2TB – 4TB TWIN BATTERY VOLTAGE REGULATOR INSTRUCTIONS CE

THIS REGULATOR IS ONLY SUITABLE FOR NEGATIVE EARTH SYSTEMS.

These instructions cover the following models 2TB12 : 2TB24 : 2TB12-T : 2TB24-T : 4TB12 : 4TB24 : 4TB12-T : 4TB24-T

Models 2TB12-T : 2TB24-T : 4TB12-T : 4TB24-T have built in temperature compensation – 25mV/degC (12v model) and 50mV/degC (24v model)

They all operate as described below but vary in design and operating voltage. A table overleaf shows the maximum dump current for each model. The TB regulator is designed to sense and limit the output voltage of an Aerogen/Aquagen generator 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 allows the Aerogen/Aquagen 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 Aerogen/Aquagen generators 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.

WARNING ! The TB 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 Aerogen/Aquagen and TB regulator or carrying out future maintenance ie. removing battery terminals for cleaning or replacing battery, it is MOST IMPORTANT THAT THE AEROGEN FAN IS STATIONARY / OR THE AQUAGEN GENERATOR IS NOT ROTATING so it produces no output. This eliminates the most damaging situation where the TB regulator is not connected to a battery but the open circuit voltage of the Aerogen/Aquagen generator.
2. The output cable from an Aerogen MUST be connected to the TB regulator with the correct polarity.
   (+ to + RED TO RED) (- to - BLACK TO BLACK)
   Note. The output cable from an Aquagen MUST be connected to the regulator with the correct polarity.
   (+ to + BROWN to RED) (- to - BLUE to BLACK)
3. The dump resistor MUST always be connected to the TB regulator via the Grey cables.
4. 4. There are two RED cables leaving the TB regulator one must be attached to the + positive terminal of battery No1. and the other red cable to battery No.2.
5. The Black negative cable leaving the TB 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 TB 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 Aerogen/Aquagen generator is at its maximum output. The dump resistor should be mounted horizontally on a heat resistant surface in a well ventilated position. The TB regulator should be positioned as close as possible to the batteries. If the TB regulator output cables require extending over 1 metre in length, then a 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. Crimp the two push-on connectors supplied to the output cable of the Aerogen/Aquagen and connect them to the TB regulator observing polarity + to +, - to -.

The TB 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 Aerogen/Aquagen operating open circuit when the switch is in an off/isolate position and ensure the batteries are charged by the Aerogen/Aquagen at all times. The TB regulator can be left connected to the batteries whilst other charging systems are operating e.g. Onshore battery charges, engine alternators. The TB regulator will not effect the operation of alternator controllers (T.W.C./ADVERC). Three batteries/banks can be regulated by fitting an additional diode unit LVM 4DU. Separate instructions available. Switches can be fitted in both RED positive cables leaving the TB regulator, to charge and regulate one or both batteries.

NOTE: The TB regulator unit must always be connected to at least one battery. If one battery (battery bank) only is to be charged the two red cables leaving the TB regulator should be connected directly to one positive battery terminal. The switch rating must be the same as the dump amps shown in the table above.
INTERFERENCE: All aerial cables should be routed a minimum of one Metre from the Aerogen/Aquagen 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.

