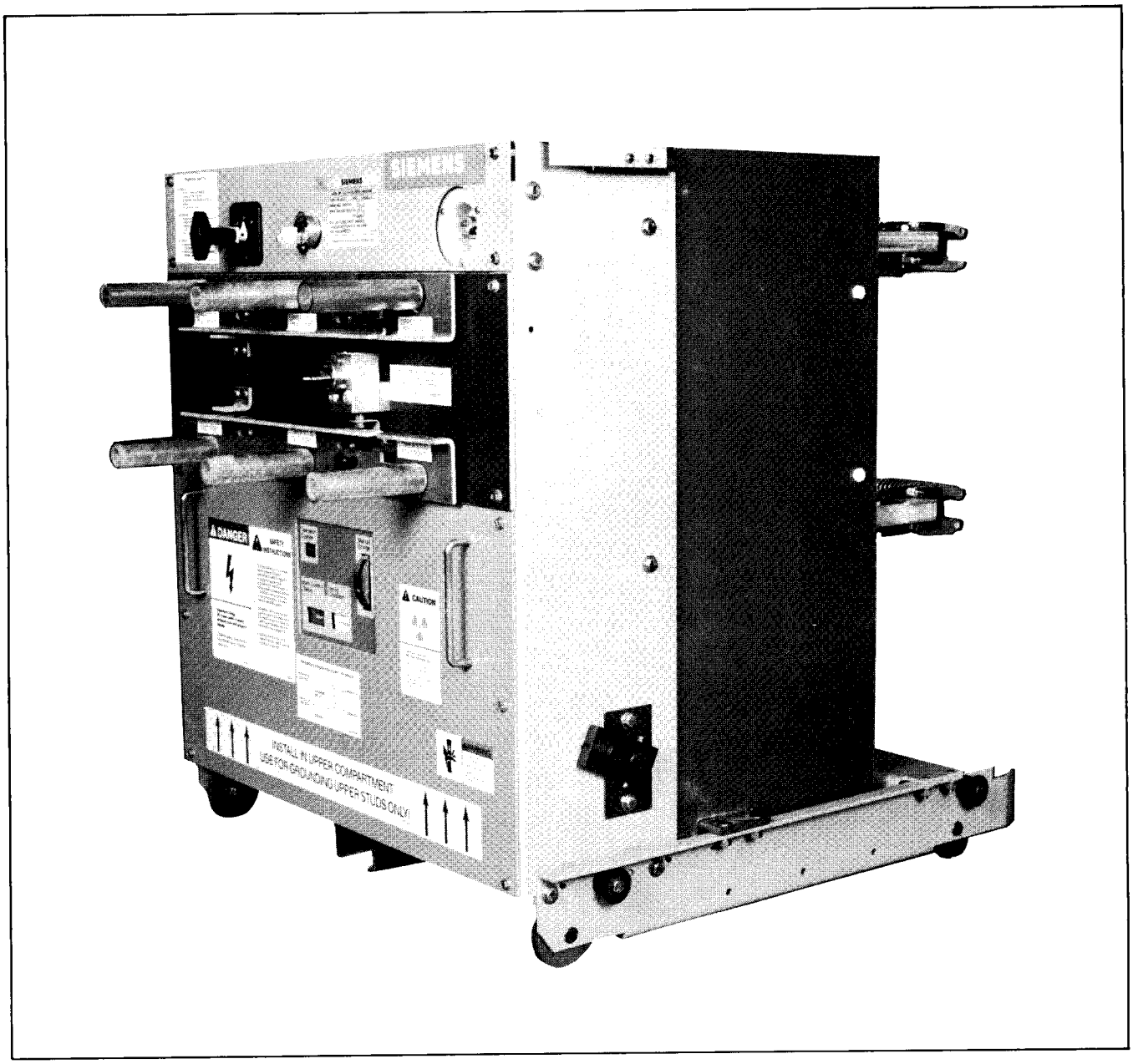
SIEMENS

Electrically Operated Test Device

Type GMI-GTD A & B

(For Type GMI Vacuum Circuit Breakers and GM Metal-Clad Switchgear)

Instructions
Installation
Operation
Maintenance
SG-3268-GT



THIS EQUIPMENT CONTAINS HAZARDOUS VOLTAGES AND MECHANICAL PARTS WHICH MOVE AT HIGH SPEED AND MAY BE CONTROLLED REMOTELY. SEVERE PERSONAL INJURY OR PROPERTY DAMAGE CAN RESULT IF SAFETY INSTRUCTIONS ARE NOT FOLLOWED. ONLY QUALIFIED PERSONNEL SHOULD WORK ON OR AROUND THIS EQUIPMENT AFTER BECOMING THOROUGHLY FAMILIAR WITH ALL WARNINGS, SAFETY NOTICES, AND MAINTENANCE PROCEDURES CONTAINED HEREIN. THE SUCCESSFUL AND SAFE OPERATION OF THIS EQUIPMENT IS DEPENDENT UPON PROPER HANDLING, INSTALLATION, OPERATION AND MAINTENANCE.

Qualified Person

For the purpose of this manual and on product labels, a qualified person is one who is familiar with the installation, construction and operation of the equipment, and the hazards involved. In addition, he has the following qualifications.

a) Is trained and authorized to energize, de-energize, clear, ground and tag circuits and equipment in accordance with established safety practices.

b) Is trained in the proper care and use of protective equipment such as rubber gloves, hard hat, safety glasses or face shields, flash clothing, etc., in accordance with established safety practices.

Signal Words

Distinctive signal words (DANGER, WARNING, CAUTION) are used in this instruction book to indicate degrees of hazard that may be encountered by the user. These signal words are defined below.

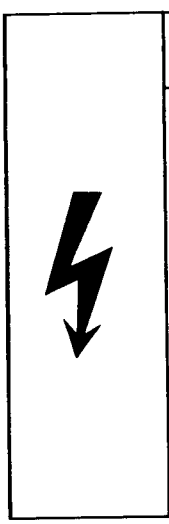
DANGER Indicates death, severe personal injury or substantial property damage will result if proper precautions are not taken.

WARNING Indicates death, severe personal injury or substantial property damage can result if proper precautions are not taken.

CAUTION Indicates minor personal injury or property damage can result if proper precautions are not taken.

Field Service Operation

Siemens can provide competent, well-trained Field Service Representatives to provide technical guidance and advisory assistance for the installation, overhaul, repair and maintenance of Siemens equipment, processes and systems. Contact regional service centers, sales offices or factory for details.



⚠DANGER

Power circuit breakers are applied at high voltages and have mechanical parts which move at high speeds and will cause death, personal injury and property damage.

To avoid injuries due to electrical shock, burns, and entanglement in moving parts, this equipment must be installed, operated, and maintained only by qualified persons thoroughly familiar with the equipment, instruction manual and drawings.

General Description

This manual describes a device which is suitable for insertion in switchgear enclosures in the space normally occupied by circuit breakers. The instruction manual, SG-3268, which describes type GMI vacuum circuit breakers supplements the ensuing description of the test device; providing handling instructions, description of mechanism operation, field tests and maintenance requirements.

The test device is essentially a GMI vacuum circuit breaker fitted with test wells, interlocks and arranged to ground the "outgoing" lines of the circuit breaker cell.

Instructions

Types GMI—GTD-A
GMI—GTD-B

Ground and test devices used with type GM 5 and 15kV switchgear.

Table of Contents

NOTE

The instructions contained within this manual are necessary for the safe installation, maintenance and operation of this equipment. If this manual is misplaced or lost, replacement manuals are available through the local Siemens sales office.

These instructions do not purport to cover all details or variations in equipment, nor to provide for every possible contingency, to be met in connection with installation, operation or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purpose, the matter should be referred to the local Siemens office.

THE CONTENTS OF THIS INSTRUCTION MANUAL SHALL NOT BECOME PART OF OR MODIFY ANY PRIOR OR EXISTING AGREEMENT, COMMITMENT OR RELATIONSHIP. THE SALES CONTRACT CONTAINS THE ENTIRE OBLIGATION OF SIEMENS. THE WARRANTY CONTAINED IN THE CONTACT BETWEEN THE PARTIES IS THE SOLE WARRANTY OF SIEMENS. ANY STATEMENTS CONTAINED HEREIN DO NOT CREATE NEW WARRANTIES OR MODIFY THE EXISTING WARRANTY.

