

Limited One Year Warranty Satisfaction Guaranteed

#9102 HEAVY RANGER MUTT® Mobile Universal Trailer Tester

Innovative Products of America® Incorporated has established a Limited One Year Warranty Policy for the Heavy Ranger MUTT® #9102, not including any wearable parts, e.g., clips, etc.

One Year Limited Warranty/Return or Replace Policy: The product is covered for one year from the date of the original user's purchase under the stipulations of the Standard Warranty.

The product is warranted to be free from defects in workmanship or material. If there is a problem due to workmanship or material defect, Innovative Products of America® Incorporated will repair or replace the product within 24 working hours after it is received by the IPA® Repair Service Center. If it is determined that the product has been tampered with or altered in any way, the warranty is void and all claims against the product will not be honored. The Warranty repair/return procedures require that the proof of purchase must be established (either by warranty card from the seller or by point of purchase receipt/invoice) and the manufacturer makes every attempt to return ship the product, prepaid freight, within three business days from the receipt of the returned product.

If it has been determined that the tool has been damaged due to misuse, Innovative Products of America® Incorporated will repair the tool at a cost we deem reasonable and these charges will be the responsibility of the user. We truly want you to be happy with our products, so if you have any questions, call us toll-free at 888-786-7899.



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Mobile Universal Trailer Tester
#9102 HEAVY RANGER MUTT®

OPERATOR'S MANUAL



**Tests 7 Round Pin Connections.
Uses Internal 12 Volt Motorcycle Battery.**
(Battery Not Included)

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LETTER FROM THE PRESIDENT OF IPA®

My name is Peter Vinci and I am the president of IPA®. I would first like to thank you for your interest in IPA®'s product line and take this opportunity to share my commitment to you, our products and our policies. In today's world, we have all experienced lack of service and consideration demonstrated by many companies after buying their products. They say whatever they can to make the sale, and then it's like pulling teeth to get any service response out of them. I know this from first hand experience and because of this, I want to be sure that your experience with IPA® meets your expectations and our customer service never disappoints you.

To prove my commitment to you, if for any reason you are not happy with one of our products, or more importantly, with the response from our customer service or any member of the IPA® team, I invite you to contact me directly via my e-mail at peter@ipatools.com, or call me at 888-786-7899. Your satisfaction is more important to me than the sale itself. We would not be in business for long if we didn't make you completely happy with our products and service. I want IPA® to be different; to be known for its quality and service.

With that said, please take a look at our product line. You will see innovative, first time products that were created to help you do your job faster and better than before. I would also like to invite you to critique our products. If you can think of a better way to make them or changes that will make them better, then again, please contact me directly and I will be sure to look into it. If you have an innovation and would like some feedback, give me a call.

From all of us at IPA®, we thank you for taking the time to review our product line and wish you and your family the very best.



Peter Vinci
President

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TOWING MAINTENANCE KITS

#8026 4/5 Pin Towing Maintenance Kit



#7866 4/5 Pin Trailer Harness Checker



#8027 6 Round Pin Towing Maintenance Kit



#7897 6 Round Pin Tractor Trailer Circuit Tester



#8028 7 Flat (Spade) Pin Towing Maintenance Kit



#7893 7 Flat (Spade) Pin Trailer Circuit Tester



#8029 7 Round Pin Towing Maintenance Kit



#7865L 7 Round Pin Tractor Trailer Circuit Tester



#TSTPK1 Multi-Trailer Tester Jobber Pack



AVAILABLE ACCESSORIES

#8000 3-Way Trailer Adapter



#7900A-5A 7 Round Pin to 7 Flat Pin Adapter



MUTT® PRODUCTS

#9008-DL SUPER MUTT® Pro Edition:

12-Button Remote Control, (2) 3-Button Remote Controls, 5' 7-Way Cable, Chassis Ground Cable, External Battery Connector, 8' Glad Hands, 10A Battery Charger, Face/Battery Shield and Rain Cover



#9008-SE Super MUTT® Base Model: 3-Button Remote Control, 5' 7-Way Cable, Chassis Ground Cable, External Battery Connector, 8' Glad Hands

#9008-UPKIT (This Kit Updates the #9008-SE to the #9008-DL): 2 Extra Remotes, 10A Battery Charger, Face Shield, Rain Cover, Shoulder Screws

