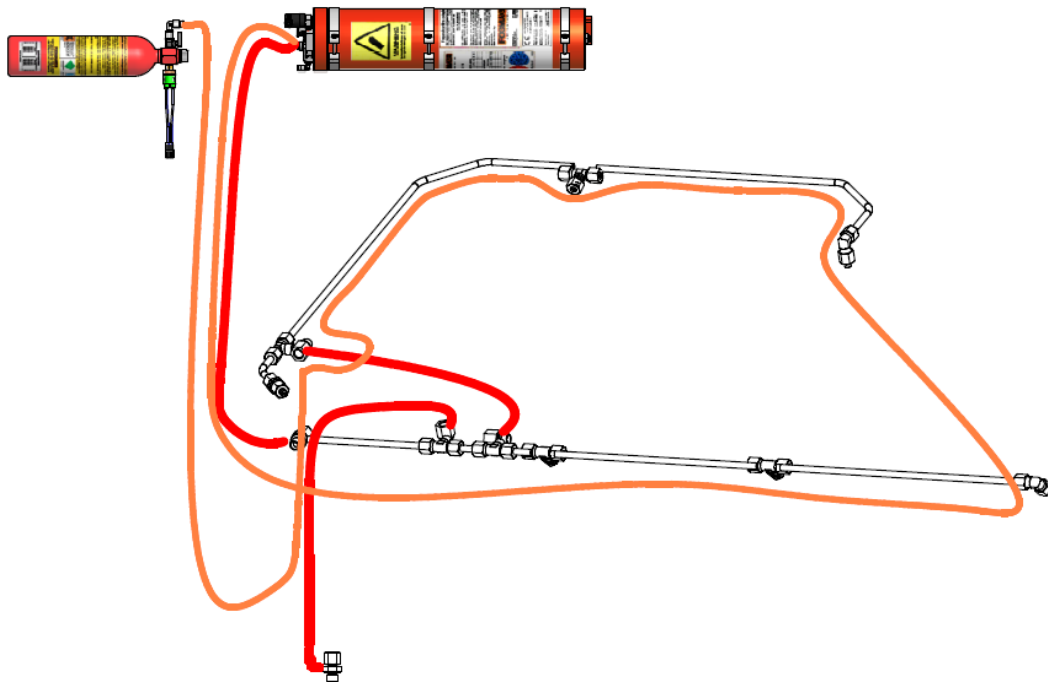




Fogmaker North America

Service Manual

Water Based Fire Suppression System for
Enclosed Spaces



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WARNING

The safety screw must always be installed in the release valve during transport, installation and service. When the safety screw and protection plates are removed, the suppressing agent in the Fogmaker® unit can be discharged. The release valve must not be removed when the system is pressurized. If the release valve or any of the nipples or connectors in the system are removed when the system is pressurized, the suppressing agent can be discharged unintentionally, resulting in serious personal injury.

Note that only components from Fogmaker® may be used. If other components are used, Fogmaker® will not guarantee the system function.

Components in this manual marked with an asterisk (*) are not UL listed.

Control Plan for the Suppression Unit

The suppression unit shall be serviced at least annually by qualified, trained, and authorized personnel according to the Control Plan in this Service Manual. (UL listed systems shall be serviced at least semi-annually.) Every fifth year the piston accumulator (PA) shall be serviced and the suppression fluid shall be replaced. Every tenth year the PA will need to be rebuilt and hydrostatic pressure tested. The service of the system may only be performed by authorized personnel.

Control Plan for Weekly Inspection

A visual inspection of the system components is to be performed every week to ensure that the suppression unit is not leaking and has not sustained damage. Any repairs are to be completed by authorized personnel.

Control Plan for Daily Inspection

Confirm that the piston accumulator is charged by confirming that the indicator for the pressure gauge is located in the green swept area. For hydro pneumatic activation units, the indicator for the pressure gauge located on the detection cylinder shall also be located in the green swept area. The pressures do not need to be checked if the PA and the detection cylinder have the electronic monitoring* option.

Control Plan for Annual Service **(UL Listed Systems Shall be Serviced Semi-Annually)**

1. Piston Accumulator

1.1 Control for Mounting/Vibration Damage to the Piston Accumulator

Visually inspect all mounting components for any damage to the piston accumulator and the suppression unit's peripheral equipment.

Also confirm that there are no indications of mechanical damage or damage due to vibration.

