MOBI-ARC™

USER GUIDE

Mobile Welding & Power, Inc.
11722 Sorrento Valley Road, Suite E
San Diego, CA 92121
(858) 720-1339 tel.
(858) 720-8556 fax
www.mobi-arc.com
info@mobi-arc.com

Manufactured in the United States of America
US Patent 6,667,600
Foreign Patents Pending

TABLE OF CONTENTS

INTRODUCTION

Congratulations on your purchase of the most technologically advanced alternator-actuated welder and battery charger available. We use the highest quality components and cutting-edge technology to ensure that your MOBI-ARC Control Unit will be reliable for years to come.

This sign (left) will indicate an item of special importance. Please read this manual in its entirety before undertaking installation.

MOBI-ARC is a multi-function platform that provides the following functions when connected to an alternator:

- Regulates the alternator during normal driving
- Provides a welding output equivalent to the amperage capability of the alternator to which it is connected
- By using optional Mode Select Modules, the unit will provide accurate voltage output at 100% of alternator's current capability (based upon RPM) for vehicle jump-starting and battery boost-charging applications

MOBI-ARC is designed to control *most* alternators. In most cases, no modifications are required. However, in some cases, small modifications may be needed. For instance, an alternator's electrical components may not work with the MOBI-ARC Control Unit and must be replaced. Alternators such as the Delco CS Series use avalanche diodes which are designed to break down at approximately 20 volts. Because the MOBI-ARC open circuit voltage is 42 volts, avalanche diodes would fail. In many cases, this issue can be overcome by replacing the alternator's diode plate with a rectifier which does not use avalanche diodes. . Changing to a different alternator may be the most cost-effective way of working around the avalanche diodes. In some cases, an internal regulator is present and must be disabled or removed. Consult your MOBI-ARC reseller or contact the manufacturer for more information.

Due to the number of different alternators in use, for installation manual purposes, the assumption is that the alternator connected to the MOBI-ARC Control Unit is "MOBI" ready. Please refer to the APPENDIX at the end of this manual for information specific to your alternator (as of printing). For current alternator information, please visit our website, contact your MOBI-ARC reseller, or contact the manufacturer.

A basic understanding of your alternator and auto-electrics is required for installation. We encourage those who don't have a healthy auto-electrical background to have MOBI-ARC professionally installed.

Installation instructions specific to your particular vehicle can be found in the APPENDIX at the end of this manual, on our website at **www.mobi-arc.com** or can be supplied by your MOBI-ARC reseller.

THIS PRODUCT CONTAINS ELECTRONICS AND HIGH-CURRENT CONNECTIONS. THE STRICTEST CARE MUST BE TAKEN WHEN CONNECTING AND TERMINATING WIRES. CONNECTIONS MUST BE CRIMPED AND SOLDERED IN ORDER FOR MOBI-ARC TO WORK AT PEAK PERFORMANCE. POOR CRIMPS AND HIGH-RESISTANCE CONNECTIONS WILL YIELD EXCESSIVE HEAT, DIMINISHED PERFORMANCE, AND POSSIBLY FAILURE.

UNITS INSTALLED IMPROPERLY ARE NOT COVERED UNDER THE MANUFACTURER'S WARRANTY

MOBI-ARC PACKING LIST

The following items make up the MOBI-ARC Kit:

1. MOBI-ARC Control Unit
2. Stainless Steel Mounting Bracket
3. #4 AWG Cable Assembly
4. 10-Pin Molex Wiring Harness Assembly
5. Ground Clamp
6. Electrode Holder
7. Welding Cable Connectors (2)
8. Secondary Throttle Assembly w/ hardware (if applicable)
9. Hardware Kit
10. Welding Receptacle Covers (2)
11. BYPASS Kit (Bypass Plug, insulation tape, bolt, instruction card)

#4 AWG welding cables are not included and can be purchased from your MOBI-ARC reseller, or from a local welding supply store, and may be cut to whatever length you require. If welding cables exceed 70 feet in length, drop to #2 AWG cable.

WHERE POSSIBLE, CABLES AND WIRES HAVE BEEN TERMINATED BY INDUSTRIAL COMPRESSION MACHINERY USING UL APPROVED METHODS. WE STRONGLY RECOMMEND NOT CUTTING AND SPLICING.
HIGH-CURRENT AND LOW-CURRENT CONNECTIONS MUST BE SOUND IN ORDER FOR MOBI-ARC TO RUN AT PEAK PERFORMANCE. WHERE THE INSTALLER TERMINATES CABLES AND WIRES, CRIMP AND SOLDER DILIGENTLY.

INSTALLATION TOOLS (not provided)

You or your installer will need the following tools:

1. Wire cutters / strippers
2. Crimping device
3. Solder and flux
4. Torch or high-heat soldering iron
5. 1/2” wrench or nut driver
6. Drill and assorted drill bits (for bracket installation)
7. Digital multi-meter (test light inadequate)
8. Phillips screwdriver
9. 5/32 hex driver

MOBI-ARC CONTROL UNIT INSTALLATION

The MOBI-ARC Control Unit is designed for engine compartment installations. It is engineered to withstand under-hood temperatures, vibration, dust, and moisture. Please keep the following points in mind when selecting a mounting location:

- Distance to the alternator (standard cable/wire assembly is six feet)
- Distance to the battery
- Easy access to both front and back of the MOBI-ARC
- Footprint doesn't conflict with other wires/cables/reservoirs etc…
- Adequate distance from high-heat sources like exhaust manifold

Once a mounting location has been selected, mount the U-Shaped Mounting Bracket using the provided self-piercing #10, ½" steel hex-head screws. U-Shaped Mounting Bracket can be used as a hanging bracket, or an under-unit support bracket.

Once the U-Shaped Mounting Bracket is securely mounted, mount the MOBI-ARC Control Unit in the bracket using the provided Rosette Thumb Screws (2) and nylon flat washers (optional) (4). Nylon flat washers are placed between the bracket and the MOBI-ARC Control Unit, two on each side. Most find it easier <u>not to use the nylon washers and they are not necessary.</u>

DO NOT OVERTIGHTEN PLASTIC THUMB SCREWS

DO NOT REPLACE PLASTIC THUMB SCREWS WITH LONGER SCREWS. LONGER SCREWS MAY GROUND INTERNAL COMPONENTS.

THE MANUFACTURER IS NOT RESPONSIBLE FOR DAMAGE CAUSE BY IMPROPER INSTALLATIONS

INSTALLATION INSTRUCTIONS

DISCONNECT POSITIVE TERMINAL ON BATTERY(S)

Your MOBI-ARC Kit is equipped with the following wiring/cabling harness:

The following requires a ½" wrench or nut driver and please refer to the wiring diagram:

1. Remove 5/16" nylon insert locking nuts and washers from their respective posts on the MOBI-ARC Control Unit.
2. BLACK #4 AWG cable(s) with right-angle lug(s) attach to "GROUND" post. Replace washer, nut, and tighten.
3. YELLOW #4 AWG cable(s) with right-angle lug(s) attach to "ALTERNATOR" post. Replace washer, nut, and tighten. Those with two YELLOW #4 AWG cables utilize both "ALTERNATOR" posts.
4. RED #4 AWG cable(s) with right-angle lug(s) attach to "BATTERY" post.

DO NOT OVERTIGHTEN NYLON INSERT LOCKING NUTS. IF MOUNTING STUDS SPIN, INTERNAL CONNECTIONS MAY BE BROKEN.

MAKE SURE RIGHT-ANGLE LUGS ARE PROPERLY INSULATED AND CANNOT SHORT ON EACH OTHER, OR THE MOBI-ARC CASING.

