) to the power converter **(figure 4, item 2)**.

3. Connect the 2- or 4-Branch cables (24VDC) **(figure 4, item 5)** to the other end of the 25-ft (24VDC) extension **(figure 4, item 4)** (if used).

4. With MBU Power switches **(figure 4, item 6)** OFF, connect the cable branches **(figure 4, item 7)** to the power-in receptacle **(figure 4, item 8)** on the individual burners.

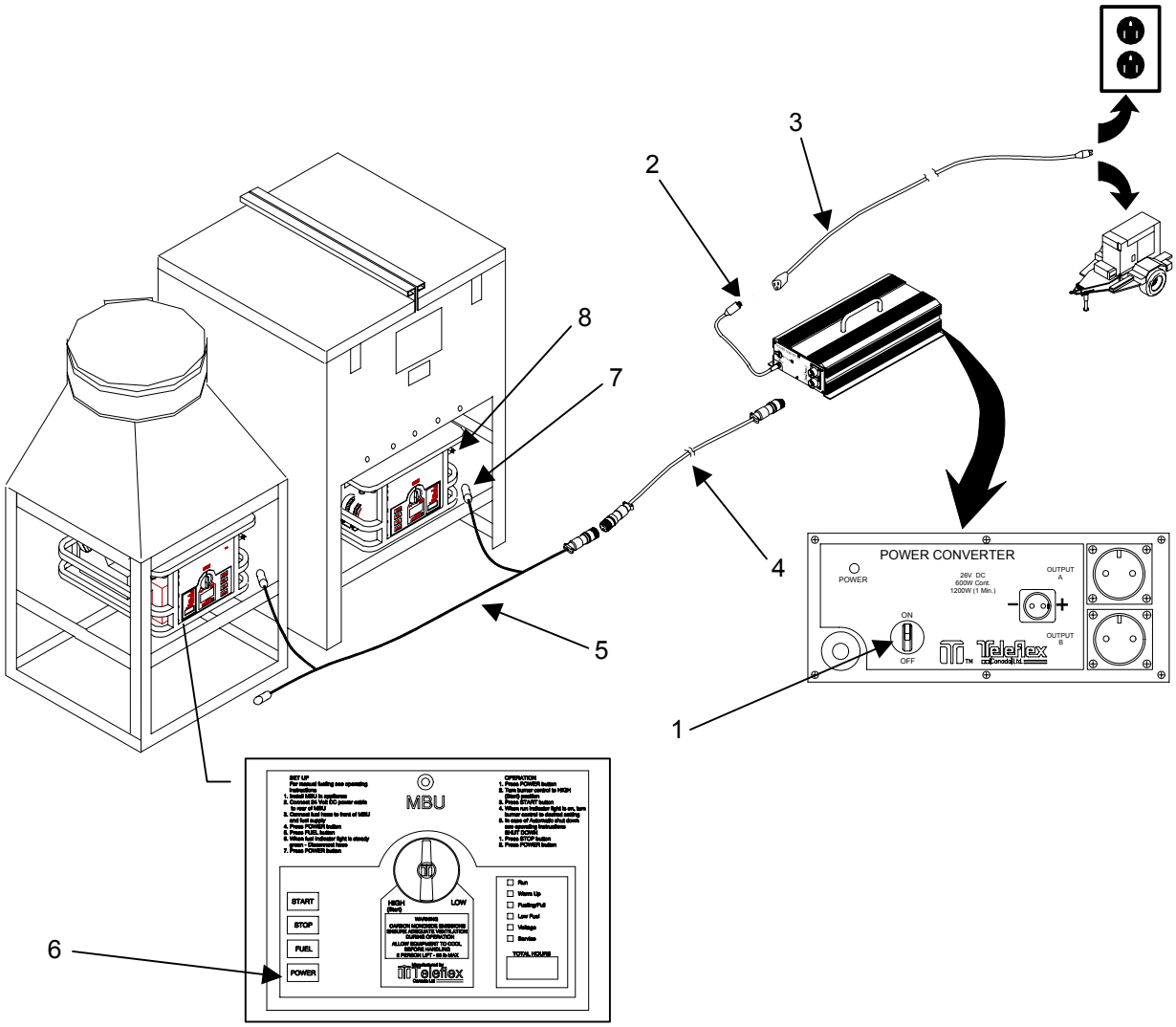


Figure 4. Connect Power Cables with 110VAC Power for Systems Other Than MKT

CONNECT POWER CABLES USING VEHICULAR POWER (22-29 VDC) ALONE

1. Connect the 25-ft NATO adapter cable **(figure 5, item 1)** (24VDC) between the vehicle supplying power **(figure 5, item 2)**, and a 2-Branch power cable **(figure 5, item 3)**. If additional length is required, connect the 25-ft (24VDC) Extension Cable **(figure 5, item 4)** between the branch cable and the NATO Adapter cable.

2. Connect the cable branches **(figure 5, item 5)** (24VDC) to the individual burners power connectors **(figure 5, item 6)**.

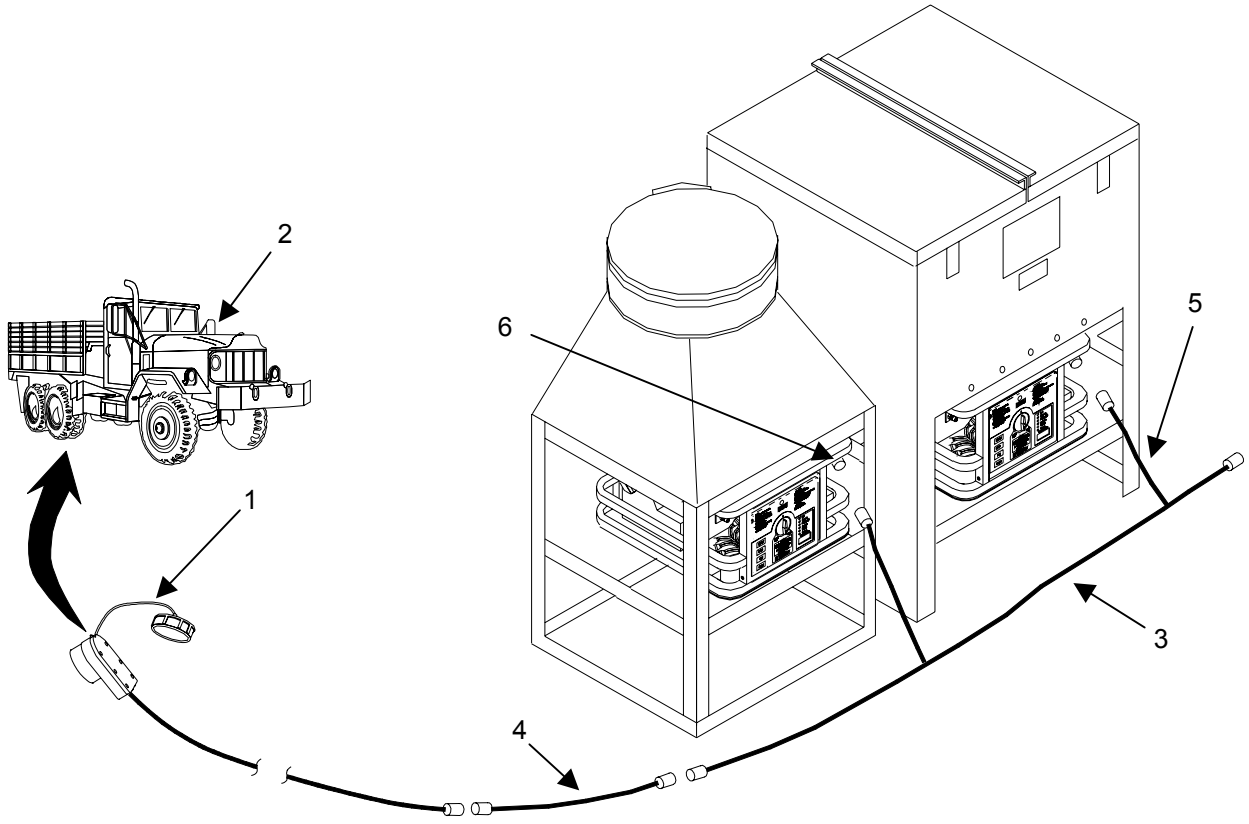


Figure 5. Connect Power Cables Using Vehicular Power Alone

CONNECTING POWER CABLES USING VEHICULAR POWER AND BATTERY PACK

WARNING

The Battery Pack weighs approximately 93 pounds (42.2 kg). Two persons must carry the Battery Pack, lifting with legs, not back, to prevent injury.

1. If the battery pack **(figure 6, item 1)** is used to supplement vehicular power, connect the NATO adapter cable **(figure 6, item 2)** to the Power Input Connector **(figure 6, item 3)** of the Battery Pack.

2. With the Battery Pack 3-position function switch **(figure 6, item 4)** OFF, connect one end of the 25-ft (24VDC) extension **(figure 6, item 5)** (if required for additional length) to the Battery Pack Power Output Connector **(figure 6, item 6)**.

3. The 2-Branch cable **(figure 6, item 7)** can then be connected to the opposite end of the 25-ft Extension Cable **(figure 6, item 5)**.

4. The cable branches **(figure 6, item 8)** are then connected to the power-in receptacle of the individual burners **(figure 6, item 9)**.

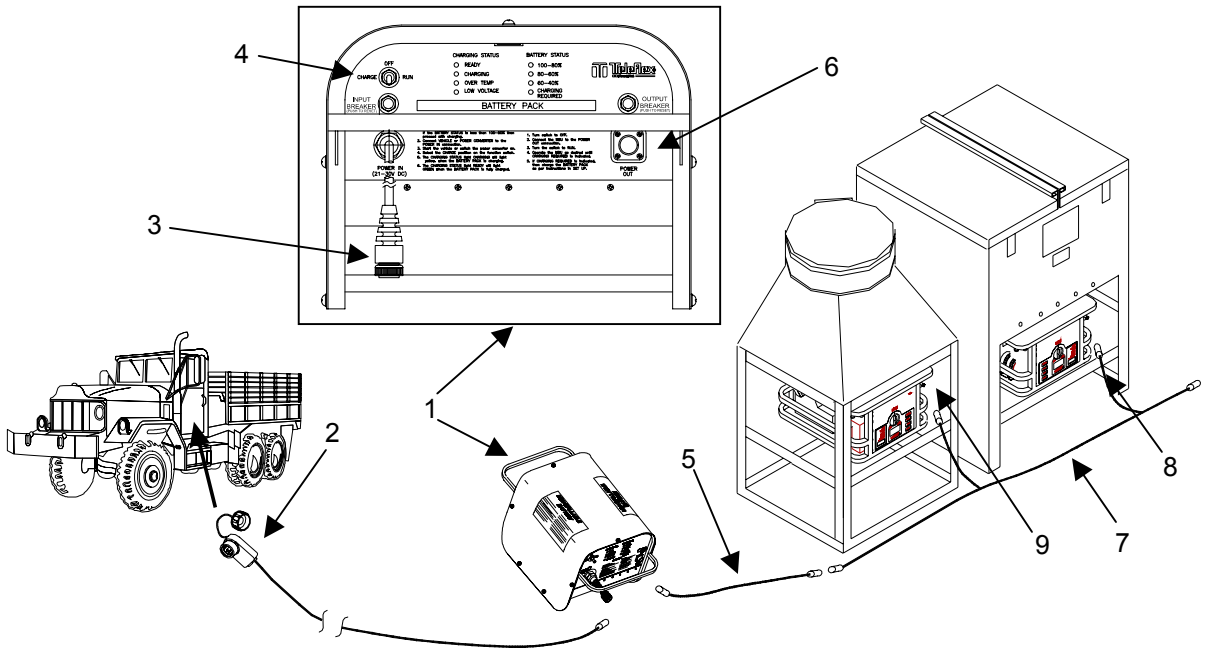


Figure 6. Connecting Power Cables Using Vehicular Power and Battery Pack

CONNECTING POWER CABLES USING THE BATTERY PACK ALONE

WARNING

The Battery Pack weighs approximately 93 pounds (42.2 kg). Two persons must carry the Battery Pack, lifting with legs, not back, to prevent injury.

1. With the Battery Pack 3-Position Function Switch **(figure 7, item 1)** in the OFF position, connect one end of the 25-ft Extension Cable (if used for additional length) **(figure 7, item 2)** to the Battery Pack Power Output Connector **(figure 7, item 3)**.

2. Connect the opposite end of the 25-ft Extension Cable **(figure 7, item 2)** to one end of a 2-Branch power cable **(figure 7, item 4)**.

3. If the Extension Cable **(figure 7, item 2)** is not used, connect one end of the branch cable **(figure 7, item 4)** directly to the Power Output Connector **(figure 7, item 3)** of the Battery Pack.

4. Connect the cable branches **(figure 7, item 5)** to the power-in receptacles **(figure 7, item 6)** of the individual burners.

5. In order to recharge the batteries a 24VDC power source, such as a vehicle or power converter, should be made available during operation of the MBU's. When the battery pack is used as the power source to operate the MBUs, the charge indicator lights **(figure 7, item 7)** should be checked frequently to monitor the condition of the batteries. To recharge the batteries, connect the 25-ft 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.

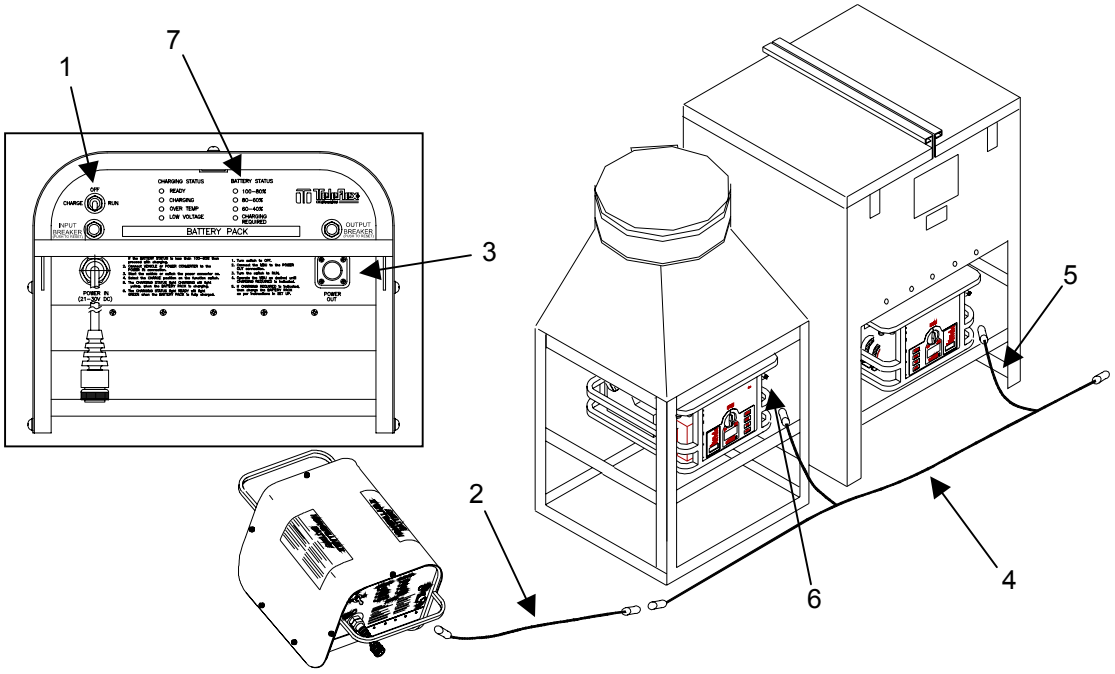


Figure 7. Connecting Power Cables Using The Battery Pack Alone

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.

1. Slide the MBU **(figure 8, item 1)** halfway out of the appliance **(figure 8, item 2)**.
2. Check the burner well **(figure 8, item 3)** for debris or the remains of spilled food.
3. Inspect interior of burner well **(figure 8, item 3)** for debris and clean as needed. Refer to WP 0009 00 for cleaning instructions.
4. Slide MBU **(figure 8, item 1)** back into appliance.
5. Be sure that the system cables **(figure 8, item 4)** are securely attached.

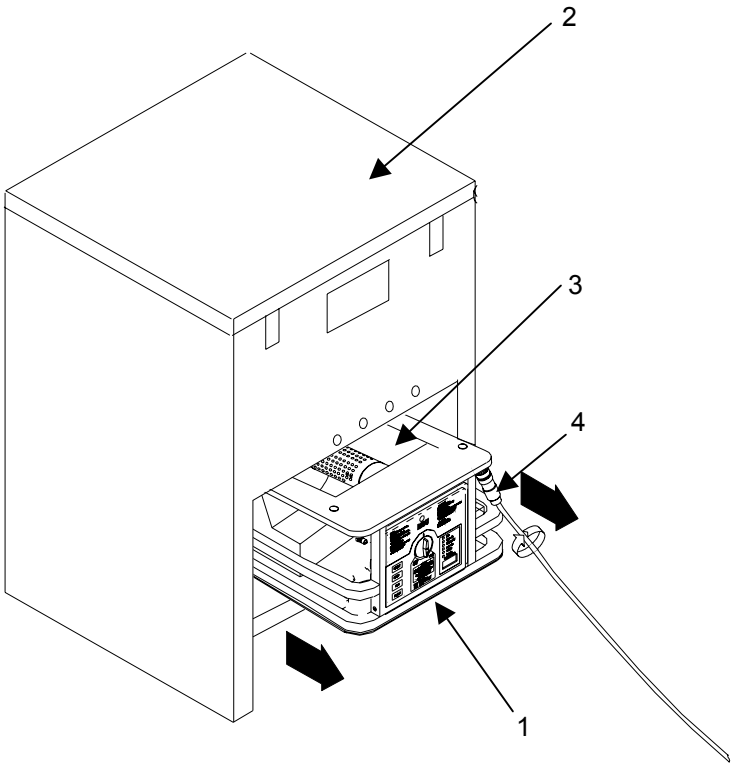


Figure 8. MBU Pre-operational Check

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 **(figure 9, item 1)**. If 110VAC 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 110VAC is used, place power converter switch **(figure 9, item 2)** to ON.

3. If the Battery Pack is used, make sure the 3-Position Function Switch **(figure 9, item 3)** is in the RUN position.

NOTE

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 WP 0023.

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 **(figure 9, item 4)** on individual MBU's.

5. Verify that the MBU is under power: Indicator lights **(figure 9, item 5)** will flash for about three seconds, and the hour meter background light **(figure 9, item 6)** will illuminate. The hour meter will display a series of characters before displaying the actual accumulated number of operating hours.

6. Observe hour meter reading **(figure 9, item 7)**. Note that all required service must be done before operation.

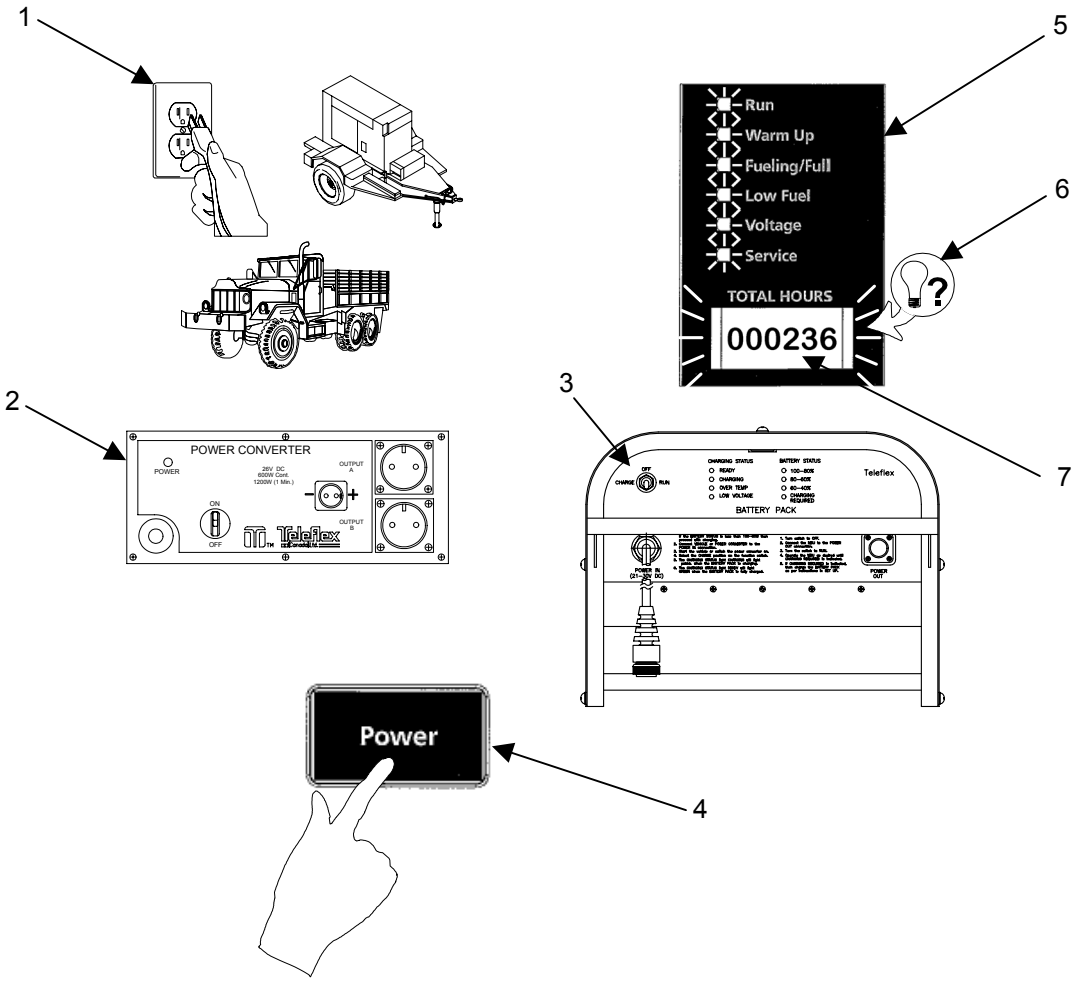


Figure 9. MBU and Associated Equipment Power-up Sequence

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

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. Failure to observe safety precautions may result in injury or death to personnel.

WARNING

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. Failure to observe safety precautions may result in injury or death to personnel.

NOTE

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

1. Position fuel container **(figure 10, item 1)** containing JP-8 fuel, equipped with a fuel can adapter **(figure 10, item 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.

2. Connect the coupling **(figure 10, item 3)** on the fuel supply hose to the fuel fill nipple **(figure 10, item 4)** on the MBU, then connect the connector on other end of the fuel supply hose to the hose connector **(figure 10, item 5)** on the fuel can adapter **(figure 10, item 2)**. The couplings of the fuel hose should snap onto the fuel fill nipple and adapter hose securely. Ensure that a positive connection is made to avoid fuel spill and ensure proper operation.

3. Open the manual vent cap **(figure 10, item 6)** of the fuel can adapter **(figure 10, item 2)**.

4. Be sure that the MBU is connected to a power source as described earlier and press the POWER button **(figure 10, item 7)** on the MBU. Check that the indicators flash and the hour meter illuminates.

5. Set the burner control **(figure 10, item 8)** to HIGH.

6. Press the FUEL button **(figure 10, item 9)**. 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.

7. When finished re-fueling, disconnect the fuel hose connector **(figure 10, item 3)** from the fuel fill nipple **(figure 10, item 4)** and adapter hose **(figure 10, item 5)**. Connect the two ends of the fuel supply hose together when not in use to prevent spillage and avoid contamination.

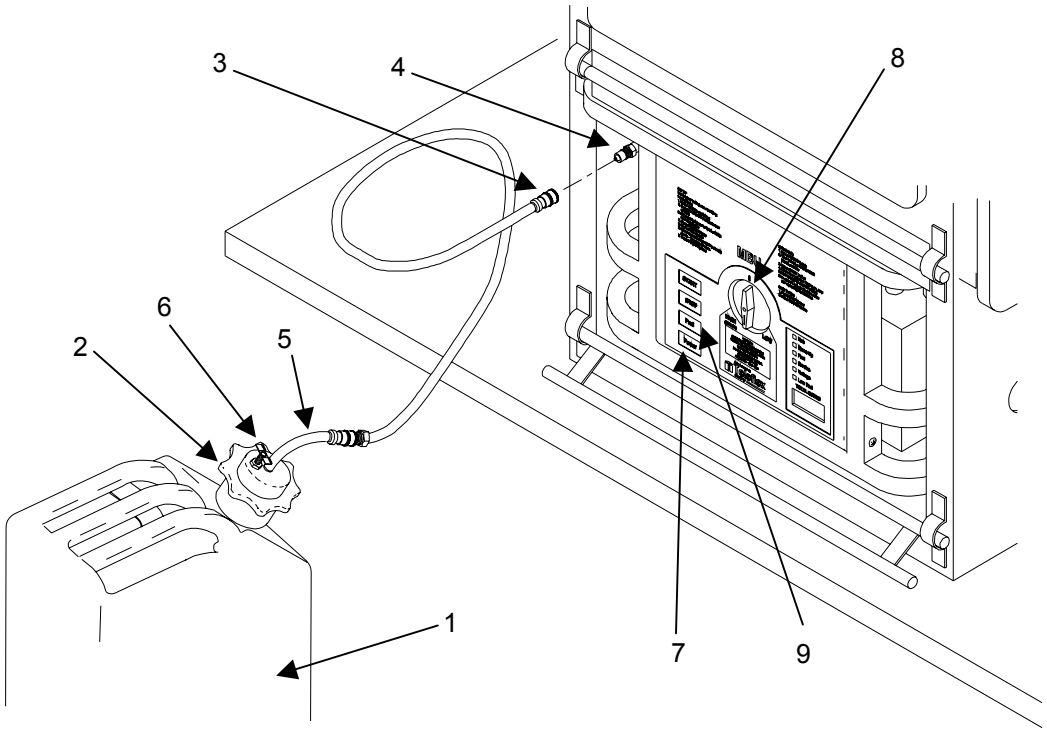


Figure 10. Powered Fueling of MBU

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

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. Failure to observe safety precautions may result in injury or death to personnel.

WARNING

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. Failure to observe safety precautions may result in injury or death to personnel.

WARNING

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.

1. In cases where the MBU is required to be fueled manually, petroleum absorbent material **(figure 11, item 1)** will be placed under the burner to catch any fuel that may be spilled.

2. 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.

3. To fuel manually, place the MBU **(figure 11, item 2)** on the absorbent material on its side so that the fill plug **(figure 11, item 3)** is on top as shown. Remove the fill plug.

4. Fill fuel tank using a fuel can equipped with spout **(figure 11, item 4)** to the bottom of filler neck opening with JP-8 or approved alternate diesel fuel, and re-install fill plug **(figure 11, item 3)**.

5. 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.

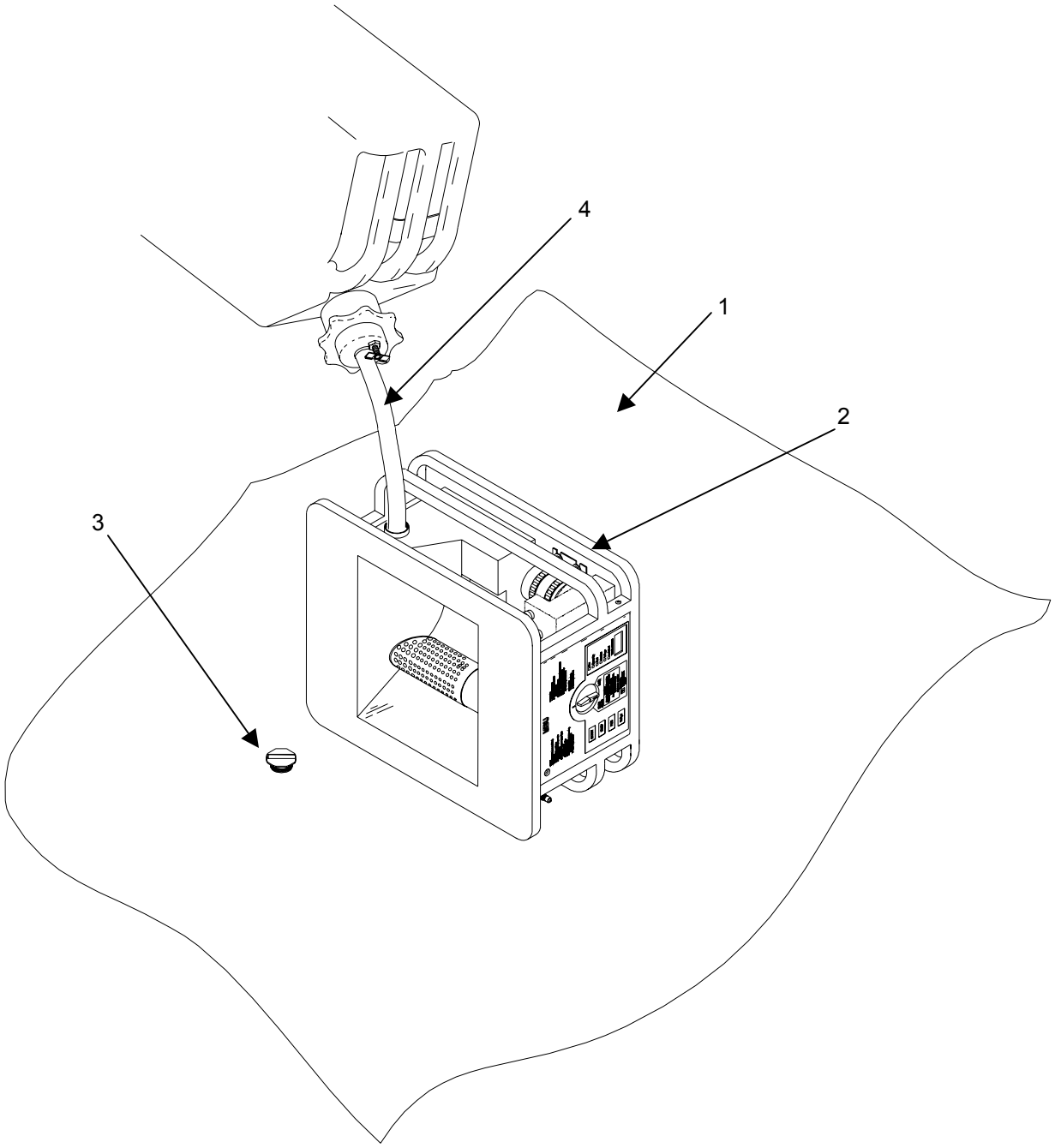


Figure 11. Manual Fueling Procedure

MBU OPERATING PROCEDURES

WARNING

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. Failure to observe safety precautions may result in injury or death to personnel.

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

1. 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.

2. Turn Burner Control to HIGH (START) position.

NOTE

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.

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

4. 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 22,000 BTUH to 52,000 BTUH (15,000 BTUH to 52,000 BTUH for MBU-V3).

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.

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 stop the fuel flow 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 22VDC or greater than 29.5VDC. The indicator will light red and the system will shut-down. The power source should immediately be checked in the sequence listed below.

1. If commercial or generator supplied power is used:

   a. Verify that power source is supplying 110VAC.

b. Verify that power converter main power switch is ON.

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

d. If problem cannot be resolved refer to troubleshooting instructions in WP 0008 00.

2. If vehicle or battery power is used:

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

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

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

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

3. If problem cannot be resolved refer to troubleshooting instructions in WP 0008 00.

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 0008 00.

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 turns 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 3½ 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 7-½ minutes			
- red (blinking)	For 7-½ minutes			
- red (steady)	On MBU shutdown, ½ hour from when LOW FUEL initially blinked green.			
VOLTAGE (red)	At an automatic shutdown when supply voltage falls to less than 22VDC or greater than 29.5VDC.	Check power source for proper operation.	N/A	Check power source for proper operation.
SERVICE (red)		Troubleshoot the problem (WP 0008 00). Attempt a re-start of MBU.		
HOUR METER BACK LIGHT -green	When power is on.	N/A	N/A	N/A

DECALS AND INSTRUCTION PLATES

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

MBU

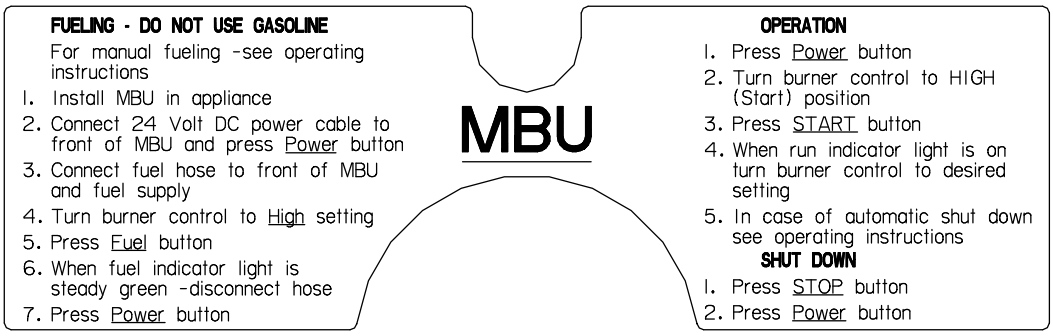


Figure 12. MBU Control Panel Set Up, Operation, and Shut Down Label

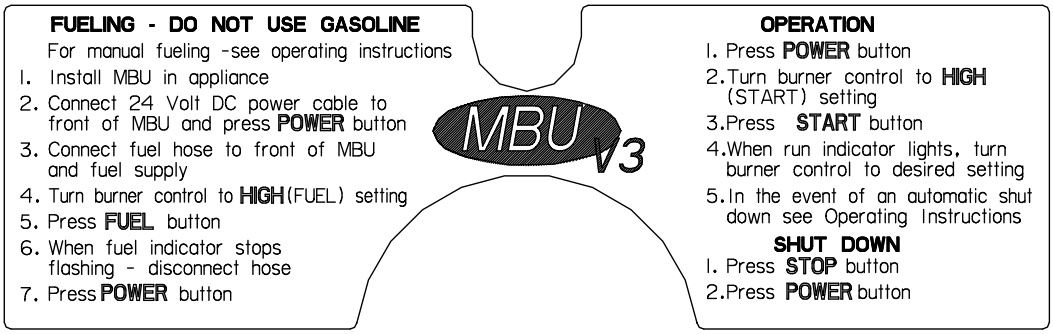


Figure 13. MBU-V3 Control Panel Set Up, Operation, and Shut Down Label

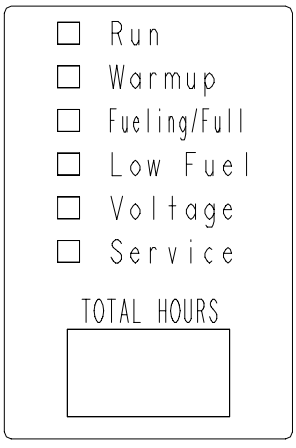


Figure 14. Control Panel Indicator Label

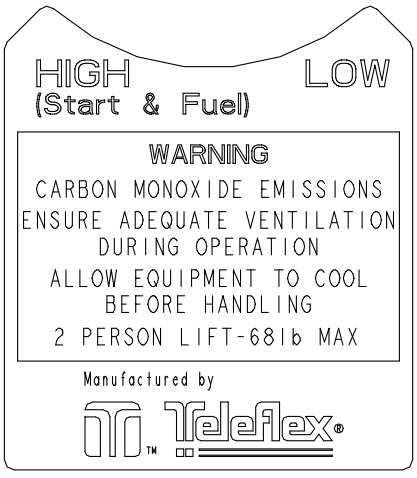


Figure 15. Burner Control Valve Label

POWER CONVERTER

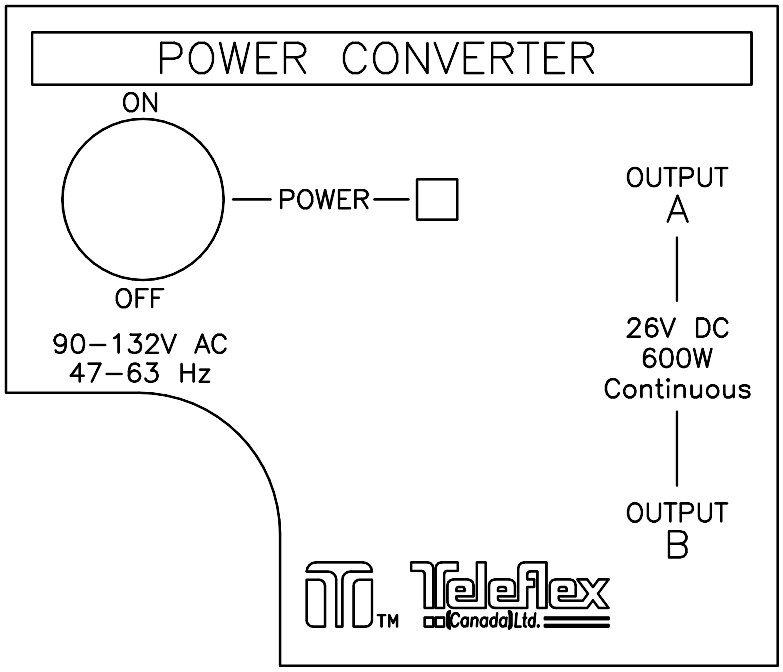


Figure 16. Power Converter Front Panel Label (Model MS0150)

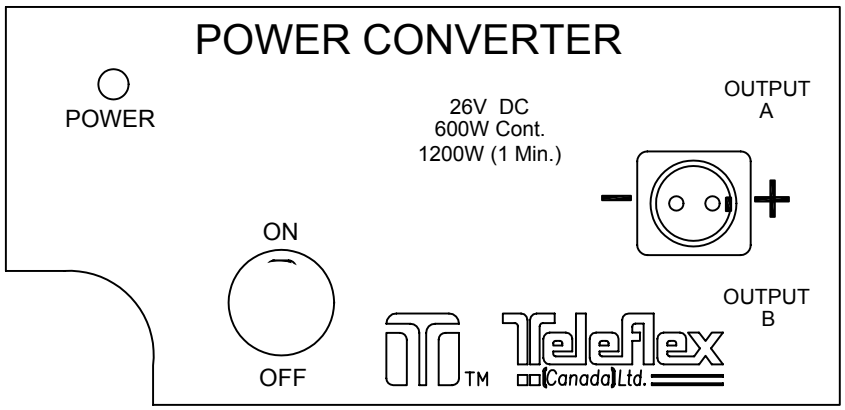


Figure 17. Power Converter Front Panel Label (Model MS0160)

BATTERY PACK

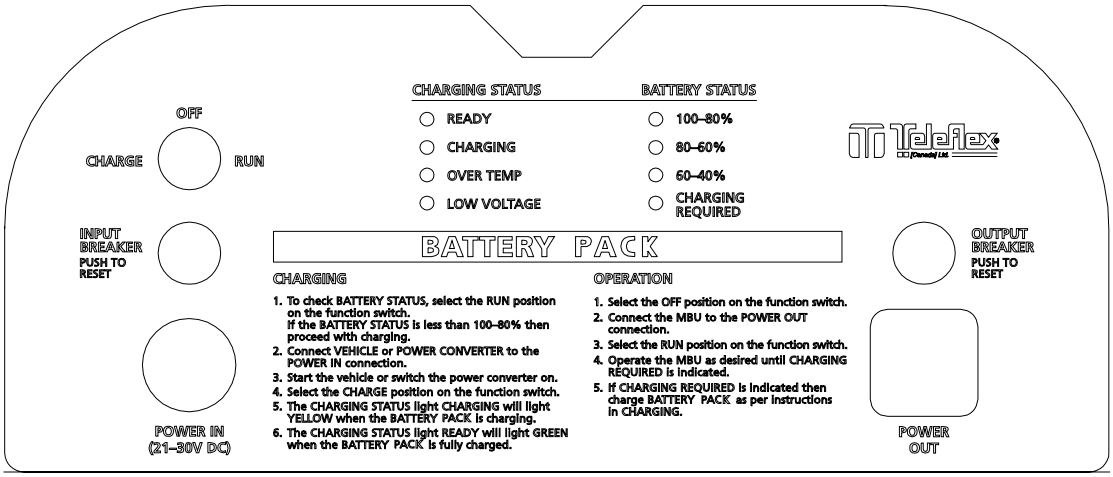


Figure 18. Battery Pack Control Panel Label

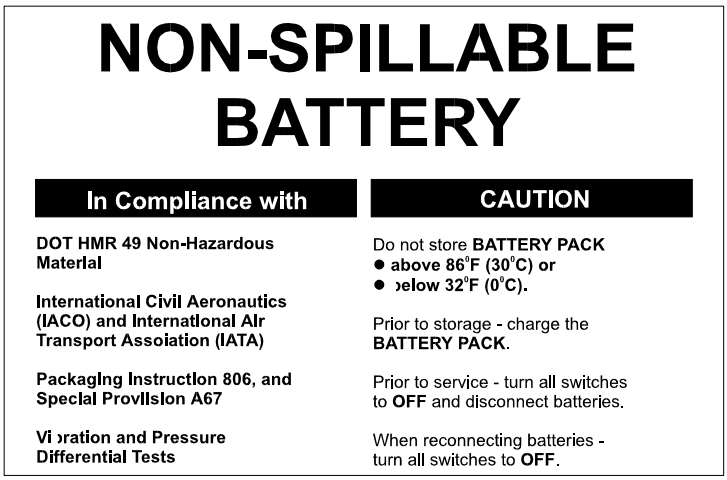


Figure 19. Battery Pack Non-Spillable Battery Outer Cover Label

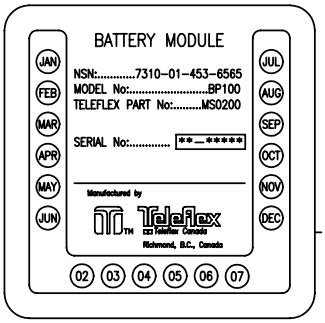


Figure 20. Battery Pack Identification Plate

BATTERY PACK OPERATING PROCEDURES

WARNING

The Battery Pack weighs approximately 93 pounds (42.2 kg). Two persons must carry the Battery Pack, lifting with legs, not back, to prevent injury.

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 three MBUs simultaneously for three hours at an ambient temperature of 60^0F (15.5^0C), and a period of two hours at an ambient temperature of -25^0F (-32^0C). The batteries are rechargeable through the standard NATO vehicle power connector in three 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 Battery Status lights indicate the status of the batteries. The percentage displayed indicates the amount of charge remaining.

1. To use the battery pack proceed as follows:

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

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

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

2. To re-charge the battery pack proceed as follows:

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

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

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

    d. Start the vehicle engine.

    e. 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.

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

    g. 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 MBU's 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

1. 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.
2. Push the POWER button to turn off power to the MBU (the hour meter background light will turn off)
3. Place power converter (or battery pack) switch to the OFF position.
4. Disconnect power converter (or battery pack) from power source.
5. Disconnect Battery Pack from vehicle (if NATO Adapter Cable is used).
6. Disconnect 110VAC extension cord from power converter.
7. Disconnect NATO Adapter Cable form Battery Pack.
8. Disconnect 24VDC extension and branch cables

END OF WORK PACKAGE

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
OPERATION UNDER UNUSUAL CONDITIONS

SECURITY MEASURES FOR ELECTRONIC DATA

There are no security measures for electronic data required for the MBU or MBU V-3.

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:

1. If possible, position burner with the control panel facing into the wind.
2. Keep burners and associated equipment under cover or indoors when not in use.
3. Follow service procedures; inspect air filter after every use, and replace air filter as necessary. Clean fuel nozzle at every air filter change.
4. Ensure fuel storage cans are tightly capped prevent fuel from being contaminated by dust.
5. Wipe equipment down more frequently.
6. 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:

1. Check cables for secure connections.
2. Avoid letting cable connections remain in running or standing water.
3. Keep components protected from rain wherever possible.
4. Follow service procedures; replace air filter and fuel nozzle more frequently as needed.

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

- Keep battery pack under cover whenever possible.
- Protect fuel supply from exposure to extreme cold whenever possible.
- Clean fuel nozzle as often as necessary.
- Check air vents on fuel regulator and vent valve orifice frequently; clean if necessary.

Extreme Heat
During operation in extremely hot conditions:

- Keep equipment shaded whenever possible.
- Do not touch hot metal surfaces with bare hands.
- 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.

Nuclear, Biological, and Chemical (NBC) Decontamination
Perform interim decontamination procedures in accordance with FM 3-5 as the mission, resources, and tactical situation permit.

WARNING

For immediate decontaminating procedures use ONLY hot soapy water for spot decontamination of hot surfaces of the MBU. Shut down and cool the MBU for any additional decontamination procedures. DO NOT spray DS2 or any other combustible decontamination solutions or compounds on an operating MBU. DO NOT spray DS2 or any other combustible decontamination solutions or compounds on any equipment surfaces or components where the operating temperatures reach or exceed the flashpoint of DS2 (160^{o} Fahrenheit or 71.1^{o} Celsius).

CHAPTER 3

OPERATOR TROUBLESHOOTING PROCEDURES FOR MODERN BURNER UNIT AND MODERN BURNER UNIT-V3

OPERATOR MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
MALFUNCTION SYMPTOM INDEX

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.

Table 1. Malfunction Symptom Index.

MALFUNCTION/SYMPTOM	WORK PACKAGE/PAGE NUMBER
1. Burner Will Not Start or Shuts Down During Operation	0008 00-2
2. Burner Runs Poorly, But Does Not Shut Down	0008 00-3
3. Burner Will Not Refuel	0008 00-4
4. Controller Error Codes	0008 00-5

OPERATOR MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
TROUBLESHOOTING PROCEDURES

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 that 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

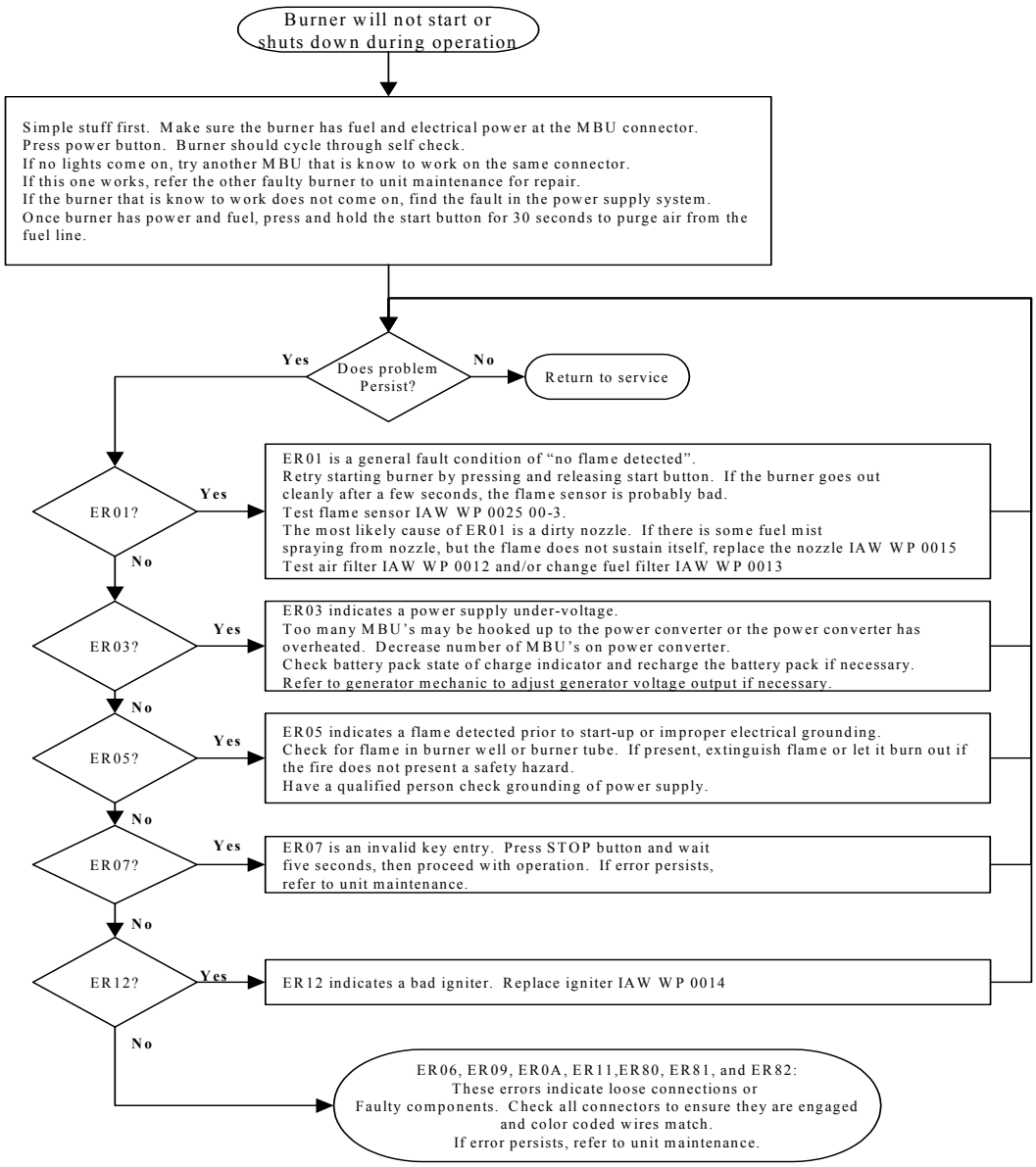
This manual cannot list all malfunctions that may occur, or all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, notify unit maintenance.

THIS PROCEDURE COVERS:

1. Burner Will Not Start or Shuts Down During Operation

INITIAL SETUP:

Maintenance Level	**Materials/Parts**
Operator	None

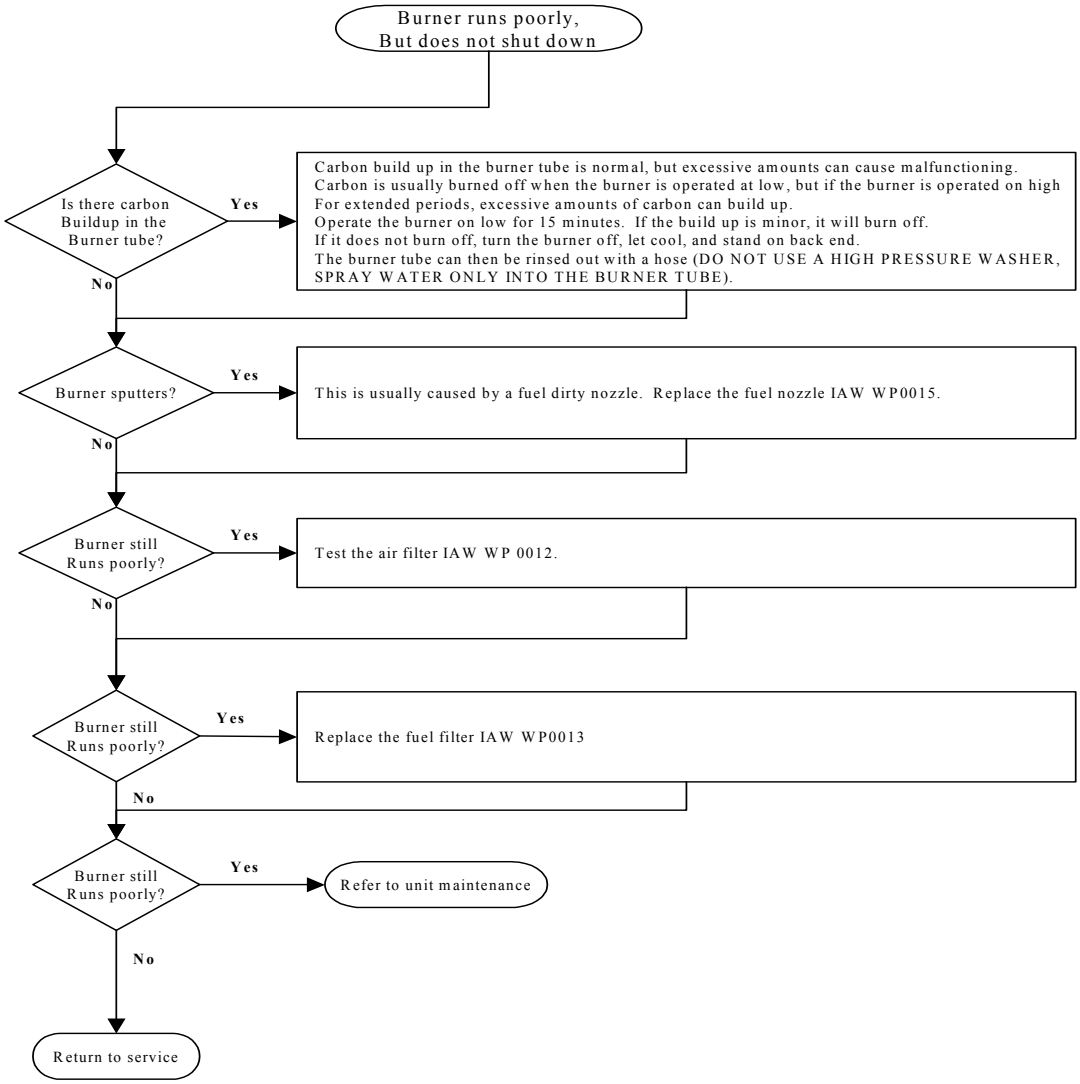


THIS PROCEDURE COVERS:

2. Burner Runs Poorly, But Does Not Shut Down

INITIAL SETUP:

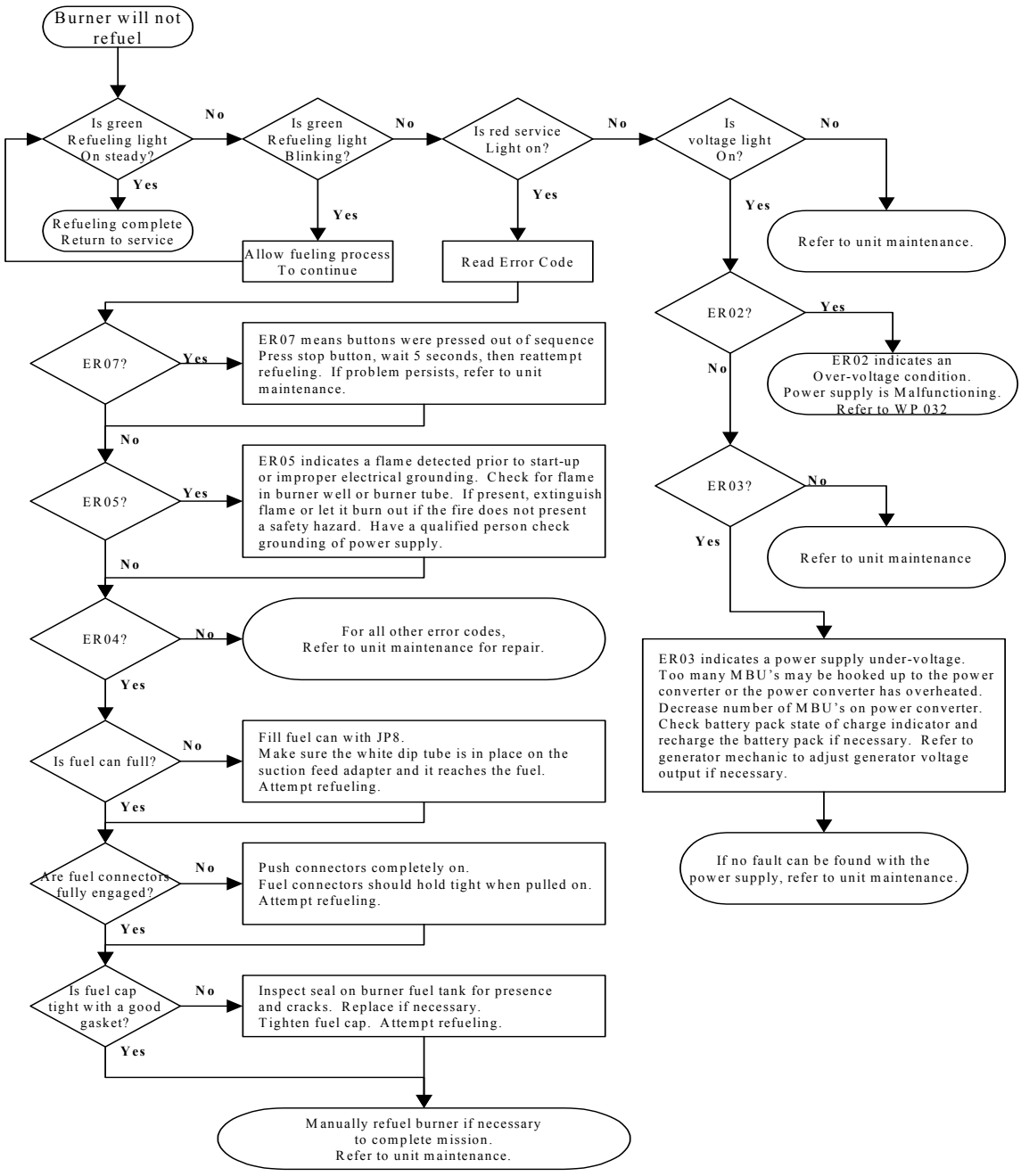
Maintenance Level	**Materials/Parts**
Operator	None



THIS PROCEDURE COVERS:
3. Burner Will Not Refuel

INITIAL SETUP:

Maintenance Level	**Materials/Parts**
Operator	None



THIS PROCEDURE COVERS:
4. 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 will serve as an aid in narrowing down the source of the malfunction when used with troubleshooting flow charts 0008-002 through 0008-004.

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 after 4 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. **NOTE** This error may also be caused by a faulty ground.
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 Igniter	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

CHAPTER 4

OPERATOR MAINTENANCE INSTRUCTIONS FOR MODERN BURNER UNIT AND MODERN BURNER UNIT-V3

OPERATOR MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) INTRODUCTION

Introduction, PMCS Procedures

INITIAL SETUP:
MBU Shut-down and cool

Maintenance Level
Operator/Unit

Tools and Special Tools
Brush, Acid Swabbing (Item 2, Table 1, WP 0066 00)

Materials/Parts
Wiping Rags
(Item 5, Table 1, WP 0066 00)

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, and fuel lines.
- Power converter external damage, serviceability of connectors, power cord, and controls.
- External damage to battery pack, condition of batteries, controls, and connectors.
- 110VAC and 24VDC 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

NOTE

MBU, power converter, and/or battery pack must be powered down and cool before cleaning. MBU must be removed from food service equipment before 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 soapy, damp rag or brush. The burner is designed to withstand being wet but DO NOT use a hose or pressure washer on the MBU, power converter or battery box. The burner top pan and tube must be kept clean at all times. Use a soapy rag, stainless steel, steel, or plastic scrubbing pad for this task. DO NOT use steel or stainless steel scrubbing pads on any surface other than the burner tube and top pan as they will become damaged. 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 soapy damp rag to remove dust and stains. Remove soapy residue from all components before returning to service by wiping with a clean damp cloth.

OPERATOR MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

GENERAL

This work package covers Preventative Maintenance Checks and Services (PMCS) for the MBU and MBU-V3. Also included are lubrication instructions and a list of mandatory replacement parts. Refer to WP 0009 00 for introductory information regarding PMCS before performing any PMCS procedures.

LUBRICATION INSTRUCTIONS

There are no lubrication instructions for the MBU or the MBU-V3.

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** 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 **(figure 1, item 1)** for damage, such as bent frame members, cracks, dents or broken welds. Check for damage to fuel connection (**figure 1, item 2)** and power connector (**figure 1, item 3)**. Check burner well (**figure 1, item 4)** for debris or food waste. Inspect fuel lines (**figure 1, item 5)** for leaks. Check control panel (**figure 1, item 6)** for damage. Check fuel cap (**figure 1, item 7)** to ensure the gasket is serviceable and in place, and the cap is tight.	Broken frame weld, fuel quick connect or power connector damaged or not secure. Food waste or debris in burner well. Fuel leak or control panel damaged.

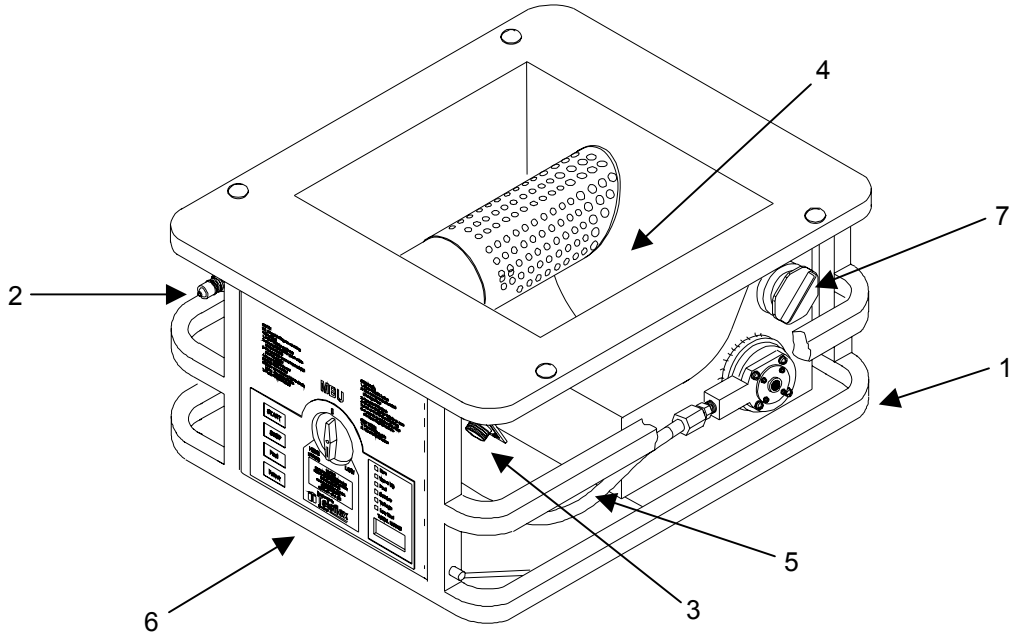


Figure 1. MBU "Before Operation" PMCS

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 **(figure 2, item 1)** for external damage, missing or frayed power cord **(figure 2, item 2)** damaged control panel **(figure 2, item 3)** or connectors **(figure 2, item 4)**.	Converter damaged, cooling fins bent, power cord missing or frayed, control panel or power connectors damaged.

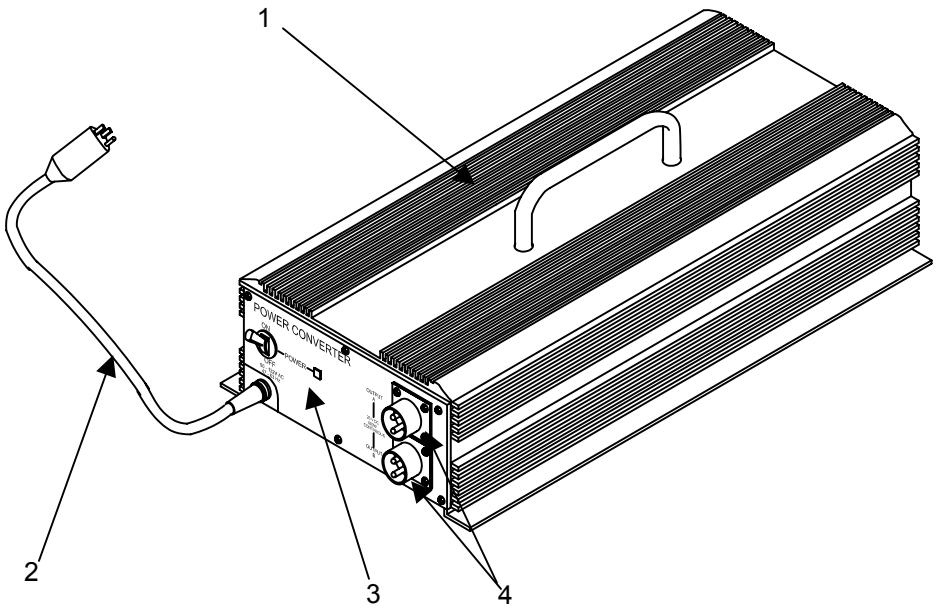


Figure 2. Power Converter "Before Operation" PMCS

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** The Battery Pack weighs approximately 93 pounds (42.2 kg). Two persons must carry the Battery Pack, lifting with legs, not back, to prevent injury. Inspect battery pack cover **(figure 3, item 1)** control panel **(figure 3, item 2)** and power connectors **(figure 3, item 3)** for damage. Check condition and charge status of batteries **(figure 3, item 4)**.	Control panel or power connectors damaged. Battery charge less than 40%.

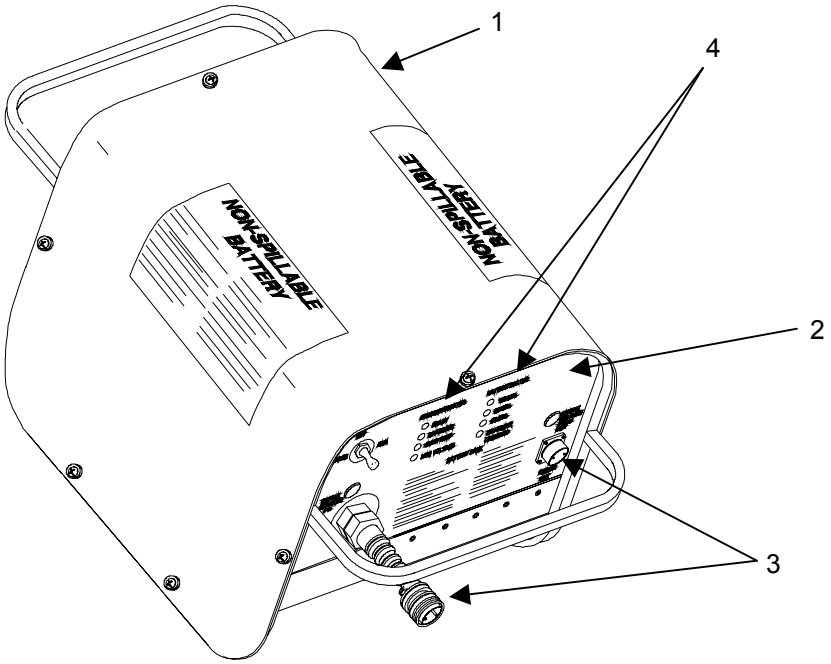


Figure 3. Battery Pack "Before Operation" PMCS

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		110VAC, 24VDC extension and branch cables. NATO adapter cable.	Inspect the power cables for frayed cable and damaged or dirty connectors.	Frayed cable. Missing or damaged power connectors.

