Revolution 250

ORDERCODE 40181

SHOWELECTRONICS FOR PROFESSIONALS

Congratulations!
You have bought a great, innovative product from Showtec.
The Showtec Revolution 250 brings excitement to any venue. Whether you want simple plug-&-play action or a sophisticated DMX show, this product provides the effect you need.

You can rely on Showtec, for more excellent lighting products.
We design and manufacture professional light equipment for the entertainment industry.
New products are being launched regularly. We work hard to keep you, our customer, satisfied.
For more information: iwant@showtec.info

You can get some of the best quality, best priced products on the market from Showtec.
So next time, turn to Showtec for more great lighting equipment.
Always get the best -- with Showtec !

Thank you!

Showtec Revolution 250™ Product Guide

Warning..... 2
Safety-instructions..... 2
Operating Determinations..... 3
Rigging..... 4

Description..... 6
Features and Overview 6
All sides..... 7

Installation..... 8
Installing the Lamp 8

Set Up and Operation..... 8
One Revolution..... 8
Multiple Revolutions..... 9

Control Board..... 10

DMX-Protocol..... 11
Control Panel..... 11
Control Mode..... 11
DMX addressing..... 11
Functions control panel..... 12
Master/Slave mode..... 12

DMX Channel Chart..... 13

Maintenance..... 14
Changing the Lamp..... 14
Replacing the Fuse..... 14
Replacing a Gobo..... 15

Troubleshooting..... 16
No Light, No Movement - All Products..... 16
No Response to DMX 16

Product Specifications..... 18

WARNING

CAUTION!
Keep this device away from rain and moisture!
Unplug mains lead before opening the housing!

FOR YOUR OWN SAFETY, PLEASE READ THIS USER MANUAL CAREFULLY BEFORE YOUR INITIAL START-UP!

SAFETY INSTRUCTIONS

Every person involved with the installation, operation and maintenance of this device has to:

- be qualified
- follow the instructions of this manual

CAUTION! Be careful with your operations.
With a dangerous voltage you can suffer
a dangerous electric shock when touching the wires!

Before your initial start-up, please make sure that there is no damage caused by transportation. Should there be any, consult your dealer and do not use the device.

To maintain perfect condition and to ensure a safe operation, it is absolutely necessary for the user to follow the safety instructions and warning notes written in this manual.

Please consider that damages caused by manual modifications to the device are not subject to warranty.

This device contains no user-serviceable parts. Refer servicing to qualified technicians only.

IMPORTANT:

The manufacturer will not accept liability for any resulting damages caused by the non-observance of this manual or any unauthorized modification to the device.

- Never let the power-cord come into contact with other cables! Handle the power-cord and all connections with the mains with particular caution!
- Never remove warning or informative labels from the unit.
- Never use anything to cover the ground contact.
- Never run the device without lamp!
- Never ignite the lamp if the objective-lens or any housing-cover is open, as discharge lamps may expose and emit a high ultraviolet radiation, which may cause burns.
- Never lift the fixture by holding it at the projector-head, as the mechanics may be damaged. Always hold the fixture at the transport handles.
- Never look directly into the light source.
- Never leave any cables lying around.
- Never unscrew the screws of the rotating gobo, as the ball bearing will otherwise be opened.
- Do not insert objects into air vents.
- Do not connect this device to a dimmerpack.
- Do not switch the device on and off in short intervals, as this would reduce the lamp's life.
- Do not touch the device's housing bare-handed during its operation (housing becomes very hot).
- Do not shake the device. Avoid brute force when installing or operating the device.
- Only use device indoor, avoid contact with water or other liquids.

- Only operate the fixture after having checked that the housing is firmly closed and all screws are tightly fastened.
- Only operate the device after having familiarized with its functions.
- Avoid flames and do not put close to flammable liquids or gases.
- Always replace the lamp, when it is damaged or deformed due to the heat.
- Always keep case closed while operating.
- Always allow free air space of at least 50 cm around the unit for ventilation.
- Always disconnect power from the mains, when device is not used, before cleaning or when replacing lamp! Only handle the power-cord by the plug. Never pull out the plug by tugging the power-cord.
- Make sure that the device is not exposed to extreme heat, moisture or dust.
- Make sure that the available voltage is not higher than stated on the rear panel.
- Make sure that the power-cord is never crimped or damaged. Check the device and the power-cord from time to time.
- If the lens is obviously damaged, it has to be replaced. So that its functions are not impaired, due to cracks or deep scratches.
- If device is dropped or struck, disconnect mains power supply immediately. Have a qualified engineer inspect for safety before operating.
- If the device has been exposed to drastic temperature fluctuation (e.g. after transportation), do not switch it on immediately. The arising condensation water might damage your device. Leave the device switched off until it has reached room temperature.
- If your Showtec device fails to work properly, discontinue use immediately. Pack the unit securely (preferably in the original packing material), and return it to your Showtec dealer for service.
- For adult use only. Movinghead must be installed out of the reach of children. Never leave the unit running unattended.
- For replacement use lamps and fuses of same type and rating only.
- Allow time to cool down, before replacing lamp.
- This device falls under protection class I. Therefore it is essential to connect the yellow/green conductor to earth.
- During the initial start-up some smoke or smell may arise. This is a normal process and does not necessarily mean that the device is defective.
- Repairs, servicing and electric connection must be carried out by a qualified technician.
- WARRANTY: Till one year after date of purchase.

CAUTION ! EYEDAMAGES !.
Avoid looking directly into the light source.
(meant especially for epileptics) !

