

See the Difference

Lamphouse (en)

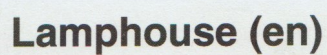


Kinoton

GMBH



User Manual



DISPLAY SYSTEMS

Imprint

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Preface

Dear customer,

this operating manual will help you get acquainted with the lamphouse and to make use of its possible applications in accordance with the requirements.

This operating manual includes important hints for a safe, proper, correct and economic operation.

It will also help you to avoid danger, to reduce failures and to increase life and reliability of the lamphouse.

This operating manual includes useful hints for proprietor and personnel obligations. It does not substitute, but supports, a thorough training period.

All information in this manual is given by best knowledge and has been checked carefully. However, KINOTON accepts no liability for the accuracy of this information.

Subject to technical changes.

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Changes / Additions / Notes

Issue of this manual: July 2006

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This operating manual must be read and understood by all persons working with the lamphouse, with particular emphasis on all aspects regarding safety.

In addition, all valid regulations and measures concerning accident prevention must be observed.

Owner's Responsibilities

The owner is responsible to assure that all persons who work with and / or operate the lamphouse:

- are familiar with safe operating practices and accident prevention techniques and have a complete working knowledge of the lamphouse and all additional machines and components of the system
- have read and fully understand the safety chapter and the warnings within this operating manual.
- The owner must assure that safe working procedures are followed by personnel

Personnel's Responsibilities

Those persons who work with the lamphouse are responsible:

- to observe safe operating practices and accident prevention techniques
- to have read and fully understand the safety chapter and the warnings within this operating manual.

Dangers when Working with the Lamphouse

Lamphouses are constructed according to the latest engineering and state-of-the-art safety standards. The lamphouse is only to be employed for its intended purpose and is only used when functioning absolutely perfectly.

Serious danger may result from improper use of the lamphouse, causing injury to the user or a third person, or damage may be done to the lamphouse or other items in the vicinity.

Faults that could adversely affect safety must be rectified immediately.

The lamphouse must not be used until any faults are rectified.

Intended Purpose

The lamphouse is mounted on the projector and is suitable to illuminate the screen evenly. The lamphouse is always enabled via the projector.

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1 Safety Instructions

1.1 Safety Notes

General Hints

- This operating manual is to be kept with the lamphouse at all times.
- For safe and trouble free operation of the lamphouse a good working knowledge of basic safety regulations and the lamphouse's correct use is required.
- This operating manual contains the most important instructions for running the lamphouse safely.
- This operating manual must be read and understood by all persons working with the lamphouse, with particular emphasis on all aspects regarding safety.
- In addition, all valid regulations and measures concerning accident prevention must be observed.

Owner's Responsibilities

The owner is responsible to assure that all persons who work with and / or operate the lamphouse:

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Serious danger may result from improper use of the lamphouse, causing injury to the user or a third person, or damage may be done to the lamphouse or other items in the vicinity.

Faults that could adversely affect safety must be rectified immediately.

The lamphouse must not be used until any faults are rectified.

Intended Purpose

The lamphouse is mounted on the projector and is suitable to illuminate the screen evenly. The lamphouse is always enabled via the projector.

Any other or further use is not classified as an "intended purpose". KINOTON cannot be held liable for any damage resulting from different or extended operation.

As part of the "intended purpose" these tasks must be performed:

- observing all instructions and warnings contained in this manual
- inspecting the equipment for damage and correct function
- implementation of maintenance and repair work.

Guarantee and Liability

By reference KINOTON's "General Terms of Business" apply. They are available to the customer on conclusion of sale at the latest.

Guarantee and liability claims for damage to persons and property are invalid if due to one of the following causes:

- improper use of lamphouse
- improper assembly, commissioning, operating and maintenance of lamphouse
- operation the lamphouse with defective and / or non-functioning safety and protection devices
- activating the lamphouse via the rectifier and not via the projector
- non-observance of instructions in the manual regarding transportation, storage, assembly, commissioning, operation and maintenance
- modification of the lamphouse without written authorisation from the manufacturer
- connecting to power other than as specified
- failure to monitor and/or replace parts subject to wear and tear
- improper repairs
- emergencies due to influence from outside bodies or force majeure.

1.2 Important Safety Instructions for US Customers

When using your motion picture equipment, basic safety precautions should always be followed, including the following:

- Read and understand all instructions before using.
- Care must be taken as burns can occur from touching hot parts.
- The equipment's switch is provided with the symbols 0 indicating off and I indicating on.
- Do not operate equipment with damaged wiring or if the appliance has been damaged until it has been examined by qualified service personnel.
- Position any cord so that it will not be tripped over, pulled, or contact hot surfaces.
- If an extension cord is necessary, a cord with a current rating at least equal to that of the appliance should be used. Cords rated for less amperage than the appliance may overheat.

- Always disconnect appliance from electrical supply before cleaning and servicing.
- To reduce the risk of electric shock, do not disassemble this equipment, but call in qualified personnel when service or repair work is required. Incorrect reassembly can cause electric shock when the appliance is used subsequently.
- The use of an accessory attachment not recommended by the manufacturer may cause a risk of fire, electric shock, or injury to persons.
- Connect this appliance to a grounded circuit.
- Disconnect this unit from its source of supply before replacing the projection lamp.
- This appliance may have a polarized plug (one blade is wider than the other). To reduce the risk of electric shock, this plug is intended to fit in a polarized outlet only one way. If the plug does not fit fully in the outlet, reverse the plug. If it still does not fit, contact a qualified electrician. Do not modify the plug in any way.

SAVE THESE INSTRUCTIONS

1.3 Explanation of Symbols



DANGER

This symbol indicates an imminent threat of danger to life and personal health. Disregarding this warning can result in serious personal injuries or highly dangerous injuries.



ATTENTION

This symbol indicates a possibly dangerous situation. Disregarding this warning can result in small personal injuries or damage to system



NOTE

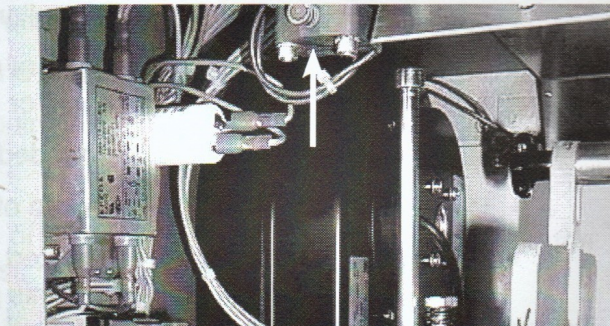
This symbol indicates where notes, user tips and useful information can be found. They serve to help use the lamphouse to its fullest.

1.4 Protective Devices

All existing safety devices must be checked regularly.

1.4.1 Door Switch

On both sides door switches (arrows) are mounted in frame of lamphouse. The xenon lamp only ignites when both lamphouse side doors are closed.



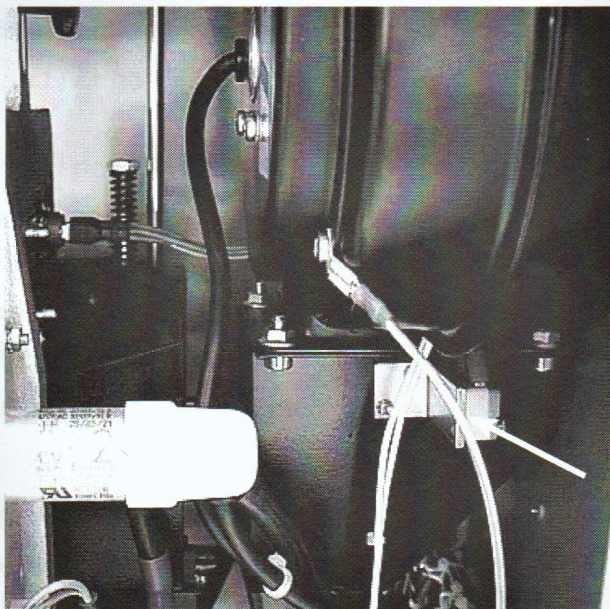
ATTENTION

Never activate the lamphouse via the rectifier.

1.4.2 Airflow Switch

As soon as projector is switched on, the radial blower is going in operation. It is reasonable to directly cool the xenon bulb. If the air flow is interrupted, the xenon lamp will be switched off via airflow switch (arrow).

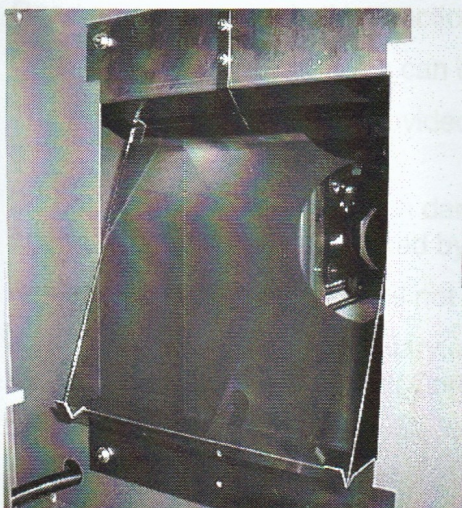
If projector and xenon lamp are switched off, the blower has to run after about ten minutes.



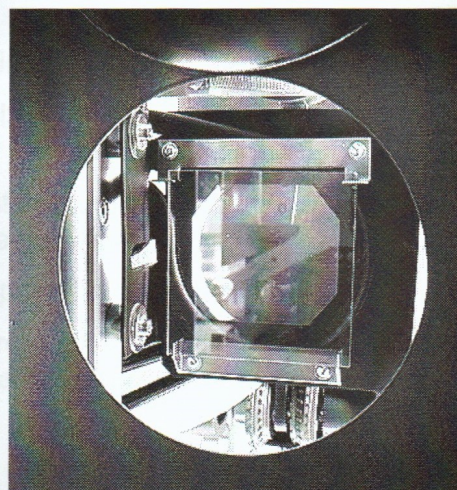
1.4.3 Heat Filters

To protect the film gate from too much heat, a heat filter has to be mounted into the lamphouse or the film gate from a lamp capacity of 2500 W onwards.

Heat filter in lamphouse



Heat filter in projector's film gate



1.5 Special Hazard Points

Danger because of electrical shock and burn:

- when switching on the rectifier directly



DANGER

- ▲ The rectifier must be exclusively enabled from projector only.
- ▲ The 4060 DC ignition unit is directly supplied via the rectifier. Therefore the lamp can be ignited by switching on the rectifier itself. Igniting the lamp by switching on the rectifier at open lamphouse can cause serious injuries and damages to the lamphouse and projector.
- ▲ If not already done the rectifier's ON/OFF switch must be disabled.
- ▲ The safety devices in the lamphouse (door switches and air flow switch) must not be deactivated. Safe service work on open lamphouse is possible with functional safety devices only, because rectifier and mains power will be switched off.

Danger because of broken glass flying around:

- when operating the xenon lamp at open lamp house
- when changing the xenon bulb



DANGER OF EXPLOSION



- ▲ Never deactivate the door switch.



- ▲ Only work on open lamphouse and with destruction of xenon bulb with face protection (shield), neck protection and safety clothes which reach to the elbow.



- ▲ If the xenon lamp explodes you can suffer hurts in face, eyes and artery.

- ▲ In cold condition the xenon lamp has an inner pressure of about 8 to 10 bar and in hot condition of about 30 bar.

- ▲ Dispose xenon bulb: Before removing xenon lamp put protective cover around it, pack xenon bulb in original package and give it back to your supplier.

- ▲ Insert the new xenon bulb in protective cover only. First remove it after mounting the xenon bulb.

Danger because of formation of ozone:

- when operating the xenon lamp



DANGER

Operate projector in a well ventilated room only. Better method: Connect an outgoing air pipe with exhaust fan at the top of the projector and lead it to the outside of the building.

Danger because of ultraviolet radiation:

- when operating the xenon lamp at open lamphouse



DANGER

Operate projector with a closed lamphouse only. If you do some adjustments in open lamphouse (look through visual hole), you have to use a visual protection which selects the ultraviolet radiation. **Never look into light of xenon lamp without protective glasses!**

Danger because of high voltage:

- when igniting the xenon lamp



DANGER

Ignite xenon lamp in closed lamphouse only.

Danger because of errors or malfunctions:

- unexpected ignition of xenon lamp
- malfunction of protective device
- igniting the lamp by switching on the rectifier



DANGER

- ▲ Regularly check function of protective device.
- ▲ Never operate with open lamphouse.
- ▲ Make sure that nobody ignites the xenon lamp while somebody is working on it.
- ▲ Never ignite the xenon lamp by switching on the rectifier.

1.5.1 Electric Power Hazards



DANGER

- Work on the electrical supply conductors or circuits must only be done by competent electricians.
- The unit's electrical parts and connections must be checked regularly. Any loose connections must be tightened immediately.
- The cover must always be kept closed. Only authorized staff may access the inner area. Hazardous voltage and moving parts are in this area.
- When working on electrical parts, switch off the main switch and disconnect power.

1.5.2 Modification of Lamphouse Construction

No alterations, additions or modifications may be made to a lamphouse without written consent of KINOTON. This includes welding of load bearing parts.

Only use original spare and wear parts. Parts obtained from third party manufacturers cannot guarantee strength and safety standards.

