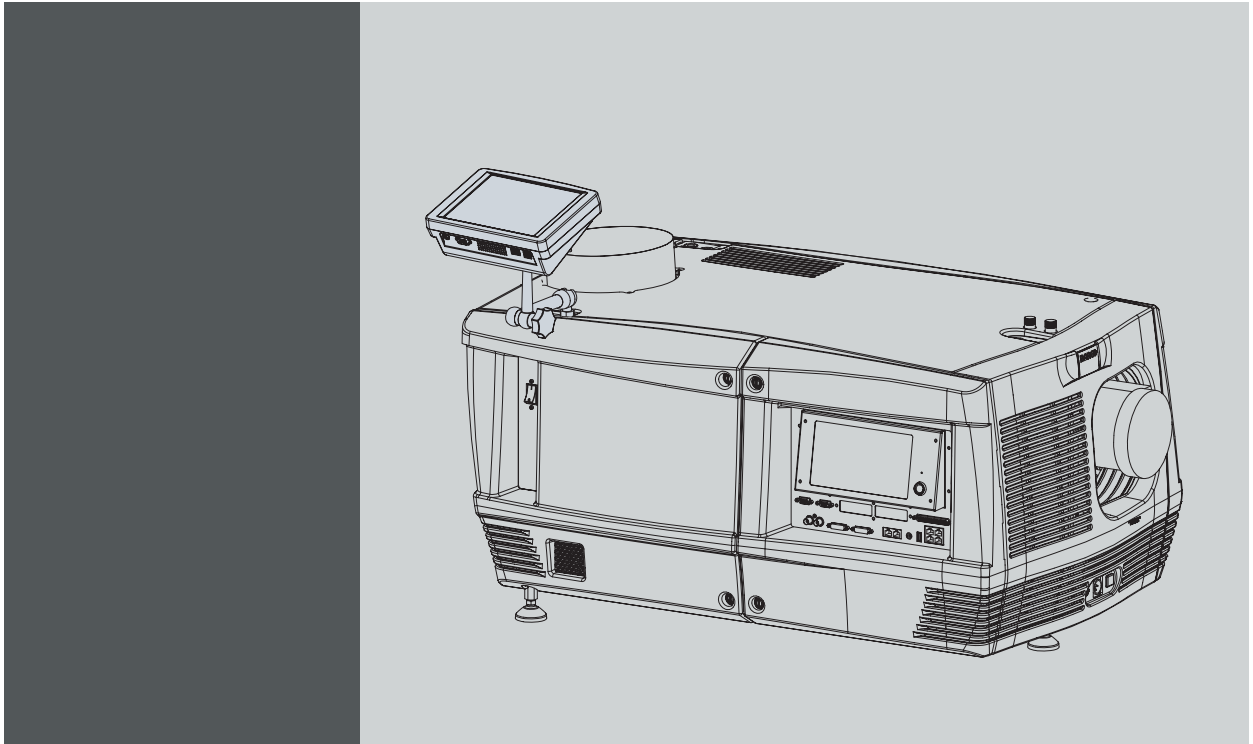


DP-2000



Installation manual

Barco Inc. Media and Entertainment Division

11101 Trade Center Drive, Rancho Cordova, California 95670, USA

Phone: +1 916 859-2500

Fax: +1 916 859-2515

E-mail: folsomsales@barco.com

Visit us at the web: www.barco.com

Barco nv Media & Entertainment Division

Noordlaan 5, B-8520 Kurne

Phone: +32 56.36.89.70

Fax: +32 56.36.883.86

E-mail: sales.events@barco.com

Visit us at the web: www.barco.com

Changes

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This publication could contain technical inaccuracies or typographical errors. Changes are periodically made to the information in this publication; these changes are incorporated in new editions of this publication.

Federal Communications Commission (FCC Statement)

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area may cause harmful interference, in which case the user will be responsible for correcting any interference at his own expense

EN55022/CISPR22 Class A ITE (Information Technology Equipment)

Class A ITE is a category of all other ITE which satisfies the class A ITE limits but not the class B ITE limits. Such equipment should not be restricted in its sale but the following warning shall be included in the instructions for use:

Warning : This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Guarantee and Compensation

Barco provides a guarantee relating to perfect manufacturing as part of the legally stipulated terms of guarantee. On receipt, the purchaser must immediately inspect all delivered goods for damage incurred during transport, as well as for material and manufacturing faults Barco must be informed immediately in writing of any complaints.

The period of guarantee begins on the date of transfer of risks, in the case of special systems and software on the date of commissioning, at latest 30 days after the transfer of risks. In the event of justified notice of complaint, Barco can repair the fault or provide a replacement at its own discretion within an appropriate period. If this measure proves to be impossible or unsuccessful, the purchaser can demand a reduction in the purchase price or cancellation of the contract. All other claims, in particular those relating to compensation for direct or indirect damage, and also damage attributed to the operation of software as well as to other services provided by Barco, being a component of the system or independent service, will be deemed invalid provided the damage is not proven to be attributed to the absence of properties guaranteed in writing or due to the intent or gross negligence or part of Barco.

If the purchaser or a third party carries out modifications or repairs on goods delivered by Barco, or if the goods are handled incorrectly, in particular if the systems are commissioned operated incorrectly or if, after the transfer of risks, the goods are subject to influences not agreed upon in the contract, all guarantee claims of the purchaser will be rendered invalid. Not included in the guarantee coverage are system failures which are attributed to programs or special electronic circuitry provided by the purchaser, e.g. interfaces. Normal wear as well as normal maintenance are not subject to the guarantee provided by Barco either.

The environmental conditions as well as the servicing and maintenance regulations specified in the this manual must be complied with by the customer.

Software License Agreement

You should carefully read the following terms and conditions before using this software. Your use of this software indicates your acceptance of this license agreement and warranty.

Terms and Conditions:

1. No redistribution of the software is allowed.
2. Reverse-Engineering. You may not reverse engineer, decompile, disassemble or alter anyhow this software product.

Disclaimer of Warranty:

This software and the accompanying files are sold "as is" and without warranties as to performance or merchantability or any other warranties whether expressed or implied. In no event shall Barco be liable for damage of any kind, loss of data, loss of profits, business interruption or other pecuniary loss arising directly or indirectly. Any liability of the seller will be exclusively limited to replacement of the product or refund of purchase price.

GNU-GPL code

If you would like a copy of the GPL source code contained in this product shipped to you on CD, please contact Barco. The cost of preparing and mailing a CD will be charged.

Disposal Information

This equipment has required the extraction and use of natural resources for its production. It may contain hazardous substances for health and environment. In order to avoid the dissemination of those substances in the environment and to diminish the pressure on natural resources, we encourage you to use the appropriate take-back systems. Those systems will reuse or recycle most of the materials of your end of life equipment in a sound way.



The crossed-out wheeled bin symbol invites you to use those systems. If you need more information on the collection, reuse and recycling systems, please contact your local or regional waste administrator. You can also contact us for more information on the environmental performances of our products.

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1. OPERATING CONDITIONS

Overview

- Certification
- Physical Environment
- Heat Dissipation/Cooling
- Input Power
- Initial Inspection
- Mutual Agreement

1.1 Certification

Guarantee

Barco provides a guarantee relating to perfect manufacturing as part of the legally stipulated terms of guarantee.

Observing the specification as mentioned below, are critical for the performances of the projector. Neglecting can results in warranty loss.

1.2 Physical Environment

Physical Environment Requirements

Table below summarizes the physical environment in which the DP-2000 may be safely operated or stored.

Environment	Operating	Non-Operating
Ambient Temperature	10°C (50°F) to 35°C (95°F)	-15°C (5°F) to 60°C (140°F)
Humidity	5% to 85% RH Non-condensed	5% to 95% RH Non-Condensed
Altitude	-60 (-197Ft) to 3000m (9843Ft)	-60 (-197Ft) to 10000m (32810Ft)

1.3 Heat Dissipation/Cooling

Thermal Management

The projector is fan cooled and must be installed with sufficient space mainly in the front and at the bottom (minimum 5 cm) and on the sides to ensure sufficient air flow.

It should be used in an area where the ambient temperature, as measured at the projector air inlet, does not exceed +35°C (+95°F).

Besides, the installation of an exhaust system is MANDATORY. The installed exhaust blower must remove an air volume of 6.65 m³ per min. (235 CFM)

1.4 **Input Power**

Input power requirements

The DP-2000 projector operates from a nominal mono phase power net with a separate earth ground PE. The DP-2000 projector requires 200–240 VAC, 50–60 Hz, 26 amps at 200 VAC with a separate earth ground PE. A label on the rear of the projector head indicates the nominal line voltage for which the projector was set at the factory.

To protect operating personnel, the National Electrical Manufacturers Association (NEMA) recommends that the instrument panel and cabinet be grounded. In no event shall this projector be operated without an adequate cabinet ground connection.

AC power supply cord specification: Certified cord, 4.0 mm², 10AWG, min. 300V. Installation according to the local electrical code and regulations by qualified technical personnel only.

1.5 Initial Inspection

General

Before shipment, the projector was inspected and found to be free of mechanical and electrical defects. As soon as the projector is unpacked, inspect for any damage that may have occurred in transit. Save all packing material until the inspection is completed. If damage is found, file claim with carrier immediately. The Barco Sales and Service office should be notified as soon as possible.

Mechanical check

This check should confirm that there are no broken knobs or connectors, that the cabinet and panel surfaces are free of dents and scratches, and that the meter face and operating panel are not scratched or cracked. The Barco Sales and Service office should be notified as soon as possible.

1.6 Mutual Agreement

Contracting parties

Unless otherwise agreed, signing the document means acceptance of above items, especially the unconditional acceptance of the operating conditions.

For the Buyer	For the Manufacturer
Firm:	Firm: Barco
Name:	Name:
Sign:	Sign:

2. SAFETY INSTRUCTIONS

Overview

- General considerations
- Restricted Access Location
- Electrical Safety
- Heat and Fire Hazards
- Safety on Installation
- Protection from Ultraviolet Radiation
- Protection on Servicing
- Safety on Cleaning
- Safety on Shipping

2.1 General considerations

Users definition

Throughout this manual, the term SERVICE PERSONNEL refers to persons having appropriate technical training and experience necessary to be knowledgeable of potential hazards to which they are exposed (including, but not limited to HIGH VOLTAGE ELECTRIC and ELECTRONIC CIRCUITRY and HIGH BRIGHTNESS PROJECTORS) in performing a task, and of measures to minimize the potential risk to themselves or other persons. The term USER and OPERATOR refers to any person other than SERVICE PERSONNEL, AUTHORIZED to operate professional projection systems located in RESTRICTED ACCESS LOCATIONS.

The DLP Cinema Systems are intended "FOR PROFESSIONAL USE ONLY" by AUTHORIZED PERSONNEL familiar with potential hazards associated with high voltage, high intensity light beams, ultraviolet exposure and high temperatures generated by the lamp and associated circuits. Only qualified SERVICE PERSONNEL, knowledgeable of such risks, are allowed to perform service functions inside the product enclosure.

General Safety Instructions

- This equipment is intended for installation in a restricted access location.
- Before operating your projector please read this manual thoroughly, and retain it for future reference.
- Installation and preliminary adjustments should be performed by qualified Barco personnel or authorized Barco service dealers.
- All warnings on the projector and in the documentation manuals should be adhered to.
- All instructions for operating and use of this equipment must be followed precisely.
- All local installations codes should be adhered to.

Owner's record

The part number and the serial number are printed on a label which is stuck on the respective part. Record these numbers in the spaces provided below. Refer to them whenever you call upon your Barco custom service engineer regarding this product.

NAME		PART NUMBER	SERIAL NUMBER	SUPPLIER
DP-2000 projector		R9004442		
Prime Lens	1.4 - 2.05 : 1 (motorized)	R9855931		
	1.4 - 2.05 : 1 (manual)	R98559311		
	1.6 - 2.5 : 1 (motorized)	R9855932 & R9855933		
	1.6 - 2.5 : 1 (manual)	R98559321 & R98559331		
	1.9 - 3.2 : 1 (motorized)	R98559934 & R9855935		
	1.9 - 3.2 : 1 (manual)	R985599341 & R98559351		
	2.4 - 3.9 : 1 (motorized)	R9855936		
	2.4 - 3.9 : 1 (manual)	R96559361		
Touch panel		R9855910		

2.2 Restricted Access Location

Installation in a Restricted Access Location

The DP-2000 can only be installed in a Restricted Access Location.

What is a Restricted Access Location (Definition) ?

Definition of a Restricted Access Location:

A location for equipment where both of the following paragraphs apply:

- Access can only be gained by SERVICE PERSONS or by USERS who have been instructed about the reasons for the restriction applied to the location and about the precautions that shall be taken.
- Access is through the use of the TOOL or lock and key, or other means of security, and is controlled by the authority responsible for the location.

What are the Reasons for the Applied Restriction?

The Air exhaust on the top of the Projector can reach high temperatures due to the High Light Output Range of the installed lamp.

2.3 Electrical Safety

Safety Warning

TO PREVENT FIRE OR ELECTRICAL SHOCK HAZARD, DO NOT EXPOSE THIS PROJECTOR TO RAIN OR MOISTURE.

Rating & Grounding

- This product should be operated from an AC power source. Check if the mains voltage and capacity matches the projector electrical ratings.
- This product is equipped with a three-terminal barrier strip for the connection of a mono phase line with a separate earth ground PE. If you are unable to install the AC Requirements, contact your electrician. Do not defeat the purpose of the grounding.
- Always use a general disconnect switch to switch off the complete installation.
- Warning: High leakage current. Earth connection essential before connecting supply.

General about the Projector

- Do not allow anything to rest on the power cord. Do not locate this product where persons will walk on the cord.
- Do not operate appliance with a damaged cord or if the appliance has been dropped or damaged - until it has been examined by a qualified serviceman.
- Position the 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. A cord rated for less amperage than the appliance may overheat.
- Let appliance cool completely before storing. Remove cord from appliance when storing.
- Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electrical shock.
- Never spill liquid of any kind on the product. Should any liquid or solid object fall into the cabinet, unplug the set and have it checked by qualified service personnel before resuming operations.
- Lightning - For added protection for this video product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect media and communication cables. This will prevent damage to the projector due to lightning and AC power-line surges.

2.4 Heat and Fire Hazards

Warning Risk of Fire

Warning Risk of Fire: Do Not Place Flammable or Combustible Materials Near Projector !

Barco large screen projection products are designed and manufactured to meet the most stringent safety regulations. This projector radiates heat on its external surfaces and from ventilation ducts during normal operation, which is both normal and safe. Exposing flammable or combustible materials into close proximity of this projector could result in the spontaneous ignition of that material, resulting in a fire. For this reason, it is absolutely necessary to leave an "exclusion zone" around all external surfaces of the projector whereby no flammable or combustible materials are present. The exclusion zone must be not less than 40 cm (16") for all DLP Cinema projectors. The exclusion zone on the lens side must be at least 5 m. Do not cover the projector or the lens with any material while the projector is in operation. Keep flammable and combustible materials away from the projector at all times. Mount the projector in a well ventilated area away from sources of ignition and out of direct sun light. Never expose the projector to rain or moisture. In the event of fire, use sand, CO₂, or dry powder fire extinguishers; never use water on an electrical fire. Always have service performed on this projector by authorized Barco service personnel. Always insist on genuine Barco replacement parts. Never use non-Barco replacement parts as they may degrade the safety of this projector.

Slots and Openings

Slots and openings in the cabinet and the sides are provided for ventilation; to ensure reliable operation of the projector and to protect it from overheating, these openings must not be blocked or covered. The openings should never be blocked by placing the product too close to walls, or other similar surface. This product should never be placed near or over a radiator or heat register. This projector should not be placed in a built-in installation or enclosure unless proper ventilation is provided.

Projection Room

Projection rooms must be well ventilated or cooled in order to avoid build up of heat. It is necessary to vent hot exhaust air from console to the outside of the building. The minimum exhaust airflow requirement is 6.65 m³/min or 235 CFM.

Replaceable Batteries

The projector electronic is provided with a replaceable battery.



CAUTION: Risk of explosion if battery is replaced by an incorrect type. For disposal of used batteries, always consult federal, state, local and provincial hazardous waste disposal rules and regulations to ensure proper disposal.

2.5 Safety on Installation

Personal Injury or Property Damage

WARNING: To minimize risks of personal injury or property damage, due electrical shock, fire, energy hazards, mechanical and heat hazards, Ultraviolet an Infrared energy hazards, and/or chemical hazards this equipment must be installed and/or serviced ONLY by SERVICE PERSONNEL.

- To prevent risk of fire or electric shock, do not immerse or expose this appliance in water or other liquids.
- To prevent the risk of electric shock, do not disassemble this appliance, but always take it to an authorized, trained service person when service or repair work is required.
- The use of an accessory attachment not recommended by the manufacturer may cause a risk of fire, electric shock, or injury to persons.

Projector Damage

If the Air Filters are not regularly replaced (A "clean" booth would be monthly-minimum), the air flow inside the projector could be disrupted, causing overheating. Overheating may lead to the projector shutting down during operation.

In order to ensure that correct airflow is maintained, and that the projector complies with Electromagnetic Compatibility requirements, it should always be operated with all of it's covers in place.

Ensure that nothing can be spilled on, or dropped inside the projector. If this does happen, switch off and unplug the mains supply immediately. Do not operate the projector again until it has been checked by qualified service personnel.

The projector must always be mounted in a manner which ensures free flow of air into its air inlets and unimpeded evacuation of the hot air exhausted from its cooling system. Heat sensitive materials should not be placed in the path of the exhausted air or on the lamp house.

2.6 Protection from Ultraviolet Radiation

Do not look directly in the high intensity light beam

WARNING: Do not look directly in the light beam. The lamp contained in this product is an intense source of light and heat. One component of the light emitted from this lamp is ultraviolet light. Potential eye and skin hazards are present when the lamp is energized due to ultraviolet radiation. Avoid unnecessary exposure. Protect yourself and your employees by making them aware of the hazards and how to protect themselves. Protecting the skin can be accomplished by wearing tightly woven garments and gloves. Protecting the eyes from UV can be accomplished by wearing safety glasses that are designed to provide UV protection. In addition to the UV, the visible light from the lamp is intense and should also be considered when choosing protective eye wear.

Exposure to UV Radiation

Some medications are known to make individuals extra sensitive to UV radiation. The American Conference of Governmental Industrial Hygienists (ACGIH) recommends occupational UV exposure for an 8-hour day to be less than 0.1 microwatts per square centimeters of effective UV radiation. An evaluation of the workplace is advised to assure employees are not exposed to cumulative radiation levels exceeding these government guidelines.

2.7 Protection on Servicing



WARNING: Attempts to alter the factory-set internal controls or to change other control settings not specially discussed in this manual can lead to permanent damage to the Projection Unit and cancellation of the warranty.

Servicing

Do not attempt to service this projector yourself, as opening or removing covers may expose you to dangerous voltage potential and risk of electric shock! Refer all projector service to a qualified Barco service center.

Call for service in the following conditions :

- When the power cord or plug is damaged or frayed.
- If liquid has been spilled into the projector.
- If the product has been exposed to rain or water.
- If the product does not operate normally when the operating instructions are followed. Adjust only those controls that are covered by the operating instructions since improper adjustment of the other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation;
- If the product has been dropped or the cabinet has been damaged.
- If the product exhibits a distinct change in performance, indicating a need for service.

Replacement Parts

When replacement parts are required, be sure the service technician has used original Barco replacement parts or authorized replacement parts which have the same characteristics as the Barco original part. Unauthorized substitutions may result in degraded performance and reliability, fire, electric shock or other hazards. Unauthorized substitutions may void warranty.

Safety Check

Upon completion of any service or repairs to this projector, ask the service technician to perform safety checks to determine that the projector is in proper operating condition.

Possible Explosion Hazard

Always keep in mind the caution below:



CAUTION: Xenon arc lamps are under high pressure. The lamp must be handled with great care. They may explode if dropped or mishandled. Whenever the protective cover is removed from the lamp, authorized protective clothing **MUST** be worn!

2.8 Safety on Cleaning

Cabinet

Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

To keep the cabinet looking brand-new, periodically clean it with a soft cloth. Stubborn stains may be removed with a cloth lightly dampened with mild detergent solution. Never use strong solvents, such as thinner or benzine, or abrasive cleaners, since these will damage the cabinet.

Optical Performances

To ensure the highest optical performance and resolution, the projection lenses are specially treated with an anti-reflective coating, therefore : AVOID TOUCHING THE LENS FACE. To remove dust on the lens, use a soft dry cloth. Do not use a damp cloth, detergent solution, or thinner. Follow the lens cleaning procedure in the Owners Manual.

2.9 Safety on Shipping

Original Shipping package

Save the original shipping wooden box and packing material; they will come in handy if you ever have to ship your projector. For maximum protection, repack your set as it was originally packed at the factory.

3. MECHANICAL SET UP OF THE DP-2000

Overview

- Unpacking the projector
- Positioning the DP-2000 at port window
- Installation of the exhaust system

3.1 Unpacking the projector

What has to be done ?

At delivery the projector is packed in a carton box upon a wooden pallet and secured with banding and fastening clips. Furthermore, to provide protection during transportation, the projector is surrounded with foam. Once the projector is arrived at the installation site, it has to be removed from the carton box and wooden pallet in a safe manner without damaging the projector.



After unpacking let the projector acclimate to the room temperature which must be higher than 10°C (50°F) and lower than 35°C (95°F). Neglecting this may result in a start up failure of the Light Processor Unit.

Necessary tools

- 8 mm Allen wrench.
- 13 mm open end wrench.
- 17 mm open end wrench.

How to unpack the projector ?

1. Remove the banding around the carton box, by releasing the fastening clips as illustrated, and open the box.

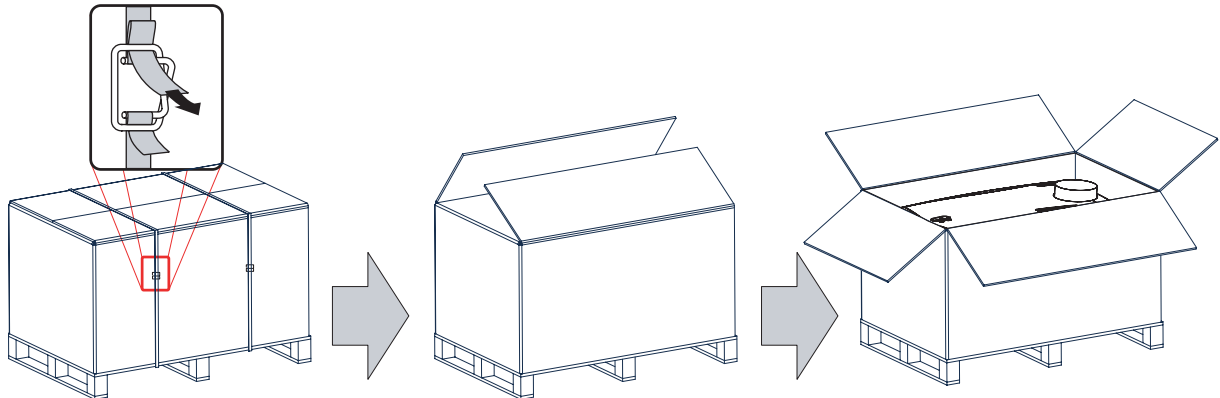


Image 3-1

2. Remove the smaller carton box (reference 1) as illustrated.
Note: The smaller carton box contains the manual.

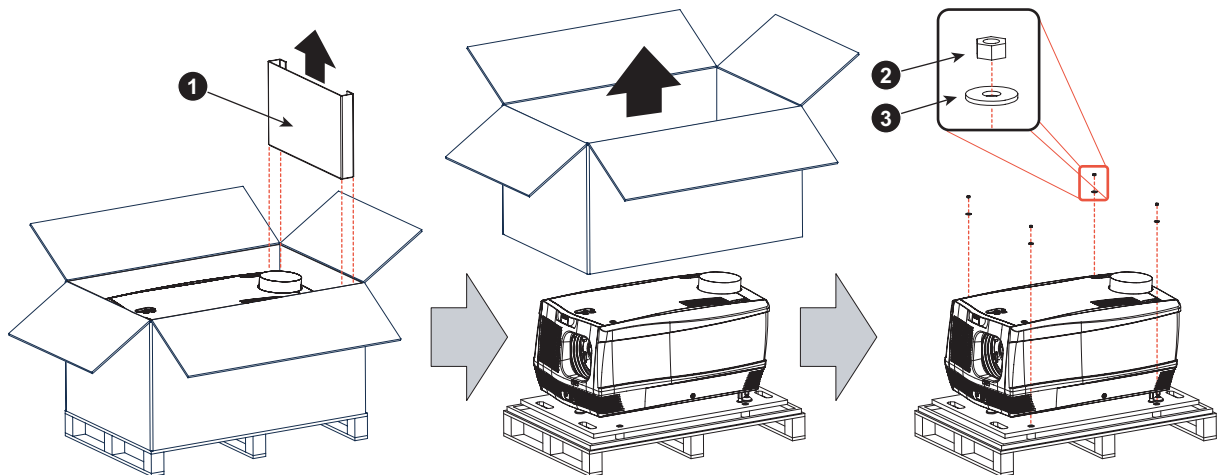


Image 3-2

3. Remove the carton box and the foam around the projector. See image 3-2.
Note: The projector is still attached to a wooden plate, which is secured the below pallet.
4. Loosen the four nuts (reference 2 image 3-2) which secure the pallet as illustrated. Use a 13 mm open end wrench.
5. Rotate the wooden support plate with projector 90° and slide the front side over the edge of the pallet until the fixation screw (reference 4) is visible as illustrated.
6. Remove the hexagon socket head cap screw (reference 4). Use an 8 mm Allen wrench.

