BELL SYSTEM PRACTICES
Outside Plant Construction and Maintenance

SECTION G73.056.2
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AT&T Co Standard

PRESSURE TESTING
SULFUR HEXAFLUORIDE GAS

Contents **Page**

1. GENERAL

1.01 This section contains information about Sulfur Hexafluoride Gas (SF6) and the precautions that must be taken in its use. The section also covers the cylinder in which the gas is supplied and the adapter required to permit using the standard nitrogen regulator on SF6 cylinders.

1.02 This gas is used in place of nitrogen in maintaining certain sections of coaxial cable under pressure, to prevent corona discharge within the coaxials.

1.03 SF6 is a very expensive gas and care should, therefore, be taken to avoid loss. It should be used only for its intended purpose.

2. PRECAUTIONS

2.01 Since the cylinder contains liquid SF6, **the cylinder must be in a vertical position before opening the valve and whenever gas is to be supplied,** otherwise the liquid will be forced out of the cylinder.

2.02 **Do not use an acetylene torch** for repairing sheath breaks, placing flanges or other operations on cable under conditions when SF6 is escaping from the cable. An open flame, such as from an acetylene torch, converts SF6 into a toxic gas.

2.03 Soldering operations with a furnace-heated copper, or the usual joint wiping operations can be done safely in the presence of SF6 gas.

2.04 Eye protection should be worn in handling SF6 gas cylinders. If liquid SF6 accidentally comes in contact with the skin for a sufficient length of time to cause irritation, treat the area in the same manner as for frostbite.

2.05 SF6 gas is five times as heavy as air and if SF6 leaks into a manhole, it may tend to displace the air, causing a deficiency of oxygen. The methods of marking and testing manholes that may accumulate SF6 are covered in separate sections.

2.06 SF6 cylinders must not be stored in boiler rooms.

2.07 Always close the cylinder valve before removing the regulator, to avoid the flow of moist air into the cylinder when the supply of SF6 gas is depleted.

3. SF6 GAS CYLINDERS

3.01 The gas is supplied in steel cylinders of two sizes containing the equivalent of 250 and 125 cubic feet of gas at atmospheric pressure and 60° F. The gross weight of the cylinders is 235 pounds and 185 pounds of which 100 pounds and 50 pounds, respectively, is the weight of SF6 gas.

3.02 Cylinders containing SF6 are painted green and are labeled to indicate that they contain SF6. The over-all height is 56 inches and the diameter 9 inches.

3.03 Under normal conditions of temperature and pressure, sulfur hexafluoride (SF6) is an inert, odorless, non-toxic vapor having a density of 0.4 pound per cubic foot at 60° F. It is about five times as heavy as air.

3.04 The following table indicates the weight of the gas and volume remaining in the cylinder, based on the total weight.

TABLE I

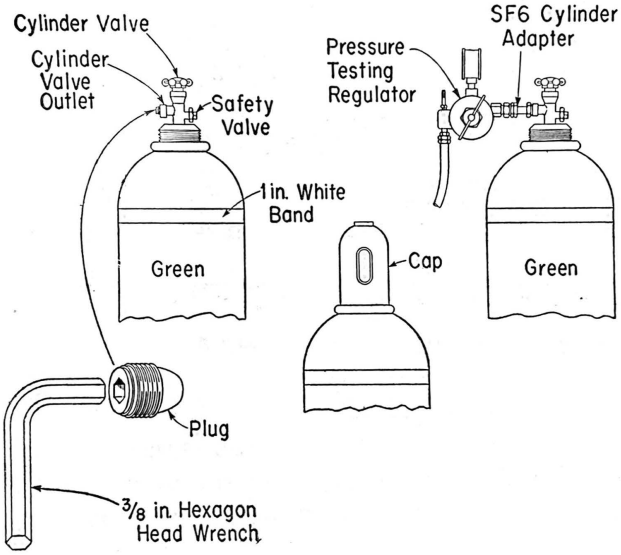
100-Pound Cylinder			50-Pound Cylinder		
	Available SF6 Gas			Available SF6 Gas	
Total Weight (Pounds)	Weight (Pounds)	Volume (Cu. Ft.*)	Total Weight (Pounds)	Weight (Pounds)	Volume (Cu. Ft.*)
235	100	250	185	50	125
225	90	225	175	40	100
200	65	160	165	30	75
175	40	100	155	20	50
150	15	35	145	10	25
135 (Empty)	0	0	135 (Empty)	0	0

* Volume at atmospheric pressure and 60° F.

3.05 Except for the effect of temperature, the gas pressure in the cylinder remains constant as long as there is liquid SF6 in the cylinder.

4. PRESSURE REGULATOR CONNECTIONS

4.01 The standard Pressure Testing Regulator is used on SF6 cylinders. The regulator is connected to the cylinder by means of the SF6 Cylinder Adapter, as illustrated below.



4.02 The volume scale on the high pressure gauge of the regulator does not apply to SF6 gas, as the gas in the cylinder is largely in liquid form. The weight of SF6 gas in the cylinder when shipped by the supplier is indicated on a shipping tag. The weight and volume of gas remaining in cylinder in use can be determined by the weight of the cylinder, as indicated in TABLE I.

4.03 If gas is flowing out of the cylinder rapidly, the amount of liquid in the cylinder is frequently indicated by moisture condensation on the outside of the cylinder.

4.04 The outlet valve at the top of the cylinder should always be opened and closed by hand. Never use a tool of any kind for the purpose. Before using a cylinder, the outlet valve should be tested for leaks and again when the cylinder is returned to the storeroom. Open the valve fully when gas is being used.

4.05 Each 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 outlet is sealed with a plug which can be removed with the 3/8-inch Hexagon Head Wrench as shown in the preceding sketch. This wrench can be obtained locally.

5. MATERIAL AND TOOL LIST

5.01 The following is a list of the material and tools.

Adapter, Cylinder, SF6	(One required for each regulator)
Gas, SF6, 100 lb. or 50 lb. Cylinder	
Regulator, Testing, Pressure	(These are standard nitrogen regulators)
Wrench, Head, Hexagon, 3/8 in.	(To be obtained locally)
Wrench, Regulator, B	(Two required, one for holding adapter and one for regulator nut)