



## INSTRUCTION LEAFLET

I.L. 46-060-1

February, 1992

### **Instructions For Mounting Low Voltage Spark Gap Assembly In Overhead Distribution Transformers**

#### **I. SCOPE**

The low voltage spark gap assembly is offered as a means of effectively reducing transformer failures caused by low-side surge current entering the secondary terminals of the transformer. Normal application of this device is on single phase transformers, 50 kVA and below, rated 120/240, 240/120, 240/480, or 480/240.

For overhead transformers, the device is mounted on the stud of the X2 bushing with leads extending to the X1 and X3 bushing studs. The actual spark gaps must be located in the gas space above top oil level. For padmounted transformers, alternate mounting techniques must be defined by the user to locate the spark gaps in the air space.

#### **II. NORMAL APPLICATION**

##### **Electrical Ratings**

There are no standards directly addressing this device. Electrical ratings are thus based on the required function of the spark gap.

The spark gap will limit 60 Hertz power follow with 24 kA available fault current with either 240 volts across a single gap or 480 volts across both gaps in series.

Power frequency sparkover per gap - minimum: 975 volts @ 60 Hertz (when tested per ANSI C62.1,8.2)

Gap setting - 0.172 inches nominal based on protecting the transformer from low-side surges.

**WARNING:** Applications exceeding these ratings should be avoided as sustained power follow arcing could result in transformer enclosure failure.

##### **Mechanical Requirements**

Arc gap assemblies are available for 0.375 inch and 0.5 inch diameter stud low voltage bushings.

Mounting must be such that the spark gaps remain out of oil when the transformer is subjected to the maximum tilt and maximum oil level (including oil expansion due to loading) expected in service.

**CAUTION:** The spark gap assembly should be mounted so that the metal "T" cannot short to the adjacent X1 or X3 bushings in the event the mounting on the X2 bushing comes loose. Normally, this can be accomplished by mounting the metal "T" toward the tank wall.

##### **Maintenance Requirements**

No maintenance is required for the normal life of the transformer.

##### **Packing, Handling, and Transportation Requirements**

Normal packing/shipping/storage methods are satisfactory for the spark gap assembly provided it is protected from excessive moisture. The finished transformer with the installed spark gap assembly may be shipped in the normal manner.

### III. PRODUCT DESCRIPTION

The low voltage spark gap assembly is a 3-terminal device that provides a spark gap between X1 and X2 and another spark gap between X3 and X2. Since X2 is routinely grounded, this limits the voltage that can appear across the low voltage windings. The spark gap is mounted in the gas space of the transformer. Application is limited to 50 kVA and below, 120/240, 240/120, 240/480 or 480/240 ratings only. (See Sketch #1).

### IV. ASSEMBLY NOTES

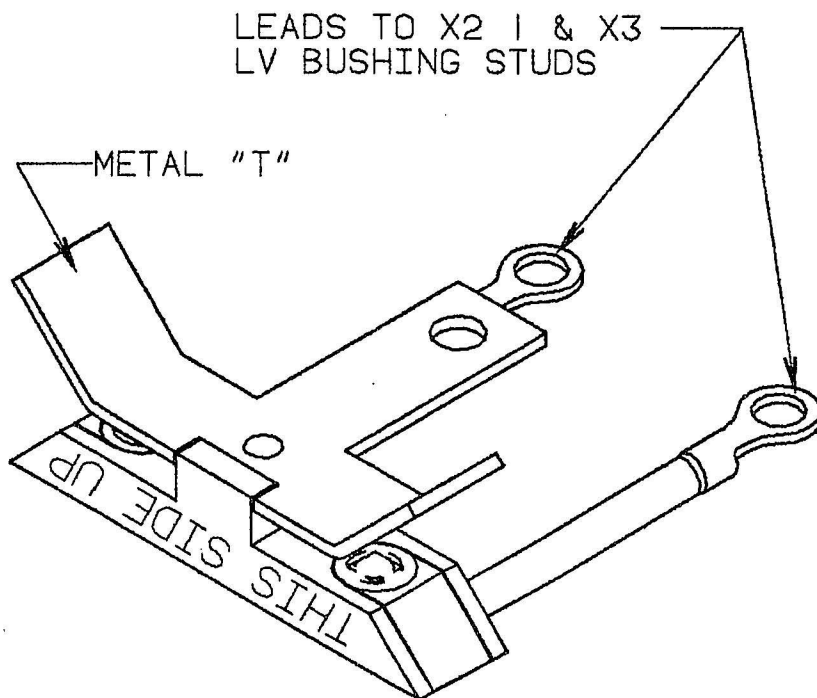
The low voltage spark gap should be mounted inside the transformer as shown in Sketch #2.

All LV gap assembly terminal connections to be assembled to bushings prior to LV leads.

LV gap assembly to be in upright "T" position when secured (See Sketch #2).

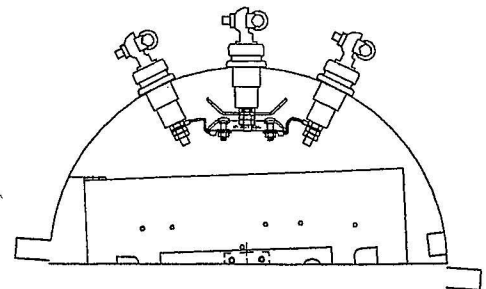
Do not allow any part of cable and/or LV gap assembly to come in contact with coil or other bare metal parts, i.e. tanks, covers.

The spark gap assembly should be mounted so that the metal "T" cannot short to the adjacent X1 or X3 bushings in the event the mounting on the X2 bushing comes loose. Normally, this can be accomplished by mounting the metal "T" toward the tank wall.



← Sketch #1  
LV Spark Gap Assembly  
6065B60G01

Sketch #3 ↓  
Top View - LV Spark Gap  
Assembly Mounted Inside  
Transformer Tank



Sketch #2 →  
LV Spark Gap Assembly Mounted  
Inside Transformer Tank.  
Ref. Drawing 6068B73F01

