

TECHNICAL MANUAL OPERATOR AND MAINTENANCE MANUAL FOR

G2 SERIES DECONTAMINATION WATER HEATER





ISO 9001: 2008 Registered Quality Management System

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SAFETY STEPS TO FOLLOW IF SOMEONE IS THE VICTIM OF ELECTRICAL SHOCK.



SEND FOR HELP AS SOON AS POSSIBLE.



DO NOT TRY TO PULL OR GRAB THE INDIVIDUAL.



IF POSSIBLE, TURN OFF THE ELECTRICAL POWER.



IF YOU CANNOT TURN OFF THE ELECTRICAL POWER, PULL, PUSH OR LIFT THE PERSON TO SAFETY USING A DRY WOODEN POLE, OR A DRY ROPE, OR SOME OTHER INSULATING MATERIAL.



AFTER THE INJURED PERSON IS FREE OF CONTACT WITH THE SOURCE OF ELECTRICAL SHOCK, MOVE THE PERSON A SHORT DISTANCE AWAY AND IMMEDIATELY START ARTIFICIAL **RESUSCITATION.**





ELECTRICAL HAZARD

Under adverse conditions, voltage used in this equipment can cause death or serious injury. Observe the following safety precautions:

GROUND THE EQUIPMENT	Before connecting primary power cables; connect grounding cable from ground lug on power control box to earth ground. Do not remove grounding cable until signal cables and primary power cables have been disconnected and generator has been shut down.
AVOID THE POWER INPUT	Be careful not to contact 115 VAC input connections when installing or servicing equipment.
DO NOT SERVICE ALONE	Never work on equipment unless there is another person nearby who is familiar with operation and hazards of equipment and who can administer first aid.
USE ONLY ONE HAND	Whenever possible, use only one hand to service equipment. Keep other hand away to reduce hazard of current flowing through vital organs of the body.

For Artificial Respiration, refer to FM 4-25.11.

WARNING





BURN HAZARD

Equipment may be hot to touch. Allow unit to cool before handling or use gloves when handling. Failure to observe this warning can result in serious injury.

b

WARNING





HEAVY EQUIPMENT

Improperly lifting or carrying heavy equipment can result in serious injury or death. Refer to the following weight limits as guidelines:

Handling Function	One-Person Max. Lift	Two-Person Max. Lift	Two-Person Max. Lift (Male Only)
Lift object from floor and place it on surface not greater than 5 feet above floor.	37 lb.	74 lb.	112 lb.
Lift object from floor and place it on surface not greater than 3 feet above floor.	44 lb.	88 lb.	174 lb.
Carry object 33 feet or less.	42 lb.	84 lb.	164 lb.

DANGER

Risk of Explosion or Fire. <u>Do Not</u> place unit in an area where flammable gas vapors may be present. A spark could cause an explosion or fire.

DANGER

Risk of Electrocution. This unit must be connected to a properly grounded outlet. <u>Do Not</u> use an adapter or remove the third grounding prong.

DANGER

Risk of Fire. <u>Do Not</u> smoke while fueling. <u>Do Not</u> fill the fuel tank while unit is running or hot. Allow two minutes before refueling. <u>Do Not</u> fill fuel tank to point of overflowing.

WARNING

Risk of Asphyxiation. Use this unit <u>ONLY</u> in well ventilated areas. The exhaust contains carbon monoxide, a poisonous, odorless, and invisible gas. Breathing this gas can cause serious injury, illness, and possible death.

WARNING

To reduce the risk of electrocution, keep all connections dry and off the ground. <u>Do Not</u> touch plug with wet hands

WARNING

Risk of Explosion or Fire. Always store fuel away from water heater while unit is operating or hot.

WARNING

Incorrect operation of this water heater could result in serious injury and or damage to equipment. <u>Do Not</u> alter or modify this equipment in any manner.

WARNING

Remove all rings, watches, and other jewelry when performing maintenance on this equipment. Secure all loose fitting clothing to prevent from being caught in moving or rotating parts. Death or loss of limb may result.

CAUTION

Risk of Unit Damage. Be certain the discharge hose is not connected to the unit while flushing the system. Flushing allows mineral deposits to be released which would obstruct or damage the hoses.

TECHNICAL MANUAL

OPERATOR AND MAINTENANCE MANUAL

FOR

REEVES

G2 SERIES DECONTAMINATION WATER HEATER

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HOW TO USE THIS MANUAL

PURPOSE AND SCOPE

This technical manual provides Operator and Maintenance information for the G2 Series Decontamination Water Heater. The information includes equipment description and theory of operation, operator instructions, troubleshooting procedures, maintenance and testing procedures, and supporting data.

ARRANGEMENT, IDENTIFICATION AND LOCATION OF FRONT MATTER, REAR MATTER, CHAPTERS, AND WORK PACKAGES

This manual is composed of front matter, chapters containing Work Packages (WPs), appendixes, and rear matter. These areas are described in greater detail in the following paragraphs.

Front Matter

The front matter includes such items as the Warning Summary, List of Effective Pages/WPs, Table of Contents, and How to Use This Manual.

Chapters and WPs

The WPs contain information pertinent to the performance of specific tasks. Each WP is maintained as a separate entity. The WPs are grouped into chapters based on overall content. WPs are arranged in numerical sequence regardless of chapter division. The chapter divisions and the WPs contained within the chapters are listed in the Table of Contents. The contents of each chapter are outlined briefly in the following paragraphs.

Chapter 1 - General Information, Equipment Descriptions, and Theory of Operation. This chapter provides general and descriptive information concerning the equipment. Theory of Operation appropriate to the maintenance level covered is also provided.

Chapter 2 - Operator Instructions. This chapter provides a description and location of the controls, indicators, and connectors for each G2 and or G2S Decontamination Water Heater. It also contains a description and location of the decals and data plates for each piece of equipment and operation under usual and unusual conditions.

Chapter 3 - Operator Troubleshooting Procedures. This chapter provides operational checkout and troubleshooting procedures appropriate to the maintenance level covered.

Chapter 4 – Operator Maintenance Procedures. This chapter provides troubleshooting/fault isolation procedures appropriate to the maintenance level covered.

Chapter 5 – Destruction of Equipment. This chapter provides procedures for Destruction of Equipment.

Chapter 6 – Illustrated Parts Breakdown (IPB). This chapter provides Assemblies and Sub-Assemblies with part numbers lists.

Identifying WPs

Each WP is identified by a six-digit number. The first four digits are assigned sequentially. The last two digits, if other than 00 (01, 02, 03, etc.), indicate WP revision level. WPs are revised due to equipment configuration differences, support equipment differences, or other similar situations. For example:

- WP 0005 00 might cover installation of a cable on a basic unit.
- WP 0005 01 might cover installation of the same cable on a differently configured unit.
- Installation of an alternate handle in place of the original handle, requiring a different procedure.
- Installation of the handle using an alternate technique or different tools.
- Installation of the handle using alternate fasteners.

Locating WPs

There are two ways to locate a WP when the number is not known, using the Table of Contents in the manual's front matter and using the Index in the manual's rear matter.

Locating a WP in the Table of Contents

First determine the category of the WP subject and then find the appropriate chapter in the Table of Contents. Scan the WP titles in that chapter until the WP subject matter is found. In the example below, it is desired to locate the PMCS for the Operator (shaded). PMCS falls into the category of maintenance. Go to the Table of Contents and find the chapter titled "Operator Maintenance Instructions." (Make sure the chapter applies to the appropriate maintenance level). Scan the WP titles within that chapter until "PMCS" is found, and follow the leader line to find the WP number.

TABLE OF CONTENTS	
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WP CONTENT AND PRESENTATION

The content and the presentation techniques used in the WPs vary according to the material covered.

Common Features

In all cases, the WP title is placed at the top of the page immediately below the manual and WP number and is set off by horizontal lines as shown below.

G2 Series Decontamination Water Heater	0002
GENERAL INFORMATION, EQUIPMENT DESCRIPTION, AND THEORY OF G G2 Series Decontamination Water Heater EQUIPMENT DATA AND DESCRIPTION	OPERATION

On the second and subsequent pages of the WP, the manual and WP number is repeated. The page number is placed at the bottom of the page and consists of the WP number and a sequential number denoting the page within the WP as shown below.

0002-1

Paragraphs are not numbered.

Primary paragraphs are denoted by headings set in **BOLD UPPER CASE (CAPITAL)** type. Secondary and lower-level paragraphs are denoted by headings set in Bold Upper and Lower Case type. These paragraphs always relate to and are subordinate to the most recent primary paragraph heading.

Figures and tables are numbered sequentially within each WP starting with numeral 1

CHAPTER 1

GENERAL INFORMATION FOR

REEVES

G2 SERIES

DECONTAMINATION WATER HEATER

SCOPE

This Operator's Manual describes the safe operation and field maintenance of the G2 Series Decontamination Water Heater. You can be assured your hot water heater was constructed and designed with guality and performance in mind. Each component has been rigorously tested to ensure the highest level of acceptance.

This operator's manual was complied for your benefit. By reading and following the simple safety, installation, operation, troubleshooting, and maintenance steps described in this manual, you will receive years of trouble free operation from your new hot water heater.

There are four Decontamination Water Heater models available: The G2 and G2-I; the G2S and G2S-I. See WP 0002 for Equipment Descriptions.

RECEIPT OF G2 SERIES DECONTAMINATION WATER HEATER

Once the unit has been uncrated, immediately write the model and serial number (see WP 0004 for serial number location) in the space provided below.

Model Number

Serial Number___

Inspect for signs of obvious or concealed freight damage. If damage does exist, file a claim with the transportation company immediately. Be sure that all damaged parts are replaced and that the mechanical and electrical problems are corrected prior to operation of the unit. If you require service, contact REEVES EMS, Customer Service. Please have the model number and serial number available for all service calls.

EQUIPMENT SPECIFIC SAFETY ISSUES

GENERAL

The cautions and warnings point out known conditions that are potentially hazardous. However, no manual can cover every possible situation. If in doubt, contact Reeves. Service and repair procedures not covered in this manual should be performed only by authorized Reeves EMS technicians.

GENERAL PRECAUTIONS

REMEMBER SAFETY FIRST. If unsure of the instructions or proper operating procedures, contact Reeves before continuing.

This manual emphasizes the safety precautions necessary during the operation and maintenance of the G2 Series Decontamination Water Heater. Each section uses caution and warning messages for both the safety of the operator as well as the durability of the equipment.

If any of the cautions or warnings is not readily understood, contact Reeves EMS, before proceeding. When an abnormal condition is observed and procedures in the manual do not specifically describe the condition, all operations should be stopped and Reeves EMS should be contacted immediately for assistance.

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REEVES EMS, Contact Information

Phone: 800-328-5563 FAX: 845-365-2114 Email: info@reevesems.com

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The following safety precautions should be observed:

- This unit <u>must</u> be grounded. Make sure the water heater is equipped with a GFCI built into the power supply cord.
- <u>Never</u> fill the burner fuel tank while the water heater is running or hot. Allow a minimum of five minutes for the water heater to cool before refueling.
- <u>**Do Not**</u> modify the electrical plug. If the plug will not fit into the outlet, have a proper outlet installed by a qualified electrician.
- **<u>Do Not</u>** use extension cords with this water heater.
- **<u>Never</u>** allow any part of your body or clothing to come in contact with the heat exchanger.
- Stay alert watch what you are doing. <u>Do Not</u> operate the unit when fatigued or under the influence of drugs or alcohol.
- Before performing any maintenance work:
 - (a). Turn power switch to the OFF position.
 - (b). Disconnect the power cord from grounded power supply.
 - (c). Wait for water heater to cool down.

QUALIFIED PERSONNEL

A qualified person is someone who is familiar with this manual, the operation of the G2 Series Decontamination Water Heater, the hazards involved in its operation and maintenance and who has been certified by the Reeves EMS training program.

This manual is not intended to be a substitute for proper training. Reeves EMS strongly recommends that all receive training directly from Reeves EMS.

IMPORTANT

READ ALL OF THE INFORMATION CONTAINED IN THIS MANUAL BEFORE OPERATING THE DECONTAMINATION WATER HEATER

WARRANTY INFORMATION

Reeves EMS LLC provides a limited warranty that all products shall be free from defects in material and workmanship for the period of time shown in the Warranty Schedule below.

- REEVES/DRASH Shelters and Decontamination Shelters: 60 Months
- REEVES Water Heaters: 12 Months
- REEVES Internal Plumbing Divider Curtains, Hoses, Harnesses, Showerheads and Spray Wands, Roller Systems, Elevation Grids, and Berms: 12 Months
- REEVES/DRASH Shelter Support Products and Accessories: 12 Months

The warranty period reflected in the above Warranty Schedule shall begin on the date of original shipment to the original purchaser. Report all defects to the supervisor, who will take appropriate action. Contact the Regional Support Center (RSC) representative for further information on Warranty items.

GENERAL INFORMATION, EQUIPMENT DESCRIPTION, AND THEORY OF OPERATION G2 SERIES DECONTAMINATION WATER HEATER EQUIPMENT DESCRIPTION AND DATA

EQUIPMENT CHARACTERISTICS AND CAPABILITIES

The G2 /G2-I Decontamination Water Heaters is a man portable, easy to maneuver, four outlet system, with a heating output of 425,000 BTU, capable of supplying multiple showers and sinks with heated water. The G2-I has a 6.6 gallon polyethylene decontamination solution holding tank and has the capability of supplying hot water for one or two decontamination shelters.

The G2S / G2S-I Decontamination Water Heaters is a smaller version of the G2 with similar features except it is a two outlet system and it doesn't have the 6.6 gallon decontamination solution holding tank. The G2S is capable of supplying hot water for a single shelter with a heating output of 168,000 BTU.

All models of Water Heaters have an enclosed fan-cooled electric motor with manual thermal overload protection, and are capable of using multiple fuel types for the burner. All units have a built in Anti-Scald Protection device and Pressure Relief Valves to protect the coils and components.



Figure 1. G2 / G2-I Water Heater Configuration.

Table 1. G2 / G2-I Water Heater Conf

ITEM	ASSEMBLY	FUNCTION
	G2 Water Heater	425,000 BTU, G2 Water Heater
	G2-I Water Heater	425,000 BTU, G2-I Water Heater with Decon Solution Injection

Part Number: 1006375

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Figure 2. G2S / G2S-I Configuration.

Table 2. G2S / G2S-I Configuration.

ITEM	ASSEMBLY	FUNCTION		
	G2S Water Heater	165,000 BTU, G2S Water Heater		
	G2S-I	165,000 BTU, G2S-I Water Heater with Decon Solution Injection		

GENERAL INFORMATION, EQUIPMENT DESCRIPTION, and THEORY of OPERATION G2 SERIES DECONTAMINATION WATER HEATER THEORY OF OPERATION

GENERAL

The following WP identifies the theory of operation for each model of the G2 Series Decontamination Water Heaters. The G2 Series Water Heaters consists of a self-heating water system with or without mobile Decon injection system designed to connect to a Reeves S and XB Decon Shelter which support various operations.

WATER HEATERS

G2:

The Reeves G2 multi-fuel 425,000 BTU, self-heating water system is portable, easy to maneuver and built for field use. The unit is the ideal way to supply multiple decontamination showers or field showers and sinks with heated water, thus increasing the safety and comfort of both patients and personnel.

FEATURES:

- 425,000 BTU, self-heating water system
- Multi-Fuel (diesel, kerosene, home heating oil, and JP4)
- Flow rate of up to 28 gallons per minute
- 10-gallon on-board fuel tank with drain plug
- 110V outlet onboard for convenience
- Instructional panel for ease of operation
- Built-in Anti-Scald Protection device factory pre-set at 110°F
- Thermostatically-controlled
- Operator's panel with color-coded temperature and pressure gauges
- Heater ignited by solid state electrical system (NO FLAME) that ignites upon water flow
- Burner motor is a 1/4 hp, 120 V, 60hz, 1 ph and runs at 3450 rpm
- Inline GFCI protection
- Fuel filter with water separator
- Modular design -- ruggedized for field use
- Man portable and easy to maneuver
- Mounted on four (4) no flat tires with hand brake for safety
- 1 ½" Female NST inlet with swivel and tethered compressed air adapter for winterization purposes
- Unit will safely accept incoming water pressure of up to 125 psi
- System can be adapted for use with multiple water sources that provide adequate water pressure and flow (adapters not included)
- Four (4) discharge outlets with male cam lock fittings and tethered caps
- Includes two (2) 35-foot, ½" supply hoses with cam lock fittings that provide heated water and solution to Reeves shower plumbing
- Discharge outlets and supply hoses can be factory modified in order to supply heated water to non-Reeves shower systems

WATER HEATERS CONTINUED

G2-I:

The Reeves G2-I multi-fuel 425,000 BTU, self-heating water and mobile Decon Solution Injection System is portable, easy to maneuver and built for field use. The unit is the ideal way to supply multiple decontamination showers or multiple field showers and sinks with heated water, thus increasing the safety and comfort of both patients and personnel.

FEATURES

- 425,000 BTU, self-heating water system
- Multi-Fuel (diesel, kerosene, home heating oil, and JP4)
- Flow rate of up to 28 gallons per minute
- 10-gallon on-board fuel tank with drain plug
- 110V outlet onboard for convenience
- Instructional panel for ease of operation
- Built-in Anti-Scald Protection device factory pre-set at 110°F
- Thermostatically-controlled
- Operator's panel with color-coded temperature and pressure gauges
- Heater ignited by solid state electrical system (NO FLAME) that ignites upon water flow
- Burner motor is a 1/4 hp, 120 V, 60hz, 1 ph and runs at 3450 rpm
- Inline GFCI protection
- Fuel filter with water separator
- Modular design -- ruggedized for field use
- Man portable and easy to maneuver
- Mounted on four (4) no flat tires with hand brake for safety
- 1 1/2" Female NST inlet with swivel and tethered compressed air adapter for winterization purposes
- Unit will safely accept incoming water pressure of up to 125 psi
- System can be adapted for use with multiple water sources that provide adequate water pressure and flow (adapters not included)
- Four (4) discharge outlets with male cam lock fittings and tethered caps (2 decontamination solution / 2 fresh rinse
- Includes two (2) 35-foot, ½" supply hoses with cam lock fittings that provide heated water and solution to Reeves shower plumbing
- Discharge outlets and supply hoses can be factory modified in order to supply heated water to non-Reeves shower systems

FEATURES OF INJECTION SYSTEM:

- Unit includes a non-electric, volumetric proportional injection system
- Injection rate adjustable onboard -- even while water is flowing
- Injection system designed to operate upon water flow
- Chemically resistant to Sodium Hypo-Chloride
- Built-in mixing chamber
- Easy to use black manual bypass (ON/OFF) lever
- In-line 100 micron filtration system
- Automatic air relief valve
- Flow range: 4.2 to 600 gallons per hour
- Injection rate: 1% (1:100) to 10% (1:10)
- Injector operating pressure: 10-85 psi
- Heavy-duty siphon hose
- Hose draws out of 6.6-gallon decontamination solution tank placed in storage area below

WATER HEATERS CONTINUED

G2S:

The Reeves G2S multi-fuel 165,000 BTU, self-heating water system is portable, easy to maneuver and built for field use. The unit is the ideal way to supply multiple decontamination showers or multiple field showers and sinks with heated water, thus increasing the safety and comfort of both patients and personnel.

FEATURES

- 165,000 BTU, self-heating water system
- Multi-Fuel (diesel, kerosene, home heating oil, and JP4)
- Flow rate of up to 18 gallons per minute
- 4-gallon on-board fuel tank with drain plug
- Instructional panel for ease of operation
- Built-in Anti-Scald Protection device factory pre-set at 110°F
- Thermostatically-controlled
- Operator's panel with color-coded temperature and pressure gauges
- Heater ignited by solid state electrical system (NO FLAME) that ignites upon water flow
- Burner motor is a 1/5 hp, 120 V, 60hz, 1 ph and runs at 3350 rpm
- Inline GFCI protection
- Fuel filter with water separator
- Modular design -- ruggedized for field use
- Man portable and easy to maneuver
- Mounted on four (4) no flat tires with hand brake for safety
- 1 ½" Female NST inlet with swivel and tethered compressed air adapter for winterization purposes
- Unit will safely accept incoming water pressure of up to 125 psi
- System can be adapted for use with multiple water sources that provide adequate water pressure and flow (adapters not included)
- Two (2) discharge outlets with male cam lock fittings and tethered caps
- Includes two (2) 35-foot, ½" supply hoses with cam lock fittings that provide heated water and solution to Reeves shower plumbing
- Discharge outlets and supply hoses can be factory modified in order to supply heated water to non-Reeves shower systems

WATER HEATERS CONTINUED

G2S-I:

The Reeves G2S-I multi-fuel 165,000 BTU, self-heating water and mobile Decon Solution Injection System is portable, easy to maneuver and built for field use. The unit is the ideal way to supply multiple decontamination showers or multiple field showers and sinks with heated water, thus increasing the safety and comfort of both patients and personnel.

