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PRIAX CORPORATION

X-Stream Less-than-lethal Backpack Sprayer

Operating and Maintenance Instructions

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X-Stream Less-than-lethal Backpack Sprayer

Introduction

This manual will prepare operational personnel to fill, and operate the X-Stream Less-than-Lethal Backpack sprayer. If you feel that additional instructions or procedures are necessary, please contact the factory regarding a training class.

The X-Stream backpack is a two-bottle Oleoresin Capsicum (OC-Pepper Spray) compressed air ejector weapon. The X-Stream was designed to fulfill a need arising from the World Trade Organization riots in Seattle several years ago when the police did not have sufficient resources in the field to stop the protestors and the situation took a long time to resolve with considerable property damage. The X-Stream design enables a very large number of pepper spray bursts before refilling such as may be needed during a large disruption.

The two bottles are a pressure bottle and a chemical storage bottle. The pressure bottle is a standard breathing air cylinder with a built-in

pressure gauge (like a Scott Pack bottle) that can be filled at any fire station or dive shop. In critical situations, a replacement air bottle can be “borrowed” from the fire or hazardous materials personnel and used with the X-Stream. The chemical storage bottle is a similar cylinder but contains a special pepper spray formulation, either liquid or powder.

The backpack connects to the handheld spray nozzle via a very flexible two-hose high pressure hose system. The spray nozzle features a safety latch and replaceable spray tips. The backpack features extra wide adjustable shoulder straps with Velcro[tm] adjustment tabs.

The X-Stream utilizes Optimum Presssure Technology (OPT), providing the appropriate gas pressure to generate the micron-sized fog particles proven very effective for controlling combative behavior, stopping disturbances in seconds and reducing the possibility of injuries to officers and combatants. The X-Stream is unique because it “adds-in” the chemical to the air stream, producing very small (micron-size) chemical particles and allowing the chemical supply to last for a very long time.

The air cylinder is manufactured using space age carbon fiber material technology with a very light weight. The chemical bottle is light-weight aluminum. Using these light-weight materials, the X-Stream can provide more than 200 chemical shots while weighing less than 25 pounds when fully filled and charged.

The new easy-to-fill design features a conventional breathing air cylinder that can be filled at any fire station or dive shop. The built-in pressure gauge indicates the remaining pressure and ensures that you know the condition of your weapon before use. The chemical cylinder has a screw top with an O-ring seal that is simply unscrewed (with pressure removed) to fill. The special pepper spray formulation is poured into the bottle and the bottle is resealed.

The Oleoresin capsicum (OC-Pepper Spray) chemical is a specially formulated concentrate that allows approximately 6 grams of pepper spray per shot. The operator controls the

length of each chemical burst with the simple-to-operate finger action valve.

Warnings

The X-Stream backpack sprayer must not be used by any officer or other personnel, until that person has received certified training in X-Stream operation and has also test fired the X-Stream with active chemical agent, and been sprayed by the X-Stream chemical agent at a maximum distance of 10 feet. The operator needs to understand the X-Stream effectiveness before operating the system against combatants.

The X-Stream backpack sprayer must not be filled, repaired or worked on by any officer, technician, or other personnel until that person has received certified training in X-Stream filling and repair.

IMPORTANT: The X-Stream is a high pressure gas-powered less-than-lethal weapon. Careful handling and proper training is required. The X-Stream chemical bottle, chemical hoses, fittings, and spray wand are filled with pressurized Oleoresin Capsicum (Pepper Spray) when the air cylinder valve is (or has been) opened and there is air pressure applied to the hoses. This pressure MUST BE RELEASED BEFORE any hose is disconnected. In particular, even when the air cylinder valve has been turned off there can be some pressure left on the chemical cylinder that must be released BEFORE ANY HOSES ARE DISCONNECTED. The detailed procedures of this manual must be followed, or injuries can occur.

Features

- Large quantity multiple-shot Pepper Spray ejector
- Pepper Spray fog up to 45 feet
- Over 200 pepper spray shots per refill (1.9 liters)
- Optimum Pressure Technology (OPT), 550 psi
- Built-in Pressure gauge
- Heavy duty spray wand and hose assembly
- Pistol-grip handle with safety lock
- Choice of replaceable spray tips with quick disconnect

- 50-foot “soft-flex” high pressure hose
- Washable backpack carrier with adjustable straps and carrying handle
- Easy to fill design
- Lightweight backpack design