#9005A Super MUTT® Service Truck Edition (For 7 Round Pin with Remote)

Diagnostic Light, Air Brake and ABS Tester for Emergency Vehicles (7 Round Pin)



#9007A Smart MUTT® (For 7 Round Pin with Remote)

A Portable Unit for the Mobile and Commercial Trailer Repair Shops



#9004A Smart MUTT® (For 7 Spade Pin with Remote)

A Portable Unit for the Light-Duty Trailer Professional Service Shop (RV Style)



#9003A Mini MUTT® (For 7 Spade Pin)

Quickly Troubleshoot and Repair Light-Duty Trailer Lights (RV Style)



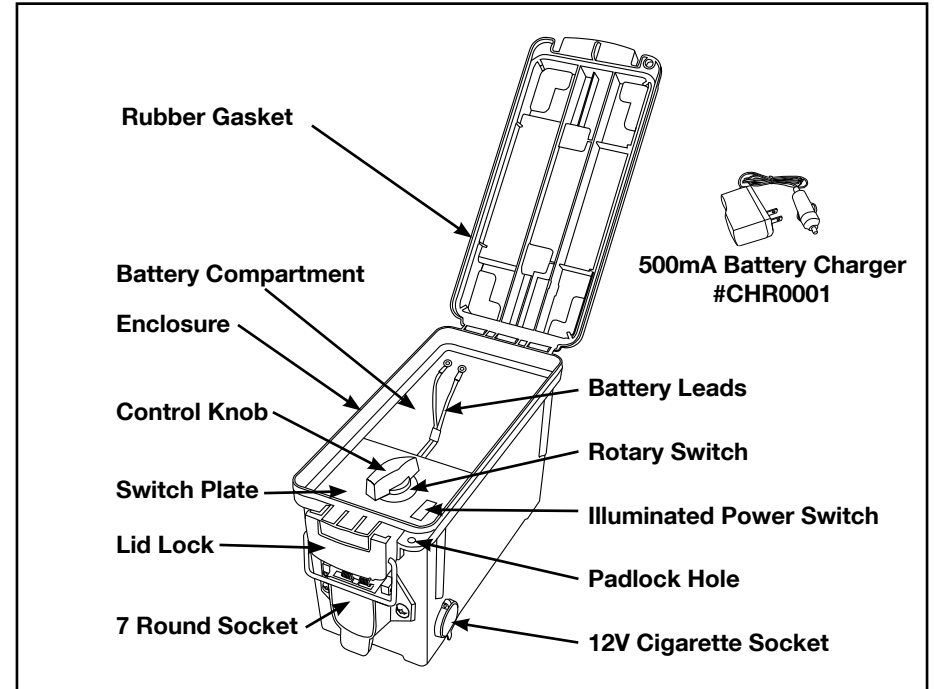
#9101 Light Ranger MUTT® (For 7 Spade, 6 Round, and 4/5 Flat Pin)

Utility and RV Type Trailer Tester For Lights and Electric Brakes



#9102 HEAVY RANGER MUTT® PARTS

Fig. 1 - Parts Diagram



USE THE REFERENCE NUMBERS PROVIDED WHEN ORDERING PRODUCTS AND PARTS ABOVE

Toll Free: 888-786-7899

IMPORTANT SAFETY INSTRUCTIONS

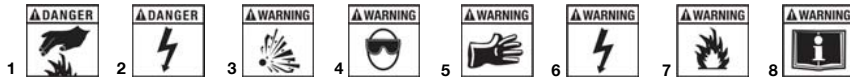
IT IS IMPORTANT TO READ, UNDERSTAND AND FOLLOW ALL SAFETY MESSAGES AND INSTRUCTIONS PRINTED IN THIS MANUAL AND ON THE EQUIPMENT BEFORE OPERATING. IF SAFETY INFORMATION IS NOT HEEDDED, SERIOUS INJURY OR DEATH TO THE OPERATOR OR BYSTANDERS MAY OCCUR.

DANGER: Indicates a hazardous situation that if not avoided, will result in death or serious injury. The possible hazards are shown in the adjoining symbols or explained in the text.

WARNING: Indicates a hazardous situation that if not avoided, could result in death or serious injury. The possible hazards are shown in the adjoining symbols or explained in the text.