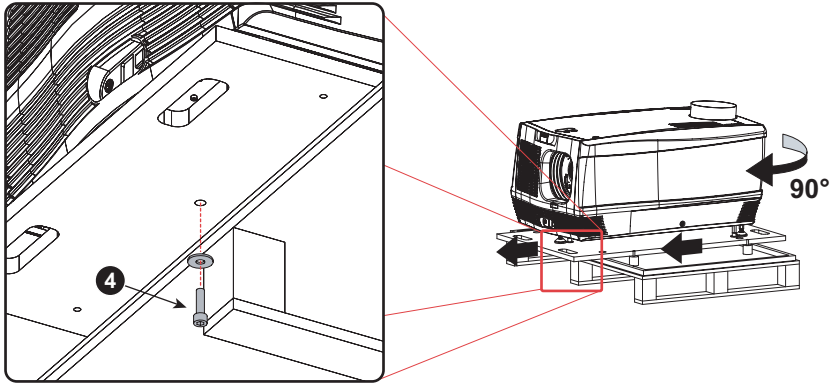


Image 3-3

7. Slide the rear side over the edge of the pallet unit the two fixation screws (reference 5) at the rear are visible.
8. Remove the two hexagon socket head cap screw (reference 5). Use an 8 mm Allen wrench.

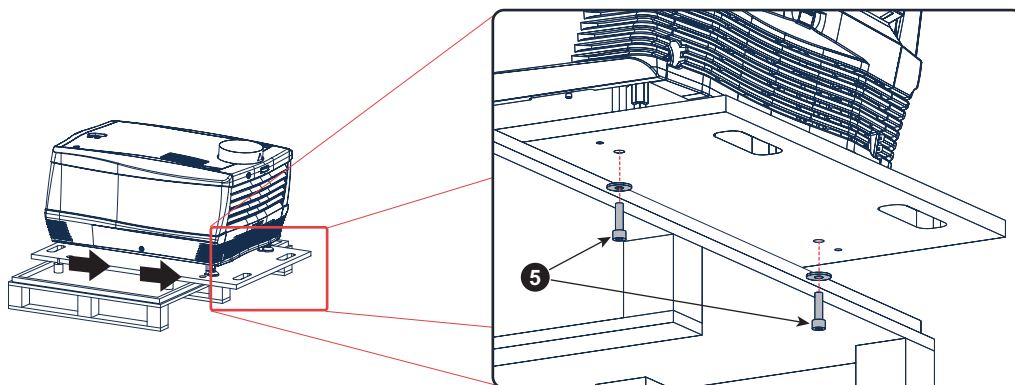


Image 3-4

9. Remove the projector from the wooden support plate and finally remove the 3 extension tubes (reference 6). Use a 17 mm wrench.

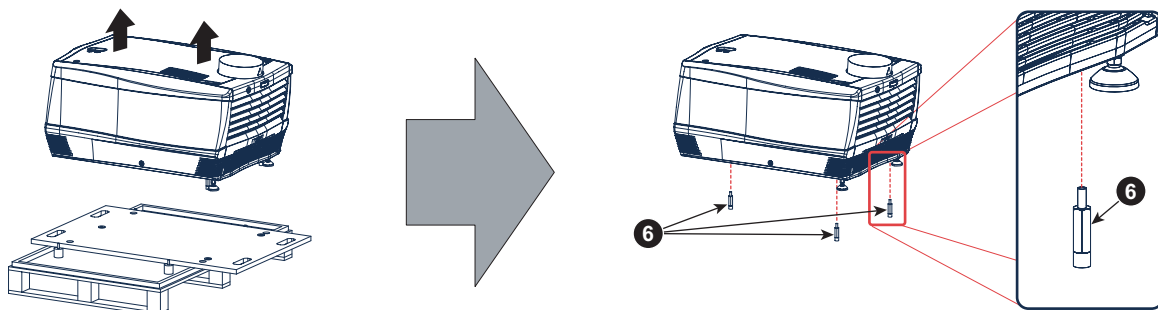


Image 3-5



Save the original shipping carton and packing material, they will be necessary if you ever have to ship your projector. For maximum protection, repack your projector as it was originally packed at the factory.



A rubber foam inside a plastic bag is placed into the lens opening of the projector. It's recommended to reuse this foam and plastic back each time you transport the projector. This to prevent intrusion of dust and foreign particles.



The lens is delivered in a separate box. For lens installation, see section "Lens & lens holder".

3.2 Positioning the DP-2000 at port window



WARNING: The installation of the DP-2000 projector requires at least 2 persons.

General guide lines

- Use a solid pedestal to put the DP-2000 projector on. Ensure that the pedestal can handle the weight of the projector and that all feet of the projector are captured.
- The pedestal should be placed in front of the port window wall in this manner that the projector front cover is at a distance of minimum 20 centimeter from the port window.

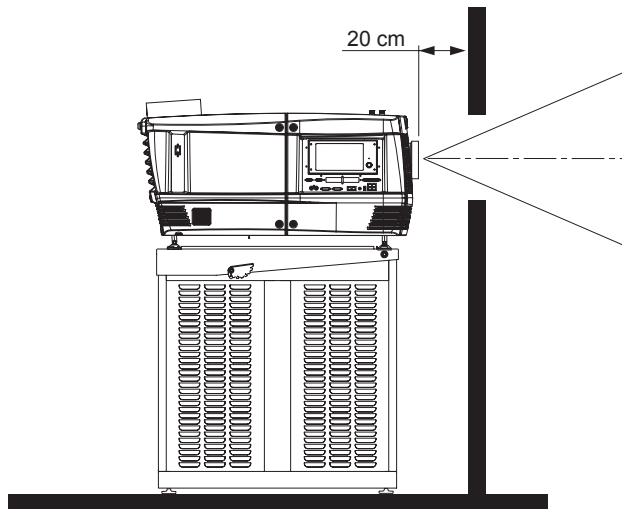


Image 3-6



Barco offers a pedestal for the DP-1200 digital projector. This universal pedestal allows a solid and easy setup of the projector. The universal pedestal has a separate compartment to install the UPS unit (if available) for the DP-1200 digital projector. Furthermore, the universal pedestal contains a standard 19" rack to build in the projector peripherals like alternative content switchers (e.g. ACS-2048).

Necessary tools

- 14 mm wrench.
- 17 mm wrench.

Projector centering

1. If the projector is standalone in front of the port window, center the projector with the theatre screen (see ref A image 3-7).
2. If a film projector is already present (projector will be off-center), try to optimize aim (see ref B image 3-7).
Note: Unlike film projectors, it is best to keep the projector lens surface as parallel to the screen as possible, even if it is significantly above the screen center.

The off-center position slightly increase side keystone, but will minimize horizontal lens offset required.

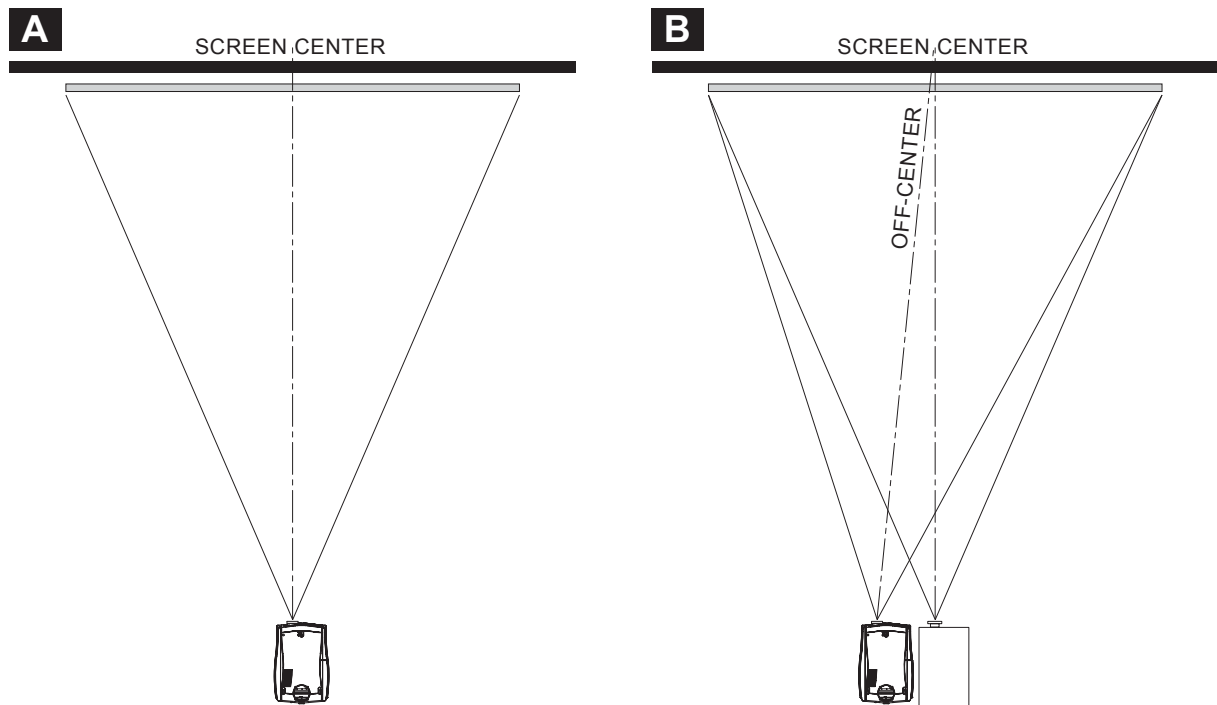


Image 3-7

3. Proceed to leveling the projector by adjusting the feet of the projector as follows:
 - Loosen the nuts (A), using a wrench of 17 mm, on the threaded rod.
 - Adjust the height of the 3 legs (B) to level the projector, using a 14 mm wrench.
 - Secure the leg height by tightening the nuts (A).

Note: There must be at least 5 cm between the bottom side of the projector and the pedestal.

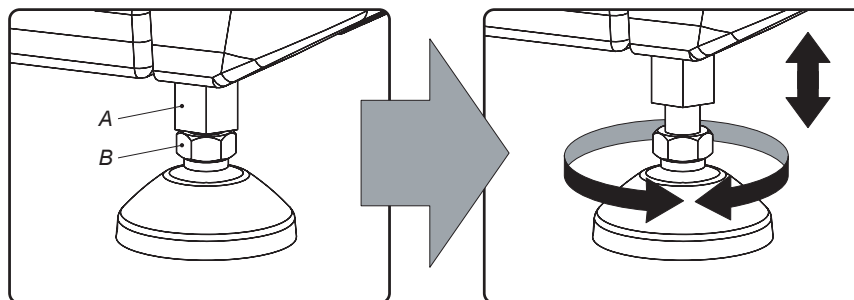


Image 3-8

4. Later, when the projector is up-and-running, adjust precise image geometry and placement.

Projector tilting

In an ideal installation, the DP-2000 lens surface is **centered with** and **parallel to** the screen. This orientation helps to ensure optimized lens performances with minimal offset. If this position is not possible (such as when the projector is significantly higher than the center of the screen), it is better to rely on **offset** rather than extra **tilt**.

1. Before adjusting tilt, make sure the projector is as well-centered with the theatre screen as possible for your installation area.
2. Check with theatre personnel for the degree of screen tilt, or measure this incline with a protractor at the screen.
3. Tilt the projector to closely match this screen tilt angle as follows:
 - Loosen the nuts (A), using a wrench of 17 mm, on the threaded rod.
 - Adjust the height of the legs until the projected image matches the projection port window and the screen tilt.
 - Secure the leg height by tightening the nuts (A).

3. Mechanical set up of the DP-2000

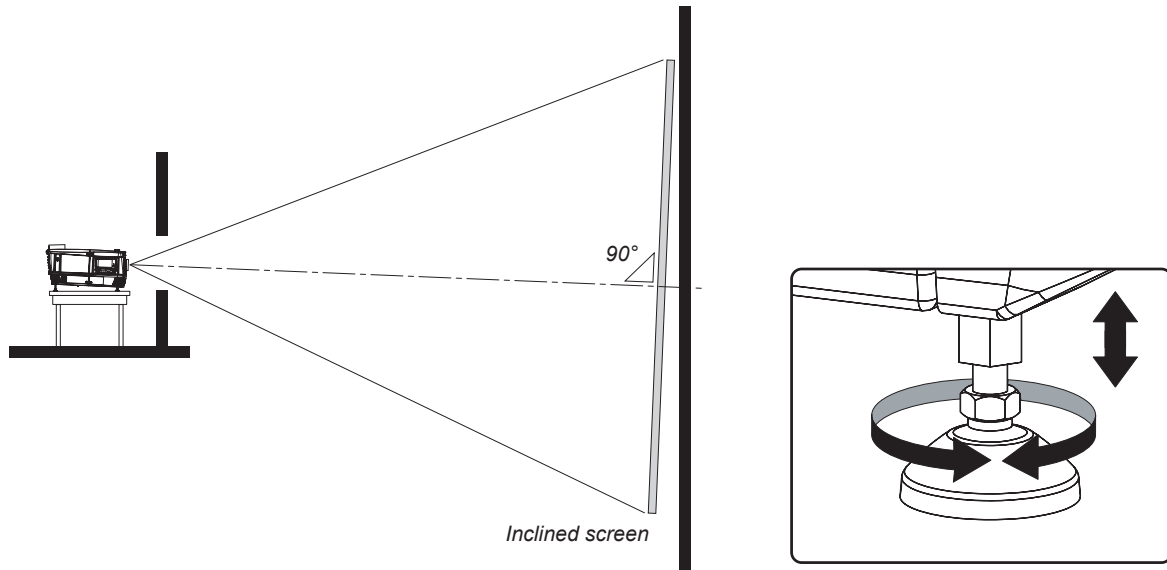


Image 3-9



Barco offers a pedestal for the DP-1200 digital projector. This universal pedestal allows you to easily tilt the projector forward up to 6°.

3.3 Installation of the exhaust system

About Exhaust

The exhaust stack of the projector head is designed to fit a 201 mm (7.91 inch) diameter duct. This size must be used throughout the entire system and installed to eliminate any possibility of downdraft or rain dripping into the lamp house.

The exhaust blower must be capable of removing minimum 6,65 m³/min (235 CFM).



CAUTION: If more than one projector is installed in a common projection booth, the above exhaust air flow must be measured at EACH individual projector head exhaust stack. Inadequate exhaust draft can contribute to premature xenon bulb lamp failure.

How to install the Exhaust stack

See illustration below:

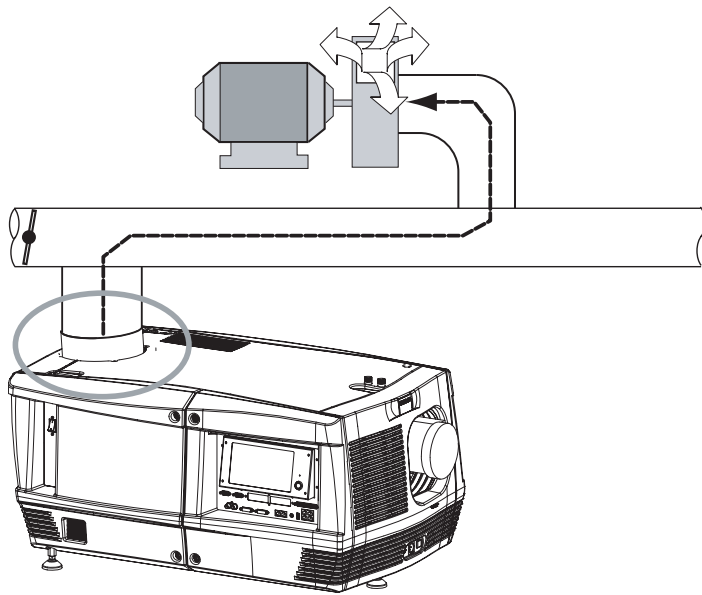


Image 3-10



Ensure good condition of the lamp house blower. Keep the blower inlet clean for unrestricted air flow.



To ensure maximum bulb life, operate the lamp house blower and the exhaust system for at least ten minutes after extinguishing the bulb.

4. ELECTRICAL SET UP OF THE DP-2000



WARNING: The total electrical installation should be protected by an appropriate rated and readily accessible disconnect switch, circuit breakers and ground fault current interrupters. The installation shall be done according to the local electrical installation codes.

Overview

- Power requirements
- Connecting the main AC power

4.1 Power requirements

Technical data

Power supply	Mono phase power net + PE (200-240VAC)
Frequency	50/60 Hz
Rated current	26 A
Lamp capacity	1500 to 4000 W



CAUTION: ALL POWER CONNECTIONS to the DP-2000 projector are made to the three-terminal strip located in a sealed compartment behind the rear cover of the projector.



CAUTION: The cross-sectional area of the conductors in the Power Supply Cord shall be not less than 4 mm² or AWG 10



CAUTION: BECAUSE OF HIGH VOLTAGES impressed during the ignition cycle, the projector casing **MUST** be grounded. Connect an adequate earth ground to the grounding lug adjacent to the terminal board

AC Requirements

THE AC REQUIREMENTS for the DP-2000 projector is a mono phase system, with a separate earth ground PE.

Voltage requirements are printed onto the Name and Data Plate. The AC supply must be installed by a qualified electrician in conformance to local codes. Hardware, wire sizes and conduit types must comply with local codes.

A general disconnect switch appropriate rated and readily accessible must be used to switch off the projector.

4.2 Connecting the main AC power

Necessary tools

- Flat screw driver.
- Phillips screw driver PH2.

Necessary parts

- Two cable ties.
- Certified AC power supply cord 4.0 mm², 10AWG, min. 300V.

How to connect the main AC power with the DP-2000 projector?

1. Remove the rear cover and lamp cover of the projector.
2. Remove the cover of the main AC compartment by releasing the three captive dumb screws.

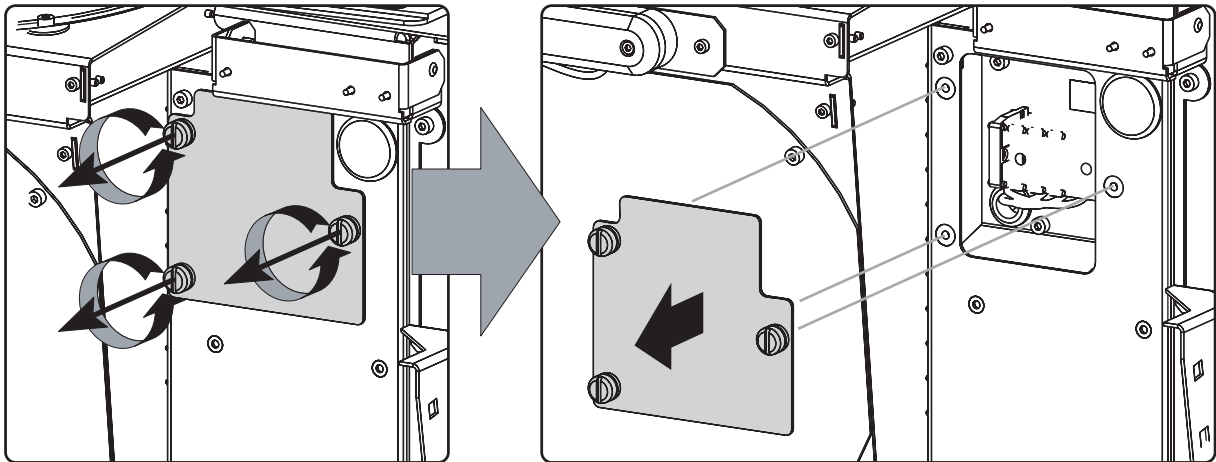


Image 4-1

3. Guide the AC power cord through the cable gland and connect the wires to the 3-terminal strip as illustrated.

Warning: Always connect first the PE wire.

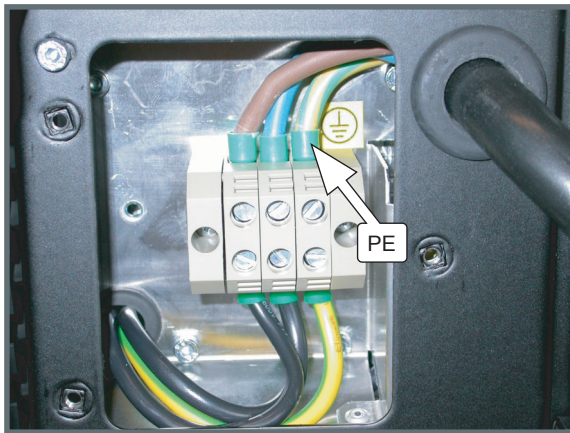


Image 4-2

4. Secure the power cord with the chassis of the projector by using two cable ties (A) and by fastening the cable gland (B) as illustrated.

Note: The first production series of the DP-2000 have the power cord entrance at the rear as showed in image 4-4. In this case no cable ties can be used.

4. Electrical set up of the DP-2000

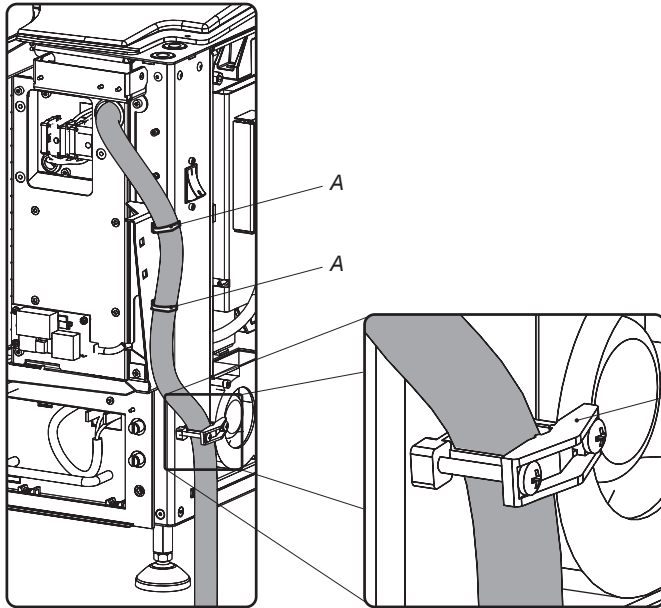


Image 4-3
Power cord entrance at the bottom.

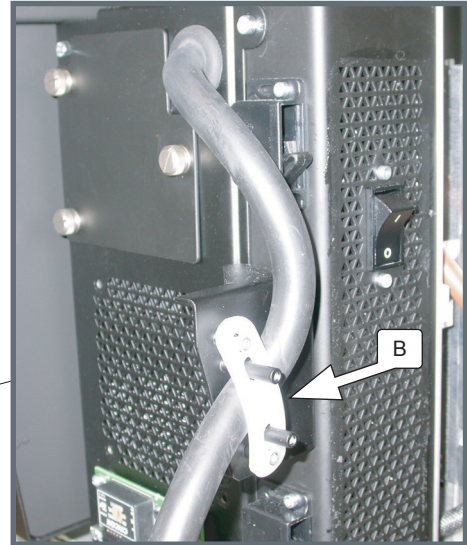


Image 4-4
Power cord entrance at the rear.

