

International POD, LLC
Revision 0

Cold Fire Super Systems
223 Oak Street
New Windsor, NY 12553

Model: CTSX
Cylinder Size: 1 Liter
Serial Number: 100088

- STOP -

READ INSTRUCTIONS FIRST

International POD, LLC

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**INSTALLATION, OPERATION, AND
MAINTENANCE MANUAL
FOR**

Cold Fire Super Systems

**CTSX AUTOMATIC FIRE DETECTION
AND SUPPRESSION SYSTEM**

International POD, LLC
Revision 0
TABLE OF CONTENTS

1.0 FORWARD

- 1.1 General**
- 1.2 Safety Precautions**

2.0 INTRODUCTION

- 2.1 ColdFire® Extinguishing Agent**

3.0 SYSTEM DESCRIPTION

- 3.1 General**
 - 3.1.1 Operating Pressure**
 - 3.1.2 Operating Temperature Range Limitations**
- 3.2 Component Descriptions**
 - 3.2.1 Cold Fire Super Systems Cylinder/Valve Assemblies**
 - 3.2.2 Cylinder Mounting Bracket**
 - 3.2.3 Cold Fire Super Systems Flexible Detection Tubing**
 - 3.2.4 Discharge Nozzles**
 - 3.2.5 Manual Actuator**
 - 3.2.6 Schrader Valve**
 - 3.2.7 Shipping Bolts**
 - 3.2.8 Cold Fire Super Systems Warning Sign**

4.0 INSTALLATION INSTRUCTIONS

- 4.1 Cylinder Installation**
 - 4.1.1 Packaged Items**
 - 4.1.2 Cylinder / Valve Assembly**
 - 4.1.3 Cylinder Mounting**
- 4.2 Cold Fire Super Systems Detection Tubing**
- 4.3 Pressurization of Cold Fire Super Systems**

5.0 OPERATION

- 5.1 Arming Manual Actuator**

6.0 SERVICE, MAINTENANCE, & FILLING INSTRUCTIONS

- 6.1 General**
- 6.2 Periodic Service and Maintenance**
- 6.3 Periodic Service and Maintenance Procedures**
 - 6.3.1 Monthly: Performed by Owner or End User**
 - 6.3.2 Annual Inspection**
 - 6.3.3 Five Year Inspection**
- 6.4 Post Fire Maintenance**
 - 6.4.1 Cold Fire Super Systems Cylinder Valve**
 - 6.4.2 Valve Disassembly**
- 6.5 Cold Fire Super Systems Cylinder Retest**
- 6.6 Filling Procedures**
- 6.7 System Depressurization**

International POD, LLC
Revision 0
TABLE OF CONTENTS

7.0 SYSTEM DESIGN AND LIMITATIONS

- 7.1 General**
- 7.2 General Specifications**
 - 7.2.1 Physical Properties of ColdFire®**
 - 7.2.2 Cold Fire Super Systems Fill Volume**
 - 7.2.3 Cold Fire Super Systems ColdFire® Weight Chart**
 - 7.2.4 Cold Fire Super Systems Valve Weight Chart**
 - 7.2.5 Discharge Time**
 - 7.3.6 Storage and Operating Temperature Range**
 - 7.2.7 System Operating Pressure**
 - 7.2.8 ColdFire® Requirement Chart**
- 7.3 Un-closable Openings and Ventilation Shut-down**
- 7.4 ColdFire® Designed Temperature**
- 7.5 ColdFire® Freeze Protection**
- 7.6 Nozzle and Discharge Tubing Requirements**
 - 7.6.1 Discharge Nozzle Limitations**
 - 7.6.2 Nozzle Area Coverage**
 - 7.6.3 Nozzle Spray Pattern Chart**
 - 7.6.4 Nozzle Flow gpm (Gallons per Minute)**
 - 7.6.5 Discharge Tubing & Fitting Specifications**
 - 7.6.6 Maximum Tubing and Fitting Limitations**
 - 7.6.7 Tubing Bends**
 - 7.6.8 Lubrication**
 - 7.6.9 Thread Sealant / Locker**

8.0 WARRANTY

Material Safety Data Sheets
ColdFire®
Nitrogen
Potassium Acetate

International POD, LLC

Revision 0

1.0 FORWARD

1.1 General

This manual is written for installation, and maintenance of Cold Fire Super Systems CTSX automatic fire detection and suppression systems. Cold Fire Super Systems CTSX automatic fire suppression systems are to be installed, inspected, tested, maintained, and recharged by personnel in accordance with the following:

All instructions, limitations, etc. contained in this manual, Model CTSX Automatic Fire Suppression System Assembly and Installation Instructions, and all information contained on the cylinder nameplate(s).

1.2 Safety Precautions

Safety precautions are essential when any electrical or mechanical equipment is involved. These precautions should be followed when handling, servicing, and recharging Cold Fire Super Systems cylinders and equipment. If safety precautions are overlooked or ignored, personal injury or property damage may occur. The following warnings are used throughout this manual. Always heed these precautions. They are essential to the safe use of the equipment described in this manual.

▲ DANGER:

This danger symbol identifies immediate hazards and provides specific instructions or procedures, which if not correctly followed **WILL** result in severe personal injury or death.

▲ WARNING:

This warning symbol identifies specific instructions or procedures which, if not correctly followed, **COULD** result in severe personal injury or death.

▲ CAUTION:

This caution symbol identifies specific instructions or procedures, which if not correctly followed, **COULD** result in minor personal injury or equipment or property damage.

THE FOLLOWING SAFETY PRECAUTIONS SHOULD ALWAYS BE FOLLOWED -

▲ WARNING:

Pressurized (charged) cylinders are extremely hazardous and if not handled properly are capable of causing bodily injury, death, or property damage.

1. Read and understand this manual and the other documents referenced herein.
2. The shipping bolts must be installed or removed in accordance with the procedures contained in this manual.
3. The cylinder should be pressurized only after the cylinder has been securely mounted in the bracket and the Detection Tubing has been connected but before the discharge tubing has been connected to the CTSX valve.
4. Wear safety glasses when working with pressurized cylinders and charging equipment.

International POD, LLC

Revision 0

5. Make sure the shipping bolts are installed, system pressure is removed, the detection tubing, and discharge tubing have been removed from the valve before removing the cylinder from the bracket.
6. Follow all of the safety procedures included on the cylinder nameplate and in this manual.
7. Never assume that a cylinder is empty. Treat all cylinders as if they are fully charged.

Any questions concerning information contained in this manual should be addressed to:

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2.0 INTRODUCTION

The Cold Fire Super Systems CTSX automatic fire suppression systems are designed to exclusively use ColdFire®. The systems are equipped with detection tubing, discharge tubing, and a nozzle. The pre-designed concept minimizes the amount of engineering involved in system design. When the discharge tubing and nozzle are installed within the limitations stated in this manual, no hydraulic calculations are required to determine pressure drop, agent flow or discharge time. The hazard being protected can be any size, shape, or volume, provided that the protected hazard is within the limitations described in this Manual. Each extinguishing unit, when installed, is a self-contained system, meaning that it is equipped with its own automatic (non-electric) detection system, which when actuated, automatically releases the suppression agent into the hazard area. These units are automatic systems (e.g. no simultaneous manual or electric actuation means is required).

2.1 ColdFire® Extinguishing Agent

The extinguishing agent used in Cold Fire Super Systems CTSX automatic fire suppression systems is ColdFire®. ColdFire® is approved for use in occupied areas; when used as specified under the U.S. Environmental Protection Agency (EPA) SNAP Program rules. Refer to the SNAP Program rules for more information.

ColdFire® extinguishes a fire by a combination of chemical and physical mechanisms without affecting the available oxygen. This allows personnel to see and breath, permitting them to safely leave the fire area. It is an effective extinguishing agent that can be used on many types of fires. It is effective for use on Class A surface fires, Class B flammable liquid fires, Class D metal fires, and Class K kitchen fires.

ColdFire® is clean and leaves little or no residue, thereby minimizing after fire clean up, along with keeping expensive downtime to a minimum. Most materials such as steel, aluminum, stainless steel, brass, as well as plastics, and rubber are not affected by exposure to ColdFire®. This agent is also environmentally friendly, having an ozone depletion potential (ODP) of 0.00. For complete details see section 7.2.

International POD, LLC
Revision 0

3.0 SYSTEM DESCRIPTION

3.1 GENERAL

Cold Fire Super Systems Automatic CTSX Systems consists of the following major components:

1. Cylinder/Valve Assembly
2. Cylinder Mount Bracket
3. Detection Tubing and Fittings
4. Discharge Nozzle
5. Discharge Tubing and Fittings
6. Manual Actuator
7. Bottle of ColdFire® Liquid
8. Shipping Bolts

Once installed, the Cold Fire Super Systems CTSX Automatic System becomes a self-contained, self-actuating unit that does not require an external source of power or electricity. The system utilizes the Cold Fire Super Systems flexible Detection tubing that is attached to the cylinder valve. This tubing is pressurized with nitrogen to maintain the cylinder valve in the closed position. This tubing is temperature sensitive, and acts as a continuous linear thermal detector that ruptures at approximately 176°F. Once the detector tubing is ruptured, the cylinder valve automatically opens, allowing the ColdFire® to flow through the discharge tubing, then through the nozzle(s) into the protected area.