If drawings or other supplementary instructions for specific applications are forwarded with the manual or separately, they take precedence over conflicting or incomplete information in this manual.

Description

Control

Electrical operation is required to achieve grounding function. Control commands are made through a remote close open push button station and control cable which is connected to the device by use of a plug and receptacle mounted on the device front panel.

Grounding operations are enabled by selecting the "Close" function on the transfer switch mounted on the device front panel. Access to the switch is achieved by satisfying specific interlock requirements.

"Opening" is enabled by moving the transfer to the "open" or " trip" position.

Current Rating

The test device is not characterized by a continuous current rating, but is rated for use in breaker cells rated 1200, 2000 and 3000 amperes. Primary contact finger assemblies and frame size interlocks are provided to permit test device conversion to any of the three cell ratings.

Operating Mechanism

The operating mechanism and the associated vacuum interrupters are identical to those used in a standard GMI breaker. The function and maintenance requirements of these elements are thoroughly discussed in instruction manual SG 3268.

Separate devices are required to serve upper and lower cells.

Test devices restricted to use in the upper cell have conductive copper primary extensions in the upper primary stud position and have a key interlock on the lower test port aperture slide.

Test devices restricted to use in the lower cell have conductive copper primary extensions in the lower primary stud position, and have a key interlock on the upper test port aperture slide.

Test Ports

Two sets of three test ports are provided on the front panel.The lower test ports are connected to the lower primary studs. The upper test ports are connected to the upper primary studs.

Test Probes

A set of six test probes are provided as a convenient means of connecting test leads to the device. Test probes are inserted into deep test wells and make an electrical connection as a bayonet terminator enters a socket with detent action. The probes are fully self aligning. The probes can be secured in place by positioning the sliding test port aperture to a third position which engages the probe. This feature also ensures the probes are fully inserted.

Test probes are provided which must be fitted with test cables by the user. The choice of cable must be carefully reviewed by the user to ensure that it is adequate for the intended purpose.

Special attention to the cleanliness of the cables and the condition of the insulation is an essential requirement for safe use. It is the users responsibility to select and maintain test cables.

Observe the following regarding test probe maintenance.

⚠CAUTION

Popular cleaning and degreasing agents such as the chlorinated hydrocarbons trichlorethylene, perchloroethylene, and carbon tetrachloride marketed under a large number of trade names, may crack, craze or otherwise attack the test probes. They must not be used for cleaning and degreasing. Nor should aromatic compounds such as benzene, xylene, or toluene be used. Recommended for cleaning the test probes No. 1 and No. 3 denatured alcohol; white kerosene; Varsol No. 2; VM&P naphtha; heptane; hexane; isobuty; and isopropyl alcohol.

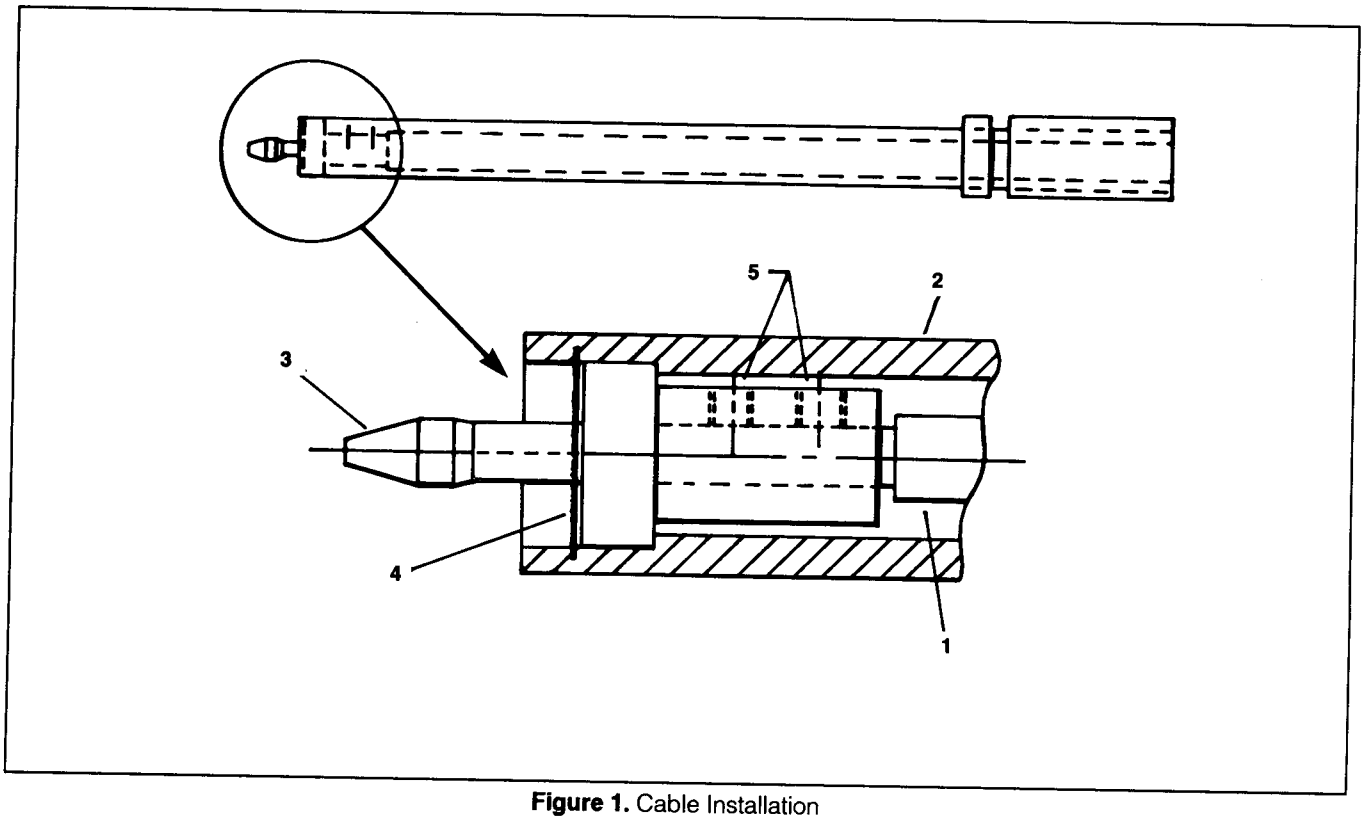
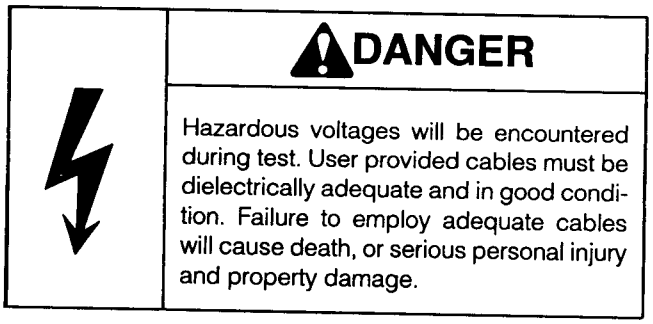


Figure 1. Cable Installation



Cable Installation

1. Remove retaining ring, Item 4.
2. Remove bayonet Item 3 from the tube and retract but do not remove two set screws.
3. Thrust selected cable through tube, strip and insert in bayonet opening to a depth beyond the two set screws.
4. Securely fasten the two set screws to firmly retain the cable in the bayonet.
5. Withdraw the cable and seat the bayonet. Restore the retaining ring.

