TROLLBRIDGE36® COMBINER

CHARGE 36 VOLT TROLLING BATTERIES FROM 12 VOLTS

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The Trollbridge36® Combiner allows you to charge your 36 volt trolling motor battery from the 12 volt alternator on your main engine, from your trailer hookup or from any single output 12 volt charger. It works automatically by switching the 12 volt batteries in series when you need to run the trolling motor and in parallel for charging.

FEATURES

Fully automatic changeover from running to charging
Radio Remote button for running BOTH motors
Can be used on 3 or 4 battery 36 volt systems.
Compatible with all 36 volt trolling motors
Eliminates the need for multiple output chargers
Compatible with existing multiple output chargers
Compact, 4"x5"x2", can be located with the batteries
Built in Combiner isolates starting battery from discharge
Rated for 12 volt charging sources up to **100 amps**
Rated for 36 volt trolling motors up to **85 amps**
LED shows when charging, remote LED output available
Batteries are charged in parallel so charge is equalized
Nearly UNLIMITED warranty, see **WARNING** and **§**
Waterproof - will operate submerged in water
Ignition rated for explosive atmospheres
99% efficient, no heat sink or cooling fan required
No modification to alternator or 12 volt engine wiring
Simple installation, cables included
Draws no current when not charging, no switch needed
Withstands ambient temperature to over 175 F (80 C)

WARNING WARNING

IF ANY EXISTING BATTERY JUMPERS ARE NOT REMOVED THE TROLLBRIDGE36® WILL SELF DESTRUCT AND VOID THE WARRANTY.

Internal automatic switches in the Trollbridge36® will take the place of the jumpers as it switches between series and parallel.

DANGER: During installation voltages may be present on unattached cables. Wrap them and keep them clear until each is ready to install.

Four Battery System. Uses the starting battery and three trolling batteries to make 36 volts. The three batteries should be dedicated to the 36 volt motor and NOTHING else should connect to them (except a multi output charger). For maximum life, trolling batteries should be matched as close as possible for chemistry, capacity and age. The trolling motor will never use power from the starting battery. See the schematic page two.

Three Battery System. With three batteries, trolling battery #1 is used as a starting battery and 12 volt instruments, etc. it should be made much larger than the other two so you can still start the engine when batteries 2 & 3 are low. Batteries 2 and 3 should be matched for chemistry, capacity and age for maximum life. On the schematic you will omit the starting battery and connect the main engine to the battery with **BLACK** and **RED** cables. The **YELLOW** cable will go to the same terminal as **RED**.

INSTALLATION

See the appendix for use of circuit breakers and fuses.

The following connections do not have to be made right on the battery terminals but any wire or cable extensions between the battery and theTrollbridge36® must be heavy enough to carry the trolling motor and charging currents.

MAKING ANY Trollbridge36® SUPPLIED CABLES SHORTER WILL VOID THE WARRANTY. Extending with 6 or 10 gauge wire is OK. Cutting off existing terminals to make extensions is OK.

DOUBLE CHECK SCHEMATIC BEFORE MAKING EACH CONNECTION. A mistake can cause sparks and damage the Trollbridge36®.

1. Remove **ALL** existing battery cables, **SEE WARNING**.
2. On a 4 battery system, connect the negative of the starting battery to the negative of battery **1**.
3. Connect the **BLACK** Trollbridge36® ground wire to the Negative terminal of battery **1**. This terminal also connects to the negative of the starting battery and the negative side of the trolling motor.
4. The **RED** cable is connected to the positive terminal of battery **1**. *On 3 battery systems this is also the starter motor positive connection.*
5. The **YELLOW** cable is the incoming charging line and will be connected to the positive of the starting battery. *On a 3 battery system connect it to the* **RED** *terminal.*
6. Connect the **PURPLE** wire to battery **2** negative. **See**
7. Connect the **WHITE** cable to battery **2** positive. **See**
8. The **GREEN** cable goes to battery **3** negative. **See**

NO OTHER WIRES CONNECT TO THESE TERMINALS (Except charging lines from a shore power charger).

9. Connect the **BLUE** cable to the trolling battery **3** positive terminal. This is the +36 volt supply to the trolling motor

TROLLING MOTOR CONNECTION

The positive terminal of battery **3** will connect to the trolling motor positive supply. 6 gauge wire is normal. A 50 amp circuit breaker is recommended in this motor connection for protection against shorts, motor failure and as a safety disconnect.

The negative side of the trolling motor connects to the negative terminal of battery 1 as stated above.. 6 gauge wire is recommended.

OPERATING INSTRUCTIONS.

DEEP DISCHARGE IS THE BIGGEST BATTERY KILLER. Avoid running below 37 volts as much as possible.

1. Off

The Trollbridge36® draws no power when not charging or trolling and does not need an on/off switch. It should be left connected to the batteries at all times. When “off” there will be 36 volts available to the trolling motor.

2. Charging

When you start the main engine, or apply any charging

source to the starting battery, the Trollbridge36® will first wait for the starting battery to get some charge (13 volts) then automatically put the trolling batteries in parallel and deliver charge. While charging the **green CHARGING LED** is on and only 12 volts will be available to the trolling motor so it will not run. If the trolling batteries are low the Trollbridge36® may cycle on and off to prevent overloading the alternator and protect the starting battery charge.

3. Trolling

When charging stops there will be a delay while the battery voltages drop below 13 before the **LED** goes off and 36 volts is available for trolling. Press the REMOTE button if you need 24 volts immediately.

