MASTER Minder™

Operation & Installation Instructions for Part # 40104 & 40112

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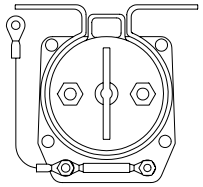
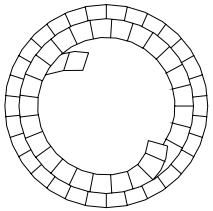
Contents of 40104

Solenoid
With Nuts



Plastic Loom
Covering

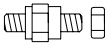


T-Tap (1)

Male (1)

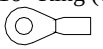
Female (1)

Battery Bolt & Nut (1)



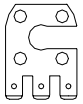
#10 Ring (3)

5/16” Ring (6)



3/8” Ring (1)

Battery Bussbar (1)



1/4” Bolt (2)

1/4” Nut (2)

Lock Washer (2)

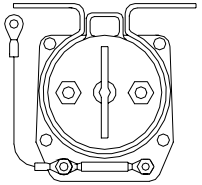
Tie Straps (6)

#8 Screw (2)

Grommet (2)

Contents of 40112

Solenoid
With Nuts



#10 Ring (1)

5/16” Ring (1)

1/4” Bolt (2)

1/4” Nut (2)

Lock
Washer (2)

Painless Performance Products Warranty

Painless Performance Products warrants to the original retail purchaser that this product will be free from defects in material or workmanship for thirty six months from the date of original retail purchase.

The product will be repaired or replaced at Painless Performance Products option only for the original retail purchaser, and this warranty is limited to repair or replacement. Proof of purchase is required.

In no event will Painless Performance Products be responsible for special, incidental or consequential damage or costs. Improper use, abuse, accident or water damage, unauthorized alteration, etc. voids this warranty.

Illustration B

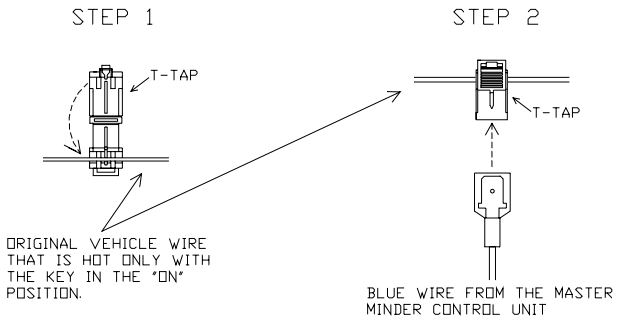
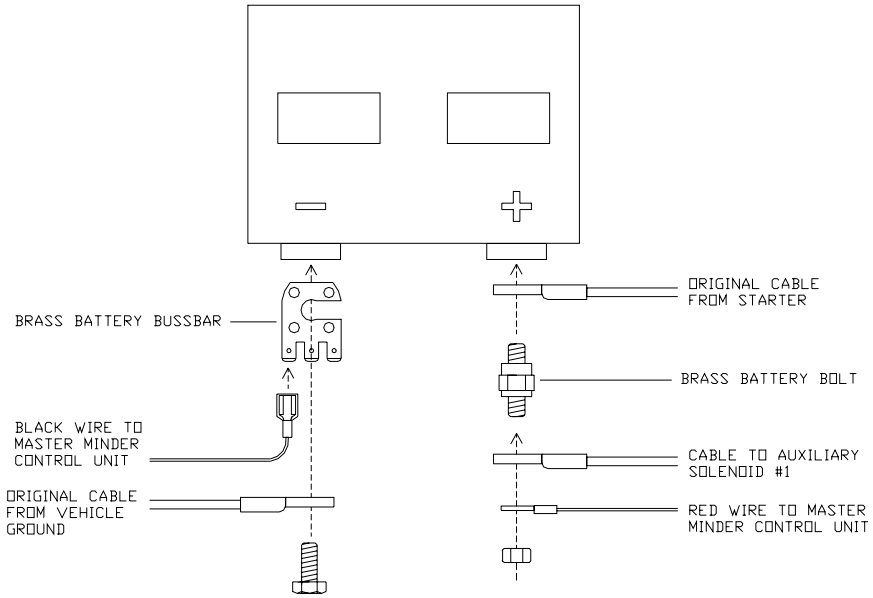


Illustration C



The MASTER/Minder System

The MASTER/Minder is a 12 Volt energy manager for any vehicle which uses more than one battery. Now you can safely and confidently power-up accessories such as winches, high-voltage lights, stereos, appliances and other electrical components without the fear of draining your batteries and being stranded. The MASTER/Minder virtually eliminates the fear of a dead battery.

Using a sophisticated, state-of-the-art microprocessor, MASTER/Minder can control the charging and operation functions of up to three batteries. It continuously monitors the charge state of all batteries, ensuring that sufficient power is there when you need it. An optional MASTER/Maintainer (part# 40114) will maintain all batteries at a constant state of charge during long periods of non-use. Below are some of the benefits and features:

Automatically increases amperage for more positive starting.

Control module allows you to jump start one battery with another with a simple turn of the dial.