1.2 Control of the Protecting Box / Labels

Visually inspect the condition of the protecting box to confirm that it is protecting the piston accumulator satisfactorily and that the mounting components and assemblies are intact.

Visually inspect the labels and markings on the suppression unit to confirm that they are legible and visible.

Replace the markings and labels with new ones if required.

Confirm that the date of installation is less than 5 years from the date of manufacture. If the suppression unit is older than 5 years, perform the 5 year service.

1.3 **Control for Leakage / Corrosion**

Visually inspect the suppression unit to confirm there is no leakage or indications of corrosion/ corrosion deposits located on the piston accumulator couplings, connections, and release valves.

1.4 **Change of Service Interval Label / Control of Gauge Pressure**

Upon completion of the service inspection, update the service interval label information by attaching a new label with the correct month towards the arrow. Check the location of the indicators on the pressure gauges and note their positions on the inspection report. **Note!** The indicator on the pressure gauges for the piston accumulator and the detection cylinder should be located in the green swept area. If deviations occur, contact Fogmaker® or an authorized service provider.

2. Cable/Electrical/Manual Activation Components*

*****Before servicing, ensure the safety screw is installed in the release valve*****

2.1 **Control for Cable Activation**

Check that the manual pull handle is free of damage and evidence of tampering.

Check that all the releases are sealed and that all the cables run easily without damage to the wire cables or the release valve components that can affect their function.

Remove the protective cover on the release valve and free the wire cable so that it is possible to test its function.

Spray lubricating oil CRC 5-56 or the equivalent on the valve mechanism. Restore the wires and valve as well as sealing the releaser again.

2.2 **Control for Electrical Activation**

Check that electrical activation button is free of damage and tampering.

Make sure pull pin can be easily removed.

Check all connections for damage and that they are properly secured.

Replace break away tie.

2.3 **Control for Manual Punch Activation**

Check that the manual activation punch is free of damage and tampering.

Check all the fittings for signs of damage or leaks.

Make sure the pull pin can be easily removed.

Replace break away tie.

3. Suppression System / Hydraulic Hose (Distribution System)

3.1 **Control for Vibration Damage / Wear**

Visually inspect the suppression unit to confirm that there is no damage or wear to any of the hoses or the piping and components in the unit.

3.2 **Control for Braces (Clamps), Tightness**

Visually inspect and confirm that braces do not display any indications of wear and that the piping system components are tightened to the requirements in the Operation and Installation Manual, number 8010-0022.

Confirm that all connections are tight.

If leakage is suspected, the suppressing unit must be test pressurized according to the Installation Manual.

3.3 **Control for Protective Covers and proper positioning of nozzles**

Visually confirm that the protective covers for the nozzles are in position and are clean. If not, inspect nozzle before replacing with a new cover. Nozzle covers for .8L flow nozzles are yellow in color; covers for 1.2L flow nozzles are orange in color.

3.4 **Control for Breakages / Cracks on Hydraulic Hoses**

Visually check hydraulic hoses for wear, deterioration, cracks, or breakages that can result in faults or leakage when the suppression unit is operated.

4. Detection System

4.1 **Control for Detection Gas Cylinder / Detection Fluid Cylinder**

Check the condition and the fixture of the cylinder. The gauge pressure shall be in the green area. If not, contact Fogmaker® for consultation.

4.2 **Control for Detection Tube / Clamps**

Check the routing and fixture of the detection tube so that no wear or other damage can occur. Check that nothing is rubbing the detection tubing through the protective coil.

4.3 **Control for Damage to Protective Tube / Protective Coil (Spiral)**

Check that there is no wear, pinching, or other damage to the protective tube or protective coil and that it is secure according to the Operation and Installation Manual.
Check clamps for wear and tightness.

4.4 **Control for Labels on the Detection Tube**

Confirm that the red-colored "FIRE DETECTOR" labels (Part # FM-8206) are legible and located on the detection tube. Replace these labels if they are damaged or missing.

5. Alarm Panel / Alarm Device / Cables*

5.1 **Check for Slackness, Breakage, and Cracks**

Check that there is no excessive slackness in the cables and that all joints and cables are undamaged.

5.2 **Function Test / Fire Simulation – Under Dash Audible Alarm***

Press the "FIRE" test switch on the dash (square switch, Not Manual Activation button). Ensure that the audible alarm activates.

Disconnect detector bottle pressure switch and make sure the audible alarm activates and the light in the button illuminates.