This system is designed as an automatic unit. No manual or electric means is required for actuation. Optional Cold Fire Super Systems valves can be combined to protect a larger size hazard, since they can be designed to provide for simultaneous actuation of (2) or more units, contact Cold Fire Super Systems for more information.

3.1.1 Operating Pressure:

The cylinder is pressurized with nitrogen to 175 psig +10, -0 psig at 70°F.

3.1.2 Operating Temperature Range Limitations:

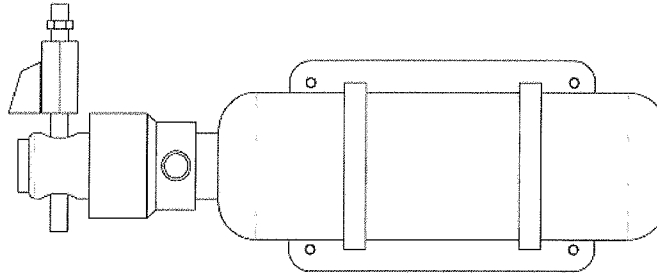
The ambient operating temperature range for all system components is: 32°F to +120°F temperature range, depending on customer requirements can be reduced to 0°F, -25°F, -45°F, or -65°F.

3.2 COMPONENT DESCRIPTIONS

3.2.1 Cold Fire Super Systems Cylinder/Valve Assembly

ColdFire® is stored in a stainless steel cylinder pressurized with nitrogen to 175 psig at 70°F.

International POD, LLC
Revision 0



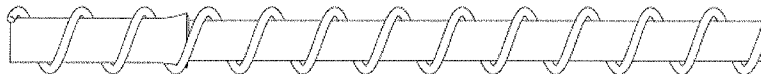
Cylinder Size	Height	Diameter	Cylinder Weight
1 Liter	10-1/2"	3-3/8"	1 lb – 6.2 oz

The stainless steel cylinder is equipped with a nickel plated valve, 175 psi pressure gauge, detection tubing, and (2) discharge ports. A 175 psi Cold Fire Super Systems pressure gauge is provided as a standard part of the cylinder valve assembly and is connected directly into the pressurized portion of the cylinder valve. This pressure gauge is used to monitor system pressure.

3.2.2 Cylinder Mounting Bracket

A wall mounted anodized aluminum bracket is used to mount the cylinder / valve assembly in a horizontal position (parallel with ground) with top of cylinder / valve facing rear of car. Each bracket is equipped with integral quick-clamp straps.

3.2.3 Cold Fire Super Systems Flexible Detection Tubing



The Cold Fire Super Systems Detection Tubing is used as a combination linear heat detector and system activation device to cause actuation of the valve and release of the ColdFire®. The tubing is installed throughout the protected area, with one end connected to the cylinder valve. The tubing is pressurized with nitrogen to 175 psig and maintains the cylinder valve in the “CLOSED” position. The detector tubing is heat sensitive and in a fire situation is designed to rupture at any point along the tube when the temperature reaches 176°F. The rupture of the tube releases the nitrogen pressure causing the cylinder valve to open, resulting in complete discharge of the ColdFire® through the nozzle(s). Location and spacing of the tubing is critical to the response time in the event of a fire. The plastic tube is uniquely impermeable to gas leakage. It also is very strong, flexible, and immune to attack from most oils, fuels, and solvents, but not from battery acid. When correctly installed in an engine compartment, cabinet, etc. it will remain indefinitely on-guard to detect and fight fires. The Detection Tube can be damaged by careless handling. It is essential that anyone involved in the handling of Cold Fire Super Systems CTSX system first read and understand the following instructions.

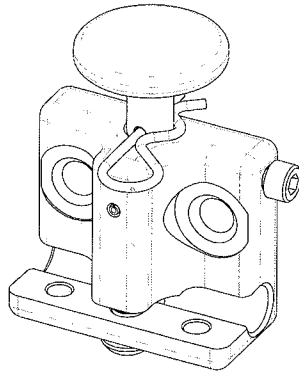
International POD, LLC

Revision 0

3.2.4 Discharge Nozzle(s)

Discharge nozzles are used to distribute ColdFire® uniformly throughout the protected area. A straight nozzle is included; the 360° pattern is designed to be installed to shower the driver in fluid in the event of fire. The nozzles are nickel plated brass with 1/8" NPT male pipe threads.

3.2.5 Manual Actuator



An emergency deployment button has been included and is capable of actuating the entire system in the event that a fire is detected. This actuator is to be placed within the reach of the driver and any emergency personnel. Mounting locations can include body panels, seat, or roll bar (with optional attachment clamp).

3.2.6 Schrader Valve

The Schrader valve is installed on the Cold Fire Super Systems CTSX valve; this is used during the initial charging and for topping off the pressure during the life of the installation. See the charge procedure in section 4.2.1.

3.2.7 Shipping Bolts

The shipping bolts are installed at the time of manufacturing and **MUST** be removed only after the Cold Fire Super Systems CTSX automatic system is ready to be installed and pressurized.

3.2.8 Cold Fire Super Systems Warning Sign

The warning sign is required to warn personnel of the presence of a Cold Fire Super Systems automatic fire suppression system. Warning sign(s) shall be installed at the entrance to the protected areas and in plain view of safety officials.

4.0 INSTALLATION INSTRUCTIONS

This section provides installation instructions covering components and limitations described in sections 3 and 4 of this manual. All components should be installed to facilitate proper inspection, testing, recharging, and any other required service or maintenance as may be necessary. Equipment must not be subjected to severe weather conditions or mechanical, chemical, or other damage which could render the equipment inoperative. The equipment must be installed in accordance with instructions in this manual and the NFPA standard 2001.

International POD, LLC

Revision 0

▲ WARNING:

Cold Fire Super Systems cylinder/valve assembly must be handled, installed, and serviced in accordance with the instructions contained in this manual and on the cylinder nameplate. Failure to follow these instructions could result in severe injury, property damage, or death.

4.1 Cold Fire Super Systems Cylinder Installation

4.1.1 Packaged Items

Remove all items from their packaging and ensure that the components listed in section 3.2 and the system drawing are included.

4.1.2 Cylinder/Valve Assembly

1. **LOCATE** the 1 Liter stainless steel cylinder, CTSX valve with dip tube, and 30oz bottle of ColdFire® Fire Suppressing Agent.
2. **FILL** the 1 Liter cylinder with the entire bottle of ColdFire® Fire Suppressing Agent.
3. **INSTALL** the CTSX valve on the cylinder hand tight with a liberal amount of lubrication on the threads and sealing surfaces.
4. **WEIGH** and record cylinder weight with valve and shipping bolts installed

Cylinder Weight:	Date:

4.1.3 Cylinder Mounting

The cylinder should be located as close as possible to the protected enclosure. In some cases the cylinder can be mounted inside the protected enclosure (cockpit / driver compartment). The assembly shall be located in a readily accessible location to allow for ease of inspection service and maintenance. This location must be protected from the weather and where the temperature range is between 32°F to +120°F, depending on customer requirements this can be reduced to 0°F. **Cylinder and bracket must be mounted in the horizontal position with the cylinder valve facing the rear of the vehicle** and oriented so that the pressure gauge is visible and away from obstruction to facilitate visual inspection. Mount the cylinder where it will not be subject to accidental damage or movement. Suitable protection and hardware must be installed to prevent damage or movement.

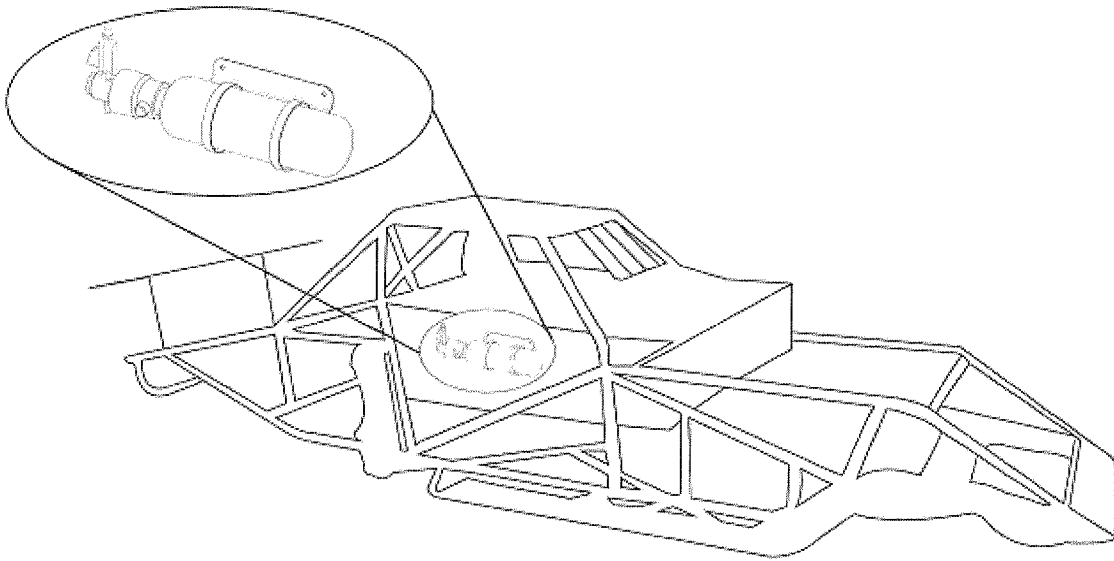
1. Securely **MOUNT** the cylinder bracket to a structural support using the mounting holes within the bracket. Grade 8 hardware is recommended.