Description

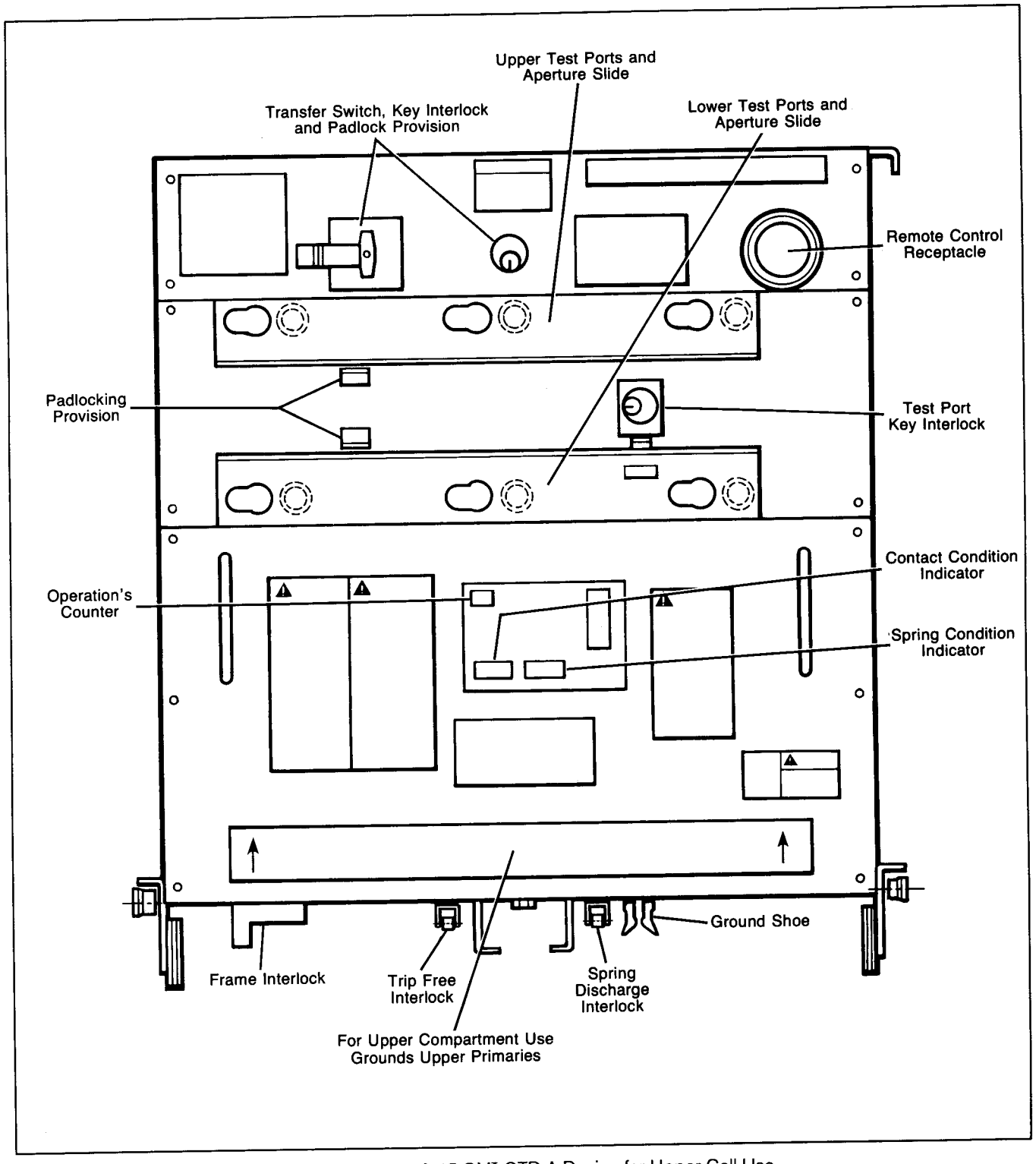


Figure 2. Type 5 & 15 GMI-GTD A Device for Upper Cell Use

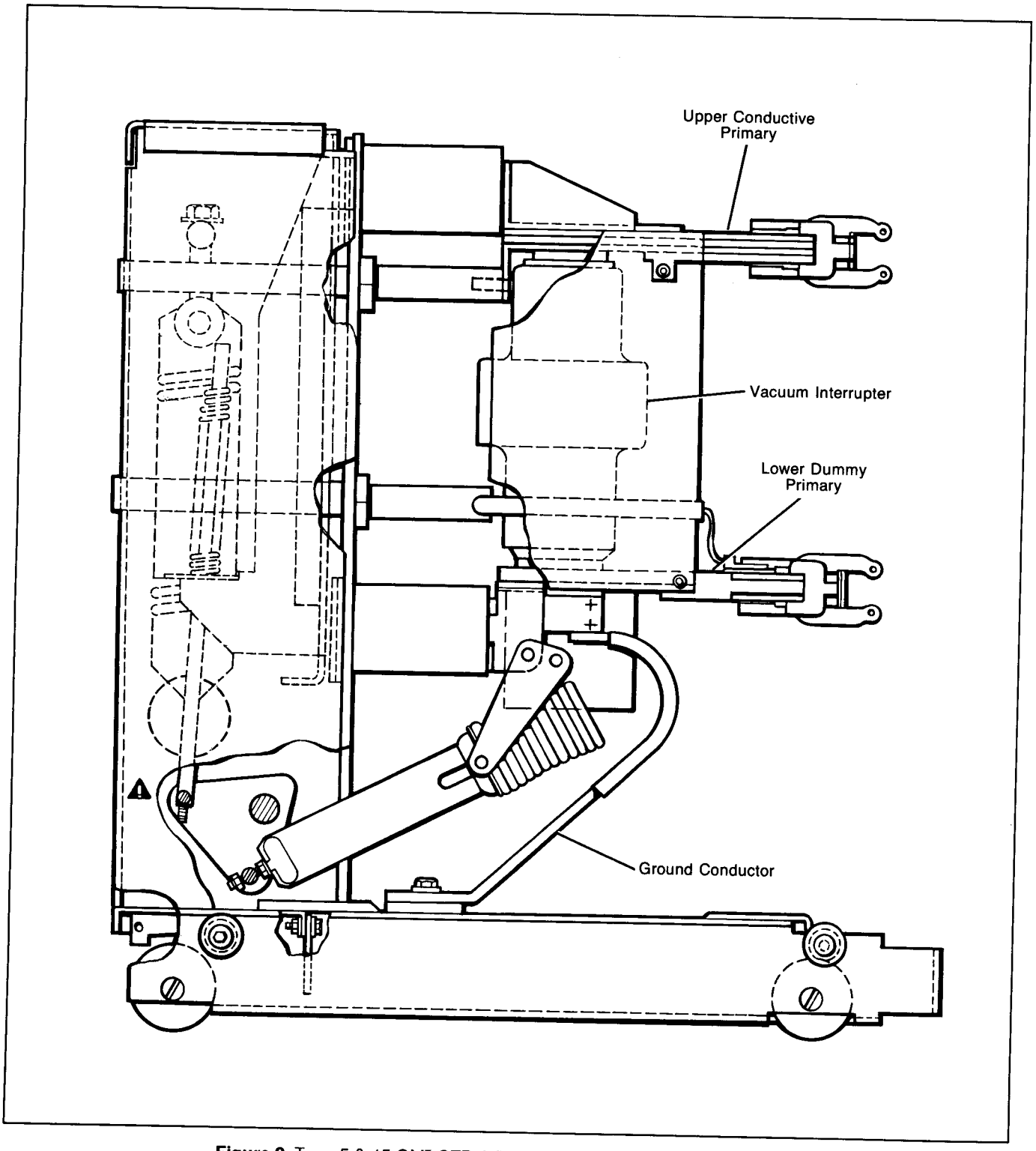


Figure 2. Type 5 & 15 GMI-GTD A Device for Upper Cell Use (continued)