2TB – 4TB TWIN BATTERY VOLTAGE REGULATOR WIRING DIAGRAM

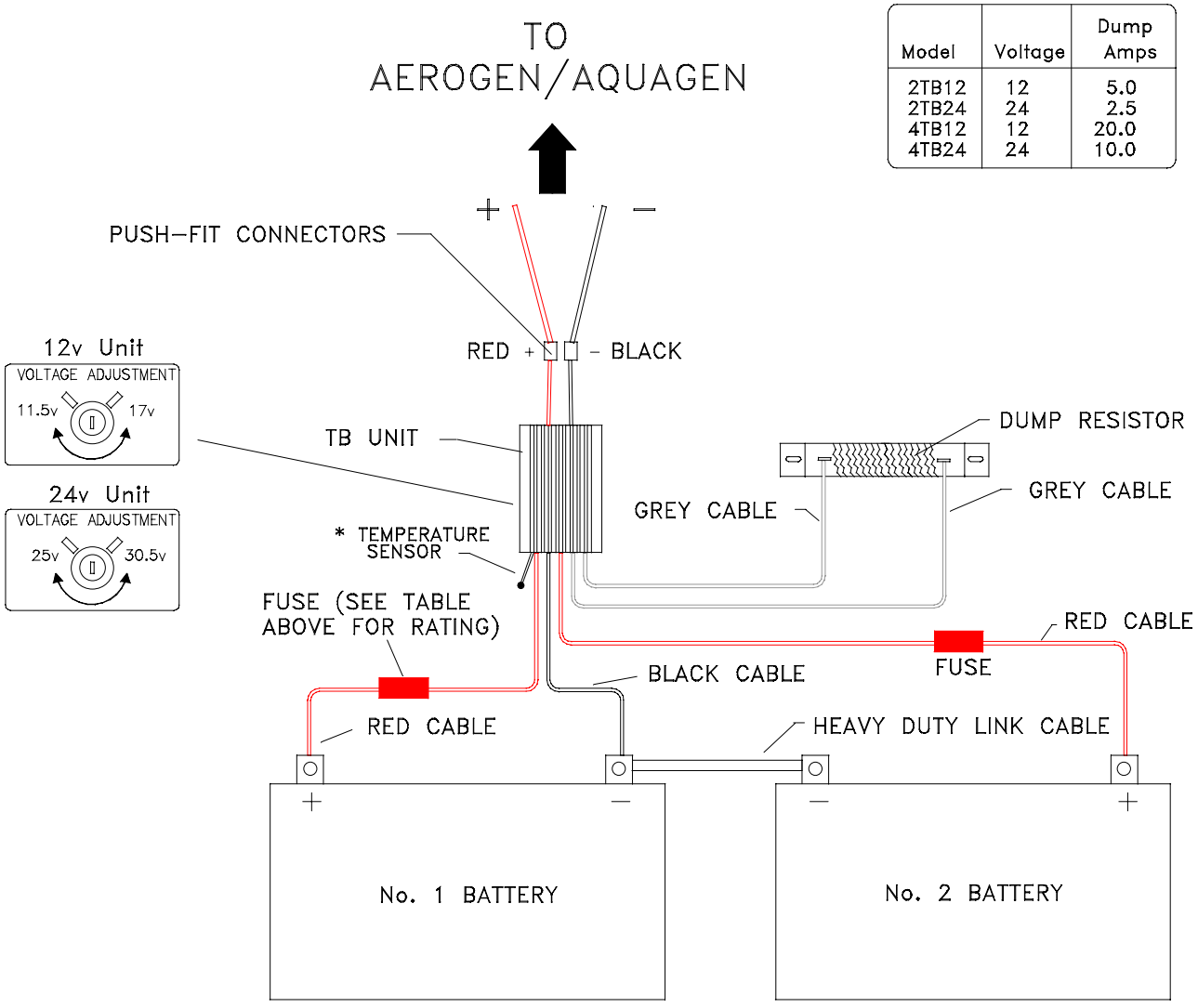
* 2TB12–T : 2TB24–T : 4TB12–T : 4TB24–T MODELS HAVE BUILT IN TEMPERATURE COMPENSATION

NOTE : ALL REGULATORS ARE FACTORY SET TO –
(14.2 for 12v MODELS) (28.4 for 24v MODELS) @ 20deg.C

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.

FUSE TABLE	
LVM MODEL	FUSE RATING
212	5 AMP
224	3 AMP
412	20 AMP
424	15 AMP
412F	20 AMP
424F	15 AMP
612F	30 AMP
624F	20 AMP
AQ412	15 AMP
AQ424	7.5 AMP
AQ612	20 AMP
AQ624	10 AMP
AQA412	20 AMP
AQA424	15 AMP

