6TB12-A / 6TB24-A TWIN BATTERY VOLTAGE REGULATOR INSTRUCTIONS

(With built in Low Voltage Alarm Drive) **CE**

THIS REGULATOR IS ONLY SUITABLE FOR NEGATIVE EARTH SYSTEMS.

These instructions cover the following models: 6TB12-A, 6TB12-AT (12v system) & 6TB24-A, 6TB24-AT (24v system).
The 6TB12-A regulator is designed to sense and limit the output voltage of an Aero6gen to 14.0 – 14.2 volts (12v models) 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 allow the Aero6gen 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 Aero6gen output is automatically diverted to the dump resistor. This does two things, it stops the batteries over charging and keeps the generator always on load.

ALARM DRIVE OUTPUT – Built into the regulator is a low battery sensing circuit that continually monitors both battery terminal voltages. It is factory set at 11v (6TB12-A) and 22v (6TB24-A).
The RED 0.7mm sq wire (labelled ALARM DRIVE) should be connected as shown in the wiring diagram overleaf to a single pole switch and a 3-30v dc piezo sounder or buzzer, then if either of the batteries voltages falls to the voltages shown above the alarm will sound.
NOTE: The regulator electronics draws no current from the battery. The low battery monitoring alarm draws 2 mA and its power is taken internally within the regulator from the RED cable which is connected to battery No. 1 as shown on the wiring diagram overleaf.

WARNING: The regulators are 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 Aero6gen and regulator or carrying out future maintenance i.e. Removing battery terminals for cleaning or replacing battery, it is MOST IMPORTANT THAT THE AERO6GEN FAN IS STATIONARY so it produces no output. This eliminates the most damaging situation where the regulator is not connected to a battery but the open circuit voltage of the Aero6gen generator.
2. The output cable from an Aero6gen MUST be connected to the regulator with the correct polarity, (+ to + RED TO RED, - to – BLACK TO BLACK).
3. The dump resistor 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 resistor can become VERY HOT when switched on, but this will only occur when the batteries are fully charged, and the Aero6gen 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 cable requires 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. Observing polarity, + to +, - to -, connect the wind generators output to the regulator by the two butt splice crimp type connectors supplied. 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 Aero6gen operating open circuit when the switch is in an off/isolate position and ensure the batteries are charged by the Aero6gen at all times. The regulator can be left connected to the batteries whilst other charging systems are operating e.g. Onshore battery charges, engine alternators. The regulator will not affect the operation or alternator controllers (T.W.C./ADVERC). By fitting an additional 6DU diode unit you can regulate four batteries/banks (see page 6). A switch can be fitted in the RED positive cable, which leaves the regulator and is connected to battery No. 2 allowing you just to charge No. 1 battery. The switch rating must be the same as the dump amps shown in the table above.

NOTE: The regulator must always be connected to No. 1 battery. If your system has only one battery (battery bank) then both red cables leaving the regulator should be connected directly to one positive batter terminal.
INTERFERENCE: All aerial cables should be routed a minimum of one Metre from the Aero6gen and regulator/dump resistor cables to avoid interference on Decca, Radar, Sat. Nav, Radio, etc.
NOTE: The dump resistors will make a very slight buzzing sound when operating i.e. dissipating current.