CAUTION: Indicates a hazardous situation that if not avoided, may result in minor or major injury. The possible hazards are shown in the adjoining symbols or explained in the text.

THE FOLLOWING SAFETY ALERT SYMBOLS ARE USED IN THIS MANUAL.



SYMBOL 1: Potential burn hazard. Sparks from electrical shorts can ignite flammable liquids such as fuel or oil. Heat from electrical overloads can cause fire hazards.

SYMBOL 2: Potential electrical hazard. Batteries have enough electrical energy potential to ignite flammable liquids such as fuel or oil. Wire overloads can cause electrical failures. Shock hazard exists.

SYMBOL 3: Potential explosive air hazard. Pneumatic pressures used with this equipment can cause explosive failures on damaged equipment.

SYMBOL 4: Potential eye hazard. Wear OSHA approved safety glasses. Battery acid and high air pressures create hazardous situations for eyes.

SYMBOL 5: Potential chemical burn hazard. Wear protective gloves. Battery acid is corrosive and can cause skin damage.

SYMBOL 6: Potential electrical hazard. Electrical energy can cause heat and burn hazards.

SYMBOL 7: Potential fire hazard. Use caution with flammable liquids such as fuel and oil. Electrical shorts can ignite flammable liquids and wiring.

SYMBOL 8: Important information is stated.

BATTERY GASES, TESTER PREPARATION AND TESTER/CHARGER LOCATION

RISK OF EXPLOSION

- Gases produced by a battery are highly explosive.
- Wear safety goggles and protective clothing, both users and bystanders.
- Use in an area having at least four air changes per hour.
- Read, understand and follow all instructions for charger, battery, vehicle and any equipment used near battery and charger.
- Do not smoke, strike a match, place metal tools on the battery or cause a spark in the vicinity of the battery. When removing battery cables, remove the ground cable first.
- Clean terminals before charging battery. During cleaning, keep corrosive particles from eyes, nose and mouth. Use baking soda and water to neutralize acid and help eliminate airborne corrosion.
- Never allow the clamps on the charger cables to touch each other.
- Do not expose the tester or charger to rain, snow or wet conditions.
- Do not allow battery gases or acid to contact the Ranger MUTT® cabinet. Do not place the charger directly above or below the battery.
- Fill the battery to the level specified by battery manufacturer using distilled water.
- Do not remove cell caps while charging per manufacturer's instructions.



TROUBLESHOOTING

The Ranger MUTT® is an analog trailer tester designed to help confirm trailer wiring configuration, proper amperage draw, functioning lights, electric brake operation and proper ground connections. Keep in mind that many electrical problems are the direct result of a bad ground connection. By maintaining tight, clean and sealed ground connections, you can eliminate guesswork and improper diagnosis. We also provide the industry's standard wiring diagrams to help you with trailer repairs. The Ranger MUTT® is wired to meet the accepted standard wiring configurations for the industry. Trailers which are improperly wired or wired to "personal" specifications may render the Ranger MUTT® less effective.

PROBLEM	POSSIBLE CAUSE
Ranger MUTT® does not turn on.	Verify that the power switch is illuminated. Check battery connections and charge the battery if needed.
Ranger MUTT® is on, but trailer lights do not light up.	First verify that the Ranger MUTT® power stays on when power is applied to the trailer. A low battery will power the Ranger MUTT®, but when power is sent to the trailer, the load may cause the Ranger MUTT® to shut down. Check for faulty operating trailer lights, wiring, ground, battery polarity, etc. Ensure 7-way cable is all the way in on the trailer and tester. Ensure that pins are spread.
Wrong circuit is powered on trailer.	The trailer is not wired to standard specifications. If possible, rewire trailer connector to match the Ranger MUTT® diagrams.
One circuit powers two sets of lights.	The trailer has crossed wires, or one terminal has two wires connected at the pin.
The Illuminated Power Switch keeps turning off and on again.	Check battery connection and voltage. The Ranger MUTT®'s auto-resetting fuse trips in overload and short circuit conditions. The Ranger MUTT® is designed for a maximum output of 10 amps DC @ 12 volts. If a trailer circuit exceeds this draw or there is a short circuit, the Ranger MUTT®'s auto-resetting fuse breaker will continue to pulse with power until the issue is resolved.
The Auto-Resetting Fuse in my Ranger MUTT® keeps tripping.	Check the 7-way cable and selected circuit for a short. The tripping of the short circuit protection auto-resetting fuse is an indication of an extreme short circuit condition.