Model	Voltage	Dump Amps
2TB12	12	5.0
2TB24	24	2.5
4TB12	12	20.0
4TB24	24	10.0



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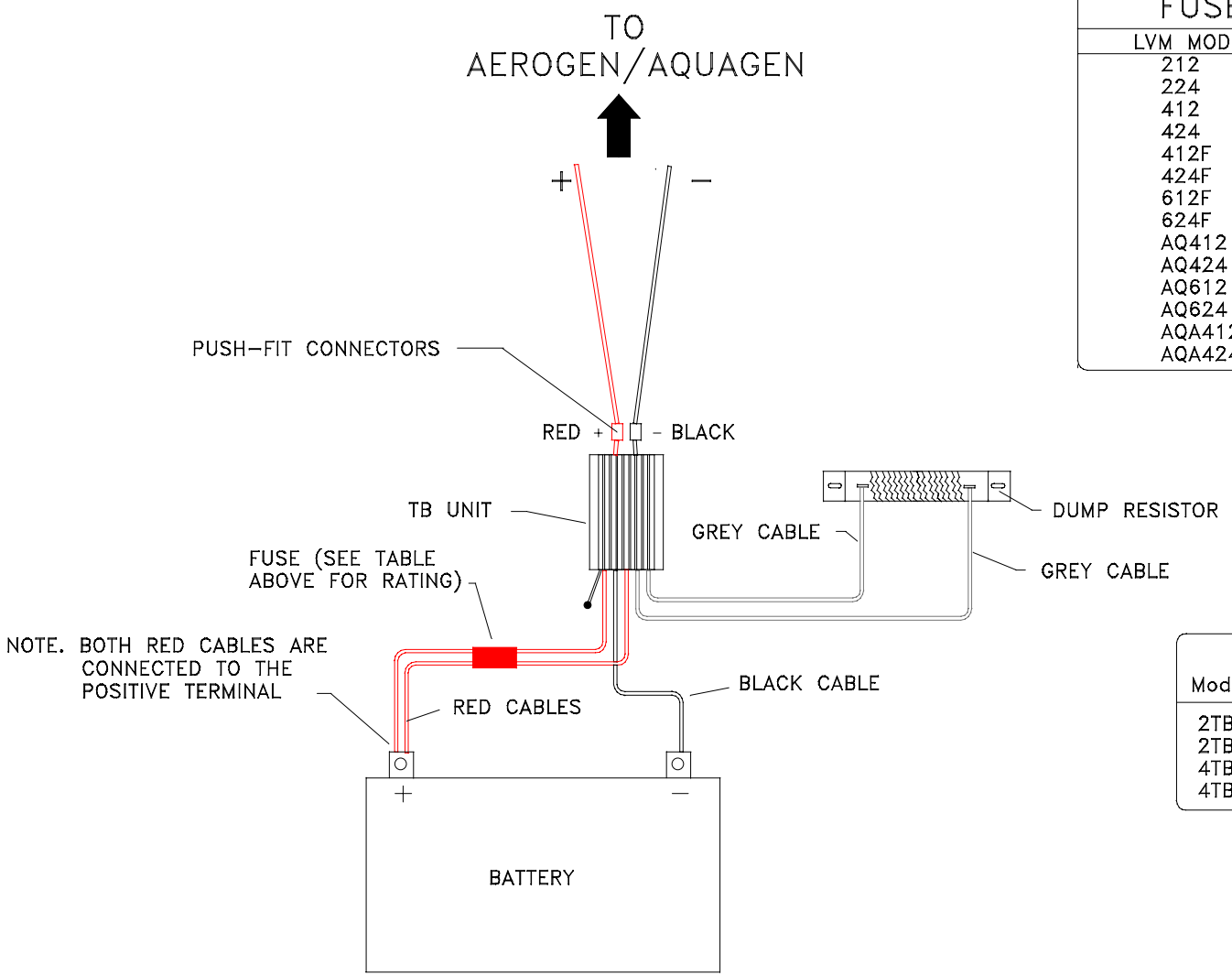
FILE TBONEB

TWIN BATTERY VOLTAGE REGULATOR WIRING DIAGRAM SHOWING CONNECTIONS FOR A SINGLE BATTERY INSTALLATION.



