

TROLLBRIDGE24[®] COMBINER

CHARGE 24 VOLT TROLLING BATTERIES FROM 12 VOLTS

SUMMARY

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The Trollbridge24[®] Combiner allows you to charge your 24 volt trolling motor battery from the 12 volt alternator on your main engine, your trailer hookup or 12 volt charger. It works automatically by putting two 12 volt batteries in series when you need to run the trolling motor and putting them in parallel for charging. It is bi-directional so when not trolling, the trolling booster battery backs up your starting or house battery.

FEATURES

- < Fully automatic, no switches or connectors to change
- < Both batteries operate in parallel when not trolling
- < Works with minimal 2 battery systems if desired
- < Eliminates the need for multiple output chargers
- < Can be conveniently located with the batteries
- < Rated for 12 volt alternators up to **100 amps**
- < Rated for 24 volt trolling motors up to **85 amps**
- < Green LED indicates 24 volt output active
- < Optional remote indicator compatible §
- < Nearly UNLIMITED warranty *
- < Waterproof - will operate submerged in salt water
- < Ignition rated for explosive atmospheres
- < No voltage drop so batteries reach full charge
- < No voltage drop so motor gets full power
- < No wasted power, no heat sink or cooling required
- < No modification to alternator or 12 volt wiring
- < Simple 5 wire basic installation
- < Comes with all cables for basic hookup
- < Draws no current when off - no on/off switch needed
- < No diodes to burn out if accidentally shorted
- < Withstands ambient temperature to over 175°F (80°C) for engine compartment mounting

SAFETY CONSIDERATIONS

DANGER: During installation voltages may be present on unattached cables. Make sure these do not short out to boat ground, battery positive, or to each other.

WARNING: Use 6 gauge wire for the motor cables and for extending the supplied cables. The 10 gauge wire supplied is used for current limiting protection - see explanation under WARRANTY at end of

these instructions.

Since the connections made in the battery circuits can carry hundreds of amps, it is imperative that you have low resistance connections. This means having clean metal to metal contact, the right size ring terminals, properly crimped terminals, and secure mechanical fastenings.

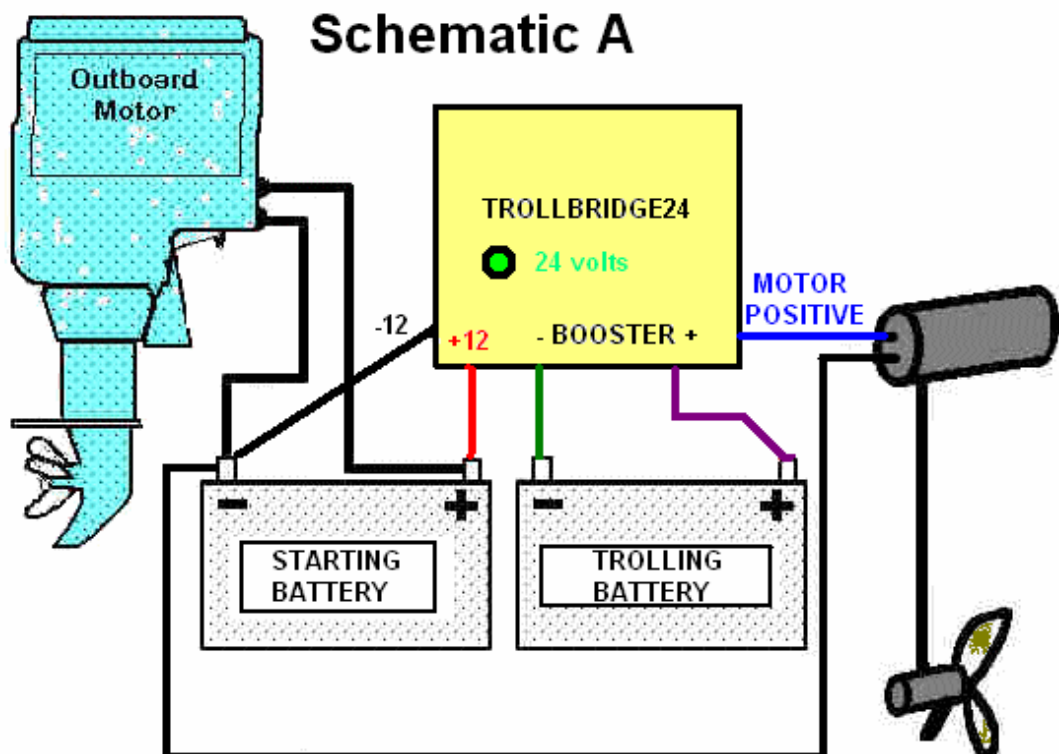
BASIC INSTALLATION

The Trollbridge24[®] uses two 12 volt batteries to make 24 volts.

