INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS
SECTIONALIZING ENCLOSURE WITH J-BAR

SECTION 1: Introduction
1.1 General ........................................Page 2
1.2 Qualified Persons .......................Page 2
1.3 Shipment Inspection ....................Page 2
1.4 Storage .......................................Page 3
1.5 Standards ....................................Page 3

SECTION 2: Safety Information
2.1 Safety Alert Messages ..............Page 4
2.2 Following Safety Instructions .....Page 4
2.3 Replacement Instructions ..........Page 4
2.4 Location of Safety Labels ..........Page 4

SECTION 3: Components
3.1 General .......................................Page 6

SECTION 4: Installation
4.1 Handling ....................................Page 6
4.2 Mounting ....................................Page 6
4.3 Grounding (earthing) ...............Page 6
4.4 Cable Connections .......................Page 6
4.5 Installation Testing .................Page 7
4.6 Fault Indicators ......................Page 7
4.7 Voltage Sensors .......................Page 7
4.8 Enclosure ....................................Page 7

SECTION 5: Operation
5.1 General .......................................Page 7
5.2 Entrance Locations ....................Page 7

SECTION 6: Maintenance
6.1 General .......................................Page 8
6.2 Finish of Sectionalizing enclosure...Page 8
6.3 Repair Parts ...............................Page 8
6.4 Returning Equipment .....................Page 8

SECTION 7: Testing
7.1 Installation Testing ....................Page 9
7.2 Cable Testing ............................Page 10
7.3 Factory Production Tests ............Page 10

SECTION 8: Attachments
8.1 Customer Drawing(s) .................Page 11
8.2 Supplemental Instructions ..........Page 11

This information is transmitted by G&W Electric Co. and accepted by you subject to the following understanding and agreement: By accepting these instructions and any included drawings you agree that all rights to the drawing and information contained herein, as well as the proprietary and novel features of the subject matter, are reserved by G&W Electric Co. and that devices embodying such features or information derived from these disclosures will not be manufactured by you or disclosed to others without the expressed written consent of G&W Electric Co. These drawings and information contained herein are and remain the property of G&W Electric Co. and are not to be copied, reproduced or disclosed to others without the expressed written consent of G&W Electric Co.
SECTION 1  INTRODUCTION

1.1 General
This document is intended to provide the user with necessary information to properly receive, inspect, test, install and maintain a G&W sectionalizing enclosure. If after reviewing the information contained herein, you should have any questions, please contact your G&W representative or call our customer service number.

Read these Instructions
Read and understand the contents of this document and follow all locally approved procedures and safety practices before installing, operating or maintaining this equipment. Be sure to read and understand the Safety Information in Section 2.

Keep these Instructions
This document is a permanent part of your G&W sectionalizing enclosure. Keep it in a safe location where it can be readily available and referred to as necessary.

How to Contact G&W
By Phone: 708-388-5010, Monday through Friday, 8:00 AM to 5:00 PM Central Time
By Fax: 708-388-0755
E-Mail: webmail@gwelec.com
Mail: 3500 W. 127th Street, Blue Island, Illinois 60406, USA
Internet: To find your local G&W Representative visit our Web site: www.gwelec.com

1.2 Qualified Persons

WARNING
The equipment covered by this document is intended to be installed, operated and maintained by qualified persons who are trained in the installation, operation and maintenance of electric power distribution equipment along with the associated hazards. A qualified person has been trained and is competent:
- To de-energize, clear and tag circuits and equipment in accordance with established safety procedures.
- To distinguish between live parts from non-live parts of the equipment.
- In the proper use of insulated tools, wears protective equipment such as rubber gloves, hard hat, safety glasses, flash-clothes, etc. in accordance with established safety practices and is trained in the care of such equipment.
- As in certified in rendering first aid, especially in the technique of removing a person in contact with a live circuit and in applying cardiopulmonary respiration.

These instructions are intended only for qualified persons and are not intended as a substitute for adequate training and experience in safety procedures for this type of equipment.

1.3 Shipment Inspection
Examine the crated equipment carefully for any damage that may have occurred in transit. If damage is found, a claim must be filed at once with the transportation company. Uncrate and remove packing as soon as possible after receiving the equipment. Examine the equipment carefully for any hidden damage that may have occurred in transit and was previously undetected. If damage is found, a claim should be filed at once with the transportation company.
1.4 Storage
Sectionalizing enclosures that will not be installed immediately should be suitable stored in a clean, dry location. Possible replacement of crating material should be investigated. Make certain sectionalizing enclosures are protected from potential damage.

