



Procedure: Install Remove and Maintain Ground Devices

Purpose

The purpose of this procedure is to provide clear instructions on how to install the “RU Grounded” ground device effectively in a variety of field conditions.

Application

- Applies to all field personnel installing the patented “RU Grounded” ground devices.

Roles & Accountabilities

Manager/Supervisors:

- Ensure field installers are properly trained and consistently follow installation procedures.
- Ensure that adequate Bonding and Grounding Plans are produced to minimize:
 - Step and Touch Potential Hazards
 - Static Electricity discharge and/or sparking due to Differential Voltages and account for:
 - the particular site characteristics (soil type, location of grounds, moisture content)
 - the presence of flammable fluids and vapors
 - equipment parameters (fault currents, isolated components, distance to grounds, bonding and grounding conductor sizes)
 - static electricity generation including fluid flow through pipes/hoses
 - voltage differentials on pieces of equipment

Field Workers

- Follow procedures for installation, removal and maintenance of ground devices and the related bonding and grounding system.

Equipment Certification



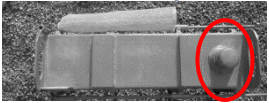
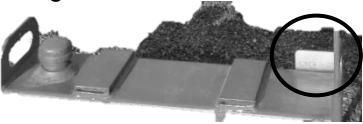
The Mundle Ground/Bond Device Conforms to UL STD UL467 and is Certified to CSA C22.2#41 and meets requirements in Alberta STANDATA, Electrical Information Bulletin 454 CEC-10, Rule 10-700.

Procedure

Tasks	Steps	Resources/Hazards
Install Grounding Device		
1. Prepare to Install Ground Device(s)	<ol style="list-style-type: none"> 1. Develop a Bonding and Grounding Plan to determine the appropriate number and location of ground devices. 2. Select an area within 3' of the portable generator, that avoids tripping hazards and provides ready access and egress to and from the generator controls. 3. Inspect the ground devices and use a wire brush to remove any corrosion from the spikes on the ground device(s) if necessary. 	<ul style="list-style-type: none"> 📄 Background: Bonding & Grounding Definitions 📄 Checklist: Bonding & Grounding Plan ⚠️ Understanding and applying an appropriate Bonding & Grounding Strategy is important to prevent shock hazards and sparking that could ignite flammable materials.


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Rev. No.1	Page 1 of 3	Reaffirmed Date:

Procedure: Install and Remove Ground Devices

Tasks	Steps	Resources/Hazards
<p>2. Install Grounding Device(s)</p>	<p>1. Dig a pit approximately 3' x 2' x 8" deep and loosen the soil.</p> <p>2. Thoroughly mix 5-10 gallons of water into the soil.</p> <p>3. Place RU Grounded Ground Bond device in center of mud pit and push down to nearly cover the top.</p>  <p>4. Install warning flag in holder.</p> 	<p>✓ The 7 ½" (19 cm) ground spikes are not considered "ground disturbance" therefore avoiding the need for underground line locating.</p> <p>✓ Water must be approved for placing on the ground.</p> <p>✓ Do not cover the access hole, which will be used to add water in the maintenance phase.</p> 
<p>3. Attach Bonding/ Grounding Cables</p>	<p>1. Select a grounding electrode conductor to connect the device based on the following:</p> <ul style="list-style-type: none"> • 2014 NEC Table 250.66 based upon the size or equivalent size of the largest phase conductor from the generator output to the line side of the main overcurrent device of the generator • Minimum size of #4 AWG stranded copper <p>2. Select appropriate style clamps to connect to ¼" flat bar on grounding device - only use connections or connectors listed and labeled for grounding and bonding.</p>  <p>3. Clamp bonding/grounding wires to grounding device, ensuring connectors are tight by torquing to their specifications.</p>	<p>✓ All connections should be made to bare metal, free of corrosion or paint to ensure low resistance.</p>

Document No. 105	Mundle Anchors & Recycling Bins Ltd.	Approved By: Terry Mundle
Doc. Type: Procedure	Page 2 of 3	Approval Date: July 3, 2018
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Tasks	Steps	Resources/Hazards
Maintain Installed Grounding Device – minimum every 8 days		
1. Check Connections	1. Ensure connections to grounding device are in place and torqued to manufacturers specifications.	
2. Maintain Soil Moisture	1. Pour a minimum of five (5) gallons of water into 2” port on top of the device. 2. Add additional water as necessary throughout operation overall effectiveness of the device.to keep the ground under and around the device moist.	<ul style="list-style-type: none"> ✓ Water must be approved for putting on ground. ✓ Ensure soil around the device is accepting water and it does not run off away from the device. ✓ Moisture is key to a low earth resistivity and overall effectiveness of the device.
Remove Grounding Device		
1. Remove Device	1. De-energize generator and remove phase conductors from load(s). 2. Using a shovel, pry bar or similar tool, carefully pry up device from each end, until the device can be easily picked and removed.	<p>⚠ Use proper lifting to minimizes risk of muscle strains.</p> 
Perform Device Maintenance		
1. Clean and Inspect	1. Clean device with clear water. 2. Inspect for damage – broken legs, cracked welds, excessive rust or other damage. 3. If damage noted, contact manufacturer for guidelines for repair or replacement. 4. If no damage noted, store in protected area for next use.	

References

Reference Type	Doc. No.	Document Type/Name
Background Documents:	101	Background: Bonding & Grounding
	102	Checklist: Bonding & Grounding Plan
	103	Background: Oilfield Grounding Practices
Training		Online Course: Bonding & Grounding for Oilfield Applications www.detalearning.com

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Doc. Type: Procedure		Approval Date: July 3, 2018
Rev. No.1	Page 3 of 3	Reaffirmed Date: