

# SERVICING INFORMATION



## OPTIKINETICS SOLAR 250 (Early Type)

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## **Servicing the Solar 250 effects projector.**

This is a short guide on how to service the main component parts of the projector. This guide covers the early type projector only (these were mainly silver in colour, not white)

You will need some simple tools to complete the service and some cleaning solutions.

Tools:

- Cross point screwdrivers

- Flat blade screwdrivers

- Snipe nose pliers (optional)

- 5.5mm nut spinner (optional)

Cleaning Solutions:

- Isopropyl Alcohol or Methylated spirit

- General purpose 'foam cleaner' or warm soapy water

You will also need a small brush (pastry brush or similar size) and some cleaning cloths. To clean the lens and heat filters you need a clean, preferably lint-free cloth.

Before starting, it's a good idea to wear vinyl or latex gloves, especially if the projector is exceptionally dirty inside.

Please note that this document is offered as a guide. I do not accept any responsibility for damage to equipment or persons as a result of actions advised in this document.

## STEP 1

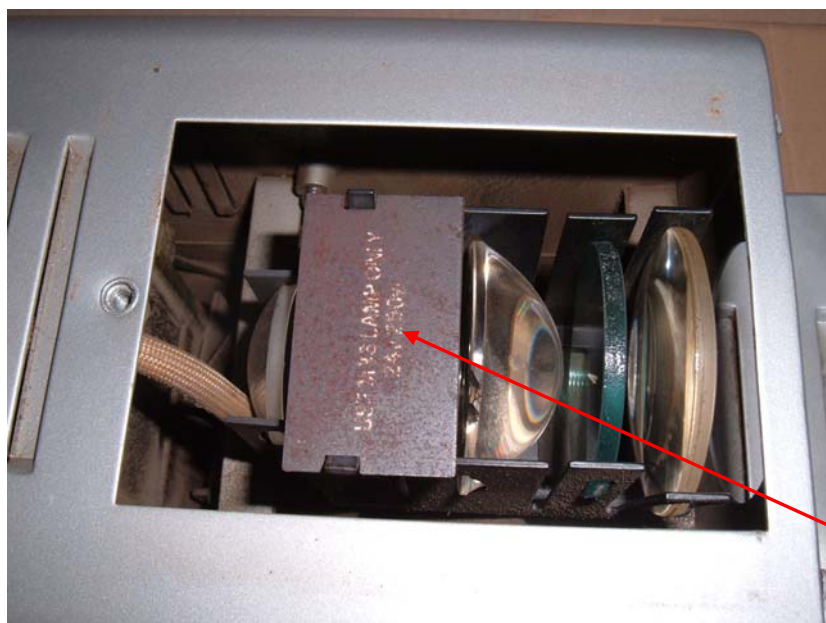
Disconnect the power cord from the projector! VERY IMPORTANT

## STEP 2

Start by removing the hatch cover and place this to one side. Remove the lamp cover plate. If this is missing obtain a replacement. This item is often rusty, if so rub down and apply a coat of high temperature matt black paint.



Hatch Cover



Lamp Cover Plate

### STEP 3

Using a lint free cloth or small plastic bag, remove the lamp from the lamp housing. Do Not touch the lamp envelope with bare fingers, this will leave finger grease deposits on the lamp envelope. Gently pull vertically out of its lamp holder, do not rock the lamp or twist as this will damage the lamp.

The lamp envelope is made of quartz not glass. Finger grease will attack the quartz under temperature and cause 'hot spots' resulting in the envelope overheating and deforming giving poor light output and premature failure.

Accidental contact with the lamp can be corrected by cleaning the lamp with alcohol or spirit using a lint free cloth.



Lamp removal using a small plastic bag to avoid touching the lamp.