FEATURES

- 165,000 BTU, self-heating water system
- Multi-Fuel (diesel, kerosene, home heating oil, and JP4)
- Flow rate of up to 18 gallons per minute
- 4-gallon on-board fuel tank with drain plug
- Instructional panel for ease of operation
- Built-in Anti-Scald Protection device factory pre-set at 110°F
- Thermostatically-controlled
- Operator's panel with color-coded temperature and pressure gauges
- Heater ignited by solid state electrical system (NO FLAME) that ignites upon water flow
- Burner motor is a 1/5 hp, 120 V, 60hz, 1 ph and runs at 3350 rpm
- Inline GFCI protection
- Fuel filter with water separator
- Modular design -- ruggedized for field use
- Man portable and easy to maneuver
- Mounted on four (4) no flat tires with hand brake for safety
- 1 ½" Female NST inlet with swivel and tethered compressed air adapter for winterization purposes
- Unit will safely accept incoming water pressure of up to 125 psi
- System can be adapted for use with multiple water sources that provide adequate water pressure and flow (adapters not included)
- Two (2) discharge outlets with male cam lock fittings and tethered caps (1 decontamination solution / 1 fresh rinse)
- Includes two (2) 35-foot, ½" supply hoses with cam lock fittings that provide heated water and solution to Reeves shower plumbing
- Discharge outlets and supply hoses can be factory modified in order to supply heated water to non-Reeves shower system

FEATURES OF INJECTION SYSTEM:

- Unit includes a non-electric, volumetric proportional injection system
- Injection rate adjustable on board -- even while water is flowing
- Injection system designed to operate upon water flow
- Chemically resistant to Sodium Hypo-Chloride
- Built-in mixing chamber
- Easy-to-use black manual bypass (ON/OFF) lever
- In-line 100 micron filtration system
- Automatic air relief valve
- Flow range: 4.2 to 600 gallons per hour
- Injection rate: 1% (1:100) to 10% (1:10)
- Injector operating pressure: 10-85 psi
- Heavy-duty siphon hose

CHAPTER 2

OPERATOR INSTRUCTIONS FOR

REEVES

G2 SERIES

DECONTAMINATION WATER HEATER

OPERATOR INSTRUCTIONS G2 SERIES DECONTAMINATION WATER HEATER DESCRIPTION AND USE OF OPERATOR CONROLS, INDICATORS AND CONNECTIONS

GENERAL

This work package contains illustrations and tables that describe location and functions used for operation of the G2 Series Decontamination Water Heaters.



Figure 1. G2 / G2-I Water Heater Functions.

G2 / G2-I WATER HEATER (CONT)



Figure 2. G2 / G2-I Water Heater Functions.

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ITEM	CONTROLS, INDICATORS AND CONNECTIONS	FUNCTION
1	Bypass Lever (G2-I Only)	On / Off Lever to toggle between Off and Run position (G2-I Only)
2	Injector Assembly (G2-I Only)	Mixes and Injects Decon solution (G2-I Only)
3	Power Cord, GFCI	120V / 15A
4	Injector Inlet Filter (G2-I Only)	In-Line 100 Micron Filter (G2-I Only)
5	Storage Area	Decon Solution Tank Storage (G2-I Only)
6	Receptacle	110V Auxiliary Outlet
7	Water Source Inlet w/Air Nipple	1-1/2" Female NST, Water supply inlet. Air Nipple used for winterization of unit
8	Hour Meter	Measures actual run time
9	Power Switch w/Indicator Light	On / Off Switch with Indicator Light
10	Temperature Control	Temperature control for adjusting water temperature between full cold and 110°F
11	Pressure Gauge	0-200 PSI Color-coded Pressure Gauge
12	Temperature Gauge	0-180°F Color-coded Temperature Gauge
13	Operation Decal	Instructional decal for ease of operation
14	Outlet, Fresh Water	Hose connections for fresh water to shelter or sink
15	Outlet, Fresh Water	Hose connections for fresh water to shelter or sink
15	Outlet, Decon Solution (G2-I Only)	Hose connections for Decon solution to shelter (G2-I Only)
16	Fuel Tank	10 Gallon multi-fuel tank
17	Serial Number Decal	Reeves assigned serial number decal
18	Fuel Filter Assembly	Fuel filter with water separator
19	Burner Motor Assembly	¼ HP, 120V/60Hz, 1-Phase, 3450 RPM

Table 1.	G2 /	G2-I	Water	Heater	Functions.
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G2S / G2S-I WATER HEATER



Figure 3. G2S / G2S-I Water Heater Functions.

G2S / G2S-I WATER HEATER (CONT)



Figure 4. G2S / G2S-I Water Heater Functions.

Table	2. G2S/G2S-	-I Water Heater Functions.	

ITEM	CONTROLS, INDICATORS AND CONNECTIONS	FUNCTION
1	Operation Decal	Instructional decal for ease of operation
2	Power Switch w/Indicator Light	On / Off Switch with Indicator Light
3	Pressure Gauge	0-200 PSI Color-coded Pressure Gauge
4	Outlet, Fresh Water	Hose connection for fresh water to shelter or sink
4	Outlet, Decon Solution (G2S-I Only)	Hose connection for Decon solution to shelter (G2-I Only)
5	Outlet, Fresh Water	Hose connection for fresh water to shelter or sink
6	Fuel Filter Assembly	Fuel filter with water separator
7	Hand Brake	Secures water heater
8	Temperature Gauge	0-180°F Color-coded Temperature Gauge
9	Temperature Control	Temperature control for adjusting water temperature between full cold and 110°F
10	Serial Number Decal	Reeves assigned serial number decal
11	Bypass Lever (G2S-I Only)	On / Off Lever to toggle between Off and Run position (G2S-I Only)
12	Injector Assembly (G2S-I Only)	Mixes and Injects Decon solution (G2S-I Only)
13	Injector Inlet Filter (G2S-I Only)	In-Line 100 Micron Filter (G2S-I Only)
14	Water Source Inlet w/Air Nipple	1-1/2" Female NST, Water supply inlet. Air Nipple used for winterization of unit
15	Injector Suction Hose (G2S-I Only)	Used for Decon solution (G2S-I Only)
16	Injector Suction Hose Filter (G2S-I Only)	Suction hose filter for Decon solution (G2S-I Only)
17	Combustion Chamber Drain Valve	Drain valve used to drain combustion chamber
18	Fuel Tank	4 Gallon multi-fuel tank
19	Burner Motor Assembly	1/5HP, 120V/60Hz, 1-Phase, 3350 RPM
20	Power Cord, GFCI	120V / 15A

OPERATOR INSTRUCTIONS G2 SERIES DECONTAMINATION WATER HEATER WATER HEATER PREPARATION, SET-UP, AND PRE-START PROCEDURES

GENERAL

This Work Package details the Water Heater preparation, set-up, and pre-start procedures of the G2 Series Decontamination Water Heater. It also covers information pertaining to ventilation options, power cord connections, extension cords, burner fuel tank, water supply, pressure relief valve, thermostatic stop and check valves and mixing valve.

WATER HEATER PREPARATION

SET-UP

DANGER

Risk of Explosion or Fire

Do not place Water Heater in an area where flammable gas vapors may be present. A spark could cause an explosion or fire.

- 1. Do Not use this unit in an area:
 - a) With insufficient ventilation.
 - b) Where there is a combustible ceiling unless suitable exhaust stack is installed.
 - c) Where there is evidence of oil or fuel leaks.
 - d) Where flammable gas vapors may be present.

2. Ensure to engage the wheel brake to prevent the water heater from moving while operating.

3. Allow sufficient clearances of no less than four feet around the water heater for accessibility.

4. **Do Not** allow the water heater to be exposed to rain, snow, or freezing temperatures. If any part of the unit becomes frozen, excessive pressure may build up in the water heater which could cause it to burst resulting in possible serious injury to the operator or bystanders.

VENTILATION INSTRUCTIONS – OPTIONAL STACK ADAPTER

WARNING

Risk of Asphyxiation

Use this Water Heater <u>ONLY</u> in well ventilated areas. The exhaust contains carbon monoxide, a poisonous, odorless, and invisible gas. Breathing this gas can cause serious injury, illness and possible death.

Installation of this unit in an indoor or enclosed environment should be performed by a qualified HVAC technician. Additionally, venting must conform to all local, state, and federal codes. Refer to NFPA 31 and CAN/CSA B139-M91, where applicable.

Exhaust gases <u>must not</u> be vented into a wall, ceiling, or a concealed space of a building.

An 8" (inch) flue pipe must be used to match the size of the stack adapter accessory. The flue pipe should be kept as short as possible and be installed so that it has a continuous rise to the chimney. Elbows <u>must</u> be kept to an absolute minimum to maintain the forced air draft in the system and ensure good burn quality.

VENTILATION INSTRUCTIONS (CONT)

If the unit is being installed in an enclosed room, an adequate air supply <u>must</u> be provided to the burner by installing openings near the floor. These openings should be at least one square inch per 1000 BTU input of the machine. Also, a ventilation opening <u>must</u> be installed near the ceiling. This opening should be at least the same size as the supply opening near the floor. Refer to NFPA 31 and CAN/CSA B139-M91, where applicable.

If the burner is located in a tightly constructed building where there is inadequate outside air infiltration, outside combustion air <u>must</u> be supplied by some other means. One method to accomplish this is through a permanent opening(s) must not be less than one square inch per 5,000 BTU input. All appliances <u>must</u> be taken into consideration. Refer to NFPA 31 and CAN/CSA B139-M91, where applicable.

POWER CORD CONNECTION

WARNING

Risk of Electrocution

This unit must be connected to a properly grounded outlet. DO NOT USE an adapter or remove the third grounding prong.

- 1. Make certain the power switch is in the OFF position.
- 2. Ensure the electrical supply is a minimum of 15 amp / 110V.

3. GROUNDING INSTRUCTIONS:

a) This unit <u>must be</u> grounded. If it should malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This unit is equipped with a cord having an equipment-grounding conductor. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.

4. DANGER:

b) Improper connection of the equipment-grounding conductor can result in a risk of electrocution. Check with a qualified electrician or Reeves EMS, if you are in doubt as to whether the outlet is properly grounded. Do not modify the plug, if it will not fit the outlet; have a proper outlet installed by a qualified electrician. Do not use any type of adapter with this unit.

5. GROUND FAULT CIRCUIT INTERRUPTER PROTECTION (GFCI):

- c) SINGLE PHASE if this water heater is provided with a Ground Fault Circuit Interrupter (GFCI) built into the plug or power supply cord, test the GFCI each time it is plugged into an outlet according to the instructions on the GFCI. **Do not** use the water heater if the test fails. The GFCI provides additional protection from the risk of electrical shock. Should replacement of the plug or power cord become necessary, use only identical replacement parts that include GFCI protection?
- d) If this water heater is **not** provided with a GFCI, this water heater should only be connected to a receptacle that is protected by a GFCI to comply with the National Electric Code (NFPA 70) and to provide additional protection from the risk of electric shock.

POWER CORD CONNECTION (CONT)

6. EXTENSION CORDS:

- e) USING EXTENSION CORDS IS NOT RECOMMENDED. If an extension cord must be used, it must be plugged into a GFCI found in circuit boxes or protected receptacles. When using an extension cord, consult a qualified electrician to determine the proper wire gauge needed for the length of the extension cord.
- f) SINGLE PHASE use only three wire extension cords that have three prong grounding type plugs and three pole cord connectors that accept the plug from the water heater.
- g) THREE PHASE use only four wire extension cords that have four prong grounding type plugs and four pole cord connectors that accept the plug from the water heater.

NOTE

If the use of an extension cord is a must, only use extension cords that are intended for outdoor use. These extension cords are identified by a marking "Acceptable for use with Outdoor Appliances". Use only extension cords having an electrical rating not less than the rating of the water heater. <u>Do Not Use Damaged Extension Cords.</u> Examine extension cord before using and replace if damaged. Do not abuse extension cords and do not pull on any cord to disconnect. Always connect or disconnect the extension cord from the receptacle before connecting or disconnecting the unit from the extension cord.

- 7. Ensure the area between the water heater power cord and outlet is kept dry.
- 8. Insert the male plug into a grounded AC outlet. DO NOT use an adapter or remove the grounding plug.

BURNER FUEL TANK

DANGER

Risk of Fire

DO NOT smoke while fueling. **DO NOT** fill the fuel tank while water heater is running or hot. Allow water heater a minimum of five minutes to cool before refueling. **DO NOT** fill fuel tank to point of overflowing.

- 1. Before fueling, review the following "Risks of Fire:
 - a) **Always** operate water heater in a well ventilated area free of flammable vapors, gases, or other combustible materials.
 - b) **Do Not** store the water heater near an open flame or any equipment such as stoves, furnace, water heater, etc., which utilizes a pilot light or sparking device
 - c) **Do Not** smoke while filling burner fuel tank.
 - d) **Never** fill the burner fuel tank while the water heater is operating or hot. <u>Always</u> allow to cool five minutes before refueling.
 - e) **Do Not** refuel in a poorly ventilated area.
 - f) Always refuel slowly to avoid the possibility of spilled fuel which may cause a risk of fire.
- 2. Locate all the Safety Decals on your water heater and heed their warnings.
- 3. Fill the burner fuel tank with good quality, clean No. 1 or No. 2 fuel oil / diesel or kerosene. Do Not Use Gasoline.

WATER SUPPLY

NOTE

Always flush water source and water supply hose before attaching supply hose to the water source inlet of the water heater.

1. This system accepts water supply from commercial buildings, standard hydrant, or truck with adequate pressure and flow. The hose should be a quality grade of fire hose with 1 ½ inch NHT.

- 2. Connect one end of the water supply hose to the pressurized water source.
- 3. Flush water source and supply hose.
- 4. Connect the other end of the hose to the water source inlet on the water heater.
- 3. Follow the incoming water requirements listed below:
 - a) Water pressure <u>must</u> be between a minimum of 60 pounds per square inch (PSI) and a maximum of 125 PSI.
 - b) Incoming water temperature <u>must</u> not exceed 110 degrees F.

4. **Never** allow the water heater to operate without the incoming water supply hose attached and the pressurized water source turned on.

PRESSURE RELIEF VALVE

A "Pressure Relief Valve" has been added to this unit to protect the coil and components. This valve will open and release water if the water pressure in the heater exceeds 150 PSI.

To ensure the water temperature does not exceed acceptable levels, never allow the water heater to operate with the temperature control valve turned off more than five minutes.

TEMPERATURE CONTROL VALVE

The temperature control valve is carefully assembled, tested at the factory, and set to deliver water at any temperature between full cold and 110°F. Failure of the cold water supply will cause the hot water seat to close. The label on the valve is marked "Hot-Cold', so that the handle can be set accordingly. When the unit is not being used, turn the handle towards the Cold position fully to shut off all flow.

THERMOSTATIC STOP AND CHECK VALVES

At each inlet of the temperature control valve, there is a screwdriver operated check valve. Both the cold and hot water stop and check valves must be open at all times for proper function of the valve. These stops are checked and opened fully before the unit is shipped.

PRE-START INSPECTION PROCEDURES

Before starting the water heater, perform the following procedures:

1. Inspect the electrical cords for damages. If cord is damaged, <u>DO NOT USE CORD</u>. Replace cord before starting water heater.

2. Check all hose connections to ensure they are securely tightened.

3. Inspect the system for water leaks and fuel leaks. If fuel leak is detected, **DO NOT START THE UNIT**. Be sure that all damaged parts are replaced and that the mechanical problems are corrected prior to operation of the unit. If you require service, contact Reeves EMS (see WP 0001 for contact information).

END OF TASK

GENERAL

This Work Package details the procedures for Flushing the System before start-up procedures of the G2 Series Decontamination Water Heater.

FLUSHING THE SYSTEM

To ensure minimal problems and optimal performance of the G2 Series Decontamination Water Heater, please read this manual carefully and follow all procedures. Failure to observe these procedures could result in serious injury or water heater damages.

CAUTION

Risk of Water Heater Damage

Be certain that the discharge hoses are not connected to the water heater while flushing the system. Flushing allows minerals deposits to be released which would obstruct or damage the hoses.

This unit has a steel coil which, after setting, will cause the water remaining in the coil from the previous usage to turn brown or black. This water **must be** flushed from the system before start-up. This procedure should be performed **without** any of the discharge hoses attached.

- 1. Connect the supply hose to water supply source.
- 2. Turn water supply source ON and flush the supply hose then turn water OFF.
- 3. Connect other end of supply hose to the water heaters' water source inlet.
- 4. Turn the water supply source ON.

5. Turn the temperature control valve counter clockwise (CCW) until water begins to flow. This allows the unit to flush any particles from the system. The unit is flushed when the water is clear.

- 6. Once the system has been flushed, turn the temperature control valve clockwise (CW) to stop the water flow.
- 7. Connect the discharge hoses to the water heater outlets.

END OF TASK
OPERATOR INSTRUCTIONS G2 SERIES DECONTAMINATION WATER HEATER G2 SERIES START-UP PROCEDURES

GENERAL

The following WP details the start-up, hot water operation and solution injector operation (G2-I and G2S-I Water Heater Only) procedures of the G2 Series Decontamination Water Heater.

WARNING

INCORRECT OPERATION OF THIS WATER HEATER COULD RESULT IN SERIOUS INJURY AND ORDAMAGETO THE EQUIPMENT. <u>DO NOT</u> ALTER OR MODIFY THIS EQUIPMENT IN ANY MANNER.

START-UP PROCEDURES

NOTE

Ensure the injector bypass lever (G2-I and G2S-I Water Heater Only) is in the OFF position.

1. Locate safety decals on the water heater and <u>heed</u> their warnings.

2. Fill the burner fuel tank with #1 or #2 fuel oil, diesel or kerosene.

3. Connect the power supply GFCI power cord into an 110V power supply, ensuring the outlet matches the plug on the power cord.

NOTE

Prior to connecting the water supply source hose, ensure hose has been flushed in accordance with WP 0006.

4. Connect the water supply hose to water source inlet of the water heater.

NOTE

Flush coil prior to connecting discharge hoses

5. Connect fresh water discharge hose (Black) and Decon solution discharge hose (Red) (G2-I and G2S-I Water Heater Only) or another black hose(s) to the corresponding water discharges on the unit.

6. Connect the "male" end of the hose to the shower system (G2-I or G2S-I water Heater).

7. Turn the temperature control valve knob clockwise (CW), to the OFF position.

8. Open the water supply completely to charge the water heater.

9. Open the temperature control valve knob, counter-clockwise (CCW), until water begins to flow from the shower heads (G2-I or G2S-I water Heater).

10. Allow the water to flow until all air is released from the system.

11. Once the system is in full flow, turn the power ON/OFF switch to the ON position.

END OF TASK

HOT WATER OPERATION PROCEDURES

NOTE

All water heaters have a built-in Anti-Scald Protection device factory pre-set at 110°F.

Once the unit has started, perform the following procedures with the temperature control valve open **but**, <u>in the cold</u> <u>position</u>.

1. Inspect the system for any water, oil or fuel leaks. If a leak is noted, <u>**Turn the Unit OFF Immediately</u>**. Be sure that all damaged parts are replaced and that all mechanical problems have been corrected prior to proceeding.</u>

2. Inspect discharge hoses for kinking, cuts and leaks. If a cut or leak has been detected, <u>**Turn the Unit OFF**</u> <u>**Immediately.**</u> Replace damaged hose and ensure all mechanical problems have been corrected prior to proceeding.

NOTE

After initial start-up, water will begin to heat in approximately 20 seconds and will reach maximum temperature in approximately 2-1/2 minutes. During the initial temperature setting, move the temperature control valve knob in a counter-clockwise (CCW) direction very slowly, allowing time for the temperature gauge to register the accurate temperature.

3. If no problems or issues were noted, turn the temperature control valve knob counter-clockwise (CCW) to the desired temperature.

END OF TASK

NOTE

The entire water line down stream from the injector will have chemical solution injected into it. If the chemical solution injected makes the water unsafe to drink, label the water line.

IMPORTANT

Avoid a potentially hazardous chemical accident: An injector location should be selected to provide a safe, but accessible, place for the chemical solution tank. It should be kept away from high usage areas and meets all applicable local codes.

IMPORTANT

Avoid solution contamination: Use only clean FILTERED water. Do not allow contaminates to enter the Decon solution tank because they will be pumped into the water line, and can cause the spread of disease and can also cause excessive wear.

NOTE

You may use any size Decon solution tank, but it is recommended using one with a lid or cover.

1. Fill the tank with a Decon solution.

2. Connect or immerse the injector solution hose and filter into the Decon solution tank at least two inches from the bottom of the tank.

3. Ensure to cover injector solution hose and filter with at least two inches of Decon solution.

4. Follow the start-up procedures in the beginning of this WP. Turn the water heater power ON/OFF switch to the ON position and begin flowing heated water to the sinks, spray wands or showerheads.

5. Once the water heater is running and the solution has been filled, place the bypass lever (on top of the injector assembly) to the ON position to activate the injector. (See Figure 1)

NOTE

When solution is flowing through the injector, a "clicking" sound will be heard. The higher the flow rate the more frequent the clicking sound will be heard. See Changing the Feed Rate on page 4 of this WP.

6. When the injector is operating, Decon solution will be drawn from the Decon solution tank and a "clicking" sound will be heard.

7. When finished using the Decon solution, siphon clean water through the system to flush the Decon solution.

8. When finished flushing the injector system, place the bypass lever into the OFF position.

DECON SOLUTION INJECTOR OPERATION (CONT)

CHANGING FEED RATE

The feed rate on the injector is adjustable, even while operating and under pressure. Rotate the Ratio Adjustment Sleeve, clockwise (CW) to decrease and counter-clockwise (CCW) to increase (see Figure 1), to change the Decon solution ratio. The setting indicator mark indicates the approximate ratio of injection setting. Check the Decon discharge outlet to assure desired feed rate is being delivered.