International POD, LLC

Revision 0

▲ CAUTION: Do not drop or bang the valve during the following steps, this could move the internal piston of the CTSX valve and cause a discharge during the pressurization of the system.

2. **REMOVE** the two shipping bolts on either side of the valve.
3. **INSTALL** the discharge connection(s), the kit includes components to plumb a single discharge tube. Install the male tubing connector in one of the two ports exposed by the removal of the shipping bolts the second port must be plugged using the male hex plug supplied.
2. **POSITION** cylinder in bracket with the pressure gauge visible. Secure cylinder in place using the bracket straps.



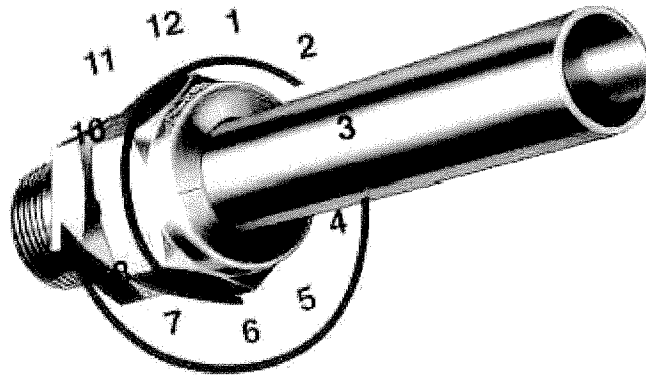
4.2 Cold Fire Super Systems Detection Tubing

- Do not kink, bend, or crush Cold Fire Super Systems Detection Tubing in order to prevent leakage which could result in accidental system discharge.
 - Do not install Detection Tubing in a hazardous environment where the maximum ambient temperature exceeds 176°F
 - Do not place the Detection Tubing on a surface where the temperature of the surface exceeds 140°F
 - Maximum length of Detection Tubing shall not exceed 75 Feet and should not exceed 25 feet without a fitting break.
 - Do not install on or near batteries.
1. **FOLLOW** guidelines as outlined in section 3.2.3 for the tubing placement.
 2. **SECURE** detection tubing using Loop clamps or ty-raps at approximately 8 inch intervals.
 3. **INSTALL** appropriate rubber grommets when detection tubing is routed through holes in order to prevent damaging to the tubing.

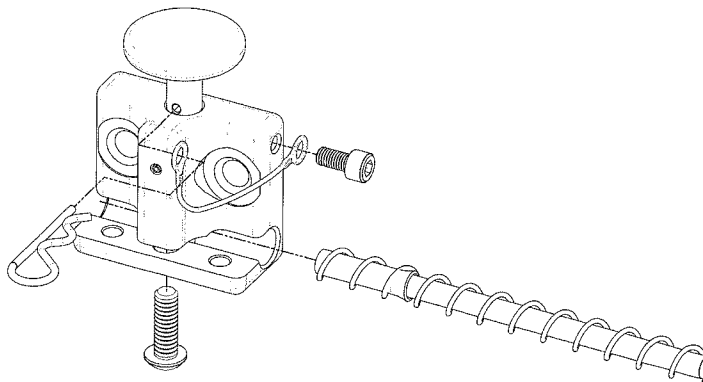
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Revision 0

4. When **INSTALLING** detection tubing to the cylinder maintenance valve fitting make sure that the tubing is pushed all the way through to the shoulder and then tighten the nut, then install the spring into the nut (left handed threads).
 - a. **INSERT** tubing into the fitting. Make sure that the tubing rests firmly on the shoulder of the tube fitting body and that the nut is finger-tight.
 - b. **SCRIBE** the nut at the 12 o'clock position.
 - c. While holding fitting body steady with a back-up wrench, **TIGHTEN** the nut 1 1/2 turns to the 6 o'clock position.



- d. Fitting can be torqued to a value of not more than 25 ft/lbs; however the above turn of the nut is the preferred method of installation.
5. **VERIFY** the maintenance valve is in the open position (the black valve handle is in line with the black Detection Tube) and the **RED** safety seal is installed through the handle and around the valve.

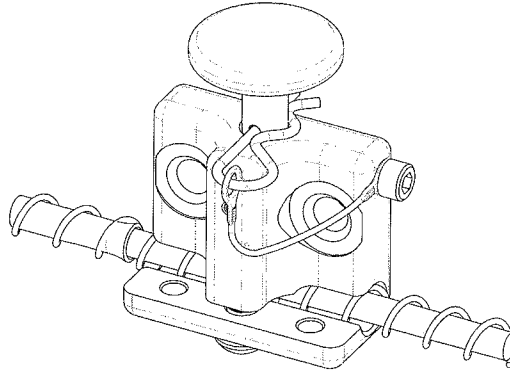


6. **INSERT** the crimped end of the Detection Tube into the clamp bore of the manual actuator and slide the actuator unit to the desired location and position along the routed Detection Tube.
7. The actuation button should be **POSITIONED** so that it is easily accessible while operating vehicle.

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Revision 0

8. **POSITION** the centerline of the piecing button between two coils of the protective outer spring on the Detection Tube. This ensures the plunger will not be blocked by the outer spring.



9. **LOCK** the tube in place within the actuator by tightening the pinch bolt located on the bottom of the assembly.
10. **LOCATE** the lanyard - bolt one end of the lanyard to the actuator housing and slip the safety clip through the other end.
11. The Cold Fire Super Systems CTSX automatic system is now ready for pressurization with nitrogen.

4.2.1 Pressurization of Cold Fire Super Systems

▲ **WARNING:**

Pressurized (charged) cylinders are extremely hazardous and if not handled properly are capable of causing bodily injury, death, or property damage

1. Using a regulated nitrogen supply, **PRESSURIZE** the Schrader valve with nitrogen to 175 psi. A portable nitrogen cylinder for on-site use is recommended.
2. **VERIFY** the pressure is in the green zone of the gauge.
3. **REMOVE** the nitrogen connection. Note: there will be nitrogen and ColdFire® trapped in the Schrader valve that will be vented. Venting will only occur for a short period until the valve closes.
4. **TEST** for leakage; apply soapy water solution to the cylinder valve connection, Schrader valve, end of line connection, pressure gauge, and any other added pressure connections. Observe for bubble leaks.

▲ **WARNING:**

Nitrogen pressure must be maintained on the actuation port, any hissing or discharge coming from the discharge ports indicates that the piston is not seating properly or has opened. Failure to follow this procedure could result in personal injury and damage to property.

5. Wait 30 minutes, then **OBSERVE** pressure gauge. Any decrease in pressure is an indication of a leak. In the event of a leak release pressure in accordance with 6.7, System Depressurization, 6.4.2, Valve Disassembly, and then re-perform section 4.2.1, Pressurization of Cold Fire Super Systems.

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Revision 0

4.3 Discharge Tubing and Nozzles

1. **LOCATE** the Nickel plated brass nozzle / fittings and the black composite discharge tubing.
2. **DETERMINE** the routing of the discharge tubing and whether one (1) or two (2) discharge ports will be utilized. Follow the guidelines and limitations described in section 7.6. If two or more discharge ports are used, verify that the tubing length from each discharge port does not exceed a 10% imbalance.
3. **VERIFY** no leakage prior to installing discharge tubing and the pressure checks outlined in 4.2.1 (5) are completed.
4. **INSTALL** the necessary composite tubing and compression fittings between the cylinder and nozzle(s). Secure tubing with appropriate size tubing clamps as required.
5. **ATTACH** the Cold Fire Super Systems warning nameplate(s) to the appropriate locations.
6. **COMPLETE** system is now fully armed and ready for use.

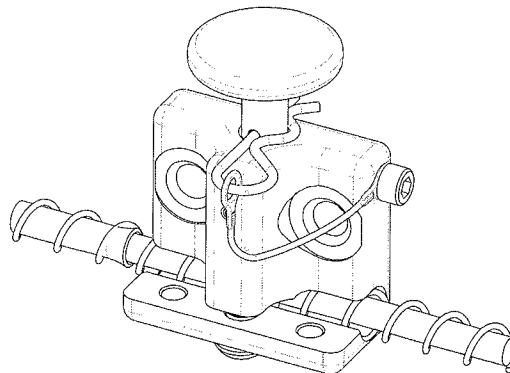
5.0 Operation

The CTSX system is equipped to automatically discharge in a fire situation and release the suppression agent. The detection tubing is heat sensitive and in a fire situation is designed to rupture at any point along the tube when the temperature reaches 176°F. The rupture of the tube releases the nitrogen pressure causing the cylinder valve to open, resulting in complete discharge of the ColdFire® through the nozzle(s).

The system can also be activated manually by depressing the red button on the manual actuator.

5.1 Arming Manual Actuator

The manual actuator is equipped with a safety pin. **This pin must be removed for the manual actuator to function.** The pin must be installed when the vehicle is not in operation to ensure accidental activation does not occur.



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Revision 0

6.0 SERVICE, MAINTENANCE, & FILLING INSTRUCTIONS

1. Cold Fire Super Systems cylinder/valve assembly must be handled, installed, inspected, and serviced only by qualified and trained personnel in accordance with the instructions contained in this manual, the cylinder nameplate, NFPA-2001, and any other regulations and codes that may apply.
2. Before performing maintenance or refilling procedures refer to the material safety data sheets in the appendix at the back of this manual.

