

## Eclectic Energy Limited

Unit 22, Sherwood Networkcentre, Sherwood Energy Village, Ollerton, Nottinghamshire, NG22 9FD  
Telephone 01623 835400 Fax: 01623 860617  
E-mail: [sales@duogen.co.uk](mailto:sales@duogen.co.uk) Web: [www.duogen.co.uk](http://www.duogen.co.uk)

## Twin Battery Voltage Regulator Instructions

THIS REGULATOR IS ONLY SUITABLE FOR NEGATIVE EARTH SYSTEMS.

The regulator is designed to sense and limit the output voltage of a DuoGen generator to 14.0 – 14.2 volts (12V models) or 28.0 – 28.4 volts (24V models) and thus prevent batteries becoming over charged. It includes a voltage monitoring / PWM circuit, a Power Mosfet, and two Schottky Blocking Diodes, which allows the DuoGen generator to charge two batteries totally independent of each other, therefore making it ideal for separate charging of engine starting and domestic batteries. The battery with the lowest terminal voltage will be charged first, then when both batteries become fully charged the DuoGen generator's output is automatically diverted to the dump resistors. This does two things: it stops the batteries over-charging; and it keeps the generator always on load.

**WARNING!** The regulator is potted to fully protect the electronics for a marine environment so the warnings below must be carefully followed as **THE UNITS ARE NOT REPAIRABLE**.

1. Whilst initially wiring in the DuoGen and the regulator, or carrying out future maintenance, ie. removing battery terminals for cleaning or replacing battery, it is **MOST IMPORTANT THAT THE DUOGEN WIND ROTOR IS STATIONARY / OR THE DUOGEN WATER IMPELLER IS NOT ROTATING**, so that it produces no output. This eliminates the most damaging situation where the regulator is not connected to a battery but to the open circuit voltage of the DuoGen.
2. The output cable from the DuoGen **MUST** be connected to the regulator with the correct polarity. (+ to + RED TO RED) (- to - BLACK TO BLACK)
3. The dump resistors **MUST** always be connected to the regulator via the GREY cables.
4. There are two RED cables leaving the regulator. One must be attached to the + POSITIVE terminal of battery No. 1 and the other RED cable to battery No. 2.
5. The BLACK negative cable leaving the regulator must be connected to a - NEGATIVE terminal on one of the batteries. A heavy duty common negative link cable must be connected between the two batteries.

**FOLLOW THE WIRING DIAGRAM OVERLEAF WHEN CONNECTING THE REGULATOR INTO A YACHT WIRING SYSTEM.**

The dump resistors can become **VERY HOT** when switched on, but this will only occur when the batteries are fully charged, and the DuoGen is at its maximum output. The dump resistor should be mounted horizontally on a heat resistant surface in a well ventilated position. The regulator should be positioned as close as possible to the batteries. If the regulator output cables require extending over 1 metre in length, then cable with a larger cross sectional area must be used to reduce voltage drop. With the regulator now positioned and connected to the batteries, the dump resistor can be connected to it via the grey cables. Use the connector block supplied to connect the output cable of the DuoGen to the regulator observing the polarity + to +, - to -.