1.5.3 Cleaning and Disposal

Substances and materials used for cleaning and lubrication must be handled and disposed of correctly, especially when cleaning with solvents.

1.5.4 Copyright

Copyright of this manual remains in possession of KINOTON.

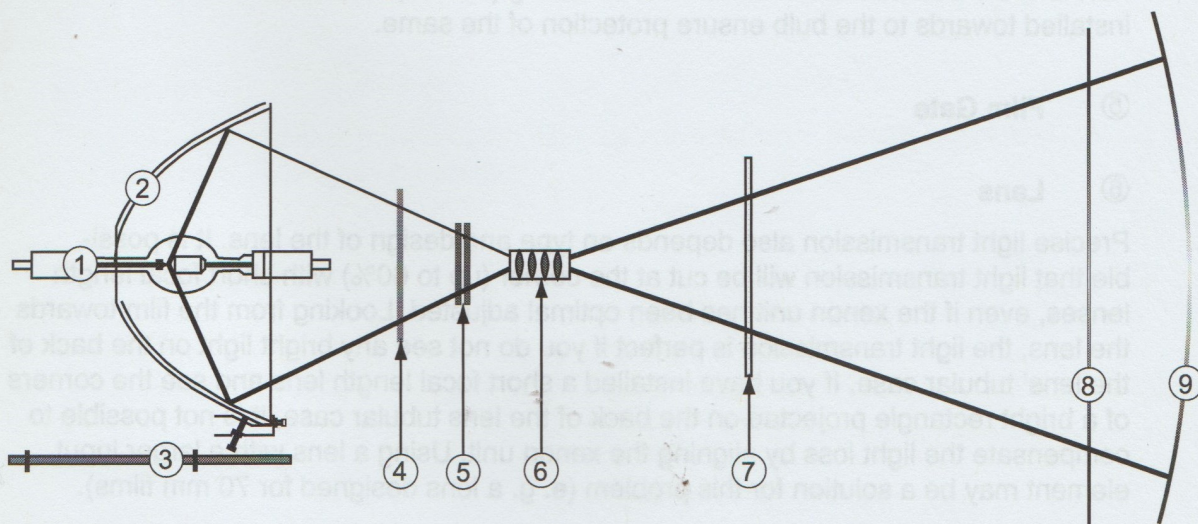
This manual is intended for the user and its staff only.

It contains regulations and operating notes that must not be copied, reproduced or otherwise transmitted, in whole or in part.

Infringement of copyright laws may lead to prosecution.

1.6 Useful Hints - From the Lamphouse to the Screen

The amount of light that ends up on screen depends on several components. Kinoton lamphouses are extremely optically efficient, but to get the benefits of that potential it is critical that they be aligned perfectly.



① Xenon Bulb

Xenon bulbs burn not always very steadily in horizontal position. Because the symmetry of the arc has a great influence on the evenness and brightness of light, arc stabilization has to be adjusted when projector is positioned on its actual projecting position (very important with projection at large up or down angles).

② Mirror

The alignment of the mirror can be carried out with an alignment projector or with an mechanical alignment tool (disks and bar).

A decisive advantage of adjusting with the alignment projector is that even the smallest displacement of the reflected light is apparent, so that you can correct the mirror position very precisely. Furthermore the size and the round form of the reflected spot give information about the quality of the mirror – a non-concentric spot indicates mirror deformation (e. g. a bent aluminium mirror).

③ Xenon Unit

The xenon unit in each lamphouse is factory-set in a way that it is close to the back housing. This adjustment is correct for the mechanical projectors with a Maltese cross. With electronic projectors FP 30 E and FP 38 E the xenon unit must be shifted forwards,

because the film plane is in a forward position. For this purpose the lamphouses are equipped with elongated holes.

④ Heat Filter

The heat filter protects the film and the film gate from getting too much heat from the lamphouse. Because the heat filter is a coated glass plate however, the light power is reduced by about 10 to 15% when light is passing through the filter. The light output is drastically reduced when the filter is dirty or dust and dirt was burned in. Therefore it is necessary to regularly clean the heat filter and to change it when it becomes soiled.

Before inserting the filter the protection foil must be removed – removing this foil is often forgotten.

Furthermore bear in mind that the heat-reflecting (coated) side of the heat filter must be installed towards to the bulb ensure protection of the same.

⑤ Film Gate

⑥ Lens

Precise light transmission also depends on type and design of the lens. It is possible that light transmission will be cut at the corner (up to 60%) with short focal length lenses, even if the xenon unit has been optimal adjusted. Looking from the film towards the lens, the light transmission is perfect if you do not see any bright light on the back of the lens' tubular case. If you have installed a short focal length lens and see the corners of a bright rectangle projected on the back of the lens tubular case, it is not possible to compensate the light loss by aligning the xenon unit. Using a lens with a larger input element may be a solution for this problem (e. g. a lens designed for 70 mm films).

⑦ Projection window (Porthole)

The projection window reduces the light transmission by up to 15%. Fire retardant glass meeting reduces the light transmission by up to 30%. Glass with an optical coating improves transmission. The glass should be removable, and both sides cleaned regularly. Plastic or Perspex should never be used.

⑧/⑨ Screen

The final important factor with great influence on brightness is the projection screen. A matt white screen with a reflectivity factor of 1.0 will reflect 100% light and will spread it semicircular to all directions.

For a typical perforated screen the real factor will be a bit lower than 1.0 because the perforation holes, which cover a few percent of the overall surface will absorb a corresponding amount of light.

An improvement is given with screens with a reflectivity factor higher than 1.0.

- A typical Perlux type screen gives about 1.4 to 1.8.

The basic idea is to concentrate the reflected amount of light towards the seating area. The main drawback is a so-called hotspot which means an uneven light distribution. Basically the screen will slightly start to act like a mirror where light is reflected in certain direction. With the projector located on the centre line, the light, which goes to the side areas will be reflected more towards the side will instead of towards the seating area.

The common practise to overcome this problem is to use curved screens where the reflection of these side areas is aimed more towards the seating area. But it should be pointed out that for a larger area, this will always be a compromise.

An often forgotten factor on screen brightness is dirt and aging. The coating of high-gain screens often turn yellowish over several years. Dirt can be removed to a certain extend but this should be done very carefully.

- Xenon bulbs
- 1,000 W, 1,600 W, 2,000 W
- 2,500 W, 3,000 W, 4,000 W, 5,000 W, 7,000 W
- Mechanic / electric light powder (option)
- Heat filter 200 x 200 (option)
- Rectifier (option)

► NOTE

Delivered rectifiers from Kinoton have deactivated main switches, to avoid igniting the lamp by switching on the rectifier.

- Operating manual

► NOTE

- For lamphouse 8,000 to 10,000 W see the GigaLight lamphouse's operating manual
- For further information about accessories please contact your local dealer or look to our website: www.kinoton.com

2.3 Installation

► NOTE

The lamphouse will be delivered completely wired and factory-tested. You only have to assemble mirror, xenon bulb and heat filter (if necessary). After installing the mirror and the xenon bulb several adjustments have to be carried out by experts, see the corresponding chapter.

2 Transportation and Installation / Mounting

2.1 Transportation

Lamphouse and the accessories are delivered in a wooden crate.

Storage

If devices are stored for a longer time:

- Only store in dry rooms.
- Choose a suitable protective coating or leave devices in the original coating

2.2 Delivery or Equipment Variations

Lamphouse with

- Xenon unit
 - 1,000 to 2,000 W
 - 2,000 to 7,000 W
- Dichroic mirror
 - Xenon unit 700 to 2,000 W at a focal length $f = 60/540$: Ø 300 mm
 - Xenon unit 2,000 to 7,000 W at a focal length $f = 55/825$: Ø 340 mm
- Xenon bulbs
 - 1,000 W, 1,600 W, 2,000 W
 - 2,500 W, 3,000 W, 4,000 W, 5,000 W, 7,000 W
- Mechanic / electric light dowser (option)
- Heat filter 200 x 200 (option)
- Rectifier (option)

► NOTE

Delivered rectifiers from Kinoton have deactivated main switches, to avoid igniting the lamp by switching on the rectifier.

- Operating manual

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► NOTE

The lamphouse will be delivered completely wired and factory-tested. You only have to assemble mirror, xenon bulb and heat filter (if necessary).

After installing the mirror and the xenon bulb several adjustments have to be carried out by experts, see the corresponding chapters.

2.3.1 Place of Installation, Measurements

- The Universal Lamphouse will be directly mounted on projector.
- The following figure shows the measurements of the lamphouses 1000 to 2000 W and 2000 to 10,000 W (with localizer).

2.3.2 Unpacking

- Take accessories out of wooden crate.



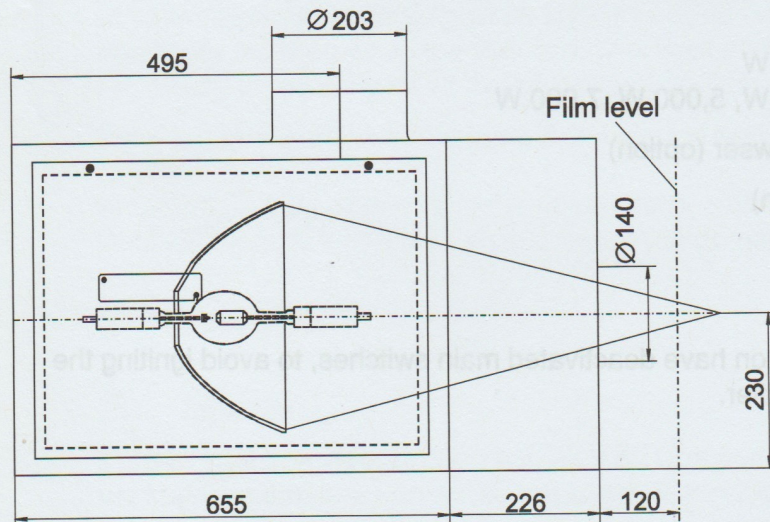
ATTENTION

Carefully take out mirror. Risk of fracture!

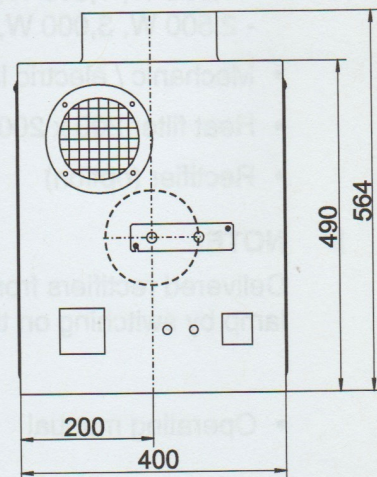
- Lift up lamphouse with a suitable hoisting machine and transport it to projector.

2.3.3 Measurements

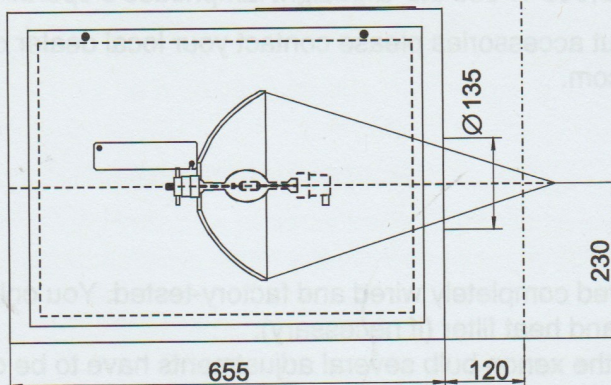
2000 to 7000 W



View from backside



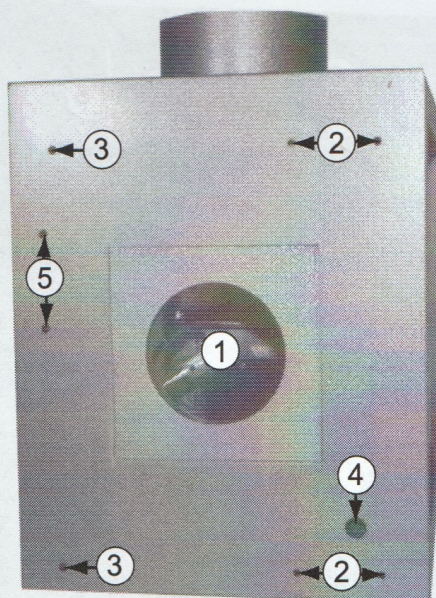
1000 to 2000 W



2.3.4 Installing the Lamphouse onto the Projector



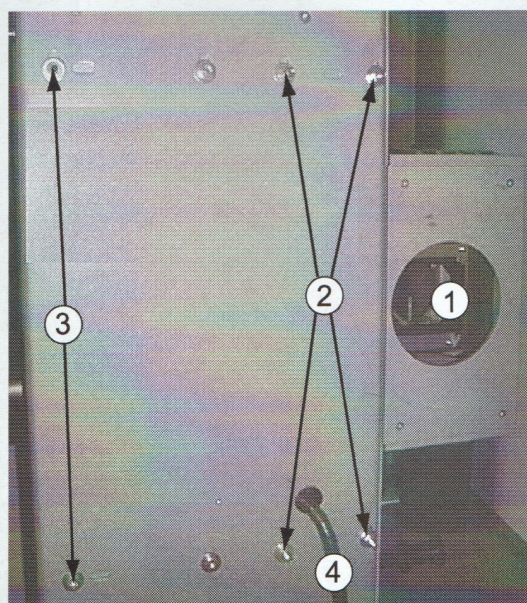
Remove both lateral doors.
Therefore loosen the upper two Allen screws (arrows) and pull away (upwards) the door.