6.1 General

A regular program of systematic maintenance must be established for continuous, proper operation of all Cold Fire Super Systems, and to avoid violating the warranty. A periodic maintenance schedule must be followed and an inspection log maintained for ready reference. As a minimum, the log must record:

(1) inspection interval, (2) inspection procedure performed, (3) maintenance performed, if any, as a result of inspection, and (4) name of inspector performing task.

If inspection indicates areas of rust or corrosion is present, immediately clean and repaint the area. See Paragraph 6.5 of this manual for cylinder information.

6.2 Periodic Service and Maintenance

Perform service and maintenance of the Cold Fire Super systems in accordance with the schedule shown in Table 6.2.

TABLE 6.2
Periodic Service and Maintenance Schedule

Inspection	Visual	General	Remove	Weigh
Monthly	X			
Annually	X	X		
5 Years	X	X	X	X

6.3 Periodic Service and Maintenance Procedures.

6.3.1 Monthly: Performed by Owner or End User

1. **PERFORM** a visual inspection of the Cold Fire Super Systems cylinder and equipment for damaged or missing parts.
2. **ENSURE** access to hazard areas, discharge nozzles, and cylinders are unobstructed and that there are not obstructions to the operation of the equipment or distribution of ColdFire®.
3. **INSPECT** detection tubing in hazard area for abrasion, distortion, cuts, or dirt accumulation, and that there are no obstructions preventing tubing from sensing a fire should one occur.
4. **INSPECT** Cold Fire Super Systems cylinder pressure gauge. If pressure gauge is not normal (175 psi at 70°F) contact authorized Cold Fire Super Systems Service Company to inspect and recharge if necessary.
5. **VERIFY** that there have been no changes in the size of the enclosure and that no new ventilation has been added.

International POD, LLC

Revision 0

6.3.2 Annual Inspection

1. **PERFORM** a general visual inspection of the Cold Fire Super Systems cylinder and equipment for damaged or missing parts.
2. **ENSURE** access to hazard areas, discharge nozzles, and cylinders are unobstructed and that there are not obstructions to the operation of the equipment or distribution of ColdFire®.
3. **INSPECT** detection tubing in hazard area for abrasion, distortion, cuts, or dirt accumulation, and that there are no obstructions preventing tubing from sensing a fire should one occur.
4. **INSPECT** Cold Fire Super Systems cylinder pressure gauge. If pressure gauge is not normal (175 psi at 70°F) contact authorized Cold Fire Super Systems Service Company to inspect, weigh, and recharge if necessary.
5. **VERIFY** that there have been no changes in the size of the enclosure and that any new ventilation has been added.

6.3.3 Five Year Inspection

▲ WARNING:

Pressurized (charged) cylinders are extremely hazardous and if not handled properly are capable of causing bodily injury, death, or property damage.

1. **RECORD** pressure.
2. **REMOVE** the discharge tubing connection from CTSX valve.
3. **CLOSE** the Detection Tube maintenance valve.
4. **DISCONNECT** Detection Tube connection from the maintenance valve.
6. **REMOVE** cylinder from bracket installation.
7. **WEIGH** cylinder. Compare measured weight with weight for the cylinder nameplate.
8. If the container shows a loss in ColdFire®, or loss in pressure of more than 10 percent **STOP**, the cylinder shall be refilled or replaced.
9. **REMOVE** nozzle(s) and inspect for obstructions.
10. **RE-INSTALL** nozzles.
10. **RE-INSTALL** cylinder in bracket.
11. **RE-INSTALL** Detection Tube to maintenance valve.
 - 11.1 **REASSEMBLE** of Detection Tube may be performed several times.
 - 11.2 **INSERT** tubing with pre-swaged ferrules into the fitting body until the front ferrule seats.
 - 11.3 **ROTATE** the nut with a wrench to the previously pulled-up position at this point a significant increase in resistance will be encountered.
 - 11.4 **TIGHTEN** slightly with a wrench (less than a quarter turn).
12. **OPEN** Detection Tube maintenance valve.
13. **INSTALL** a new maintenance valve RED safety seal.
14. **RE-INSTALL** Detection Tube connection to the CTSX valve.
15. **IF REQUIRED** top off the system pressure with nitrogen following the applicable procedures outlined in section 4.2.1, Pressurization of Cold Fire Super Systems.

6.4 Post Fire Maintenance

In the event of a system discharge the following procedures shall be performed.

International POD, LLC

Revision 0

6.4.1 Cold Fire Super Systems Cylinder Valve

Remove the cylinder assembly from the installation following procedures detailed in section 6.3.3. Inspect and service the Cold Fire Super Systems CTSX cylinder valve as follows:

Note: The ColdFire® may dissolve and wash away lubricants in the valve. Because of this, it is necessary to inspect and re-lubricate certain valve components prior to recharging the cylinder/valve assembly.

▲ CAUTION:

Prior to removal of the valve from the cylinder, verify that ALL PRESSURE HAS BEEN RELEASED. To relieve any remaining pressures see section 6.7, for system depressurization.

6.4.2 Valve Disassembly

1. **VERIFY** no pressure in cylinder, depressurize if required.
2. **REMOVE** CTSX valve from cylinder
3. **REMOVE** siphon tube from the CTSX valve
4. **REMOVE** valve cap from CTSX valve body.
5. **REMOVE** piston from CTSX body
6. **INSPECT** valve cap, "O-rings", lubricate and replace if necessary.
7. **INSPECT** the valve piston "O-ring" (top and bottom). If damaged, replace with the appropriate "O-ring".
8. **INSPECT** and clean piston seats (top and bottom), remove any foreign material or metal chips.
9. **INSTALL** piston in CTSX valve body.
10. **INSTALL** valve cap back on valve body and tighten securely
11. **INSPECT** valve "O-ring" on cylinder neck.
12. **REPLACE** "O-ring" if necessary and lubricate.
13. **INSTALL** siphon tube to valve
14. **INSTALL** CTSX valve on cylinder, lubricant threads.
15. Valve and cylinder assembly is **COMPLETE** and ready for filling.

6.5 Cold Fire Super Systems Cylinder Information

1. Cylinders life is 6 years from time of purchase and should not be refilled or re-pressurized after that date.
2. Cylinders that have been in contact or in a near proximity of a fire should not be refilled or re-pressurized.
3. Any questions concerning the viability of the cylinder, contact Cold Fire Super Systems at tech@intpod.com.

6.6 Filling Procedures

1. **FILL** cylinder in accordance with tables 7.2.2 and 7.2.3 with the correct volume of ColdFire®.
2. **INSTALL** the CTSX valve on the cylinder hand tight with a liberal amount of lubrication on the threads and sealing surfaces.
3. **WEIGH** and record cylinder weight with valve and shipping bolts installed.
4. **INSTALL** the Assembly in its mounting bracket, at its final location.
5. **INSTALL** the Detection Tube with its Spring Top fitting

International POD, LLC

Revision 0

6. **CONNECT** nitrogen supply to the Schrader valve, regulated to 175 psig.
7. **PRESSURIZE** the system verify the pressure is in the green zone of the gauge.
8. **REMOVE** the nitrogen connection. Note: there will be nitrogen and ColdFire® trapped in the Schrader valve that will be vented. Venting will only occur for a short period of time until the valve closes.

▲ **WARNING:**

Nitrogen pressure must be maintained on the actuation port, any hissing or discharge coming from the discharge ports indicates that the piston is not seating properly or has opened. Failure to follow this procedure could result in personal injury and damage to property.

9. Wait 30 minutes, then **OBSERVE** pressure gauge. Any decrease in pressure is an indication of a leak. In the event of a leak release pressure in accordance with 6.7, System Depressurization, 6.4.2, Valve Disassembly, and then re-perform section 4.2.1, Pressurization of Cold Fire Super Systems.
10. **INSTALL** the discharge port connections.

6.7 System Depressurization

▲ **WARNING:**

Pressurized (charged) cylinders are extremely hazardous and if not handled properly are capable of causing bodily injury, death, or property damage.

1. **REMOVE** the discharge tubing nozzle connection.
2. **INSTALL** collection container at the discharge tube.
2. **CLOSE** the Detection Tube maintenance valve.
4. **DISCONNECT** Detection Tube connection from the maintenance valve.

▲ **CAUTION:**

The cylinder and valve assembly will discharge when the maintenance valve is opened. One liter of liquid will be discharged into the collection container at 175 psi. Keep all body parts clear of the discharge and use safety glasses during this procedure.

5. **OPEN** the Detection Tube maintenance valve.
6. **SAVE** the liquid for re-installation and system re-charge.

Note: See section 6.4.2 for valve disassembly and re-assembly.

7.0 SYSTEM DESIGN and LIMITATIONS

7.1 General

The Cold Fire Super Systems, with ColdFire® and CTSX Automatic System have design limitations for:

- Protected Area
- Nozzle Coverage
- Nozzle placement
- Discharge time and flow rates
- ColdFire® mix and concentration
- Detection tubing placement

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Revision 0

The CTSX automatic system concept minimizes the amount of engineering required when evaluating a design for a specific application. So long as the discharge tubing and nozzles are installed within the limits prescribed in this manual, no calculations are required for pressure drop, flow rates or discharge time. When the additional limitations of hazard volume, area coverage, maximum height, design concentration, agent quantity, detector arrangement, etc., are also met, the system installation can be understood to comply with the design requirements; therefore, no discharge tests should be required.