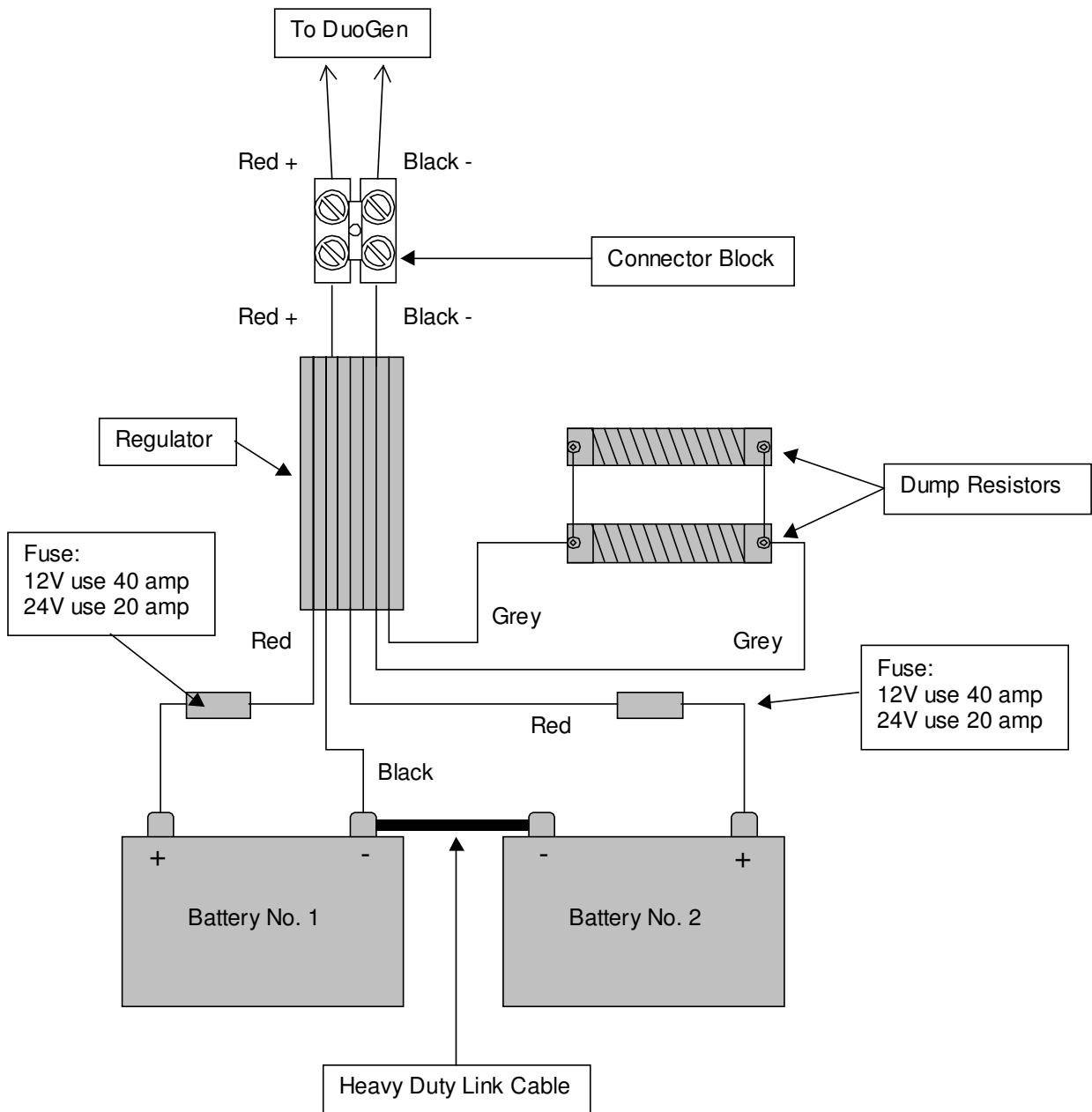
The regulator **MUST** be attached directly to the battery terminals as shown in the wiring diagrams. It **MUST NOT** be wired indirectly to the batteries via change-over / isolating switches. This will prevent the DuoGen operating open circuit when the switch is in an off / isolate position and ensure the batteries are charged by the DuoGen at all times. The regulator can be left connected to the batteries whilst other charging systems are operating eg. Onshore battery chargers, engine alternators. The regulator will not affect the operation of alternator controllers. (T.W.C/ADVERC). Three batteries/banks can be regulated by fitting additional diode units (separate instructions available). Switches can be fitted in both RED positive cables leaving the regulator to charge and regulate one or both batteries.

**NOTE:** The regulator unit must always be connected to at least one battery. If one battery/bank only is to be charged the two RED cables leaving the regulator should be connected directly to one positive battery terminal.

**INTERFERENCE:** All aerial cables should be routed a minimum of one meter from the DuoGen and regulator/dump resistor cables to avoid interference on Decca, Radar, Sat. Nav., Radio, etc.