WIRING DIAGRAM FOR THE 6TB12–A AND 6TB24–A VOLTAGE REGULATOR

FILE 6tbta

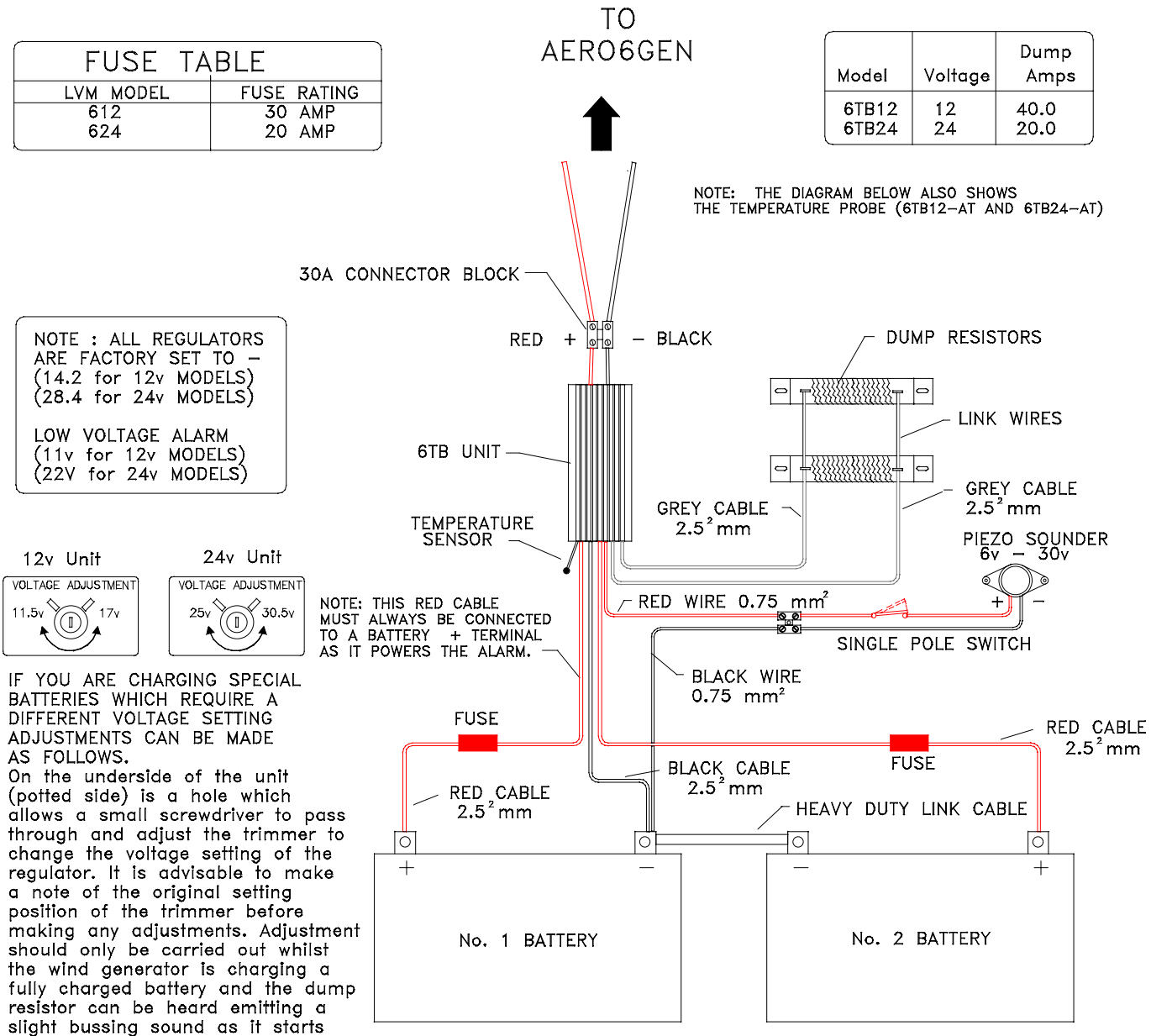
The twin battery regulator is designed to limit the Aero6gen voltage output and prevent the overcharging of TWO INDEPENDENT BATTERIES/BATTERY BANKS
It will not conflict with the operation of a TWC or ADVERC engine alternator controller if wired as shown below.

It can be used with ONE BATTERY/BATTERY BANK by simply connecting both RED outputs to the positive terminal of the battery.
To charge up to four independent batteries a 6DU diode unit must be installed. Note only the two batteries connected to the actual 6TB unit will be monitored by the low voltage alarm.

Operation of the low battery alarm – We would suggest a switch is installed as shown below, so as the alarm can be turned OFF if you are leaving the yacht unattended. Switch the alarm ON when on board.
The diagram below shows a Piezo sounder alarm, other devices can be used (bell, buzzer, warning light, relay) as long as the current draw does not exceed (0.5A @12v (0.25 @24v)
The hysteresis of the low voltage alarm is 0.2v approx.

FUSE TABLE	
LVM MODEL	FUSE RATING
612	30 AMP
624	20 AMP

Model	Voltage	Dump Amps
6TB12	12	40.0
6TB24	24	20.0



IF YOU ARE CHARGING SPECIAL BATTERIES WHICH REQUIRE A DIFFERENT VOLTAGE SETTING ADJUSTMENTS CAN BE MADE AS FOLLOWS.
On the underside of the unit (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 wind generator is charging a fully charged battery and the dump resistor can be heard emitting a slight bussing sound as it starts to cut in,(this indictes the voltage setting of the regulator).
Gradually make very small adjustments whilst monitoring the battery voltage with a multimeter.