- ① opening to film gate
- ② holes to fasten on projector
- ③ holes to fasten localizer (up to 7,000)
- ④ cable entry
- ⑤ holes to fasten an optional light dower

► NOTE

Lamphouses with xenon lamps from 2000 W onwards are mounted with an according localizer which is mounted between the lamphouse and the projector.



- ① opening to film gate / shutter housing
- ② nuts/screws to fasten the lamphouse
- ③ nuts/screws to fasten localizer (up to 7,000)
- ④ lamphouse connecting cable

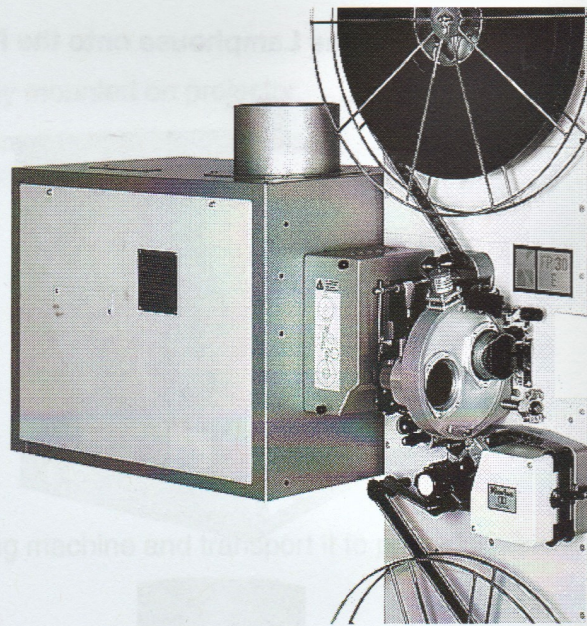
- Remove the four nuts on the screws.
- Thread connection cable to lamphouse through opening of the lamphouse front.

- Place lamphouse on the four screws which show out of the projector housing.
- Fasten lamphouse from the inside of projector with the four removed nuts.



NOTE

Put toothed lock washers between lamphouse and projector to get a good chassis connection.



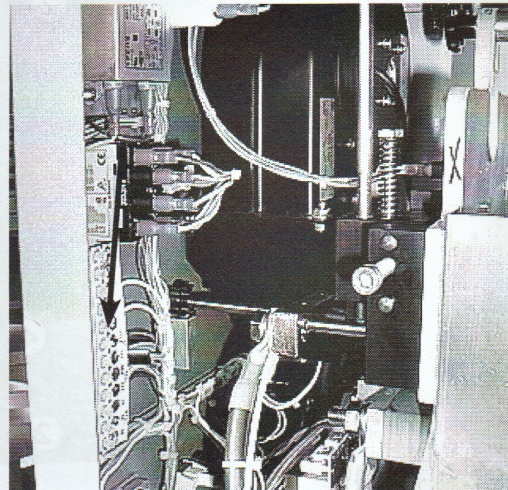
2.3.5 Connecting the Lamphouse to the Projector

- The cables from projector to the terminal strip (arrow) should only be connected by service personnel or experts only.
- The wires are signed corresponding to the terminals.



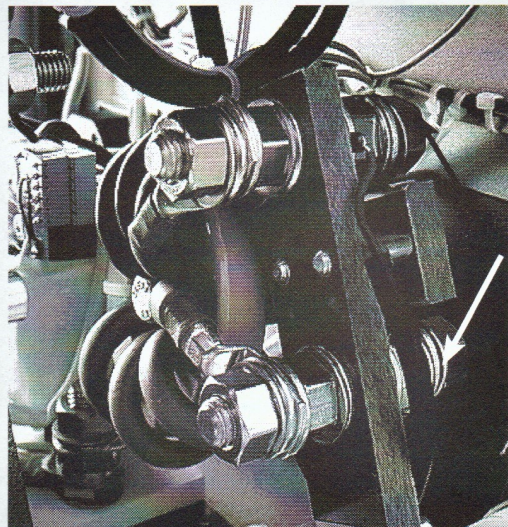
NOTE

See also lamphouse wiring scheme on the end of this manual.



2.3.5 Connecting the Lamphouse to the Rectifier

- The rectifier should be connected to the lamphouse from service personnel only!
 - The positive red cable must be connected to the lower bolt of ferrite core (white arrow).
 - The negative black cable must be connected to the upper bolt of ferrite core (black arrow).
 - Mark the ends (at ferrite core and rectifier) of the positive and negative cable with a blue and a red tape to differ the connections.

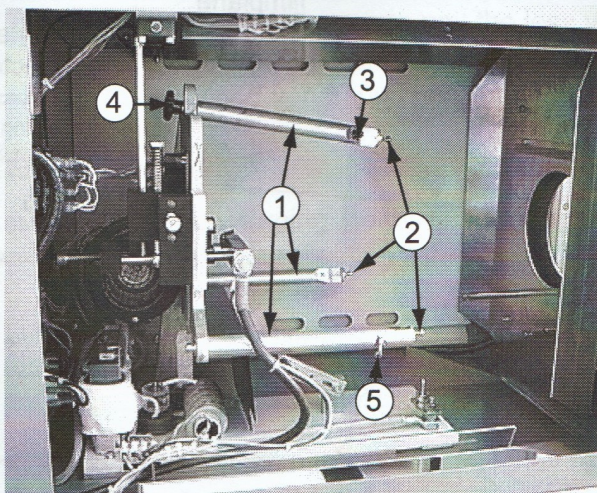




ATTENTION

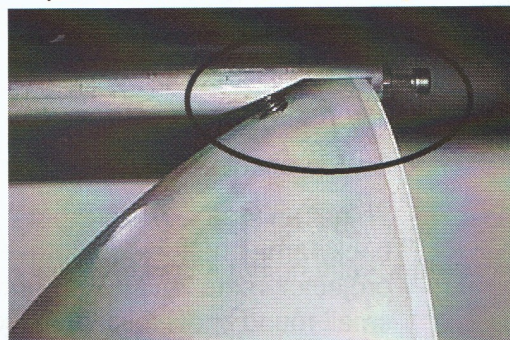
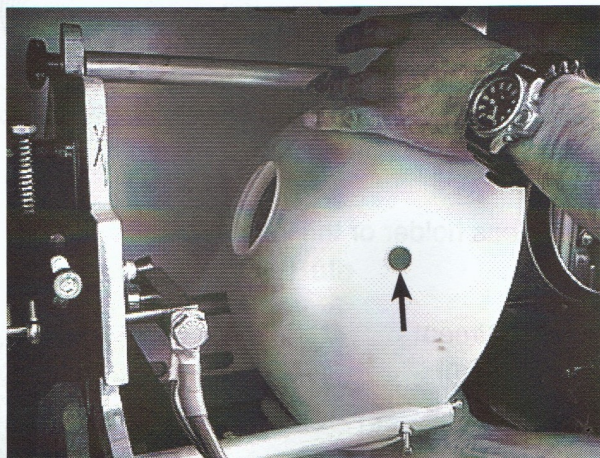
- Observe that the square mil of the D.C. cable (25 - 50) depends to the intensity of currents of the xenon bulb.
- If you connect a 110 V lamphouse with a 110 V projector you must not connect mains current from projector to lamphouse. You have to connect mains current of projector and lamphouse separately.
- The rectifier's main switch should be deactivated, to avoid igniting the xenon bulb by switching on the rectifier - the rectifier itself must be switched on via the projector control only.

2.3.7 Inserting the Mirror



- ① mirror holders
- ② adjusting/fixing screws
- ③ spring
- ④ handle star
- ⑤ counter screw

- Loosen handle star ④ until the upper mirror holder is moveable.
- Totally back out the three M4 adjusting screws ② on the mirror holder ends.
- Put down the mirror onto the lower holders. Move the mirror upper holder over the mirror and carefully put it down on the mirror edge.



NOTE

- ▷ The mirror edge must be positioned in the three holders. In the upper holder the mirror should have about 1 mm distance to the holder and the spring should lay evenly on the mirror surface, see right figure.
- ▷ The mirror has a window. Insert the mirror in a way that this window is positioned horizontally in the middle - so the light arc can be watched, see left figure.

- Tighten handle star ④ on the upper mirror holder.

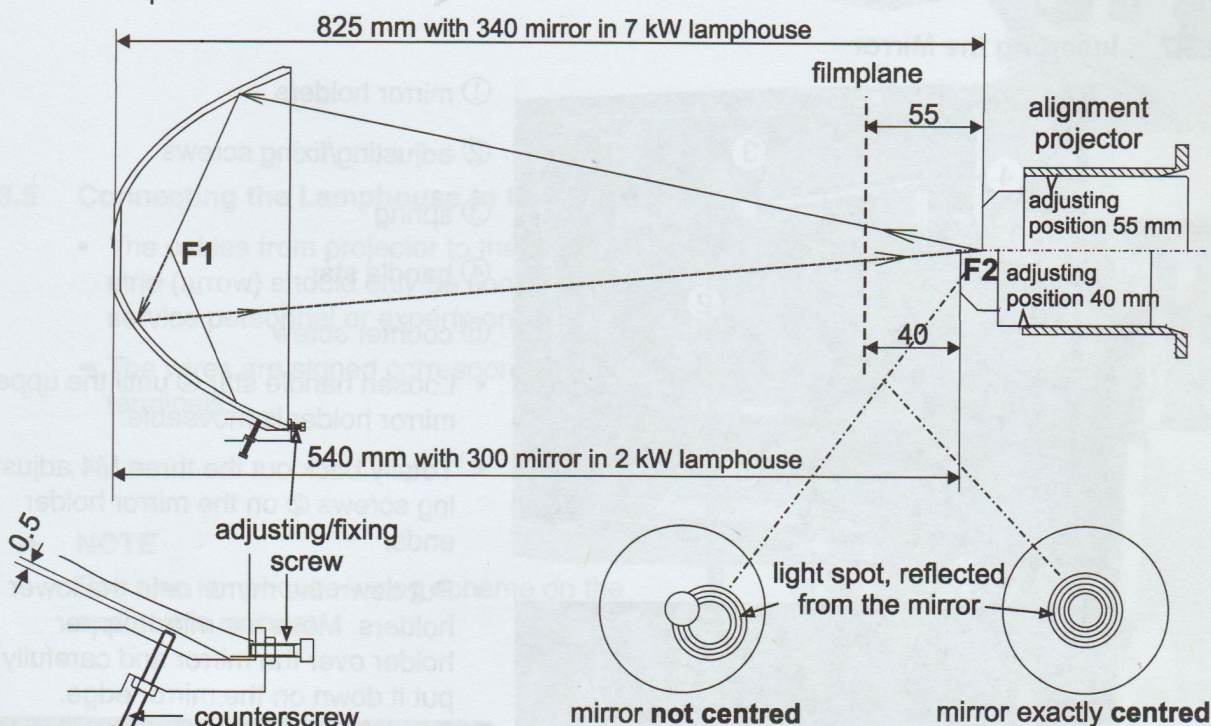


ATTENTION

Be careful that mirror will not be clamped too toughly - during operation the mirror expands and therefore could brake.

2.3.8 Mirror Adjustment with an Alignment Projector

- Loosen the four xenon unit mounting screws.
- Block the dowser and if necessary the shutter in the opened position.
- Remove an available film, the aperture, the film pressure skate and the film runner strips.

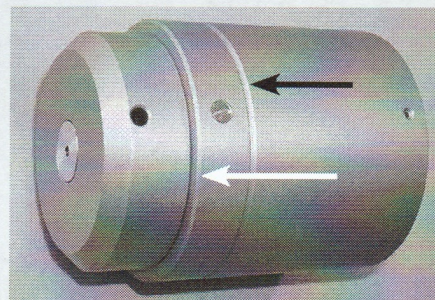


Basic Adjustment

- Insert the alignment projector into the lens holder or the lens turret.
- Switch-on the alignment projector.
- To get an idea of the current mirror adjustment, backwards and forwards move the alignment projector in the lens holder until you will see a small round spot which is reflected from the mirror. Now you know that you have to move the basic unit forwards or backwards corresponding to the alignment projector movement.

• 7 kW lamphouse with 340 mm mirror:

Move the alignment projector in the lens holder such that the light output port is 55 mm from the filmplane - or if you have a lens turret - the shoulder of the alignment projector (white arrow) is in line with the lens tube edge (film gate side) or in other words, the distance between F1 and F2 (focal points) is about 825 mm.



• 2 kW lamphouse with 300 mm mirror:

Move the alignment projector in the lens holder such that the light output port is 40 mm from the filmplane - or if you have a lens turret - the recess (mark) (black arrow) on the alignment projector is in line with the lens tube edge (film gate side) or in other words, the distance between F1 and F2 (focal points) is about 540 mm, see drawing and picture.

- Move the xenon unit laterally or lift it (use washers) such that the reflected light is projected approximately in the middle of the alignment projector.
- If there are very small divergences the height can be adjusted using the mirror holder adjusting screws.
- Axially move the xenon unit until the smallest spot is projected (compensating for differences in mirror focal lengths).