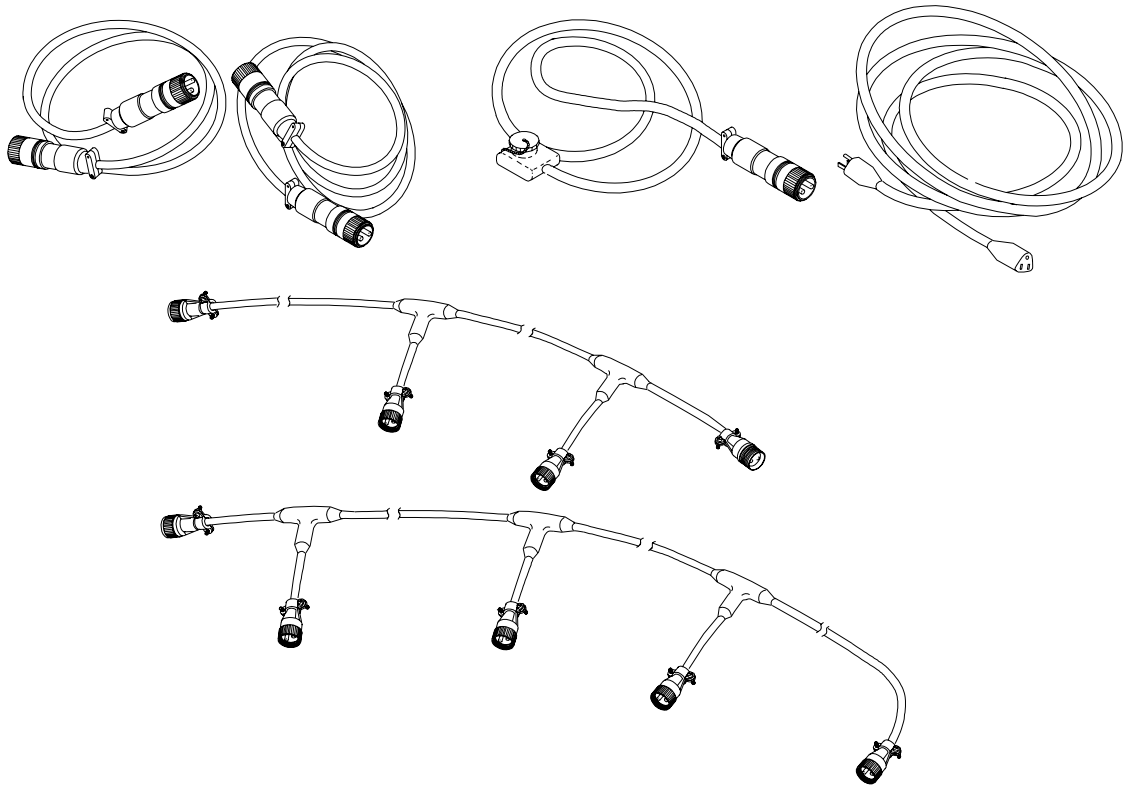


Figure 4. System Cables “Before Operation” PMCS

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 **(figure 5, item 1)** for cracks. Inspect the gasket inside the adapter **(figure 5, item 2)** for any cracks that would prevent a proper seal. Inspect the hose **(figure 5, item 3)** and fuel connector **(figure 5, item 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 **(figure 5, item 5)** for proper operation. Inspect the Fuel Hose **(figure 5, item 6)** for any cracking or other deterioration that would cause the hose to leak. Check the condition of the connection **(figure 5, item 7)** between the hose and the quick disconnect fitting **(figure 5, item 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.

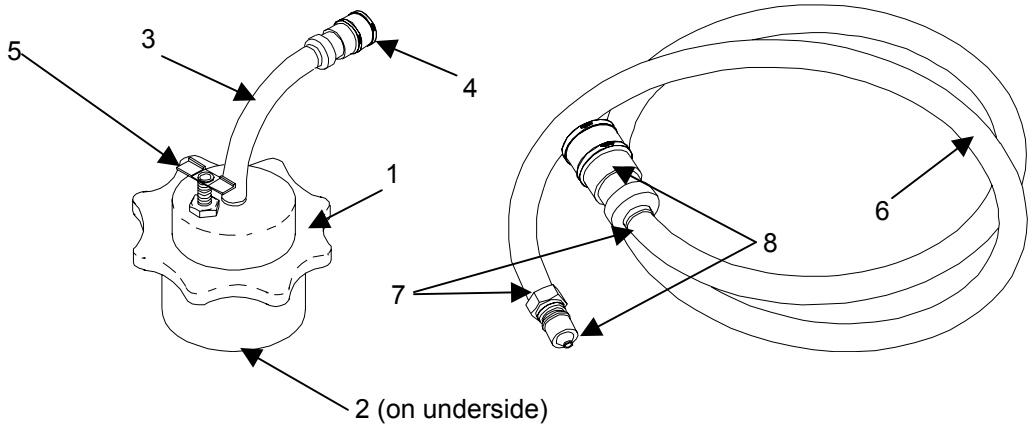


Figure 5. Fuel Can Adapter and Fuel Hose "Before Operation" PMCS

THIS SECTION COVERS:
During Operation PMCS Checks and Services

INITIAL SETUP:
MBU system 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:
5	During		MBU and Battery Pack	**WARNING** Use caution when performing maintenance tasks on an operating burner. Serious injury or death from burns may result if safety precautions are not observed. Monitor the control panel **(figure 6, item 1)** of the MBU for any fault indicators lit up. Respond as described in WP 0008 00. Check battery charge **(figure 6, item 2)** frequently. Recharge as necessary. Check Charging Status indicators **(figure 6, item 3)** for Overtemp or Low Charging Voltage fault indicator.	MBU out of fuel. Battery charge less than 40%. Battery Over Temp indicator lit. Indicator lit. Low Charging Voltage

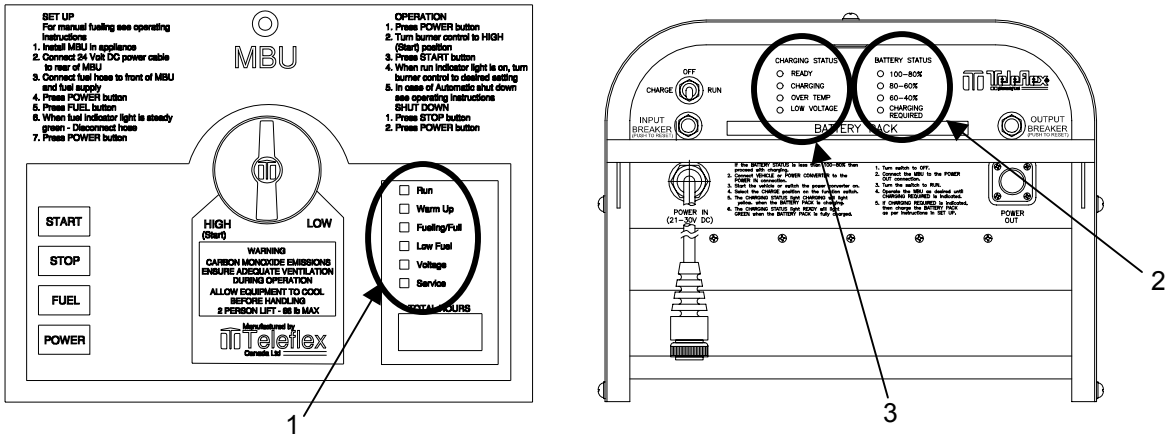


Figure 6. MBU and Battery Pack "During Operation" PMCS

THIS SECTION COVERS:
After Operation PMCS Checks and Services

INITIAL SETUP:
MBU System shut-down and cooled 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:
6	After		MBU and Battery Pack	 **WARNING** Let the MBU cool down before performing After Operation PMCS . Serious injury or death from burns may result if safety precautions are not observed.  **WARNING** The Battery Pack and MBU weigh approximately 93 and 58 pounds respectively. Two persons must carry each unit, lifting with legs, not back, to prevent injury. Inspect the MBU burner well **(figure 7, item 1)** for spilled food waste. Check the MBU for evidence of fuel leaks **(figure 7, item 2)**. Check Regulator Assembly Air Vent **(figure 7, item 3)**, and clean if necessary. Check Air Vent Assembly Orifice and filter **(figure 7, item 4)**, and clean if necessary. Check the battery charge **(figure 8, item 1)**. Clean equipment components and re-charge batteries if necessary. Check cables for any damage, and replace if necessary.	MBU 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.

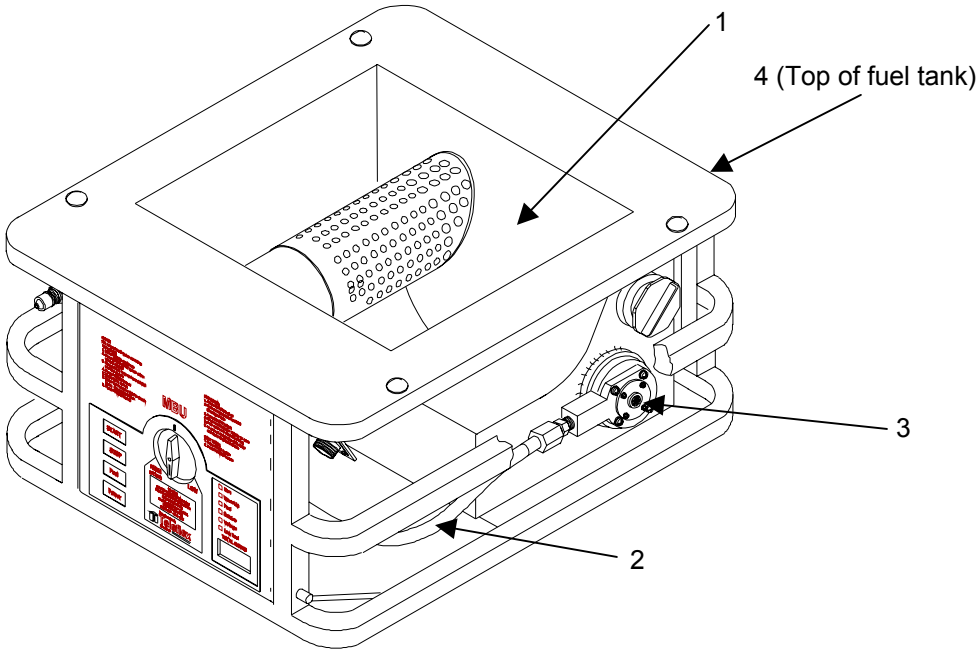


Figure 7. MBU "After Operation" PMCS

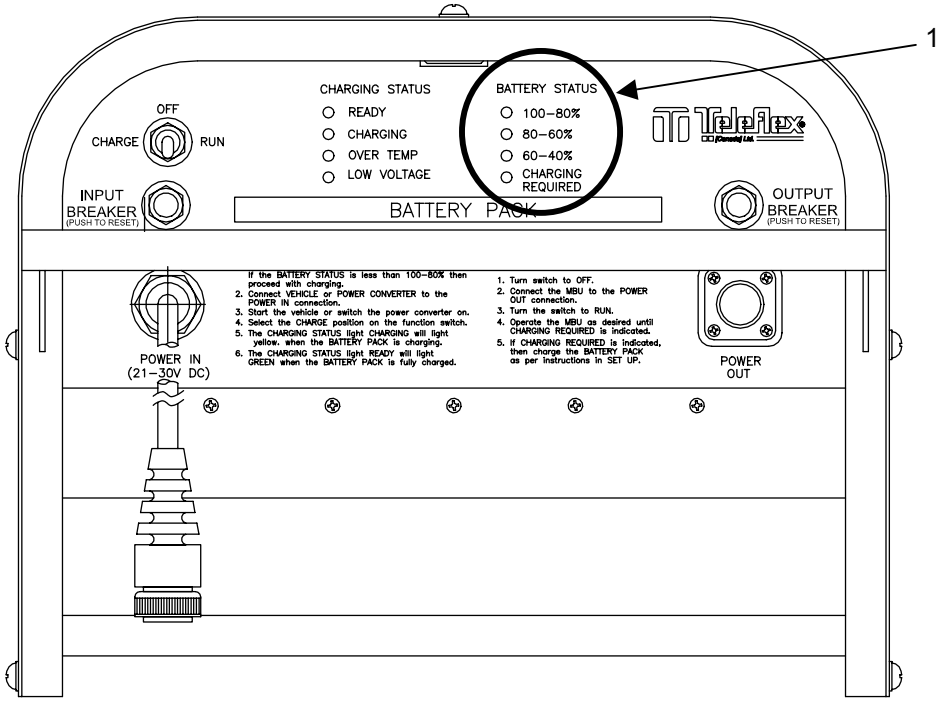


Figure 8. Battery Pack "After Operation" PMCS

Table 2. Mandatory Replacement Parts (Every 300 Hours of Operation).

Item No.	Part Number	NSN	Nomenclature	Qty
1	349930K	7310-01-462-4913	Filter, Air Inlet	1
2	953451K	7310-01-462-6765	Fuel Filter, Pickup (In-Tank Filter)	1

Table 3. Mandatory Replacement Parts (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 Assembly	1

OPERATOR MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
FUEL TANK
SERVICE

INITIAL SETUP

Tools
None Required

Personnel Required
Two

Materials/Parts
Fuel Can (Table 1, WP 0065 00)
Fuel Hose (Table 1, WP 0065 00)
Wiping Rags (Item 5, Table 1, WP 0066)

Equipment Condition
MBU shut down and cooled off.

SERVICE

Drain the 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

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. Failure to observe safety precautions may result in injury or death to personnel.

WARNING

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.

1. Place MBU on its left side so the fuel tank fill cap **(figure 1, item 1)** is on top.

2. Connect the fuel hose **(figure 1, item 2)** to the fuel fill quick disconnect **(figure 1, item 3)** on the burner, and connect the other end to the fuel can adapter **(figure 1, item 4)**. The fuel can **(figure 1, item 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.

3. Remove tank fill cap **(figure 1, item 1)**. Open manual relief vent **(figure 1, item 5)** on Fuel Can Adapter **(figure 1, item 4)**.

NOTE

Ensure the fill cap seal **(figure 1, item 7)** is serviceable. The fill cap seal must fully seal for the MBU to operate. Replace a worn or damaged seal.

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

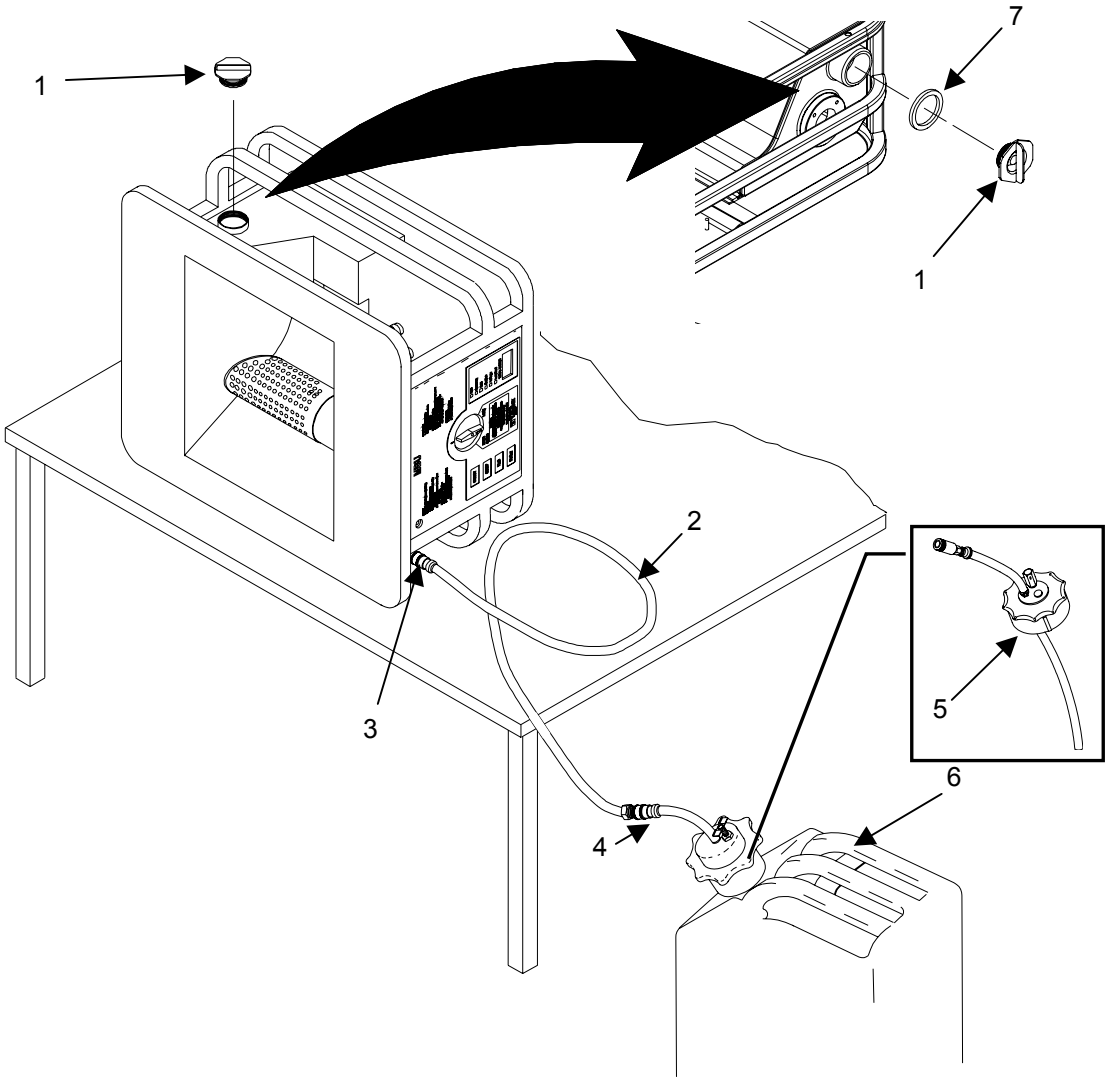


Figure 1. Drain the Fuel Tank

END OF WORK PACKAGE

OPERATOR MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
AIR FILTER
TEST, REPLACE

INITIAL SETUP

Tools	**Personnel Required**
None Required	Two
Materials/Parts	**Equipment Condition**
None Required	MBU shut down and cooled off

TEST

Air Filter Test

1. Start the MBU and observe the flame quality.
2. Open the control panel.
3. Loosen and remove air filter while the MBU is operating.
4. If the flame quality improves, shut down the MBU and replace air filter.
5. If flame quality remains constant, air filter does not require replacement.

REPLACE

Replace the Air Filter

The air filter is to be replaced after 300 hours operation. Replace the air filter more often in dusty or extremely humid conditions or whenever recommended as part of the troubleshooting procedures.

WARNING

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.

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

2. Grasp air filter **(figure 1, item 4)** and rotate counterclockwise (hold body of solenoid to prevent turning) to unscrew from the threaded fitting **(figure 1, item 5)** on the air/fill solenoid valve of the fuel delivery block **(figure 1, item 3)**.

3. Screw the new air filter **(figure 1, item 4)** onto the threaded fitting **(figure 1, item 5)** until it is securely in place. Hand tighten the air filter.

4. Close and secure front panel **(figure 1, item 1).**

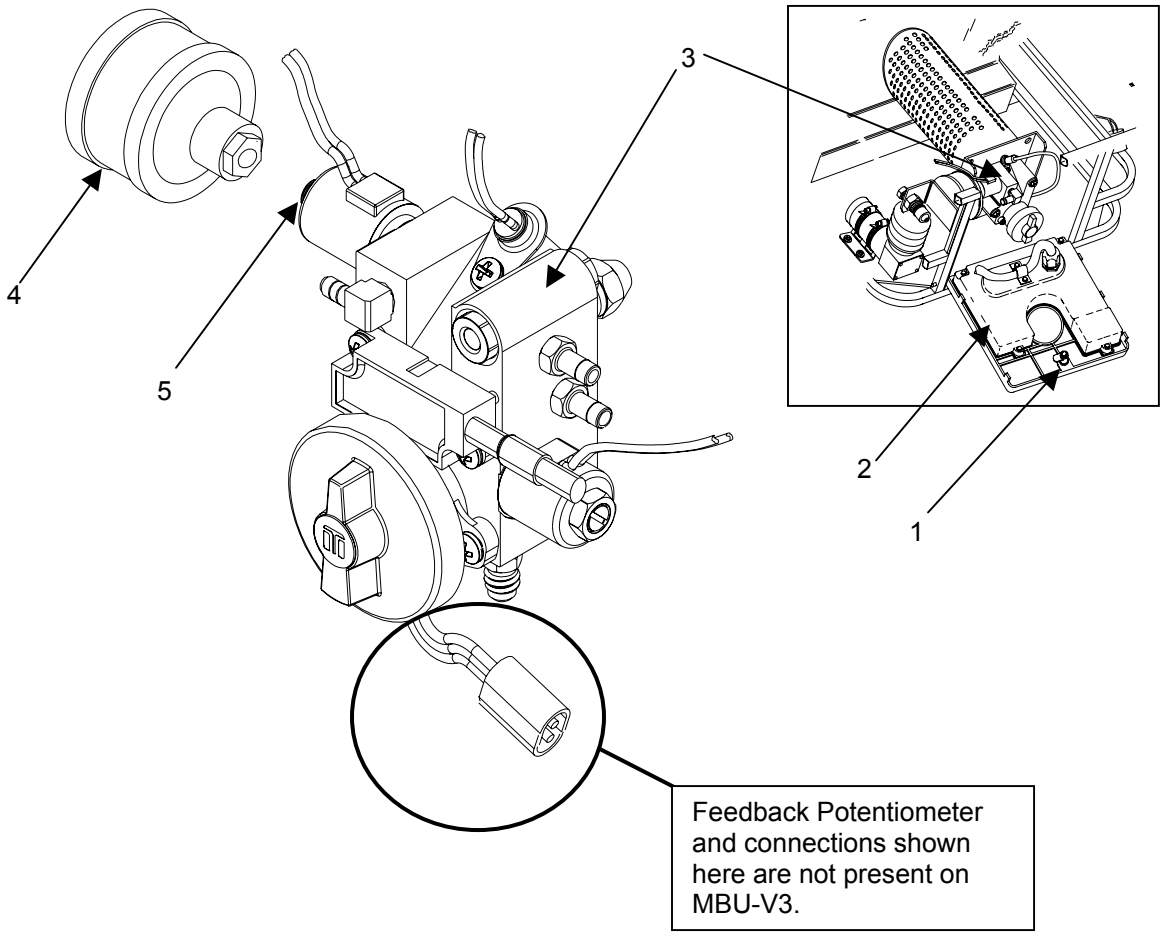


Figure 1. Replace the Air Filter

END OF WORK PACKAGE

OPERATOR MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
FUEL FILTER
REPLACE

INITIAL SETUP

Tools
Screwdriver, Cross-tipped, TM 10-7360-226-13&P, WP 0049 00, (CK users)
Screwdriver, Cross-tipped, TM 10-7360-208-13&P, Appendix C, Section III, (MFK users)
Screwdriver, Cross-tipped, TM 10-7360-204-13&P, Appendix D, Figure D-3, (All other users: M59, MKT, KCLFF)
Brush, Acid Swabbing (Item 2, Table 1, WP 0065 00)

Personnel Required
One

Materials/Parts
O-Ring (Item 3, Table 1, WP 0066 00)
Wiping Rags (Item 5, Table 1, WP 0065 00)
Fuel Can (Table 1, WP 0064 00)

Equipment Condition
MBU shut down and cooled off.
Drain MBU fuel tank.

REPLACE

Replace the Pickup Fuel Filter

The pickup fuel filter is to be replaced after 300 hours operation. Replace the pickup fuel filter on the regulator assembly more often in dusty or extremely humid conditions or whenever recommended as part of a troubleshooting procedure.

WARNING

Before proceeding with this procedure, the MBU fuel tank must be drained completely as described in WP 0011 00. 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. Failure to observe safety precautions may result in injury or death to personnel.

1. Remove four screws **(figure 1, item 1)** holding fuel regulator assembly **(figure 1, item 2)** to tank **(figure 1, item 3)**.
2. Remove fuel regulator assembly **(figure 1, item 2)** from tank **(figure 1, item 3)** as shown.
3. Discard O-ring **(figure 1, item 4)**.
4. Pull fuel filter **(figure 1, item 5)** off the regulator shaft **(figure 1, item 6)**.
5. Install new fuel filter **(figure 1, item 5)** onto regulator shaft **(figure 1, item 6)**.
6. Lubricate new O-ring **(figure 1, item 4)** with clean fuel, and install new O-ring.
7. Check the fuel regulator air vent **(figure 1, item 7)** 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.

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

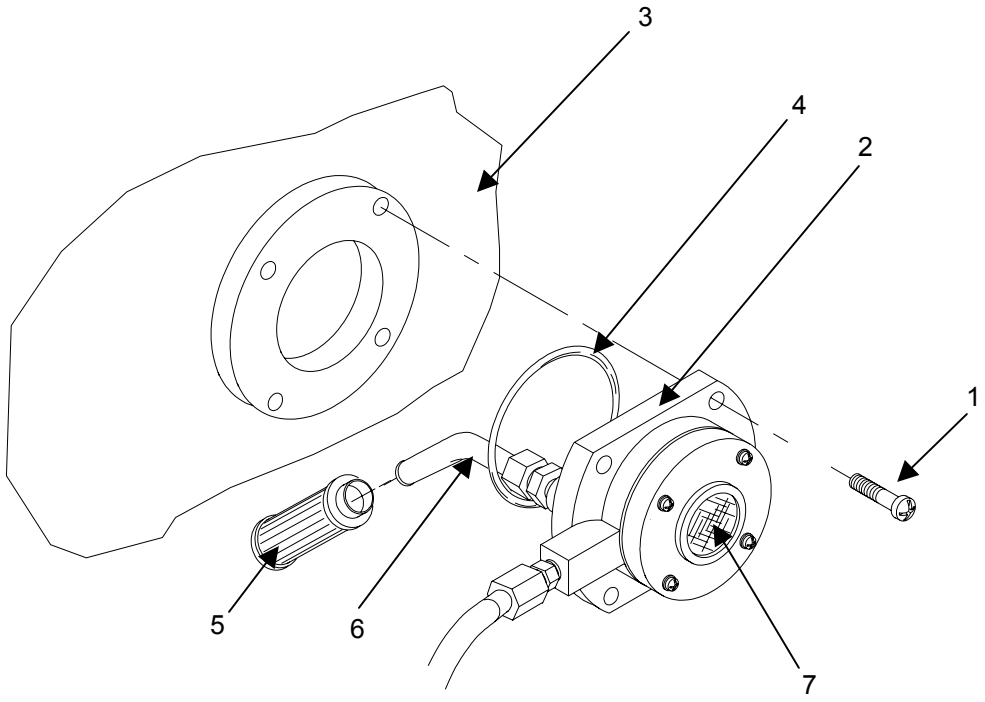


Figure 1. Replace the Pickup Fuel Filter

END OF WORK PACKAGE

OPERATOR MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
IGNITOR
REPLACE

INITIAL SETUP

Tools
Screwdriver, Cross-tipped, TM 10-7360-226-13&P, WP 0049 00, (CK users)
Screwdriver, Cross-tipped, TM 10-7360-208-13&P, Appendix C, Section III, (MFK users)
Screwdriver, Cross-tipped, TM 10-7360-204-13&P, Appendix D, Figure D-3, (All other users: M59, MKT, KCLFF)

Tools - Continued
Nutdriver, $^{7}/_{16}$-inch, TM 10-7360-226-13&P, WP 0049 00, CK users
Nutdriver, $^{7}/_{16}$-inch, TM 10-7360-208-13&P, Appendix C, Section III, MFK users
Nutdriver, $^{7}/_{16}$-inch, TM 10-7360-204-13&P, Appendix D, Figure D-3, (All other users: M59, MKT, KCLFF)

Materials/Parts
Wiping Rags (Item 5, Table 1, WP 0066 00)

Personnel Required
One

Equipment Condition
MBU shut down and cooled off.

REPLACE

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

WARNING

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.

1. Turn the locking latch counterclockwise and open MBU control panel **(figure 1, item 1)** to gain access to the fuel delivery block **(figure 1, item 2)**.

2. Remove two hex nuts and washers **(figure 1, item 3)** securing fuel delivery block **(figure 1, item 2)** to the burner tube **(figure 1, item 4)**.

3. Disconnect ignitor assembly wire **(figure 1, item 6)**.

4. Move fuel delivery block **(figure 1, item 2)** to expose ignitor **(figure 1, item 5)**.

5. Remove ignitor retainer screw **(figure 1, item 7)** and remove ignitor **(figure 1, item 5)** and bracket from the fuel delivery block **(figure 1, item 2)**. Note routing of ignitor cable.

CAUTION

When replacing the nozzle, be careful not to damage the ignitor.

6. Open electrical cable clamp to release ignitor assembly wire.

7. Disconnect ignitor power lead.

8. Install new ignitor assembly **(figure 1, item 5)**, and tighten the retainer screw **(figure 1, item 7)**.

9. Connect the ignitor power lead into light blue connector **(figure 1, item 6)**. Route ignitor cable as previously noted.

10. Move fuel delivery block **(figure 1, item 2)** into position and replace and tighten two hex nuts and washers **(figure 1, item 3)** while holding the block against the burner tube assembly **(figure 1, item 4)**.

11. Close control panel **(figure 1, item 1)**, and secure.

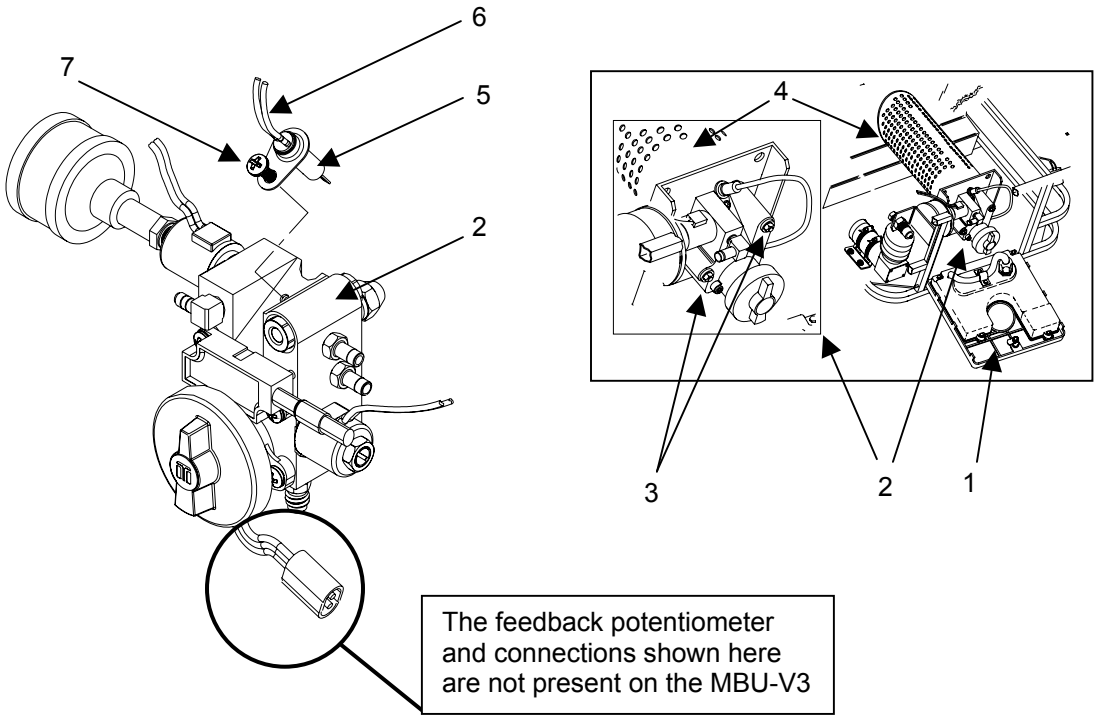


Figure 1. Replace the Ignitor Assembly

END OF WORK PACKAGE

OPERATOR MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
FUEL NOZZLE
REPLACE

INITIAL SETUP

Tools
Nutdriver, $^{7}/_{16}$-inch, TM 10-7360-226-13&P, WP 0049 00, CK users
Nutdriver, $^{7}/_{16}$-inch, TM 10-7360-208-13&P, Appendix C, Section III, MFK users
Nutdriver, $^{7}/_{16}$-inch, TM 10-7360-204-13&P, Appendix D, Figure D-3, (All other users: M59, MKT, KCLFF)

Tools - Continued
Wrench, Open End, TM 10-7360-226-13&P, WP 0049 00, CK users
Wrench, Open End, TM 10-7360-208-13&P, Appendix C, Section III, MFK users
Wrench, Open End, TM 10-7360-204-13&P, Appendix D, Figure D-3, (All other users: M59, MKT, KCLFF)

Materials/Parts
Fuel Can (Table 1, WP 0065 00)
Wiping Rags (Item 5, Table 1, WP 0066 00)

Personnel Required
One

Equipment Condition
MBU shut down and cooled off.
Fuel tank drained.

REPLACE

Replace the Fuel Nozzle

Replace the nozzle every 2000 hours of operation or whenever recommended as part of a troubleshooting procedure.

WARNING

Before proceeding with this procedure, the MBU fuel tank must be drained completely as described in WP 0011 00. 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. Failure to observe safety precautions may result in injury or death to personnel.

WARNING

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.

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

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

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

CAUTION

When replacing the nozzle, be careful not to damage the ignitor.

4. Unscrew the nozzle **(figure 2, item 5)** from the fuel delivery block **(figure 2, item 2)**.

5. Lubricate the O-ring **(figure 2, item 6)** on the replacement fuel nozzle **(figure 2, item 5)** with a small amount of clean fuel. The O-ring is supplied in place on the fuel nozzle.

6. Screw the replacement fuel nozzle **(figure 2, item 5)** into the fuel delivery block **(figure 2, item 2).**

7. With the replacement nozzle **(figure 2, item 5)** installed, move the fuel delivery block **(figure 2, item 2)** into position. Replace tighten two hex nuts and washers **(figure 2, item 3)** securing them tightly to the burner tube **(figure 2, item 4)**.

8. Close control panel **(figure 2, item 1)** and secure.

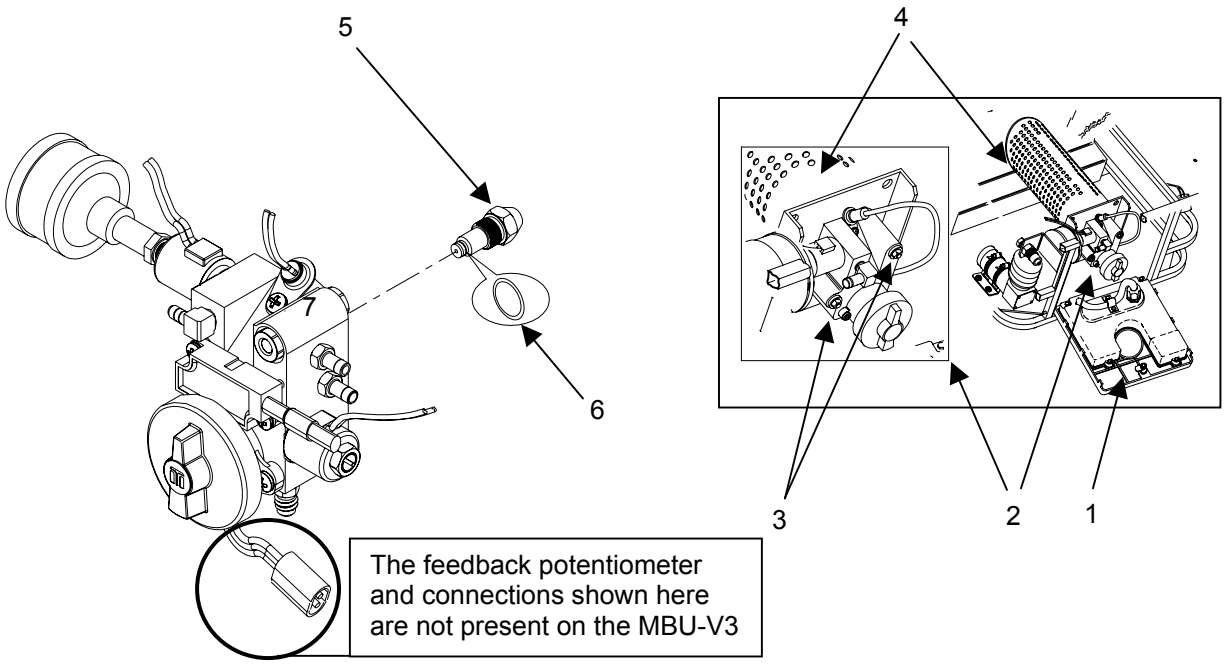


Figure 2. Replace the Fuel Nozzle

END OF WORK PACKAGE

OPERATOR MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
VENT VALVE ASSEMBLY
SERVICE

INITIAL SETUP

Tools	**Personnel Required**
Brush, Acid Swabbing (Item 2, Table 1, WP 0066 00)	One
Materials/Parts	**Equipment Condition**
Wiping Rags (Item 5, Table 1, WP 0066 00)	MBU shut down and cooled off.

SERVICE

Clean the Vent Valve Assembly Orifice

1. Locate the Air Vent Assembly **(figure 1, item 1)** on the top surface of the fuel tank **(figure 1, item 2)**. The Air Vent Orifice **(figure 1, item 3)** is the $^{3}/_{8}$ -inch diameter hole located on the side of the assembly facing the rear of the MBU.

2. Ensure that the orifice **(figure 1, item 3)** is clear of any dust or debris as this would prevent venting of the fuel tank and affect fuel flow. Use a small cleaning brush to clean the debris out of the orifice. **DO NOT** use any tool or object that would push any debris further into the orifice.

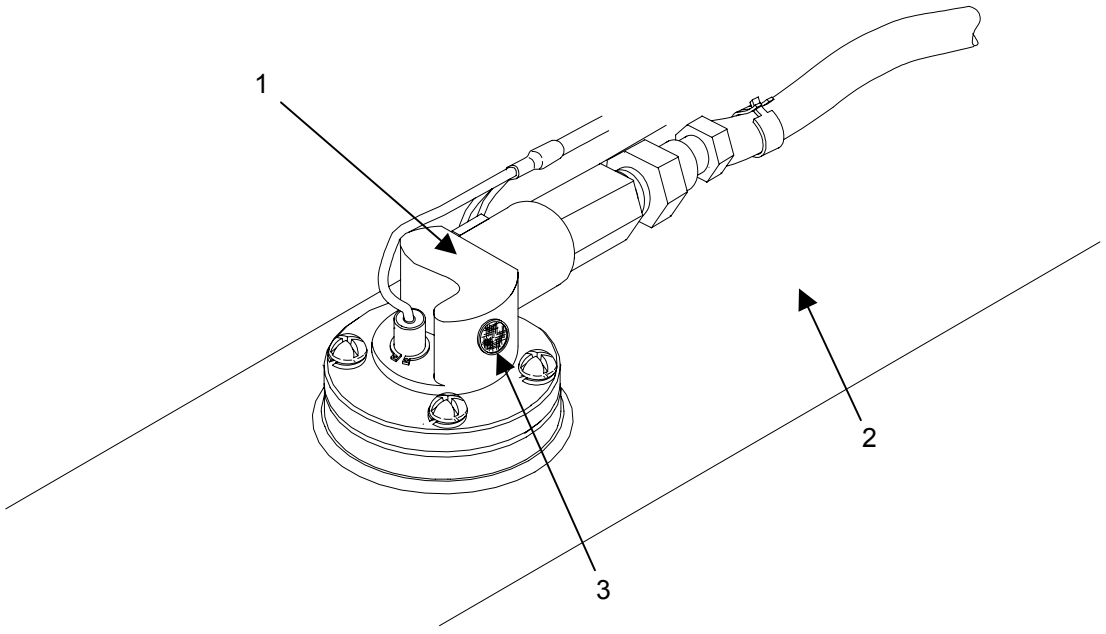


Figure 1. Clean the Vent Valve Assembly Orifice

END OF WORK PACKAGE

OPERATOR MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
FUEL REGULATOR ASSEMBLY AIR VENT SERVICE

INITIAL SETUP

Tools	**Personnel Required**
Acid Swabbing Brush (Item 2, Table 1, WP 0066 00)	One
Materials/Parts	**Equipment Condition**
Wiping Rags (Item 5, Table 1, WP 0066 00)	MBU shut down and cooled off.

SERVICE

Clean the Fuel Regulator Assembly Air Vent

1. Locate the Regulator Assembly Air Vent **(figure 1, item 1)** on the right side of the fuel tank **(figure 1, item 2)** just below and to the left of the fuel tank filler cap. The air vent is located on the top center of the assembly and is a gold colored metallic material.

2. Ensure that the vent **(figure 1, item 1)** is clean and unobstructed by using a small cleaning brush to gently remove any dirt or debris that might be found.

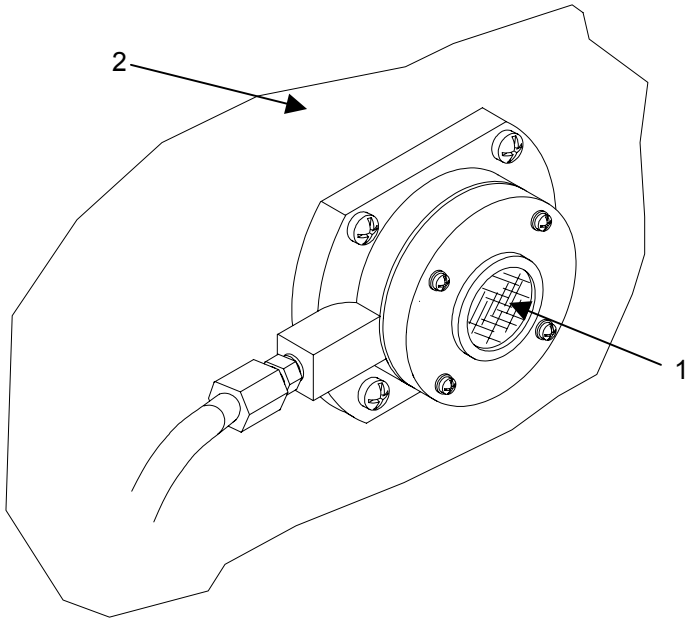


Figure 1. Clean the Fuel Regulator Assembly Air Vent

END OF WORK PACKAGE

CHAPTER 5

UNIT MAINTENANCE TROUBLESHOOTING PROCEDURES FOR MODERN BURNER UNIT AND MODERN BURNER UNIT-V3

UNIT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
MALFUNCTION SYMPTOM INDEX

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.

Table 1. Malfunction Symptom Index.

MALFUNCTION/SYMPTOM	WORK PACKAGE/PAGE NUMBER
1. Burner Will Not Start Or Shuts Down During Operation	0019 00-2
2. Burner Will Not Refuel	0019 00-3
3. Burner Runs Poorly	0019 00-4

UNIT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
TROUBLESHOOTING PROCEDURES

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 that 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

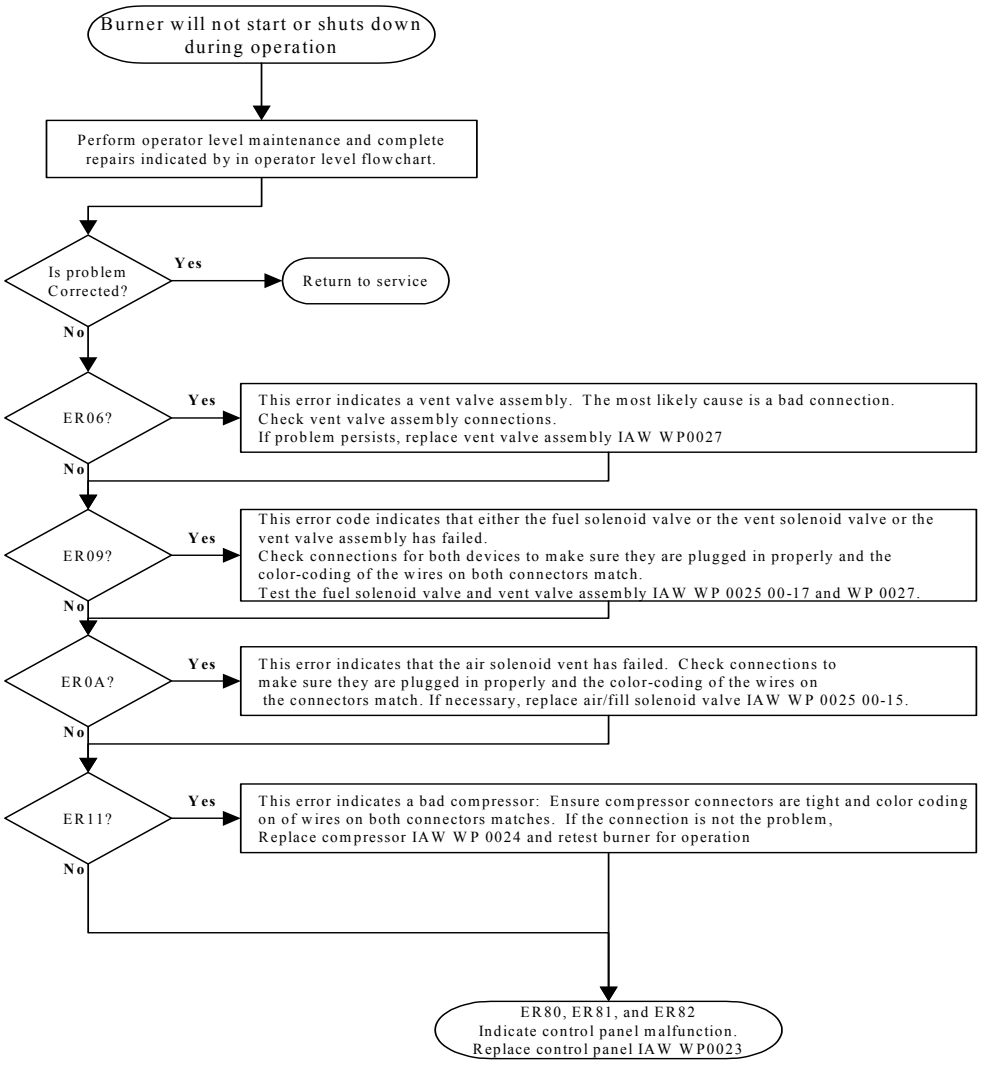
This manual cannot list all malfunctions that may occur, or all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, notify unit maintenance.

THIS PROCEDURE COVERS:

1. Burner Will Not Start Or Shuts Down During Operation

INITIAL SETUP:

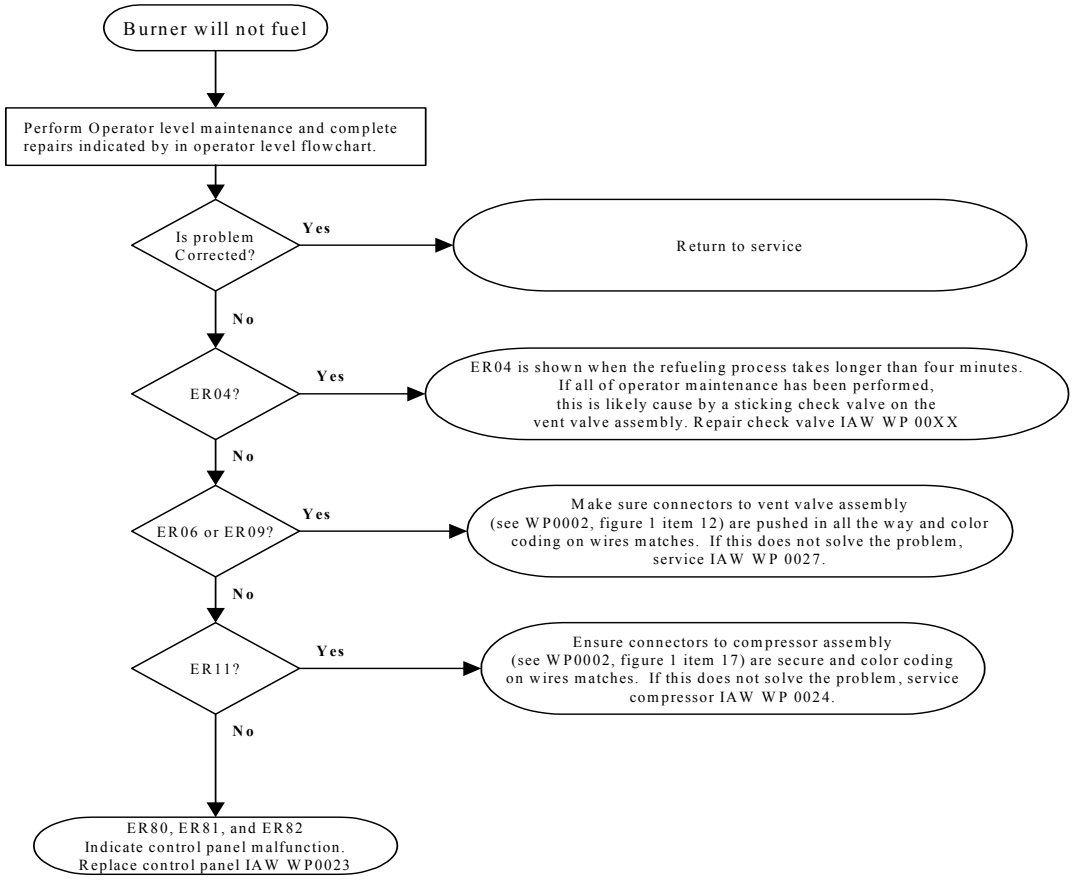
Maintenance Level	**Materials/Parts**
Unit	None



THIS PROCEDURE COVERS:
2. Burner Will Not Refuel

INITIAL SETUP:

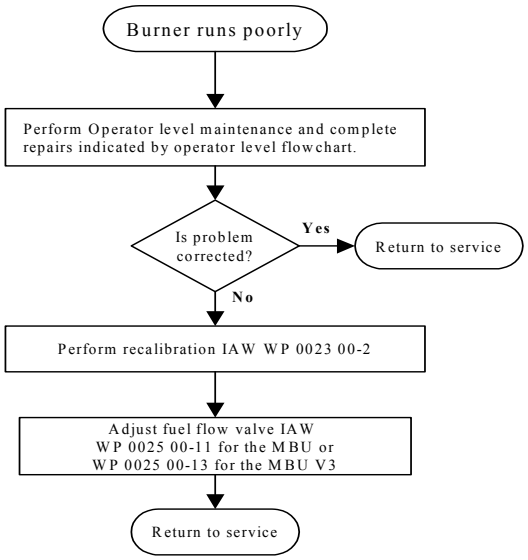
Maintenance Level	**Materials/Parts**
Unit	None



THIS PROCEDURE COVERS:
3. Burner Runs Poorly

INITIAL SETUP:

Maintenance Level	**Materials/Parts**
Operator	None



END OF WORK PACKAGE

CHAPTER 6

UNIT MAINTENANCE INSTRUCTIONS
FOR
MODERN BURNER UNIT
AND
MODERN BURNER UNIT-V3

UNIT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
SERVICE UPON RECEIPT

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 00.

INSPECTION

Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on SF 361, Transportation Discrepancy Report. Check the equipment against the packing slip to see if the shipment is complete. Report all discrepancies in accordance with applicable service instructions (e.g., for Army instructions, see DA PAM 738-750. Check to see whether equipment has been modified.

FOOD SERVICE SYSTEM EQUIPMENT MODIFICATION

The adaptation of the MBU to the field feeding systems does not require modification of any equipment except the Kitchen Field, Trailer-mounted (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.

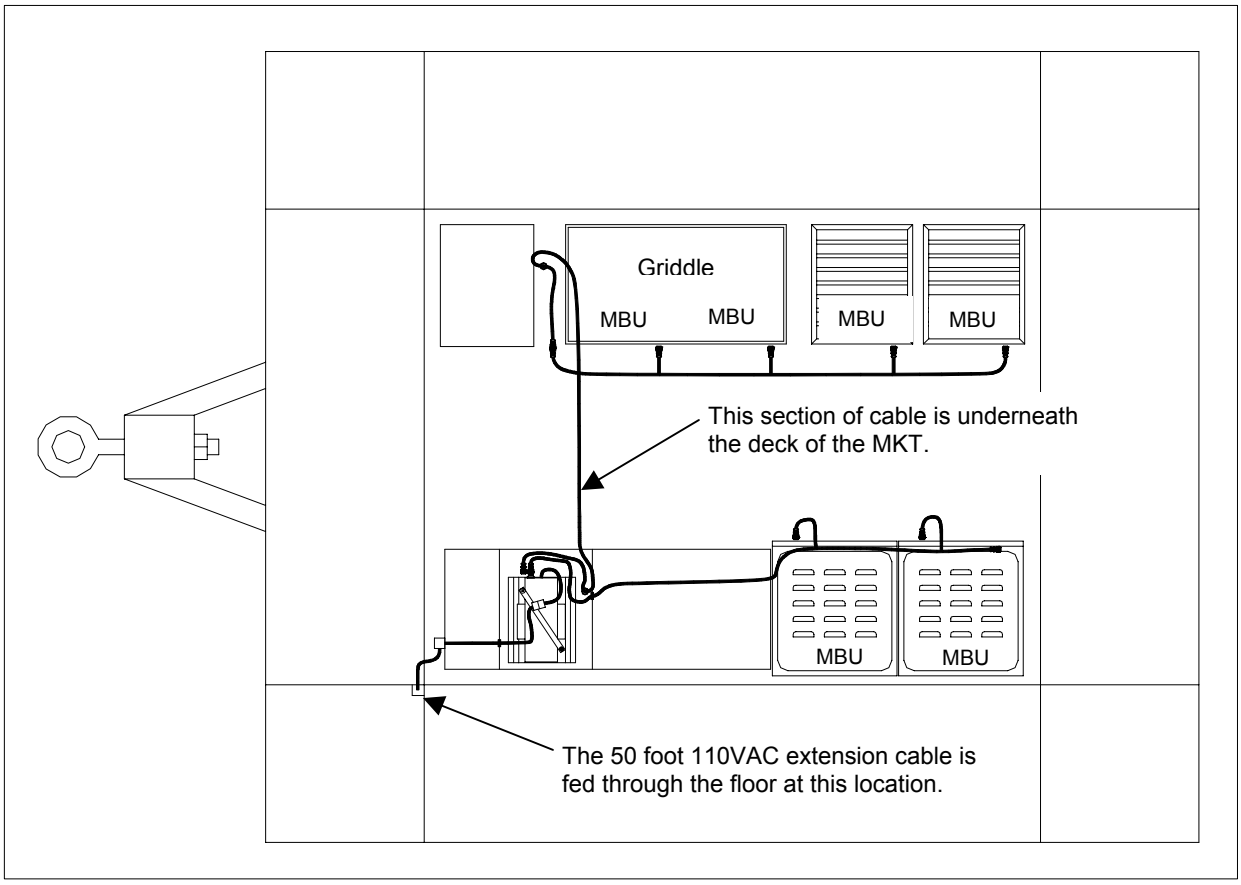


Figure 1. Overview of MKT Modification

Crossway Cable (24VDC)
The 12-ft 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 0021 00.

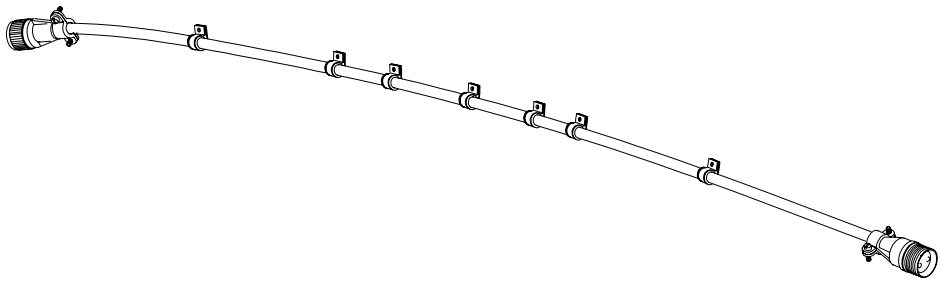


Figure 2. MKT Modification (Crossway Cable)

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 interrupt (GFCI) 110VAC utility outlets and installation of a grounding lug on the MKT chassis. The fielding contractor will complete this installation. There are no unit responsibilities involved in this modification.

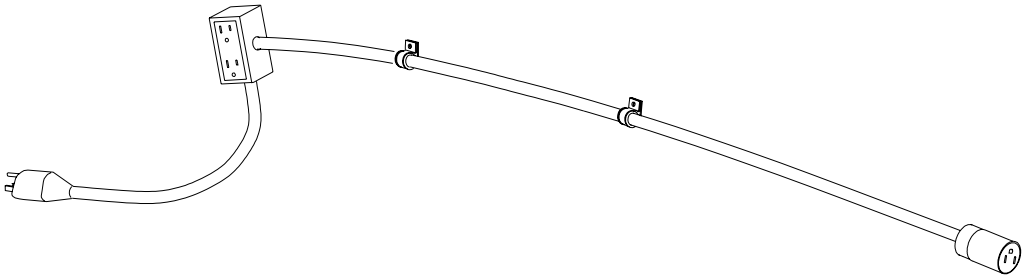


Figure 3. MKT Modification (Feeder Cable Harness)

Power Converter Mounting Bracket
A third modification involves the installation of a power converter mounting bracket assembly **(figure 4, item 1)** 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.

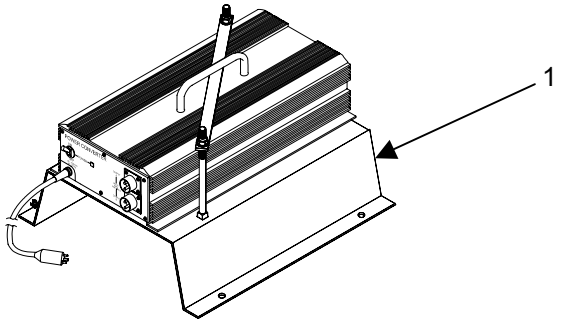


Figure 4. MKT Modification (Power Converter Mounting Bracket)

MKT Grounding Rod

A 2kW Generator is typically used to provide 110VAC power to the power converter. The grounding rod is supplied in sections **(figure 5, item 1)** that are connected together using threaded fittings **(figure 5, item 2)**. The grounding rod is driven into the ground in the vicinity of the MKT grounding lug that is located on the front driver's side of the vehicle chassis. The grounding cable **(figure 5, item 3)** is then connected between the MKT grounding lug and the grounding rod.

The lug on the MKT can be utilized to ground the MKT when AC power is provided from a source other than a properly grounded 2 KW generator, such as directly from a building. In this instance, the grounding rod form the 2 KW generator may be used to ground the MKT or a separate grounding rod (NSN 5975-00-878-3791) may be purchased. The grounding rod is on the additional authorized list for the MKT.

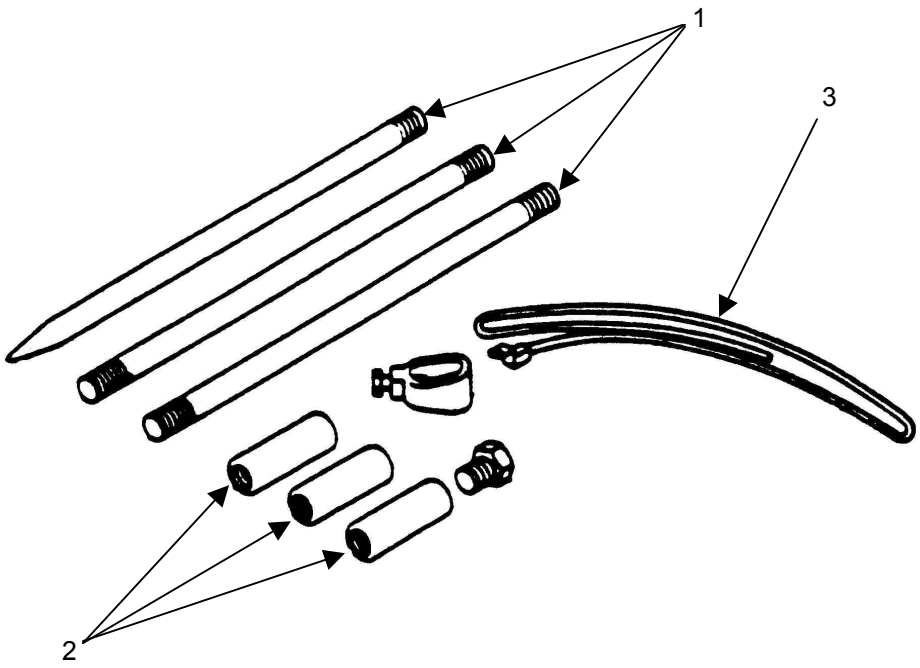


Figure 5. Grounding Rod Assembly

END OF WORK PACKAGE

UNIT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
12-FT CROSSWAY CABLE
INSTALL, REPLACE

INITIAL SETUP

Tools	**Personnel Required**
General Mechanics Tool Kit: Automotive (Item 2, Table 2, WP 0041 00)	Two
Materials/Parts	**Equipment Condition**
None Required	Cable mounting brackets installed by fielding contractor

INSTALL

Install the 12-ft Crossway Cable

Before the MBU can be used with the MKT, the Crossway Cable **(figure 1, item 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 **(figure 1, item 2)** that secure the Crossway Cable to the MKT support beam **(figure 1, item 3)** are installed by the fielding contractor and will be in place prior to installing the Crossway Cable.

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

2. Locate the support beam **(figure 1, item 3)** on which the cable clamps **(figure 1, item 2)** are mounted.

3. Distribute the Crossway Cable **(figure 1, item 1)** along the ground under the trailer support beam **(figure 1, item 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.

4. Approximately 1 to 1½ ft of cable should be available on each end to pass through the trailer floor.

5. 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 **(figure 1, item 4)** that secures the first cable clamp **(figure 1, item 5)**.

6. Place the cable in position on the support beam **(figure 1, item 3)** and reinstall the clamp.

7. 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.

8. While under the cooling cabinet area on the right side of the trailer, remove the rubber grommet **(figure 1, item 6)** mounted in the trailer floor.

9. Cut the grommet and install over the Crossway Cable **(figure 1, item 1)**.

10. Push the connector **(figure 1, item 7)** of the Crossway Cable up through the hole in the floor of the trailer and reinstall the rubber grommet **(figure 1, item 6)**.

11. Move to the left end of the support beam **(figure 1, item 3)** and remove the second rubber grommet **(figure 1, item 8)**. Cut as before and wrap around the cable.

12. Pass the connector end **(figure 1, item 9)** of the cable up through the floor of the trailer and reinstall the grommet in the floor of the trailer.

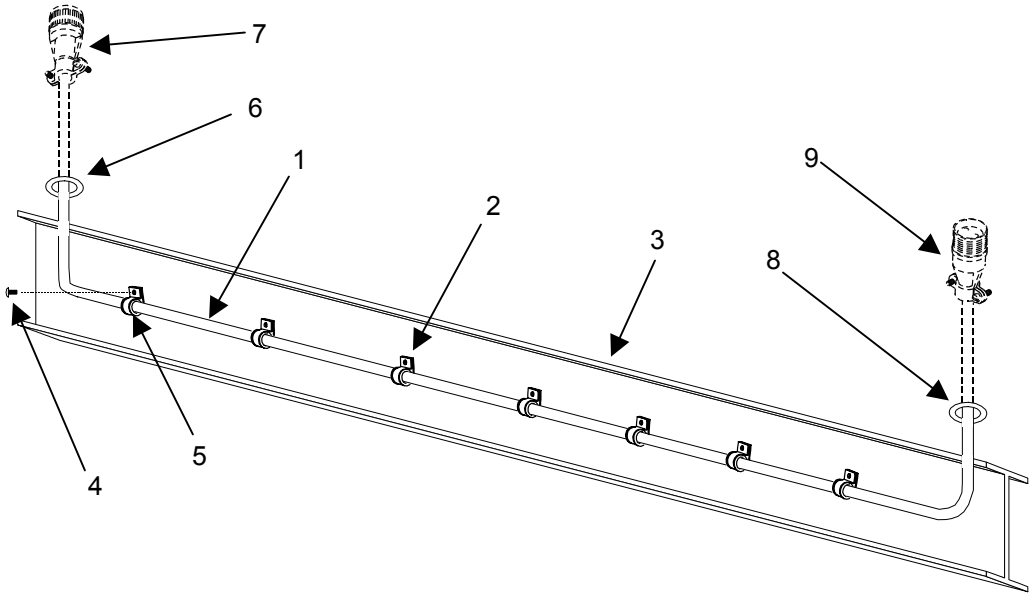


Figure 1. Install the 12-ft MKT Crossway Cable

REPLACE

Replace a Damaged Crossway Cable

1. Remove the rubber grommets **(figure 1, item 1)** at each end of the cable **(figure 1, item 2)** and pull the cable through the trailer floor at both ends. Set the rubber grommets aside.

2. Remove the screws **(figure 1, item 3)** retaining the cable clamps **(figure 1, item 4)** to the trailer support beam **(figure 1, item 5)**, and remove the cable clamps.

3. Remove the damaged cable **(figure 1, item 2)**.

4. Install the replacement cable **(figure 1, item 2)** as described in WP 0021 00, “Install the 12-ft Crossway Cable”.

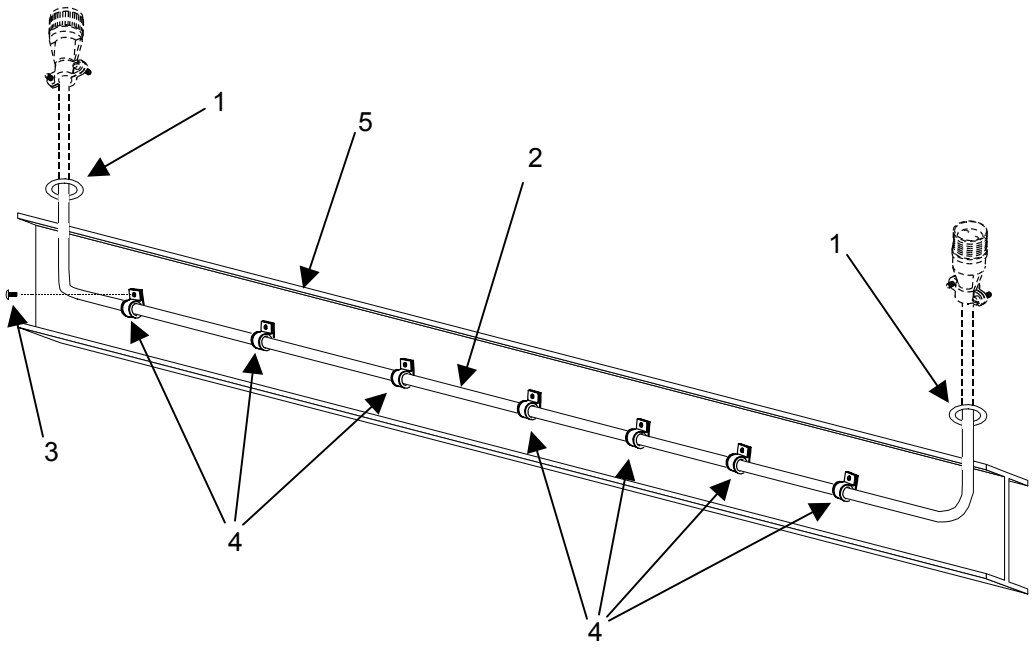


Figure 2. Replace a Damaged 12-ft MKT Crossway Cable

END OF WORK PACKAGE

UNIT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
ELECTRICAL CONNECTOR ASSEMBLY
INSPECT, TEST, REPLACE

INITIAL SETUP

Tools	**Personnel Required**
General Mechanics Tool Kit (Item 2, Table 2, WP 0041 00)	Two
Materials/Parts	**Equipment Condition**
None Required	MBU shut-down, cool, and disconnected from power source.

INSPECT

Inspect the Electrical Connector Assembly

WARNING

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.

1. Inspect the electrical connector **(figure 1, item 1)** for dents, loose or missing fasteners, and other damage that may prevent proper connection of a power cable.

2. Inspect the connector assembly **(figure 1, item 2)** for loose wires and frayed insulation.

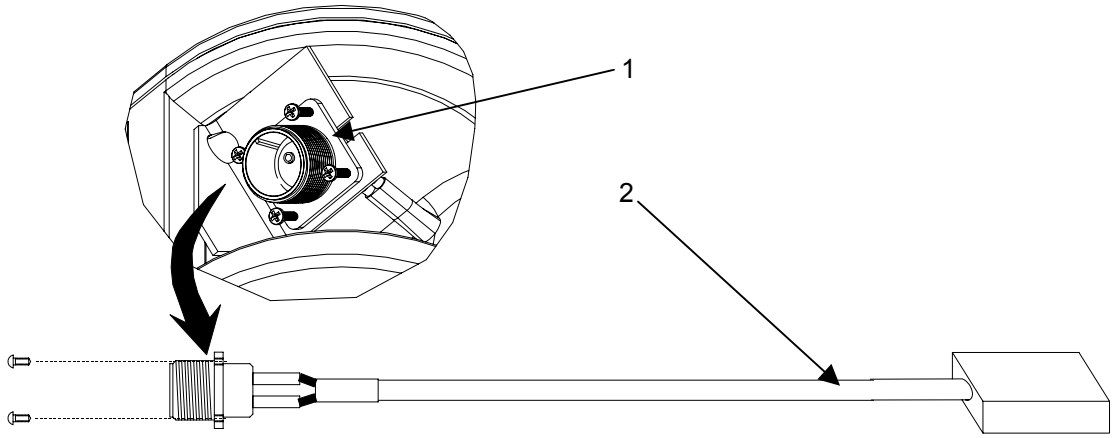


Figure 1. Inspect the Electrical Connector Assembly

TEST

Test the Electrical Connector Assembly

WARNING

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.