TROUBLE SHOOTING

A volt meter can help diagnose problems. First check the voltage across each pair of battery terminals.

Measure the output voltage (**BLACK** wire to **BLUE**). If it is less than about 30 volts you have a bad battery or a wiring problem and to protect the starting battery and alternator the Trollbridge36® will **NOT** enter charging mode.

When charging, measure the voltage on the starting battery, the Trollbridge36® **green "CHARGING" LED** will not come on until the battery gets over 13 volts for 30 seconds and at least 30 volts on the **BLUE** wire.

Check the wiring by putting the negative meter lead on the **BLACK** cable. When the LEDs are off you should measure +12 volts on **RED** and **PURPLE**, +24 volts on **WHITE** and **GREEN** and +36 volts on **BLUE**.

If the **green LED** is on all battery positive terminals should read the same voltage as the starting battery (13.0 to 14.2 depending on state of charge.).

If one of the batteries has failed the Trollbridge36® will not switch to parallel mode for charging.

When charging is terminated the green **LED** will go off and the output reverts to 36 volts. This happens when the batteries get down below 13 volts. There is a time delay which can be canceled by operating the REMOTE button.

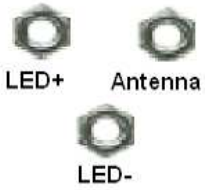
APPENDIX

Shore power charger. If your boat already has a shore power charger, just leave it as-is. No changes are needed. If adding a charger, a single output charger is all that is needed. Connect it to the starting battery.

A truck charging line can be connected to the starting battery to charge all batteries.

Radio Remote Button. If you need the ability to run both motors at the same time or 36 volts is not available soon enough after charging has stopped, momentarily press the remote control button. This will **lock** in the 36 volt mode until the starting battery is below 13 volts.

If you have radio receiver problems, add a 9.5" wire for antenna.



Remote "CHARGING" LED Terminal LED+ puts out +10 milliamps for direct connection to a remote LED. The LED negative goes to LED- or any boat negative. No resistor is needed.

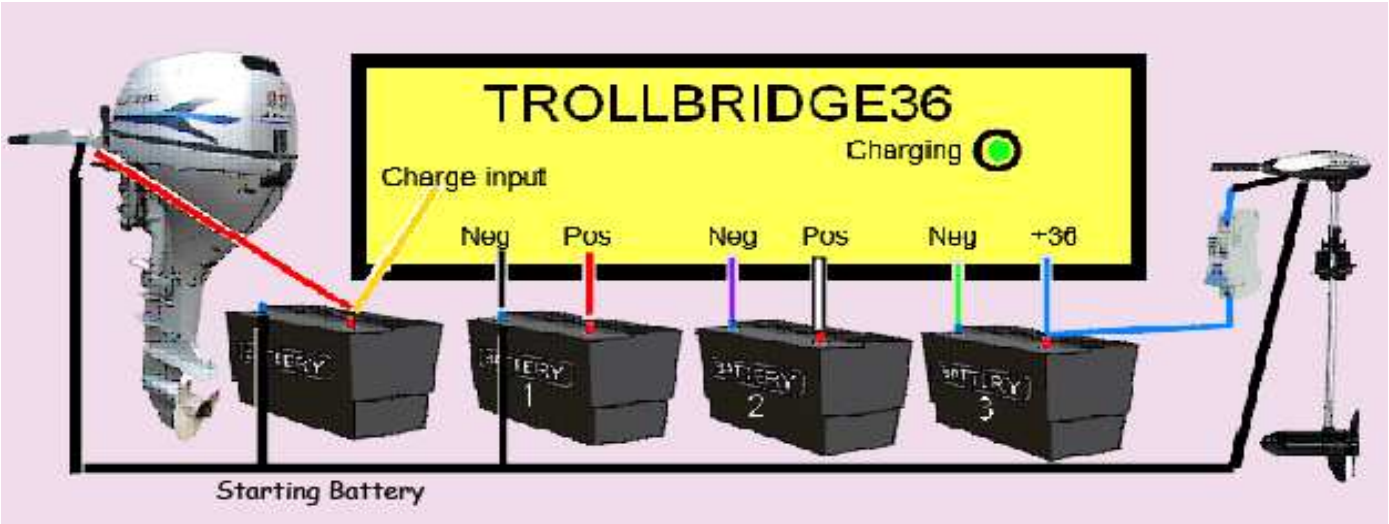
Circuit breakers and fuses. The positive feed to the trolling motor should always have a circuit breaker, 50 amp rating is typical. For ultimate protection and ABYC compliance, the Red, White and Blue wires to the battery positive terminals could be fitted with disconnect switches and 100 amp slow blow fuses but if the wiring is well protected from accidental damage they are frequently omitted.

WARRANTY ***SEE WARNING ON PAGE 1***

§ ***WARRANTY VOID IF SUPPLIED CABLES ARE MADE SHORTER*** otherwise we offer an unlimited warranty for repair or replacement if ever it doesn't work. These power leads cannot be shortened because they provide a few milliohms of resistance that protects the Trollbridge36® from excessive current when batteries at different voltages are switched in parallel. They have no detrimental effect at normal operating currents.

Check at http://www.yandina.com/AboutUs.htm to get service information and the warranty return address.

TECHNICAL EMAIL QUERY tech@yandina.com or call 877 355 2184 toll free (843 524 2282 direct).



ON 3 BATTERY SYSTEMS THE OUTBOARD USES TROLLING BATTERY #1 FOR STARTING