NOTE

Do not rotate the Ratio Adjustment Sleeve below the lowest setting line on decal. This can cause the injector to lock.



Figure 1. Ratio Adjustment Sleeve and Bypass Lever.

END OF TASK

OPERATOR INSTRUCTIONS G2 SERIES DECONTAMINATION WATER HEATER SHUTDOWN PROCEDURES

GENERAL

This Work Package details the shutdown procedures for the G2 Series Decontamination Water Heater.

SHUTDOWN PROCEDURES

To ensure minimal problems, read this manual carefully and follow all procedures. Failure to observe these procedures could result in serious injury or water heater damages.

DANGER

Risk of Injection Causing severe Injury

To prevent accidental high pressure discharge, <u>Do Not</u> leave the unit unattended until system has cooled and the temperature control valve is in the OFF position

NOTE

Insufficient cool down period of complete system will cause excessive wear and strain on the system.

1. Turn the power ON / OFF switch to the OFF position. Run cold water through the system for 3-5 minutes to cool the heat exchanger and components.

2. While the water heater is cooling, empty the Decon solution tank (G2-I or G2S-I Only); clean and refill with clean water. On G2 and G2S model water heaters, proceed to step 5.

3. Submerse injection hose pickup, turn the injector bypass lever to the "ON" position, and allow clean water to flush the injector and Decon solution line of supply.

4. After flushing the system is complete, turn the injector bypass lever to the OFF position.

5. Turn the water source supply OFF. Disconnect water source supply hose from the water heater and drain the system before storage.

NOTE

Injector must be in the OFF position before purging the system with air to avoid an "air lock" in the piston housing.

6. Attach the supplied tethered blowout cap to the water source intake of the water heater. Purge the entire system of remaining water with compressed air with all showerheads or sink valves opened.

7. Carefully unscrew injector inlet filter housing (G2-I or G2S-I Only), drain housing and rinse both the housing and filter thoroughly.

8. Disconnect all discharged hoses and cap all openings.

9. Store all hoses and electrical cords in their proper locations.

10. Wipe the water heater clean and if necessary, winterize the water heater.

END OF TASK

CHAPTER 3

OPERATOR TROUBLESHOOTING FOR

REEVES

G2 SERIES

DECONTAMINATION WATER HEATER

OPERATOR TROUBLESHOOTING PROCEDURES G2 SERIES DECONTAMINATION WATER HEATER OPERATOR TROUBLESHOOTING INDEX

GENERAL

This WP contains a troubleshooting index of conditions/indications that may develop during operation or maintenance. The troubleshooting index identifies the condition/indication, followed by a column that identifies the work package and page(s) where troubleshooting procedures(s) may be found. These inspections and corrective actions should be performed in the order listed. The index is provided to assist in the quick location of a problem. The manual cannot list all condition/indications that may occur. If a condition or indication is encountered that is not listed or cannot be corrected by the corrective actions provided, contact Reeves EMS.

TROUBLESHOOTING INDEX

The most important step in troubleshooting is recognizing the conditions/indications and combination of conditions/indications. Use the corrective action for a given condition/ indication in the order listed. If the first repair attempt is unsuccessful, proceed to the next recommended corrective action to resolve the problem. If a fault is encountered that is not listed or that cannot be corrected by the corrective actions provided, contact Reeves EMS.

WARNING

To reduce the risk of electrocution, keep all connections dry and off the ground. Use caution when connecting and disconnecting any electrical connection to prevent injury to personnel and damage to equipment.

WARNING

To reduce the risk of explosion or fire, do not fill fuel tank while the unit is running or hot. Always store fuel away from the unit while the water heater is operating or hot.

WARNING

Incorrect operation of this water heater could result in serious injury and or damage to the equipment. DO NOT alter or modify this water heater in any manner.

ITEM	CONDITION/ INDICATION	WP
	MECHANICAL	
	BURNER	
1	Burner Motor will not operate	WP 0010-2
2	Burner will not ignite	WP 0010-2
3	Burner Motor will not run	WP 0010-3
4	Burner runs erratically	WP 0010-3
5	Burner runs, but will not heat	WP 0010-4
6	Burner discharges white smoke	WP 0010-4
7	Burner discharges black smoke	WP 0010-5
8	No discharge at showerheads	WP 0010-5
9	Low or fluctuating pressure	WP 0010-5
10	Water is leaking from under heater or from the	WP 0010-5
	Pressure Relief Valve	
11	Fuel leaking from Water Heater	WP 0010-6
12	No Hot Water	WP 0010-6
	INJECTOR ASSY (G2-I and G2S-I Only)	
13	No Clicking Sound	WP 0010-8
14	Clicking Sound without Suction of Decon	WP 0010-8
	Solution	
15	Decon Solution Tank	WP 0010-8
16	Decon Solution will not siphon	WP 0010-8

Table 1. Operator Troubleshooting Index

OPERATOR TROUBLESHOOTING PROCEDURES G2 SERIES DECONTAMINATION WATER HEATER MECHANICAL TROUBLESHOOTING PROCEDURES

INITIAL SETUP:

References WP 000X

TROUBLESHOOTING PROCEDURES

This work package contains general information for troubleshooting the G2 Series Decontamination Water Heater by qualified personnel. A qualified person is one who is familiar with this manual, the operation of the G2 Decontamination Water Heater and the hazards involved in its operation and maintenance. The work package provides a systematic approach to locating and correcting malfunction of the G2 Series Decontamination Water Heater. Each section is arranged according to the condition/indication of a problem. The corrective action items have been arranged in order of complexity, with the simpler actions listed first. Note that troubleshooting causes and actions beyond the scope of operator level qualified personnel are not included in the WP. If a course of action does not present itself, contact Reeves EMS.

The most important step of troubleshooting is to gather as much first-hand information as possible from the personnel who were present when the problem or failure occurred. Information as to how long the G2 Series Decontamination Water Heater has been operating, what systems were connected, whether any protective equipment or devices functioned, etc., can also help isolate a problem. Note that if in any doubt about how to proceed, contact Reeves EMS before taking action.

WARNING

Tools, equipment, clothing and your body must be kept clear of all electrical connections, while power is applied to the system

Voltage sources, in addition to being an electrical shock hazard, may also potentially produce serious burns. Care should be exercised when using hand tools around exposed power connectors. Never let tools bridge two terminals.

If the circuit breaker does not stay in the ON position when energized, DO NOT attempt to energize repeatedly. This could cause damage to the surge protector or other components. Instead, investigate and identify the cause of the problem. Correct the situation before attempting to energize breaker again.

To avoid electrical shock and damage to the equipment, ensure the power cord is disconnected at the power source before removing or replacing any items.

ITEM	CONDITION/INDICATION	POSSIBLE MALFUNCTION	CORRECTIVE ACTION
1.	Burner Motor will not operate.	Heater switch is not in "ON" position.	Check the switch position.
		No Voltage to unit	Check power source.
			Determine if voltage supply and path through all electrical components of unit is correct
		Motor Overload Tripped.	Manually reset when motor cools.
			Check voltage supply and amp draw of motor.
		Fuel Pump Seized.	Allow motor to cool. Replace fuel pump assembly.
			Check condition and quality of fuel; if contaminated, drain and replace.
			Replace fuel filter and service burner.
2.	Burner will not ignite.	Power switch is not in the "ON" position.	Turn to "ON" position.
		Defective switch	Remove and replace switch.
		Out of fuel.	Refuel.
		Temperature is above normal operating temperature	Unit will automatically reignite after some cool down time.
		Flexible fuel pump coupler between pump and burner	Check condition and freeness of fuel pump operation.
		motor is broken.	Remove and replace flexible coupler.
		Fuel pump sucking air.	Tighten all fuel intake connections. Eliminate any leaks in intake lines.
		Fuel pump inoperative.	Check for proper output pressure.
			(Note: Output pressure should be checked by an authorized service technician)
			Replace fuel pump assembly as necessary.

Table 1. Operator Troubleshooting – Mechanical.

ITEM	CONDITION/INDICATION	POSSIBLE MALFUNCTION	CORRECTIVE ACTION
2.	Burner will not ignite	Dirty or clogged fuel nozzles.	Remove and replace with new nozzle.
(Cont)	(Cont)		Check fuel filter and fuel quality. Drain and clean entire fuel system, if required.
		Improper burner air adjustment.	Adjust accordingly to the procedures listed in Maintenance every 3 months.
		Electronic Ignition failure	Remove and replace electronic ignition.
		Ignition electrodes not set properly, damaged or worn.	Replace or adjust accordingly to the procedures listed in Maintenance
		Flow switch not completing	Check for proper flow through heater.
		fuel solenoid circuit.	Remove and replace flow switch if necessary
			Contact REEVES EMS.
3.	Burner motor will not run.	Power switch is not in the "ON" position.	Turn to "ON" position.
		Defective switch	Remove and replace switch.
		Out of fuel.	Refuel.
		Temperature is above normal operating temperature	Unit will automatically reignite after some cool down time.
4.	Burner runs erratically.	Low on fuel.	Refuel.
		Contaminated fuel supply and system.	Service entire fuel system.
		Contaminated fuel filter.	Remove and replace fuel filter.
		Dirty fuel nozzles.	Replace.
		Improper air adjustment setting.	Adjust accordingly to the procedures listed in Maintenance every 3 months.
		Fuel Pump malfunctioning.	Check output pressure.
			Remove and replace fuel pump if necessary.

Table 1.	Operator	Troubleshooting -	Mechanical	(Cont).
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ITEM	CONDITION/INDICATION	POSSIBLE MALFUNCTION	CORRECTIVE ACTION
5.	Burner runs, but will not	Poor or improper fuel supply	Check fuel type and quality.
	heat.		Drain and clean fuel tank and system if necessary.
		Low Fuel Pump pressure.	Check fuel pump pressure, adjust to proper specifications.
			Remove and replace fuel pump if necessary.
			Contact REEVES EMS.
		Dirty fuel nozzle.	Remove and replace fuel nozzle if necessary.
		Improper air adjustment setting.	Adjust accordingly to the procedures listed in Maintenance every 3 months.
		Scale buildup in heat exchanger coil.	Contact REEVES EMC for de-scaling procedures.
		Low Fuel Pump pressure.	Check fuel pump pressure, adjust to proper specifications.
			Remove and replace fuel pump if necessary.
			Contact REEVES EMS.
6.	Burner discharges white	Low fuel.	Refill with fuel.
	smoke.	Cold combustion chamber.	Run burner for several minutes. If condition does not improve proceed with next step.
		Dirty fuel nozzle.	Remove and replace fuel nozzle.
		Improper air adjustment setting.	Adjust accordingly to the procedures listed in Maintenance every 3 months.

Table 1. Operator Troubleshooting – Mechanical (Cont).

ITEM	CONDITION/INDICATION	POSSIBLE MALFUNCTION	CORRECTIVE ACTION
7.	Burner discharges black smoke.	Insufficient or improper air supply or adjustment.	Adjust accordingly to the procedures listed in Maintenance every 3 months.
		Fuel nozzle orifice is too large.	Replace with correct nozzle.
		Fuel pressure is too high.	Check fuel pump discharge pressure.
			Contact REEVES EMS.
		Combustion chamber loaded or restricted with unburned	Entire burner and fuel system needs cleaning and servicing.
		tuel and / or soot.	Contact REEVES EMS.
8.	No discharge at showerheads.	Inadequate water supply.	Ensure hose is 1 ½" dia. and incoming water supply is turned on.
9.	Low or fluctuating pressure.	Water inlet hose is kinked.	Remove kink.
10.	Water is leaking from under heater or from the	Check all plumbing connections.	Tighten or repair as necessary.
	Pressure Relief Valve. Restriction of water flow	Remove or repair restriction.	
		through heater, which causes over pressurization.	Check quality of incoming water supply.
			Remove and inspect inlet screen for blockage.
		Check for scale buildup in heat exchanger coil.	Contact REEVES EMS for de-scaling procedures.
		Water inlet pressure is too high.	Incoming water pressure can not exceed 125 PSI.
		Water output temperature is too high. Excessive heat can cause over pressure situation	Check temperature control or setting.
		Defective pressure relief	Replace pressure relief valve.
		valve of valve being left open.	(NOTE: NEVER run heater without the Pressure Relief Valve – may cause an explosion).

Table 1.	Operator	Troubleshooting -	Mechanical	(Cont).
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ITEM	CONDITION/INDICATION	POSSIBLE MALFUNCTION	CORRECTIVE ACTION
11.	Fuel leaking from unit.	Check fuel tank cap.	Tighten fuel tank cap.
		Fuel tank is over filled.	Drain excessive fuel from tank.
		Check all fuel lines, fuel pump and filter connections.	Tighten as required
		Check if fuel is leaking from burner, coil housing or	Stop heater immediately and disconnect power supply.
		chamber.	Service burner system
		Excess fuel is leaking from	Contact REEVES EMS
		burner chamber	(NOTE: See Burner Will Not Ignite section, Item #2 of this table).
12.	No Hot Water.	No heat or flame.	Check for proper fuel in fuel tank
			Remove and replace fuel filter
			Ensure the burner switch is in the ON position.
			Ensure there is adequate flow.
			 Check to see if blower motor is turning: A) Reset thermal overload on burner motor. B) Check for obstruction in the squirrel cage. C) Check the fuel bypass return line for obstructions. D) Check the fuel pump for binding
			 Check for spark across the electrodes: A) Remove target assembly from top of burner. B) Using a mirror, inspect for spark across electrodes. C) If no spark, check for voltage to ignition transformer (110V unit = 110VAC)

Table 1. Operator Troubleshooting – Mechanical (Cont).

ITEM	CONDITION/INDICATION	POSSIBLE MALFUNCTION	CORRECTIVE ACTION
12. (Cont)	No Hot Water.	No heat or flame.	 Inspect transformer for proper operation: A) 10,000VAC – spring to spring or ³⁄₄" spark – spring to spring. B) 5,000VAC – spring to spring or ¹⁄₂" spark – spring to chassis. C) Check electrodes for cracked ceramic insulators. D) Set gap of electrodes according to electrode chart.
			 Check for voltage at the solenoid coil, with Burner switch on: A) 120VAC = use orange and white wires. B) 240VAC = use red and white wires C) If voltage is present, check for magnetic flux generated from the coil.
			 D) If the voltage to the coil and a magnetic flux is present, inspect or replace the fuel nozzle or solenoid. (NOTE: Not recommended to clean the fuel nozzles). E) If voltage is not present, perform the following checks: Flow Switch – disconnect wires and check for continuity across switch Sufficient flow passing thru coil = 0 Ohms. Flow stopped = infinite Ohms
			 (NOTE: If the same reading exists regardless of flow thru coil, then the flow switch is considered defective). 2. High Limit Switch – disconnect wires and check for continuity across switch. a) If continuity exists, the switch is considered good. 3. Burner Switch – check voltage across the burner switch: a) Check voltage before the switch; if no voltage check supply. b) Check voltage after switch; if no voltage, replace switch.

Table 1.	Operator	Troubleshooting -	Mechanical	(Cont).
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ITEM	CONDITION/INDICATION	POSSIBLE MALFUNCTION	CORRECTIVE ACTION
12. (Cont)	No Hot Water.	No heat or flame.	 Check the fuel pump. A) Inspect the fuel pump coupler for wear (should have 1/8" end play). B) Open the bleeder valve: If fuel flows freely, fuel pump may not be turning at correct RPM or fuel pump may be defective. If low or no fuel present from bleeder valve, check for vacuum leaks between the fuel pump and the fuel tank. Reset fuel pressure to 140 PSI. Contact Reeves EMS
	Injector Assy (G2-I and G2S-I Only).		
13.	No Clicking Sound when bypass lever is in the ON position.	Water flow rate exceeds rated service flow of injector. Operating pressure exceeds maximum limit.	Reduce flow rate. Install a pressure reducer valve.
14.	Clicking Sound without Suction of Decon Solution.	Suction tube or suction tube fitting cracked and leaking. Clogged Suction Tube Filter. Check valve leaking.	Replace as required. Replace and / or clean as required. Clean and replace as required.
15.	Decon Solution Tank.	Check Valve Leaking.	Check seat area on suction tube fitting. Check valve and seal must fit loose in the suction tube fitting.
16.	Decon solution will not siphon.	Solution pickup is not completely submerged. Solution strainer obstructed. Solution hose is cut	Check and submerge if necessary. Inspect, clean and or replace.
		obstructed or kinked. Bypass lever is OFF.	Turn bypass lever to the ON position.

Table 1.	Operator	Troubleshooting -	Mechanical	(Cont).
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END OF TASK

END OF WORK PACKAGE

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CHAPTER 4

OPERATOR MAINTENANCE INSTRUCTIONS FOR

REEVES

G2 SERIES

DECONTAMINATION WATER HEATER

OPERATOR MAINTENANCE PROCEDURES G2 DECONTAMINATION WATER HEATER SERVICE UPON RECEIPT

INITIAL SETUP:

Personnel Required: One References WP 0005, WP 0006, WP 0007, WP 0008

GENERAL

The following procedures are required to be performed by the operator in order to prepare the G2 Series Decontamination Water Heater and its contents for use.

SITE SELECTION

To ensure minimal problems with set-up of the G2 Series Decontamination Water Heater and good operation of equipment being used in conjunction with it, ensure area is:

Dry and environmentally controlled

POWER REQUIREMENTS

The G2 Series Decontamination Water Heater requires an electrical supply of 110V, 15A grounded power supply to operate.

SERVICE UPON RECEIPT

Inspect each Water Heater for damage incurred during shipment. If any damage is visible, notify supervisor. Report the damage on SF361, 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.

Refer to PMCS before placing the Water Heater in service.

INSTALLATION INSTRUCTIONS

To set up the G2 Decontamination Water Heater refer to WP 0005 of this TM for setup and pre-start procedures.

PRELIMINARY SERVICING OF EQUIPMENT

WARNING

Do not apply power to the water heater if it is not properly grounded to the power source. Electrical shock can cause personnel injury or death and may result in damage to equipment.

The G2 Decontamination Water Heater does require before operation service. Daily and monthly checks are addressed in the PMCS tables located in WP 0013 of this TM.

OPERATOR MAINTENANCE INSTRUCTIONS G2 SERIES DECONTAMINATION WATER HEATER PMCS INTRODUCTION

GENERAL

This Work Package provides data necessary to keep the G2 Series Decontamination Water Heater operational ready. PMCS are performed to keep the equipment in operational condition. The checks are used to find, correct, and report problems. Personnel trained on the equipment are required to perform the tasks as indicated in Operator PMCS (WP 0013), Table 1. PMCS are performed by the operator each time the equipment is operated.

WARNINGS AND CAUTIONS

Special attention should be paid to the WARNINGS and CAUTIONS appearing in the operator PMCS table. A WARNING means someone could be injured. A CAUTION means equipment could be damaged.

EXPLANATION OF TABLE ENTRIES

Item Number – Numbers in this column are for reference. When completing DA Form 2404/ DA Form 5988E (Equipment Inspection and Maintenance Worksheet), include the item number for the check/service indicating a fault. Item numbers appear in the order in which the checks/services are performed for the interval listed.

Interval – This column indicates when a procedure must be performed (i.e., Before, Daily, or Monthly).

Item to Be Checked or Serviced - This Column identifies the item that is to be checked or serviced.

Procedure – This column describes the procedure that must be followed to ensure that the equipment is capable of performing its intended mission.

Equipment Not Ready/Available If – This column lists conditions that makes the G2 Series Decontamination Water Heater not fully mission capable. If the problem can be fixed using the troubleshooting procedures and/or maintenance procedures in this manual, do so. If not, document the items not able to be fixed on DA Form 2404/DA Form 5988E for operator maintenance. For further information on how to use this form, see DA PAM 750-8. Be sure to observe and annotate all special circumstances that appear/occur.

NOTE

Perform daily as well as before PMCS if you are the assigned operator but have not operated the equipment since the last weekly inspection, or if you are operating the equipment for the first time.

If the equipment must be kept in continuous operation, only perform those procedures that will not disturb operation. Complete checks and services when the equipment is shut down.

OPERATOR MAINTENANCE INSTRUCTIONS G2 SERIES DECONTAMINATION WATER HEATER SERVICE – PMCS

INITIAL SETUP:

References

WP 0005, WP 0006, WP 0007, WP 0008

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
1	BEFORE	POWER CORD Inspect Electrical Cord	Check entire length of extension cord for cuts, gashes, or physical damage.	If damage is noted, replace cord before operating the water
		Test GFCI	Test the GFCI in accordance with to the specific GFCI.	If testing fails, replace electrical cord.
2	BEFORE	GAUGES Temperature Gauge	1. Check for serviceability.	If unserviceable, replace temperature gauge.
			2. Verify if gauge operate properly.	Contact Reeves EMS for replacement gauge.
		Pressure Gauge	1. Check for serviceability.	If unserviceable, replace pressure gauge.
			2. Verify if gauge operate properly.	Contact Reeves EMS for replacement gauge.
3	BEFORE	FUEL TANK Fuel Level	Check for proper fuel level.	If fuel is low, fill tank according to manufacturer recommendations.

