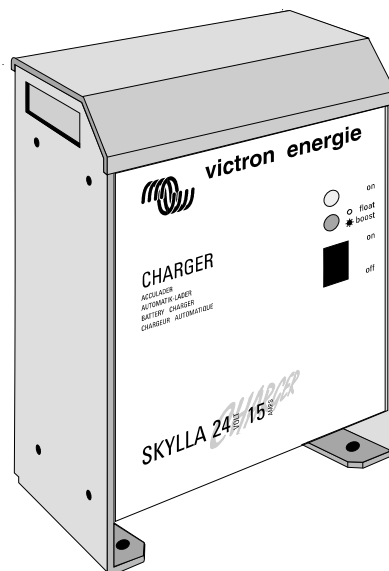




USER MANUAL
GEBRUIKSAANWIJZING
GEBRAUCHSANWEISUNG

Victron Skylla 24/15



|

|

—

—

—

—

—

|

|

SECTIONS

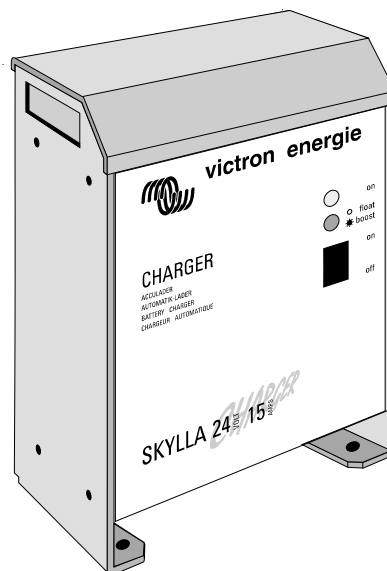
ENGLISH	1
NEDERLANDS	29
DEUTSCH	57

This page intentionally left blank.

ENGLISH

USER MANUAL

Victron Skylla 24/15



This page intentionally left blank.

INTRODUCTION



Victron Energie has established an international reputation as a leading designer and manufacturer of power systems. Our R&D department is the driving force behind this reputation. It is continually seeking new ways of incorporating the latest technology in our products. Each step forward results in value-adding technical and economical features.

Our proven philosophy has resulted in a full range of state-of-the-art equipment for the supply of electrical power. All our equipment meets the most stringent requirements.

Victron Energie systems provide you with high-quality AC supplies at places where there are no permanent sources of mains power.

An automatic stand-alone power system can be created with a configuration comprising a Victron Energie inverter, battery charger, mains manager (if required) and, last but not least, batteries with sufficient capacity.

Our equipment is suitable for countless situations in the field, on ships or other places where a mobile 230-Volt_{ac} power supply is indispensable.

Victron Energie has the ideal power source for all kinds of electrical appliances used for household, technical and administrative purposes, including instruments susceptible to interference. All of these applications require a high-quality power supply in order to function properly.

Victron Skylla battery charger model 24/15

This manual contains directions for installing the Skylla battery charger model 24/15. It describes the functionality and operation of the Skylla battery charger, including its protective devices and other technical features.

This page intentionally left blank.

CONTENTS



1.	Description	7
1.1	General	7
1.2	Skylla charger	7
1.3	Description	7
1.4	Protection	8
2.	Installation	9
2.1	Mounting	9
2.2	Connections	9
2.2.1	Earthing	9
2.2.2	Mains input	9
2.2.3	Battery output	9
2.2.4	Diode splitter	11
2.2.5	Battery voltage alarm	12
3.	Start up	13
3.1	Operating	13
3.1.1	Automatic charging mode	13
3.1.2	Permanent boost mode	13
3.1.3	Permanent float mode	14
3.1	Maintenance	14
4.	Calibration	15
4.1	Adjusting the charge voltage	15
4.2	Setting the charge voltage	15
5.	Fault tracing diagrams	17
5.1	Fault finding	17
	Battery charger does not work	18
	Batteries are being overcharged	19
	Batteries are not being charged	20
6.	Specifications	23
6.1	Input	23
6.2	Output	23
6.3	General	24
6.4	Environment	24
6.5	Mechanical	24
6.6	Connections	24
7.	Drawings	25
	Victron Skylla 24/15 dimensions	26
	Victron Skylla 24/15 connections	27

This page intentionally left blank.

1. DESCRIPTION



IP21=
protection against
materials larger
than 12 mm (for
example a finger)
and protection
against vertical
descending water-
drops (condensa-
tion).

1.1 General

All Victron Skylla 24/15 battery chargers are subjected to full functional testing before leaving the factory. They are properly packed for secure transportation.

The Skylla 24/15 is housed in a IP21 specification aluminium case designed for wall or floor mounting. The mains input, battery output and alarm output (if used) connections are made close to the under side of the housing.

1.2 Skylla charger

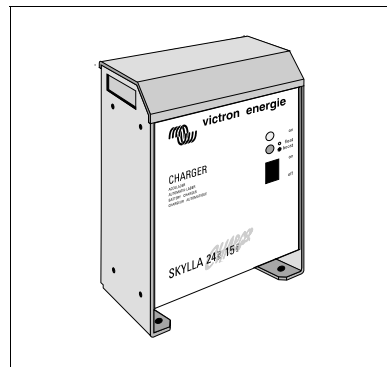


The Skylla 24/15 is designed for a 24V lead-acid battery system. The maximum charging current is 15A. The recommended battery capacity is 60 to 150 Ah. The standard Skylla 24/15 is suitable for traction batteries. Please consult your local Victron Energie agent for more details.

The Skylla 24/15 is a fully automatic battery charger. It is powered by mains (230V 50/60 Hz nominal supply - see specifications). It is designed to be permanently connected to the lead-acid batteries. It is no longer necessary to disconnect the charger during long term storage, for example during winter storage.

1.3 Description

The Skylla 24/15 will charge the battery as soon as the power switch is turned on, provided there is a mains supply. If automatic charge mode is selected (see connection diagram), the battery will be charged with the



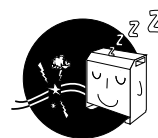
built in IUoUo characteristic. The float voltage is factory preset to 26,5 V. The boost voltage is factory preset to 28,5 V. The boost and float voltages are user adjustable (see 4).

Warning: Because of the extremely high voltages permanently present within the Skylla 24/15, we insist that only a qualified electrician makes all the connections and adjustments within the charger. Make sure the Skylla 24/15 is turned off when connecting, and use an insulated electrician's screwdriver to make all connections and to adjust the voltage and current control.

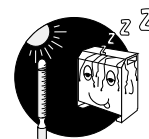
1.4 Protection

The Skylla 24/15 is inherently safe due to its robust design. The output current is fully short circuit protected. The output current is internally limited under all conditions (see specifications). The battery cables are thus protected in the event of a short circuit.

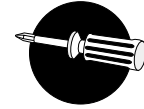
If the internal temperature of the Skylla 24/15 increases, the output current decreases accordingly. Under extreme conditions (the ventilation holes could be blocked, or the fan may be jammed) the internal temperature will become too high, and the machine will shut itself down. When the internal temperature is again within limits, the Skylla 24/15 will resume operation.



short-circuit current = current supplied when a short-circuit on the output occurs.



2. INSTALLATION



2.1 Mounting

Wall or floor mount the Skylla 24/15 in a dry, well ventilated area. Excessively high ambient temperatures may adversely affect the output current and the lifetime of the Skylla 24/15. Best results are obtained in such conditions if the Skylla 24/15 is wall mounted.

2.2 Connections

Earth =
(PE): yellow and green striped colour wire
Phase =
(L): brown or black colour wire
Neutral =
(N): blue colour wire

2.2.1 Earthing

The Skylla 24/15 is not a double insulated charger. The PE terminal must be connected to a true earth under all conditions. On a boat, the earth terminal on the under side of the housing must be connected to the ground plate or the hull. The shore connection must be earthed to the PE terminal on the mains input connection block. For mobile applications (car, caravan etcetera) earth terminal must be connected to the metal chassis.

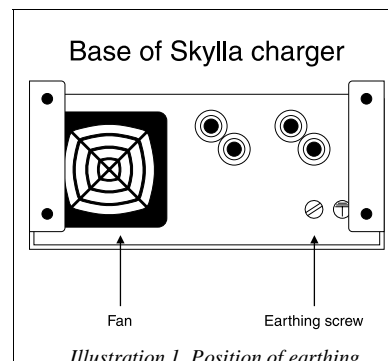


Illustration 1. Position of earthing screw

2.2.2 Mains input

Use a three core approved cable to connect the Skylla 24/15 to the mains. Remember that the PE terminal must always be earthed.

2.2.3 Battery output

It is important that the connection between the Skylla 24/15 and the battery is made in such a way that power loss is minimised. The cables must be as short and as thick as possible to

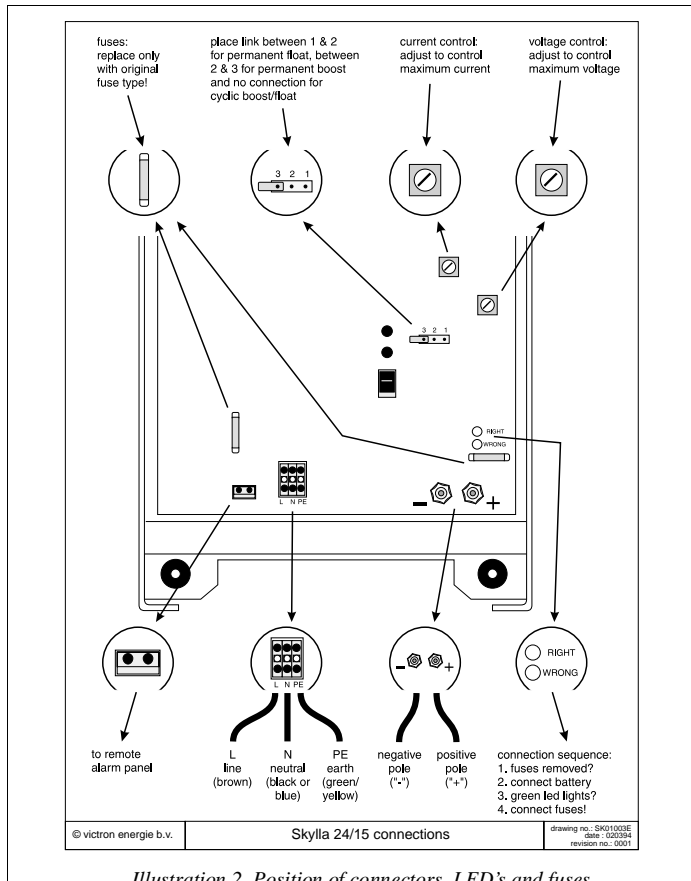


Illustration 2. Position of connectors, LED's and fuses

reduce resistance. We recommend using cable shoes as supplied. We recommend the following minimum copper cross section for these battery cables:

Length	cross section
length 0-1.5 meters	4 mm ²
length 1.5 - 6 meters	10 mm ²



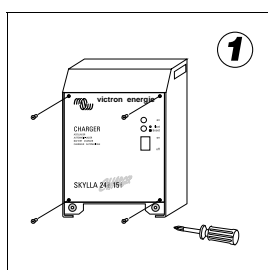
Cable lengths in excess of 6 meters are not recommended.

The Skylla 24/15 has an output fuse to ensure that the battery cables are protected in the event of an internal short circuit. Furthermore, the output current of the Skylla 24/15 is limited (see specifications).

2.2.4 Diode splitter

A diode splitter can be connected to the Skylla 24/15. The output voltage must be increased to compensate for the voltage drop over the diode splitter.

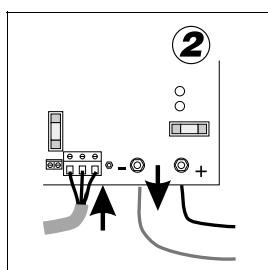
Warning: Because of the extremely high voltages permanently present within the Skylla 24/15, we insist that only a qualified electrician makes adjustments in the Skylla 24/15. Make sure the Skylla 24/15 is turned off when connecting, and use an insulated electrician's screwdriver to make all connections and to adjust the voltage or current control.



The following procedure must be followed:

step 1

Remove the front panel of the Skylla 24/15.

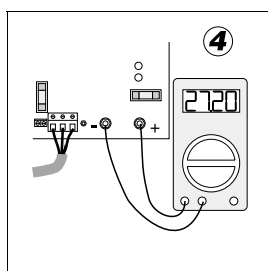


step 2

Connect the mains input onto the charger. Remove all loads on the machine.

step 3

Switch the machine on.



step 4

Use an accurate volt meter on the + and - terminals to measure the no-load voltage. Adjust the output voltage by turning on the 'voltage control' potentiometer to 0,7 V more than the desired float voltage for the battery . Normally this is $26,5 + 0,7 = 27,2$ V.

Note: The 0,7 V compensation is a realistic estimate for most diode splitters. If absolute accuracy is required, continue by now connecting the diode splitter and the batteries onto the charger. Wait until the batteries are fully charged, and adjust the 'voltage control' potentiometer until the voltage on the battery side of the diode splitter becomes the desired float voltage. Remember that the boost voltage is automatically adjusted along with the float voltage. It is not possible to adjust the boost voltage independently.

step 5

Place the front panel back on to the unit.

2.2.5 Battery voltage alarm

The Skylla 24/15 has a potential free contact which is closed if the battery voltage is out of range for more than 1 minute. The contact is activated if the battery voltage is higher than 33,6 V or lower than 23,8 V. This potential free contact can be used to energise a remote alarm. Consult your dealer for more details about the possible applications of this alarm. The maximum current through this contact is detailed in the specification.

3. START UP



3.1 Operating

LED =
Light Emitting
Diode

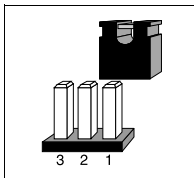
On the front panel of the Skylla 24/15 a power switch and two LED's can be found. Switch on the charger by operating the power switch. The 'on' LED will light, and if the battery is not completely full, the 'boost' LED will light. The batteries are charged without any switch on delay.

V.D.L. =
Victron charging
system
float charge
mode =
recharging
boost charge
mode =
initial charging

3.1.1 Automatic charging mode

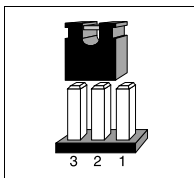
As the charge in the batteries increases, the charge current decreases. The charger is in 'boost' mode while the charge current is greater than 1 A. In this mode, the output voltage will rise to 28,5 V.

When the charge current decreases to below 1 A, the Skylla 24/15 will switch over to 'float' mode. The output voltage will drop to 26,5 V.



The above mentioned voltages are recommended by most battery manufacturers to ensure optimal charging of 24 V lead-acid batteries. The Skylla 24/15 can be left connected on to the batteries during long periods of time without the risk of gas discharge due to overcharging. The batteries are kept in optimal condition under all conditions. We recommend that you select this mode for long battery life.

Note: To select automatic charge mode, the supplied jumper must be placed in such a way that there is no connection between any pins of the mode selector (see connection diagram). Alternatively, the jumper can be removed and stored elsewhere.



3.1.2 Permanent boost mode

Permanent boost mode can be selected by placing the supplied jumper between pins 2 and 3 of the mode selector (see connection diagram). The battery will be charged up to 28,5 V.

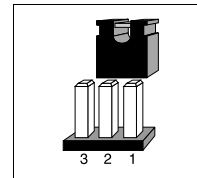
In some cases, for example after a deep discharge, it is good to charge the batteries up to 28,5 V for a period of 24 hours. We however do not recommend placing the Skylla 24/15 in permanent boost mode for extended periods because of the danger of gas discharge.

We do not recommend permanent boost mode for sealed type lead-acid batteries. When charging open type batteries, you are advised to top these up regularly with distilled water.

For further information, contact your local Victron Energie dealer.

3.1.3 Permanent float mode

Permanent float mode can be selected by placing the supplied jumper between pins 1 and 2 of the mode selector (see connection diagram). The battery will be charged up to 26,5 V. There is no danger of gas discharge due to overcharging.



Permanent float mode is recommended for certain sealed type lead-acid batteries designed for standby use only. For further information, contact your local Victron Energie dealer.

3.2 Maintenance

The Skylla 24/15 requires no special maintenance. It is however recommended that the electrical connections be checked once a year, and that the charger is kept dry, clean and dust free. If any problems arise, use the fault finding procedure in this manual to trace the fault.

We also recommend cleaning the fan once every two years (for position of the fan, see illustration 1 on page 3). If the fan is worn, contact your local Victron Energie dealer to have the fan replaced.

4. CALIBRATION



4.1 Adjusting the charge voltage

The float voltage is factory preset to 26,5 V. The boost voltage is factory preset to 28,5 V. The boost and float voltages are user adjustable. These values are recommended by almost all lead-acid battery manufacturers. The current and voltage settings do not have to be periodically checked.

Warning: Because of the extremely high voltages permanently present within the Skylla 24/15, we insist that only a qualified electrician makes any adjustments within the charger. Make sure the Skylla 24/15 is turned off when connecting, and use an insulated electrician's screwdriver to make all connections and to adjust the voltage and current control.

If you want to adjust the charge voltage, remove the front panel of the Skylla 24/15. Unscrew the four countersunk screws with a Phillips screwdriver, and pull the panel free.

4.1.1 *Setting the charge voltage.*

The boost and charge voltages cannot be set independently. The boost voltage is always 2 V more than the float voltage. To set the float voltage, disconnect all loads from the charger. Measure the output voltage with an accurate voltmeter. Adjust the float voltage to the value recommended by the battery manufacturer.

This page intentionally left blank.