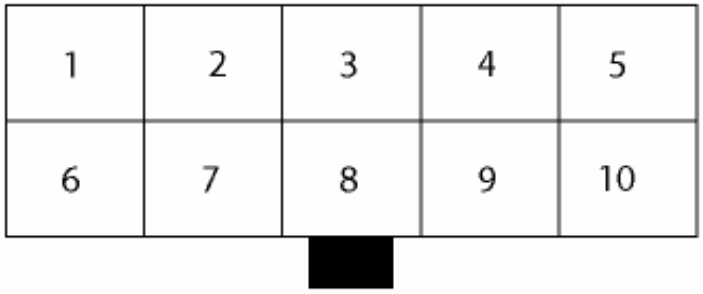
CONNECTIONS TO THE ALTERNATOR

REMOVE ORIGINAL ALTERNATOR OUTPUT CABLE. IT WILL NOT BE USED. INSULATE AND SECURE FROM ROTATING PARTS.

Please refer to the wiring diagram specific to your vehicle. The following is a general overview and *not all wires are used for every installation*:

1. Disconnect all wires and cables attached to the original alternator. Insulate and secure away from moving parts; they will not be used.
2. Original BATTERY OUTPUT CABLE will not be used. Insulate and secure out of the way of moving parts.
3. BLACK #4 AWG cable connects to ground, preferably alternator. (ex. ground sandwiched between the thru-bolt, alternator casing, or mounting bracket) If a solid alternator ground is in question, connect to the BATTERY NEGATIVE terminal on the battery. It is critical that the alternator is grounded properly.
4. YELLOW #4 AWG cable(s) connect to the large battery output post on the back of the alternator.
5. RED #4 AWG cable(s) connect to the BATTERY POSITIVE post on the vehicle's battery.
6. Refer to the diagram specific to your vehicle when connecting the wires from the 10-Pin Wiring Harness.

DO NOT REMOVE 10-Pin HARNESS WHILE VEHICLE IS RUNNING



(As viewed from the wire side of the connector)

1	Field +	BLUE	BL
2	Field +	BLUE	BL
3	Ground	BLACK	BK
4	Stator-In	ORANGE	OR
5	Excitation	GRAY	GY
6	Field -	GREEN	GN
7	Field -	GREEN	GN
8	Tachometer Out	WHITE	WH
9	Ignition Switched 12v	VIOLET	VI
10	Alternator Warning Light	BROWN	BR

SECONDARY THROTTLE INSTALLATION

A secondary throttle has been provided and may be used to adjust the vehicle RPM up or down. The faster the alternator spins, the greater the power output.

IMPROPER INSTALLATION OF A SECONDARY THROTTLE CAN BE VERY DANGEROUS AND SHOULD ONLY BE UNDERTAKEN BY A PROFESSIONAL.

SECONDARY THROTTLE CABLE SHOULD BE MOUNTED SO THE CONNECTION TO THE VEHICLE'S THROTTLE IS EASILY REMOVABLE DURING DAILY DRIVING.

SECONDARY THROTTLE MUST NOT INTERFERE WITH NORMAL VEHICLE OPERATION.

Refer to the complete wiring diagram and double-check that all connections are sound. Thoroughly check installation integrity keeping in mind that the Manufacturer's warranty does not cover damage caused by improper installations.

INSTALLATION IS COMPLETE

BEFORE YOU RECONNECT THE BATTERY AND FIRE EVERYTHING UP, CONTINUE TO POST INSTALLATION CHECKLIST…

POST INSTALLATION CHECK-LIST

Most failed installations occur when installers are careless, don't follow the instructions precisely, or try to run MOBI-ARC when due diligence has not been executed. Before the vehicle is fired up and welding is attempted, please follow this step-by-step procedure. Should any of these steps not respond as indicated, STOP, double-check your work, or contact your MOBI-ARC reseller or the manufacturer for assistance. It's easier to ask a quick question, than to repair a damaged product.

Check the Yellow, Red, and Black cables on the back of the MOBI-ARC. Be sure they are properly insulated, oriented, and cannot short. Once completed, reconnect the battery. Make sure there is no Mode Select Module Inserted.
With ignition off, use a digital multi-meter (not analog or a test light) and read voltage between the **ALTERNATOR POST** and the **GROUND POST** on the back of the MOBI-ARC Control unit. The reading should be between .4v and 1v less than battery voltage.

Battery Voltage _____volts

Alternator Voltage _____volts

Subtract the two readings _____volt

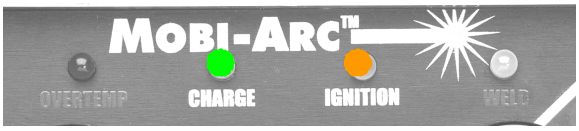
The difference should be between .4 and 1.0 volts. If it's not, STOP, you may have a configuration problem. Double-check your work and call for support.

Switch vehicle's ignition on. **DO NOT START THE VEHICLE.** The CHARGE and IGNITION lights should be illuminated. Feel the control unit, wires, cables, and alternator. If anything starts to get hot, then STOP and call for support. If the LED lights fail to illuminate, then stop and call for support.

Using your digital multi-meter, connect the test leads between the **GROUND POST** and **ALTERNATOR POST** on the back of the control unit. While watching the digital multi-meter, start engine. With engine running, meter should read between 14.0 and 15.0 volts. If not, STOP . Shut off engine and call for support. If okay, move to next step.
Engine is running. With your digital multi-meter connected between **ALTERNATOR POST** and **BATTERY POST** on the back of the control unit, reading should be no more that 0.3 volts or less. As the battery accepts a charge, this reading should slowly diminish. If your reading is greater than 0.3 of a volt, or is increasing, STOP **SHUT OFF ENGINE**. Call for support.

Insert welding cables. Electrode holder (stinger) in the positive position, ground clamp in the negative position. We are not going to weld, but you will need an electrode inserted in the electrode holder. We are going to test the switching mechanism with the following process:

1. Digital multi-meter connected to the **ALTERNATOR POST** and the **GROUND POST** on the back of the control unit. We are reading the alternator's output.
2. Start the vehicle and set the idle at 1200 rpm's. With vehicle running, the meter should read **between 14.0 15.0 volts** and the LED's on the control unit should reflect **CHARGE** and **IGNITION** illuminated.



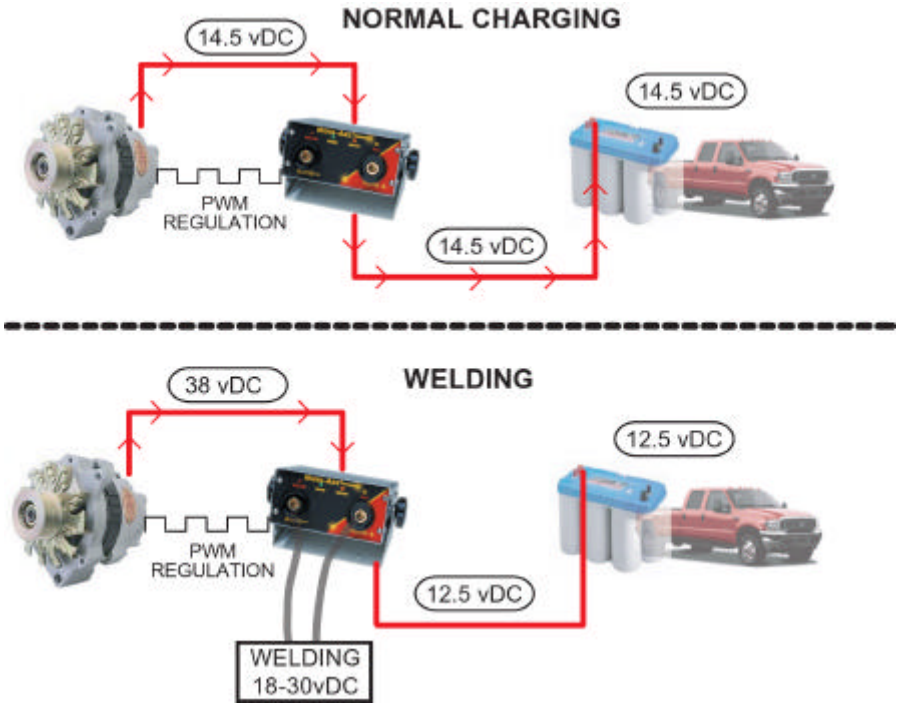
3. While reading the multi-meter, take your electrode and strike the tip against the ground clamp, hard enough to create a quick arc or spark. The following will occur:

   Alternator's output will instantly jump to +/- 37v to 42v
   CHARGE LED will extinguish
   WELD LED will illuminate.

   If the alternator's voltage does not instantly increase to +/- 40v, or the LED's do not behave as indicated above, STOP **. Shut off engine**. Call for support.

4. The control unit will stay in the "Weld" mode for fifty (55) seconds, at which point it will switch back to the "Charge" mode. While the unit is in the "Weld" mode, although the alternator is at +/- 40 volts, the battery will read static battery voltage of +/- 12.5 volts. If, during the "Weld" cycle, the battery rises to more than 15v, then STOP **SHUT OFF ENGINE**. Call for support.

If the above steps have been checked-off, then continue to "Safe Welding Practices" on the following page.
If your control unit doesn't behave exactly as indicated above, you may have an alternator configuration problem, a wiring problem, or a control unit problem. Disconnect the battery and double-check the installation diagram specific to your vehicle. If you cannot identify a problem, follow the Troubleshooting Guide on page 25 of this manual, and then call for support.



SAFE WELDING PRACTICES

Safe welding practices must be adhered to when using MOBI-ARC. Please abide by the following guidelines:

- **ARC RAYS, HOT SLAG and SPARKS CAN INJURE EYES and BURN SKIN**
  The welding process produces extreme localized heat and strong ultraviolet rays. Never attempt to weld without a welding helmet with the proper lens. A number 12 to 14 shade filter lens provides the best protection against arc radiation. Make sure others are protected by approved shielding curtains. Make sure children and animals are clear of the welding area. Skin should also be protected from arc rays, heat, and molten metal by wearing gloves and clothing that will not allow skin exposure.

- **WELDING SPARKS CAN CAUSE FIRES and EXPLOSIONS**
  Causes of fire and explosion are; combustibles reached by the arc, flame, flying sparks, hot slag or heated materials. Remove combustibles from the work area and/or provide a fire watch with a suitable fire extinguisher and/or sufficient water and tools. Avoid oily or greasy clothing as a spark may ignite them. Be alert to the danger of conduction or radiation. All hollow spaces, cavities and containers should be vented prior to welding to permit the escape of air or gases. Purging with inert gas is recommended. Arcing against any compressed gas cylinder can cause cylinder damage or explosion.

- **SMOKE, FUMES, and GASES CAN BE DANGEROUS TO YOUR HEALTH**
  Keep smoke, fumes, and gases from the breathing area. Fumes from the welding process are of various types and strengths, depending on the kind of base metal being worked on and can cause discomfort and physical harm if inhaled over an extended period of time. To ensure your safety, do not breathe these fumes. Ventilation must be adequate to remove smoke, fumes, and gases. Vapors of chlorinated solvents can form the toxic gas “Phosgene” when exposed to ultraviolet radiation from an electric arc. All solvents, degreasers and potential sources of these vapors must be removed from the operating area.

- **DELICATE ELECTRONIC EQUIPMENT**
  Welding equipment can damage and/or interfere with the operation of delicate electronic equipment. Welding equipment should not be used by individuals who use pace-makers or other life-sustaining electronic medical implants or devices.

For more information:

- US Government Printing Office, Washington, DC 20402 *Code of Federal Regulations (OSHA)*, Section 29 Part 1910.95, 132, 133, 134, 139, 251, 252, 253, and 1000.
- American National Standards Institute, 1430 Broadway, NY, NY 10018 ANSI Z49.1 *“Safety in Welding and Cutting”;* ANSI Z87.1 *“Practice for Occupational and Educational Eye and Face Protection”*; ANSI Z88.2 *“Standard Practice for Respiratory Protection”*
- American Welding Society, 550 NW Lejune Road, POB 351040, Miami, FL 33135 AWS C5.3 *“Recommended Practices for Air Carbon Arc Gouging and Cutting”*; AWS F4.1 *“Recommended Safe Welding Practices for Welding and Cutting Containers”*
- National Fire Protection Association, Battery Park, Quincy, MA 02269 NFPA 51B *“Fire Prevention in Cutting and Welding* Processes*”*

USE AS A WELDER

The MOBI-ARC Control Unit is completely automatic. During daily driving conditions, the Control Unit will pulse-width modulate (PWM) the alternator output to create an automotive-friendly 14.7 volts (+/-). Should welding be required, simply insert welding cables, idle up the vehicle, and strike an arc. The MOBI-ARC Control Unit is voltage-sensing meaning that when an arc is struck, the Unit senses the strike, instantly isolates and protects the vehicle's battery and electrical system. The MOBI-ARC then pulse-width modulates the alternator very efficiently to create higher voltage and maximum current (based upon alternator RPM) for welding and battery boost/jump-starting applications (see "BATTERY-BOOST / JUMP-STARTING").

The following instructions can be carried out either with, or without the vehicle running. Keep in mind that the MOBI-ARC generates constant current and constant voltage; when connected to the welding receptacles, the welding cables are live.

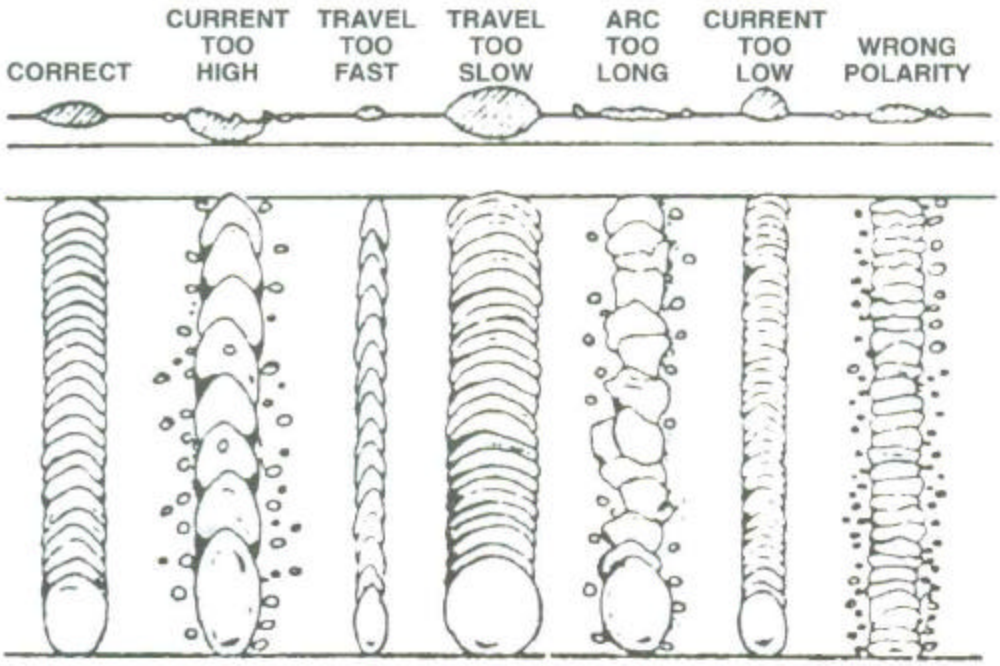
1. Plug the welding cables into the welding sockets on the face of the MOBI-ARC Control Unit; stinger positive, ground negative. Twist connector until firmly seated. To change the polarity, simply switch the cables.