TWIN BATTERY VOLTAGE REGULATOR WIRING DIAGRAM

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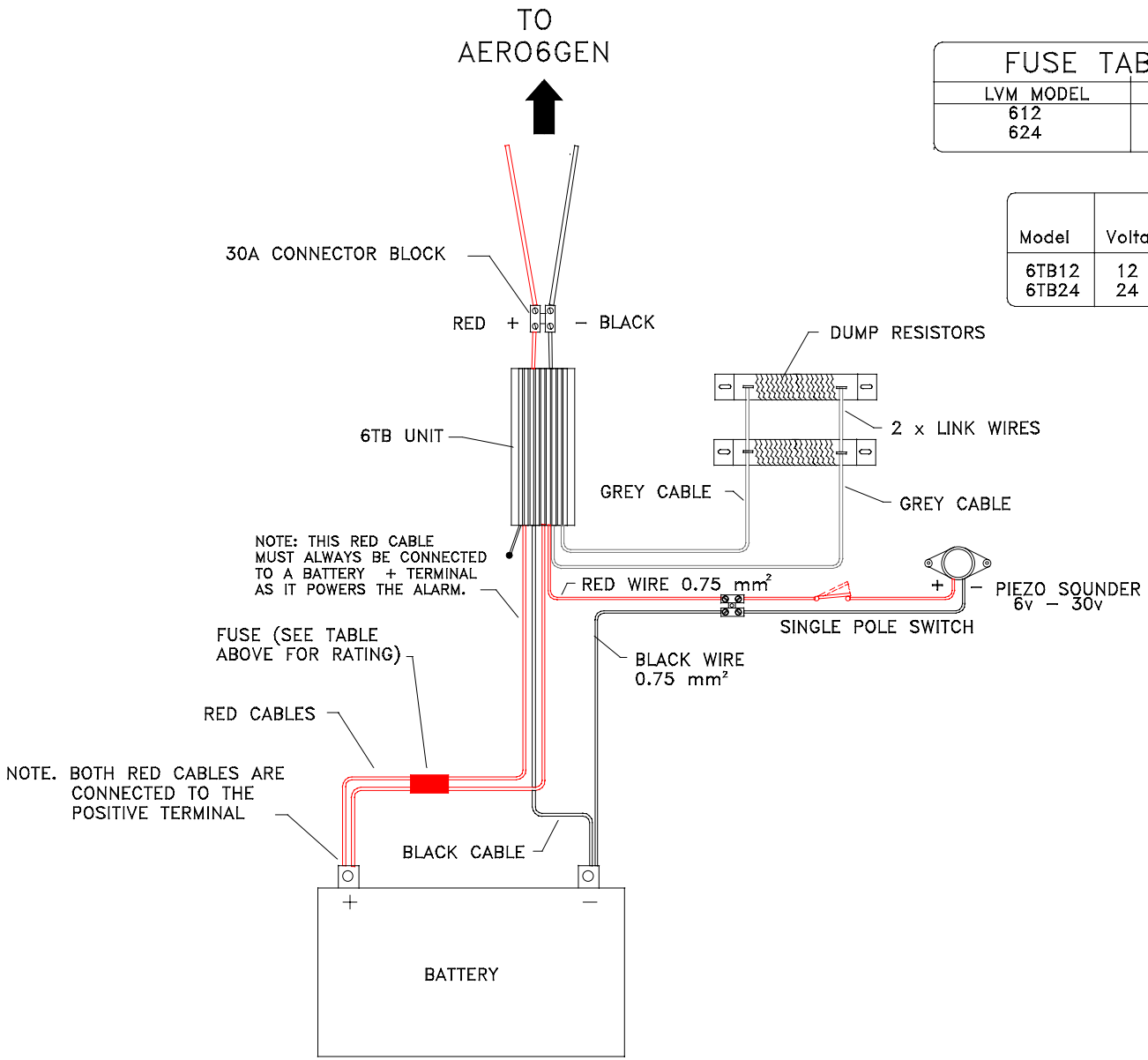
FILE 6tbA1

6TB–A VOLTAGE REGULATOR WIRING DIAGRAM SHOWING CONNECTIONS FOR A SINGLE BATTERY INSTALLATION.