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ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
4	BEFORE	LEAKS Fuel Leak Inspection	Visually inspect for fuel leaks. Tighten if necessary.	If a fuel leak is detected, shutdown water heater immediately. Ensure all damaged parts are replaced and all mechanical problems are corrected before restarting.
		Water Leak Inspection	Visually inspect for water leaks. Tighten if necessary.	Contact Reeves EMS for additional assistance. If water leak is detected, promptly eliminate any leaks by applying thread sealant to the threads and reinstall or by removing and replacing suspected parts.
		Hose Inspection	Visually inspect hoses for kinks, cuts, or leaks.	Contact Reeves EMS for additional assistance. If damaged or leak is detected, replace hose or tighten if necessary before restarting water heater. Contact Reeves EMS for additional assistance.

Table 1. Operator Preventive Maintenance Checks and Service (Cont).

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
		INJECTOR ASSY (G2-I AND G2S-I Only)		
5	BEFORE	Injector Inlet Filter	Visually inspect filter for cleanliness and foreign objects	If filter is dirty, and or clogged. Clean or replace filter
6	BEFORE	Suction Tube Filter Screen	Visually inspect filter screen for cleanliness.	If filter screen is dirty and or clogged. Clean or replace filter screen.
7	BEFORE	Decon Solution Tank	 Visually inspect exterior surface for cracks and or leaks. 	If solution tank exterior is cracked and or leaking solution. Replace tank.
			 Visually inspect quick disconnect for damage and or O-ring for leaks. 	If quick disconnect is damaged or O- ring is worn and or cut. Replace quick disconnect or O- ring.
			3. Visually check Decon solution level.	If level is low, refill.
8	BEFORE	Injector Assembly	Visually inspect exterior for damage and or leaks.	If exterior is damaged and or leaking. Replace assembly.
9	3 MONTH (TO INCLUDE ALL BEFORE ITEMS)	BURNER Burner Air Adjustment	Visually inspect for excessive soot buildup.	If excessive soot buildup is detected. Burner requires service by authorized service technician. Contact Reeves EMS.

Table 1.	Operator Preventive	Maintenance C	Checks and Service	(Cont).
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Table 1.	Operator Preventive	Maintenance	Checks and Service	(Cont).
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ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
10	3 MONTH (TO INCLUDE ALL BEFORE ITEMS PLUS THE FOLL OWING)	GAUGES Test fuel pressure gauge	Verify fuel pressure gauge operates properly by authorized service technician.	Contact Reeves EMS for service.
	TOLLOWING	Test water temperature gauge	Verify water temperature gauge operates properly by authorized service technician.	Contact Reeves EMS for service.
11	6 MONTH (TO INCLUDE ALL BEFORE AND 3 MONTH ITEMS PLUS THE FOLLOWING)	FILTER Fuel Filter	Fuel filter replacement required.	Remove and replace fuel filter.
12	12 MONTH (TO INCLUDE ALL BEFORE, 3 AND 6 MONTH ITEMS PLUS THE FOLLOWING)	Test Voltage and Amp Draw	Perform volt meter and amp meter readings by an authorized service technician.	Contact Reeves EMS for service.
	FOLLOWING	Fuel Pump Internal Filter	Inspect fuel pump internal filter by an authorized service technician.	Contact Reeves EMS for service.
		Burner Electrodes	Inspect and adjust proper gap requirement by an authorized service technician.	Contact Reeves EMS for service.
		Fuel Nozzle	Fuel nozzle replacement required.	Contact Reeves EMS for service.
		Fuel Pickup In- line Screen	Inspect and clean fuel pickup in-line screen by an authorized service technician.	Contact Reeves EMS for service.

CAUTION

The items listed in the following table must be performed after each use for the G2-I and G2S-I Decontamination Water Heater ONLY.

Table 2. (Operator	Functional	Services.
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ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
1	AFTER	G2-I / G2S-I ONLY Clean Injector	Rinse injector after each uses.	If Decon solution remains in injector, injector may dry out and damage lower end.
2	AFTER	Clean Suction Tube Filter Screen	Remove filter screen from suction tube and clean by washing in fresh water.	If filter screen is damaged or clogged.
3	AFTER	Clean Decon Solution Tank	Rinse Decon solution tank thoroughly after each use to prevent any contaminates from entering tank	If Decon solution tank becomes contaminated.
4	AFTER	Clean Inlet Filter	Clean or replace inlet filter as required to increase life of water heater.	If inlet filter is dirty and water heater has decreased pressure.

OPERATOR MAINTENANCE INSTRUCTIONS G2 SERIES DECONTAMINATION WATER HEATER G2 / G2-I EQUIPMENT MAINTENANCE PROCEDURES

GENERAL

This work package provides information needed by the Operator when performing the following services to the G2 / G2-I Decontamination Water Heater. They consist of:

- Remove and Replace Burner Motor Assembly Procedures
- Burner Air Adjustment Maintenance Procedures
- Remove and Replace Fuel Pump/Solenoid Procedures
- Remove and Replace Fuel Pump Flexible Coupling Procedures
- Remove and Replace Electronic Igniter Assembly Procedures
- Remove and Replace Fuel Nozzle and Electrode Assembly Procedures
- Remove and Replace Fuel Tank Assembly Procedures
- Remove and Replace Fuel Filter/Water Separator Procedures
- Remove and Replace Decon Solution Tank Strainer (G2-I Water Heater ONLY)
- Injector Maintenance Procedures (G2-I Water Heater ONLY)
- Remove and Replace Power Switch Procedures
- Seasonal Maintenance Procedures

WARNING

Voltage sources, in addition to being an electrical shock hazard, may also potentially produce serious burns. Care should be exercised when using water around exposed power connections. Ensure that all power to the system has been shut off, disconnected and water heater has cooled off before disassembling and cleaning the components of the G2 / G2-I Decontamination Water Heater.

REMOVE AND REPLACE BURNER MOTOR ASSEMBLY PROCEDURES REQUIRE VERIFICATION

INITIAL SETUP:

Tools and Special Tools General Mechanics Tool Kit Splined Wrench or Socket	Personnel Required One	
Materials/Parts	Equipment Condition	
Drain Pan or Bucket	Equipment Powered Down	
Rags	Power Source Disconnected	

REMOVAL OF THE BURNER MOTOR ASSEMBLY:

- 1. Remove the electronic igniter assembly as follows:
 - a. Disconnect the power cord from power supply outlet.
 - b. Using a cross-point screwdriver, remove the bottom (2) screws from the electronic igniter and base plate assembly.
 - c. Using a 5/16" open end wrench or equivalent, remove the top (2) hex head screws from the electronic igniter and base plate assembly.
 - d. Lift the electronic igniter and base plate assembly.
 - e. Loosen and remove (2) wire nuts that secure the blue and white igniter wire to main wire harness.
 - f. Remove the electronic igniter and base plate assembly; set aside.
- 2. Remove the Fuel Pump/Solenoid Assembly as follows:
 - a. Attach drain hose to the fuel water separator bowl drain valve.
 - b. Open drain valve and drain contents into a waste fuel container.
 - c. Using a 9/16" open end wrench, loosen and disconnect fuel in-line at fuel water strainer housing.
 - d. Remove drain hose and retighten drain valve.
 - e. Using a 9/16" open end wrench, loosen and disconnect fuel line at the fuel pump/solenoid assembly.
 - f. Using a 7/16" open end wrench, loosen and disconnect the fuel nozzle tube.
 - g. Disconnect the solenoid electrical harness plug.
 - h. Using a ¹/₂" open end wrench, loosen and remove the fuel pump/solenoid assembly (2) mounting bolts.
 - i. Remove fuel pump/solenoid assembly from burner motor housing.
- 3. Remove the Fuel Nozzle and Electrode Assembly as follows:
 - a. Using a splined wrench or equivalent, loosen and remove splined nut.

NOTE

Index mark the escutcheon plate before removing screw. This index mark will be used during reinstallation.

REMOVAL OF THE BURNER MOTOR ASSEMBLY (CONT):

- b. Using a ¼" open end wrench, loosen and remove escutcheon plate mount screw and escutcheon plate.
- c. Remove the nozzle and electrode assembly from the air tube, being careful not to damage the electrodes or insulators while handling.
- 4. Remove the Burner Motor Assembly as follows:
 - a. Loosen and remove the remaining wire nut; separate all wires.
 - b. Using a 5/16" open end wrench, loosen the ground screw and disconnect the green ground wire.
 - c. Loosen and remove the plastic jam-nut securing the main wire harness to the burner motor assembly; remove main wire harness.
 - d. Using a 9/16" open end wrench, loosen and remove (3) nuts, (3) lock washers and (3) flat washers.
 - e. Carefully, remove burner motor assembly from the combustion chamber.

END OF TASK

INSTALLATION OF THE BURNER MOTOR ASSEMBLY:

- 1. Install Burner Motor Assembly as follows:
 - a. Inspect gasket; if needed remove and replace gasket.
 - b. Carefully, install burner motor assembly into the combustion chamber.
 - c. Center burner motor bracket on mounting studs.
 - d. Install (3) flat washers, (3) lock washers and (3) nuts.
 - e. Using a 9/16" open end wrench, tighten the nuts alternating between the (3) nuts to ensure burner motor is seated evenly.
 - f. Insert the main wire harness through the hole on the burner motor.
 - g. Install and tighten the plastic jam-nut onto the main wire harness.
 - h. Using a 5/16" open end wrench, reconnect the (green) ground wire and tighten the screw.
 - i. Using the following sequence, reconnect the main wire harness: (
 - 1. Black wire #011 main wire harness to black wire oil burner. Twists both wires together; do not install a wire nut at this time.
 - 2. White wire main wire harness to white wire oil burner to white wire solenoid. Twists (3) wires together; do not install a wire nut at this time.
- 2. Install Fuel Nozzle and Electrode Assembly as follows:
 - a. Install the nozzle and electrode assembly into the air tube, being careful not to damage the electrodes or insulators while handling.
 - b. Align the fuel nozzle tube into the slotted area of the burner housing.

INSTALLATION OF THE BURNER MOTOR ASSEMBLY (CONT):

- c. Install the escutcheon plate and mount screw hand tight.
- d. Line up the index mark made during the removal of the nozzle assembly.
- e. Using a ¼" open end wrench, tighten the escutcheon plate mount screw.
- f. Install and tighten splined nut using a splined wrench.
- 3. Install Fuel Pump/Solenoid Assembly as follows:
 - a. Install fuel pump/solenoid assembly into burner motor housing.
 - b. Loosely thread (2) mount bolts into the fuel pump housing; do not tighten at this time.
 - c. Using a 7/16" open end wrench, connect and tighten the fuel nozzle tube B-nut.
 - d. Using a 9/16" open end wrench, connect and tighten the fuel line B-nut at the fuel pump.
 - e. Using a ¹/₂" open end wrench, tighten the (2) fuel pump mounting bolts.
 - f. Using a 9/16" open end wrench, connect and tighten the fuel in-line at the fuel water strainer housing.
 - g. Using the following sequence, reconnect the solenoid wire harness as follows:
 - 1. Purple wire to Black #051 main wire harness. Twist both wires together and install a wire nut.
 - 2. White wire to white wire main wire harness. Twist both wires together; do not install a wire nut at this time.
 - h. Reconnect the solenoid electrical plug.
- 4. Install the Electronic Igniter Assembly as follows:
 - a. Place the electronic igniter and base plate assembly onto the burner motor
 - b. Using the following sequence, reconnect the igniter leads as follows:
 - 1. Igniter blue wire to the black #011 main harness wire and the black wire from the oil burner wire harness. Twist the three wires together and install a wire nut.
 - 2. Igniter white wire to (3) white wires (one from the main wire harness, one from the oil burner motor and one from the fuel solenoid plug). Twist all (4) wires together and install a wire nut.
 - c. Crimp all wire nuts for added security.
 - d. Reinstall the electronic igniter and base plate assembly; ensure the igniter springs are contacting the electrodes tangs and electrical wires are not pinched.
 - e. Using a 5/16" open end wrench, install and tighten (2) hex head screws.
 - f. Using a cross-point screwdriver, install and tighten (2) cross-point screws.
 - g. Reconnect power cord into power supply outlet.
 - h. Perform operations and leak checks.

END OF TASK

BURNER AIR ADJUSTMENT MAINTENANCE PROCEDURES PROCEDURES REQUIRE VERIFICATION

INITIAL SETUP:

Tools and Special Tools General Mechanics Tool Kit Smoke Spot Tester (If Available)

Materials/Parts

Personnel Required One

Equipment Condition Equipment Powered Down Power Source Disconnected

NOTE

Burner Air Adjustment: The air shutter has been factory preset to the proper operation between sea level and 2000 feet elevation at standard conditions, (60°F ambient water, and air temperatures).

In cooler temperatures or higher altitudes, it may be necessary to adjust the air supply to the combustion chamber. This adjustment will maximize burner efficient operation or excessive soot buildup on the heat exchanger coil. A smoke spot test is recommended during any air shutter and band adjustment. If you do not have the equipment to perform a smoke spot test, follow the procedures listed below.



Figure 1. Burner Air Adjustment.

BURNER AIR ADJUSTMENT PROCEDURES:

- 1. The water heater must be operating and heating water.
- 2. Loosen the locking screw on the air shutter.
- 3. Check for smoke from the heat exchanger exhaust. If smoke is not present, slowly close the air shutter by moving the dial counterclockwise (CCW) to a lower number. Continue moving the dial CCW until smoke appears.
- 4. Record the setting.

BURNER AIR ADJUSTMENT MAINTENANCE PROCEDURES (CONT):

- 5. Open the air shutter by two increments. (Example if air shutter was set at 2, then move it to 4).
- 6. Repeat steps 3 5 until a smoke puff is noticed.
- 7. Record the air shutter setting.
- 8. The difference between the recorded settings in step 4 and step 7 is the combustion window. Set the dial half way between these settings.

NOTE

If you are unable to detect a setting on either step 3 or step 5, more or less air may be needed to achieve a proper combustion window. Loosen the bolt and open the Air Band in 1/4 increments. Repeat steps 3 and step 5 until proper combustion window is achieved.

END OF TASK
REMOVE AND REPLACE FUEL PUMP/SOLENOID PROCEDURES REQUIRE VERIFICATION

INITIAL SETUP:

Tools and Special Tools General Mechanics Tool Kit References

Materials/Parts Waste Fuel Container Rags Pipe Dope Equipment Condition Equipment Powered Down Power Source Disconnected

REMOVAL OF FUEL PUMP / SOLENOID PROCEDURES

- 1. Removing the fuel pump/solenoid as follows:
 - a. Disconnect power cord from power supply.
 - b. Attach drain hose to the fuel water separator bowl drain valve.
 - c. Open drain valve and drain contents into a waste fuel container.
 - d. Using a 9/16" open end wrench, loosen and disconnect fuel in-line at fuel water strainer housing.
 - e. Remove drain hose and retighten drain valve.
 - f. Using a 9/16" open end wrench, loosen and disconnect fuel line at the fuel pump/solenoid assembly.
 - g. Using a 7/16" open end wrench, loosen and disconnect the fuel nozzle tube.
 - h. Disconnect the solenoid electrical harness plug.
 - i. Using a ¹/₂" open end wrench, loosen and remove the fuel pump/solenoid assembly (2) mounting bolts.
 - j. Remove fuel pump/solenoid assembly from burner motor housing.
 - k. If fuel pump/solenoid assembly is being removed and replaced, perform the following steps:
 - 1. Loosen and remove fuel water separator assembly.
 - 2. Using a 5/8" open end wrench, loosen and remove both 90° elbow; remove and discard o-rings.

WARNING

DO NOT USE TEFLON TAPE. Pipe Dope may be applied to the threads of the fittings.

- 3. Lubricate and install new o-rings on each 90° elbow; using a 5/8" open end wrench, install and tighten both elbows.
- 4. Install and tighten fuel water separator assembly.

INSTALLATION OF FUEL PUMP/SOLENOID:

- 2. Installing the fuel pump/solenoid as follows:
 - a. Install fuel pump/solenoid assembly into burner motor housing.
 - b. Loosely thread (2) mount bolts into the fuel pump housing; do not tighten at this time.
 - c. Using a 7/16" open end wrench, connect and tighten the fuel nozzle tube B-nut.
 - d. Using a 9/16" open end wrench, connect and tighten the fuel line B-nut at the fuel pump.
 - e. Using a ¹/₂" open end wrench, tighten the (2) fuel pump mounting bolts.
 - f. Using a 9/16" open end wrench, connect and tighten the fuel in-line at the fuel water strainer housing.
 - g. Connect the solenoid electrical plug.
 - h. Connect power cord to power supply outlet.
 - i. Perform operations and leak checks.

REMOVE AND REPLACE FUEL PUMP FLEXIBLE COUPLING PROCEDURES REQUIRE VERIFICATION

INITIAL SETUP:

Tools and Special Tools General Mechanics Tool Kit References

Materials/Parts Drain Pan or Bucket Rags Equipment Condition Equipment Powered Down Power Source Disconnected

REMOVAL OF FLEXIBLE COUPLING:

- 1. Remove the fuel pump/solenoid as follows:
 - a. Disconnect power cord from power supply.
 - b. Attach drain hose to the fuel water separator bowl drain valve.
 - c. Open drain valve and drain contents into a waste fuel container.
 - d. Using a 9/16" open end wrench, loosen and disconnect fuel in-line at fuel water strainer housing.
 - e. Remove drain hose and retighten drain valve.
 - f. Using a 9/16" open end wrench, loosen and disconnect fuel line at the fuel pump/solenoid assembly.
 - g. Using a 7/16" open end wrench, loosen and disconnect the fuel nozzle tube.
 - h. Disconnect the solenoid electrical harness plug.
 - i. Using a ¹/₂" open end wrench, loosen and remove the fuel pump/solenoid assembly (2) mounting bolts.
 - j. Remove fuel pump/solenoid assembly from burner motor housing.
 - k. Remove the flexible coupler from the fuel pump/solenoid shaft.

- INSTALLATION OF FLEXIBLE COUPLING;
 - 2. Install the fuel pump/solenoid as follows:
 - a. Slide the flexible coupling onto the fuel pump/solenoid shaft.
 - b. Install fuel pump/solenoid assembly into burner motor housing.
 - c. Loosely thread (2) mount bolts into the fuel pump housing; do not tighten at this time.
 - d. Using a 7/16" open end wrench, connect and tighten the fuel nozzle tube B-nut.
 - e. Using a 9/16" open end wrench, connect and tighten the fuel line B-nut at the fuel pump.
 - f. Using a ¹/₂" open end wrench, tighten the (2) fuel pump mounting bolts.
 - g. Using a 9/16" open end wrench, connect and tighten the fuel in-line at the fuel water strainer housing.
 - h. Connect the solenoid electrical plug.
 - i. Reconnect power cord to power supply outlet.
 - j. Perform ops and leak checks.

REMOVE AND REPLACE ELECTRONIC IGNITER ASSEMBLY PROCEDURES REQUIRE VERIFICATION

INITIAL SETUP:

Tools and Special Tools General Mechanics Tool Kit

Materials/Parts

Personnel Required One

Equipment Condition Equipment Powered Down Power Source Disconnected

REMOVAL OF THE ELECTRONIC IGNITER ASSEMBLY:

- 1. Remove the electronic igniter assembly as follows:
 - a. Disconnect power cord from power supply outlet.
 - b. Using a cross-point screwdriver, remove the bottom (2) screws from the electronic igniter and base plate assembly.
 - c. Using a 5/16" open end wrench or equivalent, remove the top (2) hex head screws from the electronic igniter and base plate assembly.
 - d. Lift the electronic igniter and base plate assembly off of the burner motor.
 - e. Loosen and remove (2) wire nuts that secure the blue and white igniter wire to main wire harness.
 - f. Using a 5/16" open end wrench, remove (2) hex head mounting screws from the electronic igniter and base plate.
 - g. Remove the electronic igniter from the base plate.

REPLACEMENT OF THE ELECTRONIC IGNITER:

- a. Feed/insert the blue and white igniter wire through the base plate.
- b. Install (2) hex head mounting screws through the electronic igniter to the base plate.
- c. Using a 5/16" open end wrench, tighten both mounting screws.

INSTALLATION OF THE ELECTRONIC IGNITER ASSEMBLY:

- d. Place the electronic igniter and base plate assembly onto the burner motor
- e. Reconnect the igniter blue wire to the black #011 main harness wire and the black wire from the oil burner wire harness. Twist the three wires together and install a wire nut.
- f. Reconnect the igniter white wire to (3) white wires (one from the main wire harness, one from the oil burner motor and one from the fuel solenoid plug). Twist wires together and install a wire nut.
- g. Crimp wire nuts.

INSTALLATION OF THE ELECTRONIC IGNITER ASSEMBLY (CONT):

- h. Reinstall the electronic igniter and base plate assembly; ensure the igniter springs are contacting the electrodes tangs and electrical wires are not pinched.
- i. Using a 5/16" open end wrench, install and tighten (2) hex head screws.
- j. Using a cross-point screwdriver, install and tighten (2) cross-point screws.
- k. Reconnect power cord into power supply.
- I. Perform operations check.

