

MASTERLINE ELECTRIC OXYGEN BOOSTER SETUP AND GUIDELINES

WARNINGS

USE NO GREASE OR OIL The filling area should be completely free of any grease or oil products and should be kept as clean as possible.

DO NOT SMOKE or fill oxygen in the presence of open flame. If the filling is done in a small confined area, adequate ventilation should be provided to prevent oxygen buildup. Oxygen causes objects to burn more aggressively and may cause items to ignite which normally would not burn.

ONLY MEDICAL OXYGEN is to be used to fill the oxygen cylinders. Other grades of oxygen may contain impurities and excess moisture which can affect the cylinder.

DO NOT USE THIS BOOSTER PUMP TO PUMP ANY GAS OTHER THAN OXYGEN!

INITIAL BOOSTER PUMP SETUP PROCEDURE

1. Set booster on a sturdy bench and plug into a 115V 20 AMP or optional 230V 15 AMP outlet. Leave at least 12" between wall and back of booster to allow for air flow.
2. Connect the CGA-540 connection at the end of 72" flexible hose assembly to the Oxygen Cylinder.

OPTIONAL VACUUM PUMP INSTALLATION

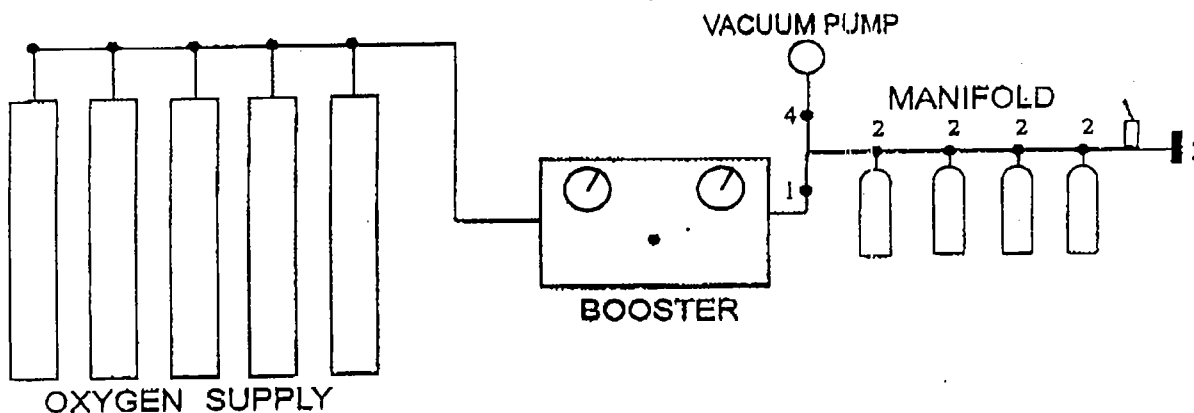
FILLING OXYGEN CYLINDERS

PRIOR TO FILLING A CYLINDER

1. Visually inspect each oxygen cylinder for physical damage and any accumulation of contaminants such as dirt, lint, grease, or oil. If any contaminants are present, particularly on the bottle valve seat area, the oxygen cylinder should be cleaned thoroughly before filling. If fiberglass cylinders are used, cuts in the fiberglass wrap on the cylinder require that it be thoroughly inspected by a hydrostatic test facility (CGA pamphlet C-6,2).
2. Check the hydrostatic test date on the oxygen cylinder. Only oxygen cylinders with current hydro test date may be filled to the rated pressure of the bottle. For Aluminum cylinders, if the latest test date is over 3 years old, do not refill the cylinder. For steel cylinders, if the latest test date is over 5 years old, do not refill the cylinder.
3. Do not completely drain the oxygen cylinder of gas prior to refilling. You should maintain at least 200 PSI on the cylinder gauge at all times. If the pressure falls to 0 PSI there is a good chance the ambient air has entered the cylinder. This could contaminate the oxygen with other gases as well as let moisture into the cylinder. Cylinders that show zero pressure on the gauge must be purged and vacuumed to remove any contaminant or moisture that may have entered due to the lack of pressure in the cylinder.
4. The temperature in the filling and storage areas should be maintained at approximately 70* F. A high room temperature during filling will result in an actual cylinder pressure which may be several hundred PSI lower once the cylinder cools to approximately 70* F. A low room temperature during filling will result in an actual cylinder pressure which may be several hundred PSI higher once the cylinder warms to approximately 70 F. This can be dangerous because the gas will expand when warmed and rise the cylinder pressure beyond its service rating. For the same reason, no cylinder should be stored above 70* F.
5. It is good practice to crack the cylinder valve slightly and then close it before connecting to the pump for refilling. This will blow out any dust or moisture that may have accumulated in the valve. When doing this, the valve opening should be turned away from your face to avoid injury to the eye that could result if any small pieces of debris were blown from the valve.