7.2 General Specifications

7.2.1 Physical Properties of ColdFire®

PH: concentrate is 6.15, Neutral when diluted

Boiling Point: 212 °F

Freezing Point: 32°F

Specific Gravity: 1.02 @ 60°F

Solubility in Water: 100%

Color: Clear Liquid

Vapor Pressure: 23.76 mm Hg @ 77°F

Biodegradability: 100% in 21 Days

Reactivity: 0.00

Flammability: 0.00

Ozone Depletion Potential: 0.00

7.2.2 Cold Fire Super Systems Fill Volume

Cylinder Size	Total Volume	ColdFire® Maximum Fill	Nitrogen Space	Pressure	Cylinder Weight
1 Liter	45 oz	30 oz	1/3 Volume	175 psi	1 lb – 6.2 oz
2 Liter	96 oz	64 oz	1/3 Volume	175 psi	2 lb – 3.2 oz

The maximum fill volume has been determined for each Cold Fire Super Systems Stainless Steel cylinder.

7.2.3 Cold Fire Super Systems ColdFire® Weight Chart

Liquid Weight Chart	Protection Factor 32°F	Protection Factor 0°F	Protection Factor -25°F	Protection Factor -45°F	Protection Factor -65°F
1 Liter	3lb – 3.0oz	3lb – 5.6oz	3lb - 8.6oz	3lb - 9.0oz	3lb – 10.8oz

7.2.4 Cold Fire Super Systems Valve Weight Chart

CTSX
2 lb – 14 oz

The total weight of a filled cylinder is determined by adding the 'Cylinder Weight' column from 7.2.2 and the appropriate ColdFire® weight from 7.2.3 based on the cylinder size and the protection factor and 7.2.4 the valve weight, tolerance +2% -0%. The cylinder size, protection factor, and valve type can be found on the cylinder label.

7.2.5 Discharge Time: The minimum discharge time should be 10 seconds, or as may be otherwise required by the authority having jurisdiction (AHJ).

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Revision 0

7.2.6 Storage and Operating Temperature Range: The Cold Fire Super Systems pre-engineered CTSX automatic fire suppression systems is designed to be stored and operated at the ambient temperature range of 32°F to +120°F temperature range, depending on customer requirements can be reduced to 0°F, -25°F, -45°F, or -65°F .

7.2.7 System Operating Pressure: The normal system operating pressure is 175 psig at 70°F.

7.2.8 ColdFire® Requirement Chart

ColdFire®	Description
32°F	Standard ColdFire 10% Mix
0°F	ColdFire 10% Mix protected to 0°F
-25°F	ColdFire 10% Mix protected to -25°F
-45°F	ColdFire 10% Mix protected to -45°F
-65°F	ColdFire 10% Mix protected to -65°F

7.3 Un-closeable Openings and Ventilation Shut-Down

Provisions must be made to provide means to close all openings in the hazard enclosure and shutoff ventilation at the time of system discharge.

7.4 ColdFire® Designed Temperature

ColdFire® has a temperature range of 32°F to +120°F.

7.5 ColdFire® Freeze Protection

A mixture added to ColdFire® allows for below freezing applications of Cold Fire Super Systems. The mix can be custom blended depending on customer requirements to 0°F, -25°F, -45°F, or -65°F.

7.6 Nozzle and Discharge Tubing Requirements

7.6.1 Discharge Nozzle Limitations

The system can be designed using 1, 2, 3, or 4 nozzles to suit the hazard configuration. Each cylinder valve is equipped with (2) 3/8" discharge ports. Whether (1) or (2) discharge ports are used is dependant on the size and shape of the enclosure, the number of nozzles required to cover the specific hazard, and cylinder size.

7.6.2 Nozzle Area Coverage

The maximum coverage per system (regardless of the number of nozzles used) is 32³ ft.

The maximum nozzle arrangement limitations are 1 nozzle per 1 liter of ColdFire®.

The length and width covered by each nozzle can vary.

The maximum straight line distance from the center line of the nozzle to the farthest corner of the area protected by a given nozzle 2 ft.

The maximum height is 8 ft.

The maximum area coverage for a given nozzle is 12³ ft.

The maximum area of coverage 32³ ft.

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Revision 0

7.6.3 Nozzle Spray Pattern Chart

Nozzle	Type	Pressure	Cone Angle	Pressure	Cone Angle
1/8" RF	Straight	10 psi	120 degree	80 psi	102 degree

7.6.4 Nozzle Flow gpm (Gallons per Minute)

Nozzle	Type	10 psi	20 psi	30 psi	40 psi	60 psi	80 psi
1/8" RF	Straight	.43gpm					

7.6.5 Discharge Tubing & Fitting Specifications

All Cold Fire Super Systems CTSX Automatic Systems shall use Metal/Plastic Composite Tubing for the ColdFire® distribution system. The following tubing and fittings shall be used.

Tubing Specifications:

Material: Black, high-density polyethylene bonded to an overlapped aluminum tape having an ethylene copolymer coating. Polyethylene complies with ASTM D-1248 Classification; Type III, Class C, and Category 5.

Size: 3/8" OD x .062" wall

Tubing Fitting Specifications:

Material: Brass

Type: Flare less Bite Type

Manufacturer's Pressure Rating: 1500 PSI in all sizes thru 3/8".

Min Pressure Rating for Use with Cold Fire Super Systems: 1000 psig

7.6.6 Maximum Tubing and Fitting Limitations

The maximum tubing and fitting limitations are: 3/8" = 50 ft per discharge port.

7.6.7 Tubing Bends

Wherever possible, tubing bends should be used in lieu of 90° tubing elbows. It is recommended that a tube bender should be used when forming the 90° bends. It is also recommended that the following minimum bend radius be used when forming the tubing bends in order to minimize the chance of flattening the tubing and restricting flow.

Metal/Plastic Composite Tubing Minimum Bend Radius for 90° Bend:

$$3/8" = 2.25 \times \text{OD}$$

Minimum distance between bends:

$$3/8" = 1.125"$$

7.6.8 Lubrication

Thread and "O-ring" lubrication should be Vaseline (petroleum jelly).

7.6.9 Thread Sealant / Locker

Saf-T-Lok PS pneumatic sealant is used on all pressure retaining fittings (Detection Tube). The distribution tubing and fitting **DO NOT** require a thread locker or sealant.

International POD, LLC

Revision 0

8.0 WARRANTY

COLD FIRE SUPER SYSTEMS

LIMITED WARRANTY & PURCHASER'S EXCLUSIVE REMEDY

Purchaser's Limited Warranty

International POD, LLC (hereafter referred to as Cold Fire Super Systems) provides the following **Limited Warranty** only to the original purchaser, who purchases the Cold Fire Super Systems from an Authorized Cold Fire Super Systems Distributor. The **Limited Warranty** includes all Cold Fire Super Systems and its component parts supplied by Cold Fire Super Systems. Hereafter these products will be referred to as "Cold Fire Super Systems Products". When the Cold Fire Super Systems Products are properly installed, **in complete** accordance with the written instructions contained in the instruction manuals, or other data supplied with Cold Fire Super Systems products, and when the Cold Fire Super Systems products have not subsequently been modified or altered, unless by express written instructions from Cold Fire Super Systems, then the Cold Fire Super Systems products are

Warranted to be free of defects in materials and workmanship for a period of three (3) years from the date of shipment from Cold Fire Super Systems, New Windsor, New York as long as the following conditions are met:

(1) The **original** purchaser must maintain an annual maintenance service agreement with an authorized Cold Fire Super Systems distributor, commencing with the date the Cold Fire Super Systems product was accepted by the purchaser and placed into service. The service agreement **shall** remain in effect for the duration of the warranty.

(2) The Cold Fire Super Systems Warranty Registration must be completed and returned to Cold Fire Super Systems within thirty (30) days of the installation of the Cold Fire Super Systems. Cold Fire Super Systems products that are not certified, as specified in the paragraphs 1 and 2 above, will carry a maximum limited warranty of one (1) year from the date of shipment from Cold Fire Super Systems.

Purchaser's Exclusive Remedy

The original purchaser's sole and exclusive remedy, unless varied by express written agreement with Cold Fire Super Systems, is as follows: Repair or replacement, at Cold Fire Super System's option, of any defective part which is returned to Cold Fire Super Systems within ninety (90) days of discovery of the defect. Because of the deleterious effects of corrosion, heat, rust, dirt, debris and other factors of use and installation over which Cold Fire Super Systems has no control, **COLD FIRE SUPER SYSTEMS MAKES NO OTHER WARRANTIES OF ANY KIND, WHETHER EXPRESSED OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, BEYOND THOSE EXPRESSLY PROVIDED FOR IN THIS LIMITED WARRANTY.** These warranties shall be void where defects occur due to improper maintenance, installation, service, alterations and/or modifications subsequent to installation, not expressly authorized in writing by Cold Fire Super Systems or due to intentional or negligent acts of the original purchaser or third parties.

Non-Assignability of Warranty

The limited warranty set forth herein may not be assigned, transferred or sold in any way and extends only to the *original* purchaser.