► NOTE

The better you adjust the xenon unit the less you have to adjust the mirror holders.

- Lock the adjusted xenon unit position by tightening the screws.

Fine Adjustment

- By alternatively turning the three adjusting screws on the mirror holders pan and tilt the mirror until the reflecting light is exactly in the central position of the alignment projector.
- To check your adjustment move alignment projector again forward and backwards in the lens tube: In alignment position (40 or 55 mm) the smallest spot must be seen on the alignment projector. If necessary adjust the x-axis position again.
- Screw in the M4 counterscrews until they reach a distance to the mirror of about 0.5 mm (see drawing) and then lock all adjusting screws with their jam nuts.
- Remove the alignment projector.

► NOTE

The mirror adjustment with the mechanical alignment tool is described in the lamp-house's service manual.

2.3.9 Inserting the Xenon Bulb



DANGER



▲ Xenon bulbs are high-pressure glow-discharge lamps in which a high interior pressure exists even if not in operation.



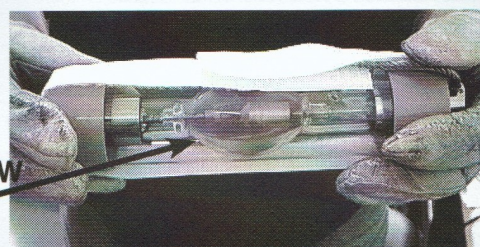
▲ Inserting the xenon bulb wear safety gloves, face protection and protective suit. Do not insert the xenon bulb with any violence.

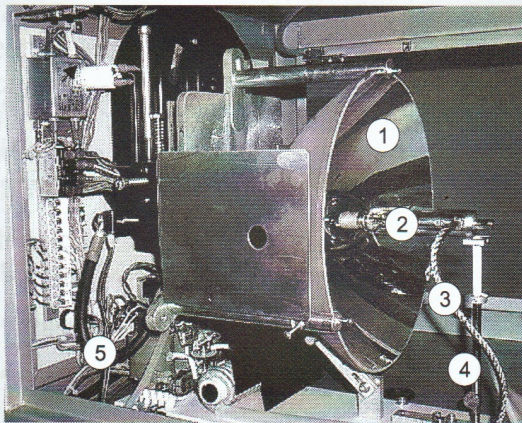


▲ Do not insert the xenon bulb by touching it at anode base.

▲ Install the xenon bulb in its protective coat only.

**Xenon bulb up to 2000 W
in protective coat**



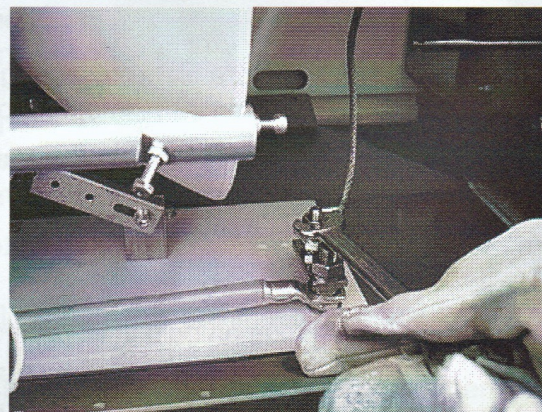
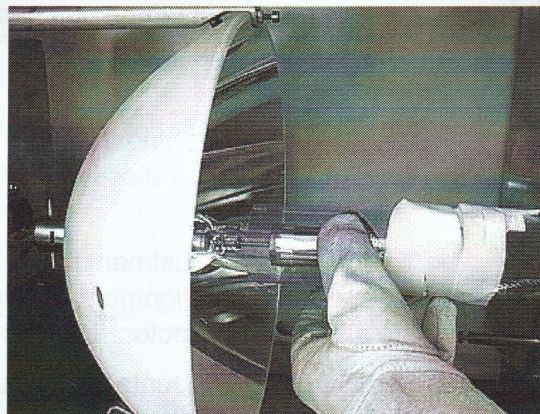


- ① mirror
- ② xenon bulb
- ③ anode cable (+)
- ④ bulb support
- ⑤ cathode cable (-)

► NOTE

Inserting the 7000 W bulb you have to adjust the optical axis so far as possible in forward direction to have enough space to handle the bulb.

- Open the protective coat (up to 2000 W). Install xenon bulbs up to 7000 W with the available protective bonded fabric or put a strong cloth around the xenon bulb after you have removed the protective coat.
- With xenon bulbs from 2000 W onwards, put the corresponding adapter onto the bulb's cathode base and tighten the clamping screws
- Insert the xenon bulb (in the protective coat) with cathode base first through the central mirror hole.
- Xenon bulbs up to 2000 W can be easily screwed in.
- Xenon bulbs from 2000 W onwards can be fastened via the Allen screw through the opening from the lamphouse outside.
- If necessary position the xenon bulb (2000 to 7000 W) onto the bulb support and adjust it in a way that the bulb is positioned horizontally.
- Now remove the xenon bulb's protective coat.
- Fasten the positive cable (anode) on the lamphouse connecting bolt.
- Close the lamphouse doors by fastening the screws.



2.3.10 Adjusting the Intensity of Currents

Lamp Capacity [W]	Typical Current [A]	Max. Current [A]
1000	50	55
1600	65	70
2000	70	85
2500	90	100
3000	100	110
4000	135	150
5000	140	150
7000	160	165

► NOTE

Read the data sheet which is delivered with xenon bulb. The bulb manufacturer's own data should be used.

2.3.11 Checking and Adjusting the Light Arc Stabilization Solenoid



DANGER

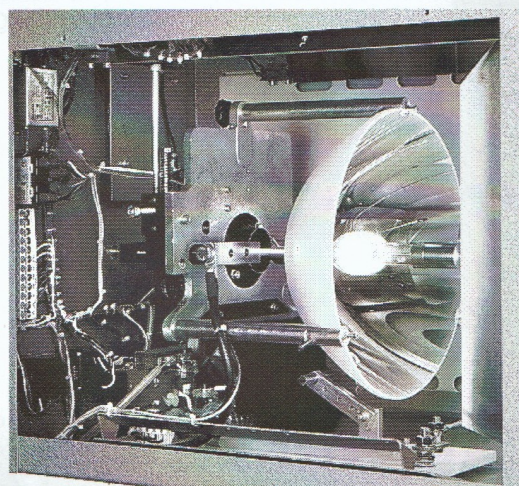
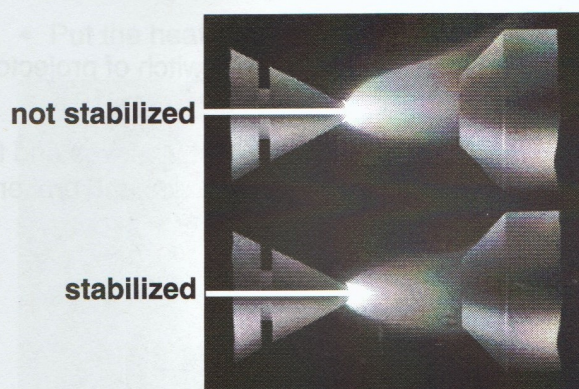


▲ This adjustment can only be carried out when xenon lamp is on. Therefore this adjustment requires special protective equipment. requirements must be carried out with a special welders' mask and suitable protective equipment.



▲ While doing this work, use a special welders' mask, wear safety clothes, face protection and protective suit.

A solenoid stabilizes the arc between cathode and anode. An even well adjusted light arc provides a good optical efficiency and increase the life of the xenon lamp.



- To adjust loosen the stabilization solenoid (arrow) and the bulb stay if existing.
- Ignite the lamp.
- Compare your observations with the figure.
- If necessary adjust the stabilization solenoid by raising and lowering the aluminium holder of the solenoid with a non-conductive wand until the light arc has the correct shape. Mark this position.

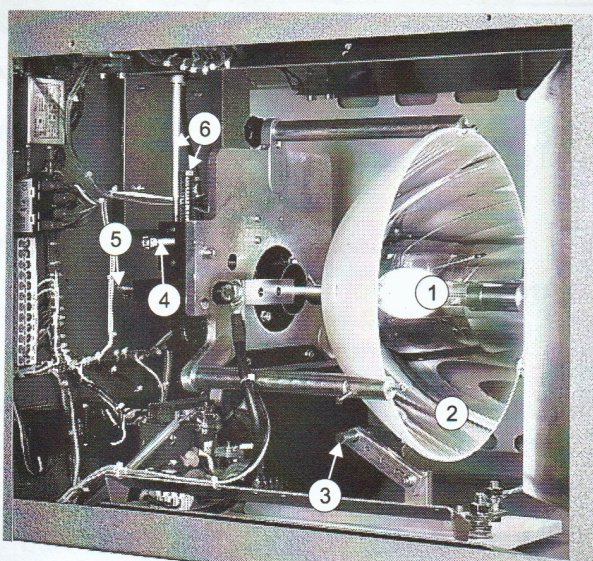
► NOTE

The space between the ignition base and the solenoid should be:

- 79 mm to 81 mm for 1000 to 2000 W xenon unit
- 92 mm to 94 mm for 2000 to 7000 W xenon unit

- After adjustment switch-off the lamphouse.
- Position the bulb support again and paint-lock the screws.

2.3.12 Adjusting the Illumination of Screen



- ① xenon bulb
- ② mirror
- ③ stabilization solenoid
- ④ horizontal adjustment unit
- ⑤ axial adjustment unit
- ⑥ vertical adjustment unit

The xenon bulb's position can be adjusted relatively to the mirror in three axes (horizontal, vertical and axial).

- Open the lamphouse and loosen the bulb support, if existing.



DANGER



- ▲ Open lamphouse after a waiting period of 10 minutes only.



- ▲ Lamphouse and rectifier must be switched off. Switch-off main switch of projector and turn out the lamphouse fuse.

- ▲ Work on open lamphouse should be carried out with protective suit, clothes and face shield on. You can seriously hurt yourself when xenon bulb explodes and broken glass flies around.

- Close the lamphouse again and insert the CS lens.
- Start the projector and select the CS format.
- Using an Allen wrench on ⑤, the xenon lamp can be adjusted as much along the optical axis until only a reduced round illuminated spot can be seen on the screen (focal length adjustment).
- By turning the adjusting screws ④ right – left (horizontally) and ⑥ up – down (vertically) you bring this light spot precisely into the middle of the screen.
- Turning the adjusting screw ⑤ (axial) you draw up the spot until the screen illumination is even. If necessary adjust the horizontal and vertical axis again.

- Switch-off the projector and the lamphouse.
- Open the lamphouse only after a waiting period of 10 minutes.
- Position the bulb support again to xenon bulb and close the lamphouse.

2.3.13 Inserting a Heat Filter

A heat filter is necessary from a lamp capacity of 2500 W onwards. It protects the film gate from too much heat.



ATTENTION

The heat filter in the lamphouse is a reflection filter; therefore you have to watch out for the reflection side which must be directed to the xenon lamp. You can see the edge of reflection coating when you look at the small filter side holding it against the light.

A heat filter (200 x 200) (left figure) has to be mounted

- in all lamphouses with metallic mirrors
- in all lamphouses 4,000 W to 7,000 W.

The small lamphouses up to 3,500 W have no heat filter, but if needed, a small heat filter (78 x 78) can be mounted into the front gate of the projector (right figure).

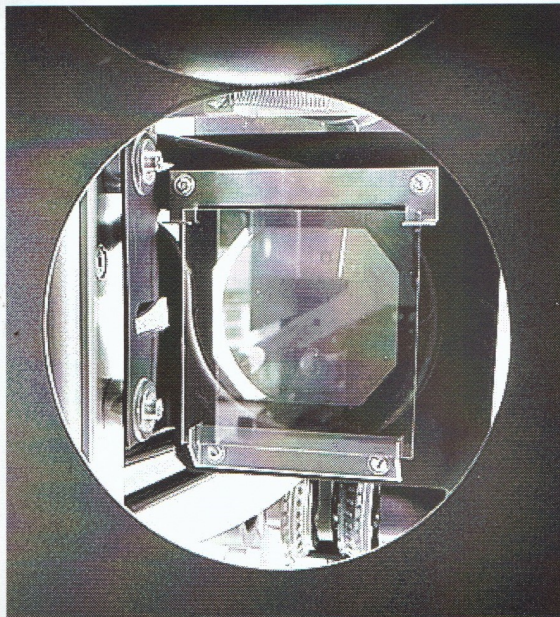
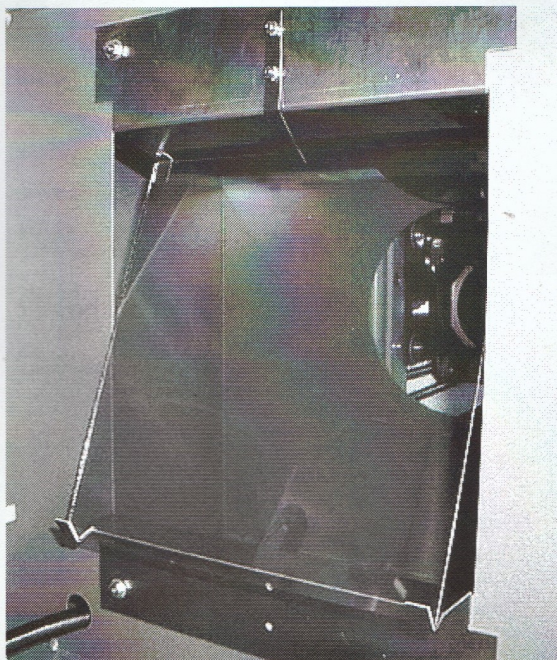
- Remove the protective foil from the filter.