1.5 Standards
Some or all of these standards are applicable to this sectionalizing enclosure:

<table>
<thead>
<tr>
<th>Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANSI C57.12.28 1996. Switchgear and Transformers, Padmounted Equipment,</td>
</tr>
<tr>
<td>Enclosure Integrity.</td>
</tr>
<tr>
<td>ANSI/IEEE 386 - 1995. Separable Insulated Connectors for Power Distribution</td>
</tr>
<tr>
<td>Systems Above 600 V.</td>
</tr>
<tr>
<td>ANSI/IEEE 454 - latest revision. Recommended Practice for the Detection</td>
</tr>
<tr>
<td>and Measurement of Partial Discharge (Corona) During Dielectric Tests.</td>
</tr>
<tr>
<td>Breakers Rated on a Symmetrical Current Basis.</td>
</tr>
</tbody>
</table>
2.1 Safety Alert Messages
The following is important safety information. For safe installation and operation, be sure to read and understand all danger, warning and caution information. The various types of safety alert messages are described below:

<table>
<thead>
<tr>
<th>DANGER</th>
</tr>
</thead>
<tbody>
<tr>
<td>DANGER - Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>WARNING - Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAUTION - Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. May also be used to alert against unsafe practices.</td>
</tr>
</tbody>
</table>

2.2 Following Safety Instructions
Carefully read all safety messages in this manual and on your equipment. Keep safety signs in good condition. Replace missing or damaged safety signs.

Keep your equipment in proper working condition. Unauthorized modifications to the equipment may impair the function and/or safety and effect equipment life.

If you do not understand any part of these safety instructions and need assistance, contact your G&W representative or G&W Customer Service.

2.3 Replacement Instruction and Labels
Replacement instructions and safety labels are available from G&W. To obtain them, please contact Customer Service.

2.4 List and Location of Safety Labels
The following are typical safety labels which must be followed. Refer to customer drawing in Section 8.1 for approximate location of the labels on the sectionalizing enclosure. The drawings represent typical configurations and may vary.
DANGER
Hazardous Voltage. May Shock, Burn, or Cause Death. Remote operation of switch is recommended. Switch is to be operated by Qualified Personnel in strict accordance with instruction manual.

WARNING
Do not operate switch if a short circuit is suspected. Exceeding ratings of switch may cause an Explosion resulting in Severe Injury or Death. Refer to switch nameplate for maximum ratings.

WARNING
Deepwell bushings are rated 200A continuous and 10,000A momentary current (IEEE 386). Exceeding ratings of bushing may cause an Explosion resulting in Severe Injury or Death.

WARNING
Hazardous voltage inside. Can shock, burn, or cause death. Keep out. If open or unlocked, immediately call electric power and light company.
3.1 General
G&W manufactures a complete line of Sectionalizing Enclosures. The Sectionalizing Enclosures are connected to cable systems using industry standard bushings and connectors. Refer to the outline drawing attached for identification and location of components for your particular sectionalizing enclosure style.

4.1 Handling

**WARNING**

Do not lift or handle sectionalizing enclosure by the bushings. Doing so may result in damage to the sectionalizing enclosure and possible injury or death to personnel.

The sectionalizing enclosure is equipped with lifting eyes or other lifting provisions. Use proper equipment to obtain a vertical lift without damaging the unit. See sectionalizing enclosure drawing in Section 8.1 for approximate weight and lifting provision details.

4.2 Mounting
Provisions should be made for ample cable training space. All sectionalizing enclosures have provisions for mounting. See sectionalizing enclosure drawing in Section 8.1 for mounting details. Check that the sectionalizing enclosure, in its installed position, is secured and that mountings are adequate to support the weight of the sectionalizing enclosure.

4.3 Grounding (earthing)
Ground bosses are located on the sectionalizing enclosure. To ensure a good ground connection, the top surface of each boss must be sanded to expose bare metal before making a ground connection. The sectionalizing enclosure must be attached to a suitable ground as required by local practice. Ensure that all cable terminations for shielded cable have been properly grounded to the sectionalizing enclosure tank during installation.

4.4 Cable Connections
Each entrance must be properly terminated. Entrances must be terminated following instructions supplied by the termination manufacturer.

**WARNING**

Sectionalizing enclosure entrances are designed to accept cable accessories constructed in accordance with IEEE 386 or a termination means specifically approved by G&W Electric Co. The use of any other cable termination means can present an electrical hazard or cause failure resulting in serious injury or death.
4.5 Installation Testing
High potential testing on sectionalizing enclosures and cable systems may be conducted. Refer to Section 7, Testing.

4.6 Fault Indicators (if applicable)
Refer to separate instructions.

4.7 Voltage sensors (if applicable)
Refer to separate instructions.

4.8 Enclosure (if applicable)
If supplied, pad mount enclosures provide tamper resistant construction. Penta-head bolts require a special wrench to open and are located on each access door behind the door handle. Door handles conceal Penta-head bolt when pushed flush against the door and are supplied with a provision for padlocking. Wind stops are supplied for each door panel. Some enclosures are supplied with a flip-up top section that is locked in place behind the main access doors.

SECTION 5

5.1 General
Sectionalizing enclosures are assigned ratings by the manufacturer and have been designed and tested using levels established by ANSI and/or IEC standards. Design and production tests are conducted to demonstrate that the equipment will perform within the ratings on the nameplate and customer drawing. See section 9.1 and Customer Drawing in Section 10.1.

