INTRODUCTION
These instructions apply to the installation of the auxiliary current transformer accessory for single-phase, mineral oil-filled, voltage regulators manufactured by Cooper Power Systems.

Supplement 5 to Service Information S225-10-1 (CL-2) or S225-10-5 (CL-2A) VR-32 Regulator: Operating, Maintenance and Parts Replacement Instructions, covers field installation, connections, current calculations, and parts ordering information for a McGraw-Edison auxiliary current transformer No. 9061 (Figure 1) in a CL-2 or CL-2A control mounted on a VR-32 voltage regulator.

NOTE: A copy of S225-10-1 or S225-10-5 accompanies each VR-32 regulator shipped by Cooper.

The auxiliary current transformer steps up the 0.2-amp control current supply to a usable 2.5-amp or 5.0-amp source for special metering purposes.

Only trained and experienced personnel should install or operate this equipment.

These instructions are written to assist such personnel, and are not intended to replace proper training and experience. These instructions do not claim to cover all details or variations in this equipment, procedure, or process described, nor to provide directions for meeting every possible contingency during installation and replacing a part in an auxiliary current transformer. If the personnel installing or replacing a part in an auxiliary current transformer needs information about a condition not covered in these instructions, please contact your Cooper Power Systems representative.

WARNING/DANGER ALERTS
Warning/Danger alerts in this manual describe hazardous situations that may cause death and/or personal injury if the instructions in the Warning/Danger alerts are not followed. Warning/Danger alerts are highlighted like this:

⚠️ WARNING/DANGER
A Warning/Danger alert describes a hazardous situation that may cause death and/or personal injury and gives instructions on how to avoid death and/or personal injury.

CAUTION ALERTS
Caution alerts in this manual describe hazardous situations that may cause personal injury and/or property damage if the instructions in the Caution alerts are not followed. Caution alerts are highlighted like this:

⚠️ CAUTION
A Caution alert describes a hazardous situation that may cause personal injury and/or property damage and gives instructions on how to avoid personal injury and/or property damage.

INITIAL INSPECTION
Each McGraw-Edison auxiliary current transformer is shipped in a carton designed to protect the unit from in-transit damage. Immediately upon receipt of the auxiliary current transformer:

- Thoroughly inspect the housing and the wiring to make sure the auxiliary C.T. is in good condition.
- If initial inspection reveals damage or evidence of rough handling in transit, immediately file a claim with the carrier and notify your Cooper Power Systems representative.

IDENTIFICATION RECORDS
For permanent auxiliary current transformer identification, record complete accurate information, for example:

- VR-32 regulator serial number.
- CL-2 or CL-2A control serial number.
- Aux. C.T. serial number.
- Date auxiliary current transformer was installed.

FIELD INSTALLATION
The auxiliary current transformer assembly has its own set of lift-off hinges. Installation consists of mating the hinge halves of the auxiliary current transformer and the control box, then mounting the auxiliary current transformer above the main control.

The auxiliary current transformer has an accuracy of ± 1% with a 25-VA burden at a 70% power factor. The secondary of the transformer must be short-circuited, using the short-circuiting block provided, when a metering device is not connected to the secondary.

⚠️ CAUTION
Open the V, switch and close the C knife switch to deenergize the control before installing the auxiliary current transformer.

CONNECTIONS
Figure 2 is a schematic diagram of the auxiliary current transformer, showing its connections and its relationship to the main control.

The two jumpers on the terminal strip on the rear of the accessory panel determines the current available from the auxiliary current transformer.

To make appropriate connections:

1. Remove the jumper between C4 and C3 on the rear panel terminal board (TB1).
2. Connect the primary lead S3 (green) of current transformer to C4.
3. Connect the F3 (orange) primary lead to C3.

For selection of desired amp supply, refer Table 1 for the proper jumper connections.

These instructions do not claim to cover all details or variations in the equipment, procedure, or process described, nor to provide directions for meeting every possible contingency during installation, operation, or maintenance. When additional information is desired to satisfy a problem not covered sufficiently for the user’s purpose, please contact your Cooper Power Systems sales engineer.
**Table 1**

<table>
<thead>
<tr>
<th>Primary to Secondary Ratio</th>
<th>Primary Current (amps)</th>
<th>Secondary Current (amps)</th>
<th>Jumper(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:12.5</td>
<td>0.2</td>
<td>2.5</td>
<td>F1, in S2</td>
</tr>
<tr>
<td>1:25</td>
<td>0.2</td>
<td>5.0</td>
<td>F1 to F2, S1 to S2</td>
</tr>
</tbody>
</table>

Figure 3 illustrates the physical wiring of the auxiliary current transformer and the connections that are made from it to the rear panel signal circuit. The metering device is connected to S1 and F2 for either amp supply applications.

**CURRENT CALCULATION**

The primary current might not be 0.2 amp at the rated regulator load. This current depends upon the ratio of the toroidal current transformer that is in the regulator tank and the rated load amps of the regulator. Both of these values are stamped on the nameplate or found in Table 3 of 8225-10-1 or Table 2-2 of 8225-10-5.

To determine the actual load current on the regulator from the reading on the metering device connected to the auxiliary current transformer.

1. Identify the current transformer ratio by checking the regulator rating plate.
2. Examine the jumper positions to determine the auxiliary current transformer ratio.
3. Calculate the load amps on the regulator using the following formula:
   \[ \text{Load amps} = \text{CT ratio} \times \text{aux CT ratio} \times \text{aux meter reading} \]

**Example**

Regulator rating = 328 amps, 7620/13200Y.

CT ratio = 400:0.2.

Aux. CT ratio = 1.25. (or 1:12.5)

Auxiliary meter reading = 3 amps.

\[ \text{Load amps} = \frac{400}{0.2} \times \frac{1}{12.5} \times 3 = 240 \text{amps.} \]

**REPLACEMENT PARTS**

For ease and accuracy in ordering provide the description and the part code number as listed in Table 2. Figure 4 shows the location of these basic parts.

**Table 2**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Part Code No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Panel lock assembly screw</td>
<td>6513</td>
</tr>
<tr>
<td>2</td>
<td>Short-circuiting bar assembly</td>
<td>9090</td>
</tr>
<tr>
<td>3</td>
<td>Shorting Block</td>
<td>9059</td>
</tr>
<tr>
<td>4</td>
<td>Transformer assembly</td>
<td>9058</td>
</tr>
<tr>
<td>5</td>
<td>Jumper</td>
<td>9057</td>
</tr>
<tr>
<td>6</td>
<td>Terminal Strip</td>
<td>9056</td>
</tr>
<tr>
<td>1-6</td>
<td>Complete Aux. CT assembly</td>
<td>9061</td>
</tr>
</tbody>
</table>