FUSE TABLE	
LVM MODEL	FUSE RATING
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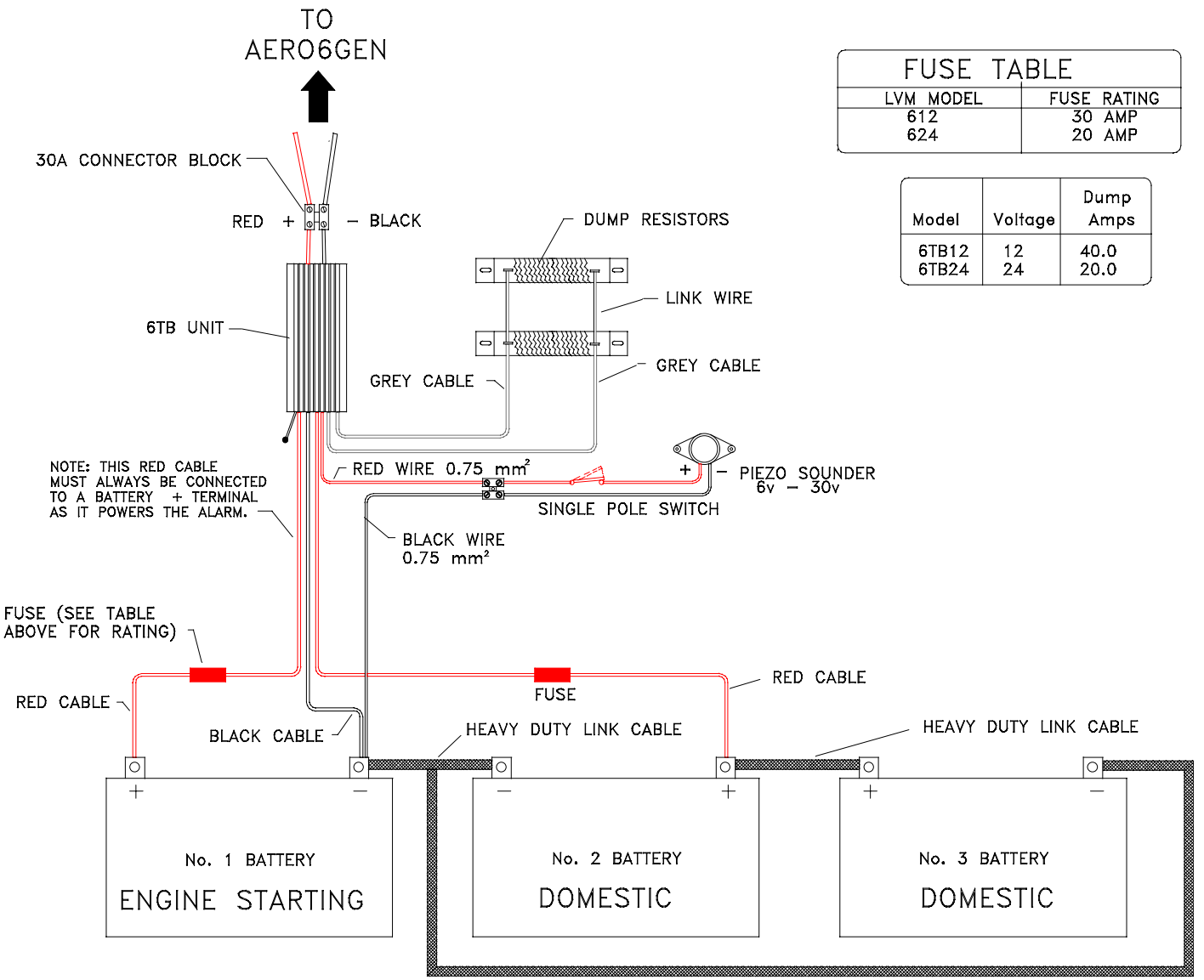
624	20 AMP

