

Sollatek

SVS Three Phase Models

SVS3x35-22 SVS3x45-22 SVS3x75-22

User Instructions



Important: This manual contains important safety instructions.
Keep this manual handy for reference.

- Before using this product please read all instructions carefully.
 - Keep these instructions for future reference.
- All specifications are subject to change without prior notice.


Sollatek[™]
the power to protect

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SAFETY

- All equipment designed and manufactured by Sollatek (UK) Ltd complies with the latest safety codes of practice. Install in accordance with local and international electrical safety regulations.
- To avoid the risk of shock, do not expose this equipment to rain, moisture, or liquid spillage.
- Before attempting to use the SVS (Sollatek Voltage Stabiliser) ensure that the total loading of your equipment does not exceed the maximum rating of the SVS. To check the rating of your SVS, refer to the label on the side of the unit.
- For your own safety, do not insert any object into the ventilation slots.
- Do not attempt to dismantle the SVS, to do so will invalidate the warranty.
- There are no user serviceable parts inside.

 The SVS internally contains lethal voltages.
Only authorised personnel should work on it.

The dangers from electricity

Harm can be caused to any person when they are exposed to 'live parts' that are either touched directly or indirectly by means of some conducting object or material.

Electrical shocks from faulty equipment can cause severe and permanent injury and may also lead to indirect injuries due to falls from ladders, scaffolds, or other work platforms. Faulty electrical appliances can also lead to fires. As well as causing injuries and loss of life, fires cause damage to plant, equipment and property.

Most electrical accidents occur because individuals:

- are working on or near equipment which is thought to be dead but which is, in fact, live
- are working on or near equipment which is known to be live, but where those involved are without adequate training or appropriate equipment, or they have not taken adequate precautions

Misuse equipment or use electrical equipment which they know to be faulty.

Reducing the risk of electric shock

To reduce the risk of electric shock:

- Install the SVS in a temperature and humidity controlled indoor area free of conductive contaminants. Ambient temperature must not exceed 55°C
- Remove watches, rings and other metal objects.
- Use tools with insulated handles.
- Wear PPE.

First Aid

Before commencing any work:

- Find out the location of a suitably stocked first-aid box
- Find out the arrangements that exist on site for first-aid, and who is responsible for taking charge of these.

DESCRIPTION

The Sollatek 3 phase SVS consists of three identical single-phase regulator units. Each of these monitors and corrects the incoming supply to the operating range of your unit. The in line SVS will stabilise the supply voltage to your equipment to a constant L-N 230v (+/-6%).

A voltage display panel indicates the incoming phases L-N supply and the stabilised output voltage supplied to your load.

The Sollatek SVS has the following integrated features as standard:

AVS™ function

The Sollatek SVS is unique in having a built-in AVS™ (Automatic Voltage Switcher). When the mains power supply fluctuates outside pre-set tolerances the potentially harmful power to your equipment is disconnected.

The AVS™ monitors the voltage for a short period to ensure the power has stabilised before re-connecting. In addition, the start-up delay provides protection against power-back surges commonly experienced after resumption of power in a power cut situation.

Surge and spike protection is also incorporated to ensure protection against these common events which can be generated by lightning and nearby switching off and on of other equipment such as vacuum cleaners, pumps, motors, television, elevators etc.

TIMESAVE™ function

The Sollatek SVS has a built-in microprocessor incorporating the advanced TimeSave™ function. When the mains return to normal, the unit checks the duration of the OFF time. If the SVS has been off for more than the standard wait time it will reconnect the mains within 10 seconds thereby providing you more vital operating time for your loads than any other stabiliser.

Dependant on model, a 4/5 LED indication panel shows the SVS status for low, high volt and wait time output control.

The duration of the start-up delay period varies between 10 seconds and 10 minutes, depending on the model. For refrigeration and air-conditioning equipment, a delay of 3-4 minutes is recommended. The 3-4-minute delay allows compressors gas to neutralise before re-starting.

By using the Sollatek SVS you will ensure a stable and clean voltage supply to your valuable equipment. Depending on the rating of the SVS, it is suitable for all electrical and electronic appliances, including:

- Air conditioners, fridges, fax machines, photocopiers, and laser printers.
- Television, video equipment, hi-fi, and computers.
- Ink & bubble jet printers, domestic pumps, and satellite equipment.
- Freezers, fridges, and drinks coolers.
- Lighting.