OPERATING INSTRUCTIONS

7-WAY ROUND PIN TESTING PROCEDURE

1. Install a fully charged 12V DC battery into your Ranger MUTT®.
2. Plug the trailer's 7-way round pin cable into the front of the Ranger MUTT®. Be sure to push firmly until the flap locks in behind it.
3. To begin testing your trailer, turn the power switch to the "On" position. The power switch will illuminate. Turn the control knob to the desired circuit.
4. The Ranger MUTT® will send up to 10A @ 12V DC to the selected circuit, e.g., turn signals, brake lights, etc. Perform a visual inspection by walking around the trailer to verify proper lights are illuminated.
5. Step 4 should be repeated for all lighting circuits.

WARNING: LEFT TURN AND RIGHT TURN SIGNALS FLASHING TOO QUICKLY OR TOO SLOWLY ARE AN INDICATION OF LOW BATTERY VOLTAGE. STOP AND CHARGE BATTERY IMMEDIATELY TO PREVENT DAMAGE TO TURN SIGNAL FLASHERS.

SHORT CIRCUIT AND OVERLOAD TESTING

SHORT CIRCUIT: When a positive power source (12V +) is directly connected to, or touching the negative terminal or ground connection, wire insulation can wear through due to vibration. Exposed copper wire can make contact with the metal trailer frame resulting in a short circuit and a blown fuse in the vehicle.

OVERLOAD: When the load (lights and/or electric brakes) attempts to draw more current (amps) than the circuit was designed to handle, it often results in blown fuses.

SUMMARY: The Ranger MUTT® is capable of providing up to 10 amps of current to a selected circuit. It is equipped with an internal, auto-resetting fuse, which is designed to remove power to the selected circuit when the load exceeds 10 amps in overload condition. Once power is removed, the circuit breaker requires a 30-second cool-down cycle until power can be reapplied. If the source of the excessive current draw, i.e., the overload condition, is still present, the circuit breaker will immediately remove power once again. This process will be repeated until the source of the excessive current draw is removed. Most trailers should not exceed 10 amps per circuit when wired properly. You should check the specified current draw for each light bulb or LED on the trailer circuit to determine whether it is an overload condition, short circuit condition or faulty equipment, e.g., electric brakes, lights, harnesses, etc.

NOTE: The auto-resetting fuse used in the Ranger MUTT® is thermally activated and requires a short cool-down time between uses. The more often it is tripped, the longer the required cool-down time before it will become active again.

- Make sure tester cable clamps make tight connections.
- Battery explosion can cause injury.

ACID BURNS

- Battery acid is highly corrosive sulfuric acid.
- Wear safety goggles, both user and bystanders.
- Wear safety gloves.
- Make sure someone can hear you or is close enough to provide aid when working near battery.
- Have plenty of fresh water and soap nearby. If battery acid contacts skin, clothing or eyes, flush the exposed area with soap and water for 10 minutes before seeking medical help.
- Do not touch eyes after handling battery.
- Battery acid can burn eyes and skin.



CHARGER WARNINGS

RISK OF ELECTRIC SHOCK AND FIRE

- Do not operate the charger with a damaged cord or plug. Replace the cord or plug immediately.
- Position the power cord and charger cables away from the hood, doors or hot and/or moving engine parts where they could be damaged.
- Unplug the power cord using the plug rather than the cord when disconnecting the charger from the outlet.
- Unplug the power cord from the outlet before cleaning or maintaining the tester and charger. Turning off the controls does not reduce this risk.
- Do not operate the charger after a sharp impact, drop or any other damage.
- Do not disassemble the charger.
- Use only recommended attachments.
- Do not charge a frozen battery. Do not overcharge a battery.
- Use the charger only for lead-acid automotive batteries. Do not use the charger for charging dry cell batteries.
- Electric shock or fire can cause injury.



RISK OF ENTANGLEMENT

- Keep yourself, any clothing and the battery charger leads clear of moving parts such as fan blades, pulleys, hood and doors.
- Moving parts can cause injury.

RISK OF BURNS

- Batteries can produce short circuit current high enough to weld jewelry such as rings, bracelets and watches. You must remove them before working near battery.
- Short circuits can cause injury.