5. Reinstall the cover of the main AC compartment.

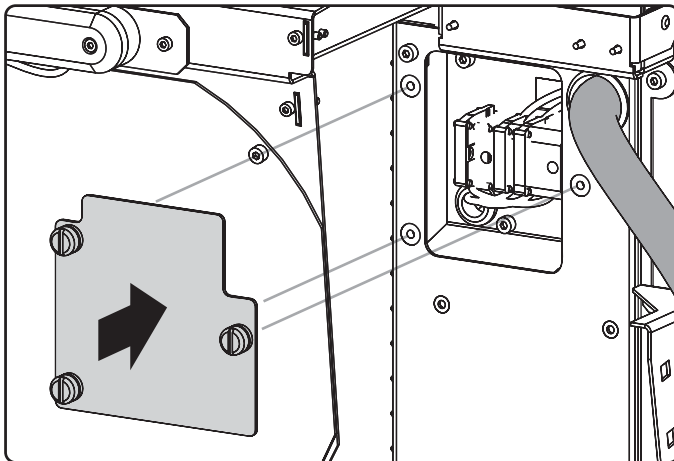
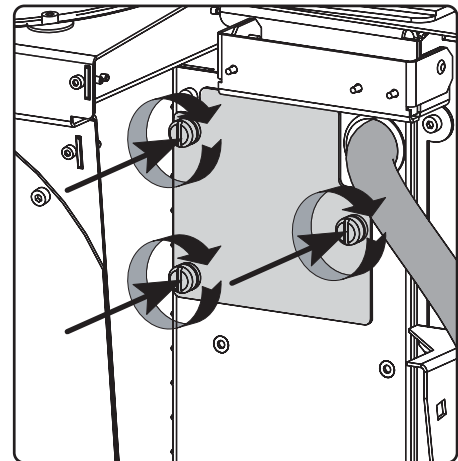


Image 4-5

6. Reinstall the rear cover and lamp cover of the projector.



5. LENSES & LENS HOLDER



CAUTION: Never transport the projector with the lens mounted on it !
Always remove the lens before transporting the projector.

Overview

- Available lenses
- Lens selection
- Lens formulas
- Lens removal
- Lens installation
- Lens shift, zoom & focus
- Scheimpflug adjustment

5.1 Available lenses

Overview

Lens	Type	Product Number	Image
0.98" DC2K Zoom (1.2–1.81 : 1)	Motorized	R9855957	
0.98" DC2K Zoom (1.2–1.81 : 1)	Manual	R98559571	
0.98" DC2K Zoom (1.4–2.05 : 1)	Motorized	R9855931	
0.98" DC2K Zoom (1.4–2.05 : 1)	Manual	R98559311	
0.98" DC2K Zoom (1.6–2.5 : 1)	Motorized	R9855932 or R9855933	
0.98" DC2K Zoom (1.6–2.5 : 1)	Manual	R98559321 or R98559331	
0.98" DC2K Zoom (1.95–3.2 : 1)	Motorized	R9855934 or R9855935	image 5-1
0.98" DC2K Zoom (1.95–3.2 : 1)	Manual	R98559341 or R98559351	
0.98" DC2K Zoom (2.4–3.9 : 1)	Motorized	R9855936	image 5-2
0.98" DC2K Zoom (2.4–3.9 : 1)	Manual	R98559361	



Image 5-1
R9855934: 0.98" DC2K Zoom (1.95–3.2 : 1)



Image 5-2
R9855936: 0.98" DC2K Zoom (2.4–3.9 : 1)

5.2 Lens selection

How to select the right lens for your application ?

1. Determine the required screen width (SW).
2. Determine the position of the projector in the projection room with regard to the screen and measure the projector-screen distance (PD).
3. Use the lens formulas (see "Lens formulas", page 36) to find the best corresponding PD with regard to the measured projector-screen distance for the required screen width SW.

Tip: Divide PD by SW to determine the approximate throw ratio. Choose a lens, which captures the calculated throw ratio. Use the lens formula of the chosen lens to recalculate exactly.

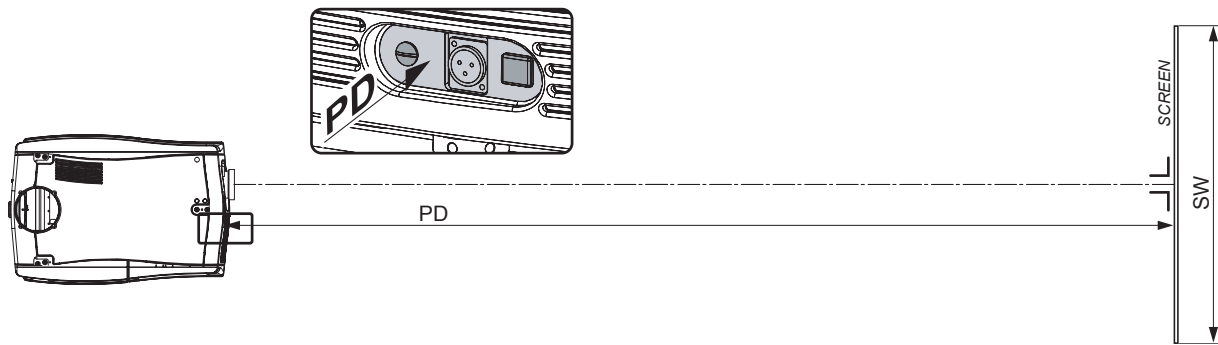


Image 5-3

5.3 Lens formulas

Formulas

Lens	Throw ratio for 0.98" DC2K Zoom	Formulas (metric and inches)
0.98" DC2K Zoom (1.2–1.81:1)	1.2 - 1.81	$PD_{min}=1.2 \times SW$ $PD_{max}=1.81 \times SW$
0.98" DC2K Zoom (1.4–2.05:1)	1.4 - 2.05	$PD_{min}=1.4 \times SW$ $PD_{max}=2.05 \times SW$
0.98" DC2K Zoom (1.6–2.5:1)	1.6 - 2.5	$PD_{min}=1.60 \times SW$ $PD_{max}=2.50 \times SW$
0.98" DC2K Zoom (1.95–3.2:1)	1.95 - 3.2	$PD_{min}=1.95 \times SW$ $PD_{max}=3.2 \times SW$
0.98" DC2K Zoom (2.4–3.9:1)	2.4 - 3.9	$PD_{min}=2.4 \times SW$ $PD_{max}=3.9 \times SW$



Due to production tolerances the real distances can differ by 2% from these calculated values.

For critical situations (fixed installs that use the lens at one of its extreme zoom positions) this should be taken into account.



CAUTION: Never transport the projector with a lens mounted in the lens holder. Always remove the lens before transporting the projector. Neglecting this can damage the lens holder and prism.

5.4 Lens removal

How to remove a lens from the projector lens holder ?

1. Support the lens with one hand while you unlock the lens holder by sliding the lock handle towards the "unlocked" position as illustrated.

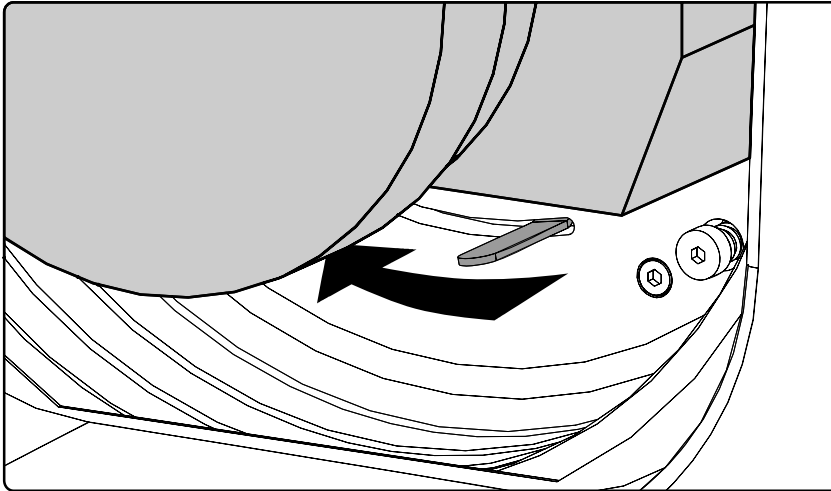


Image 5-4

2. Gently pull the lens out of the lens holder.

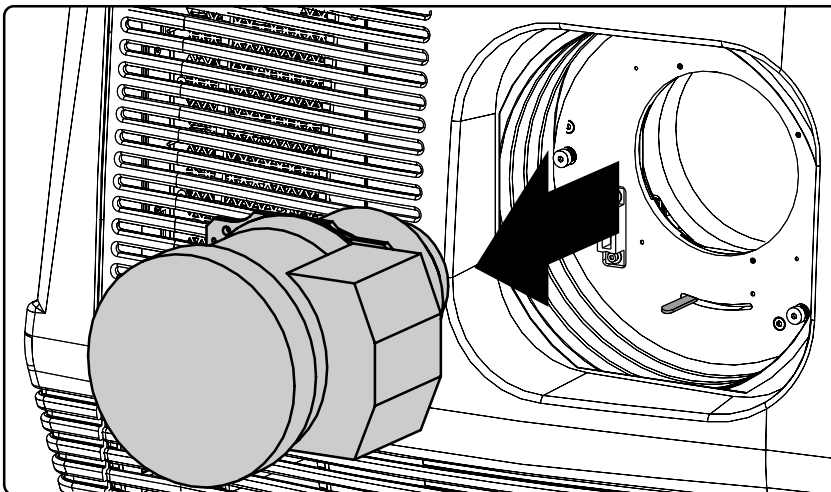


Image 5-5



It's recommended to place the lens caps of the original lens packaging, back on both sides of the removed lens to protect the lens.



It's recommended to place the foam rubber of the original projector packaging, back in the lens opening to prevent intrusion of dust. Note that this foam rubber is packed in a plastic bag to prevent the dust, emitted by the foam, from entering the projector.

5.5 Lens installation

How to install a lens into the projector lens holder ?

1. Remove the foam rubber in the opening of the lens holder if not removed yet.
2. Take the lens assembly out of its packing material and remove the lens caps on both sides.
3. Place the lens holder in the "unlocked" position by moving the lens lock handle (A) towards the lens power supply socket (B) as illustrated.

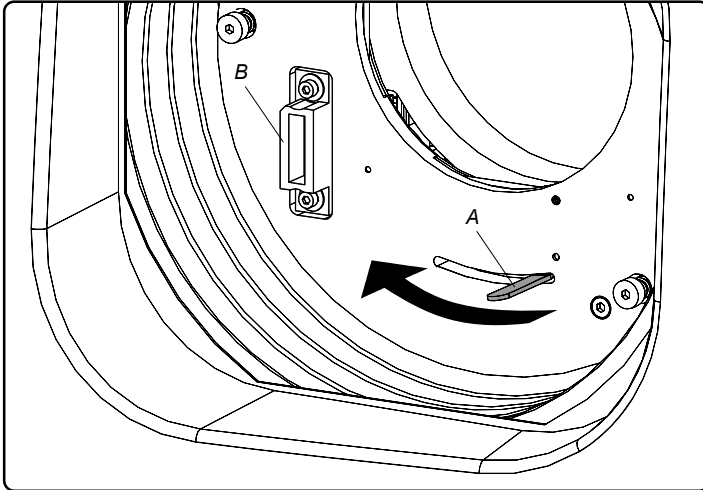


Image 5-6

4. Ensure that the lens holder stands in the On-Axis position (horizontal and vertical mid position).
Note: The lens holder is placed default in the On-Axis position at factory.
5. Gently insert the lens in such a way that the lens connector matches the socket (B).

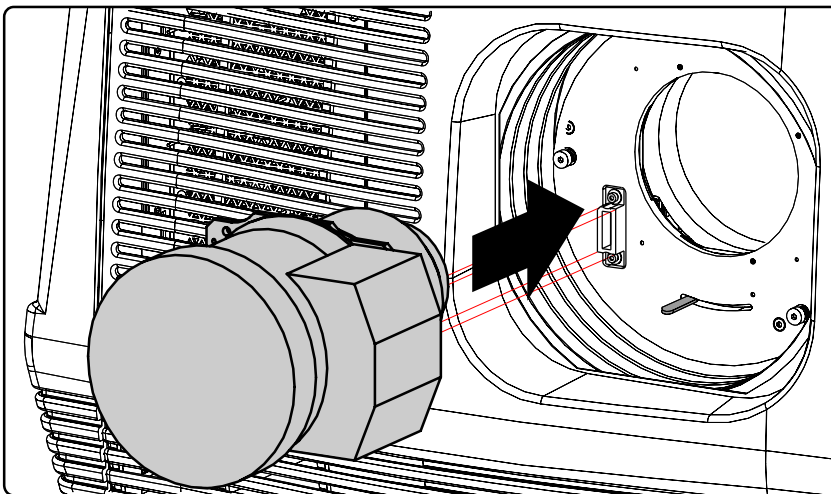


Image 5-7

6. Insert the lens until the connector seats into the socket.
Warning: Do not release the lens yet, as the lens may fall out of the lens holder.
7. Secure the lens in the lens holder by sliding the lens lock handle into the "locked" position, which is away from the lens power supply socket. Ensure the lens touches the front plate of the lens holder.

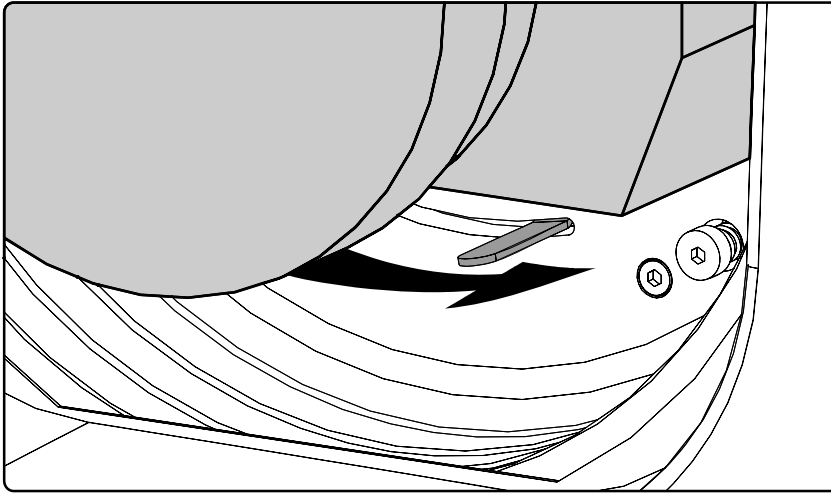


Image 5-8

8. Check if the lens is really secured by trying to pull the lens out of the lens holder.



CAUTION: Never transport the projector with a lens mounted in the lens holder. Always remove the lens before transporting the projector. Neglecting this can damage the lens holder and prism.

5.6 Lens shift, zoom & focus

Manual or motorized lens adjustment

The DP-2000 projector can be equipped with a motorized or manual lens shift functionality and/or a motorized or manual zoom & focus functionality. A DP-2000 projector with a manual shift can be recognized by the two knobs on the top of the projector (see image 5-10). A DP-2000 projector with a motorized zoom & focus can be recognized by the electrical lens socket upon the lens holder.

Maximum shift range

The lens can be shifted with respect to the DMD which result in a shifted image on the screen (Off-Axis). A 100% shift means that the centre point of the projected image is shifted by half the screen size. In other words, the centre point of the projected image falls together with the outline of the image in an On-Axis projection. Due to mechanical and optical limitations the shift range is limited as well.

All DC2K lenses have a shift range of 50% up/down and 15% left/right. This range is valid for all throw ratios. Only the 0.98" DC2K Zoom (1.95–3.2 : 1) lenses with item numbers **R9855934** and **R98559341** have a larger shift range of 128% up/down.

How to shift the lens of the DP-2000?

1. Is the projector equipped with a motorized shift?

If yes, use the **up and down** arrow keys on the local keypad to shift the lens **vertically** and use the **left and right** arrow keys on the local keypad to shift the lens **horizontally**.

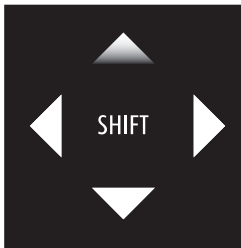


Image 5-9

If no, use the **first knob (V)** on top of the projector to shift the lens **vertically** and use the **second knob (H)** on top of the projector to shift the lens **horizontally**.

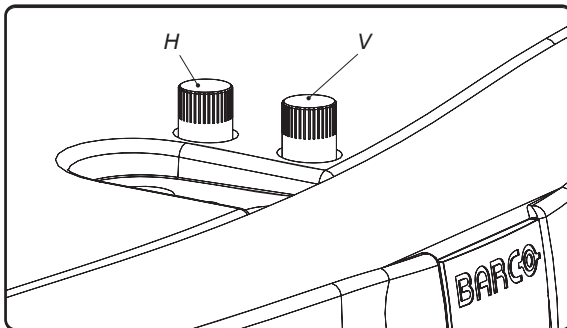


Image 5-10

How to zoom in or out?

1. Is the projector equipped with a motorized zoom & focus?

If yes, use the "+" and "-" **zoom keys** on the local keypad to zoom in or out.



Image 5-11

If no, use the **zoom barrel** on the lens to zoom in or out.

How to focus?

1. Is the projector equipped with a motorized zoom & focus?

If yes, use the "+" and "-" **focus keys** on the local keypad to focus the image on the screen.



Image 5-12

If no, use the **focus barrel** on the lens to focus the image on the screen.

5.7 Scheimpflug adjustment

What has to be done ?

The lens holder has to be adjusted so that the "sharp focus plane" of the projected image falls together with the plane of the screen (Fp1→Fp2). This is achieved by changing the distance between the DMD plane and the lens plane (Lp1→Lp2). The closer the lens plane comes to the DMD plane the further the sharp focus plane will be. It can happen that you won't be able to get a complete focused image on the screen due to a tilt (or swing) of the lens plane with respect to the DMD plane. This is also known as Scheimpflug's law. To solve this the lens plane must be placed parallel with the DMD plane. This can be achieved by turning the lens holder to remove the tilt (or swing) between lens plane and DMD plane (Lp3→Lp4).

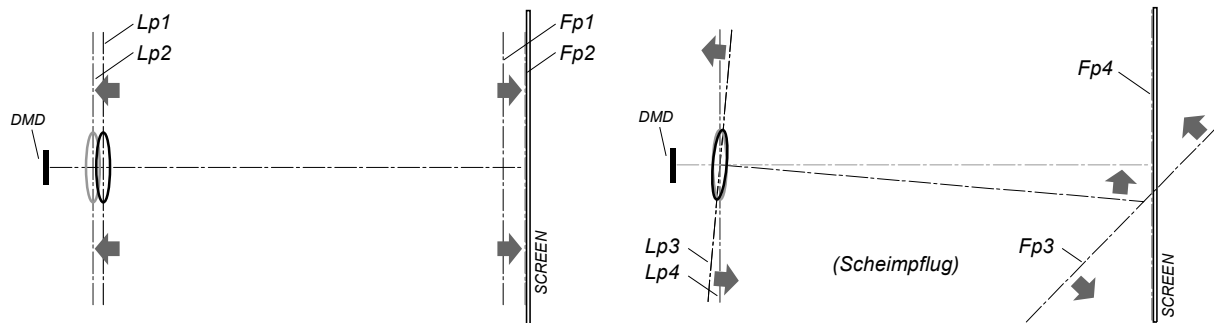


Image 5-13

The lens holder has three adjustment mechanisms. The first mechanism allows to shift the lens back and forward, the second mechanism allows to tilt the lens and the third mechanism allows to swing the lens. Note that all three adjustment mechanisms stand in relation with each other. So, a change to one of them will also effect the adjustment result of the two others. Therefore, all three adjustment points have to be alternately and repeatedly adjusted until the projected image is completely focused on the screen.



Scheimpflug principle

The "plane of sharp focus" can be changed so that any plane can be brought into sharp focus. When the DMD plane and lens plane are parallel, the plane of sharp focus will also be parallel to these two planes. If, however, the lens plane is tilted with respect to the DMD plane, the plane of sharp focus will also be tilted according to geometrical and optical properties. The DMD plane, the principal lens plane and the sharp focus plane will intersect in a line below the projector for downward lens tilt.

Necessary tools

- 3 mm Allen wrench.
- 5,5 mm nut driver or flat screw driver.
- White paper sheet.

How to set up the projector for lens holder adjustment?

1. Place the projector upon a stable pedestal in its final location.
2. Remove the front cover, side cover and top cover of the projector.
3. Switch on the projector and project the internal green focus pattern.
4. Focus the projected image as sharp as possible upon the screen.

How to adjust the lens holder?

1. Loosen (not remove) the following lock screws of the lens holder adjustment mechanism using a 3 mm Allen wrench:
 - a) The three screws of the lens holder front plate. Note that the three retaining springs of the lens holder plate are not strong enough to keep some heavy lenses into position while adjusting the lens holder. If this is the case you have to fasten these screws immediately after adjusting the focus shift plate.
 - b) The two screws of the lens holder tilt mechanism.
 - c) The two screws of the lens holder swing mechanism.

5. Lenses & lens holder

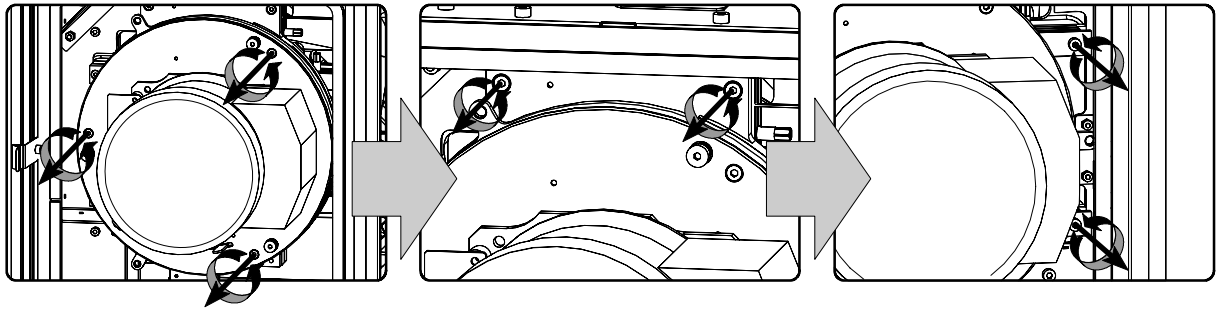


Image 5-14

2. Rotate the focus shift plate of the lens holder until the centre (F) of the projected pattern is most sharp on the screen.

Tip: Use a white paper to search for the "sharp focus plane". The sharp focus plane is located behind the screen in case you can't focus the projected pattern on the paper somewhere between the screen and the lens. Knowing that will help you to determine in which direction you have to rotate the focus shift plate. Rotate the plate counterclockwise in case you can't find the sharp focus plane somewhere between screen and lens.

Tip: Immediately fasten the three screws of the lens holder front plate in case of using a projection lens which is too heavy for the three retaining springs of the lens holder plate.

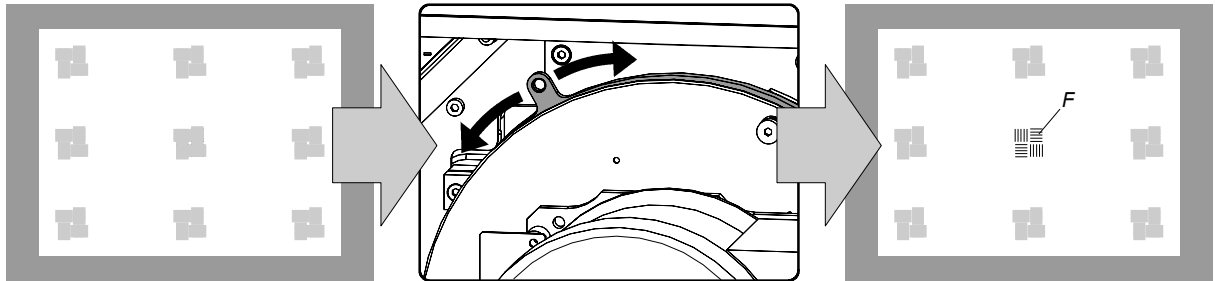


Image 5-15

3. Adjust the screw (bit by bit) of the lens holder swing mechanism until the mid left and mid right of the projected pattern is most sharp on the screen. Use a 5,5 mm nut driver or a flat screw driver.