**NOTE:** The dump resistor will make a very slight buzzing sound when operating ie. Dissipating current.

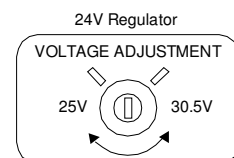
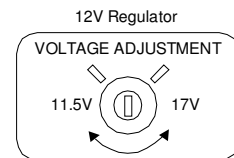
## DuoGen Twin Battery Voltage Regulator Wiring Diagram with Two Batteries / Banks



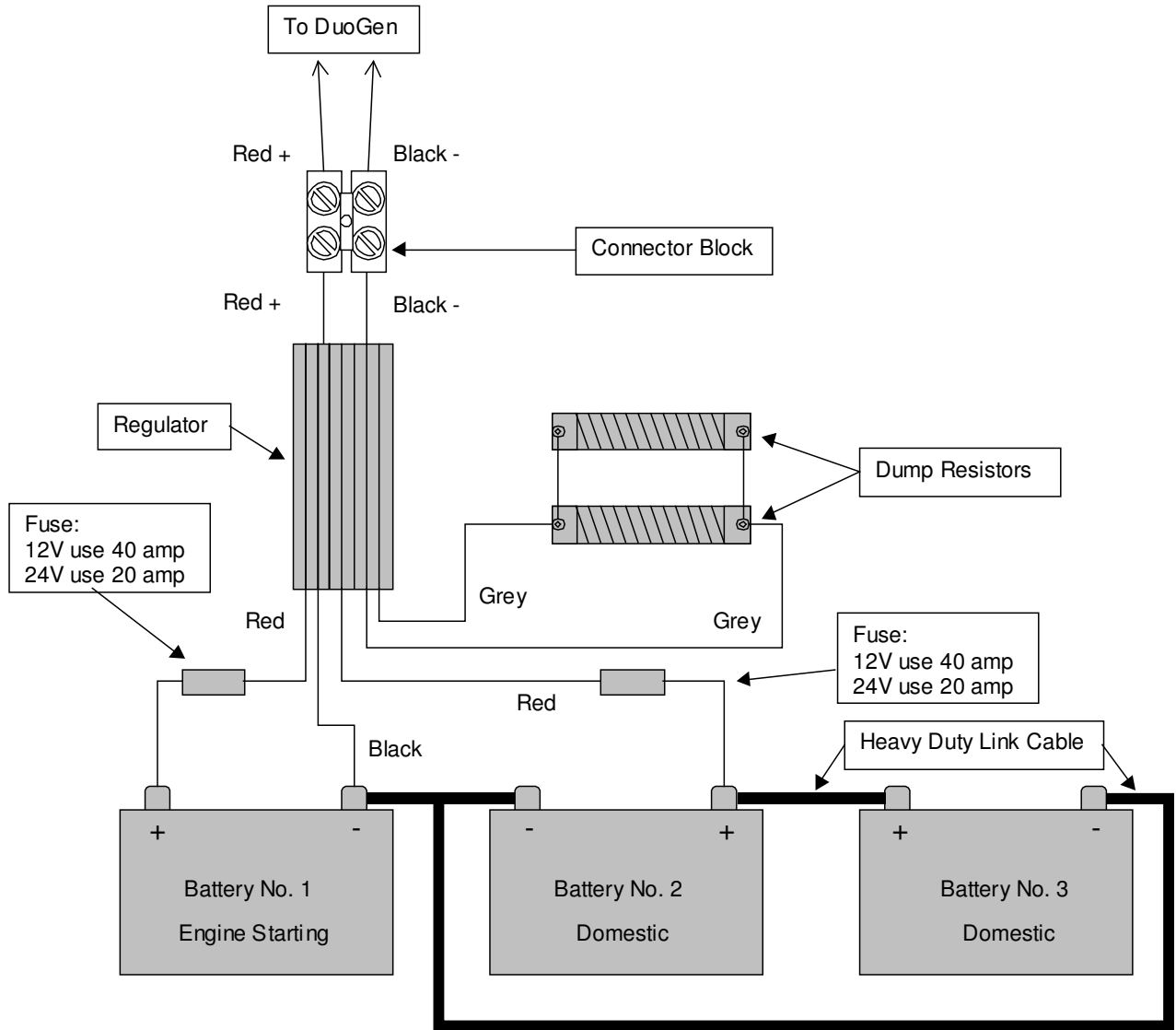
NOTE: ALL REGULATORS ARE FACTORY SET TO 14.2V FOR 12V MODELS, 28.4V FOR 24V MODELS