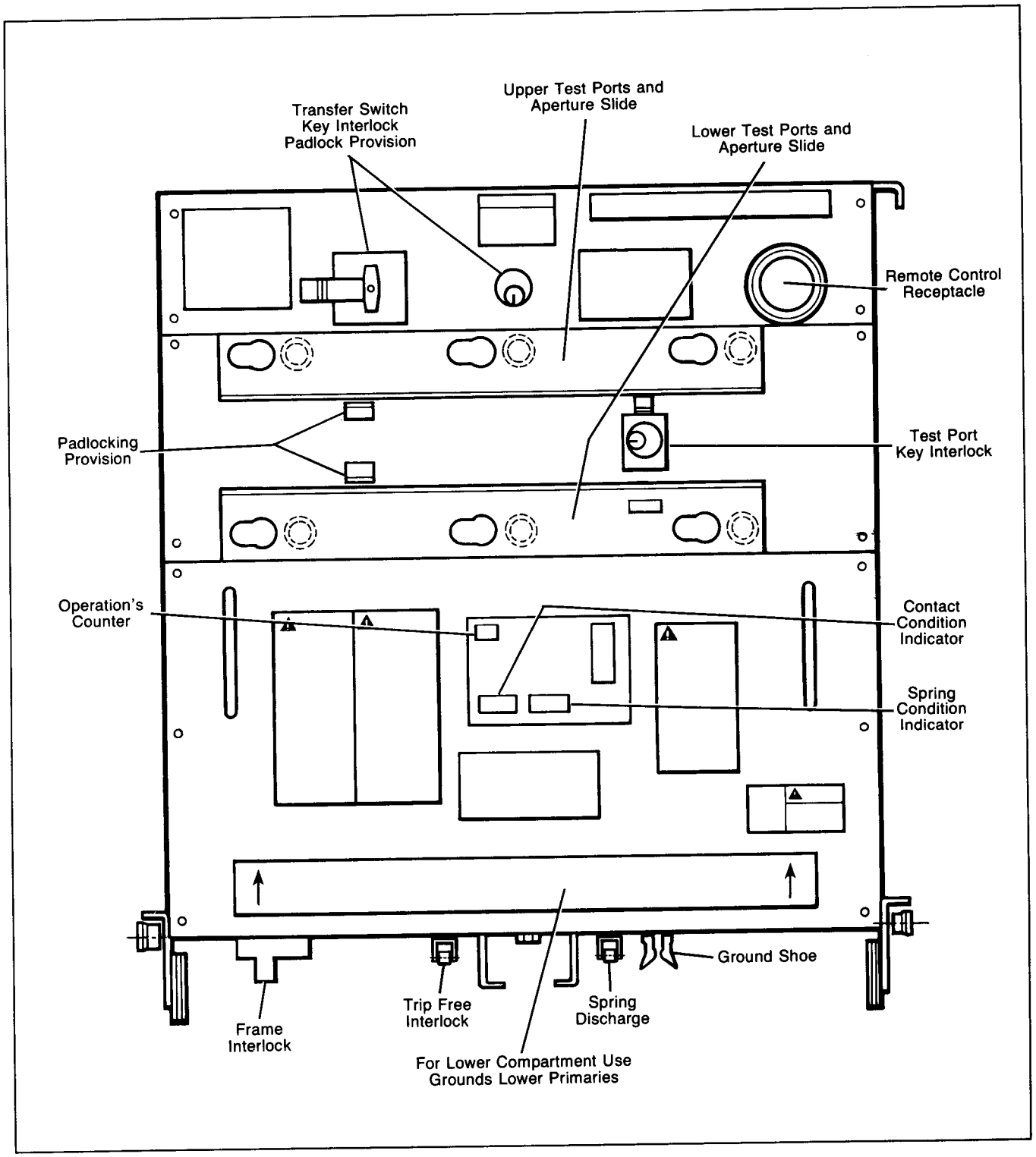


Figure 3. Type 5 & 15 GMI-GTD B Device for Lower Cell Use

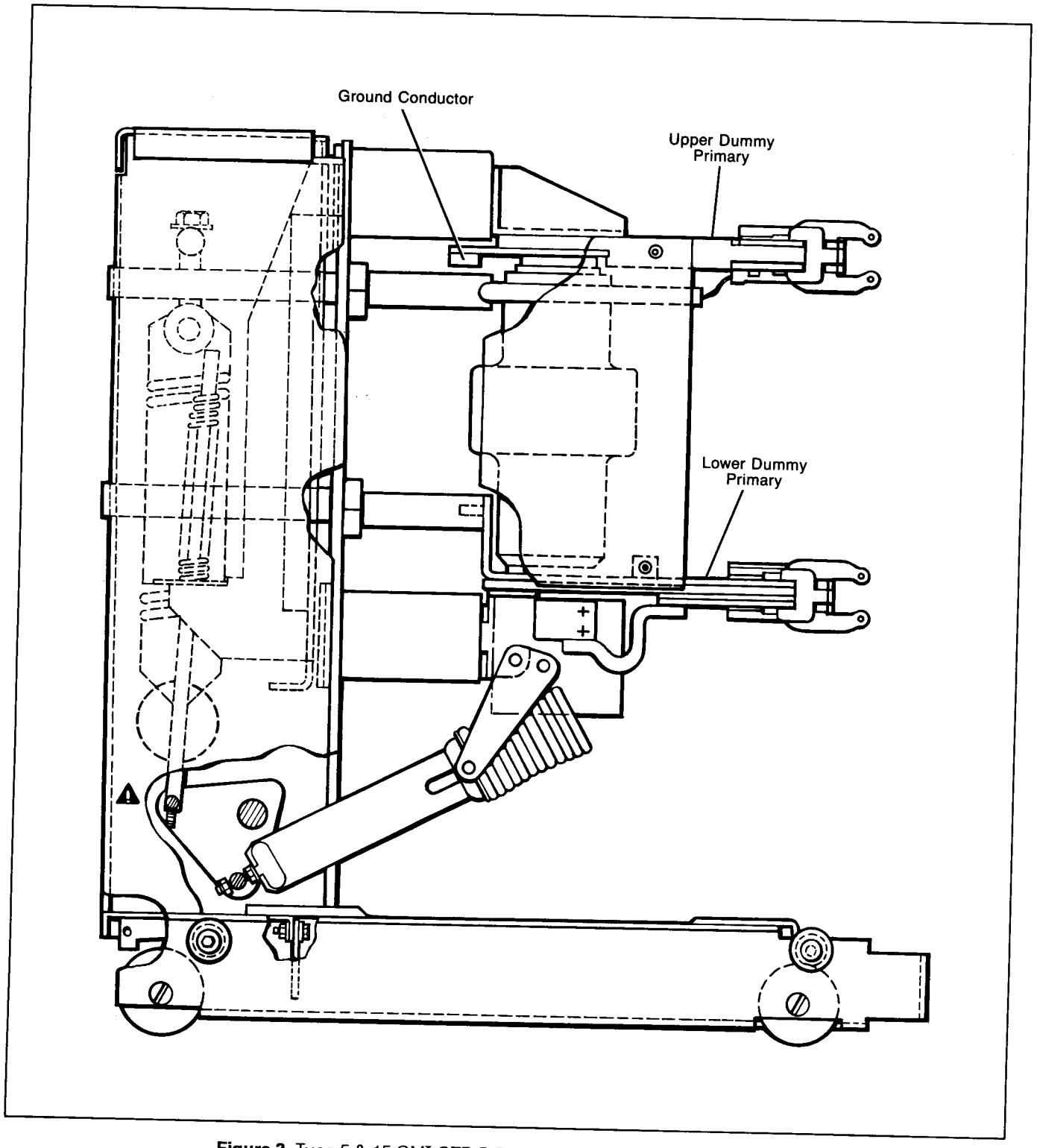


Figure 3. Type 5 & 15 GMI-GTD B Device for Lower Cell Use (continued)

Interlocks

⚠WARNING

Inoperative or by-passed interlocks can cause death, serious personal injury and property damage.

Mechanical and electrical interlocks are provided as integral components of this equipment to ensure safe use. Interlocks must be in operation at all times.

Read this instruction manual. Know and understand correct interlock function.

Check interlock function prior to inserting breaker into switchgear cubicle.

Elementary diagrams of the primary circuit are provided on the front panel of each device. These diagrams provide a quick reference to the devices arrangement, and should be studied prior to each use to confirm the device chosen conforms to the user's intent.