1. Tag and disconnect the connector assembly **(figure 2, item 1)** from the harness.
2. Using a multimeter **(figure 2, item 2)**, test the leads for continuity. If the wires are open, replace the electrical connector assembly.
3. Reconnect the connector assembly **(figure 2, item 1)** to the harness as tagged.

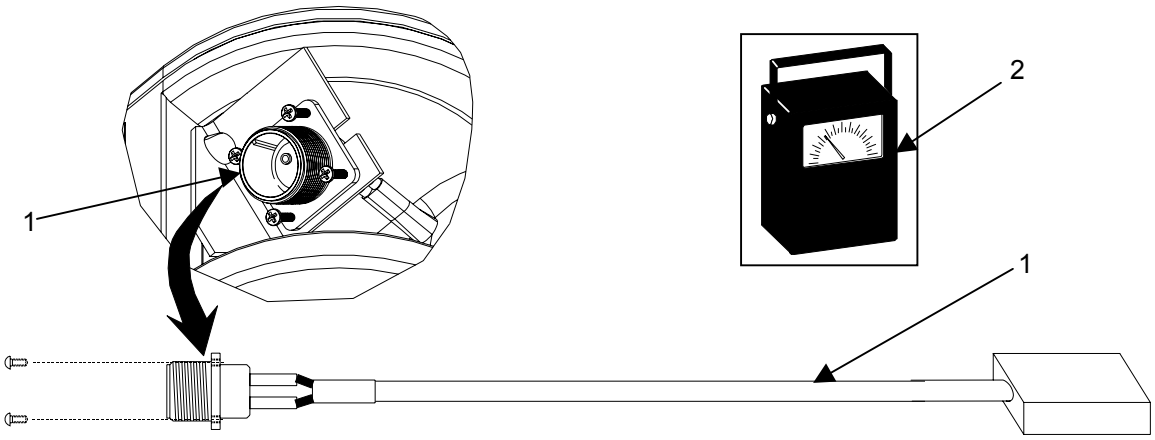


Figure 2. Test the Electrical Connector Assembly

REPLACE

Replace the Electrical Connector Assembly

WARNING

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.

1. Replace the connector assembly **(figure 3, item 1)** by removing four screws **(figure 3, item 2)**.
2. Slide connector assembly **(figure 3, item 1)** from bracket **(figure 3, item 3)**.
3. Tag connector assembly **(figure 3, item 4)**, and disconnect from harness.
4. Slide new connector assembly **(figure 3, item 1)** into place on bracket **(figure 3, item 3)**, and secure with four retainer screws.
5. Connect connector assembly **(figure 3, item 4)** to harness as tagged.

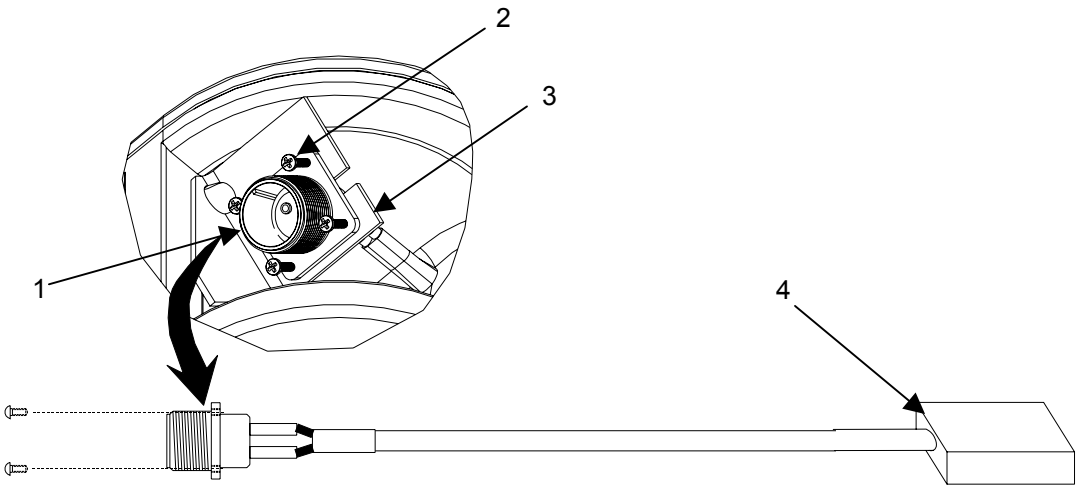


Figure 3. Replace the Electrical Connector Assembly

UNIT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
CONTROLLER ASSEMBLY
INSPECT, REPLACE, CALIBRATE

INITIAL SETUP

Tools	**Personnel Required**
General Mechanics Tool Kit (Item 2, Table 2, WP 0041 00)	Two
Materials/Parts	**Equipment Condition**
None Required	MBU shut-down, cool, and disconnected from power source.

INSPECT

Inspect the Controller Assembly

WARNING

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.

1. Inspect condition of controller assembly including the control panel **(figure 1, item 1)**, harness and connector housing **(figure 1, item 2)**, and hinge pins **(figure 1, item 3)** 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. If there is visible damage which prevents normal operation of the MBU, replace the controller assembly.

2. Connect power.

3. Push the POWER Button **(figure 1, item 4)**. The indicator lights will flash on and off for 3 seconds, and the hour meter **(figure 1, item 5)** 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. If the background light does not come on, or if the display appears faded, black, or otherwise illegible, replace the controller assembly.

4. Disconnect power.

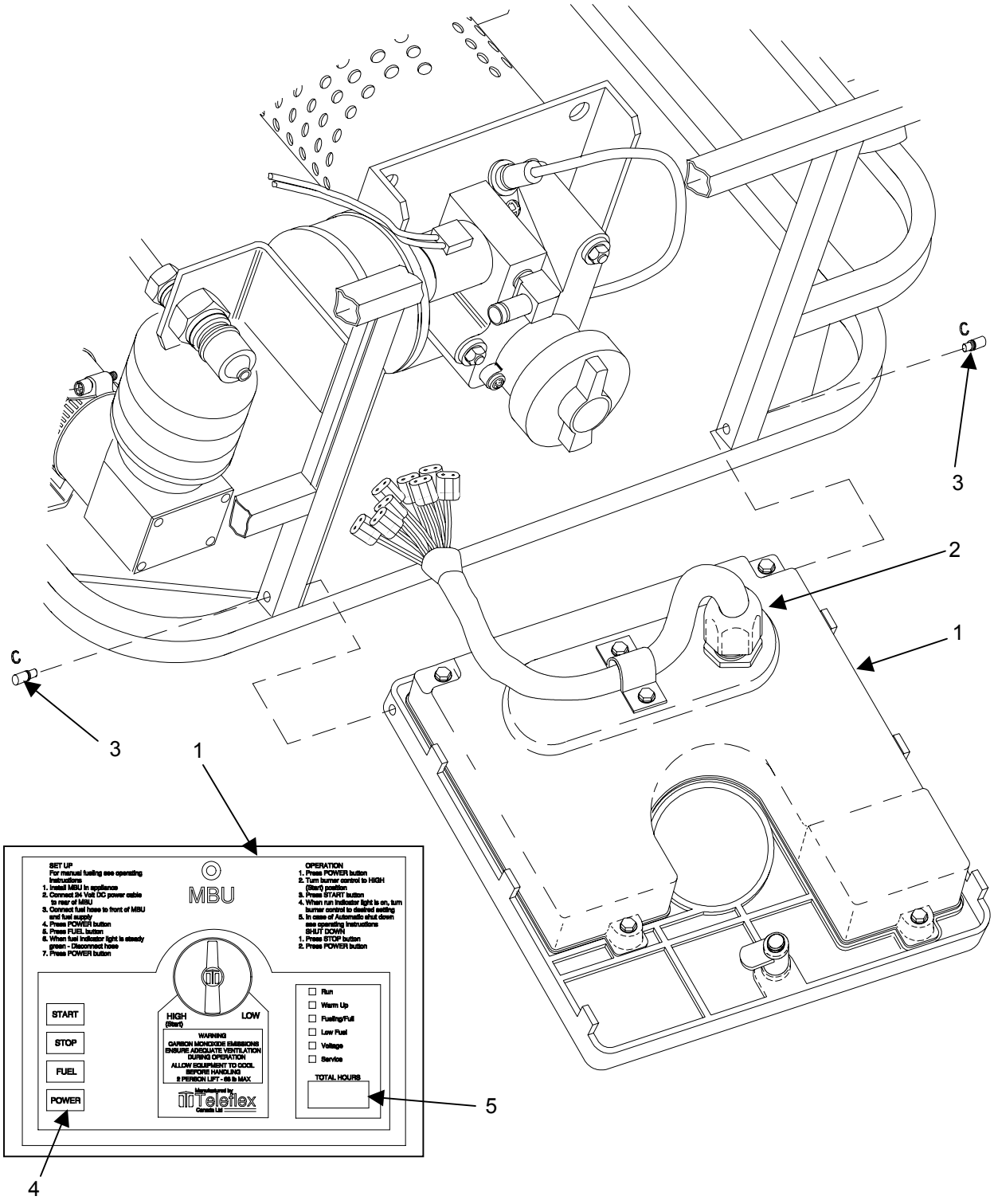


Figure 1. Inspect the Controller Assembly

REPLACE

Replace the Controller Assembly

1. Ensure power is disconnected, and open hinged controller assembly **(figure 2, item 1)**.

2. Follow the cable harness **(figure 2, item 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 **(figure 2, item 3)** at the opposite end of the harness.

3. Remove snap rings **(figure 2, item 4)** from hinge pins **(figure 2, item 5)** with flathead screwdriver and remove hinge pins from frame **(figure 2, item 6)**.

4. Remove the entire controller assembly **(figure 2, item 1)** from system.

NOTE

The replacement controller assembly may come with replacement hinge pins.

5. To install new hinge pins **(figure 2, item 5)**, place controller assembly **(figure 2, item 1)** into position and insert hinge pins through frame **(figure 2, item 6)**.

6. Secure hinge pins **(figure 2, item 5)** with snap rings **(figure 2, item 4).**

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

8. Close and secure the hinged controller assembly **(figure 2, item 1)**.

NOTE

The calibration procedure presented in WP 0023 00 is 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, then 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.

9. If required, calibrate the Controller Assembly as described in WP 0023 00, “Calibrate the Controller Assembly”.

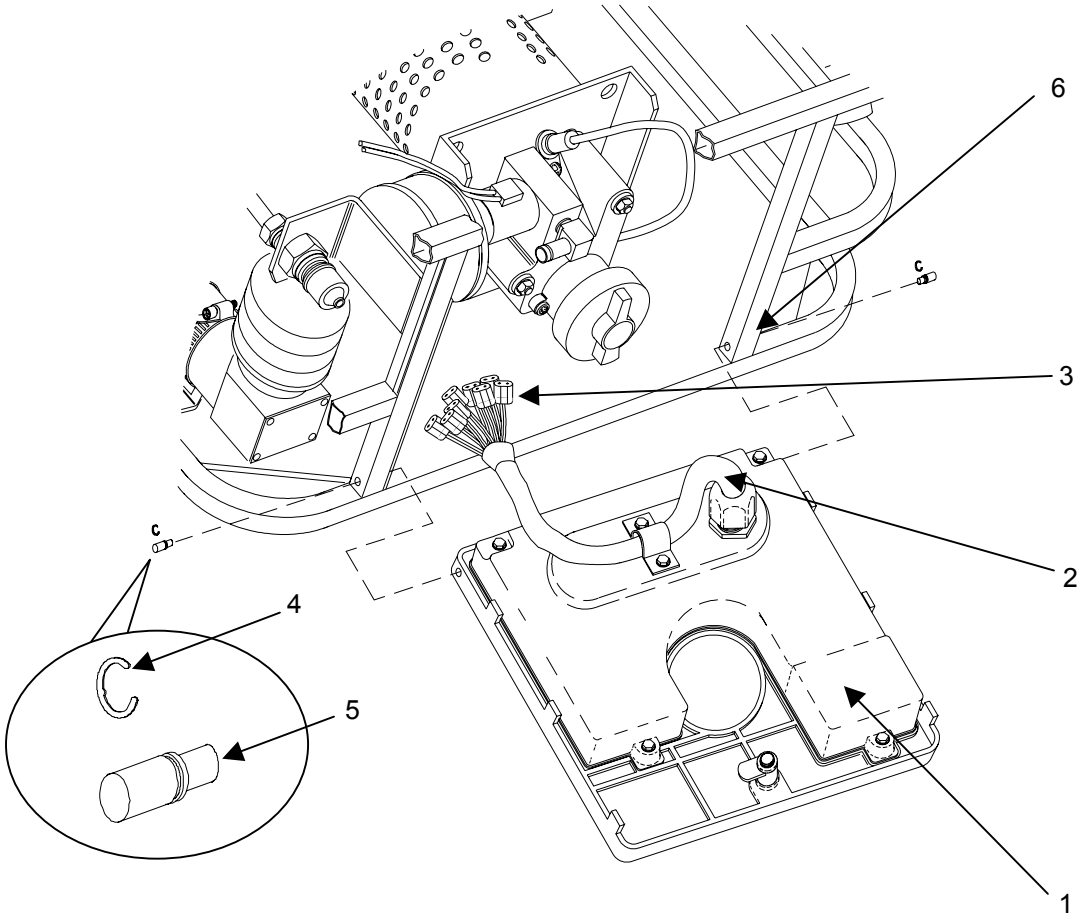


Figure 2. Replace the Controller Assembly

CALIBRATION

Calibrate the Controller Assembly (MBU only)

NOTE

The calibration procedure outlined below is 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, then 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.

1. After replacing the Controller Assembly perform a calibration procedure by first making sure that the MBU is set up with power connected, powered down, and cool.
2. Press and HOLD the Power button **(figure 3, item 1)** until the power-up routine is complete (approximately 3 seconds) and the hour meter **(figure 3, item 2)** displays CAL?
3. Release the Power button **(figure 3, item 1)**.
4. Press the Start key **(figure 3, item 3)**. The hour meter **(figure 3, item 2)** will display CAL
5. Turn the Burner Control Knob **(figure 3, item 4)** through its complete rotation from HIGH (Start) to LOW.
6. Wait approximately 3 seconds for automatic return to standby.
7. The MBU is now ready to use.

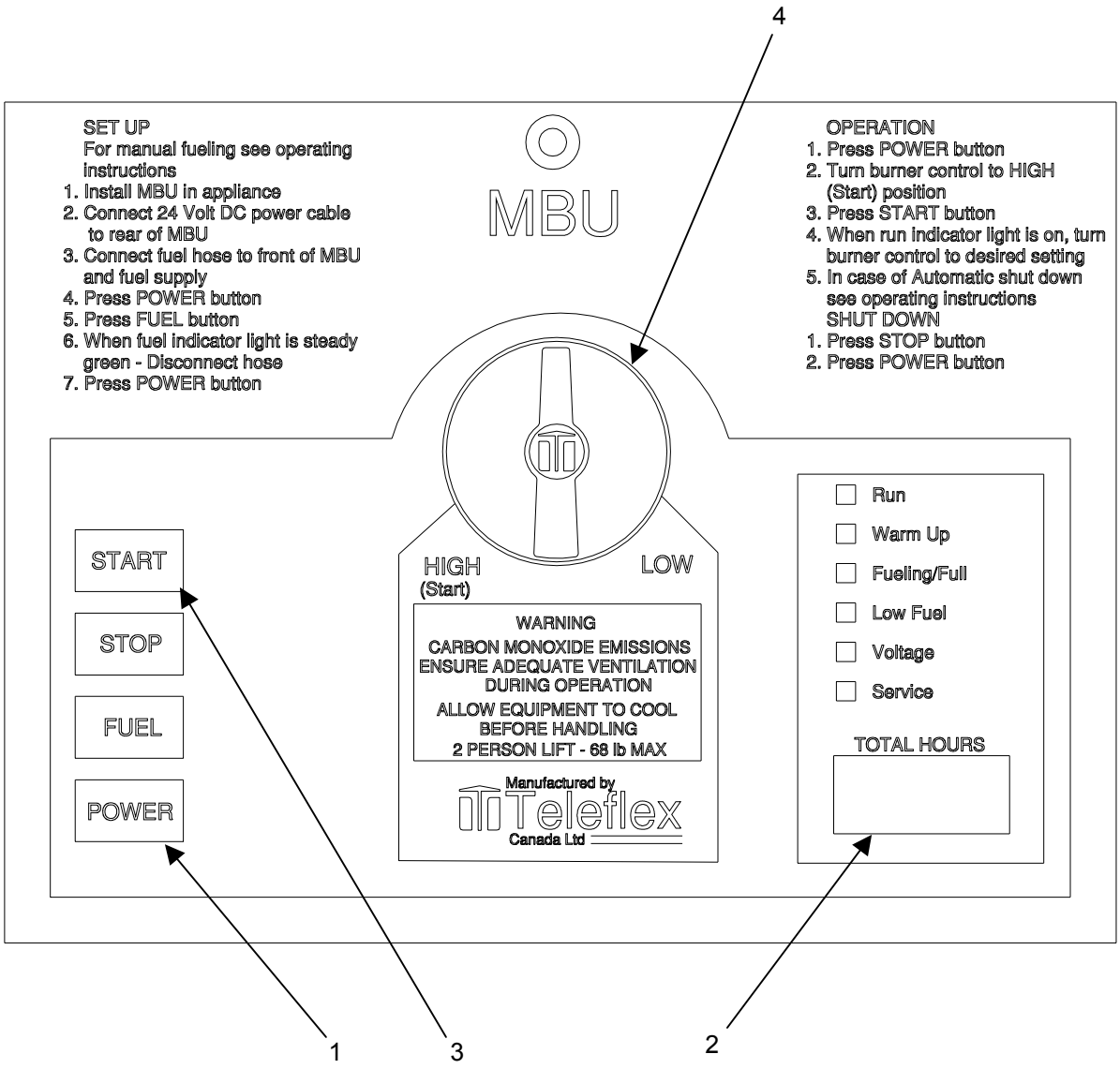


Figure 3. Calibrate the Controller Assembly (MBU only)

END OF WORK PACKAGE

UNIT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
COMPRESSOR ASSEMBLY
INSPECT, TEST, REPLACE

INITIAL SETUP

Tools
General Mechanics Tool Kit: Automotive (Item 2, Table 2, WP 0041 00)

Personnel Required
Two

Materials/Parts
Fuel Can (Table 1, WP 0065 00)
Wiping Rags (Item 5, Table 1, WP 0066 00)

Equipment Condition
MBU shut-down, cool, and disconnected from power source. Fuel tank drained.

INSPECT

Inspect the Compressor Assembly

WARNING

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.

Inspect compressor assembly **(figure 1, item 1)** 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.

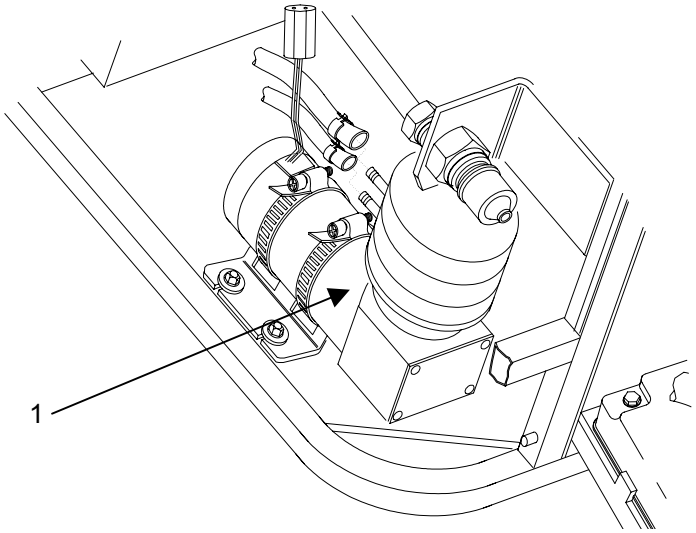


Figure 1. Inspect the Compressor Assembly

TEST

Test the Compressor Assembly

WARNING

Do not perform this procedure near an open flame to prevent fire. Failure to observe safety precautions may result in injury or death to personnel.

1. Remove the Reflective Heat Shield and Burner Assembly from the MBU frame as described in WP 0026 00. Set the assembly aside.

NOTE

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-inch ID neoprene air hose.

2. Disconnect air lines **(figure 2, item 1)** from compressor **(figure 2, item 2)**.

3. Connect power to the MBU, and press START. The compressor **(figure 2, item 2)** should start, and air should discharge from the compressor air line fittings **(figure 2, item 3)**.

4. If air discharges from the compressor air line fittings **(figure 2, item 3)**, reconnect the air lines **(figure 2, item 1)** and reassemble the Reflective Heat Shield and Burner Assembly.

5. If the compressor **(figure 2, item 2)** does not start, listen for indications of a locked or damaged compressor, such as a loud humming sound, or uneven or unusually noisy operation. If these indications are present, the compressor must be replaced.

6. If the compressor **(figure 2, item 2)** does not start, and there are no indications of mechanical damage to the compressor, disconnect the compressor power wire harness connector **(figure 2, item 4)**.

7. Use an ohmmeter to test for continuity between the compressor power leads at the harness connector **(figure 2, item 4)**. Replace a compressor **(figure 2, item 2)** with an open motor winding.

8. Reconnect the compressor power wire harness connector **(figure 2, item 4)**.

9. Reconnect the air lines **(figure 2, item 1)** to the compressor **(figure 2, item 2)**.

10. Operate the MBU IAW procedures given in WP 0005 00, and monitor for normal operation.

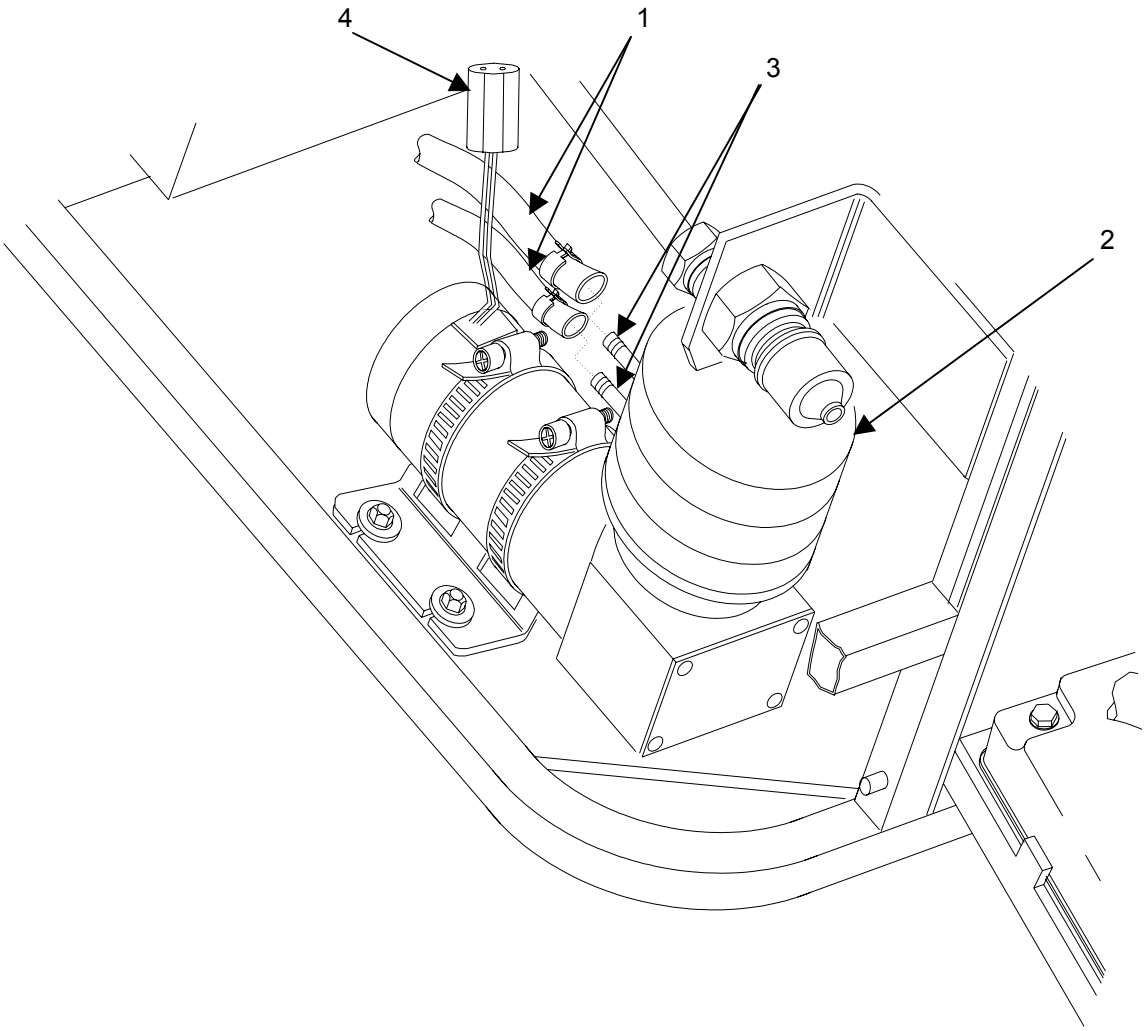


Figure 2. Test the Compressor Assembly

REPLACE

Replace the Compressor Assembly

WARNING

Do not perform this procedure near an open flame to prevent fire. Failure to observe safety precautions may result in injury or death to personnel.

1. Remove the Reflective Heat Shield and Burner Assembly from the MBU frame as described in WP 0026 00. Set the assembly aside.

2. Disconnect compressor power wire harness connector **(figure 3, item 1)**.

NOTE

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-inch ID neoprene air hose.

3. Disconnect air lines **(figure 3, item 2)** from compressor **(figure 3, item 3)**.

4. Loosen and remove two hose clamps **(figure 3, item 4)** and lift compressor **(figure 3, item 3)** off the mounting plate **(figure 3, item 5)**.

NOTE

The replacement compressor may be installed in the existing mounting plate if a replacement mounting plate is not needed. Continue to Step 7.

5. To replace the compressor mounting plate **(figure 3, item 5)**, remove four self locking nuts and washers **(figure 3, item 6)** securing the mounting plate to the threaded studs mounted to the MBU base plate **(figure 3, item 7)**.

6. Slide new vibration grommets **(figure 3, item 8)** onto mounting plate **(figure 3, item 5)**, insert spacers, and secure assembly with four self locking nuts and washers **(figure 3, item 6)** to the threaded studs mounted to the MBU base plate **(figure 3, item 7)**.

7. Place new compressor onto mounting plate **(figure 3, item 5)** and secure with two hose clamps **(figure 3, item 4)**. Connect air lines **(figure 3, item 2)** previously removed. Note that the $^{3}/_{8}$-inch ID hose installs on the larger fitting.

8. Connect compressor power wire harness connector **(figure 3, item 1)**.

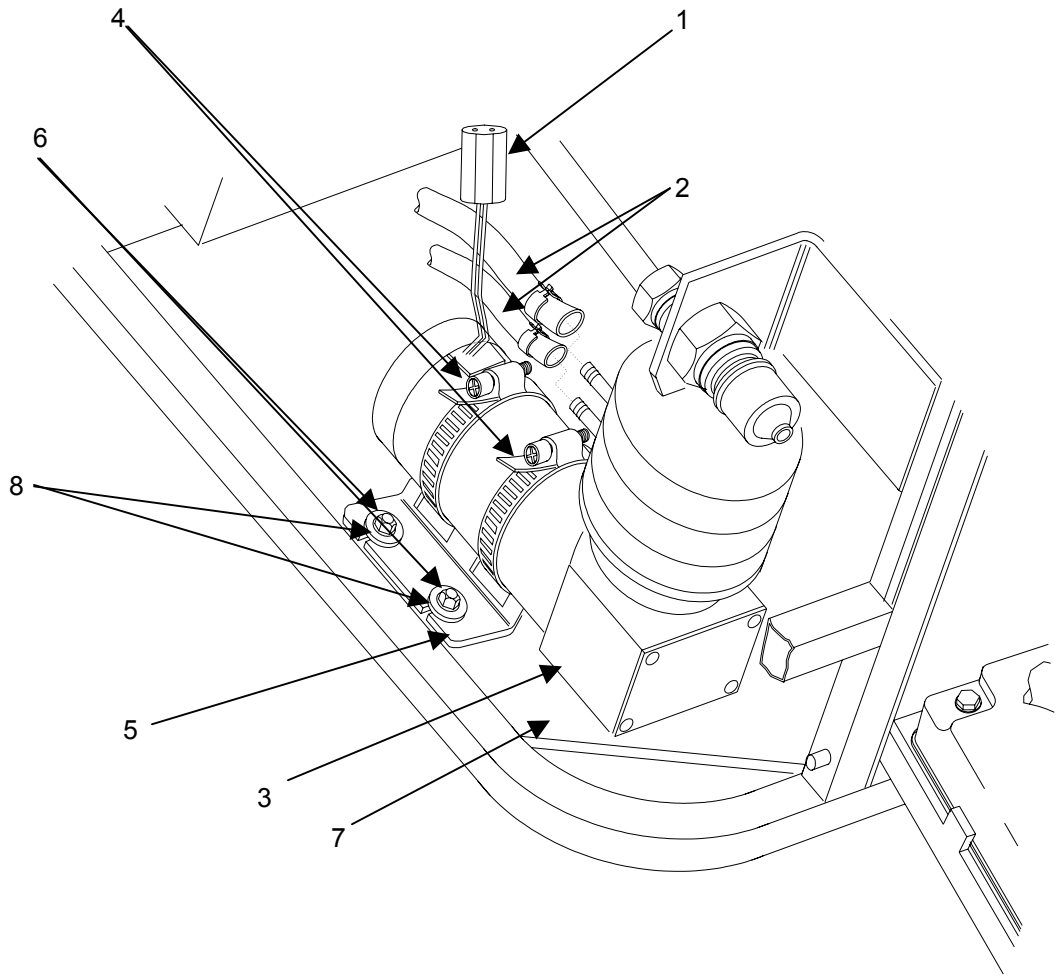


Figure 3. Replace the Compressor Assembly

END OF WORK PACKAGE

UNIT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
FUEL DELIVERY BLOCK ASSEMBLY
INSPECT, TEST, REMOVE/INSTALL, ADJUST, REPLACE

INITIAL SETUP

Tools
General Mechanics Tool Kit: Automotive (Item 2, Table 2, WP 0041 00)

Personnel Required
Two

Materials/Parts
Fuel Can (Table 1, WP 0065 00)
Compound, Pipe Sealer (Item 3, Table 1, WP 0066 00)
Wiping Rags (Item 5, Table 1, WP 0066 00)

Equipment Condition
MBU shut-down, cool, and disconnected from power source.
Fuel tank drained.

INSPECT

Inspect the Fuel Delivery Block Assembly

WARNING

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. Failure to observe safety precautions may result in injury or death to personnel.

WARNING

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.

1. Ensure the MBU is cool, disconnected from power, and has been drained of fuel IAW instructions given in WP 0011 00.

2. Open control panel **(figure 1, item 1)** to gain access to the fuel delivery block assembly **(figure 1, item 2)**.

3. Inspect the fuel delivery block assembly for damage to individual components, including leaking or loose fuel hoses **(figure 1, item 3)**, frayed or loose power leads **(figure 1, item 4)**, damage to the solenoids **(figure 1, item 5)**, flame sensor **(figure 1, item 8)**, ignitor **(figure 1, item 7)**, and air filter **(figure 1, item 6)**. Check the control knob **(figure 1, item 9)** for free movement.

4. Close the control panel **(figure 1, item 1)**.

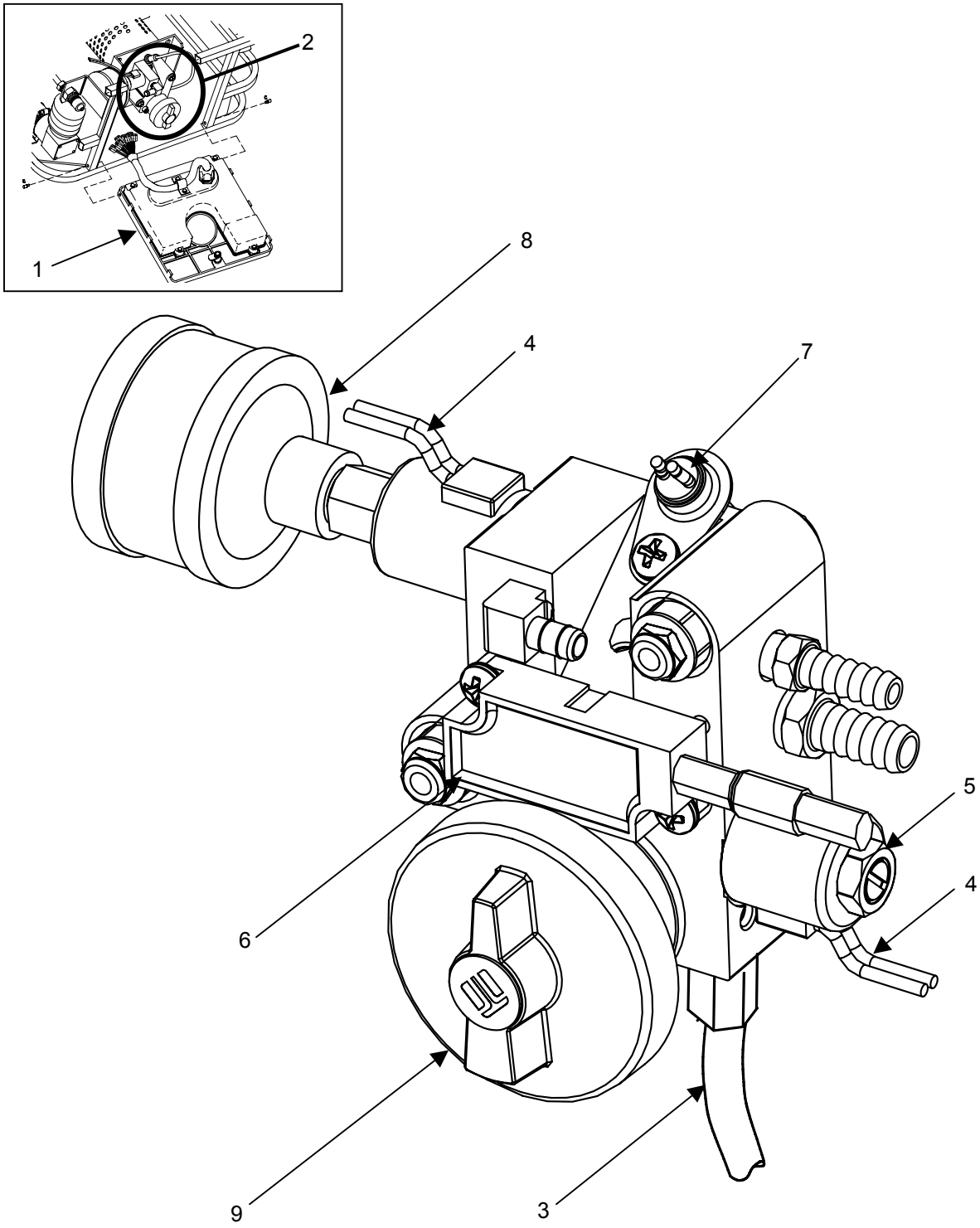


Figure 1. Inspect the Fuel Delivery Block Assembly

TEST

Test the Flame Sensor

1. Attempt to start the MBU by pressing and releasing the start button **(figure 2, item 1).**

2. Begin counting when the start button is pushed. If the flame sensor is bad, the burner will attempt to light, but shut itself down in approximately 8 seconds. The controller checks for the proper signal from the flame sensor. Error message ER01 will be displayed.

3. Press and hold the start button **(figure 2, item 1)**. Wait for the MBU to ignite and continue holding the start button for another 20 seconds. If the flame sensor is bad, the burner should shut off immediately when the button is released. The burner will display error message ER01.

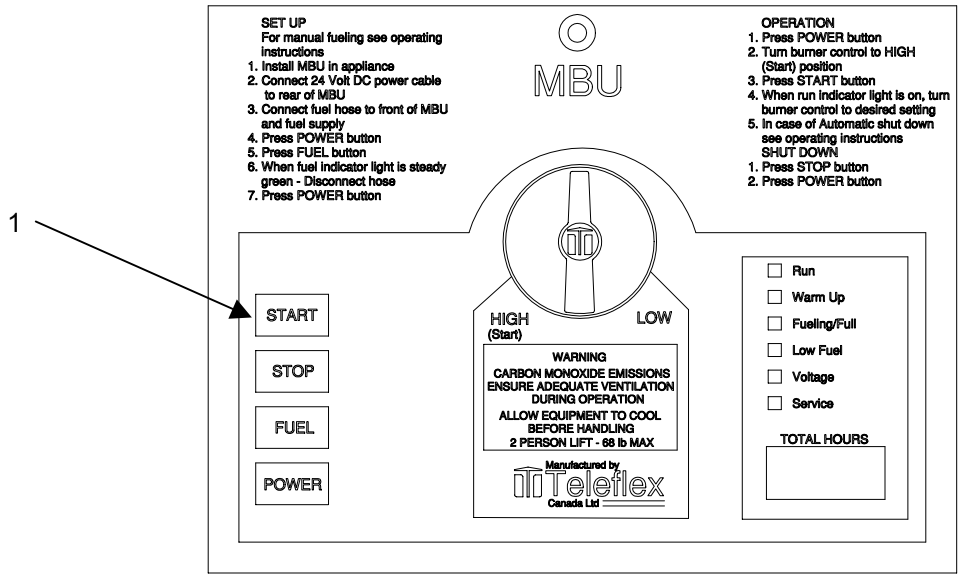


Figure 2. Test the Flame Sensor

Test the Feedback Potentiometer (MBU only)

NOTE

The following procedure is not applicable to the MBU-V3. The MBU-V3 does not employ a feedback potentiometer.

1. Ensure the MBU is cool and disconnected from power.
2. Open control panel **(figure 3, item 1)** to gain access to the fuel delivery block assembly **(figure 3, item 2)**.
3. Disconnect the feedback potentiometer wiring harness **(figure 3, item 10)** by separating the connector at the end of the harness.
4. Turn the control knob **(figure 3, item 3)** fully counterclockwise.
5. Use an ohmmeter to test for resistance between the two disconnected leads **(figure 3, item 10)**. There should be approximately 0 – 500 ohms resistance. Replace a feedback potentiometer that reads over 525 ohms in this position.
6. Turn the control knob fully clockwise **(figure 3, item 3)**.
7. Use an ohmmeter to test for resistance between the two disconnected leads. There should be approximately 9500 – 10000 ohms resistance. Replace a feedback potentiometer that reads under 9480 ohms or over 10000 ohms in this position.
8. Reconnect the feedback potentiometer wiring harness assembly connector **(figure 3, item 10)**.
9. Close the control panel **(figure 3, item 1)**.

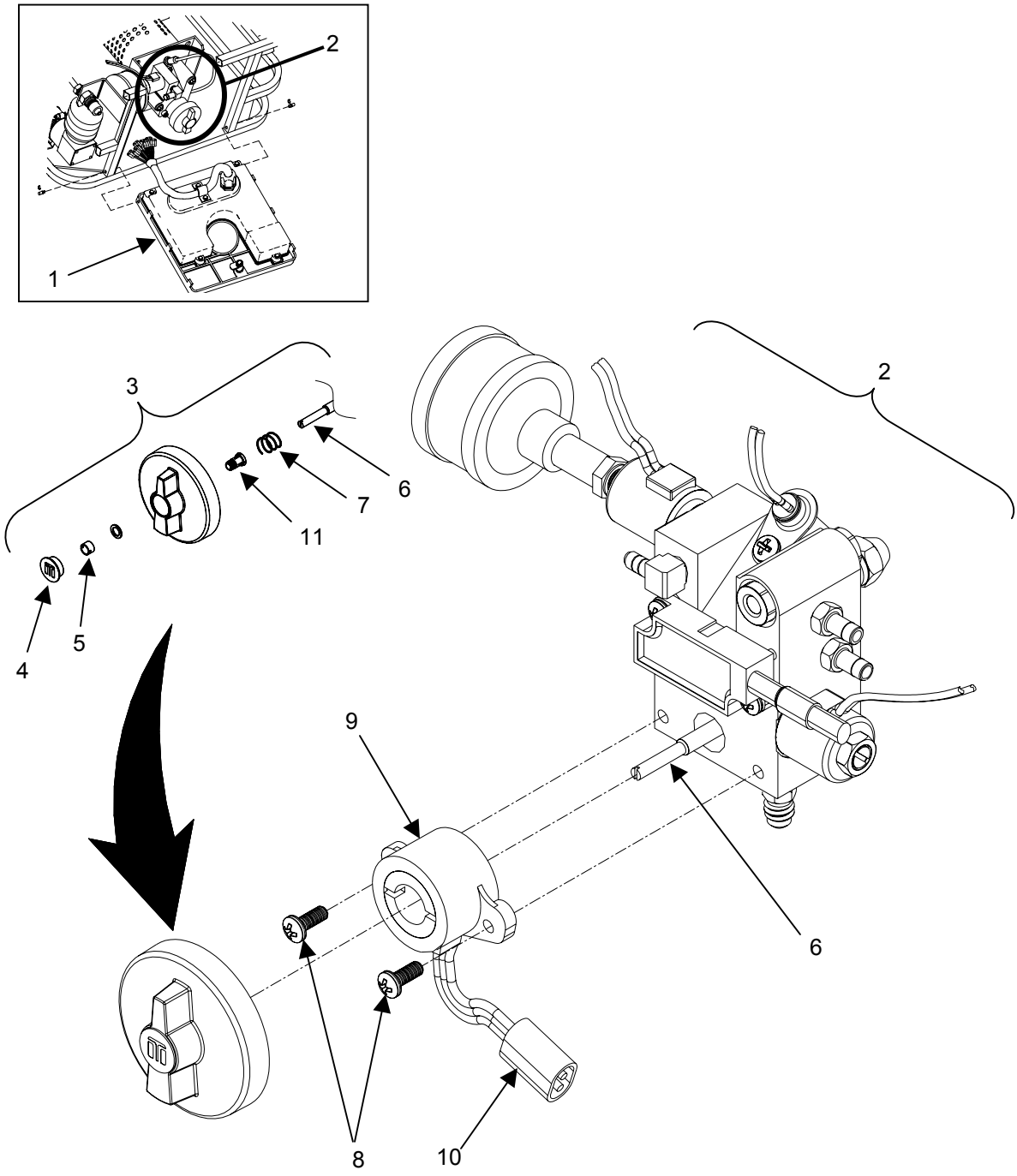


Figure 3. Test the Feedback Potentiometer (MBU only)

Test the Air/Fill Solenoid Valve

1. Open the control panel **(figure 4, item 1)**.
2. Disconnect ignitor electrical connector **(figure 4 item 2)**.

3. Disconnect air solenoid valve electrical connector **(figure 4, item 3)** and plug into ignitor power lead connector.
4. Press the start button on the front of the control panel **(figure 4, item 1)**.
5. If control panel indicates error code ER12, replace the air solenoid.
6. Reconnect ignitor electrical leads **(figure 4, item 2 and item 3)**.
7. Close the control panel **(figure 4, item 1).**

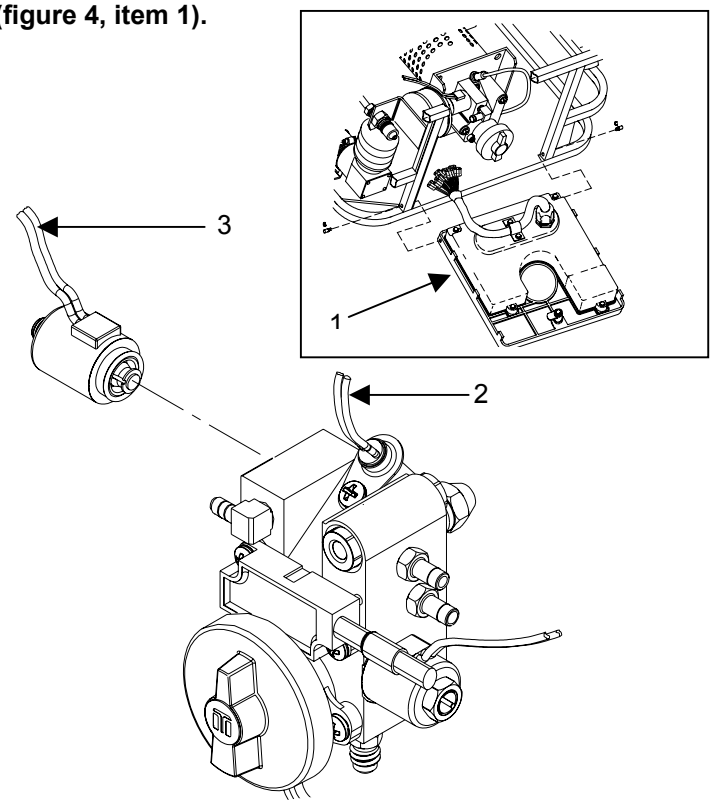


Figure 4. Test the Air/Fill Solenoid Valve (MBU-V3 shown)

Test the Fuel Shut-Off Solenoid Valve

WARNING

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. Failure to observe safety precautions may result in injury or death to personnel.

1. Open the control panel **(figure 5, item 1)**.
2. Disconnect electrical lead to ignitor **(figure 5, item 2)**.
3. Disconnect electrical lead to fuel solenoid valve and plug into ignitor lead **(figure 5, item 4)**.
4. Press start **(figure 5, item 3)**. If control panel indicates ER12, Fuel solenoid is bad.

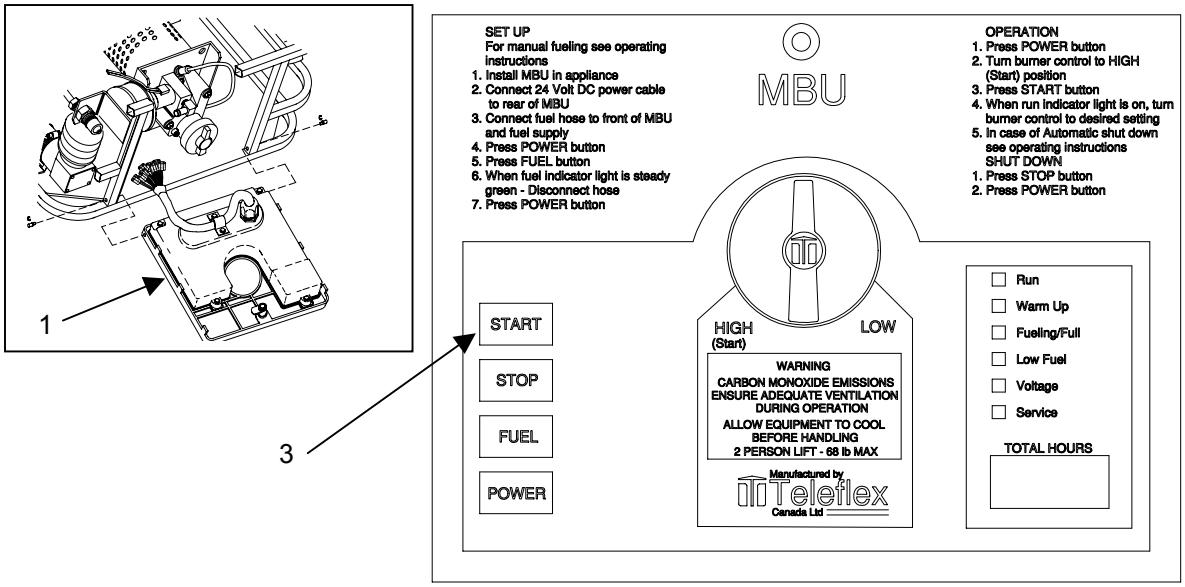


Figure 5. Test the Fuel Shut-Off Solenoid Valve (MBU-V3 shown)

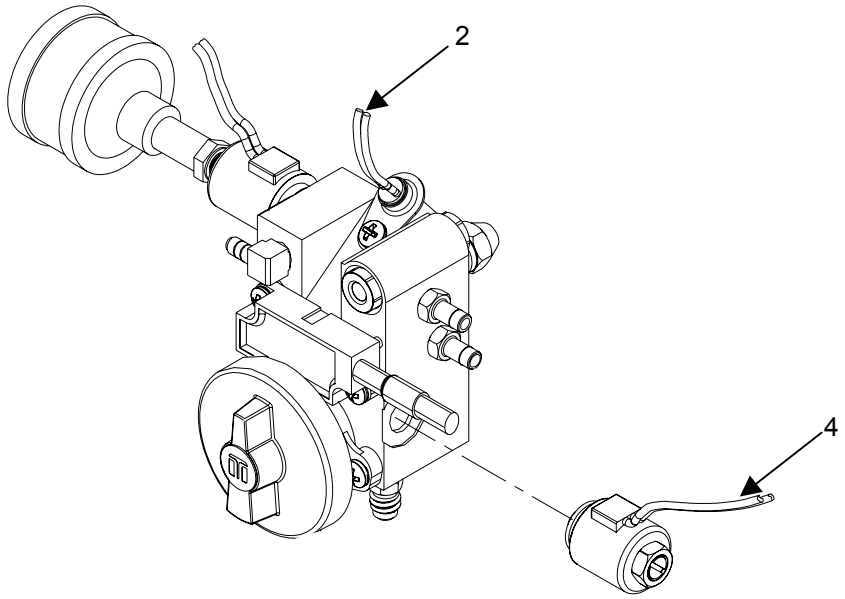


Figure 5 (cont.) Test the Fuel Shut-Off Solenoid Valve.
(MBU-V3 shown)

REMOVE/INSTALL

Remove/Install the Fuel Delivery Block

WARNING

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. Failure to observe safety precautions may result in injury or death to personnel.

NOTE

The fuel delivery block **(figure 6, item 1)** MUST BE TEMPORARILY REMOVED from the burner tube mounting shafts when replacing the ignitor **(figure 6, item 2)**, fuel line **(figure 6, item 3)**, or air lines **(figure 6, item 4)**.

1. Ensure the MBU is cool, disconnected from power, and has been drained of fuel IAW instructions given in WP 0011 00.

2. To remove the fuel delivery block, proceed as follows:

   a. Open control panel **(figure 6, item 5)** for access to the fuel delivery block assembly **(figure 6, item 1)**.

   b. Disconnect the fuel line **(figure 6, item 3)**.

   c. To remove fuel delivery block assembly **(figure 6, item 1)**, remove two self locking nuts and washers **(figure 6, item 6, figure 6, item 7)** that secure the fuel delivery block assembly to the burner tube mounting shafts **(figure 6, item 8)**.

   d. Slide the fuel delivery block assembly **(figure 6, item 1)** off the threaded studs of the burner assembly **(figure 6, item 8)**.

   e. Remove the three air lines **(figure 6, item 4)** and disconnect electrical connections for the air fill solenoid valve **(figure 6, item 9)**, fuel solenoid valve, and ignitor **(figure 6, item 11)**.

3. To install the fuel delivery block, proceed as follows:

   a. Slide the fuel delivery block assembly **(figure 6, item 1)** onto the threaded studs **(figure 6, item 8)** of the burner assembly.

   b. Install two self-locking nuts and washers **(figure 6, item 6, figure 6, item 7)** to retain the fuel delivery block assembly **(figure 6, item 5)** to the burner tube mounting studs **(figure 6, item 8)**.

   c. Reconnect the fuel line **(figure 6, item 3)**.

   d. Reconnect the three air lines **(figure 6, item 4)**.

e. Reconnect the electrical connections **(figure 6, item 9)**, **(figure 6, item 10)**, **(figure 6, item 11)**.

f. Close the control panel **(figure 6, item 5)**.

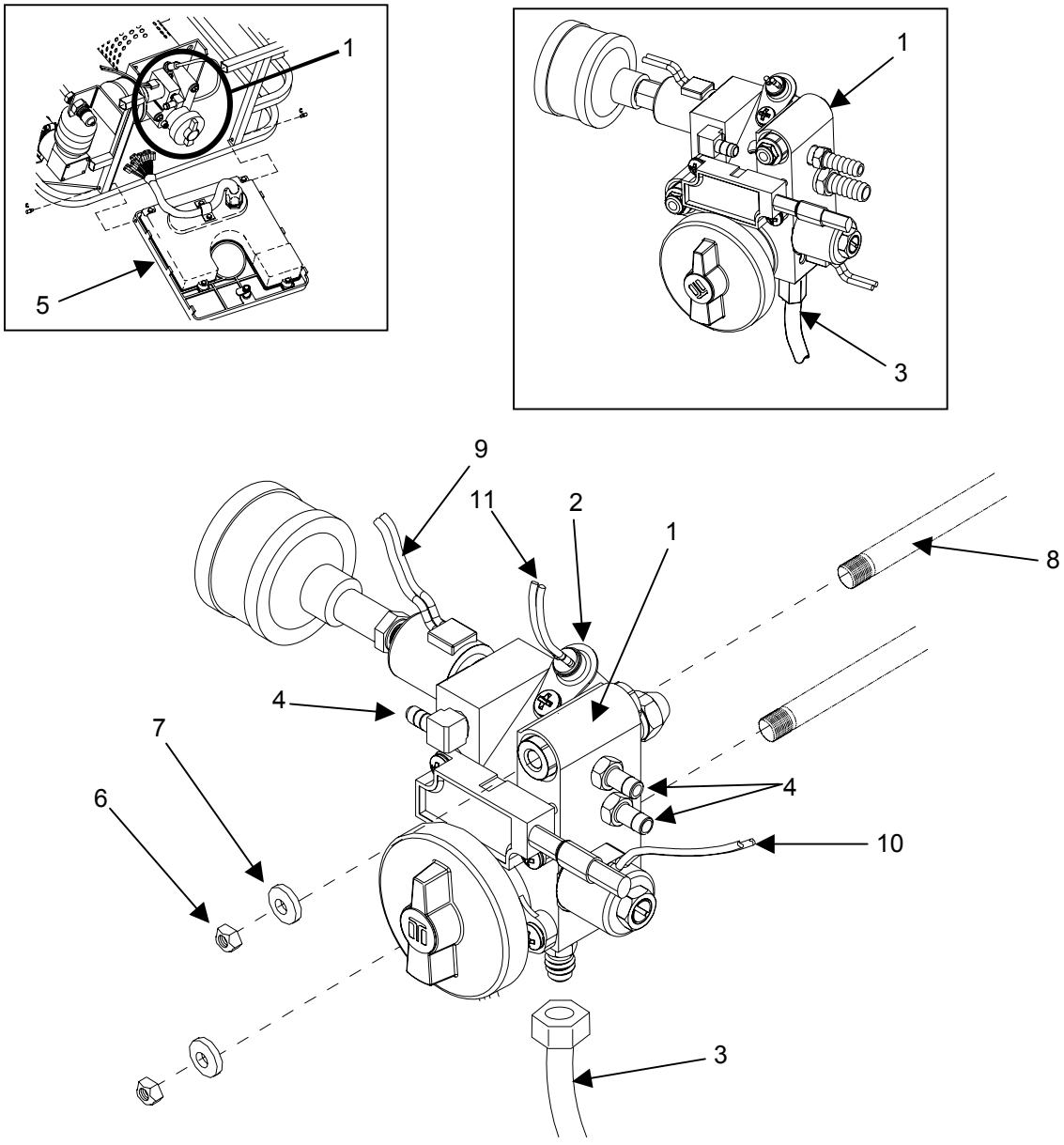


Figure 6. Remove/Install the Fuel Delivery Block from Burner Tube Mounting Studs

ADJUST

Adjust the Flame Control on the MBU

NOTE

This procedure is not exact. It relies on the maintainer's judgment for what is a good flame. Do not adjust the flame control on a burner unless it is necessary. Using a properly functioning MBU (not MBU-V3) burner as a guide is helpful in achieving the proper flame adjustment. MBU-V3 adjustment procedures are separate in this WP.

1. Ensure the burner has fuel and power, and is ready to operate IAW procedures given in WP 0005 00.
2. Turn burner control knob **(figure 7, item 1)** counter-clockwise until it stops.
3. Lower the control panel **(figure 7, item 2)** by loosening the retaining screw with a cross-tipped screwdriver.
4. Removing the end cap **(figure 7, item 3)** from the control knob **(figure 7, item 1)** by prying it off with a small, flat-tipped screwdriver.
5. Loosen the control knob retaining-nut **(figure 7, item 4)** located in the center of the control knob **(figure 7, item 1)** with a 5/16-inch nut-driver only enough to remove the control knob and spring **(figure 7, item 5)**.
6. Place the tip of the small, flat-tipped screwdriver into one of the slots on the potentiometer **(figure 7, item 6)** and turn it counter-clockwise until it stops. One of the slots will stop at about the 10 o'clock position. Turn this slot clock-wise back to the 12 o'clock position.
7. Start the burner but do not close the control panel. If burner will not start: Turn the flame control shaft **(figure 7, item 6)** one turn counter-clockwise with a small, flat tipped screwdriver. Reattempt to start the burner. If the burner will not start, see troubleshooting procedures (burner will not start).
8. On the back of the control knob, there are two tabs that fit into the slots on the potentiometer **(figure 7, item 7)**. They will line up with the potentiometer slots when the control knob is pointing to the 9 o'clock position.
9. Install the spring **(figure 7, item 5)** on the control knob **(figure 7, item 8)** then press the control knob **(figure 7, item 1)** back onto the flame control shaft **(figure 7, item 6)**.
10. Without tightening the retaining nut **(figure 7, item 4)**, turn the control knob **(figure 7, item 1)** clockwise until it stops. Continue to hold the control knob in.
11. Use a small flat-tipped screwdriver to slowly turn the flame control shaft **(figure 7, item 6)** clockwise until the flame gets small and turns completely blue. It may sputter or go out momentarily and make a rumbling sound.
12. Turn the flame control shaft **(figure 7, item 6)** counter-clockwise until the flame becomes stable and has some yellow. It should make a steady sound.
13. Tighten the control knob retaining nut **(figure 7, item 4)** with a 5/16-inch nutdriver.
14. Turn the burner control knob **(figure 7, item 1)** counter-clockwise (high), then back to clockwise (low). There should be a noticeable difference between low and high. Let the burner run for a few minutes to be sure that it is stable and will not go out. Adjust flame control shaft as necessary to achieve a good flame throughout the range. The high flame does not need adjustment.

15. Replace the control knob cap **(figure 7, item 3)** then close and secure the control panel door **(figure 7, item 2)** by tightening the retaining screw.

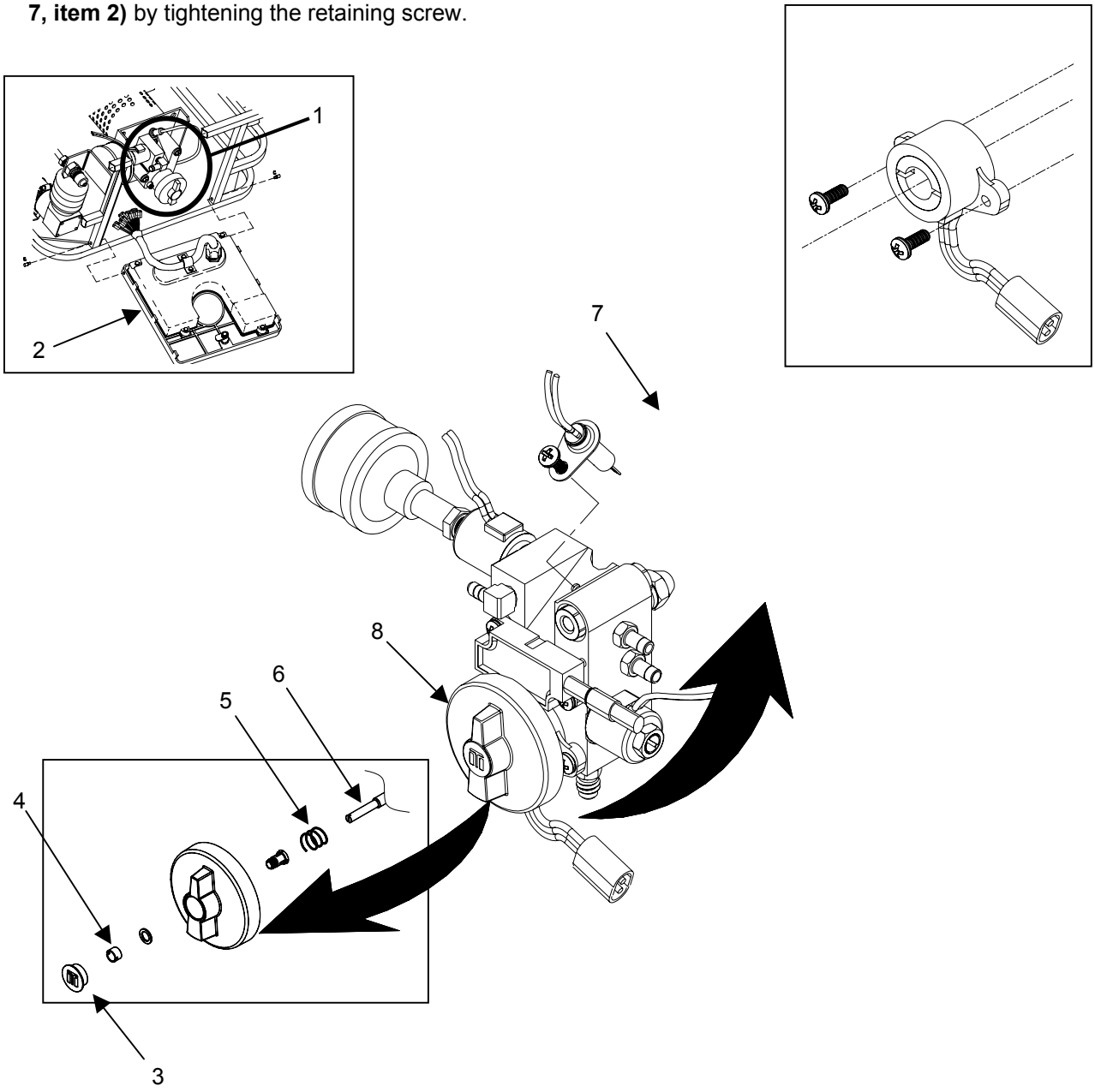


Figure 7. Adjust the Flame Control on MBU

Adjust the Flame Control on the MBU-V3

NOTE

This procedure is not exact. It relies on the maintainer's judgment for what is a good flame. Do not adjust the flame control on a burner unless it is necessary. Using a properly functioning MBU-V3 burner as a guide is helpful in achieving the proper flame adjustment.

Remove The Control Knob

1. Lower the control panel **(figure 8, item 3)** by loosening the retaining-screw with a cross-tipped screwdriver.

2. Using a small, flat-tipped screwdriver, pry off the end cap from the control knob **(figure 8, item 2)**.

3. Using a 5/16-inch nut-driver, loosen the control knob retaining-nut **(figure 8, item 4)** located in the center of the control knob until the control knob slips off. Remove the control knob and spring assembly **(figure 8, item 3)**.

Adjust The Castle Nut

1. Using your fingers, turn the brass castle nut **(figure 8, item 5)** clockwise until it stops.

2. Locate the steel ball embedded in the fuel delivery block body at the 3 o'clock position **(figure 8, item 6)**.

3. If a notch on the brass castle nut does not line up with this ball, turn the castle nut counterclockwise until the closest one does. As an aid, mark this notch with a permanent marker or dab of paint.

4. Rotate the castle nut counterclockwise and count four notches **(figure 8, item 5)**.

NOTE

When finished the marked notch will be the first notch to the left of the notch in the 12 o'clock position. (See figure 8).

Install The Control Knob Assembly

1. Hold in the control knob with the pointer in the 3 o'clock position **(figure 8, item 3)**. The tabs on the back of the control knob will align with the notches at the 6 and 12 o'clock positions on the castle nut.

2. Press the control knob onto the flame control shaft. Once the knob has engaged the castle nut, turn it clockwise until it stops.

3. Tighten the 5/16-inch control-knob retaining nut **(figure 8, item 4)**.

Start The Burner

1. Set the burner to high by rotating the control-knob counterclockwise **(figure 8, item 3)** until it stops.

2. Press the start button **(figure 8, item 8)**.

3. If the burner starts, wait for the 2-minute warm up cycle to complete and the green "run" button **(figure 8, item 9)** to illuminate and go to **Adjust the Flame Control Valve**.

4. If the burner does not start:

5. While holding the control knob in place, loosen the 5/16-inch control knob retainer nut **(figure 8, item 4)**.

6. Using a small flat-tipped screwdriver, turn the flame control valve ½ turn counterclockwise **(figure 8, item 7)**.

7. Tighten the control knob retaining nut **(figure 8, item 4)**.

8. Press the start button **(figure 8, item 8)**.

9. If the burner starts, wait for the warm up cycle to complete and the green light on the control panel **(figure 8, item 9)** to illuminate. If the burner will still not start, go back to step 5 of this section.

Adjust The Flame Control Valve

1. Set the burner to low by rotating the control-knob clockwise until it stops **(figure 8, item 3)**.

2. If the burner stays lit **(figure 8, item 7)**, go to step 8 of this section.

3. If the burner goes out:

4. While holding the control knob in place, loosen the 5/16-inch control knob retainer nut **(figure 8, item 4)**.

5. Using a small flat tipped screwdriver, turn the flame control valve ½ turn counterclockwise **(figure 8, item 7)**.

6. Tighten the control knob retaining nut **(figure 8, item 4)**.

7. Go back to **Start the Burner.**

8. While holding the control knob in place, loosen the 5/16-inch control knob retainer nut **(figure 8, item 4)**.

NOTE

The flame should be as small as possible without producing an odor or irritating combustion gas. A properly adjusted flame will only be a few inches long, but this will vary from burner to burner. There will be very little or no smell at all. The flame should be stable and should not go out or sputter.

9. Using a small flat tipped screwdriver, turn the flame control valve to adjust the flame level.

10. Tighten the control knob retaining nut **(figure 8, item 4)**.

Check for Proper Operation

1. Rotate the flame control knob throughout its entire range for low to high **(figure 8, item 3)**. The flame should vary smoothly from low to high and should not produce smoke or smell at any setting. If the low firing rate cannot be adjusted to achieve an acceptable flame, use the following procedures.

2. Place the control knob in the 12 o'clock position (**figure 8, item 3).**

3. Loosen the control knob retaining nut and pull it slightly away from the castle nut. Rotate the control knob clockwise until it lines up with the next set of notches on the castle nut. Push the control knob into these slots and tighten the control knob retaining nut.