TECHNICAL SPECIFICATION

General specification

Input / output range	Standard o/p	Narrow o/p
Input Range	-26% to + 19%	-20% to + 20%
Output Accuracy	+/-6%	+/-3%
Stabilised Range @230V	172 to 274V i/p = 216 to 243V o/p	184-276V i/p =223 to 237 o/p
AVS Limits	o/p = LVD 142V. HVD 260V	
Voltage stabilisation	2 boost, 1:1 and one buck	
Frequency range	45 to 75Hz	
General		
Derating factor	10% to 15% per 10°C above 40°C	
Derating factor	Microprocessor controlled transformer tap selection using thyristors	
Synchronisation	Output synchronised to input	
Max load current per phase	Dependent on model. See individual rating in model specification overleaf	
Max input current per phase	Dependent on model. See individual rating in model specification overleaf	
KVA (400V)	Dependent on model. See individual rating in model specification overleaf	
Permissible overload	1000% for 100mS. 150% for 4 minutes. 110% for 15 minutes	
Load types	Suitable for all domestic and commercial sites	
Technology	Auto transformer with relay switching	
Efficiency.	88% at 25% load, 94% at 50% load, 96% at 75% load, 97% at 100% load	
Control	Microcontroller based system providing self-check and diagnostic indication	
Control protection	Internal surge arrestors and filters in control circuit protect against disturbances. Filtering algorithms and fault tolerant software to prevent false measurements	
Ambient operating range	0 to +55°C	
Relative humidity	<95% non-condensing	
Acoustic noise	<45dB(A)	
Expected service life	>10 years	
Standards	ISO9001:2000, CE, EN 50081-1:1992, EN 50082-1:1998, EN 55022:1998, EN 61000-4-2:1995/1998, EN 61000-4-3:1996, EN 61000-4-4:1995, EN 61000-4-5:1995, EN 61000-4-6:1996, EN 61000-4-11:1994, DD ENV 50204, BS EN 61558-1, EN 60065, EN 60555	
Correction speed	750V per second	
Response Within	0.1 second	
Wait time on start up	Delay by controller firmware is 10 seconds	
Power factor	Unaffected by load power factor	

Model specification

	SVS3x35-22	SVS3x45-22	SVS3x75-22
Amps	3x35	3x45	3x75
kVA@230V/400	24.2	31.0	51.7
Weight (KG)	65	85	110
Dims (mm)	400 x 400 x 645	400 x 400 x 645	550 x 600 x 750

UNPACKING & INSPECTION

Inspect the transit damage indicators where applicable (Shock-Watch and or Tip n Tell)

ShockWatch

A label affixed to the unit's shipping crate to monitor handling in transit. If the unit has not sustained any unacceptable shock in transit, the label's indicator tube will retain its original clear appearance. However, if the unit is subjected to more than its acceptable acceleration level, a highly visible red dye is released into the length of the tube.

Tip'n'Tell

Tip'n'Tell is another label affixed to the unit's shipping crate, designed to monitor for excessive tipping. If the crate is tipped to slightly less than – or beyond - 90°, the label's clear arrow becomes permanently blue.

Do not refuse to accept the delivery and immediately contact your supplier if these have been activated.

Inspection of the unit

Remove the crating and protective packing, inspect the case for any physical damage. If cracks, scratches or dents are visible there is a chance of internal damage.

Carefully remove the top cover and side panels. Inspect for damage to the transformers, PCBs and other components. All mountings should be tight and there should be no sign of movement of the transformers.

Take photographs of the indicators and any visible damage. Contact the carrier in writing immediately if either label has been activated, if the crate shows other signs of transit damage, or if inspection reveals problems.

PREPARATION

What's in the box

- SVS3xnn Unit.
- Installation manual available for download on Sollatek website:
<https://www.sollatek.com/support/downloads/>

Tools needed

- Standard electrician's toolkit
- Standard electricians spanner set

Packaging

Retain the packing material in case of relocation or return of unit in the unlikely event of workshop repair.