OPERATING DETERMINATIONS

This device is not designed for permanent operation. Consistent operation breaks will ensure that the device will serve you for a long time without defects.

The minimum distance between light-output and the illuminated surface must be more than 1.3 meter.

The maximum ambient temperature t_a must never be exceeded.

If this device is operated in any other way, than the one described in this manual, the product may suffer damages and the warranty becomes void.
Any other operation may lead to dangers like short-circuit, burns, electric shock, lamp explosion, crash etc. You endanger your own safety and the safety of others!

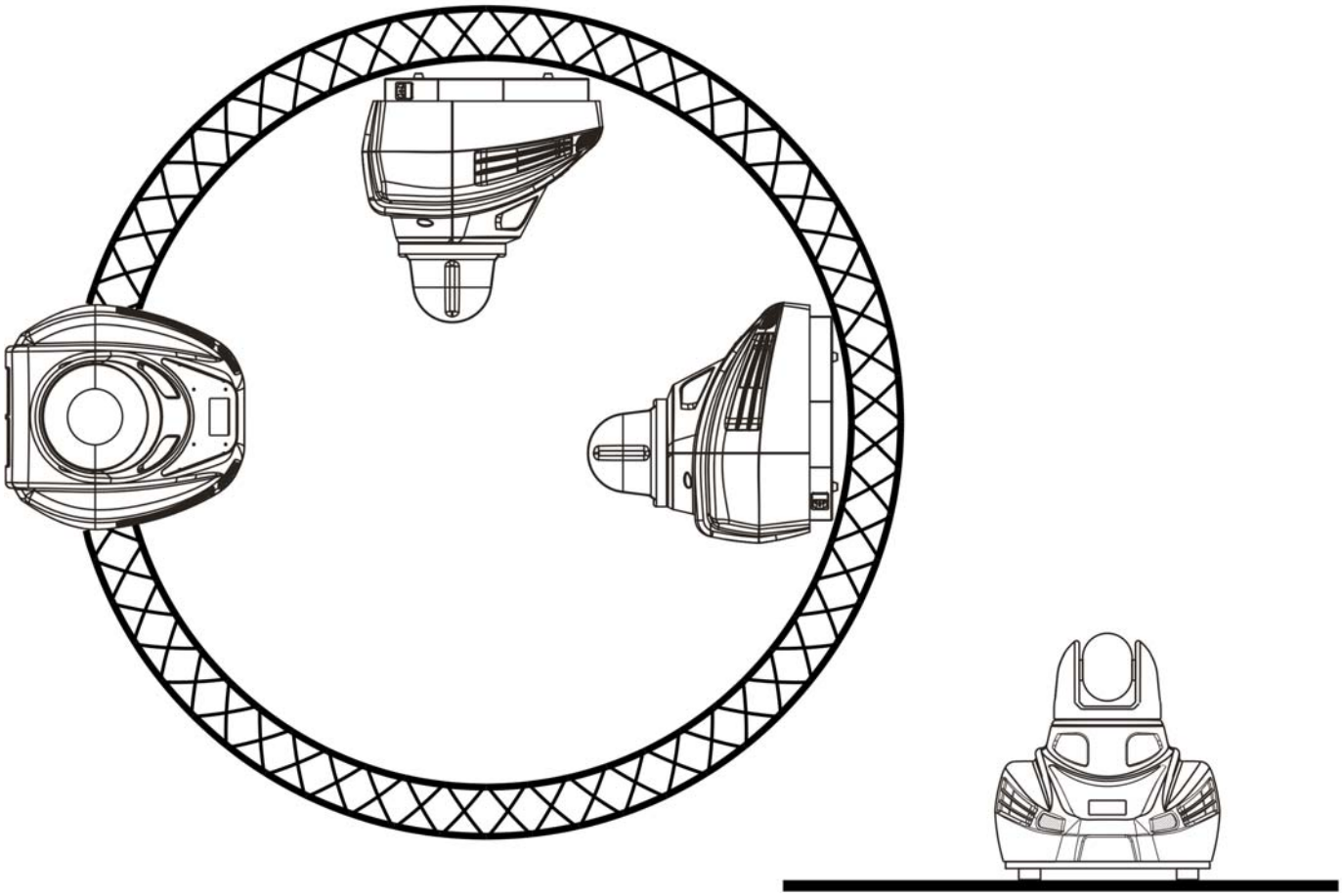
Rigging

Please follow the European and national guidelines concerning rigging, trussing and all other safety issues.

Do not attempt the installation yourself !
Always let the installation be carried out by an authorized dealer !

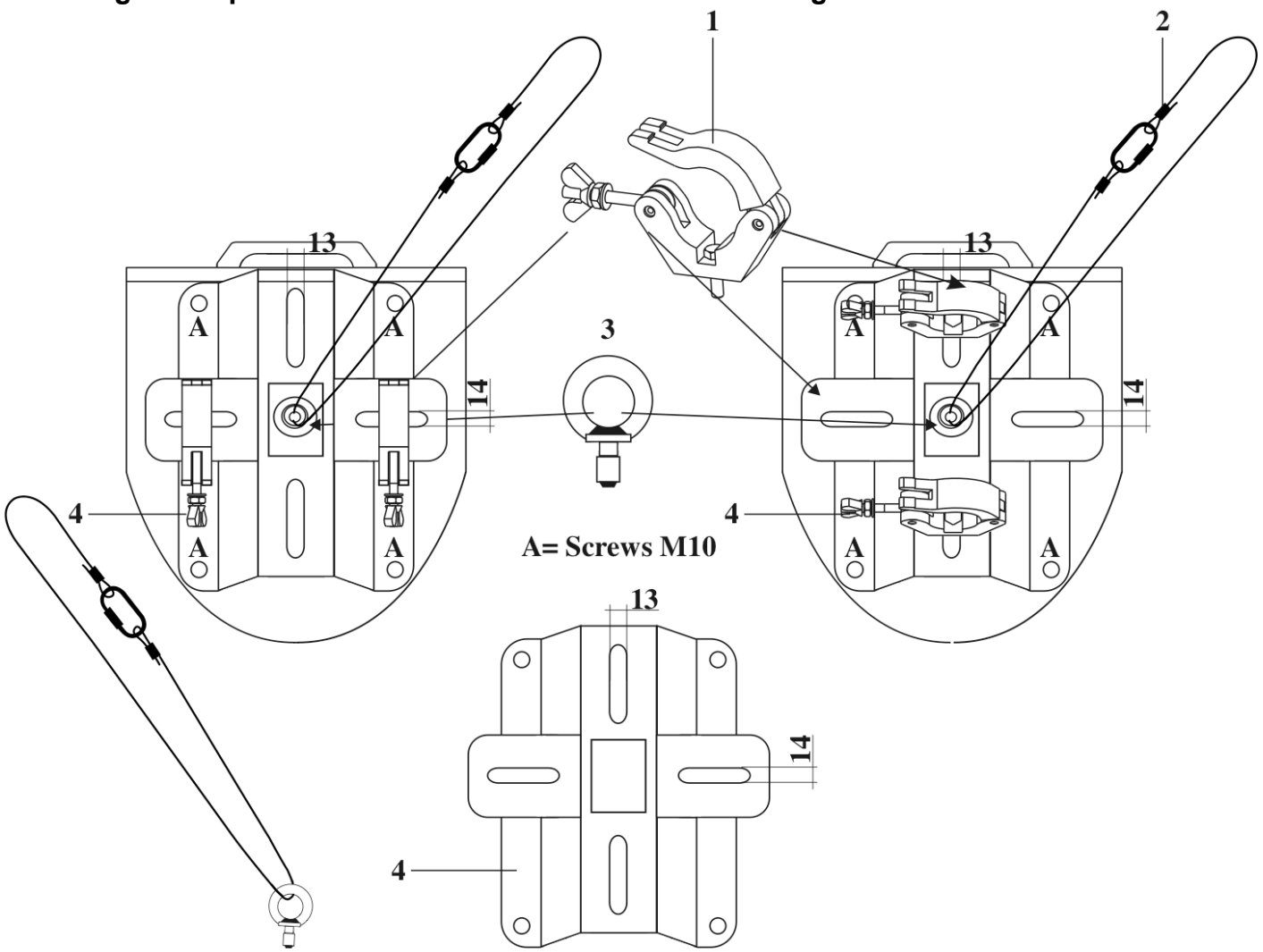
Procedure:

- If the projector is lowered from the ceiling or high joists, professional trussing systems have to be used.
- Use a clamp to mount the projector, with the mounting-bracket, to the trussing system.
- The projector must never be fixed swinging freely in the room.
- The installation must always be secured with a safety attachment, e.g. an appropriate safety net or safety-cable.
- When rigging, derigging or servicing the projector, always make sure, that the area below the installation place is blocked and staying in the area is forbidden.



The Revolution can be placed on a flat stage floor or mounted to any kind of truss by a clamp.

Mounting a clamp to the underside of the Revolution moving head



1) Clamp
2) Safety-cable
3) Eye bolt
4) Mounting plate

Improper installation can cause serious damage to people and property !

Connection with the mains

Connect the device to the mains with the power-plug.
Always pay attention, that the right color cable is connected to the right place.

Cable	Pin	International
BROWN	FASE	L
BLUE	NUL	N
YELLOW/GREEN	EARTH	⏚

Make sure that the device is always connected properly to the earth!

Description of the device

Features

The Showtec Revolution 250 is a moving scanner with high output and great effects.
• 1 Color-wheel with 9 colored gobos, and open
• 1 Gobo-wheel with 4 glass and 2 metal interchangeable rotating gobos plus open
• DMX-control via standard DMX-controller
• 12 DMX-control channels required
• Strobe-effect with adjustable speed (1 - 7 flashes/sec.)
• Sound-controlled via built-in microphone
• Manual focus
• Pan 0º -- 359º
• Tilt 0º -- 359º
• Lamp MSD 250 or HSD 250
• Fuse 5A / 250V