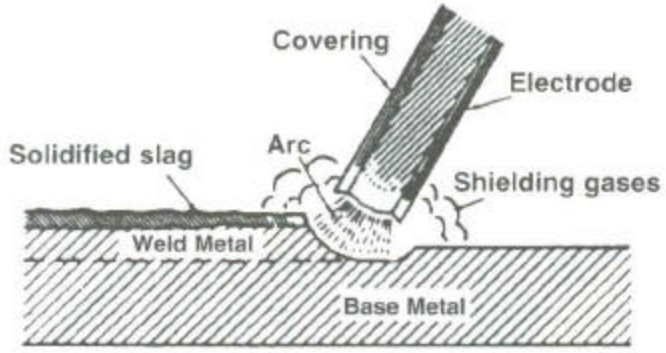
WHEN WELDING ON MY VEHICLE

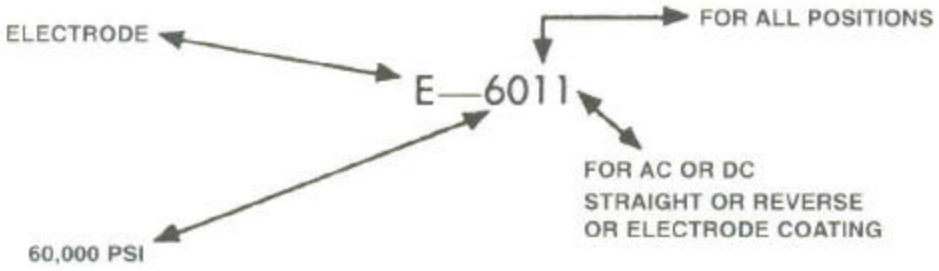
When Welding on one's own vehicle, ONLY weld with the STINGER in the POSITIVE POSITION

2. Connect the ground clamp close to the intended welding target area.
3. Throttle up the vehicle to increase the alternator's output.
4. Using the appropriate electrode, strike arc and weld. If weld is too cold, throttle vehicle higher. If weld is too hot, throttle down vehicle. Refer to "DETERMINING PROPER OPERATING SPEED" on the following page.
5. After welding, throttle down vehicle; disconnect cables and store for later use.

INTENTIONALLY LEFT BLANK


CORRECT
CURRENT TOO HIGH
TRAVEL TOO FAST
TRAVEL TOO SLOW
ARC TOO LONG
CURRENT TOO LOW
WRONG POLARITY


Covering
Electrode
Solidified slag
Arc
Shielding gases
Weld Metal
Base Metal


ELECTRODE
FOR ALL POSITIONS
E—6011
FOR AC OR DC
STRAIGHT OR REVERSE
OR ELECTRODE COATING
60,000 PSI

AUTOMATIC SWITCHING

A sophisticated timing circuit has been engineered into the MOBI-ARC Control Unit. This circuit will automatically switch the Control Unit from the "Welding" mode back to the "Charging" mode with no user intervention. The timer is set for a fifty-five (55) second delay. If there is any lapse in welding, after 55 seconds of non-use, the MOBI-ARC Control Unit will automatically switch modes and charge the vehicle's battery at 14.7 volts (+/-). If there is sufficient fluctuation in welding current during the welding process, the timer *may* re-trigger and extend another 55 seconds; this is normal.

PROPER OPERATING SPEED

The MOBI-ARC Control Unit is engineered for constant current and constant voltage. Voltage and current will be present even when the vehicle's engine is at idle and spinning slowly. Varying alternator RPM will create higher or lower levels of voltage and current. Most alternators will provide maximum output capability when rotating at approximately 6,000 alternator RPM. Spinning slower will simply yield less output at a given RPM. To determine the approximate engine operating speed for welding at best alternator capability, measure the diameter of the engine's crank pulley and refer to the chart below:

NOTE: Chart assumes 2" alternator pulley

CRANK PULLEY DIAMETER	ENGINE RPM RANGE
4.5"	2,700 to 3,100
5 "	2,400 to 2,800
5.5"	2,200 to 2,500
6"	2,000 to 2,300
6.5"	1,800 to 2,200
7"	1,700 to 2,000
7.5"	1,600 to 1,900
8"	1,500 to 1,800
8.5"	1,400 to 1,600
9"	1,300 to 1,600
9.5"	1,300 to 1,500

Direct Current welding is considerably easier than welding with Alternating Current. By selecting the appropriate welding electrode, excellent welds on numerous types of metals can be achieved. For general repairs on mild steel, we suggest the following:

Smaller alternators	6010/6011/6013 or 7018	3/32" or 1/8" electrode 3.25mm
Larger Alternators	6010/6011/6013 or 7018	up to 5/32" electrode 4.00mm
Industrial Alternators	6010/6011/6013 or 7018	up to ¼" electrode 6.35mm

BATTERY BOOST-CHARGING / JUMP-STARTING

When optional MODE SELECT Modules are purchased, the MOBI-ARC Control Unit can provide regulated voltage at 100% of the alternator's current capability for safe and efficient BATTERY BOOST-CHARGING and vehicle JUMP-STARTING applications.

The 16-Pin Receptacle denoted as "MODE SELECT" is located on the back of the Control Unit. MODE SELECT Modules can be inserted which program the MOBI-ARC Control Unit to create specific voltage from the welding receptacles at 100% of the alternator's current capability. Standard MODE SELECT Modules are programmed for 14 volts, 28 volts, 36 volts, and 42 volts. Any voltage requirement between 12 and 42 volts can be custom engineered. Please contact the manufacturer.

When Jump-Starting, please adhere to the following safety conditions:

- Wear protective eyewear and clothing and remove all jewelry.
- No smoking, open flames or sparks should be allowed near the battery.
- Never attempt to jump-start a car if gasoline fumes are present either around the source vehicle (good battery) or the dead vehicle.
- Check the water level in the dead vehicle's battery and fill if needed.
- Use extreme caution with jumper cables!
- Avoid connecting cables in reverse polarity.
- Do not let the vehicle bumpers touch.
- Turn the source vehicle off before making any jumper cable connections between the two batteries.
- Clean the battery terminal surfaces of corrosion to ensure clean and quick connections.

To jump-start a vehicle with a 12 volt negative ground, the jump-starting voltage should not exceed 14.7 volts. Insert a 14 volt MODE SELECT Module and the Unit's output voltage will not exceed 14.7 volts, regardless of RPM.

1. Connect welding leads into welding sockets on the front of the MOBI-ARC Control Unit; adhere to polarity: stinger positive, ground negative.
2. Insert 14 volt MODE SELECT Module in 16-Pin receptacle.
3. **Adhering to correct polarity**, connect stinger positive to the positive terminal of the dead battery.
4. **Adhering to correct polarity**, connect ground clamp to the negative terminal of the dead battery.
5. Start the source vehicle, increase RPM to about 2,000 and allow two to five minutes for the dead battery to charge.
6. Start the dead vehicle and remove the cables in reverse order.