SPECIFICATIONS

- Input: 12V DC Battery (Use Battery Compartment)
- Output: 10A @ 12V DC
- Overload Protection: Automatic Resetting (Internal) Breaker
- Connection Type: 7 Round Pin
- Control Type: Manual Rotary Switch
- Materials: ABS
- Weight: 2 lbs. (Without the Battery)
- Packaged Dimensions: 12.25"(L) x 5.25"(W) x 7.25"(H)

BATTERY REQUIREMENTS

- Battery Voltage: 12V DC
- Battery Protection: 10 Amp Auto-Resetting Fuse
- Maximum Output to Trailer: 10 Amps

AUTO-RESETTING FUSE

- The thermally activated, internal auto-resetting fuse requires a 30-second cool-down cycle. After this cycle, the illuminated power switch signifies that the unit is ready to test.

QUICK START-UP GUIDE

SELECT A BATTERY

- The best battery to use is the YUASA YTX14 (12 Ah) or similar motorcycle type battery with top mounted posts. (Sealed lead-acid batteries only.)
- The battery must be 12 volts DC.
- Maximum battery dimensions: 6"(L) x 4"(W) x 5.75"(H)
- Be sure to properly connect the +/- leads to the correct posts on the battery.
- Once the battery is installed, testing can begin.

TAKING CARE OF YOUR BATTERY

NOTE: Every day, a battery naturally loses its charge, little by little. Batteries are temperamental and can be damaged easily. Using a battery very little and then recharging it will short cycle the battery and hurt its overall life and output. Additionally, over-discharging it (exceeding 80% total discharge) and then undercharging will permanently damage the battery as well. It is not good to leave batteries in cold or hot weather. For every degree above or below room temperature (72° F), a battery loses amp hours. Also, it is not good to allow batteries to sit for weeks at a time without using or charging.

- To get the most life out of your battery, it is important to discharge about 30% to 50% of its total output, then provide a full recharge.
- A 500mA battery charger has been provided with your purchase. Be sure to disconnect the battery charger once it is fully charged. For any questions, please call 888-786-7899.

NOTE: DO NOT LEAVE THE CHARGER PLUGGED INTO A WALL OUTLET WHEN NOT IN USE.

WARNING: NEVER OPERATE TESTER WITH BATTERY VOLTAGE LESS THAN 11.5V. OPERATING ELECTRONIC DEVICES ON LOW VOLTAGE MAY SHORTEN LIFE OF DEVICE AND CAUSE DAMAGE TO INTERNAL COMPONENTS. IDEAL BATTERY VOLTAGE IS 12.0V DC TO 12.5V DC.

SET-UP

- Use the supplied battery charger or charger input no greater than 3 amps to fully charge the internal battery of the tester. It may take up to 12 hours to charge a fully drained battery.
- Place the tester on a flat, level surface.
- Chock trailer wheels to avoid rolling.

The Ranger MUTT® allows the testing of trailer electrical systems without the need for the tow vehicle. When used properly, the Ranger MUTT® can save hours spent troubleshooting electrical issues.

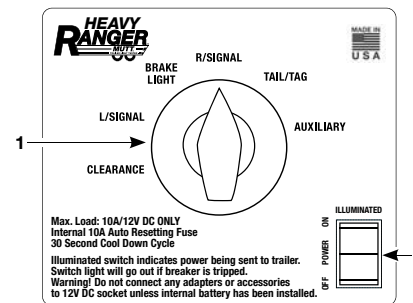
CHECK 7-WAY PIN CONNECTORS: Before operating the Ranger MUTT®, be sure the 7-way socket on the front of the Ranger MUTT® and cable coming from the trailer are in good condition and the pins are spread to the proper width to ensure good connections.

MAINTAIN 7-WAY PIN CONNECTORS: Dielectric grease should be used on all connections to avoid corrosion. If a bad connection exists at the terminal junction, you may get an erroneous reading and the MUTT® will not work properly. Make sure that you have a solid connection in the 7-way socket.

FUNCTIONAL DESCRIPTIONS

The Ranger MUTT® is a diagnostic tool for trailers wired to North American style 7-way round pin configurations.

Fig. 2 - Control and Information Panel



1. **Control Knob:** Activates one selected circuit at a time.
2. **Power Switch:** Illuminates when adequate power source is available and power switch is on.