5. FAULT FINDING

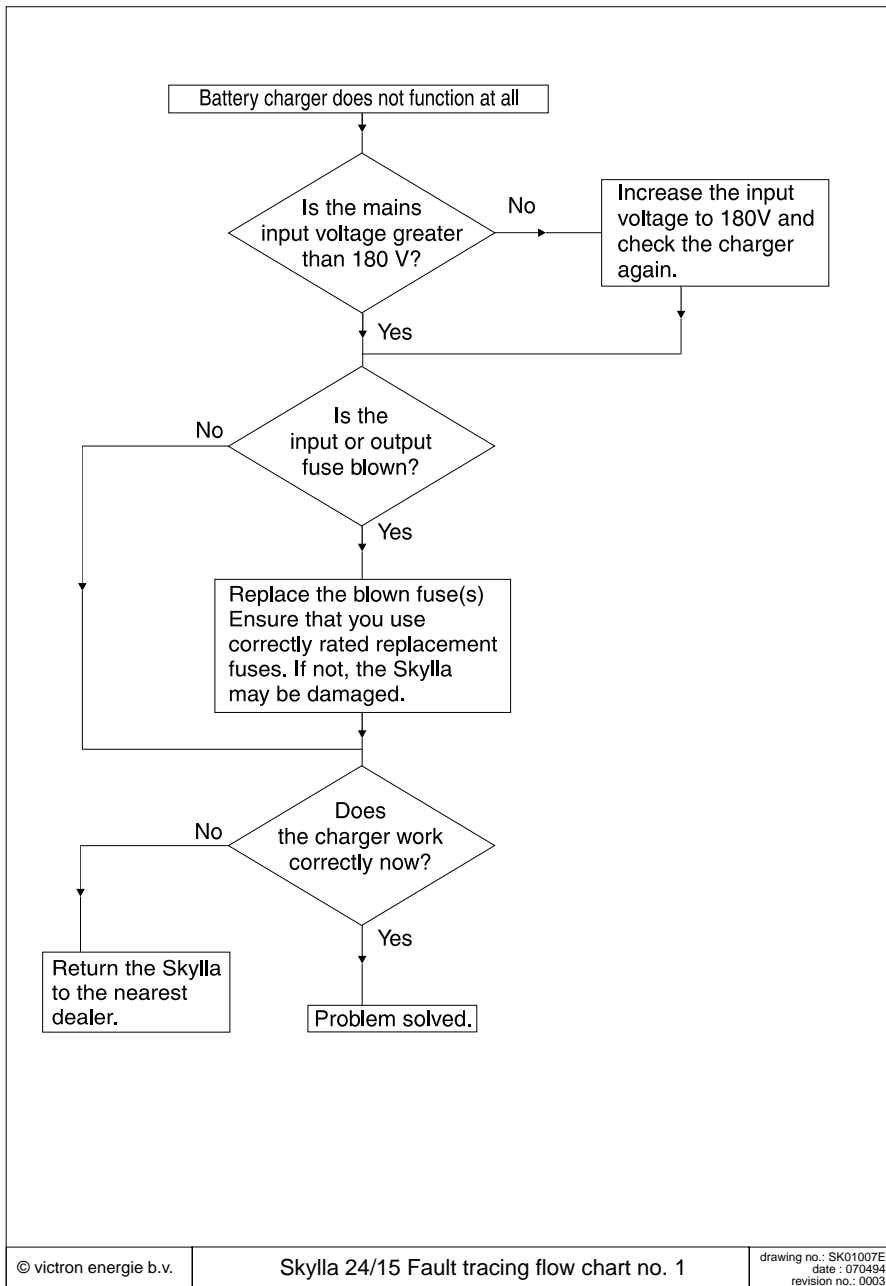


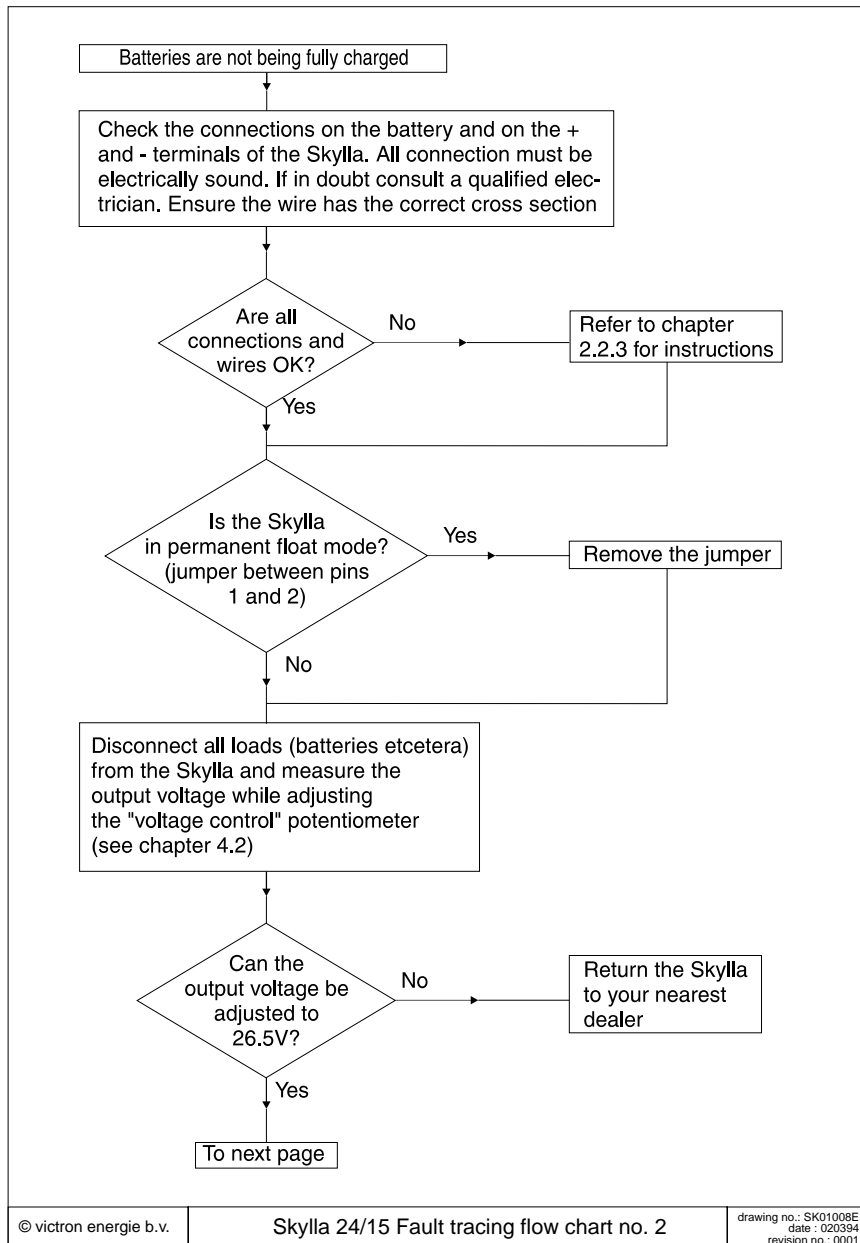
5.1 Fault finding

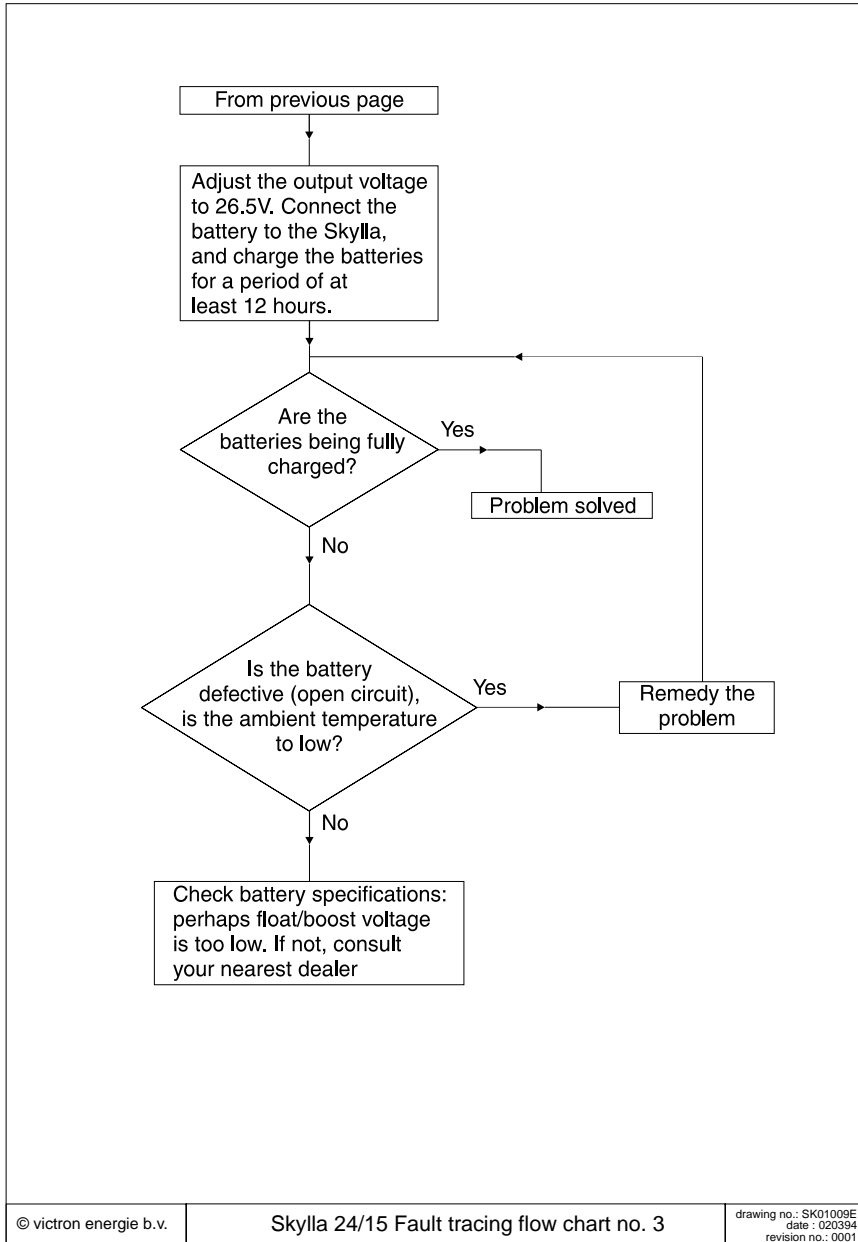
The following 3 diagrams are included to assist you in finding the fault. Experience has shown