If detected, MASTER/Minder automatically brings battery up to full charge during charging.

LEDs alert you to the condition of all batteries.

Automatically removes bad battery from system before other batteries can be damaged. Won't charge batteries that would not hold a charge.

In "EMERGENCY" mode, ties all batteries together for max voltage.

The **"MASTER/ Minder"** is designed to control up to three batteries, including the main, at one time. Depending on your application there may be one or two control solenoids required. The main control unit has been designed to control two solenoids even if you only are using one in your application. Any extra or unused wires may be cut off or rolled up and stored for future use.

Battery cables are not included in this kit due to the high number of possible applications in vehicles. High quality battery cables are very important in the proper operation of the system. A minimum of 2 gauge is recommended using quality crimp-on terminals.

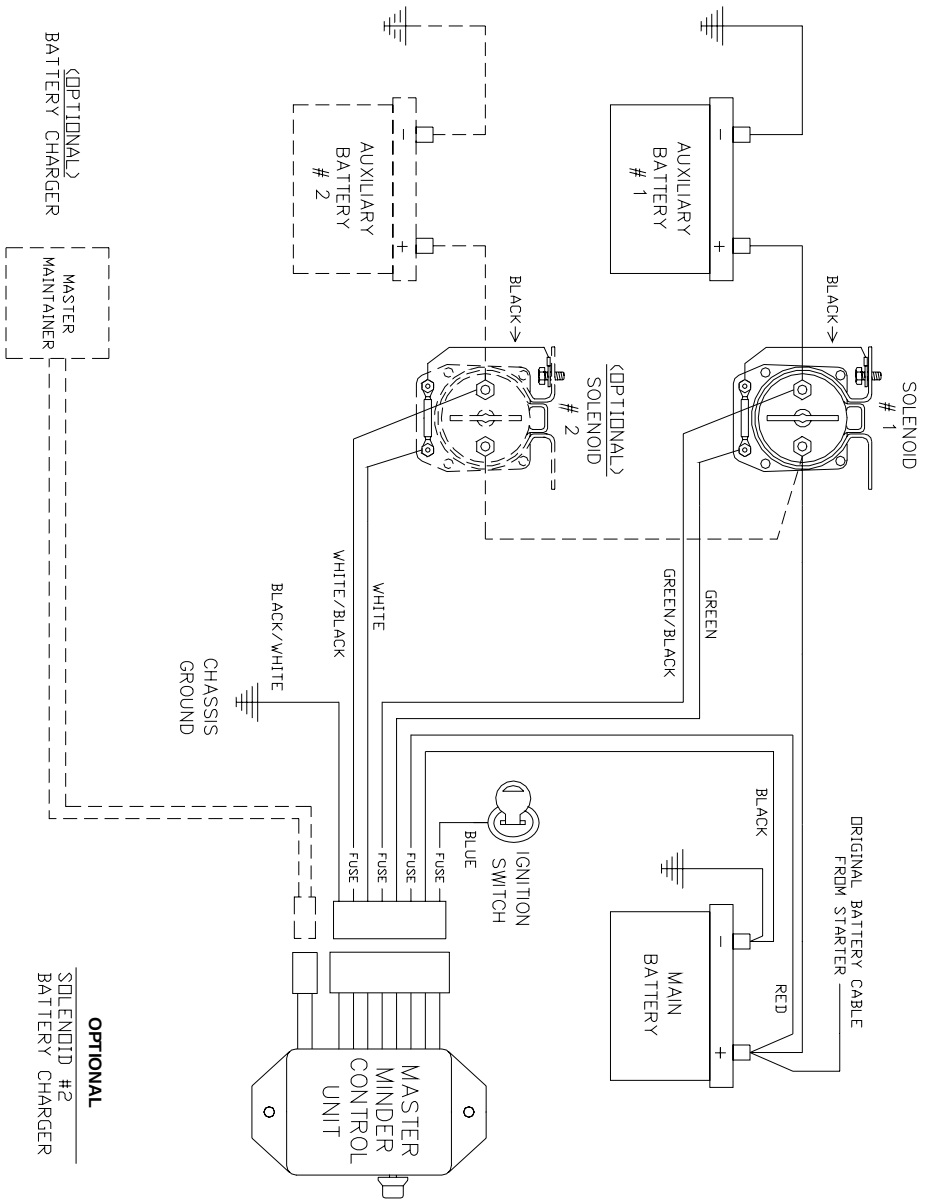
The main control unit is equipped with 4 indicator lights. Three of these lights are connected to a specific battery in the system. The lights will be green in color when their respective battery has a full charge or will turn red in color if their respective battery is in need of a recharge. When an indicator light flashes red, it is an indication that it's respective battery will not except a recharge and may need to be replaced.

<u>Indicator Lights for Main, Aux 1, & Aux 2 in the Normal Mode:</u>
Green ---------- battery has full charge
Flashing Red - battery voltage has dropped below 9.25 volts and battery is in need of or is receiving a recharge
Red ---------- battery voltage is below 9.25 volts

The fourth light is for indicating the **"MASTER/ Maintainer"** (optional part number 40114) charger is being used. This light will flash green slowly indicating it is in the operational mode.