Overview

Fig. 1

1) Lens
2) Display
3) Menu / Select buttons

All sides

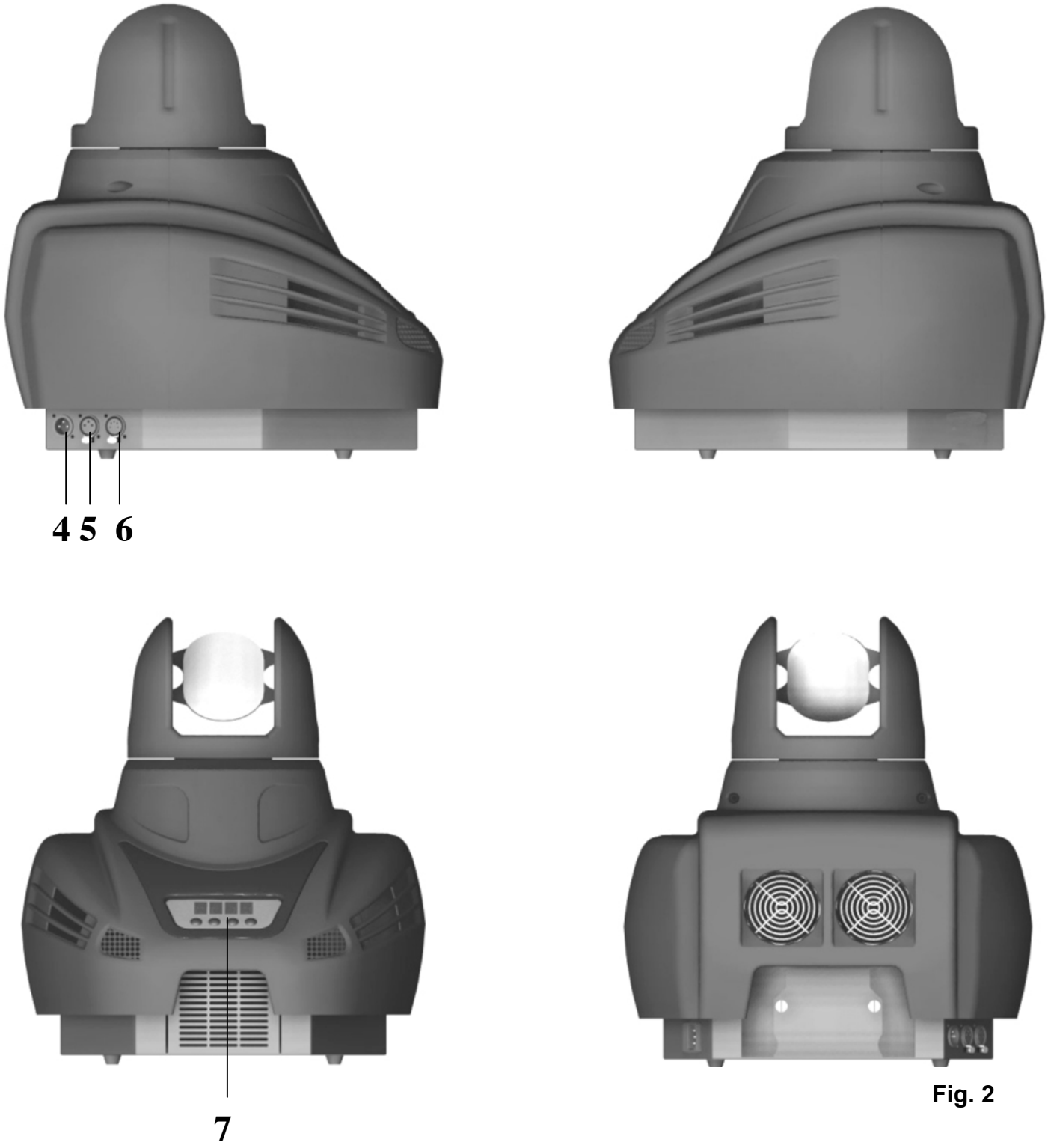


Fig. 2

4) DMX IN
5) DMX OUT
6) DMX OUT
7) Control Panel

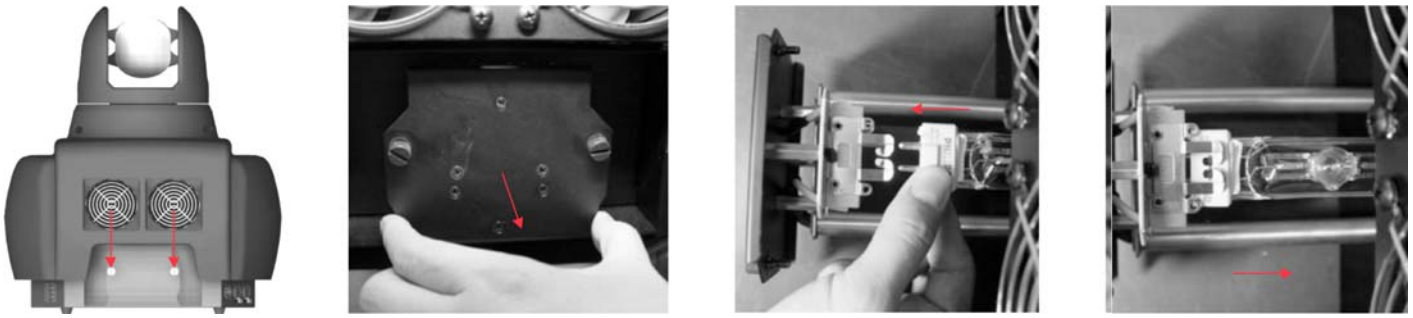
Installation

Installing the Lamp

The Showtec Revolution 250 uses the MSD 250 or HSD 250 (ordercode 80920P / 80920O / 80926P / 80933O / 82603 / 80935) reflectorbulb as manufactured by all popular manufacturers. Use only the appropriate lamp for your unit.
Note that, product versions that use other lamps, may be offered in the future. Check your product specification label for information.
Always disconnect from electric mains power supply before changing lamps.
The lamp has to be replaced when it is damaged or deformed due to the heat.
Do not install lamps with a higher wattage! Lamps with a higher wattage generate temperatures the device was not designed for.
Damages caused by non-observance are not subject to warranty.