Tip: Use a white paper to search for the "sharp focus plane" at the left or right side of the projected pattern. Turn the adjustment screw a bit and check if the sharp focus plane has come closer to the screen. If not, turn the adjustment screw in the opposite direction and check again.

Note: A simultaneous readjustment of the focus shift plate will be necessary to get the mid left and mid right of the projected pattern equally focused as the centre.

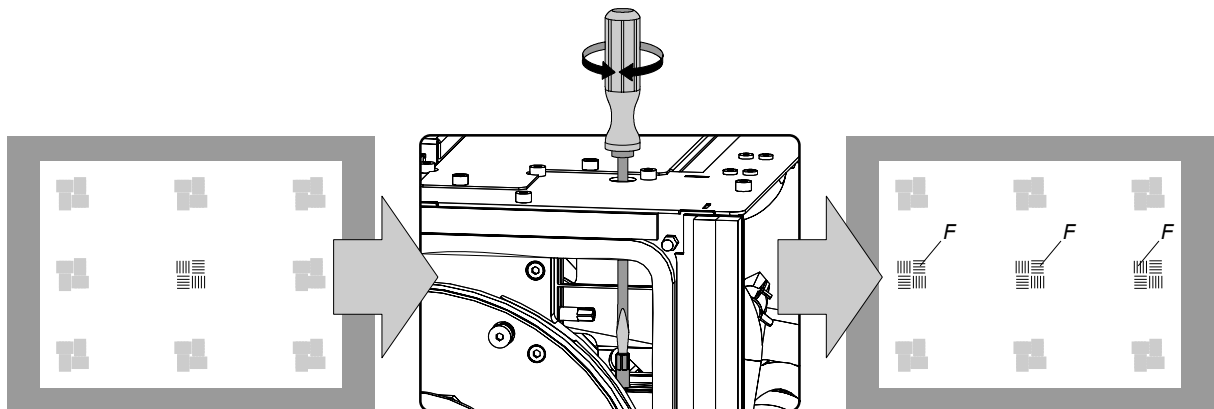


Image 5-16

4. Adjust the screw of the lens holder tilt mechanism until the mid top and mid bottom of the projected pattern is most sharp on the screen. Use a 5,5 mm nut driver or a flat screw driver.

Tip: Use a white paper to search for the "sharp focus plane" at the top or bottom side of the projected pattern. Turn the adjustment screw a bit and check if the sharp focus plane has come closer to the screen. If not, turn the adjustment screw in the opposite direction and check again.

Note: A simultaneous readjustment of the focus shift plate will be necessary to get the mid top and mid bottom of the projected pattern equally focused as the centre.

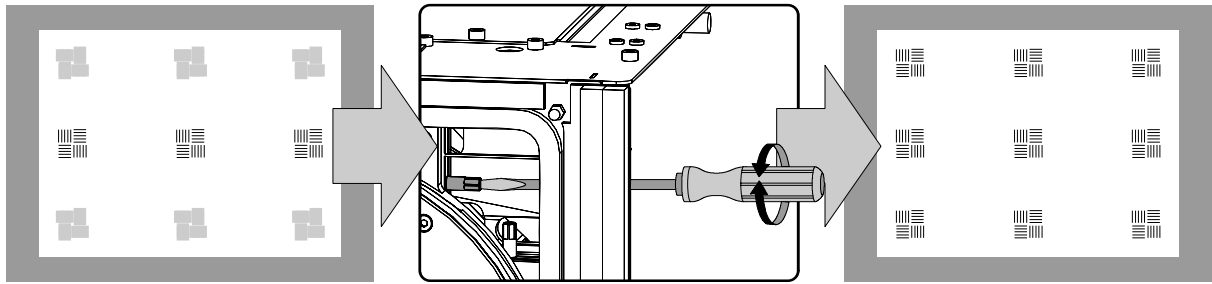


Image 5-17

5. Repeat from step 2 until the projected focus pattern is as sharp as possible in the centre, left, right, top and bottom of the screen.
6. Optimize the focus of the projected image as follows:
 - a) Place the zoom lens in TELE position (smallest projected image) and adjust the focus using the lens focus barrel or motorized focus control.
 - b) Place the zoom lens in WIDE position (largest projected image) and adjust the focus using the focus shift plate of the lens holder.
 - c) Repeat step "a" and "b" until the projected image is as sharp as possible.
7. Fasten all lock screws of the lens holder adjustment mechanism.

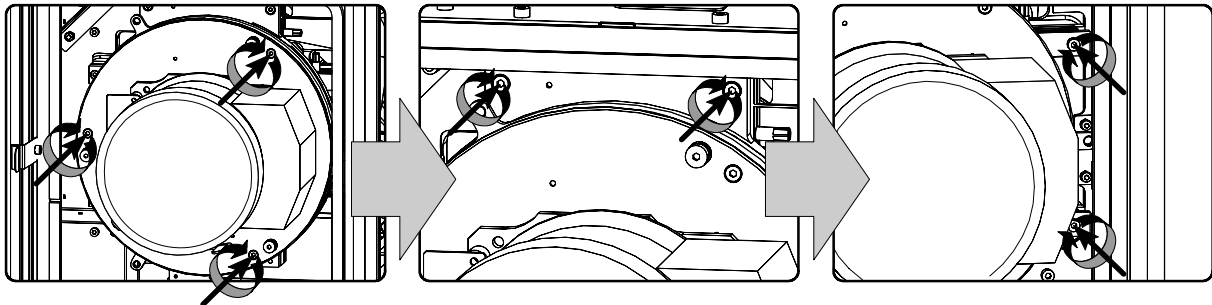


Image 5-18

8. Reinstall the top cover, the side cover and the front cover of the projector.

6. LAMP & LAMP HOUSE

Overview

- Introduction
- Removal of the lamp house
- Removal of the xenon bulb lamp
- Installation of the xenon bulb lamp
- Installation of the lamp house
- Resetting the lamp parameters
- Realignment of the lamp in its reflector

6.1 Introduction

Lamp & lamp house

The lamp house of the DP-2000 projector is delivered without lamp. The xenon bulb lamp is delivered separately and has to be installed on site by a qualified service technician.

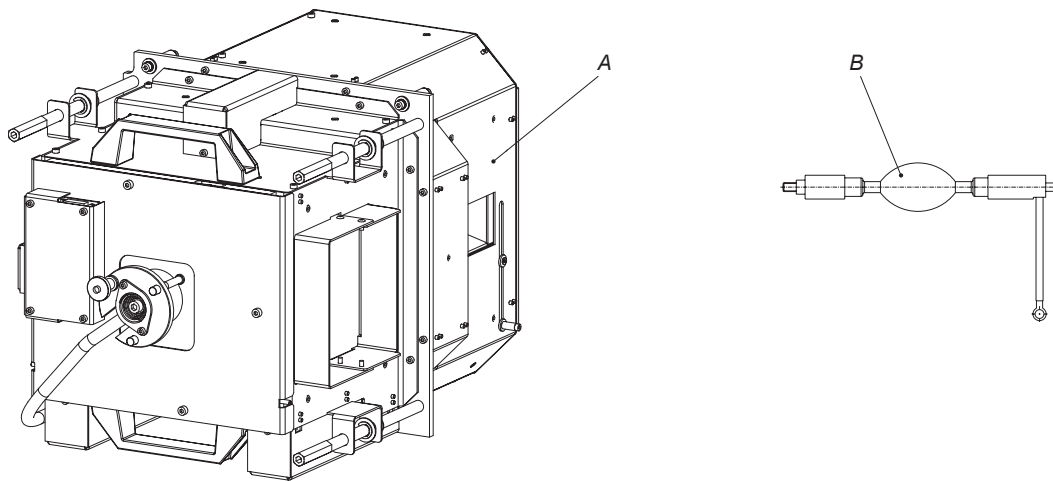


Image 6-1

- A Lamp house.
- B Xenon bulb lamp.

The xenon bulb lamp is packed in a protective container or wrapped in a protective cloth. Never remove this protective container or protective cloth without wearing adequate protective clothing (face shield, clean cotton gloves, welder's jacket).

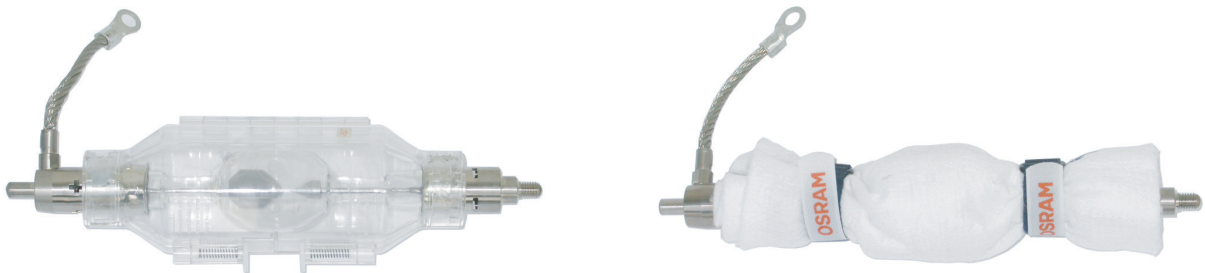


Image 6-2

Left: Xenon bulb lamp in protective container. Right: Xenon bulb lamp wrapped in protective cloth.



CAUTION: Xenon compact arc lamps are highly pressurized. When ignited, the normal operating temperature of the bulb increases the pressure to a level at which the bulb may explode if not handled in strict accordance to the manufacturer's instructions. The bulb is stable at room temperature, but may still explode if dropped or otherwise mishandled. Whenever the lamp house, containing a xenon bulb lamp, has to be dismantled or whenever the protective container or cloth has to be removed from the xenon bulb lamp, authorized protective clothing **MUST be worn!**

Supported xenon bulb lamps (without lamp house)

Lamp	Type	Order info
Osram xenon bulb lamp of 4 kW	4kW DHP	R9855937
Osram xenon bulb lamp of 3 kW	3kW DHP	R9855938
Osram xenon bulb lamp of 2 kW	2kW DHP	R9855956
Ushio xenon bulb lamp of 4 kW	DXL40BAF	R9855939
Ushio xenon bulb lamp of 3 kW	DXL30BAF	R9855940
Ushio xenon bulb lamp of 2 kW	DXL20BAF	R9855955

6.2 Removal of the lamp house



WARNING: This procedure may only be performed by qualified technical service personnel.



CAUTION: Lamp casing is very hot after operation. To avoid burns, let the projector cool down for at least 15 minutes before proceeding to the lamp unit replacement.



CAUTION: Due to its high internal pressure, the lamp may explode in either hot or cold states if improperly handled.

Necessary tools

7 mm flat screw driver.

How to remove the lamp house of the projector ?

1. Switch off the projector.
2. Remove the lamp cover.
3. Release the three spring lock screws of the lamp house as illustrated.

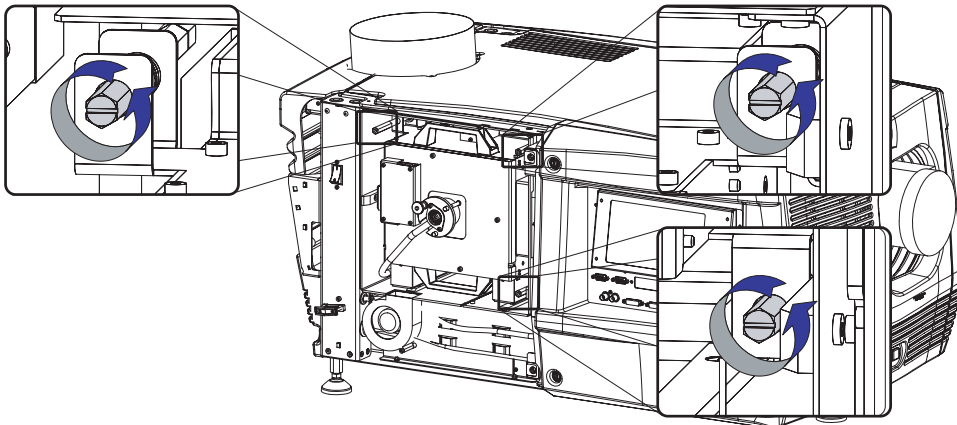


Image 6-3

4. Hold fast the lamp house by the handles and pull the lamp house out of the projector.
Caution: Beware of the weight of the lamp assembly. Take the necessary precautions to avoid personal injury.

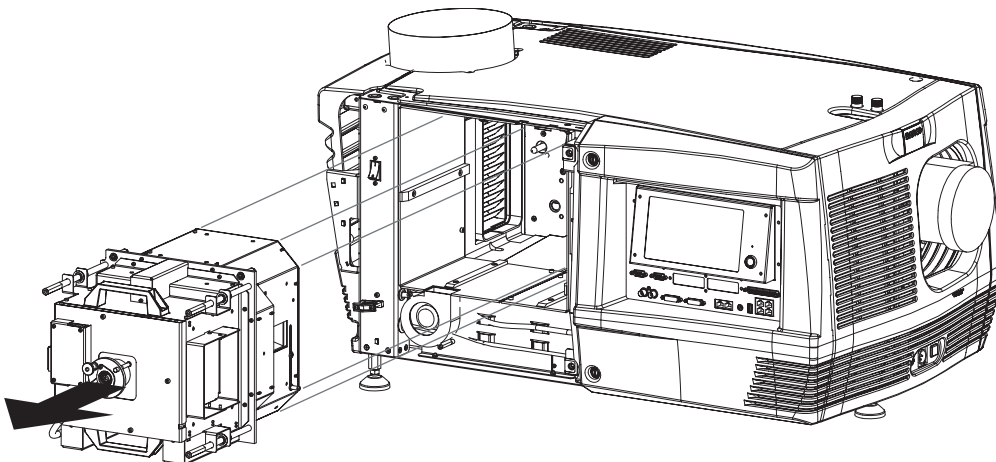


Image 6-4

5. Place the lamp house on a stable support.

6. Lamp & lamp house



While starting up the projector, the electronics detect if a lamp is installed. If no lamp is installed, it is not possible to start up the projector.

6.3 Removal of the xenon bulb lamp



WARNING: DO NOT PERMIT UNAUTHORIZED PERSONNEL TO PERFORM OR ATTEMPT ANY PHASE OF XENON BULB LAMP HANDLING OR SERVICE.



WARNING: This procedure may only be performed by qualified technical service personnel.



CAUTION: Xenon compact arc lamps are highly pressurized. When ignited, the normal operating temperature of the bulb increases the pressure to a level at which the bulb may explode if not handled in strict accordance to the manufacturer's instructions. The bulb is stable at room temperature, but may still explode if dropped or otherwise mishandled. Whenever the lamp house, containing a xenon bulb lamp, has to be dismantled or whenever the protective container or cloth has to be removed from the xenon bulb lamp, authorized protective clothing **MUST be worn!**



WARNING: Always wear face protection (full face shield with neck protector) when handling xenon bulb lamps.



WARNING: Always wear protective clothing (welder's jacket) when handling xenon bulb lamps.



WARNING: Always wear clean leather gloves with wrist protectors when handling xenon bulb lamps.

Necessary tools

- 5 mm Allen wrench.
- 17 mm open ended spanner (2 pieces).

How to remove the xenon lamp bulb from the lamp house?

1. Ensure that you wear protective clothing, a full face shield and protective gloves.
2. Remove first the lamps house side cover and then the lamp house UV blocker assembly by releasing the retaining thumbscrews as illustrated. Support the xenon bulb lamp while removing the UV blocker assembly.

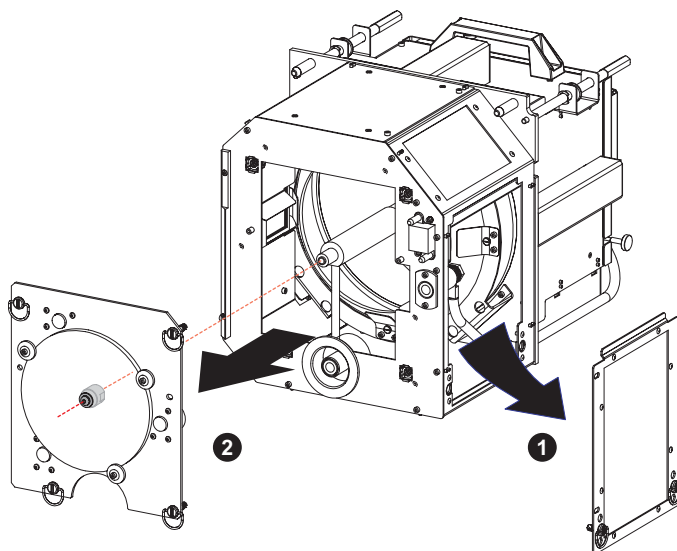


Image 6-5

6. Lamp & lamp house

3. Release the xenon bulb lamp from its socket by removing the hexagon socket head cap screw and plane washer as illustrated. Use a 5 mm Allen wrench.

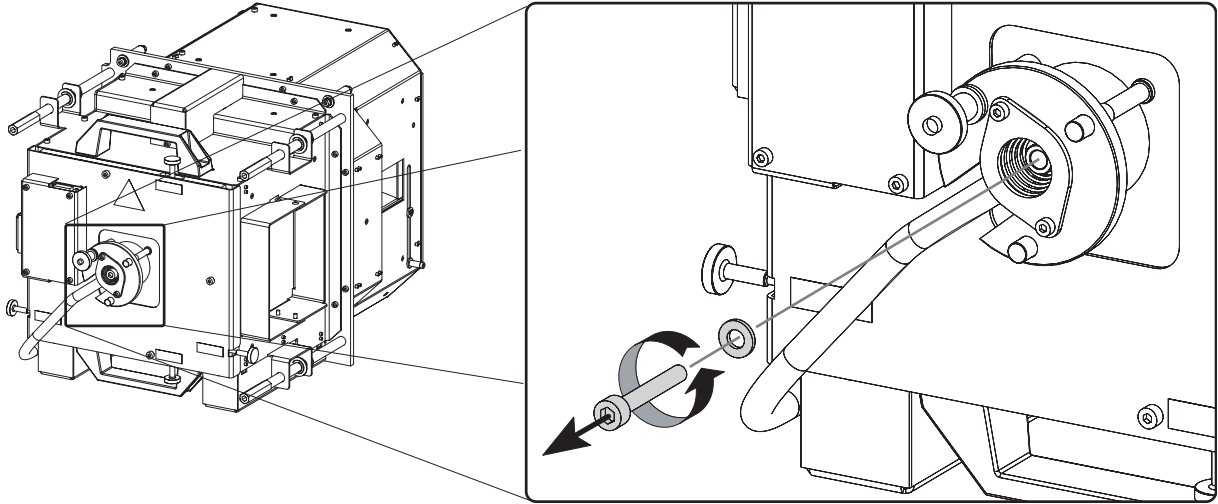


Image 6-6

4. Slide the white anode socket, which is connected via a thick wire with the xenon bulb lamp, upwards away from its position and then remove the xenon bulb lamp with anode socket from the lamp house.

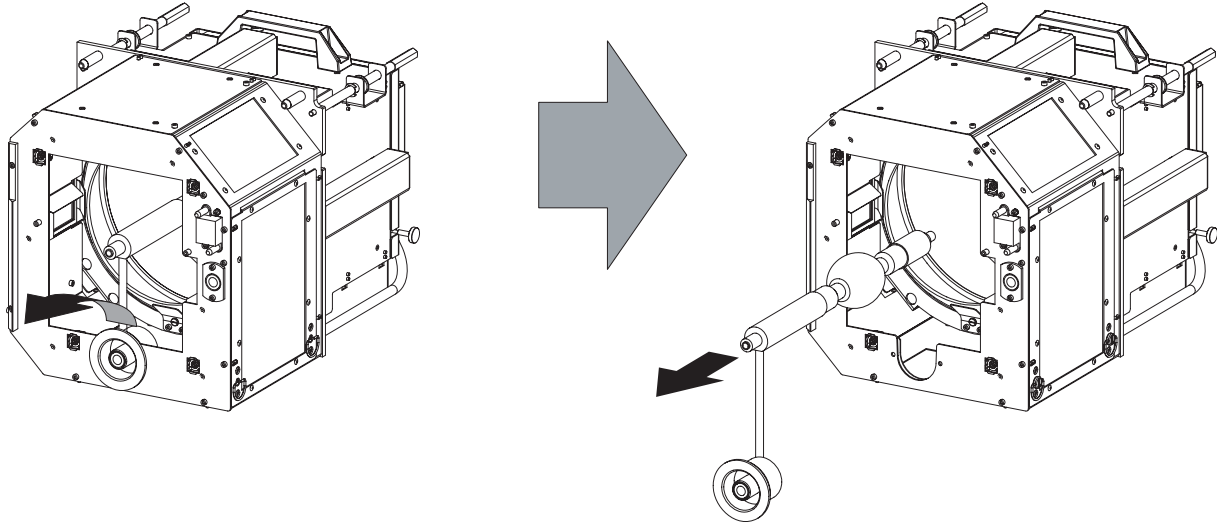


Image 6-7

5. Place the xenon bulb lamp into a protective container or wrap a protective cloth around the xenon bulb lamp.
6. Remove the anode wire lug from the anode socket. Use for that two open ended spanners of 17 mm. Hold fast the nut N1 with one spanner while releasing the nut N2 with the other spanner. Note that a plane washer (W1 & W2) is provided on both sides of the anode wire lug (L).

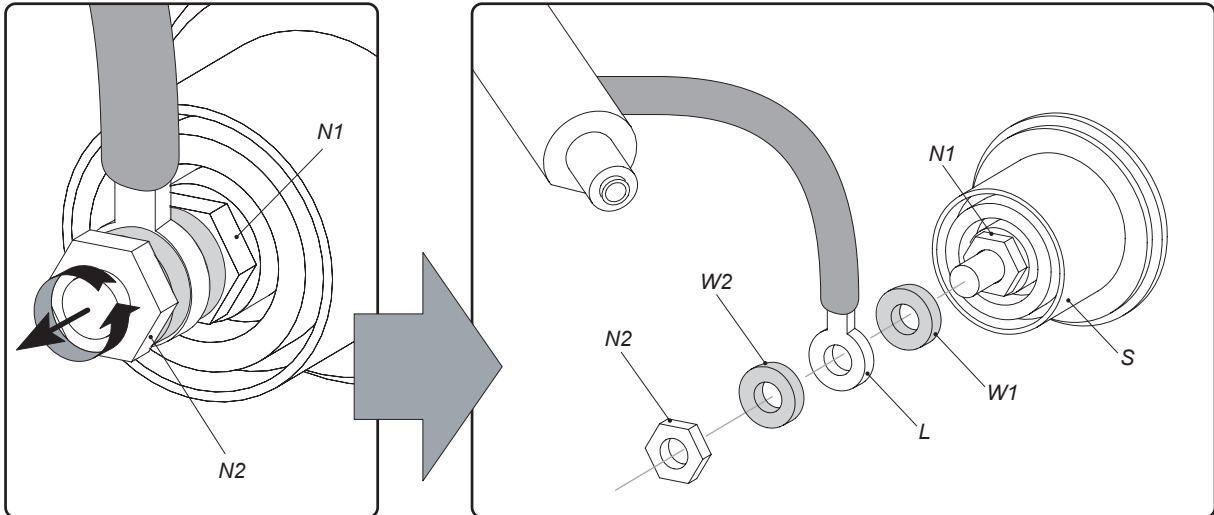


Image 6-8

7. Remove the cathode lamp adaptor (A) from the xenon bulb lamp (L) as illustrated. Use a 5 mm Allen wrench to release the fixation screw (S) of the adaptor.