In lamphouse:

- Open the lamphouse.
- Put the heat filter on the lower holder and push the filter against the leaf spring on the top.

In film gate:

- Remove the shutter housing.
- Put the heat filter into the slits of the holders.



3 Components, Operating Elements and Operation

3.1 Description / Function

The Universal Lamphouse is mounted on the projector. Depending on the lamp capacity an according localizer is fastened between the lamphouse and the projector.

In the xenon bulb two electrodes produce a light arc in a surrounding of pure xenon gas between each other. The light arc is reflected via the mirror and lights through film gate, the film and in result to the screen. If the xenon lamp is correctly adjusted an even light distribution across the screen is guaranteed.

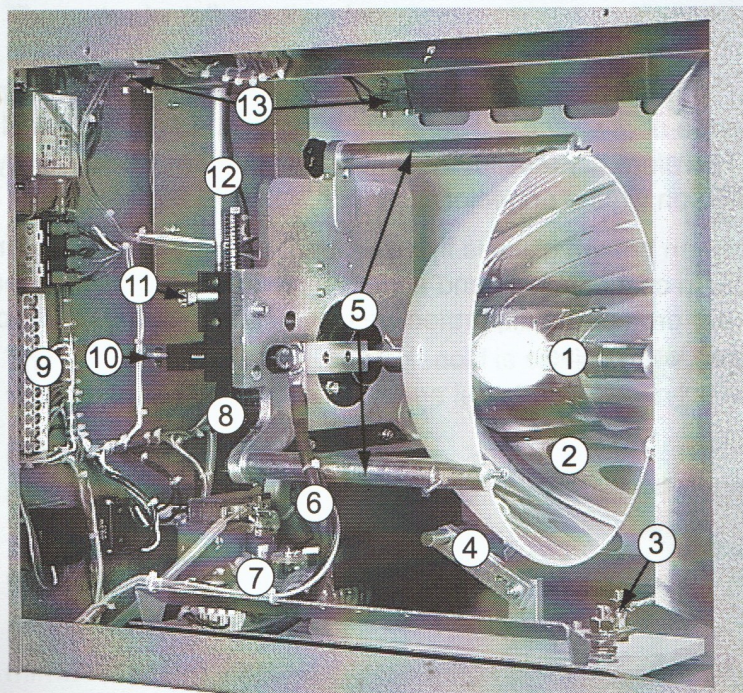
The xenon bulb is air-cooled over its length.

The universal lamphouses can be loaded with horizontal xenon bulbs from 1,000 W to 2,000 W and 2,000 W to 7,000 W capacity.

An associated rectifier provides the xenon lamp with power.

3.2 Components

Lamphouse up to 2,000 W

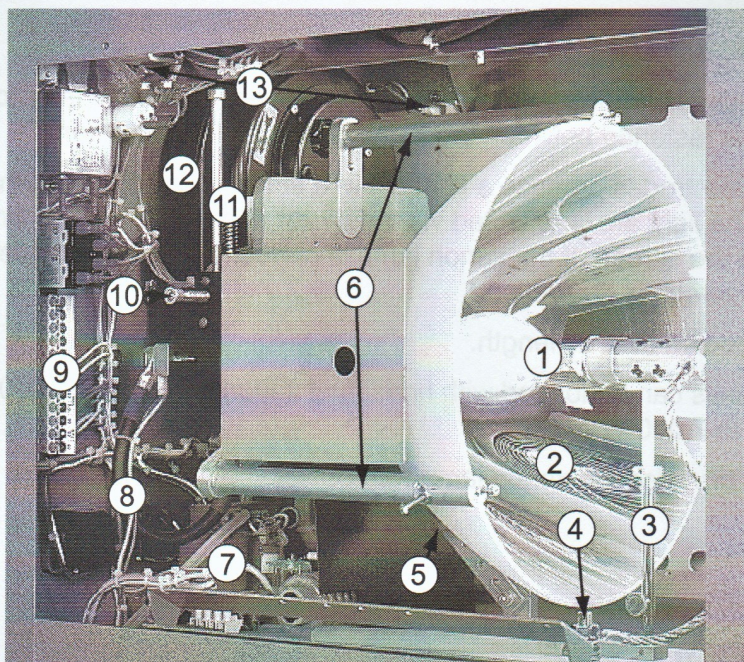


- ① xenon bulb
- ② mirror
- ③ anode (+) connection
- ④ stabilization solenoid
- ⑤ mirror holders
- ⑥ cathode (-) cable
- ⑦ ignition unit
- ⑧ fan
- ⑨ terminal strip
- ⑩ axial adjustment screw
- ⑪ horizontal adjustment screw

⑫ vertical adjustment screw

⑬ door switches

Lamphouse up to 7,000 W



- ① xenon bulb
- ② mirror
- ③ bulb support
- ④ anode (+) connection
- ⑤ stabilization solenoid
- ⑥ mirror holders
- ⑦ ignition unit
- ⑧ cathode (-) cable
- ⑨ terminal strip
- ⑩ horizontal adjustment screw
- ⑪ vertical adjustment screw
- ⑫ fan
- ⑬ door switches



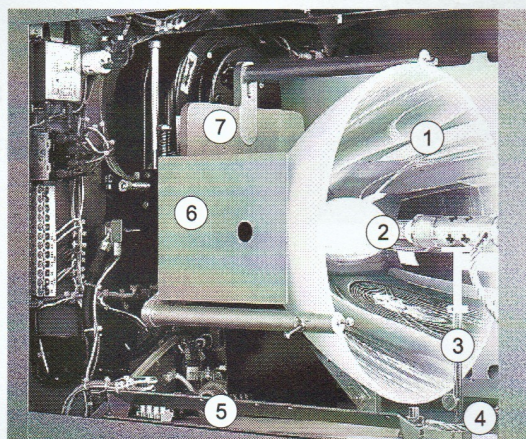
DANGER



▲ You can ignite xenon lamp only when door lamphouse door is closed. If you open the door during operation the door switch will be activated and the xenon lamp will immediately get off. Therefore the rectifier must not switched on - it must always be switched and controlled on via the projector.

▲ You can suffer hurts when broken glass is flying around (xenon bulb has an inner pressure of 8 to 10 bar in cold condition and about 30 bar in hot condition). Because of that you have to wear protective suit, protective gloves and face/neck protection during all works at open lamphouse.

3.2.1 Xenon Unit



- ① mirror
- ② xenon bulb
- ③ bulb support
- ④ anode (+) cable
- ⑤ base with ignition unit
- ⑥ protection plate
- ⑦ mirror holder plate

► **NOTE**

The xenon unit is factory-set positioned at the back of the lamphouse. Installing the lamphouse to an electronic projector you have to move the xenon unit forwards, therefore see chapter "Adjusting with an Alignment Projector".



ATTENTION

The adjustment of optical axis is carried out by authorised experts or service technicians from KINOTON only, see lamphouse's service manual.

Two different xenon units with xenon lamps are available:

- 1,000 W to 2,000 W
- 2,000 W to 7,000 W

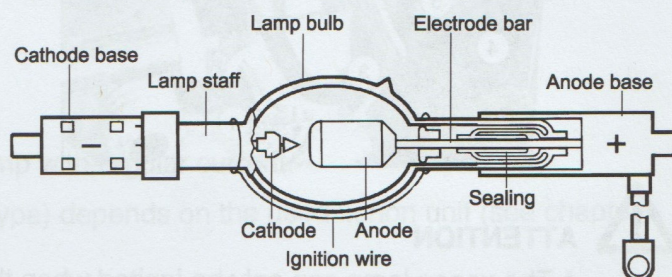
NOTE

- ▷ The small xenon unit can be equipped with xenon bulbs 1,000 to 2,000 W which can be easily screwed in.
- ▷ The big xenon unit can be equipped with xenon bulbs 2,000 to 7,000 W. To install them an adapter has to be put on the cathode base. The bulb with the adapter will be fastened by turning an Allen screw from the lamphouse outside.

3.2.1.1 Xenon Bulb

The lamp bulb out of quartz glass encloses the electrode system and the xenon gas. The discharge arc burns between the anode (+) and the cathode (-).

The cathode delivers the electrons. The anode takes off the electrons. The resulting brake energy will be transformed into heat energy and then reflected. The discharge arc (light arc) is stabilized through a solenoid.



ATTENTION

The adjustment of stabilizing solenoid is carried out by authorised experts or service technicians of KINOTON only, see lamphouse's service manual.

NOTE

Changing and disposing of xenon bulb, see maintenance chapter.

3.2.1.2 Mirror

Nowadays cold mirrors are mostly used. Because of their coating, heat can diffuse the mirror – the film gate gets a less range of heat but the full range of light.

The following mirrors are available:

- Xenon unit 1,000 W to 2,000 W at a focal length $f = 60/540$: Ø 300 mm
- Xenon unit 2,000 W to 7,000 W at a focal length $f = 55/825$: Ø 340 mm



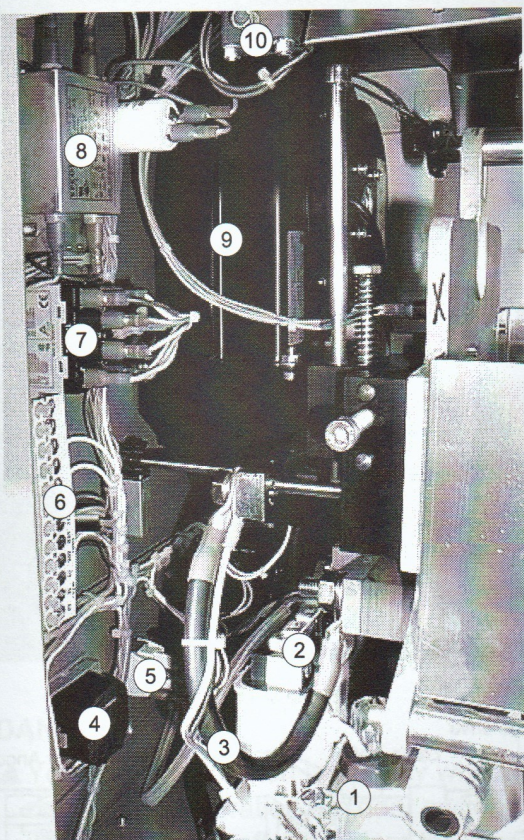
ATTENTION

Do not touch the inside of the mirror with bare hands. If necessary carefully remove fingerprints with an alcohol-soaked cloth.

NOTE

Changing the mirror, see maintenance chapter.

3.2.2 Electrical Equipment



- ① ignition unit
- ② ignition switch board
- ③ cathode (-) cable
- ④ operating hour meter
- ⑤ toggle switch ON/OFF
- ⑥ terminal strip
- ⑦ contactor
- ⑧ mains filter
- ⑨ fan
- ⑩ door switch



ATTENTION

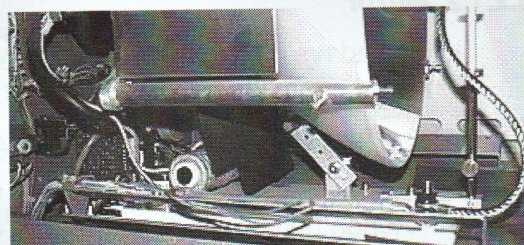
- ▲ The xenon lamp can only be ignited when the lamphouse door is closed and the fan is running.
- ▲ The rectifier must not be activated to ignite the xenon bulb.
- ▲ Work on electrical equipment is carried out by authorised experts or service technicians of KINOTON only.

3.2.2.1 Ignition Unit



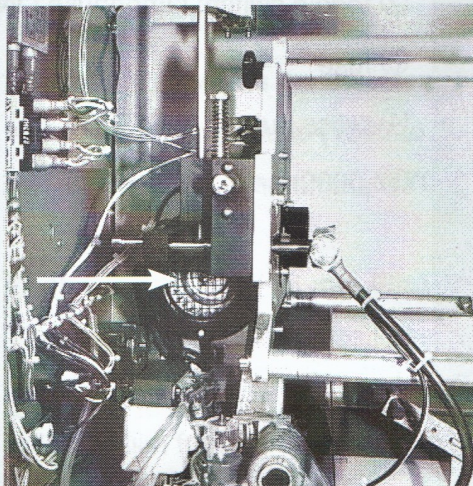
HIGH VOLTAGE

All works on electrical equipment especially on ignition unit are to be carried out by competent electricians only.

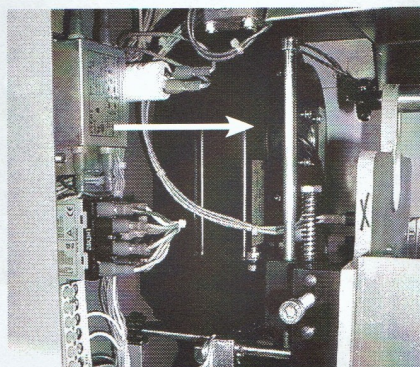


3.2.3 Cooling System

The xenon bulb and the housing are cooled via a radial air fan (arrows), which leads airflow around the bulb.