OXYGEN BOOSTER PUMP INSTRUCTIONS FILLING PROCEDURES

1. Close all Isolation Valves and Bleed Valve on manifold and booster.
2. Fully open valve on Supply Oxygen Cylinder.
3. Connect cylinder to be filled to fill connectors on manifold. Open isolation valve (2) on manifold for each cylinder to be filled. Open cylinder valves and check for leaks.
4. Open Main outlet valve (1) on manifold and read pressure of cylinders on outlet gauge.
5. If the cylinders have at least 200 PSI proceed to step (7). If the cylinders are empty and need to be evacuated with a vacuum pump proceed as follows: Slowly open bleed on end of manifold to ensure there is no pressure in system; close bleed valve and main outlet valve (1).
6. Open Isolation Valve (4) on Manifold to Vacuum Pump. Turn Vacuum Pump on and evacuate cylinder(s) to be filled, to 25 inches of mercury vacuum minimum. Close Vacuum Pump Isolation Valve (4) and shut off Vacuum Pump.
7. Slowly open Inlet Shut-Off Valve on booster. Pressure should now read on Inlet and Outlet Gauge. Flow can be controlled with Inlet Shut-Off Valve to maintain cool fills when equalizing.
8. Monitor Inlet Pressure Gauge and Outlet Pressure Gauge. Wait until Outlet Pressure equalizes with Inlet Pressure.
9. Push start switch on booster to ON, booster will now automatically fill cylinders up to final pressure and shut off. NOTE: The Pressure Relief Valve has been factory set to automatically relieve pressure at approximately 10% over fill pressure (preset at factory).
10. During the filling cycle the temperature in the oxygen cylinders will rise in proportion to how fast the cylinders are filled. The warm cylinders will give a false high reading resulting in a low fill pressure after they cool. After filling the cylinders, allow to cool to room temperature; 70 F or 25 C. If the pressure drops after the cylinders cool, restart booster to bring cylinders up to desired pressure. Use of Pressure-Temperature Chart may also be used to speed filling time.
11. Close all oxygen cylinder valves and close outlet shut-off valve (1).
12. Open Bleed Valve (3) and relieve pressure from manifold.
13. Loosen handles on fill connectors and remove each Oxygen Cylinder.
14. Close all Isolation Valves, Bleed Valve, Inlet Valve and Outlet Valve upon completion of filling all cylinders.



MASTERLINE ELECTRIC GAS BOOSTER TWO STAGE

GENERAL INSTALLATION AND OPERATING INSTRUCTION

PURPOSE

THE PURPOSE OF THE MASTERLINE GAS BOOSTER IS TO TAKE A GAS FROM A CASCADE SYSTEM. THIS WILL NOT IMPROVE THE QUALITY OF THE SOURCE AIR NOR WILL IT ADD ANY CONTAMINANTS. THE MASTERLINE UNIT IS STRICTLY A BOOSTER AND REQUIRES A SOURCE OF AIR OF AT LEAST 300 PSI TO FUNCTION PROPERLY. ANY GREATER INLET PRESSURE WILL GREATLY REDUCE THE FILL TIME OF THE RECEIVING CYLINDER.