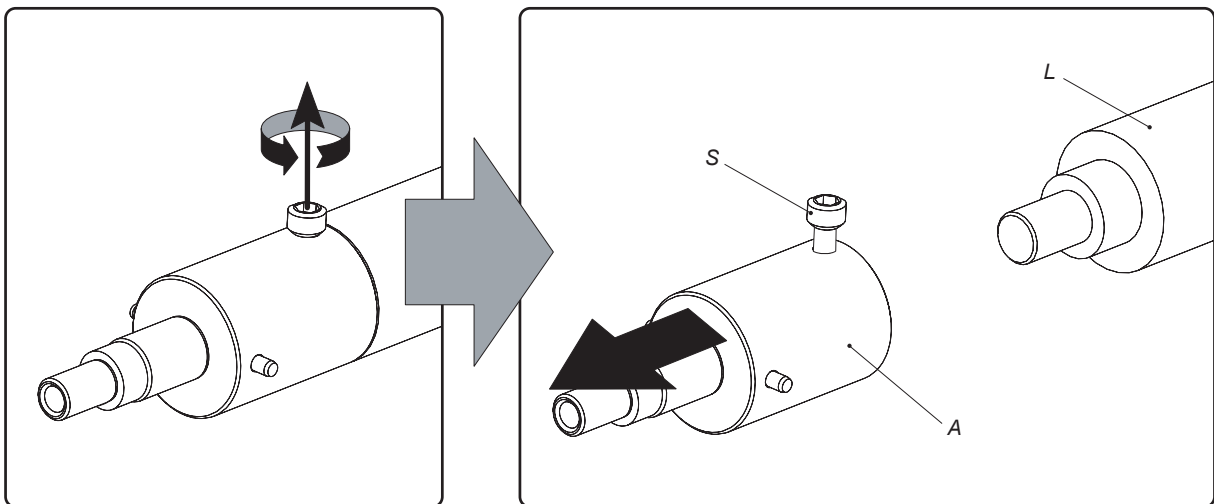


Image 6-9



CAUTION: Expired xenon bulb lamps.

Dispose of expired bulbs that are beyond warranty in the following manner: wrap the bulb tightly in several layers of canvas or heavy cloth. Place it on hard surface and shatter the envelope with a sharp hammer blow. **DO NOT** place a non shattered bulb in any ordinary refuse container.



When returning a xenon bulb lamp for warranty adjustment, pack it in its original shipping container. Complete and return all required warranty information.

6.4 Installation of the xenon bulb lamp



WARNING: DO NOT PERMIT UNAUTHORIZED PERSONNEL TO PERFORM OR ATTEMPT ANY PHASE OF XENON BULB LAMP HANDLING OR SERVICE.



WARNING: This procedure may only be performed by qualified technical service personnel.



CAUTION: Xenon compact arc lamps are highly pressurized. When ignited, the normal operating temperature of the bulb increases the pressure to a level at which the bulb may explode if not handled in strict accordance to the manufacturer's instructions. The bulb is stable at room temperature, but may still explode if dropped or otherwise mishandled. Whenever the lamp house, containing a xenon bulb lamp, has to be dismantled or whenever the protective container or cloth has to be removed from the xenon bulb lamp, authorized protective clothing **MUST be worn!**



WARNING: Always wear face protection (full face shield with neck protector) when handling xenon bulb lamps.



WARNING: Always wear protective clothing (welder's jacket) when handling xenon bulb lamps.



WARNING: Always wear clean leather gloves with wrist protectors when handling xenon bulb lamps.



The DP-2000 projector is delivered without xenon bulb lamp installed. This procedure also assumes that the lamp house is closed and that there is no xenon bulb lamp installed inside the lamp house.

Necessary tools

- 17 mm open ended wrench.
- Torque wrench with 17 mm hexagon socket
- Torque wrench with 5 mm Allen socket.

Necessary parts

- Lamp cathode adapter.
- Hexagon socket head screw M6 x 40.
- Plane washer.

How to install the xenon bulb lamp into the lamp house?

1. Ensure that you wear protective clothing, a full face shield and protective gloves.
2. Remove the UV blocker and side cover of the lamp house by releasing the retaining thumbscrews as illustrated.
Note: *In case of a lamp replacement, the UV blocker will be already removed.*

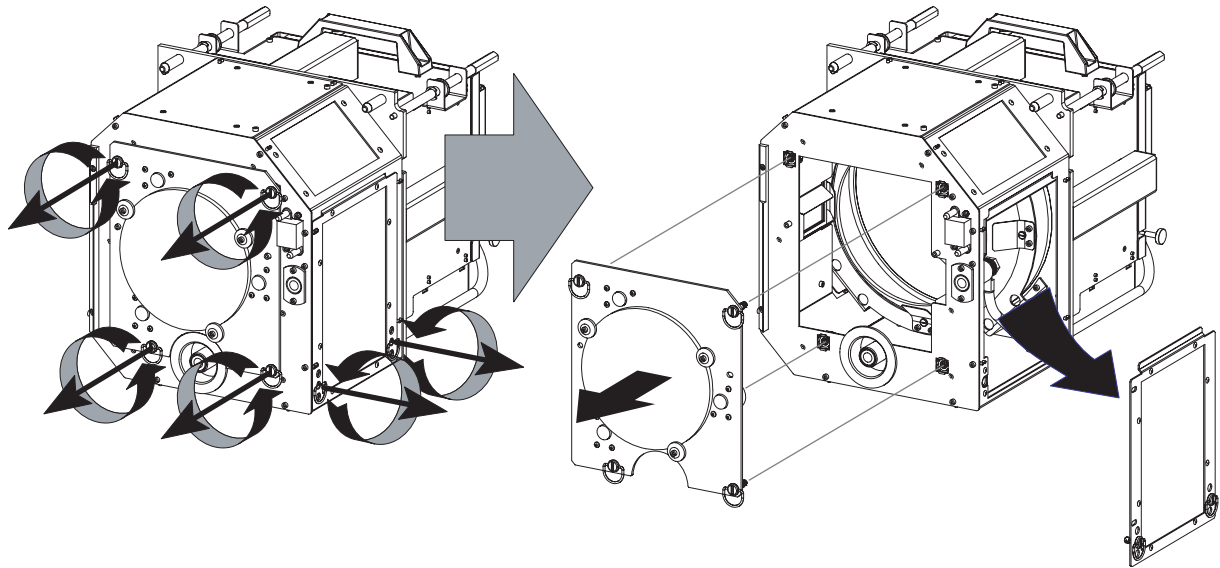


Image 6-10

3. Install the lamp cathode adaptor (A) upon the xenon bulb lamp (L) as illustrated. Use torque **2,5 Nm** to fasten the fixation screw (S) of the adapter. Use for that a torque wrench with a 5 mm Allen socket. Make sure that there is full contact between the cathode adaptor and the lamp base.

Note: The cathode lamp adaptor is delivered in a separate bag with the projector. In case of a lamp replacement you have to reuse the adaptor from the xenon bulb lamp which you want to replace.

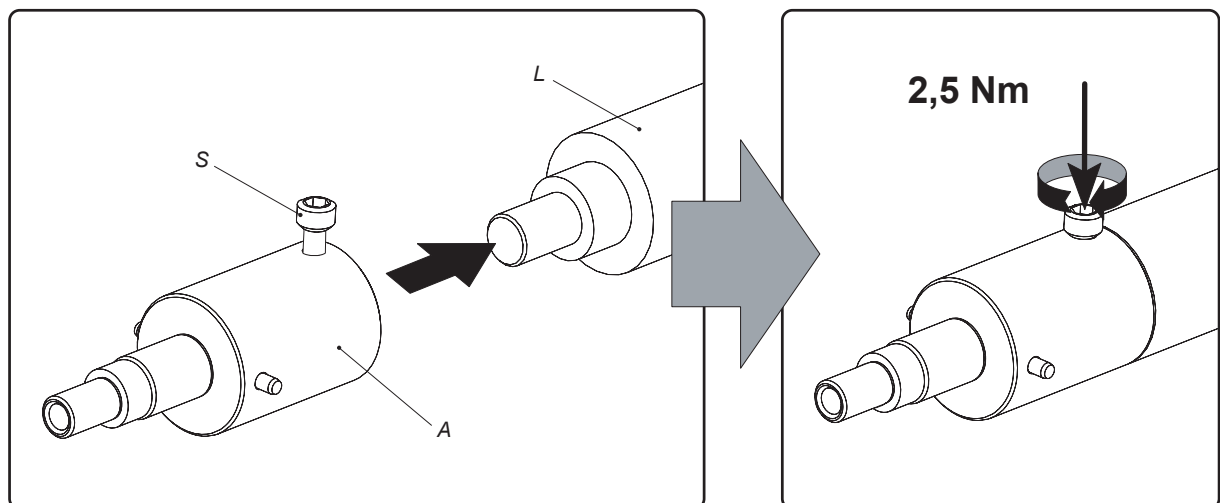


Image 6-11

4. Install the anode wire lug (L) upon the anode socket (S). Hold fast the nut N1 with an open-end wrench while fastening the nut N2 with a torque of **9 Nm** using a torque wrench. Ensure that at both sides of the wire lug L a plane washer (W1 & W2) is present.

Note: The anode socket is located just below the UV blocker and can easily be removed from the lamp house. In case of a lamp replacement you have to reuse the anode socket which is connected to the xenon bulb lamp which you want to replace.

6. Lamp & lamp house

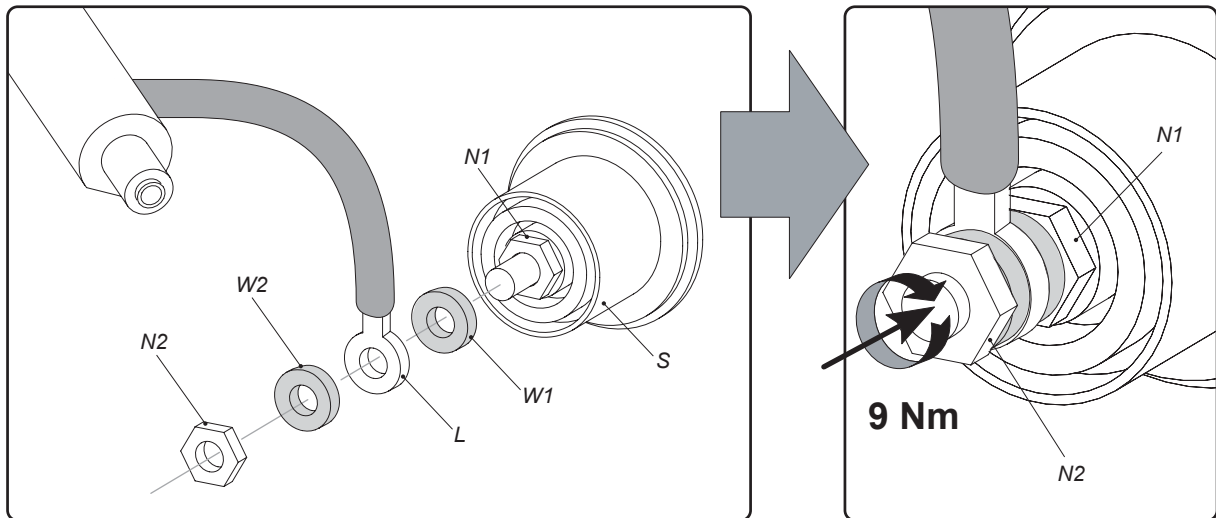


Image 6-12

5. Remove the protective container or unwrap the protective cloth from the xenon bulb lamp.

Warning: Ensure that you wear protective clothing, a full face shield and protective gloves.

Tip: Write down the serial number of the lamp. You will need this while updating the lamp parameters after installation of the lamp. The serial number of the lamp is engraved in the neck of the xenon bulb lamp.

6. Gently guide the xenon bulb lamp into position inside the lamp house as illustrated. Anode socket hanging vertical down. While inserting the lamp, rotate it slightly, engaging the pins of the cathode adapter in the foreseen slots. This is to ensure the lamp cathode is completely inserted.

Warning: Make sure that the both pins of the cathode adapter are engaged in the foreseen slots.

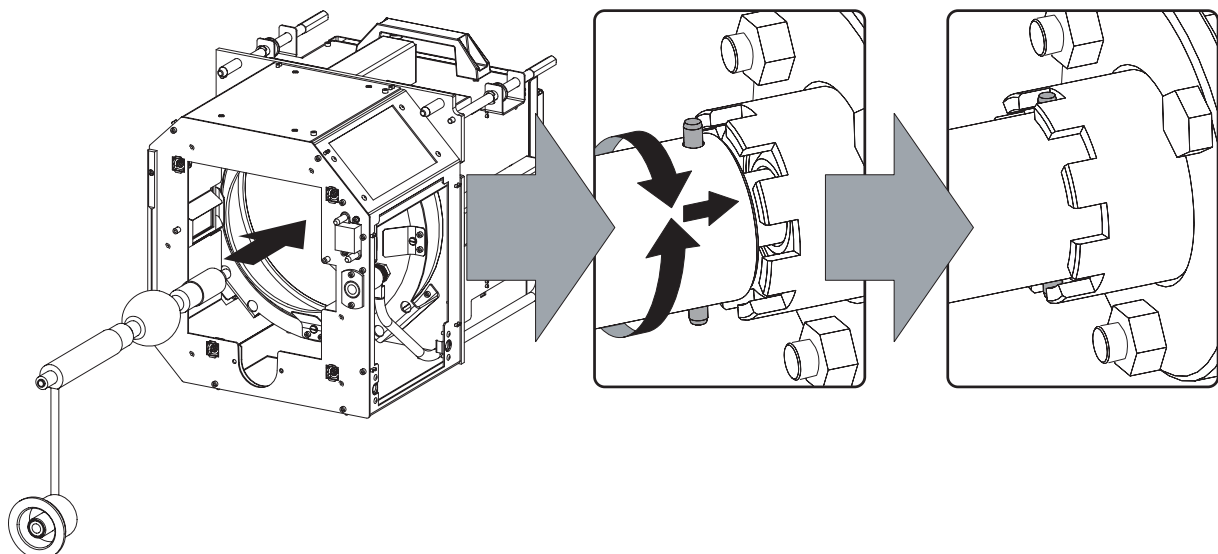


Image 6-13

7. Insert the anode socket into position as illustrated.

Caution: Avoid any tension on the anode wire, so there is no mechanical stress on the bulb of the lamp.

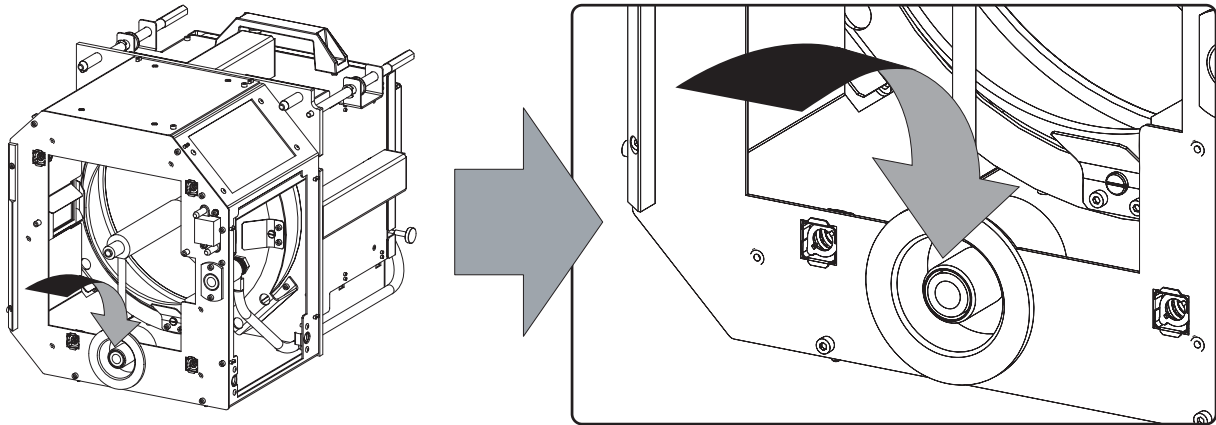


Image 6-14

8. Reinstall the UV blocker assembly as illustrated. Make sure that the xenon bulb lamp is properly supported by the lamp supporting mechanism in the centre of the UV blocker. Use the opening at the side of the lamp house to guide the supporting pin of the xenon bulb lamp into the anode supporting mechanism.

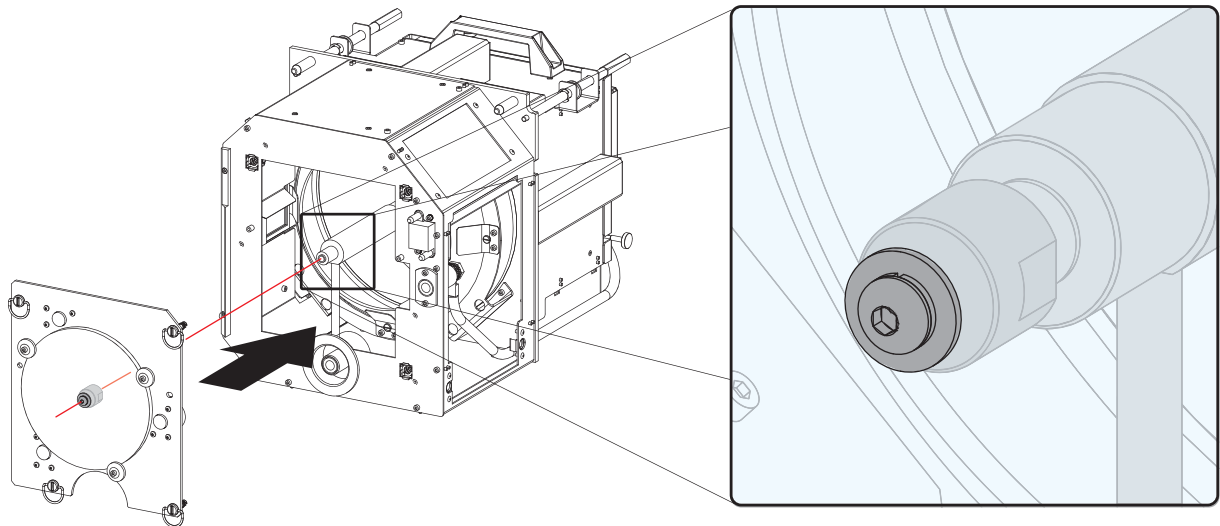


Image 6-15

9. Secure the UV blocker by fastening the four thumbscrews as illustrated.

Note: Please ensure that the thumb screws turning wires are flush with the cover or interference will occur while inserting the lamp house into the projector.

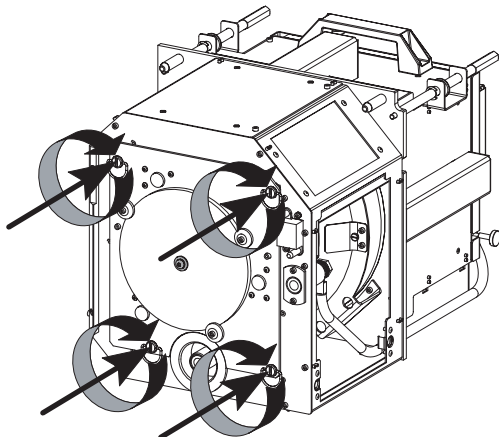


Image 6-16

10. Fasten the cathode side of the xenon bulb lamp using a hexagon socket head screw M6 x 40 and a plane washer as illustrated. Use a torque of **2,5 Nm** to fasten the hexagon socket head screw. Use for that a torque wrench with a 5 mm Allen socket.

Caution: Make sure that the both pins (reference A of image 6-17) of the cathode adapter remain engaged in the foreseen slots. Therefore, use one hand to keep the xenon bulb lamp into position while inserting the hexagon socket head screw.

6. Lamp & lamp house

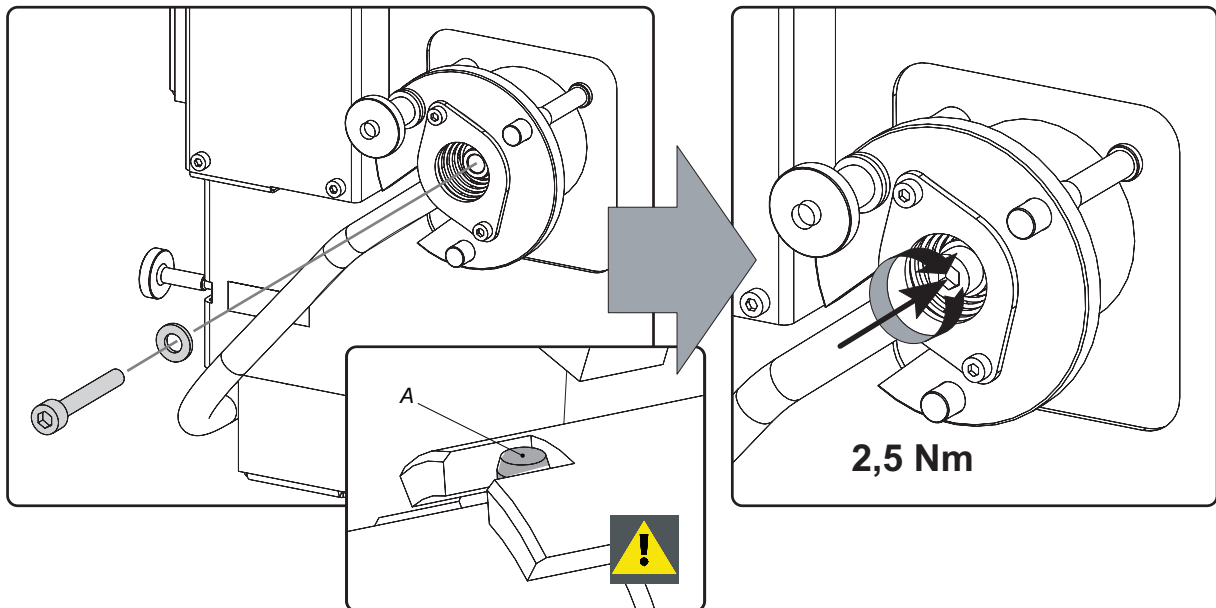


Image 6-17

11. Reinstall the side cover of the lamp house as illustrated.

Note: Please ensure that the thumb screws turning wires are flush with the cover or interference will occur while inserting the lamp house into the projector.

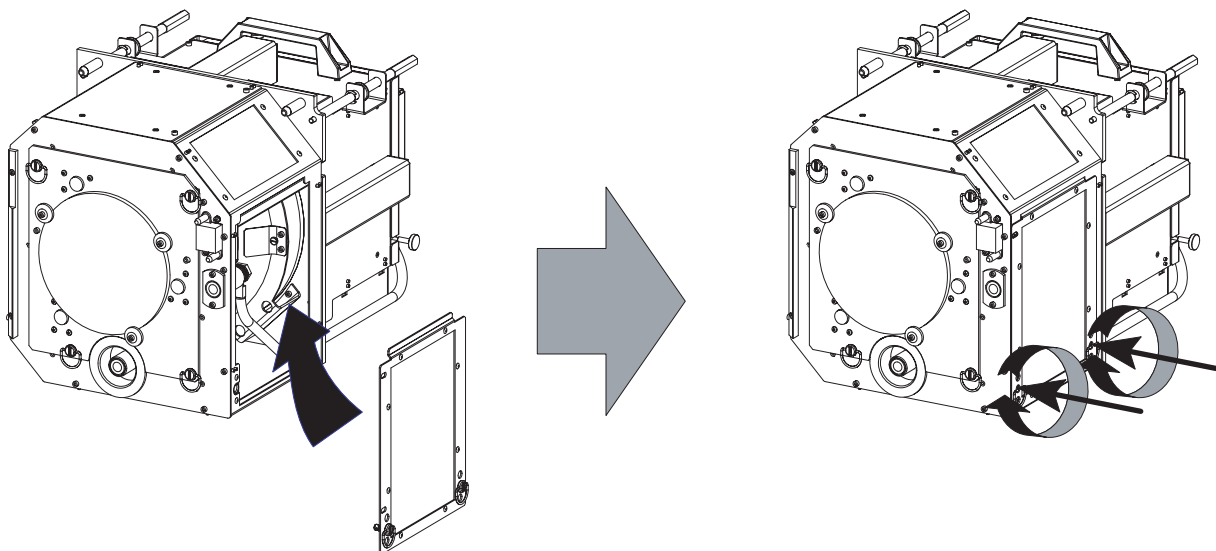


Image 6-18



CAUTION: The "LAMP INFO" parameters which are stored on a chip inside the lamp house **MUST** be updated after each installation of an xenon bulb lamp inside the lamp house. Neglecting this update will result in poor performance and short life time of the xenon bulb lamp. See procedure "Resetting the lamp parameters", page 59.