Wood packaging waste from items such as skips or crates accounts for 1.2 million tons a year. Your local authority may offer a waste collection and wood recycling service. Alternatively, contact a local waste disposal company that offers wood waste disposal facilities.

Storage

The unit must be protected from environmental extremes during storage as well as after installation. Ingress of dust and moisture must be prevented. Heating of the room may be necessary to prevent any incidence of humidity during storage or before commissioning.

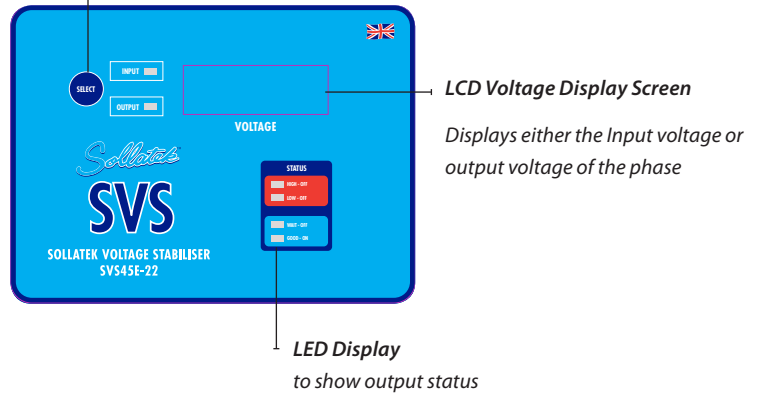
INTERFACE AND INTERNAL COMPONENTS

Front Panels (Layout dependent on model)

LCD Voltage Display Screen

Select Button

Toggles the voltage on display between Input and Output.

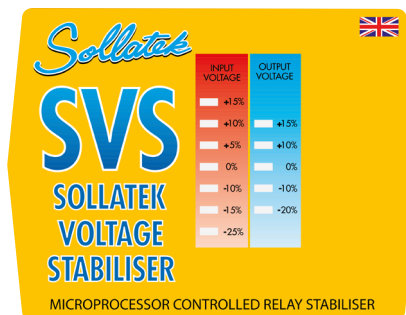


LED Indicators Panel

1. Input voltage increase is displayed in steps of +5%, +10% and +15% and input voltage decrease is displayed in steps of -10%, -15% and -25%.

The SVS indicates the plus or minus voltage variation by lighting the relevant LED.

2. Within this range, the SVS will compensate by stepping up or stepping down the output voltage to maintain it's norm of 230V +/-6%, which will be indicated by the green 0% LED.