The exhaust ventilator (axial fan) on the top of the lamphouse leads the warm air out of the housing.



► NOTE

From 2000 W lamp capacity onwards the lamphouse is equipped with an exhaust ventilator cowl.

3.2.4 Rectifier

The rectifier supplies the xenon lamp with regular current.

The intensity of rectifier currents (type) depends on the used xenon unit (see chapter 2.3.10).

With handwheel or potentiometer (electrical rectifier) the intensity of current can be adjusted. The ampere meter on lamphouse shows the set current.



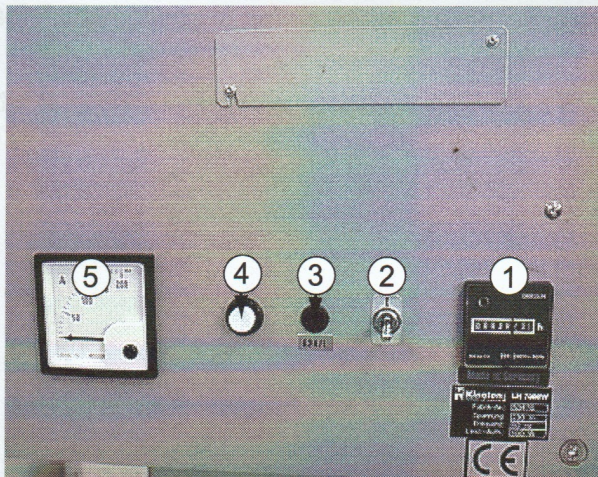
ATTENTION

Never ignite the xenon bulb by switching on the rectifier. The rectifier must be switched on and controlled via the projector. New rectifiers which are delivered from Kinoton have main switches deactivated.

► NOTE

You will find a more detailed description of the rectifier in the corresponding operating manual.

3.3 Operating Elements



- ① operating hour meter
- ② toggle switch: lamphouse ON/OFF
- ③ fuse
- ④ press button: IGNITE
- ⑤ ammeter

3.3.1 Ignition Button

The xenon lamp automatically ignites when pushing the start button on projector operating panel.

You can manually ignite xenon lamp by pushing the ignition button.

3.3.2 Main Switch

Toggle switch in position "I":

Xenon lamp is ON. Ventilation runs after when xenon lamp lights off.

Toggle switch in position "0":

Xenon lamp is OFF.

Manually switch-on or switch-off

- Switch on main switch (position "I"). The fan is running.
- Switch off main switch (position "0"). The fan is off.

► NOTE

The fan runs after (approx. 5 minutes) when projector and xenon lamp are switched off. This thermal switch is operating with a temperature of 60° C. If the temperature is less than 45° C the switch resets.

3.3.3 Fuse

If you screw out the fuse the lamphouse is separated from mains.



ATTENTION

- △ You have to screw out the fuse at all maintenance work and cleaning.
- △ Take care that the rectifier cannot be switched on.

3.3.4 Operating Hour Counter

The operating hour counter shows the hours the xenon bulb has been in operation.

3.3.5 Ammeter

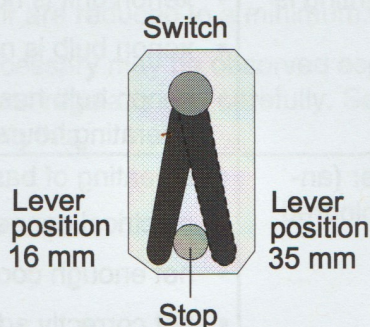
The ammeter shows the set intensity of currents.

- The small lamphouse (1000 to 2000 W) is equipped with a 100 A ammeter.
- The big lamphouse (2000 to 7000 W) is equipped with a 200 A ammeter.

3.3.6 Switch for 16 mm / 35 mm Film (option)

The switch lever can be positioned between the position for 16 mm film and 35 mm film to adapt the focal length corresponding to the selected film format.

- Switch lever on left hand:
16 mm is selected
- Switch lever on right hand:
35 mm is selected.

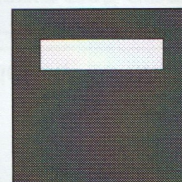


► NOTE

Always move the switch lever to its stop!



Hour Counter



3.4 Troubleshooting

Currently technology and programming guarantee a perfect process of the system, nevertheless there could be errors because of malfunction, wrong procedures and other things.

In this chapter you get information about possible errors and error messages and about possible clearing of these errors.

Error	Reasons	Clearing
Nothing works	<ul style="list-style-type: none"> main power is not available loose main power connection 	<ul style="list-style-type: none"> check fuses or circuit breakers check main power connections
Xenon lamp does not ignite	<ul style="list-style-type: none"> no contact ignition unit is defect lamphouse is open 	<ul style="list-style-type: none"> ignite manually change close lamphouse door to contact the door switches
Screen lighting is uneven	<ul style="list-style-type: none"> xenon unit is not in optical axis xenon bulb is not adjusted correctly xenon bulb has been run too many operating hours 	<ul style="list-style-type: none"> service adjust change xenon bulb
Base cover (anode) discoloured	overheating of base (over 230° C) <ul style="list-style-type: none"> electrical connections are poor not enough cooling not correctly adjusted optical axis intensity of currents too high 	<ul style="list-style-type: none"> fasten contacts change check cooling service check, adjust
Bulb gets black or dark coloured	<ul style="list-style-type: none"> because of overheating the bulb gets fractures 	<ul style="list-style-type: none"> check, described in line above "change bulb"
Slug on the top of cathode	<ul style="list-style-type: none"> wrong polarity, wrong connection wrong connection of lamphouse 	<ul style="list-style-type: none"> check, Service check, anode (the bigger electrode) must be connect above cathode (Service)
Deformation of electrodes and lamp blackening	restless arc <ul style="list-style-type: none"> not in range of current control alternating component is too high bad or missing arc stabilization bad or wrong cooling 	<ul style="list-style-type: none"> adjust intensity of currents check rectifier Service check cooling
Bulb gets milky	<ul style="list-style-type: none"> life of xenon bulb is reached intensity of currents is too high 	<ul style="list-style-type: none"> change lamp check and adjust intensity of currents remove fingerprints on xenon bulb before switching on
Asymmetrical bulb blackening	<ul style="list-style-type: none"> bad or missing arc stabilization 	<ul style="list-style-type: none"> Service

4 Cleaning, Maintenance and Repair

4.1 General Hints



ATTENTION

- △ Allow work on electric supply to be carried out by competent electricians only.
- △ Make sure that nobody starts lamp or the rectifier while you are working on it. With all maintenance and cleaning work you must separate the lamphouse and the rectifier from power supply (switch off main switch of projector and screw out the fuse).

Because of using maintenance-free elements, the consumption of material and the expenditure of time for maintenance work and repair are reduced to a minimum.

This maintenance and cleaning work which is necessary may be observed especially from operators. These works have to be carried out regularly and carefully. See the following lists of cleaning and maintenance regarding this.

4.2 Cleaning and Maintenance

Monthly

Mirror:	Remove dust and dirt with a soft brush. Remove adhere dirt under a slight pressure with a linen cloth which is lightly moistened with alcohol.
---------	---



ATTENTION

Do never use sharp objects to remove hard particles from mirror.



DANGER



- ▲ Open lamphouse after a waiting period of 10 minutes only.



- ▲ Lamphouse and rectifier must be switched off. Switch-off main switch of projector and turn out the lamphouse and the rectifier fuse.



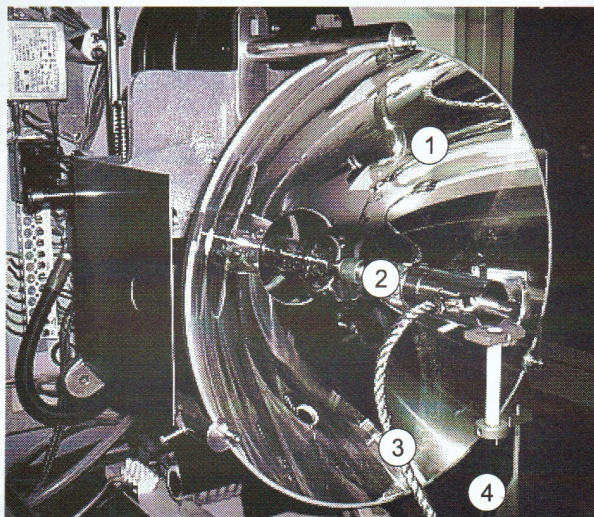
- ▲ Work on open lamphouse should be carried out with protective suit, gloves and face shield on. You can seriously hurt yourself when xenon bulb explodes and broken glass flies around.

Every three month

Check screen illumination	Adjust stabilization solenoid Adjust spot on screen
Check operating hours of xenon bulb	If necessary change xenon bulb

4.3 Repair

4.3.1 Changing the Xenon Bulb



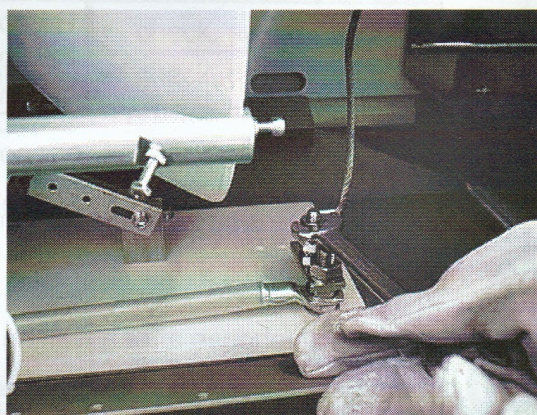
- ① mirror
- ② xenon bulb
- ③ anode (+) cable
- ④ bulb support



DANGER

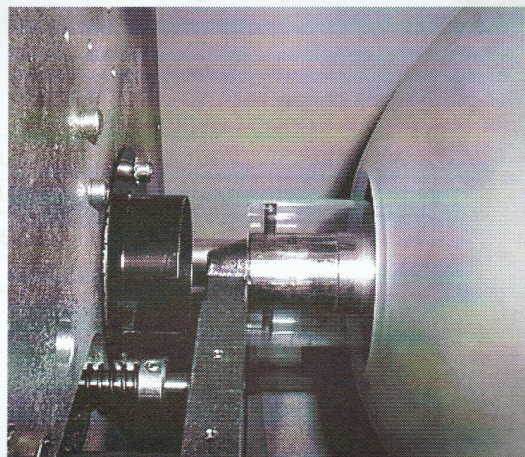
Observe the safety instructions, when opening the lamphouse.

- Remove the lamphouse door.
- Remove the anode cable from the lamphouse connecting bolt.

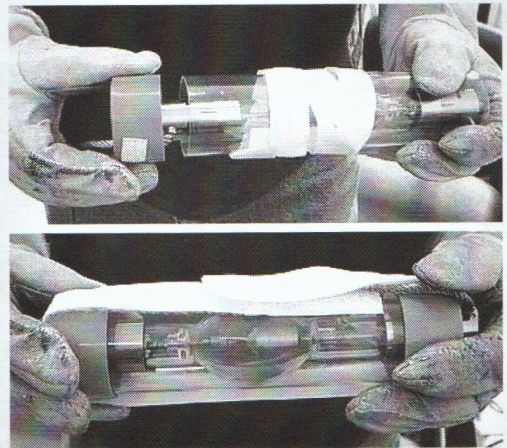


Up to 2000 W xenon bulbs:

- Put protection coat over the bulb - thread anode cable through the coat opening and shove the protective coat to the bulb's socket such the coat slits slide over the socket's pin.
- Unscrew the bulb by turning the protective coat.



- Pack the used xenon bulb as shown in figures.
- Open the protective coat cap of the new xenon bulb and screw the bulb in its protective coat into the lamphouse socket.
- Remove the protective coat and connect the anode cable to the lamphouse socket.
- Close the lamphouse door.



Up to 7000 W xenon bulbs:

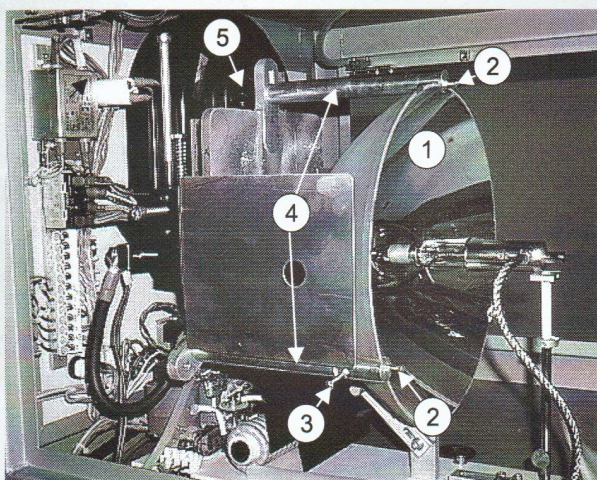
- Loosen the bulb support and put it down.
- Put the protective bonded fabric or a strong cloth around the unpacked bulb.
- Loosen the bulb fixing screw with an Allen key through the lamphouse opening.
- Remove the bulb and then the adapter on the bulb socket by loosening the fixing screw.
- Pack the used xenon bulb.
- Fasten adapter onto the new xenon bulb - bulb is packed in protective bonded fabric.
- Thread the xenon bulb through the central mirror hole and fasten it by tightening the Allen screw from the lamphouse outside.
Before inserting the 7,000 W bulb, turn the axial adjustment so far as possible in forward direction to get more space.
- Remove the protective coat and connect the anode cable to the lamphouse socket.
- Position the bulb's anode end onto the bulb support and adjust the support that the bulb is levelled horizontally on the support. The support should not contact the xenon bulb, let little space between the bulb and the support, because in hot condition the bulb needs a little space.
- Close the lamphouse door.

