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Greenlee dm 20 instruction manual

8OperationElectric shock hazard:Contact with live circuits could result in severeinjury or death.1. Refer to the Settings Table. Set the selector to the proper setting.Start with the highest measurement range.2. Refer to "Typical Measurements" for specific measurementinstructions.3. Test the unit on a known functioning circuit or component. • If the unit does not function as expected on a known functioningcircuit, replace the battery and/or fuses. • If the unit still does not function as expected, send the unit toGreenlee for repair.



Safety Safety is essential in the use and maintenance of Greenlee tools and equipment. This instruction manual and any markings on the tool provide information for avoiding hazards and unsafe practices related to the use of this tool. Observe all of the safety information provided. Purpose of This Manual This instruction manual is intended to familiarize all personnel with the safe operation and maintenance procedures for the Greenlee DM-20 Digital Multimeter. Keep this manual available to all personnel. Replacement manuals are available upon request at no charge. All specifications are nominal and may change as design improvements occur. Greenlee Textron Inc. shall not be liable for damages resulting from misapplication or misuse of its products. © Registered: The color green for electrical test instruments is a registered trademark of Greenlee Textron Inc. KEEP THIS MANUAL 2 DM-20 Important Safety Information SAFETY ALERT SYMBOL This symbol is used to call your attention to hazards or unsafe practices which could result in an injury or property damage. The signal word, defined below, indicates the severity of the hazard. The message after the signal word provides information for preventing or avoiding the hazard. Immediate hazards which, if not avoided, WILL result in severe injury or death. Hazards which, if not avoided, COULD result in severe injury or death. Hazards or unsafe practices which, if not avoided, MAY result in injury or property damage. Read and understand this material before operating or servicing this equipment. Failure to understand how to safely operate this tool could result in an accident causing serious injury or death. 3 Important Safety Information Electric shock hazard: Contact with live circuits could result in severe injury or death. Electric shock and fire hazard: •Do not expose this unit to rain or moisture. •Do not use the unit if it is wet or damaged. •Inspect the test leads before use. They must be clean and dry, and the insulation must be in good condition. •Use this unit for the manufacturer's intended purpose only, as described in this manual. Any other use can impair the protection provided by the unit. Failure to observe these warnings could result in severe injury or death. Electric shock hazard: •Do not apply more than the rated voltage between any two input terminals, or between any input terminal and earth ground. •Do not contact the test lead tips. Failure to observe these warnings could result in severe injury or death. 4 DM-20 Important Safety Information Electric shock hazard: •Do not operate with the case open. •Before opening the case, remove the test leads from the circuit and shut off the unit. Failure to observe these warnings could result in severe injury or death. Electric shock hazard: The fuse is an integral part of the overvoltage protection. When fuse replacement is necessary, refer to "Specifications" for the correct type, size and capacity. Using any other type of fuse will void the overvoltage protection rating of the unit. Failure to observe this warning could result in severe injury or death. Electric shock hazard: •Unless measuring voltage or current, shut off and lock out power. Make sure that all capacitors are discharged. Voltage must not be present. •Using this unit near equipment that generates electromagnetic interference can result in unstable or inaccurate readings. Failure to observe these warnings could result in severe injury or death. 