A realignment of the xenon bulb lamp in its reflector is required after the installation of the xenon bulb lamp in the lamp house. See procedure "Realignment of the lamp in its reflector", page 60.

6.5 Installation of the lamp house



WARNING: This procedure may only be performed by qualified technical service personnel.



CAUTION: Due to its high internal pressure, the lamp may explode in either hot or cold states if improperly handled.

Necessary tools

7 mm flat screw driver.

How to install the lamp house of the projector ?

1. Ensure the projector is switched off.
2. Remove the lamp cover.
3. Hold fast the lamp house by its handles and gently slide the lamp house into its socket. Note that the compartment is provided with guides (G) to position the lamp house correctly.

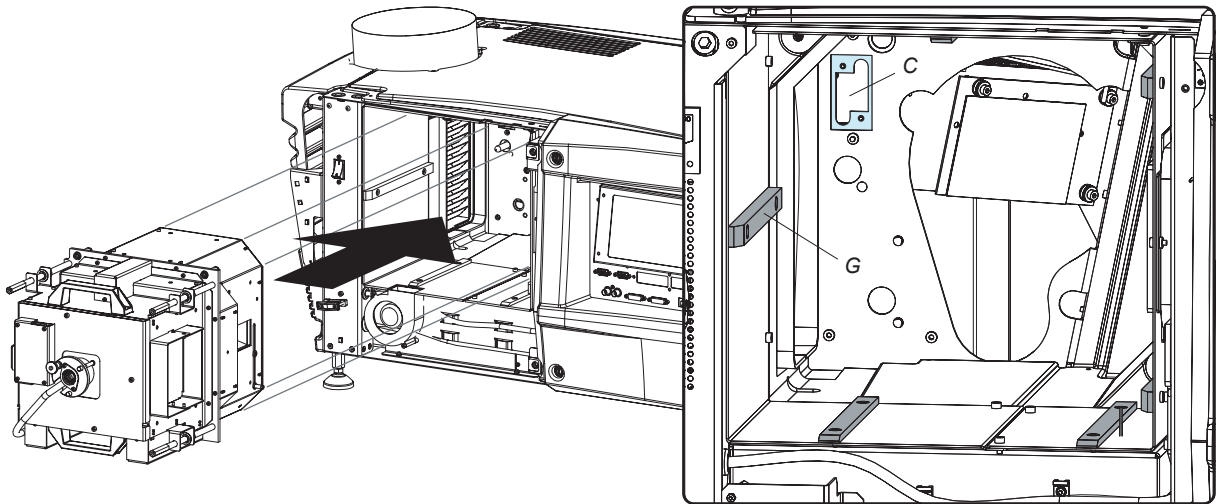


Image 6-19

4. Push the lamp house forward until it slides fully into the projector.
5. Secure the correct position of the lamp house by tightening all three spring lock screws as illustrated.

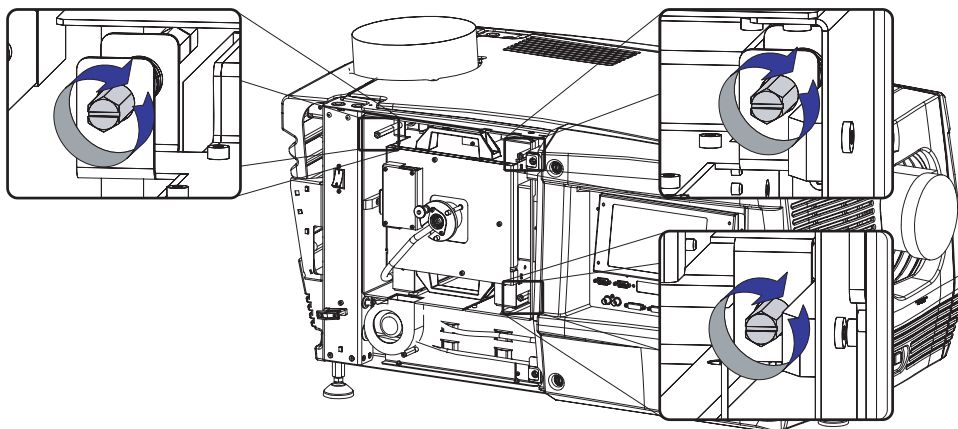


Image 6-20

6. Reinstall the lamp cover of the projector.

6. Lamp & lamp house



While starting up the projector, the electronics detect if a lamp is installed. If no lamp is installed, it is not possible to start up the projector.

6.6 Resetting the lamp parameters



CAUTION: The “LAMP INFO” parameters which are stored on a chip **MUST** be updated after each installation of an xenon bulb lamp inside the lamp house. Neglecting this update will result in poor performance and short life time of the xenon bulb lamp.

How to reset the lamp parameters?

1. Start up the projector but do not ignite the lamp.
2. Go via the **Communicator** touch panel to the menu “Installation” > “Lamp” > “Lamp information”.
3. While the *Lamp information* window is displayed, tip on **Reset** (1).
A reset message is displayed (2).
4. Fill out the article number of the new lamp (3a)
Or,
click on **Select** (3b) to display a list of possible article numbers (4). Select a article number (5) and click **OK** (6).
The software will check if the entered article number is a valid number (7).
5. Fill out the serial number of the lamp (8).
6. Click **Reset** (9).

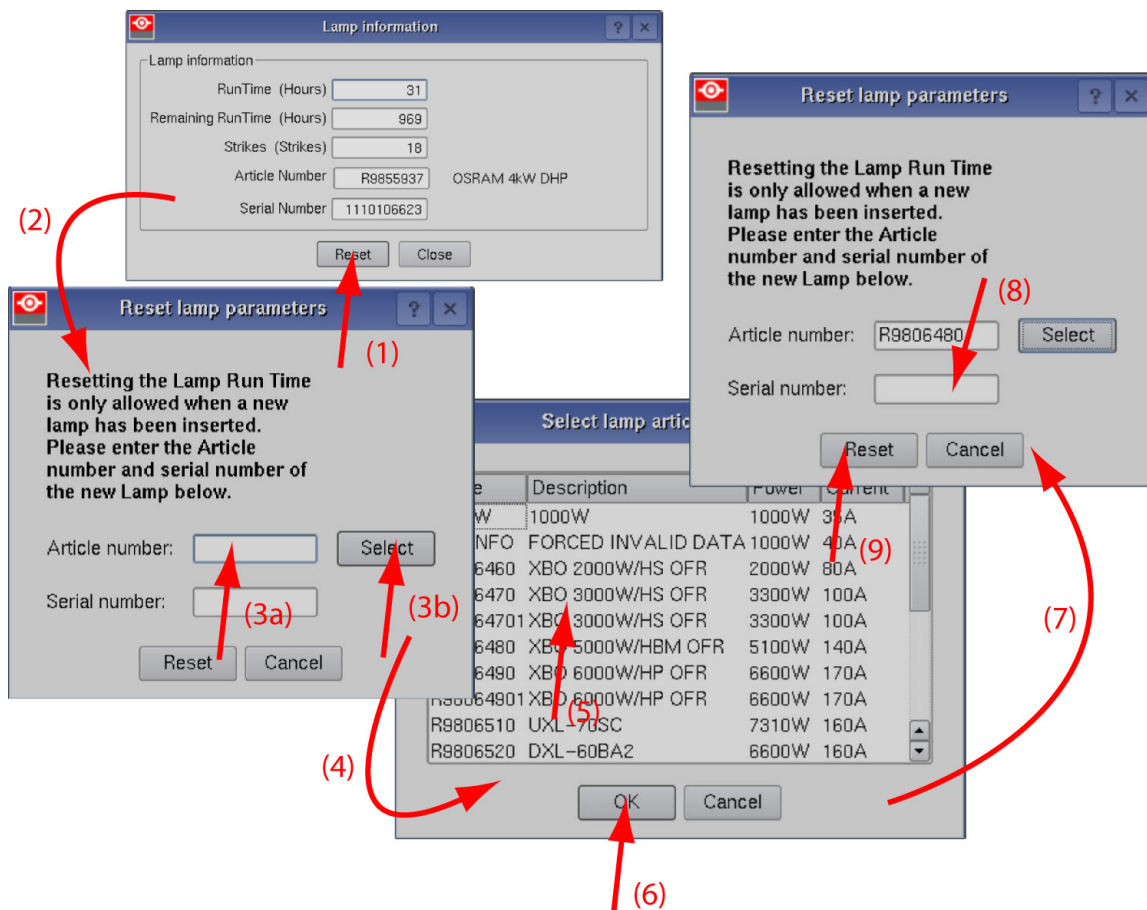


Image 6-21
Reset lamp info



CAUTION: For more information about using the Communicator touch panel consult the user's guide of the communicator touch panel.

6.7 Realignment of the lamp in its reflector



Each xenon bulb lamp installation requires a realignment of the lamp in its reflector for optimal performance of the xenon bulb lamp in the DP-2000 projector. Furthermore, it is recommended to realign the lamp after the first run time of 100 and 200 hours. Especially the Z-axis of the lamp.



WARNING: This procedure may only be performed by qualified technical service personnel.

How to realign the lamp in its reflector?

1. Remove the cover of the lamp compartment to gain access to the X-, Y-, and Z-axis adjustment thumbscrews of the lamp.
2. Switch on the projector and start up the lamp.
3. Go via the Communicator touch panel to the menu “Installation” > “Lamp” > “Light output”.
4. Set the “Light output mode” in **normal mode** and the “Lamp Dimming” on maximum (255).

Note: This window on the Communicator touch panel shows in the upper left corner the measured value of the built-in light sensor of the projector.

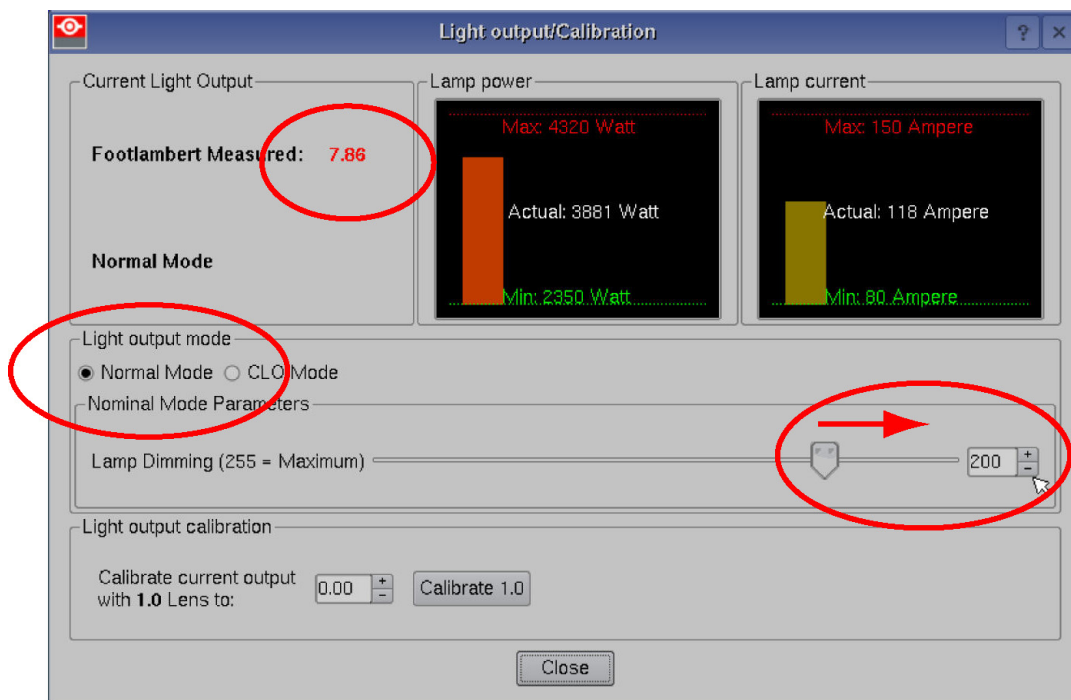


Image 6-22

5. Release the X-axis lock thumb screw (ref LX image 6-23) and Y-axis lock thumb screw (ref LY image 6-23).
6. Adjust the X-axis (ref X image 6-23), the Y-axis (ref Y image 6-23) and the Z-axis (ref Z image 6-23) for maximum current light output (Footlambert Measured). Carefully turn the thumbscrew for maximum light output. Once over the maximum, turn slightly in opposite direction to reach the maximum light output again. Do this for each direction and minimum repeat this adjustment cycle twice.

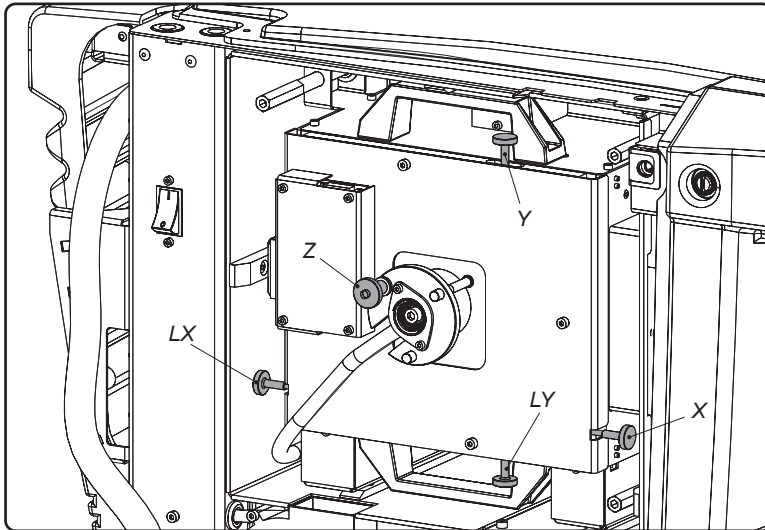


Image 6-23

7. Fasten the X-axis lock thumb screw (ref LX image 6-23) and Y-axis lock thumb screw (ref LY image 6-23).
8. Switch off the projector.
9. Reinstall the cover of the lamp compartment.

7. INPUT & COMMUNICATION UNIT

Overview

- Introduction
- Local Keypad of the DP-2000 projector
- Communication ports of the DP-2000 projector
- About General Purpose Inputs & Outputs (GPIO)
- Source input ports of the DP-2000 projector

7.1 Introduction

General

The input & communication unit of the DP-2000 projector consist in a local keypad, input ports, communication ports, and a security key socket. The whole unit can be removed from the projector for service purposes.

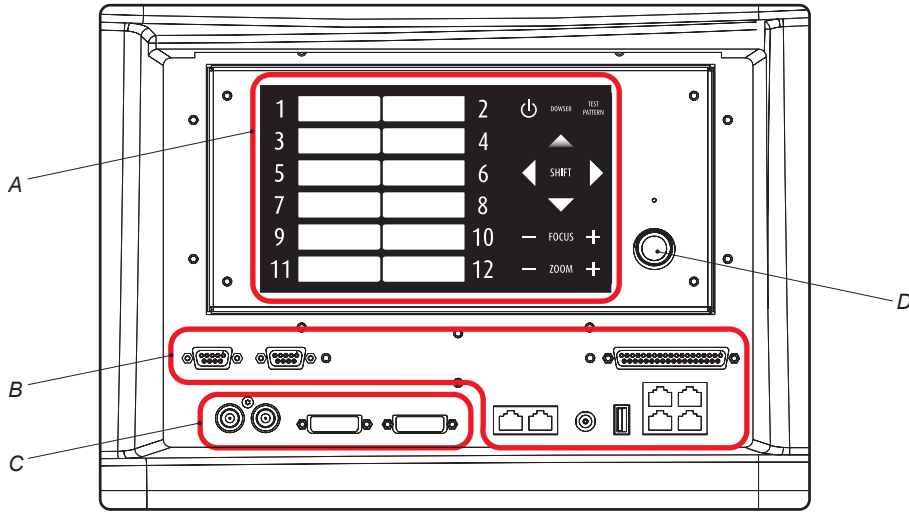


Image 7-1

- A Local keypad.
- B Communication ports.
- C Source input ports.
- D Socket for security key.



CAUTION: The input & communication unit may only be removed by qualified service personnel. Removing the input & communication unit will result in an authorization request upon startup.

7.2 Local Keypad of the DP-2000 projector

Identification of the keys

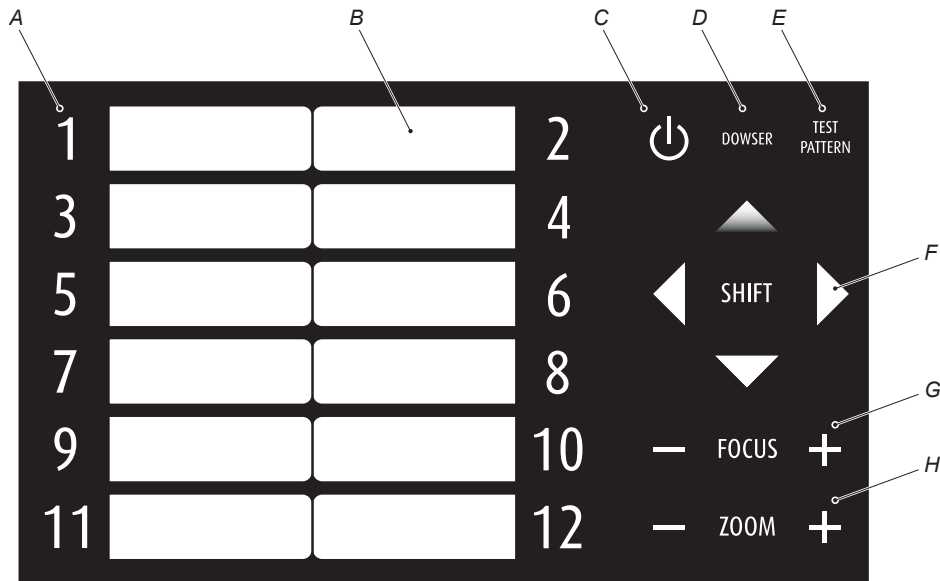


Image 7-2

- A Numeric keyboard.
- B Marker area for macro name.
- C Standby/Operation switch.
- D Dowser Open/Close switch.
- E Test Pattern toggle switch.
- F Lens holder shift left/right & up/down keys.
- G Lens focus keys.
- H Lens zoom keys.

Numeric keys: All the numeric keys (A) of the local keypad have a blue backlight during normal operation. Only when the authorization process is activated with the security key, then the backlight color of the numeric keys 1 to 10 changes to orange. Each key can be linked to a macro which allows you to setup the projector to your requirements with one push on a button. Note that each numeric key has a marker area (B) where you can write down the name of the macro.

Standby key: Standby key (C) switches ON or OFF the lamp and lamp electronics. The lamp cooling fans remain active for about 5 minutes. The speed of the other fans is reduced. The backlight color of the standby key remains red in standby mode and changes to green in operation mode.

Dowser key: The dowser key (D) opens or closes the dowser. The backlight color of the dowser key is green when the dowser is open and red when the dowser is closed.

Pattern key: The pattern key (E) gives you direct access key to the internal test patterns of the projector.

Shift keys: The shift keys (F) allows you to shift the lens up/down or left/right. This functionality is only available in case of a motorized lens shift

Focus keys: The focus keys (G) allows you to focus the projected image on the screen. This functionality is only available in case of a motorized lens and lens holder.

Zoom keys: The zoom keys (H) allows you to zoom in or out the projected image on the screen. This functionality is only available in case of a motorized lens and lens holder.

7.3 Communication ports of the DP-2000 projector

Location of the communication ports

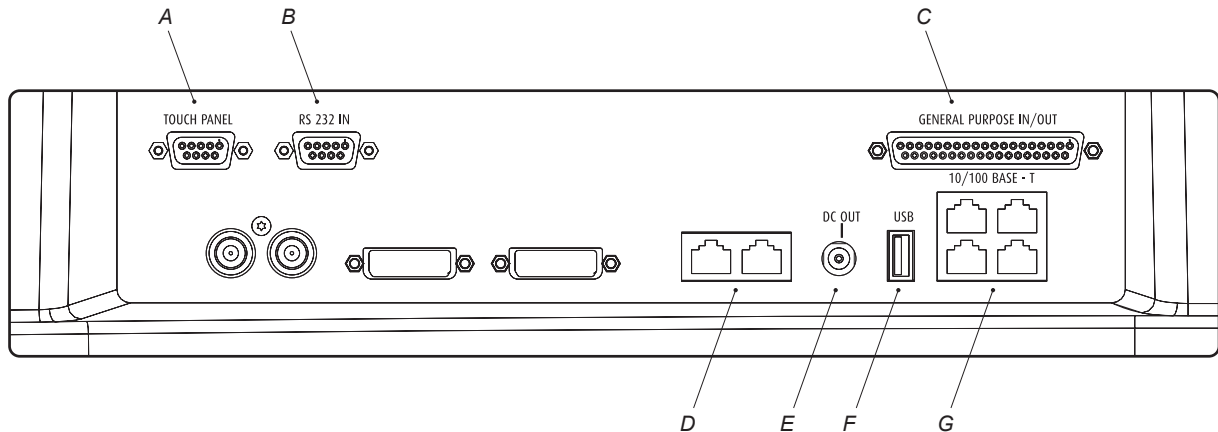


Image 7-3

- A Communication port for the touch panel.
- B RS232 input port.
- C General purpose input/output port (GPIO).
- D (Future expansion).
- E +12 VDC output port (maximum 2 ampere).
- F Master USB port type A.
- G Four Ethernet ports RJ45.

TOUCH PANEL

This female DB-9 connector allows you to use a standard serial cable up to 10 meter to connect the touch panel interface with the projector. Note that the RS232 protocol is used on this connection.

RS232 IN

This female DP-9 connector is only used for service purposes. Do not use this connector to communicate with the projector.



RS232

An Electronic Industries Association (EIA) serial digital interface standard specifying the characteristics of the communication path between two devices using either D-SUB 9 pins or D-SUB 25 pins connectors. This standard is used for relatively short-range communications and does not specify balanced control lines. RS-232 is a serial control standard with a set number of conductors, data rate, word length and type of connector to be used. The standard specifies component connection standards with regard to computer interface. It is also called RS-232-C, which is the third version of the RS-232 standard, and is functionally identical to the CCITT V.24 standard. Logical '0' is $> +3V$, Logical '1' is $< -3V$. The range between $-3V$ and $+3V$ is the transition zone.

GENERAL PURPOSE IN/OUT

This 37 pins connector can be used to send or receive trigger signals from other devices. These input/output pins can be programmed by macros created on the Communicator touch panel. See user's guide of the Touch panel, section Macro editor, for more information about this functionality. Note that the General Purpose Inputs accept 24 volt maximum.

DC OUT

This fuse protected mono jack socket provides a +12 VDC voltage and maximum 1,5 ampere. The DC OUT socket has ground (GND) in the middle and +12V on external pin. This is opposite of the Barco Touch Panel Communicator power connection. So, a cross cable is needed when connecting the DC OUT directly to the Touch Panel.

USB port

The communication interface is equipped with a master USB port, type "A" connector (F). This USB port is for future expansion.

10/100 BASE - T

The DP-2000 projector can be connected to a LAN (local area network) using one of the Ethernet ports (G) on the communication interface. Once connected to the LAN, users are capable of accessing the projector from any location, inside or outside (if allowed) their company network using the Communicator software. This software locates the projector on the network in case there is a DHCP server or the user can insert the correct IP-address of the projector to access the projector. Once accessed, it is possible to check and manipulate all the projector settings. Remote diagnostics, control and monitoring of the projector can then become a daily and very simple operation. The network connectivity permits to detect potential errors and consequently improve the time to servicing.

