

# OWNER'S SERVICE MANUAL

## INSTALLATION, OPERATING & SERVICING INSTRUCTIONS



MANUAL PN 05603

CARBON DIOXIDE PORTABLE EXTINGUISHERS

MODELS 321M, 322, 322NM, 330, 331, 332

All fire extinguishers shall be installed, inspected and maintained in accordance with the National Fire Protection Association standard titled "Portable Fire Extinguishers", NFPA 10 or the National Fire Code of Canada and the requirements of local authorities having jurisdiction.

When maintenance is indicated, it shall be performed by trained persons having proper equipment. 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. Amerex strongly recommends that the maintenance of portable fire extinguishers be done by a trained professional – your local authorized Amerex Distributor.

Amerex Corporation makes original factory parts available to insure proper maintenance – USE OF SUBSTITUTE PARTS RELEASES AMEREX OF ITS WARRANTY OBLIGATIONS. Amerex parts have machined surfaces and threads that are manufactured to exacting tolerances. o-rings, hoses, nozzles and all metal parts meet precise specifications and are subjected to multiple in-house inspections and tests for acceptability. There are substitute parts available that may be incorrectly labeled as UL component parts, some are advertised as Amerex type. None of these meet UL requirements and all of them voids the Amerex extinguisher warranty and UL listing. DO NOT SUBSTITUTE

#### REFERENCES IN THIS MAUNUAL:

**NFPA 10** Portable Fire Extinguishers

**CGA C-1** Methods for Pressure Testing Compressed Gas Cylinders

**CGA C-6.1** Standard for Visual Inspection of High Pressure Aluminum Compressed Gas Cylinders.

**National Fire Code of Canada**

#### AVAILABLE FROM:

National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471

Compressed Gas Association, 14501 George Carter Way, Chantilly, VA 20151-2923

Compressed Gas Association, 14501 George Carter Way, Chantilly, VA 20151-2923

National Research Council Canada, 1200 Montreal Road,

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## INSPECTING THE EXTINGUISHER

This extinguisher must be inspected at regular intervals (monthly or more often if circumstances dictate) to insure that it is ready for use. Inspection is a “quick check” that a fire extinguisher is available and is in operating condition. It is intended to give reasonable assurance that the fire extinguisher is fully charged. This is done by verifying that it is in its designated place, that it has not been actuated or tampered with and that there is no obvious physical damage or condition to prevent its operation.

## OPERATION

**NOTE:** Persons expected to use this extinguisher shall be trained in initiating its operation and in the proper fire fighting technique. Familiarize all personnel with this information before an emergency occurs.

**WARNING:** Carbon Dioxide extinguishes fires 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 due to oxygen deficiency. Avoid skin contact – CO<sub>2</sub> is extremely cold and could cause burns or frostbite.

1. Remove extinguisher from wall hanger or vehicle bracket and move it to within approximately 8 feet [2m] (2 1/2 & 5 lb) or 10 feet [3m] (10, 15 or 20 lb) of the fire site.
2. Hold the extinguisher upright, twist and pull the pull pin.
3. Stand back 8 feet [2m] (2 1/2 or 5 lb) or 10 feet [3m] (10, 15 or 20 lb) from the fire and aim the horn at base of flames nearest you. Hold horn on hand grip only—grasping the horn or swivel discharge tube could cause cold burn. The 2 1/5 & 5 lb has a swivel and once aimed will maintain that same fixed position and is not required to be held during discharge.
4. Keeping the extinguisher upright, sweep side to side across the base of the fire and past both edges. Progressively follow up until the fire is extinguished. Work the fire away from you while being alert for flashbacks. Move closer as the fire is extinguished, but not so close as to scatter or splash the burning materials.
5. When the fire is out, release the valve lever to stop discharge. Stand by and watch for possible reignition.
6. Evacuate and ventilate the area immediately after extinguishing the fire. The fumes and smoke from any fire may be hazardous and can be deadly.