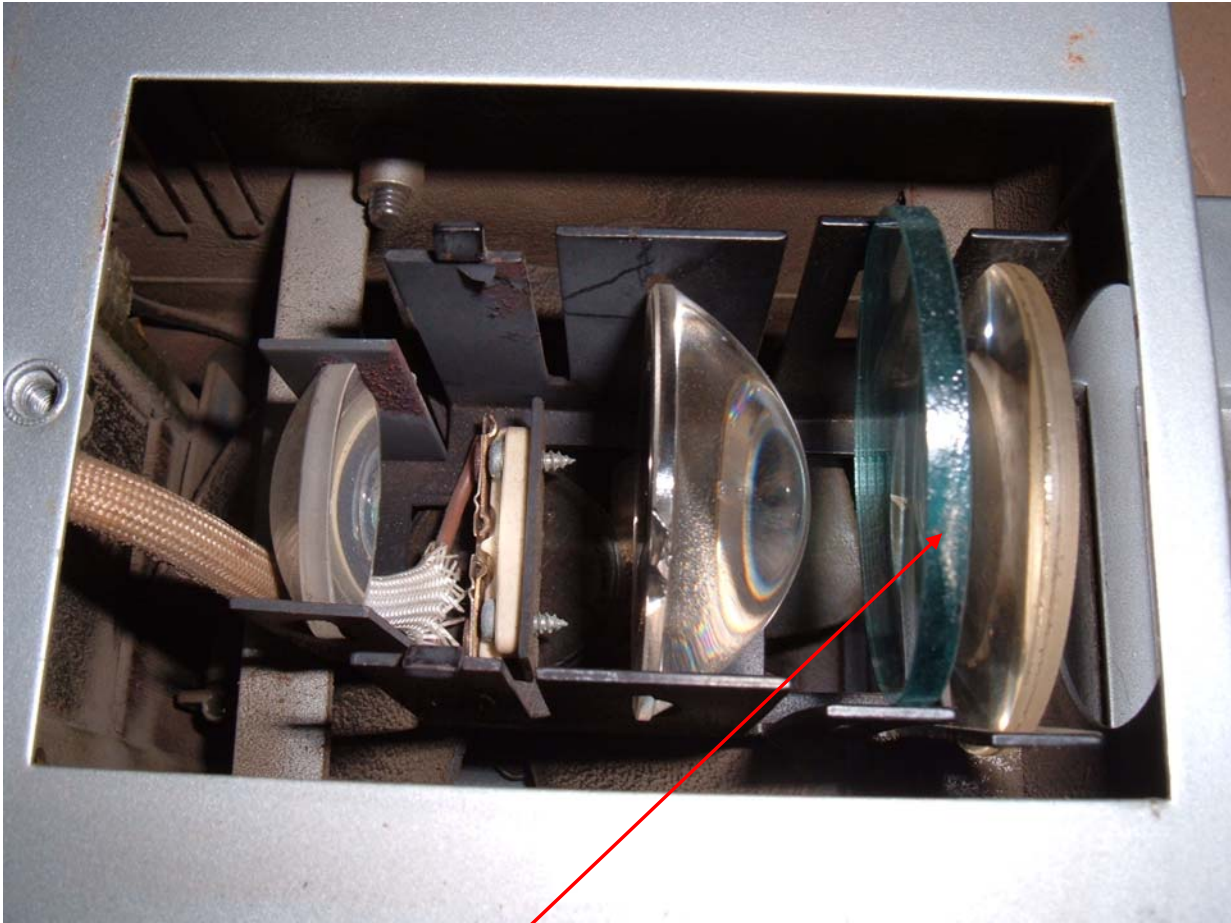
### STEP 4

The next thing is to remove the lens, heat filter and reflector from the lamp housing.

Commence by removing the heat filter first. Gently prize the retaining clips apart with finger pressure while pulling the filter vertically.

Once removed access to the remaining lens is easier. Remove the front lens, condenser lens and reflector in a similar manner in that order.

The lenses heat filter and reflector should then be cleaned using a lint free cloth and spirit or alcohol. Gently buff these items to remove smears and be careful not to scratch the mirror surface of the reflector.



Heat filter partially removed

Once removed and cleaned the lenses and heat filter should be checked for damage. There is usually some chipping of the edge of the condenser lens. Small chips as shown in the picture are acceptable. If cracks or large chips are detected, the lens should be replaced. New Lens and filters are available as spares items.