5 Important Safety Information Electric shock hazard: Do not change the measurement function while the test leads are connected to a component or circuit. Failure to observe this precaution may result in injury and can damage the unit. Electric shock hazard: •Do not attempt to repair this unit. It contains no user-serviceable parts. •Do not expose the unit to extremes in temperature or high humidity. Refer to "Specifications." Failure to observe these precautions may result in injury and can damage the unit. Set the selector and connect the test leads so that they correspond to the intended measurement. Incorrect settings or connections can result in a blown fuse. Note: The test leads of this unit are not removable. Do not attempt to remove them. 6 Identification 1.LCD display 2.Selector to select a function or turn power off 3.Permanently attached test leads and probes Display Icons 4.300 V AC or DC range selected 4 5. - Polarity indicator 5 6. Low battery indicator 6 7.1 Overload indicator 7 Symbols on the Unit Warning—Read the instruction manual Double insulation Battery 7 Operation Electric shock hazard: Contact with live circuits could result in severe injury or death. 1.Refer to the Settings Table. Set the selector to the proper setting. Start with the highest measurement range. 2.Refer to "Typical Measurements" for specific measurement instructions. 3.Test the unit on a known functioning circuit or component. •If the unit does not function as expected on a known functioning circuit, replace the battery and/or fuses. •If the unit still does not function as expected, send the unit to Greenlee for repair. Refer to the instructions under the Warranty. 4.Take the reading from the circuit or component to be tested. If the resolution is not satisfactory, remove the meter from the circuit and change to the next lower range. Settings Table To measure this value: Set the selector to this symbol: Continuity* Current (DC)** Diode Voltage (AC) Voltage (DC) Battery *Tone sounds if the measured resistance is less than approximately 25 Ω. **Connect the unit in series with the test object and then switch the test object on. 8 DM-20 Typical Measurements Voltage Measurement Current Measurement 9 Typical Measurements Resistance Measurement Continuity Check 10 DM-20 Typical Measurements Diode Measurement Reverse Bias Forward Bias Red Probe 11 Accuracy Refer to "Specifications" for operating conditions and temperature coefficient. Accuracy is specified as follows: ± (a percentage of the reading + a fixed amount) at 23 ° C ± 5 ° C (73. ° F ± 9 ° F), 0% to 80% relative humidity. DC Current Range Accuracy Burden Voltage 1999 A ± (2.5% + 4 A) 19.99 mA ± (2.5% + 0.04 mA) < 0.7 V 199.9 mA ± (2.5% + 0.4 mA) AC Voltage Frequency Input Range Accuracy Range Impedance 199.9 V ± (1.5% + 0.4 V) 45 to 400 Hz 0.5 MΩ 300 V ± (2.0% + 4 V) DC Voltage Range Accuracy Input Impedance 199.9 mV ± (1.2% + 0.2 mV) 1.999 V ± (1.2% + 0.002 V) 19.99 V ± (1.2% + 0.02 V) 1 MΩ 199.9 V ± (1.2% + 0.2 V) 300 V ± (1.5% + 2 V) Resistance Range Accuracy Typical Open Circuit Voltage 199.9 Ω ± (1.5% + 0.5 Ω) 3.2 VDC 1999 Ω ± (1.5% + 0.005 kΩ) 19.99 kΩ ± (1.5% + 0.05 kΩ) 199.9 kΩ ± (1.5% + 0.5 kΩ) > 0.3 VDC 1999 kΩ ± (2.0% + 0.004 MΩ) 12 DM-20 Accuracy (cont'd) Battery Test Test Current: Approximately 14 mA for 1.5 V, 8 mA for 9 V Accuracy: ± (5% + 0.1 V) Diode Test Open Circuit Voltage: 3.2 VDC (maximum) Test Current (Typical): 1.0 mA Continuity Tone indicates continuity. Threshold is approximately 30 Ω . Resolution: 1 Ω Open Circuit Voltage: 3.2 VDC (maximum) Specifications Display: 3-1/2-digit LCD (1999 maximum count) Polarity: Automatic Sampling Rate: 2.5 per second Temperature Coefficient: 0.1 x (accuracy) per ° C below 18° C or above 28 ° C Overload Protections: mA and Battery Test: 0.315 A/250 V F fuse, interrupting rating 1500 A, 5 mm x 20 mm All Other Functions: 300 VAC RMS and 300 VDC Measurement Category: Category II, 300 V Operating Conditions: 0 ° C to 40° C (32° F to 104 ° F), 0 to 80% relative humidity Altitude: 2000 m (6500') maximum Indoor use only Pollution Degree: 2 Storage Conditions: -10 ° C to 60° C (14° F to 140° F), 0 to 70% relative humidity Remove battery Battery: 9-Volt battery (NEDA 1604, JIS 006P or IEC 6F22) 13 Measurement Categories Category I Signal level. Electronic and telecommunication equipment, or parts thereof. Some examples include transient-protected electronic circuits inside photocopiers and modems. Measurement Category II Local level. Appliances, portable equipment, and the circuits they are plugged into. Some examples include light fixtures, televisions, and long branch circuits. Measurement Category III Distribution level. Permanently installed machines and the circuits they are hard-wired to. Some examples include conveyor systems and the main circuit breaker panels of a building's electrical system.