### DISCHARGE TIME (APPROXIMATELY)

2 1/2 or 5 lb – 9 seconds

10 lb – 11 seconds

15 lb – 15 seconds

20 lb – 19 seconds

### DISCHARGE RANGE (APPROXIMATELY)

2 1/2, 5, 10, 15, 20 lb – 3 to 8 feet [0.3 to 2.4m]

## **PERIODIC INSPECTION PROCEDURES**

(Monthly or more often if circumstances dictate)

NFPA 10 Periodic inspection of fire extinguishers shall include a check of at least the following items:

1. Located in designated place.
2. No obstruction to access or visibility.
3. Operating instructions on nameplate and facing outward.
4. Tamper seal not broken or missing.
5. Examination for obvious physical damage, corrosion, leakage or clogged nozzle.
6. Determine fullness by weighing or hefting.

## **MAINTENANCE**

At least once a year or more frequently if indicated by an inspection, Maintenance shall be performed. Maintenance is a "thorough check" of the extinguisher. It is intended to give maximum assurance that an extinguisher will operate effectively and safely. It includes a thorough examination and any necessary repair or replacement. It will normally reveal the need for hydrostatic testing.

## **MAINTENANCE - SERVICE PROCEDURE**

1. Clean extinguisher to remove dirt, grease or foreign material. Check to make sure that the instruction nameplate is securely fastened and legible. Inspect the cylinder for corrosion, abrasion, dents or weld damage. If any of these conditions are found and you doubt the integrity of the cylinder, hydrostatically test in accordance with CGA Pamphlets C-1 and NFPA 10.
2. Inspect the extinguisher for damaged, missing or substitute parts. Only factory replacement parts are approved for use on Amerex fire extinguishers.
3. Weigh the extinguisher and compare with weight printed in the "Maintenance" section on the nameplate (label). Recharge extinguisher if weight is not within indicated allowable tolerances.
4. Check the date of manufacture stamped on the cylinder dome. The agent cylinder must be hydrostatically tested every 5 years to the test pressure indicated on the nameplate in accordance with DOT requirements.
5. Remove pull pin breaking tamper seal. Replace if bent or if removal appears difficult. Install new tamper seal.
6. Inspect discharge lever for any dirt or corrosion which might impair freedom of movement. Inspect carrying handle for proper installation. If lever, handle or rivets are damaged replace with proper Amerex part(s).
7. Remove the horn and discharge tube (2 1/2 & 5 lb) or hose & horn assembly (10, 15 & 20 lb), inspect for damage, replace as necessary. Replace the horn if brittle, cracked or deformed. Blow air through nozzle and nozzle assemblies to insure passage is clear of foreign material.
8. Carbon dioxide hose assemblies have a continuous metal braid that connects to both couplings to minimize static shock. A hose continuity test shall be performed using 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).
9. Inspect the valve assembly for corrosion or damage to hose thread connection. Visually inspect the safety relief assembly for obstruction or damage. If necessary replace with complete Amerex factory assembled safety relief assembly (tightening assembly to 250 in-lbs [28.25 Nm] of torque). DO NOT SUBSTITUTE. Valve removal and/or valve part replacement shall be made only after completely discharging the contents of the cylinder.
10. Inspect the 10, 15 & 20 lb elbow and diffuser tip for blockage or damage. The Amerex 2 1/2 & 5 lb CO<sub>2</sub> diffuser is built into the discharge tube. Check elbow and discharge tube for blockage or damage. Replace damaged parts with genuine factory replacement parts only.

11. Reinstall horn and discharge tube (2 1/2 & 5 lb) or hose and horn assembly (10, 15 & 20 lb) to discharge valve. Check horn strap and clip (10, 15 & 20 lb) for damage and proper positioning. Replace, tighten or realign as necessary.
12. Install new tamper seal and record service data on the extinguisher inspection tag.
13. Replace the extinguisher on the wall hanger or in the vehicle bracket making sure that it fits the bracket properly and the bracket is securely attached to mounting surface – replace the bracket if necessary.

