Max-Suppress™ 30-G Wheeled Unit

30-Gallon Fast Response CAC

OPERATIONS, TRAINING, & MAINTENANCE MANUAL

January 1, 2015

TABLE OF CONTENTS

CHAPTER 1
INTRODUCTION

1-1. MANUFACTURER:

A. FireStopper International Limited (hereinafter FireStopper®)

1-2. CERTIFICATION AND RATING:

INTERNATIONAL:

CE – EN-1568; EN3-7; ICAO; IMO

US:

The ***FireStopper® Max-Suppress™ 30-G Wheeled*** system is tested, rated, and certified through UL under Standard UL711 sections 5.2 and 6.2. It is rated for: A-TBD, B-TBD, C-TBD fires when used in conjunction with UL 162 rated all fire class FireStopper® XL FFC, XL "PUS" FFC or FireStopper® PFE-FR FFC suppressants. ***The above "Statement" is subject to finalization of testing and Listing process currently under way.***

1-3. LIMITED WARRANTY:

WARRANTY, DISCLAIMERS, LIMITATIONS OF REMEDIES AND WARNINGS

FireStopper® warrants its products as provided herein only to Buyers who buy directly from FireStopper® solely for resale or for commercial or industrial use in the ordinary course of each Buyer's business, and FireStopper® makes no written warranty to any purchaser who purchases for personal, family or household use and authorizes no person to make any such written warranty on its behalf. No employee or agent of FireStopper® is authorized to vary the terms of this Warranty. FireStopper® warrants its extinguisher products to be free from defect in material & workmanship for a period of (20) twenty-years from date of manufacture (on stainless steel models only. On any other models, a 1-year limited warranty period applies. During the warranty period, any such defects will be repaired or replaced at the discretion of FireStopper®. The original seals must be in place or the warranty is void. This warranty does not cover defects resulting from tampering, modification, alteration, abuse, and misuse, exposure to corrosive conditions, or improper installation and or maintenance. Any pressure gage and wearable parts are expressly excluded. ***This warranty shall be void if any other product than the recommended FireStopper® fire suppressants is used in conjunction with this system.***

ALL IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO, WARRANTIES OF FITNESS FOR PURPOSE AND MERCHANTABILITY, ARE LIMITED TO THE TIME PERIODS STATED ABOVE, AND IN NO EVENT WILL FIRESTOPPER® OR ANY OF ITS AFFILIATES, DISTRIBUTORS, AGENTS OR EMPLOYEES, BE LIABLE TO INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND. IMPORTANT NOTICE TO PURCHASER: ANY ALTERATION TO THE ORIGINAL FORMULA, EXCEPT FOR ITS INTENDED END USE, SHALL VOID ANY AND ALL WARRANTIES OF PRODUCT.

The following is made in lieu of all warranties, expressed or implied, including the implied warranties of merchantability and fitness for purpose: Sellers and manufacturer's only obligations shall be to replace such quantity of the product proved to be defective. Before using, user shall determine the suitability of the product for its intended use, and user will assume all risk and liability whatsoever in connection therewith.

NEITHER SELLER NOR MANUFACTURER SHALL BE LIABLE IN TORT OR IN CONTRACT FOR ANY LOSS OR DAMAGE DIRECT, INCIDENTAL, OR CONSEQUENTIAL, ARISING OUT OF THE USE OF OR THE INABILITY TO USE THE PRODUCT.
Buyer is authorizes to return to FireStopper®, freight prepaid, at a location specified by FireStopper® authorized personnel, any such warranted product, and that product will be repaired or replaced at FireStopper® expense if a defect is found to exist. *Any claims of defect or failure to performance under this Warranty must be made within (30) thirty-days after failure or defect is discovered. The liabilities are limited solely and exclusively to repair or replacement as provided herein and exclude all consequential or other damages of any kind whatsoever, whether any claim is based upon theories of contract, negligence or tort, and without any limitation, do not include shipping charges, labor, installation, loss of product, or any other losses or expenses incurred in operation or installation of any repaired or replaced materials and products.* FireStopper® assumes no liability for damages resulting from normal ware, tampering, improper installation, misuse or neglect, or the effects of internal or external corrosion. FireStopper® does not warrant any aspect of product installation, modification or manufacturing carried out by parties other than FireStopper®. Buyer hereby indemnifies FireStopper® for any loss, cost, or expense to which Buyer may expose FireStopper® as a result of any such activities.

WARNING: Some FireStopper® products may be under pressure and shall require special handling and compliance to Governmental or DOT regulations, State and local laws, and any other applicable standards. FireStopper® is not responsible for ensuring the compliance of others, and does not warrant the compliance of other, with any law or regulation pertaining to the use or charging of the cylinder product it manufactures. This warranty may be supplemented or changed in whole or in part from time to time. The applicable Warranty is the Warranty in effect at the time of shipment.

9. LIMITATION OF LIABILITY. FireStopper® total liability on any claim arising out of this contract shall not exceed the price allocated to the product or part, which gives rise to such claim. In no event shall FireStopper® be liable for any incidental or consequential damages including, but not limited to, damages for loss of revenue, cost of capital, loss of contents, claims of customers for service/business interruptions or failure of supply, and costs and expenses incurred in connection with labor, overhead, transportation, installation or removal of products or substitute facilities or supply sources.

10. CHANGES OR CANCELLATION. FireStopper® cannot accept cancellations or change orders after portions of the manufacturing have initiated. Charges for cancellations or changed orders during processing will be pro-rated to the selling price. Prior to the return of any product, written approval from FireStopper® for credit or replacement must be obtained. Returned products must be sent back in their original packaging, freight prepaid, and is subject to a handling charge. Additional charges will be made if the products are damaged, obsolete or in an unsalable condition.

11. OTHER. (a) FireStopper® accepts no responsibility to Buyer, or to any person claiming by or through Buyer, for compliance with any statute, governmental rule or regulation made applicable to this contract by reason of Buyer's intended use of the products unless FireStopper® has received from Buyer prior timely written notification of such statute, rule or regulation and has accepted the same by a separate signed by and authorizes representative of FireStopper®.

(b) FireStopper® may forthwith cancel this contract of any portion hereof, if any of the following events occur: insolvency of Buyer; the initiation of a case by or against Buyer under chapter of the Bankruptcy Code, as amended; the failure of Buyer to give adequate assurance; the appointment of a receiver or trustee to Buyer or for all or part of Buyer's property; or the termination of business operations by Buyer.
(c) FireStopper® forbearance or failure to enforce any of these conditions to exercise any right occurring from any default of Buyer shall not affect, impair or waive FireStopper® rights if such default continues, or if any subsequent default of Buyer's occurs.

(d) All orders are subject to acceptance at FireStopper® offices. Any contract hereunder shall be construed in accordance with the laws of the State of California.