If theresolution is not satisfactory, remove the meter from the circuitand change to the next lower range.Settings TableTo measure this value:Set the selector to this symbol:Continuity*Current (DC)**DiodeResistanceΩVoltage (AC)Voltage (DC)Battery* Tone sounds if the measured resistance is less than approximately25 Ω.** Connect the unit in series with the test object and then switch thetest object on. 2014-12-11: Greenlee Greenlee-Dm-20-Instruction-Manual-120015 greenlee-dm-20-instruction-manual-120015 greenlee pdf Open the PDF directly: View PDF. Page Count: 48 Directly view this document at INSTRUCTION MANUAL MANUAL DE INSTRUCCIONES MANUEL D'INSTRUCTIONS DM-20 Digital Multimeter Multímetro digital Contrôleur numérique Read and understand all of the instructions and safety information in this manual before operating or servicing this tool. Lea y entienda todas las instrucciones y la información sobre seguridad que aparecen en este manual, antes de manejar esta herramienta o darle mantenimiento. Lire attentivement et bien comprendre toutes les instructions et les informations sur la sécurité de ce manuel avant d'utiliser ou de procéder à l'entretien de cet outil. 999 6758.8 © 2004 Greenlee Textron Inc. 12/04 Description The Greenlee DM-20 Digital Multimeter is a hand-held testing device with the following measurement capabilities: AC and DC voltage, DC current, and resistance. It also checks diodes, verifies continuity, and tests 1.5 V and 9 V batteries. Safety Safety is essential in the use and maintenance of Greenlee tools and equipment. This instruction manual and any markings on the tool provide information for avoiding hazards and unsafe practices related to the use of this tool. Observe all of the safety information provided. Purpose of This Manual This instruction manual is intended to familiarize all personnel with the safe operation and maintenance procedures for the Greenlee DM-20 Digital Multimeter. Keep this manual available to all personnel.



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•Do not expose the unit to extremes in temperature or high humidity. Refer to "Specifications." Failure to observe these precautions may result in injury and can damage the unit. Set the selector and connect the test leads so that they correspond to the intended measurement. Incorrect settings or connections can result in a blown fuse.

Note: The test leads of this unit are not removable. Do not attempt to remove them. 6 Identification 1.LCD display 2.Selector to select a function or turn power off 3.Permanently attached test leads and probes Display Icons 4.300 V AC or DC range selected 4 5. - Polarity indicator 5 6. Low battery indicator 6 7.1 Overload indicator 7 Symbols on the Unit Warning—Read the instruction manual Double insulation Battery 7 Operation Electric shock hazard: Contact with live circuits could result in severe injury or death. 1.Refer to the Settings Table. Set the selector to the proper setting. Start with the highest measurement range. 2.Refer to "Typical Measurements" for specific measurement instructions. 3.Test the unit on a known functioning circuit or component. •If the unit does not function as expected on a known functioning circuit, replace the battery and/or fuses. •If the unit still does not function as expected, send the unit to Greenlee for repair. Refer to the instructions under the Warranty. 4.Take the reading from the circuit or component to be tested. If the resolution is not satisfactory, remove the meter from the circuit and change to the next lower range.