Optional Accessories

5-inch straight bore tip

5-inch “Salinas” wide-angle spray tip

Wide-angle fog tip

26-inch flexible hose tip

Operating Specifications

Spray force:	15 ft. lbs. at 3 feet using straight bore nozzle. **Note:** For Ballistic test results, contact the factory.
Recommended Minimum shooting distance:	5 feet
	Do not shoot at head area within 5 feet for “Salinas” tip. Do not shoot at head area within 8 feet for straight bore tip.
Average Shots:	Over 200 ¼ second chemical shots when using a filled chemical cylinder (1.9 liter filled capacity) **Note:** Capacity of air cylinder will outlast chemical spray in chemical cylinder
Continuous spray:	Over 50 seconds of continuous chemical spray when using a filled chemical cylinder and straight bore tip

Shooting distance:	32 feet – straight bore tip, 6-inch, level shooting 43 feet - straight bore tip, 6-inch, + 10 degree up shooting 20 feet – "Salinas" wide spray tip, 6-inch 24 feet – 26 inch flexible hose with 4-inch straight bore tip
Angle of Spray:	20 degrees – straight bore tip, 6-inch 50 degrees – "Salinas" wide-spray tip, 6- inch 90 degrees – wide-angle fog tip
Nominal Air Cylinder Pressure:	2100 psi, breathing air only
Maximum Air Cylinder Pressure:	3000 psi, breathing air only
Nominal Chemical Cylinder Pressure:	550 psi
Maximum Chemical Cylinder Pressure:	2215 psi
Regulated chemical and air pressure: (as delivered)	550 psi
Hose and chemical Pressure: (when pressurized)	550 psi
Maximum design hose pressure:	2000psi
Hose Length:	48 inches
Hose Size:	
Air:	3/8" ID
Chemical:	¼" ID

Backpack Harness:	Nylon Webbing Velcro adjustment straps
Overall Dimensions:	Length: 24 inches Width: 14 inches Depth: 5 inches
Weight:	21 lbs. (empty) 25 lbs. (filled and charged)

Description of Operation

The X-Stream uses Optimum Pressure Technology (OPT) to produce the micron-sized pepper spray particles that are effective when used against an individual or a group of combatants. The pressure source is the compressed air provided by the high pressure breathing air bottle. The typical bottle pressure is 2200 pounds per square inch (psi). This pressure is much more that our OPT pressure of 550 psi so the regulator reduces the bottle pressure to 550 psi. The regulator is adjusted and locked in place at the factory and should not be changed or tampered with in any way.

The 550 psi OPT pressure is delivered to the handheld sprayer via the air hose. The check valve located in the air line near the handheld wand mixing unit stops any chemical solution from entering the air line. The OPT pressure is delivered to the chemical cylinder via the small hose firmly connected to the regulator and connected to the chemical cylinder with a check valve and quick release connection. This check valve stops any chemical solution from going toward the regulator or air supply.

There are two fittings on the chemical cylinder. These fittings are on the screw seal which seals to the chemical bottle with an O-ring. For safety purposes, the pressure rating of the chemical cylinder is over 2000 psi, similar to the breathing air cylinder. The connector with small hose from the regulator pressurizes the top of the chemical cylinder placing a downward pressure on the pepper spray chemical solution. The chemical cylinder

output connector has a draw tube which collects chemical solution from the bottom of the cylinder. The chemical cylinder output connector includes a seal so that chemical cannot leave the cylinder unless the mating chemical hose connector is in place.

The chemical hose connects the chemical cylinder to the mixing unit located on the handheld sprayer. The mixing unit injects the chemical solution into the air stream of pressurized air coming from the breathing air cylinder. Injecting the chemical solution into the air stream provides a fog of micron-sized particles which cause immediate distress to the eyes and lungs.

The handheld spray wand includes a high pressure swivel so the spray wand movement is not restricted by the hoses. The spray wand is similar to a pressure washer wand and includes a safety switch to prevent inadvertent firing. The pistol grip activation allows the operator to precisely meter the amount and direction of chemical delivery. The spray tip is replaceable using the quick release connector, and there is a selection of tips to match the desired chemical distribution.

IMPORTANT – The X-Stream is a less-than-lethal chemical weapon system. Exercise maximum care whenever working with or operating the X-Stream.

Storage

The X-Stream can be stored either unfilled or filled. The recommended storage temperature range for an unfilled and unpressurized unit is -40 deg C to +85 deg C (-40 deg F to +185 deg F). The recommended storage temperature range for a filled and pressurized unit is 0 deg C to +85 deg C (32 deg F to +185 deg F).

Preoperational Use

The X-Stream is recommended for use as the less-than-lethal option in the force continuum. For more information on the force continuum please see our web page. Adequate verbal warnings should be given to the combatants. In crowd control

situations it is recommended that the X-Stream be demonstrated by spraying one time away from the crowd so people will have a chance to vacate the area.