(e) The provisions herein constitute the entire agreement between Buyer and FireStopper®, and no terms or conditions other than those stated herein and agreement or understanding, oral or written in any way purporting to modify these conditions shall be binding on FireStopper® unless hereafter made in writing and signed by FireStopper® authorizes representative.

Acceptance of the products sold hereunder shall constitute assent to these terms and conditions and FireStopper® herby objects to and rejects any and all additional or different terms proposed by Buyer, whether contained in Buyers purchasing or shipping release forms, if any, made prior and with reference hereto are merged herein. Any proposed additions, modifications, deletions, or changes not in separate writings signed by FireStopper® are rejected without further action of FireStopper®.

1-4. WARNINGS, CAUTIONS, & NOTES: Are used to emphasize important and critical instructions and are used for the following conditions:

A. **WARNING**: An operating procedure, practice, etc., which if not correctly followed could result in personal injury or loss of life.

B. **CAUTION**: An operating procedure, practice, etc., which, if not strictly observed, could result in damage to, or destruction of, equipment.

C. **NOTE**: An operating procedure, condition, etc., which it is essential to highlight.

1-5. MANUAL CHANGES AND REPRODUCTION:

A. MANUAL CHANGES:

(1) This manual and the associated updates will be posted on the FireStopper® web site: **www.firestopperintl.com**

(2) Users can help improve this manual by providing any errors, or inconsistencies, to the manufacturer. All corrections submitted should reference the appropriate Chapter/Paragraph (if applicable) and the name and contact (phone, e-mail, fax, etc.) for the person submitting the information.

B. REPRODUCTION: Reproduction of training information, illustrations, and checklists in this manual is authorized.

CHAPTER 2

SYSTEM DESCRIPTION

2-1. GENERAL INFORMATION: The FireStopper® Max-Suppress™ 30-G Compressed Air Catalyst fire suppression system uses compressed air to propel fire-fighting foam. Thousands of tight radius bubbles quickly cool and smother a fire by providing a thick vapor-sealing blanket of foam that virtually eliminates re-ignition. The foam will adhere to horizontal and vertical surfaces. This system allows the operator to seal a fuel spill and flammable vapors with foam thus reducing or eliminating a potential fire. The 30-gallon system can produce approximately 600-gallons of finished foam. It takes approximately 1.5 minutes, in the full open position, to fully discharge the 600-gallons of finished foam. The system will discharge the foam approximately 65-feet in a no wind condition allowing fire-fighting personnel without protective clothing to avoid thermal injuries. The operator can easily service the system. Trained personnel can accomplish all maintenance except the hydrostatic pressure testing of the Air Cylinders, Premix Tank, and the Discharge Hose.

2-2. SPECIFICATIONS:

A. Height: 36-inches Width: 33-inches Length: 44-inches
B. Loaded Weight: 600-lbs Empty Weight: 360-lbs
C. Premix Tank: 304-Stainless Steel 30-gallon capacity
D. Finished Foam Capacity: Approximately 600-gallons
E. Discharge Nozzle: 1” FireStopper®/Akron
F. Discharge Rate (max): 300-gal/minute of finished foam
G. Foam Discharge Distance: 65-feet in a no wind condition
H. Air Cylinder (Scuba): Two (2) 80-CF 3000-psi
I. Regulator: Aqua Environment 415A adjustable pressure 0-400-psi
J. Dispensing Hose: 50 feet of 1” hard rubber or collapsible
K. Hose Length (max): 200 feet
L. Pressure Relief Valve: 200-psi
M. Air Hose: ¼ inch 3000-psi
N. Ball Valves: 400-psi
O. Check Valves: Three one-way
P. Recharge Time: 6-8 minutes
Q. Tires: 8 inch casters on front; 4x16-inch (tube or tubeless) on rear

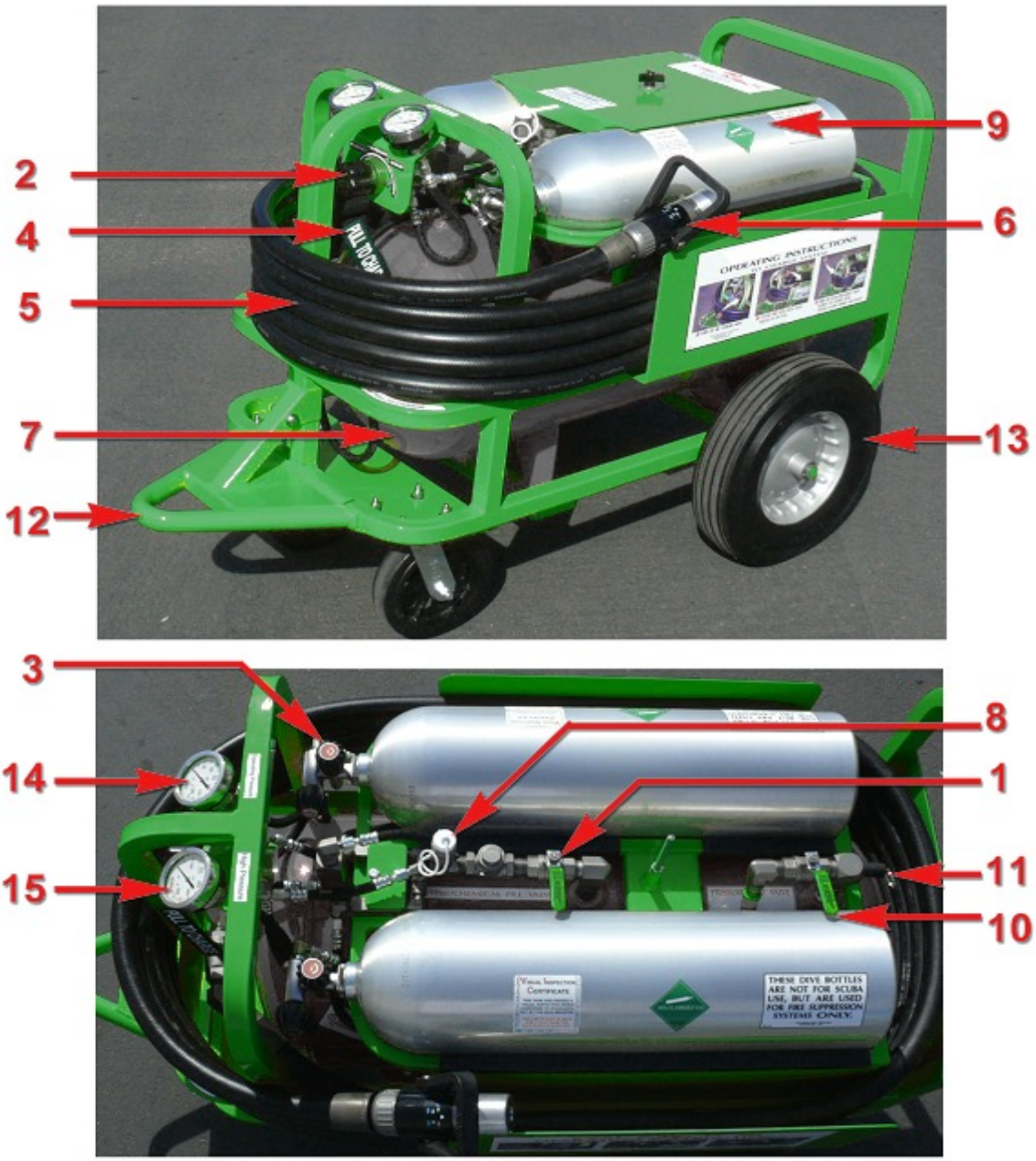
2-3. TRANSPORTING:

The FireStopper® FireStopper® Max-Suppress™ 30-G Unit should be thoroughly secured when transporting in trailers and vehicles. The towing eye was designed exclusively to handle all ground towing and external lift operations. Other sections of the system should not be used for these purposes. Utilize the frame when re-positioning the system. Do not push on any of the components (i.e. gauges, regulators etc.) when moving the system.

2-4. SYSTEM COMPONENTS:

1. **WATER/CHEMICAL FILL VALVE** is located below the Premix Tank Refill Port and allows solutions to enter the Premix Tank. The valve should be open (parallel to the supply line) to fill the Premix Tank and closed (in the perpendicular position) at all other times.
2. **AIR CYLINDER REGULATOR** adjusts the airflow from the Air Cylinders for the system. The regulator incorporates a check valve, which will when the system is pressurized. The regulator maintains a 0-175 psi system operating pressure and has been set to an operational pressure of 150-160 psi. The regulator's operational temperature range is -40 to +160 degrees F.
3. **AIR CYLINDER VALVES** are located on the Air Cylinder. An internal over pressure relief valve opens and vents the Air Cylinder if the internal pressure reaches 4000 psi. An air pressure-indicating gauge is mounted on the main control panel.
4. **FOAM CHARGE VALVE** fills the discharge hose with pressurized foam when placed in the open position. The valve should be positioned in the full open position (handle is in line with the hose) for all operations and closed (handle is perpendicular to the hose) at all other times.
5. **FOAM DISCHARGE HOSE** is 1 inch inside diameter x 50-feet rubber or Wild land UL Listed collapsible hose. The Arctic Hose is to be used in extreme cold temperatures. A combination of hose sections up to 200 feet can be used without system performance degradation.
6. **FOAM DISCHARGE NOZZLE** has a 3-position pistol grip hand activated lever (pictured). Forward is closed and aft is full open, additionally, the unit has an easy to use 3-position-twist pattern choice.
7. **PREMIX TANK** in 304-stainless steel has a capacity of 30-gallons and it meets or exceeds ASME requirements. The Serial number for the system is stamped on a data plate on the tank and shall be printed on the UL label. Mounted to the tank are the Foam Charge Valve, Foam Discharge Valve, Foam Discharge Hose, Pressure Vent Valve, Water/Chemical Fill Valve, Refill Port, and Pressure Relief Valve (on early models). The tank pressure normal operating range is 100-170 psi. A manual drain valve is located in the bottom of the tank.
8. **PREMIX TANK REFILL PORT** is located on the Tank Fill Valve. It is threaded to accept a funnel for adding foaming agent and water. A standard water hose can be attached to the Premix Tank Refill Port to facilitate the refilling process. The port has a one way check valve and a dust cap to keep foreign objects from entering the system.
9. **AIR CYLINDERS** are standard 80 CF SCUBA 3000-psi tanks pressure tested at 5000-psi. The system has 2-Air Cylinders; however, only one is required to fully operate the system. Compressed air or nitrogen can be used in the air cylinders.
10. **PRESSURE VENT VALVE** is located on top of the Premix Tank. The valve is used in the foam refill process and to depressurize the system after use. The valve is closed when it is perpendicular to the Premix Tank and is open when parallel with the Premix Tank.
11. **PRESSURE RELIEF VALVE** is located on the 90-degree elbow fitting on the Pressure Vent Valve. The static pressure in the PREMIX TANK may increase during warm weather if the unit is left in the direct sunlight. When the system is pressurized for operation, the Premix Tank pressure may exceed 200 psi. If this happens, the Pressure Relief Valve will open and vent any excess pressure. Some agent may appear on the ground, however, the function or the operation of the system is not affected.
12. **TOWING EYE** is located on the front of the unit and should be used for all towing and external lift operations.
13. **STANDARD TIRES:** Are solid rubber wheels that offer excellent mobility.
14. **OPERATION SYSTEM PRESSURE GAUGE:** Shows the System operating pressure in the PREMIX TANK. Normal pressure should read 100-175 psi.
15. **HIGH PRESSURE AIR CYLINDER GAUGE:** is used to test the Air Cylinder Pressure. When testing the Air Cylinder Pressures this gauge should read between 2300-3400 psi.

FireStopper® MAX-SUPPRESS™ 30-G COMPONENTS



CHAPTER 3

OPERATING INSTRUCTIONS

3-1. INITIAL SETUP: The FireStopper® MAX-SUPPRESS™ 30-G users should turn on the Air Cylinder handles and verify there is 2300-3400-psi pressure. The Air Cylinders should be refilled if the cylinder pressure is less than 2300-psi. The 30-gallon Premix Tank must be filled prior to use. This unit is designed for use in conjunction with FireStopper® fire suppressants only. ***The use of any other fire suppressant products shall void any warrantee represented in this document and/or by FireStopper®.***

3-2 USABLE FOAM SOLUTION PRODUCTS:

A. The FireStopper® MAX-SUPPRESS™ 30-G can use any type of AFFF fire suppression foam chemical solution. Recommended fire suppressants:

1. ***FireStopper® AB-40002 FFC*** all fire class effective (ABCDK) concentrate on all general applications
2. ***FireStopper® XL FFC*** all fire class effective (ABCDK) concentrate usable in multiple concentrations for general applications where high-risk class A, hydrocarbon, high energy transformer, flammable metals, etc., fire hazards are prevalent
3. ***FireStopper® XL "Plus" FFC*** all fire class effective (ABCDK) a supper concentrate usable in multiple concentrations according to need for general applications where high-risk class A, hydrocarbon, high energy transformer, flammable metals, etc., fire hazards are prevalent
4. ***FireStopper® PFE-FR FFC*** an all fire class effective (ABCDK), freeze resistant to -100ºF (-73.3ºC) premix formula designed for extreme life threatening circumstances on all classes of fires. (This product requires no additional water)

B. The following amounts of foam solution should be added to the 30-gallon Premix Tank:

Since this unit is classified as an emergency first response portable system, limited to a maximum 30-gal cycle, the maximum fire suppressant application should always be employed. Therefore regardless of the product of choice in the concentrate form, it is recommended to use 3-gal of concentrate to 27-gal of water.

3-3. SYSTEM DEPRESSURIZATION

CAUTION

Ensure the Premix Tank is depressurized and the Air Cylinders are closed before conducting any maintenance on the system.

A. Close the Air Cylinder Valves.

B. Close the Foam Charge Valve (if open).

C. Open the Pressure Vent Valve slowly to relieve the Premix Tank and gauge pressures.

D. Close the Pressure Vent Valve.

3-4. PREVENTATIVE MAINTENANCE CHECKS & SERVICES (PMCS)

A. Recommendation: the PMCS CHECKLIST should be completed every month.

B. Personnel completing the PMCS should become thoroughly familiar with the operation and maintenance of FireStopper® MAX-SUPPRESS™ 30-G system and the information in this manual.

C. Recommendation: a tag should be maintained on each unit that indicates the date and the initials of the individual completing the PMCS, the type of FireStopper® recommended product in the Premix Tank, and the location of the MSDS for an emergency situation.

FireStopper® MAX-SUPPRESS™ 30-G
PREVENTATIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

CHECKLIST

DATE COMPLETED_____

NAME _____ **SIGNATURE**_____

_____ 1. Conduct a visual inspection of the system for chaffing lines, loose lines, dirt, corrosion or damage. Check that the O-ring is not protruding where the Air Cylinder valve screws into the Air Cylinder. If the O-ring is protruding, the cylinder should be removed and the O-ring replaced.

_____ 2. Check to ensure tamper seals are installed on the Air Cylinder Valves, the Foam Charge Valve, and the Water/Chemical Fill Valve and Pressure Vent Valve. Tamper seals are optional on the Water/Chemical and Pressure Vent Valves if the large Air Cylinder Retention Plate that fully covers both tank valves is installed).

A. Turn on one air cylinder and note pressure. Close the air cylinder and check the pressure on the remaining air cylinder.

(1) Conduct a leak check if either Air Cylinder pressure is below 2300-psi:

(a) Turn on Air Cylinder(s) with broken seal.
(b) Spray a light soap solution on all airlines and fittings.
(c) Tighten fittings, replace O-rings, or replace leaking component.

(2) Remove, recharge, and reinstall Air Cylinders

(3) Reapply tamper seals

B. Check the Premix Tank level if both the Air Cylinder Valve and the Foam Charge Valve tamper seals is broken.

(1) Open the Water/Chemical and Pressure Vent Valves.
(2) Slowly tip the unit towards the 45-degree position. Note that solution flows from the overflow tube.
(3) Fill up the Premix Tank if low.
(4) Close the Water/Chemical Valves.
(5) Reapply tamper seals

_____ 3. Check the tire condition. Check pressure (30 psi) for tube tires.

_____ 4. Note any other problems:

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3-5. NORMAL OPERATING INSTRUCTIONS

WARNING

The FireStopper® MAX-SUPPRESS™ 30-G discharges foam solution at a high pressure. A sudden pressure surge could cause the operator to lose control of the hose if the nozzle and hose are not held securely when the Foam Discharge Nozzle is opened. Open the nozzle slowly to the full open position.

Consult the foam manufacturer's MSDS for the proper precautions and treatments if the foam is sprayed into the facial area (eyes, nose, and mouth).

NOTE

It is recommended that the air cylinders normally be left in the closed position.

A. Ensure the Foam Discharge Nozzle is in the closed (forward) position.

B. Open one Air Cylinder by turning the valve counter clockwise.

C. Extend the hose.

D. Turn on the Foam Charge Valve slowly to the full open position (handle should be in line with the hose).

E. Aim the Nozzle at the base of the fire and open the Foam Discharge Valve slowly (rear position).

F. Shoot the system in 5 to 10-second bursts across the base of the fire or directly on objects that are on fire. Move the nozzle slowly to build up a layer of foam over the fire surface.

3-6. COLD WEATHER OPERATIONS

A. It is recommended that the FireStopper® MAX-SUPPRESS™ 30-G system be equipped with the Arctic Regulator, Arctic Discharge Hose, Protective Cover and the ***FIRESTOPPER® PFE-FR FFC*** when extreme cold weather conditions are anticipated.

B. The operator of this unit should familiarize themselves with the operation of this System in the weather conditions this system will be tasked to perform. FireStopper® recommends scheduled training sessions on the handling and operating of this system and any other life saving systems.

3-7. EMERGENCY PROCEDURES

A. LOOSE HOSE

WARNING

Do not attempt to catch a runaway hose.

(1) Move to the unit and close the Foam Charge Valve immediately (valve handle should be perpendicular to the hose).

(2) Close the Foam Discharge Nozzle (valve handle is full forward).

IF CONTINUING TO FIGHT THE FIRE:

(3) Open Foam Charge Valve slowly.

(4) Hold the hose securely and open the Foam Discharge Nozzle slowly (valve handle should be full aft).

B. NO FOAM DISCHARGE

(1) Close the Foam Discharge Nozzle (move the handle full forward).

(2) Close the Foam Charge Valve.

(3) Open the backup Air Cylinder Valve.

(4) Open Foam Charge Valve slowly (valve handle should be in line with the hose).

(5) Hold the hose securely and open the Foam Discharge Nozzle (valve handle is full aft) slowly.

C. SHUT DOWN PROCEDURES

(1) Close the Foam Discharge Nozzle.

(2) Close the Foam Charge Valve.

(3) Close the Air Cylinder Valve.

(4) Open the Foam Discharge Nozzle to depressurize the hose. Close the valve when all of the foam has been expended from the hose.

(5) Open the Pressure Vent Valve slowly until all pressure is relieved.

(6) Secure the fire hose.

3-8 AVIATION REFUELING OPERATIONS

A. Helicopter hot refuel operations are by nature hazardous. An accident during refueling can result in catastrophic damage to the aircraft and possible injury or loss of life to the refuel/aircraft crew. The FireStopper® MAX-SUPPRESS™ 30-G provides the user a stand off capability along with the ability to prevent fires by covering up flammable liquids, sealing vapors, and cooling the surface.

B. The following techniques will help prevent catastrophic affects of accidents and reduce the overall risk of aviation refueling operations. These are offered as a guideline, and are not a substitute for certified Fire training:

(1) FIREGUARDS: The protective cover (if utilized) should be removed from the unit and the hose are moved to the fireguard position.

Fireguards should stand just outside the rotor disc at a 45-degree angle on the side of the aircraft the refueling nozzle is located on. This position allows the fire guard the best view to monitor the refuel operation, alert the crew to any problem, and quickly react to a fire or fuel spill situation while remaining well clear of the affected area. Priorities should be given to the crew, the fuel spill, and the main fire areas.