International POD, LLC

Revision 0

Disclaimer of Consequential Damages

In no event shall Cold Fire Super Systems be liable for any consequential or incidental damages arising from the purchase and/or use of Cold Fire Super Systems products, including but not limited to: damages resulting from loss of use of Cold Fire Super Systems products, the costs of replacing discharged suppression agent, damages for lost profits or income, or damages for resulting harm to property other than the Cold Fire Super Systems products.

Use of Non-Cold Fire Super Systems Components

All Cold Fire Super Systems must exclusively use Cold Fire Super Systems components, especially for connections made to the Cold Fire Super Systems Detection tubing. Failure to exclusively use Cold Fire Super Systems components will void this limited warranty and release Cold Fire Super Systems of any and all liability on the performance of the Cold Fire Super Systems components and system.

SOME FACTORS INFLUENCING ENGINEERING DESIGN AND PRODUCT APPLICATION OF COLD FIRE SUPER SYSTEMS

The following are some of the factors that influence engineering design and application of Cold Fire Super Systems. In many cases, these factors are difficult to accurately estimate, and it is for these reasons that Cold Fire Super Systems makes **no** warranties other than those specifically stated in this **Limited Warranty**.

1. The Cold Fire Super Systems has been designed to provide protection against fire, both existing and imminent, for a limited duration of time when: the system is fully operational; used in its normal, expected environment; the system and its component parts are properly **installed, maintained, and operated** in **complete** accordance with written instructions supplied with the system.
2. The duration of the protection against fires dependent upon a sufficient concentration of agent being maintained in the protected hazard area for a pre-determined period of time. This duration will be shortened by conditions or circumstances which may ventilate, cause the agent concentration dilution within the protected hazard area thereby causing an insufficient concentration of agent as is needed to extinguish or prevent the existence or re-ignition of combustion or fire. All hazard areas have different rate of ventilation, leakage, or agent dilution that, in many cases, may be impossible to predict or determine. Air vents, air conditioning systems, gaps and cracks in the enclosure, windows, cable and pipe penetrations, etc., all may effect the agent concentration and the duration of the protection against fire. Also, unforeseen changes in the configuration of a hazard area such as removal of a wall, an explosion or fire external to the protected space, changes in the enclosures configuration, etc. can influence the duration of the fire protection. It is because of these many, and varied, circumstances and conditions that Cold Fire Super Systems makes **no** warranty as to the duration of the protection against fire.
3. The effectiveness of an agent, such as ColdFire® as a fire extinguishant is directly related to the amount of the agent required to extinguish various substances. Not all substances require the same amount of agent to extinguish the fire. Therefore, Cold Fire Super Systems can only assume that the customer has properly defined the hazard area(s) being protected.
4. The effectiveness of the Cold Fire Super Systems is dependent upon the timely discharge of ColdFire® in to the protected area. If unforeseen circumstances such as an explosion, failure of the detection system to activate the Cold Fire Super Systems, failure to manually activate the system, etc. occur, they can prevent the system discharge from being accomplished in a timely manner, and the fire may become deep seated or out of control and completely destroy the hazard area. Since Cold Fire Super Systems has no control over these circumstances, there are **no** warranties as to the effectiveness of extinguishment of the fire other than those specifically stated in this **Limited Warranty**.

International POD, LLC

Revision 0

5. Even if the Cold Fire Super Systems is completely effective in suppressing a fire, failure to remove the ignition source of the fire could result in a re-ignition of the fire. If possible, the source of the fire should immediately be eliminated to prevent re-ignition. Protection against re-ignition only exists when a sufficient amount of ColdFire® penetrates the ignition source. Since the effectiveness of the Cold Fire Super Systems depends on when, under what circumstances, it is used, the judgment of operating personnel as to when to activate a Cold Fire Super Systems, in an emergency, affects the protection provided by the system. Because of the widely carrying conditions and circumstances under which the Cold Fire Super Systems can be used, some conditions can cause its effectiveness to be unpredictable. Therefore, evacuation of personnel from the protected areas **must** be accomplished without delay.

International POD, LLC

Revision 0

Fire Suppressing Agent

COLD FIRE® is a fire suppressing agent specially formulated to rapidly snuff out Class A,B,and D fires. Prevents reflash, safe to store, handle and use, leaves virtually no residue, and is environmentally friendly. The chemical is water soluble and rapidly biodegradable. On Class B oil fires, the chemical encapsulates the oil and prevents burning and reignition. Has the advantages of foam and dry chemical without mess, specialized apparatus or contamination to our environment. **COLD FIRE®** can be used in pumpers and all types of multi-use portable equipment.

Capabilities

Suppressing Power:	Quickly snuffs out fires. "Kills" burning fuel on contact. Prevents reignition by encapsulating fuel source. Retards smoke generation.
Applications:	Class A, B, & D fires of all types.
Cleanup:	None needed. Foam layer dissipates without leaving residue. Product biodegrades rapidly. Oil molecules do not form a tight emulsion with the suppressing solution.
Dispersant Capability:	Low. Treated oils are not dispersed in water.

Characteristics

pH:	pH of concentrate is 6.15. Neutral when diluted.
Flash Point:	Negligible.
Boiling Point:	212° F.
Odor:	Mild fresh scent. Does not contain d-limonenes. Clear color.
Water Solubility:	Complete.
Shelf Life:	Indefinite when stored in closed containers between 32°F and 120°F.
Dilution Strength:	Use at strengths of 1% to 10% in any type of water.
Residue:	Agent layer dissipates rapidly. Product leaves no residue.

Environmental and Safety Considerations

Biodegradability:	100% in 21 days under ideal conditions.
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International POD, LLC

Revision 0

Hazardous Components:	No components are listed in the NIOSH Recommendations for Occupational Health Standards, 1988, or are defined as hazardous by SARA, CERLA, or RCRA. No OSHA PEL's are established for other ingredients.
Handling:	Suppressor is neutral. It will remove oil from the skin and may irritate the eyes if sprayed directly into them. When handling bulk concentrate, eye protection, gloves, and impervious clothing should be worn when there is danger of splashing, prolonged exposure to vapor, or prolonged skin contact, as with all chemicals.
Disposal:	Suppressant itself may be disposed through municipal systems.
SECTION I - IDENTIFICATION	
Manufacturer:	FIREFREEZE Worldwide, Incorporated
Address:	270 Route 46, Rockaway, N.J. 07866
Phone:	(973) 627-0722
Fax:	(973) 627-2982
Date Prepared:	December 10, 1999
Formulation Number:	JG302
Trade Name:	COLD FIRE 302
Product:	Class A:B:D Fire Suppressing Agent
SECTION II - INGREDIENTS AND HAZARD CLASSIFICATION	
Components are classified trade secret. No components are believed to be hazardous, or listed in the NIOSH Recommendations for Occupational Safety and Health Standards, 1988, or are listed as hazardous by SARA, CERCLA, or RCRA. No OSHA PEL's are established for any of the other ingredients.	
SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS	
Boiling Point:	212° F.
Vapor Pressure (mm Hg):	Same as water.
Solubility in water:	100%

International POD, LLC

Revision 0

Specific Gravity:	1.02 @ 60° F.
pH:	6.15 (concentrate). Neutral when diluted
Appearance and Odor:	Clear liquid, fresh smell.

SECTION IV - FIRE AND EXPLOSION DATA

Flash Point:	Not applicable.
Flammable Limits:	Non-flammable.
LEL:	Not applicable.
UEL:	Not applicable.
Extinguishing Media:	Not applicable.
Special Fire Fighting Procedures:	None.
Unusual Fire and Explosion Hazards:	None.

SECTION V - REACTIVITY DATA

Stability:	Stable.
Incompatibility:	None.
Hazardous Decomposition Products:	Carbon monoxide and carbon dioxide.
Hazardous Polymerization:	Will not occur.

SECTION VI - HEALTH HAZARD DATA

Exposure Limits	
OSHA PEL:	Not established.
ACGIH TLV:	Not established.

International POD, LLC

Revision 0

Routes of Entry

Inhalation: Yes.

Skin: Yes.

Ingestion: Yes.

Signs and Symptoms of Exposure

Skin: Negligible hazard. Not a primary skin irritant. Dermal irritation testing for 72 hours on albino rabbits showed no erythema and no edema.

Eyes: Not considered to be a primary ocular irritant.

Inhalation: Negligible.

Ingestion: Not considered to be orally toxic.

First Aid

Eyes: Immediately flush eyes with water.

Skin: Rinse with water.

Inhalation: Negligible. Remove to fresh air.

Ingestion: Drink water.

Carcinogenicity

NTP? No.

IARC? No.

OSHA Regulated? No

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

Spill or Leak Procedures: Rinse affected area with water.

Waste Disposal Method: Dispose as non-hazardous waste in accordance with local regulations.