5.3 **Function Test/Fire Simulation- On Dash Alarm Panel**

Check that the green "System OK" light is illuminated.

Hold the Test button for 4 seconds. All the lights should light up one at a time, and the audible alarm should sound for 5 seconds.

Disconnect the PA pressure switch and the detector bottle pressure switch connectors to simulate a fire condition. Check that the red "FIRE" light is illuminated and that audible alarm activates.

For vehicles with the automatic shutdown with delay, the vehicle engine should shutdown 15 seconds after the alarm panel indicates a fire. With the alarm panel still in the "FIRE" state, press and hold the reset button for 5 seconds. Attempt to restart the vehicle. The engine run for another 15 seconds from the time the reset button was pressed.

6. FM-1318 Electrical Punch/"FIRE" Button

6.1 Control for Testing 1318 Electrical Punch and "Fire" Button

WARNING: Follow the steps in order to avoid a system discharge.

- a) Disconnect the plug from the wire harness to the FM-1318. The FM-1318 has 2 red wires (see picture 1). The wire harness should read "Manual Actuator" if supplied by FMNA.



Picture 1

- b) Plug the test siren (FM-US-1900) into the wire harness plug "Manual Actuator" (see picture 2).



Picture 2

- c) Break the red wire tie and pull pin to test the system. When the button is pushed the siren should sound indicating that everything is operational (see picture 3). In some cases the vehicle ignition will need to be turned "ON" for this test.



Picture 3

- d) After a successful test, reinstall the pin followed by a new wire tie (FM-6992-3002). Make sure the wire tie is installed so it must be broken to remove the pin.
- e) Disconnect the test tool (FM-US-1900) and reconnect the FM-1318 electrical punch (see picture 1).

7. Other Items

7.1 Control for Suppression Unit Enclosure

Check to ensure that the enclosure is unchanged since the last inspection.

7.2 Installation and Operation Manual / Owner's Manual

A copy of the Operation and Installation Manual (number 8010-0022 Rev G) and a copy of the Owner's Manual (number 8012-001 Rev A) is to accompany each unit at all times.

Replace if missing or incomplete.

7.3 Activation Labels / Control Labels

Confirm that the activation/control labels are visible and legible in accordance with the instructions in the Operation and Installation Manual.

7.4 Control if Safety Screw is Not Engaged into the Release Valve

Confirm that the detection system for the Hydro Pneumatic Activation option is activated and that the safety screw is removed from the Piston Accumulator Release Valve. Refer to the Operation and Installation Manual for activation/deactivation instructions.

FM INSPECTION FORM



Requester - Sales/Programs

Reviewer - FS/engineering

Installer

Program Mgr

System Install #			
SERVICE TECHNICIAN		ORDER #	
DATE		WORK SITE	
CUSTOMER		# OF NOZZLES	
ADDRESS		PA SERIAL #	
CITY, STATE, ZIP		PA GAUGE READING	
CONTACT NAME		DETECTOR SERIAL #	
CONTACT PHONE		DET. GAUGE READING	
VIN		VEHICLE YR/MODEL	

VEHICLE #	
VEHICLE MAN.	
END USER	

1 Piston Accumulator (P.A.) YES NO NA

1.1	Control Fixture/ Vibration Damage			
	Are all mounting locations of the P.A. intact with no signs of wear or breakage?			
1.2	Control Protection Box / Labels			
	Is the protection box intact with no signs of wear or breakage?			
	Are all labels visible and readable?			
1.3	Control Leakage / corrosion			
	Is the area around the P.A. couplings/valve/connections free of signs of leakage or corrosion?			
1.4	Change of service interval label / Control of gauge pressure			
	Is the service interval date label changed for next inspection?			
	For annual inspections only, is the annual inspection label replaced as required for warranty?			
	Is the pressure gauge indicating in the green area on the P.A. & pressure recorded on this form?			

2 Cable/Electrical/Manual Punch Activation YES NO NA

*****BEFORE PERFORMING ANY WORK ON ACTIVATION, RE-INSERT THE SAFETY SCREW!*****

2.1	Control for Cable Activation			
	Is the cable activation handle free of damage and evidence of tampering?			
	Is the cable pull handle properly installed and connected?			
	Are the cables and handle lubricated and move freely?			
2.2	Control for Electrical Activation			
	Is the electrical activation button free of damage and evidence of tampering?			
	Can the pull pin be removed on the manual button?			
	Are wires and harness connections on electrical punch secure?			
	Is the break away tie secured properly around the pull pin?			
2.3	Control for Manual Punch Activation			
	Is the manual punch free of damage and evidence of tampering?			
	Are all the fittings free of signs of leaks or damage?			
	Can the pull pin be removed on the manual punch?			
	Is the break away tie secured properly around the pull pin?			