(2) IN THE EVENT A FIRE OCCURS: The safety of the fueling personnel and aircraft crew is the number one priority. Fuel burning in the vicinity of the aircrew should be extinguished first. Open the Foam Discharge Nozzle fully and sweep the foam stream across the base of the flames starting at the leading edge and moving slowly to the rear. Use short 5-10 second bursts checking the effectiveness of the foam between bursts. Once the fuel on the ground has been extinguished, begin foaming any remaining portion of the aircraft that is burning.

(3) IF FUEL HAS BEEN SPILLED ON THE GROUND AND THE AIRCRAFT: Foam the aircraft first by positioning the Foam Discharge Nozzle to the full open position in order to get the maximum foam possible on the aircraft. Fuel spilled in the vicinity of the engine, exhaust, or the intake should be foamed immediately to prevent ignition. Once the aircraft has been foamed, the fuel on the ground should be covered with a blanket of foam. Monitor the crew egress and reapply foam to any areas where the foam blanket has been compromised. This action can be accomplished in approximately 20 seconds by a trained fireguard. Quick action on the part of the fireguard is critical to prevent a fuel spill from becoming a fuel fire.

3-9. FUEL SPILL PROCEDURES:

A. The hazard of fuel spills can be reduced by applying a blanket of foam on top of the fuel to seal vapors and reduce the chance of combustion.

B. Cover any personnel who have been drenched with fuel with foam to prevent combustion.

WARNING

Do not hit the spilled fuel directly with an unrestricted flow of foam or with the Nozzle in the full open position. This action could spread the fuel creating a greater hazard and cause injury to refuel personnel. The operator should be positioned a minimum of 30-40 feet from the fire to maximize the effectiveness of the system. Personnel exposed to foam should follow the instructions listed in the foam manufacturer's Material Safety Data Sheet (MSDS).

CHAPTER 4

TRAINING

4-1. TRAINING PROGRAM

A. Training on the FireStopper® MAX-SUPPRESS™ 30-G system should be conducted at least annually for all operators.

B. Maintainers should complete initial training and refresher training as required.

C. Trainers should be thoroughly familiar with the system, fire behavior, hazard identification, and basic fire fighting skills.

D. Operator training should be conducted using a "hands-on" approach in a live fire scenario whenever possible. Live fire training can often be accomplished through coordination with a local fire department.

4-2. TRAINING AIDS: Liquid dish soap or training foam can be mixed with water at a ratio of 1-gallon per 30-gallon tank providing the training is being conducted in non-freezing environment. The training solution should be placed in the Premix Tank when it is almost full of water in order to maximize the volume of solution available. Dish soap does not cause any damage to the system and can be mixed with all FireStopper® recommended products without any impact on the operation. For better performance, rinse out premix tank after training with dish soap.

4-3. TRAINING PROGRAM OF INSTRUCTION (POI):

A. OPERATORS & MAINTAINERS

(1) Component Identification (Pages 6-7)

(2) PMCS (Pages 9-11)

(3) Normal and Cold Weather Operating Instructions (Pages 12-13)

(4) Emergency Procedures (Pages 13-14)

(5) Aviation Refueling Operations (if applicable) (Page 15)

(6) Fuel Spill Operations (Page 15)

(7) Hands-On Operation, preferably on a live fire scenario (Page 12)

B. MAINTAINERS

CHAPTER 5

MAINTENANCE

5-1. GENERAL INSTRUCTIONS

A. The FireStopper® MAX-SUPPRESS™ 30-G system was designed to be easy to operate and simple to maintain. The system has few moving parts; however, it is a vital lifesaving piece of equipment that requires some minimal maintenance.

B. It is recommended that the monthly PMCS be accomplished.

C. It is also very important that responsible personnel be assigned the responsibility to service and maintain the system.

D. The final important task is maintaining thorough documented records of the maintenance performed. These records should include copies of the completed PMCS Checklists, the Maintenance Log, when the Premix Tank was filled and the type/mixture of foam in each unit. A MSDS sheet should be readily available for the type of foam being utilized. Recommend a tag be affixed to each unit that lists the date and initials of the individual performing the PMCS, the foam type and mixture ratio (if any), and the location of the MSDS.

5-2. TECHNICAL ASSISTANCE: The manufacturer is totally committed to providing technical assistance whenever required. Maintainers should contact the manufacturer whenever a problem arises that cannot be solved using the information in this manual or when unusual situations are encountered.

5-3. REPAIR PARTS

A. The FireStopper® MAX-SUPPRESS™ 30-G repair parts are listed in this section. All repair parts can be obtained from the manufacturer by using a credit card or a purchase order. Many of the parts can also be purchased at local dive shops or hardware stores. O-rings should be purchased from the factory, or an authorized FIRESTOPPER® distributor, or from a certified scuba shop.

B. The manufacturer will replace parts that fail due to defects in workmanship during the warranty period at no cost. The defective part must be identified for the manufacturer by submitting a digital photograph and the part number. Users should contact the distributor by phone, e-mail, fax, or by completing the comment page on the website to receive replacement parts.

FireStopper® MAX-SUPPRESS™ 30-G REPAIR PARTS

5-4. SPECIAL TOOLS & ACCESSORIES

A. **PRESSURE TESTER**: A hand held gauge to easily determine the amount of pressure in the Air Cylinders is available from the manufacturer or local distributors.

B. **FUNNEL**: A Two (2) Quart threaded funnel is provided with each unit to fill the Premix Tank.

5-5. VISUAL TAMPER SAFETY SEALS

A. The manufacturer recommends that visual tamper seals be applied to the Foam Charge Valve, Air Cylinder Valves, Water/Chemical Fill Valve, and the Pressure Vent Valve when positioned in the closed position. Placing tamper seals on the Water/Chemical and Pressure Vent Valves is optional if the large Air Cylinder retention plate, which fully covers both valves, is installed. The tamper seals on the Air Cylinder and Foam Charge Valve should be a breakaway plastic or safety wire type.

B. Pressure Vent Valve, Water/Chemical Fill Valve Tamper Seals: The handles have a small hole at the end of the handle or they come pre-drilled at the factory. The hole at the end of the handle can be opened using a sharp object such as a small nail to create an open hole that a visual tamper seal can pass through.

C. Air Cylinder Valve Tamper Seals:

(1) Holes are drilled in the air cylinder valve knob at the factory.

(2) Insert a plastic tamper seal or breakaway safety wire into one hole, loop it under the Air Cylinder support frame and draw it back out the second hole. Re-install the Air Cylinder into the Air Cylinder Support.

(3)Install the Air Regulator on the Air Cylinder. Loop the tamper seal around the Air Regulator and connect the ends.

