



**STRIKE FIRST  
CORPORATION**

CO<sub>2</sub>

## **SERVICE MANUAL (v2)**

*UL / ULC*

# **CARBON DIOXIDE – HAND PORTABLE FIRE EXTINGUISHERS**

All fire extinguishers should be installed, inspected & maintained in accordance with the National Fire Protection Association (NFPA) 10, 2007 Edition "Standard for Portable Fire Extinguishers", local, state, provincial or federal fire codes.

When installation, inspection or maintenance is required, Strike First Corporation strongly recommends the work to be performed by NFPA 10 (2007) Certified personnel. Fire extinguishers are pressure vessels and must be treated with respect and handled with care. They are mechanical devices and require periodic maintenance to be sure that they are ready to operate properly and safely.

Strike First Corporation makes O.E.M. parts available to insure proper maintenance. Substituting O.E.M. parts voids the Strike First warranty, as well as the UL & ULC Listings. **DO NOT SUBSTITUTE.**

Strike First Corporation does not service, maintain or recharge fire extinguishers. This manual is published as a guide to assist qualified service personnel in the inspection, maintenance and recharge of Strike First fire extinguishers only. **This service manual should be used in conjunction with the appropriate Parts Lists/Pictograms for each unit being serviced.** No service manual can anticipate all the possible malfunctions that may be encountered in the service of fire extinguishers. Due to the possibility that prior service performed on this equipment may have been improperly done, it is extremely important that all warnings, cautions and notes in this manual be carefully observed. Failure to heed these instructions could result in serious injury.

Strike First Corporation assumes no liability for service, maintenance or recharge of fire extinguishers by publishing this service manual.

For installation instructions of Strike First portable fire extinguishers please refer to all of the following:

1. Owner's Manual - included with the unit
2. NFPA 10 "Standard for Portable Fire Extinguishers – 2007 Edition
3. Local authorities having jurisdiction

For operation instructions on Strike First portable fire extinguishers please refer to one or all of the following:

1. Fire Extinguisher Nameplate/Label
2. Owner's Manual – included with the unit
3. NFPA 10 "Standard for Portable Fire Extinguishers – 2007 Edition
4. Your local authorized Strike First Distributor

**WARNING:** CARBON DIOXIDE EXTINGUISHES FIRE BY DILUTING THE SURROUNDING ATMOSPHERE WITH INERT GAS KEEPING THE OXYGEN LEVEL BELOW THE PERCENTAGE REQUIRED FOR COMBUSTION. WHEN IT IS USED IN AN UNVENTILATED SPACE, SUCH AS A SMALL ROOM, CLOSET OR OTHER CONFINED AREA, PROLONGED OCCUPANCY OF THAT SPACE CAN RESULT IN LOSS OF CONSCIOUSNESS AND POSSIBLE DEATH DUE TO OXYGEN DEFICIENCY.

WHEN DISCHARGING CARBON DIOXIDE FOR RECHARGE, MAINTENANCE AND SERVICING, IT SHOULD ALWAYS BE DISCHARGED TO AN OUTSIDE ATMOSPHERE FOR THE REASONS STATED ABOVE.

**WARNING:** ALWAYS WEAR HAND AND FACE PROTECTION TO AVOID SKID CONTACT – CO2 (GAS OR SNOW) IS EXTREMELY COLD AND COULD CAUSE BURNS OR FROSTBITE.

**CAUTION:** PERSONS EXPECTED TO USE THIS FIRE EXTINGUISHER SHOULD BE TRAINED IN INITIATING ITS OPERATION AND IN THE PROPER FIRE FIGHTING TECHNIQUE.

***DISCHARGE TIME (APPROX.)***

5 LB. – 10 SEC.  
10 LB. – 10 SEC.  
15 LB. – 15 SEC.  
20 LB. – 20 SEC.

***DISCHARGE RANGE (APPROX.)***

6 – 12 FEET

**RECHARGE FIRE EXTINGUISHERS IMMEDIATELY AFTER ANY USE**

**INSPECTION\* (ref. 7.2 - NFPA 10, 2007)**

The inspection procedures outlined below may not be sufficient for every jurisdiction or location and should be used in conjunction with the NFPA 10 Standard for Portable Fire Extinguishers, 2007 Edition.