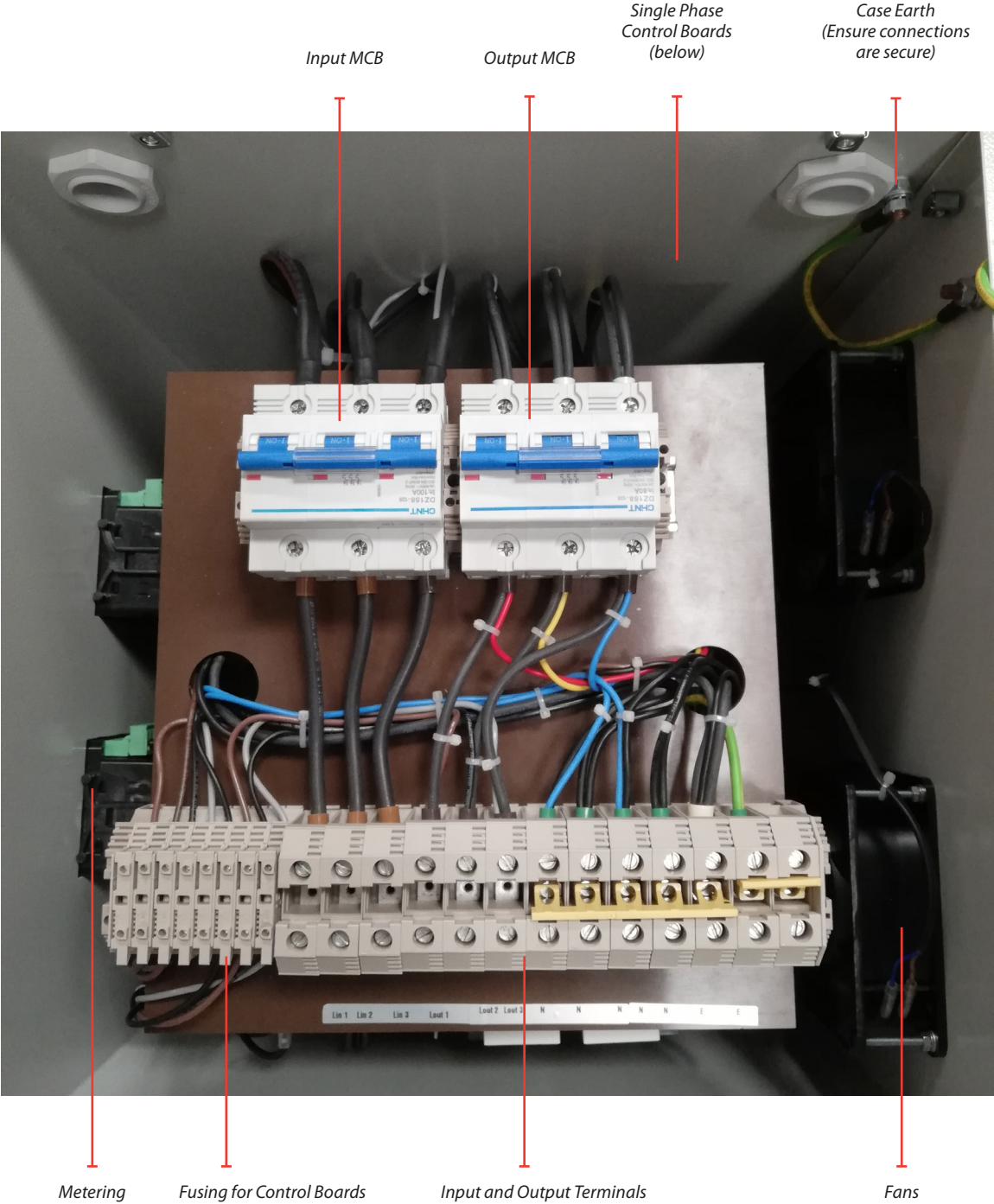
LED Digital Display

Digital display of both input and output voltage







Internal configuration

Top view (lid removed) customer connection



INSTALLATION

Installation must only be carried out by a competent person who has sufficient electrical training and is familiar with safe practices when working on or near electrical systems.

-  **WARNING:** Safe handling. Take appropriate safe handling measures when lifting heavy items.
-  **WARNING:** The appliance must be earthed.
-  **AC input disconnect (Isolator switch). FOR PERMANENTLY CONNECTED EQUIPMENT:**
-  **A readily accessible disconnect device (all-poles separation of at least 3mm) shall be incorporated external to this equipment.**

Positioning the unit

The SVS3xnn has U channel feet to facilitate handling with appropriate lifting gear. Take appropriate safe handling precautions when locating the unit.

The SVS must be installed in a dry shaded and dust free location with 300mm spacing all-round the unit to allow adequate ventilation. The unit is cooled naturally by convection and dependent on size, may incorporate fans for additional cooling.

Fusing

Ensure the SVS input cable is protected by an appropriate rated MCB.

Model	MCB(A)
SVS3x35	50
SVS3x45	63
SVS3x75	100

Before wiring the input and output of SVS, refer to table 1 for suggested absolute minimum recommended cable size. Depending on cable length the cable diameter may be increased to avoid excessive voltage drops. The cable length should be kept to a minimum to prevent excess voltage drop.

Observe de-rating factors depending on cable fixing method.

Model Number	AC Input (min)*	AC Output*
SVS3x35-22	10mm csa	10mm csa
SVS3x45-22	16mm csa	10mm csa
SVS3x75-22	25mm csa	25mm csa

*based on H07 RN flexible cable

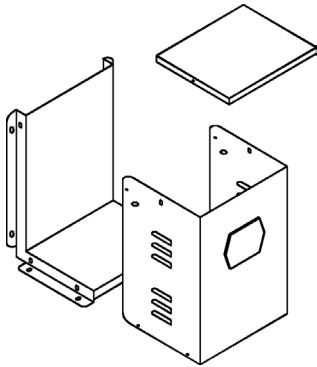
Table 1.

