

BELL SYSTEM PRACTICES
Outside Plant Construction
and Maintenance

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PRESSURE TESTING

PRECAUTIONS

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1. GENERAL

1.01 This section covers the precautions to be observed in using tools, apparatus and methods for pressure testing cables with nitrogen gas. This information was formerly contained in Section G73.220, Issue 1, which is cancelled.

1.02 The precautions contained in this section supplement the general precautions contained in the G10 Division and the precautions for cable work contained in other sections of this series.

1.03 Nitrogen gas is neither explosive nor poisonous. The nitrogen gas supplied in cylinders for pressure testing work is dry, odorless, and colorless.

2. VENTILATION OF MANHOLES

2.01 The atmosphere contains 21 per cent oxygen, 78 per cent nitrogen and 1 per cent other gases. When nitrogen gas escapes from a sheath opening or an open splice in a manhole or other closed space there is a possibility that the oxygen in the air will be diluted to the point where it will not support respiration.

2.02 When it is known or suspected that nitrogen gas has escaped into a manhole, oxygen deficiency tests shall be made prior to entrance in accordance with the precautions for underground and buried work and the instructions on testing manhole atmosphere given in the G10 Division of this series. Manholes with an oxygen deficiency must be ventilated as covered in other sections.

3. WORKING ON CABLES UNDER PRESSURE

3.01 In order to provide means of identifying cables maintained under pressure, gas pressure warning tags are usually attached to the lead sleeves of splices in such cables.

3.02 Before wiping or unwiping joints or doing any other solder work on a cable under pressure, bore a hole in the sleeve with a cable drill or, if there is a valve or flange on the sleeve, remove the valve core or the plug from the flange so that gas may escape through this opening while the solder work is in progress. This will prevent the gas from escaping through the molten solder which would not only interfere with soldering operations, but might blow particles of hot solder from the work and thus cause injury.

4. HANDLING AND USING GAS CYLINDERS

4.01 Nitrogen gas cylinders are under high pressure and the following precautions should be observed in handling and using the cylinders.

4.02 Cylinders should not be dropped or struck violently. Where cylinders are laid in a horizontal position they should be blocked to prevent rolling. Do not stack the cylinders. In case cylinders are used or stored in a vertical position, they should be secured against falling.

4.03 Cylinders should be protected from excessive temperatures that might result from a fire. Cylinders that have been exposed to fire should not be approached until they have cooled.

4.04 Cylinders should be protected from an accumulation of ice or snow which would make them slippery and difficult to handle or might cause freezing of the valve.

4.05 The protective cap which encloses the outlet valve at the top of the cylinder should always be in place except when the cylinder is in actual use. Do not remove the cap until the cylinder has been properly positioned and secured against rolling or falling, and is ready for the attachment of the regulator. No attempt shall be made to repair a cylinder, adjust its

valve assembly, tamper with its safety device, or change any of its permanent marking.

4.06 An approved pressure regulator should always be used when drawing gas from a cylinder for any purpose other than that of filling another cylinder. Regulators connected to cylinders at outside locations during cable charging operations should be covered with a protective hood such as a tarpaulin.

5. HANDLING AND USING TOOLS

5.01 Some of the tools and apparatus used in pressure testing work are delicate instruments and should not be subjected to excessive strains or jars. Particular care is required in the handling of pressure regulators, pressure gauges, mercury manometers, and flow indicators which are of such nature that their accuracy may be impaired by rough usage.

6. MAXIMUM REGULATOR AND CABLE PRESSURES

6.01 Regulator pressure as indicated by the low pressure gauge of the regulator shall never exceed 20 pounds per square inch.

6.02 In charging a cable with gas, care shall be taken that the amount of gas admitted is not greater than that which will produce the maximum allowable average pressure after the cable has equalized. The average pressure of a gas section shall never be allowed to exceed the maximum values given in the charging tables.

6.03 These precautions regarding maximum regulator and cable pressures are very important. Pressures in excess of the specified amounts are likely to damage the cable sheath or the lead sleeves of splices.