PRINCIPLES OF OPERATION

THE AIR IS ROUTED TO THE BOOSTER THROUGH THE INLET FLEXIBLE HOSE FROM THE CASCADE SYSTEM TO THE INLET CONNECTOR PORT AT THE REAR OF THE UNIT. THE AIR ENTERS THE PUMP FROM THE INLET SIDE VIA THE INLET PORT AND THROUGH THE IN-LINE PARTICLE FILTER. THE AIR THEN FLOWS THROUGH THE BOOSTER, THROUGH THE AIR COOLED AFTER-COOLER AND PRESSURE SWITCH. THE AIR THEN GOES THROUGH THE CHECK VALVE AND OUT TO THE OUTLET PORT AT THE REAR OF THE BOOSTER. THE TIMER (RUNNING TIME METER) RECORDS THE BOOSTER RUNNING TIME. THE BOOSTER REMAINS ON UNTIL THE PRESSURE SWITCH SENSES THE SET PRESSURE AND WILL NOT AUTOMATICALLY RESTART.

INSTALLATION/ LOCATION

THE MASTERLINE BOOSTER CAN BE MOUNTED ON A STURDY CART, A SOLID WORK BENCH, OR ON A SPECIAL WELDED FRAME CONSTRUCTED OVER A BANK OF CYLINDERS. IT IS NOT IMPERATIVE THAT THE BOOSTER BE BOLTED TO THE SUPPORTING SURFACE BUT IS DESIRABLE FROM A SAFETY STANDPOINT. FOUR RUBBER FEET ARE PROVIDED TO MOUNT THE BOOSTER. THE BOOSTER SHOULD BE LOCATED IN AN AREA THAT WILL ALLOW A MINIMUM OF TEN INCHES OF SPACE BETWEEN THE BACK AND RIGHT SIDE OF THE BOOSTER AND ANY ADJOINING WALL OR EQUIPMENT. THIS CLEARANCE IS NECESSARY TO ALLOW ADEQUATE AIR FLOW THROUGH THE BOOSTER TO COOL THE ELECTRIC MOTOR AND OTHER COMPONENTS. HAVING SPACE IN THE BACK OF THE BOOSTER WILL GREATLY SIMPLIFY ANY REQUIRED MAINTENANCE OR SERVICE.

CYLINDER INSPECTION

CAUTION: Cylinders of equipment for handling oxygen should be stored in a clean, ventilated area, free of grease, oil or other contaminants.

PERFORM THE FOLLOWING PROCEDURES BEFORE REFILLING CYLINDERS:

1. **MARKINGS** - Check ownership, ICC or DOT specification Number, pressure rating, retest date label for gas service.

The specification and "service pressure" number marking is normally located immediately below the neck ring, and consists of a combination of numbers and letters. For example, the designation DOT - 3AA-2015 indicates that the cylinder was fabricated and tested to DOT Specification 3AA for a service pressure of 2015 psig.
2. **CONDITION** - Visually inspect the entire cylinder for the following defect:
Cracks, dents, gouges, bulges, arc burns, fire damage, etc. If damaged, DO NOT refill. Return to manufacturer. Never attempt to repair or alter cylinders.
3. **OIL/GREASE** - Remove any oil, grease or other foreign matter from the valve and cylinder exterior. Although oxygen is nonflammable, materials which burn in air will burn much more vigorously, and at a higher temperature, in oxygen. If ignited, some combustibles such as oil, burn in oxygen with explosive violence. Some other materials which do not burn in air will burn vigorously in oxygen-enriched atmospheres. Never lubricate oxygen valves, regulators, fitting, etc., with oil or any other combustible substance. One must be quite careful to inspect work gloves as well as hands themselves for proper cleanliness.
4. **VALVE** - Check outlet and outlet connection threads for cleanliness and damage. Check the pressure-relief device for damage and proper pressure rating. Replace valve if damaged. Check the valve/cylinder connection for adequate torque.
5. **CONTAMINATION** - Check the odor of any remaining contents for contaminants cylinder.
6. **CORROSION** - Lightly tap the cylinder side wall with a hammer. A dull ring would indicate internal corrosion

REFER TO THE COMPRESSED GAS ASSOCIATION'S

"Hand book of Compressed Gas" FOR MORE DETAILED INFORMATION.