PRESSURE TESTING
NITROGEN GAS CYLINDERS

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1. GENERAL

1.01 This section describes the three standard sizes of nitrogen cylinders and covers several points that need attention in using the cylinders. This revision of the section replaces Issue 1.

1.02 The section has been reissued to include information on the 112 cubic foot cylinder which has been standardized to facilitate handling by one man.

1.03 In so far as practicable, nitrogen gas should be ordered only in quantities to meet the immediate requirements. It is important that empty gas cylinders be returned promptly to the supplier.

1.04 Both the 224 and 112 cubic foot cylinders are owned by the nitrogen supplier and must be returned for refilling.

1.05 The B nitrogen cylinder is owned by the Telephone Company and is refilled locally from 224 cubic foot cylinders.

2. DESCRIPTION

2.01 These cylinders are of one-piece, drawn steel construction, heavy enough to withstand high internal pressures. They are charged with dry nitrogen gas to a pressure of 2200 pounds per square inch. The following table gives the weights, dimensions, and approximate volume of gas for each of the cylinders:

Size	Diam.	Over-all Length with Cap	Gross Weight (Lbs.)	Approx. Weight of Nitrogen (Lbs.)	Volume of Nitrogen (Cu. ft. at atmospheric pressure and 70° F)
224 Cu Ft	9 in.	52 in.	150	17	224
112 Cu Ft	7 in.	44 in.	133	8.5	112
B Cylinder	4-1/2 in.	32 in.	30	1.8	24

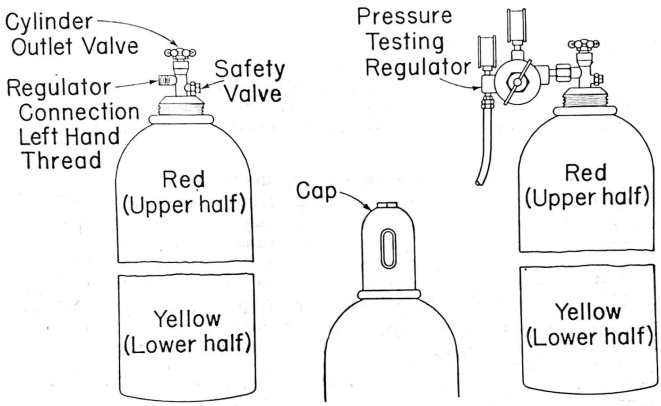
2.02 The pressure of the gas in these cylinders varies with the temperature, as indicated in the following table:

Temperature Fahrenheit	Pressure Pounds Per Sq. Inch	Temperature Fahrenheit	Pressure Pounds Per Sq. Inch
130	2550	60	2150
120	2500	50	2100
110	2450	40	2050
100	2350	30	2000
90	2300	20	1950
80	2250	10	1850
70	2200	0	1800

2.03 **Volume of Gas in Cylinders:** The volume of gas remaining in the 224 cubic foot and B nitrogen cylinders at various pressures is indicated on the high pressure gauge of the regulator. The volume remaining in 112 cubic foot cylinders at various pressures is one-half that indicated on the gauge for 224 cubic foot cylinders.

3. PRECAUTIONS

3.01 Each nitrogen cylinder is equipped with a screw cap to protect the valve. The cap should always be in place when the cylinder is not in use. The following figure shows a cylinder with the protective cap in place, with the cap removed, and with a pressure regulator attached.



3.02 To assist in identifying cylinders containing nitrogen gas, the lower half of the cylinder is painted yellow and the top half red. The outlet (regulator) connection on nitrogen cylinders is equipped with left-hand threads.

3.03 To guard against the possibility of using a nitrogen cylinder that may contain other than nitrogen gas, examine the connection screw on the cylinder and observe whether the screw threads are damaged. If the threads are scored in such a way as to indicate that a nut with a right-hand thread has been forced onto the left-hand thread of the connector, or if the cylinder is not painted as described above, do not use the gas. The cylinder should be appropriately tagged and returned.

3.04 The outlet valve at the top of the cylinder should always be opened and closed by hand. Never use tools of any kind for this purpose. Before using cylinders, the outlet valves should be tested for leaks. This should also be done when returning cylinders to the storeroom.

3.05 The pressure indicated on the high pressure gauge of the pressure regulator on both large and small cylinders should be recorded on the cylinder with chalk or crayon each time before returning it to the storeroom, so that partly filled cylinders can be distinguished from full and empty ones. (The volume remaining in 112 cubic foot cylinders is one-half that indicated on regulator gauge for 224 cubic foot cylinder.) The cylinder must never be completely exhausted. It should be returned for refilling under a pressure of preferably about 25 pounds but not less than 6 pounds per square inch. Complete exhaustion might permit the entrance of moist air.

4. B NITROGEN CYLINDER

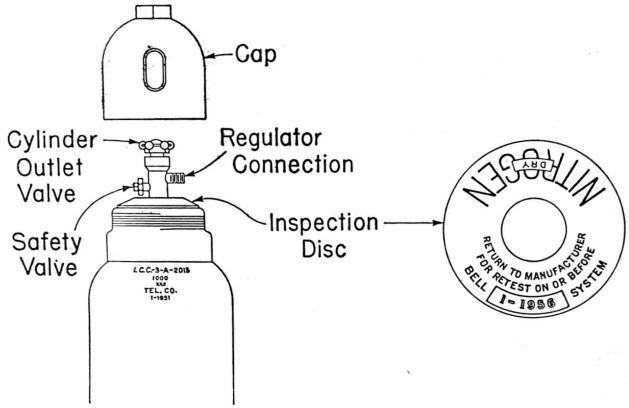
4.01 This cylinder permits convenient transportation of small quantities of nitrogen gas and is intended primarily for flash testing. A fully charged B cylinder contains about 24 cubic feet of nitrogen gas at standard atmospheric conditions. A filled cylinder contains sufficient gas for testing 4 to 5 sleeves.

4.02 The manufacturer supplies the B cylinders fully charged with nitrogen gas. When empty the cylinders can be refilled from 224 cubic foot nitrogen gas cylinders by means of a charging connector or a manifold.

4.03 Each B cylinder is equipped with a screw cap to protect the valve. The cap should always be in place when the cylinder is not in use. The B cylinders are owned by the Telephone Company and must be tested in accordance with the regulations of the Interstate Commerce Commission, Bureau of Explosives. **The Bureau regulations require that each container be inspected at intervals of not more than five years.** Containers should be returned to the Western Electric Company periodically for inspection by an authorized agent to comply with this ruling.

4.04 Each cylinder is marked with a serial number, date of manufacture, the proper I.C.C. marking and the word "TELCO" to denote ownership by one of the Associated Companies. The container has an inspection disc held in place over the collar by means of the valve and marked to show the date before which inspection must be made.

B NITROGEN CYLINDER



4.05 The B nitrogen cylinder should be refilled when its pressure falls to about 25 pounds per square inch. It should not be completely exhausted before refilling as this might permit the entrance of moisture. Before refilling, the cylinder should be placed in an inverted position for several hours, after which, with the container still inverted, the valve should be opened to blow out any moisture that may have collected in the cylinder. The B cylinder must not be filled with anything but dry nitrogen gas.