► NOTE

After installing the xenon bulb you have to carry out the following checks and adjustments:

- intensity of currents, see chapter 2.3.10
- light arc stabilization, see chapter 2.3.11
- screen illumination, see chapter 2.3.12.

4.3.2 Changing the Mirror



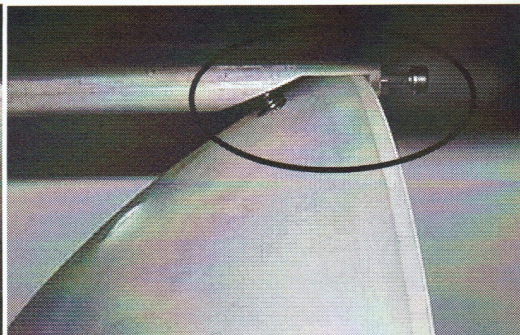
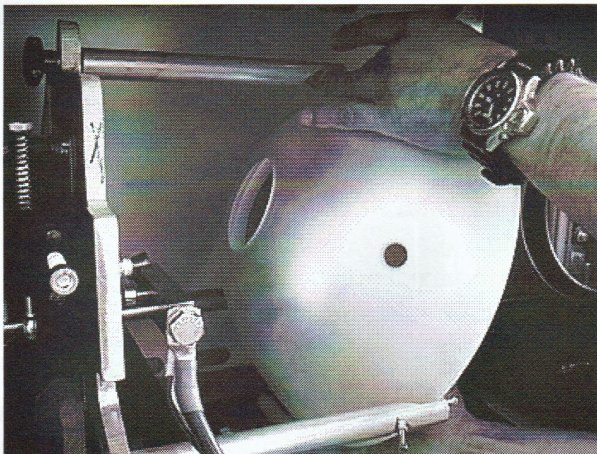
- ① mirror
- ② adjusting/fixing screws
- ③ counterscrew
- ④ mirror holder bars
- ⑤ handle star for fastening the upper holder



DANGER

Observe the safety instructions, when opening the lamphouse.

- Remove the lamphouse door.
- Remove the xenon bulb, see chapter 4.3.1.
- Loosen the handle star ⑤.



- Carefully take out the mirror by tilting the mirror forwards while the upper holder bar is moved upwards.

- Clean lamphouse by blowing compressed air in the lamphouse and finally remove the dust with a vacuum cleaner.
- Put down the mirror onto the lower holder bars. Move the mirror upper holder bar over the mirror and carefully put it down on the mirror edge.

NOTE

- ▷ The mirror edge must be positioned in the three holder bars. In the upper holder bar the mirror should have about 1 mm distance to the holder and the spring should lay evenly on the mirror surface, see right figure.
- ▷ The mirror has a window. Insert the mirror in a way that this window is positioned horizontally in the middle - so the light arc can be watched.
- Tighten handle star on the upper mirror holder.



ATTENTION

- △ Do not touch the inner side of mirror (reflecting surface) with bare hands. If necessary, remove fingerprints with an alcohol-soaked cloth.
- △ Care must be taken that the mirror is not firmly clamped, otherwise when heated during operation it would not be able to expand and would break. The mirror should be positioned on the two lower holders only while it is pressed by the spring, lightly against the front edge of the holder only.

- Insert the xenon bulb, see chapter 4.3.1.
- Close the lamphouse.

► NOTE

Adjusting the mirror position with the alignment projector is described in chapter 2.3.8.

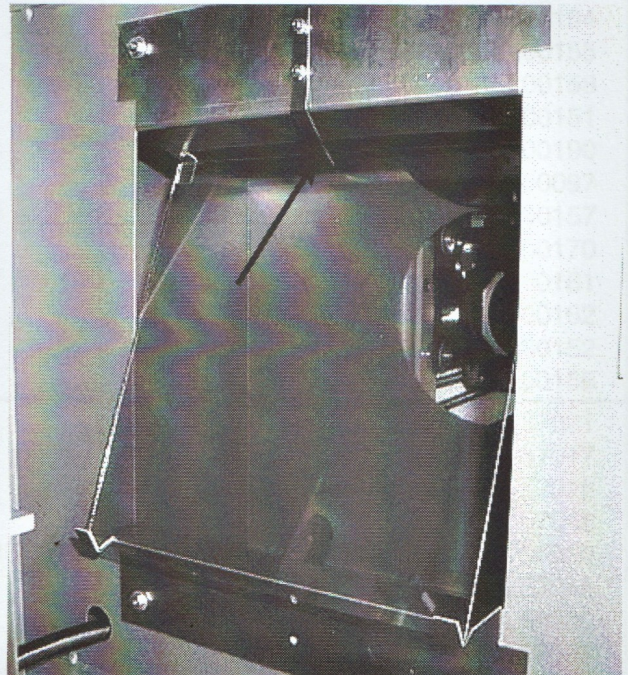
4.3.3 Changing the Heat Filter



ATTENTION

The heat filter is a reflection filter, therefore you have to watch out for the reflection side of filter to be directed to xenon lamp.

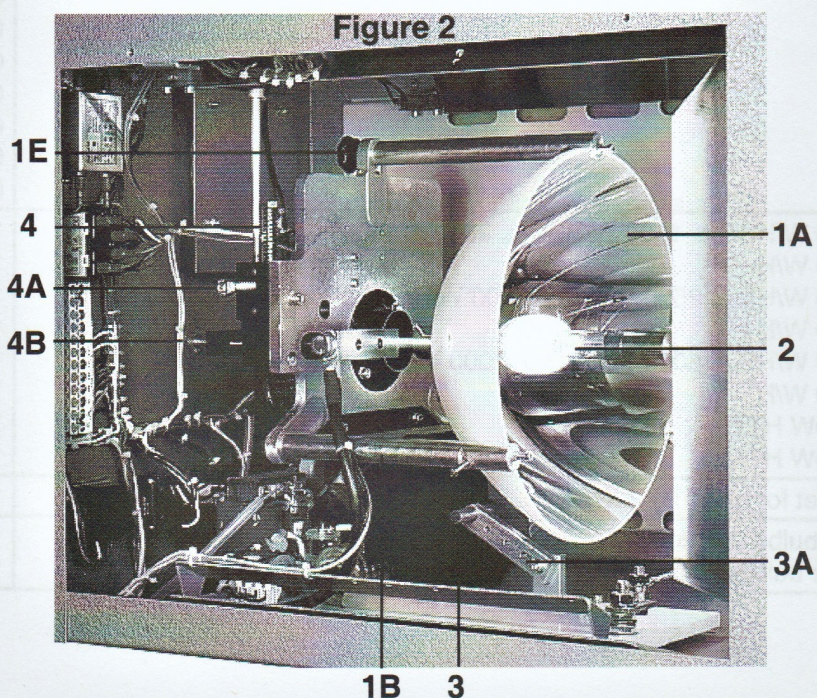
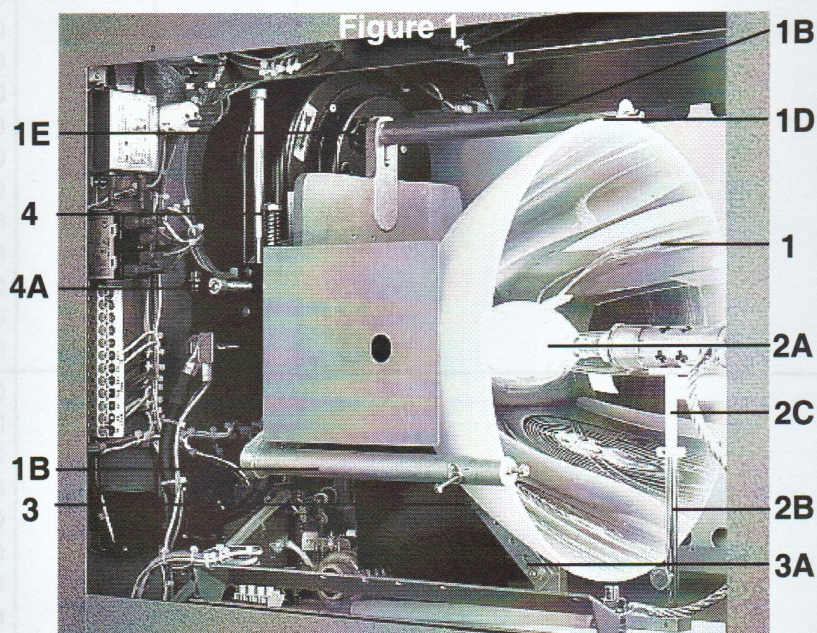
- Remove the old filter.
- Remove the protective foil from the new filter!
- Put the heat filter onto the lower holder and press the filter against the leaf spring (arrow) until it arrests.



5 List of Parts and Wearing Parts

Part	Figure	Position	Code number
dichroic mirrors	6-1	1	0040 180 00155
Ø 340 mm f=55/825	6-2	1A	0040 180 00156
Ø 300 mm f=60/540			
set of mirror holders	6-1	1B	1000 256 97009
for mirror Ø 340 mm	6-2	1C	1000 256 97008
for mirror Ø 300 mm			
spring for upper mirror holder	6-1	1D	1000 492 37001
star handle for upper mirror holder	6-1/6-2	1E	1000 502 17014
xenon bulbs horizontal	6-1	2	
500 W / H			0040 120 00091
700 W / HS			0040 120 00100
700 W / HSC			0040 120 00101
1000 W / HSC			0040 120 00102
1000 W / HS			0040 120 00105
1000 W / HTP			0040 120 00163
1600 W / HSC			0040 120 00103
1600 W / HS			0040 120 00106
2000 W / SHSC			0040 120 00104
2000 W / HTP			0040 120 00150
2000 W / H			0040 120 00094
2000 W / HS			0040 120 00098
2000 W / HTT			0040 120 00180
2500 W / HS	6-1	2A	0040 120 00095
3000 W / H			0040 120 00096
3000 W / HP			0040 120 00099
3000 W / HTP			0040 120 00154
3000 W / HS			0040 120 00155
3600 W / HTM			0040 120 00158
4000 W / HTP			0040 120 00151
4000 W / HSA			0040 120 00190
4000 W / HS			0040 120 00097
5000 W / H			0040 120 00157
5000 W HBM			0040 120 00170
5000 W / HTP			0040 120 00161
6000 W / HTP			0040 120 00162
7000 W / HS			0040 120 00152
7000 W / HSH			0040 120 00159
adapter for 1000 W/HSC a. 1600 W/HSC a. 2000 W			1000 404 57021
adapter for 2000 W/H			1000 404 57017
adapter for 2000 W/HS a. 2500 W/HS a. 3000 W/HS			1000 404 57018
adapter for 3000 W/H			1000 404 57019
adapter for 4000 W/HS a. 5000 W/HBM a. 7000 W/HS			1000 404 57020
adapter for 5000 W/H			1000 404 57044
adapter for 2000W HTT			1000 404 57030
adapter for 3600W HTM			1000 404 57031
xenon bulb socket for bulbs 2 - 7 kW			1000 404 57058
bulb support for bulbs 2 - 7 kW	6-1	2B	1000 404 57011
stick insulator for bulb support	6-1	2C	1000 535 57011

Part	Figure	Position	Code number
solenoid for big and small lamphouse	1/2	3	1000 526 27002
solenoid holder	1/2	3A	1000 404 57064
solenoid holder triple inclusive solenoids			1000 256 97005
restoring spring for vertical adjustment	1/2	4	1000 492 37004
restoring spring for horizontal adjustment	1/2	4A	1000 492 37002
restoring spring for axial adjustment	2	4B	1000 492 37003
alignment projector for mirror adjustment			1000 395 37004
heat filter 20 x 20 B			0025 760 70216
leaf spring for heat filter holder for 2 - 7 kW lamphouse			1000 463 57006
fuse 6.3 A			4822 253 30031
safety pack xenon (face shield and protective gloves)			0040 240 00082
Kevlar - safety jacket			0040 200 00010



6 Technical Data and Circuit Diagrams

6.1 Data

Name	Universal Lamphouse
Type	1,000 W - 2,000 W / 2,000 W - 7,000 W
Machine No.	See data plate on housing