Pressure Precautions

The X-Stream utilizes a breathing air bottle for the pressure source. The nominal air pressure in the breathing air bottle is 2100 psi. This pressure is lowered with a regulator to about 550 psi, which is the pressure in the hoses and handheld spray wand. Exercise the same care with the X-Stream that you would with any weapon system or breathing air backpack. ALWAYS consider that the hose and spray wand contains pressure. ALWAYS operate the handheld spray wand safety lever when the X-Stream is in a stored or standby condition. It is best to turn off the air valve on the breathing air bottle and relieve the pressure on the chemical bottle when the unit is not in use or stored. See below for pressure relief instructions.

Operation of the X-Stream Backpack with Handheld Sprayer

Follow these instructions for X-Stream backpack operation.

1. BEFORE operating the breathing air valve (on the breathing air bottle):

    a. Verify that the safety on the handheld spray wand is in the safe position.

    b. Verify that the chemical cylinder is filled with chemical solution. If the chemical cylinder is half full, the number of chemical shots will drop below 100.

    c. Check all the hose disconnect fittings to be sure each of them is properly seated and latched in place.

    d. Verify that the breathing air bottle air pressure gauge has 1900 psi or more. If the pressure is less

than 1900 psi the number of shots before refill may be affected. If the air pressure is below 1000 psi have the air bottle filled or replaced.

2. BEFORE putting the X-Stream on your back:

    a. Slowly turn the air valve on the breathing air bottle. Opening this valve pressurizes the chemical cylinder and all hoses. Carefully check for air or chemical leaks.

    b. If leaks are discovered, quickly turn off the breathing air valve and have the system repaired before use.

    c. Place the X-Stream backpack on your back and adjust the straps for a comfortable fit.

3. The X-Stream is now ready for use. If the system has been recently filled or not used for some time, the chemical solution may not fully fill the chemical hose and the first burst may not contain the normal chemical amount.

4. ALWAYS keep the handheld spray wand safety lever in the safe position when the X-Stream is not in use.

After Using the X-Stream with Remaining Pressure and Chemical in Tanks

Many times the X-Stream will be only partly used or not used at all even though it has been pressurized. It is recommended that the X-Stream be stored with all pressure removed to preserve the integrity of the hoses and fittings. Whenever you have finished using the X-Stream and there is still air pressure and chemical in the chemical cylinder, proceed as follows:

1. Turn off completely the air valve located on the breathing air bottle.

2. Observe the breathing air bottle air pressure. If this pressure is less than 1700 psi, refill is recommended.

3. **CAUTION:** Even though the air valve is turned off, there is still pressure on the chemical cylinder, hoses and spray wand. If you activate the handheld spray wand at this time, this pressure will pump chemical solution only (no air) through the spray wand tip.

4. With the backpack and chemical cylinder in the upright position with the brass fittings at the top, reach into the backpack and locate the quick release air fitting located at the top of the chemical cylinder assembly. NOTE: This is the small valve with integral check valve that is mounted vertically out of the top of the chemical cylinder assembly.

5. Carefully push down on the coupling to temporarily release the coupling and then pull the coupling slightly (approx ½ inch) to relieve the air pressure in the chemical cylinder and hoses. There is no need to completely disconnect the coupling. Simply release the coupling momentarily while the small amount of air pressure is relieved.

6. Once that air pressure is relieved, press down on the hose and coupling to snap the connection back in place and verify that it is firmly seated before proceeding.

7. Once pressure is removed, inspection of the chemical cylinder is recommended to determine that it is properly filled and ready for the next operational use.

8. If you have any questions about this procedure, please call the factory.

Refilling the X-Stream with Chemical (when air cylinder still has pressure)

In order to refill the X-Stream chemical cylinder when the air cylinder is connected and has air pressure, proceed as follows:

1. Perform all the steps of the procedure listed above in the section: *After Using the X-Stream with Remaining Pressure and Chemical in Tanks*.

2. However, in this case, release and disconnect the coupling with the small regulator air hose that is vertically connected to the top of the chemical cylinder assembly.

3. Next release the large chemical hose connector that is coming horizontally from the chemical cylinder assembly and through the side of the fabric backpack.

4. Once the two connectors have been disconnected, carefully remove the chemical cylinder from the backpack, being careful to keep the chemical cylinder vertical so no pepper spray chemical is spilled. **NOTE:** The horizontal chemical connector is sealed but the vertically mounted air connector is not and if the bottle is placed on its side a small amount of chemical solution can leak from the air connection.

5. Keeping the chemical cylinder vertical, carefully unscrew the brass fitting located at the top of the chemical cylinder assembly. You will see that there is an O-ring seal at the screw connection.