Procedure :

1. Loosen the 2 screws on back of the housing.
2. Gently pull out the lamp board. Read lamp instructions. Do not touch the lamp bulb glass. Oil on hands shortens the lamp life. (If you touch the bulb glass, wipe off the glass with a clean, lint-free towel and rubbing alcohol.)
3. Hold the lamp socket with one hand. Insert the lamp pins into the holes in the lamp socket.
4. Push the lamp in to the lamp board.
5. Put the backpanel back and fasten the screws snugly.



1 **2** **3** **5**

Fig. 3

Set Up and Operation

Follow the directions below, as they pertain to your preferred operation mode.
Before plugging the unit in, always make sure that the power supply matches the product specification voltage. Do not attempt to operate a 120V specification product on 230V power, or vice versa.

One Revolution

1. Fasten the moving head onto firm trussing (Use a 30-kg rated or stronger C-clamp fastened onto the Revolution). Leave at least 1 meter on all sides for air circulation.
2. Plug one end of the electric mains power cord into the IEC socket on the unit. Then plug the other end of the cord into a proper electric power supply socket.
3. Turn on the music. If F8 (Audio) is set, then the fixture will react to the beat of the music.

Multiple Revolutions

1. Fasten the effect light onto firm trussing (Use a 30-kg rated or stronger C-clamp fastened onto the Revolution). Leave at least 1 meter on all sides for air circulation.

2. Use a 3-p XLR cable to connect the Revolutions and other devices.
The pins:

1. Earth
2. Signal -
3. Signal +

3. Link the units as shown in (figure 4), Connect a DMX signal cable from the first unit's DMX "out" socket to the second unit's "in" socket. Repeat this process to link the second, third, and fourth units.

4. Supply electric power: Plug electric mains power cords into each unit's IEC socket, then plug the other end of the mains power cord into proper electric power supply sockets, starting with the first unit. Do not supply power before the whole system is set up and connected properly.

Multiple Revolutions Set Up

DMX-Set up

Master/Slave Set up

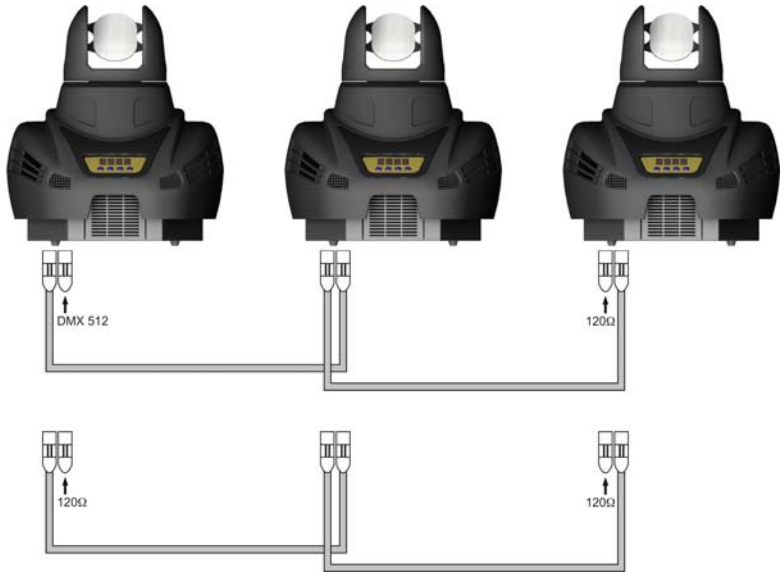


Fig. 4

Note : Link all cables before connecting electric power

Control Board

Addr	Press ▲ to increase DMX Address; ▼ to decrease. Press ▲▼ simultaneously to zero DMX address.
LP.ti	Used lamp time Press▲▼ simultaneously to zero lamp time, unit : hour
Shut	Off : Normal On : Shutter closes during changing color, gobo or prism. Shutter opens after color, gobo and prism are properly positioned.
CoLo	Off : Colorwheel linear movement On : Colorwheel fixed step advance
Focu	Off : Normal On : Focus adjustment
r.PAn	Off : Pan movement from 0˚- 359˚. On : Pan movement from 359˚- 0˚.
r.tilt	Off : Tilt movement from bottom to top. On : Tilt movement from top to bottom.
dEMo	Off : Normal On : Show all functions without DMX control.
SoFt	Off : Normal On : Smooth movement with 'DEMO' prior set 'ON'
dP.SE	Off : Display off ; On: Display on On : While 'Off', press any key to turn on the display
rSEt	Off : Normal On : Self-zero all motors once
dF.SE	Off : Normal On : All fixture personalities reset to default values.
LAMP	Off: Lamp off On: Lamp on
turn	Off: Normal On: Reverse the display

- Press ◄► simultaneously returning to "*Addr*".
- Press ◄► simultaneously in advance before switching on the unit, Release ◄► to erase all recorded data after switching the unit as ex-works.
- Once operation stopped, the unit stores all data. When restarting the unit, it starts with the latest play of the last operation, before turning off the unit.

DMX Protocol

This device has **12** channels.

The Revolution 250 can be operated with a controller in **control mode** or without the controller in **demo-mode.**

Control Panel

When the indicator light is on, means the Revolution is working.