Model	Voltage	Dump Amps
6TB12	12	40.0
6TB24	24	20.0

FILE 6TBA2

6TB–A VOLTAGE REGULATOR WIRING DIAGRAM
WITH DOMESTIC BATTERIES 2 & 3 CONNECTED IN PARALLEL



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LVM MODEL	FUSE RATING
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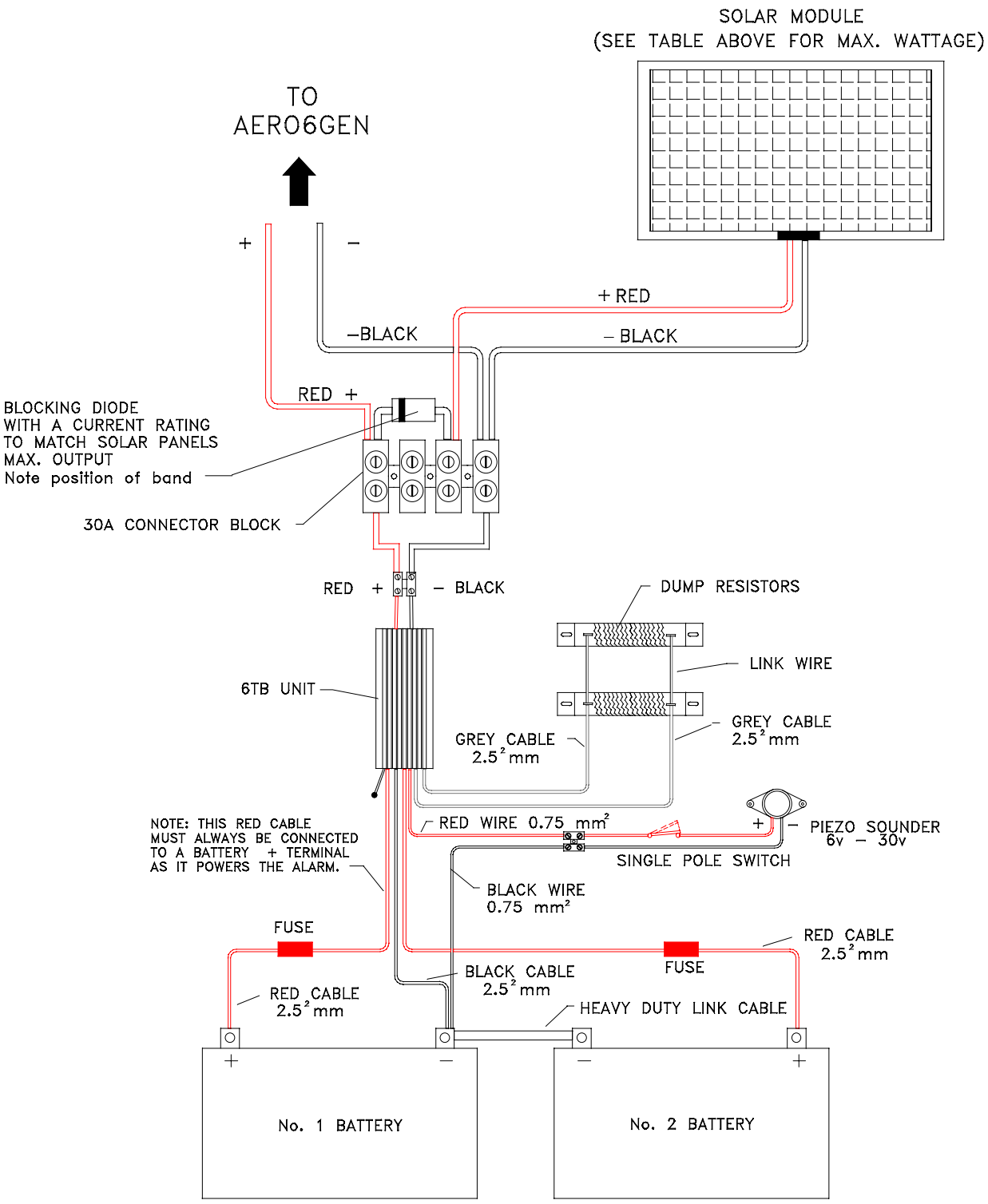
624	20 AMP

Model	Voltage	Dump Amps
6TB12	12	40.0
6TB24	24	20.0

CIRCUIT DIAGRAM SHOWING THE 6TB–A REGULATOR CONTROLLING AN AERO6GEN AND A SOLAR MODULE

FILE 6TBSA3

REGULATOR MODEL	MAX. SOLAR PANEL WATTAGE
6TB	140 WATTS



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6DU BLOCKING DIODE INSTRUCTIONS AND WIRING DIAGRAM WHEN INSTALLED WITH THE 6TB–A VOLTAGE REGULATOR

FILE 6DUA

The 6DU unit is designed to be used in conjunction with an Aero6gen and a 6TB Voltage Regulator to enable two additional batteries to be charged and regulated independently of the other batteries.

CONNECTING THE UNIT
The 6DU has two short RED cables, and two long (1 Metre) RED cables, they must be connected as follows. Each of the two long RED cables must be connected to the + positive terminal of the two batteries.
One of the short RED cables (it does not matter which one) must be connected to the + Positive output cable of the Aero6gen generator.
The other short RED cable must be connected to the RED + input cable of the 6TB regulator.