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Voltage Range Accuracy Input Impedance 199.9 mV ± (1.2% + 0.2 mV) 1.999 V ± (1.2% + 0.002 V) 19.99 V ± (1.2% + 0.02 V) 1 MΩ 199.9 V ± (1.2% + 0.2 V) 300 V ± (1.5% + 2 V) Resistance Range Accuracy Typical Open Circuit Voltage 199.9 Ω ± (1.5% + 0.5 Ω) 3.2 VDC 1999 Ω ± (1.5% + 0.005 kΩ) 19.99 kΩ ± (1.5% + 0.05 kΩ) 199.9 kΩ ± (1.5% + 0.5 kΩ) > 0.3 VDC 1999 kΩ ± (2.0% + 0.004 MΩ) 12 DM-20 Accuracy (cont'd) Battery Test Test Current: Approximately 14 mA for 1.5 V, 8 mA for 9 V Accuracy: ± (5% + 0.1 V) Diode Test Open Circuit Voltage: 3.2 VDC (maximum) Test Current (Typical): 1.0 mA Continuity Tone indicates continuity. Threshold is approximately 30 Ω . Resolution: 1 Ω

Open Circuit Voltage: 3.2 VDC (maximum) Specifications Display: 3-1/2-digit LCD (1999 maximum count) Polarity: Automatic Sampling Rate: 2.5 per second Temperature Coefficient: 0.1 x (accuracy) per ° C below 18° C or above 28 ° C Overload Protections: mA and Battery Test: 0.315 A/250 V F fuse, interrupting rating 1500 A, 5 mm x 20 mm All Other Functions: 300 VAC RMS and 300 VDC Measurement Category: Category II, 300 V Operating Conditions: 0 ° C to 40° C (32° F to 104 ° F), 0 to 80% relative humidity Altitude: 2000 m (6500') maximum Indoor use only Pollution Degree: 2 Storage Conditions: -10 ° C to 60° C (14° F to 140° F), 0 to 70% relative humidity Remove battery Battery: 9-Volt battery (NEDA 1604, IIS 006P or IEC 6F22) 13 Measurement Categories These definitions were derived from the international safety standard for insulation coordination as it applies to measurement, control, and laboratory equipment. These measurement categories are explained in more detail by the International Electrotechnical Commission; refer to either of their publications: IEC 61010-1 or IEC 60664. Measurement Category I Signal level. Electronic and telecommunication equipment, or parts thereof.

Some examples include transient-protected electronic circuits inside photocopiers and modems. Measurement Category II Local level. Appliances, portable equipment, and the circuits they are plugged into. Some examples include light fixtures, televisions, and long branch circuits. Measurement Category III Distribution level. Permanently installed machines and the circuits they are hard-wired to. Some examples include conveyor systems and the main circuit breaker panels of a building's electrical system. Measurement Category IV Primary supply level. Overhead lines and other cable systems. Some examples include cables, meters, transformers, and other exterior equipment owned by the power utility. Statement of Conformity Greenlee Textron Inc. is certified in accordance with ISO 9000 (2000) for our Quality Management Systems. The instrument enclosed has been checked and/or calibrated using equipment that is traceable to the National Institute for Standards and Technology (NIST). 14 DM-20 Maintenance Electric shock hazard: •Do not attempt to repair this unit. It contains no user-serviceable parts. •Do not expose the unit to extremes in temperature or high humidity. Refer to "Specifications." Failure to observe these precautions may result in injury and can damage the unit. Battery and Fuse Replacement Electric shock hazard: •Do not operate with the case open.

•Before opening the case, remove the test leads from the circuit and shut off the unit. Failure to observe these warnings could result in severe injury or death. Electric shock hazard: The fuse is an integral part of the overvoltage protection. When fuse replacement is necessary, refer to "Specifications" for the correct type, size and capacity. Using any other type of fuse will void the overvoltage protection rating of the unit. Failure to observe this warning could result in severe injury or death. 1.Disconnect the unit from the circuit. Turn the unit OFF. 2.Remove the screws from the back cover. Remove the back cover. 3.Replace the battery (observe polarity) and/or fuse. 4.Replace the cover and screws. 15 DM-207Identification1. LCD display2. Selector to select a function or turnpower off3. Permanentlyattached testleads and probesDisplay Icons4.300 V AC or DC range5selected5.-Polarity indicator6.Low battery indicator7.1Overload indicatorSymbols on the UnitWarning—Read the instruction manualDouble insulationBattery1234567