## **RECHARGE**

**WARNING: Before attempting to disassemble, be sure the extinguisher is completely empty/depressurized. Use only an approved source of carbon dioxide (see minimum specifications in NFPA 10 "Inspection, Maintenance & Recharging". Do not use dry ice convertors. Use an approved pump, hose and recharge adapter to insure safe and efficient charge operations.**

## **RECHARGING PROCEDURE**

1. Perform steps 1 through 10 of the "Maintenance-Service Procedure" section.
2. Discharge all remaining pressure and contents, making sure that there is no remaining pressure. Retighten valve assembly. A proper valve installation occurs when the **minimum** tightness is used to make a leak-tight, valve-to-cylinder seal. **Do not over-tighten valves!** (100 ft. lbs. [135.58 Nm] maximum torque). Over-tightening can damage both valve and cylinder and may lead to unsafe situations that can cause property damage, injury and/or loss of life.
3. Check the extinguisher nameplate (label) for the proper amount of CO<sub>2</sub> to be pumped into the extinguisher.
4. Install the proper Amerex recharge adapter. Adapter must fit over diffuser tip on 2 1/2 & 5 lb discharge tube and elbow on 10, 15 & 20 lb without blocking diffuser holes. Do not remove 2 1/2 & 5 lb discharge tube or 10, 15, 20 lb elbow.
5. Place extinguisher on an accurate scale and attach carbon dioxide supply line to the recharge adapter.
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 CO<sub>2</sub> into the extinguisher. When the proper weight is reached, release the clamp, shut off the CO<sub>2</sub> pump and vent the supply line.
7. Remove the CO<sub>2</sub> supply line and recharge adapter from the extinguisher valve.
8. Check the collar and valve for leaks using a leak detection fluid or a solution of soapy water. Remove leak detection fluid from the valve assembly and wipe exterior of the extinguisher to dry.
9. Install pull pin with ring facing the front of the extinguisher.
10. Install tamper seal. Record recharge date and attach new recharge tag.
11. Install the horn or hose and horn assembly to the extinguisher valve.
12. Weigh assembled extinguisher and confirm that the total weight is within the allowable tolerances indicated in the Maintenance section of the nameplate (label).

## TROUBLESHOOTING GUIDE

**WARNING:** Determine the source of a leak before the extinguisher is depressurized. The extinguisher must be completely depressurized before any attempt is made to de-valve it and correct a leakage problem. To depressurize – hold the extinguisher in a vertical position and slowly squeeze the discharge handle. Thoroughly clean all valve parts after depressurization and valve removal.

Amerex CO2 valve bodies and aluminum cylinders are 1-1/8"-12 UNF straight threads. Use a proper straight thread adapter when hydrostatically testing. When reinstalling the valve assembly, the cylinder must be placed in a suitable securing vice. Lubricate o-ring area only. The threads of straight threaded cylinders require no lubricant for proper valve installation. A proper valve installation occurs when the minimum tightness is used to make a leak-tight, valve-to-cylinder seal. Do not over-tighten valves! (100 ft. lbs. [135.58 Nm] maximum torque). Over-tightening can damage both valve and cylinder and may lead to unsafe situations that can cause property damage, injury and/or loss of life.

	PROBLEM	CORRECTIVE ACTION
1.	Leak at collar o-ring	Remove valve assembly, clean collar thoroughly and install new collar o-ring. Lubricate o-ring only with V-711 and reinstall valve.
2.	Leak through valve	Check valve stem seating area for scratches or foreign matter. Clean seating area with a tooth brush and soft cloth. Install new valve stem assembly.
3.	Leak at safety relief nut	Remove safety nut, disc and gasket assembly. Replace with new Amerex safety nut, disc and gasket assembly. Tighten assembly to 250 in-lbs [28.25 Nm] maximum of torque.
4.	Leak during discharge under discharge lever	Remove valve assembly, downtube, spring and valve stem assembly. Install new valve stem assembly. Check valve seat for scratches or foreign matter.
5.	Leak during discharge at hose connection elbow	Tighten hose connection at elbow on 10, 15 & 20 lb. Replace o-ring and/or elbow on 2 1/2 & 5 lb.
6.	Leak in the cylinder	Contact Amerex if under warranty – otherwise mark "Rejected" and remove from service or return to the owner.

**FOR REPLACEMENT PARTS SEE THE AMEREX PORTABLE AND WHEELED PARTS BOOK PN 27277 AVAILABLE AT <http://www.amerex-fire.com> UNDER MANUALS OF THE RESOURCE SELECTION.**