Ac connection

- !** Ensure all cabling is isolated from any existing mains supply and loads, use appropriate mechanical lock outs to safely isolate the SVS unit.

Step 1. Remove top panel - Access the cable terminals:

Unscrew the four retainers and remove the top cover of the SVS (photo1).



Drawing 1. Panels on the SVS



Photo 1. Remove the top cover.

Step1B. Remove side panel:

- !** Do not remove side panels unless absolutely necessary. Ac Connections can normally be made with just the top cover removed.

Unscrew the retainers from around the sides. Remove the bottom front bolts (one on each side) and carefully pull the side panel from the unit.

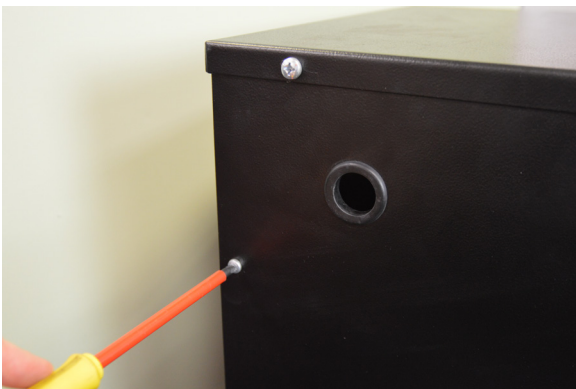


Photo 2.1. Remove the screws from the side panel



Photo 2.2. Remove the front bolts

Step 2. Wiring connections

Step 2.A.

Route mains supply cable through chosen cable hole (photo 2); cable glanding may be used if required. Terminate cable into LIVE IN inputs for L1 L2 L3 N and Ein (photo 3)

Step 2.B.

Route equipment supply (load) cable through remaining cable hole. Cable glanding may be used if required. Terminate cable into LIVE OUT outputs for L1 L2 L3 N and Eout (photo 4).

Step 2.C.

Ensure terminations are tight and cable is secure.

Electrical regulations require that an external disconnect switch be used in the AC input wiring circuit. The AC breakers (MCB) in a sub panel may in most cases satisfy this requirement and local regulations. Correct practice is to fit an Isolator switch before the supply MCB (see section: Installation and Fusing).

Caution! Be sure that AC source is completely isolated.



Photo 3. Use cable entry holes for i/p and o/p cabling

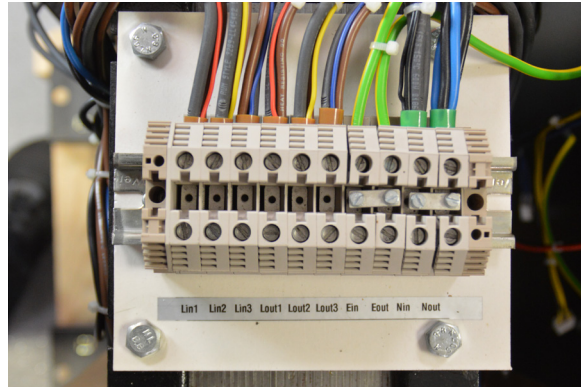


Photo 4. Terminal Block (input and output connections)

Step 3. Ensure top cover is placed nearby for later use.

Step 4. Connect SVS to system wiring.

OPERATING INSTRUCTIONS

Please follow the procedure below to commission your SVS. Work in accordance with national safety regulations. Wear personal protective equipment suitable for these work actions.

- A. Make sure the system isolator feeding the SVS is switched to OFF.
- B. Make sure the SVS is isolated from the loads.
- C. Switch the SVS Input and Output MCBs to OFF.
- D. Measure the 3 phase voltages (L1 2 3 -N) on the upstream side of the system isolator. Check phase to phase and phase to neutral voltages are correct. Note the SVS unit will not identify phase reversal so this must be independently checked.
- E. Switch the SVS input MCB to ON and output MCB to ON. Replace SVS top.
- F. Switch system isolator to ON.
- G. Observe the front panel displays for Input and output voltage. The LED displays will indicate whether the phase to neutral voltage is at the nominal 230V or the percentage deviation. See the General specifications page Input-Output range for voltage comparison.
- H. Assuming the supply voltage is within the SVS operational limits, the switcher function (AVS) will delay the voltage appearing at the output terminals (10 seconds or 3 minutes depending on model purchased). Be aware that after this output delay the SVS output will become live. Check the AVS status LEDs.
- I. Check voltages on the upstream side of the Load isolator with a multi-meter to make sure these are satisfactory.
- J. Close the isolator to supply site loads with a regulated voltage.