4. Go back to **Start The Burner.**

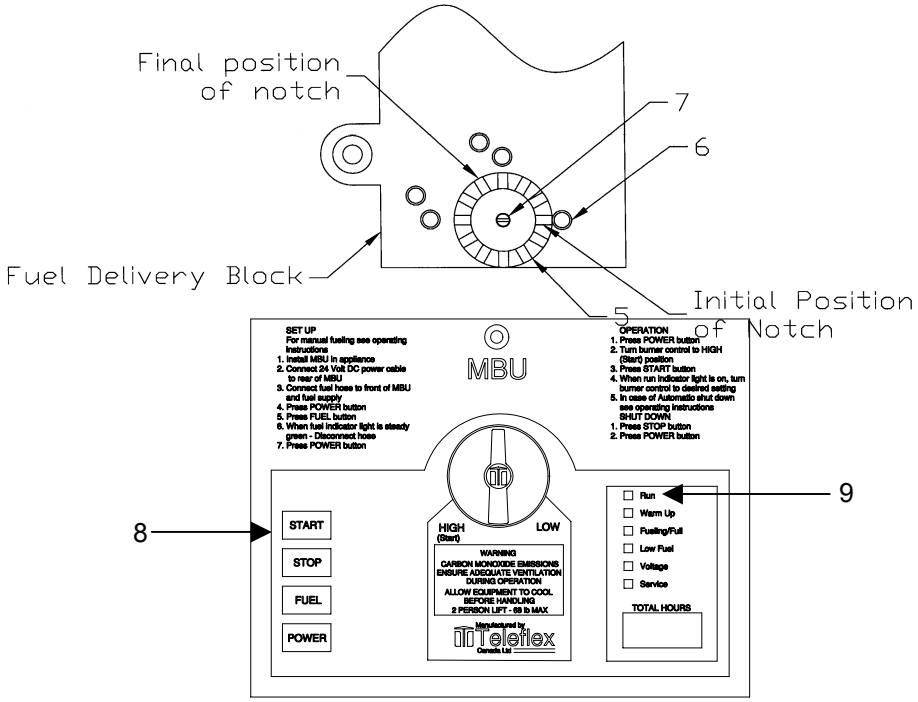


Figure 8. Adjust the Flame Control on the MBU-V3

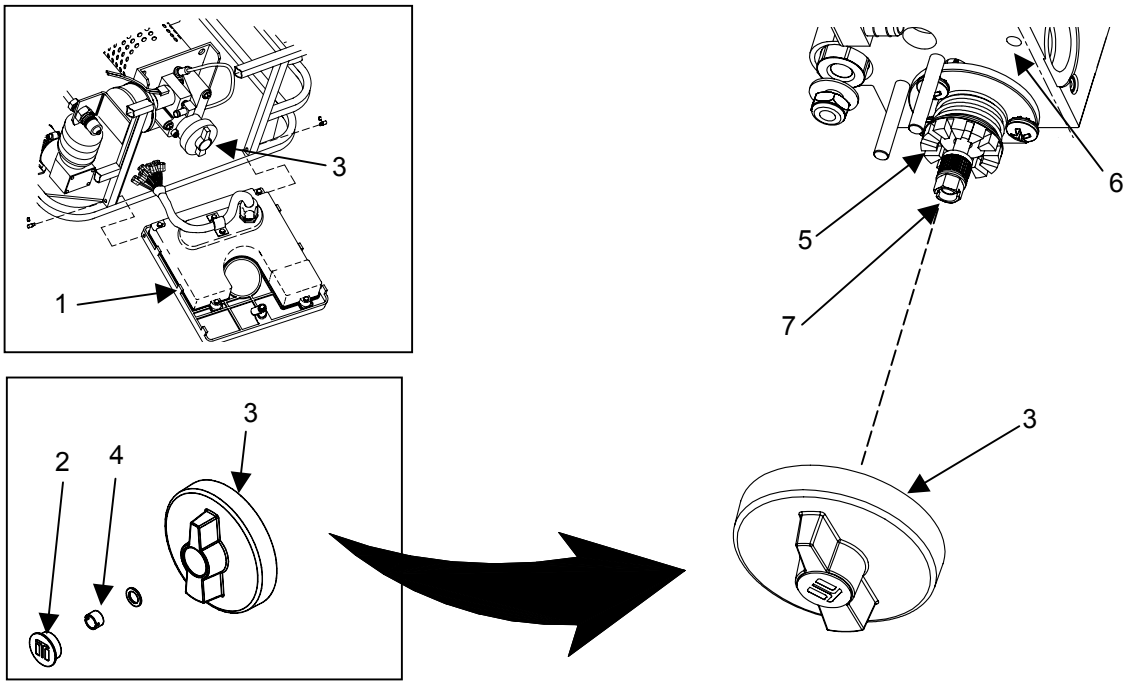


Figure 8. Adjust the Flame Control on the MBU-V3 (cont.)

REPLACE

NOTE

The air filter **(figure 9, item 1)**, control knob assembly **(figure 9, item 2)**, flame sensor **(figure 9, item 3)**, fuel feeder line **(figure 9, item 4)**, fuel shut-off solenoid **(figure 9, item 5)**, and air fill solenoid **(figure 9, item 6)** 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 **(figure 9, item 7)** from the burner tube mounting shafts while still connected to all wire harnesses and hoses.

The replacement procedure for the air filter **(figure 9, item 1)** is described in WP 0012 00.

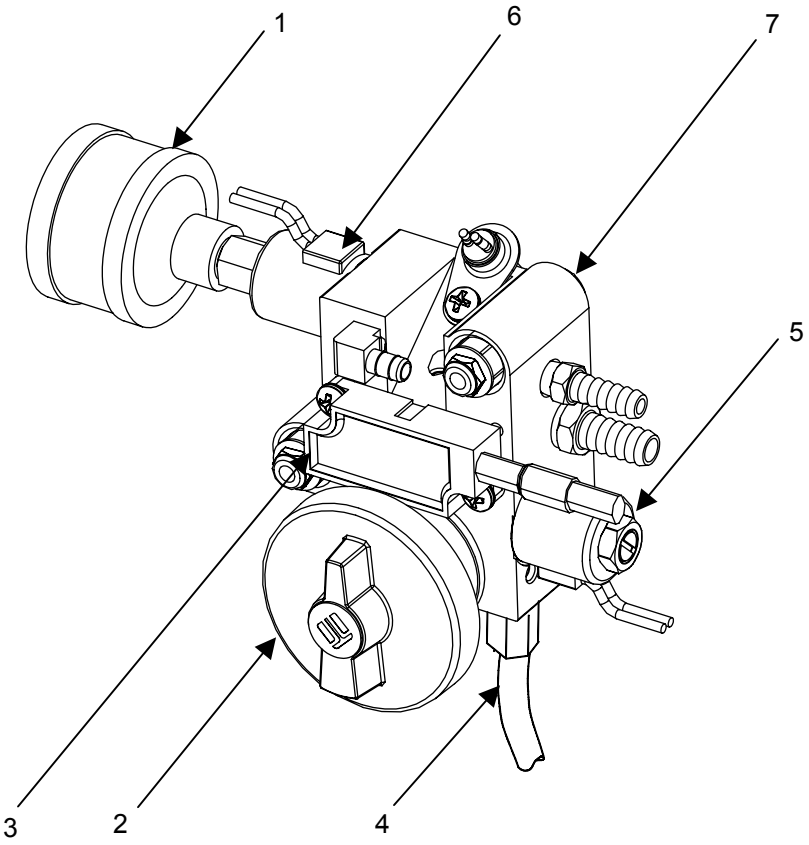


Figure 9. Replacing Parts Without Removing Fuel Delivery Block (MBU-V3 shown)

Replace the Control Knob Assembly

1. Ensure the MBU is cool and disconnected from power IAW instructions given in WP 0011 00. Turn the control knob to point to the 12 o'clock position.

2. Open control panel **(figure 10, item 1)** to gain access to the fuel delivery block assembly **(figure 10, item 2)**.

NOTE

Do not disassemble the knob components.

3. To replace the control knob assembly **(figure 10, item 3)**, remove the cap **(figure 10, item 4)**, and loosen the retainer nut **(figure 10, item 5)** ONLY enough to release the knob from the Fuel Delivery Block **(figure 10, item 6)**. Do not disassemble the knob components.

4. Remove the control knob assembly **(figure 10, item 3)** taking care not to drop the spring **(figure 10, item 7)** located behind the knob.

5. Loosen the retainer nut **(figure 10, item 5)** on the new knob until it is just held in place. Make sure that the spring **(figure 10, item 7)** is in place.

6. Using a screwdriver or nutdriver placed in the slot of the retainer nut to hold it steady, position the new control knob assembly **(figure 10, item 3)** at a twelve o'clock position and press onto the needle valve shaft **(figure 10, item 8)**.

7. Press the control knob until the collet **(figure 10, item 9)** on the back of the control knob is firmly engaged on the needle valve shaft **(figure 10, item 8)**.

8. Secure the control knob assembly **(figure 10, item 3)** by tightening the retainer nut **(figure 10, item 5)**.

9. Replace the cap **(figure 10, item 4)**.

10. Close the control panel **(figure 10, item 1)**.

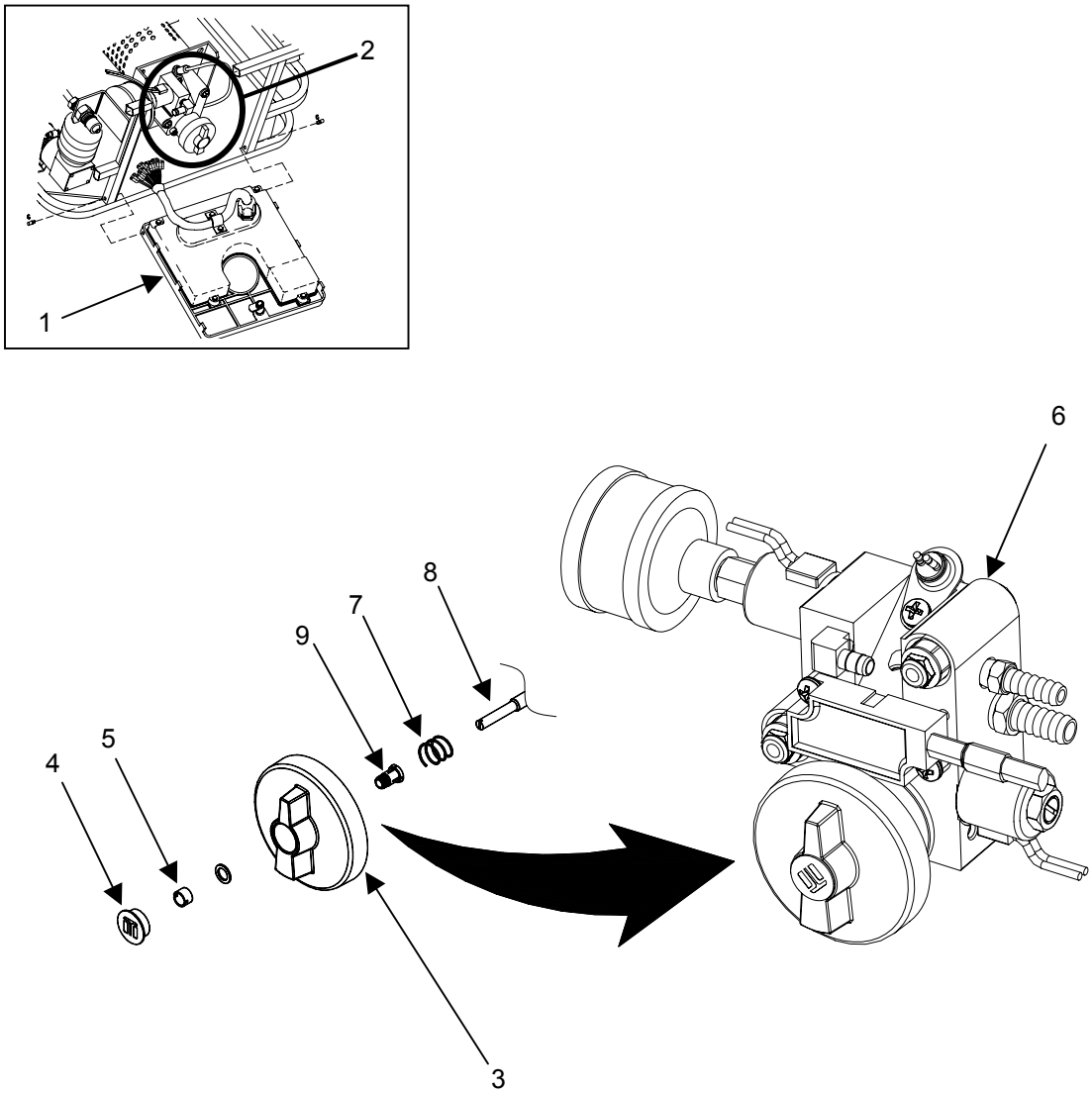


Figure 10. Replace the Control Knob Assembly

Test the Flame Sensor

1. Attempt to start the MBU by pressing and releasing the start button **(figure 11, item 3)**.

2. Begin counting when the start button is pushed. If the flame sensor is bad, the burner will attempt to light but shutdown in about 8 seconds when the controller checks for the proper signal from the flame sensor. ERO1 Will be displayed.

3. Press and hold the start button **(figure 11, item 8)**. Wait for the MBU to ignite and continue holding the start button for 20 more seconds. If the flame sensor is bad **(figure 11, item 3)**, the burner should shut off immediately when the button is released. The MBU will display ER01.

Replace the Flame Sensor

1. Ensure the MBU is cool and disconnected from power.

2. Open control panel **(figure 11, item 1)** to gain access to the fuel delivery block assembly **(figure 11, item 2)**.

3. To replace the flame sensor assembly **(figure 11, item 3)**, remove the two screws **(figure 11, item 4)** with a cross tip screwdriver.

4. Disconnect the flame sensor wiring harness **(figure 11, item 5)** by opening the clamp and separating the connector at the end of the harness.

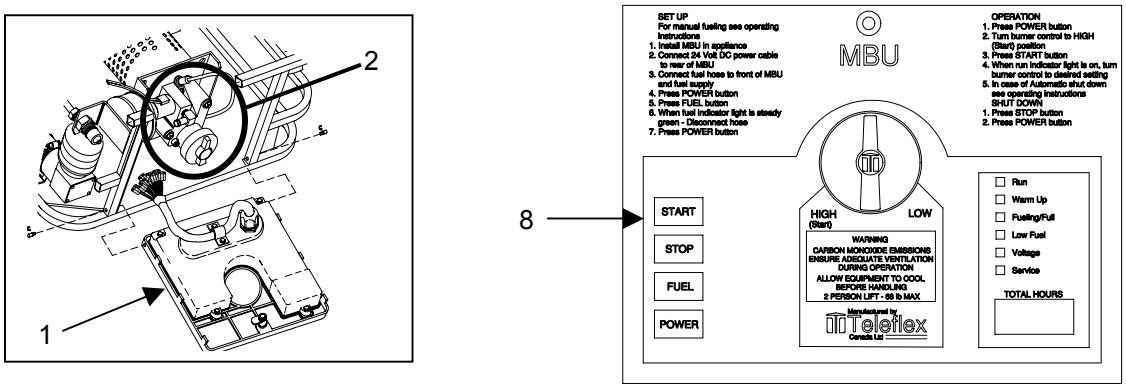
5. Remove the flame sensor assembly **(figure 11, item 3)**.

6. Install a new flame sensor assembly **(figure 11, item 3)** on the fuel delivery block **(figure 11, item 6)**.

7. Ensure lockwashers **(figure 11, item 7)** are in place, and secure the two screws **(figure 11, item 4)** with a cross tip screwdriver.

8. Reconnect the flame sensor wiring harness assembly connector **(figure 11, item 5)**.

9. Close the control panel **(figure 11, item 1)**.



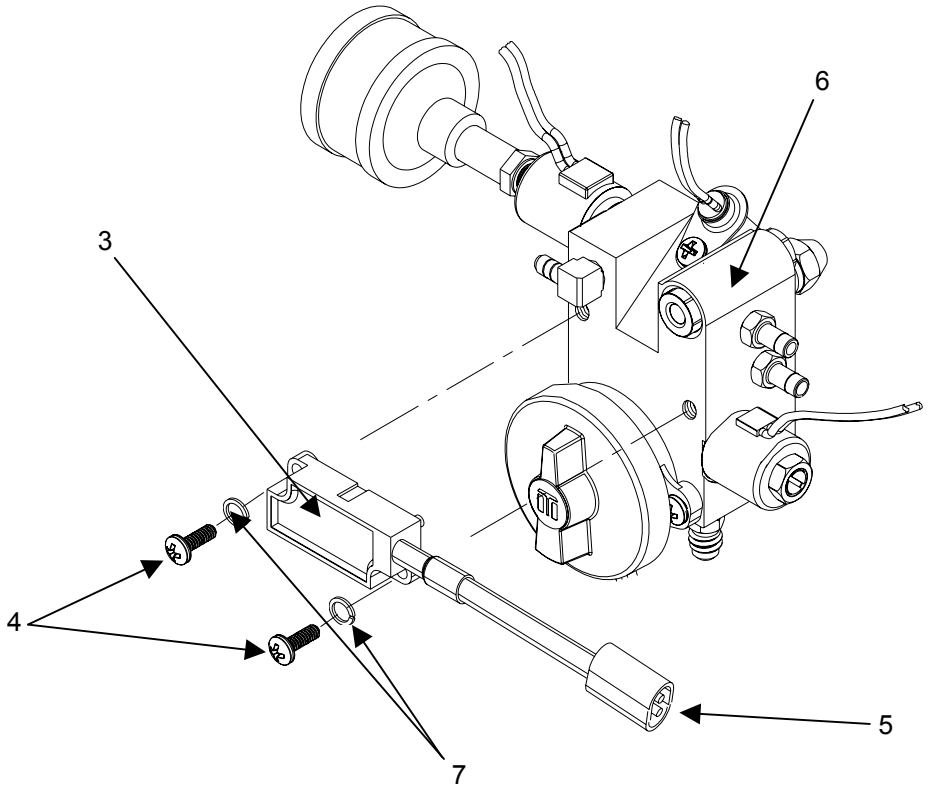


Figure 11. Replace the Flame Sensor

Replace the Feedback Potentiometer (MBU only)

NOTE

The following procedure is not applicable to the MBU-V3. The MBU-V3 does not employ a feedback potentiometer.

1. Ensure the MBU is cool, disconnected from power IAW instructions given in WP 0011 00. Place the control knob in the 12 o'clock position.

2. Open control panel **(figure 12, item 1)** to gain access to the fuel delivery block assembly **(figure 12, item 2)**.

NOTE

Do not disassemble the knob components.

3. To remove the control knob assembly **(figure 12, item 3)**, remove the cap **(figure 12, item 4)**, and loosen the retainer nut **(figure 12, item 5)** ONLY enough to release the knob from the needle valve shaft **(figure 12, item 6)**. Do not disassemble the knob components.

4. Remove the control knob assembly **(figure 12, item 3)** taking care not to drop the spring **(figure 12, item 7)** located behind the knob.

5. Remove the two screws **(figure 12, item 8)** retaining the feedback potentiometer assembly **(figure 12, item 9)** to the fuel delivery block **(figure 12, item 2)**.

6. Disconnect the feedback potentiometer wiring harness **(figure 12, item 10)** by separating the connector at the end of the harness.

7. Remove the feedback potentiometer assembly **(figure 12, item 9)**.

8. Install a new feedback potentiometer assembly **(figure 12, item 9)** on the fuel delivery block **(figure 12, item 2)**.

9. Secure the two screws **(figure 12, item 8)** with a cross tip screwdriver.

10. Reconnect the feedback potentiometer wiring harness assembly connector **(figure 12, item 10)**.

11. Using a small flat tip screwdriver, turn the pot counterclockwise until the slots are at the 3 o'clock and 9 o'clock positions **(figure 12, item 9).**

12. While holding the control knob in the 12 o'clock position, use a screwdriver placed in the slot of the retainer nut to hold it steady, press new control knob assembly **(figure 12, item 3)** onto the needle valve shaft **(figure 12, item 6)**.

13. Press the Control Knob until the collet **(figure 12, item 11)** on the back of the Control Knob is firmly engaged on the needle valve shaft **(figure 12, item 6)**.

14. Secure the control knob assembly **(figure 12, item 3)** by tightening the retainer nut **(figure 12, item 5)** with a screwdriver.

15. Replace the cap **(figure 12, item 4)**.

16. Close the control panel **(figure 12, item 1)**.

NOTE

The calibration procedure is 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, then 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.

17. Calibrate the controller assembly IAW procedures given in WP 0023 00.

18. Adjust the flame control IAW procedures given in this WP.

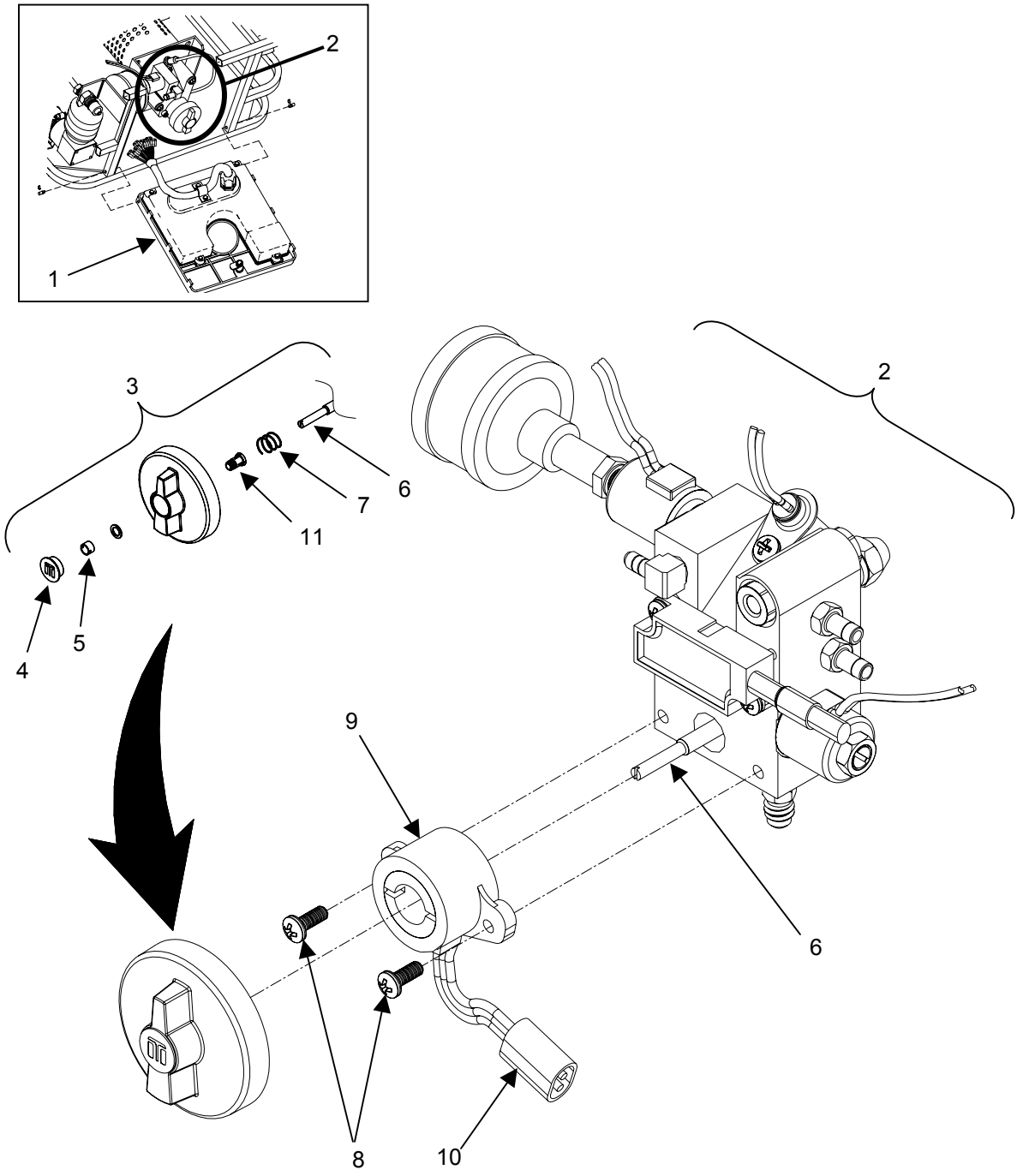


Figure 12. Replace the Feedback Potentiometer (MBU only)

Replace the Fuel Feeder Line

WARNING

Before proceeding with this procedure, the MBU fuel tank must be drained completely as described in WP 0011 00. 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. Failure to observe safety precautions may result in injury or death to personnel.

1. Ensure the MBU is cool, disconnected from power, and has been drained of fuel IAW instructions given in WP 0011 00.

2. Open control panel **(figure 13, item 1)** to gain access to the fuel delivery block assembly **(figure 13, item 2)**.

3. Loosen the nut **(figure 13, item 3)** attached to the fuel delivery block fitting **(figure 13, item 4)** with a wrench. Drain any fuel remaining in the line into an approved container. Wipe up any fuel that may have spilled.

4. Remove the opposite end of the fuel feeder line **(figure 13, item 5)** by loosening the nut **(figure 13, item 6)** attached to the regulator assembly fitting **(figure 13, item 7)**.

5. Remove the fuel feeder line **(figure 13, item 5)**.

6. Install a new fuel feeder line **(figure 13, item 5)** by threading the nut **(figure 13, item 3)** onto the fitting **(figure 13, item 4)** of the fuel delivery block **(figure 13, item 8)**. Tighten using a wrench.

7. Install the nut **(figure 13, item 6)** on the opposite end of the fuel feeder line **(figure 13, item 5)** onto the regulator assembly fitting **(figure 13, item 7)**. Tighten using a wrench.

8. Close the control panel **(figure 13, item 1)**.

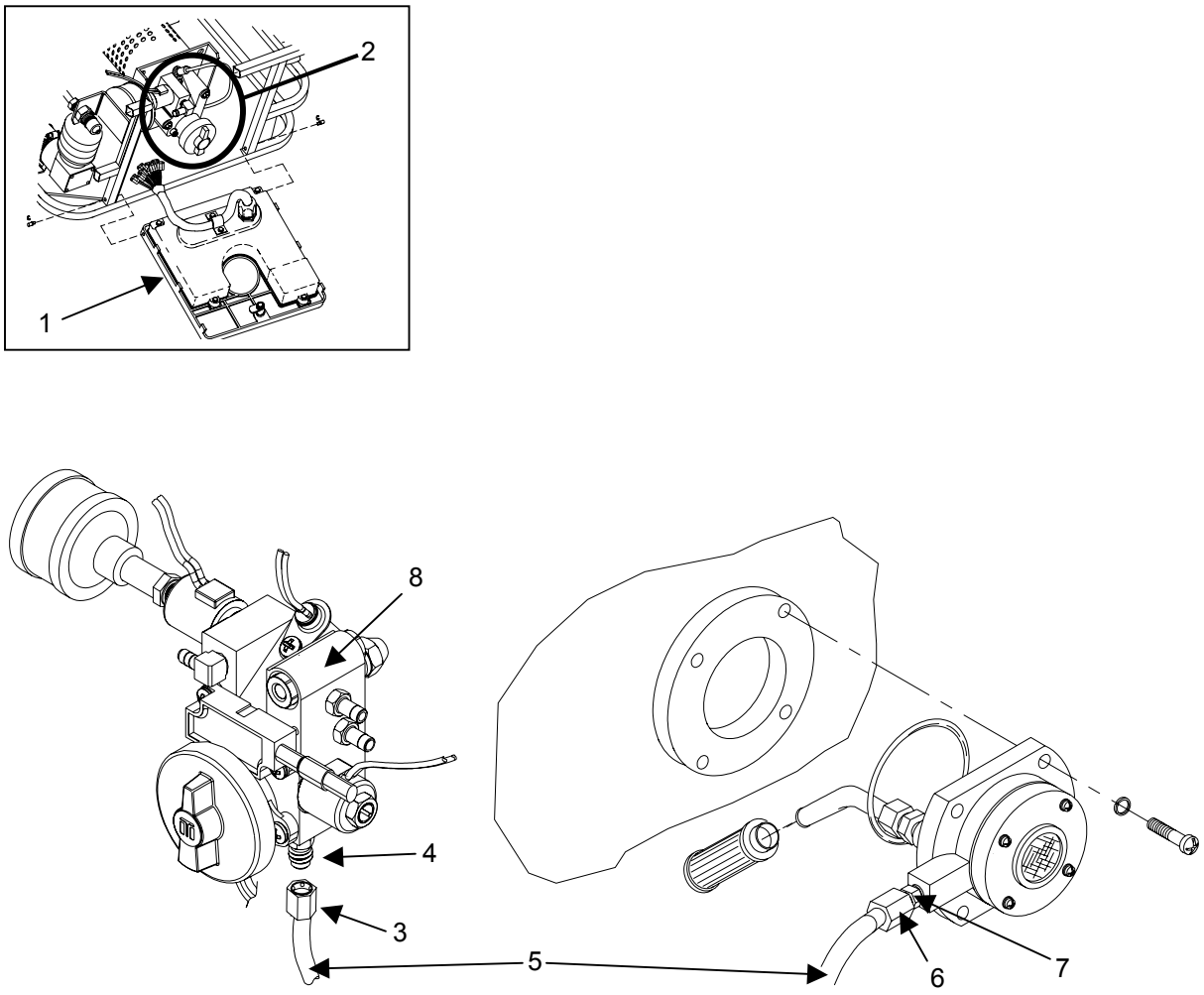


Figure 13. Replace the Fuel Feeder Line

Replace the Air/Fill Solenoid Valve

1. Ensure the MBU is cool and disconnected from power.

2. Open control panel **(figure 14, item 1)** to gain access to the fuel delivery block assembly **(figure 14, item 2)**.

3. To replace the air/fill solenoid valve **(figure 14, item 3)**, remove the air filter from the threaded end **(figure 14, item 4)** of the solenoid valve as described in WP 0012 00.

4. Disconnect the solenoid valve wiring harness **(figure 14, item 5)** by separating the connector at the end of the harness assembly.

5. Loosen and remove the retaining screw **(figure 14, item 6)** securing the air/fill solenoid valve **(figure 14, item 3)** to the fuel delivery block **(figure 14, item 7)** with a flat blade screwdriver. It may be necessary to grasp the body of the solenoid valve to keep it from turning. Note the position of the harness exiting the solenoid for proper reconnection later in the procedure.

6. A small spring tensioned plunger **(figure 14, item 8)** is located inside the solenoid valve **(figure 14, item 3)**. Take care not to drop the plunger into the MBU. Carefully remove the solenoid valve assembly by pulling straight out.

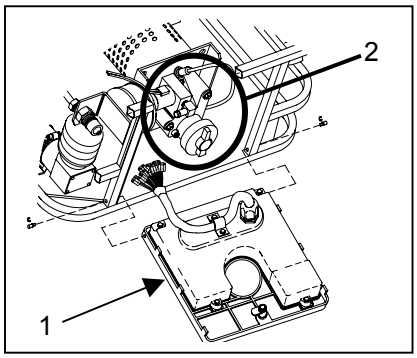
7. Install a new air/fill solenoid valve **(figure 14, item 3)** in the fuel delivery block **(figure 14, item 7)**. Be certain that the plunger **(figure 14, item 8)** is installed in the solenoid body so that the end of the plunger with the spring is inserted into the solenoid body first. The end of the plunger with the small rubber pad should face out of the solenoid.

8. The base of the solenoid valve **(figure 14, item 3)** should be flush with the fuel delivery block **(figure 14, item 7)** when properly installed. Rotate the body of the solenoid so that the wiring harness **(figure 14, item 5)** is oriented as it was prior to removal.

9. Reinstall the retaining screw **(figure 14, item 6)** through the body of the solenoid **(figure 14, item 3)** and tighten. Reconnect the connector at the end of the solenoid wiring harness **(figure 14, item 5)**.

10. Reinstall the air filter on the threaded end **(figure 14, item 6)** of the solenoid valve **(figure 14, item 3)** as described in WP 0012 00.

11. Close the control panel **(figure 14, item 1)**.



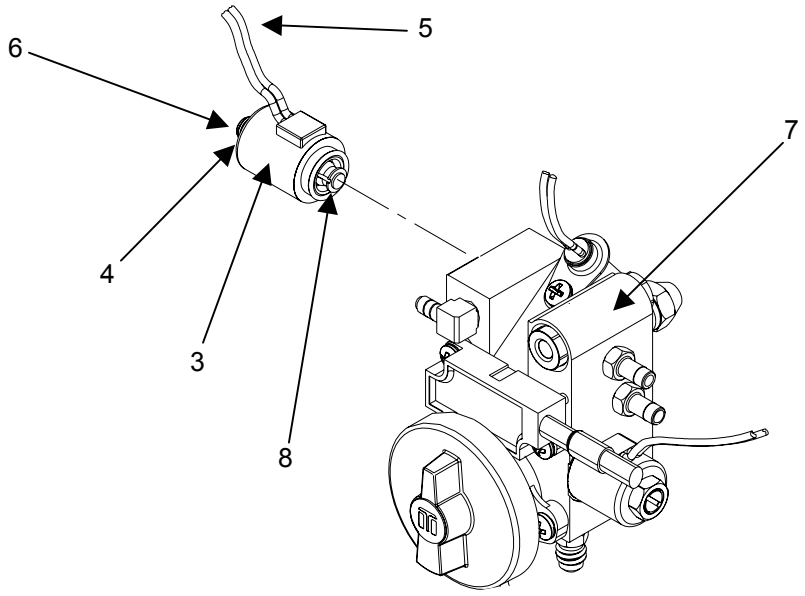


Figure 14. Replacement of Air/Fill Solenoid Valve (MBU-V3 shown)

Replace the Fuel Shut-Off Solenoid Valve

WARNING

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. Failure to observe safety precautions may result in injury or death to personnel.

1. Ensure the MBU is cool and disconnected from power.
2. Open control panel **(figure 15, item 1)** to gain access to the fuel delivery block assembly **(figure 15, item 2)**.
3. To replace the fuel shut-off solenoid valve **(figure 15, item 3)**, disconnect the solenoid valve wiring harness **(figure 15, item 4)** by separating the connector at the end of the harness assembly.
4. Loosen and remove the nut **(figure 15, item 5)** on the end of the solenoid valve **(figure 15, item 3)**. It may be necessary to grasp the body of the solenoid valve to keep it from turning.
5. Loosen and remove the retaining screw **(figure 15, item 6)** securing the fuel shut-off solenoid valve **(figure 15, item 3)** to the fuel delivery block **(figure 15, item 7)** with a flat blade screwdriver. It may be necessary to grasp the body of the solenoid valve to keep it from turning. Take note of the orientation of the wiring harness **(figure 15, item 4)** so that it may be installed in its proper position later in this procedure.
6. A small spring tensioned plunger is located inside the solenoid valve **(figure 15, item 3)**. Take care not to drop the plunger into the MBU. Carefully remove the solenoid valve assembly by pulling straight out.
7. Install a new fuel shut-off solenoid valve **(figure 15, item 3)** in the fuel delivery block **(figure 15, item 7)**. 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.
8. The base of the solenoid valve **(figure 15, item 3)** should be flush with the fuel delivery block **(figure 15, item 7)** when properly installed. Rotate the body of the solenoid so that the wiring harness assembly **(figure 15, item 4)** is as it was prior to removal.
9. Reinstall the retaining screw **(figure 15, item 6)** through the body of the solenoid and tighten.
10. Reinstall the nut **(figure 15, item 5)** and tighten.
11. Reconnect the connector at the end of the solenoid wiring harness assembly **(figure 15, item 4)**.
12. Close the control panel **(figure 15, item 1)**.

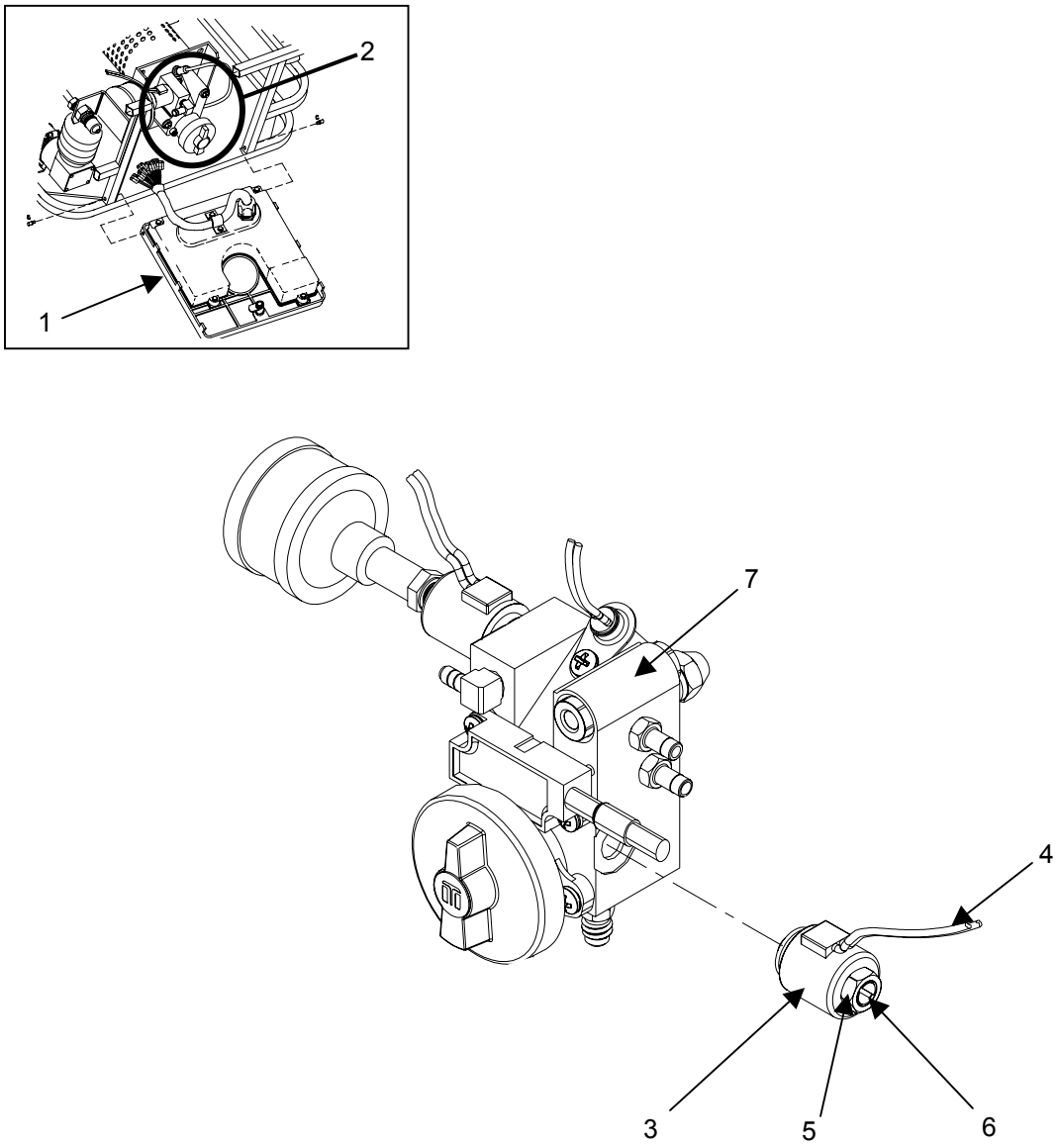


Figure 15. Replace the Fuel Shut-Off Solenoid Valve (MBU-V3 shown)

Replace the Air Line to Vent Valve

WARNING

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. Failure to observe safety precautions may result in injury or death to personnel.

1. To replace the air line **(figure 16, item 1)**, temporarily remove the Fuel Delivery Block **(figure 16, item 2)** from the Burner Tube mounting studs IAW procedures given in WP 0025 00, “Remove/Install the Fuel Delivery Block”.

2. Squeeze the tabs on hose clamp **(figure 16, item 3)** with a pair of pliers and slide the clamp off the fuel delivery block fitting **(figure 16, item 4)** and onto the neoprene line **(figure 16, item 1)**. If it is necessary to replace the fitting, remove with a wrench and install a new fitting.

3. Squeeze the tabs on hose clamp **(figure 16, item 5)** with a pair of pliers and slide the clamp off the vent valve fitting **(figure 16, item 6)** and onto the fuel line **(figure 16, item 1)**.

4. After removing the clamp, grasp the end of the fuel line **(figure 16, item 1)** connected to the fuel delivery block fitting **(figure 16, item 4)** and pull while wiggling from side to side, until the line is free.

5. Remove the end of the fuel line **(figure 16, item 1)** connected to the vent valve fitting **(figure 16, item 6)** in a similar manner. Be sure to wipe up any fuel that may have dripped from the line. If the vent valve fitting needs replacement, unscrew and install a new vent valve fitting.

6. Using the damaged fuel line **(figure 16, item 1)** as a size guide, cut a new piece of fuel line of the same length from the bulk supply of neoprene hose.

7. Remove the clamps **(figure 16, item 3, figure 16, item 5)** from the damaged fuel line and install on the new line, sliding each about 1-1/2 to 2 inches from the end.

8. Reinstall the new line, pushing one end fully onto the fuel delivery block fitting **(figure 16, item 4)** and the other end onto the vent valve fitting **(figure 16, item 6)**.

9. Squeeze the tabs on the clamps **(figure 16, item 3, figure 16, item 5)** with a pair of pliers and slide one clamp up on the fuel delivery block fitting **(figure 16, item 4)** and the other end onto the vent assembly fitting **(figure 16, item 6)**. Be sure to position the tabs so that they can be easily accessed should service be required at a later date.

10. Install the Fuel Delivery Block **(figure 16, item 2)** onto the burner tube mounting studs IAW procedures given in WP 0025 00, “Remove/Install the Fuel Delivery Block”.

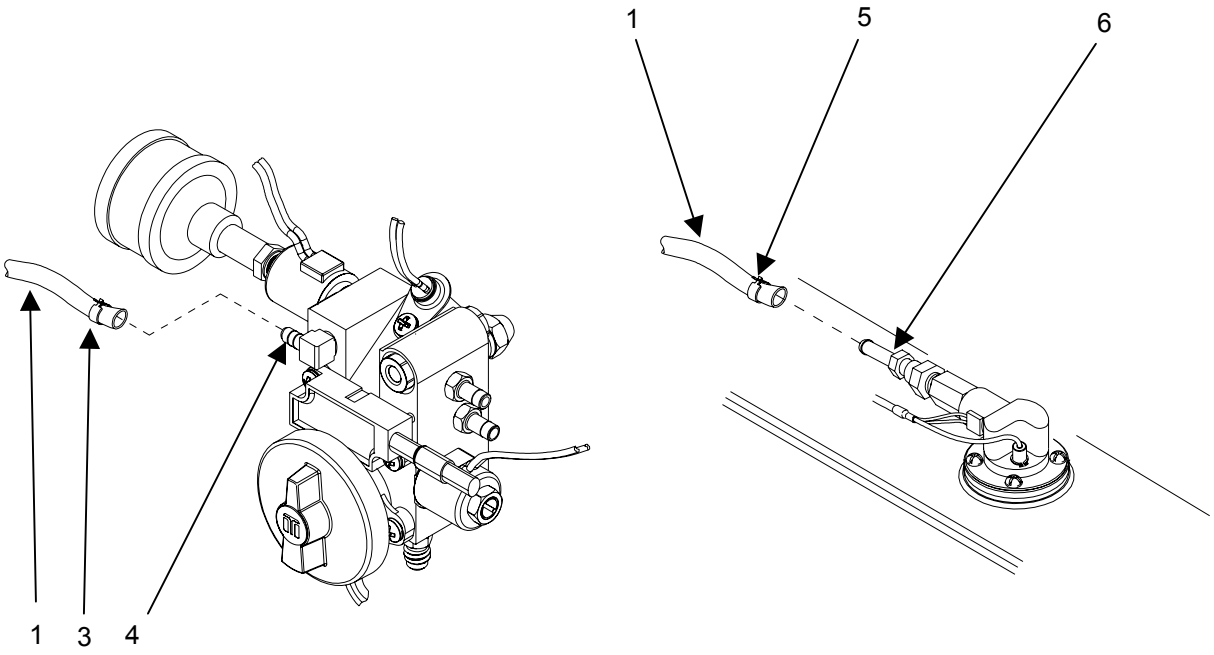


Figure 16. Replace the Neoprene Fuel Line

Replace Air Line to Compressor

NOTE

There are two neoprene air lines extending from the fuel delivery block assembly to the air compressor. Note that the two lines are different sizes. The replacement procedure for both air lines is identical.

1. Ensure the MBU is cool, disconnected from power, and has been drained of fuel IAW instructions given in WP 0011 00.

2. Open control panel **(figure 17, item 1)** to gain access to the fuel delivery block assembly **(figure 17, item 2)**.

3. To replace either of the neoprene air lines **(figure 17, item 3)**, squeeze the tabs on hose clamp **(figure 17, item 4)** with a pair of pliers and slide the clamp off the fuel delivery block fitting **(figure 17, item 5)** and onto the air line.

4. Squeeze the tabs on hose clamp **(figure 17, item 6)** with a pair of pliers and slide the clamp off the air compressor fitting **(figure 17, item 7)** and onto the air line **(figure 17, item 3)**.

5. After removing the clamp, grasp the end of the air line **(figure 17, item 3)** connected to the fuel delivery block fitting **(figure 17, item 5)** and pull while wiggling from side to side, until the line is free. If any of the fuel delivery block fittings require replacement, simply loosen with an open end wrench and install a new fitting.

6. Remove the end of the air line **(figure 17, item 3)** connected to the air compressor fitting **(figure 17, item 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 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 to the fitting threads before installation.

NOTE

The neoprene air line connected to the upper fitting on the compressor is $^{3}/_{8}$-inch ID. The neoprene air line connected tot he lower fitting on the compressor is ¼-inch ID.

7. Using the damaged air line **(figure 17, item 3)** as a size guide, cut a new piece of air line of the same length from the bulk supply of neoprene hose. Remove the clamps **(figure 17, item 4, figure 17, item 6)** from the damaged air line and install on the new line, sliding each about 1.5 to 2 inches from the end.

8. Reinstall the new line, pushing one end fully onto the fuel delivery block fitting **(figure 17, item 5)** and the other end onto the air compressor fitting **(figure 17, item 7)**.

9. Squeeze the tabs on the clamps **(figure 17, item 4, figure 17, item 6)** with a pair of pliers and slide one clamp up on the fuel delivery block fitting **(figure 17, item 5)** and the other end onto the air compressor fitting **(figure 17, item 7)**. Be sure to position the tabs so that they can be easily accessed should service be required at a later date.

10. Close the control panel **(figure 17, item 1)**.

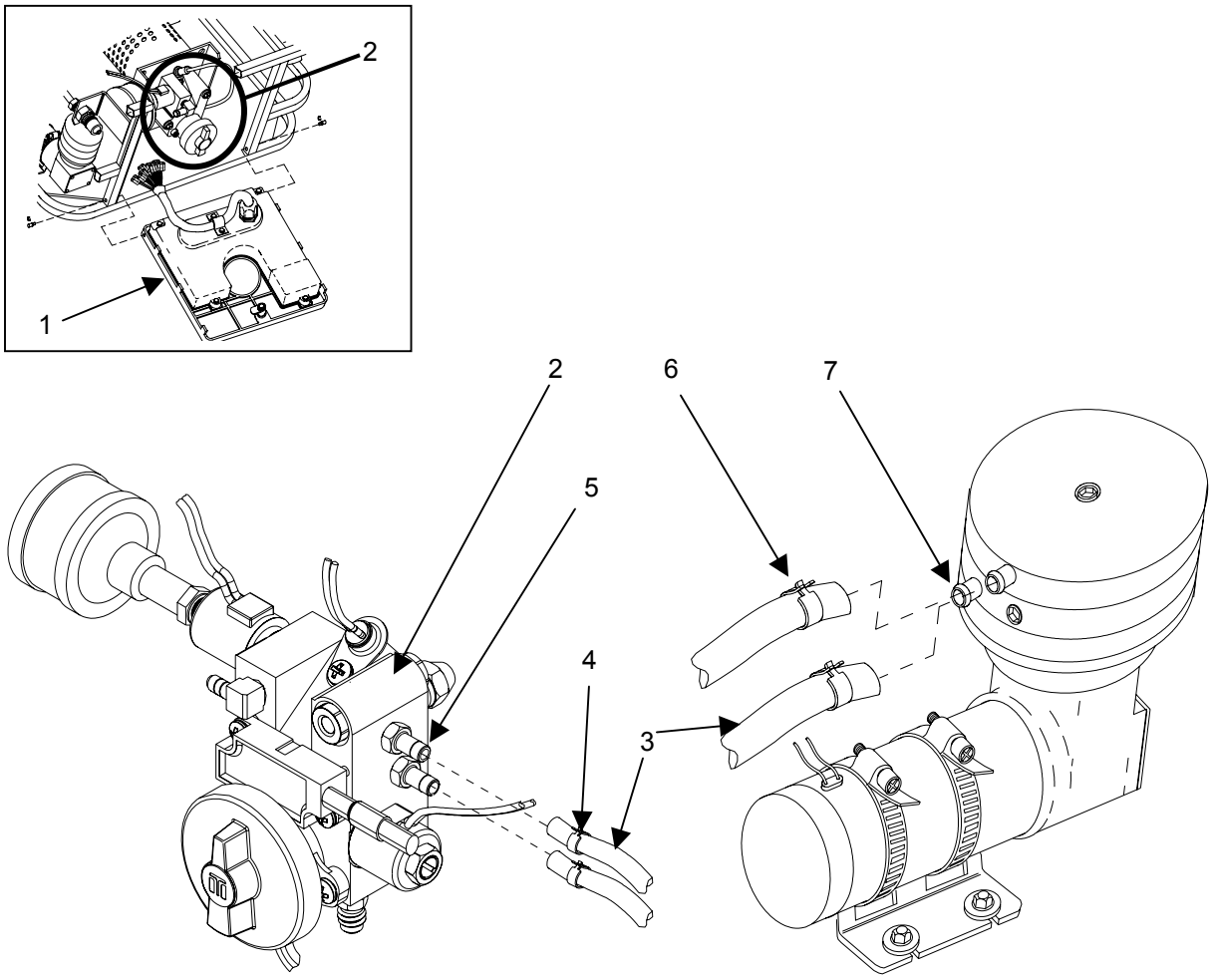


Figure 17. Replace Neoprene Air Lines

Replace the Fuel Delivery Block Assembly

WARNING

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. Failure to observe safety precautions may result in injury or death to personnel.

NOTE

There are no field serviceable items within the fuel delivery block.

1. Remove Fuel Delivery Block **(figure 18, item 1)** from the burner tube mounting studs IAW procedures given in WP 0025 00.

2. To replace the entire fuel delivery block assembly **(figure 18, item 1)**, disconnect the fuel line **(figure 18, item 2)**, fuel feeder line **(figure 18, item 3)** and air hoses **(figure 13, item 4, figure 18, item 5)** from the fuel delivery block assembly.

3. Disconnect the air/fill solenoid harness connector **(figure 18, item 6)** and the fuel shut-off solenoid harness connector **(figure 18, item 7)**.

4. Disconnect the flame sensor harness connector **(figure 18, item 8)**.

5. Disconnect the Feedback Potentiometer, if fitted (MBU only) **(figure 18, item 9)**.

6. Disconnect the Ignitor Assembly **(figure 18, item 10).** Remove the Control Knob **(figure 18, item 11)** and the Ground Wire **(figure 18, item 12)**.

7. Remove the fuel delivery block assembly from the MBU frame **(figure 18, item 13)**.

8. To install the new fuel delivery block assembly **(figure 18, item 1)**, place the assembly in the MBU frame **(figure 18, item 13)** with the control knob **(figure 18, item 11)** facing toward the front of the MBU.

NOTE

The air line connected to the upper fitting on the compressor is $^{3}/_{8}$-inch ID. The air line connected to the lower fitting on the compressor is ¼-inch ID.

9. Connect the fuel line **(figure 18, item 2)**, fuel feeder line **(figure 18, item 3)** and air hoses **(figure 18, item 4, figure 18, item 5)** to the fuel delivery block assembly **(figure 18, item 1)**. Note that neoprene hoses are two sizes. Install correct size hose on correct size fitting.

10. Connect the air/fill solenoid harness connector **(figure 18, item 6)** and the fuel shut-off solenoid harness connector **(figure 18, item 7)**.

11. Connect the Feedback Potentiometer, if fitted (MBU only) **(figure 18, item 9)**.

12. Connect the flame sensor harness connector **(figure 18, item 8)**. This will not be connected after replacement with a MBU V3 fuel delivery block.

13. Install the Ground Wire **(figure 18, item 12)**.

14. Install the Fuel Delivery Block **(figure 18, item 1)** onto the burner tube mounting studs IAW procedures given in WP 0025 00, “Remove/Install the Fuel Delivery Block”.

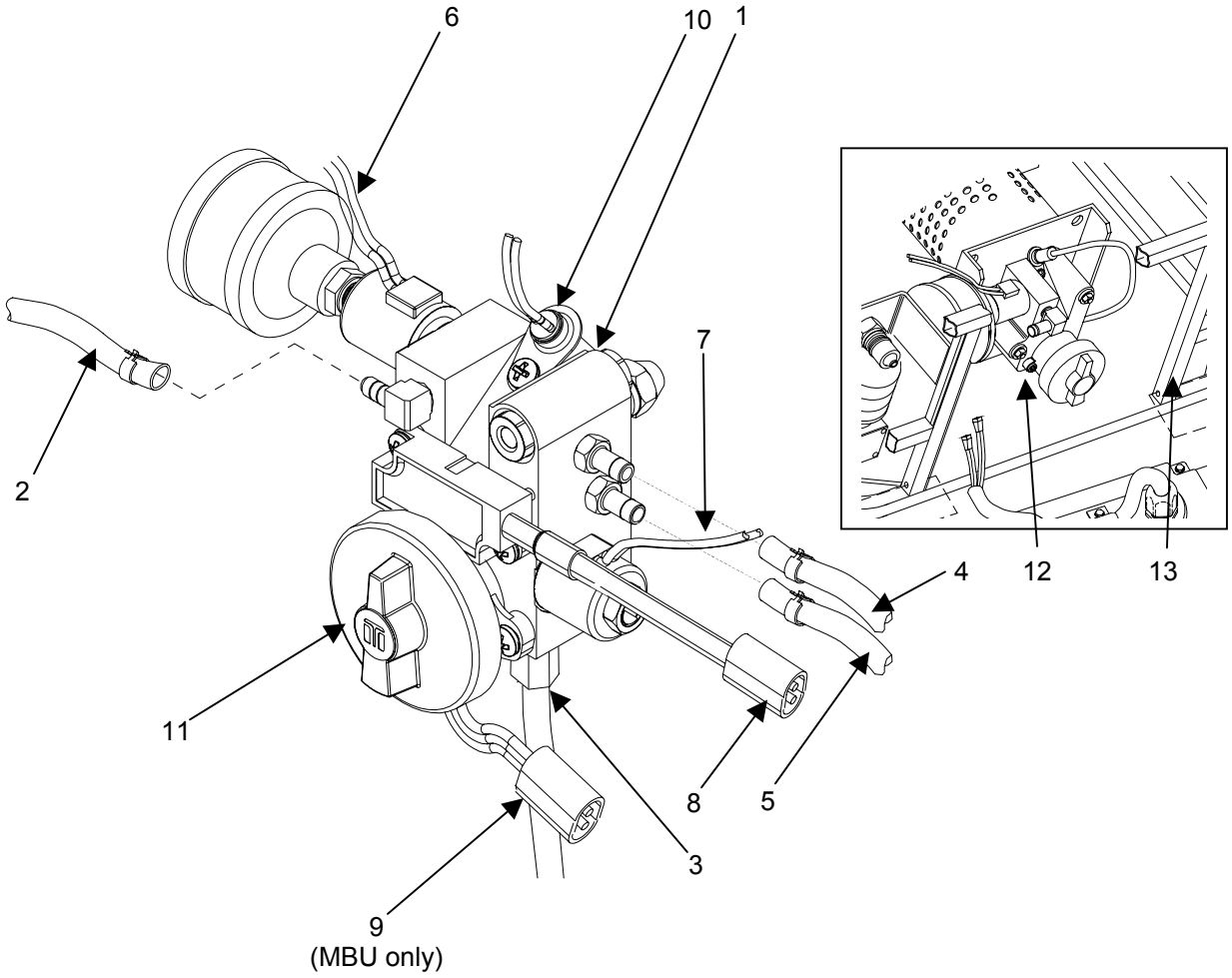


Figure 18. Replace the Fuel Delivery Block Assembly

END OF WORK PACKAGE

UNIT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
REFLECTIVE HEAT SHIELD AND BURNER ASSEMBLY
INSPECT, REPLACE

INITIAL SETUP

Tools
General Mechanics Tool Kit: Automotive (Item 2, Table 2, WP 0041 00)

Personnel Required
Two

Materials/Parts
Fuel Can (Table 1, WP 0065 00)
Wiping Rags (Item 5, Table 1, WP 0066 00)

Equipment Condition
MBU shut-down, cool, and disconnected from power source. Fuel tank drained.

INSPECT

Inspect the Reflective Heat Shield and Burner Tube Assembly

WARNING

Before proceeding with this procedure, the MBU fuel tank must be drained completely as described in WP 0011 00. 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. Failure to observe safety precautions may result in injury or death to personnel.

WARNING

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

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.

Inspect the reflective heat shield **(figure 1, item 1)** and burner tube assembly **(figure 1, item 2)** for physical damage, such as dents, perforations or severe warping. Check mounting hardware for security.

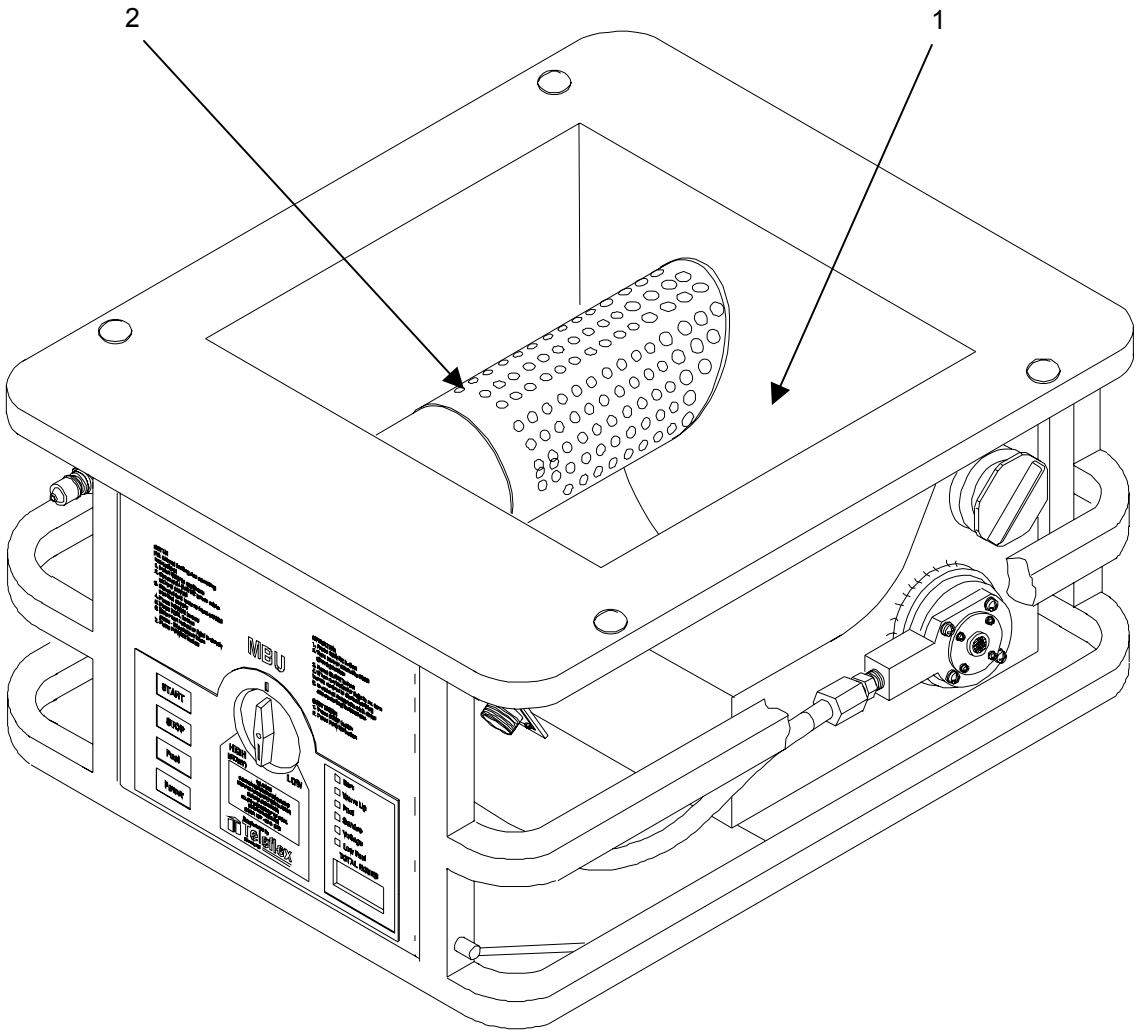


Figure 1. Inspect the Reflective Heat Shield and Burner Assembly

REPLACE

Replace the Reflective Heat Shield and Burner Assembly

WARNING

Before proceeding with this procedure, the MBU fuel tank must be drained completely as described in WP 0011 00. 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. Failure to observe safety precautions may result in injury or death to personnel.

WARNING

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

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.

1. Temporarily remove the Fuel Delivery Block from the burner tube mounting shafts as described in WP 0025 00.

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

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

4. Remove the burner tube assembly by removing four screws **(figure 2, item 7)**.

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

6. Flip the entire assembly face down on a work surface and press down on the burner well to expose the burner tube mounting plate **(figure 2, item 9)**.

7. Install the burner tube assembly **(figure 2, item 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 **(figure 2, item 6)**.

8. Place the entire reflective heat shield and burner tube assembly back in place on the MBU frame **(figure 2, item 6)**.

9. Install four carriage bolts **(figure 2, item 3)**, washers **(figure 2, item 4)**, and self locking nylon nuts **(figure 2, item 5)** securing the reflective heat shield assembly **(figure 2, item 1)** to the frame **(figure 2, item 6)**.

10. Install the Fuel Delivery Block onto the burner tube mounting shafts as described in WP 0025 00.

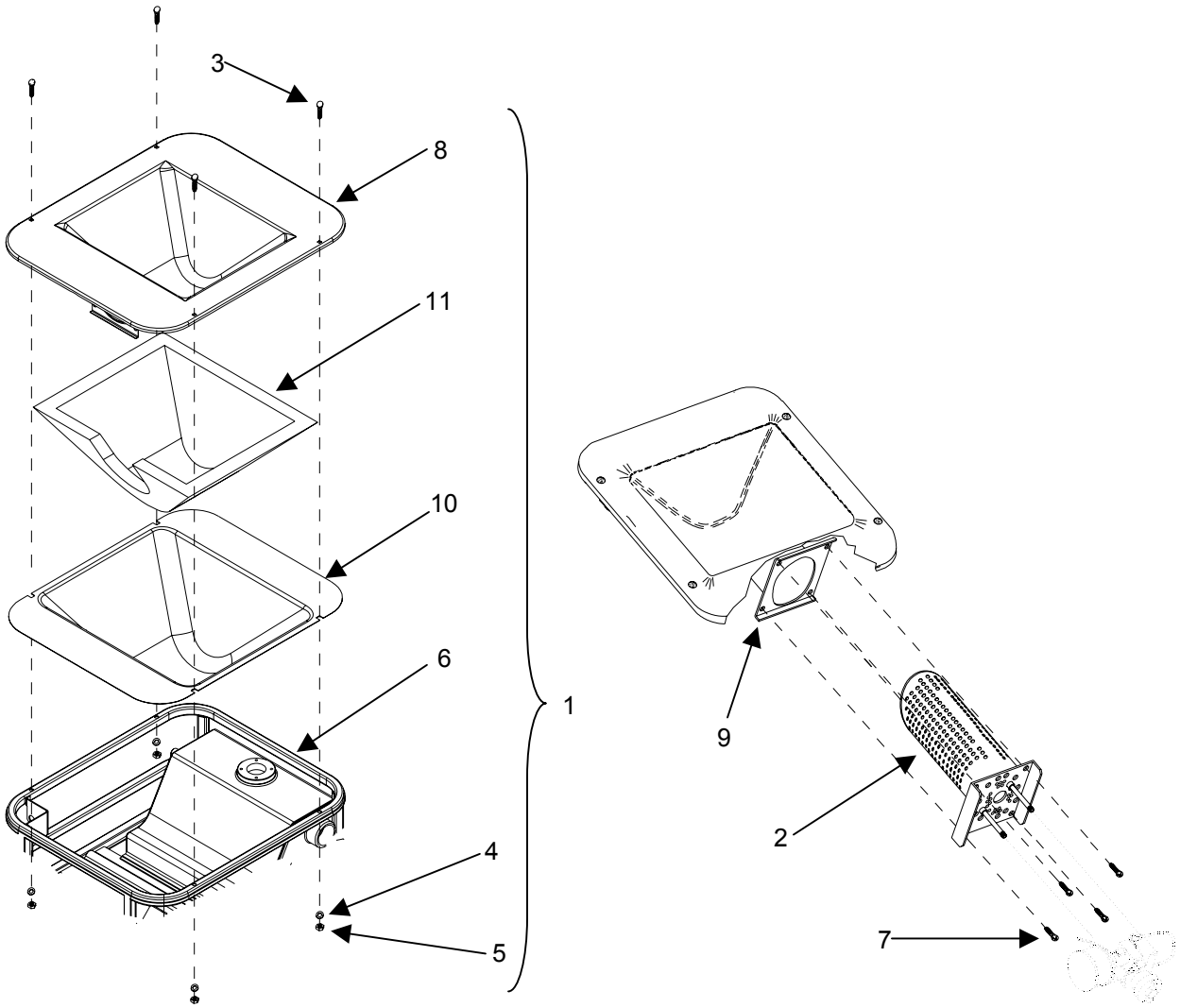


Figure 2. Replace the Reflective Heat Shield and Burner Assembly

END OF WORK PACKAGE

UNIT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
VENT VALVE ASSEMBLY
INSPECT, TEST, SERVICE, REPLACE

INITIAL SETUP

Tools
General Mechanics Tool Kit: Automotive (Item 2, Table 2, WP 0041 00)

Personnel Required
Two

Materials/Parts
O-ring (Item 3, Table 1, WP 0066 00)
Fuel Can (Table 1, WP 0065 00)
Wiping Rags (Item 5, Table 1, WP 0066 00)

Equipment Condition
MBU shut-down, cool, and disconnected from power source.
Fuel tank drained.

INSPECT

Inspect the Vent Valve Assembly

WARNING

Before proceeding with this procedure, the MBU fuel tank must be drained completely as described in WP 0011 00. 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. Failure to observe safety precautions may result in injury or death to personnel.

WARNING

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.

Inspect the vent valve assembly **(figure 1, item 1)** for proper seating on the fuel tank **(figure 1, item 2)**. Check for damage to the valve head **(figure 1, item 3)**, and solenoid. Check for loose power leads **(figure 1, item 4)** to the solenoid and float switch. Ensure vent orifice is not clogged.

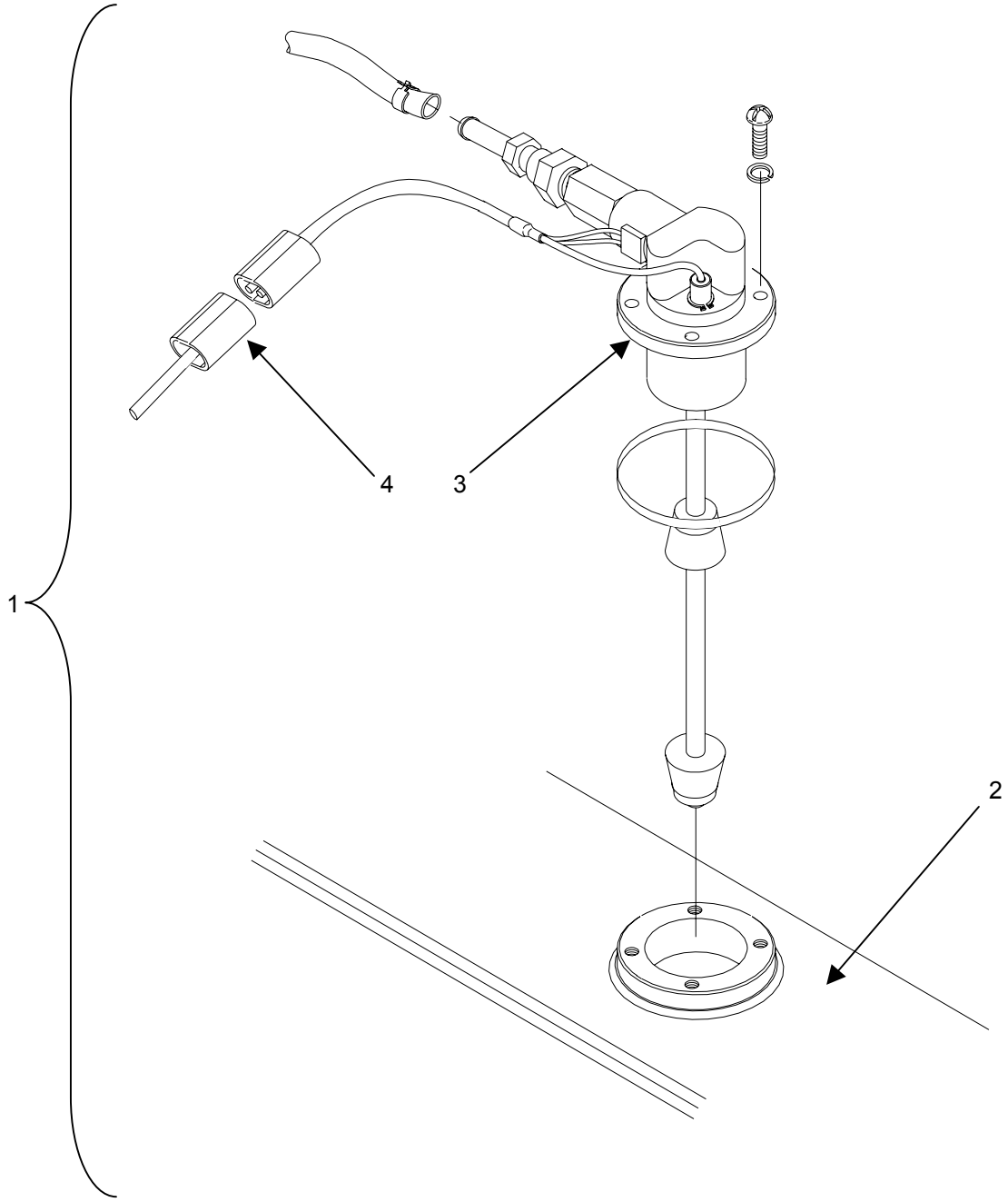


Figure 1. Inspect the Vent Valve Assembly

TEST

Test the Check Valve on Vent Valve Assembly

WARNING

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

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.