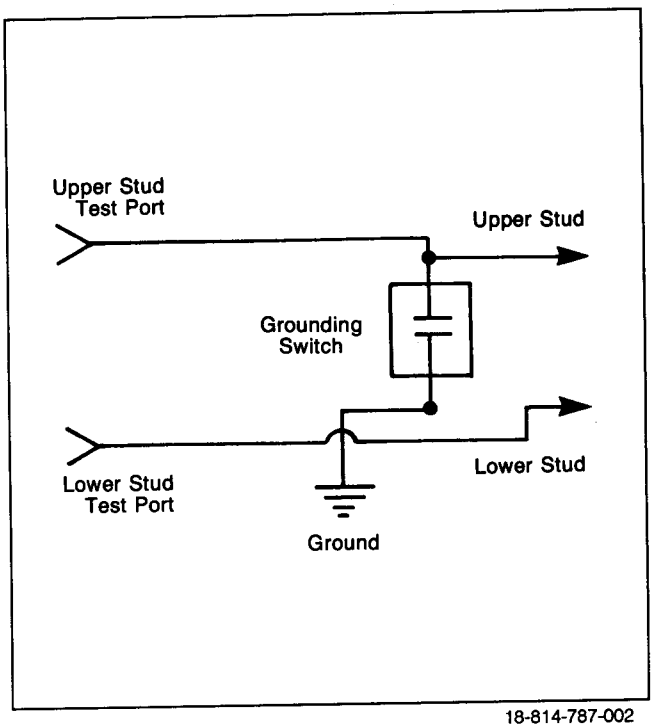


Figure 4. Elementary Diagram for Upper Cell Device

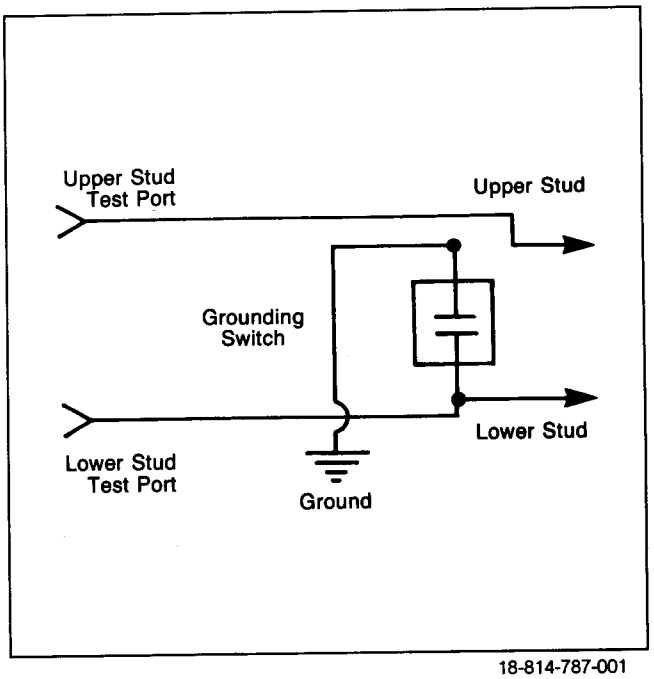


Figure 5. Elementary Diagram for Lower Cell Device

"Key Interlocks"

Test Port Key Interlock

- Locks test port closed in preparation for a grounding operation.
- Key works in the "Key transfer interlock."

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The test port key interlock must be operated as the first step in preparing the device for a grounding operation.

This interlock functions to lock closed those test ports associated with primary conductors which **are not** to be grounded, and assures that voltage tests prior to grounding are made only at the primary conductors which are to be grounded. Thus, preventing accidental grounding of a live circuit.

Key Transfer Interlock

- The key transfer interlock is not accessible when breaker is in the connect position
- The decision to "ground" must be made before racking to the "connect position."
- Accepts key from the test port interlock to allow removal of the key which works in the transfer switch interlock to enable the grounding procedure.

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The key transfer interlock is positioned on the device to compel the decision to ground or not to ground be made before the breaker achieves the connected position. When in the connected position or in transit from the test position, the key transfer interlock is not accessible.

With the breaker withdrawn or in the test position, the key transfer interlock is available to receive the key from one of the closed and locked "test port key interlocks." Upon inserting this key and rotating, the second key in the key transfer interlock becomes available. This second key functions in the transfer switch to allow selection and electrical closing (grounding) or opening function.

The transfer switch allows selection of "close," "off," and "trip" functions.

Transfer Switch

Off Position

- Control power disconnected
- Lockable in this position
- Key required from transfer interlock to operate.
- Trip latch is blocked.

Close Position

- Requires key from transfer interlock to attain position.
- Position allows execution of a remote "close" command.
- Trip latch is blocked.

Trip Position

- Requires key from transfer interlock to attain position.
- Position enables execution of a remote "opening command."

Mechanically, it blocks the breakers trip latch in the "close" and "off" positions.

Electrically while in the "off" position it removes the spring charge, close and trip functions from the control circuit. In the "close" position it enables those portions of the circuit which support spring charging and closing (spring release). In the "trip" position only the tripping circuit is enabled.

The second key from the "key transfer interlock," when applied in the transfer switch interlock will free the switch for use. The switch is locked by the key in the "off" position, and may be padlocked in this position as well.

Electrical operation is performed at a remote pushbutton station at the end of a 30 foot cable. This cable should be extended to its full length off to the side of the cell before grounding operations are attempted. All observers should stand with the pushbutton operator, and not in front of the cell being grounded.

Frame Interlocks

Frame interlocks re provided to ensure test devices may only enter cells for which they have been properly prepared.

Figures 6 and **7** show the appropriate interlock interference block positions. Interference block positions are viewed from the front panel side of the GTD.