IMPORTANT

Do not Jump-Start or Boost-Charge without the proper MODE SELECT Module inserted. Damage to vehicle, battery, or the MOBI-ARC may occur.

The chart below illustrates the MOBI-ARC Control Unit's output levels:

MODE SELECT MODULE	VOLTAGE OUTPUT	IDEAL CHARGING SYSTEM	CURRENT LEVEL
NOT INSERTED	42v	DO NOT JUMP	100% of ALT. CAPABILITY
14v Module	14.7v	12v	100% of ALT. CAPABILITY
28v Module	28.7v	24v	100% of ALT. CAPABILITY
42v Module	42v	42v	100% of ALT. CAPABILITY

LED STATUS DISPLAY

The MOBI-ARC Control Unit is equipped with four indicator lights. These indicator lights provide basic feedback as to the condition of the printed circuit board. For instance, when the green CHARGE light is illuminated, the MOBI-ARC Control Unit is in the “CHARGE” mode. However, if the battery is not correctly wired to the Control Unit, the battery will not be charging.

LIGHT	FUNCTION
WELD	Light illuminated when the Control Unit is triggered into the “WELDING” or “BATTERY BOOST” modes indicating the alternator is generating 25+ volts. Control Unit disconnects battery and the vehicle’s electrical system from the alternator.
IGNITION	Light illuminates when ignition is keyed-on and powers-up the printed circuit board.
CHARGE	Light illuminates when the alternator is connected to the vehicle’s battery and electrical system. Control Unit regulates the voltage to 14.5 volts (+/-)
OVERTEMP	Light illuminates when the temperature within the Control Unit exceeds specified safety levels. When the temperature falls, the Control Unit will automatically reset. Under normal conditions, MOBI-ARC will run cool. The illumination of the OVERTEMP light is an indication of excessive heat either triggered by excessive ambient engine temperature, or an internal MOBI-ARC component failure. Immediately BYPASS the MOBI-ARC and seek assistance from the manufacturer or your MOBI-ARC representative.

IMPORTANT

BECAUSE MOBI-ARC IS DESIGNED TO RUN COOL, IF OVERTEMP ILLUMINATES, SHUT OFF THE VEHICLE IMMEDIATELY AND IMPLEMENT THE BYPASS CONFIGURATION. VIEW THE OVERTEMP WARNING AS AN EARLY INDICATOR OF A PROBLEM. FAILURE TO BYPASS THE CONTROL UNIT COULD CAUSE IRREPARABLE DAMAGE.

This is a MOBI-ARC Control Unit that was not BYPASSED when the OVERTEMP LED illuminated. It is damaged beyond repair. Electronics and high power can be very unforgiving.

BYPASS KIT

Utilizing the MOBI-ARC BYPASS Kit, the MOBI-ARC Control Unit can be removed from the vehicle and the alternator's original regulator can be re-enabled. This is useful in the following circumstances:

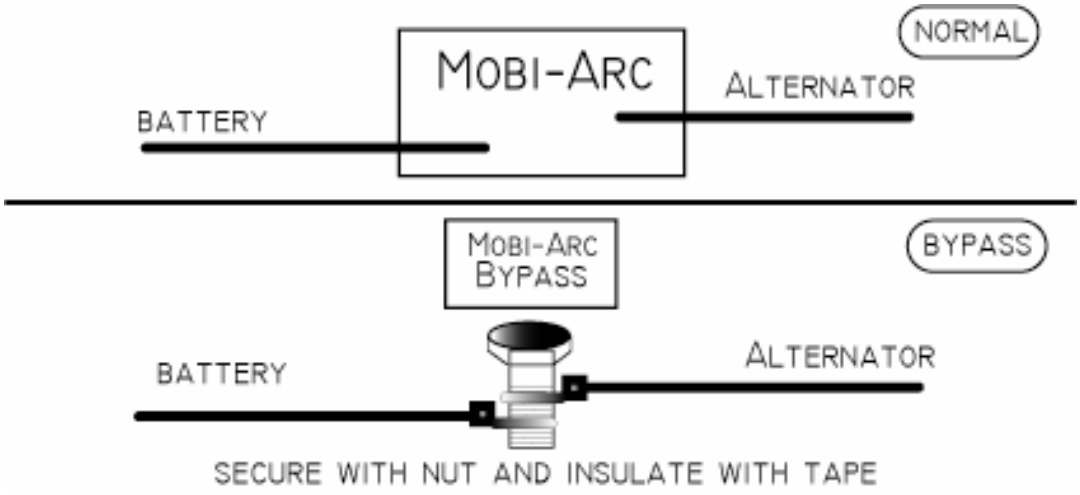
1. Some customers have several vehicles and would like to utilize MOBI-ARC from several different platforms. By purchasing additional installation kits, a customer can quickly move the MOBI-ARC Control Unit from vehicle-to-vehicle, avoiding the additional expense of a second and third Control Unit.
2. The MOBI-ARC Control Unit may require service. Because the Control Unit houses the regulation system for the alternator, should the Control Unit be removed, the stock regulator must be re-enabled so the vehicle may resume activity.

The BYPASS Kit is contained in the zip-lock baggie and is part of the accessory kit. The baggie has a hole and is designed to be zip-tied to the Control Unit mounting bracket where it can be easily accessed should a BYPASS be required. An extra hole in the mounting bracket has been provided for this purpose.

In most cases, the BYPASS plug is housed in the zip-lock baggie for easy access. On some installations, the BYPASS plug has been incorporated into an alternator's modification harness.

DISCONNECT NEGATIVE TERMINAL ON BATTERY(S)

1. Disconnect Battery negative.
2. Detach 10-Pin wiring harness connector from the Control Unit.
3. Connect molded BYPASS plug to the wiring harness.
4. Remove yellow ALTERNATOR cable and red BATTERY cable from their respective posts on the back of the Control Unit.
5. Attach yellow ALTERNATOR cable to red BATTERY cable with provided 5/16" steel bolt.
6. Secure with nut and washer from the Control Unit and insulate with provided electrical tape.
7. Be sure of proper insulation and secure cables from moving parts.
8. Reconnect BATTERY, start vehicle, and verify normal charging.



WARRANTY INFORMATION

Mobile Welding & Power, Inc. warrants the MOBI-ARC and MOBI-POWER against all defects in materials and workmanship for a period of **one year** from the date of the original purchase, subject to the following terms and conditions:

This warranty does not apply if the serial number or housing of the product has been removed, or if the product has been subjected to physical abuse, improper installation, water damage, corrosion due to road salts or de-icing chemicals, or modification.

To obtain warranty service, please contact the manufacturer for a Return Materials Authorization (RMA) number. The product must be returned, insured and shipping prepaid, to Mobile Welding & Power, Inc., at the address below, in its original packaging or a suitable equivalent, along with a written description of the problem.

Mobile Welding & Power, Inc.'s responsibility under this warranty is limited to repair or replacement of the product or refund of its purchase price, at the sole discretion of Mobile Welding & Power, Inc.

Mobile Welding & Power, Inc. disclaims all other warranties, expressed or implied, including warranties of merchantability and fitness for any particular purposes whatsoever, and no other remedy shall be available including without limitation, incidental or consequential damages. In no event shall Mobile Welding & Power, Inc.'s liability exceed the purchase price of the product in question.

Some states do not allow the exclusion or limitation of incidental or consequential damages of how long an implied warranty lasts, so the above limitations or exclusions may not apply to you.

This warranty gives you specific rights. You may have other legal rights which may vary from state to state.

