



Instruction Manual #104



▶ General Instructions
for Installation and
Operation

Eco-Pad Switch and Fuse Sectionalizing Compartment



ERMCO Distribution Transformers

- P. O. Box 1228, Dyersburg, TN 38025-1228
- Phone: 731-285-9121
- Fax: 731-287-4104

Date: February, 2003

INTRODUCTION

This instruction manual provides general information for the installation, operation, and maintenance of ERMCO sectionalizing enclosure AEco-Pad®. These units are designed for outdoor installation on flat, level pads or foundations. All high voltage cables are installed through an opening in the pad beneath the cable termination compartment. The compartment is designed for padlocking and has barriers to resist tampering and vandalism.

These enclosures are to be applied and used per the usual service conditions described in ANSI C57.12.28 (RUS Spec U-4).

RECEIVING AND INSPECTION

ERMCO pad mounted Eco-Pad Enclosures are shipped filled with insulating enclosure oil. Immediately upon receipt, and before being put into service, enclosures should be carefully inspected for any external damage or loose parts caused by shipping and handling. Damage presumed to have occurred during shipment should be noted, and your ERMCO sales representative contacted.

Each unit has been carefully assembled and inspected at the factory. Extreme care is taken in the processing and sealing of the enclosure to insure that it is clean and dry, and of adequate dielectric strength. Therefore, it is not recommended that the enclosure seals be broken. If it is decided, however, that the enclosure be opened, adequate precautions should be taken as outlined elsewhere in these instructions.

HANDLING AND INSTALLATION

Enclosures should be lifted by the lifting provisions only. The bolts used for banding the unit to the pallet may be used for lifting. Do not use longer bolts for lifting. The enclosures must never be moved or lifted by means other than the lifting provisions provided for that purpose. Do not use jacks or tackles under radiator panels, if supplied. The units may be skidded in both directions. With the sill and door in place, the unit may be rolled in both directions using rolling bars. The sill of the cable compartment may be unbolted and removed. The compartment door may be removed after first bending the spring action hinge stop. For best operation and assurance of proper electrical insulation to ground, the enclosure should always be installed and maintained on a flat, level surface while energized. The enclosure to pad interface should not have gaps which could defeat the tamper-resistance of the enclosure.

Insure that all hardware removed during installation is securely replaced in order to eliminate any openings into the cabinet or any other potentially energized area of the transformer. Check to make sure that any protective barriers are securely in place, the cabinet is completely closed and locking provisions are installed before leaving the transformer site unattended. ERMCO takes no responsibility for damages due to improper installation. The customer is solely responsible for completing all installation work in a good workman-ship manner and within industry standards.

OIL

Enclosures are thoroughly dried at the factory and filled with ERMCO inhibited mineral oil having a minimum dielectric strength of 30 kV at 60 Hz when tested per ASTM D-877. ERMCO inhibited mineral oil

contains less than 1 ppm of PCB's at time of manufacture. The enclosure should never be energized unless it is filled with oil. If it should be found necessary to add to or replace the oil in the enclosure, only clean dry oil having a minimum dielectric strength of 30 kV and less than 1 ppm PCB's should be used. Before opening the enclosure, sufficient time should be allowed for the enclosure to come to temperature equilibrium with the air in the room to eliminate the possibility of moisture condensation from the air.

To check oil level or to add oil, first bring the interior of the enclosure to atmospheric pressure by venting the automatic pressure relief valve furnished on all ERMCO enclosures. Then remove the oil level plug located on the tank front plate at the 25°C oil level. If it is necessary to add oil, it may be added through the oil level plug.

A natural rubber hose should not be used in the transfer of oil.

CONNECTIONS

Refer to the nameplate for the rating and the permissible connections. No connections other than those shown on the nameplate should be made; and none of the connections should be changed while voltage is applied to the enclosure.

Provision are made for grounding the tank by means of tapped pads and ground connectors.

SOURCE LOAD TERMINATIONS

Terminations are made with shielded separable insulated cable elbow connectors, used with externally clamped bushing wells. Loadbreak or non-loadbreak bushing inserts should be used with the wells, unless integrated bushings are furnished.

Bushings are provided with tabs to accept a bail, used as a positive hold down for elbows. The bail prevents accidental removal of elbow connectors under energized conditions.

When removing cables from the bushings, they may be easily transferred to an adjacent parking stand. The parking stands will accept open plug type accessories available for loop feed, grounding or insulating the terminators during trouble shooting, sectionalizing or maintenance. On enclosures equipped with bushing wells, the bushing inserts may be changed or replaced at the installation site. Changing inserts does not affect the enclosure seal.

OVERLOAD AND OVERVOLTAGE PROTECTION

Enclosure protection against overvoltages may be obtained by having the unit supplied with suitable devices from the factory.

A. Bayonet Fuses

ERMCO enclosures may be equipped with a bayonet type expulsion fuse. The externally operable bayonet fuse assembly provides load break capacity by simple hot stick withdrawal. Enclosures incorporating this device must not be applied to primary distribution systems where the available fault current will exceed the maximum current interrupting capability of the bayonet fuse. Where the available fault current does exceed the maximum current interrupting capability of the fuse, current limiting fuses should be used.