Connecting Data

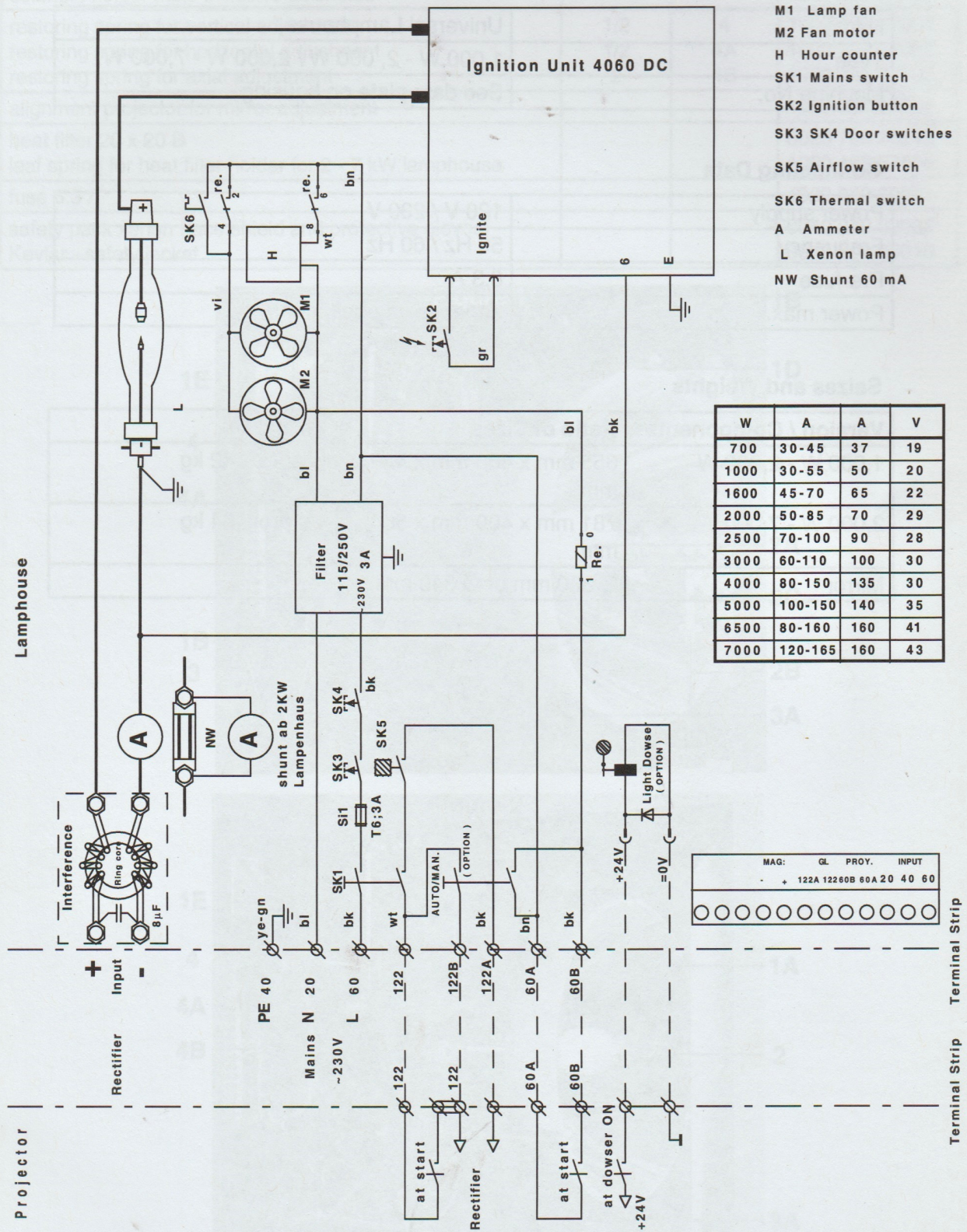
Power supply	120 V / 230 V
Frequency	50 Hz / 60 Hz
Pre-fuse	6.3 A
Power max.	depends on equipment

Seizes and Weights

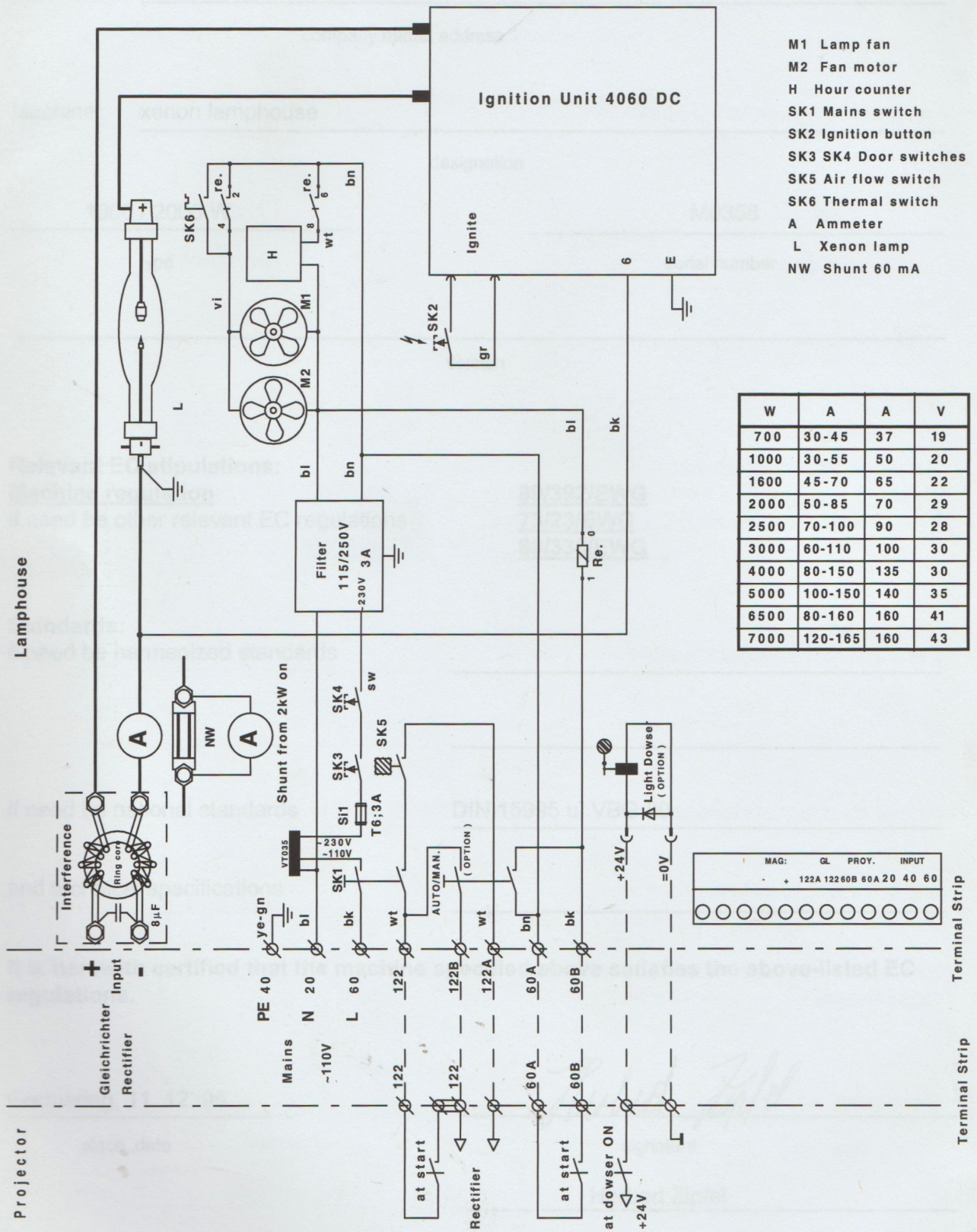
Version / Components	Ratio of Sizes	Weights
1,000 W - 2,000 W	655 mm x 400 mm x 490 mm	approx. 42 kg
2,000 W - 7,000 W	781 mm x 400 mm x 564 mm	approx. 64 kg
Mirror	Ø 300 mm or Ø 340 mm	

6.2 Circuit Diagram

6.2.1 230 V Mains Voltage

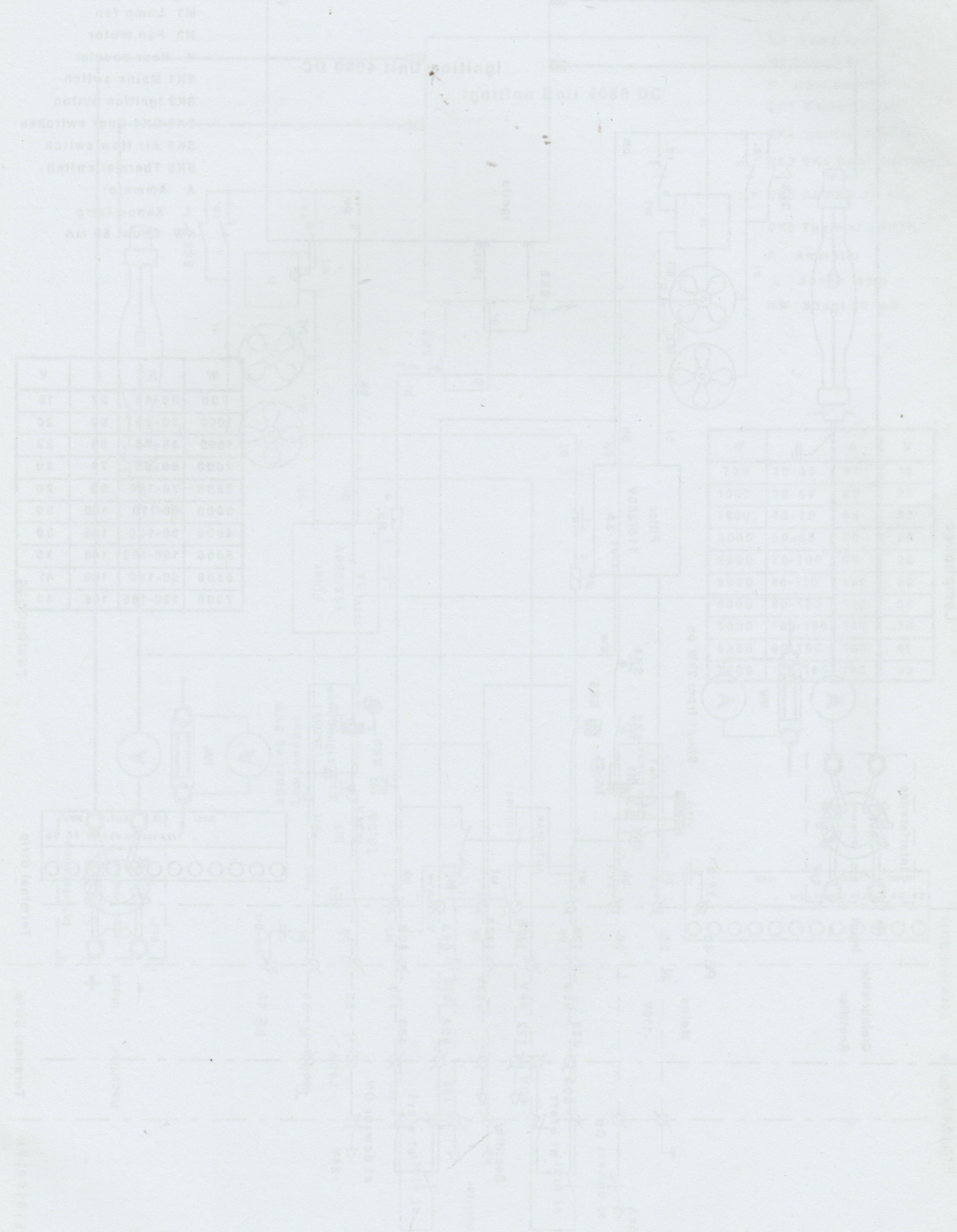


6.2.2 120 V Mains Voltage



5.2 Circuit Diagram

5.2.1 230 V Mains Voltage



EC Declaration of Conformity

Messrs.: Kinoton GmbH, Industriestr. 20 a, 82110 Germering

company name, address

Machine: xenon lamphouse

designation

1000 / 2000 W

type

M0358

serial number

version

Relevant EC stipulations:

Machine regulation

if need be other relevant EC regulations

89/392/EWG

73/23/EWG

89/336/EWG

Standards:

if need be harmonized standards

if need be national standards

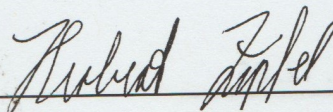
DIN 15995 u. VBG 80

and technical specifications

It is herewith certified that the machine specified above satisfies the above-listed EC regulations.

Germering, 11. 12. 95

place, date



signature

Herbert Zipfel

prename, name

Production Manager

function

EC Declaration of Conformity

Messrs.: Kinoton GmbH, Industriestr. 20 a, 82110 Germering

company name, address

Machine: xenon lamphouse

designation

2,000 / 7,000 W

N0870

type

serial number

version

Relevant EC stipulations:

Machine regulation

if need be other relevant EC regulations

89/392/EWG

73/23/EWG

89/336/EWG

Standards:

if need be harmonized standards

if need be national standards

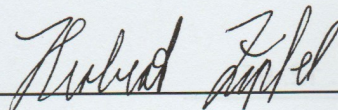
DIN 15995 u. VBG 80

and technical specifications

It is herewith certified that the machine specified above satisfies the above-listed EC regulations.

Germering, 11. 12. 95

place, date



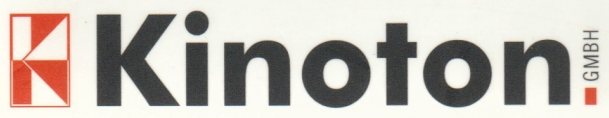
signature

Herbert Zipfel

prename, name

Production Manager

function



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