Mobile Welding & Power, Inc. wants you to be satisfied with its products. Should you have any difficulties with the operation or performance of your MOBI-ARC and MOBI-POWER, please contact:

Mobile Welding & Power, Inc.
Customer Service
11722 Sorrento Valley Road, Suite E
San Diego, California 92121
(858) 720-1339 (858) 720-8556 fax
www.mobi-arc.com

FOR YOUR PROTECTION, PLEASE FILL OUT THE WARRANTY / REGISTRATION CARD ON THE FOLLOWING PAGE or REGISTER ON-LINE AT www.mobi-arc.com/register.htm

FILL IN AND KEEP FOR YOUR RECORDS:

MODEL _____

SERIAL NUMBER _____

PURCHASE DATE _____

PURCHASED FROM _____

TEAR HERE

MOBI-ARC / PERFECT SWITCH
11722 Sorrento Valley Road, Suite E
San Diego, CA 92121

ATTN: Registration Department

TAPE DOCUMENT CLOSED WITH THIS SIDE FACING OUT

FOLD

NAME _____

STREET _____

CITY _____

STATE _____ **ZIP**_____

COUNTRY _____

E-MAIL ADDRESS _____

MODEL _____

SERIAL No. _____

PURCHASE DATE _____

PURCHASED FROM _____

CITY / STATE _____

PURCHASE PRICE (excluding tax) _____

DATE OF BIRTH _____

WELDING LEVEL

- ❑ Novice
- ❑ Recreational
- ❑ Professional

WHERE DO YOU PLAN TO USE YOUR MOBI PRODUCT?

- ❑ Turf Utility
- ❑ Farm / Agriculture
- ❑ Fire / Rescue
- ❑ Off-Road
- ❑ Racing
- ❑ Industrial Fleet
- ❑ General Maintenance
- ❑ Construction
- ❑ Other – Please explain below:

DO YOU OWN A COMPUTER? YES NO

DID YOU PURCHASE THIS PRODUCT FOR YOURSELF OR DID YOU RECEIVE IT AS A GIFT?

- ❑ Self
- ❑ Gift

WHAT INFLUENCED YOUR PURCHASE OF THIS PRODUCT?

- ❑ Friend's Recommendation
- ❑ Dealer Recommendation
- ❑ Magazine Article
- ❑ Magazine Advertisement
- ❑ Reputation of Manufacturer
- ❑ Infomercial
- ❑ Other _____

WHERE HAVE SEEN ADVERTISING?

- ❑ Offroad.com
- ❑ Television
- ❑ Four Wheeler
- ❑ Sport Truck
- ❑ Truck'n
- ❑ JP
- ❑ Off-Road
- ❑ General Interest Publication _____
- ❑ Specialty Trade Publication _____
- ❑ Other:

FOLD

HOW LONG DID YOU OWN YOUR PREVIOUS ON-BOARD WELDER?

- ❑ No previous welder
- ❑ 1 year or less
- ❑ 2 years
- ❑ 3 years
- ❑ 4 years
- ❑ 5 or more years

WHAT BRAND(S)

- ❑ Mobi-Weld
- ❑ Ready Welder
- ❑ Resco
- ❑ Zena
- ❑ Link-Arc
- ❑ Hehr Power Arc II
- ❑ Premier Power Welder
- ❑ Thunderbolt
- ❑ Canadarc
- ❑ Stellarc
- ❑ Other _____

We value your feedback and constantly strive to provide products and applications that meet our customer's needs. Please use the space below for comments, criticism, ideas, etc..

TECHNICAL SPECIFICATIONS

ALTERNATOR:

User supplied or purchased through select manufacturers
Delta Wound Stator Preferable
Removed or disconnected Excitation Diodes (diode trio)
Rectifier utilizing non-Avalanche Diodes
12 volt or 24 volt Compatible (pre-set at factory)

MOBI-ARC CONTROL UNIT:

Dimensions (W x H x D):	4.6" x 2.5" x 4.5"
Weight:	24 oz.

Pulse-Width Modulation Regulation
Solid-State Switch-mode technology
Automatic Mode Switching
Option Mode Select Modules
Fail-Safe Mode
LED Indicator Lights
Welding Cable Sockets
Diagnostic Output
Maximum Switchable Charging Current: Up to 300amps, preconfigured when manufactured.

Thermal / Amperage Overload Protection
Water Resistant / Dust Resistant

Welding: (Specifications Vary between Alternators)

Power produced:	Direct Current (DC).
Welding Amperage:	Up to 300 amps
Duty Cycle: 100%	
Open Circuit Voltage (OCV):	38 volts
Closed Circuit ARC-voltage:	18 to 28 volts
Electrode sizes:	up to 5/32 (4.0mm)

Battery Jump/Boost Charging:

12-48 Volt Batteries	
Regulated Direct Current	
Optional Mode Select Modules	(14v, 28v, 36v, 42v)

We reserve the right to change technical specification.

TROUBLESHOOTING

The purchase of your MOBI-ARC Control Unit includes one 15 minute phone call. You must have a serial number to access the service department. Subsequent calls will be billed at $1.00/minute with a $15.00 minimum. Please have your Mastercard or Visa ready.

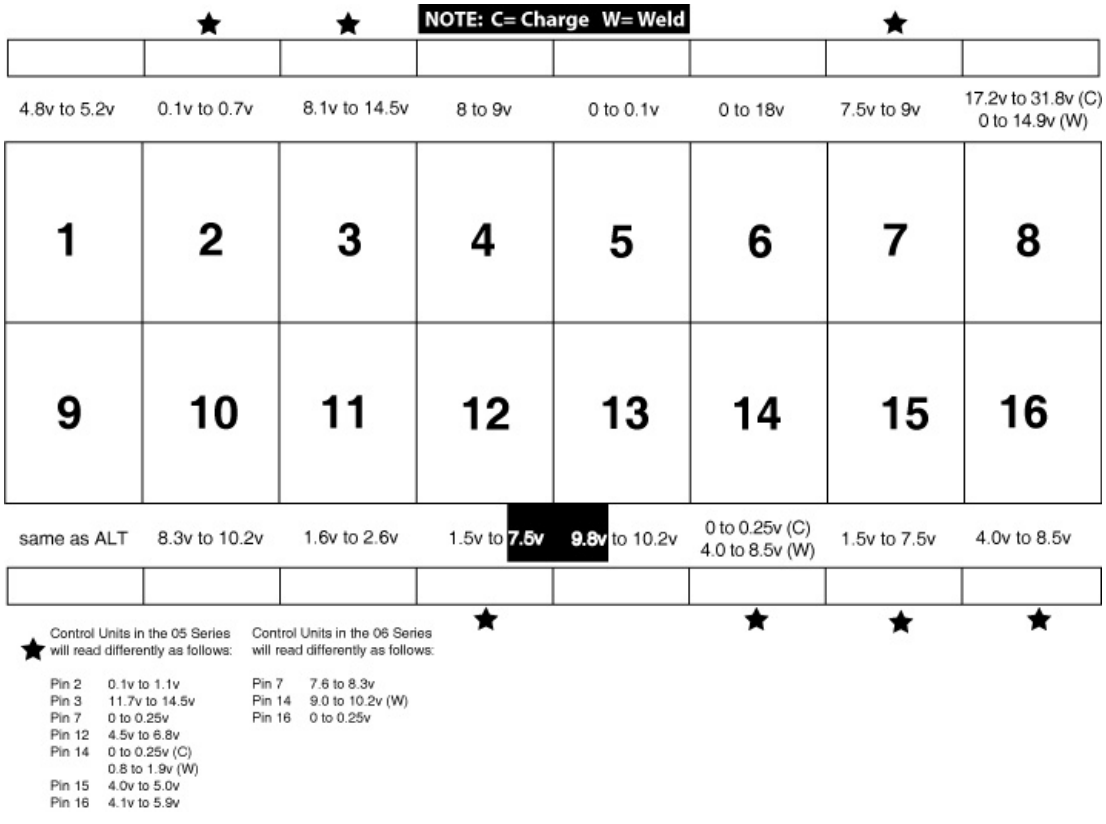
Before you call for technical support, please be sure installation instructions have been executed as stipulated in the installation diagram pertaining to your vehicle. Most complications are due to poor crimps, bad connections, or simply not following the directions.