The fuse operates as follows:

1. Vent enclosure by opening the pressure relief device with hotstick. Standing to one side of the enclosure, attach hotstick to fuse holder eye and twist hotstick to unlock fuse holder.
2. Turn fuse holder 90° in tube to break the seal between the seal gasket and the outer tube assembly. NOTE: If tank pressure is not released, fuse holder may be forced out of enclosure. Maintain control of fuse holder at all times.
3. Draw the fuse holder out quickly 4 to 6 inches to interrupt the load. Wait a few moments for the oil to drain into the tank.
4. Remove fuse holder from outer tube assembly and wipe off fuse cartridge holder and fuse cartridge.
5. Use a wrench to remove fuse cartridge from cartridge holder.
6. Remove end plug from fuse cartridge using two wrenches. Use screwdriver or other tool to straighten the tulip tip end of fuse element and push fuse element out of fuse cartridge. NOTE: Replace fuse cartridge if damaged.
7. Insert replacement fuse element into cartridge from either end. Tulip tip may have to be closed slightly to allow insertion into cartridge.
8. Install the cartridge and fuse to the holder with the formed end ferrule towards the holder. Secure the holder while using a wrench on the flat of the cartridge ferrule and torque to 50-70 in-lbs.
9. Spread tulip tips of fuse before installing end plug. Tighten end plug to expand the tulip tips using a wrench on end plug while holding fuse cartridge with wrench on flat of ferrule next to end plug and torque to 50-70 in-lbs.
10. Remove end plug and inspect the tulip tips to see that they are uniformly expanded to insure even contact. Replace the end plug and torque to 50-70 in-lbs.
11. Check oil level at oil fill plug, and add oil, if necessary.
12. Attach end of fuse holder assembly to hotstick and insert holder assembly firmly into the outer tube assembly. Twist the locking handle so that the latch engages the outer tube shoulder. NOTE: Visually inspect inner fuse holder assembly to ensure it is installed properly.

WARNING: The bayonet fuse is not recommended for fault closing. Serious personal injury may result if attempted. Internal fault conditions can cause enclosure to rupture. Always energize enclosure from remote location to be safe. This device was designed and intended for under oil application only. Refer to Step 11. for correct oil level.

CAUTION: Do not re-energize suspected failed enclosure. When replacing a blown fuse, the feed circuit should be opened and closed from a remote location. After fuse replacement, the bayonet should be replaced using the procedure described above and re-energized from a remote location. If equipment is re-fused while energized, the fuse could close in on the system's maximum fault current. Any equipment that has a suspected failure should not be closed in with this fuse. The bayonet fuse is designed to be operated in

accordance with normal safe operating procedures. These instructions are not intended to supersede or replace existing safety and operating procedures. The bayonet fuse should be installed and serviced only by personnel familiar with good safety practices and the handling of high voltage electrical equipment.

B. Internal Current Limiting Fuse

ERMCO enclosures are also available with internal current limiting fuses which will limit the energy let through into the fault.

C. Lightning Arresters

Elbow type lightning arresters may be applied to ERMCO enclosures by the user.

GASKETS

Bushing gaskets are all made of Buna-N Nitrile rubber. Gaskets may be reused if not damaged.

STORAGE

Enclosures should be stored filled with oil and in a clean dry place. If possible they should be stored where there will be no extreme temperature changes. Before the enclosure is put in service, it should be checked in the same manner as when received.

MAINTENANCE

A periodic visual inspection of the enclosure is recommended. At such times, the general condition of the following should be noted.

1. High voltage bushings;
2. Enclosure integrity (hinges, locking provisions, corrosion, etc.);
3. Evidence of oil leakage;
4. Ground connections;
5. Accessories;
6. Safety labels;
7. Enclosure tilt.

Where tanks show evidence of rusting or deterioration of the finish, they may be cleaned and then retouched with paint. It is necessary to remove all loose paint and rust by wire brushing, scraping, or sanding, and clean with a good solvent. Apply an acrylic lacquer, alkyd enamel, two part urethane or silicone alkyd primer, allow to dry, and then apply a color matched, compatible top coat and allow to dry.

If metal is rusted to the point of being weak such that the enclosure integrity can be compromised, repair or replace the part rather than painting it.

REPLACEMENT PARTS

Replacement parts are available from ERMCO. When ordering parts, give a complete description of the part. Also, give the kVA, voltage, and serial number of the enclosure, all of which may be found on the nameplate.

ADDITIONAL INFORMATION

Complete information on details of construction, installation, operation and maintenance can be obtained from the ERMCO factory or your nearest ERMCO Sales office.



2225 Industrial Road
P. O. Box 1228
Dyersburg, TN 38025-1228



Phone: 731-285-9121
Fax: 731-287-4104
Web Site: www.ermco-eci.com