Frame Interlocks

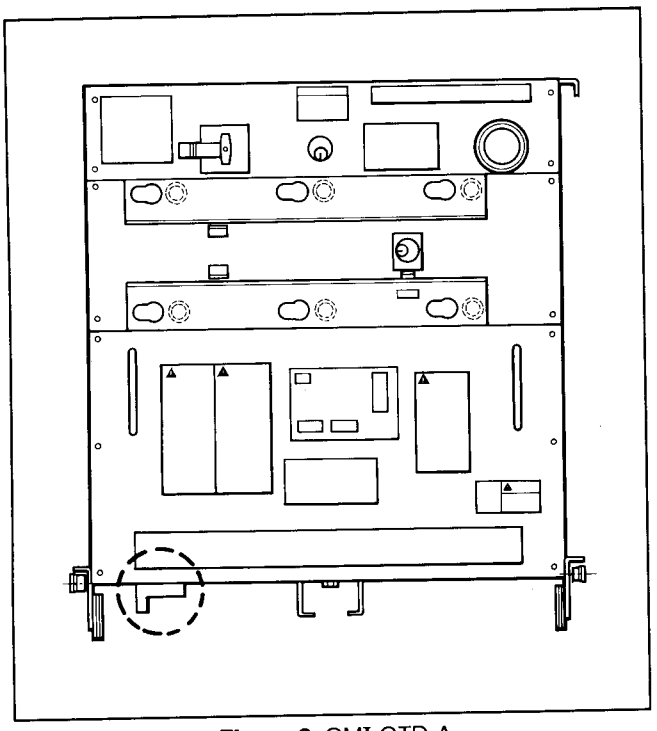

Figure 6. GMI-GTD-A
Upper Compartment Frame Interlocks

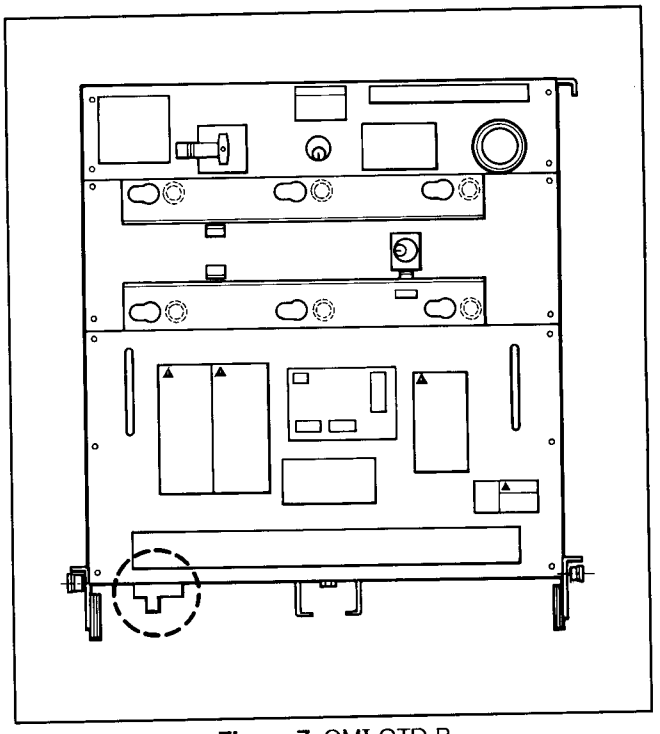

Figure 7. GMI-GTD-B
Lower Compartment Frame Interlocks

Ground and Test Operating Instructions

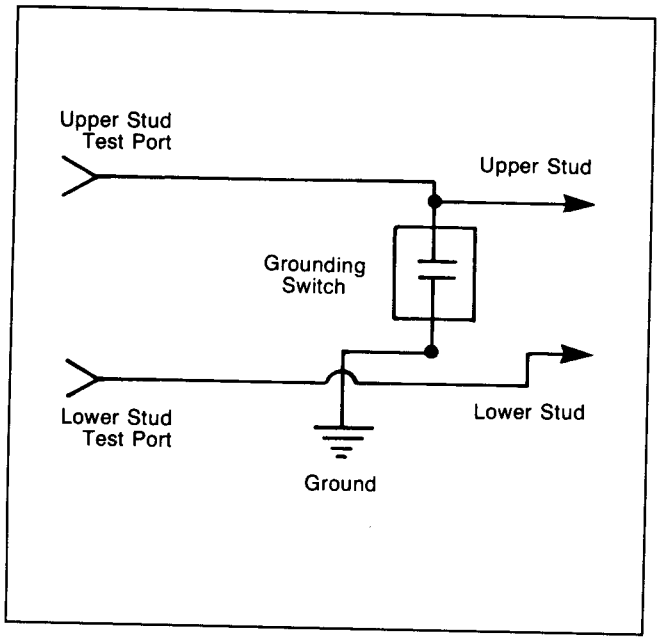

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Figure 8. Elementary Diagram for Upper Cell Device

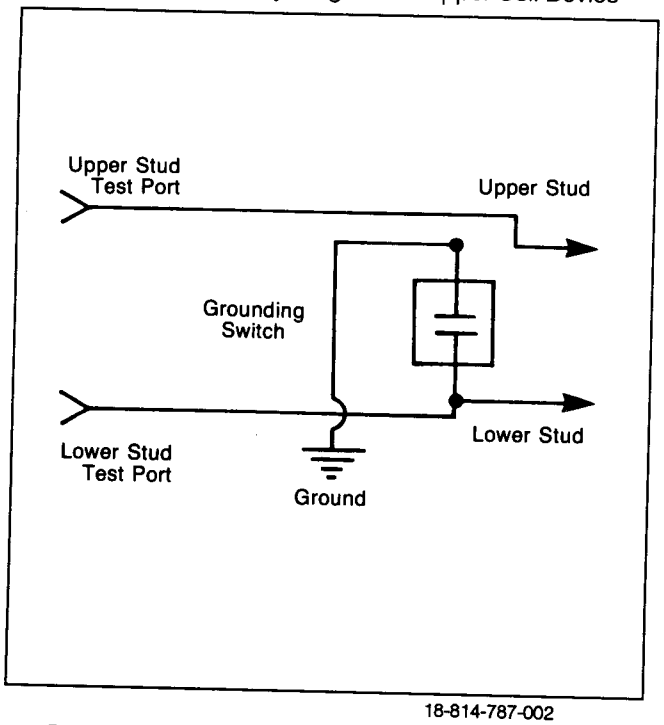

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Figure 9. Elementary Diagram for Lower Cell Device

⚠ DANGER

The Siemens Ground and Test Device provides user access to the primary terminals of the switchgear equipment. These terminals are energized at system voltages and capable of maximum system fault currents. No attempt to operate this ground device should be undertaken without fully reading the instruction manual and operating the ground and test device outside the switchgear unit. Operators must be familiar with the equipment, its operation, and have read these instructions prior to each use. Failure to do so may result in electrical shock or burn causing death or serious personal injury and property damage.

Use of the Siemens ground and test device must be restricted to qualified personnel. A qualified person is one who is familiar with the installation, construction or operation of the equipment and the hazards involved. In addition, this qualified person has the following qualifications.

- Is trained and authorized to de-energize, clear, ground, and tag circuits and equipment in accordance with established safety practices.
- Is trained in the proper care and use of protective equipment such as rubber gloves, hard hat, safety glasses or face shields, flash clothing, etc. in accordance with established safety practices.
- Is trained in rendering first aid.

The instructions which follow have been written to enhance operator understanding of this equipment and suggest a sequence of operation. The content of these instructions include:

1. Operational check out of the ground and test device.
2. System test procedures.

1. Operational Check of the GTD

1.1 These procedures are recommended as a **prerequisite to each use of the GTD**, to insure the GTD is in acceptable operating condition and to familiarize

the user with the equipment. These operational checks should be performed with GTD withdrawn completely from the cubicle in an area of sufficient size to facilitate the GTD's inspection from any direction. Reference to the GTD elementary diagram, **Figure 5** for upper cell devices and **Figure 6** for lower cell devices will facilitate understanding.

1.2 The following should be available:

- Ground and Test Device (GTD). Appropriate for upper or lower cell use.
- Remote close and trip push button control consisting of two (normally open) pushbuttons and 30 feet of control cable terminated with plug.
- Suitable voltage source to charge and close operator. Voltage must match operator rating plate located on the right hand side of the operator frame.

NOTE
Test devices restricted to upper compartment use must have copper (conductive) primary conductors in the upper position, and have a key interlock on the lower test port aperture slide.

NOTE
Test devices restricted to lower compartment use must have copper (conductive) primary conductors in the lower position, and have a key interlock on the upper test port aperture slide.

Confirm the correct test device has been chosen for use. Affirm position of the conductive primary and the location of the lockable test aperture slide.

Check that the front mounted label agrees with your observations, and directs use only in your choice of upper or lower compartment.

1.3 Interlock Function

Key interlocks are provided to enable and control grounding procedures.

For the purpose of this test procedure we shall define the as found (initial condition) of the interlocks as:

- The "test port key interlock" shall have its key inserted and bolt withdrawn.
- One key will be present and held in the "key transfer interlock"
- The transfer switch key interlock will have no key, and the transfer switch shall be found locked in the "Off" position.

1.4 Key Interlock Checks

These interlocks enable and control grounding operation.

- Close test aperture slides. Without turning the key in the "Test Port Key Interlock," attempt to withdraw the key. The key shall not be withdrawable with the interlock bolt withdrawn and aperture slide free.

1.5 Electrical Operation

- Turn the key in the "Test Port Key Interlock," The interlock bolt will become extended, locking the aperture slide in the closed position. The key shall be withdrawable. Confirm that the key works only in the "Key Transfer Interlock."
- Insert the key in the "Key Transfer Interlock." but do not turn it. Try to remove the second key in the transfer interlock. It shall not be removable. Turn the first key and try to remove the second key. The second key shall be removable, and must fit and work only in the interlock associated with the transfer switch.
- Confirm by electric continuity checks that each of the test wells which can be uncovered are connected only to their respective copper primary extensions.
- Insert the second key from the "Key Transfer Interlock" into the interlock associated with the transfer switch. Upon insertion and rotation, the control switch shall be free and rotatable among its three positions: Close, Off and Trip.
- The switch may be locked by key or padlock only in the "Off" position. Confirm that this is true. Padlock provisions must be well aligned in the "Off" position.

Refer to wiring diagram 18-746-350-498.

Install remote control cable and pushbutton station, 18-733-500-585. The cable plug mates with a receptacle (upper right) on the control panel of the device.

