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allow to dry.

Before assembly, apply a light coat of compound 880 to the tank flange and underside of the gasket. After the compound has dried sufficiently so that it will not adhere to the fingers (about 15 minutes), assemble the gaskets on the tank flange. Place the gasket between the bolt holes and inner edge of the flange. When full width gaskets are used, make sure they are assembled with at least 3/4 in. of gasket width inside the bolt holes. Locate scarfed joints between bolt holes. Work each gasket section back and forth a few times over the compounded metal surface.

Make the scarfed joints as explained in a subsequent section.

Weight or clamp the gasket at frequent intervals to obtain the best possible adhesion to the metal surface. Use extra pressure at the scarfed joints and at curves. Leave the clamps or weights for at least 30 minutes. After this period, the compound should be quite "gummy" but not hard.

If full-width gaskets are used, ream openings through the gasket for the bolts, and cover all exposed gasket surface at the holes with compound 880. This should be done with the clamps in position.

Apply a light coat of compound to all exposed surfaces of the gasket and to the underside of the cover. When the compound is tacky, as previously explained, mount the cover.

Tighten the bolts, drawing down all bolts in small increments. Proceed around the bolt circle several times until the gasket is compressed to approximately one-half its original thickness. Allow several hours (2 to 6) to elapse, then retighten the bolts until the gasket is compressed to about one-third its original thickness. A third tightening, a few hours later, is also recommended. Keep the insulating liquid away from the joint until the final tightening.

#### Preparation of Scarfed Joints

Place the gasket in a suitable fixture and cut to the proper angle. The correct lengths of scarf for various thicknesses of gasket are given in TABLE III.

**TABLE 3**

| Thickness of Gasket<br>(Inches) | Length of Scarf<br>(Inches) |
|---------------------------------|-----------------------------|
| 3/8                             | 2                           |
| 1/4                             | 1 1/4                       |
| 3/16                            | 1                           |

Sand or file the surface until it is smooth, drawing the sanding block or file toward the thin edge only.

Apply a thin coat of G-E compound 880 to both scarfed surfaces and allow to dry until tacky.

If the gasket is not to be used for several hours, clamp the scarfed joint together firmly and allow the clamps to remain for at least 30 minutes.

#### Valve-stem Packings

Packings for radiator and conservator valve stems are made of rings of composition cork, 3/8 in. thick and 1/8 in. wide. They are inserted edgewise into the stuffing box, in which they fit snugly. Use no compound in applying these gaskets. The method of insertion is as follows:

Remove the handle and gland, and clean all surfaces. Place the cork rings around the stem and force them into the stuffing box with a piece of standard 3/8 in. pipe. Repeat until the stuffing box is full; then screw the gland down hard. Remove the gland and add more cork, pressing it down hard with the gland. Assemble the handle and adjust the gland until the valve stem turns quite hard.

#### PIPE FITTINGS

When assembling pipe fittings, clean the threads thoroughly to remove all oil, grease, Pyranol, old compound, and dirt. Apply a coating of G-E compound 880 to the threads and screw the mating parts tightly in place.

#### MAINTENANCE

In general, from the standpoint of maintenance, operation, overvoltage protection, and overcurrent protection, Pyranol transformers should be treated the same as oil-filled transformers. Specific instructions on items peculiar to Pyranol transformers are given in the sections which follow.

#### HANDLING PYRANOL

Transformer Pyranol may be handled in the

same manner as mineral oil. However, continued exposure to liquid Pyranol may produce local skin irritations. Cleanliness among workmen handling Pyranol constitutes an adequate safeguard against such effects. Ordinary medicinal washes will remove any irritation caused by Pyranol coming in contact with an open cut or skin abrasion. A drop of castor oil will neutralize any irritation caused by contact of liquid transformer Pyranol with the eyes. As with most volatile materials, exposure to concentrated Pyranol vapors in unventilated rooms should be avoided.

Pyranol must be handled in containers, pipes, all-metal hose, etc. which are free from oil, grease, pitch, or other foreign materials, since they contaminate the liquid and decrease its noninflammable properties. It is desirable that all such apparatus used in storing or transporting Pyranol be maintained for exclusive use with Pyranol, as it is extremely difficult to remove all traces of oil, or other Pyranol contaminants, from equipment of this type.

All-metal hose, instead of rubber-lined hose, must be used in handling Pyranol, since rubber is affected by Pyranol.

### FILLING TRANSFORMERS

Although all Pyranol transformers are shipped filled with Pyranol, it may be necessary to refill a transformer. If so, proceed as follows: Before filling the transformer, make sure that the joints are tight and open all air vents. In order to prevent aeration of the Pyranol, it is preferable to fill the transformer through the drain valve, with a filter press. Fill to the 25 C mark on the gage, or up to the lower sampling valve if no gage is provided.

Baked-on Glyptal® paint is resistant to the action of Pyranol. Air-cured Glyptal paint used for touch-up work in the factory and for repainting in the field, however, requires a rather long curing period. Therefore, care should be taken to remove all traces of Pyranol that are spilled or dripped on the outside of the transformer.

### PERIODIC INSPECTION

After the first few days of operation, test the top and bottom Pyranol for dielectric

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strength. Refer to the section SAMPLING AND TESTING PYRANOL.

Pyranol samples may be drawn and tested semiannually or annually, except in water-cooled transformers, where tests every four months are recommended. Accurate records of these tests should be kept. If, at any time, the Pyranol tests below 25 kv at room temperature, a filter press may be used to restore the dielectric strength to 30 kv or more.

Maintain the level of the Pyranol in the transformer up to, or above, the mark on the Pyranol gage, or up to, or above, the lower sampling valve.

Note that with a low operating temperature one of the constituents of No. 1467 Pyranol has a tendency to separate and appear on the surface as a light deposit. When the operating temperature returns to normal, this compound recombines with the Pyranol.

Examine the condition of the external transformer surfaces at regular intervals. If it is found that weathering is taking place, clean the surfaces thoroughly and repaint with a good grade of durable paint recommended by the General Electric Company.

It is recommended that a pressure test be made once a year, or more often for severe operating conditions, to make sure that a complete seal is maintained. See instructions under heading PRESSURE TEST.

If the transformer is equipped with a pressure-vacuum gage, observe the gage reading periodically. If it continues to read approximately zero lb per sq in. with varying Pyranol temperatures, a leak in the seal is indicated, and a pressure test should be made.

### WATER-COOLED TRANSFORMERS

The ingoing cooling water should have a temperature of approximately 25 C. Supply enough water so that the difference in temperatures between the ingoing and the outgoing is not more than 10 C. It is recommended that thermometers be permanently installed in the ingoing and outgoing water connections so that the difference in temperatures may be readily observed. Where multiple cooling coils are employed, see that the flow through each section is such as to produce the same temperature rise in each.

To prevent condensation, never allow water to pass through any portion of a cooling coil that has been exposed by lowering the Py-