POWER BUS – METAL-ENCLOSED

INSTRUCTIONS

METAL-ENCLOSED NON-SEGREGATED PHASE BUS DUCT

STORAGE

Bus sections may be stacked for storage, observing normal precautions to prevent handling damage. Storing in reverse sequence to erection will facilitate later handling.

NOTE: KEEP IT CLEAN AND DRY.

This equipment must be stored in such manner that it will not get wet and/or dirty. Severe damage and subsequent failure in service can result from exposure to moisture and contamination.

ERECTION

The arrangement of the complete installation is shown on the arrangement drawings.

Each section is assigned a piece number. Identical assemblies will have the same number and are interchangeable. The piece numbers are shown encircled on the arrangement drawing and are marked on the housing of each assembly.

Angles with suitable drilling are furnished as an integral part of each bus assembly, for attachment to hanger rods or structural members. Support locations are indicated on the arrangement drawing. Covers must be removed to complete erection. Store the covers carefully until they are replaced. Be sure that covers are replaced on the correct assemblies.

Bus ducts are sometimes furnished with internal heaters to prevent water condensation on the insulation. In such cases a connection diagram is provided. The heaters should be energized as soon as the ducts are erected since condensation is most likely when the duct is not carrying current.

Conductor joints are bolted lap or splice plate type. The contact areas are plated to assure proper conductivity and to prevent chemical degradation in usual service atmospheres. Bolt the conductors together using the hardware provided. The bolts must be tight. Half inch diameter hardware should be tightened to 30 to 45 foot pounds torque. Heavier hardware should be tightened to commensurately higher values. As a visual check, the heavy duty split lock washers should always be pulled down completely flat.

COVERING BUS JOINTS

Bus bars are covered with a flame retardant insulation having a sufficient thickness to stand full line voltage for the rating of the equipment. Straight joints as well as connections to usual switchgear components are covered by a molded boot. After the bus has been re-assembled at a shipping split, the boot, which is flexible, should be spread apart and slipped over the joint. The flanges should then be closed with the nylon fasteners furnished. With this cover no wrapping or filling compound is required, since it fits tightly over the bus insulation. Tape and sealer are provided for insulating connections for which boots cannot be furnished. The procedure for applying is as follows:

1. Tighten up hardware. For 1/2" hardware, use a torque of 30 to 45 foot pounds.

2. Clean the area to be covered by removing grease, oil or dust.

3. Prepare the bare joint for taping by first providing a smooth, tapered surface for the tape. Use the sealer, carefully eliminating voids and covering bare parts. In no case extend the sealer more than 3/8" onto the bus insulation.

4. Wrap the joint using the tape furnished for the purpose. On 7.5kV or 15kV equipment, wrap 13 half-lapped layers; on 5kV equipment, wrap 7 half-lapped layers. Wherever possible, have the tape overlap the bus insulation by at least 1-1/2". Half-lapped layers of tape should be "pencilled". Leave no voids between sealer and tape, or between layers of tape.

5. Taping should not cover more than 10% of porcelain bushings or insulators, nor should be carried beyond the first depression or petticoat.

After all internal work is completed, install the covers being careful not to damage gaskets. The heaters, where used, should be energized immediately to prevent condensation during the remaining construction period.

TESTING AND INSPECTION

With the equipment erected, assembled and connected, observe the following precautions:

1. Remove all extraneous matter and see that all internal parts are free of dirt, grease and moisture. If moisture has penetrated, dry out with air or heat.

2. Apply potential tests to check for any damaged insulation.

60 CYCLE, RMS, WITHSTAND VOLTAGES (1 MINUTE)		
Rated	**Factory Test**	**Field Test**
61 to 220 volts	1500 volts	1100 volts
221 to 600 volts	2200 volts	1650 volts
4160 volts	19,000 volts	14,600 volts
7200 volts	36,000 volts	27,000 volts
13,800 volts	36,000 volts	27,000 volts

3. If finish has been marred during shipment or installation, apply touch-up paint (which may be secured from the factory).

IMPORTANT: PROPER PHASING OF ALL MAIN CIRCUITS SHOULD BE CHECKED ACCORDING TO DIAGRAM.

MAINTENANCE

All installations should be given a general inspection at appropriate intervals. Perform a visual inspection to see that there is no evidence of loose parts or mechanical damage. Take steps to remedy deficiencies of this nature and refinish areas where paint films have been penetrated.

Indoor assemblies must be kept dry at all times. If leaks from overhead pipes and dripping from condensation or other sources cannot be eliminated, prevent the moisture from falling on the equipment.

Outdoor ducts should be checked to assure that snow and rain are not entering the enclosure and that the heater system is operating properly to prevent internal condensation.

SAFETY PRECAUTIONS

ALL BUS BARS MUST BE DISCONNECTED FROM THEIR POWER SOURCES AND SOLIDLY GROUNDED WHENEVER WORK IS TO BE DONE ON THE EQUIPMENT.