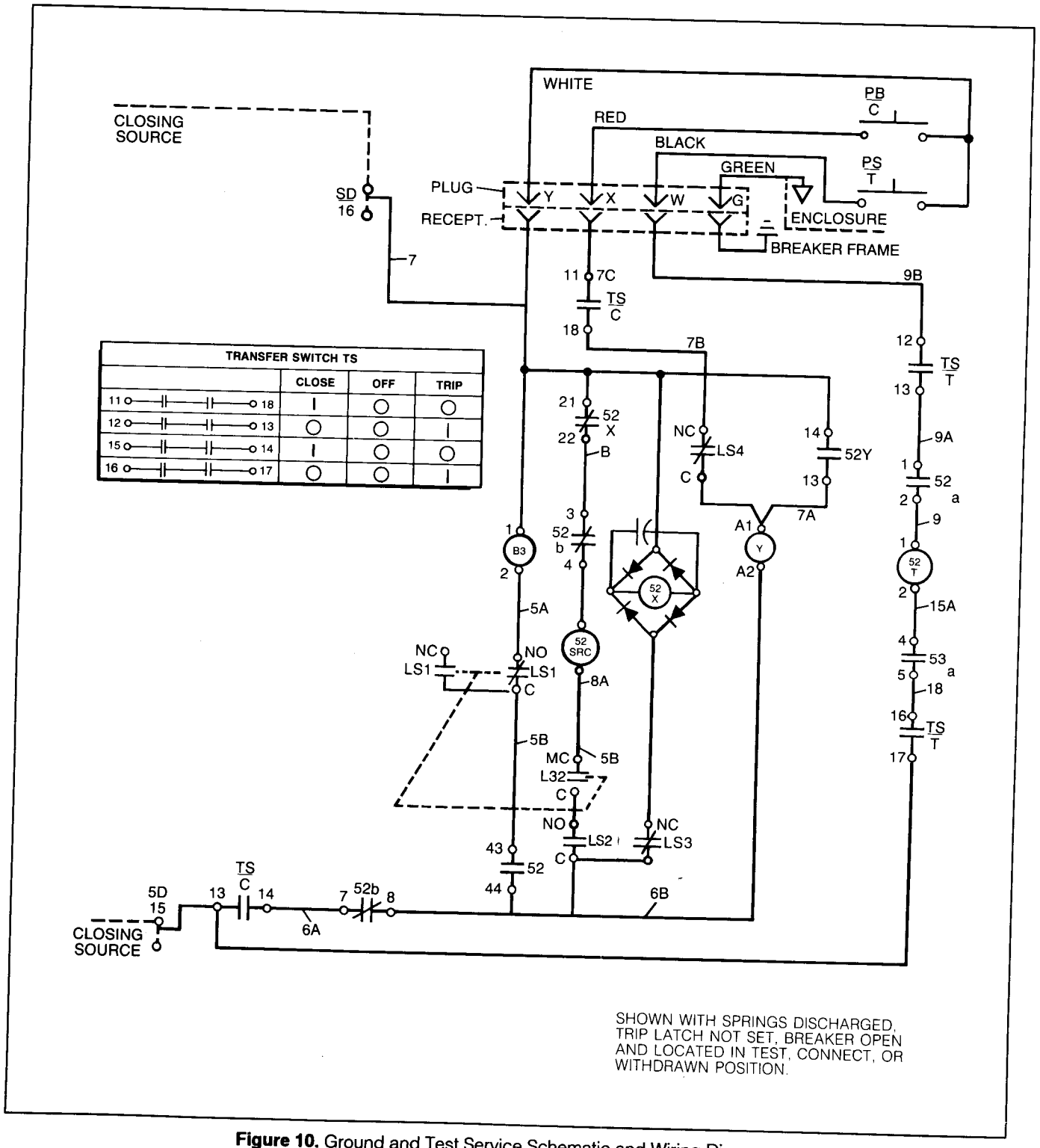


Figure 10. Ground and Test Service Schematic and Wiring Diagram

Refer to the operator control voltage information on the rating plate and provide required control voltage. Control power may be applied by use of the "Plug Jumper" accessory which affords an extension of compartment secondary control connections directly to the test device. Note closing electrical operation is enabled through the transfer switch. The key interlock sequence described above must be completed to make available the key needed to unlock the transfer switch.

Unlock the transfer switch and select a closing operation. Using the pushbutton station, depress the close pushbutton. The test device will begin charging its closing springs. Upon reaching a full charge the test device will automatically close. Confirm the panel indicator signals closed.

This sequence is allowed by circuit as follows:

a) Transfer Switch to Close

- Switch contact TS/C 11-18 and TS/C 14-15 Close.

b) Close Pushbutton Depressed:

- Applies voltage to spring charging motor (88) circuit with voltage temporarily blocked across an open 52y contact.
- Applies voltage across 52y relay causing pickup. 52y contact 13-14 closes to seal in the 52y relay. 52y contact 43-44 closes to energize spring charging motor.
- Upon reaching full spring charge, limit switch contacts LS21 opens to de-energize the motor. Limit LS2 closes energizing the spring release solenoid 52SRC.
- Coincident with achieving full spring charge, the trip latch resets and switch L53 closes in the 52SRC circuit and opens in the 52X circuit. The drop out of 52X is delayed by capacitor charge thus, closure of 52X contact in the 52SRC circuit delays spring release.
- The device then automatically closes, opening the 52b contacts driven by the major bell crank of the device. The 52b contact opens the spring release coil circuit, and 52b contact 7-8 opens the spring charging motor circuit. All spring charging and spring release circuits are open. As the breaker closed contact 52b opens causing the 52y relay to "drop out." Contacts 52a 1-2 and 52a 5-6 close in the tripping circuit, completing the closing sequence.

The transfer switch may now be returned to the "Off" position and padlocked or locked by key if desired.

An opening operation requires that the transfer switch be moved to the "Open" or "Trip" position. In this position, depress the "Open" or "Trip" pushbutton and observe the device opens. Confirm that the panel indicator signals "open."

This sequence is allowed by the circuit as follows:

a) Transfer Switch to Trip:

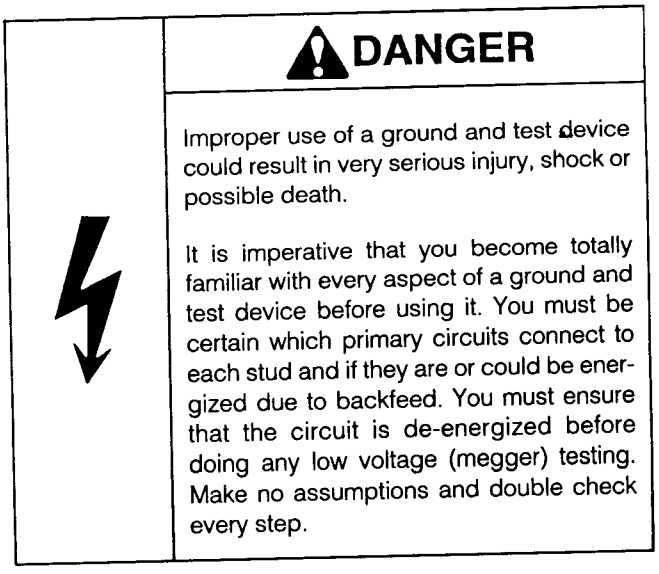
- Switch contacts TS/T 12-13 and TS/T 16-17 close in the trip coil circuit.
- Contacts 52a 1-2 and 52a 5-6 are closed as a consequence of the device being in the closed position.

b) Depressing the "Open" (Trip) pushbutton energizes the "tripping" solenoid 52T, releasing the major bell crank of the device.

1.6 Frame Interlock

Refer to the "Frame Interlock" description, page 9, and confirm the appropriate interference blocks are mounted in the positions required to prepare the test device for insertion into the chosen compartment

2. System Test Procedures.



2.1 Live Terminal Detection, line to line and line to ground measurements.

2.1.1 Complete operational check out and familiarization routine, Section 1.0 of these operating instructions.

2.1.2 Verify that the test devices frame interlocks reset correctly.

2.1.3 Affirm that the correct test device has been chosen for upper or lower compartment use. Note rules of identification Article 1.2 page 11.

2.1.4 Check to make certain each test port slide may be opened, and that the transfer switch is locked in the "Off" position.