PROTECTING YOUR SVS

Fitting of surge protection device at main DB incomer.

The SVS has limited internal surge protection. To ensure reliable operation installing additional protection at the main DB is recommended.

For areas subject to lightning related damage.

Sollatek advise using advanced protection device such as DSP D-100 spike and surge protection obtainable at any Sollatek distributor.

Note: Please read the DSP installation guidelines carefully and ensure there is a good low impedance connection to earth.

TROUBLESHOOTING

Symptom	Possible Cause	Remedy
The unit does not switch on. None of the LEDs are lit.	1) The system main supply fuse has blown. 2) The main Isolator switch is not on 3) No power is available on the input	Check main MCB or change the fuse of the correct rating. Ensure that the load current does not exceed the capacity of the unit. If after changing the fuse, unit is still not functioning, return the unit for repair. Ensure that you are using the correct voltage 230V.
The unit appears to be functioning normally, but the load is not being switched on.	1) Load is not plugged in. 2) Load is not switched on.	Check that the load is plugged in. Check that the load is switched on. Check that the input voltage is within the input range of the SVS. Close output MCB.
The unit appears to be functioning, but the output voltage is persistently low.	The mains input is too low: 1) Due to continuous brown-out 2) The unit is rated at 230V and the incoming supply is 110V	
The SVS continuously performs self-test. If it finds a fault the LEDs will continuously light from top to bottom repeatedly in one of two patterns.	1) Possible internal fault. The fault could be temporary or permanent. 2) Very bad mains waveform or frequency.	Ensure that the load current does not exceed the rating of the SVS. Turn the appliance off then switch SVS off. Restart the unit as per operating instructions.

If the above doesn't solve the problem, please return the unit to a Sollatek service centre.

- Ensure that you have followed the operating instructions carefully.
- There are no user serviceable parts internally.
- Disassembling the unit, opening the lid, or tampering with the unit is unsafe for unqualified users and will render the warranty invalid.

MAINTENANCE

As the unit is essentially maintenance free, maintenance is limited to ensuring periodically that the ventilation holes are free from dust.

No calibration is required as the unit is factory calibrated and is not subject to long term deviation.

CHECK Surge protection operation on the ST145 boards, replace blown fuses with same type and inspect MOV blue discs for signs of damage. Contact service centre if MOV's are damaged.

The service life of the SVS should be in excess of twenty years if operated within specification.

GUARANTEE

Sollatek (UK) Ltd guarantee that if within 2 years of purchase this appliance fails due to faulty workmanship or materials we will repair or replace it free of charge provided that:

- The appliance has been correctly installed and used within the electrical range as specified on the appliance nameplate.
- The appliance has been used in accordance with the operating instructions.
- There has been no attempt to unduly open the unit.
- The unit is returned to Sollatek or Sollatek agent in good condition.
- Sollatek shall not be liable under the terms of this guarantee for any material fault or damage as a result of failure of this appliance.
- This guarantee does not affect your statutory or Common Law rights.

WARRANTY

Should your SVS unit need repair, the quickest and simplest way is to return it to your dealer or to a Sollatek Service Centre or direct to the nearest Sollatek office.

IMPORTANT: Before returning a unit to a Sollatek Service Centre, contact the returns department to obtain a returns number. You will be asked for the following information which you should have ready:

Your Name, Address, Telephone, Fax (If available), Email (If available)

Date purchased, where purchased

Serial number, model number

Local voltage and type of load.

Description of fault

Once you have the returns number:

Ensure that the unit is securely packed enclosing a short note with details as above and mark the unit clearly with the returns number. Remember also to add your name and address.

Complying with the above will ensure that your unit will be treated promptly and efficiently.

Without a returns number it will not be possible to trace a unit or check progress of repair of the unit.



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A STAMP OF AUTHENTICITY

ISO9001: 2008 accredited company

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