INPORTANT : THERE MUST BE A HEAVY DUTY NEGATIVE CABLE LINKING ALL THE NEGATIVE TERMINALS OF EACH BATTERY

As with the 6TB Voltage Regulators switches can be fitted in the long RED cables attached to batteries one and two, to permit individual batteries to be charged. Use 30A switches.

NOTE: AT LEAST ONE BATTERY MUST BE CONNECTED AT ALL TIMES

THE 1 Metre RED CABLES = 6DU OUTPUT
THE 500mm RED CABLES = 6DU INPUT

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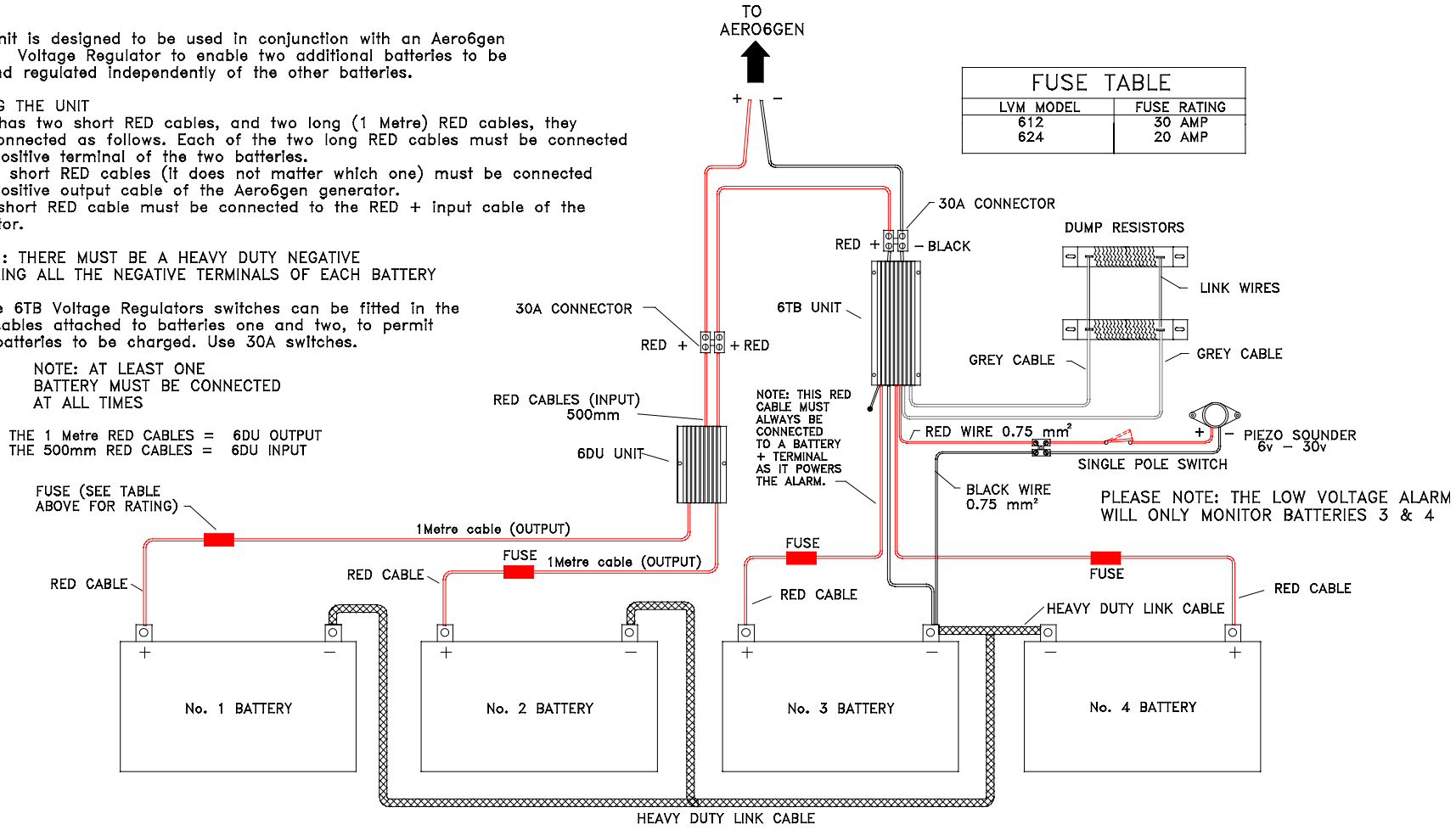
624	20 AMP



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