2.1.5 Insert and rack the test device to the connect position. Refer to pages 35 through 37 of the type "GM Metal-Clad Switchgear Instruction Manual," SG.3258.

⚠ DANGER

Check the following. Failure to do so may result in electrical shock or burn causing death or serious personal injury and property damage.

1. Voltage measuring probe adequately rated?
2. Probe functional and in calibration?
3. Certified rubber gloves in use?
4. Rubber blanket in place to stand on while taking measurements?
5. Sufficient probe or hot stick extension in use? Must equal or exceed length recommended by National Safety rules, OSHA.
6. A step stool or elevated platform to facilitate testing upper unit.

2.1.6 Complete voltage measurements, sliding aperture guards aside to expose the test wells. Cover the test wells with the aperture guard immediately after completing measurements.

2.1.7 Remove test device from the compartment observing procedures noted in the "GM Metal-Clad Switchgear Instruction Manual," SG-3258.

2.2 Grounding Procedures

⚠ DANGER

Improper use of a ground and test device could result in very serious injury, shock or possible death.

It is imperative that you become totally familiar with every aspect of a ground and test device before using it. You must be certain which primary circuits connect to each stud and if they are or could be energized due to backfeed. You must insure that the circuit is de-energized before doing any low voltage (megger) testing. Make no assumptions and double check every step.

Prior to grounding, the primary circuit must first be de-energized. Check the single line or three line diagram for the equipment to determine if remote circuit breakers must be opened prior to grounding.

2.2.1 Complete the operational checkout and familiarization routine, Section 1 of these operating instructions.

2.2.2 Verify that the test devices frame interlocks are set correctly.

2.2.3 Check and affirm that the correct test device has been chosen for upper or lower compartment use. Note rules of identification Article 1.2 page 11.

2.2.4 After ensuring the appropriate test device for upper or lower compartment has been selected, proceed to set the key interlocks.

2.2.4.1 Lock the test port guard and remove the key.

2.2.4.2 Insert the key into the "Key Transfer Interlock," turn and free the second key found in this interlock.

2.2.4.3 The key removed from the "Key Transfer Interlock" may then be applied at the "Transfer Switch" to unlock the switch.

2.2.5 Insert and rack the test device to the connect position. Refer to pages 35 through 37 of the type "GM Metal-Clad Switchgear Instruction Manual," SG-3258.

2.2.6 Determine if the poles to be grounded are de-energized. Slide aperture guard aside to expose the test wells. Complete the voltage measurement and withdraw the probe, complete this test on each of the three phases. Cover the test wells immediately after completing the measurements.

⚠ DANGER

If voltages are found on the bushings, grounding procedures cannot be performed. If energized bushings are grounded, severe electrical system disturbances will result.

2.2.7 Remove all materials and safety equipment from the area in front of the compartment to be tested.

2.2.8 Attach (plug in) "Close-Open" pushbutton station and control cable.

⚠ CAUTION

Layout out control cable to its full extension off to the side of the test device. Do not stand in front of the test device while operating the grounding system, and check to make sure no one else is in front of the device.

2.2.9 Check and apply if required compartment control power. Select the "Close" function to the transfer switch.

2.2.10 Proceed to the "Close" pushbutton (operator should be 20-30 feet to the side of the test device). Depress the "Close" pushbutton. The test device will charge the closing springs and immediately upon completing the charge, close the selected primary circuit and network. Observe the panel mounted, indicator should signal a red field with the word "Close."

2.2.11 Return the transfer switch to the "off" position. It may be padlocked in this position to prevent unauthorized removal of the grounded condition.

The pushbutton station and control cable may be unplugged, coiled and stored.

2.2.12 When it is desired to remove the ground. Recover the pushbutton station and control cable. Plug into the test devices panel and lay out to the side.

2.2.13 Remove the padlock, if present, at the transfer switch. Select the "Open" or "Trip" position at the transfer switch. Check that the compartment control power is connected.

⚠ CAUTION

Layout "pushbutton station" and control cable to its full extension off to the side of the test device. Do not stand in front of the test device while operating the grounding system, and check to make sure no one else is in front of the test device.

2.2.14 Proceed to the far end of the pushbutton station and control cable. Depress the "Open" pushbutton. The test device will open.

2.2.15 Observe indicator on the test devices front panel, indicator should signal a green field with the word "Open."

2.2.16 Remove test device from the compartment observing procedures noted in the "GM Metal-Clad Switchgear Instruction Manual," SG-3258.

2.3 Load Side Feeder Meggering Procedure.

⚠ DANGER

Improper use of a ground and test device could result in very serious injury, shock or possible death.

It is imperative that you become totally familiar with every aspect of a ground and test device before using it. You must be certain which primary circuits connect to each stud and if they are or could be energized before doing any low voltage (megger) testing. Make no assumptions and double check every step.

2.3.1 Complete the operational checkout and familiarization routine described in Section 1 of these operating instructions.

2.3.2 Verify that the test devices frame interlocks are set correctly.

2.3.3. Check and affirm that the correct test device has been chosen for upper or lower compartment use. Note rules of Identification Article 1.2 page 11.

2.3.4 After ensuring the appropriate test device for upper or lower compartment has been selected, proceed to set the key interlock.

2.3.5 Lock the test port guard closed by turning and removing the key from the test port key interlock. Put the key into the key transfer interlock for safe storage.

2.3.6 Insert and rack the test device to the connected position. Refer to pages 35 through 37 of the type "GM Metal-Clad Switchgear Manual," SG-3258.

⚠ DANGER

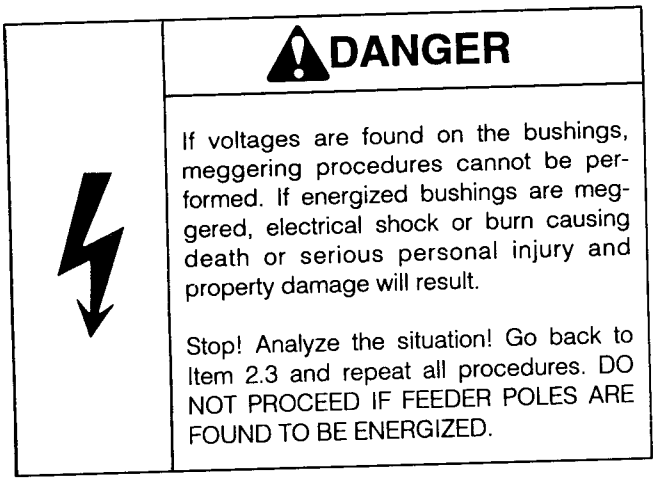
Before proceeding with "megger" routine, the following tests must be performed to insure the circuits are not energized. Failure to do so may result in electrical shock or burn causing death or serious personal injury and property damage.

⚠ DANGER

Check the following. Failure to do so may result in electrical shock or burn causing death or serious personal injury and property damage.

1. Voltage measuring probe adequately rated?
2. Probe functional and in calibration?
3. Certified rubber gloves in use?
4. Rubber blanket in place to stand on while taking measurements?
5. Sufficient probe or hot stick extension in use? Must equal or exceed length recommended by National Safety Rules, OSHA.
6. A step stool or elevated platform to facilitate testing upper unit.

2.3.7 Slide test port guard aside exposing the three feeder test wells. Using an appropriate voltage detector or measuring probe which has been proven functional and in calibration check each test well to ensure the feeder circuit is de-energized. Perform this test with care to ensure absolutely that each feeder pole is de-energized.



⚠DANGER

If voltages are found on the bushings, meggering procedures cannot be performed. If energized bushings are meggered, electrical shock or burn causing death or serious personal injury and property damage will result.

Stop! Analyze the situation! Go back to Item 2.3 and repeat all procedures. DO NOT PROCEED IF FEEDER POLES ARE FOUND TO BE ENERGIZED.

2.3.8 If procedures 2.3.1 through 2.3.7 indicate the feeder bushings are completely de-energized, the feeder bushings may be meggered.

2.3.9 After completing the "meggering" procedure, remove the test device from the compartment observing procedures noted in the "GM Metal-Clad Switchgear Instruction Manual," SG-3258.

SIEMENS

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SG-3268-GT 9/90

PRINTED IN U.S.A.