1. Ensure that the gasket is in serviceable condition on the fuel tank filler cap and that the cap is tight. If this gasket leaks or is missing, the MBU will operate, but it cannot be refueled because air will be drawn into the tank instead of fuel.

2. With the fuel line disconnected from the MBU, press the fuel button. The fuel cycle will start and the MBU should pull air from the tank. After a few seconds, depress the middle of the fuel fill quick-connector on the MBU. You should hear a hiss as the air rushes into the tank. The noise is subtle, so listen closely to hear the momentary sound.

3. If you hear the air rushing into the tank, the check valve is functioning properly. If no air rushes into the fitting, the check valve is more than likely stuck.

4. Remove the four 7/16-inch nuts that hold down the top pan. Lift the top pan and position it to the side. The pan does not have to be completely removed. The fuel delivery block may stay attached.

5. Remove the air line that is connected to the check valve on the vent valve assembly. **(figure 3, item 1).**

6. Remove the check valve **(figure 3, item 3)** by holding the solenoid **(figure 3, item 4)** with a 9/16-inch wrench while turning the check valve with a 9/16-inch wrench. Be careful not to turn the fitting on the solenoid valve.

7. Place the check valve back into the air line and press the MBU fuel button on the MBU control panel.

CAUTION

DO NOT press the start button or the MBU will attempt to start

8. If air is not drawn in through the check valve, it is not functioning properly. Service the check valve IAW procedures in this WP.

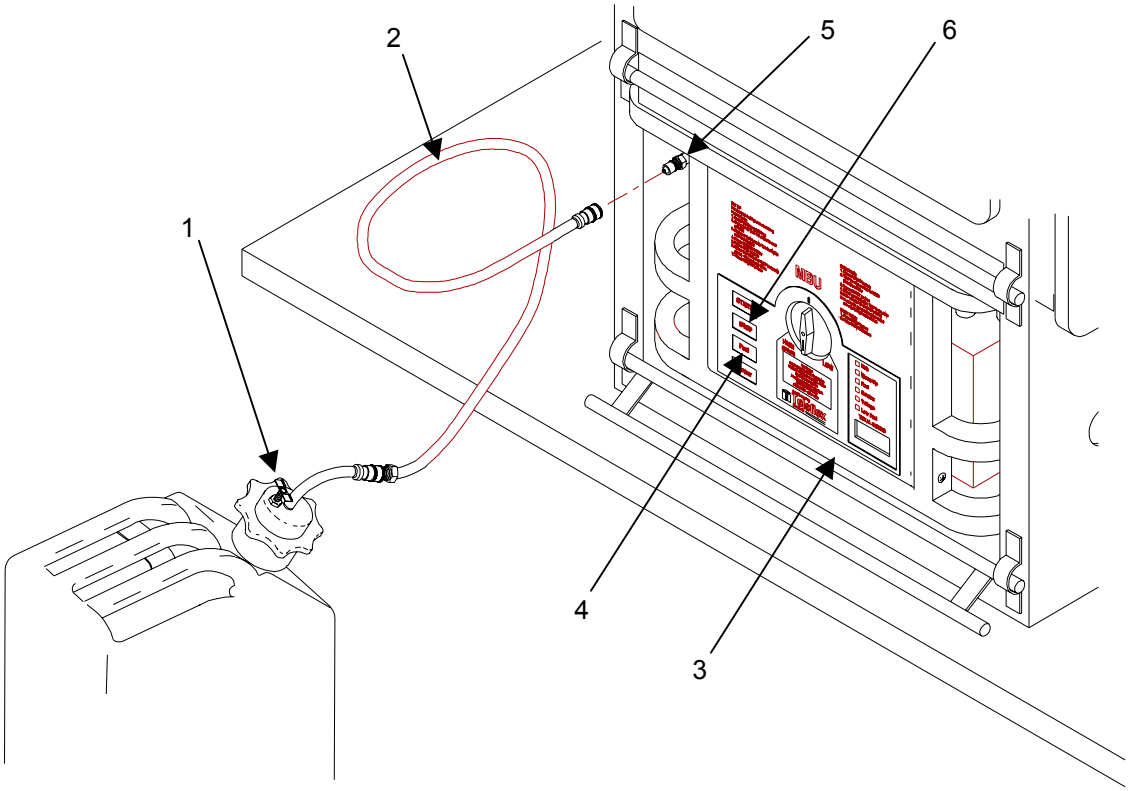


Figure 2. Test the Check Valve

9. Remove the check valve **(figure 3, item 3)** from the airline **(figure 3, item 1)**.

10. Install the check valve **(figure 3, item 3)** by holding the solenoid **(figure 3, item 4)** with a $^{9}/_{16}$ -inch wrench and turning the check valve with a $^{9}/_{16}$ -inch wrench. Be careful not to turn the fitting on the solenoid valve.

11. Connect the airline **(figure 3, item 1)** to the barb fitting on the vent valve assembly **(figure 3, item 2)**.

12. Install the reflective heat shield assembly as described in WP 0026 00.

13. Connect power to the MBU and operate IAW procedures in WP 0005 00. Monitor for normal operation.

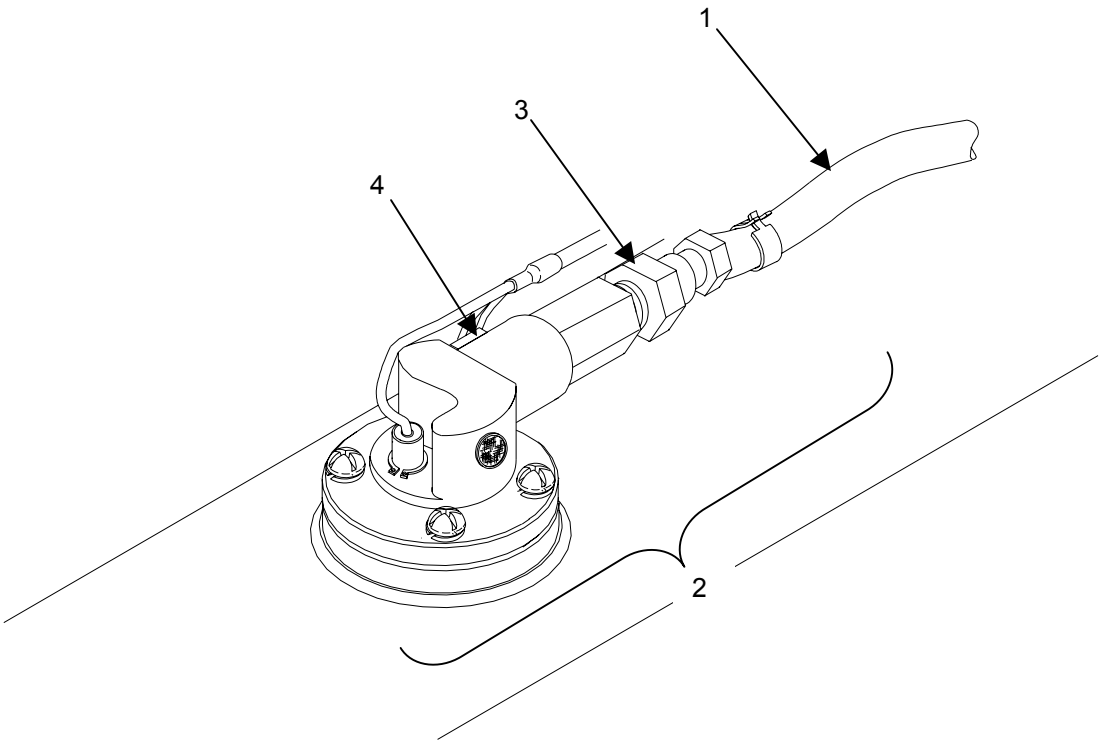


Figure 3. Test the Check Valve - Continued

SERVICE

Check Valve

WARNING

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.

NOTE

The check valve is a component of the vent valve assembly.

1. Press the STOP button **(figure 2, item 6)** and disconnect power from the MBU.
2. Test the check valve IAW procedures in this WP.
3. Locate the plunger on the inside of the check valve **(figure 4, item 3)**. Use a pin punch **(figure 3, item 5)** to gently push the plunger in from the threaded side of the check valve. If it is stuck, it should take slight pressure to get it to move in freely. The plunger is spring loaded and should return to the closed position automatically.
4. Ensure the plunger moves in and out freely.
5. Install the check valve **(figure 3, item 3)** by holding the solenoid **(figure 3, item 4)** with a $^{9}/_{16}$ -inch wrench and turning the check valve with a $^{9}/_{16}$ -inch wrench. Be careful not to turn the fitting on the solenoid valve.
6. Connect the airline **(figure 3, item 1)** to the barb fitting on the vent valve assembly **(figure 3, item 2)**.
7. Install the reflective heat shield assembly as described in WP 0026 00.
8. Connect power to the MBU and operate IAW procedures in WP 0005 00. Monitor for normal operation.

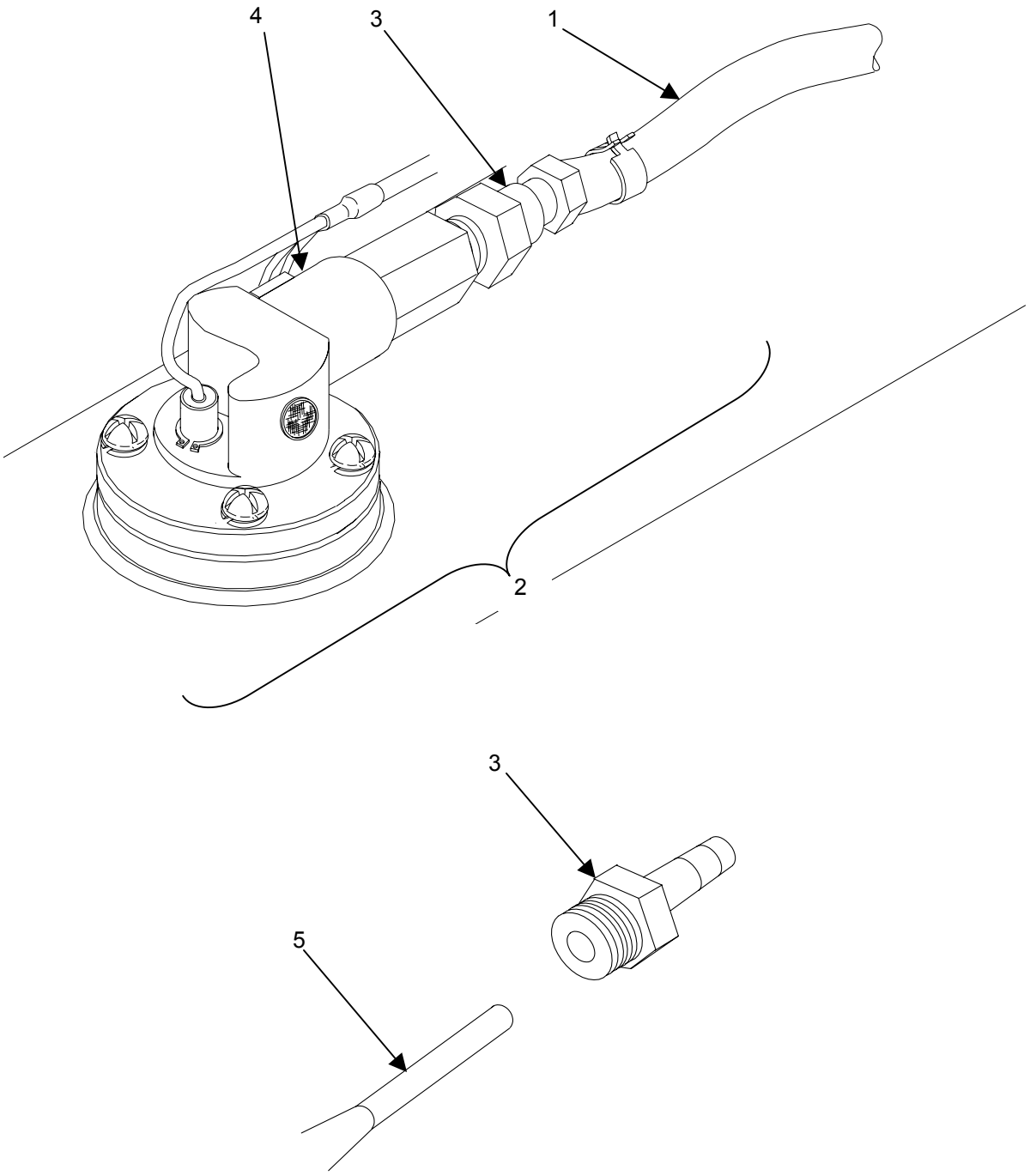


Figure 4. Service The Check Valve

REPLACE

Replace the Vent Valve Assembly

WARNING

Before proceeding with this procedure, the MBU fuel tank must be drained completely as described in WP 0011 00. 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. Failure to observe safety precautions may result in injury or death to personnel.

WARNING

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

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.

1. To replace a vent valve assembly **(figure 5, item 1)** remove the reflective heat shield assembly as described in WP 0026 00.
2. Remove nylon retainer clips from the fuel line assembly **(figure 5, item 2)**.
3. Remove four cross tip screws **(figure 5, item 3)** securing vent assembly to fuel tank **(figure 5, item 4)**.
4. Remove fuel line from fitting **(figure 5, item 5)**.
5. Remove fitting **(figure 5, item 5)** from vent valve assembly solenoid **(figure 5, item 6)** using wrench.
6. Disconnect power lead **(figure 5, item 7)** from harness **(figure 5, item 8)**.
7. Remove vent valve assembly **(figure 5, item 1)** from fuel tank **(figure 5, item 4)**.
8. Discard old O-ring **(figure 5, item 9)**.
9. Lubricate the new O-ring **(figure 5, item 9)** with clean fuel, and install.
10. Place new vent valve assembly **(figure 5, item 1)** into position in fuel tank **(figure 5, item 4)**.

11. Install four cross tip screws **(figure 5, item 3)** holding vent valve assembly to fuel tank **(figure 5, item 4)**.

12. Install fuel fitting **(figure 5, item 5)** onto vent valve assembly **(figure 5, item 1)** using wrench.

13. Install fuel line onto fitting **(figure 5, item 5).**

14. Connect power lead **(figure 5, item 7)** to harness **(figure 5, item 8).**

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

16. Install the reflective heat shield and burner tube assembly as described in WP 0026 00.

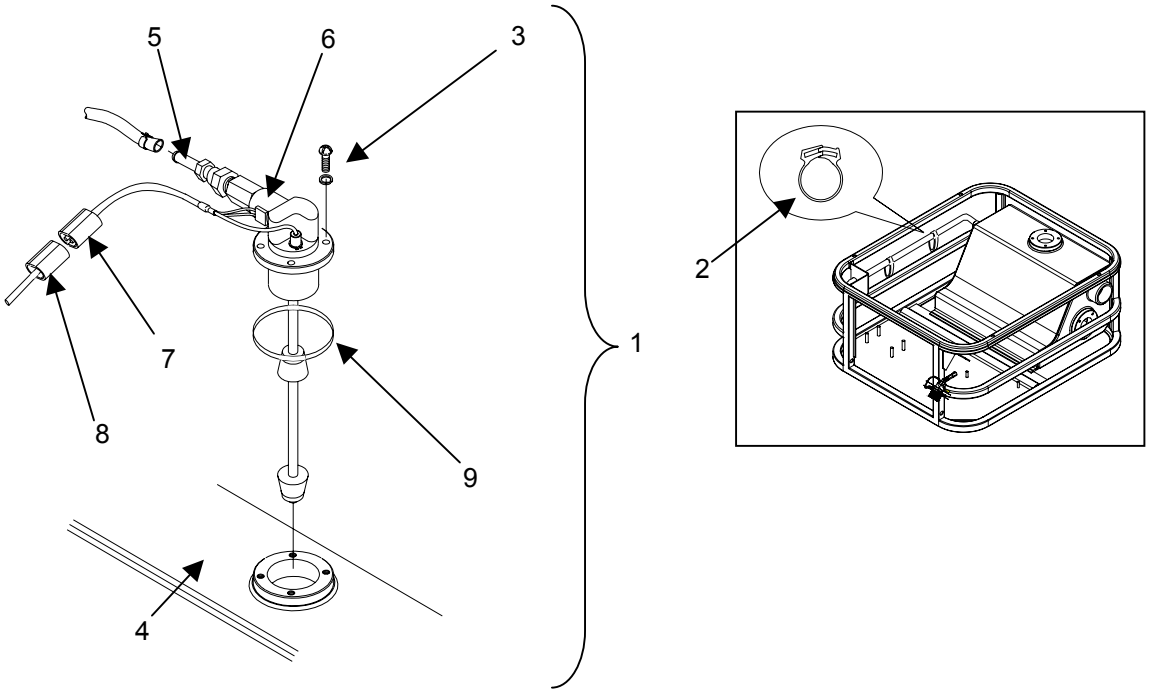


Figure 5. Replace the Vent Valve Assembly

END OF WORK PACKAGE

UNIT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
FUEL REGULATOR ASSEMBLY
INSPECT, REPLACE

INITIAL SETUP

Tools
General Mechanics Tool Kit: Automotive (Item 2, Table 2, WP 0041 00)

Personnel Required
Two

Materials/Parts
O-ring (Item 3, Table 1, WP 0066 00)
Fuel Can (Table 1, WP 0065 00)
Wiping Rags (Item 5, Table 1, WP 0066 00)

Equipment Condition
MBU shut-down, cool, and disconnected from power source.
Fuel tank drained.

INSPECT

Inspect the Fuel Regulator Assembly

WARNING

Before proceeding with this procedure, the MBU fuel tank must be drained completely as described in WP 0011 00. 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. Failure to observe safety precautions may result in injury or death to personnel.

WARNING

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

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.

Inspect the regulator assembly **(figure 1, item 1)** for proper seating on the fuel tank **(figure 1, item 2)**. Check for security of the valve head, and fuel line fitting. Ensure vent is not clogged.

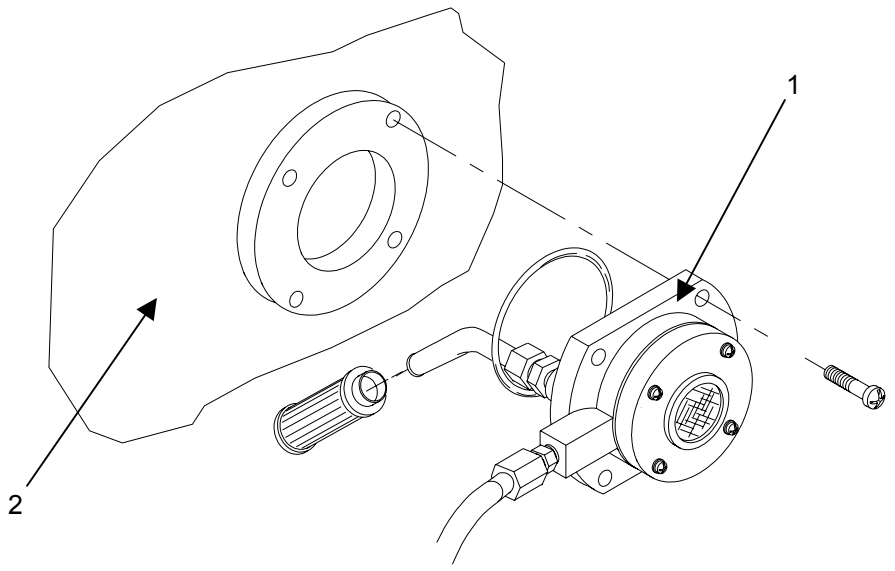


Figure 1. Inspect the Fuel Regulator Assembly

REPLACE

Replace the Fuel Regulator Assembly

WARNING

Before proceeding with this procedure, the MBU fuel tank must be drained completely as described in WP 0011 00. 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. Failure to observe safety precautions may result in injury or death to personnel.

WARNING

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

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.

1. To replace the Fuel Regulator Assembly **(figure 2, item 1)**, disconnect the fuel feeder line **(figure 2, item 2)** by loosening the compression fitting nut **(figure 2, item 3)** from the fuel regulator fitting **(figure 2, item 4)**.

2. Remove the four retaining screws **(figure 2, item 5)**.

3. Remove the Fuel Regulator Assembly **(figure 2, item 1)** from the fuel tank **(figure 2, item 6)**.

4. Discard O-ring **(figure 2, item 7)**.

5. Lubricate the O-ring **(figure 2, item 7)** with a small amount of clean fuel. Be sure to install a new fuel filter **(figure 2, item 8).**

6. Install a new regulator assembly by installing a new O-ring **(figure 2, item 7)** between the fuel regulator **(figure 2, item 1)** and fuel tank **(figure 2, item 6)**.

7. Insert the fuel regulator assembly **(figure 2, item 1)** into the fuel tank **(figure 2, item 6)** and secure with four retaining screws **(figure 2, item 5)** using a cross tip screwdriver.

8. Reconnect the fuel feeder line **(figure 2, item 2)** by tightening the compression nut **(figure 2, item 3)** to the fuel regulator fitting **(figure 2, item 4)**.

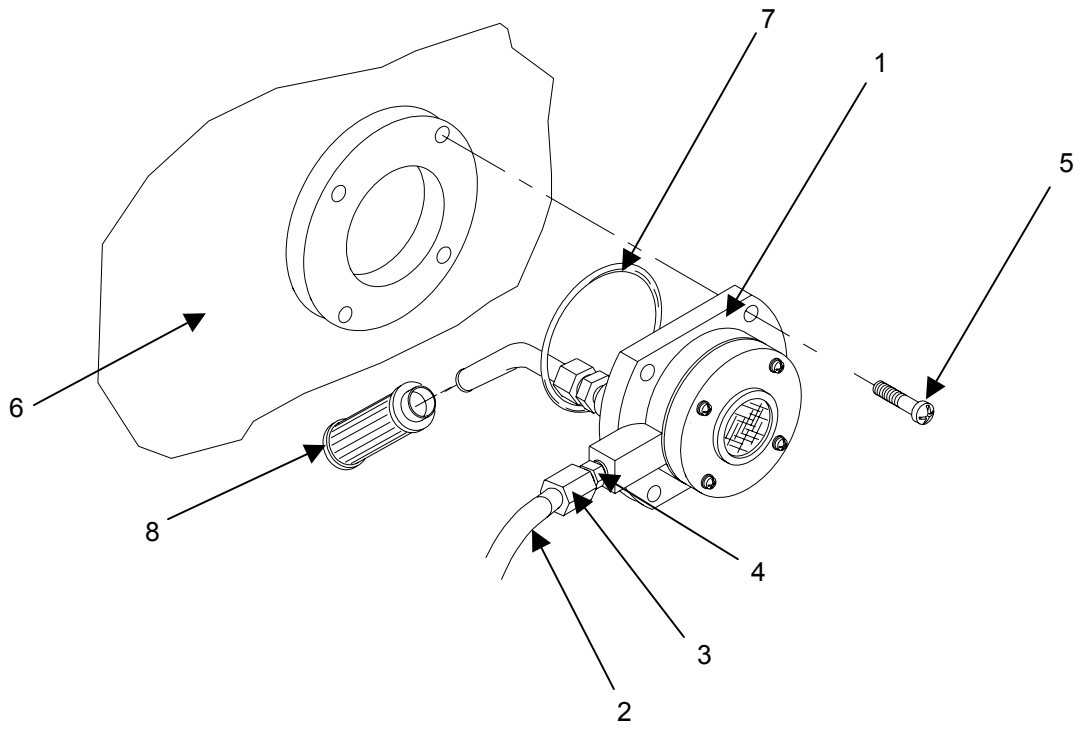


Figure 2. Replace the Fuel Regulator Assembly

END OF WORK PACKAGE

UNIT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
FUEL LINE ASSEMBLY
INSPECT, REPLACE

INITIAL SETUP

Tools
General Mechanics Tool Kit: Automotive (Item 2, Table 2, WP 0041 00)

Personnel Required
Two

Materials/Parts
Compound, Pipe Sealer (Item 3, Table 1, WP 0066 00)
Wiping Rags (Item 5, Table 1, WP 0066 00)
Fuel Can (Table 1, WP 0065 00)

Equipment Condition
MBU shut-down, cool, and disconnected from power source.
Fuel tank drained.

INSPECT

Inspect the Fuel Line Assembly

WARNING

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

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.

Inspect the fuel line assembly for damage to the fuel line **(figure 1, item 1)** and fittings. Check for leaks, loose connections**(figure 1, item 2)** or a dented fuel line. Dents or kinks in the fuel line can restrict or prevent proper fuel flow.

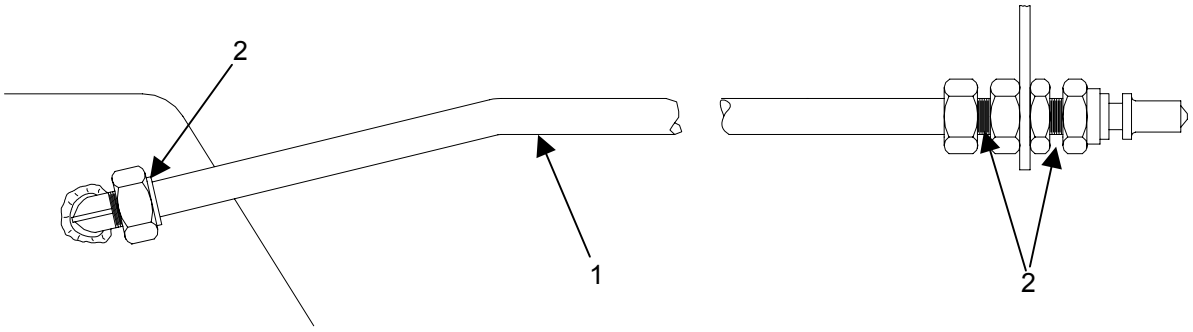


Figure 1. Inspect the Fuel Line Assembly

REPLACE

Replace the Fuel Line Assembly

WARNING

Before proceeding with this procedure, the MBU fuel tank must be drained completely as described in WP 0011 00. 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. Failure to observe safety precautions may result in injury or death to personnel.

WARNING

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

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.

1. To replace the fuel line assembly **(figure 2, item 1)**, remove the fuel interface fitting **(figure 2, item 2)** as described in WP 0030 00.

2. Remove the two nylon snap-it hose clamps from the fuel line **(figure 2, item 1)**.

3. Loosen the $^{5}/_{8}$-inch compression fitting **(figure 2, item 3)** on the fuel line **(figure 2, item 1)** mounted to the elbow fitting **(figure 2, item 4)**.

4. Loosen the union locking nut **(figure 2, item 5)** while holding the union nut **(figure 2, item 6)** with a second wrench.

5. Loosen the compression fitting **(figure 2, item 7)** while holding the union nut **(figure 2, item 6)** with a second wrench.

6. Remove the union **(figure 2, item 8)** from the bracket **(figure 2, item 9).**

7. Make note of the angle at which the elbow fitting **(figure 2, item 4)** is mounted in the fuel tank port **(figure 2, item 10)**.

8. Remove the ½-inch elbow fitting **(figure 2, item 4)** from fuel tank port **(figure 2, item 10)**.

9. Clean pipe sealer compound residue with rag.

CAUTION

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

10. Apply new pipe sealer compound to new elbow fitting **(figure 2, item 4)** and screw in place on fuel tank port **(figure 2, item 10)**. Make sure that elbow is installed at same angle as before removal.

11. Install new fuel line assembly **(figure 2, item 1)** into elbow fitting and hand tighten compression fitting.

12. Install the union **(figure 2, item 8)** through the bracket **(figure 2, item 9)** and hand tighten the compression fitting **(figure 2, item 7)** and the union locking nut **(figure 2, item 5)**.

13. Connect the fuel line **(figure 2, item 1)** to the elbow fitting **(figure 2, item 4)** by hand tightening the compression fitting **(figure 2, item 3)**.

14. Making sure that there is no stress on the fuel line **(figure 2, item 1)** tighten compression and union fittings **(figure 2, item 3, figure 2, item 5)**.

15. Install fuel interface fitting **(figure 2, item 2)** as described in WP 0030 00.

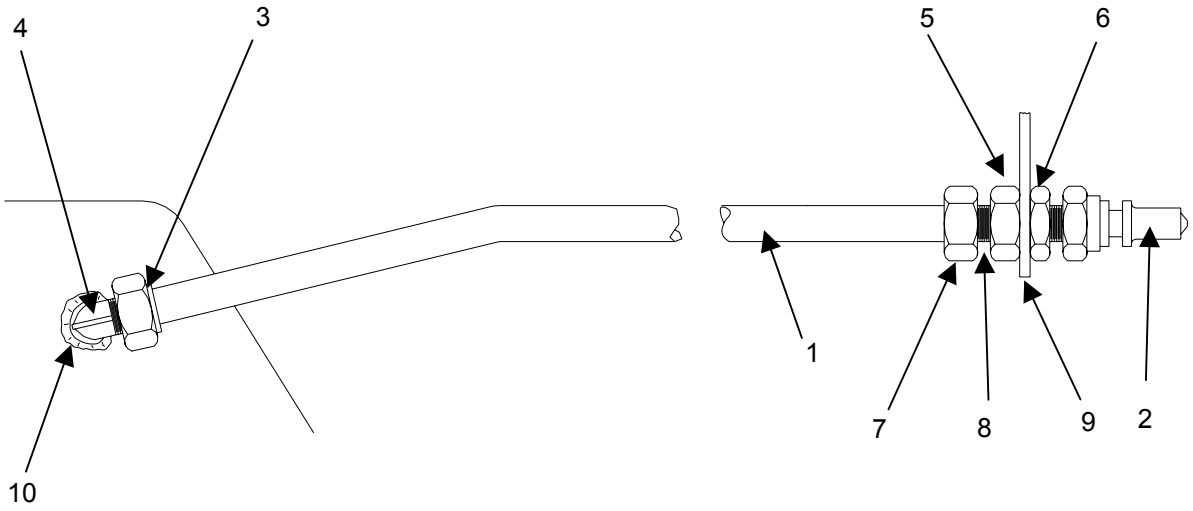


Figure 2. Replace the Fuel Line Assembly

END OF WORK PACKAGE

UNIT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
FUEL INTERFACE FITTING
INSPECT, REPLACE

INITIAL SETUP

Tools
General Mechanics Tool Kit: Automotive (Item 2, Table 2, WP 0041 00)

Personnel Required
Two

Materials/Parts
Compound, Pipe Sealer (Item 3, Table 1, WP 0066 00)
Wiping Rags (Item 5, Table 1, WP 0066 00)
Fuel Can (Table 1, WP 0065 00)

Equipment Condition
MBU shut-down, cool, and disconnected from power source.
Fuel tank drained.

INSPECT

Inspect the Fuel Interface Fitting

WARNING

Before proceeding with this procedure, the MBU fuel tank must be drained completely as described in WP 0011 00. 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. Failure to observe safety precautions may result in injury or death to personnel.

WARNING

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

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.

Inspect the fuel interface fitting **(figure 1, item 1)** for physical damage, secure attachment, and leakage. Check free movement of the valve stem.

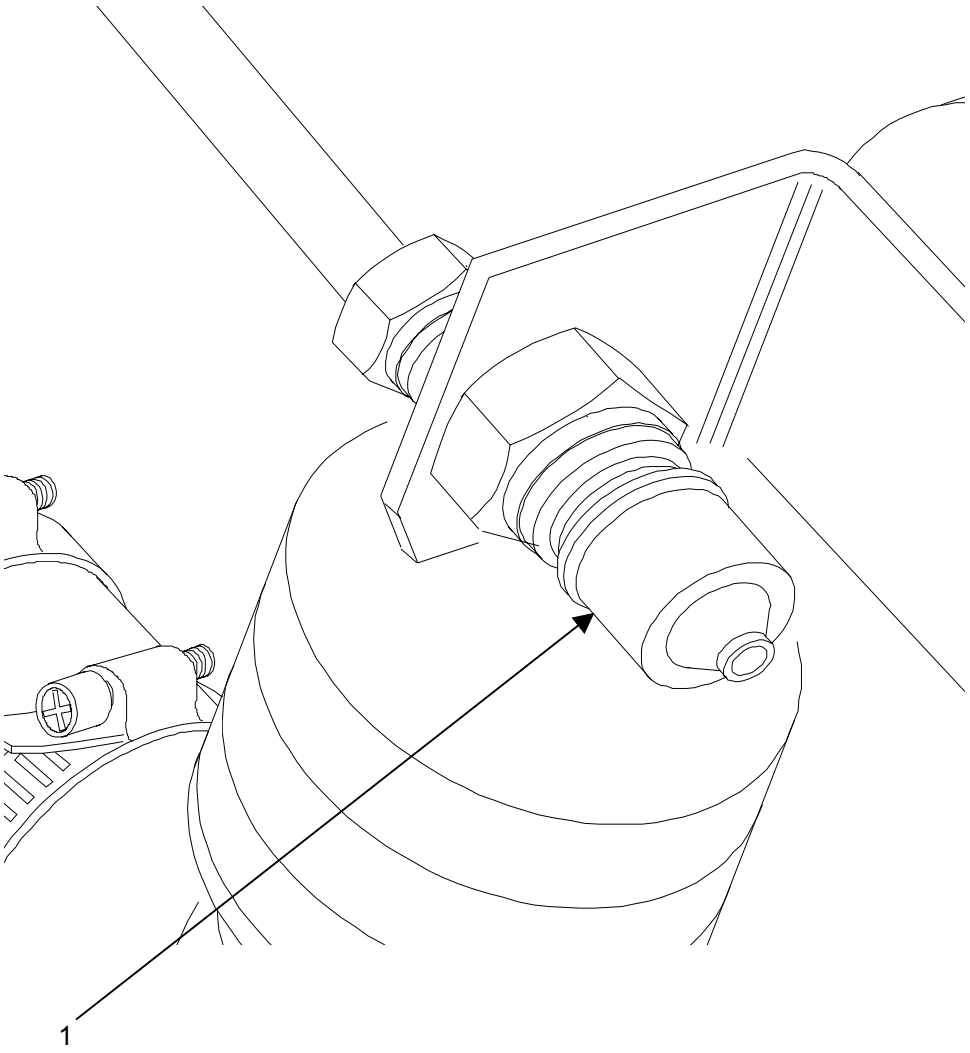


Figure 1. Inspect the Fuel Interface Fitting

REPLACE

Replace the Fuel Interface Fitting

WARNING

Before proceeding with this procedure, the MBU fuel tank must be drained completely as described in WP 0011 00. 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. Failure to observe safety precautions may result in injury or death to personnel.

WARNING

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

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.

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

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

CAUTION

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

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

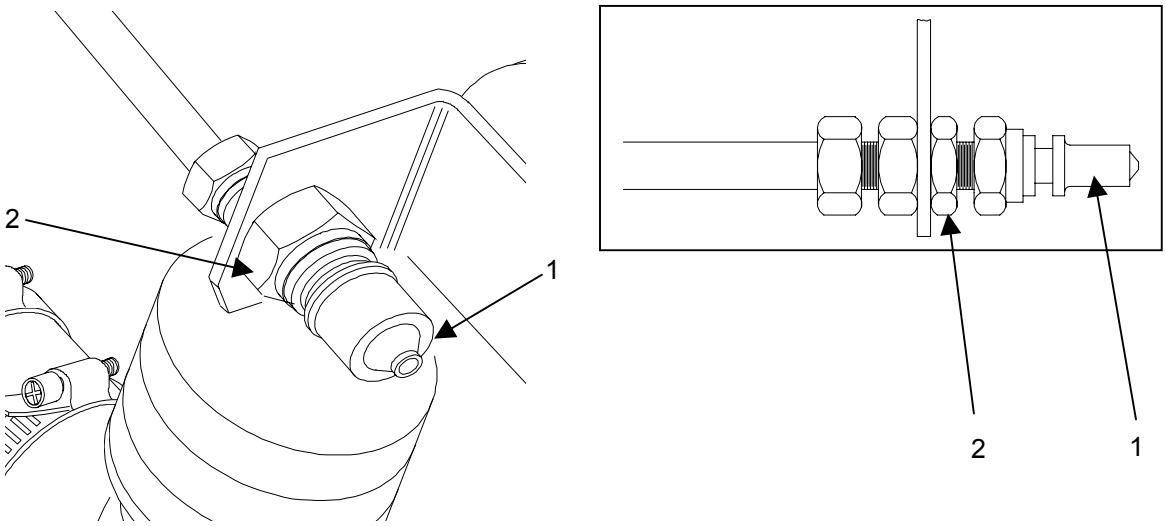


Figure 2. Replace the Fuel Interface Fitting

END OF WORK PACKAGE

UNIT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
CABLE CLIPS
INSPECT, REPLACE

INITIAL SETUP

Tools
General Mechanics Tool Kit: Automotive (Item 2, Table 2, WP 0041 00)

Personnel Required
Two

Materials/Parts
None Required

Equipment Condition
MBU shut-down, cool, and disconnected from power source.

INSPECT

Inspect the Cable Clips and Hose Clamps

WARNING

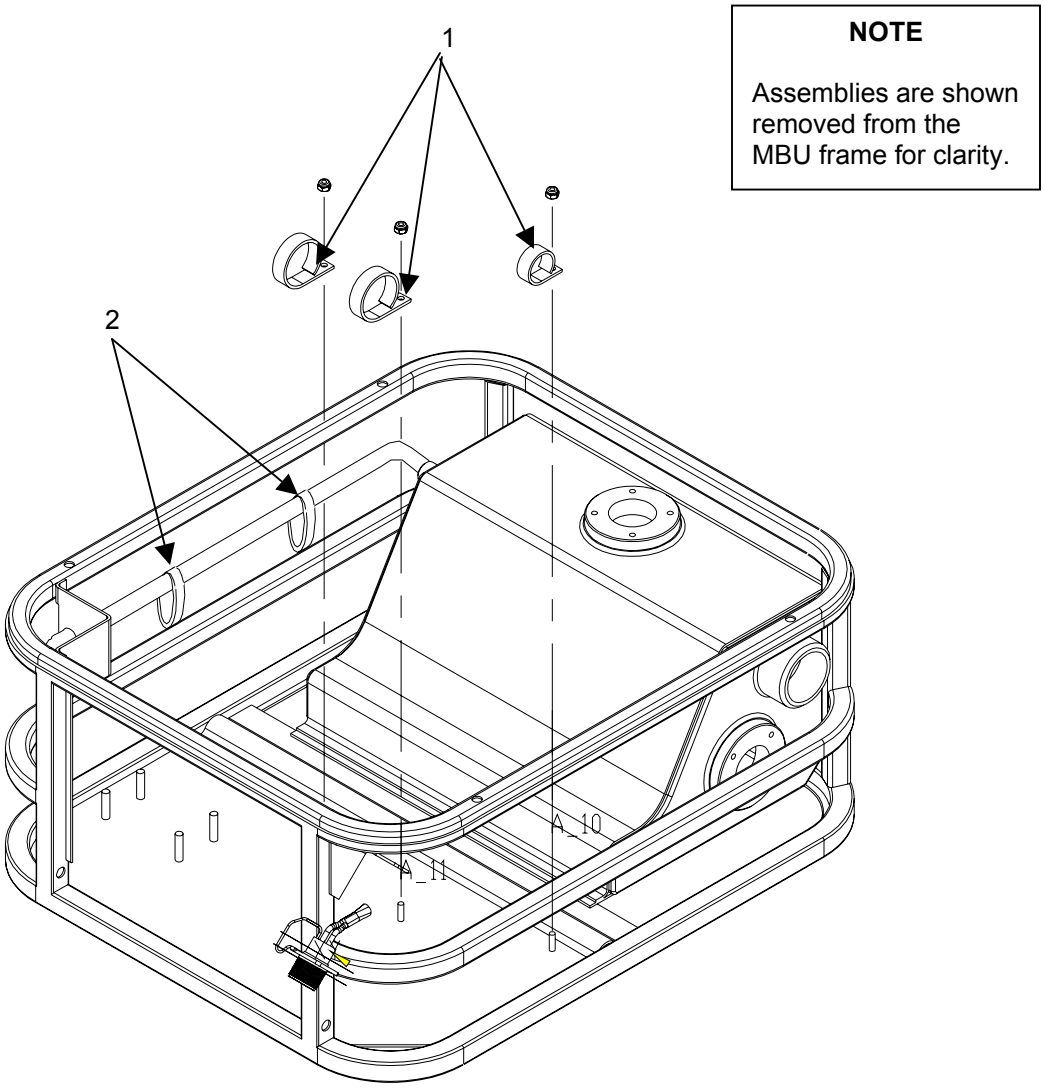
Do not attempt service procedures on a burner that has recently been in operation. Let the burner cool down before performing these procedures to avoid the possibility of serious burns.

WARNING

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.

1. Inspect each chassis cable clip **(figure 1, item 1)** to ensure that it is not cracked, cut, or otherwise damaged. Replace any unserviceable straps.

2. Inspect each fuel line hose clamp **(figure 1, item 2)** to ensure that it is not cracked, cut, or otherwise damaged. Replace any unserviceable clamps.



NOTE

Assemblies are shown removed from the MBU frame for clarity.

Figure 1. Inspect Chassis Mounted Cable Clips and Hose Clamps

REPLACE

Replace the Cable Clips and Hose Clamps

WARNING

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

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.

1. To replace the chassis cable clips, proceed as follows:

NOTE

The chassis mounted cable clips come in two different sizes.

   a. Locate the three chassis mounted cable clips **(figure 2, item 1, figure 2, item 2)** on the bottom surface of the MBU. Take note that there are two sizes.

   b. Replace the chassis cable clips **(figure 2, item 1, figure 2, item 2)** by removing the cables/hoses retained by the strap.

   c. Remove the nut **(figure 2, item 3)** securing the cable clips to the chassis.

   d. Install a new cable clip in place on the threaded chassis stud and fasten with the nut **(figure 2, item 3)** removed earlier.

   e. Reinstall the hoses/cables inside the cable clip **(figure 2, item 1, figure 2, item 2)**.

2. To replace the fuel line hose clamps, proceed as follows:

   a. Locate the two snap-it hose clamps **(figure 2, item 4)** that secure the hose and electrical wires to the copper fuel line **(figure 2, item 5)**.

   b. Replace the fuel line cable clamp **(figure 2, item 4)** by removing the damaged clamp.

   c. Slide the replacement clamp **(figure 2, item 4)** over the fuel line, hose, and wire assembly.

   d. Engage the locking mechanism of the clamp **(figure 2, item 4)** so as to retain the hoses and cables securely without squeezing or otherwise deforming them.

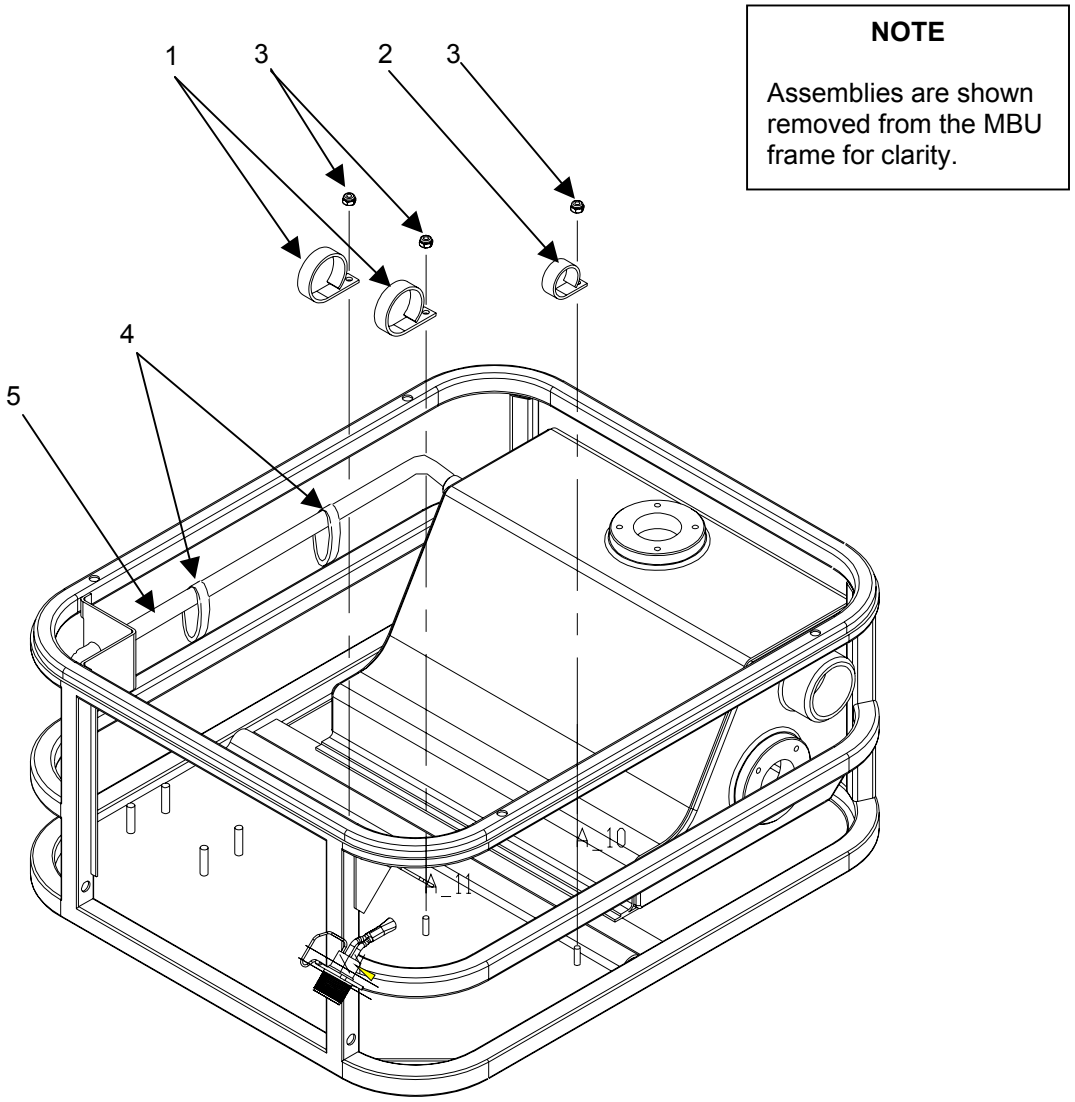


Figure 2. Replace Chassis Mounted Cable Clips and Hose Clamps

END OF WORK PACKAGE

UNIT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
POWER CONVERTER
INSPECT, TEST, REPLACE

INITIAL SETUP

Tools
General Mechanics Tool Kit (Item 2, Table 2, WP 0041 00)

Personnel Required
One

Materials/Parts
None Required

Equipment Condition
Power converter disconnected from power source.

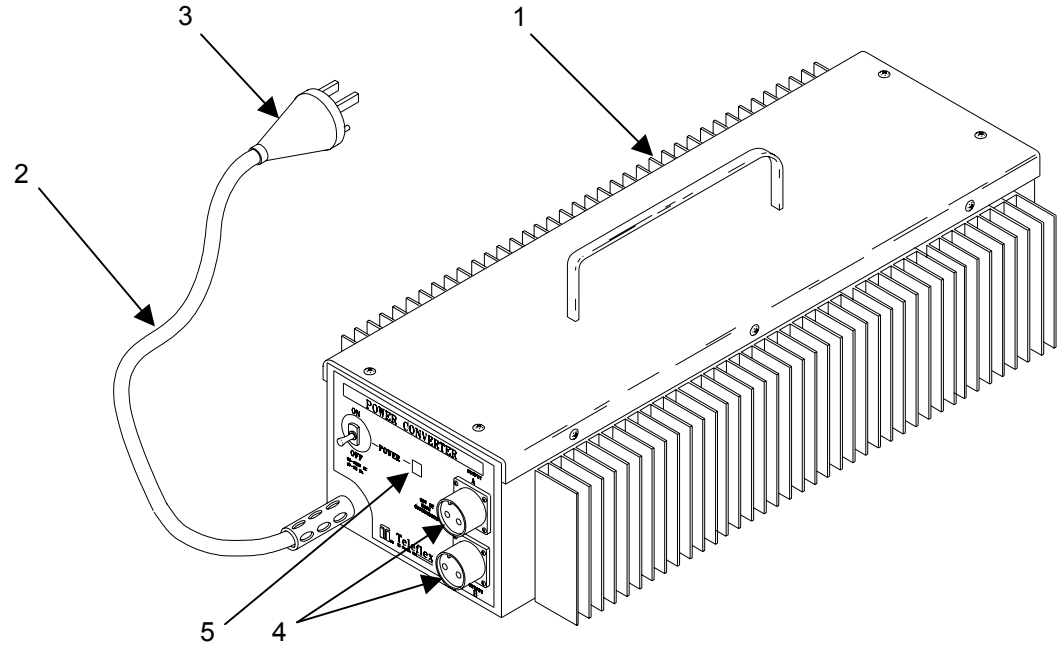
INSPECT

Inspect the Power Converter

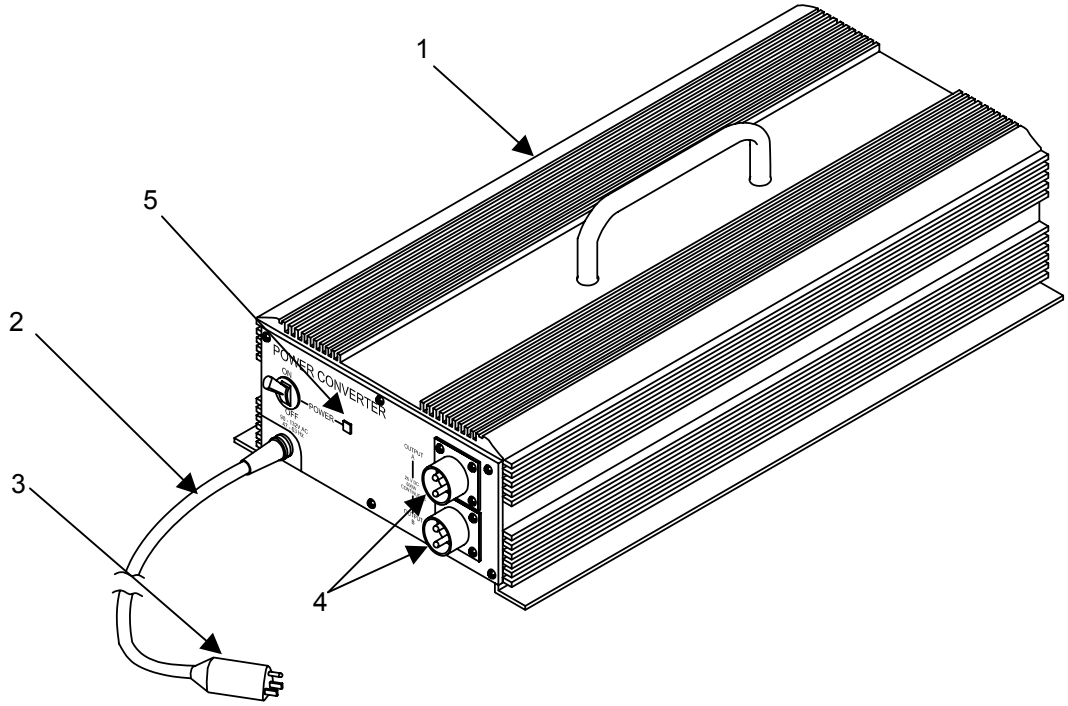
WARNING

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

1. Inspect the outer case of the power converter **(figure 1, item 1)** for any damage that would expose or damage the internal components.
2. Inspect the power cord **(figure 1, item 2)** is not cut, frayed, or other wise damaged.
3. Ensure the plug **(figure 1, item 3)** on the power cord has not been damaged.
4. Ensure that the power output connectors **(figure 1, item 4)** are not bent, or damaged in any way that would prevent the proper insertion of cable connectors.
5. Connect the power converter **(figure 1, item 1)** to an approved power source, and ensure that the LED indicator **(figure 1, item 5)** operates properly.



MS0150



MS0160

Figure 1. Inspect the Power Converter

TEST

Test the Power Converter (MS 0150)

WARNING

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

1. Connect the power converter **(figure 2, item 1)** to an approved power source.
2. Use a multimeter to verify that the output voltage of the power converter **(figure 2, item 1)** is 23-29 VDC. If the output voltage is correct, no further testing is required. If there is no voltage output, go to Step 4. If the voltage is out of range, replace the converter and return to service.
3. Disconnect the power converter **(figure 2, item 1)** from the power source.
4. To test the power converter switch **(figure 2, item 1)**, remove the top cover **(figure 2, item 2)** of the power converter by removing the ten screws and washers **(figure 2, item 3)**.
5. Loosen and remove the hex nut with protective rubber cap **(figure 2, item 4)** of the main power switch **(figure 2, item 5)**.
6. Make note of the location, color, and connection point of the two wires connected to the main power switch **(figure 2, item 5)** inside the power converter **(figure 2, item 1)** to ensure that the wires are reconnected properly when the switch is replaced.
7. Reach inside the power converter case and disconnect the spade connector **(figure 2, item 6)** which connects the power switch **(figure 2, item 5)** to the AC filter block **(figure 2, item 7)**.
8. Loosen and remove the screw **(figure 2, item 8)** that secures the wire **(figure 2, item 9)** to the second terminal. Set this wire aside.
9. Remove the main power switch **(figure 2, item 5)** from the power converter.
10. Test for continuity through the power switch **(figure 2, item 5)** with a multimeter. If the power switch is not found to be defective, check for continuity through the power cord **(figure 2, item 10)**. If both are not defective, the entire power converter should be replaced.
11. Install the main power switch **(figure 2, item 5)**, install the short wire **(figure 2, item 9)** set aside earlier on the switch terminal labeled LOAD. Secure with screw.
12. Place the switch **(figure 2, item 5)** in position in the power converter's front panel. Be sure to position the switch so that the screw terminal labeled LOAD is facing up and out of the case while the terminal labeled LINE is facing down into the power converter case.
13. Install the hex nut with protective rubber cap **(figure 2, item 4)** on the front of the power switch **(figure 2, item 5)**.
14. Connect the spade terminal **(figure 2, item 6)** to the lug on the AC Filter **(figure 2, item 7)**.
15. Secure power converter cover **(figure 2, item 2)** with screws and lockwashers **(figure 2, item 3)**.

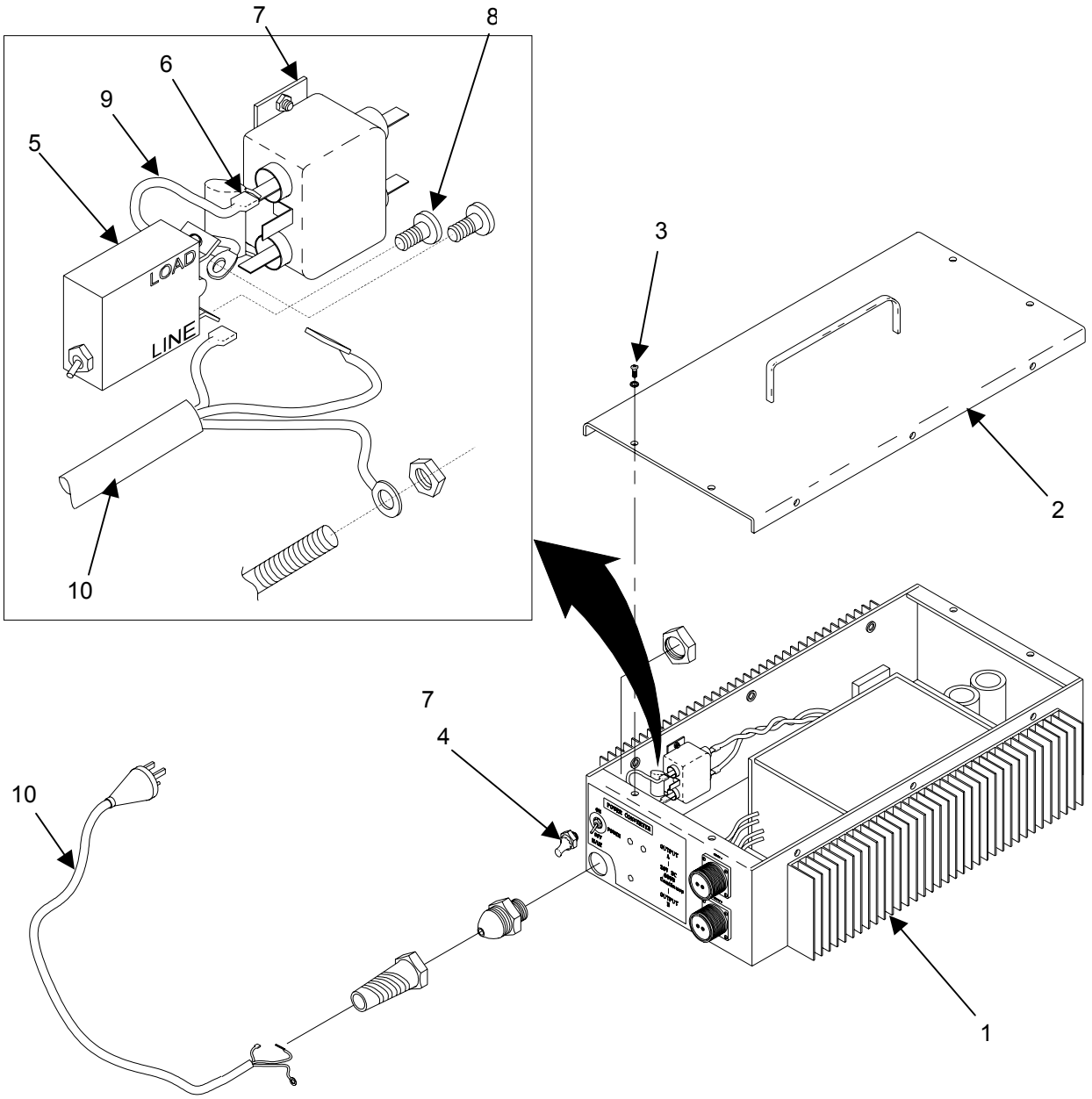


Figure 2. Test the Power Converter (MS0150)

Test the Power Converter (MS 0160)

WARNING

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

1. Connect the power converter **(figure 3, item 1)** to an approved power source.
2. Use a multimeter to verify that the output voltage of the Power Converter **(figure 3, item 1)** is 23 - 29VDC. If the output voltage is correct, no further testing is required.
3. Disconnect the power converter **(figure 3, item 1)** from the power source.
4. Remove the screws and lockwashers retaining the bottom cover of the power converter **(figure 3, item 1)**, and then remove the bottom cover **(figure 3, item 2)**.
5. Loosen and remove the hex nut **(figure 3, item 3)** with protective rubber cap of the main power switch **(figure 3, item 4)**.
6. Reach inside the power converter case and withdraw the main power switch **(figure 3, item 4)** from the case as far as the wiring will allow.
7. Make note of the location, color, and connection point of the two wires connected to the main power switch **(figure 3, item 4)** inside the power converter to ensure that the wires are reconnected properly when the switch is replaced. Tag the wires as necessary.
8. Loosen and remove the screws securing the wires to the terminals on the main power switch **(figure 3, item 4)**. Set the wires aside.
9. Test for continuity through the power switch **(figure 3, item 4)** with a multimeter. If the power switch is not found to be defective, check for continuity through the power cord **(figure 3, item 5)**. If both are not found to be defective, the entire power converter should be replaced.
10. To install the main power switch **(figure 3, item 4)**, connect the wiring to the switch as tagged and secure with screws.
11. Place the switch **(figure 3, item 4)** in position in the power converter's front panel. Be sure to position the switch so that the screw terminal labeled LOAD is facing up and out of the case while the terminal labeled LINE is facing down into the power converter case.
12. Install the hex nut **(figure 3, item 3)** with protective rubber cap on the front of the power switch **(figure 3, item 4)**.
13. Install the bottom cover **(figure 3, item 2)** of the power converter **(figure 3, item 1)** and secure with screws and lockwashers.

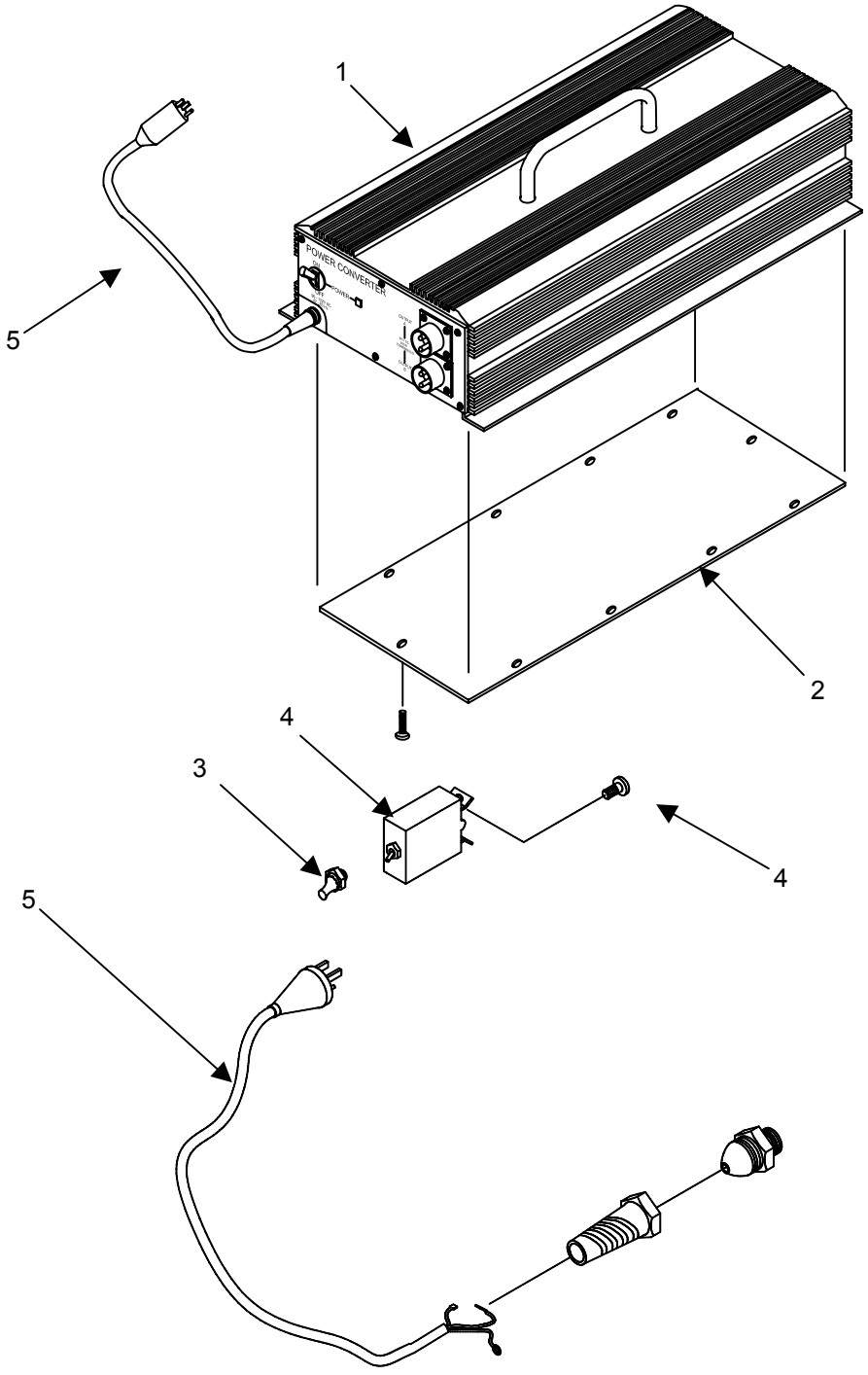


Figure 3. Test the Power Converter (MS0160)

REPLACE

Replace the Main Power Switch (MS 0150)

WARNING

HIGH VOLTAGE is used in the operation of this equipment. Ensure power is disconnected before attempting with this maintenance procedure. **DEATH ON CONTACT** may result if personnel fail to observe safety precautions.

1. Remove the screws and washers retaining the top cover **(figure 4, item 1)** of the power converter **(figure 4, item 2)**, and remove the top cover.

2. Loosen and remove the hex nut with protective rubber cap **(figure 4, item 3)** of the main power switch **(figure 4, item 4)**.

3. Make note of the location, color, and connection point of the two wires connected to the main power switch **(figure 4, item 4)** inside the power converter **(figure 4, item 1)** to ensure that the wires are reconnected properly when the switch is replaced.

4. Reach inside the power converter **(figure 4, item 2)** case and disconnect the spade connector **(figure 4, item 5)** which connects the power switch **(figure 4, item 4)** to the AC filter block **(figure 4, item 6)**.

5. Loosen and remove the screw that secures the wire **(figure 4, item 7)** to the second terminal. Set this wire aside.

6. Loosen and remove the screw retaining the power cord wire **(figure 4, item 8)** to the switch **(figure 4, item 4)** at the LINE terminal.

7. Remove the main power switch **(figure 4, item 4)** from the power converter **(figure 4, item 2)**.

8. To install a new main power switch **(figure 4, item 4)**, install the short wire **(figure 4, item 7)** set aside earlier on the switch terminal labeled LOAD. Secure with screw.

9. Place the switch **(figure 4, item 4)** in position in the power converter's **(figure 4, item 2)** front panel. Be sure to position the switch so that the screw terminal labeled LOAD is facing up and out of the case while the terminal labeled LINE is facing down into the power converter case.

10. Install the hex nut with protective rubber cap **(figure 4, item 3)** on the front of the power switch **(figure 4, item 4)**.

11. Connect the spade terminal **(figure 4, item 5)** to the lug on the AC Filter **(figure 4, item 6)**.

12. Connect the power cord wire **(figure 4, item 8)** to the switch **(figure 4, item 4)** at the terminal marked LINE, and secure with screw.