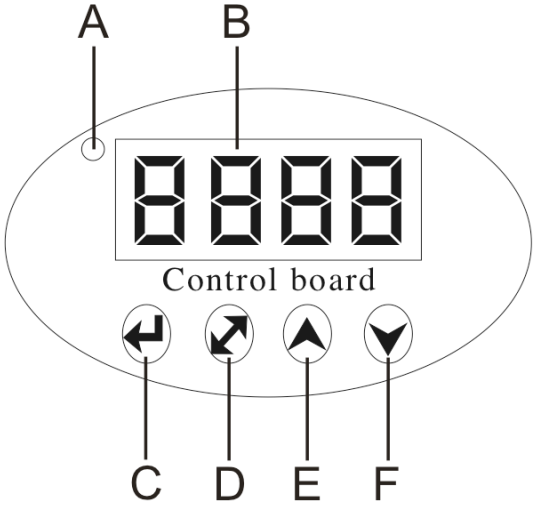


Fig. 5

A. LED
B. Display
C. [ENTER] Button
D. [MODE] Button
E. Up Button
F. Down Button

Control Mode

The fixtures are individually addressed A001 - A511 on a data-link and connected to the controller.
The fixtures respond to the DMX signal from the controller. (When you select the DMX address and save it, the controller will display the saved DMX address the next time.)

DMX Addressing

The control panel on the front side of the base allows you to assign the DMX fixture address, which is the first channel from which the Revolution will respond to the controller.
Please note when you use the controller, the unit has **12** channels.
When using multiple Revolutions, make sure you set the DMX addresses right.
Therefore, the DMX address of the first Revolution should be **1(A001)**; the DMX address of the second Revolution
should be **1+12=13(A013**); the DMX address of the third Revolution should be **13+12=25(A025)**, etc.
Please, be sure that you don't have any overlapping channels in order to control each Revolution correctly.
If two or more Revolutions are addressed similarly, they will work similarly.
For address settings, please refer to the instructions under "Addressing' (menu A001)

Controlling:

After having addressed all Revolution fixtures, you may now start operating these via your lighting controller.
Note: After switching on, the Revolution will automatically detect whether DMX 512 data is received or not. If there is no data received at the DMX-input, the "**LED** " on the control panel will not flash.
The problem may be:
- The XLR cable from the controller is not connected with the input of the Revolution.

- The controller is switched off or defective, the cable or connector is detective, or the signal wires are swapped in the input connector.

Note: It's necessary to insert a XLR termination plug (with 120 Ohm) in the last fixture in order to ensure proper transmission on the DMX data link. (only with lines more than 100 m.)

Remotely controllable functions

Colour-wheel
The Revolution contains a colour-wheel with 12 colour positions. 11 dichroic colours and one white. The colour-wheel can be positioned between two adjacent colours in any position. It is also possible to rotate the colour-wheel continuously at different speeds ("Rainbow effect" in both directions).

Rotating gobo-wheel
This rotating gobo-wheel has 3 metal gobos, 3 glass gobos and open. The gobos have an outside diameter of 27 mm and an image diameter of 23 mm.

Shutter/Dimmer/Strobe
The dimming (0-100%) is provided by a simple mechanical shutter unit. This unit may also be used for strobe effect (1-10 flashes per second).

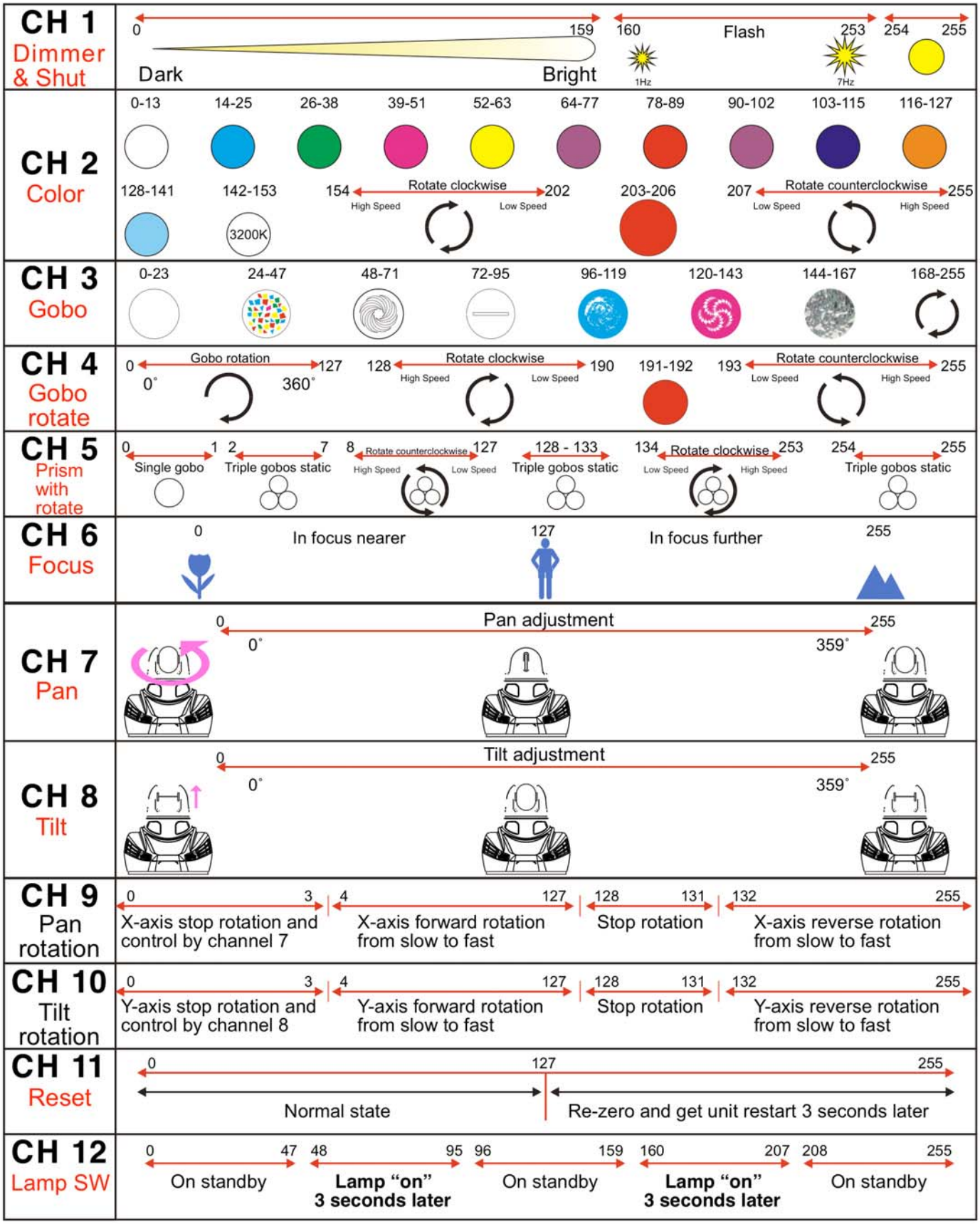
Functions control panel
The control panel is situated on the front of the base and offers several features. You can simply set the DMX address, master/slave mode, make a reset and also use many functions for setting purposes.
The main menu of the control panel is accessed by pressing the ⇲ button [MODE] - press this one until the display shows A001 (with actually stored address).