REMOVE AND REPLACE FUEL NOZZLE AND ELECTRODE ASSEMBLY PROCEDURES REQUIRE VERIFICATION

INITIAL SETUP:

Tools and Special Tools General Mechanics Tool Kit Clean White Lint Free Cloth Torque Wrench

Materials/Parts Rags Personnel Required One

Equipment Condition Equipment Powered Down Power Source Disconnected

REMOVAL OF THE FUEL NOZZLE AND ELECTRODE ASSEMBLY:

- 1. Removing the fuel nozzle and electrode assembly as follows:
 - a. Disconnect power cord from the power supply outlet.
 - b. Using a cross-point screwdriver remove (2) screws from the electronic igniter and base plate assembly on the burner motor.
 - c. Using a 5/16" open end wrench or equivalent, remove (2) hex head screws from the electronic igniter and base plate assembly of the burner motor.
 - d. Loosen and remove (2) wire nuts that secure the blue and white igniter wire to main wire harness.
 - e. Lift the electronic igniter and base plate assembly off of the burner motor.
 - f. Using a 7/16" open end wrench, loosen and disconnect the fuel nozzle tube B-nut.
 - g. Using a splined wrench or equivalent, loosen and remove splined nut.

NOTE

Index mark the escutcheon plate before removing screw. This index mark will be used during installation.

- h. Using a ¼" open end wrench, loosen and remove escutcheon plate mount screw and escutcheon plate.
- i. Remove the nozzle and electrode assembly from the air tube, being careful not to damage the electrodes or insulators while handling.

REMOVE AND REPLACE FUEL NOZZLE:

- 2. Removing and replacing the fuel nozzle as follows:
 - a. Use the removal procedures in removing the fuel nozzle and electrode assembly from the burner.
 - b. Using a ³/₄" open end wrench, hold the nozzle adapter; remove the fuel nozzle head using a 5/8" open end wrench.

REMOVE AND REPLACE FUEL NOZZLE (CONT):

NOTE

Use care to avoid bending the electrodes.

- c. Insert the new fuel nozzle into the nozzle adapter and finger tight.
- d. Using a ³/₄" open end wrench, hold the nozzle adapter; using a 5/8" open end wrench securely tighten the nozzle (torque to 90 inch pounds).

REMOVE AND REPLACE ELECTRODES:

- 3. Removing and replacing the electrodes as follows:
 - a. Using a ¹/₂" open end wrench, loosen and remove the electrode clamp screw.
 - b. Remove and replace damaged electrode from clamp assembly.
 - c. Loosely install the electrode clamp screw.
- 4. Electrode Tip Adjustment
 - d. Use the following procedures for the electrode tip gap adjustment:
 - 1. Slide or rotate the electrodes as necessary to obtain the correct gap of 1/16" between the fuel nozzle and electrode tip as shown in Figure 2.
 - 2. Using a ¹/₂" open end wrench, securely tighten the electrode clamp screw.



Figure 2. Electrode Tip Adjustment.

INSTALLATION OF THE FUEL NOZZLE AND ELECTRODE ASSEMBLY:

- 1. Installing the fuel nozzle and electrode assembly as follows:
 - a. Install the nozzle and electrode assembly into the air tube, being careful not to damage the electrodes or insulators while handling.
 - b. Align the fuel nozzle tube into the slotted area of the burner housing.
 - c. Install the escutcheon plate and mount screw hand tight.
 - d. Line up the index mark made during the removal of the nozzle assembly.
 - e. Using a $\frac{1}{4}$ " open end wrench, tighten the escutcheon plate mount screw.

- f. Install and tighten splined nut using a splined wrench.
- g. Using a 7/16" open end wrench, reconnect and tighten the fuel nozzle tube B-nut.
- 2. Installing the electronic igniter assembly as follows:
 - a. Place the electronic igniter and base plate assembly onto the burner motor housing.
 - b. Using the following sequence, reconnect the igniter wire harness as follows:
 - 1. Reconnect the igniter blue wire to the black #011 main harness wire to the black wire oil burner wire harness. Twist the three wires together and install a wire nut.
 - 2. Reconnect the igniter white wire to (3) white wires (one from the main wire harness, one from the oil burner motor and one from the fuel solenoid plug). Twist wires together and install a wire nut.
 - c. Crimp all wire nuts for added security.
 - d. Ensure igniter springs make contact with the insulators.
 - e. Using a 5/16" open end wrench, install and tighten (2) mounting screws on the top to secure the electronic igniter and base plate assembly.
 - f. Using a cross-point screwdriver, install and tighten (2) screws on the bottom to secure the electronic igniter and base plate assembly.
 - g. Reconnect the power cord into power supply outlet.
 - h. Perform operations and leak checks.

REMOVE AND REPLACE FUEL TANK ASSEMBLY PROCEDURES PROCEDURES REQUIRE VERIFICATION

INITIAL SETUP:

Rags

Tools and Special Tools General Mechanics Tool Kit

Materials/Parts Waste Fuel Container or Equivalent Personnel Required One

Equipment Condition Equipment Powered Down Power Source Disconnected

REMOVAL OF THE FUEL TANK FOR CONTAMINATED FUEL:

- 1. Removing the fuel tank:
 - a. Disconnect the power cord from the power supply outlet.
 - b. Using a 9/16" open end wrench, loosen and remove the fuel water separator in-line at the fuel tank.
 - c. Using a 9/16" open end wrench, loosen and remove the fuel pump inlet line at the fuel tank.
 - d. Loosen and remove (2) bolts, (2) lock washers and (2) flat washers from the fuel tank straps underneath fuel tank.
 - e. Loosen and remove (2) nylock nuts, (2) lock washers and (2) flat washers from the fuel tank upper straps.
 - f. Remove fuel tank.
 - g. Remove fuel cap and drain contaminated fuel into a waste fuel container or equivalent.

INSTALLATION OF THE FUEL TANK ASSEMBLY:

- 2. Installing the fuel tank:
 - a. Reinstall empty fuel tank.
 - b. Reinstall fuel tank straps; install (2) flat washers, (2) lock washers and (2) nylock nuts on the upper fuel straps.
 - c. Install (2) bolts, (2) lock washers and (2) flat washers on the fuel tank straps underneath the fuel tank.
 - d. Using a 9/16" open end wrench, install and tighten the fuel pump inlet line B-nut at the tank.
 - e. Using a 9/16" open end wrench, install and tighten the fuel water separator in-line B-nut at the tank.
 - f. Refill fuel tank using clean No. 1 or No. 2 fuel oil/diesel or kerosene. Do Not Use Gasoline.
 - g. Reconnect the power cord to the power supply outlet.
 - h. Perform operation and leak check.

REMOVE AND REPLACE FUEL FILTER/WATER SEPARATOR PROCEDURES PROCEDURES REQUIRE VERIFICATION

INITIAL SETUP:

Tools and Special Tools General Mechanics Tool Kit

Materials/Parts Waste Fuel Container or Equivalent Fuel Drain Hose or Equivalent Clean Rags **Personnel Required** One

Equipment Condition Equipment Powered Down Power Source Disconnected

REMOVAL FUEL FILTER/WATER SEPARATOR ASSEMBLY:

- 1. Disconnect the power cord from the power supply.
- 2. Attach drain hose to the fuel water separator bowl drain valve.
- 3. Open drain valve and drain fuel into a fuel waste container.
- 4. Using a 9/16" open end wrench or equivalent, loosen the fuel in-line at the fuel water separator housing (loosening this fuel line will assist in draining the fuel water strainer assembly).
- 5. Loosen and remove the fuel water strainer assembly by turning the assembly in a CCW direction. Drain remaining fluid from the fuel water strainer.

REMOVAL OF FUEL FILTER:

- 6. Hold the fuel filter/water separator bowl in one hand; loosen and remove fuel filter by turning the filter in a CCW direction.
- 7. Recycle or discard the old fuel filter.
- 8. Remove the fuel water separator bowl o-ring.

INSTALLATION OF FUEL FILTER:

- 1. Lubricate and install new fuel filter/water separator bowl o-ring
- 2. Install new fuel filter onto the fuel water separator bowl by turning filter in a CW direction. Hand tight only.

INSTALLATION OF FUEL FILTER/WATER SEPARATOR ASSEMBLY:

- 3. Using a 9/16" open end wrench or equivalent, tighten the fuel in-line at fuel water separator housing.
- 4. Hand tighten fuel water separator bowl drain valve.
- 5. Reconnect power cord to power supply outlet.
- 6. Perform operations and leak checks.

REMOVE AND REPLACE DECON SOLUTION TANK STRAINER (G2-I WATER HEATER ONLY)

One

INITIAL SETUP:

Tools and Special Tools General Mechanics Tool Kit

Materials/Parts Clean Water Equipment Condition Equipment Powered Down

Personnel Required

Power Source Disconnected

REMOVAL OF DECON SOLUTION TANK STRAINER:

- 1. Disconnect power cord from power supply
- 2. Disconnect solution hose from the QCD at solution tank.
- 3. Unscrew solution in-line tube from solution tank.
- 4. Carefully remove in-line tube from tank; gently pull straight up to remove tube and strainer.
- 5. Remove strainer from tube.
- 6. Clean/rinse strainer in clean water.
- 7. Inspect strainer for damages; if necessary replace with a new strainer.

INSTALLATION OF DECON SOLUTION TANK STRAINER:

- 8. Install strainer onto in-line tube.
- 9. Install in-line tube into solution tank; turn solution in-line tube CW and tighten.
- 10. Reconnect solution hose to the QCD at the solution tank.
- 11. Reconnect power cord into the power supply.

INJECTOR MAINTENANCE PROCEDURES (G2-I WATER HEATER ONLY)

INITIAL SETUP:

Tools and Special Tools General Mechanics Tool Kit

Materials/Parts Chlorine Bleach Personnel Required One

Equipment Condition Equipment Powered Down Power Source Disconnected

NOTE

The following maintenance procedures should be performed after each use of the Injector Assembly with a Decon solution.

WARNING

Failure to follow these general maintenance procedures of the injector may result in poor performance from the injector.

WARNING

Incorrect operation of this water heater could result in serious injury and or damage to the equipment. Do Not alter or modify this water heater in any manner.

RINSE INJECTOR AFTER EACH USE:

NOTE

Additive allowed to remain in injector can dry out and damage lower end at the next start up

- 1. Put suction tube into a 1 qt. (4 liters) or more container of fresh filtered water.
- 2. Pull fresh water through the injector by operating until container is empty.

CLEAN SUCTION TUBE FILTER SCREEN: Inspect each time new solution is added. Clean as frequently as necessary by washing in fresh water. Remove filter screen from suction tube and run water backwards through it. Replace if necessary. Keep filter screen off bottom of solution container to prevent dirt and precipitate from contamination solution.

CLEAN SOLUTION CONTAINER: Keep covered to prevent any contaminants from entering container. Rinse container thoroughly and often. Do not mix chemical together that might react and cause a precipitate. Use FILTERED WATER when filling container.

CLEAN INLET FILTER: Clean or replace inlet filter as required to increase the life of the unit as well as reduce pressure loss.

STORAGE: For extended storage, rinse injector as described above and place entire injector underwater (in 5 gal container). Monthly, apply a small amount (thimble full) of chlorine bleach to avoid algae growth.

REMOVE AND REPLACE POWER SWITCH PROCEDURES PROCEDURES REQUIRE VERIFICATION

INITIAL SETUP:

Tools and Special Tools	Personnel Required
General Mechanics Tool Kit	One
Materials/Parts	Equipment Condition Equipment Powered Down Power Source Disconnected

REMOVAL OF POWER SWITCH:

- 1. Removing the Power Switch:
 - a. Disconnect the power cord from the power supply outlet.
 - b. Disconnect and remove (4) cam covers on the fresh water and Decon solution outlets.
 - c. Loosen and remove the water supply connector protective cover.

NOTE

Keep pressure against the panel so it doesn't drop open when removing the bolts.

- d. Using a 7/16" open end wrench, loosen and remove the control panel (4) bolts, (4) lock washers and (4) flat washers. Carefully lower control panel.
- e. Disconnect power switch as follows:
 - 1. Remove white wire #024
 - 2. Remove black wire #013
 - 3. Remove black wire #061
- f. Depress the top and bottom tab on the power switch while pushing the switch outward.
- g. Remove switch.

INSTALLATION OF POWER SWITCH:

- 2. Installing the Power Switch:
 - a. Insert new power switch into the control panel until it locks into place.
 - b. Connect the power switch as follows:
 - 1. Install black wire #061.
 - 2. Install black wire #013.
 - 3. Install white wire #024.

INSTALLATION OF POWER SWITCH (CONT):

- c. Raise control panel and keep pressure against the panel while installing the mount bolts.
- d. Using a 7/16" open end wrench, install and tighten (4) bolts, (4) lock washers and (4) flat washers.
- e. Reinstall water supply connector protective cover, hand tight.
- f. Reinstall (4) cam covers on the fresh water and Decon solution outlets.
- g. Reconnect power cord to power supply outlet.
- h. Perform operation check on the power switch.

SEASONAL MAINTENANCE PROCEDURES

INITIAL	SETUP:
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Tools and Special Tools	Personnel Required
General Mechanics Tool Kit	One
Materials/Parts	Equipment Condition Equipment Powered Down Power Source Disconnected

WINTERIZING THE G2 / G2S-I WATER HEATER

For storage and transportation purposes in subfreezing ambient temperatures, it will be necessary to winterize the water heater. This unit must be protected to the lowest incurred temperature for the following reasons:

1. If any part of the system becomes frozen; excessive pressure may build up in the unit which could cause the unit to burst resulting in possible serious injury to the operator or bystanders.

2. Freeze damage is not covered by warranty.

If you must store the unit in an area where the temperature may fall below 32°F, you can protect the water heater by following the procedures below.

- 3. Disconnect the power cord from the power supply outlet.
- 4. Remove all discharge and supply hoses.
- 5. Connect an air fitting from an air hose to the water inlet side of the unit.
- 6. Blow compressed air, into the system to remove all water from the unit.
- 7. Remove the injector strainer cup, drain the remaining water, and replace the cup loosely.
- 8. Remove injector outer cylinder; push straight up on the piston to drain remaining water. Replace the outer cylinder on the injector.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE INSTRUCTIONS G2 SERIES DECONTAMINATION WATER HEATER G2S / G2S-I EQUIPMENT MAINTENANCE PROCEDURES

WORK INPROGRESS

GENERAL

This work package provides information needed by the Operator when performing the following services to the G2S / G2S-I Decontamination Water Heater. They consist of:

- Remove and Replace Burner Motor Assembly Procedures
- Burner Air Adjustment Maintenance Procedures
- Remove and Replace Fuel Pump/Solenoid Procedures
- Remove and Replace Fuel Pump Flexible Coupling Procedures
- Remove and Replace Electronic Igniter Assembly Procedures
- Remove and Replace Fuel Nozzle and Electrode Assembly Procedures
- Remove and Replace Fuel Tank Assembly Procedures
- Remove and Replace Fuel Filter/Water Separator Procedures
- Inspection and Cleaning Suction Tube Screen Procedures (G2S-I Water Heater ONLY)
- Injector Maintenance Procedures (G2S-I Water Heater ONLY)
- Remove and Replace Power Switch Procedures
- Seasonal Maintenance Procedures

WARNING

Voltage sources, in addition to being an electrical shock hazard, may also potentially produce serious burns. Care should be exercised when using water around exposed power connections. Ensure that all power to the system has been shut off, disconnected and water heater has cooled off before disassembling and cleaning the components of the G2S / G2S-I Decontamination Water Heater.

0015

REMOVE AND REPLACE BURNER MOTOR ASSEMBLY WORK INPROGRESS PROCEDURES REQUIRE VERIFICATION

INITIAL SETUP:

Tools and Special Tools	Personnel Required	
General Mechanics Tool Kit	One	
Splined Wrench or Socket		
Materials/Parts	Equipment Condition	
Materials/Parts Drain Pan or Bucket	Equipment Condition Equipment Powered Down	

REMOVAL OF THE BURNER MOTOR ASSEMBLY:

- 1. Remove the electronic igniter assembly as follows:
 - a. Disconnect the power cord from power supply outlet.
 - b. Using a cross-point screwdriver, remove the bottom (2) screws from the electronic igniter and base plate assembly.
 - c. Using a 5/16" open end wrench or equivalent, remove the top (2) hex head screws from the electronic igniter and base plate assembly.
 - d. Lift the electronic igniter and base plate assembly.
 - e. Loosen and remove (2) wire nuts that secure the blue and white igniter wire to main wire harness.
 - f. Remove the electronic igniter and base plate assembly; set aside.
- 2. Remove the Fuel Pump/Solenoid Assembly as follows:
 - a. Attach drain hose to the fuel water separator bowl drain valve.
 - b. Open drain valve and drain contents into a waste fuel container.
 - c. Using a 9/16" open end wrench, loosen and disconnect fuel in-line at fuel water strainer housing.
 - d. Remove drain hose and retighten drain valve.
 - e. Using a 9/16" open end wrench, loosen and disconnect fuel line at the fuel pump/solenoid assembly.
 - f. Using a 7/16" open end wrench, loosen and disconnect the fuel nozzle tube.
 - g. Disconnect the solenoid electrical harness plug.
 - h. Using a ¹/₂" open end wrench, loosen and remove the fuel pump/solenoid assembly (2) mounting bolts.
 - i. Remove fuel pump/solenoid assembly from burner motor housing.
- 3. Remove the Fuel Nozzle and Electrode Assembly as follows:
 - a. Using a splined wrench or equivalent, loosen and remove splined nut.

NOTE

Index mark the escutcheon plate before removing screw. This index mark will be used during reinstallation.

REMOVAL OF THE BURNER MOTOR ASSEMBLY (CONT):

- b. Using a ¼" open end wrench, loosen and remove escutcheon plate mount screw and escutcheon plate.
- c. Remove the nozzle and electrode assembly from the air tube, being careful not to damage the electrodes or insulators while handling.
- Remove the Burner Motor Assembly as follows:
 - a. Loosen and remove the remaining wire nut; separate all wires.
 - b. Using a 5/16" open end wrench, loosen the ground screw and disconnect the green ground wire.
 - c. Loosen and remove the plastic jam-nut securing the main wire harness to the burner motor assembly; remove main wire harness.
 - d. Using a 9/16" open end wrench, loosen and remove (3) nuts, (3) lock washers and (3) flat washers.
 - e. Carefully, remove burner motor assembly from the combustion chamber.

END OF TASK

INSTALLATION OF THE BURNER MOTOR ASSEMBLY:

- 1. Install Burner Motor Assembly as follows:
 - a. Inspect gasket; if needed remove and replace gasket.
 - b. Carefully, install burner motor assembly into the combustion chamber.
 - c. Center burner motor bracket on mounting studs.
 - d. Install (3) flat washers, (3) lock washers and (3) nuts.
 - Using a 9/16" open end wrench, tighten the nuts alternating between the (3) nuts to ensure burner e. motor is seated evenly.
 - f. Insert the main wire harness through the hole on the burner motor.
 - Install and tighten the plastic jam-nut onto the main wire harness. α.
 - h. Using a 5/16" open end wrench, reconnect the (green) ground wire and tighten the screw.
 - Using the following sequence, reconnect the main wire harness: (i.
 - 1. Black wire #011 main wire harness to black wire oil burner. Twists both wires together; do not install a wire nut at this time.
 - 2. White wire main wire harness to white wire oil burner to white wire solenoid. Twists (3) wires together; do not install a wire nut at this time.
- Install Fuel Nozzle and Electrode Assembly as follows:
 - a. Install the nozzle and electrode assembly into the air tube, being careful not to damage the electrodes or insulators while handling.
 - b. Align the fuel nozzle tube into the slotted area of the burner housing.

INSTALLATION OF THE BURNER MOTOR ASSEMBLY (CONT):

- c. Install the escutcheon plate and mount screw hand tight.
- d. Line up the index mark made during the removal of the nozzle assembly.
- e. Using a ¼" open end wrench, tighten the escutcheon plate mount screw.
- f. Install and tighten splined nut using a splined wrench.
- 3. Install Fuel Pump/Solenoid Assembly as follows:
 - a. Install fuel pump/solenoid assembly into burner motor housing.
 - b. Loosely thread (2) mount bolts into the fuel pump housing; do not tighten at this time.
 - c. Using a 7/16" open end wrench, connect and tighten the fuel nozzle tube B-nut.
 - d. Using a 9/16" open end wrench, connect and tighten the fuel line B-nut at the fuel pump.
 - e. Using a ¹/₂" open end wrench, tighten the (2) fuel pump mounting bolts.
 - f. Using a 9/16" open end wrench, connect and tighten the fuel in-line at the fuel water strainer housing.
 - g. Using the following sequence, reconnect the solenoid wire harness as follows:
 - 1. Purple wire to Black #051 main wire harness. Twist both wires together and install a wire nut.
 - 2. White wire to white wire main wire harness. Twist both wires together; do not install a wire nut at this time.
 - h. Reconnect the solenoid electrical plug.
- 4. Install the Electronic Igniter Assembly as follows:
 - a. Place the electronic igniter and base plate assembly onto the burner motor
 - b. Using the following sequence, reconnect the igniter leads as follows:
 - 1. Igniter blue wire to the black #011 main harness wire and the black wire from the oil burner wire harness. Twist the three wires together and install a wire nut.
 - 2. Igniter white wire to (3) white wires (one from the main wire harness, one from the oil burner motor and one from the fuel solenoid plug). Twist all (4) wires together and install a wire nut.
 - c. Crimp all wire nuts for added security.
 - d. Reinstall the electronic igniter and base plate assembly; ensure the igniter springs are contacting the electrodes tangs and electrical wires are not pinched.
 - e. Using a 5/16" open end wrench, install and tighten (2) hex head screws.
 - f. Using a cross-point screwdriver, install and tighten (2) cross-point screws.
 - g. Reconnect power cord into power supply outlet.
 - h. Perform operations and leak checks.