13. Install power converter cover **(figure 4, item 1)** and retain with screws and lockwashers.

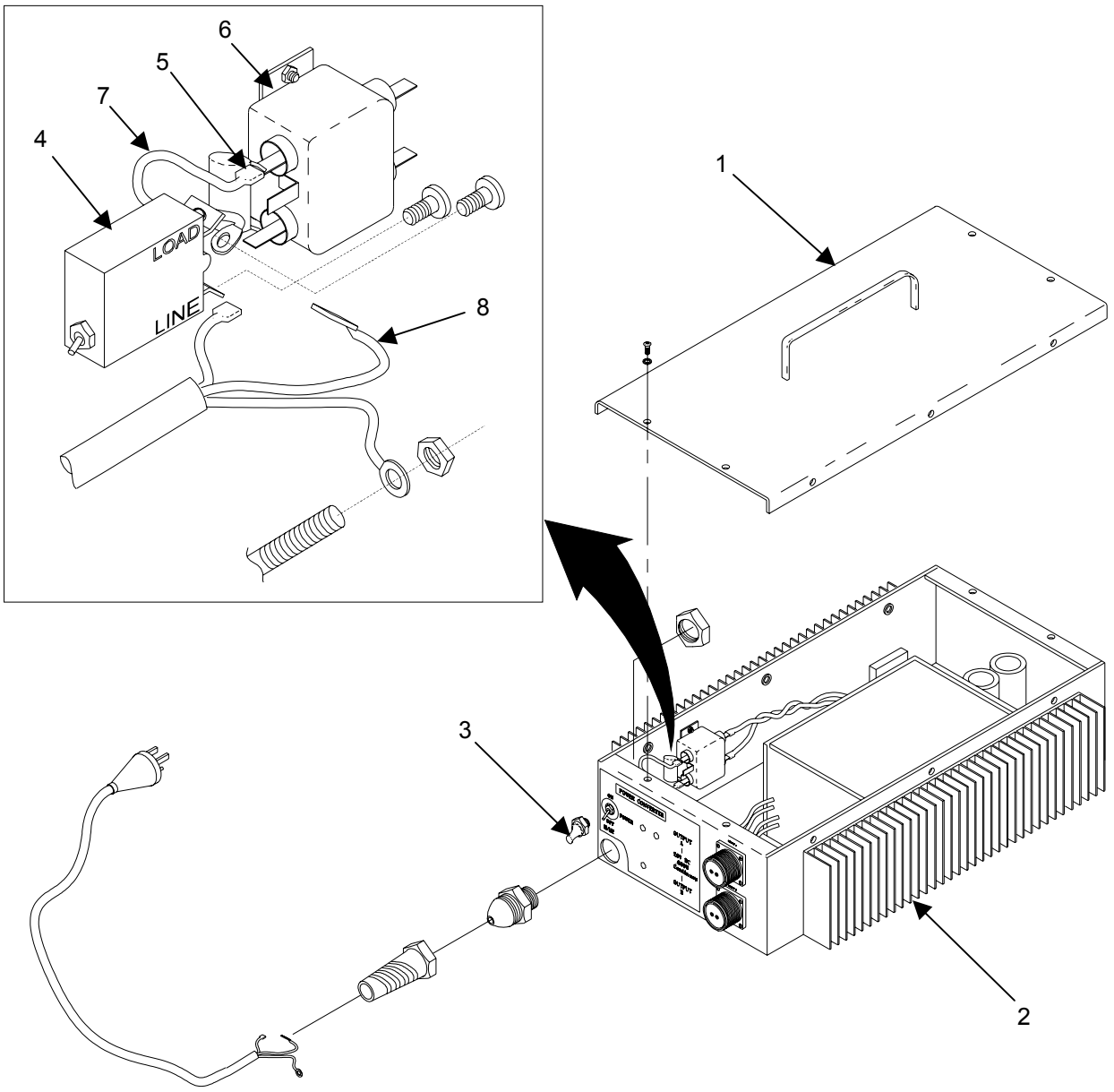


Figure 4. Replace the Main Power Switch (MS0150)

Replace the Main Power Switch (MS 0160)

WARNING

HIGH VOLTAGE is used in the operation of this equipment. Ensure power is disconnected before attempting with this maintenance procedure. **DEATH ON CONTACT** may result if personnel fail to observe safety precautions.

1. Remove the screws and lockwashers retaining the bottom cover **(figure 5, item 1)** of the power converter **(figure 5, item 2)**, and then remove the bottom cover.

2. Loosen and remove the hex nut **(figure 5, item 3)** with protective rubber cap of the main power switch **(figure 5, item 4)**.

3. Reach inside the power converter **(figure 5, item 2)** case and withdraw the main power switch **(figure 5, item 4)** from the case as far as the wiring will allow.

4. Tag and disconnect the wiring from the main power switch **(figure 5, item 4)**.

5. Install the wiring as tagged on the replacement switch main power switch **(figure 5, item 4)** terminals, and retain with screws.

6. Place the switch **(figure 5, item 4)** in position in the power converter's **(figure 5, item 2)** front panel. Be sure to position the switch so that the screw terminal labeled LOAD is facing up and out of the case while the terminal labeled LINE is facing down into the power converter case.

7. Install the hex nut with protective rubber cap **(figure 5, item 3)** on the front of the power switch **(figure 5, item 4)**.

8. Install the bottom cover **(figure 5, item 1)** of the power converter **(figure 5, item 2)** and secure with ten screws and lockwashers.

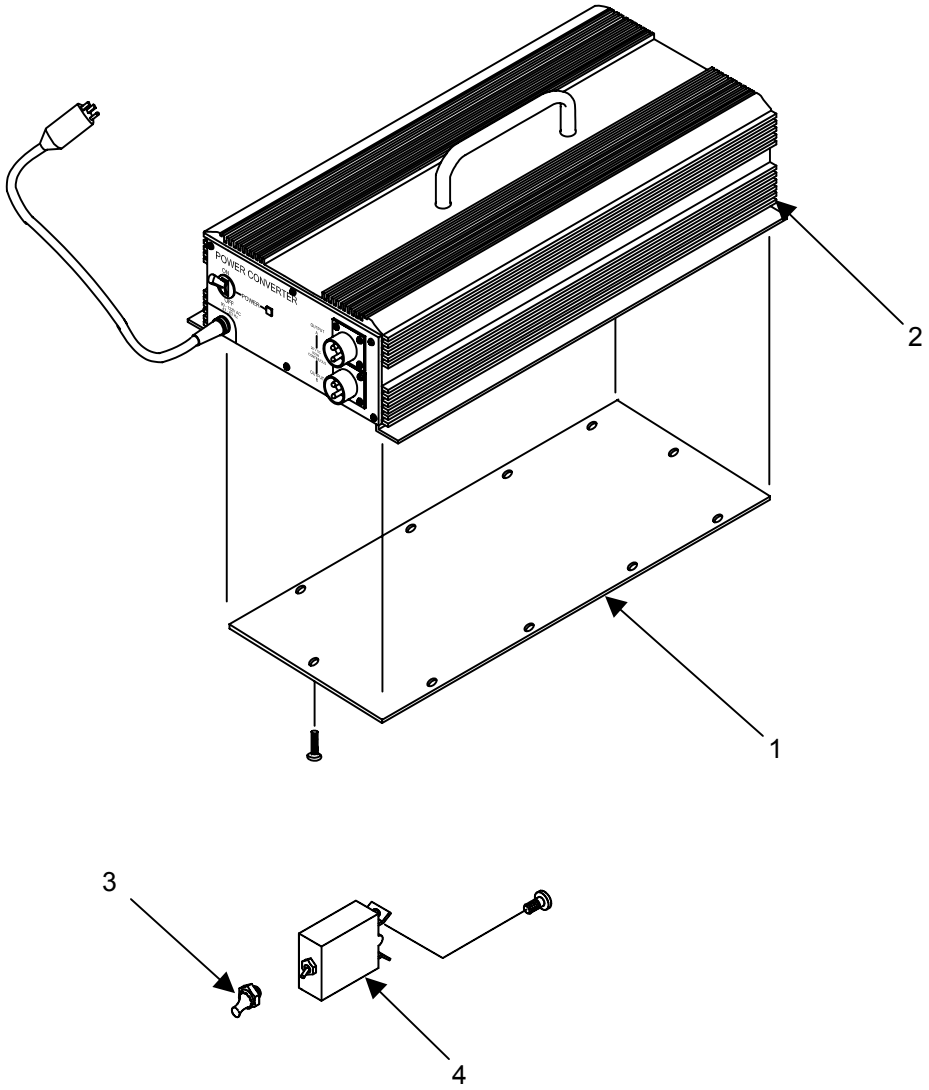


Figure 5. Replace the Main Power Switch (MS0160)

Replace the Power Cord (MS 0150)

WARNING

HIGH VOLTAGE is used in the operation of this equipment. Ensure power is disconnected before attempting with this maintenance procedure. **DEATH ON CONTACT** may result if personnel fail to observe safety precautions.

1. Remove the screws and lockwashers that secure the power converter cover **(figure 6, item 1)**, and remove the cover.

2. Remove the main power switch **(figure 6, item 2)** as described above.

3. Take note of the color of the power cord **(figure 6, item 3)** wires and where they are connected to ensure that the cord is reconnected properly.

4. Disconnect the power cord **(figure 6, item 3)** spade terminal from the lower lug of the AC Filter **(figure 6, item 4)**.

5. Remove the hex nut retaining the power cord **(figure 6, item 3)** ground wire to the grounding stud **(figure 6, item 5)** and remove the power cord ground wire.

6. Loosen and remove the plastic hex nut **(figure 6, item 6)** that secures the power cord strain relief **(figure 6, item 7)**.

7. Pull the entire power cord assembly **(figure 6, item 3)** out of the power converter **(figure 6, item 8)**.

8. Remove the strain relief **(figure 6, item 7)** from the power cord **(figure 6, item 3)**.

NOTE

Replace a damaged or otherwise unserviceable strain relief.

9. Install the strain relief **(figure 6, item 7)** over the replacement power cord.

10. Insert the power cord **(figure 6, item 3)** and strain relief assembly **(figure 6, item 7)** through the hole in the front panel of the power converter. Secure with plastic strain relief hex nut **(figure 6, item 6)**.

11. Connect the spade terminal of the BLUE wire to the lower terminal of the AC Filter **(figure 6, item 4)**.

12. Connect the GREEN/YELLOW wire to the grounding stud **(figure 6, item 5)** on the inside surface of the front panel, and retain with hex nut.

13. Reinstall the main power switch **(figure 6, item 2)** as described above and connect the BROWN power cord wire to the terminal on the power switch labeled LINE. Secure with screw.

14. Reinstall the power converter cover **(figure 6, item 1)** and secure with screws and lockwashers.

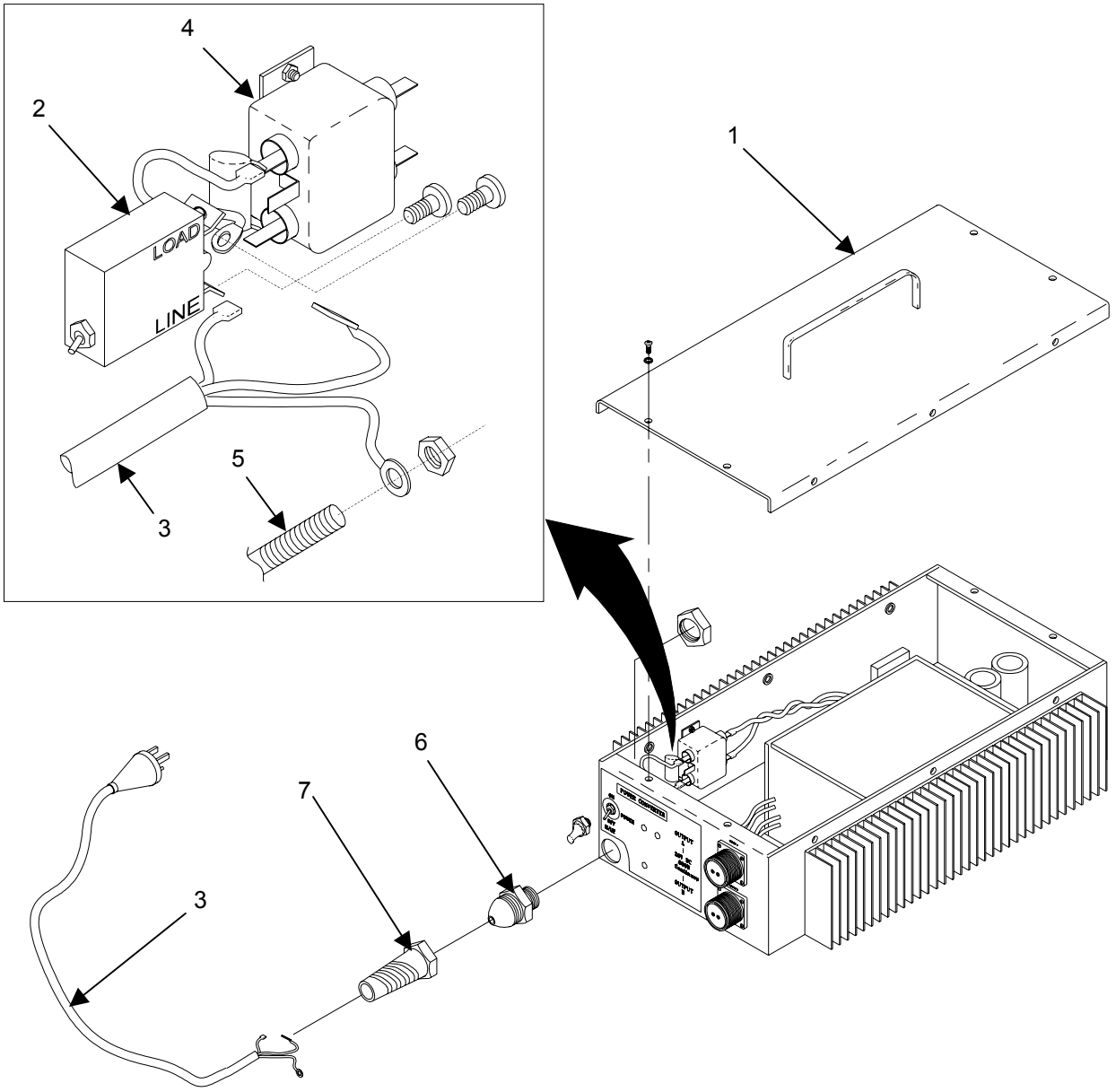


Figure 6. Replace the Power Cord (MS0150)

Replace the Power Cord (MS 0160)

WARNING

HIGH VOLTAGE is used in the operation of this equipment. Ensure power is disconnected before attempting with this maintenance procedure. **DEATH ON CONTACT** may result if personnel fail to observe safety precautions.

1. Remove the screws and lockwashers that secure the bottom cover **(figure 7, item 1)** of the power converter **(figure 7, item 2)**.
2. Remove the main power switch **(figure 7, item 3)** as described above.
3. Take note of the color of the power cord **(figure 7, item 4)** wires and where they are connected to ensure that the cord is reconnected properly. Tag wires as necessary (one lead has been disconnected in the removal of the main power switch).
4. Tag and disconnect the remaining BLUE power cord **(figure 7, item 4)** wire.
5. Locate and remove the hex nut on the grounding stud **(figure 7, item 5)** and remove the power cord **(figure 7, item 4)** ground wire.
6. Loosen and remove the plastic hex nut **(figure 7, item 6)** on the inside of the power converter front panel that secures the power cord strain relief **(figure 7, item 7)**.
7. Pull the entire power cord assembly **(figure 7, item 4)** out of the power converter **(figure 7, item 2)**.
8. Remove the strain relief **(figure 7, item 7)** from the power cord **(figure 7, item 4)**.
9. Install the strain relief **(figure 7, item 7)** over the replacement power cord **(figure 7, item 4)**.
10. Insert the power cord **(figure 7, item 4)** and strain relief assembly **(figure 7, item 7)** through the hole in the front panel of the power converter **(figure 7, item 2)**. Secure with plastic strain relief hex nut **(figure 7, item 6)**.
11. Install the power cord ground wire on the grounding stud **(figure 7, item 5)** and secure with the hex nut.
12. Connect the BLUE power cord **(figure 7, item 4)** wire as tagged.
13. Reinstall the main power switch **(figure 7, item 3)** as described above.
14. Reinstall the bottom cover **(figure 7, item 1)** of the power converter **(figure 7, item 2)** and secure with screws and lockwashers.

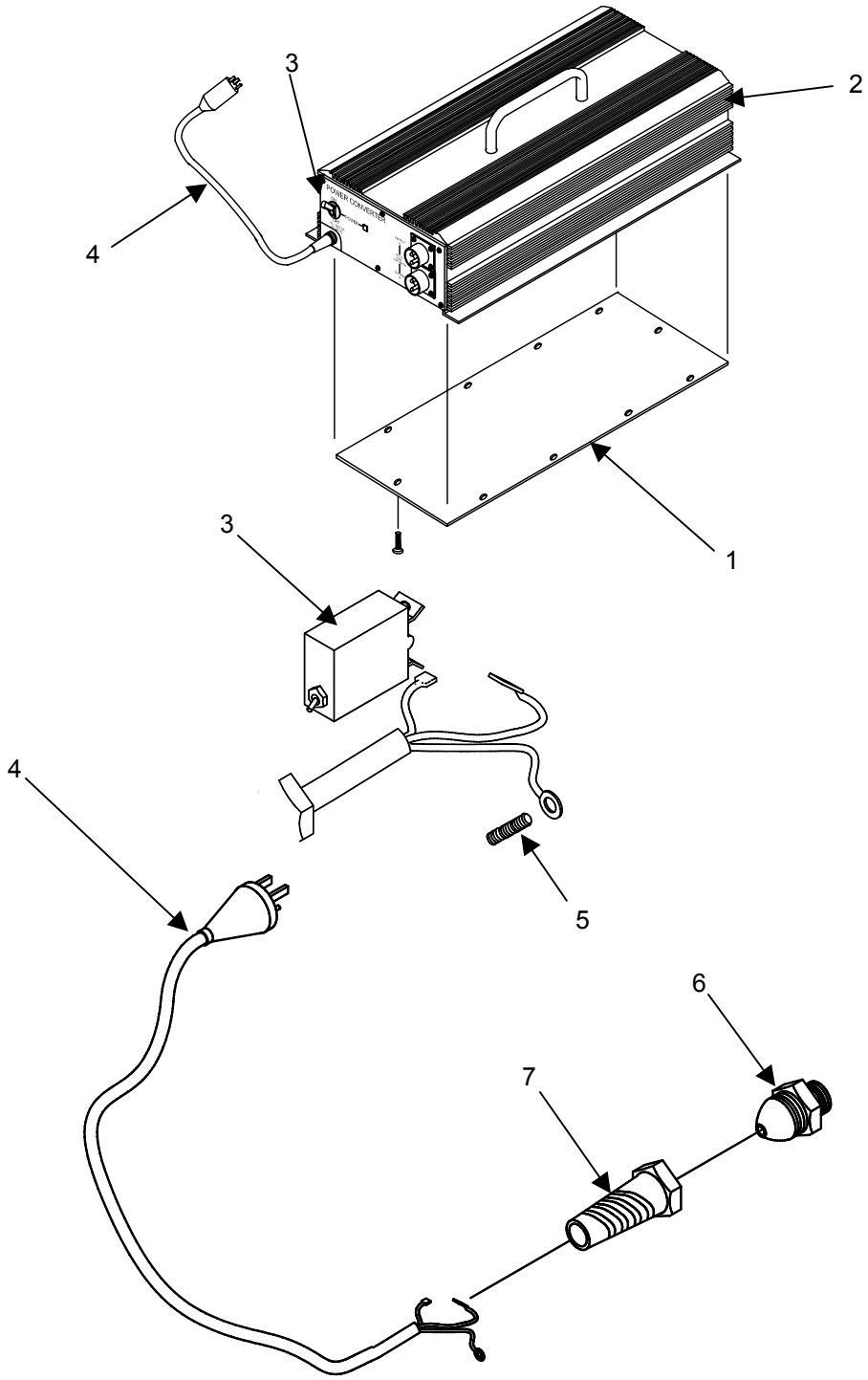


Figure 7. Replace the Power Cord (MS0160)

END OF WORK PACKAGE

UNIT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
BATTERY PACK
INSPECT, REPLACE

INITIAL SETUP

Tools
General Mechanics Tool Kit (Item 2, Table 2, WP 0041 00)

Personnel Required
Two

Materials/Parts
None Required

Equipment Condition
Battery pack disconnected from power source.

INSPECT

Inspect the Battery Pack

WARNING

The Battery Pack weighs approximately 93 pounds (42.3 kg). Two persons must carry the Battery Pack, lifting with legs, not back, to prevent injury.

1. Remove the Battery Pack **(figure 1, item 1)** outer cover **(figure 1, item 2)** by removing the cover retaining screws **(figure 1, item 3)** with a cross tip screwdriver.

2. Inspect the Battery Pack **(figure 1, item 1)** for broken or loose welds on the frame **(figure 1, item 4)**. Refer to Direct Support Maintenance for repair.

3. Install the outer cover **(figure 1, item 2)** and retain with the cover retaining screws **(figure 1, item 3).**

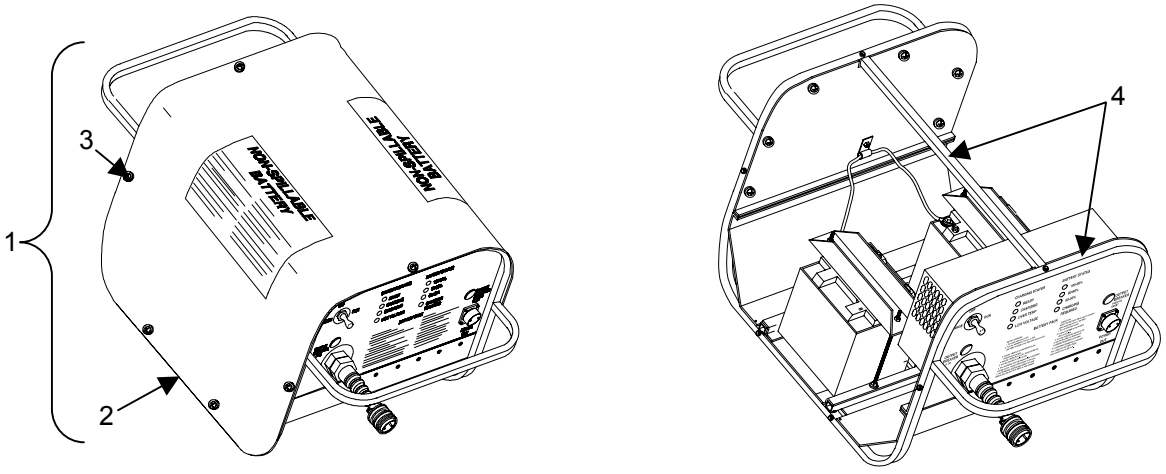


Figure 1. Inspect the Battery Pack

REPLACE

Replace the Battery Pack

Replace the entire Battery Pack **(figure 2, item 1)** if damaged beyond repair.

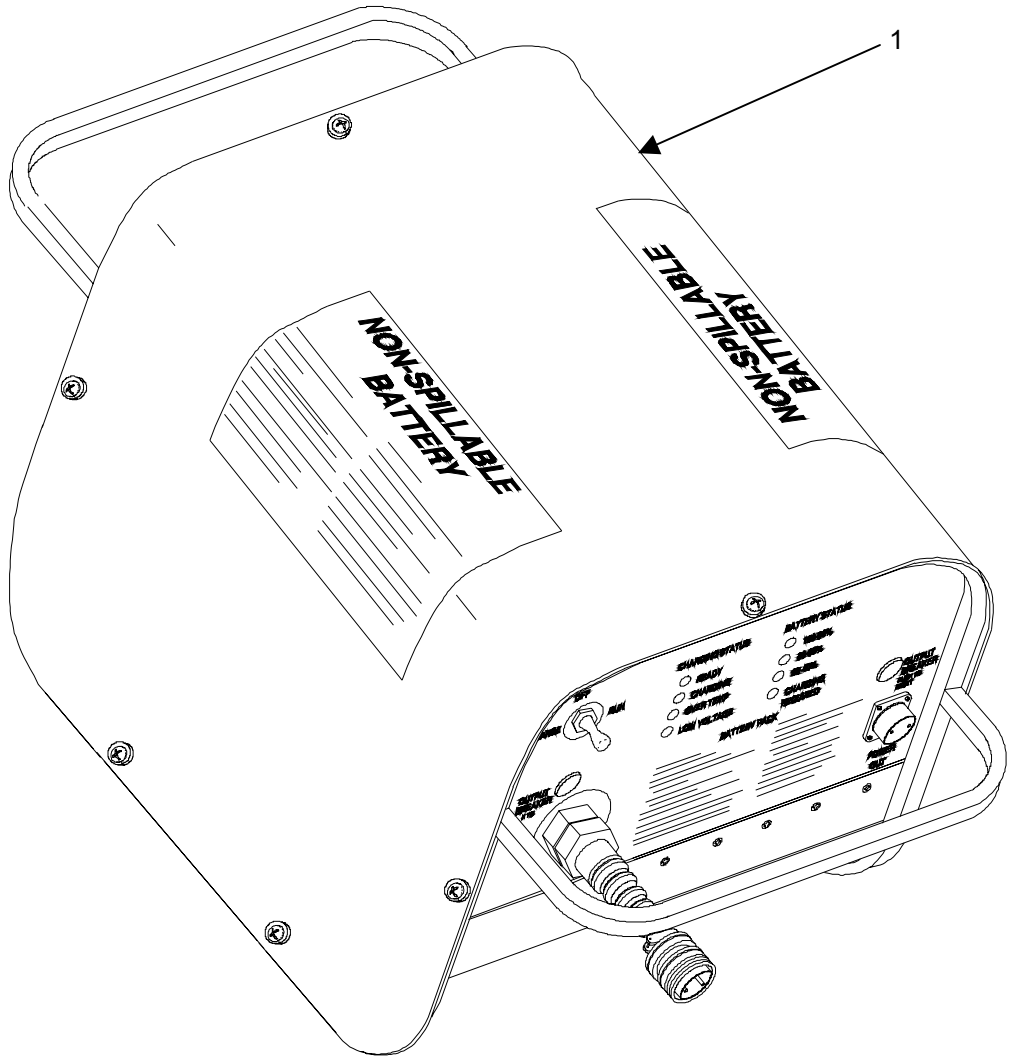


Figure 2. Replace the Battery Pack

END OF WORK PACKAGE

UNIT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
BATTERIES
INSPECT, TEST, REPLACE

INITIAL SETUP

Tools	**Personnel Required**
General Mechanics Tool Kit (Item 2, Table 2, WP 0041 00)	Two
Materials/Parts	**Equipment Condition**
None Required	Battery pack disconnected from power source.

INSPECT

Inspect the Batteries

WARNING

The Battery Pack weighs approximately 93 pounds (42.2 kg). Two persons must carry the Battery Pack, lifting with legs, not back, to prevent injury.

1. Remove the Battery Pack **(figure 1, item 1)** outer cover **(figure 1, item 2)** by removing the cover retaining screws **(figure 1, item 3)** with a cross tip screwdriver.
2. Inspect the outer casing of the lead acid batteries **(figure 1, item 4)** inside the Battery Pack **(figure 1, item 1)** for any damage that could lead to leaking.
3. Check the condition of the battery terminals **(figure 1, item 5)** for corrosion.
4. Disconnect the power lead terminals **(figure 1, item 6)** and clean as necessary.

WARNING

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.

5. Connect the power lead terminals **(figure 1, item 6)**.
6. Install the outer cover **(figure 1, item 2)** and retain with the cover retaining screws **(figure 1, item 3).**

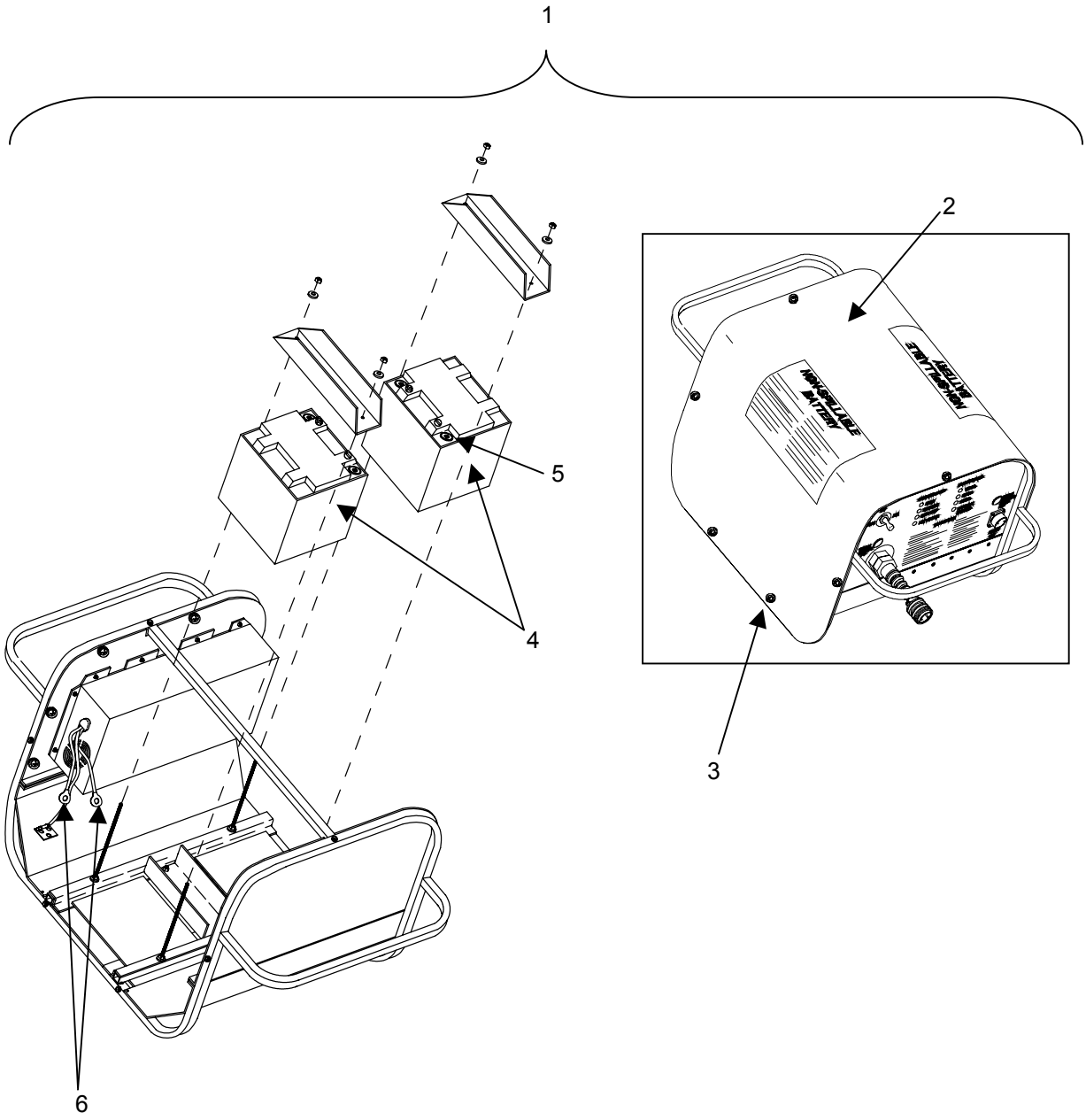


Figure 1. Inspect the Batteries

TEST

Test the Batteries

WARNING

The Battery Pack weighs approximately 93 pounds (42.2 kg). Two persons must carry the Battery Pack, lifting with legs, not back, to prevent injury.

1. To determine the status of the batteries, attempt to charge the battery pack **(figure 2, item 1)** until the Ready indicator is lit. Refer to WP 0005 00 as necessary for operating procedures.

2. 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. Refer to WP 0005 00 as necessary for operating procedures.

3. Remove the screws**(figure 2, item 2)** retaining the Battery Pack cover **(figure 2, item 3)** and remove the cover.

4. Tag and disconnect the power leads **(figure 2, item 4)** that extend from the charger to the battery terminals **(figure 2, item 5)** so that the batteries **(figure 2, item 6)** are no longer connected to the charger or each other.

5. With a Multimeter set to measure DC Volts, place the (+) positive lead of the Multimeter on the (+) positive terminal of one battery **(figure 2, item 6)** and the (-) negative lead of the Multimeter on the (-) negative terminal of the same battery.

6. Read the output voltage of the battery **(figure 2, item 6)** on the Multimeter. If the voltage is 11VDC or less, the battery is most likely no longer capable of holding a full charge and requires replacement.

7. Repeat steps 5 and 6 with the remaining battery **(figure 2, item 6)**.

WARNING

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.

8. Connect the power leads **(figure 2, item 4)** to the battery terminals **(figure 2, item 5)** as tagged.

9. If the batteries **(figure 2, item 6)** pass the voltage test, install the cover **(figure 2, item 3)**, and retain with screws **(figure 2, item 2)**.

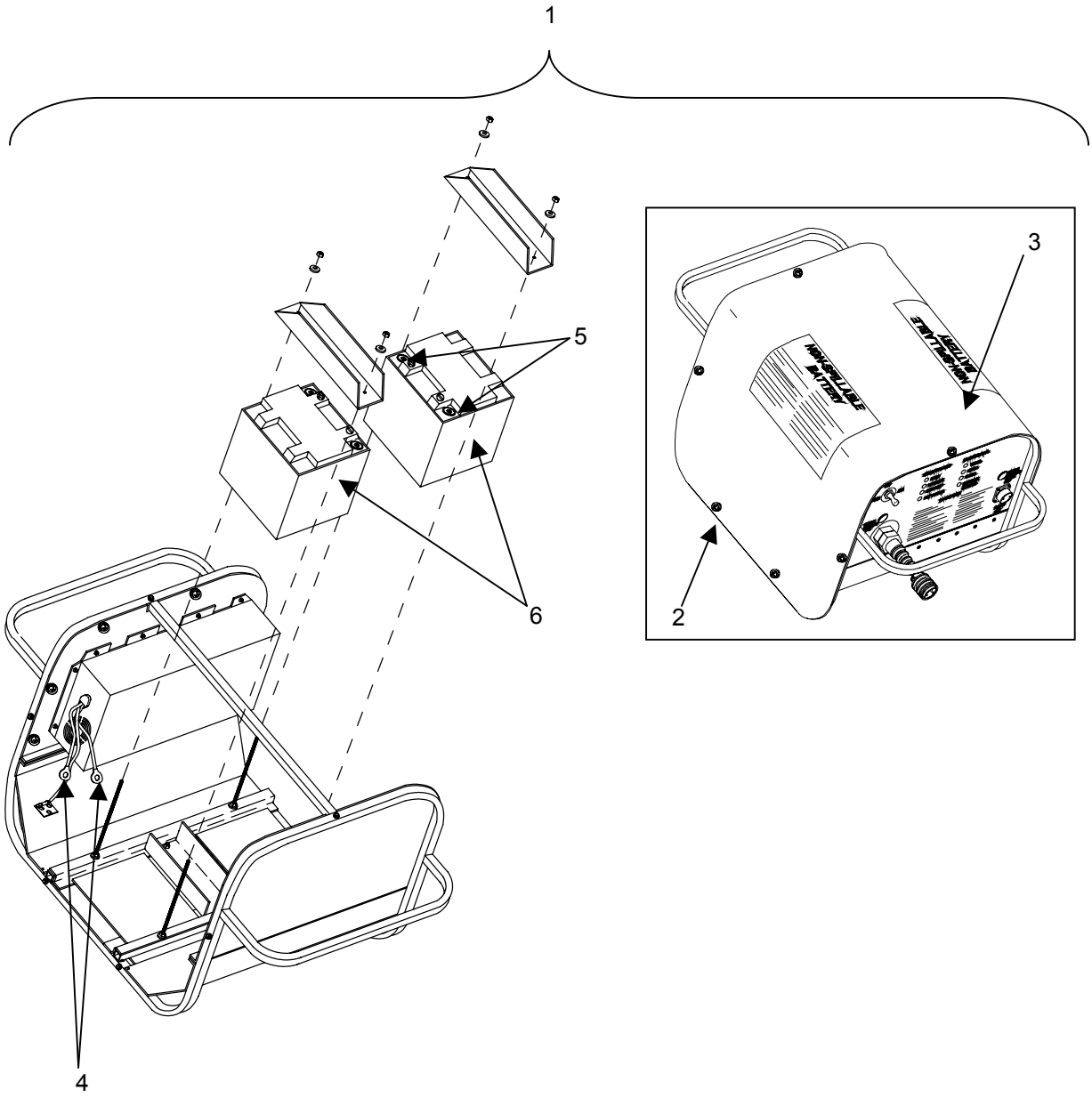


Figure 2. Test the Batteries

REPLACE

Replace the Batteries

NOTE

Replace both batteries at the same time, if possible.

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

2. Remove the two nylon locking nuts and washers **(figure 3, item 4)** on the hold-down bracket **(figure 3, item 5)** of the battery being replaced.

3. Slide the hold-down bracket **(figure 3, item 5)** off the threaded shafts **(figure 3, item 6)** and remove.

4. Loosen and remove the battery terminal hex head bolts **(figure 3, item 7)** that secure the power leads **(figure 3, item 8)** to the battery terminals of the battery being replaced.

5. Remove the defective battery **(figure 3, item 1)** 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 **(figure 3, item 9)** and make require a moderate amount of force to break the bond.

6. Install the new battery **(figure 3, item 1)** onto the Battery Pack base plate **(figure 3, item 9)**.

7. Slide the hold-down bracket **(figure 3, item 5)** onto the threaded shafts **(figure 3, item 6)**.

8. Reinstall the two nylon locking nuts **(figure 3, item 4)** on the hold-down bracket **(figure 3, item 5)** of the battery.

WARNING

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.

9. Reconnect each power lead **(figure 3, item 8)** making sure to attach the RED lead to the positive (+) battery terminal and the temperature sensor **(figure 3, item 10)** under the BLACK negative lead of the negative (-) battery terminal. Secure the power lead to the battery terminals with hex head bolts **(figure 3, item 7)**.

10. Dispose of defective batteries **(figure 3, item 1)** IAW unit SOP, or in an environmentally approved manner per local commanders's requirements.

11. Install the Battery Pack outer cover **(figure 3, item 2)** and retain with screws **(figure 3, item 3)**.

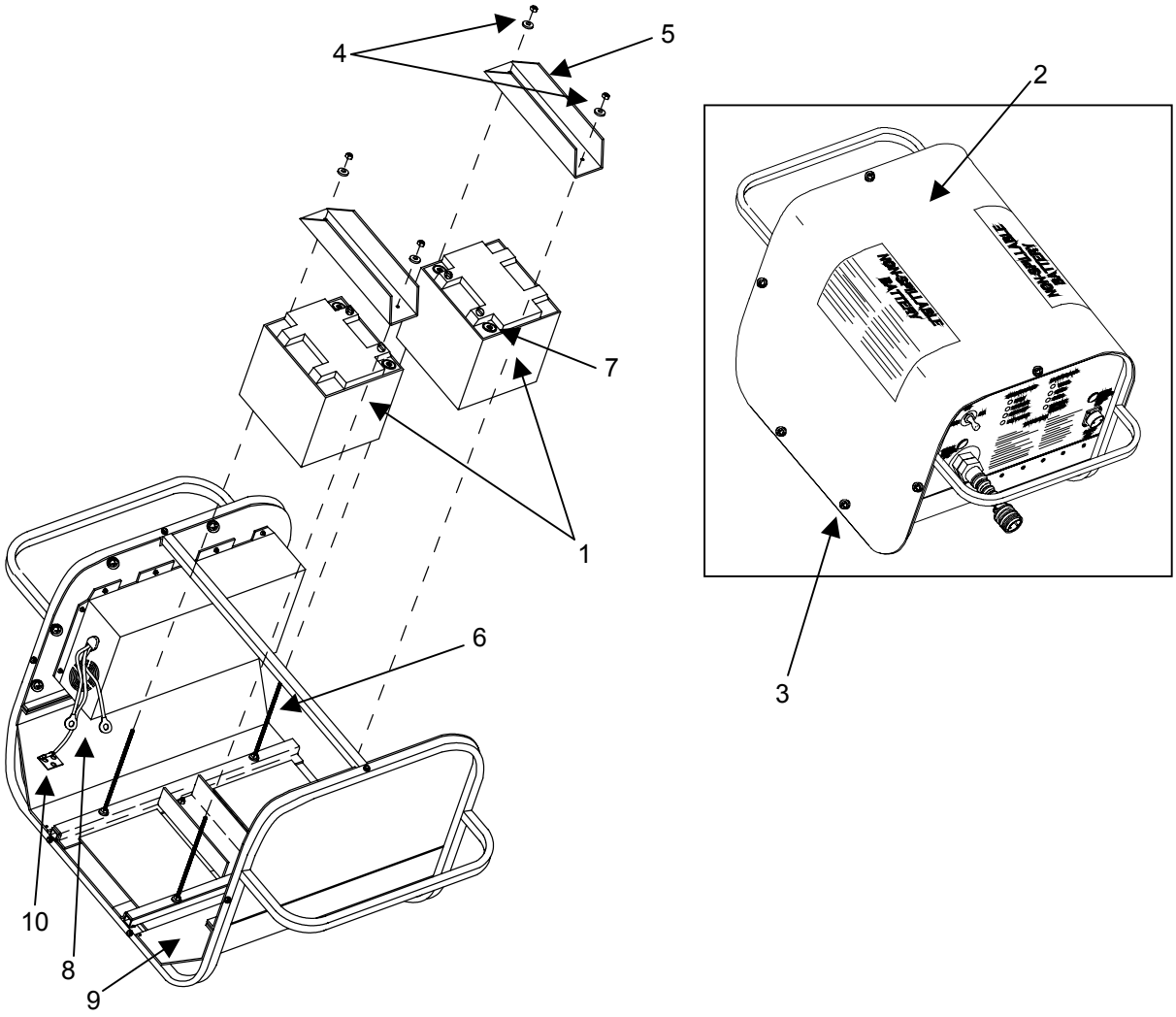


Figure 3. Replace the Batteries

END OF WORK PACKAGE

UNIT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
BATTERY CHARGER
INSPECT, TEST, REPLACE

INITIAL SETUP

Tools	**Personnel Required**
General Mechanics Tool Kit (Item 2, Table 2, WP 0041 00)	Two
Materials/Parts	**Equipment Condition**
Tape, Electrical (Item 4, Table 1, WP 0066 00)	Battery pack disconnected from power source.

INSPECT

Inspect the Battery Charger

WARNING

The Battery Pack weighs approximately 93 pounds (42.3 kg). Two persons must carry the Battery Pack, lifting with legs, not back, to prevent injury.

1. Inspect the front panel of the battery charger **(figure 1, item 1)**.
2. Check the condition of the Power Out connector **(figure 1, item 2)** for dents or other damage that would prevent the proper connection of a cable connector.
3. Check the condition of the Power In cable **(figure 1, item 3)** for cuts or other damage that expose the wiring.
4. Remove the screws **(figure 1, item 4)** retaining the battery pack cover **(figure 1, item 5)**, and remove the cover.
5. Inspect the battery charger **(figure 1, item 1)** for indications of physical damage, such as dents, corrosion, or burnt components.
6. Inspect the battery charger wires **(figure 1, item 6)** for damage such as chafed or burnt insulation, loose or corroded connections, or exposed wiring.
7. Inspect the temperature sensor **(figure 1, item 7)** for damage such as chafed or burnt insulation, loose or corroded connections, or exposed wiring.
8. If there are no indications of any faults with the battery charger **(figure 1, item 1)**, install battery pack cover **(figure 1, item 5)** and retain with screws **(figure 1, item 4)**.

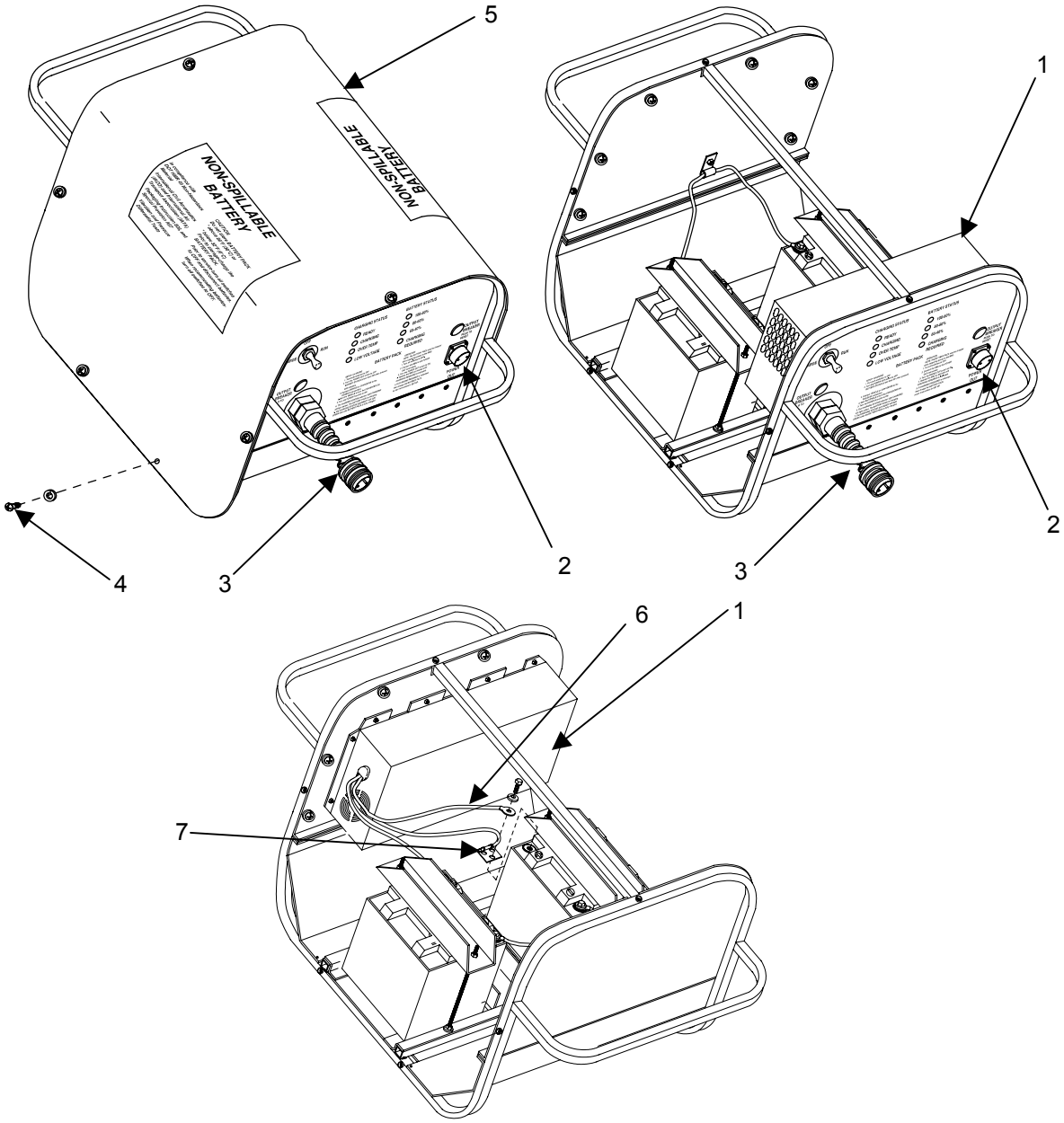


Figure 1. Inspect the Battery Charger

TEST

Test the Battery Charger

WARNING

The Battery Pack weighs approximately 93 pounds (42.3 kg). Two persons must carry the Battery Pack, lifting with legs, not back, to prevent injury.

1. Remove the screws **(figure 2, item 1)** retaining the battery pack cover **(figure 2, item 2)**, and remove the cover.

2. Tag and disconnect the battery charger wiring **(figure 2, item 3)** from the batteries **(figure 2, item 4)**.

3. Use electrical tape to insulate the terminal end of each battery charger wire **(figure 2, item 3)**. Leave the end open to allow access to the terminal.

CAUTION

Ensure the terminals are completely insulated from each other, and from any conductive components. Failure to do so may allow a short circuit, and may damage the charger.

4. Connect the battery charger **(figure 2, item 5)** to an approved power source, and set the 3-Position switch **(figure 2, item 6)** to CHARGE.

5. Set a multimeter to read DC voltage, and check the voltage between the two charger wire **(figure 2, item 3)** terminals. The charger **(figure 2, item 5)** should deliver approximately 24 to 28 VDC. Replace a charger with low or no voltage.

6. Disconnect the battery charger **(figure 2, item 5)** from the power source.

CAUTION

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.

7. Remove the electrical tape from the wire **(figure 2, item 3)** terminals, and connect the charger wiring to the batteries **(figure 2, item 4)** as tagged.

8. Install the battery pack cover **(figure 2, item 2)**, and retain with screws **(figure 2, item 1)**.

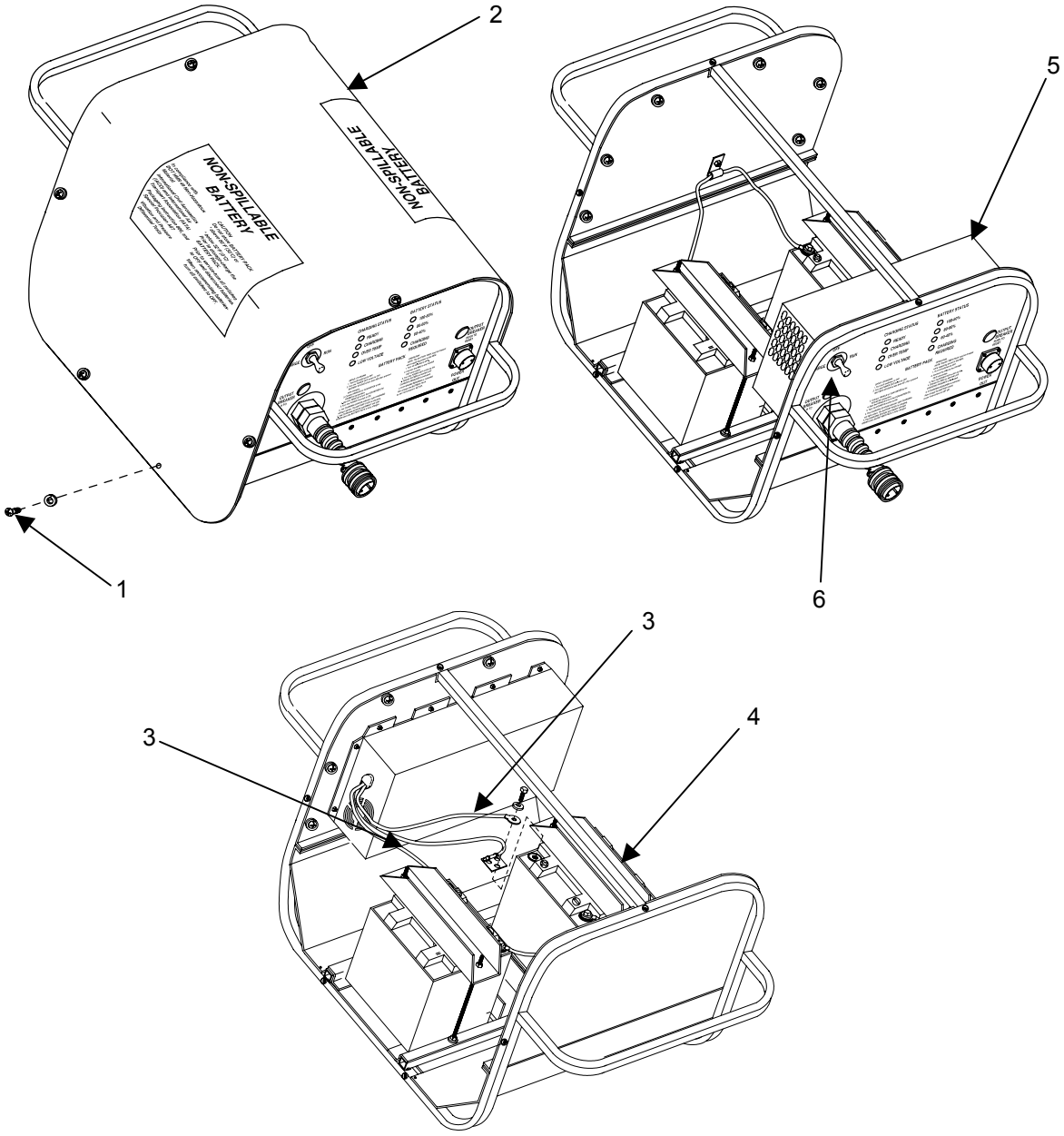


Figure 2. Test the Battery Charger

REPLACE

Replace the Battery Charger

WARNING

The Battery Pack weighs approximately 93 pounds (42.3 kg). Two persons must carry the Battery Pack, lifting with legs, not back, to prevent injury.

1. To replace the internal battery charger **(figure 3, item 1)**, remove batteries as detailed in WP 0034 00.

2. Loosen the two hex nuts **(figure 3, item 2)** at the base of the threaded shafts **(figure 3, item 3)** just behind the charger assembly.

3. Remove the two shafts **(figure 3, item 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.

4. Remove the six retaining screws and washers **(figure 3, item 4)** that secure the battery charger **(figure 3, item 1)** to the battery pack frame **(figure 3, item 5)**.

5. Remove the defective charger assembly **(figure 3, item 1)**.

6. Install a new charger **(figure 3, item 1)** in place on the battery pack frame **(figure 3, item 5)**.

7. Secure in place with the six retaining screws and washers **(figure 3, item 4)**.

8. Install two threaded shafts **(figure 3, item 3)** removed earlier and secure.

WARNING

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.

9. Reinstall the batteries and battery pack cover as described in WP 0034 00.

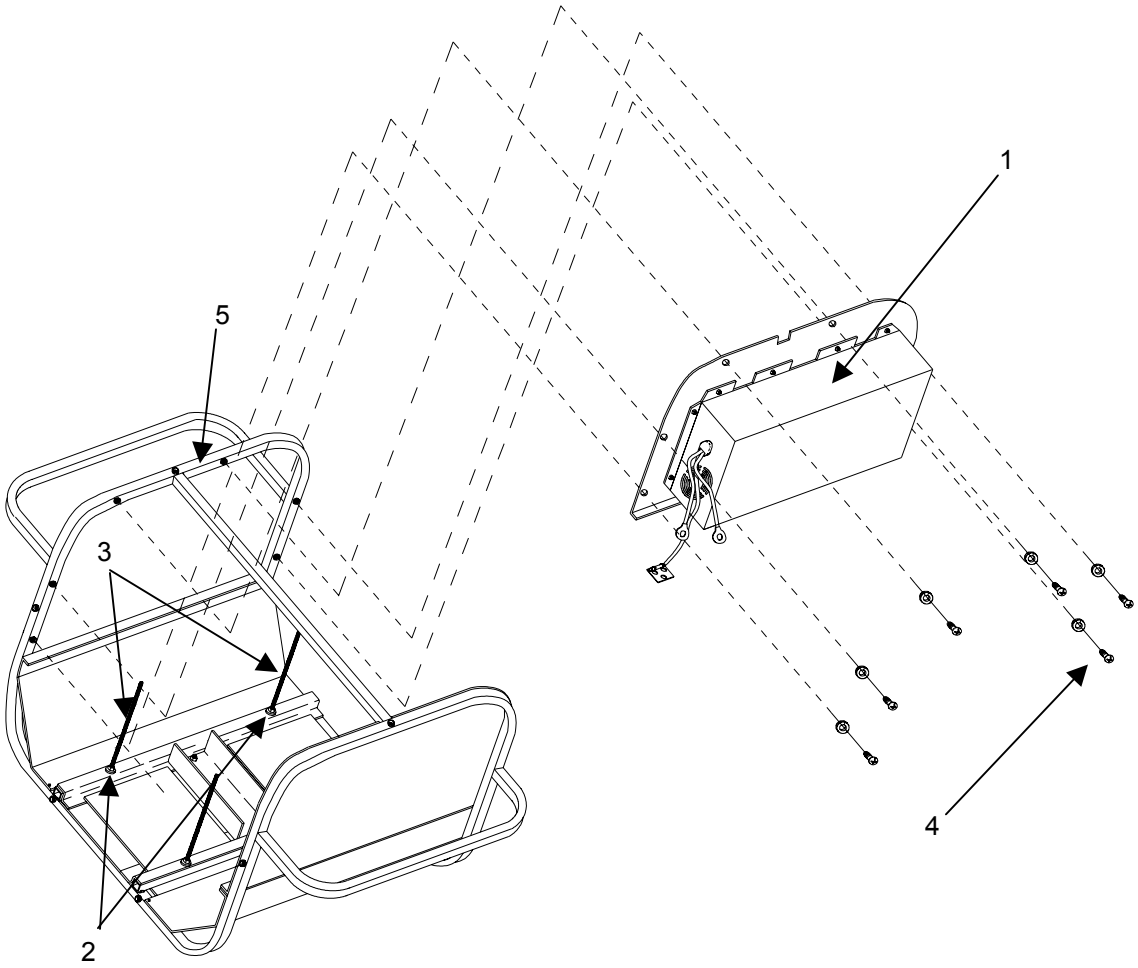


Figure 3. Replace the Battery Charger

END OF WORK PACKAGE

UNIT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
NATO ADAPTER CABLE
INSPECT, TEST, REPLACE

INITIAL SETUP

Tools	**Personnel Required**
General Mechanics Tool Kit (Item 2, Table 2, WP 0041 00)	Two
Materials/Parts	**Equipment Condition**
None Required	NATO Adapter Cable disconnected from power source.

INSPECT

Inspect the NATO Adapter Cable

1. Remove the outer cap **(figure 1, item 1)** of the large power connector **(figure 1, item 2)** and inspect the interior surfaces for any dirt, damage, or corrosion that would prevent a good electrical connection.

2. Inspect the connection point **(figure 1, item 3)** between the large power connector **(figure 1, item 2)** and the cable **(figure 1, item 4)** for any cracks, separations, or exposed wires. Inspect the length of the cable jacket **(figure 1, item 5)** for any cracks, cuts, or other damage that would expose the inner wires.

3. Inspect the small power connector **(figure 1, item 6)** for any cracks, dents, or damage to the outer collar that would prevent a proper and secure electrical connection.

4. Inspect the interior surfaces of the connector **(figure 1, item 6)** for dirt or damage to the internal contacts.

5. Ensure that the outer cable jacket **(figure 1, item 5)** is securely attached to the connector and that there are no exposed wires.

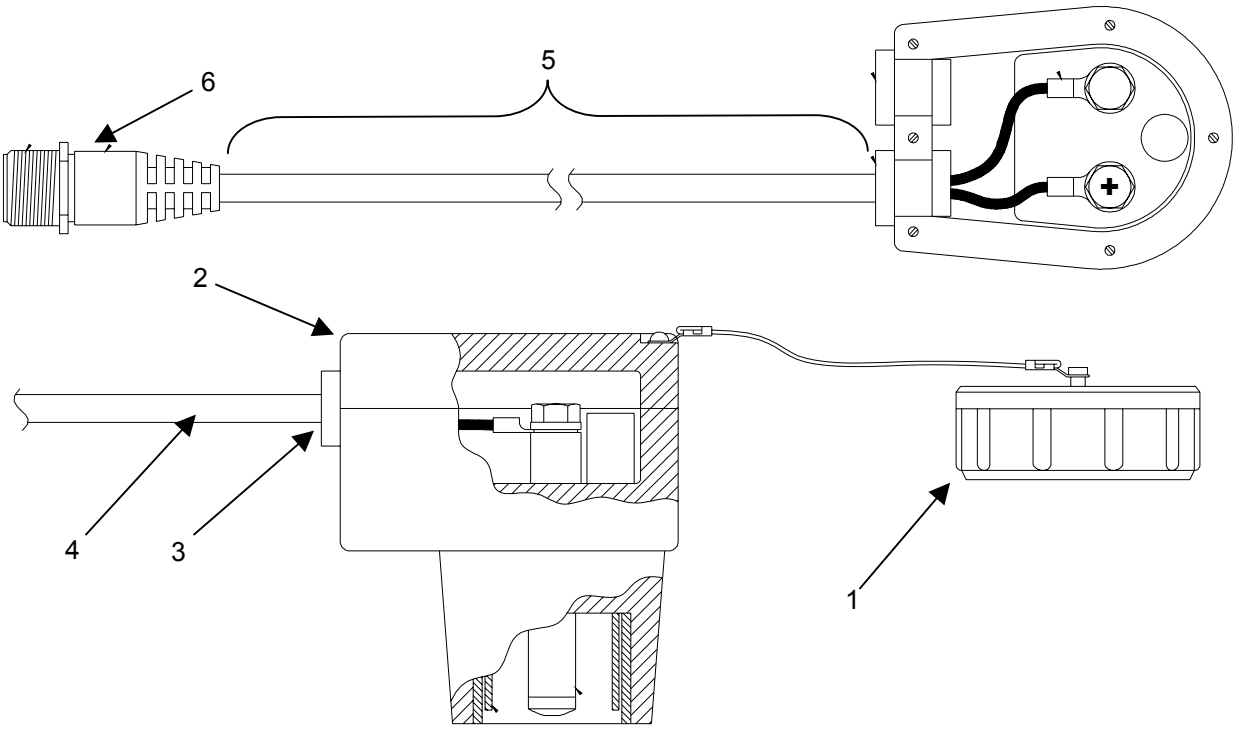


Figure 1. Inspect the NATO Adapter Cable

TEST

Test the NATO Adapter Cable

1. Remove the outer cap **(figure 2, item 1)** of the large power connector **(figure 2, item 2)**.

2. Use an ohmmeter to test for continuity between the terminal **(figure 2, item 3)** in the large power connector **(figure 2, item 2)** and each terminal in the small power connector **(figure 2, item 4)**. There should be continuity with only one terminal in the small power connector. Replace a NATO Adapter Cable which does not pass this test.

3. Use an ohmmeter to test for continuity between the socket **(figure 2, item 5)** in the large power connector **(figure 2, item 2)** and each terminal in the small power connector **(figure 2, item 4)**. There should be continuity with only one terminal in the small power connector. Replace a NATO Adapter Cable which does not pass this test.

4. Install the outer cap **(figure 2, item 1)** on the large power connector **(figure 2, item 2)**.

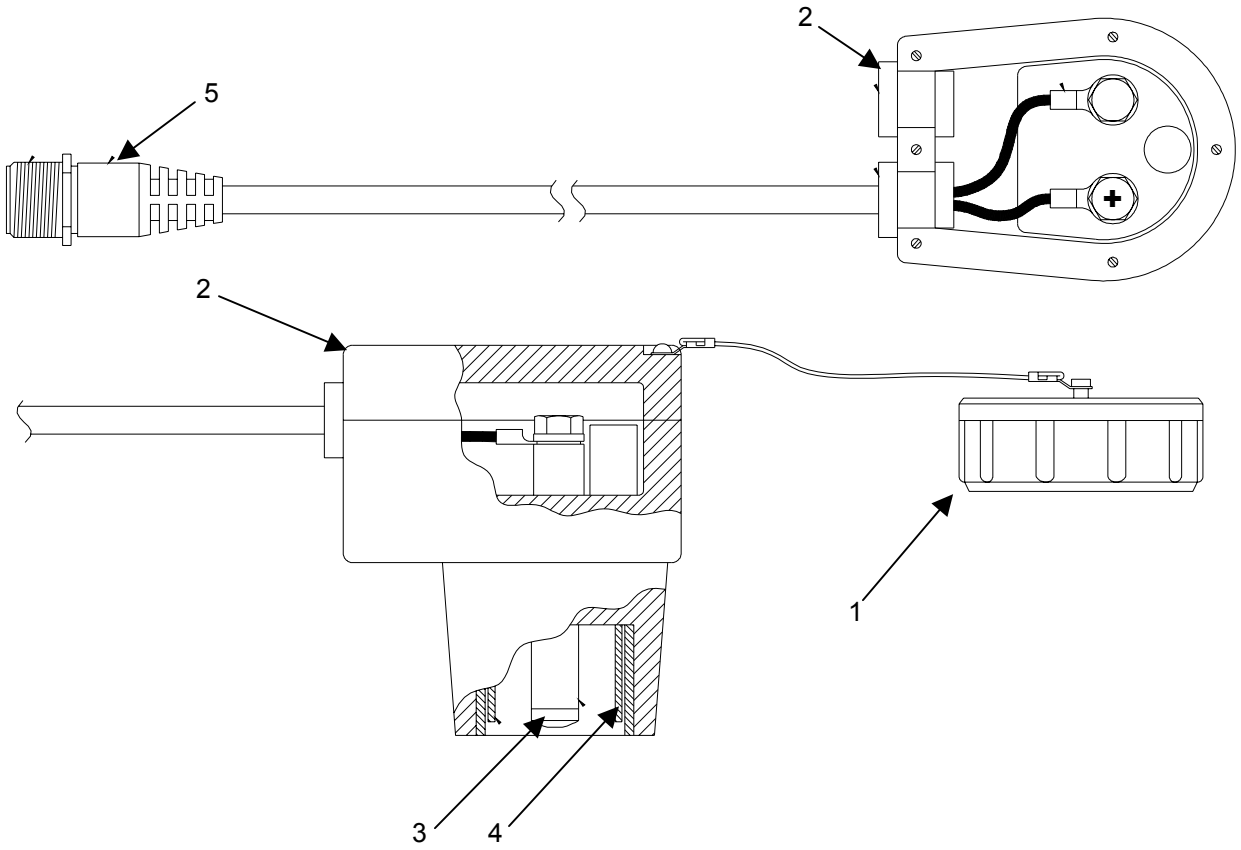


Figure 2. Test the NATO Adapter Cable

REPLACE

Replace NATO Adapter Cable Components

1. Remove the protective cap **(figure 3, item 1)**.

2. Remove the six screws that secure the back cover of the main connector head **(figure 3, item 2)**.

3. Remove the two hex head bolts **(figure 3, item 3)** that secure the power cable **(figure 3, item 4)** to the main power connector head **(figure 3, item 2)** and remove the cable assembly.

4. Install a new power cable **(figure 3, item 4)** or new main connector head **(figure 3, item 2)** making sure to place the power cable strain relief **(figure 3, item 5)** into the slot on the main power connector head.

5. Place the power cable terminals in position by aligning the **(+)** positive lead of the cable with the **(+)** terminal **(figure 3, item 6)** on the main connector head **(figure 3, item 2)** and install the two hex head bolts **(figure 3, item 3)**.

6. Place the back cover of the main connector head **(figure 3, item 2)** into position. Place a new cap or the cap removed earlier into position over the top screw hole **(figure 3, item 7)** and secure the six cover screws.

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

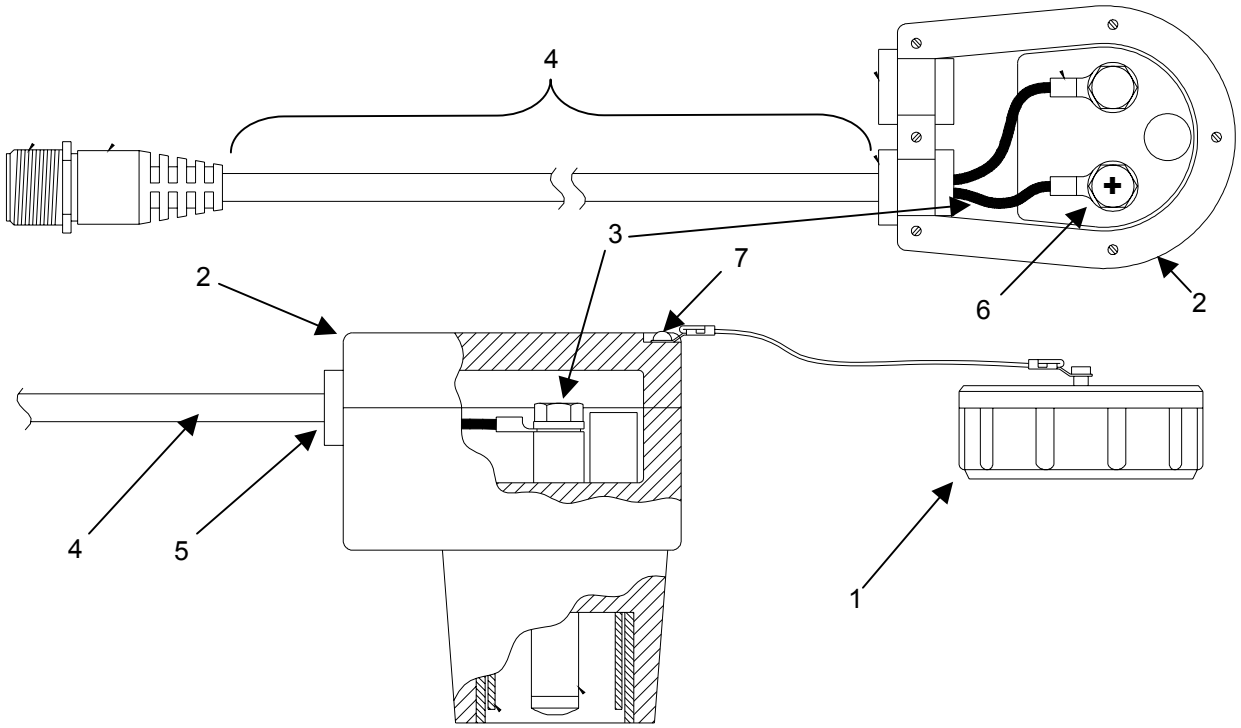


Figure 3. Replace NATO Adapter Cable Components

END OF WORK PACKAGE

CHAPTER 7

DIRECT SUPPORT MAINTENANCE INSTRUCTIONS
FOR
MODERN BURNER UNIT
AND
MODERN BURNER UNIT-V3

DIRECT SUPPORT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
MBU FRAME
REPAIR

INITIAL SETUP

Tools
General Mechanics Tool Kit: Automotive (Item 2, Table 2, WP 0041 00)
Welding Shop, Trailer Mounted (Item 3, Table 2, WP 0041 00)

Personnel Required
Two

Materials/Parts
Fuel Can (Table 1, WP 0065 00)
Wiping Rags (Item 5, Table 1, WP 0066 00)

Equipment Condition
MBU shut-down, cool, and disconnected from power source.
Fuel tank drained.