To verify the MOBI-ARC Control Unit is working correctly, the 16-PIN "MODE SELECT" receptacle also serves as a diagnostic output. Utilizing a digital multi-meter (not a test light), set the DC reading to four places (ex. 12.52).

Switch vehicle ignition to the "ON" position. With the negative meter probe connected to Ground, insert the positive probe into each of the sixteen points as viewed in the diagram below. The sixteen holes are insulated from each other so don't worry about shorting anything out. As you probe each hole, write down the voltage reading in the empty box provided in the diagram.

If the voltage readings fall within the specified parameters, the control unit is working correctly. Any problem will be external to the control unit (alternator, wiring/cabling, connections, or battery). If the voltage readings fall outside the specified parameters, this may indicate a problem with the control unit; please contact the manufacturer or your MOBI-ARC reseller.

(BELOW---16-PIN RECEPTACLE AS VIEWED FROM REAR OF CONTROL UNIT)



BATTERY _____volts BATTERY POST _____volts ALTERNATOR POST _____volts

TYPE OF PROBLEM	PROBABLE CAUSE	RECOMMENDED FIX
NO LIGHTS ON CONTROL UNIT.	Bad connection or wired incorrectly	Make sure 10-pin harness is inserted in HARNESS receptacle. Battery connection has been restored. Violet wire is connected to keyed-on 12 volts and should be no less than 1/10th of a volt below the battery post (tested w/ digital multi-meter, not a test light)
ALL LIGHTS ON (except CHARGE), BUT NO CHARGING CURRENT GETTING TO THE BATTERY	Electrical configuration of Blue and/or Green wires are incorrect in relation to the alternator's electrical configuration	Double-check wiring schematic specific to your vehicle. Make sure in-line fuse(s) have not been blown. If blown. Check for short and contact manufacturer.
	Battery level is too low for the control unit to function correctly	Place battery on shop charger and bring charge level up to 12.5 v +/-
	Gray wire is not connected to battery or is on the wrong side of a dual-battery isolation device.	Connect Gray wire to Battery.
	Red and Yellow #4 AWG cables are not installed between the control unit, alternator, and battery	Be sure Yellow cable is installed between alternator and control unit. Be sure Red cable is installed between the battery and the control unit.
	Poor ground on alternator	Double check ground connection.
	Bad alternator	Install BYPASS Configuration to make sure alternator functions normally. If no charge output, contact manufacturer and/or have alternator serviced or replaced.
	Mode Select Module left in 16-pin receptacle	Remove Mode Select Module and allow timer to reset.
STRIKE AN ARC TO WELD, BUT ONLY LIGHT SPARKING TAKES PLACE AT THE WORK-PIECE.	Control unit isn't switching into "weld" mode.	If an arc is struck, and the CHARGE LED does not go out, do the following: ✓ Yellow #4AWG cable is the <u>only</u> connection on the main post on the bck of the alternator. The original alternator output cable is <u>not used</u> and only the Yellow cable should be present. ✓ Make sure the blue and/or green wires for conductivity though the in-line fuse(s). Be sure the blue/green wire(s) are making the connection(s) on the alternator based upon the correct wiring diagram.
		An arc is struck, CHARGE LED extinguishes, but WELD LED does not go on: ✓ Make sure the blue and/or green wires for conductivity though the in-line fuse(s). Be sure the blue/green wire(s) are making the connection(s) on the alternator based upon the correct wiring diagram. ✓ Make sure Gray wire is connected to keyed-on 12 volts. ✓ Be sure the alternator does not use avalanche diodes in the rectifier. If not sure, contact manufacturer.
STRIKE AN ARC TO WELD, WELDING BEGINS BUT THEN FADES AWAY.	Drive belt is not tight enough and slipping as alternator loads.	Tighten belt.
DIFFICULT TO STRIKE AN ARC AND WELD.	Old or wet electrodes (welding rod).	Purchase fresh electrodes
	42 volts open-circuit not being generated by the alternator after initial strike.	Make sure the blue and/or green wires for conductivity though the in-line fuse(s). Be sure the blue/green wire(s) are making the connection(s) on the alternator based upon the correct wiring diagram. Make sure Gray wire is connected to keyed-on 12 volts
	Avalanche diodes are present in the rectifier plate not allowing the voltage to increase to 42 volts	Be sure the alternator does not use avalanche diodes in the rectifier. If not sure, contact manufacturer.
WELDING ARC LOST AFTER 7-10 SECONDS OF CONTINUOS WELDING	End of electrode is not close enough to puddle in order to maintain arc.	Tighten gapping by keeping end of electrode closer to puddle.
	Timer is not resetting and extending as welding is taking place. Unit is timing out and briefly switching into "Charge" mode, then back to "Weld" mode.	Call for support and return unit for service. Component on PCB must be replaced.