BURNER AIR ADJUSTMENT MAINTENANCE PROCEDURES WORK INPROGRESS PROCEDURES REQUIRE VERIFICATION

INITIAL SETUP:

Tools and Special Tools General Mechanics Tool Kit Smoke Spot Tester (If Available)

Materials/Parts

Personnel Required One

Equipment Condition Equipment Powered Down Power Source Disconnected

NOTE

Burner Air Adjustment: The air shutter has been factory preset to the proper operation between sea level and 2000 feet elevation at standard conditions, (60°F ambient water, and air temperatures).

In cooler temperatures or higher altitudes, it may be necessary to adjust the air supply to the combustion chamber. This adjustment will maximize burner efficient operation or excessive soot buildup on the heat exchanger coil. A smoke spot test is recommended during any air shutter and band adjustment. If you do not have the equipment to perform a smoke spot test, follow the procedures listed below.



Figure 1. Burner Air Adjustment.

BURNER AIR ADJUSTMENT PROCEDURES:

- 1. The water heater must be operating and heating water.
- 2. Loosen the locking screw on the air shutter.
- 3. Check for smoke from the heat exchanger exhaust. If smoke is not present, slowly close the air shutter by moving the dial counterclockwise (CCW) to a lower number. Continue moving the dial CCW until smoke appears.
- 4. Record the setting.

BURNER AIR ADJUSTMENT MAINTENANCE PROCEDURES (CONT):

- 5. Open the air shutter by two increments. (Example if air shutter was set at 2, then move it to 4).
- 6. Repeat steps 3 5 until a smoke puff is noticed.
- 7. Record the air shutter setting.
- 8. The difference between the recorded settings in step 4 and step 7 is the combustion window. Set the dial half way between these settings.

NOTE

If you are unable to detect a setting on either step 3 or step 5, more or less air may be needed to achieve a proper combustion window. Loosen the bolt and open the Air Band in 1/4 increments. Repeat steps 3 and step 5 until proper combustion window is achieved.

INITIAL SETUP:

Tools and Special Tools General Mechanics Tool Kit References

Materials/Parts Waste Fuel Container Rags Pipe Dope Equipment Condition Equipment Powered Down Power Source Disconnected

REMOVAL OF FUEL PUMP / SOLENOID PROCEDURES

- 1. Removing the fuel pump/solenoid as follows:
 - a. Disconnect power cord from power supply.
 - b. Attach drain hose to the fuel water separator bowl drain valve.
 - c. Open drain valve and drain contents into a waste fuel container.
 - d. Using a 9/16" open end wrench, loosen and disconnect fuel in-line at fuel water strainer housing.
 - e. Remove drain hose and retighten drain valve.
 - f. Using a 9/16" open end wrench, loosen and disconnect fuel line at the fuel pump/solenoid assembly.
 - g. Using a 7/16" open end wrench, loosen and disconnect the fuel nozzle tube.
 - h. Disconnect the solenoid electrical harness plug.
 - i. Using a ¹/₂" open end wrench, loosen and remove the fuel pump/solenoid assembly (2) mounting bolts.
 - j. Remove fuel pump/solenoid assembly from burner motor housing.
 - k. If fuel pump/solenoid assembly is being removed and replaced, perform the following steps:
 - 1. Loosen and remove fuel water separator assembly.
 - 2. Using a 5/8" open end wrench, loosen and remove both 90° elbow; remove and discard o-rings.

WARNING

DO NOT USE TEFLON TAPE. Pipe Dope may be applied to the threads of the fittings.

- 3. Lubricate and install new o-rings on each 90° elbow; using a 5/8" open end wrench, install and tighten both elbows.
- 4. Install and tighten fuel water separator assembly.

INSTALLATION OF FUEL PUMP/SOLENOID:

- 2. Installing the fuel pump/solenoid as follows:
 - a. Install fuel pump/solenoid assembly into burner motor housing.
 - b. Loosely thread (2) mount bolts into the fuel pump housing; do not tighten at this time.
 - c. Using a 7/16" open end wrench, connect and tighten the fuel nozzle tube B-nut.
 - d. Using a 9/16" open end wrench, connect and tighten the fuel line B-nut at the fuel pump.
 - e. Using a ¹/₂" open end wrench, tighten the (2) fuel pump mounting bolts.
 - f. Using a 9/16" open end wrench, connect and tighten the fuel in-line at the fuel water strainer housing.
 - g. Connect the solenoid electrical plug.
 - h. Connect power cord to power supply outlet.
 - i. Perform operations and leak checks.

REMOVE AND REPLACE FUEL PUMP FLEXIBLE COUPLING WORK INPROGRESS PROCEDURES REQUIRE VERIFICATION

INITIAL SETUP:

Tools and Special Tools General Mechanics Tool Kit References

Materials/Parts Drain Pan or Bucket Rags Equipment Condition Equipment Powered Down Power Source Disconnected

REMOVAL OF FLEXIBLE COUPLING:

- 1. Remove the fuel pump/solenoid as follows:
 - a. Disconnect power cord from power supply.
 - b. Attach drain hose to the fuel water separator bowl drain valve.
 - c. Open drain valve and drain contents into a waste fuel container.
 - d. Using a 9/16" open end wrench, loosen and disconnect fuel in-line at fuel water strainer housing.
 - e. Remove drain hose and retighten drain valve.
 - f. Using a 9/16" open end wrench, loosen and disconnect fuel line at the fuel pump/solenoid assembly.
 - g. Using a 7/16" open end wrench, loosen and disconnect the fuel nozzle tube.
 - h. Disconnect the solenoid electrical harness plug.
 - i. Using a ¹/₂" open end wrench, loosen and remove the fuel pump/solenoid assembly (2) mounting bolts.
 - j. Remove fuel pump/solenoid assembly from burner motor housing.
 - k. Remove the flexible coupler from the fuel pump/solenoid shaft.

INSTALLATION OF FLEXIBLE COUPLING;

- 2. Install the fuel pump/solenoid as follows:
 - a. Slide the flexible coupling onto the fuel pump/solenoid shaft.
 - b. Install fuel pump/solenoid assembly into burner motor housing.
 - c. Loosely thread (2) mount bolts into the fuel pump housing; do not tighten at this time.
 - d. Using a 7/16" open end wrench, connect and tighten the fuel nozzle tube B-nut.
 - e. Using a 9/16" open end wrench, connect and tighten the fuel line B-nut at the fuel pump.
 - f. Using a ¹/₂" open end wrench, tighten the (2) fuel pump mounting bolts.
 - g. Using a 9/16" open end wrench, connect and tighten the fuel in-line at the fuel water strainer housing.
 - h. Connect the solenoid electrical plug.
 - i. Reconnect power cord to power supply outlet.
 - j. Perform ops and leak checks.

REMOVE AND REPLACE ELECTRONIC IGNITER ASSEMBLY WORK INPROGRESS PROCEDURES REQUIRE VERIFICATION

INITIAL SETUP:

Tools and Special Tools General Mechanics Tool Kit

Materials/Parts

Personnel Required One

Equipment Condition Equipment Powered Down Power Source Disconnected

REMOVAL OF THE ELECTRONIC IGNITER ASSEMBLY:

- 1. Remove the electronic igniter assembly as follows:
 - a. Disconnect power cord from power supply outlet.
 - b. Using a cross-point screwdriver, remove the bottom (2) screws from the electronic igniter and base plate assembly.
 - c. Using a 5/16" open end wrench or equivalent, remove the top (2) hex head screws from the electronic igniter and base plate assembly.
 - d. Lift the electronic igniter and base plate assembly off of the burner motor.
 - e. Loosen and remove (2) wire nuts that secure the blue and white igniter wire to main wire harness.
 - f. Using a 5/16" open end wrench, remove (2) hex head mounting screws from the electronic igniter and base plate.
 - g. Remove the electronic igniter from the base plate.

REPLACEMENT OF THE ELECTRONIC IGNITER:

- a. Feed/insert the blue and white igniter wire through the base plate.
- b. Install (2) hex head mounting screws through the electronic igniter to the base plate.
- c. Using a 5/16" open end wrench, tighten both mounting screws.

INSTALLATION OF THE ELECTRONIC IGNITER ASSEMBLY:

- d. Place the electronic igniter and base plate assembly onto the burner motor
- e. Reconnect the igniter blue wire to the black #011 main harness wire and the black wire from the oil burner wire harness. Twist the three wires together and install a wire nut.
- f. Reconnect the igniter white wire to (3) white wires (one from the main wire harness, one from the oil burner motor and one from the fuel solenoid plug). Twist wires together and install a wire nut.
- g. Crimp wire nuts.

INSTALLATION OF THE ELECTRONIC IGNITER ASSEMBLY (CONT):

- h. Reinstall the electronic igniter and base plate assembly; ensure the igniter springs are contacting the electrodes tangs and electrical wires are not pinched.
- i. Using a 5/16" open end wrench, install and tighten (2) hex head screws.
- j. Using a cross-point screwdriver, install and tighten (2) cross-point screws.
- k. Reconnect power cord into power supply.
- I. Perform operations check.

REMOVE AND REPLACE FUEL NOZZLE AND ELECTRODE ASSEMBLY WORK INPROGRESS PROCEDURES REQUIRE VERIFCATION

INITIAL SETUP:

Tools and Special Tools General Mechanics Tool Kit Clean White Lint Free Cloth Torque Wrench

Materials/Parts Rags Personnel Required One

Equipment Condition Equipment Powered Down Power Source Disconnected

REMOVAL OF THE FUEL NOZZLE AND ELECTRODE ASSEMBLY:

- 1. Removing the fuel nozzle and electrode assembly as follows:
 - a. Disconnect power cord from the power supply outlet.
 - b. Using a cross-point screwdriver remove (2) screws from the electronic igniter and base plate assembly on the burner motor.
 - c. Using a 5/16" open end wrench or equivalent, remove (2) hex head screws from the electronic igniter and base plate assembly of the burner motor.
 - d. Loosen and remove (2) wire nuts that secure the blue and white igniter wire to main wire harness.
 - e. Lift the electronic igniter and base plate assembly off of the burner motor.
 - f. Using a 7/16" open end wrench, loosen and disconnect the fuel nozzle tube B-nut.
 - g. Using a splined wrench or equivalent, loosen and remove splined nut.

NOTE

Index mark the escutcheon plate before removing screw. This index mark will be used during installation.

- h. Using a ¼" open end wrench, loosen and remove escutcheon plate mount screw and escutcheon plate.
- i. Remove the nozzle and electrode assembly from the air tube, being careful not to damage the electrodes or insulators while handling.

REMOVE AND REPLACE FUEL NOZZLE:

- 2. Removing and replacing the fuel nozzle as follows:
 - a. Use the removal procedures in removing the fuel nozzle and electrode assembly from the burner.
 - b. Using a ¾" open end wrench, hold the nozzle adapter; remove the fuel nozzle head using a 5/8" open end wrench.

REMOVE AND REPLACE FUEL NOZZLE (CONT):

NOTE

Use care to avoid bending the electrodes.

- c. Insert the new fuel nozzle into the nozzle adapter and finger tight.
- d. Using a ³/₄" open end wrench, hold the nozzle adapter; using a 5/8" open end wrench securely tighten the nozzle (torque to 90 inch pounds).

REMOVE AND REPLACE ELECTRODES:

- 3. Removing and replacing the electrodes as follows:
 - a. Using a ¹/₂" open end wrench, loosen and remove the electrode clamp screw.
 - b. Remove and replace damaged electrode from clamp assembly.
 - c. Loosely install the electrode clamp screw.

4. Electrode Tip Adjustment

- d. Use the following procedures for the electrode tip gap adjustment:
 - 1. Slide or rotate the electrodes as necessary to obtain the correct gap of 1/16" between the fuel nozzle and electrode tip as shown in Figure 2.
 - 2. Using a ¹/₂" open end wrench, securely tighten the electrode clamp screw.



Figure 2. Electrode Tip Adjustment.

INSTALLATION OF THE FUEL NOZZLE AND ELECTRODE ASSEMBLY:

- 1. Installing the fuel nozzle and electrode assembly as follows:
 - a. Install the nozzle and electrode assembly into the air tube, being careful not to damage the electrodes or insulators while handling.
 - b. Align the fuel nozzle tube into the slotted area of the burner housing.
 - c. Install the escutcheon plate and mount screw hand tight.
 - d. Line up the index mark made during the removal of the nozzle assembly.
 - e. Using a ¼" open end wrench, tighten the escutcheon plate mount screw.

INSTALLATION OF THE FUEL NOZZLE AND ELECTRODE ASSEMBLY (CONT):

- f. Install and tighten splined nut using a splined wrench.
- g. Using a 7/16" open end wrench, reconnect and tighten the fuel nozzle tube B-nut.
- 2. Installing the electronic igniter assembly as follows:
 - a. Place the electronic igniter and base plate assembly onto the burner motor housing.
 - b. Using the following sequence, reconnect the igniter wire harness as follows:
 - 1. Reconnect the igniter blue wire to the black #011 main harness wire to the black wire oil burner wire harness. Twist the three wires together and install a wire nut.
 - 2. Reconnect the igniter white wire to (3) white wires (one from the main wire harness, one from the oil burner motor and one from the fuel solenoid plug). Twist wires together and install a wire nut.
 - c. Crimp all wire nuts for added security.
 - d. Ensure igniter springs make contact with the insulators.
 - e. Using a 5/16" open end wrench, install and tighten (2) mounting screws on the top to secure the electronic igniter and base plate assembly.
 - f. Using a cross-point screwdriver, install and tighten (2) screws on the bottom to secure the electronic igniter and base plate assembly.
 - g. Reconnect the power cord into power supply outlet.
 - h. Perform operations and leak checks.

REMOVE AND REPLACE FUEL TANK ASSEMBLY PROCEDURES WORK INPROGRESS PROCEDURES REQUIRE VERIFICATION

One

INITIAL SETUP:

Tools and Special Tools General Mechanics Tool Kit

Materials/Parts Waste Fuel Container or Equivalent Rags Equipment Condition Equipment Powered Down Power Source Disconnected

Personnel Required

REMOVAL OF THE FUEL TANK FOR CONTAMINATED FUEL:

- 1. Removing the fuel tank:
 - a. Disconnect the power cord from the power supply outlet.
 - b. Using a 9/16" open end wrench, loosen and remove the fuel water separator in-line at the fuel tank.
 - c. Using a 9/16" open end wrench, loosen and remove the fuel pump inlet line at the fuel tank.
 - d. Loosen and remove (2) bolts, (2) lock washers and (2) flat washers from the fuel tank straps underneath fuel tank.
 - e. Loosen and remove (2) nylock nuts, (2) lock washers and (2) flat washers from the fuel tank upper straps.
 - f. Remove fuel tank.
 - g. Remove fuel cap and drain contaminated fuel into a waste fuel container or equivalent.

INSTALLATION OF THE FUEL TANK ASSEMBLY:

- 2. Installing the fuel tank:
 - a. Reinstall empty fuel tank.
 - b. Reinstall fuel tank straps; install (2) flat washers, (2) lock washers and (2) nylock nuts on the upper fuel straps.
 - c. Install (2) bolts, (2) lock washers and (2) flat washers on the fuel tank straps underneath the fuel tank.
 - d. Using a 9/16" open end wrench, install and tighten the fuel pump inlet line B-nut at the tank.
 - e. Using a 9/16" open end wrench, install and tighten the fuel water separator in-line B-nut at the tank.
 - f. Refill fuel tank using clean No. 1 or No. 2 fuel oil/diesel or kerosene. Do Not Use Gasoline.
 - g. Reconnect the power cord to the power supply outlet.
 - h. Perform operation and leak check.

REMOVE AND REPLACE FUEL FILTER/WATER SEPARATOR PROCEDURES PROCEDURES REQUIRE VERIFICATION

INITIAL SETUP:

Tools and Special Tools General Mechanics Tool Kit

Materials/Parts Waste Fuel Container or Equivalent Fuel Drain Hose or Equivalent Clean Rags **Personnel Required** One

Equipment Condition Equipment Powered Down Power Source Disconnected

REMOVAL FUEL FILTER/WATER SEPARATOR ASSEMBLY:

- 1. Disconnect the power cord from the power supply.
- 2. Attach drain hose to the fuel water separator bowl drain valve.
- 3. Open drain valve and drain fuel into a fuel waste container.
- 4. Using a 9/16" open end wrench or equivalent, loosen the fuel in-line at the fuel water separator housing (loosening this fuel line will assist in draining the fuel water strainer assembly).
- 5. Loosen and remove the fuel water strainer assembly by turning the assembly in a CCW direction. Drain remaining fluid from the fuel water strainer.

REMOVAL OF FUEL FILTER:

- 6. Hold the fuel filter/water separator bowl in one hand; loosen and remove fuel filter by turning the filter in a CCW direction.
- 7. Recycle or discard the old fuel filter.
- 8. Remove the fuel water separator bowl o-ring.

INSTALLATION OF FUEL FILTER:

- 1. Lubricate and install new fuel filter/water separator bowl o-ring
- 2. Install new fuel filter onto the fuel water separator bowl by turning filter in a CW direction. Hand tight only.

INSTALLATION OF FUEL FILTER/WATER SEPARATOR ASSEMBLY:

- 3. Using a 9/16" open end wrench or equivalent, tighten the fuel in-line at fuel water separator housing.
- 4. Hand tighten fuel water separator bowl drain valve.
- 5. Reconnect power cord to power supply outlet.
- 6. Perform operations and leak checks.

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INSPECTION AND CLEANING SUCTION TUBE SCREEN PROCEDURES (G2S-I ONLY) PROCEDURES REQUIRE VERIFICATION

INITIAL SETUP:

Tools and Special Tools General Mechanics Tool Kit

Materials/Parts Clean Water Personnel Required One

Equipment Condition Equipment Powered Down Power Source Disconnected

INSPECTION OF SUCTION TUBE SCREEN:

- 1. Disconnect power cord from power supply
- 2. Remove suction hose from solution tank.
- 3. If necessary, loosen and remove suction hose from the lower end of the injector assembly.
- 4. Slide screen off of suction hose and inspect screen for foreign objects.

CLEANING SUCTION TUBE SCREEN:

- 5. Clean screen by running clean water backwards through screen.
- 6. Inspect screen for damages; if necessary replace with a new screen.
- 7. If unable to clean screen thoroughly, replace with new screen..

REINSTALLATION OF SUCTION TUBE SCREEN:

- 8. Slide screen back onto suction tube.
- 9. Reconnect and tighten suction hose on the lower end of the injector assembly.
- 10. Place suction tube assembly into the solution tank.
- 11. Reconnect power cord into the power supply.

INJECTOR MAINTENANCE PROCEDURES (G2S-I ONLY)

INITIAL SETUP:

Tools and Special Tools General Mechanics Tool Kit

Materials/Parts Chlorine Bleach Personnel Required One

Equipment Condition Equipment Powered Down Power Source Disconnected

NOTE

The following maintenance procedures should be performed after each use of the Injector Assembly with a Decon solution.

WARNING

Failure to follow these general maintenance procedures of the injector may result in poor performance from the injector.

WARNING

Incorrect operation of this water heater could result in serious injury and or damage to the equipment. Do Not alter or modify this water heater in any manner.

RINSE INJECTOR AFTER EACH USE:

NOTE

Additive allowed to remain in injector can dry out and damage lower end at the next start up

- 1. Put suction tube into a 1 qt. (4 liters) or more container of fresh filtered water.
- 2. Pull fresh water through the injector by operating until container is empty.

CLEAN SUCTION TUBE FILTER SCREEN: Inspect each time new solution is added. Clean as frequently as necessary by washing in fresh water. Remove filter screen from suction tube and run water backwards through it. Replace if necessary. Keep filter screen off bottom of solution container to prevent dirt and precipitate from contamination solution.

CLEAN SOLUTION CONTAINER: Keep covered to prevent any contaminants from entering container. Rinse container thoroughly and often. Do not mix chemical together that might react and cause a precipitate. Use FILTERED WATER when filling container.

CLEAN INLET FILTER: Clean or replace inlet filter as required to increase the life of the unit as well as reduce pressure loss.

STORAGE: For extended storage, rinse injector as described above and place entire injector underwater (in 5 gal container). Monthly, apply a small amount (thimble full) of chlorine bleach to avoid algae growth.

END OF TASK

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REMOVE AND REPLACE POWER SWITCH PROCEDURES PROCEDURES REQUIRE VERIFICATION

INITIAL SETUP:

Tools and Special Tools	Personnel Required
General Mechanics Tool Kit	One
Materials/Parts	Equipment Condition Equipment Powered Down Power Source Disconnected

REMOVAL OF POWER SWITCH:

- 1. Removing the Power Switch:
 - a. Disconnect the power cord from the power supply outlet.
 - b. Disconnect and remove (4) cam covers on the fresh water and Decon solution outlets.
 - c. Loosen and remove the water supply connector protective cover.

NOTE

Keep pressure against the panel so it doesn't drop open when removing the bolts.

- d. Using a 7/16" open end wrench, loosen and remove the control panel (4) bolts, (4) lock washers and (4) flat washers. Carefully lower control panel.
- e. Disconnect power switch as follows:
 - 1. Remove white wire #024
 - 2. Remove black wire #013
 - 3. Remove black wire #061
- f. Depress the top and bottom tab on the power switch while pushing the switch outward.
- g. Remove switch.