REPAIR

Repair the MBU

WARNING

Before proceeding, the MBU fuel tank must be drained completely as described in WP 0011 00. Have rags on hand to clean up fuel spillage that may occur to prevent contamination. Do not attempt this repair on an assembled MBU. Do not perform this procedure near an open flame to prevent fire. Failure to observe safety precautions may result in injury or death to personnel.

WARNING

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.

REPAIR

1. Remove all components per WP 0022 00 through WP 0030 00. In WP 0025 00, perform only the final procedure entitled “Replace the Fuel Delivery Block Assembly”.

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

END OF WORK PACKAGE

DIRECT SUPPORT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
BATTERY PACK
REPAIR

INITIAL SETUP

Tools
General Mechanics Tool Kit: Automotive (Item 2, Table 2, WP 0041 00)
Welding Shop, Trailer Mounted (Item 3, Table 2, WP 0041 00)

Personnel Required
Two

Materials/Parts
None Required

Equipment Condition
Battery Pack disconnected from power source and MBU.

REPAIR

Repair the Battery Pack

WARNING

Before proceeding, the batteries must be removed from the battery pack. Failure to observe safety precautions may result in injury or death to personnel.

WARNING

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.

1. Remove the batteries IAW instructions given in WP 0034 00, and remove the battery charger IAW instructions given in WP 0035 00.

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

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

4. Install the battery charger IAW instructions given in WP 0035 00, then install the batteries IAW instructions given in WP 0034 00.

END OF WORK PACKAGE

CHAPTER 8

SUPPORTING INFORMATION
FOR
MODERN BURNER UNIT
AND
MODERN BURNER UNIT-V3

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
REFERENCES

SCOPE

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

FIELD MANUALS

Basic Doctrine for Army Field Feeding ..... FM 10-23
Basic Cold Weather Manual ..... FM 31-70
Northern Operations ..... FM 31-71
NBC Decontamination ..... FM 3-5
Packaging of Material – Preservation ..... FM 38-700
Packaging of Material – Packing ..... FM 38-701
Mountain Operations ..... FM 3-97.6
First Aid for Soldiers ..... FM 4-25.11

FORMS

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
Hand Receipt/Annex Number ..... DA Form 2062
Equipment Control Record ..... DA Form 2408-9
Equipment Inspection and Maintenance Worksheet ..... DA Form 2404

TECHNICAL MANUALS

Operator's Manual: Welding Theory and Application ..... TC 9-237
Metal Body Repair and Related Operation ..... TC 9-510
Operator's Manual For
Truck, Utility: Cargo/Troop Carrier, 1-1/4 Ton, 4x4, M998
(2320-01-107-7155) (EIC: BBD);
M998A1 (2320-01-371-9577) (EIC: BBN);
Truck, Utility: Cargo/Troop Carrier, 1-1/4 Ton, 4x4, W/Winch, M1038
(2320-01-107-7156) (EIC: BBE);
M1038A1 (2320-01-371-9578) (EIC: BBP);
Truck, Utility: Heavy Variant, 4x4,
M1097 (2320-01-346-9317) (EIC: BBM);
M1097A1(2320-01-371-9583) (EIC: BBU);
M1097A2 (2320-01-380-8604) (EIC: BB6);
M1123 (2320-01-455-9593) (EIC: B6G);
Truck, Utility: Tow Carrier, Armored, 1-1/4 Ton, 4x4,
M966 (2320-01-107-7153) (EIC: BBC);
M966A1 (2320-01-372-3932) (EIC: BBX);
M1121 (2320-01-956-1282) (EIC: B6H);
Truck, Utility: Tow Carrier, Armored, 1-1/4 Ton, 4x4, W/Winch,
M1036 (2320-01-107-7154) (EIC: BBH);
Truck, Utility: Tow Carrier, W/Supplemental Armor, 1-1/4 Ton, 4x4,

M1045 (2320-01-146-7191);
M1045A1 (2320-01-371-9580) (EIC: BBR);
M1045A2 (2320-01-380-8229) (EIC: BB5);
Truck, Utility: Tow Carrier, W/Supplemental Armor, 1-1/4 Ton, 4x4, W/Winch,
M1046 (2320-01-146-7188);
M1046A1 (2320-01-371-9582) (EIC: BBT);
Truck, Utility: Armament Carrier, Armored, 1-1/4 Ton, 4x4, M1025
(2320-01-128-9551) (EIC: BBF);
M1025A1 (2320-01-371-9584) (EIC: BBV);
M1025A2 (2320-01-380-8233) (EIC: BB3);
Truck, Utility: Armament Carrier, Armored, 1-1/4 Ton, 4x4, W/Winch,
M1026
(2320-01-128-9552) (EIC: BBG);
M1026A1 (2320-01-371-9579) (EIC: BBQ);
Truck, Utility: Armament Carrier, W/Supplemental Armor,
1-1/4 Ton, 4x4, M1043
(2320-01-146-7190); M1043A1 (2320-01-372-3933) (EIC: BBY);
M1043A2 (2320-01-380-8213) (EIC: BB4);
Truck, Utility: Armament Carrier, W/Supplemental Armor, 1-1/4 Ton, 4x4,
W/Winch, M1044 (2320-01-146-7189);
M1044A1 (2320-01-371-9581) (EIC: BBS);
Truck, Utility: S250 Shelter Carrier, 4x4, M1037 (2320-01-146-7193)
(EIC: BBK);
Truck, Utility: S250 Shelter Carrier, 4x4, W/Winch,
M1042 (2320-01-146-7187);
Truck, Ambulance, 2-Litter, Armored, 4x4, M996 (2310-01-111-2275)
(EIC: BBB); M996A1 (2310-01-372-3935) (EIC: BB2);
Truck, Ambulance, 4-Litter, Armored, 4x4, M997
(2310-01-111-2274) (EIC: BBA);
M997A1 (2310-01-372-3934) (EIC: BBZ); M997A2
(2310-01-380-8225) (EIC: BB8);
Truck, Ambulance, 2-Litter, Soft Top, 4x4,
M1035 (2310-01-146-7194);
M1035A1 (2310-01-371-9585) (EIC: BBW);
M1035A2 (2310-01-380-8290) (EIC: BB9)..... TM 9-2320-280-10
Operator's, Unit and Direct Support Maintenance Manual
Including Repair Parts and Special Tools List for
2KW Military Tactical Generator Sets
<u>120 VAC, 60Hz</u>
MEP 531A (Dewey) (NSN 6115-01-435-1565) (EIC: LKA)
Mechron (NSN 6115-21-912-0393) (EIC: N/A)
<u>28 VDC</u>
MEP 531A (Dewey) (NSN 6115-01-435-1567) (EIC: LKD)
Mechron (NSN 6115-21-912-0392) (EIC: N/A).....TM 9-6115-673-13&P

Operator, Organizational and Direct Support Maintenance Manual
Including Repair Parts and Special Tools List for
Range Outfit, Gasoline, Model M59 (NSN 7360-00-082-2153);
Burner Unit, Gasoline, Model M2 (NSN 7310-00-842-9247);
Burner Unit, Model M2A (NSN 7310-01-017-1285);
Burner Unit, Model M2A With Safety Device (NSN 7310-01-113-9172);
Accessory Outfit, Gasoline, Field Range With Baking Rack
(NSN 7360-00-187-4757).....TM 10-7360-204-13&P
Operator's, Unit and Direct Support Maintenance Manual
for Kitchen, Field, Trailer Mounted
MKT-75 (NSN 7360-00-138-7782)
MKT-75A (NSN 7360-01-155-6020)
MKT-82 (NSN 7360-01-155-6020)..... TM 10-7360-206-13
Unit and Direct Support Maintenance Repair Parts and Special Tools List
Kitchen, Field, Trailer Mounted .....TM 10-7360-206-23P
Operator's, Unit, and Direct Support Maintenance Manual
Including Repair Parts and Special Tools List for Modular Field Kitchen
(NSN 7360-01-276-9817).....TM 10-7360-208-13&P
Operator, Organizational and Direct Support Maintenance Manual
Including Repair Parts and Special Tools List for
Kitchen, Company Level Field Feeding (KCLFF) (NSN 7360-01-200-9828)
Kitchen, Company Level Field Feeding – Enhanced (KCLFF-E)
(NSN 7360-01-374-1980).....TM 10-7360-209-13&P
Operator's, Unit and Direct Support Maintenance Manual
Including Repair Parts and Special Tools List for Food Sanitation Center (FSC)
(NSN 7360-01-277-2558).....TM 10-7360-211-13&P
Administrative Storage of Equipment.....TM 740-90-1
Destruction of Army Material to prevent Enemy Use .....TM 750-244-3

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
Military Standardization Handbook Dishwashing Operations..... MIL/HDBK 740

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
MAINTENANCE ALLOCATION CHART (MAC) 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 are limited to and 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). This includes scheduled inspection and gagings and evaluation of cannon tubes.

2. Test. To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards on a scheduled basis, i.e., load testing of lift devices and hydrostatic testing of pressure hoses.

3. Service. Operations required periodically to keep an item in proper operating condition; e.g., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases. This includes scheduled exercising and purging of recoil mechanisms.

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

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

6. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments of test, 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 functioning of an 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 assigned maintenance level is shown as the third position code of the Source, Maintenance and Recoverability (SMR) code.

9. Repair. The application of maintenance services, including fault location/troubleshooting, removal/installation, 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. 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 materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (e.g., hours/miles) considered in classifying Army equipment/components.

Explanation of Columns in the MAC

Column (1) Group Number. Column (1) lists FGC numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the Next Higher Assembly (NHA).

Column (2) Component/Assembly. Column (2) contains the item names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

Column (3) Maintenance Function. Column (3) lists the functions to be performed on the item listed in column (2). (For a detailed explanation of these functions refer to "Maintenance Functions" outlined above.)

Column (4) Maintenance Level. Column (4) specifies each level of maintenance authorized to perform each function listed in column (3), by indicating work time required (expressed as manhours in whole hours or decimals) in the appropriate subcolumn. This work time figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function varies at different maintenance levels, appropriate work time figures are to 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 preparation time (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the MAC. The symbol designations for the various maintenance levels are as follows:

C Operator or crew maintenance
O Unit maintenance
F Direct support maintenance
L Specialized repair activity (SRA)
H General support maintenance
D Depot maintenance

NOTE

The "L" maintenance level is not included in column (4) of the MAC. Functions to this level of maintenance are identified by a work time figure in the "H" column of column (4), and an associated reference code is used in the REMARKS column (6). This code is keyed to the remarks and the SRA complete repair application is explained there.

Column (5) Tools and Equipment Reference Code. Column (5) specifies, by code, those common tool sets (not individual tools), common Test, Measurement and Diagnostic Equipment (TMDE), and special tools, special TMDE and special support equipment required to perform the designated function. Codes are keyed to the entries in the tools and test equipment table.

Column (6) Remarks Code. When applicable, this column contains a letter code, in alphabetical order, which is keyed to the remarks table entries.

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 the 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.

Explanation of Columns in the 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.

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
MAINTENANCE ALLOCATION CHART (MAC)

Table 1. MAC for Modern Burner Unit (MBU and MBU-V3)

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REFERENCE CODE	(6) REMARKS CODE
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT		
			C	O	F	H	D		
00	MBU	INSPECT	.1	.1					
		SERVICE	.5					1, 2	C
01	FRAME	INSPECT	.1						
	ASSEMBLY	SERVICE							E
		REPAIR			.5			3	A, B
0101	CONNECTOR	INSPECT	.1	.1					
	HARNESS	TEST		.1				2	
	ASSEMBLY	REPLACE		.4				2	
0102	CONTROLLER	INSPECT	.1	.1					
	ASSEMBLY	REPLACE		.4				2	
		CALIBRATE						2	
0103	COMPRESSOR	INSPECT	.1	.1					
	ASSEMBLY	TEST		.3				2	
		REPLACE		.4				2	
0104	FUEL	INSPECT	.1	.1					
	DELIVERY	TEST		.3				2	
	BLOCK	REMOVE/							
	ASSEMBLY	INSTALL		.3				2	
		ADJUST		.5				2	
		REPLACE		.5					
0105	VENT VALVE	INSPECT	.1	.1					
	ASSEMBLY	TEST							
		SERVICE	.1	.1				1	C
		REPLACE		.5				2	C
0106	BURNER	INSPECT	.1	.1					
	ASSEMBLY	REPLACE		.4				2	

Table 1. MAC for Modern Burner Unit (MBU and MBU-V3) - Continued.

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REFERENCE CODE	(6) REMARKS CODE
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT		
			C	O	F	H	D		
0107	FUEL REGULATOR ASSEMBLY	INSPECT SERVICE REPLACE	.1 .1	.1 .1				 2	
0108	REFLECTIVE HEAT SHIELD ASSEMBLY	INSPECT REPLACE	.1	.1 .1				 2	
0109	FUEL LINE ASSEMBLY	INSPECT REPLACE	.1	.1 .5				 2	
010901	FUEL INTERFACE FITTING	INSPECT REPLACE	.1	.1 .4				 2	
02	POWER CONVERTER	INSPECT TEST REPLACE	.1	.1 .4 .5				2 2	
03	BATTERY PACK	INSPECT REPAIR REPLACE	.1 .1	.1 .1	.5			2, 3	A, B
0301	BATTERIES	INSPECT TEST REPLACE	.1 .4	.1 .3 .4				2 2 2	
0302	BATTERY CHARGER	INSPECT TEST REPLACE	.1 .4	.1 .5 .4				2 2 2	
04	MISC. ASSEMBLIES								
0401	FUEL CAN ADAPTER AND FUEL HOSE	INSPECT REPLACE	.1	.1 .1				2 2	
0402	NATO ADAPTER CABLE	INSPECT TEST REPLACE	.1 .1	.1 .2 .1				2 2 2	

Table 1. MAC for Modern Burner Unit (MBU and MBU-V3) - Continued.

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REFERENCE CODE	(6) REMARKS CODE
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT		
			C	O	F	H	D		
0403	24VDC EXTENSION AND BRANCH CABLES	INSPECT INSTALL REPLACE	.1	.1 .1 .1					 F F
0404	110VAC EXTENSION	INSPECT REPLACE	.1	.1 .1					

Table 2. Tools and Test Equipment for Modern Burner Unit (MBU and MBU-V3)

TOOL OR TEST EQUIPMENT REFERENCE CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL STOCK NUMBER (NSN)	TOOL NUMBER
1	C	BRUSH, ACID SWABBING	7920-00-205-1711	
2	O	TOOL KIT, GENERAL MECHANIC'S:	5180-01-454-3787	SC 5180-95-B47
		AUTOMOTIVE	5180-01-483-0249	
3	F	WELDING SHOP, TRAILER MOUNTED	3431-01-090-1231	SC 3431-95-CL-A04

Table 3. Remarks for Modern Burner Unit (MBU and MBU-V3)

REMARKS CODE	REMARKS
A	Perform welding operations as directed in TC 9-237, Welding Theory and Application
B	Perform repairs to the body as directed in TC 9-510, Metal Body Repair and Related Operations
C	Availability of tools necessary for operator to perform this maintenance function is dependent on application. Refer to Setup information in the maintenance work package.
D	MKT only.
E	Service is specific to draining the fuel tank.
F	This includes the 12-ft Crossway Cable

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL)

INTRODUCTION

SCOPE

This RPSTL lists and authorizes spares and repair parts; special tools; special test, measurement, and diagnostic equipment (TMDE); and other special support equipment required for performance of operator, unit, and direct support maintenance of the MBU and MBU-V3. 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 the Introduction work package, this RPSTL is divided into the following work packages.

1. Repair Parts List Work Packages. Work packages containing lists of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. These work packages 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. Sending units, brackets, filters, and bolts are listed with the component they mount on. Bulk materials are listed by item name in FIG. BULK at the end of the work packages. Repair parts kits are listed separately in their own functional group and work package. Repair parts for reparable special tools are also listed in a separate work package. Items listed are shown on the associated illustrations.

2. Special Tools List Work Packages. Work packages 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.

3. Cross-Reference Indexes Work Packages. There are two crossreference indexes work packages in this RPSTL: the National Stock Number (NSN) Index work package, the Part Number (P/N) Index work package. The National Stock Number Index work package refers you to the figure and item number. The Part Number Index work package refers you to the figure and item number.

EXPLANATION OF COLUMNS IN THE REPAIR PARTS LIST AND SPECIAL TOOLS LIST WORK PACKAGES

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

SMR CODE (Column (2)). The SMR code containing supply/requisitioning information, maintenance level authorization criteria, and disposition instruction, as shown in the following breakout:

Source Code	**Maintenance Code**		**Recoverability Code**
XX	XX		X
1st two positions: How to 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 unserviceable items.

*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 you get an item needed for maintenance, repair, or overhaul of an end item/equipment. Explanations of source codes follow:

Source Code	Application/Explanation
PA PB PC PD PE PF PG	Stock items; use the applicable NSN to requisition/request items with these source codes. They are authorized to the level indicated by the code entered in the 3rd position of the SMR code. **NOTE** Items coded PC are subject to deterioration.
KD KF KB	Items with these codes are not to be requested/requisitioned individually. They are part of a kit which is authorized to the maintenance level 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 level ML-Made at SRA MD-Made at depot	tems with these codes are not to be requisitioned/requested individually. They must be made from bulk material which is identified by the P/N in the DESCRIPTION AND USABLE ON CODE (UOC) column and listed in the bulk material group work package of the RPSTL. If the item is authorized to you by the 3rd position

	code of the SMR code, but the source code indicates it is made at 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 3rd position 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 the next higher assembly.(Refer to NOTE below.)
XB	If an item is not available from salvage, order it using the CAGEC and P/N.
XC	Installation drawings, diagrams, instruction sheets, field service drawings; identified by manufacturer's P/N.
XD	Item is not stocked. Order an XD-coded item through normal supply channels using the CAGEC and P/N 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 items 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 an item. The maintenance code entered in the third position will indicate authorization to 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 can remove, replace, and use the item.

Fourth Position. The maintenance code entered in the fourth position tells you whether or not the item is to be repaired and identifies the lowest maintenance level with the capability to do complete repair (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 (enter specialized repair activity designator) 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 -	Nonreparable. No repair is authorized.
B -	No repair is authorized. No parts or special tools are authorized for maintenance of "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 shown in the fifth position of the SMR code as follows:

Recoverability Code	Application/Explanation
Z -	Nonreparable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in the third position of the SMR code.
O -	Reparable item. When uneconomically reparable, condemn and dispose of the item at the unit level.
F -	Reparable item. When uneconomically reparable, condemn and dispose of the item at the direct support level.
H -	Reparable item. When uneconomically reparable, condemn and dispose of the item at the general support level.
D -	Reparable item. When beyond lower level repair capability, return to depot. Condemnation and disposal of item are not authorized below depot level.
L -	Reparable item. Condemnation and disposal not authorized below Specialized Repair Activity (SRA).
A -	Item requires special handling or condemnation procedures because of specific reasons (such as precious metal content, high dollar value, critical material, or hazardous material). Refer to appropriate manuals/directives for specific instructions.

NSN (Column (3)). The NSN for the item is listed in this column.

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

PART NUMBER (Column (5)). Indicates the primary number used by the manufacturer (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 you use an NSN to requisition an item, the item you receive may have a different P/N from the number listed.

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

1. The federal item name, and when required, a minimum description to identify the item.

2. P/Ns of bulk materials are referenced in this column in the line entry to be manufactured or 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 (6) for a given figure in both the repair parts list and special tools list work packages.

QTY (Column (7)). 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 a quantity indicates that the quantity is variable and quantity may change from application to application.

EXPLANATION OF CROSS-REFERENCE INDEXES WORK PACKAGES FORMAT AND COLUMNS

1. National Stock Number (NSN) Index Work Package.

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.

_____NSN_____ (e.g., 5385-01-574-1476) NIIN	When using this column to locate an item, ignore the first four digits of the NSN. However, the complete NSN should be used when ordering items 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 the repair parts list and special tools list work packages.

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.

2. Part Number (P/N) Index Work Package. P/Ns in this index are listed in ascending alphanumeric sequence (vertical arrangement of letter and number combinations which places 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 P/N 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 work packages.

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

SPECIAL INFORMATION

UOC. The UOC appears in the lower left corner of the Description Column heading. Usable on codes are shown as "UOC: ..." in the Description Column (justified left) on the first line under the applicable item/nomenclature. Uncoded items are applicable to all models. Identification of the UOCs used in the RPSTL are:

Code	Used On
FQG	MBU
FTW	MBU-V3

Fabrication Instructions. Bulk materials required to manufacture items are listed in the bulk material functional group of this RPSTL. Part numbers for bulk material are also referenced in the Description Column of the line item entry for the item to be manufactured/fabricated. Detailed fabrication instructions for items source coded to be manufactured or fabricated are found in (enter applicable TM number).

Index Numbers. Items which have the word BULK in the figure column will have an index number shown in the item number column. This index number is a cross-reference between the NSN / P/N index work packages and the bulk material list in the repair parts list work package.

HOW TO LOCATE REPAIR PARTS

1. When NSNs or P/Ns Are Not Known.

First. Using the table of contents, determine the assembly group to which the item belongs. This is necessary since figures are prepared for assembly groups and subassembly groups, and lists are divided into the same groups.

Second. Find the figure covering the functional group or the subfunctional 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 work packages for the figure and item numbers. The NSNs and part numbers are on the same line as the associated item numbers.

2. When NSN Is Known.

First. If you have the NSN, look in the STOCK NUMBER column of the NSN index work package. 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.

3. When P/N Is Known.

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

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

ABBREVIATIONS

Abbreviation	Explanation

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
REPAIR PARTS LIST (RPSTL)

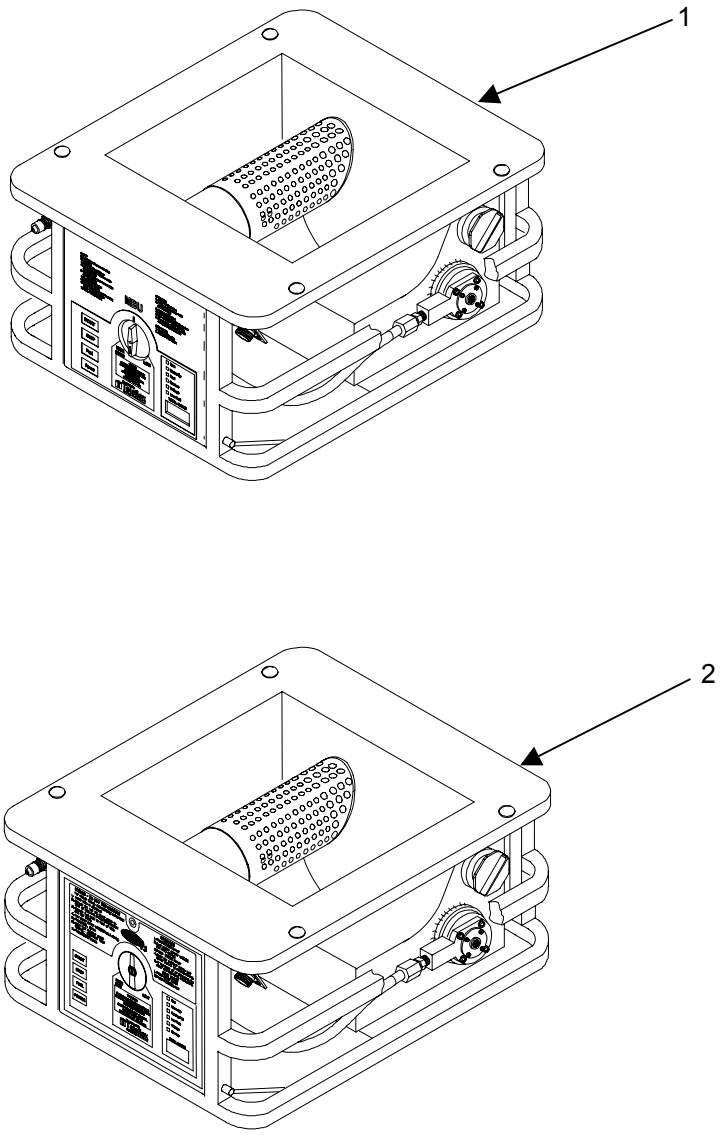


Figure 1. Modern Burner Unit (MBU) and Modern Burner Unit – V3 (MBU-V3)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 00 MODERN BURNER UNIT (MBU and MBU V3)	
					FIG. 1 MODERN BURNER UNIT (MBU) AND	
1	PAOFF	7310-01-452-8137	3AD06	MS0001	MODERN BURNER UNIT (FQG).....	1
2	PAOFF	7310-01-507-9310	3AD06	MS0003	MODERN BURNER UNIT – V3 (FTW)	1
					END OF FIGURE	

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
FRAME ASSEMBLY
REPAIR PARTS LIST (RPSTL)

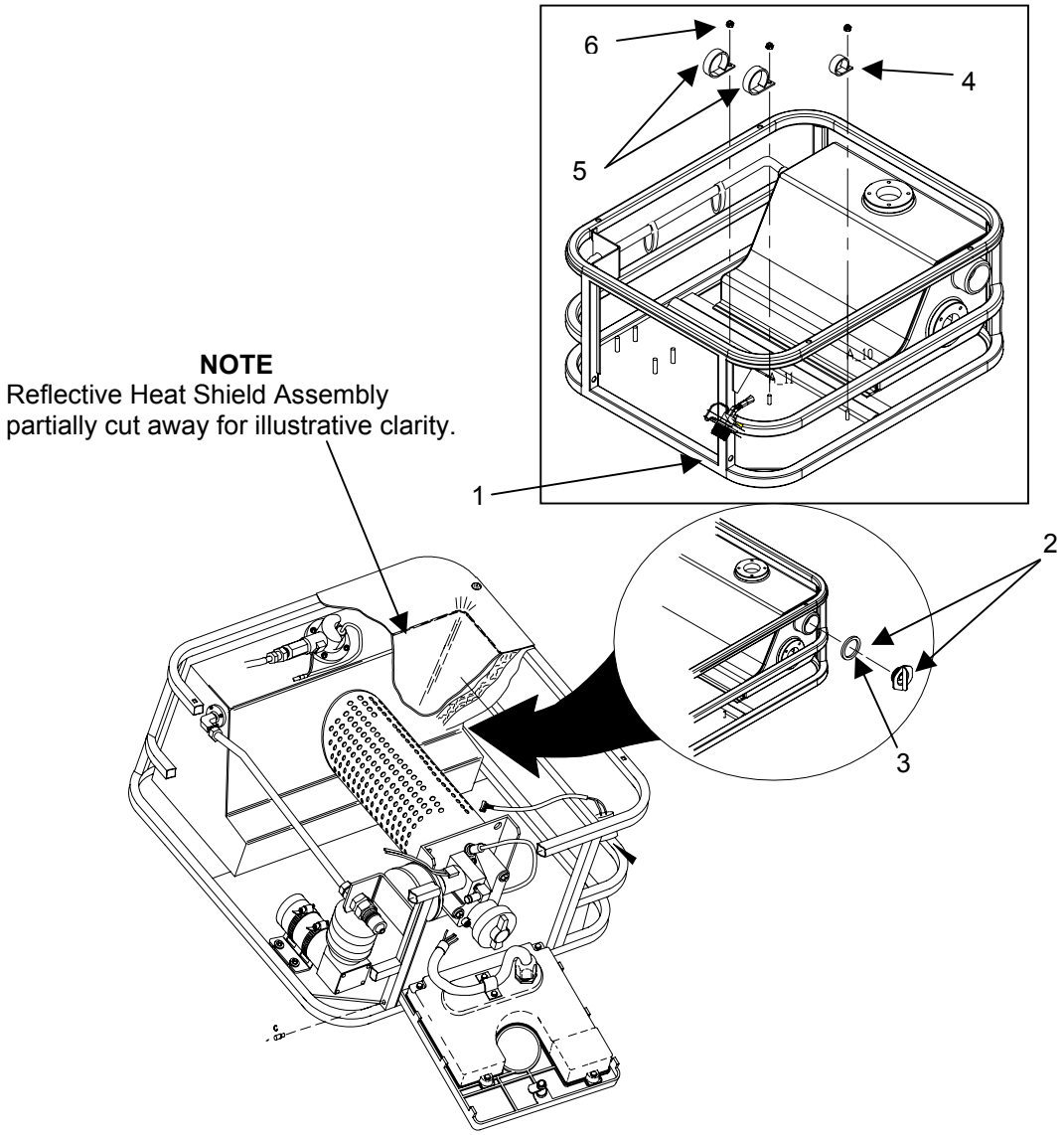


Figure 2. Frame Assembly

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 01 FRAME ASSEMBLY	
					FIG. 2 FRAME ASSEMBLY	
1	PAFFF	7310-01-462-4864	3AD06	980250K	KIT, MBU FRAME, TANK, PLATE ASSY.....	1
2	PAOOO	7310-01-462-4865	3AD06	935631K	. MBU CAP, FILLER, FUEL TANK.....	1
3	PAOZZ	7310-01-462-4867	3AD06	980940K	. MBU SEAL FUEL TANK.....	1
4	PAOZZ	5340-01-479-5144	06915	WHC-1000-01	. CLIP, SPRING TENSION (SMALL).....	1
5	PAOZZ	5340-01-479-5180	06915	WHC-1500-01	. CLIP, SPRING TENSION (LARGE).....	2
6	PAOZZ	5310-00-984-6610	72962	79NTE040	. NUT, SELF-LOCKING, HEXAGON.....	3
					END OF FIGURE	

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
CONNECTOR HARNESS ASSEMBLY
REPAIR PARTS LIST (RPSTL)

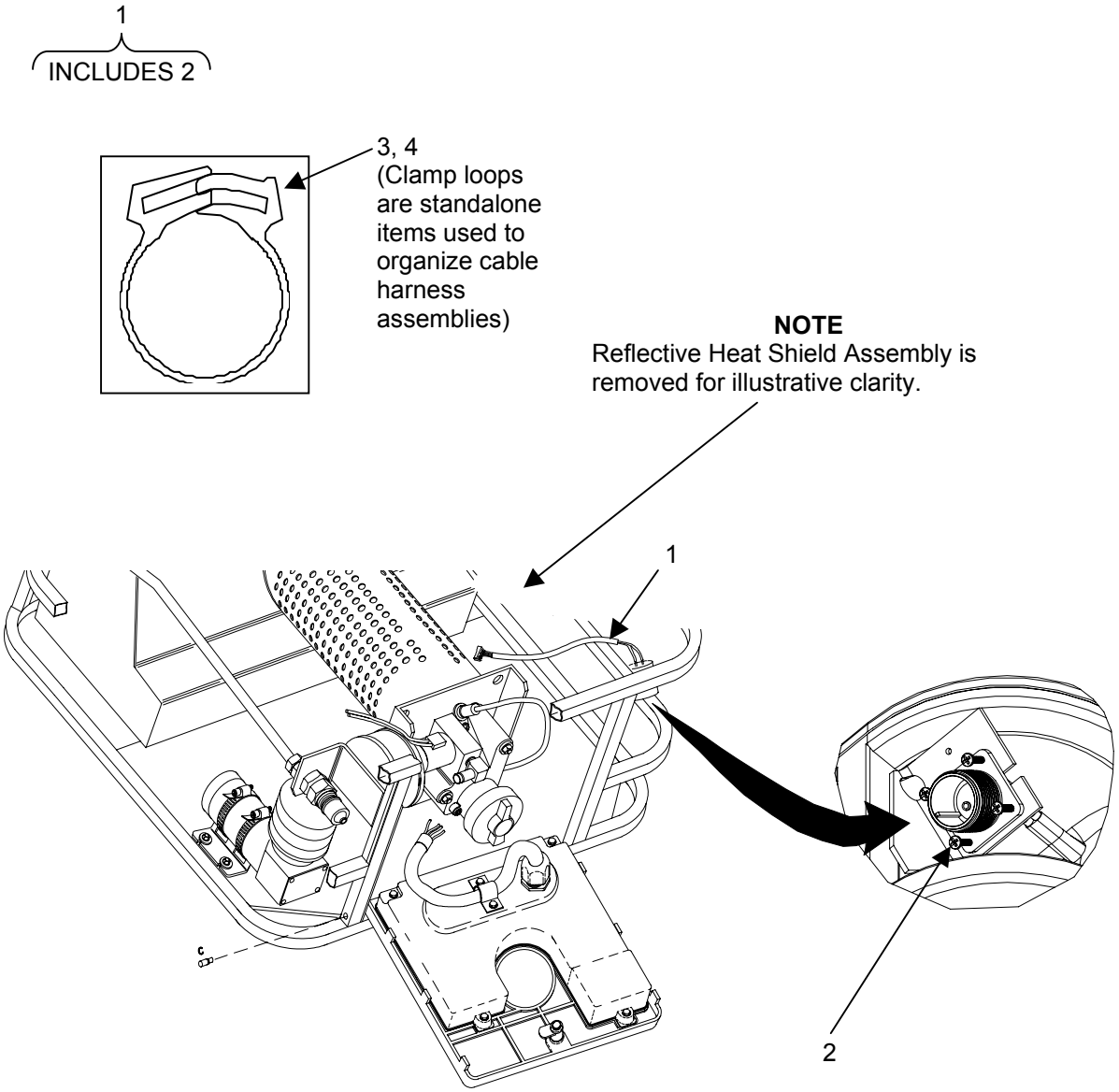


Figure 3. Connector Harness Assembly

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0101 CONNECTOR HARNESS ASSEMBLY	
					FIG. 3 CONNECTOR HARNESS ASSEMBLY	
1	PAOOO	7310-01-462-4868	3AD06	930740K	KIT, MBU CONNECTOR ASSY	1
2	XDOZZ		9W655	491-100	. SCREW, #4-40X1/4ZP.....	4
3	PAOZZ	5340-01-479-7770	06915	SHC-50	CLAMP, LOOP(SMALL).....	2
4	PAOZZ	5340-01-479-7760	06915	SHC-80	CLAMP, LOOP (LARGE)	1
					END OF FIGURE	

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
CONTROLLER ASSEMBLY
REPAIR PARTS LIST (RPSTL)

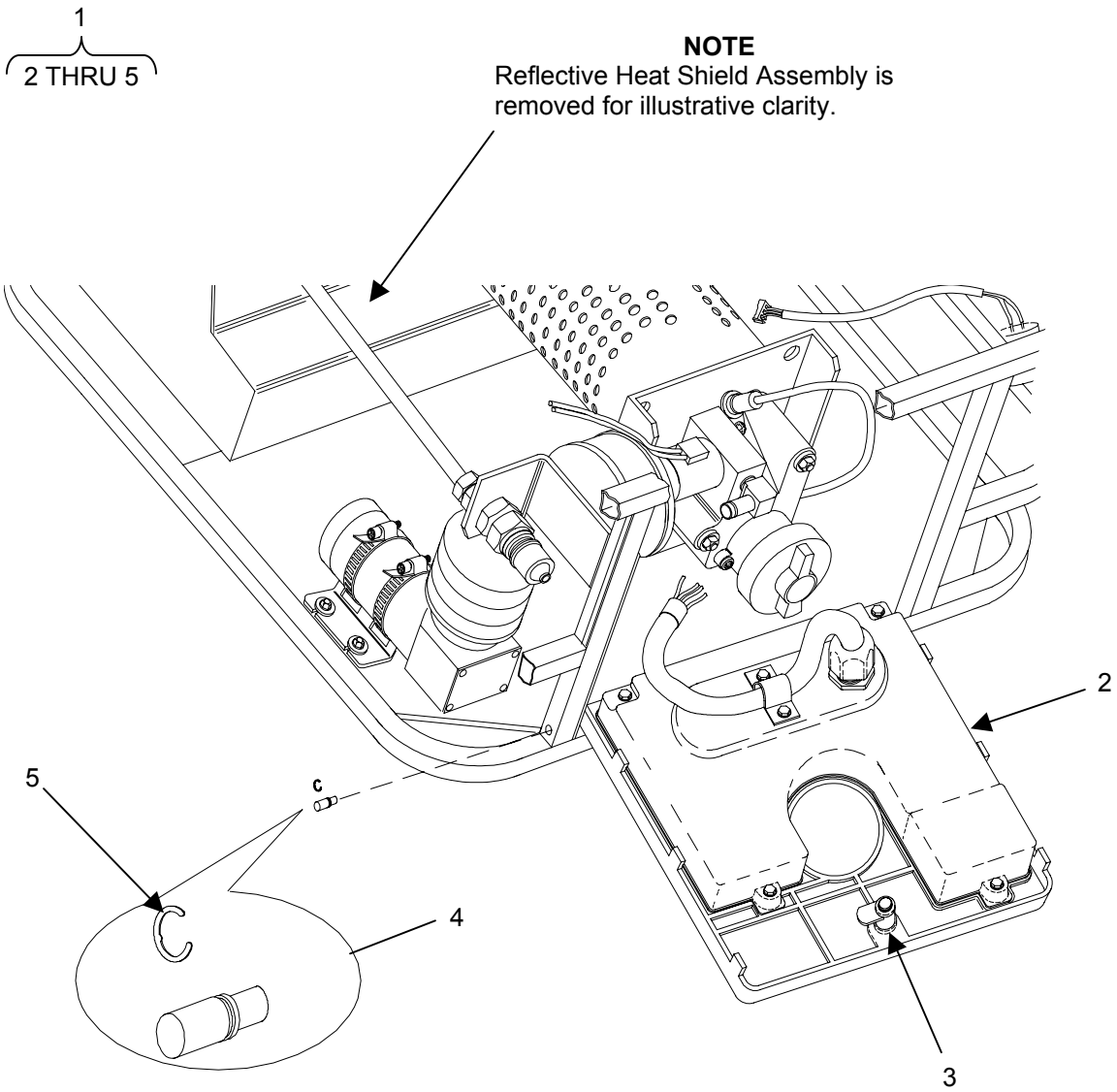


Figure 4. Controller Assembly

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0102 CONTROLLER ASSEMBLY	
					FIG. 4 CONTROLLER ASSEMBLY	
1	PAOOO	7310-01-507-9302	3AD06	980350K	MBU ASSY CONTROLLER [USE ONLY ON MBU-V3] (FTW)	1
2	XAOZZ		3AD06	980350	. MBU ASSY CONTROLLER (FTW)	1
1	PAOOO	7310-01-462-4869	3AD06	980240K	MBU ASSY CONTROLLER [USE ONLY ON MBU] (FQG)	1
2	XAOZZ		3AD06	980350K	. MBU ASSY CONTROLLER (FQG)	1
3	PAOZZ	5340-01-479-8335	94222	48-99-221-92N	. FASTENER, PAWL	1
4	PAOZZ	7310-01-462-4871	3AD06	930929K	. MBU PIN HINGE	1
5	PAOZZ	5325-00-721-7889	79136	5137-37MD	. . RING, RETAINING	2
					END OF FIGURE	

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
COMPRESSOR ASSEMBLY
REPAIR PARTS LIST (RPSTL)

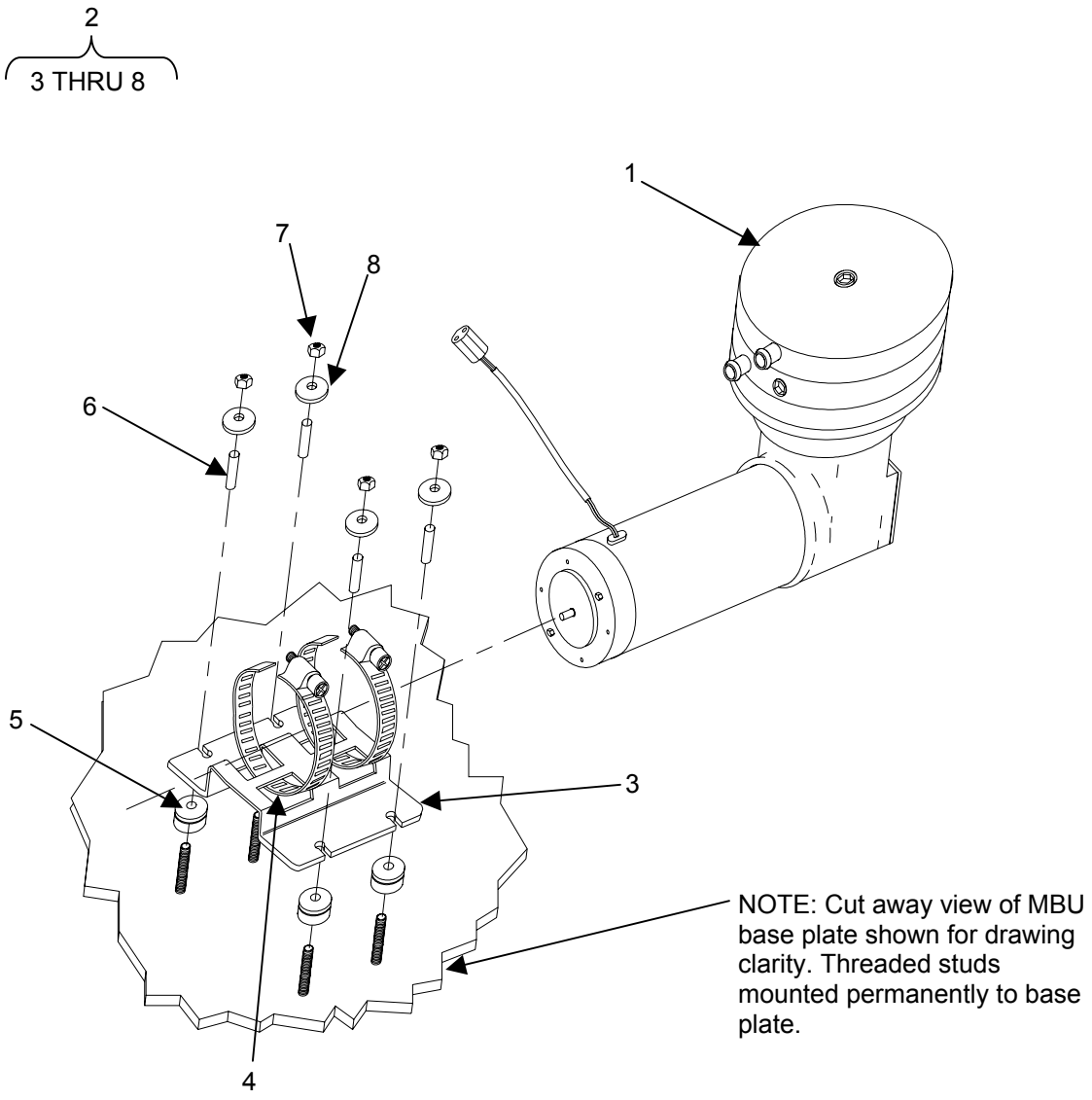


Figure 5. Compressor Assembly

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0103 COMPRESSOR ASSEMBLY	
					FIG 5 COMPRESSOR ASSEMBLY	
1	PAOOO	7310-01-462-4899	3AD06	980124K	MBU ASSY, COMPRESSOR	1
2	PAOZZ	7310-01-462-4902	3AD06	933827K	MBU ASSY BRACKET	1
3	XAOZZ		3AD06	933900	. BRACKET, COMPRESSOR	1
4	PAOZZ	4730-01-486-1138	0J2W4	HC5-36	. CLAMP, HOSE	2
5	XDOZZ		76385	Z103 TYPE SC	. GROMMET, NONMETALLIC	4
6	PAOZZ	5365-21-920-9924	94223	607-085	. SPACER, SLEEVE	4
7	PAOZZ	5310-00-984-6610	72962	79NTE040	. NUT, SELF-LOCKING, HEXAGON	4
8	PAOZZ	5310-21-921-0253	94223	W-167	. WASHER, FLAT	4
					END OF FIGURE	

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
FUEL DELIVERY BLOCK ASSEMBLY
REPAIR PARTS LIST (RPSTL)

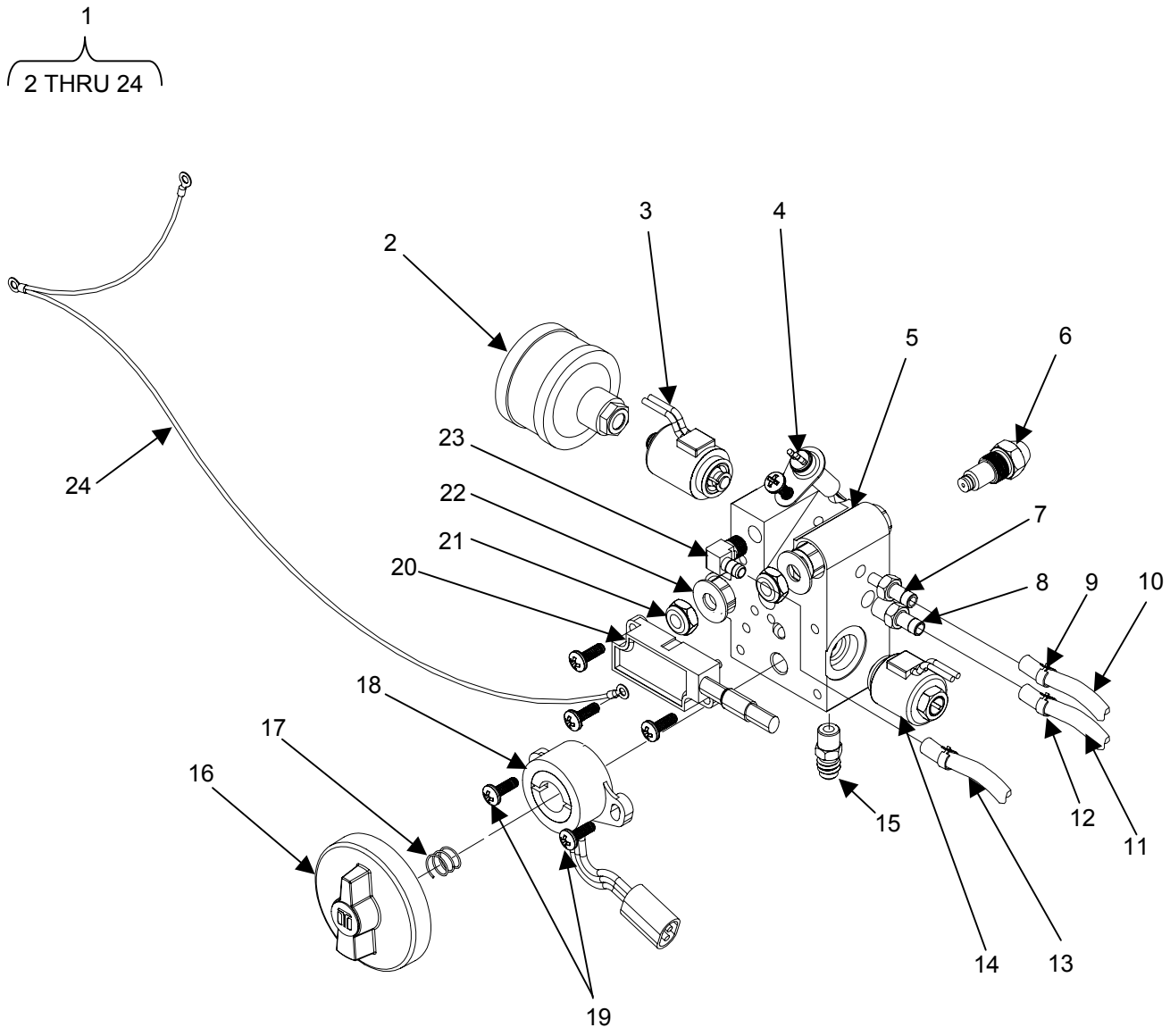


Figure 6. Fuel Delivery Block Assembly
(Sheet 1 of 2)

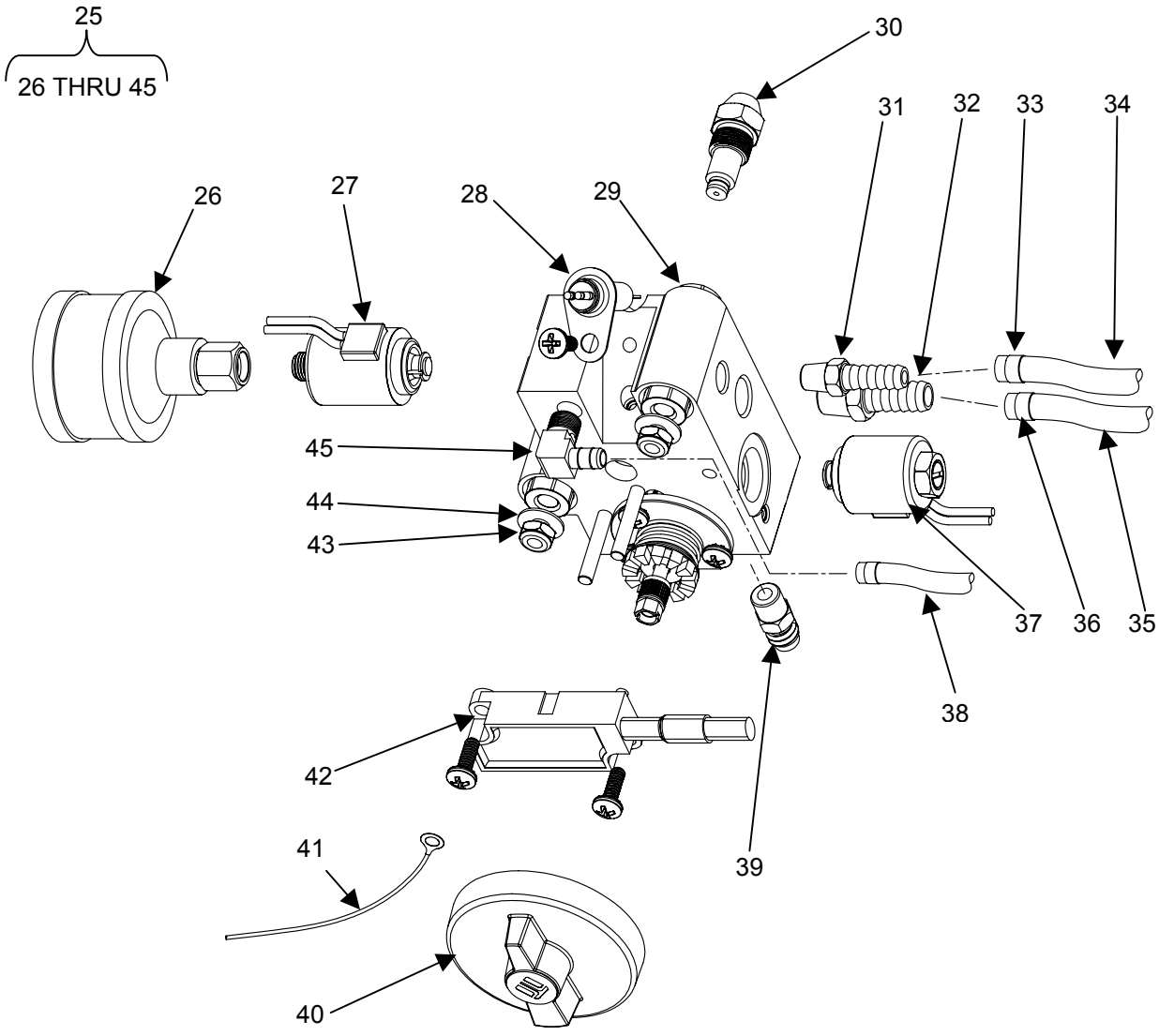


Figure 6. Fuel Delivery Block Assembly (Sheet 2 of 2)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0104 FUEL DELIVERY BLOCK ASSEMBLY	
					FIG. 6 FUEL DELIVERY BLOCK ASSEMBLY	
1	PAOOO	7310-01-462-4905	3AD06	980230K	MBU FUEL DELIVERY BLOCK	
					UOC: FQG	1
2	PAOZZ	7310-01-462-4913	3AD06	349930K	. MBU FILTER AIR INLET	1
3	PAOZZ	4810-01-480-0851	73212	2X1323-24VDC	. VALVE, SOLENOID	1
4	PAOZZ	7310-01-462-4915	3AD06	980260K	. MBU ASSY IGNITOR	
					UOC: FQG	1
5	XAOOO		3AD06	930700	. FUEL DELIVERY BODY	
					UOC: FQG	1
6	PAOZZ	7310-01-462-4919	3AD06	928329K	. MBU ASSY FUEL NOZZLE	1
7	PAOZZ	4730-01-481-9200	0J2W4	125-4A	. ADAPTER, STRAIGHT, PIPE TO HOSE, ¼ BARB X 1/8 NPTM	1
8	PAOZZ	4730-01-481-9210	0J2W4	125-6B	. ADAPTER, STRAIGHT, PIPE TO HOSE, 3/8 BARB X ¼ NPTM	1
9	PAOZZ	4730-00-954-1251	59199	UM5008	. CLAMP, 1/4 ID HOSE	4
10	MOOZZ		3AD06	989000K	. HOSE, NONMETALLIC (NEOPRENE AIR LINE ¼ ID, MAKE FROM P/N J30-30R7-1/4ID, 2 FT LENGTH)	1
11	MOOZZ		3AD06	989038K	. HOSE, NONMETALLIC (NEOPRENE AIR LINE 3/8 ID, MAKE FROM P/N6675-06298, 2 FT LENGTH)	1
12	PAOZZ	5342-01-210-7340	59199	UM5010	. CLAMP, 3/8 ID HOSE	2
13	MOOZZ		3AD06	989038K	. HOSE, NONMETALLIC (NEOPRENE AIR LINE 3/8 ID, MAKE FROM P/N 6675-06298, 2 FT 8 IN LENGTH)	1
14	PAOZZ	4810-01-480-0861	73212	1X1024-24VDC	. VALVE, SOLENOID	1
15	PAOZZ	4730-01-481-9121	0J2W4	48-4A	. ADAPTER, STRAIGHT, PIPE TO TUBE, 1/8-#4 STRAIGHT	1
16	PAOOO	7310-01-462-4907	3AD06	880150K	. MBU CONTROL KNOB	1
17	XAOZZ		3AD06	981028	. . SPRING, KNOB, NEEDLE VALVE	
					UOC: FQG	1
18	PAOZZ	7310-01-462-4928	3AD06	980610K	. MBU, FEEDBACK POTENTIOMETER	
					UOC: FQG	1
19	PAOZZ	5305-01-481-0580	9W655	180629	. SCREW	
					UOC: FQG	2
20	PAOZZ	7310-01-462-4918	3AD06	930125K	. MBU FLAME SENSOR	1
21	PAOZZ	5310-00-984-6610	72962	79NTE040	. NUT, SELF-LOCKING, HEXAGON	2
22	PAOZZ	5310-00-582-5677	80205	MS15759-810	. WASHER, FLAT	2
23	PAOZZ	4730-01-070-7680	93061	229-6-2	. ELBOW, PIPE TO HOSE (3/8 TUBE X 1/8 NPT)	1
24	PAOZZ	7310-01-462-4936	3AD06	910729K	. MBU GROUND WIRE	1

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
25	PAOOO	7310-01-462-4905	3AD06	980310K	MBU FUEL DELIVERY BLOCK UOC: FTW	1
26	PAOZZ	7310-01-462-4913	3AD06	349930K	. MBU AIR FILTER INLET	1
27	PAOZZ	4810-01-480-0851	73212	2X1323-24VDC	. VALVE, SOLENOID UOC: FTW	1
28	PAOOO	7310-01-462-4915	3AD06	980260K	. MBU ASSY IGNITOR	1
29	XAOZZ		3AD06	935874	. FUEL DELIVERY BODY UOC: FTW	1
30	PAOOO	7310-01-462-4919	3AD06	928329K	. MBU ASSY FUEL NOZZLE	1
31	PAOZZ	4730-01-481-9200	0J2W4	125-4A	. ADAPTER, STRAIGHT, PIPE TO HOSE, ¼ BARB X 1/8 NPTM	1
32	PAOZZ	4730-01-481-9210	0J2W4	125-6B	. ADAPTER, STRAIGHT, PIPE TO HOSE, 3/8 BARB X ¼ NPTM	1
33	PAOZZ	4730-00-954-1251	59199	UM5008	. CLAMP, 1/4 ID HOSE UOC: FTW	4
34	MOOZZ		3AD06	989000K	. HOSE, NONMETALLIC (NEOPRENE AIR LINE ¼ ID, MAKE FROM P/N J30-30R7-1/4 ID, 2 FT LENGTH) UOC: FTW	1
35	MOOZZ		3AD06	989038K	. HOSE, NONMETALLIC (NEOPRENE AIR LINE 3/8 ID, MAKE FROM P/N 667-06298, 2 FT LENGTH)	1
36	PAOZZ	5342-01-210-7340	3AD06	860073	. CLAMP, 3/8 ID HOSE	2
37	PAOZZ	4810-01-480-0861	73212	1X1024-24VDC	. VALVE, SOLENOID	1
38	MOOZZ		3AD06	989038K	. HOSE, NONMETALLIC (NEOPRENE AIR LINE 3/8 ID, MAKE FROM P/N 6675-06298, 2 FT 8 IN LENGTH)	1
39	PAOZZ	4730-01-481-9121	0J2W4	48-4A	. ADAPTER, STRAIGHT, PIPE TO TUBE, 1/8-#4 STRAIGHT	1
40	PAOZZ	7310-01-462-4907	3AD06	880150K	. MBU CONTROL KNOB	1
41	PAOZZ	7310-01-462-4936	3AD06	910729K	. MBU GROUND WIRE	1
42	PAOZZ	7310-01-462-4918	3AD06	930125K	. MBU FLAME SENSOR	1
43	PAOZZ	5310-00-984-6610	72962	79NTE040	. NUT, SELF-LOCKING, HEXAGON	2
44	PAOZZ	5310-00-582-5677	80205	MS15795-810	. WASHER, FLAT	2
45	PAOZZ	4730-01-070-7680	93061	229-6-2	. ELBOW, PIPE TO TUBE, 3/8 TUBE X 1/8 NPT	1
					END OF FIGURE	

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
VENT VALVE ASSEMBLY
REPAIR PARTS LIST (RPSTL)

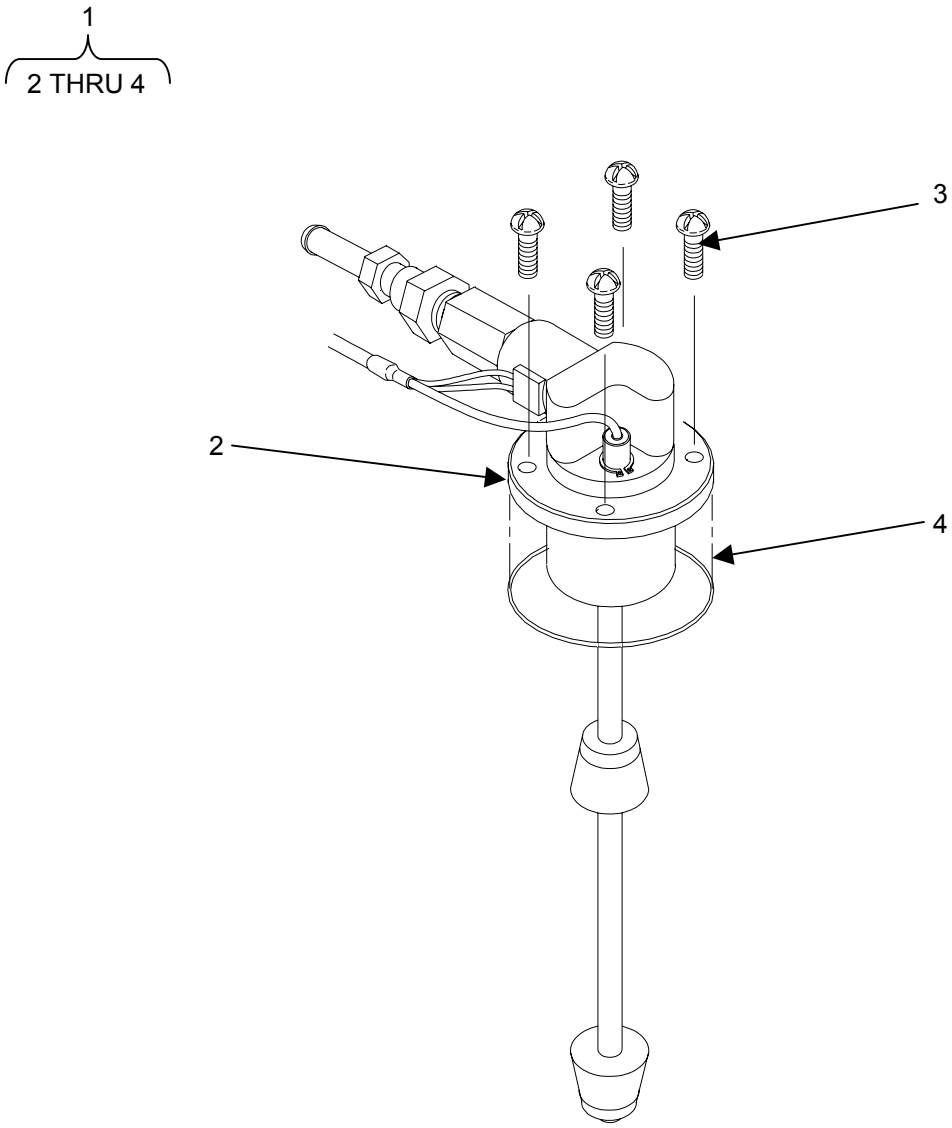


Figure 7. Vent Valve Assembly

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0105 VENT VALVE ASSEMBLY	
					FIG. 7 VENT VALVE ASSEMBLY	
1	PAOOO	7310-01-462-4942	3AD06	980280K	MBU ASSY VENT VALVE.....	1
2	XAOZZ		3AD06	980280	. VENT VALVE.....	1
3	PAOZZ	5305-01-481-0580	9W655	180629	. SCREW, MACHINE, #10 C/W L/WASHER.....	4
4	PAOZZ	5331-01-183-0991	81349	MIL-P-83461/1	. O-RING, 233 COMP 1	1
					END OF FIGURE	

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
BURNER ASSEMBLY
REPAIR PARTS LIST (RPSTL)

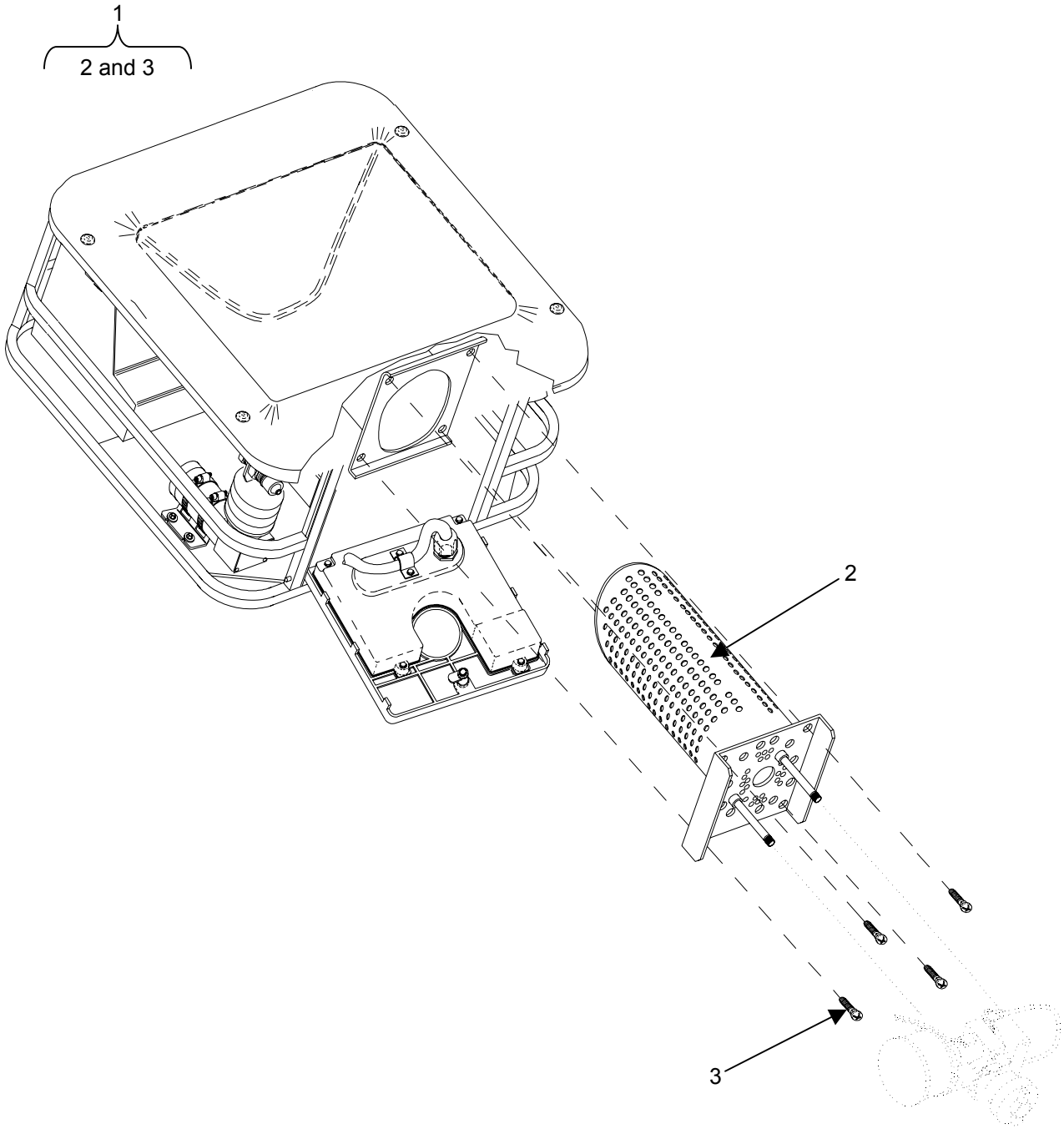


Figure 8. Burner Assembly

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0106 BURNER ASSEMBLY	
					FIG. 8 BURNER ASSEMBLY	
1	PAOOO	7310-01-462-4943	3AD06	880110K	MBU ASSY, BURNER.....	1
2	XAOZZ		3AD06	880110	. BURNER TUBE.....	1
3	PAOZZ	5305-01-483-3412	9W655	029422	. SCREW, MACHINE, PHMS 1/4NC X 5/8 SS	4
					END OF FIGURE	

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
FUEL REGULATOR ASSEMBLY
REPAIR PARTS LIST (RPSTL)