International POD, LLC

Revision 0

Storage and Handling Precautions:	Store in temperatures from 32° F to 120° F in closed containers to prevent evaporation and deterioration. Freezing will not damage material as long as container remains intact.
Other Precautions:	Although components have low hazard levels, the product will remove oils from the skin like the common soap. Avoid prolonged skin contact.
SECTION VIII - CONTROL MEASURES	
Respiratory Protection:	Not required.
Ventilation:	Dispose as non-hazardous waste in accordance with local regulations.
Protective Gloves:	Wear if there is prolonged skin contact.
Eye Protection:	Wear if needed to prevent reasonable probability of eye contact.
SECTION IX - HAZARD CLASSIFICATION	
IMO Hazard Class and Number:	Non-hazardous.
UN Number:	Not applicable.
US DOT Hazard Class:	Not regulated by DOT.
US DOT Identification Number:	Not applicable.
SECTION X - REGULATORY INFORMATION	
EPA SNAP:	Significantly New Alternative Policy Program Listed. Cold Fire® is listed by the EPA as a substitute for Halon 1211.
HMIS Rating	
Health:	0
Flammability:	0
Reactivity:	0
SECTION XI- ENVIRONMENTAL DATA	

International POD, LLC
Revision 0

Biodegradability:	Product is 100% biodegradable in an active environment within 21 days.
Toxicity:	In accordance with U.S. EPA Office of Pollution Prevention and Toxic criteria for ranking the acute toxicity of chemicals in the aquatic environment, ColdFire 302 is considered to be of low concern.
-96 hour acute toxicity versus freshwater alga (<i>Selenastrum capricornutum</i>) IAW 40 CFR 797.1050 showed ColdFire 302 was algicidal at concentrations above 750 ppm.	
-96 hour acute toxicity versus juvenile rainbow trout (<i>Oncorhynchus mykiss</i>) IAW 49 CFR 797.1400 showed an LC50 of 105 ppm.	
The information presented in this MSDS is believed to be factual. However, nothing contained in this information is to be taken as a warranty of any kind by FIREFREEZE Worldwide, Inc. The user should review any recommendations, in the specific context of the intended use, to determine whether they are appropriate.	

International POD, LLC

Revision 0

MATERIAL SAFETY DATA SHEET

May be used to comply with OSHA's Hazard Communication Standard.
29CFR 1910.1200 Standard must be consulted for specific regulations

POTASSIUM ACETATE SOL.

Quick Identifier
Common Name (Used on Label and List)

SECTION I - GENERAL INFORMATION

Manufacturer's Name - JARCHEM INDUSTRIES, INC.
Address - 414 Wilson Avenue
Newark, NJ 07105
Emergency Telephone # - (973) 344-0600 Secondary Telephone No. - CHEMTREC
Other Information Calls - (973) 344-0600 (800) 424-9300
24 Hour a Day
Date Prepared - March 22, 2001 Reviewed - September 25, 2003

SECTION II - HAZARDOUS INGREDIENTS / IDENTITY

HAZARDOUS COMPONENT(S) [CHEMICAL & COMMON NAMES]:
Potassium Acetate Solution is non-hazardous.

OSHA PEL	ACGIH TLV	Other Exposure Limits	% (optional)	CAS NUMBER
* not established			33-50%	127-08-2 7732-18-5 (water)

HMS: H-1, F-0, R-0, P-C

* Consider ACGIH TWA of 10mg/m³ for particulates not otherwise classified, if misting occurs.

SECTION III - PHYSICAL & CHEMICAL CHARACTERISTICS

BOILING POINT: 100° C (for water)
SPECIFIC GRAVITY (H₂O = 1): 1.32 - 1.35
VAPOR DENSITY (AIR = 1): N/A VAPOR PRESSURE (mmHg): N/A
SOLUBILITY IN WATER: Freely
REACTIVITY IN WATER: N/A
APPEARANCE & ODOR: Clear colorless liquid
MELTING POINT: N/A

SECTION IV - FIRE & EXPLOSION DATA

FLASH POINT: N/A Method Used: N/A
FLAMMABLE LIMITS IN AIR BY VOLUME: LEL Lower: N/A UEL Upper: N/A
AUTO-IGNITION TEMPERATURE: N/A
EXTINGUISHER MEDIA: N/A
SPECIAL FIRE FIGHTING PROCEDURES: N/A
UNUSUAL FIRE & EXPLOSIVE HAZARDS: N/A

SECTION V - PHYSICAL HAZARDS (REACTIVITY DATA)

Page 1 of 2
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International POD, LLC

Revision 0

STABILITY Stable ☒ Unstable ☐ CONDITIONS TO AVOID: N/A

INCOMPATIBILITY (MATERIALS TO AVOID): N/A
HAZARDOUS DECOMPOSITION PRODUCTS: N/A

HAZARDOUS POLYMERIZATION May Occur ☐
Will NOT Occur ☒ CONDITIONS TO AVOID: N/A

SECTION VI - HEALTH HAZARDS

1. ACUTE: Irritant 2. CHRONIC: N/A

SIGNS & SYMPTOMS OF EXPOSURE: Irritation of skin, eyes and respiratory tract.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE Irritation of respiratory tract.

CHEMICAL LISTED AS CARCINOGEN OR POTENTIAL CARCINOGEN:

National Toxicology Program - Yes ☐
No ☒ I.A.R.C. Yes ☐
Monographs No ☒ OSHA Yes ☐
No ☒

EMERGENCY AND FIRST AID PROCEDURES
Flush affected area with water.

ROUTES OF ENTRY:

1. Inhalation Possible with insuing irritation.
2. Eyes Possible with insuing irritation.
3. Skin Possible with insuing irritation.
4. Ingestion Possible with insuing irritation.

SECTION VII - SPECIAL PRECAUTION AND SPILL / LEAK PROCEDURES

PRECAUTION TO BE TAKEN IN HANDLING AND STORAGE. Keep container tightly closed.

OTHER PRECAUTIONS. N/A

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Dike spill and pump to clean container. Flush area with water.

WASTE DISPOSAL METHODS (CONSULT FEDERAL, STATE & LOCAL REGULATIONS).

In accordance with all Federal, State and Local regulations.

SECTION VIII - SPECIAL PROTECTION INFORMATION / CONTROL MEASURES

RESPIRATORY PROTECTION Generally not required. However, wear NIOSH respirator in misting conditions.

VENTILATION: N/A LOCAL EXHAUST: If misting
MECHANICAL (GENERAL) N/A SPECIAL N/A

PROTECTIVE GLOVES. Rubber or plastic

EYE PROTECTION. Safety glasses or goggles

OTHER PROTECTIVE CLOTHING OR EQUIPMENT Aprons and sleeves, if splashing hazard occurs.

WORK / HYGIENIC PRACTICES Good personal hygiene

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Revision 0

AIR PRODUCTS & CHEMICALS -- NITROGEN - NITROGEN, TECHNICAL

MATERIAL SAFETY DATA SHEET

NSN: 6830002920732

Manufacturer's CAGE: 00742

Part No. Indicator: A

Part Number/Trade Name: NITROGEN

General Information

Item Name: NITROGEN, TECHNICAL

Company's Name: AIR PRODUCTS AND CHEMICALS, INC.

Company's Street: 7201 HAMILTON BLVD

Company's City: ALLENTOWN

Company's State: PA

Company's Country: US

Company's Zip Code: 18195-1501

Company's Emerg Ph #: 215-481-4911

Company's Info Ph #: 215-481-4911

Record No. For Safety Entry: 001

Tot Safety Entries This Stk#: 003

Status: SE

Date MSDS Prepared: 01JUN90

Safety Data Review Date: 30MAR92

Supply Item Manager: CX

MSDS Serial Number: BMGPP

Specification Number: BBN411

Spec Type, Grade, Class: I/B/2

Hazard Characteristic Code: G3

Unit Of Issue: CY

Unit Of Issue Container Qty: 231 CU FT

Type Of Container: METAL

Net Unit Weight: UNKNOWN

Ingredients/Identity Information

Proprietary: NO

Ingredient: NITROGEN

Ingredient Sequence Number: 01

Percent: 100

NIOSH (RTECS) Number: QW9700000

CAS Number: 7727-37-9

OSHA PEL: NOT ESTABLISHED

ACGIH TLV: ASPHYXIAN; 9192

Other Recommended Limit: NONE SPECIFIED

Physical/Chemical Characteristics

Appearance And Odor: COLORLESS, ODORLESS GAS OR LIQUID

Boiling Point: -320F, -196C

Melting Point: -346F, -210C

Vapor Pressure (MM Hg/70 F): UNKNOWN

Vapor Density (Air=1): <1

Specific Gravity: 0.8

Decomposition Temperature: UNKNOWN

Evaporation Rate And Ref: UNKNOWN

Solubility In Water: UNKNOWN

Percent Volatiles By Volume: 100

Corrosion Rate (IPY): UNKNOWN

International POD, LLC
Revision 0

=====

Fire and Explosion Hazard Data

=====

Flash Point: NONE

Extinguishing Media: USE MEDIA FOR SURROUNDING FIRE.

Special Fire Fighting Proc: WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE GEAR. COOL CONTAINERS WITH FLOODING AMOUNTS OF WATER UNTIL WELL AFTER FIRE IS OUT.

Unusual Fire And Expl Hazrds: GAS UNDER PRESSURE. CYLINDER MAY EXPLODE IF EXPOSED TO FIRE OR HIGH TEMPERATURES.

=====

Reactivity Data

=====

Stability: YES

Cond To Avoid (Stability): HIGH TEMPERATURES, OPEN FLAME.

Materials To Avoid: NONE SPECIFIED BY MANUFACTURER. LITHIUM.

Hazardous Decomp Products: OXIDES OF NITROGEN

Hazardous Poly Occur: NO

Conditions To Avoid (Poly): NONE

=====

Health Hazard Data

=====

LD50-LC50 Mixture: ORAL LD50 (RAT) IS UNKNOWN

Route Of Entry - Inhalation: YES

Route Of Entry - Skin: NO

Route Of Entry - Ingestion: NO

Health Haz Acute And Chronic: ACUTE: ASPHYXIATION. CHRONIC: NONE.