INSTALLATION OF POWER SWITCH:

- 2. Installing the Power Switch:
 - a. Insert new power switch into the control panel until it locks into place.
 - b. Connect the power switch as follows:
 - 1. Install black wire #061.
 - 2. Install black wire #013.
 - 3. Install white wire #024.
INSTALLATION OF POWER SWITCH (CONT):

- c. Raise control panel and keep pressure against the panel while installing the mount bolts.
- d. Using a 7/16" open end wrench, install and tighten (4) bolts, (4) lock washers and (4) flat washers.
- e. Reinstall water supply connector protective cover, hand tight.
- f. Reinstall (4) cam covers on the fresh water and Decon solution outlets.
- g. Reconnect power cord to power supply outlet.
- h. Perform operation check on the power switch.

END OF TASK

SEASONAL MAINTENANCE PROCEDURES

INITIAL SETUP:	INITIAL SETU	JP:	
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Tools and Special Tools	Personnel Required
General Mechanics Tool Kit	One
Materials/Parts	Equipment Condition Equipment Powered Down Power Source Disconnected

WINTERIZING THE G2S / G2S-I WATER HEATER

For storage and transportation purposes in subfreezing ambient temperatures, it will be necessary to winterize the water heater. This unit must be protected to the lowest incurred temperature for the following reasons:

1. If any part of the system becomes frozen; excessive pressure may build up in the unit which could cause the unit to burst resulting in possible serious injury to the operator or bystanders.

2. Freeze damage is not covered by warranty.

If you must store the unit in an area where the temperature may fall below 32°F, you can protect the water heater by following the procedures below.

- 3. Disconnect the power cord from the power supply outlet.
- 4. Remove all discharge and supply hoses.
- 5. Connect an air fitting from an air hose to the water inlet side of the unit.
- 6. Blow compressed air, into the system to remove all water from the unit.
- 7. Remove the injector strainer cup, drain the remaining water, and replace the cup loosely.
- 8. Remove injector outer cylinder; push straight up on the piston to drain remaining water. Replace the outer cylinder on the injector.

END OF TASK

END OF WORK PACKAGE

CHAPTER 5

DESTRUCTION OF EQUIPMENT FOR

REEVES

G2 SERIES

DECONTAMINATION WATER HEATER

DESTRUCTION OF EQUIPMENT TO PREVENT ENEMY USE G2 SERIES DECONTAMINATION WATER HEATER GENERAL INFORMATION

SCOPE

This work package is for guidance of those whose duty it is to render inoperable or destroy equipment which is in imminent danger of capture by an enemy.

AUTHORIZATION

Only division or higher commanders have the authority to order destruction of equipment. They may however, delegate this authority to subordinate commanders when the situation demands it.

REPORTING DESTRUCTION

Destruction of equipment will be reported through command channels.

METHODS OF DESTRUCTION

Choose methods of destruction which will cause such damage that it will be impossible to restore the equipment to a usable condition within the combat zone. The following methods of destruction may be used separately or in combination, depending on the type of equipment and the degree to which each method is used.

SELF-DESTRUCTION

Built-in self-destruction devices should be set off even if the major item containing equipment with self-destruction devices is to be destroyed. These devices should be permitted to do their work at least partially before incendiaries or explosives (especially the latter) are set off. Currently, the G2 Series Decontamination Water Heater contains no built-in self-destruction devices.

IMPROPER OPERATION

The short circuiting of a power source and the application of an over voltage to equipment are examples of improper operation. This method of destruction has a limited application to electronics material.

FIRE

The starting of fires on or near electronic equipment is particularly useful in destroying predominantly nonmetallic components such as transistors, diodes, resistors, capacitors, switches, and printed circuit boards. Fires should be lit after setting off explosives and/or completing mechanical destruction. Fires within partially closed cabinets tend to be less effective than open fires, since a closed area does not allow sufficient oxygen necessary for an intense flame. Heat sources which do not require an air supply, such as thermite-based devices or incendiary grenades, are not subject to this limitation. The use of fire is associated with numerous hazards, including the possibility of disclosing positions which are under enemy visual or infrared surveillance.

WEAPONS FIRE

The use of weapons fire is less desirable than mechanical destruction, and is practically useless against heavy gauge metal panels and metal castings. However, optics such as night observation equipment are easily destroyed by correctly aimed gunfire.

DEMOLITION (EXPLOSIVES)

Explosives refer to TNT, plastic explosives, as well as fragmentation grenades. Explosives are most effective against structures and components which will not burn, or are too heavy or too strong to be easily demolished by mechanical means. The use of explosives has the disadvantage of possible disclosure of position when enemy forces are using sound-ranging-type equipment.

MECHANICAL DESTRUCTION

Mechanical destruction includes smashing electronic components, bending chassis or sub chassis, slashing cables and wiring, or any similar action. Dropping a weight on equipment and throwing lightweight equipment over a cliff are also examples of mechanical destructions. Sledges, hammers, axes or heavy tools are examples of the implements which can be used. Mechanical destruction should be completed before fires are lit.

USE OF NATURAL SURROUNDINGS

The disposal or denial to the enemy of electronics material may be accomplished in the field by taking advantage of the natural surroundings and environment.

Submergence of equipment and repair parts under water (lakes, ponds, streams, etc), concealment by hiding material in caves or, preferably burial can be used effectively. Where the surrounding area does not lend itself to such disposal, widely dispersed scattering of material, preferably, into heavy underbrush, can serve as a denial or delaying measure in the event the area is recaptured.

CLASSIFIED EQUIPMENT

Classified equipment must be destroyed to such a degree as to prevent duplication by, or revealing means of operation or function to the enemy.

ASSOCIATED CLASSIFIED DOCUMENTS

Any classified documents, notes, instructions, or other written material pertaining to function, operation, maintenance, or employment, including drawings or parts lists, must be destroyed in a manner to render them useless to the enemy.

END OF WORK PACKAGE

DESTRUCTION OF EQUIPMENT TO PREVENT ENEMY USE G2 SERIES DECONTAMINATION WATER HEATER DESTRUCTION PROCEDURES

SCOPE

This work package is for guidance of those whose duty it is to render inoperable or destroy the G2 Series Decontamination Water Heater which is in imminent danger of capture by an enemy.

METHOD OF DESTRUCTION

Command decision, according to the tactical situation will determine when the using organization is to destroy a G2 Series Decontamination Water Heater. A destruction plan will be prepared by the using organization, unless one was prepared by a higher authority.

G2 SERIES DECONTAMINATION WATER HEATER EQUIPMENT DESTRUCTION PROCEDURES

The following procedures should be followed when time does not permit critical equipment to be destroyed individually.

DEMOLITION/EXPLOSIVES

WARNING

Personnel should stand clear of area being destroyed be weapons fire. Always use a weapon of a caliber sufficient to ensure enough penetration to achieve the desired damage and to eliminate the possibility of ricochet.

Personnel unfamiliar with explosives should not set or detonate explosives. The use of explosives has the disadvantage of possible disclosure of position.

The G2 Series Decontamination Water Heaters can be destroyed using incendiary grenades, several rounds of properly aimed weapons fire, or a small charge of explosives.

WARNING

Toxic fumes may result from burning the Decon Water Heater. Fires should be lit only in open areas. Avoid inhaling fumes from burning components.

FIRE

Fires should be started after setting off explosives. Gasoline, kerosene, diesel, or oil may be used to destroy the G2 Series Decontamination Water Heater.

END OF WORK PACKAGE

CHAPTER 6

ILLUSTRATED PARTS BREAKDOWN FOR

REEVES

G2 SERIES

DECONTAMINATION WATER HEATER

SUPPORTING INFORMATION G2 DECONTAMINATION WATER HEATER G2 / G2-I WATER HEATER ILLUSTRATED PARTS BREAKDOWN & PARTS LIST

GENERAL

The following WP identifies the G2 and G2-I Water Heaters Illustrated Parts Breakdown (IPB) and Spare Parts Lists. The G2 Series Water Heaters consists of a self-heating water system with or without mobile Decon injection system designed to connect to a Reeves S and XB Decon Shelter which support various operations.



Figure 1. G2 / G2-I Water Heater Multi-views.

G2 / G2-I FRESH WATER INLET SUBASSEMBLY



Figure 2. G2 / G2-I Fresh Water Inlet Subassembly.

(1) Illus Number	(2) National Stock Number	(3) Part Number	(4) Description	(5) U/I	(6) Qty Rqr
1		RD30025F	Adapter, Copper 1 ½"C x FIP	EA	1
2		RD30020F	Reducer, FTG, 1-1/2" x ¾" FTC-C	EA	1
3		RD30001P*	Tube, Copper ¾"dia x 6"L	EA	1
4		RD30035F	Fitting, Tee, Copper, ¾" x ½"	EA	1
5		RD30410F	Adapter, Copper ½" FTG - FIP	EA	1
6		RD30040F	Adapter, Brass ¼" x ½" FL - MIP	EA	1
7		RD30001P*	Tube, Copper, ¾"dia x 4 ½"L	EA	1
8		RD30030F	Fitting, Tee, Copper, 3/4"	EA	1
9		RD30010F	Adapter, Copper ¾" FTG - MIP	EA	1
10		RD30045F	Elbow, Brass 5/8" x ¾" FL - FIP	EA	1
11		RD30005F	Elbow, Copper ¾" C - FTG, 90°	EA	1
12		RD30001P*	Tube, Copper ¾"dia x 5"L	EA	1
13		RD30001F	Adapter, Copper ¾" C - MIP	EA	1
14		RD300065	Hose, Pressure, Rubber, 14" w/Fittings	EA	1
15		RD30455F	Elbow, Brass ¼" FL - FIP	EA	1
16		RD300060	Gauge, Pressure 2"dia	EA	1
17		RD300510	Screw, #6 x ½"L, S-Metal, SS	EA	3
18		RDSP0430	Valve, Pressure Relief	EA	1
19		RDSP0080	Switch, Flow, G2 (Original)	EA	1
19A		1003708	Kit, Switch Flow, Sensitive (Retrofit)	EA	1
20		RD30420F	Union, Steel, 5/8" x ½" MIP	EA	1
21		RD30005H	Hose, Gas 22"L	EA	1
22		RD30080F	Adapter, 1-1/2" MIP – NHT, KOCHEK	EA	1
23		RD30085F	Plug, 1-1/2" NFT w/ ¼" Tap	EA	1
24		RD300490	Washer, Flat, 0.625"ID x 1.25"OD, SS	EA	1
25		RD30005Q	Fitting, ¼" MIP – QC, Hansen 10	EA	1
26		RD300015	Lanyard, Cable Aircraft, 1/16"dia	EA	1
27		RD300020	Sleeve, Oval	EA	2

*NOTE: Part number RD30001P sold in 12" Lengths.

G2 / G2-I FRESH WATER OUTLET SUBASSEMBLY



Figure 3. G2 / G2-I Fresh Water Outlet Subassembly.

(1) Illus Number	(2) National Stock Number	(3) Part Number	(4) Description	(5) U/I	(6) Qty Rqr
1		RD30005F	Elbow, Copper, ¾" C – FTG, 90°	EA	3
2		RD30030F	Fitting, Tee, Copper ¾"	EA	2
3		RD30001P*	Copper Tube, ¾"dia x 5 ½"L	EA	1
4		RD30055F	Union, Copper, ¾"	EA	1
5		RD30001P*	Tube, Copper ¾"dia x 2"L	EA	4
6		RD30050F	Adapter, Copper ¾" x ½" C - MIP	EA	2
7		RD30010Q	Cam, Plastic ½" FIP - Male	EA	2
8		RD30105H	Hose, Supply 35' Black	EA	1
9		RD30001Q	Cap, Dust ½"	EA	2
10		RD30015F	Adapter, Copper ¾" x ½" C - FIP	EA	1
11		RD300055	Gauge, Temperature w/Probe, 2" dia	EA	1
12		RD300510	Screw, #6 x ½", S-Metal, SS	EA	3
13		RD30045F	Elbow, Brass 5/8" x ¾" FL - FIP	EA	1
14		RD30010F	Adapter, Copper ¾" FTG - MIP	EA	1

Table 3. G2 / G2-I Fresh Water Outlet Subassembly.

*NOTE: Part number RD30001P sold in 12" Lengths.

G2 / G2-I HOT WATER SUBASSEMBLY



Figure 4. G2 / G2-I Hot Water Subassembly.

(1) Illus Number	(2) National Stock Number	(3) Part Number	(4) Description	(5) U/I	(6) Qty Rqr
1		RD30075F	Pipe, Nipple, Brass (Threaded) ¾" x 4"L	EA	1
2		RD30045F	Elbow, Brass 5/8" x ¾" FL - FIP	EA	1
3		RD30001H	Hose, Gas 16"	EA	1
4		RD30420F	Union, Steel 5/8" x 1⁄2" MIP	EA	1
5		RDSP0140	Switch, Hi-Limit	EA	1

Table 4. G2 / G2-I Hot Water Subassembly.

G2 / G2-I CONTROL PANEL SUBASSEMBLY



Figure 5. G2 / G2-I Control Panel Subassembly.

(1) Illus Number	(2) National Stock Number	(3) Part Number	(4) Description	(5) U/I	(6) Qty Rqr
1		RDSA2100	Assembly, Control Panel Complete	EA	1
2		1008105	Knob, Handle (Incl Mounting Screw), Brass	EA	1
3		RD300485	Screw, Phil Flat Hd, 10-24 x ¾"L, SS	EA	2
4		RD300035	Plate, Valve Heater	EA	1
5		RD300470	Screw, Phil Flat Hd, 10-24 x 1"L, SS	EA	2
6		RD300150	Bolt, Hex Hd, ¼-20 x ¾"L, SS	EA	4
7		1003484	Washer, Lock, ¼", SS	EA	4
8		1005374	Washer, Flat, ¼", SS	EA	4
9		RDSP0155	Switch, Power, Rocker	EA	1
10		1006800	Meter, Hour (Includes mounting hardware)	EA	1
11		1009750	Receptacle, Single, 120V, 15A	EA	1
12		1009751	Cover, Receptacle, Single	EA	1
13		RDSP0210	Cord, Power, Electric with GFCI, 120V, 15A	EA	1
14		1009753	Strain Relief	EA	1
15		1009752	Locknut, 1/2" Electrical, Plastic	EA	1

Table 5. G2 / G2-I Control Panel Subassembly.

G2 / G2-I TEMPERATURE (MIXING VALVE) ASSEMBLY



Figure 6. G2 / G2-I Temperature (Mixing Valve) Assembly.

(1) Illus Number	(2) National Stock Number	(3) Part Number	(4) Description	(5) U/I	(6) Qty Rqr
1		RD300050	Valve, Mixing 3500	EA	1
2		1009669	Stop, Check, Straight 3/4" Rough Bronze	EA	2
3		RD30010F	Adapter, Copper ¾" FTG-MIP	EA	1

Table 6. G2 / G2-I Temperature (Mixing Valve) Assembly.



Figure 7. G2 / G2-I Fuel Filter / Water Separator Assembly.

(1) Illus Number	(2) National Stock Number	(3) Part Number	(4) Description	(5) U/I	(6) Qty Rqr
1		1007414	Assembly, Fuel Filter/Water Separator	EA	1
2		RDSP0150	Filter, Fuel (Incl both O-rings)	EA	1
3		1007415	Bowl, Water Separator	EA	1
4		RD300015	Lanyard, Cable Aircraft, 1/16"dia x 26"	EA	1
5		RD300020	Sleeve, Oval	EA	2

Table 7.	G2 / G2	-I Fuel Filter	/ Water Separato	or Assembly.
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G2 / G2-I FUEL TANK ASSEMBLY



Figure 8. G2 / G2-I Fuel Tank Assembly.

(1) Illus Number	(2) National Stock Number	(3) Part Number	(4) Description	(5) U/I	(6) Qty Rqr
1		1007410	Cap, Vented Fuel	EA	1
2		1007411	Tank, Fuel 10 Gallon	EA	1
3		1007412	Strap, Fuel Tank, Metal	EA	2
4		1001792	Screw, Cap, Hex Hd, ¼-20 x 1-1/2"L	EA	2
5		1003484	Washer, Lock, ¼"	EA	2
6		1005374	Washer, Flat, ¼"	EA	6
7		1005858	Nut, Lock, Nylon Insert, 1/4-20	EA	4
8		1009800	Assy, Fuel Hose, ¼" ID x 13" L	EA	2

Table 8. G2 / G2-I Fuel Tank Assembly.

G2 / G2-I BRAKE & WHEEL ASSEMBLY



Figure 9. G2 / G2-I Brake and Wheel Assembly.

(1) Illus Number	(2) National Stock Number	(3) Part Number	(4) Description	(5) U/I	(6) Qty Rqr
1		1005858	Nut, Lock, Nylon Insert, ¼-20	EA	4
2		1005374	Washer, Flat, ¼"	EA	4
3		RDSP0325	Brake Assembly	EA	1
4		RD300150	Screw, Cap, Hex Hd, ¼-20 x ¾"L	EA	4
5		1009754	Axle, 5/8"dia x 29-3/4"L	EA	2
6		RDSP0205	Tire, Flat Proof, 10" dia	EA	4
7		1009755	Collar, Shaft, 5/8"dia	EA	4

Table 9.	G2 / G2-I	Brake and	Wheel	Assembly.
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G2 / G2-I BURNER MOTOR ASSEMBLY



Figure 10. G2 / G2-I Burner Motor Assembly.

(1) Illus Number	(2) National Stock Number	(3) Part Number	(4) Description	(5) U/I	(6) Qty Rqr
1		RDSP0145	Assembly, Burner Motor Complete (Excludes #18, 19, 20, 27, 28 and 29)	EA	1
2		RDSP0334	Gasket, Mounting, Burner Motor	EA	1
3		1009756	Burner Head	EA	1
4		1009757	Air Tube (includes nozzle gun)	EA	1
5		1007419	Screw, Slotted Hex Hd, #8 x ½"L	EA	4
6		1007420	Screw, Phil Flat Hd, ¼-20 x 5/8"L	EA	4
7		1009758	Flange, Air Tube	EA	1
8		1009759	Gasket, Air Tube	EA	1
9		1009760	Kit, Electrode (includes 2 electrodes)	EA	1
10		1007425	Screw, Slotted Hex Hd, 10-24 x 3/8"L	EA	2
11		1009761	Transformer, Ignition	EA	1
12		1007421	Screw, Fillister Head, 10-24 x 5/16"L	EA	2
13		1009762	Housing, Burner	EA	1
14		1009763	Blower, Fan (squirrel cage)	EA	1
15		1009764	Motor, Blower	EA	1
16		1007418	Screw, Slotted Hex Hd, 5/16-18 x 1"L	EA	4
17		RDSP0380	Coupler, Drive, Flexible, Fuel Pump	EA	1
18		1007416	Elbow, 90°, ¼"MPT x ¼"MPT	EA	1
19		1007414	Fuel Filter/Water Separator Assy (see Figure 6 for breakdown)	EA	1
20		1007417	Elbow, 90°, ¼"MPT x ¼"JIC Flare	EA	1
21		1009430	Assembly, Fuel Pump (includes Solenoid)	EA	1
22		1009765	Solenoid, Fuel	EA	1
23		1009766	Set, Cord	EA	1
24		1009767	Line, Fuel Connector	EA	1
25		1007422	Screw, Self-Tapping, Slotted Hex Hd, 10-24 x ½"L	EA	1
26		1007423*	Nut, Splined (Specialty)	EA	1
27		T270550	Nut, Plain Hex Hd, 3/8-16	EA	3
28		T270590	Washer, Lock, 3/8"	EA	3
29		T270580	Washer, Flat, 3/8"	EA	3
30		1007424	Screw, Phil Pan Hd. 8-32 x 3/8"L, SS	FA	2

Table 10. G2 / G2-I Burner Motor Assembly.

*PN 1007423 is a special made part for Beckett Burners



Figure 11. G2-I Decon Solution Subassembly.

(1) Illus Number	(2) National Stock Number	(3) Part Number	(4) Description	(5) U/I	(6) Qty Rqr
1		RD30060F	Adapter, Steel, 5/8" x ¾" FL-FIP	EA	1
2		RD30010F	Adapter, Copper, ¾" FTG-MIP	EA	1
3		RD30030F	Fitting, Tee, Copper, ¾"	EA	1
4		RD30001P*	Pipe, Copper, ¾"dia x 2"L	EA	2
5		RD30005F	Elbow, 90°, ¾"C-FTO90	EA	2
6		RD30050F	Adapter, Copper, ¾" x ½"C-MIP	EA	2
7		RD30010Q	Cam, ½"FIP-Male	EA	2
8		RD30100H	Hose, Supply ½" x 35' FCAM-MCAM, Red	EA	1
9		RD30001Q	Cap, Dust, ½"	EA	2

Table 11. G2-I Decon Solution Subassembly.

*PN RD30001P is sold in 10' Lengths

G2-I INJECTOR ASSEMBLY



Figure 12. G2-I Injector Assembly.