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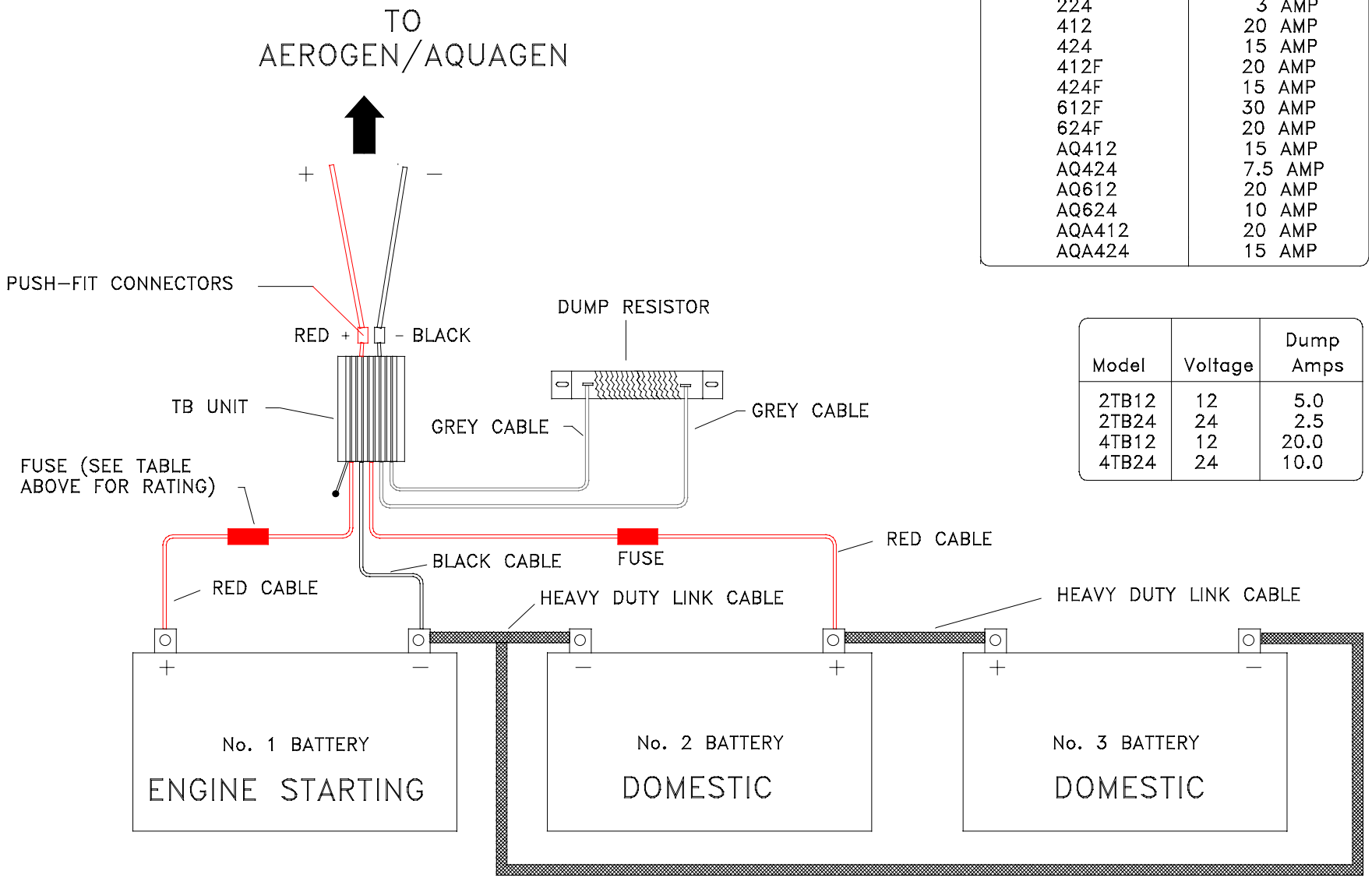
624F	20 AMP
AQ412	15 AMP
AQ424	7.5 AMP
AQ612	20 AMP
AQ624	10 AMP
AQA412	20 AMP
AQA424	15 AMP

Model	Voltage	Dump Amps
2TB12	12	5.0
2TB24	24	2.5
4TB12	12	20.0
4TB24	24	10.0

TWIN BATTERY VOLTAGE REGULATOR WIRING DIAGRAM WITH DOMESTIC BATTERIES 2 & 3 CONNECTED IN PARALLEL

FUSE TABLE	
LVM MODEL	FUSE RATING
212	5 AMP
224	3 AMP
412	20 AMP
424	15 AMP
412F	20 AMP
424F	15 AMP
612F	30 AMP
624F	20 AMP
AQ412	15 AMP
AQ424	7.5 AMP
AQ612	20 AMP
AQ624	10 AMP
AQA412	20 AMP
AQA424	15 AMP