3 Suppression System / Hydraulic Hose (Distribution System) YES NO NA

3.1	Control for vibration damage / wear			
	Are the hoses and pipes in the system free of damage and wear?			
	Is the Stainless free of kinks and nicks?			
3.2	Control for braces (clamps), tightness			
	Are all braces or clamps secure per the installation instructions and in good condition?			
	Are all connections tightened so that there is no risk for leakage?			

3.3	Control for protective covers and proper positioning of nozzles			
	Are the proper number of nozzles installed?			
	Are all nozzles properly placed per customer or FMNA drawing and free of obstructions?			
	Are the protective covers position and clean? If not, replace with new ones.			
3.4	Control for breakages / cracks on hydraulic hoses			
	Are all hoses secure and in good condition?			
	Are all hoses & tubing connections tight with no possibility for leaks?			
4	Detection System	YES	NO	NA
4.1	Control for detection Gas cylinder / detection fluid cylinder			
	Are all mounting locations of the detector bottle intact with no signs of wear or breakage?			
	Is the pressure gauge indicating in the green area on the detector bottle & pressure reading recorded on this form?			
4.2	Control for Detection Tube/Clamps			
	Is the routing and fixture of the detector tube free from wear or other damage?			
	Is the detector tube completely protected by SS coil or conduit?			
	Is the detection tube free of abrasions, secured, & nothing contacting tube through coil, etc.?			
	Are all tubing connections tight with no possibility for leaks?			
4.3	Control for damage to protective tube / protective coil (spiral)			
	Is the detector tube free of any wear, pinching, or other damage to the protective tube or protective coil?			
	Is the protective coil secure and the ends properly bent according to the installation manual?			
4.4	Control for labels on the detector tube			
	Are the Red "FIRE DETECTOR" labels clearly visible on the detector tube? Replace as needed			
5	Alarm panel / Alarm device / Cables	YES	NO	NA
5.1	Check for slackness, breakage and cracks			
	Are the cables free of any slack and are all joints / cables undamaged?			
5.2	Function test/Fire Simulation Under Dash Audible Alarm			
	Does audible alarm sound when FIRE test button is pressed?			
	Does the audible alarm sound and light illuminate when the detector cylinder pressure switch is disconnected?			
5.3	Function Test/Fire Simulation - On Dash Alarm Panel			
	Is the green light illuminated on the control panel and no evidence of tampering?			
	For Alarm Pnl, hold test button for 4 seconds. Do all lights cycle and does audible alarm sound for 5 seconds?			
	For Alarm Pnl, disconnect PA and det. cylinder pressure switch connectors. Does panel signal Fire and sound audible alarm			
	For Alarm Pnl w/ Eng. shutdown and delay, Does vehicle shutdown after 15s?			
	For Alarm Pnl w/ Eng. shutdown and delay, Can vehicle be restarted?			
6	FM-1318 Electrical Punch/"FIRE" Button	YES	NO	NA
6.1	Control for Testing Electrical Punch and "FIRE" Button			
	Was the FM-1318 successfully tested as per section 6?			
7	Other Items			
7.1	Control for Suppression Unit Enclosure			
	Is enclosure unchanged since the last inspection?			
7.2	Installation and Operation Manual / Owners Manual			
	Is installation and Operation / Owners Manual Present?			
	Check if customer would like a manual sent electronically and notify customer service			
7.3	Activation Labels / Control Labels			
	Are all control labels up to date and easily shown?			
7.4	Control if Safety Screw is not engaged into the release valve			
	Is the detection system activated and the safety screw removed?			

Additional Comments:

Service Tech (Printed)

Customer Name (Printed)

Signature

Customer Signature

Company

Date ____

Date ____

Note: It is the customer's responsibility to ensure that all service checks are performed in accordance to Fogmaker North America's guidelines as indicated in the Installation Manual. Services and/or maintenance must be performed by a Fogmaker trained, certified technician.

It is the responsibility of the customer to correct any problems as indicated by this document to ensure the proper function of the system. This document must be returned to Fogmaker NA to be cataloged and verified.

Return of this document for annual inspection will allow Fogmaker NA to provide replacement inspection stickers as required.