(1) Illus Number	(2) National Stock Number	(3) Part Number	(4) Description	(5) U/I	(6) Qty Rqr
1		RDSA2015	Assembly, Injector, MiniDos 10	EA	1
2		RD30045F	Elbow, Brass, 5/8" x ¾" FL-FIP	EA	2
3		RD30015H	Hose, Gas 34"	EA	1
4		1009779	Hose, Suction, ½"dia x 5'	EA	1
5		RD300005	Assembly, Filter Water Banjo, Screen 100 Mesh (see Figure 12 for breakdown)	EA	1
6		RD30170Q	Adapter, 3/8" Barb – QC	EA	1
7		RD30010H	Hose, Gas 28"	EA	1
8		RD30070F	Pipe, Nipple, PVC80, ¾" Close	EA	1
9		RD300430	Pin Hitch, Injector, MiniDos 10	EA	4
10		1005858	Nut, Nylon Lock ¼-20	EA	4
11		1005374	Washer, Flat ¼" SS	EA	4
12		1002605	Bracket, Mounting. Injector, MiniDos 10	EA	1

Table 12. G2-I Injector Assembly.

G2-I INJECTOR INLET T-STRAINER / FILTER ASSEMBLY



Figure 13. G2-I Injector Inlet Filter (T-Strainer) Assembly.

(1) Illus Number	(2) National Stock Number	(3) Part Number	(4) Description	(5) U/I	(6) Qty Rqr
1		RD30005	Assembly, Filter Water Banjo, w/100 Mesh Screen	EA	1
2		1009769	Head, T-Strainer	EA	1
3		1009770	Screen, Mesh 100	EA	1
4		1009771	O-ring, Strainer Body	EA	1
5		1009772	Body, T-Strainer	EA	1
6		1009773	O-ring, Drain Plug, Strainer Body	EA	1
7		1009774	Plug, Drain, Strainer Body	EA	1

Table 13. G2-I Injector Inlet Filter (T-Strainer) Assembly.

G2-I MINIDOS INJECTOR SUBASSEMBLY




(1) Illus Number	(2) National Stock Number	(3) Part Number	(4) Description	(5) U/I	(6) Qty Rqr
1		1009777	Ring, Locking, Cotter	EA	1
2		1009780	Lever, Bypass, On / Off	EA	1
3		1009781	Pin, Upper Shaft (for Bypass Lever)	EA	1
4		1009332	Cylinder, Outer, Injector, MiniDos 10%	EA	1
5		1009466	O-ring (Viton), Inner Cylinder, Lower End	EA	1
6		1002911	Sleeve, Ratio Adjustment	EA	1
7		1009467	O-ring (Viton), Outer Cylinder, Lower End	EA	1
8		1009333	Cylinder, Inner, Injector, MiniDos 10%	EA	1
9		1009776	Pin, Narrow Interlock (Stainless Steel)	EA	1
10		1009775	Pin, Upper Interlock (Black Plastic)	EA	1

Table 14. G2-I MiniDos Injector Subassembly.

G2-I DECON SOLUTION TANK ASSEMBLY



Figure 15. G2-I Decon Solution Tank Assembly.

(1) Illus Number	(2) National Stock Number	(3) Part Number	(4) Description	(5) U/I	(6) Qty Rqr
1		RD300070	Assembly, Tank Solution (includes gauge and in-line filter)	EA	1
2		RD30175Q	Coupler, 3/8"MIP, Quick Connect	EA	1
3		1009778	Gauge, Decon Solution, 2-1/4" Threaded Cap w/8" Gauge	EA	1

Table 15. G2-I Decon Solution Tank Assembly.



Figure 16. Optional Exhaust Stack.

Table 16.	Optional	Exhaust St	tack.
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(1) Illus Number	(2) National Stock Number	(3) Part Number	(4) Description	(5) U/I	(6) Qty Rqr
1 2 3	5310-01-525-0177 5305-01-443-8652	RDSP0081 HW903-6012-1 1009782	Adapter, Stack, Exhaust, G2 Heater Washer, Flat, 13/64"ID (for #10 Screw) Screw, Phil Rd Hd, 10-32 x ¾"L, Steel, Z- Plated	EA EA EA	1 4 4

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G2 / G2-I WATER HEATER WIRING SCHEMATIC



Figure 17. G2 / G2-I Wiring Schematic.

END OF WORK PACKAGE

SUPPORTING INFORMATION G2 SERIES DECONTAMINATION WATER HEATER G2S / G2S-I WATER HEATER ILLUSTRATED PARTS BREAKDOWN & PARTS LIST

GENERAL

The following WP identifies the G2S and G2S-I Water Heaters Illustrated Parts Breakdown (IPB) and Spare Parts Lists. The G2S Series Water Heaters is a smaller version of the G2 Series Water Heater. The G2S / G2S-I consists of a self-heating water system with or without mobile Decon injection system designed to connect to a Reeves S and XB Decon Shelter which support various operations.



Figure 1. G2S / G2S-I Water Heater Multi-views.

G2S / G2S-I ILLUSTRATED PARTS BREAKDOWN & SPARE PARTS LISTS

G2S / G2S-I FRESH WATER INLET SUBASSEMBLY



Figure 2. G2S / G2S-I Fresh Water Inlet Subassembly.

(1) Illus Number	(2) National Stock Number	(3) Part Number	(4) Description	(5) U/I	(6) Qty Rqr
1		RD30001H	Hose, Gas, 16"L	EA	1
2		RD300060	Gauge, Pressure 2"dia	EA	1
3		RD30455F	Elbow, Brass, ¼" FL-FIP, ¼"	EA	1
4		RD300065	Hose, Pressure, w/Fittings, ¼"	EA	1
5		RD30040F	Adapter, Brass ¼" x ½" FL - MIP	EA	1
6		RD30015F	Adapter, Brass, ¾" x ½" C-FIP	EA	2
7		RD30001P*	Tube, Copper ¾"dia x 4"L	EA	2
8		RD30305F	Elbow, Copper, 45°, ¾" FFTG-C	EA	3
9		RD30030F	Tee, Copper, ¾"	EA	2
10		RD30001P*	Tube, Copper, ¾"dia x 4 ½"L	EA	2
11		RD30145F	Elbow, Cop, Lt 90°, ¾"	EA	1
12		RD30001P*	Tube, Copper ¾"dia x 3 ¼"L	EA	1
13		RD30055F	Union, Copper, ¾"	EA	1
14		RD30020F	Reducer, FTG, 1-1/2" x ¾" FTC-C	EA	1
15		RD30025F	Adapter, Copper 1 ½"C x FIP	EA	1
16		RD30085F	Plug, 1-1/2" NFT w/ ¼" Tap	EA	1
17		RD30005Q	Fitting, ¼" MIP – QC, Hansen 10	EA	1
18		RD300490	Washer, Flat, 0.625"ID x 1.25"OD, SS	EA	1
19		RD300015	Lanyard, Cable Aircraft, 1/16"dia	EA	1
20		RD300020	Sleeve, Oval	EA	2
21		RD30080F	Adapter, 1-1/2" MIP – NHT, KOCHEK	EA	1
22		RD30005F	Elbow, Copper ¾" C - FTG, 90°	EA	1
23		RD30001F	Adapter, Copper ¾" C - MIP	EA	1
24		RD30060F	Adapter, Steel, 5/8" x ¾", FL-FIP	EA	1
25		1009787	Adapter, Swivel, 3/8" MNPT x #8 FJIC	EA	2
26		1009819	Nipple, Hex, ½"MP x #8 JIC	EA	2
27		RDSP0285	Tee, Steel, 1/2" FIP	EA	1
28		RDSP0425	Switch, Flow, (Replacement Model V11)	EA	1
29		1009788	Tee –Steel 3/8" Female	EA	1
30		RDSP0265	Pipe, Nipple, 3/8" MIP x 3"	EA	1
31		RDSP0250	Elbow, 3/8"M-F, Brass	EA	1
32		RDSP0255	Nipple, 3/8" FIP-M22, 15mm, Brass	EA	1
33		RDSP0275	Assembly, Drain Plug	EA	1

*NOTE: Part number RD30001P sold in 12" Lengths.

G2S FRESH WATER OUTLET SUBASSEMBLY





(1) Illus Number	(2) National Stock Number	(3) Part Number	(4) Description	(5) U/I	(6) Qty Rqr
1		RD30010H	Hose, Gas, 28"L	EA	1
2		RD30060F	Adapter, Steel, 5/8" x ¾", FL-FIP	EA	2
3		RD30010F	Adapter, Copper ¾" FTG - MIP	EA	3
4		RD30030F	Fitting, Tee, Copper ¾"	EA	2
5		RD30001P*	Tube, Copper ¾"dia x 2"L	EA	1
6		RD30015F	Adapter, Copper ¾" x ½" C - FIP	EA	1
7		RD300055	Gauge, Temperature w/Probe, 2" dia	EA	1
8		RD30305F	Elbow, Copper, 45°, ¾" FFTG-C	EA	2
9		RD30145F	Elbow, Cop, Lt 90°, ¾"	EA	1
10		RD30001P*	Copper Tube, ¾"dia x 5 ½"L	EA	1
11		RD30325F	Elbow, Copper, 90° ¾"C-C	EA	1
12		RD30001P*	Tube, Copper ¾"dia x 2 ½"L	EA	1
13		RD30050F	Adapter, copper, ¾" x ½", C-MIP	EA	2

Table 3. (G2S Fresh	Water Outlet	Subassembly.
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*NOTE: Part number RD30001P sold in 12" Lengths.

G2S / G2S-I TEMPERATURE (MIXING VALVE) ASSEMBLY



Figure 4. Temperature (Mixing Valve) Assembly.

(1) Illus Number	(2) National Stock Number	(3) Part Number	(4) Description	(5) U/I	(6) Qty Rqr
1		RD300050	Valve, Mixing 3500	EA	1
2		1009669	Stop, Check, Straight ½" Rough Bronze	EA	2
3		RD30010F	Adapter, Copper ¾" FTG-MIP	EA	1

Table 4. Temperature (Mixing Valve) Assembly

G2S / G2S-I CONTROL PANEL



Figure 5. G2S / G2S-I Control Panel

(1) Illus Number	(2) National Stock Number	(3) Part Number	(4) Description	(5) U/I	(6) Qty Rqr
1		RDSP0155	Switch, Power, Rocker	EA	1
2		1009768	Screw, Cap, Flange Hex Hd, M6-1.00 x 20mm	EA	4
3		RDSP0210	Cord, Power, Electric with GFCI, 120V, 15A	EA	1
4		1009753	Strain Relief	EA	1
5		1009752	Locknut, ½" Electrical, Plastic	EA	1
6		RD30001Q	Cap, Dust, ½"	EA	2
7		RD300020	Sleeve, Oval	EA	2
8		RD300015	Lanyard, Cable, Aircraft, 1/16"dia x 12"	EA	1
9		RD300470	Screw, Phil Flat Hd, 10-24 x 1"L, SS	EA	2
10		RD300035	Plate, Valve Heater	EA	1
11		RD300485	Screw, Phil Flat Hd, 10-24 x ¾"L, SS	EA	2
12		1008105	Knob, Handle (Incl Mounting Screw), Brass	EA	1

Table 5. G2S / G2S-I Control Panel

G2S / G2S-I FUEL TANK & FUEL FILTER / WATER SEPARATOR ASSEMBLY



Figure 6. G2S / G2S-I Fuel Tank and Fuel Filter / Water Separator Assembly.

(1) Illus Number	(2) National Stock Number	(3) Part Number	(4) Description	(5) U/I	(6) Qty Rqr
1		1007414	Assembly, Fuel Filter/Water Separator	EA	1
2		RDSP0150	Filter, Fuel (Incl both O-rings)	EA	1
3		1007415	Bowl, Fuel/Water Separator	EA	1
4		1009783	Tank, Fuel, 4 Gallon	EA	1
5		1007410	Cap, Vented Fuel	EA	1

Table 6. G2S / G2S-I Fuel Tank and Fuel Filter / Water Separator Assembly.

G2S / G2S-I BRAKE AND WHEEL ASSEMBLY



Figure 7. G2S / G2S-I Brake and Wheel Assembly.

(1) Illus Number	(2) National Stock Number	(3) Part Number	(4) Description	(5) U/I	(6) Qty Rqr
1		1009789	Grip-Handle	EA	1
2		RDSP0245	Handle, Brake, (Painted)	EA	1
3		1009790	Screw, Cap, Hex Hd, 5/16-18 x 1-1/4"L Gr5	EA	1
4		1009791	Washer, Flat, SAE, 5/16"	EA	2
5		1009792	Washer, Flat, 11/32"ID x 1-1/4"OD	EA	1
6		1009793	Grommet, Rubber, 5/16"ID x 1"OD	EA	1
7		1005375	Nut, Lock, Nylon Insert, ¼-20	EA	4
8		1009794	Bracket, Brake, (Painted)	EA	1
9		1009795	Plate, Brake, (Painted)	EA	1
10		1005374	Washer, Flat, ¼"	EA	8
11		RD300150	Screw, Cap, Hex Hd, ¼-20 x ¾"L	EA	4
12		RD300525	Screw , M8 X 1.25 X 20mm	EA	2
13		T270460	Nut, Lock, Nylon, Insert, 5/16-18	EA	1
14		RDSP0205	Tire, Flat Proof, 10" dia	EA	4
15		T270860-8	Nut, Lock, Nylon Insert, 5/8-11	EA	4

Table 7.	G2S / G2S-I	Brake and	Wheel Assembly	y.
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G2S / G2S-I BURNER MOTOR ASSEMBLY





Table 8.	G2S / G2S-I Burner Motor Assembly	y
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(1) Illus Number	(2) National Stock Number	(3) Part Number	(4) Description	(5) U/I	(6) Qty Rqr
		1000800		F A	2
		1009600	Fuel Filter)	EA	3
2		1007417	Elbow, Flare, 45°, ¼" M x ¼"	EA	3
3		1009801	Coupler, Flex, Fuel Pump	EA	1
4		RD300525	Screw, Cap, Hex Hd, M8-1.25 x 20mm, Gr8,-Zinc	EA	1
5		1009803	Shim, Bower Motor	EA	1
6		1009805	Blower, Fan	EA	1
7		1009807	Adapter, ¼" MNPT x ¼" Flare, Brass	EA	1
8		1009808	Bracket, Fuel Filter	EA	1
9		1009809	Washer, Seal, Rubber, 1" OD x ½" ID	EA	1
10		1007414	Assembly, Fuel Filter / Water Separator (See Figure 6 for Breakdown)	EA	1
11		1009811	Nut, Hex, Serrated Flange, M8-1.25	EA	2
12		RDSP0425	Switch, Flow, (Replacement Model V11)	EA	1
13		1009787	Adapter, Swivel, 3/8" MNPT x #8 FJIC	EA	2
14		1009819	Nipple, Hex, ½" MP x #8 JIC	EA	2
15		RDSP0285	Tee, Steel, ¹ / ₂ " Female	EA	1
16		1009788	Tee, Steel, 3/8" Female	EA	2
17		RDSP0265	Pipe, Nipple, 3/8" NPT x 3" L	EA	1
18		RDSP0275 Assembly, Drain Plug		EA	1
19	RDSP0255 Adapter, 3/8" FNPT x M22 x 15mm, Brass		EA	1	
20	RDSP0250 Elbow, Brass 3/8M x F ,G2S		EA	1	
21	RDSP0270 Switch, Hi Limit, 3/8" NPT, 225°F / 107°C, 4' Cord		EA	1	
22		1009820	Elbow, 90°, 3/8" M x 3/8" F, Steel	EA	1
23		1009806	Assembly, Boiler	EA	1
24		1009814	Boot, Electrode	EA	2
25		1009813	Cap, Connector, Electrode	EA	2
26		1009812	Insulator, ¾" dia tapering to ½" dia x 3" L, Black	EA	2
27		1009815	Elbow, 90°, 1/8" M x 1/8" M, Brass	EA	1
28		1007695	Solenoid, Fuel, 120V	EA	1
29		1009804	Screw, Set	EA	1
30		1009797	Elbow, Flare, 90°, 1/8" M x 1/8" M, Brass	EA	2
31		1009796	Assy, Fuel Hose, ¼" ID x 23.75" L (Fuel Pump to Fuel Nozzle)	EA	1
32		1009802	Motor, Assy, Blower, 120V	EA	1
33		1009798	Fuel Pump, (Right-Hand)	EA	1
34		1009799	Screw, Cap, Flange, Hex Hd, M6-1.00 x 25mm	EA	2





(1) Illus Number	(2) National Stock Number	(3) Part Number	(4) Description	(5) U/I	(6) Qty Rqr
1		RD30005H	Hose, Gas, 22"L	EA	1
2		RD30060F	Adapter, Steel, 5/8" x ¾", FL-FIP	EA	1
3		RD30010F	Adapter, Copper ¾" FTG - MIP	EA	1
4		RD30030F	Fitting, Tee, Copper ¾"	EA	2
5		RD30001P*	Tube, Copper ¾"dia x 2"L	EA	1
6		RD30015F	Adapter, Copper ¾" x ½" C - FIP	EA	1
7		RD300055	Gauge, Temperature w/Probe, 2" dia	EA	1
8		RD30305F	Elbow, Copper, 45°, ¾" FFTG-C	EA	2
9		RD30145F	Elbow, Cop, Lt 90°, ¾"	EA	1
10		RD30001P*	Copper Tube, ¾"dia x 5 ½"L	EA	1
11		RD30325F	Elbow, Copper, 90° ¾"C-C	EA	1
12		RD30001P*	Tube, Copper ¾"dia x 2 ½"L	EA	1
13		RD30050F	Adapter, copper, ¾" x ½", C-MIP	EA	1

Table 9. G2S-I Fresh Water Outlet Subassembly.

*NOTE: Part number RD30001P sold in 12" Lengths.

G2S-I DECON SOLUTION SUBASSEMBLY





(1) Illus Number	(2) National Stock Number	(3) Part Number	(4) Description	(5) U/I	(6) Qty Rqr
1		RD30045F	Elbow, 5/8" x ¾" FL – FIP, Brass	EA	1
2		RD30010H	Hose, Gas, 28"	EA	1
3		RD30060F	Adapter, Steel, 5/8" x ¾" FTG-MIP	EA	1
4		RD30010F	Adapter, Copper, ¾" FTG-MIP	EA	1
5		RD30050F	Adapter, Copper, ¾" x ½" C-MIP	EA	1
6		RD30010Q	Cam, ½" Flip-Male	EA	1
7		RD30001Q	Cap, Dust, ½"	EA	1

Table 10. G2S-I Decon Solution Subassembly.

G2S-I INJECTOR ASSEMBLY



Figure 11. G2S-I Injector Assembly.

(1) Illus Number	(2) National Stock Number	(3) Part Number	(4) Description		(6) Qty Rqr
1		RDSA2015	Assembly, Injector, MiniDos 10	EA	1
2		RD30070F	Pipe, Nipple, PVC80, ¾" Close	EA	1
3		RD30045F	Elbow, Brass, 5/8" x ¾" FL-FIP	EA	2
4		RD30015H	Hose, Gas 34"	EA	1
5		RD300005	Assembly, Filter Water Banjo, Screen 100 Mesh (see Figure 12 for breakdown)	EA	1
6		1009779	Hose, Suction, ½"dia x 5'	EA	1
7		1009818	Filter, Suction Tube, ½" dia	EA	1
8		RD30010H	Hose, Gas 28"	EA	1
9		RD300430	Pin Hitch, Injector, MiniDos 10	EA	4
10		1005858	Nut, Nylon Lock ¼-20	EA	4
11		1005374	Washer, Flat ¼" SS	EA	4
12		1002605	Bracket, Mounting. Injector, MiniDos 10	EA	1

Table 11. G2S-I Injector Assembly.

G2S-I INJECTOR INLET FILTER (T-STRAINER) ASSEMBLY



Figure 12. G2S-I Injector Inlet Filter (T-Strainer) Assembly.

(1) Illus Number	(2) National Stock Number	(3) Part Number	(4) Description	(5) U/I	(6) Qty Rqr
1		RD300005	Assembly, Filter Water Banjo, w/100 Mesh Screen	EA	1
2		1009769	Head, T-Strainer	EA	1
3		1009770	Screen, Mesh 100	EA	1
4		1009771	O-ring, Strainer Body	EA	1
5		1009772	Body, T-Strainer	EA	1
6		1009773	O-ring, Drain Plug, Strainer Body	EA	1
7		1009774	Plug, Drain, Strainer Body	EA	1

Table 12. G2S-I Injector Inlet Filter (T-Strainer) Assembly.

G2S-I MINIDOS INJECTOR REPLACEMENT PARTS





(1) Illus Number	(2) National Stock Number	(3) Part Number	(4) Description	(5) U/I	(6) Qty Rqr
1		1009777	Ring, Locking, Cotter	EA	1
2		1009780	Lever, Bypass, On / Off	EA	1
3		1009781	Pin, Upper Shaft (for Bypass Lever)	EA	1
4		1009332	Cylinder, Outer, Injector, MiniDos 10%	EA	1
5		1009466	O-ring (Viton), Inner Cylinder, Lower End	EA	1
6		1002911	Sleeve, Ratio Adjustment	EA	1
7		1009467	O-ring (Viton), Outer Cylinder, Lower End	EA	1
8		1009333	Cylinder, Inner, Injector, MiniDos 10%	EA	1
9		1009776	Pin, Narrow Interlock	EA	1
10		1009775	Pin, Upper Interlock	EA	1

Table 13.	G2S-I MiniDos	Injector	Replacement	Parts.
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G2S / G2S-I WIRING SCHEMATIC



Figure 14. G2S / G2S-I Wiring Schematic.

END OF WORK PACKAGE