that most faults can be solved with this procedure. Before checking the Skylla 24/15, remove all loads from the charger, and connect the unit to mains supply.

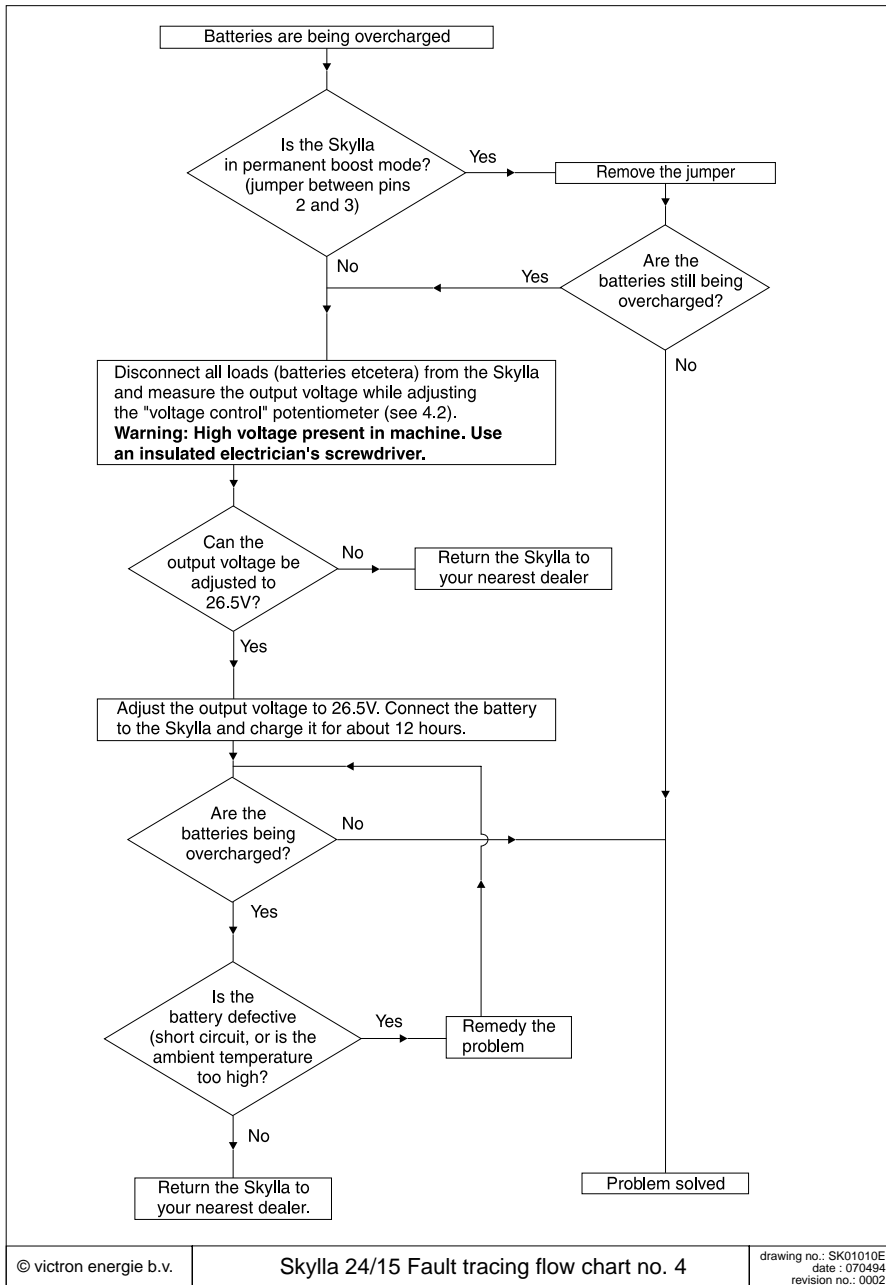
The following conditions are covered by the diagrams:

- battery charger does not work
- batteries are being overcharged
- batteries are not being fully charged









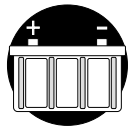
This page intentionally left blank.

6. Specifications



6.1 Input:

Input voltage:	180 - 265V
Input voltage protection:	Unit shuts down if input voltage drops below 160V. The unit will resume operation if the input voltage rises above 165V.
Frequency range:	47 - 63Hz
Input fuse:	5A fast 5 x 20 mm
Power factor:	0,94 at full load 0,90 at half load
Input current:	2,4A at 230V input on full load



6.2 Output:

Nominal charging voltage:	24V
High charging voltage (boost):	28,5V
Low charging voltage (float):	26,5V
Charging characteristic:	IUoUo in accordance with DIN 41772
Voltage stability:	± 1%
Output current:	15A at boost voltage
Output current ripple:	75% rms at full load
Short circuit current:	20A
Short circuit protection:	Continuous short circuit proof
Output fuse:	20A auto blade fuse
Battery voltage alarm:	A 5A potential free contact is activated if the battery voltage remains above 33,1 V or below 23,2V for more than 60 seconds

All specifications are subject to change without notice

6.3 General:

Radio interference suppression:	EN55014
Electromagnetic compatibility:	IEC 801-2 class 3 IEC 801-3 class 2 IEC 801-4 class 2 for the DC output IEC 801-4 class 3 for the AC input IEC 801-5 class 3
Safety:	PCB designed to IEC950
Diode splitter compensation:	Compensation by potentiometer adjustment



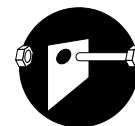
6.4 Environment:

Temperature range:	-10 to 50 °C. The charge current decreases if the temperature rises above 40 °C
Cooling:	Forced convection
Fan control:	The fan speed is electronically controlled. If the internal temperature is too high, the unit will shut down.



6.5 Mechanical:

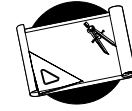
Case:	Aluminium IP21
Colour:	Blue (RAL5012) epoxy
Dimensions (h x b x d):	280 x 200 x 90
Weight:	2,75 kg



6.6 Connections

Output 24 V _{DC} :	M6 bolts
Input 230 V _{AC} plus earth:	3 pole connector block plus extra earth terminal on housing