Carcinogenicity - NTP: NO

Carcinogenicity - IARC: NO

Carcinogenicity - OSHA: NO

Explanation Carcinogenicity: NONE

Signs/Symptoms Of Overexp: INHALATION: SHORTNESS OF BREATH, DIFFICULTY BREATHING, UNCONSCIOUSNESS.

Med Cond Aggravated By Exp: NONE SPECIFIED BY MANUFACTURER.

Emergency/First Aid Proc: INHALATION: REMOVE TO FRESH AIR. RESUSCITATE IF NEEDED.

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Precautions for Safe Handling and Use

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Steps If Matl Released/Spill: TRY TO STOP LEAK IF IT CAN BE DONE AT NO RISK. VENTILATE AREA. DISPELL VAPORS WITH WATER.

Neutralizing Agent: NONE

Waste Disposal Method: CONTACT LOCAL ENVIRONMENTAL MANAGER. DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

Precautions-Handling/Storing: STORE IN A COOL, DRY AREA.

Other Precautions: NONE

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Control Measures

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Respiratory Protection: NONE NORMALLY REQUIRED. IF IDLH CONDITIONS ARE PRESENT WEAR SELF-CONTAINED BREATHING APPARATUS.

Ventilation: USE ADEQUATE MECHANICAL VENTILATION.

Protective Gloves: LEATHER

Eye Protection: SAFETY GLASSES/CHEMICAL SPLASH GOGGLES

Other Protective Equipment: NONE

Work Hygienic Practices: WASH HANDS AFTER USE AND BEFORE EATING, DRINKING, OR SMOKING.

Suppl. Safety & Health Data: ITEM IS I TYPE AND GRADE B AND CLASS 2 OF

International POD, LLC
Revision 0

FEDERAL SPECIFICATION BB-N-411

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Transportation Data
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Trans Data Review Date: 92090
DOT PSN Code: KLZ
DOT Proper Shipping Name: NITROGEN, COMPRESSED
DOT Class: 2.2
DOT ID Number: UN1066
DOT Label: NONFLAMMABLE GAS
IMO PSN Code: KSR
IMO Proper Shipping Name: NITROGEN, COMPRESSED
IMO Regulations Page Number: 2163
IMO UN Number: 1066
IMO UN Class: 2(2.2)
IMO Subsidiary Risk Label: -
IATA PSN Code: SBP
IATA UN ID Number: 1066
IATA Proper Shipping Name: NITROGEN, COMPRESSED
IATA UN Class: 2.2
IATA Label: NON-FLAMMABLE GAS
AFI PSN Code: SBP
AFI Prop. Shipping Name: NITROGEN, COMPRESSED
AFI Class: 2.2
AFI ID Number: UN1066
AFI Basic Pac Ref: 6-6,6-10
N.O.S. Shipping Name: NITROGEN, COMPRESSED
Additional Trans Data: NONFLAMMABLE GAS
=====

=====
Disposal Data
=====

=====
Label Data
=====

Label Required: YES
Label Status: G
Common Name: NITROGEN
Special Hazard Precautions: ACUTE: ASPHYXIATION. CHRONIC: NONE.
INHALATION: SHORTNESS OF BREATH, DIFFICULTY BREATHING, UNCONSCIOUSNESS.
Label Name: AIR PRODUCTS AND CHEMICALS, INC.
Label Street: 7201 HAMILTON BLVD
Label City: ALLENTOWN
Label State: PA
Label Zip Code: 18195-1501
Label Country: US
Label Emergency Number: 15-481-4911

*** * Warranty Registration * ***

International POD, LLC
223 Oak Street
New Windsor, NY 12553

Model: ☐ CT ☐ CT VW-T2 ☐ MCT
 ☐ CTX ☐ CTSX
 ☐ HH
 ☐ MS
 ☐ SC ☐ RVVSC ☐ RVHSC

Serial Number: _____

Date Purchased: _____

Company Name: _____

First Name: _____

Last Name: _____

Street Address: _____

City: _____

State/Province: _____

Zip/Postal Code: _____

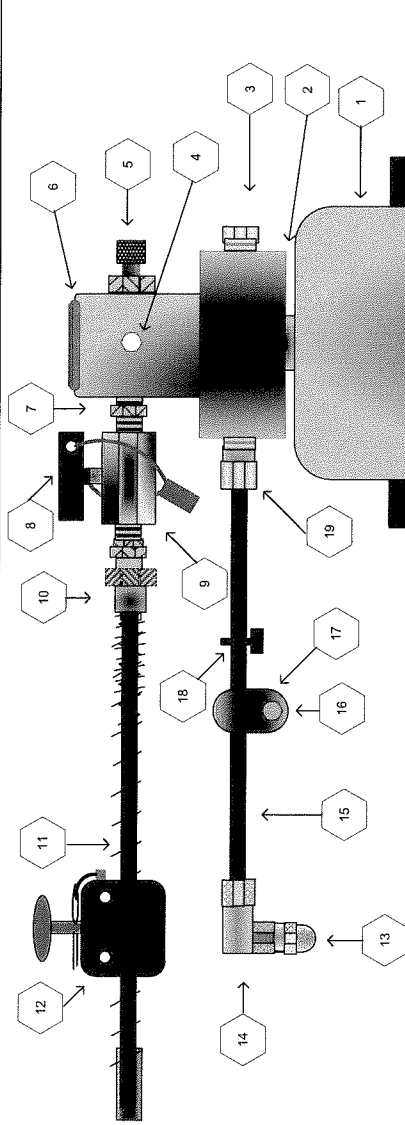
Telephone: _____

E-mail: _____

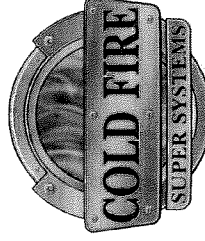
The above registration information **MUST** be returned to International POD, LLC within 30 days of purchase in accordance with the product Warranty program.

We would like to thank you for purchasing this Cold Fire Super Systems product. Because what you think is very important to us, we invite you to fill out this survey. We promise to respect your privacy. All of your answers will be kept confidential.

Marital Status: ☐ Single ☐ Married
Gender: ☐ Male ☐ Female
Date of Birth:
Age ☐ Under 18 ☐ 18-24 ☐ 25-34 ☐ 35-44 ☐ 45-54
 ☐ 55-64 ☐ Over 65
Residence Type: ☐ Apartment ☐ House ☐ Condo ☐ Own ☐ Rent
Household Income: ☐ Less than 30k ☐ 30-39k ☐ 40-59k ☐ 60-79k
 ☐ 80-99k ☐ 100-149k ☐ More than 150k



Fill Information		
Cylinder	Protection	Cylinder & Fill Weight
1 Liter	32 ° F	3 lb - 3.0 oz
	0 ° F	3 lb - 5.6 oz



ITEM	QTY.	PART NO.	DESCRIPTION
1	1		1 Liter Stainless Steel Cylinder *
2	1		Indirect CTSX Valve *
3	1		3/8" NPT Hex Head Male Plug *
4	1		1/8" NPT Countersunk Hex Plug *
5	1	486-75091	1/8" Schrader Valve *
6	1	486-75090	175 psi Pressure Gauge *
7	1		1/8" Brass Close Nipple *
8	1		Red Fire Extinguisher Seals *
9	1		1/8" Ball Valve *
10	1		1/8" Detection Tube Male Connector *
11	1	486-75060-8	8" Tubing Black Detection 176 "F" *
12	1	910-75051	CTSX Manual Activation Valve *
13	1	486-75086	1/8" CFSX Straight Low Flow Nozzle *
14	1	4867-5080-90	3/8" x 1/8" NPTF Compression Elbow *
15	1	486-75070-3	3/8" Metal/Plastic Composite Tubing *
16	5		#8 x 5/8" Self Drilling #2 Hex Head *
17	5		3/8" Loop Clamp *
18	15	910-045	8" Ty-rap Nylon *
19	1	486-75083	3/8" NPTM Connector to 3/8" Tube *
20	1	910-75052	1 Liter Cylinder Bracket with 2 Straps *
NS	1		1 Liter Flex Dip Tube *
NS	1		Label: Cold Fire Super Systems *
NS	1		Label: Warning CFSX Installed *
NS	1		Coldfire 32-5E Breowall Kit K2-5.1.1 2ea *
NS	1	486-75075-32	

* Item Furnished in Assembly

ITEM	PART NO.	OPTION DESCRIPTION
11	486-75060-4	4" Tubing, Black Detection 176 °F
11	486-75060-12	12" Tubing, Black Detection 176 °F
15	486-75070-5	3/8" Metal/Plastic Composite Tubing
15	486-75070-7	3/8" Metal/Plastic Composite Tubing
N/S	486-75075-0	CoilLine 0.95 Bremex EMI Kit 1.1 liter

Cold Fire Super Systems

General Arrangement for
CTSX Automatic System
Size: 1 Liter

Information contained on this drawing are not intended to conflict with any local, state, or federal codes.

Drawing contains 'Proprietary Information' and shall remain the property of International POD, LLC and is subject to change without notice. This drawing or any of it's information are not intended to be used in any way detrimental to the company.

Date: 11/12/2011

VISIO Drawing Do Not Alter

DWG NO

845-CTSX-002

REV

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BY _____

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