Addressing

Fig. 6

Display with Menu and Select functions.

DMX Channel chart



Maintenance

The operator has to make sure that safety-relating and machine-technical installations are to be inspected by an expert after every four years in the course of an acceptance test.
The operator has to make sure that safety-relating and machine-technical installations are to be inspected by a skilled person once a year.

The following points have to be considered during the inspection:
1. All screws used for installing the device or parts of the device have to be tightly connected and must not be corroded.
2. There may not be any deformations on housings, fixations and installation spots.
3. Mechanically moving parts like axles, eyes and others may not show any traces of wearing.
4. The electric power supply cables must not show any damages or material fatigue.

The Showtec Revolution 250 requires almost no maintenance. However, you should keep the unit clean. Otherwise, the fixture's light-output will be significantly reduced. Disconnect the mains power supply, and then wipe the cover with a damp cloth. Do not immerse in liquid. Wipe lens clean with glass cleaner and a soft cloth. Do not use alcohol or solvents.
The front PC lens will require weekly cleaning, as smoke-fluid tends to build up residues, reducing the light-output very quickly.
The cooling-fans, dichroic colour-filters, the gobo-wheels, the gobos and the internal lenses should be cleaned monthly with a soft brush. Please clean internal components once a year with a light brush and vacuum cleaner. Be careful not to damage the internal components when using an air-jet. To ensure a proper function and smooth rotation of the gobo wheel, we recommend lubricating every six months. Do not use excess lubrication.
Keep connections clean. Disconnect electric power, and then wipe the DMX and audio connections with a damp cloth. Make sure connections are thoroughly dry before linking equipment or supplying electric power.

Changing the Lamp
1. Disconnect mains power supply, and allow 15 minutes to cool down. Loosen the 2 screws on back of the housing.
2. Gently pull out the lamp board.
3. Follow directions for installing a new lamp, page 8.

Replacing a Fuse
Power surges, short-circuit or inappropriate electrical power supply may cause a fuse to burn out. If the fuse burns out, the product will not function whatsoever. If this happens, follow the directions below to do so.
1. Unplug the unit from electric power source.
2. Insert a flat-head screwdriver into a slot in the fuse cover. Turn the screwdriver to the left, at the same time gently push a bit (Turn and Push). The fuse will come out.
3. Remove the used fuse. If brown or unclear, it is burned out.
4. Insert the replacement fuse into the holder where the old fuse was. Reinsert the fuse cover. Be sure to use a fuse of the same type and specification. See the product specification label for details.

Replacing a Gobo

Gobo-wheel with rotating gobo's

1. Disconnect mains power supply and set the switch to OFF.

2. Make sure that the gobo you want to insert has the same size. For the right size, see below.

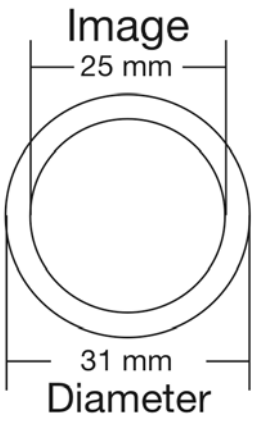


Fig. 7

3. Loosen the 6 screws on backs cover. Remove the maintenance cap.

Fig. 8

4. Turn the gobo wheel, with the gobo you want to remove.

Fig. 9

5. Very carefully take the pinchcock (fig 10) out of the gobo wheel, but pay attention that the pinchcock does not fall in the device. Then push the gobo out.
6. Place the new gobo in the gobo wheel. Carefully put the pinchcock back, gently press the pinchcock a little bit together. Possibly use a pair of pliers to press the pinchcock a little bit together.
7. Replace the cap and fasten all screws.