7. Drawings

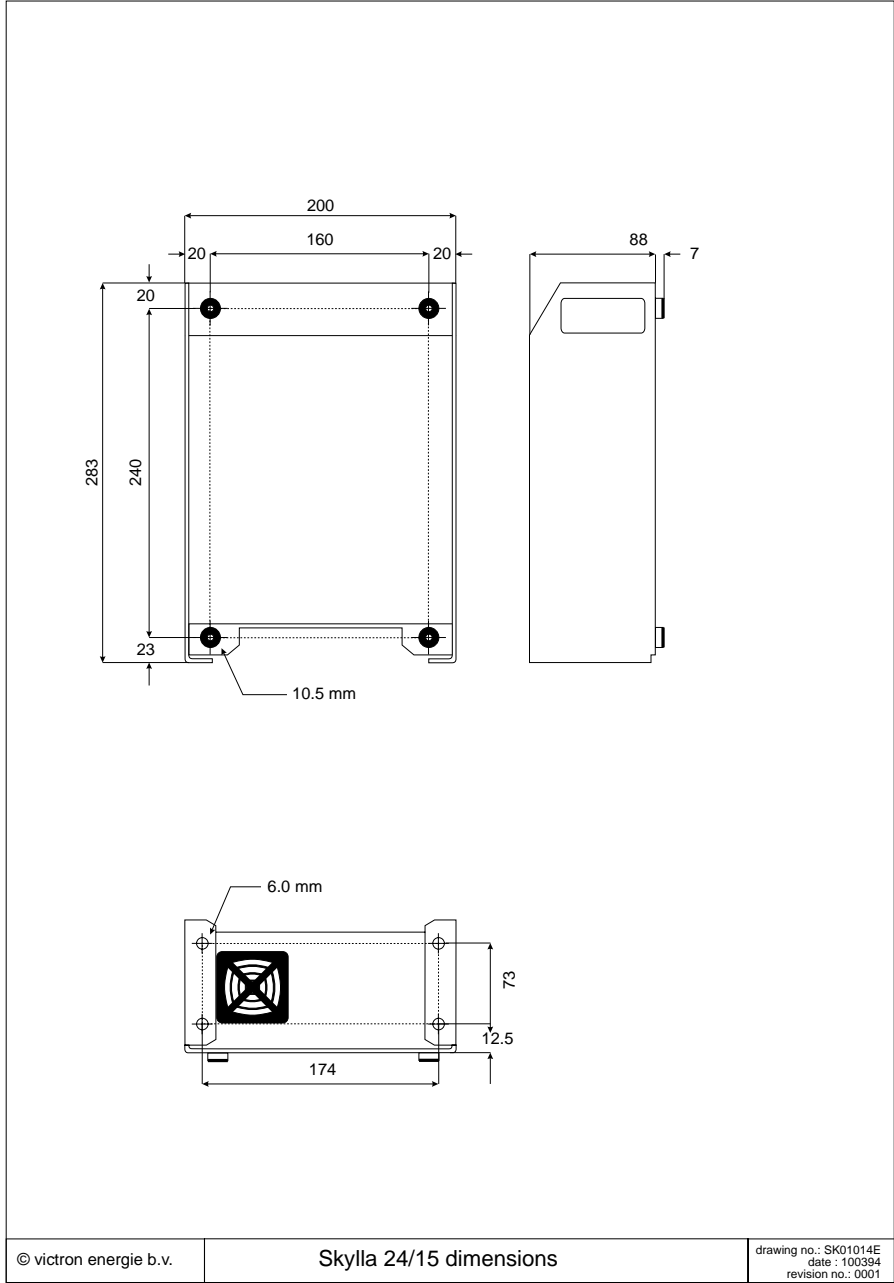


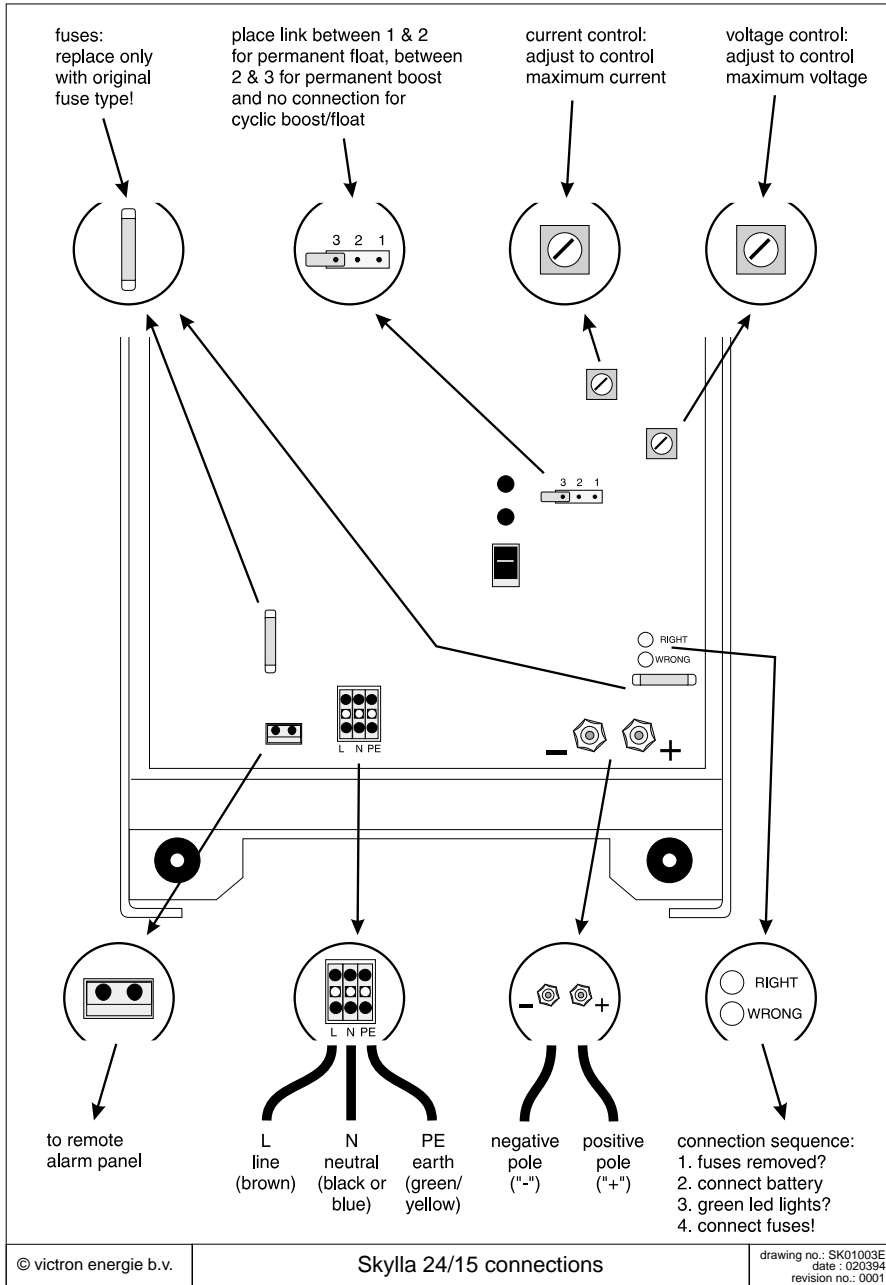
Victron Skylla 24/15 dimensions

26

Victron Skylla 24/15 connections

27





This page intentionally left blank.