Fire extinguishers shall be manually inspected when initially placed in service. The inspection is intended to give reasonable assurance that the extinguisher is fully charged and operable. This is done by seeing that it is in its designated place, has not been actuated or tampered with, and there is no obvious physical damage or condition to prevent operation.

**WARNING:** FOR SAFETY PURPOSES, IF AN EXTINGUISHER SHOWS SIGNS OF CORROSION OR MECHANICAL DAMAGE, IT SHALL BE SUBJECTED TO A HYDROSTATIC PRESSURE TEST OR REPLACED.

***PERIODIC INSPECTION PROCEDURE***

(Monthly or more often if circumstances dictate)

Periodic inspection of the fire extinguisher shall include a check of at least the following items:

1. Location in designated place
2. No obstruction to access or visibility
3. Fullness determined by weighing or hefting
4. Seal and tamper indicators not broken or missing
5. Operating instructions on nameplate are legible and facing outward
6. Examine for obvious physical damage, corrosion, leakage, or clogged horn obstruction.

**MAINTENANCE (ref. 7.2 & 7.3 - NFPA 10, 2007)**

Maintenance, servicing & recharging shall be performed by trained and certified persons having available the appropriate servicing manual, the proper types of tools, recharge materials, lubricants, and Strike First O.E.M. replacement parts.

Fire extinguishers shall be subjected to maintenance at intervals of not more than 1 year, at the time of hydrostatic test, or when specifically indicated by an inspection. Extinguishers taken out of service for maintenance or recharge shall be replaced by spare extinguishers of the same type and at least an equal rating.

**MAINTENANCE PROCEDURE**

1. Clean extinguisher to remove dirt, grease or foreign material. Check to make sure that the instruction nameplate and UL/ULC manifest are securely fastened and legible. Inspect the cylinder for corrosion, abrasion and dents. If any of these conditions are found or you doubt the integrity of the cylinder, hydrostatically test and mark (stamp) in accordance with CGA Pamphlet C-1 and The National Fire Protection Association (NFPA) Pamphlet No. 10 "Standard for Portable Fire Extinguishers" 2007 Edition. Properly dispose of cylinder if in violation of the standard.
2. Inspect the extinguisher and replace any parts that are damaged, missing, corroded or O.E.M. substitute parts. Only factory O.E.M. replacement parts are approved for use on Strike First fire extinguishers.
3. Check the date of manufacture stamped on the extinguisher cylinder dome. Cylinder must be hydrostatically tested every 5 years to test the pressure indicated on the nameplate (3000 psi, [20.69 MPa]). NOTE: COMPLETE MAINTENANCE should be performed whenever a hydrostatic test is being done. This includes an inspection of the interior of the valve assembly, the spring and valve stem assembly as well as the interior of the cylinder (using an appropriate inspection light). Strike First Corporation recommends replacement of the collar o-ring at hydrostatic test. The valve stem assembly should be checked for cuts in the seat area or any distortion and replaced if necessary.

4. Check pull (locking) pin for freedom of movement. Replace if bent or if removal appears difficult.
5. Check the discharge lever for freedom of movement. Inspect carrying handle for proper installation. If either is damaged, replace.
6. Remove the horn and swivel tube (5 lb. model) or hose and horn assembly (10, 15 & 20 lb. models) and inspect for damage. Replace the hose if cut or cracked, or if threaded couplings are damaged. Replace the horn if brittle, cracked or deformed. Blow air through the hose and nozzle assemblies using air or nitrogen at 50 psi (345 kPa) or less to insure that the passage is clear of foreign material.
7. Carbon dioxide hose assemblies have a continuous metal braid that connects to both couplings to minimize the static shock hazard. The reason for the conductivity test is to determine that the hose is conductive from the inlet coupling to the outlet orifice. A basic conductivity tester consisting of a flashlight having an open circuit and a set of two wires with a conductor (clamps or probe) at each end. (NFPA 10 A.7.3.1.3, 2007 Edition)
8. Inspect valve assembly for corrosion or damage to hose thread connection. Visually inspect the safety relief assembly for obstruction or damage – replace with complete Strike First O.E.M. safety relief assembly (tighten assembly to 25 ft. – lbs. of torque) if necessary. DO NOT SUBSTITUTE. Valve removal and / or valve part replacement should be made only after completely discharging the contents of the cylinder.
9. Inspect the 10, 15 & 20 lb. elbow for blockage or damage. The Strike First 5 lb. CO2 diffuser is built into the swivel tube. Check elbow and swivel tube for blockage or damage. Replace damaged parts with O.E.M. factory replacement parts only.
10. Reinstall horn and discharge tube (5 lb.) or hose and horn assembly (10, 15 & 20 lb.) to discharge valve. Check horn clip (10, 15 & 20 lb.) for damage and proper positioning. Replace, tighten or realign as necessary.
11. Weigh extinguisher and compare with weight stamped on valve. Recharge extinguisher if weight is not within indicated allowable tolerances (10% of charge weight).
12. Install new tamper seal and record service data on the extinguisher inspection tag.
13. Install the extinguisher on the wall hanger bracket (or in vehicle bracket) in its proper location. Check for correct fit – replace bracket if necessary.

## RECHARGE

RECHARGING [NFPA 10, 7.4, 2007] IS THE REPLACEMENT OF THE EXTINGUISHING AGENT

### RECHARGING PROCEDURE

**WARNING:** Before attempting to recharge be sure the extinguisher is completely empty and depressurized. Failure to comply could result in personal injury, death or property damage due to the violent movement of loosened components.

Use only an approved source of carbon dioxide (see minimum specification in NFPA 10, 2007, 7.4.3.9 or UL Standard 154). Do not use dry ice converters.

Use an approved pump, hose and recharge adapter to insure safe and efficient recharge operations.

1. Perform steps 1 thru 8 of the "MAINTENANCE PROCEDURE".
2. Discharge all remaining carbon dioxide from the extinguisher.
3. Check the extinguisher nameplate (label) for the proper amount of CO2 to be pumped into the extinguisher. DO NOT OVERFILL.
4. Install the proper recharge adaptor. Adaptor must fit over diffuser tip on 5lb. Discharge Tube and elbow on 10, 15 & 20lb. without blocking diffuser holes. DO NOT REMOVE 5 LB. DISCHARGE TUBE OR 10, 15 & 20LB. ELBOW.
5. Place extinguisher on an accurate scale and attach carbon dioxide supply line to the recharge adaptor.
6. Attach a device such as a "pony spring clamp" to hold the extinguisher valve lever in the squeezed or open position. Pump the proper amount of CO2 into the extinguisher.
7. When the proper weight is reached, release the clamp, shut off the CO2 pump and vent the supply line.
8. Remove the CO2 supply line and recharge adapter from the extinguisher valve.
9. Install pull pin. Check for leaks using leak detection fluid or a solution of soapy water. If any leaks occur, refer to the TROUBLESHOOTING GUIDE.
10. Install tamper seal and attach new recharge tag.
11. Attach the horn or hose assembly to the extinguisher valve.
12. Weigh assembled extinguisher and confirm that the total weight is within the allowable tolerances indicated on the extinguisher stamped on valve.

### TROUBLESHOOTING GUIDE

**WARNING:** BEFORE ATTEMPTING TO CORRECT ANY LEAKAGE PROBLEM, BE SURE THAT THE EXTINGUISHER IS COMPLETELY EMPTY AND DEPRESSURIZED.

**Note:** Check to determine the source of the leak before the extinguisher is empty. Leakage repairs will require that the Carbon Dioxide extinguisher be completely empty and the valve assembly removed.

Strike First CO2 valve bodies and aluminum cylinders are 1 1/8" – 12 UNF STRAIGHT THREADS. When re-installing the valve assembly, the cylinder must be placed in a suitable securing vice and valve installed hand tight.