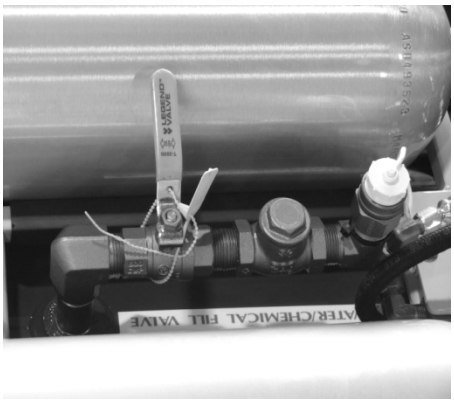
D. Foam Charge Valve Tamper Seal: If no hole is available on the valve handle, drill a hole in the location indicated with an arrow on the image below.

NEW PART	
101B	FireStopper® MAX-SUPPRESS™ 30-G PROTECTIVE COVER
3	¼-INCH CHECK VALVE
11	¾-INCH FLAPPER VALVE
14	FUNNEL ADAPTER (GARDEN HOSE)
127	FUNNEL, 2-QUARTS
20/95	UL RATED HOSE (STANDARD DISCHARGE) 1" X 50'
78	¾-INCH BALL VALVE (FILL VENT)
79	¾-INCH BALL VALVE (DISCHARGE)
80	PRESSURE RELIEF VALVE
82	HIGH PRESSURE GAUGE
83	LOW PRESSURE GAUGE
96	PISTOL GRIP NOZZLE
132	PSI ALUMINUM 80-FT^3 AIR BOTTLE
80B	WHEEL
81	CASTER
18	AIR LINE ¼-INCH X 12-INCH
18A	AIR LINE ¼-INCH X 13-INCH
18B	AIR LINE ¼-INCH X 14-INCH
18C	AIR LINE ¼-INCH X 15.5-INCH
18D	AIR LINE ¼-INCH X 24-INCH
18E	AIR LINE ¼-INCH X 5-INCH
107	O-RING CYLINDER LOWER
108	O-RING CYLINDER UPPER
102	REGULATOR AQUA ADJUSTABLE
103	REGULATOR MOUNTING RING
71	CAP - NOZZLE SCREW-ON
110	CAP - TANK FILL DUST
22	PLUG - PREMIX TANK 1/4 -INCH
25	PLUG - PREMIX TANK 1/2 -INCH
123	KNOB - AIR BOTTLE RETENTION PLATE
101B	PRESSURE TESTER (FILLER ADAPTER)
109	SCUBA REGULATOR
97	FireStopper® SUPPRESSANT

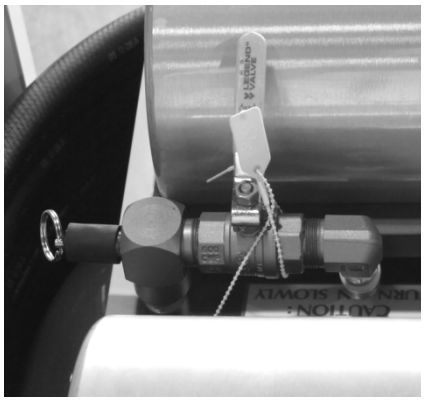
FireStopper® MAX-SUPPRESS™ 30-G TAMPER SEAL LOCATIONS

Air Cylinder Valve

Foam Charge Valve



Water/Chemical Fill Valve



Pressure Vent Valve

FireStopper® MAX-SUPPRESS™ 30-G MAINTENANCE LOG

PREVENTATIVE MAINTENANCE CHECKS & SERVICES (PMCS)

SCHEDULED DATE	DATE COMPLETED	SIGNATURE
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

SCHEDULED MAINTENANCE

ACTION	DATE DUE	DATE COMPLETED	SIGNATURE
Check Air Cylinder Pressures	_____ (6 months)	_____	_____
Wash unit & apply WD40 or equivalent over non-painted surfaces	_____ (6 months)	_____	_____
Lubricate and recycle pressure relief valve	_____ (6 months)	_____	_____
Lubricate wheel bearings	_____ (6 months)	_____	_____
Air Cylinder visual inspection and certification	_____ (12 months)	_____	_____

FireStopper® MAX-SUPPRESS™ 30-G MAINTENANCE LOG
SCHEDULED MAINTENANCE
(Continued)

ACTION	DATE DUE	DATE COMPLETED	SIGNATURE
System Operations check	_____ (12 months)	_____	_____
Manifold Airline Purge	_____ (12 months)	_____	_____
Air Cylinder Hydrostatic Test	_____ (5 years)	_____	_____
Premix Tank & Discharge Hose hydrostatic test	_____ (5 years)	_____	_____

UNSCHEDULED MAINTENANCE

ACTION	**DATE COMPLETED**	**SIGNATURE**
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

5-7. SERVICING UNDER NORMAL CONDITIONS

A. SYSTEM PRESSURE CHECK

(1) Ensure the Pressure Vent Valve, Water/Chemical Fill Valve, and the Foam Charge Valves are closed. Tamper seals should be applied to the Air Cylinders Valves, the Foam Charge Valve, and the Pressure Vent and Water/Chemical Fill Valves (Premix tank seals are optional on the tank valves if the large Air Cylinder retention plate that covers both valves is installed).

(2) Open one Air Cylinder and check the pressure reading on the gauge is between 2300-3400 psi. Check the pressure on the Premix Tank gauge, if installed, is between 150-160 psi. Close the Air Cylinder and open the Pressure Vent Valve to release pressure in the Premix Tank. Open the other Air Cylinder and check for an operating pressure of 2300-3400 psi. Close the Air Cylinder.

(3). Conduct a leak check if either Air Cylinder pressure is below 2300 psi or if any air noise or solution leaks are detected.

(a) Spray a light soap solution on all airlines and fittings to check for leaks.

(b) Tighten leaking fittings or replace O-rings.

(c) Contact manufacturer if regulator has a leak.

(d) Recharge and replace the Air Cylinder(s).

(4) Reapply tamper seals

B. AIR CYLINDER PRESSURE CHECK, RECHARGE, AND REPLACEMENT

CAUTION

Ensure the system is depressurized before conducting any maintenance on the system. The Air Regulator can be damaged if removal is attempted with pressure in the system. Extreme care should be used when handling and transporting the Air Cylinders. Do not fully drain the Air Cylinders, as this will allow moisture to enter the cylinders. Ensure that all replacement O-rings for the Air Cylinder valve and the Air Cylinders are purchased from the factory, a FIRESTOPPER® distributor, or a certified scuba shop

NOTE

Ensure the O-ring is secured when removing and transporting the Air Cylinder.

(1) AIR CYLINDER PRESSURE CHECK: Check the Air Cylinder pressures for normal operating pressure (2300-3400psi).