IF YOU ARE CHARGING SPECIAL BATTERIES WHICH REQUIRE A DIFFERENT VOLTAGE SETTING, ADJUSTMENTS CAN BE MADE AS FOLLOWS:

On the underside of the regulator (potted side) is a hole which allows a small screwdriver to pass through and adjust the trimmer to change the voltage setting of the regulator. It is advisable to make a note of the original setting position of the trimmer before making any adjustments. Adjustment should only be carried out whilst the DuoGen is charging a fully charged battery and the dump resistor can be heard emitting a slight buzzing sound as it starts to cut in, (this indicates the voltage setting of the regulator). Gradually make very small adjustments whilst monitoring the battery voltage with a multimeter.

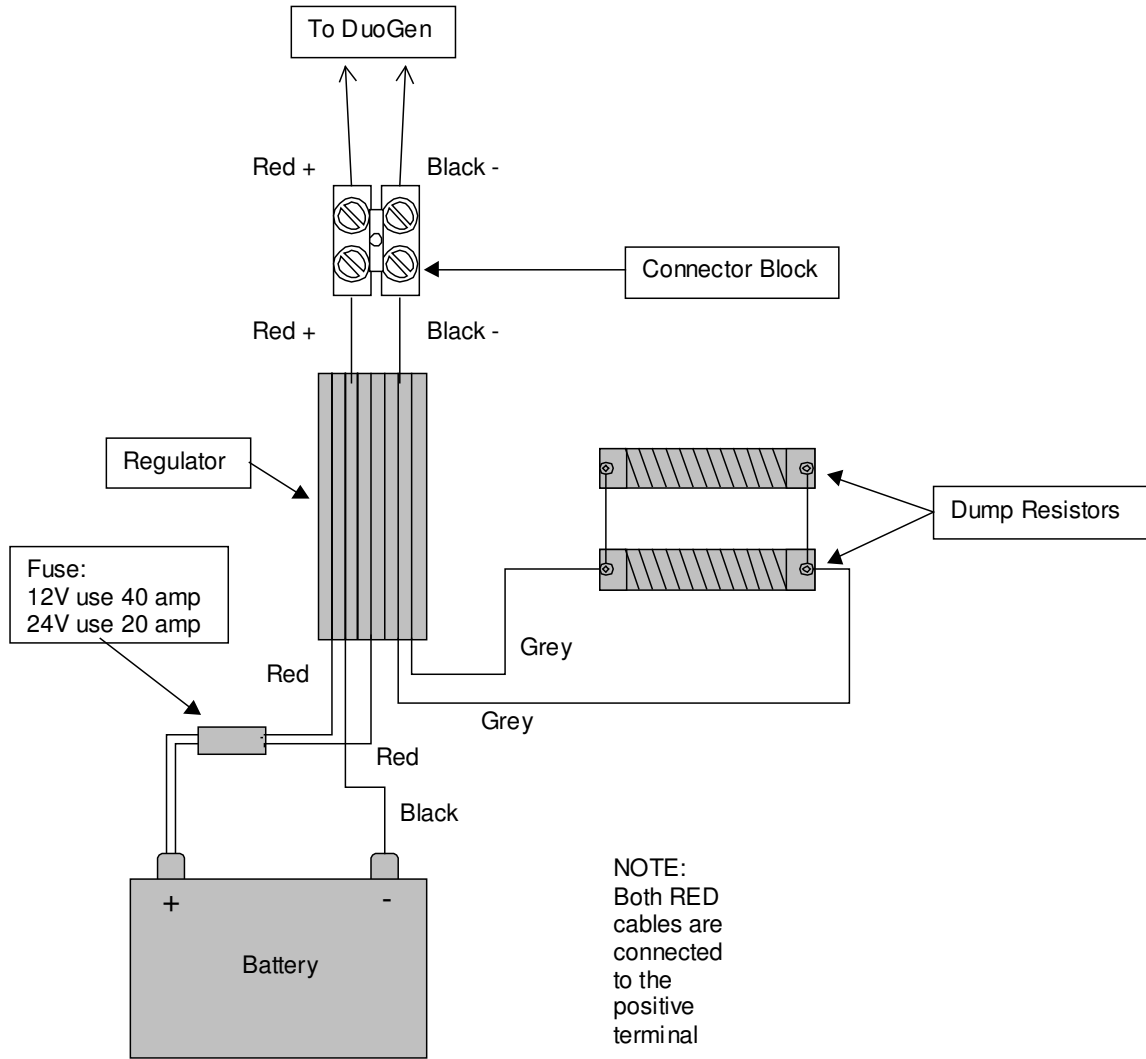


# DuoGen Twin Battery Voltage Regulator Wiring Diagram with Three Batteries / Two Banks

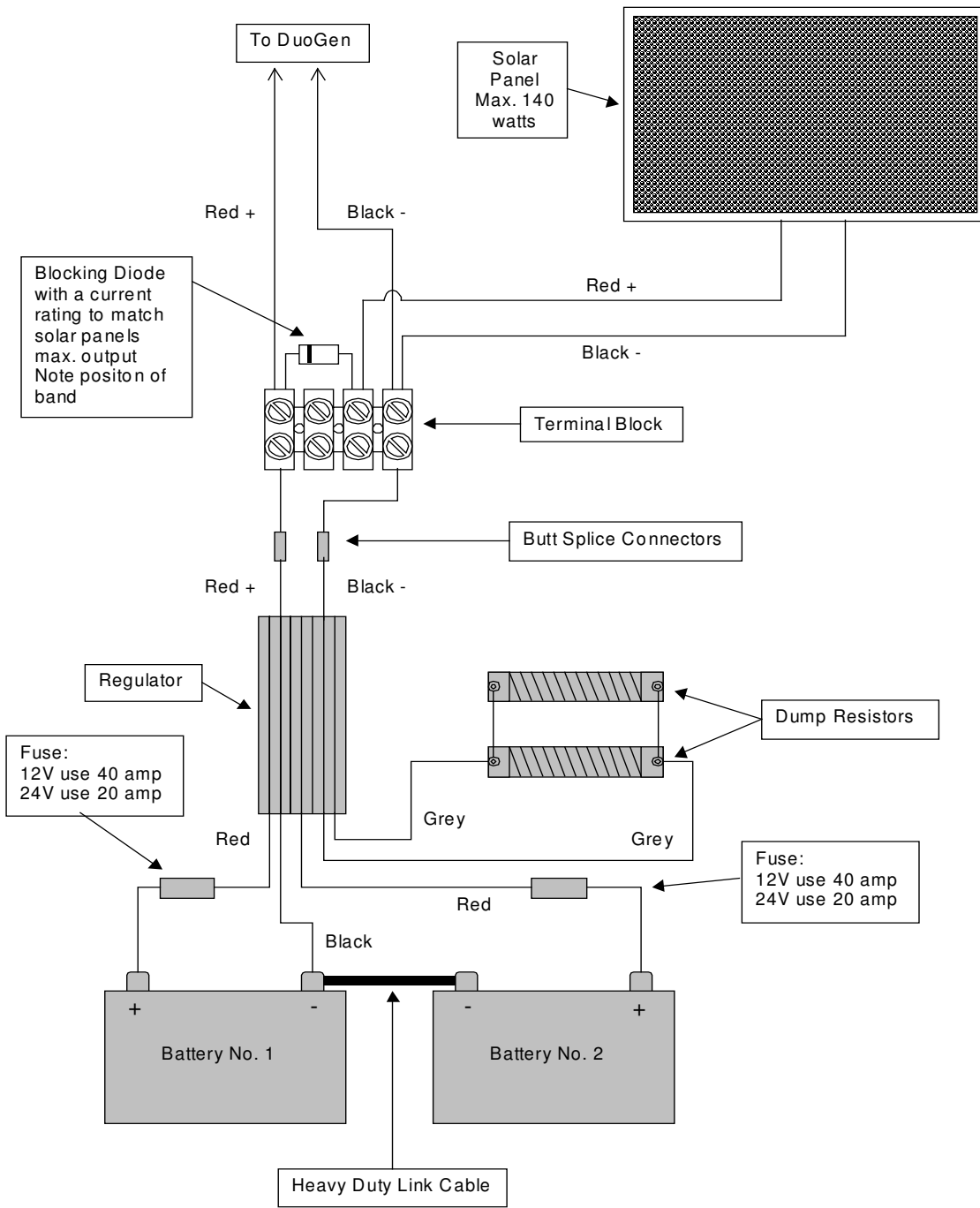


Domestic Batteries 2 & 3 are shown connected in parallel

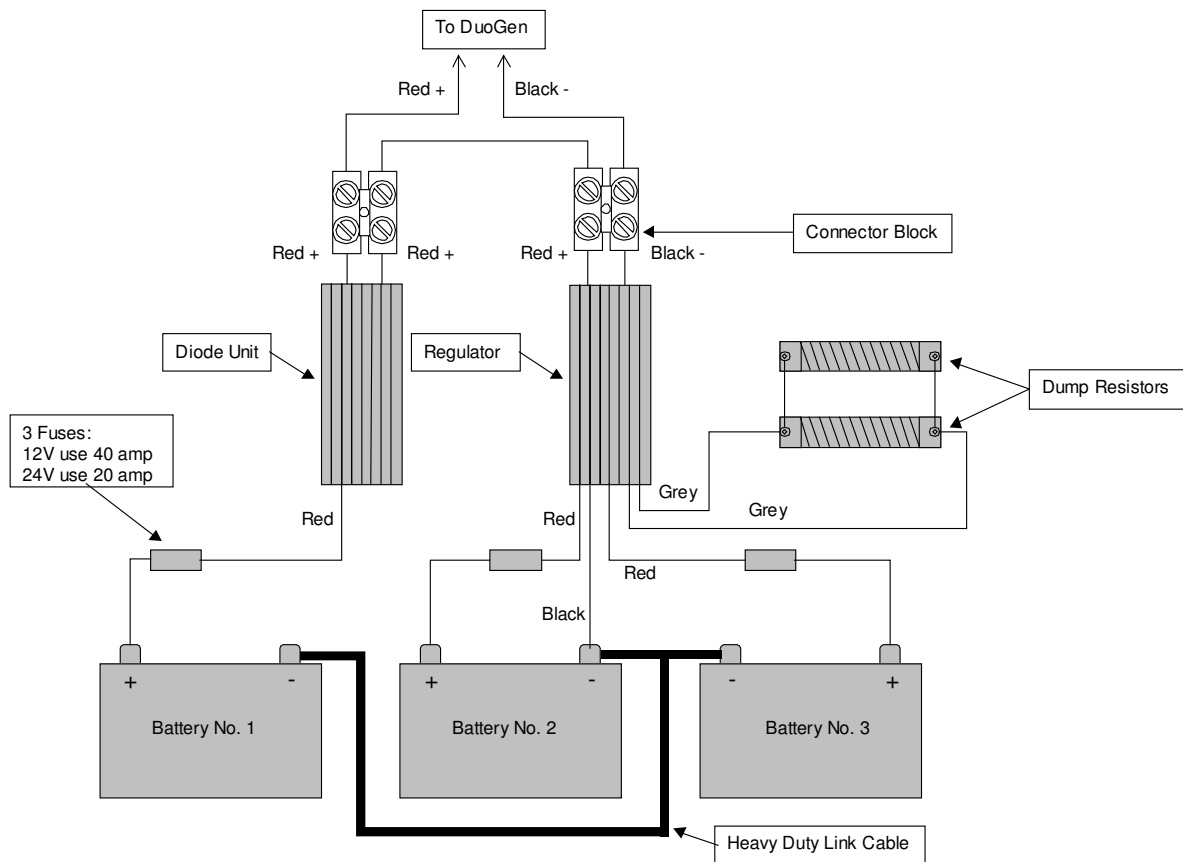
# DuoGen Twin Battery Voltage Regulator Wiring Diagram with One Battery / Bank