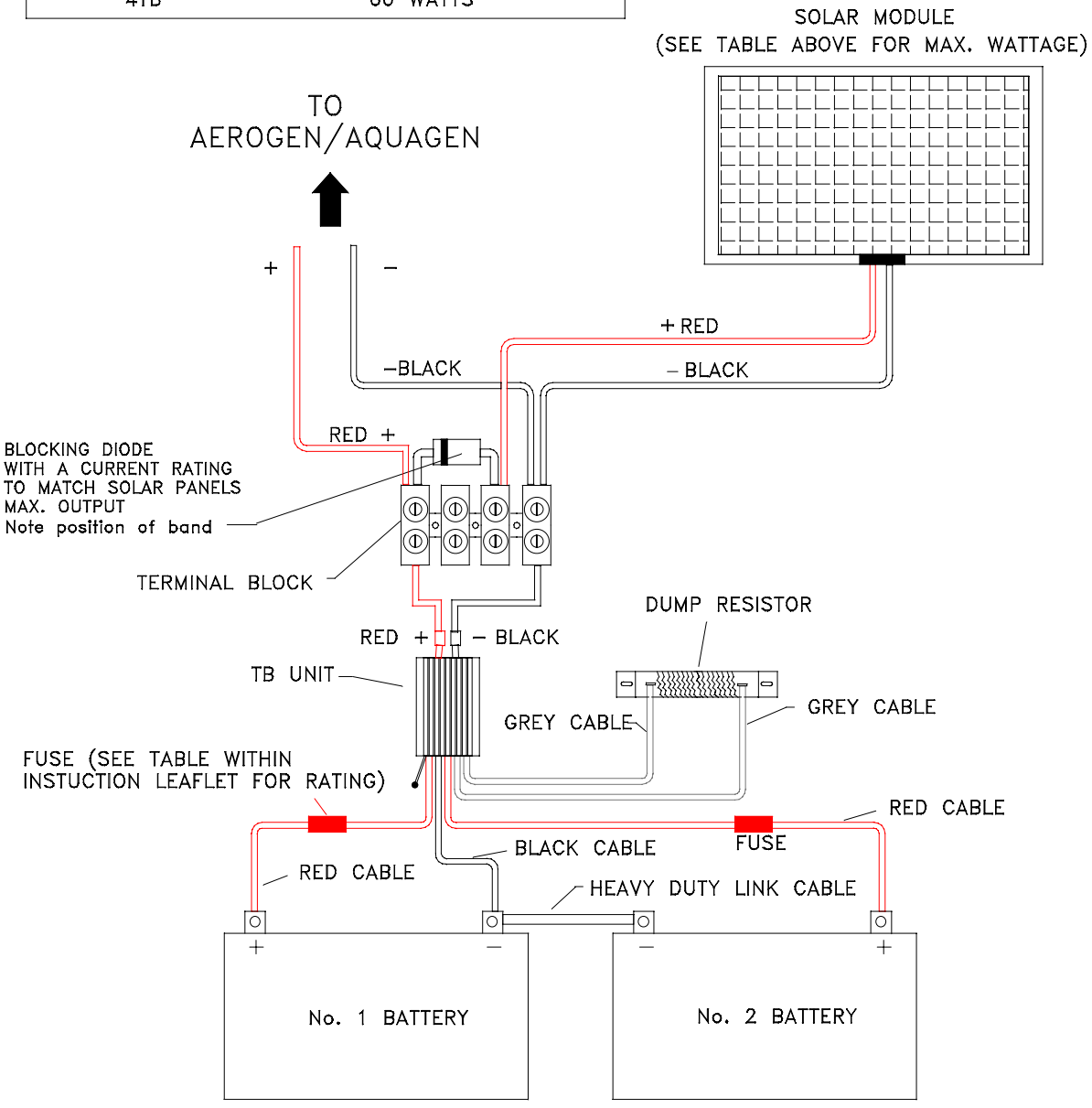
Model	Voltage	Dump Amps
2TB12	12	5.0
2TB24	24	2.5
4TB12	12	20.0
4TB24	24	10.0



CIRCUIT DIAGRAM SHOWING THE TB REGULATOR CONTROLLING AN AEROGEN/AQUAGEN AND A SOLAR MODULE

FILE TBSOLAR

REGULATOR MODEL	MAX. SOLAR PANEL WATTAGE
2TB	10 WATTS
4TB	60 WATTS



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4DU BLOCKING DIODE INSTRUCTIONS AND WIRING DIAGRAM

FILE 4DU

FUSE TABLE	
LVM MODEL	FUSE RATING
212	5 AMP
224	3 AMP
412	20 AMP
424	15 AMP
412F	20 AMP
424F	15 AMP
612F	30 AMP
624F	20 AMP
AQ412	15 AMP
AQ424	7.5 AMP
AQ612	20 AMP
AQ624	10 AMP
AQA412	20 AMP
AQA424	15 AMP