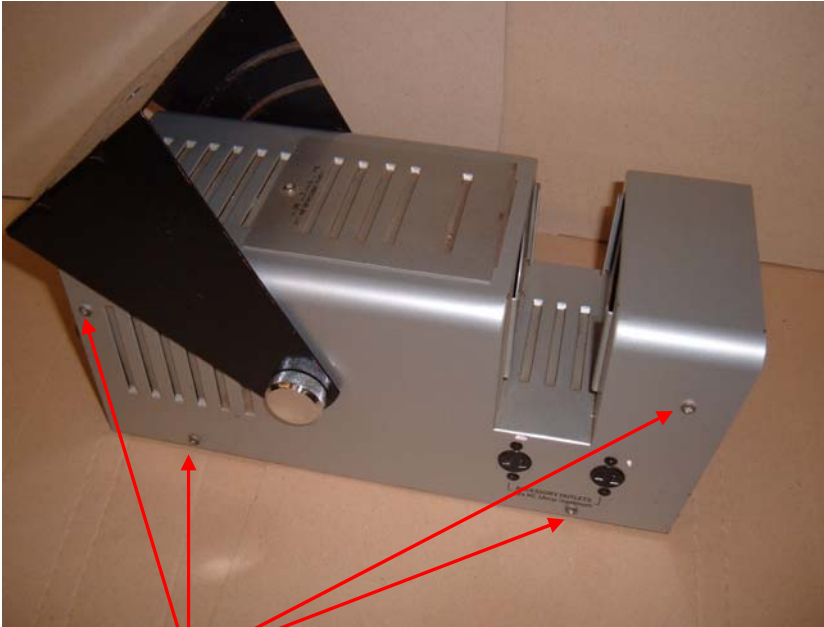
Place the now cleaned items on clean tissue away from the work area until the projector is re assembled.



## STEP 5

The outer casing can now be removed.

Start by removing the eight screws holding the main cover in place.



Remove these screws and those on the opposite side

Once the screws are removed carefully raise the top casing to gain access to the lamp wires. Loosen the connector screws for the lamp wires to release them and allow the top casing to be lifted free. Leave the accessory socket cables connected for now. Be careful not to damage the fan blades.



Lamp wires

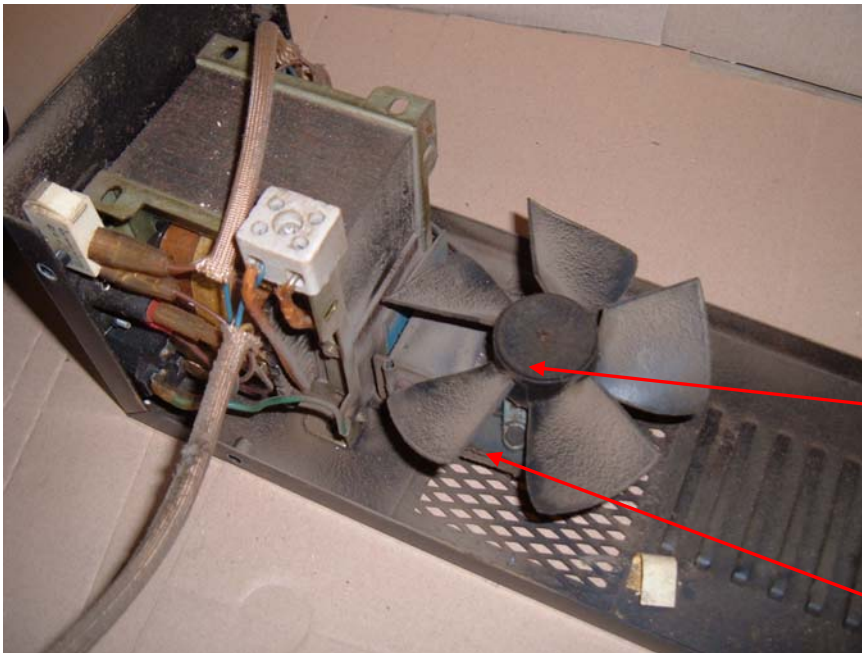
Lamp wire connector

Accessory socket cables

## STEP 6

With the top casing removed access to the fan and transformer are now possible.

The fan is prone to age damage where the centre fixing cracks and becomes detached from the main boss. Carefully pull off the blades of the fan from the motor (do not pull at the blade, pull the centre boss).



Fan Blade Centre Boss

Fan Motor

If no replacement is available for a damaged fan blade, there are two options. Repair may be possible or the entire fan and blade can be replaced with an alternative.

Clean the fan blade using foam clean once removed and dry thoroughly. Brush out dirt from the base and remove the fan motor to clean thoroughly

with a brush and cloth. Ensure the motor can rotate freely.



Removing the two 5.5mm nuts will free the motor from the base. (Remember to re-fit the fibre washers when fitting the motor).

## Fan blade repair:



Typically damaged fan blades

If the centre spindle of the fan blades has broken off, it may be possible to repair this. Glue the centre back into the boss using model glue. Ensure the centre is perfectly aligned and perpendicular, allow the glue to set.



Once fully set, apply epoxy glue around the spindle to strengthen the joint as shown above. Once this is set fully it can be re-fitted to the fan motor.