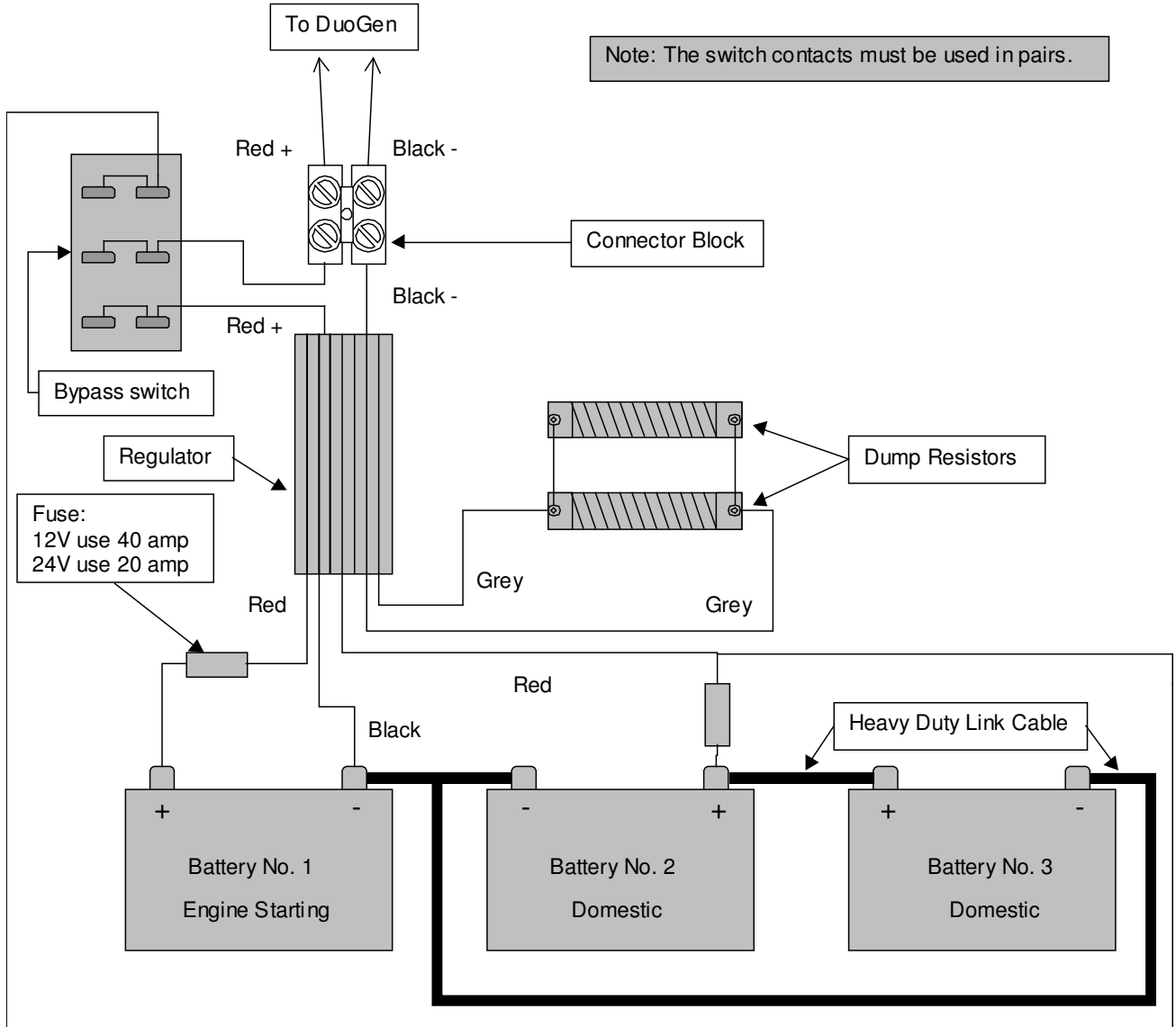
**DuoGen Twin Battery Voltage Regulator Wiring Diagram with Two Batteries / Banks and a Solar Panel (Max. 140 watts)**



DuoGen Twin Battery Voltage Regulator Wiring Diagram with Three Batteries / Banks



**DuoGen Twin Battery Voltage Regulator Wiring Diagram with Three Batteries / Two Banks  
Incorporating Bypass Switch**



Domestic Batteries 2 & 3 are shown connected in parallel