Diagram #4010

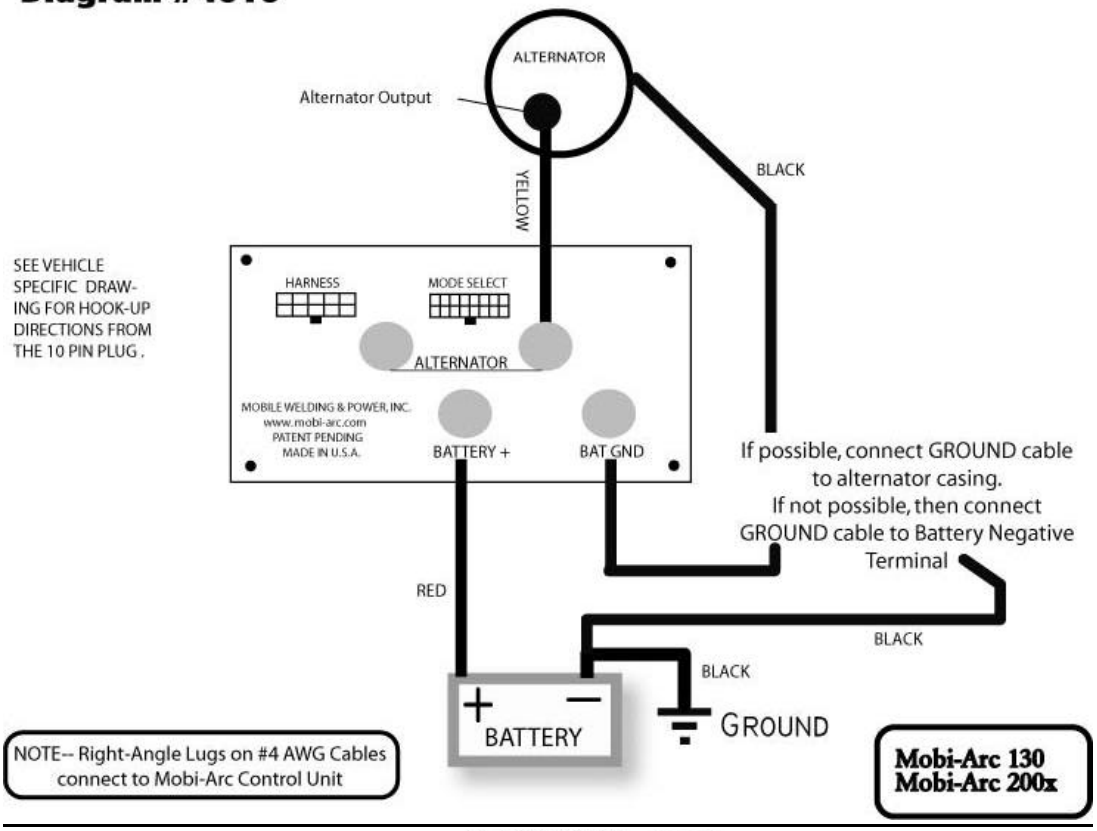
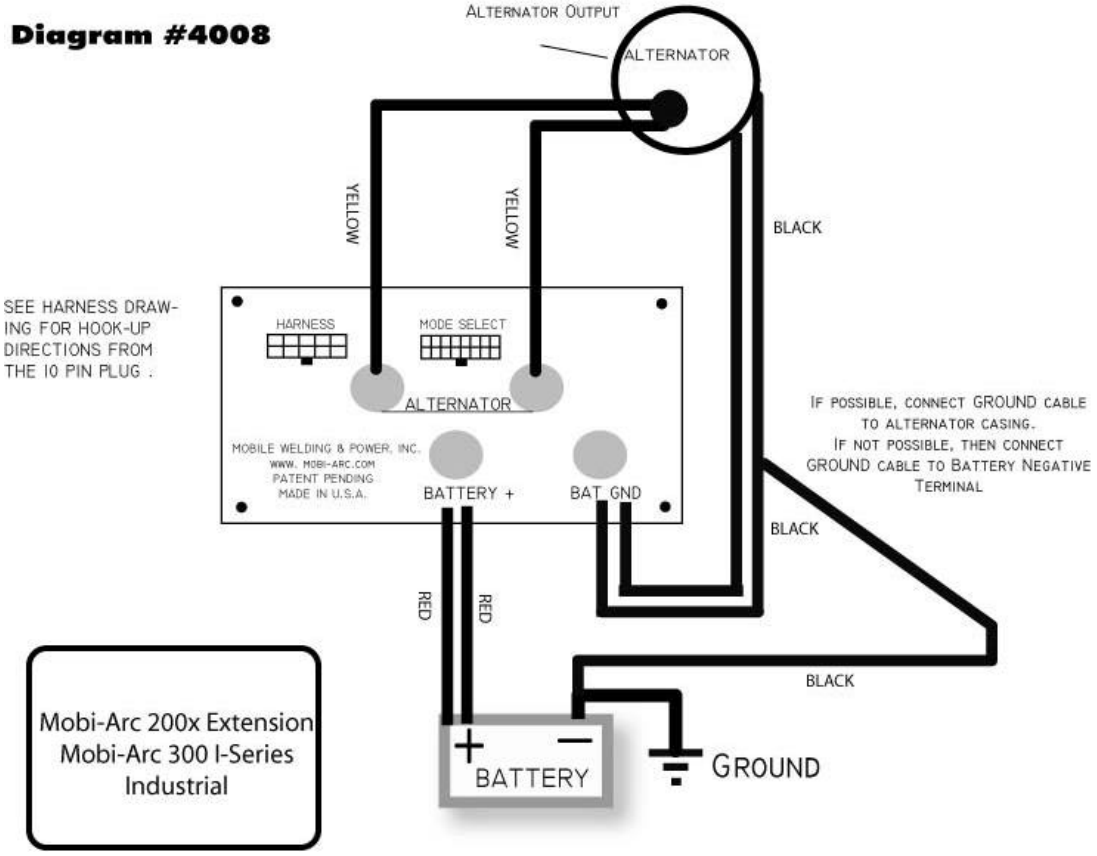


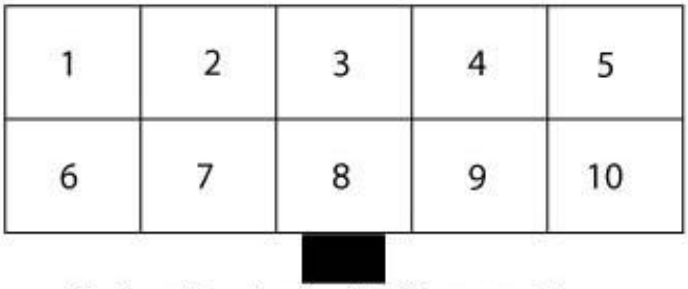
Diagram #4008



MOBI-ARC

Wiring Harness

10-Pin Connector

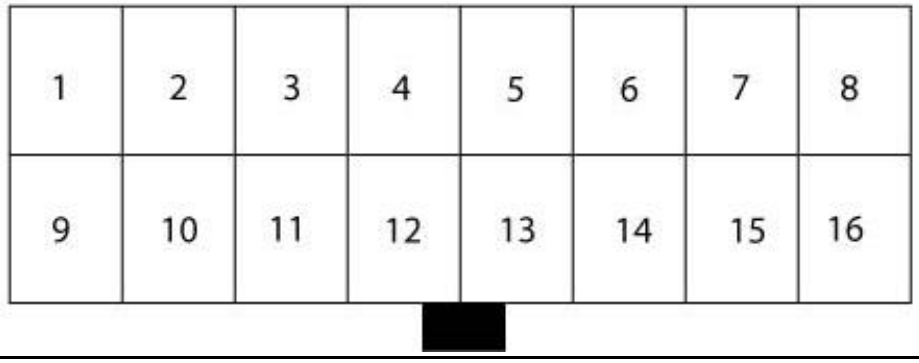


(As viewed from the wire side of the connector)

1	Field +	BLUE	BL
2	Field +	BLUE	BL
3	Ground	BLACK	BK
4	Stator-In	ORANGE	OR
5	Excitation	GRAY	GY
6	Field -	GREEN	GN
7	Field -	GREEN	GN
8	Tachometer Out	WHITE	WH
9	Ignition Switched 12v	VIOLET	VI
10	Alternator Warning Light	BROWN	BR

16-Pin Connector

Mode Select / Diagnostics



OPTONAL ACCESSORIES

	**POWER-GATE™ SOLID-STATE BATTERY ISOLATORS** **Single Rectifier and Dual Rectifier Configurations** **Internationally patented technology yields highest performing battery isolators on the market**	▪ Dramatically more efficient than typical isolators. ▪ Negligible heat generated, no airflow necessary ▪ A perfect one-way electric valve without voltage loss associated with all other isolators.
		
	**MOBI-TIG™**	▪ A complete TIG accessory package for use with any MOBI-ARC Control Unit Allows TIG welding at idle for non-aluminum applications
	**MOBI-MIG™** *Coming Soon*	▪ Connects to any MOBI-ARC Control Unit for use of all features ▪ Connects to 1, 2, or 3 car batteries ▪ Automatically adjusts wire speed based on welding task ▪ More features to be detailed soon.
	**#4 Welding Cable**	▪ Available in both black and red
	**Misc. Connectors**	▪ Panel-Mount Receptacles for remote mounting. ▪ Male/Female quick disconnects for multiple lengths of welding cable or cable ends.
	**Remote Control Module**	▪ Amperage and volt meters ▪ Single point of monitoring and control
	**Regulator**	▪ Flexible alternator regulator with integrated amp/volt readings