"MASTER/Minder" is Patent Pending.

Illustration A



Attaching <u>two</u> auxiliary batteries (Continued)

B. Mount the solenoid for auxiliary battery #2 in a convenient location between the auxiliary battery #2 and the #1 solenoid using the hardware supplied. Easy access for installing the battery cables later (a good ground should be a factor in choosing a mounting location) is required.

C. Route and attach a positive cable from the positive battery post of the second battery to one large post(doesn't matter which one) of the second **"MASTER/ Minder"** solenoid. Route and attach another positive battery cable from the remaining large post of solenoid number "2" to the post of solenoid "1" which has the main battery cable attached. You will now have two cables on the main battery positive post of solenoid "1". See Illustration "A"

D. Use the wire ties furnished to secure the battery cables from excessive movement due to vibration.

E. Test the system for proper operation.

Switch Operation;

MAIN ONLY;
The **"MASTER/ Minder"** system is totally isolated from the main battery and no auxiliary battery charging or connections are being made. The vehicle operates as it did before the system was installed.

NORMAL;
The auxiliary battery(s) is (are) connected to the main battery for starting and charging any time the ignition is on. The **"MASTER/ Minder"** will monitor the state of charge of all batteries. Once the main battery has a full charge it will then allow charging of the auxiliary battery(s). The charge state indicator lights will illuminate when the ignition is on.

MAIN + Aux. 1;
The main and the auxiliary battery #1 are connected together at all times regardless of the ignition switch position. The main and auxiliary #1 charge state indicator lights will be illuminated at all times.

MAIN + Aux. 2; (Two auxiliary battery application only)
The main and auxiliary battery #2 only are connected together at all times. The other auxiliary battery is isolated from the system. The main and auxiliary #2 charge state indicator lights will be illuminated at all times.

MAINTAINER;
The main and auxiliary batteries are connected to the **"MASTER/ Maintainer"** charger. When connected to a 110 volt power source, all batteries will now be charged or maintained by the "Master Maintainer" and which battery receives the charge and the amount of charge is controlled by the computer in the **"MASTER/Minder"**. A green flashing light will indicate charging is taking place.

EMERGENCY;
The main and all auxiliary batteries are connected together at all times. All charge indicator lights will be illuminated at all times. <u>This is the only mode that will allow the user to totally discharge all batteries.</u>

Installation;

A. Find a suitable location under the dash, roll bar or possibly in the console, to mount the main control unit. The unit should have easy access and visibility to the driver.

B. After plugging in the main harness onto the short harness coming out of the control unit, route the black/white (*) wire to a good chassis ground and attach. Route the black wire out to the main battery negative cable terminal and attach with a female terminal and the brass battery bussbar provided. See Illustration "C" **This wire must be attached to the negative (-) battery terminal for proper operation of the computer.**

C. Route the red wire to the main battery and attach to the positive (+) terminal using the ring terminal supplied. See Illustration "C".

D. Locate a power wire under the dash that has power only when the ignition is turned on. Attach the T tap, included in the kit, to this wire by placing the wire in the slit in the metal connector inside the plastic housing. Fold the plastic housing over and squeeze the halves together with a pair of pliers and the plastic halves will snap together (**). Attach the blue wire to the assembled "T" tap with the male push on terminal included. See Illustration "B"

E. Mount the solenoid for auxiliary battery #1 in a convenient location between the main factory battery and the auxiliary battery using the hardware supplied. Easy access for installing the battery cables later (a good ground should be a factor in choosing a mounting location) is required.

F. Route the green and green/black wire, in a single solenoid application or the green, green/black, white/black and white wire, in a dual solenoid application through the fire wall and out to each respective solenoid. Use the protective loom and rubber grommet to prevent possible future wire damage. Attach the wire, after cutting it the proper length to the remaining small terminal(the one that doesn't have a black wire on it) of the solenoid(s) using the terminal(s) supplied. See Illustration "A".

G. Remove the positive battery cable from the main battery and reattach it with the special brass battery bolt in the parts kit. Route and attach a new cable from the **"MASTER/ Minder"** solenoid to the same positive post of the main battery where the starter cable is attached See Illustration "C".
You should now have two cables and a red wire on the positive terminal).

- **Note;** The color listed after a slash"/" represents a stripe color on the wire.

**** Note;** Do not over squeeze

Attaching one auxiliary battery

A. After mounting the auxiliary battery, route and attach a ground cable, from the battery, to a good frame or engine ground.

B. Route the positive cable of auxiliary battery to the **"MASTER/ Minder"** solenoid and attach it to the remaining large terminal.

C. Use the wire ties furnished to secure the battery cables from excessive movement due to vibration.

D. Test the system for proper operation.

Attaching two auxiliary batteries

A. After completing the steps for installing one auxiliary battery, mount the second battery and attach a ground cable, from the second battery, to a good frame or engine ground.

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