If this fails then a common practice is to replace the fan and motor with a PAPST type fan.

A good quality high air flow metal 80mm fan can be purchased from an electronics dealer. This should be a 110volt type. Computer fans are not recommended types, the quality is poor and life span in this application short.





Example mounting position for fan.  
(fan shown is for demonstration of position)

Position the replacement fan directly over the grille in the base. Mount using 4 M4 nuts and bolts, fit 3 or 4 washers between the fan and base to raise the fan slightly. This will allow airflow should the grille be partially blocked at any time.

Wire the replacement onto the same terminals of the transformer that the original fan motor was connected to (across the 110v winding).

## **STEP 7**

Using a brush and cloth clean the whole top cover assembly previously removed. Treat any rust present with rust inhibitor.

Check the condition of the lamp holder and replace if necessary.

Replace any defective auxiliary sockets with new ones.

## **STEP 8**

Re- assemble the projector top cover onto the base.

The fitting of the lamp wires is a little tricky and care must be taken not to allow the top cover to rest on the fan blades. Make sure the lamp wires are fitted into the ceramic block fully and the screws are not over-tightened. Take your time with this step to avoid having to disassemble the unit to correct problems.

Ensure the wiring to the auxiliary sockets is clear of the fan blades and lying in the bottom along the edge.

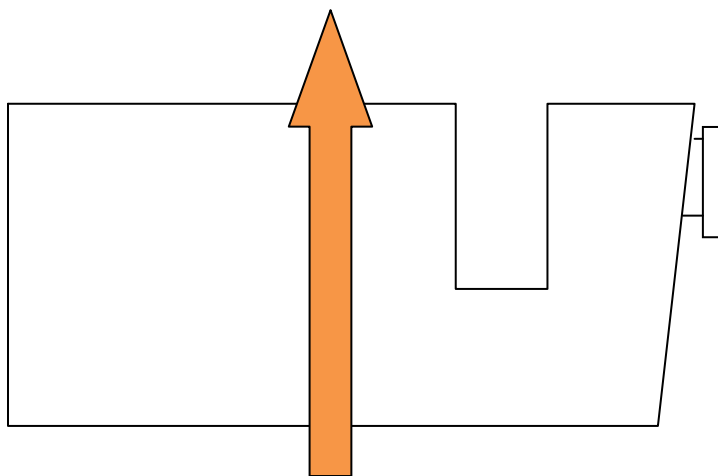
## STEP 9

Replace the eight screws to retain the top cover.

Plug in the projector to a suitable outlet and switch on.

Ensure the fan runs correctly and a good airflow can be felt out of the lamp housing. If a replacement fan has been used and there is no airflow, check this has been fitted the correct way (for air flow direction from bottom to top).

Once you are satisfied all is ok, switch off and remove the power cord.



**Air Flow Direction**

## STEP 10

The lamp housing lenses and heat filter can now be fitted. Start by fitting the reflector, followed by the main condenser, front lens then heat filter in that order.



## **STEP 11**

The lamp can now be fitted. As when removing use a clean cloth or plastic bag to hold the lamp. Position the lamp in the lampholder and gently push home. Ensure the lamp is vertical when you do this and do not 'rock' or twist the lamp as this can damage the lamp envelope. Fit the lamp cover plate over the lamp.

If the lamp is damaged or faulty replace this with a type M33 24v 250w QI lamp. An alternative M36 lamp may be fitted, this is the long life version of the M33 giving extended life useage.

## **STEP 12**

Finally, clean the Hatch Cover removed at the beginning of service. Check the vent slots are free of obstruction and fit the cover on the projector.

The projector may now be tested. Connect the power cord and switch on the projector. Place a white card approximately two feet from the focus lens and focus the image for a clean edge. (no effects fitted).

Check the evenness of illumination, if uneven then check the lamp house lenses and reflector are correctly seated in the lamp house.

Place a motor plate and effect into the projector gate and connect to the auxiliary power outlet. Focus the image and ensure the outlet socket is working correctly. If the effect motor becomes intermittent when the plug in the auxiliary socket is rocked gently, the socket may be faulty and require replacing.

## **ALL OK?**

Your Solar 250 is now ready for the road.

Remember some countries or venues may require equipment to be PAT tested. If this is done, ensure the power cord used is packed with this unit and not any other.

It is recommended the projector is stored in its original packing or a padded flight case. When using the projector do not tilt more than 30° from horizontal. Use a deflection if acute angle projection is required.