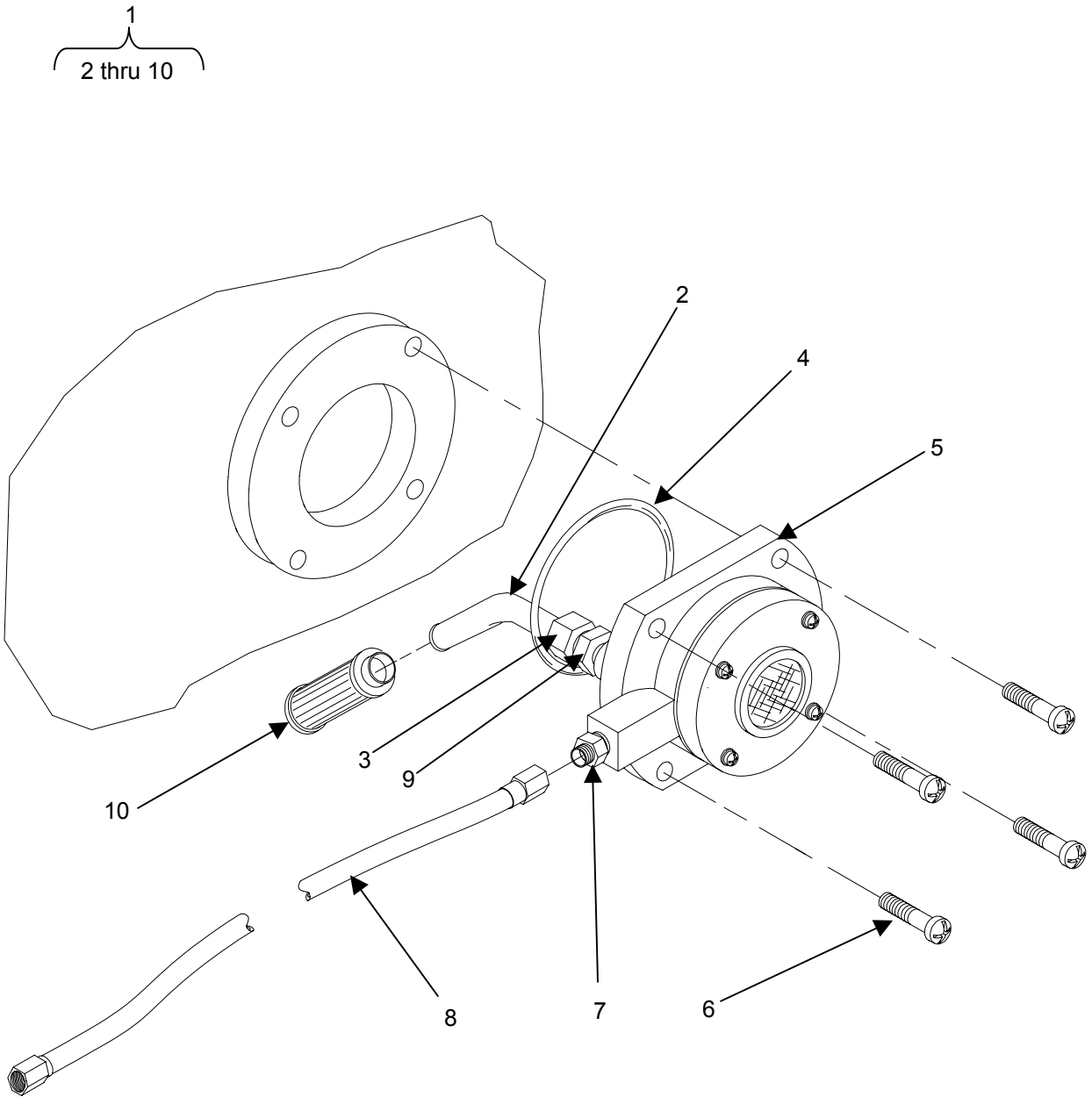


Figure 9. Fuel Regulator Assembly

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0107 FUEL REGULATOR ASSEMBLY	
					FIG. 9 FUEL REGULATOR ASSEMBLY	
1	PAOOO	7310-01-462-4944	3AD06	880050K	MBU ASSY, FUEL REGULATOR	1
2	PAOZZ	7310-01-462-4946	3AD06	980101K	. FUEL PICKUP TUBE	1
3	PAOZZ	4730-01-071-9080	93061	61CA-6	. . NUT, TUBE COUPLING, 3/8 IN	1
4	PAOZZ	5331-01-183-0991	81349	MIL-P-83461/1	. O-RING, 233 COMP 1	1
5	XAOZZ		3AD06	980270	. FUEL REGULATOR	1
6	PAOZZ	5305-01-481-0580	9W655	180629	. SCREW, MACHINE, #10 C/W L/WASHER	4
7	PAOZZ	4730-00-542-5796	30327	68-F-06X02	. ADAPTER, STRAIGHT, PIPE TO TUBE, 3/8T - 1/8 NPTM	1
8	PAOZZ	4720-01-486-0595	3AD06	930101	. HOSE ASSY, NONMETALLIC, FUEL FEEDER	1
9	PAOZZ	5305-01-481-9121	0J2W4	48-4A	. ADAPTER, STRAIGHT, PIPE TO TUBE,1/8-#4	1
10	PAOZZ	7310-01-462-6765	3AD06	953451K	. MBU FILTER FUEL PICKUP	1
					END OF FIGURE	

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
REFLECTIVE HEAT SHIELD ASSEMBLY
REPAIR PARTS LIST (RPSTL)

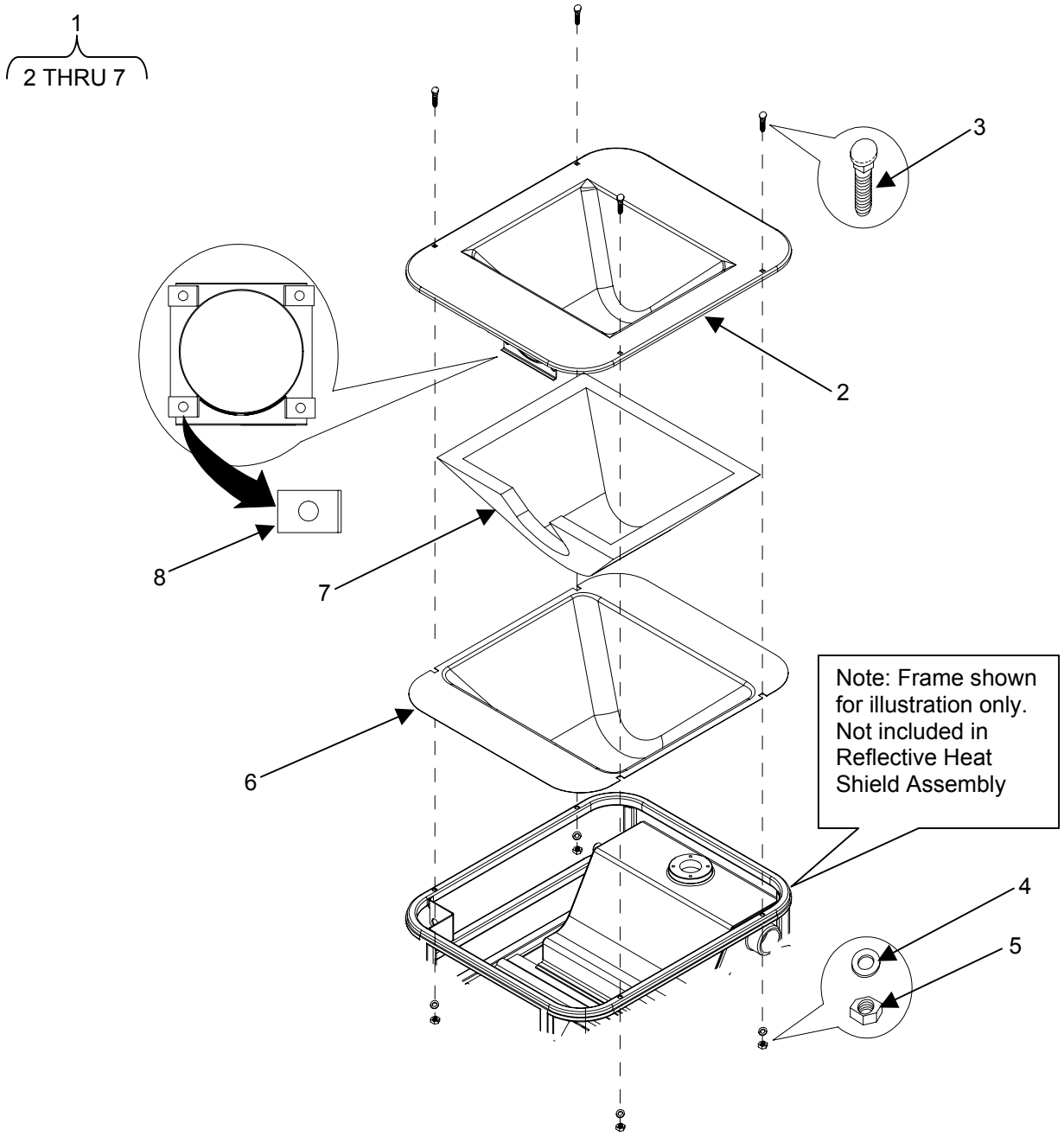


Figure 10. Reflective Heat Shield Assembly

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0108 REFLECTIVE HEAT SHIELD ASSEMBLY	
					FIG. 10 REFLECTIVE HEAT SHIELD ASSEMBLY	
1	PAOOO	7310-01-462-4948	3AD06	880004K	MBU ASSY, REFLECTIVE HEAT SHIELD.....	1
2	PAOZZ	7310-01-462-4949	3AD06	880005K	. MBU REFLECTIVE HEAT SHIELD	1
3	PAOZZ	5306-01-481-5242	9W655	025C0125CGE	. BOLT, SQUARE NECK, CARRIAGE 1/4NC X 1-1/4 SS	4
4	PAOZZ	5310-00-582-5677	80205	MS15795-810	. WASHER, FLAT ¼ ID SS 5/8 OD.....	4
5	PAOZZ	5310-00-984-6610	72962	79NTE040	. NUT, SELF-LOCKING, HEXAGON	4
6	PAOZZ	7310-01-462-4955	3AD06	880080K	. MBU BURNER WELL.....	1
7	PAOZZ	7310-01-462-4959	3AD06	880090K	. MBU INSULATION	1
8	PAOZZ	5310-21-920-9094	94223	202-026	. NUT, SHEET SPRING.....	4
					END OF FIGURE	

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
FUEL LINE ASSEMBLY
REPAIR PARTS LIST (RPSTL)

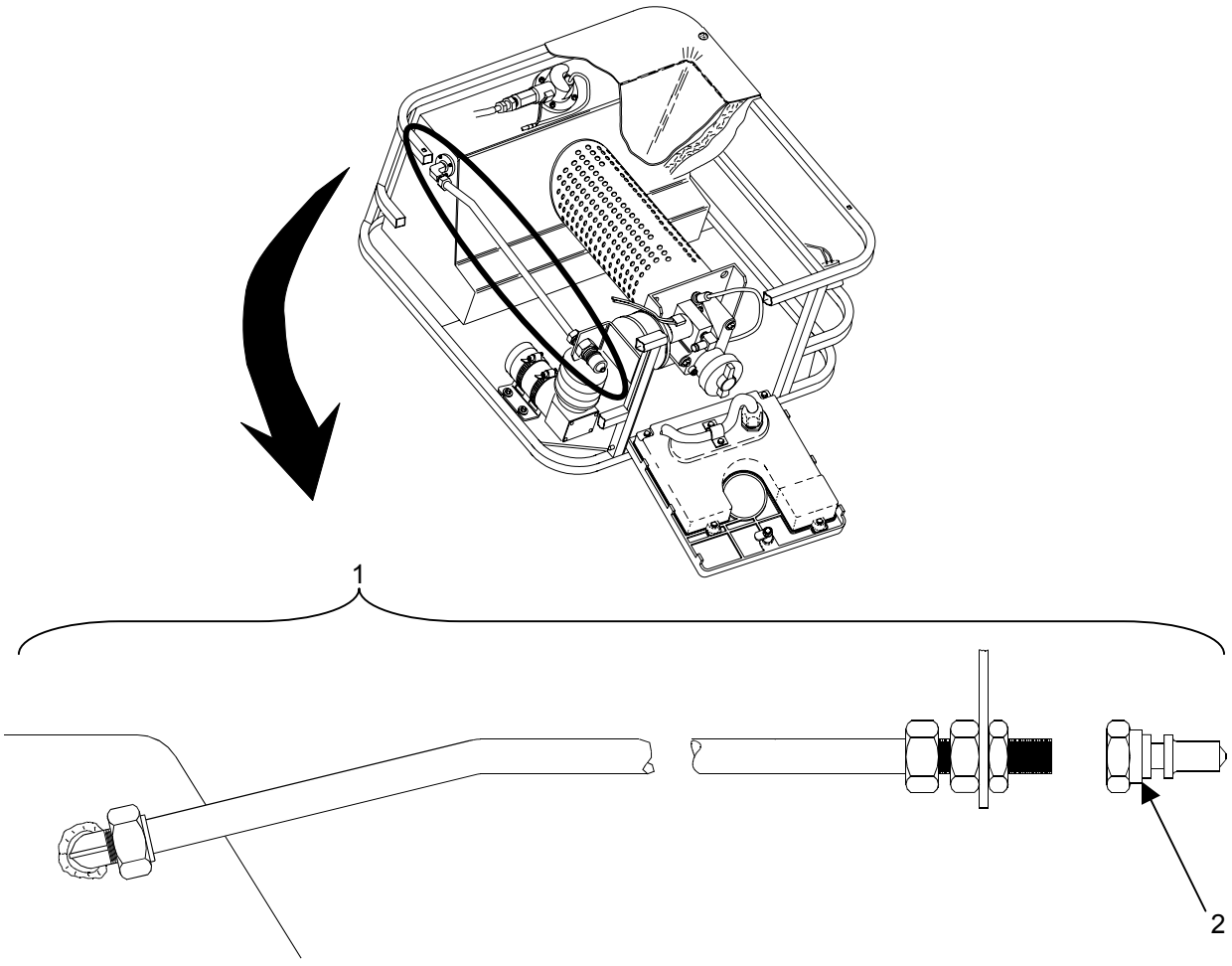


Figure 11. Fuel Line Assembly

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0109 FUEL LINE ASSEMBLY	
					FIG. 11 FUEL LINE ASSEMBLY	
1	PAOZZ	7310-01-462-4964	3AD06	980130K	MBU ASSY FUEL LINE.....	1
2	XDOZZ		97111	BH2-61Y	**. FITTING, FUEL INTERFACE**.....	1
					END OF FIGURE	

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
POWER CONVERTER
REPAIR PARTS LIST (RPSTL)

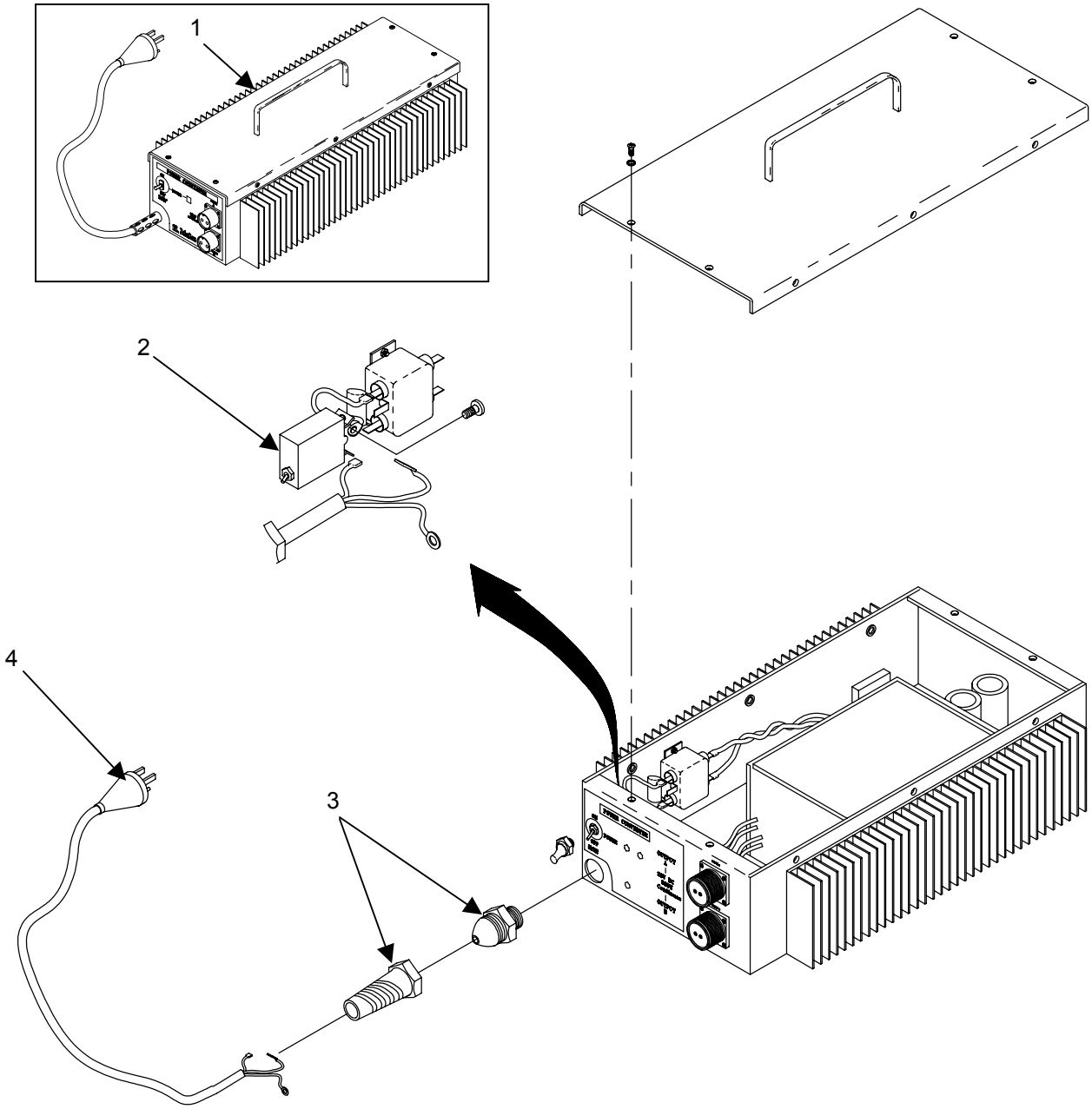


Figure 12. Power Converter for MBU (Sheet 1 of 2)

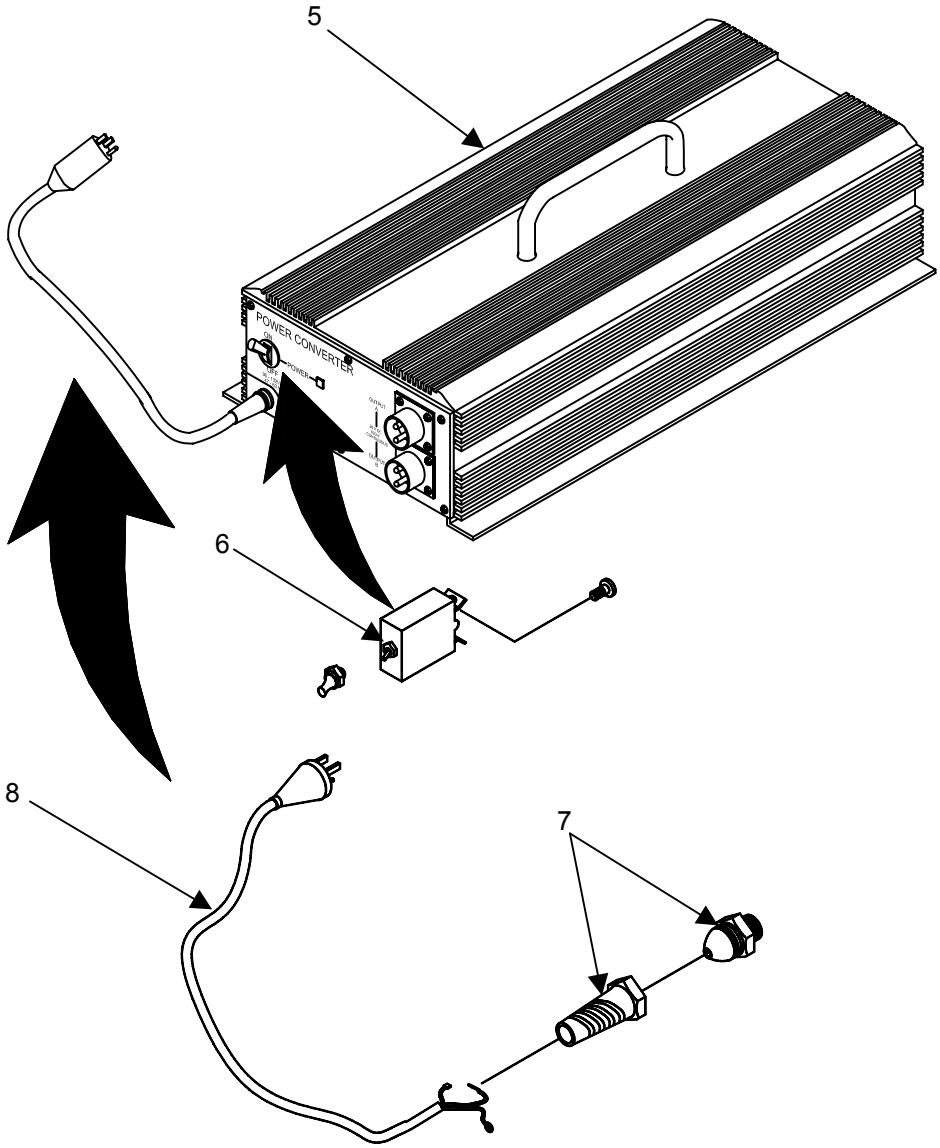


Figure 12. Power Converter for MBU-V3 (Sheet 2 of 2)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 02 POWER CONVERTER	
					FIG. 12 POWER CONVERTER	
1	PAOFF	7310-01-453-6513	3AD06	MS0150	POWER CONVERTER, MBU (FQG)	1
2	PAOZZ	7310-01-462-4990	3AD06	981002K	. POWER SWITCH (FQG)	1
3	PAOZZ	5975-01-480-1302	28520	3249	. ADAPTER, ELECTRICAL CONDUIT, STRAIN RELIEF, POWER CORD (FQG)	1
4	PAOZZ	6150-01-267-5488	1M3W9	17516	. CABLE ASSY, POWER, ELECTRICAL (FQG)	1
5	PAOFF	7310-01-502-9455	3AD06	MS0160	MBU, POWER CONVERTER	1
6	PAOZZ	5930-20-000-5584	3AD06	980122K	. POWER SWITCH	1
7	PAOZZ	5975-01-148-1302	28520	3249	. ADAPTER, ELECTRICAL CONDUIT, STRAIN RELIEF, POWER CORD	1
8	PAOZZ	6150-01-267-5488	1M3W9	17516	. CABLE ASSY, POWER, ELECTRICAL	1
					END OF FIGURE	

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
BATTERY PACK
REPAIR PARTS LIST (RPSTL)

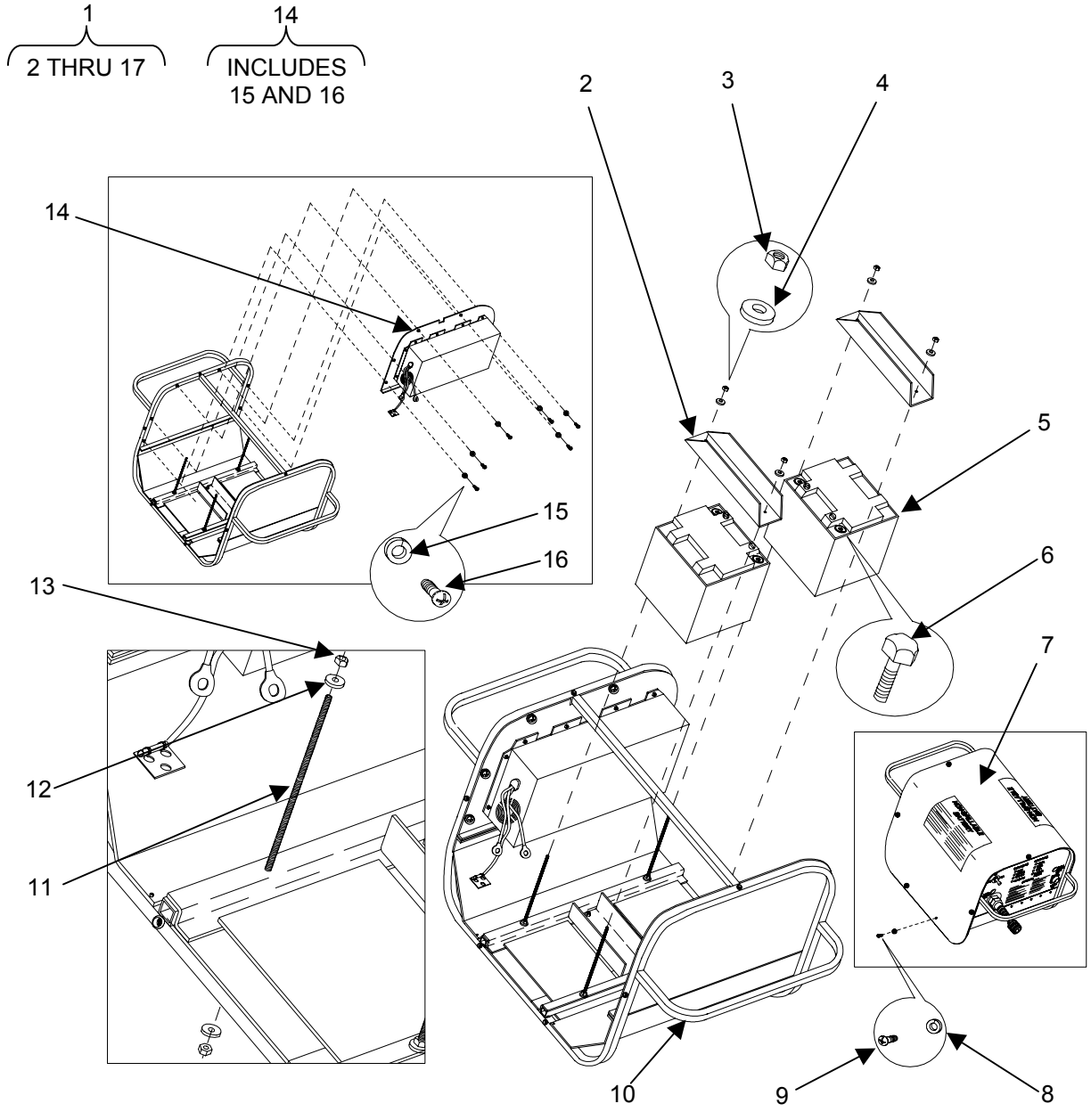


Figure 13. Battery Pack

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 03 BATTERY PACK	
					FIG. 13 BATTERY PACK	
1	PAOFF	7310-01-453-6565	3AD06	MS0200	BATTERY MODULE, MBU	1
2	PAOZZ	7310-01-462-4994	3AD06	800205K	. MBU BATTERY HOLD DOWN BRACKET	2
3	PAOZZ	5310-01-396-8168	3AD06	191424	. NUT, SELF-LOCKING, HEXAGON, ¼-20 SS	4
4	PAOZZ	5310-00-582-5677	80205	MS15795-810	. WASHER, FLAT, ¼ ID X 5/8 OD SS	4
5	PAOZZ	7310-01-454-1249	3AD06	MS0225	. BATTERIES, MBU (pair)	1
6	PAOZZ	5305-21-910-7640	9W655	344-015	. . BOLT, TERMINAL HEX	4
7	PAOOO	7310-01-462-4992	3AD06	800207K	. MBU BATTERY PACK COVER	1
8	PAOZZ	5310-21-905-5279	9W655	667-002	. WASHER, LOCK, SPRING	6
9	PAOZZ	5305-01-483-3412	9W655	029422	. SCREW, MACHINE, ¼-20 X 5/8 LG SS	6
10	PAFFF	7310-01-462-4997	3AD06	800203K	. MBU BATTERY PACK FRAME	1
11	PAOZZ	5306-21-920-9092	94223	TR-2005	. ROD, SS THREADED ¼-20 X 7.5 IN (CUT TO LENGTH)	4
12	PAOZZ	5310-21-905-5279	94223	667-002	. WASHER, LOCK, SPRING	8
13	PAOZZ	5310-00-903-5966	96906	MS51971-1	. NUT, PLAIN, HEXAGON, SS ¼-20	8
14	PAOZZ	7310-01-462-4998	3AD06	980611K	. MBU BATTERY PACK CHARGER	1
15	PAOZZ	5310-21-905-5279	9W655	667-002	. LOCKWASHER, SPRING	6
16	PAOZZ	5305-01-483-3412	9W655	029422	. SCREW, MACHINE, ¼-20 X 5/8 LG SS	6
					END OF FIGURE	

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
FUEL CAN ADAPTER AND FUEL HOSE
REPAIR PARTS LIST (RPSTL)

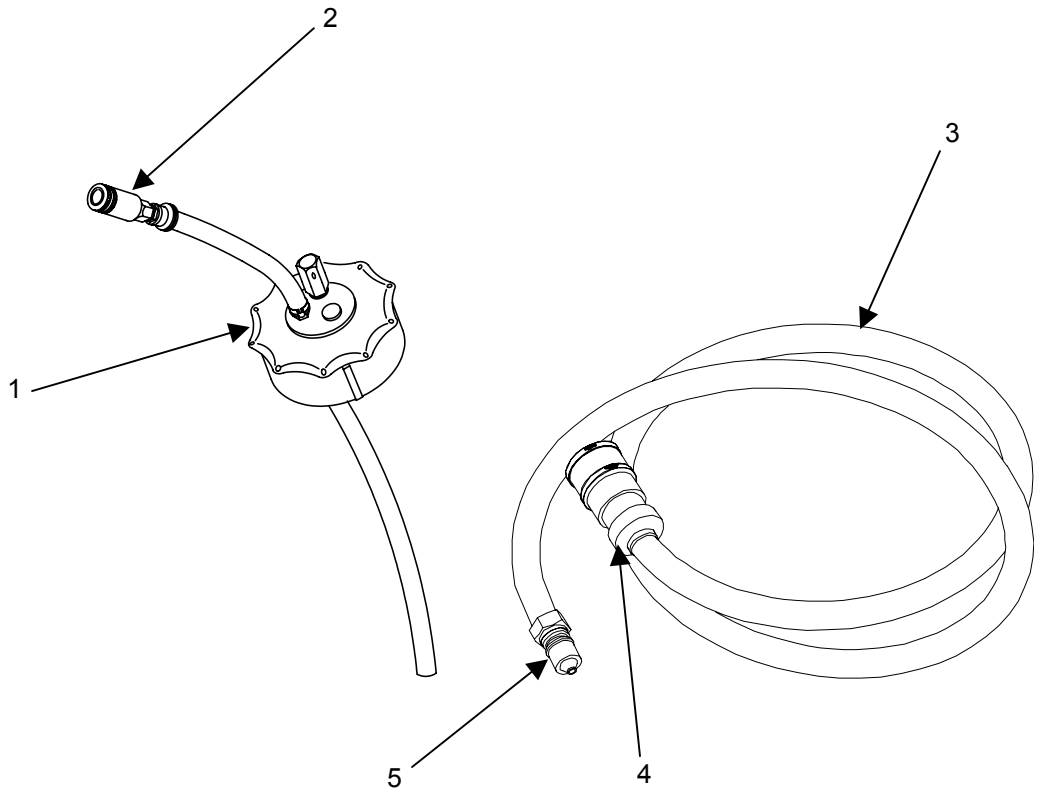


Figure 14. Fuel Can Adapter and Fuel Hose

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0401 MISC. ASSEMBLIES	
					FIG. 14 FUEL CAN ADAPTER AND FUEL HOSE	
1	PAOZZ	7310-01-455-3736	3AD06	MS0300	FUEL ADAPTER, MBU	1
2	XAOZZ		97111	BH2-60Y	. COUPLING HALF, QUICK DISCONNECT (FEMALE)	1
3	PAOZZ	7310-01-455-3735	3AD06	MS0350	FUEL LINE, MBU	1
4	XAOZZ		97111	BH2-60Y	. COUPLING HALF, QUICK DISCONNECT (FEMALE)	1
5	XAOZZ		97111	BH2-61Y	. COUPLING HALF, QUICK DISCONNECT (MALE).....	1
					END OF FIGURE	

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
NATO ADAPTER CABLE
REPAIR PARTS LIST (RPSTL)

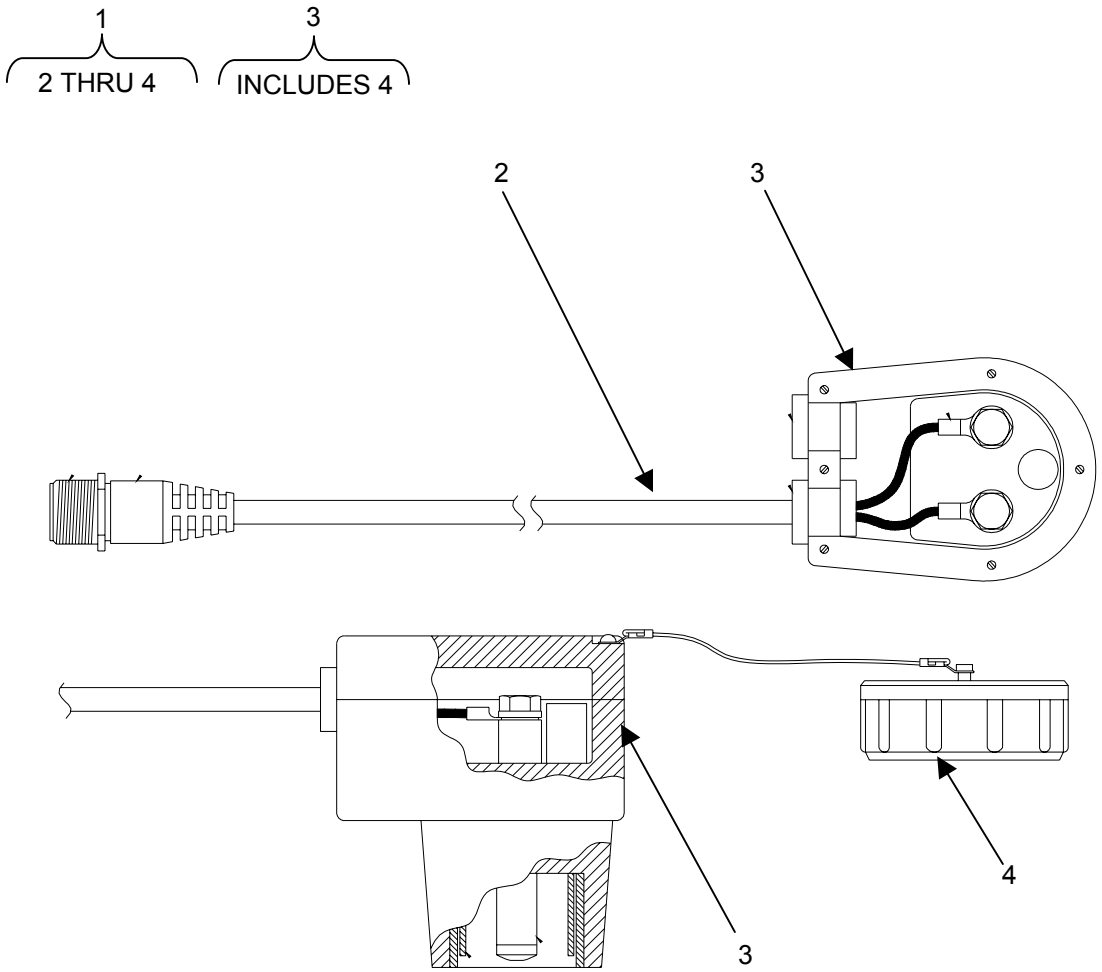


Figure 15. NATO Adapter Cable

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0402 MISC ASSEMBLIES	
					FIG. 15 NATO ADAPTER CABLE	
1	PAOOO	7310-01-454-1241	3AD06	MS0250	ELECTRICAL ADAPTER, MBU, NATO CABLE	1
2	XAOZZ		3AD06	981026K	. CABLE, POWER	1
3	PAOZZ	5935-00-567-0128	05593	151605	. CONNECTOR, PLUG, ELECTRICAL, NATO	1
4	PAOZZ	5340-01-316-1624	19207	12314225	. CAP, PROTECTIVE, DUST AND MOISTURE SEAL	1
					END OF FIGURE	

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
24VDC EXTENSION AND BRANCH CABLES
REPAIR PARTS LIST (RPSTL)

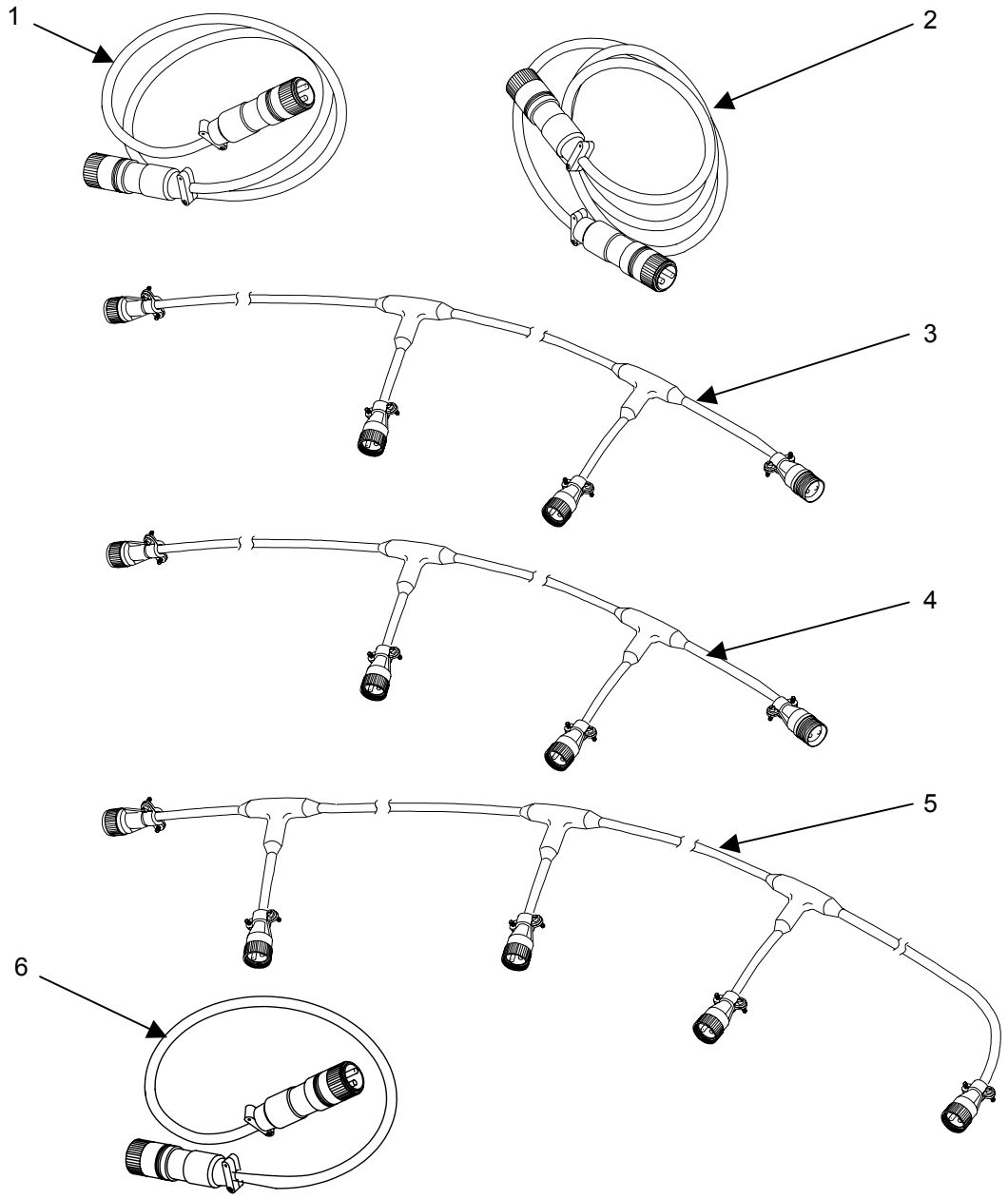


Figure 16. 24VDC Extension and Branch Cables

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0403 MISC ASSEMBLIES	
					FIG. 16 24VDC EXTENSION AND BRANCH CABLES	
1	PAOZZ	7310-01-455-0665	3AD06	MS0101	CORD LONG, MBU (CABLE A)	1
2	PAOZZ	7310-01-455-1206	3AD06	MS0105	CORD SHORT, MBU (CABLE E)	1
3	PAOZZ	6150-01-455-1014	3AD06	MS0103	WIRING HARNESS, BRANCHED (CABLE C)	1
4	PAOZZ	7310-01-455-1017	3AD06	MS0104	HARNESS BRANCH, MBU (CABLE D)	1
5	PAOZZ	7310-01-455-0896	3AD06	MS0102	HARNESS BRANCH, MBU (CABLE B)	1
6	PAOZZ	7310-01-509-4453	3AD06	MS0106	MBU EXT CABLE (CABLE F)	1
					END OF FIGURE	

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
110VAC EXTENSION
REPAIR PARTS LIST (RPSTL)

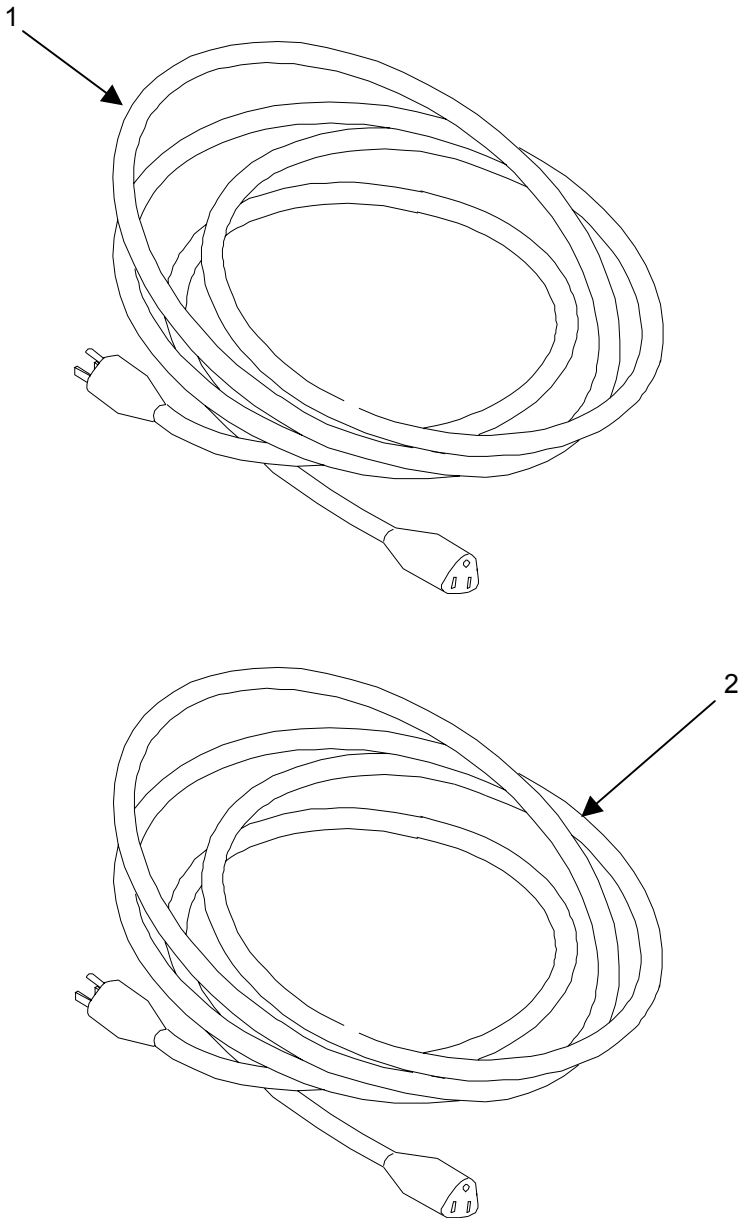


Figure 17. 110VAC Extension

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0404 MISC ASSEMBLIES	
					FIG. 17 110VAC EXTENSION	
1	PAOZZ	7310-01-454-1281	3AD06	MS0400	EXTENSION CORD, MBU (50 FT).....	1
2	PAOZZ	7310-01-458-5060	3AD06	MS0425	EXTENSION CORD SHORT, MBU (25 FT)	1
					END OF FIGURE	

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
BULK MATERIAL
REPAIR PARTS LIST (RPSTL)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 99 BULK MATERIAL	
					FIG. 18 BULK	
1	PAOZZ	4720-01-247-5457	81343	J30-30R7-1/4ID	HOSE, NONMETALLIC (1/4 ID)	2
2	PAOZZ	4120-01-483-6944	21868	6675-06298	HOSE, NONMETALLIC (3/8 ID)	5
					END OF FIGURE	

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
SPECIAL TOOLS LIST

STOCK NUMBER	FIG.	ITEM

There are no special tools required for the MBU, the MBU-V3, or associated equipment.

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG.	ITEM
4730-00-542-5796	9	7
5935-00-567-0128	15	3
5310-00-582-5677	6	22
	6	44
	10	4
	13	4
5325-00-721-7889	4	5
5310-00-903-5966	13	13
5310-00-984-6610	2	6
	5	7
	6	21
	6	43
	10	5
4730-01-070-7680	6	23
	6	45
4730-01-071-9080	9	3
5331-01-183-0991	7	4
	9	4
5342-01-210-7340	6	36
4720-01-247-5457	18	1
6150-01-267-5488	12	4
	12	8
5340-01-316-1624	15	4
5310-01-396-8168	13	3
7310-01-452-8137	1	1
7310-01-453-6513	12	1
7310-01-453-6565	13	1
7310-01-454-1241	15	1
7310-01-454-1249	13	5
7310-01-454-1281	17	1
7310-01-455-0665	16	1
7310-01-455-0896	16	5
6150-01-455-1014	16	3
7310-01-455-1017	16	4
7310-01-455-1206	16	2
7310-01-455-3735	14	3
7310-01-455-3736	14	1
7310-01-458-5060	17	2
7310-01-462-4864	2	1
7310-01-462-4865	2	2
7310-01-462-4867	2	3
7310-01-462-4868	3	1
7310-01-462-4869	4	1
7310-01-462-4871	4	4
7310-01-462-4899	5	1
7310-01-462-4902	5	2
7310-01-462-4905	6	1
	6	25
7310-01-462-4907	6	16
	6	40
7310-01-462-4913	6	2
	6	26
7310-01-462-4915	6	4
	6	28
7310-01-462-4918	6	20
	6	42
7310-01-462-4919	6	6
	6	30
7310-01-462-4928	6	18
7310-01-462-4936	6	24
	6	41
7310-01-462-4942	7	1
7310-01-462-4943	8	1
7310-01-462-4944	9	1
7310-01-462-4946	9	2
7310-01-462-4948	10	1
7310-01-462-4949	10	2
7310-01-462-4955	10	6
7310-01-462-4959	10	7
7310-01-462-4964	11	1
7310-01-462-4990	12	2
7310-01-462-4992	13	7
7310-01-462-4994	13	2
7310-01-462-4997	13	10
7310-01-462-4998	13	14
7310-01-462-6765	9	10
5340-01-479-5144	2	4
5340-01-479-5180	2	5
5340-01-479-7760	3	4
5340-01-479-7770	3	3
5340-01-479-8335	4	3
4810-01-480-0851	6	3
	6	27
4810-01-480-0861	6	14
	6	37
5975-01-480-1302	12	3
5305-01-481-0580	6	19
	7	3
	9	6
5306-01-481-5242	10	3

STOCK NUMBER	FIG.	ITEM
4730-01-481-9121	6	15
	6	39
	9	9
4730-01-481-9200	6	7
	6	31
4730-01-481-9210	6	8
	6	32
5305-01-483-3412	8	3
	13	9
	13	16
4120-01-483-6944	18	2
4720-01-486-0595	9	8
4730-01-486-1138	5	4
7310-01-502-9455	12	5
7310-01-507-9302	4	1
7310-01-507-9310	1	2
7310-01-509-4453	16	6
5930-20-000-5584	12	6
5310-21-905-5279	13	8
	13	12
	13	15
5305-21-910-7640	13	6
5306-21-920-9092	13	11
5310-21-920-9094	10	8
5310-21-921-0253	5	8
5365-00-920-9924	5	6

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
PART NUMBER INDEX

PART NUMBER	FIG.	ITEM
BH2-60Y	14	2
	14	4
BH2-61Y	11	2
	14	5
HC5-36	5	4
J30-30R7-1/4ID	18	1
MIL-P-83461/1	7	4
	9	4
MS0001	1	1
MS0003	1	2
MS0101	16	1
MS0102	16	5
MS0103	16	3
MS0104	16	4
MS0105	16	2
MS0106	16	6
MS0150	12	1
MS0160	12	5
MS0200	13	1
MS0225	13	5
MS0250	15	1
MS0300	14	1
MS0350	14	3
MS0400	17	1
MS0425	17	2
MS15759-810	6	22
	10	4
	13	4
	6	44
MS51971-1	13	13
SHC-50	3	3
SHC-80	3	4
TR-2005	13	11
W-167	5	8
WHC-1000-01	2	4
WHC-1500-01	2	5
Z103 TYPE SC	5	5
025C0125CGE	10	3
029422	13	9
	13	16
	8	3
12314225	15	4
125-4A	6	7
	6	31

PART NUMBER	FIG.	ITEM
125-6B	6	8
	6	32
151605	15	3
17516	12	4
	12	8
180629	6	19
	7	3
	9	6
191424	13	3
1X1024-24VDC	6	14
	6	37
202-026	10	8
229-6-2	6	23
	6	45
2X1323-24VDC	6	3
	6	27
3249	12	3
	12	7
344-015	13	6
349930K	6	2
	6	26
48-4A	6	15
	6	39
	9	9
48-99-221-92N	4	3
491-100	3	2
5137-37MD	4	5
607-085	5	6
61CA-6	9	3
667-002	13	8
	13	12
	13	15
6675-06298	18	2
68-F-06X02	9	7
79NTE040	10	5
	2	6
	5	7
	6	21
	6	43
800203K	13	10
800205K	13	2
800207K	13	7
860073	6	12
860073	6	36

PART NUMBER	FIG.	ITEM
880004K	10	1
880005K	10	2
880050K	9	1
880072	6	9
	6	33
880080K	10	6
880090K	10	7
880110	8	2
880110K	8	1
880150K	6	16
	6	40
910729K	6	24
	6	41
928329K	6	6
	6	30
930101	9	8
930125K	6	20
	6	42
930700	6	5
930740K	3	1
930929K	4	4
933827K	5	2
933900	5	3
935631K	2	2
935874	6	29
953451K	9	10
980101K	9	2

PART NUMBER	FIG.	ITEM
980122K	12	6
980124K	5	1
980130K	11	1
980230K	6	1
980240K	4	1
980250K	2	1
980260K	6	4
	6	28
980270	9	5
980280	7	2
980280K	7	1
980310K	6	25
980350	4	2
980350K	4	1
	4	2
980610K	6	18
980611K	13	14
980940K	2	3
981002K	12	2
981026K	15	2
981028	6	17
989000K	6	10
	6	34
989038K	6	11
	6	13
	6	35
	6	38

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII) LISTS

INTRODUCTION

Scope

This work package lists COEI and BII for the Modern Burner Unit (MBU and MBU-V3) 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:

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 Modern Burner Unit (MBU and MBU-V3). As part of the end item, these items 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.

Basic Issue Items (BII). These essential items are required to place the Modern Burner Unit (MBU and MBU-V3) in operation, operate it, and to do emergency repairs. Although shipped separately packaged, BII must be with the Modern Burner Unit (MBU and MBU-V3) 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 (NSN). 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 stowage location of COEI and BII is also included in this column. The last line below the description is the CAGEC (Commercial and Government Entity Code) (in parentheses) and the part number.

Column (4) Usable On Code. When applicable, 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
FQG	MBU
FTW	MBU-V3

Column (5) Unit of Issue (U/I). Indicates the physical measurement or count of the item as issued per the National Stock Number shown in column (2).

Column (6) Qty Rqr. Indicates the quantity required.

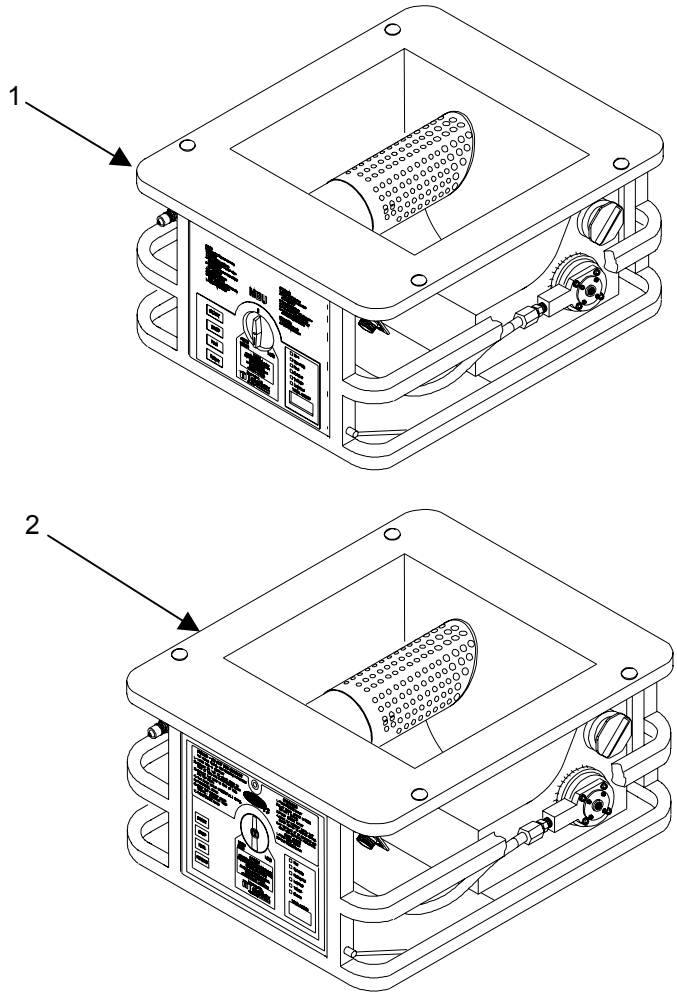


Table 1. Components of End Item List.

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER (NSN)	(3) DESCRIPTION, CAGEC, AND PART NUMBER	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
1	7310-01-452-8137	MBU (3AD06) MS0001	FQG	EA	1
	OR				
2	7310-01-507-9310	MBU-V3 (3AD06) MS0003	FTW	EA	1

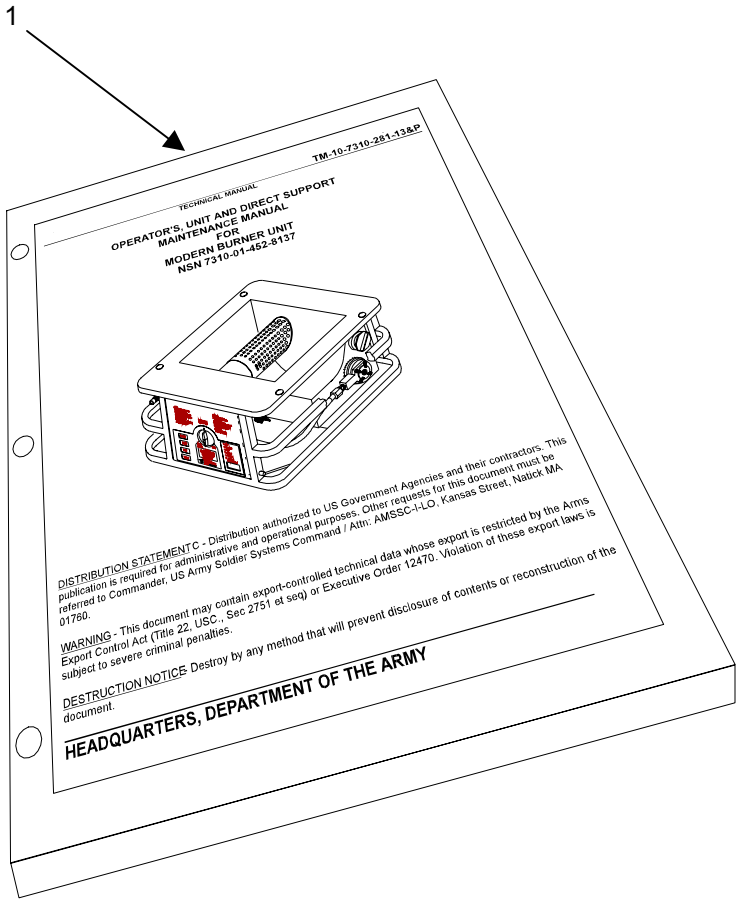


Table 2. Basic Issue Items List.

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER (NSN)	(3) DESCRIPTION, CAGEC, AND PART NUMBER	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
1	N/A	TM 10-7310-281-13&P		EA	1

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
ADDITIONAL AUTHORIZATION LIST (AAL)

INTRODUCTION

Scope
This work package lists additional items you are authorized for the support of the Modern Burner Unit (MBU and MBU-V3).

General
This list identifies items that do not have to accompany the Modern Burner Unit (MBU and MBU-V3) 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 (NSN). Identifies the stock number of the item to be used for requisitioning purposes.

Column (2) Description, Commercial and Government Entity Code (CAGEC), and Part Number (P/N). 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 (in parentheses) 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. These codes are identified below:

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

Column (4) Unit of Issue (U/I). Indicates the physical measurement or count of the item as issued per the National Stock Number shown in column (1).

Column (5) Qty Recm. Indicates the quantity recommended.

Table 1. Additional Authorization List.

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION, CAGEC, AND P/N	(3) USABLE ON CODE	(4) U/M	(5) QTY RECM
7310-01-454-1249	BATTERY (3AD06) MS0225		EA	2
7310-01-453-6565	BATTERY PACK (3AD06) MS0200	PAD	EA	1
7310-01-455-0665	CABLE A, EXTENSION 25FT (3AD06) MS0101	PAA PAC PAD	EA EA EA	3 1 1
7310-01-455-0896	CABLE B, MKT, 4 BRANCH (3AD06) MS0105	PAB	EA	1
7310-01-455-1014	CABLE C, MKT, 2 BRANCH (3AD06) MS0103	PAB	EA	1
7310-01-455-1017	CABLE D, 2 BRANCH (3AD06) MS0104	PAA PAC PAD	EA EA EA	5 2 2
7310-01-455-1206	CABLE E , MKT EXTENSION 12FT (3AD06) MS0105	PAB	EA	1
7310-01-509-4453	CABLE F, EXTENSION 3FT (3AD06) MS0106	PAC PAD	EA EA	1 1
1025-01-214-6568	CLEANING KIT, BORE, WEAPON, SMALL (65983) BOR-CAP-20		EA	1
7310-01-458-5060	EXTENSION CORD, 25FT (110VAC) (3AD06) MS0425	PAA PAB PAC	EA EA EA	1 1 1
7310-01-454-1281	EXTENSION CORD, 50FT (110VAC) (3AD06) MS0400	PAA PAB PAC	EA EA EA	1 1 1

Table 1. Additional Authorization List – Continued.

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION, CAGEC, AND P/N	(3) USABLE ON CODE	(4) U/M	(5) QTY RECM
7240-01-337-5268 (TAN) OR 7240-01-337-5269 (GREEN)	FUEL CAN (TAN OR GREEN) (81349) MIL-C-53109		EA	2
7310-01-455-3736	FUEL ADAPTER, MBU (3AD06) MS0300	PAA	EA	2
		PAB	EA	2
		PAC	EA	1
		PAD	EA	1
7310-01-455-3735	FUEL LINE, MBU (3AD06) MS0350	PAA	EA	2
		PAB	EA	2
		PAC	EA	1
		PAD	EA	1
7310-01-454-1241	NATO ELECTRICAL ADAPTER (24VDC) (3AD06) MS0250	PAD	EA	1
7310-01-453-6513	POWER CONVERTER FOR MBU-V3 (3AD06) MS0150	PAA	EA	1
		PAB	EA	1
		PAC	EA	1
7310-01-502-9455	POWER CONVERTER FOR MBU (3AD06) MS0160	PAA	EA	1
		PAB	EA	1
		PAC	EA	1
5975-00-878-3791	ROD, GROUNDING (49956) H293168		EA	1
7240-00-177-6154	SPOUT, CAN FLEXIBLE (19207) 11677020		EA	1

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
EXPENDABLE AND DURABLE ITEMS LIST

INTRODUCTION

Scope

This work package lists expendable and durable items that you will need to operate and maintain the Modern Burner Unit (MBU and MBU-V3). 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 brake fluid (item 5, WP 0098 00).").

Column (2) Level. This column includes the lowest level of maintenance that requires the listed item (C=Operator/Crew)

Column (3) National Stock Number (NSN). This is the NSN assigned to the item which you can use to requisition it.

Column (4) Item Name, Description, Commercial and Government Entity Code (CAGEC), and Part Number (P/N). This column provides the other information you need to identify the item.

Column (5), Unit of Issue (U/I) Indicates the physical measurment or count of the item as issued per the National Stock Number shown in column (3).

Table 1. Expendable and Durable Items List

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION, CAGEC, AND PART NUMBER	(5) U/I
1	O	7930-01-363-8631	ABSORBENT MATERIAL, OIL AND WATER (1JA49) GOV106	BG
2	O	7920-00-514-2417	BRUSH, ACID SWABBING (58536) 7920-00-514-2417	GR
3	O	7920-00-205-1711	RAG, WIPING (64067) 7920-00-205-1711	BE
4	O	8030-01-166-0675	SEALING COMPOUND (05972) 56747	TU
5	O	5970-00-419-4291	TAPE, INSULATION, ELECTRICAL (81349) MIL-I-24391	RO

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE
MODERN BURNER UNIT (MBU)
(NSN 7310-01-452-8137)
MODERN BURNER UNIT-V3 (MBU-V3)
(NSN 7310-01-507-9310)
MANDATORY REPLACEMENT PARTS LIST

INTRODUCTION

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/ CAGEC	NSN	NOMENCLATURE	QTY
1	980230K (3AD06)	7310-01-462-4905	Air Filter	1
2	953451K (3AD06)	7310-01-462-6765	In-Tank Fuel Filter	1
3	MIL-P-83461/1 (81349)	5331-01-183-0991	Fuel Regulator O-ring	1

Table 2. Mandatory Replacement Parts List (Every 2000 Hours of Operation)

ITEM NO.	PART NUMBER/ CAGEC	NSN	NOMENCLATURE	QTY
1	980260K (3AD06)	7310-01-462-4915	Ignitor	1
2	928329K (3AD06)	7310-01-462-4919	Fuel Nozzle	1

MODERN BURNER UNIT (MBU)
AND
MODERN BURNER UNIT-V3 (MBU-V3)

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By Order of the Secretary of the Army:

PETER J. SCHOOMAKER
General, United States Army
Chief of Staff

Official:

JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army
0421001

Distribution: To be distributed in accordance with initial distribution number (IDN) 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: amssbriml@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 PUBLICATIONS AND BLANK FORMS

For use of this form, see AR 25-30; the proponent agency is ODISC4.

Use Part II *(reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).

DATE
21 October 2003

TO: *(Forward to proponent of publication or form) (Include ZIP Code)*
COMMANDER
U.S. ARMY TANK-AUTOMOTIVE AND ARMAMENT COMMAND
ATTN: AMSTA LC-CECT
KANSAS STREET
NATICK, MA 01760-5052

FROM: *(Activity and location) (Include ZIP Code)*
PFC Jane Doe
CO A 3rd Engineer BR
Ft. Leonardwood, MO 63108

PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER	DATE	TITLE
TM 10-1670-296-23&P	30 October 2002	Unit Manual for Ancillary Equipment for Low Velocity Air Drop Systems

ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON *(Provide exact wording of recommended changes, if possible).*
	0036 00-2				*1*	*In table 1, Sewing Machine Code Symbols, the second sewing machine code symbol should be MD ZZ not MD 22.* *Change the manual to show Sewing Machine, Industrial: Zig-Zag; 308 stitch; medium-duty; NSN 3530-01-181-1421 as a MD ZZ code symbol.*

**Reference to line numbers within the paragraph or subparagraph.*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE
Jane Doe, PFC	508-233-4141	Jane Doe *Jane Doe*

DA FORM 2028, FEB 74 REPLACES DA FORM 2028, 1 DEC 68, WHICH WILL BE USED. USAPPC V3.00

TO: (*Forward direct to addressee listed in publication*)	**FROM:** (*Activity and location*) (*Include ZIP Code*)	**DATE**
COMMANDER U.S. ARMY TANK-AUTOMOTIVE AND ARMAMENT COMMAND ATTN: AMSTA LC-CECT KANSAS STREET NATICK, MA 01760-5052	*PFC Jane Doe* *CO A 3rd Engineer BR* *Ft. Leonardwood, MO 63108*	*21 October 2003*

PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER	**DATE**	**TITLE**
TM 10-1670-296-23&P	30 October 2002	Unit Manual for Ancillary Equipment for Low Velocity Air Drop Systems

PAGE NO.	**COLM NO.**	**LINE NO.**	**NATIONAL STOCK NUMBER**	**REFERENCE NO.**	**FIGURE NO.**	**ITEM NO.**	**TOTAL NO. OF MAJOR ITEMS SUPPORTED**	**RECOMMENDED ACTION**
0066 00-1					*4*			*Callout 16 in figure 4 is pointed to a D-Ring. In the Repair Parts List key for figure 4, item 16 is called a Snap Hook. Please correct one or the other.*

PART III – REMARKS (*Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.*)

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25-30; the proponent agency is ODISC4.	Use Part II *(reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	DATE

TO: *(Forward to proponent of publication or form) (Include ZIP Code)* COMMANDER U.S. ARMY TANK-AUTOMOTIVE AND ARMAMENT COMMAND ATTN: AMSTA LC-CECT KANSAS STREET, NATICK, MA 01760-5052	**FROM:** *(Activity and location) (Include ZIP Code)*

PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER TM 10-7310-281-13&P	DATE 31 July 2004	TITLE Operator's, Unit, and Direct Support Maintenance Manual, Including Repair Parts and Special Tools List (RPSTL) for Modern Burner Unit (MBU) NSN 7310-01-452-8137 and Modern Burner Unit (MBU-V3) NSN 7310-01-507-9310

ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON *(Provide exact wording of recommended changes, if possible).*

**Reference to line numbers within the paragraph or subparagraph.*

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PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER	DATE	TITLE

PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART III – REMARKS (*Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25-30; the proponent agency is ODISC4.	Use Part II *(reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	DATE

TO: *(Forward to proponent of publication or form) (Include ZIP Code)* COMMANDER U.S. ARMY TANK-AUTOMOTIVE AND ARMAMENT COMMAND ATTN: AMSTA LC-CECT KANSAS STREET, NATICK, MA 01760-5052	**FROM:** *(Activity and location) (Include ZIP Code)*

PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER TM 10-7310-281-13&P	DATE 31 July 2004	TITLE Operator's, Unit, and Direct Support Maintenance Manual, Including Repair Parts and Special Tools List (RPSTL) for Modern Burner Unit (MBU) NSN 7310-01-452-8137 and Modern Burner Unit (MBU-V3) NSN 7310-01-507-9310

ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON *(Provide exact wording of recommended changes, if possible).*

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PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

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PART III – REMARKS (*Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

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 = 3 2.8 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 decigrarn = 10 centigrams = 1.54 grains
1 gram = 10 decigrams = .035 ounce
1 dekagrarn = 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 = .15 5 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	Iiters	.473	milliliters	fluid ounces	.034
quarts	Iiters	.946	liters	pints	2.113
gallons	Iiters	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