Preferred Method: Remove the Air Cylinder yoke, apply the hand held pressure-indicating gauge, open each Air Cylinder, and note the psi reading.

Alternate Method: Turn on the Air Cylinder(s) and note pressures on Air Cylinder gauges. This method will result in the loss of 50-100 lbs of air per cylinder, which, in turn, will require a more frequent refilling of the Air Cylinders.

Conduct a leak check if either Air Cylinder pressure is below 2300 psi:

(a) Turn on Air Cylinder(s) with broken seal.
(b) Spray a light soap solution on all airlines and fittings.
(c) Tighten fittings, replace O-rings, or replace leaking component.

(2) AIR CYLINDER RECHARGE

(a) Ensure the Air Cylinder Valve is closed.

(b) Depressurize the system by opening the Pressure Vent Valve.

(c) Unscrew the Air Cylinder connector.

(d) Unscrew and remove the Air Cylinder support plate.

(e) Lift out the Air Cylinder.

(f) Have the Air Cylinder filled to 3200 psi by a certified technician. Either compressed air or nitrogen can be used in the Air Cylinders.

(g) Verify the Air Cylinder pressure using the pressure tester.

(h) Replace the Air Cylinders in the cradle.

(i) Replace the Air Cylinder support plate.

(j) Re-connect airline to air cylinder and replace regulator.

(k) Turn on Air Cylinder and verify 2300-3400 psi pressure if the pressure was not verified by using a pressure tester.

(l) Reapply tamper seals.

C. PREMIX TANK FILLING

CAUTION

Ensure the system is depressurized before conducting any maintenance on the system. Also ensure the Water/Chemical valve is closed prior to pressuring the system to prevent a backsplash of the solution, which might cause an injury to personnel.

(1) Close the Air Cylinder Valves.

(2) Close the Foam Charge Valve.

(3) Open the Pressure Vent Valve slowly and leave open.

(4) Open the Water/Chemical Fill Valve.

(5) Remove the Filler Port Dust Cap and install the 2 Quart Filler Funnel.

(6) Open the Water/Chemical Fill Valve and add the appropriate amount of foam agent: this unit is a first response system with a limited amount of firefighting media. The intent is to quickly control the initial fire extinguishing the event with the maximum fire suppressing power. Therefore, FireStopper® recommends the following: when using any of the FireStopper® recommended concentrate products for maximum all fire class usage (ABCDK), 3-gallons or concentrate with 27-gallons of water or fill with FireStopper® PFE-FR FFC for maximum performance.

(7) Connect a standard water hose to the Tank Refill Port. A funnel may be used if a water hose is not available or an AFFF is being used that should not be mixed with water.

(8) Add water until it flows out of the Pressure Vent Valve drain line.

(9) Close the Water/Chemical Fill and Pressure Vent Valves. Remove the water hose.

CAUTION

Failure to close the Pressure Vent Valve will cause the Premix Tank drain hose to oscillate and may cause injury to personnel.

(13) Purge the solution from the Water/Chemical fill lines to prevent freezing by waiting 5 minutes for the solution to settle, opening both tank valves, tipping the unit to the 45 degree position, and closing the valves. An alternate method is to use air to force the solution into the tank after the foam has settled.

(14) Annotate the type of foam and mixture ratio on a self-installed waterproof label applied in a visible area on the Premix tank.

(15) Replace the dust cap on the Fill Port.

(16) Apply tamper seals on the Pressure Vent Valve and the Water/Chemical Fill Valve in the closed position (not required if the large cover plate is installed).

5-8. SERVICING UNDER COLD CONDITIONS

A. Fill the Premix Tank with Freeze Protected Foam solution whenever the existing temperatures are below 32 degrees F. The Freeze Protected Foam solutions should be used in the concentrate form and not diluted.

B. The procedures outlined in Paragraph 5-9 should be used for filling the Premix Tank with the following exceptions:

(1) Remove the Pressure Vent Discharge hose, unscrew the JVC fitting from the valve, and push it one inch laterally. This procedure will provide adequate ventilation for the Premix Tank to be completely filled. Reattach the fitting and hose when the tank is full.

(2) It is recommended that the following procedure be used to purge the Freeze Protected Foam solutions from the Water/Chemical Fill line after the Premix Tank has been filled to reduce the residual buildup:

(a) Close the Pressure Vent Valve and wait 5 minutes after filling the tank for the solution to settle.
(b) Either position the unit in the 45-degree position for at least 5 seconds or apply air in the Water/Chemical Fill Valve line to force the solution from the fill line into the Premix Tank. Do not use any water to wash the solution into the tank, as the Freeze Protected Foam cannot be diluted.
(c) Close the Water/Chemical and Pressure Vent Valves.
(d)Wash any residual foam off the unit and place the unit in service.

5-9. SCHEDULED MAINTENANCE RECOMMENDATIONS:

A. AIR CYLINDERS

(1) Pressures to be checked at least every 6 months.
(2) An annual visual inspection be completed every 12 months
(3) A hydrostatic test to be completed every 5 years.

B. CLEANING AND LUBRICATION: (Complete at least every 6 months)

(1) Wash unit with soap and water.
(2) Apply WD40 or equivalent on all non-painted surfaces.
(3) Apply WD40 on Pressure Relief Valve and recycle.
(4) Grease wheel bearing zerk fittings.

C. PREMIX TANK:

(1) Pressurize and check for leaks every 12-months.
(2) Hydrostatic test be completed every 5-years. This test includes an internal and external visual inspection as well as pressure testing the hose and tank.

D. DISCHARGE HOSE: Hydrostatic test be completed every 5-years.

E. PERFORMANCE CHECK

The system should be pressurized and discharged once a year.
Freeze Protected Foam solutions can be reused if desired.

F. MANIFOLD AIR LINE PURGE PROCEDURE

When the system is discharged once a year, this procedure should be performed when the PRE-MIX tank is empty. If the PRE-MIX TANK is not empty, solution will leak from the system and will need to be replenished.

1. Remove Air Cylinders from Air Cylinder Rack
2. Position the Unit in a 45° or 90° stance.
3. Open Pressure Vent Valve
4. Remove Quick Connect fitting from manifold.
5. Blow compressed air through hose for 5-seconds to ensure any residual solution is purged from airline.
6. Re-Connect Quick Connect fitting.
7. Close Pressure Vent Valve.
8. Replace air cylinders and large Air Cylinder hold-down plate.

5-10. UNSCHEDULED MAINTENANCE

A. Unscheduled maintenance will need to be performed as required. Contact the manufacturer if a malfunction cannot be corrected after employing good troubleshooting procedures.

B. The following procedures should apply to all FIRESTOPPER® MAX-SUPPRESS™ 30-G systems:

(1)REPLACE AIR REGULATOR

NOTE

The Aqua 415 Regulator is adjustable; however, the pressure is set at the factory at 150-160-psi. The adjustable control knob was removed and a non-adjusting knob was installed to preclude tampering. The adjustable control knob should be re-installed if a higher or lower pressure is desired.