6. Inspect the chemical cylinder and the O-ring for wear or damage. Replace the O-ring and/or the chemical cylinder if necessary.

7. Refill the open chemical cylinder with the approved chemical solution only. This solution will guarantee the advertised chemical delivery. Use the Hydro-force Series funnel, or another small funnel, so no chemical is spilled. **NOTE:** If chemical is spilled, carefully wipe with throw-away absorbent towels and then clean the area with soap and water.

8. Once the chemical cylinder is refilled, replace the brass top assembly and firmly hand tighten the O-ring seal.

9. Carefully replace the chemical cylinder into the backpack taking care that it is seated into its backpack pocket. Rotate the chemical cylinder so the horizontal chemical hose connector protrudes from the opening on the side of the backpack.

10. First, reconnect the chemical hose to the horizontal chemical hose connector, at the opening at the side of the backpack.

11. Second, reconnect the air hose to the chemical cylinder vertical connector inside the backpack.

12. Before proceeding, verify that all connections are properly seated and that the handheld spray wand is safely in place.

13. Proceed as directed above in the section named: *Operation of the X-Stream Backpack with Handheld Sprayer*.

14. If you have any questions about this procedure, please call the factory.

Refilling the Air Cylinder

The X-Stream air cylinder is a standard breathing air bottle similar to those used on all breathing air systems. The air cylinder can be filled by any fire station that maintains breathing air systems and at most dive shops. If there is a problem filling the air bottle, please contact the factory.

Pressure Cylinder Recertification

In accordance with federal Department of Transportation requirements, the pressure cylinders, both breathing air and chemical, must be pressure tested and recertified at least every five years. Each bottle is marked with a date and serial number. This recertification is the same as for all breathing air bottles and diving tanks. Please contact our office and request the Technical Note that describes the pressure cylinder recertification procedure.

Limited Warranty

Priax Corporation makes no warranty, expressly or by implication, except as set forth below.

Priax Corporation warrants that the products delivered hereunder will be in substantial conformity with applicable specifications and will be free from defects in material and workmanship. Priax Corporation's obligation under this warranty shall be limited to (at its option) repairing, replacing, or granting a credit at the prices invoiced at the time of shipment for any of said products which shall, within 90 days after shipment, be returned to the factory of origin, transportation charges prepaid, and which are, after examination, disclosed to Priax Corporation's satisfaction to be thus defective. This warranty shall not apply to any of such products which shall have been repaired or altered, except by Priax Corporation, or which shall have been subjected to physical or electrical abuse or misuse.

THE WARRANTIES STATED HEREIN ARE IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED, AND PRIAX CORPORATION NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON TO ASSUME FOR IT ANY OTHER LIABILITY. PRIAX CORPORATION SHALL NOT BE LIABLE FOR SPECIAL OR CONSEQUENTIAL DAMAGES OF ANY NATURE WITH RESPECT TO ANY PRODUCTS OR SERVICES RENDERED HEREUNDER. NO PRODUCT IS WARRANTED TO BE FIT FOR ANY PARTICULAR USE OR APPLICATION.

Repair

Factory parts are available to enable field repair of the X-Stream. Please see the list of replacement parts in the section below. The X-Stream can also be returned to the factory at any time for repair. It is recommended that you contact the factory before returning any unit for repair to obain current shipping instructions.

Technical Support

Technical support is provided by Priax Corporation at no charge starting from the date of purchase. Priax Corporation

will respond to all service calls made during the normal work week within a 24-hour period during normal business hours of 8:00 AM to 5:00 PM (Pacific Standard Time).

Replacement Parts

On the following page is a listing of the replacement parts for the X-Stream system. Any parts can be ordered by contacting our offices. If you have any questions, please contact our office.

Replacement Parts

Replacement Components

Part No.	Description
X-10SW-210	Pistol-grip handle assembly
X-10SW-211	Quick-release connector, female for Tip, 1/4 inch
X-10SW-212	Straight swivel
X-10SW-213	Hose, 5-foot with male fittings
X-10SW-214	Rotary joint, 90-degree swivel
X-10SW-215	90-degree street ell, 3/8”
X-10SW-216	Connector, male, mate to bottle, 3/8”

Replacement Tips

Part No.	Description
X-10SW-250	Nozzle tip, straight bore, 6-inch, stainless steel
X-10SW-255	Nozzle tip, “Salinas” wide-spray, 6-inch, stainless steel
X-10SW-256	Nozzle tip, wide-angle fog, stubby brass
X-10SW-257	Nozzle tip, 26-inch flexible hose, 4-inch straight bore tip, stainless steel