WARNING

Equipment in service will perform to established ratings only if properly installed, operated and maintained. Power switchgear is characterized by high voltage and high continuous and short circuit currents. It should be installed, operated and maintained by Qualified Personnel. Failure to properly install, operate or maintain the equipment may result in damage to the sectionalizing enclosure and possible injury or death.

For further information on operation and maintenance of equipment see ANSI C2 standards.

WARNING

Do not attempt to close into fault in excess of the sectionalizing enclosure ratings or to interrupt currents in excess of interrupting ratings. Either may result in damage to the sectionalizing enclosure and possible injury or death.

5.2 Entrance Locations
Refer to the three line diagram on the sectionalizing enclosure, for proper entrance locations.
SECTION 6

MAINTENANCE

6.1 General
No internal maintenance is required.

6.2 Finish of Sectionalizing enclosure
The front panel paint finish is comprised of a two part epoxy, gray coating (Munsell No. 5BG7/0.4), the external enclosure finish is Munsell No. 7gy-3.29/1.5 green. Clean using soap and water. Touch up paint is available.

6.3 Repair Parts List
To inquire about spare or repair parts, contact G&W Representative or customer service with the sectionalizing enclosure serial number.

6.4 Returning Equipment to Service

6.4.1 Make sure that the grounding means are removed.

6.4.3 For sectionalizing enclosures, padlock the enclosure before leaving the area even momentarily. This should be done even if the sectionalizing enclosure is accessible only to qualified persons.
7.1 Installation Testing

**WARNING**

Follow these precautions when performing electrical tests:
1) Completely de-energize the sectionalizing enclosure and disconnect it from all power sources.
2) Terminate all bushings with an insulated cap or other suitable cable termination capable of withstanding the test voltage.

**WARNING**

The DC withstand capability of sectionalizing enclosure may be reduced due to damage, or electrical wear. The DC test voltage must not exceed the withstand limits of the sectionalizing enclosure. Application of DC voltages greater than the withstand capability of the sectionalizing enclosure can result in flash over, injury and equipment damage.

**WARNING**

When it is necessary to test the cables connected to an energized sectionalizing enclosure, proper insulation between the power-frequency source and the DC test equipment must be maintained. Follow the recommendations of the manufacturer of the test or fault location equipment.

**DANGER**

Do not exceed the Maximum Dielectric Test Levels as shown in Section 7.1.2. Exceeding the test levels can cause flash over. This can lead to a fault in the sectionalizing enclosure or test equipment and cause serious personal injury or death.

7.1.1 General

After sectionalizing enclosures are completely installed in accordance with local practices, high voltage testing may be performed before the section enclosure is energized. Test levels will generally be established by the cable or termination manufacturer but should not exceed the values listed in the tables below. Insure the test equipment is used in accordance with the manufacturer's instructions.
7.1.2 Maximum Dielectric Test Levels:

<table>
<thead>
<tr>
<th>Switchgear Rating</th>
<th>Withstand Test Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 Hz</td>
<td>60 Hz</td>
</tr>
<tr>
<td>12kV</td>
<td>15.5kV</td>
</tr>
<tr>
<td>24kV</td>
<td>27kV</td>
</tr>
<tr>
<td>40 kV</td>
<td>78 kV</td>
</tr>
</tbody>
</table>

7.2 Cable Testing
DC testing is primarily used to test the integrity of installed cable systems and terminations. DC testing should be performed in accordance with appropriate cable test standards, and must not exceed the rating of the sectionalizing enclosure.

**WARNING**

DC testing cables installed on sectionalizing enclosures must only be performed when all ways of the sectionalizing enclosure and cables are isolated from all system voltages. Applying a DC test voltage to a sectionalizing enclosure with energized ways may lead to electrical failure of the resulting in personnel injury or death.

7.2.1 Maximum Cable Testing Levels:

<table>
<thead>
<tr>
<th>Sectionalizing enclosure Rating</th>
<th>Cable Testing</th>
<th>Cable Thumping</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 Hz</td>
<td>60 Hz</td>
<td>110kV</td>
</tr>
<tr>
<td>12kV</td>
<td>15.5kV</td>
<td>40kV</td>
</tr>
<tr>
<td>24kV</td>
<td>27kV</td>
<td>125kV</td>
</tr>
<tr>
<td>40 kV</td>
<td>78kV</td>
<td>40kV</td>
</tr>
</tbody>
</table>

7.3 Factory Production Tests
Routine (production) tests are conducted in accordance with applicable standards. The following are typical production tests performed:

- Dielectric Test (40hz Withstand Test)
- Partial Discharge (Corona)
- Design and Visual Checks (Operating Assurance Test)
SECTION 8

ATTACHMENTS

8.1 Customer Drawing(s)

8.2 Supplemental Instructions, if applicable. May include:

1) Voltage Sensors