As there is a need to daisy chain projectors when they are in Ethernet network, an Ethernet switch is build in. the incoming network is hereby available for the internal PC and for the next device in the chain. In this way a 'star' network interconnection can be avoid. The switch used is a stand alone 10/100Mbit Ethernet switch. This assures no influence on the network speed. Whenever a slow (10Mbit) device is connected the speed between the 100Mbit devices remains 100Mbit.

7.4 About General Purpose Inputs & Outputs (GPIO)

General Purpose inputs

Eight (8) opto-isolated general purpose inputs are available. These inputs are used to trigger the execution of macro files. For more explanation about the association of a macro to a GPI, consult the user guide of the Projector Toolset.

Input voltage

The inputs can be directly driven from a TTL or CMOS output.

- Minimum voltage : $V_{\min} = 3,3 \text{ V}$
- Maximum voltage : $V_{\max} = 24 \text{ V}$

External power supply

When interfacing with contact closure outputs, an external power supply needs to be provided. Depending upon the configuration a suitable pull-up resistor needs to be added as well.

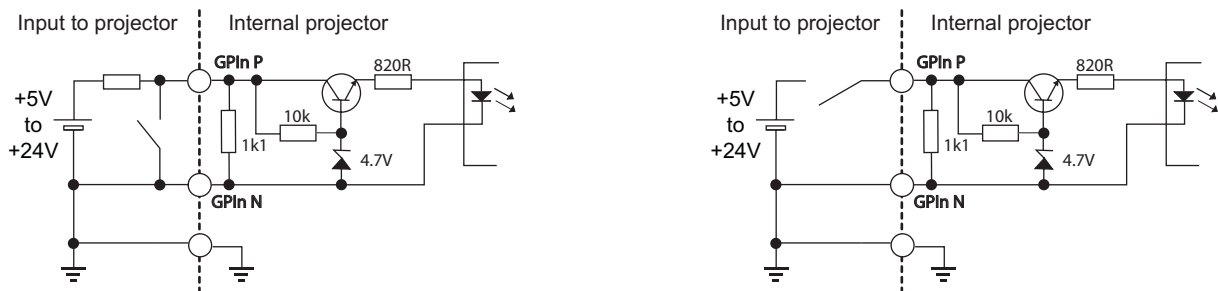


Image 7-4

Left diagram: with pull-up resistor. Right diagram: without pull-up resistor.

Cables

When long cable connections are required the use of shielded cables with twisted pairs is recommended. One twisted pair is to be assigned to each GP Input pair.

How to make the connection

When the power supply used to provide the DC voltage is isolated from ground (for example in the case of an AC adapter) it is recommended that minus pole of that power supply is connected to ground (or to the projector chassis). This will avoid high common mode voltages at the projector GP Inputs. If that same power supply is used for other parts of the system, take care not to create ground loops. In any case when shielded cables are used that shield should be connected to the projector chassis.

General Purpose outputs

Eight (8) opto-isolated outputs are available, where seven are general purpose and one for a fixed purpose. The seven general purpose outputs can be controlled via software while the fixed output provides the status of the system. When this output is closed (current is flowing), then the system is OK.

About an output

The output can generate a falling edge, rising edge, toggle or continuous toggle.

- **Generate Falling Edge** – generate a falling edge on the external GPO port if the present state of the output is high. If the present state of the external GPO is low, no edge will be generated.
- **Generate Rising Edge** – generate a rising edge on the external GPO port if the present state of the output is low. If the present state of the external GPO is high, no edge will be generated.
- **Generate Toggle** – generate a toggle on the external GPO port. If the present state of the output is low, a rising edge will be generated, followed by a falling edge. If the present state of the output is high, a falling edge will be generated, followed by a rising edge. The rate of toggle will be the vertical sync rate (edge transition at each vsync).
- **Generate Continuous Toggle** - This command will generate a continuous toggle of the external GPO port. This toggle will continue until a *Generate Falling Edge*, *Generate Rising Edge*, or *Generate Toggle* command is received. The rate of toggle will be the vertical sync rate (edge transition at each vsync).

Output transistor

- Maximum output driving voltage : $V_{\max} = 70 \text{ V}$
- Maximum current : $I_{\max} = 30 \text{ mA}$
- Maximum power dissipation : 120 mW

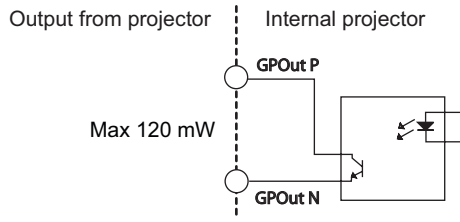


Image 7-5

7.5 Source input ports of the DP-2000 projector

Location of the source input ports

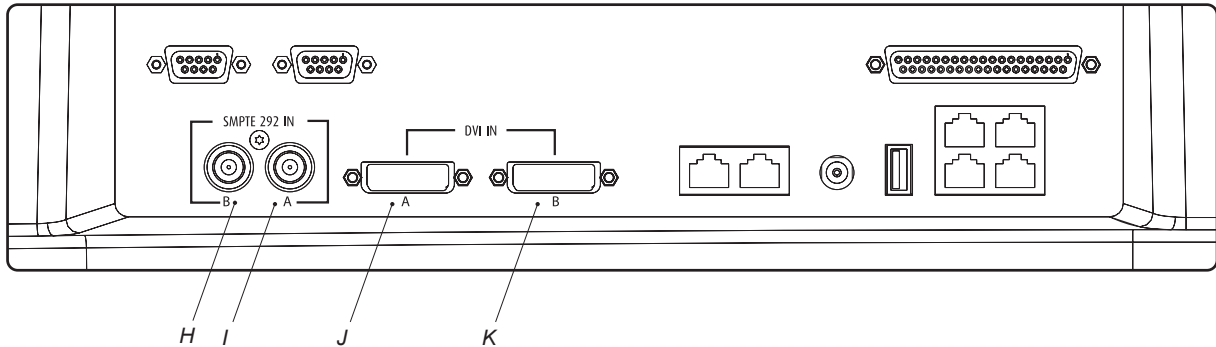


Image 7-6

- H SMPTE 292 input port A.
- I SMPTE 292 input port B.
- J DVI-D input port A.
- K DVI-D input port B.



SMPTE

Society of Motion Picture and Television Engineers - A global organization, based in the United States, that sets standards for baseband visual communications. This includes film as well video standards.



DVI

Digital Visual Interface is a display interface developed in response to the proliferation of digital flat panel displays.

The digital video connectivity standard that was developed by DDWG (Digital Display Work Group). This connection standard offers two different connectors: one with 24 pins that handles digital video signals only, and one with 29 pins that handles both digital and analog video. This standard uses TMDS (Transition Minimized Differential Signal) from Silicon Image and DDC (Display Data Channel) from VESA (Video Electronics Standards Association).

DVI can be single or dual link.

8. COMMUNICATOR TOUCH PANEL

Overview

- Introduction
- Installing the touch panel interface
- Reposition the touch panel interface

8.1 Introduction

Communicator Touch Panel for digital cinema projectors

The Communicator Touch Panel is designed for multi-user command and control, the Communicator enables users to learn quickly and operate efficiently - using an elegant and flexible touch panel interface. The interface's commonality means that operators can intuitively use any model in the product line, without restriction, and its user-friendly nature translates directly into a short and enjoyable learning curve.

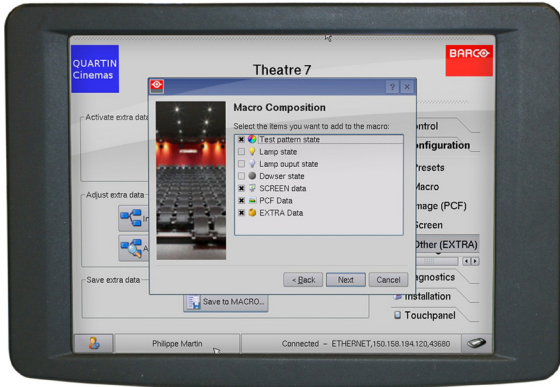


Image 8-1

Flexible touch panel interface

The touch panel interface can be mounted upon a swivel arm which easily fits on top of the DP-2000 projector. One central locking mechanism of the swivel arm allows an instant fixation of the touch panel interface in any position.

The touch panel interface can also be installed further away from the DP-2000 projector. For that you can use a serial (RS232) cable up to 10 meter or an Ethernet cable up to 50 meter to realize a direct data communication between the DP-2000 projector and the Communicator Touch Panel.

The touch panel interface can also be connected with a Local Area Network (LAN) just like the DP-2000 projector. In this case both devices can communicate with each other as well.

The touch panel interface requires a voltage supply +12 VDC and 1,5 ampere. Note that the DP-2000 projector has a 12 VDC output which can be used to power up the touch panel interface. Nevertheless, the use of a separate +12 VDC adaptor (1,5 ampere minimum) is required in case the touch panel interface is installed more than a few meters away from the DP-2000 projector.



A crossed DC cable has to be used when connecting the +12 VDC output from the Input & Communication unit of the DP-2000 projector directly with the Touch Panel interface.

Parts location of the touch panel interface

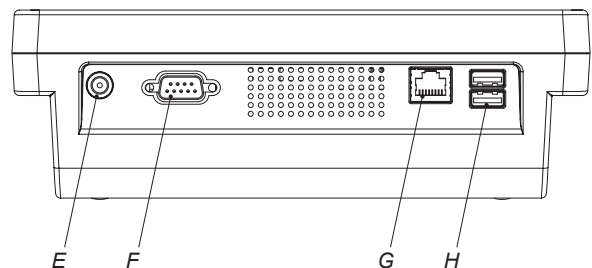
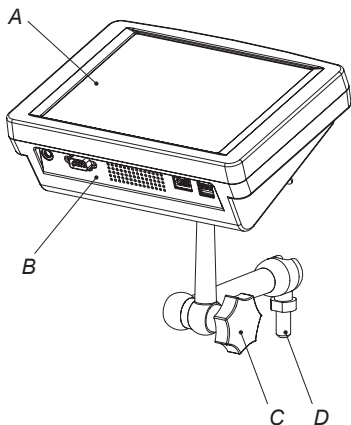


Image 8-2

- A Touch screen.
- B Communication ports.
- C Knob to operate central swivel clamp.
- D Base of swivel arm.
- E Power input (12 VDC – 1,5 A).
- F RS232 port (9 pins SUB-D).
- G Ethernet port (RJ45).

H Two USB ports to connect USB stick, mouse or keyboard.



CAUTION: Refer to the user guide of the Communicator Touch Panel for more information about usage guidelines.

8.2 Installing the touch panel interface

Necessary tools

- 17 mm wrench.
- 10 mm wrench.

How to install the touch panel interface upon the DP-2000 projector?

1. Assemble the mounting plate and the swivel arm together as illustrated. First the nut (N) upon the rod of the mounting plate, then the lock washer (L), and then fasten mounting plate and swivel arm together. When arm is mounted, turn nut (N) against the arm to secure the position.

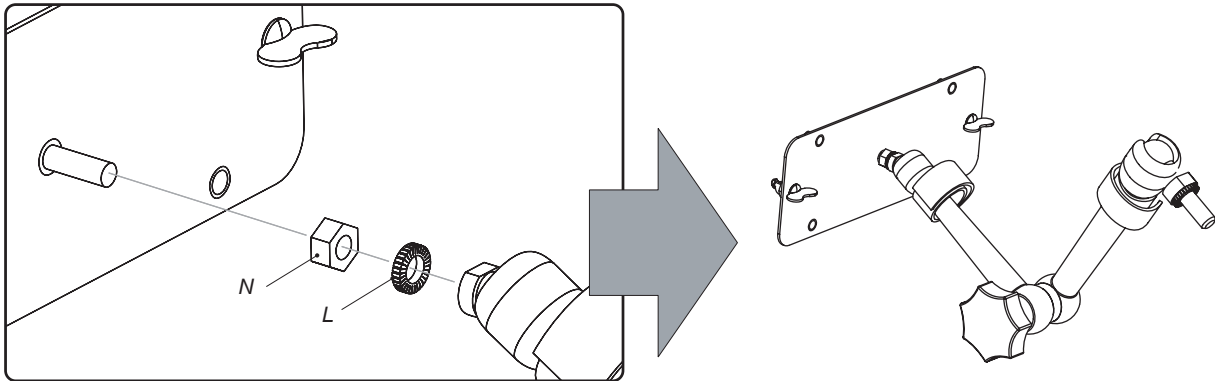


Image 8-3

2. Slide a washer (M) over the base of the swivel arm and insert the base of the swivel arm into the mounting hole at the top of the DP-2000 projector as illustrated.

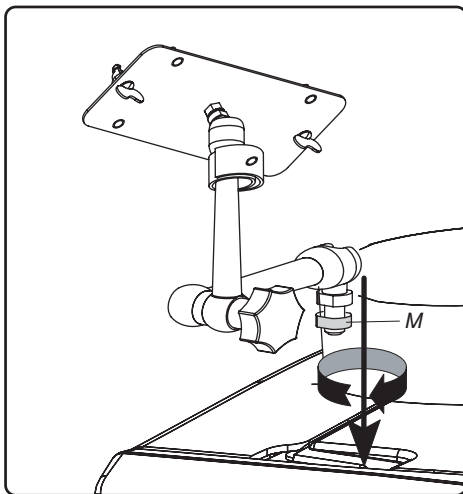


Image 8-4

3. Place the touch panel interface upon the mounting plate of the swivel arm and fasten the two wing nuts (W) as illustrated.

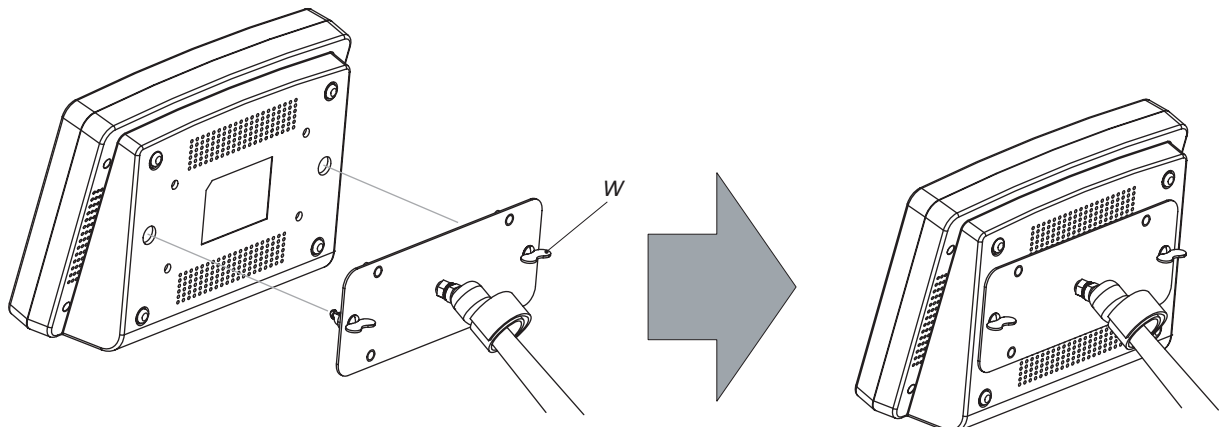


Image 8-5

4. Connect the circular plug of the multi cable with the circular socket at the rear side of the DP-2000 projector.

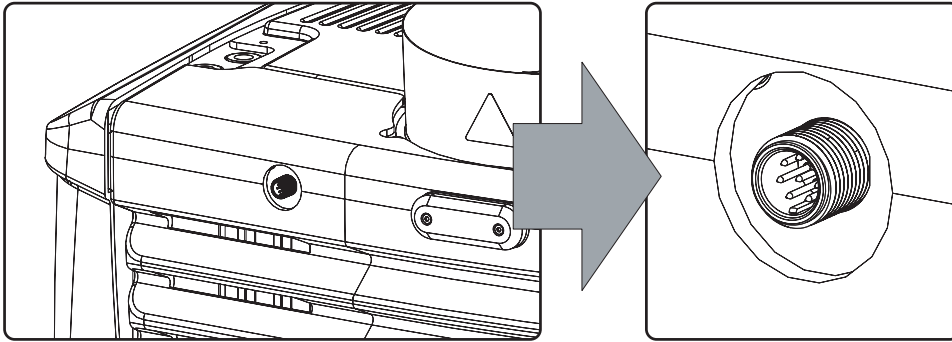


Image 8-6

5. Attach the multi cable to the swivel arm. Use for that the two Velcro strips.
6. Connect the DC plug, the RJ45 Ethernet plug and the SUB-D plug with their respective sockets on the touch panel interface.

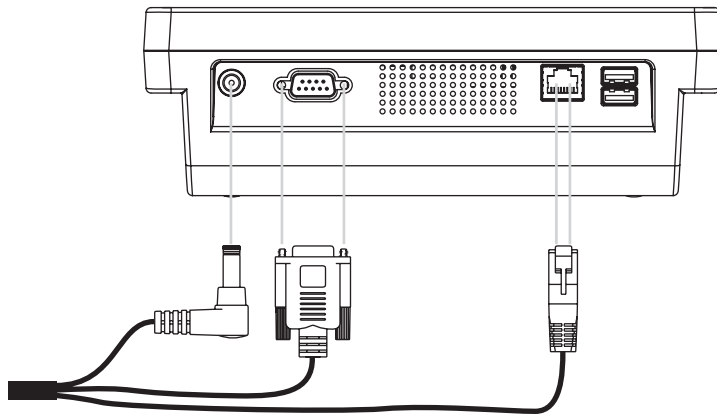


Image 8-7

8.3 Reposition the touch panel interface

How to reposition the touch panel interface?

1. Hold fast the touch panel interface.
2. Release the central swivel clamp by turning the big black knob (K) counterclockwise.

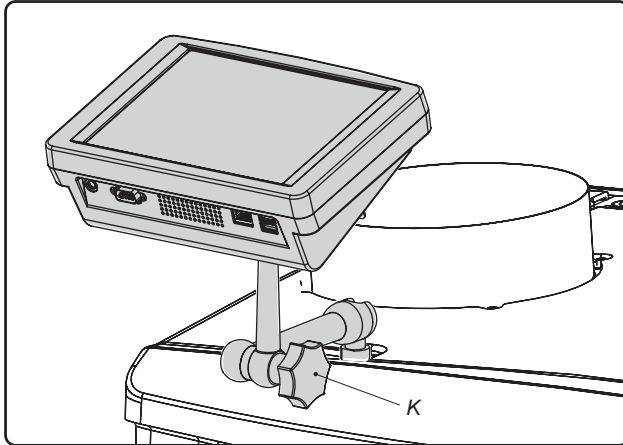


Image 8-8

3. Move the touch panel interface into the desired position.
4. Fasten the central swivel clamp by turning the big black knob clockwise.



CAUTION: Never release the central swivel lock without supporting the touch panel interface.

9. STARTING UP

Overview

- Switching on the DP-2000 projector
- Switching off the DP-2000 projector

9.1 Switching on the DP-2000 projector

Process:

1. Make sure that the DP-2000 projector is installed upon a stable pedestal. See chapter "Positioning the DP-2000 at port window", page 24.
2. Make sure that the exhaust system is properly installed. See chapter "Installation of the exhaust system", page 27.
3. Make sure that the right lens is installed for your application. See chapter "Lenses & lens holder", page 33.
4. Make sure that the lamp and lamp house are correctly installed. See chapter "Lamp & lamp house", page 45.
5. Make sure the projector is correctly connected to the power net. See chapter "Electrical set up of the DP-2000", page 29.
6. Check if a video source is connected with the projector. See chapter "Source input ports of the DP-2000 projector", page 70.
7. Check if the communicator touch panel is installed. See chapter "Communicator touch panel", page 71.
8. Press the power switch to switch on the projector. As a result the projector starts up in standby. So, the lamp is off and the dower open. No internal pattern is selected. The communicator touch panel starts its initialization procedure..
 - When '0' is visible, the projector is switched off.
 - When '1' is visible, the projector is switched on.
9. Press the standby button on the local keypad or use the communicator touch panel to activate the lamp. As a result the applied source will be displayed.



CAUTION: See user's guide of the Communicator Touch Panel to operate and control the DP-2000 projector.

9.2 Switching off the DP-2000 projector

How to switch off the DP-2000 projector?

1. Press the standby button on the local keypad or use the communicator touch panel to switch the projector from operation to standby. As a result the lamp turns off but the fans remain turning to cool down the projector.
2. Let cool down the projector until the speed of the fans decrease, at least 5 minutes.
3. Switch off the projector with the power switch.

10. PROJECTOR REGISTRATION

Overview

- Introduction
- Download the certificate file
- Registration of new projector
- Update registration of an existing projector

10.1 Introduction

Overview

The current projector is DCI compliant and should be registered by Barco. Therefore, the digital certificate inside the projector will be used to secure encryption key communication between the projector and the rest of the theatre system (server and theatre management system). The film distributor will send keys to the theatre that are unique for the installed trusted digital cinema equipment of that theatre. The film distributor will find its information about a theatre in the same database as where the projector is registered. Barco plays as an intermediate station between the theatre and the film distributor.

Once a projector is registered, the uploaded data can be changed via the update procedure.

10.2 Download the certificate file

How to download

1. Insert a USB stick in the Communicator touch panel.
2. On the touch panel, go via **Installation > Advanced settings > Retrieve certificate**.

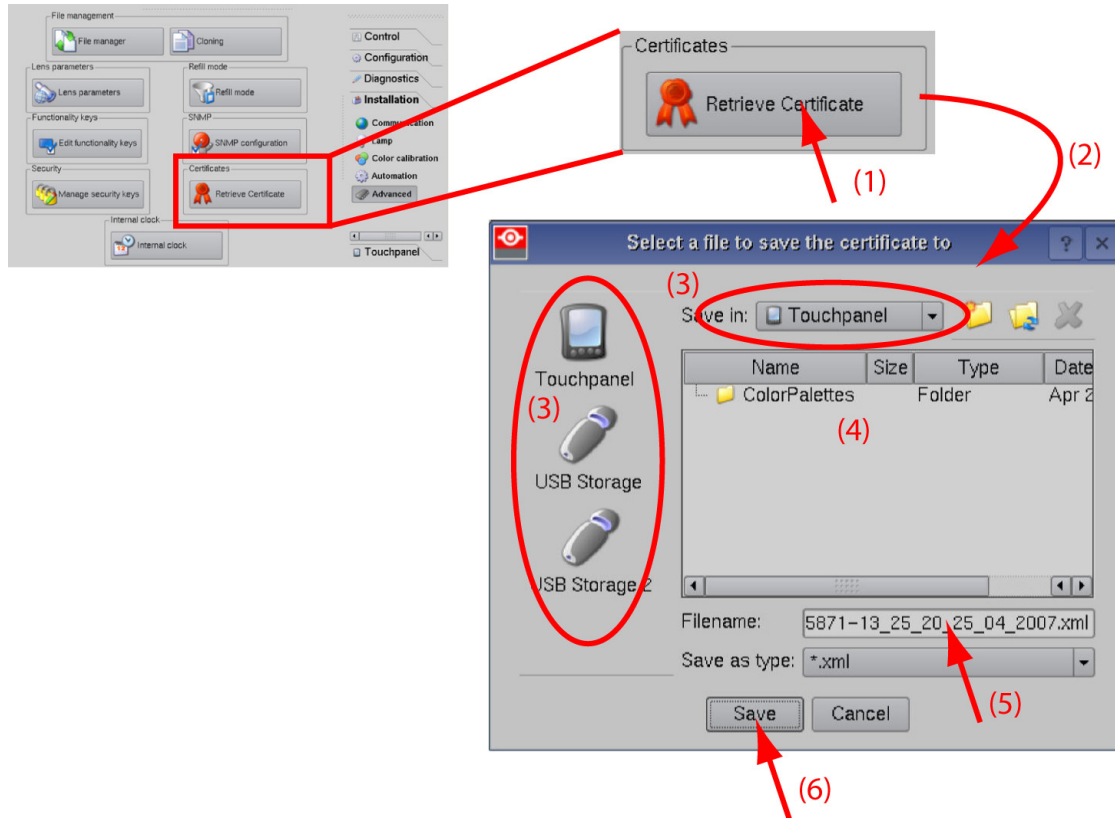


Image 10-1
Download certificate

3. If the proposed file name is OK, tip on **Save**.
Otherwise, change first the file name and tip then on **Save**.
4. Bring this file to a computer with an Ethernet access and continue with the registration procedure.