REMOVAL PROCEDURE

1. Ensure air cylinder valves are closed.
2. Depressurize system by opening the pressure vent valve. Verify all pressures read 0-psi.
3. Remove both ¼" hose lines from both the low (300-psi) and the high (2000-psi) pressure gauges.
4. Remove both ¼" hose lines from the pressure in and out ports on the air regulator.
5. Loosen both lock bolts in the lock ring. Remove adjustment knob from the regulator, slide regulator back and out of ring.
6. Remove remaining hoses and fittings from the regulator and replace in the same position on the new regulator.

INSTALLATION PROCEDURE

1. Slide the regulator into the ring and attach both ¼" in and out lines using two wrenches to prevent damage to the hoses and regulator.
2. Reattach ¼" hoses to the low (300-psi) and the high (2000-psi) gauges. Tighten bolts in the ring to the regulator.
3. Re-install the non-adjusting knob.
4. Charge the system by opening air cylinder valve.
5. Check for leaks using soap and water spray.

(2) REPLACE GAUGES

CAUTION

Ensure the system is depressurized before conducting any maintenance on the system.

(a) Ensure that the Air Cylinder Valve is closed.
(b) Depressurize the system by opening the Pressure Vent Valve. Ensure all pressure gauges read 0-psi.

(c) Remove gauge using proper wrenches.
(d) Install new gauge.
(e) Charge the system by opening Air Cylinder Valve and check for leaks by squirting soap solution on connections.

(3) REPLACE PRESSURE RELIEF VALVE

(a) The location of the Pressure Relief Valve varies depending on model variation. The earlier models had the valve on the Premix Tank and the Water/Chemical Valve on the later models positions it on the 90-degree fitting. It may be necessary to remove the Air Cylinder located on the left side of the unit (while facing it from the front) to get access.
(b) Ensure the Premix Tank is fully depressurized.
(c) Remove defective Pressure Relief Valve and install new one.

(d) Pressurize the system and check for air stabilization and leaks.

(4) REPLACE CHECK VALVE:

(a) Remove airline from the 90 degree JIC fitting
(b) Remove 90 degree fitting from the check valve
(c) Install the 90-degree fitting into the check valve in the direction of the airflow, which is towards the Premix Tank.

(5) REPLACE O-RING BETWEEN AIR CYLINDER VALVE AND AIR CYLINDER

(a) Fully depressurize Air Cylinder slowly to prevent injecting moisture.
(b) Remove the Air Cylinder Valve.
(c) Replace the O-ring.
(d) Re-torque the valve to 40-50 lbs.

5-11. TROUBLESHOOTING

A. NO PRESSURE ON GAUGES

(1) Air Cylinder Valve is not turned on.
(2) Air Cylinders are empty.
(3) Pressure indicating Gauge is inoperative.
(4) Broken or blocked airline.
(5) Air Regulator has malfunctioned.

B. FOAM DOES NOT DISCHARGE FROM HOSE

(1) Premix Tank is empty.
(2) Air Cylinder is empty.
(3) Air Cylinder is not turned on.
(4) Foam Charge Valve is off.
(5) Nozzle is in the off position.
(6) Nozzle valve has malfunctioned.
(7) Blockage in the dispensing hose.
(8) Foam solution in Premix Tank is frozen.
(9) Faulty check valve

C. AIRLINE LEAK

(1) Air hose fitting is loose or broken.
(2) Air line is blocked or broken.

D. SYSTEM IS NOT FULLY DISCHARGING

(1) Insufficient volume of air in the Air Cylinder.
(2) Foam Discharge Nozzle is not fully opening.
(3) Foam Discharge Hose has a restriction.
(4) Air Regulator has malfunctioned or is not properly adjusted (Arctic Regulator only).
(5) The solution is frozen or near freezing.
(6) There is a blockage in the Premix Tank.
(7) Defective check valve

E. SOLUTION IS RUNNING OUT OF PREMIX TANK OVERFLOW

Pressure vent valve is open.

F. SOLUTION IS RUNNING OUT OF WATER/CHEMICAL FILL PORT

Water/Chemical Fill Valve is open.

5-12. STORAGE AND PROTECTION

A. The FireStopper® MAX-SUPPRESS™ 30-G can be positioned in the vertical, horizontal, or 45-degree position. The 45-degree position is the best position for unwinding the discharge hose and dispensing the maximum amount of foam solution from the Premix Tank. It is recommended that the wheels be chalked when the unit is placed in the horizontal or 45-degree position.

B. A PMCS should be conducted if the system has been placed in storage prior to placing the unit in an operational status.

C. It is recommended that a weatherproof protective cover be used if the unit is going to be positioned outside. Ultraviolet sunrays can cause long-term damage to the hoses, tires, and gauges if the unit is not covered. Additionally, frozen rain and snow can restrict the movement of discharge hose. A heavy-duty protective cover with reflective markings and frame securing devices is available from the manufacturer.

RECOMMENDED FireStopper® PRODUCTS FOR USE WITH THIS CAC PORTABLE SYSTEM

THIS PORTABLE SYSTEM IS DESIGNED TO OPERATE WITH ALL OF THE FireStopper® FFC PRODUTS ACCORDING TO THE END USER'S NEEDS:

- ***FireStopper® PFE-FR FFC (A PREMIX)*** – This product is designed for the highest risk to life and property where extreme low environment temperatures are present and when limited product for firefighting is available such as in restaurant kitchens where a "K" type fire is prevalent, high valued industrial complex where multiple fire class hazards are present, all Military use, transportation related applications and other high valued scenarios (please review product specifications sheet).

    - Hydrocarbon (class "B") high flammability environment
    - High flammability (class "A") environment
    - High risk flammable metal (class "D") risk
    - High risk energized fire (class "C" Electrical)

CONCENTRATES:

- ***FireStopper® XL "PLUS" FFC –*** This concentrate is the most powerful and efficient concentrate in the World. Should be used where life and high value infrastructure protection is required. Where ample water source is available for fast recharge (please review product specifications sheet).

    - Petrochemical facilities
    - Industrial complex requiring multiple fire hazard protection
    - Airports
    - Shipping
    - Offshore applications such as drilling platforms, etc.
    - All Military use

- ***FireStopper® XL FFC*** - This concentrate product is designed to provide similar application as above but where budgetary restrictions and other limitations by the end user are present (please review product specifications sheet).

- ***FireStopper® AB 40002 FFC –*** This concentrate product is designed to provide similar application as above (please review product specifications sheet). Recommended for use by municipal fire services, wild land/forest fire applications, general commercial/industrial customers where additional budgetary restrictions prevent higher risk protection products to be implemented.