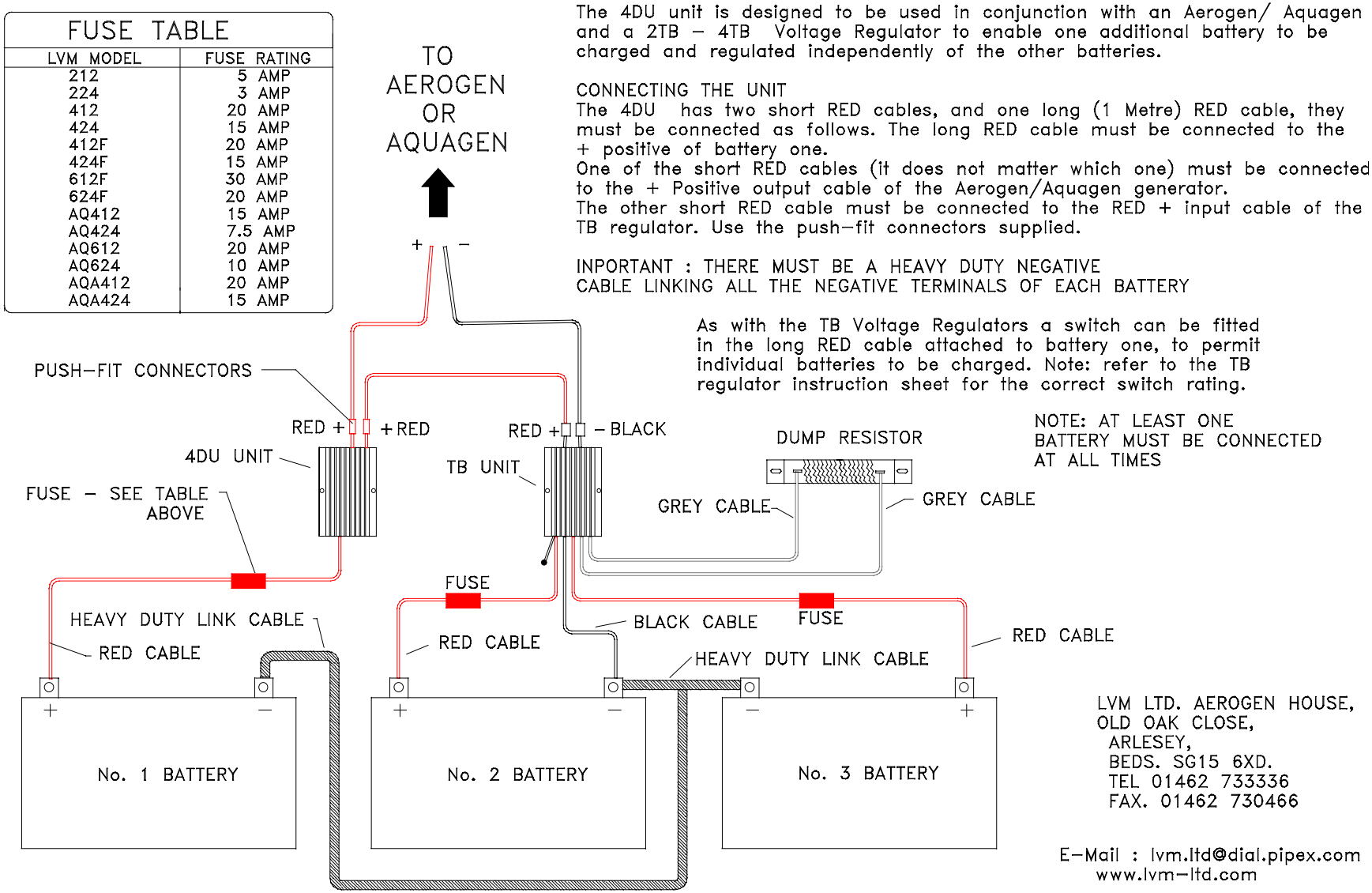
The 4DU unit is designed to be used in conjunction with an Aerogen/ Aquagen and a 2TB – 4TB Voltage Regulator to enable one additional battery to be charged and regulated independently of the other batteries.

CONNECTING THE UNIT
The 4DU has two short RED cables, and one long (1 Metre) RED cable, they must be connected as follows. The long RED cable must be connected to the + positive of battery one.
One of the short RED cables (it does not matter which one) must be connected to the + Positive output cable of the Aerogen/Aquagen generator.
The other short RED cable must be connected to the RED + input cable of the TB regulator. Use the push–fit connectors supplied.

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

As with the TB Voltage Regulators a switch can be fitted in the long RED cable attached to battery one, to permit individual batteries to be charged. Note: refer to the TB regulator instruction sheet for the correct switch rating.

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



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