<b>PROBLEM</b>	<b>CORRECTIVE ACTION</b>
1. Leak at collar o-ring	Remove valve assembly, clean collar thoroughly and install new collar o-ring.
2. Leak through valve	Remove spring and valve stem assembly. Install new valve stem assembly. Check valve seat for scratches or foreign matter.
3. Leak at safety relief nut	Remove safety nut, disc and gasket assembly. Replace with new Strike First safety nut, disc & gasket assembly. Tighten assembly to 25 ft-lbs. of torque.
4. Leak during discharge under discharge lever	Remove spring and valve stem assembly. Install new valve stem assembly. Check valve seat for scratches or foreign matter.
5. Leak during discharge	Tighten hose connection at elbow (10, 15 & 20 lb.). Replace swivel assembly on 5 lb.
6. Defect in the cylinder*	Contact a Strike First dealer if under warranty, otherwise – mark "CONDEMNED" and remove from service or return to owner.

**LIMITED WARRANTY**

STRIKE FIRST CORPORATION ("STRIKE FIRST") warrants its fire extinguishers ("Products") to be free from defects in material and workmanship for a period of five (5) years from the date of manufacture. Strike First's responsibility for defects in material or workmanship is limited to repair or replacement of the products for the original retail purchaser ("Consumer") only. This limited warranty does not cover defects resulting from modification, abuse, accident, alteration, misuse, exposure to corrosive conditions, or improper installation or maintenance. STRIKE FIRST is not responsible for the installation or the maintenance of the Products.

Defective Products for which a valid claim has been made shall be returned to STRIKE FIRST's facility at Scarborough, ON (416) 299-7767 for repair or replacement (or to other repair facilities pursuant to STRIKE FIRST's prior written authorization), and transportation costs to such locations shall be paid by Consumer.

STRIKE FIRST DOES NOT ACCEPT LIABILITY BEYOND THE REMEDIES PROVIDED IN THIS LIMITED WARRANTY, WHETHER BASED ON CONTRACT, NEGLIGENCE, STRICT LIABILITY OR OTHERWISE, INCLUDING WITHOUT LIMITATION DAMAGES FOR ANY PERSONAL INJURY, PROPERTY DAMAGE, OR ANY DIRECT, INDIRECT, SPECIAL, CONSEQUENTIAL, INCIDENTAL, EXEMPLARY OR PUNITIVE DAMAGES, AND INCLUDING WITHOUT LIMITATION ANY LIABILITY FOR THIRD PARTY CLAIMS, IN EACH CASE EVEN IF STRIKE FIRST HAS BEEN ADVISED OF THE POSSIBILITY THEREOF. LAWS OF SOME JURISDICTIONS DO NOT ALLOW THE DISCLAIMER OF CONSEQUENTIAL OR OTHER TYPES OF DAMAGES, AND CONSUMERS MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM JURISDICTION TO JURISDICTION. UNDER SUCH CIRCUMSTANCES, THIS LIMITED WARRANTY AND THE LIMITATIONS AND DISCLAIMERS HEREIN SHALL BE TO THE GREATEST EXTENT PERMITTED BY LAW.

THIS LIMITED WARRANTY CONTAINS THE ENTIRE WARRANTY PROVIDED BY STRIKE FIRST, AND SHALL BE IN LIEU OF ANY AND ALL OTHER WARRANTIES OR CONDITIONS, WHETHER EXPRESS OR IMPLIED, STATUTORY OR OTHERWISE, INCLUDING WITHOUT LIMITATION, IMPLIED WARRANTIES AND CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Neither the Product distributor nor any other third party is authorized to make any conditions, representations or warranties on STRIKE FIRST's behalf. STRIKE FIRST neither assumes nor authorizes any representative or other person to assume for it any obligation or liability other than as expressly set forth herein.

This limited warranty is governed by the laws of the province of Ontario, Canada. Any disputes regarding or relating to this limited warranty will be resolved in the sole discretion of STRIKE FIRST.

**REFERENCES IN THIS MANUAL:**

**AVAILABLE FROM:**

NFPA 10	Standard for Portable Fire Extinguishers 2007 Edition
*CGA C-1	"METHODS FOR HYDROSTATIC TESTING OF COMPRESSED GAS CYLINDERS"
*CGA C-6.1	"STANDARDS FOR VISUAL INSPECTION OF HIGH PRESSURE ALUMINUM COMPRESSED GAS CYLINDERS"

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