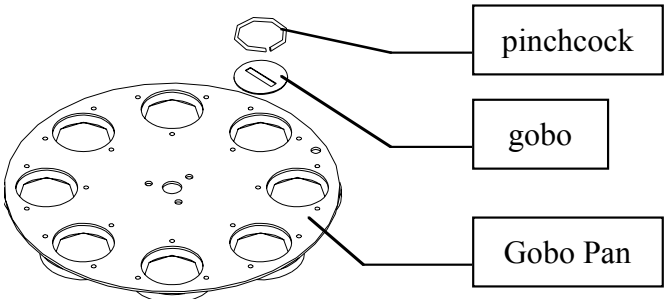


Fig. 10

Troubleshooting

No Light, No Movement - All Products

This troubleshooting guide is meant to help solve simple problems. If a problem occurs, carry out the steps below in sequence until a solution is found. Once the unit operates properly, do not carry out following steps.
If the light effect does not operate properly, refer servicing to a technician.
Response: Suspect three potential problem areas: the power supply, the lamp, the fuse.
1. Power supply. Check that the unit is plugged into an appropriate power supply.
2. The lamp. Replace the old lamp with a new one with the same specifications. See page 8 for replacing lamps.
3. The fuse. Replace the fuse. See page 14 for replacing the fuse.

No Response to DMX

Response: Suspect the DMX cable or connectors, a controller malfunction, a light effect DMX card malfunction.
1. Check the DMX cable: Unplug the unit; change the DMX cable; then reconnect to electrical power. Try your DMX control again.
2. Determine whether the controller or light effect is at fault. Does the controller operate properly with other DMX products ? If not, take the controller in for repair. If so, take the DMX cable and the light effect to a qualified technician.

See next page for more problem solving.

Problem	Probable cause(s)	Remedy
One or more fixtures are completely dead.	No power to the fixture	·Check that power is switched on and cables are plugged in.
	Primary fuse blown.	·Replace fuse.
Fixtures reset correctly, but all respond erratically or not at all to the controller.	The controller is not connected.	·Connect controller.
	3-pin XLR Out of the controller does not match XLR Out of the first fixture on the link (i.e. signal is reversed).	·Install a phase reversing cable between the controller and the first fixture on the link.
Fixtures reset correctly, but some respond erratically or not at all to the controller.	Poor data quality	·Check data quality. If much lower than 100 percent, the problem may be a bad data link connection, poor quality or broken cables, missing termination plug, or a defective fixture disturbing the link.
	Bad data link connection	·Inspect connections and cables. Correct poor connections. Repair or replace damaged cables.
	Data link not terminated with 120 Ohm termination plug.	·Insert termination plug in output jack of the last fixture on the link.
	Incorrect addressing of the fixtures.	·Check address setting.
	One of the fixtures is defective and disturbs data transmission on the link.	·Bypass one fixture at a time until normal operation is regained: unplug both connectors and connect them directly together. ·Have the defective fixture serviced by a qualified technician.
	3-pin XLR Out on the fixtures does not match (pins 2 and 3 reversed).	·Install a phase-reversing cable between the fixtures or swap pin 2 and 3 in the fixture, that behaves erratically.
Shutter closes suddenly	The color wheel, gobo wheel, or a gobo has lost its index position and the fixture is resetting the effect.	·Contact a technician for servicing if the problem persists.
No light	The power supply settings do not match local AC voltage and frequency.	·Disconnect fixture. Check settings (page 8) and correct if necessary.
	Lamp missing or blown	·Disconnect fixture and replace lamp.
Lamp cuts out intermittently.	Fixture is too hot.	·Allow fixture to cool. ·Clean fan. ·Make sure air vents at control panel and front lens are not blocked. ·Turn up the air conditioning.
	The power supply settings do not match local AC voltage and frequency.	·Disconnect fixture. Check settings (page 8) and correct if necessary.

Product Specification

Model: Showtec Revolution 250
Voltage: 240V-50Hz (CE)
Power: 300W
Fuse: 5A / 250V
Dimensions: 400x426x460mm (LxWxH)
Weight: 19 kg

Operation and Programming
Signal pin OUT: pin 1 earth, pin 2 (-), pin 3 (+)
Set Up and Addressing: LED control panel
Pan / Tilt 16 bit
DMX Channels: 12
Signal input 3-pin XLR male
Signal output 3-pin XLR female

Lamp
Allowed lamp models*:
Showtec NSD 250/2 (2000 hr) (ordercode 82603)
Philips MSD 250 (3000 hr; 6700K) ordercode 80920P
Osram HSD 250 (3000 hr; 6000K) ordercode 80920O
Philips MSD 250/2 (2000 hr; 8500K) ordercode 80926P
Osram HSD 250/78 (1000 hr; 7800K) (ordercode 80933O)
Osram HSD 250/80 (1000 hr; 8000K) (ordercode 80935)
Control: Automatic and DMX remote ON / OFF

Electro-mechanical effects
Colors: 11 colors plus white
Gobos rotating: 2 rotating metal gobos, 4 rotating glass gobos and open
Colour-wheel with variable rotation speed
Gobo rotation: adjustable speed, position direction
Prism: 3-facer prism rotating in both directions at different speeds
All lenses are anti-reflection coated
High luminous-efficiency parabolic system
Strobe-effect with variable speed (1 flash -- 10 flashes/sec.)
DMX-control via standard DMX-controller
Pan 0º -- 360º
Tilt 0º -- 360º
Automatic Pan / Tilt position correction
Wheel control: auto-electronic reset

Gobos
Gobo diameter (metal or glass) 31 mm
Maximum image diameter 25 mm
Glass gobo: heat-resistant and intensify glass; dichroic glas coating
Max. ambient temperature t_a: 40°C; Max. housing temperature t_B: 80°C
Cooling: 2 axial fans

Minimum distance:
Minimum distance from flammable surfaces: 0.5m
Minimum distance to lighted object: 1.3m

*: Versions for other lamps may be produced. Please check the specification label on your product.

CE

Design and product specifications are subject to change without prior notice.

© 2005 Showtec.