One of these batteries can be either the normal starting battery (Schematic A), or a 12 volt "house" battery if your boat has one (Schematic B). If you use the house battery, it should be connected to the starting battery with a battery combiner so both batteries will get a charge from the alternator when the main engine is running.

The other "trolling" or "booster" battery is used only for the trolling motor and **cannot be connected to anything else** but it remains in parallel with the starting/house battery when the trolling motor is not in use.

1. Connect the **BLACK** ground wire to the common negative of your main 12 volt battery ground terminal. Shorten if necessary. Lengthen with 8 or 6 gauge wire if needed.
2. The **RED** cable is connect to the positive terminal of the main 12 volt battery. For safety a 100 amp slow blow circuit breaker should be installed on this cable. **SHORTENING THIS CABLE WILL VOID THE WARRANTY** *. Extending with 6 gauge wire is OK.



The connections do not have to be made right on the battery terminals but any wire or cables between the battery and the Trollbridge24[®] must be heavy enough to carry the trolling motor current in addition to any existing loads on those cables.

3. Connect the **GREEN** cable to the trolling battery negative terminal. **No other connections should be made to this negative battery terminal. SHORTENING THIS CABLE WILL VOID THE WARRANTY** *. Extending with 8 or 6 gauge wire is OK.
4. Connect the **PURPLE** cable to the trolling battery positive terminal. **SHORTENING THIS CABLE WILL VOID THE WARRANTY** *. Extending with 8 or 6 gauge wire is OK. For safety a 100 amp slow blow breaker should be installed on this cable. **No other connections should be made to this positive battery terminal.**
5. The **BLUE** cable connects to the trolling motor positive input. This cable can be shortened if desired. **No other connections should be made to this cable.** Extend with 8 or 6 gauge wire where necessary.
6. The negative side of the trolling motor connects to the main negative terminal of the starting/house battery. It does **not** connect to the negative terminal of the trolling battery. 8 or 6 gauge wire is recommended.
7. § If you want to install an **optional remote** indicator that shows when you are in 24 volt mode use a 12 volt panel mount indicator and connect one wire on the common negative (**BLACK**) terminal and the other indicator wire on the Trolling Battery negative (**GREEN**) wire. If it is a 12 volt LED style lamp, the green wire is the positive connection.

OPERATING INSTRUCTIONS.

The Trollbridge24[®] automatically puts the batteries in series whenever you turn on the trolling motor. When not trolling, there is 12 volts going to the motor to detect when it gets turned on. Within a few milliseconds of being turned on, the voltage switches to 24 volts and the **green LED** turns on.

When the trolling motor is off for about 10 seconds the batteries are put back in parallel. If the main engine is running both batteries will receive a charge when they are in parallel and both are available for starting or house loads.

Running both engines at the same time does no harm. Unequal loads on the batteries is not a problem since the batteries equalize every time the trolling motor is off.

12/24 volt motors will work OK. They will use both batteries in parallel for 12 volts and in series for 24 volt operation..

TROUBLE SHOOTING

The amount of charging available is limited by the alternator output and how long it runs. Older outboard alternators often have minimal output so running time for the trolling motor will be governed by the running time of the main engine and the battery capacity.

A buzzing sound when applying a 24 volt load indicates that one of the batteries is not connected.

APPENDIX

A **shore power charger** can be connected to the starting battery to charge all batteries. A charger can be connected directly to the trolling battery if desired but it **must** have an isolated output so it doesn't short out the main battery through a common ground if the trolling motor gets turned on.

WARRANTY

*** WARRANTY VOID IF POWER LEADS ARE SHORTENED** otherwise we offer an unlimited warranty. These leads cannot be shortened because they provide a few milliohms of resistance that protects the Trollbridge24[®] 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).