10.3 Registration of new projector

Possible login types

A projector can be registered by the following persons, each with its own login:

- installer
- owner
- Installer/owner

Depending on your login type, some steps are not necessary in the registration procedure. Follow the wizard as displayed on the screen. The procedure below gives an overview of all possible steps which can be displayed.

How to register

1. Go to Barco's Partnerzone on <https://secure.barco.com/digitalcinema/>.
2. Login into the partnerzone.

If you are not yet registered, click on *Sign in here* and follow the instructions. With the created login and password, it is possible to enter the partnerzone where you can upload the certificate.

When your login is correct, the digital cinema partnerzone start page is displayed.

Click *Registration DC projector* and select *Register a new DC projector*. The first registration page will be displayed.

Register a Digital Cinema Projector

Upload Certificate

Welcome to our DC Projector Registration Wizard. This wizard will guide you step by step in the process to register a DC Projector. Please, make sure to complete this wizard to register successfully.

Please, upload the .xml file you've received from the D-Cine Communicator Software (version 2.7.0. or higher) while installing the DC Projector.

XML-file:

If you experience any problems submitting this form, please email partnerzone.digitalcinema@barco.com

Image 10-2
Start registration

3. Click **Browse** to locate the certificate file. Select the file and click **Open**.

The file is filled out next to *XML file*. Click **>> Next** to continue.

Some checks are done on the certificate file. When the file is correct and not yet uploaded, the next registration page is displayed.

4. Fill out the *Technical Data* page.

Register a Digital Cinema Projector

Technical Data

Following data is mandatory for the registration of your projector. This data will be used in other and future informative applications.

Prime Lens Type:

Anamorphic Lens:

Server Brand:

Screen width: m or ft

Screen height: m or ft

Projector distance: m or ft

Screen gain:

Number of seats: (optional)

If you experience any problems submitting this form, please email partnerzone.digitalcinema@barco.com

Image 10-3

- **Lenses:** click on the drop down box and select the lens of the projector when a M25 lens or select Other lens when no M25 lens is used. When other lens is selected, an extra input field appears to fill out the lens type.
- **Anamorphic lens:** check when an anamorphic lens is available.
- **Server brand:** click on the drop down box and select the server brand name when in the list. Otherwise select Others and an extra input field appears to enter the brand name.
- **Screen width:** enter the screen width value in meter or in inch. When one of them is entered, the other value is calculated automatically.
- **Screen height:** enter the screen height value in meter or in inch. When one of them is entered, the other value is calculated automatically.
- **Projector distance:** enter the distance between the projector and screen. The value is checked with the used lens and the entered screen width.
- **Screen gain:** enter the gain of the screen used in the theatre.
- **Number of seats:** enter the number of seats in the theatre.

5. Click **Next >>** to continue.

The location window opens with all available locations.

Register a Digital Cinema Projector

Choose a location.

Choose a location.

Docutest
Dtest2
Kinopolis Brugge
test2
tets
zer

Selection:

Or add new Location:

If you experience any problems submitting this form, please email partnerzone.digitalcinema@barco.com

Image 10-4
Location window

6. If the location is in the list, select that location and click **Next >>** and continue to step 8.

10. Projector registration

If the location is not in the list, click **Add new** and continue to next step.

7. Fill out all fields with an asterisk for *Location*, *Contact person* and *Support contact*. Click **Next >>**.

Register a Digital Cinema Projector

DC Projector - Add new location/cinema

Please fill in the information for the new location or cinema. After this registration, we will process your request for this new location and send you a mail when accepted. In the mean time, you can keep registering projectors for this location. All fields with a (*) are mandatory.

Site Details	
Cinema Name*	<input type="text"/>
Street*	<input type="text"/>
Town*	<input type="text"/>
ZipCode*	<input type="text"/>
State/Province	<input type="text"/>
Country*	<input type="text" value="Please select a country"/>
Phone*	<input type="text"/>
Fax	<input type="text"/>
General e-mail*	<input type="text"/>
Website	<input type="text"/>
Contact Person	
First Name*	<input type="text"/>

Image 10-5
Add new location

The new location is added to the list of locations and is selected. Click **Next >>** to continue .

8. If the installer is in the list, select the installer and click **Next >>** to continue to step 10.
If the installer is not in the list, click **Add new** and continue to next step.

Register a Digital Cinema Projector

Which company installed the projector?

Which company installed the projector?

Barco N.V. (my company)
Darco
Darco
Kinepolis

Selection:
Barco N.V. Noordlaan 5 8520 Kuurne
Belgium +32-56-36.82.11

Or add new Installer:

If you experience any problems submitting this form, please email partnerzone.digitalcinema@barco.com

Image 10-6
Select installer

9. Fill out the *Company information*, *Contact person* and *Support contact*. Click **Next >>**.

Register a Digital Cinema Projector

DC Projector - Add new installer

Please fill in the information for the new installer. After this registration, we will process your request for this new installer and send you a mail when accepted. In the mean time, you can keep registering projectors with this installer.
All fields with a (*) are mandatory.

Company Information	
Company*	<input type="text" value="Barco Kuurne"/>
Street*	<input type="text" value="Noordlaan 5"/>
Town*	<input type="text" value="Kuurne"/>
ZipCode*	<input type="text" value="8520"/>
State/Province	<input type="text" value="W-VL"/>
Country*	<input type="text" value="Belgium"/>
Phone*	<input type="text" value="056368211"/>
Fax	<input type="text"/>
General e-mail*	<input type="text" value="info@barco.com"/>
Website	<input type="text"/>
Contact Person	
First Name*	<input type="text" value="Jan"/>

Image 10-7
Add new installer

The new installer is added to the list of installers and is selected. Click **Next >>** to continue to next step.

The owner input form appears.

10. If the owner is in the list, select the owner and click **Next >>** to finalize the registration.
If the owner is not in the list, click **Add new** and continue with next step.

Register a Digital Cinema Projector

Who owns the projector?

Who owns the projector?

Barco N.V. (my company)
 Dtest2
 Kinopolis

Selection:

Or add new Owner:

If you experience any problems submitting this form, please email
partnerzone.digitalcinema@barco.com

Image 10-8
Select owner

11. Fill out the *Company information*, *Contact person* and *Support contact*. Click **Next >>**.

Register a Digital Cinema Projector

DC Projector - Add new owner

Please fill in the information for the new owner of this projector. After this registration, we will process your request for this new owner and send you a mail when accepted. In the mean time, you can keep registering projectors for this owner. All fields with a (*) are mandatory.

Company Information	
Company*	<input type="text"/>
Street*	<input type="text"/>
Town*	<input type="text"/>
ZipCode*	<input type="text"/>
State/Province	<input type="text"/>
Country*	<input type="text" value="Please select a country"/>
Phone*	<input type="text"/>
Fax	<input type="text"/>
General e-mail*	<input type="text"/>
Website	<input type="text"/>
Contact Person	
First Name*	<input type="text"/>

Image 10-9
Add new owner

The new owner is added to the list of owners and is selected. Click **Next >>** to finalize the registration.

The registration is completed. An E-mail will be sent to the person who is logged in.

Registration successful

A registration request for the projector with serial 0 has been sent successfully.

However, because you've added a new location/owner/installer, we still need to process this request.

You will receive an email when this registration is accepted.

Projector data	
Productname	D-Cine Premiere DP100
Manufacturer	Barco
Ordernr.	R9010110
Projector Serial	0
Electronical Serial	0
Board Serial	B1000000D653CE71
Technical data	
Prime Lenstype	M25 1.25 - 1.45:1
Anamorphic Lens	Y
Server Brand	0
Screen width	10 m - 32.8083 ft
Screen height	5.6 m - 18.372648 ft
Projector distance	30 m - 98.4249 ft
Screen grain	1
Number of seats	300
Location	
	DocuKuurne Noordlaan 5 W-VI

Image 10-10
Registration successful



When an update of the data is necessary, due to e.g. location change or contact person change an update of the registration is necessary. Start the update procedure.

10.4 Update registration of an existing projector

When should it be used ?

An update of the registration of an existing projector should be done in e.g. one of the following cases:

- relocation of the projector
- new owner
- new contact person
- and when any of the registered data is changed.

How to update

1. First get a new certificate file. See "Download the certificate file", page 83.

2. Go to Barco's Partnerzone on <https://secure.barco.com/digitalcinema/>.

3. Login into the partnerzone.

Click *Register DC projector* and select *Update DC projector*.

The update page is displayed with your registered projectors.

Update a Digital Cinema Projector

Choose DC Projector

Choose the projector you want to update:

1190003776 - Mega Box 1412041 - Barcopolis

Selection: No item is selected
--

Next >>

Image 10-11
Select projector to update

4. Select the projector for which the registration must be updated.

The installation address is displayed in *Selection*

Click >> **Next** to continue.

5. Browse to locate the certificate file. Select the file and click **Open**.

The file is filled out next to *XML file*. Click >> **Next** to continue. From now on the procedure is equal to those of the registration of a new projector. Follow the steps as given in the wizard.

11. MAINTENANCE

Overview

- Cleaning the lens
- Cleaning the exterior of the projector
- Replacement of the dust filter on the front side
- Replacement of the dust filter on the bottom side
- Replacement of the dust filter on the top side
- Pressure verification of the liquid cooling circuit

11.1 Cleaning the lens



To minimize the possibility of damage to optical coatings, or scratches to lens surfaces, we have developed recommendations for cleaning. **FIRST**, we recommend you try to remove any material from the lens by blowing it off with clean, dry deionized air. **DO NOT** use any liquid to clean the lenses.

Necessary tools

Toraysee™ cloth (delivered together with the lens kit). Order number : R379058.

How to clean the lens ?

Proceed as follow :

1. Always wipe lenses with a CLEAN Toraysee™ cloth.
 2. Always wipe lenses in a single direction.
Warning: *Do not wipe back and forwards across the lens surface as this tends to grind dirt into the coating.*
 3. Do not leave cleaning cloth in either an open room or lab coat pocket, as doing so can contaminate the cloth.
 4. If smears occur when cleaning lenses, replace the cloth. Smears are the first indication of a dirty cloth.
-



CAUTION: Do not use fabric softener when washing the cleaning cloth or softener sheets when drying the cloth.

Do not use liquid cleaners on the cloth as doing so will contaminate the cloth.



Other lenses can also be cleaned safely with this Toraysee™ cloth.

11.2 Cleaning the exterior of the projector

How to clean the exterior of the projector ?

1. Switch off the projector and unplug the projector from the mains power net.
2. Clean the housing of the projector with a damp cloth. Stubborn stains may be removed with a cloth lightly dampened with a mild detergent solution.

11.3 Replacement of the dust filter on the front side



The front filter of the projector can be removed from the lamp side of the projector in case there is insufficient place at the front of the projector or in case you want to avoid the removal of the lens. This procedure describes how to access the front filter from the side of the projector.

Necessary parts

New dust filter for the front side.

How to replace the HEPA dust filter on the front side of the projector?

1. Remove the input cover of the projector.
2. Release the captive screw of the front cover and pull the left side of the front cover 5 centimeters away from the projector. No need to remove the front cover.
3. Turn the three latches of the front filter compartment 90° counterclockwise.

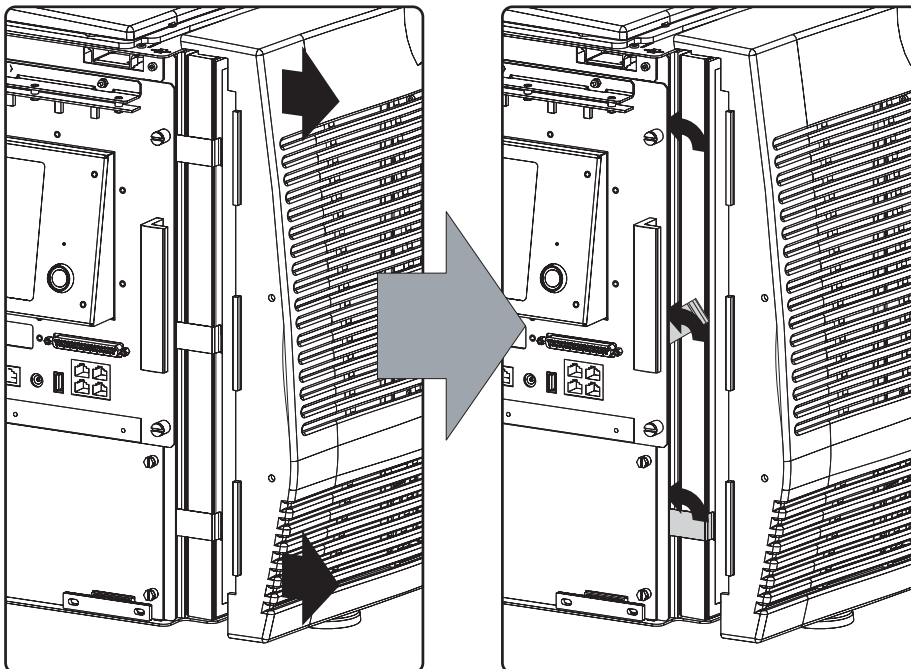


Image 11-1

4. Pull out the front dust filter as illustrated.

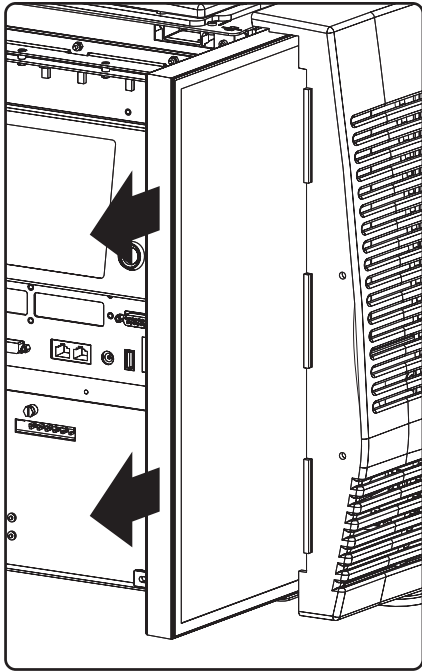


Image 11-2

5. Insert a new filter.
6. Rotate the three latches back into the original position.
7. Fasten the front cover and reinstall the input cover of the projector.



CAUTION: Never install a used HEPA filter. Always install a new HEPA filter.

11.4 Replacement of the dust filter on the bottom side

Necessary parts

- New HEPA dust filter for the bottom side.
- 2.5 mm Allen key.

How to replace the HEPA dust filter on the bottom side of the projector ?

1. Remove the side cover of the projector.
2. Release (not remove) the two wedge lock screws (A) using a 2.5 mm Allen key as illustrated.

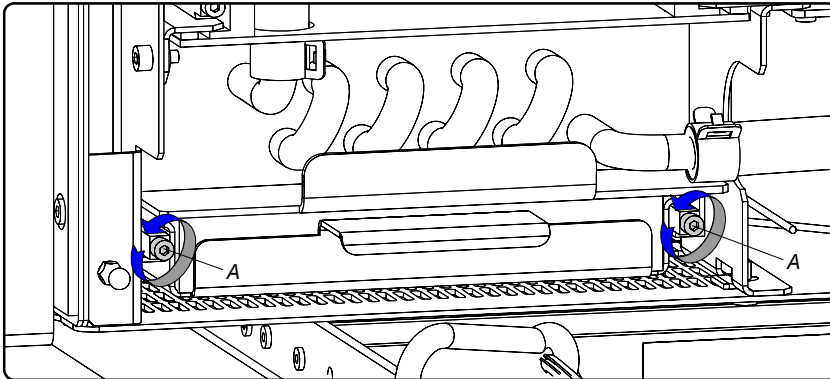


Image 11-3

3. Remove the filter (F) on the bottom side by pulling out the filter holder (H) as illustrated.

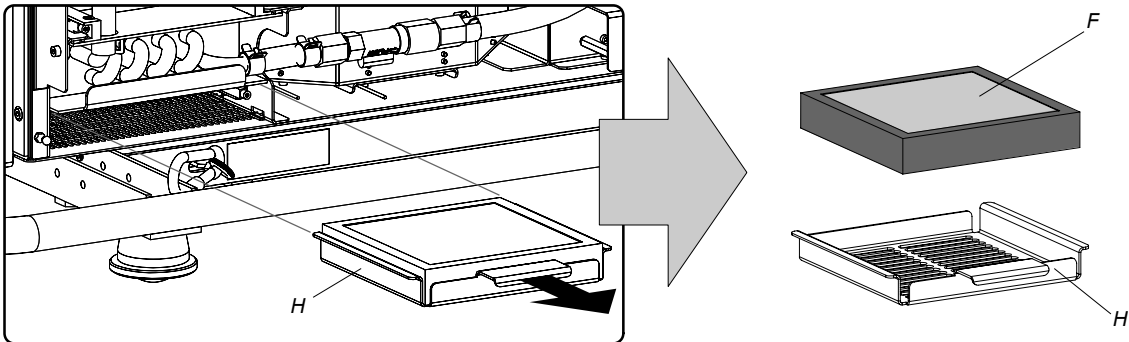


Image 11-4

4. Place a new HEPA dust filter in the filter holder.
5. Reinstall the filter holder containing the new HEPA filter.
6. Fasten the two wedge lock screws (A) using a 2.5 mm Allen key as illustrated.

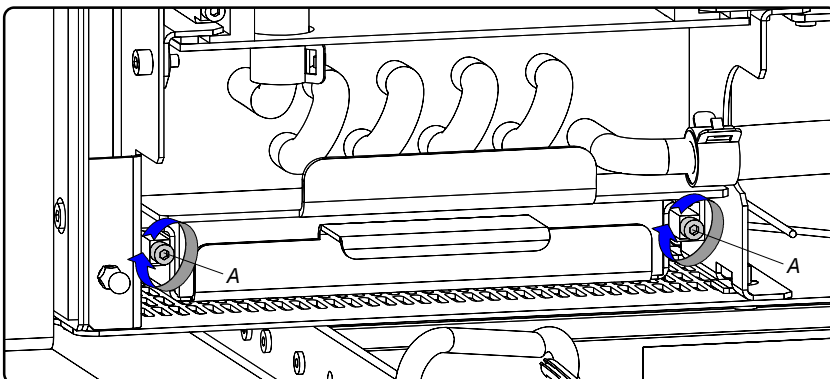


Image 11-5

7. Reinstall the side cover of the projector.



CAUTION: Never install a used HEPA filter. Always install a new HEPA filter.

11.5 Replacement of the dust filter on the top side

Necessary parts

New HEPA dust filter for the top side.

How to replace the HEPA dust filter on the top side of the projector ?

1. Remove the side cover of the projector.
2. Remove the filter (F) on the bottom side by pulling out the filter holder (H) as illustrated.

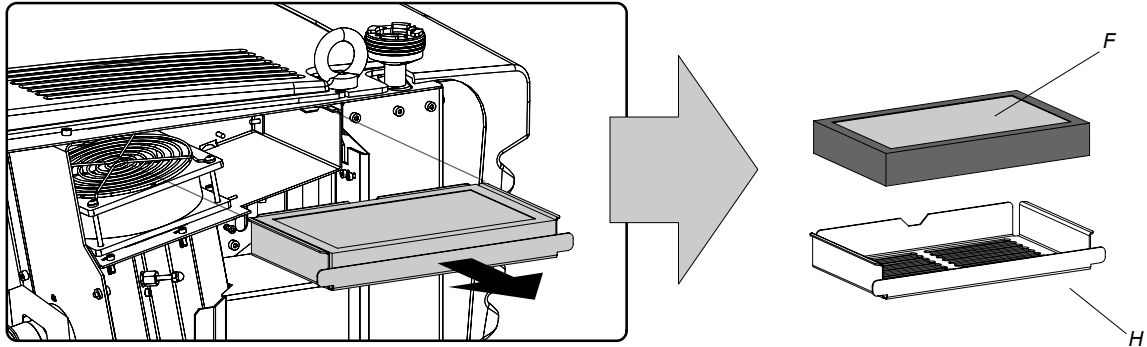


Image 11-6

3. Place a new HEPA dust filter in the filter holder.
4. Reinstall the filter holder containing the new HEPA filter.
5. Reinstall the side cover of the projector.



CAUTION: Never install a used HEPA filter. Always install a new HEPA filter.

11.6 Pressure verification of the liquid cooling circuit



CAUTION: The pressure of the liquid cooling circuit should be checked regularly. This pressure, indicated on the internal manometer, should be between 0,5 and 1 bar. If not, corrective action should be taken by qualified technical service personnel.

How to check the pressure of the liquid cooling circuit inside the projector ?

1. Remove the side cover (light processor side) of the projector.
2. Look through the small window, which is provided on the security cover of the light processor and check the pressure indicated on the internal manometer of the liquid cooling circuit.
Tip: Use a flashlight.

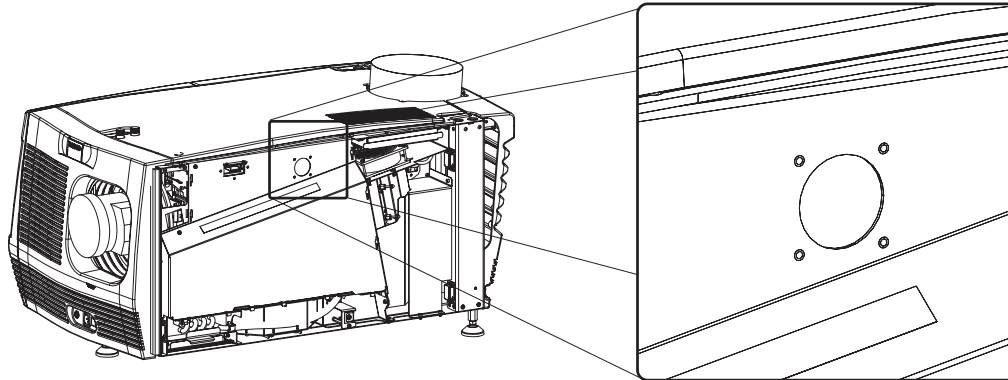


Image 11-7

3. This pressure should be between 0,5 and 1 bar. If the pressure, indicated on the manometer, is out of range, inform the responsible and qualified technicians, so they may take necessary corrective action.
4. Reinstall the side cover of the projector.

12. SERVICING

Overview

- Removal of the Input & Communication unit
- Installation of the Input & Communication unit
- Convergence (with extenders)
- Convergence (old system)
- Authorization to clear security warning

12.1 Removal of the Input & Communication unit



Removing and reinstalling the Input & Communication unit will result in an authorization request upon startup.

Necessary tools

7 mm flat screw driver.

How to remove the Input & Communication unit from the projector ?

1. Switch off the projector
2. Ensure that no cables are connected to one of the ports of the Input & Communication unit.
3. Remove the input cover.
4. Release the four captive screws in the corners of the Input and Communication unit as illustrated.

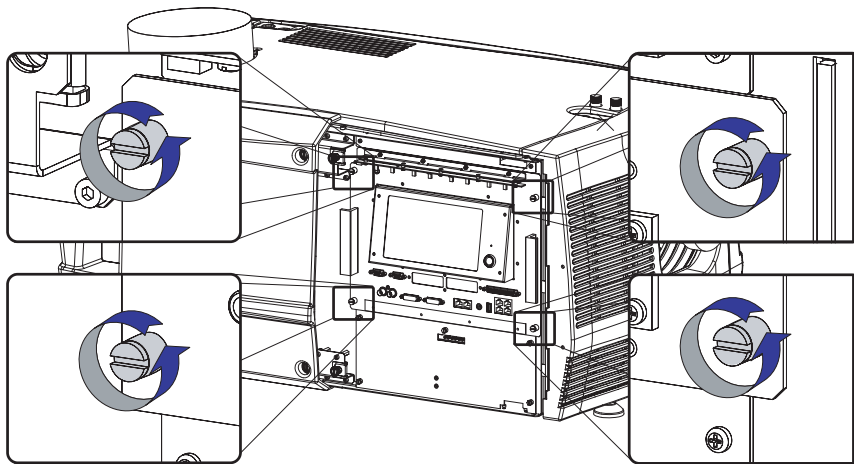


Image 12-1

5. Pull the Input & Communication unit out of its compartment, using the side handles provided.

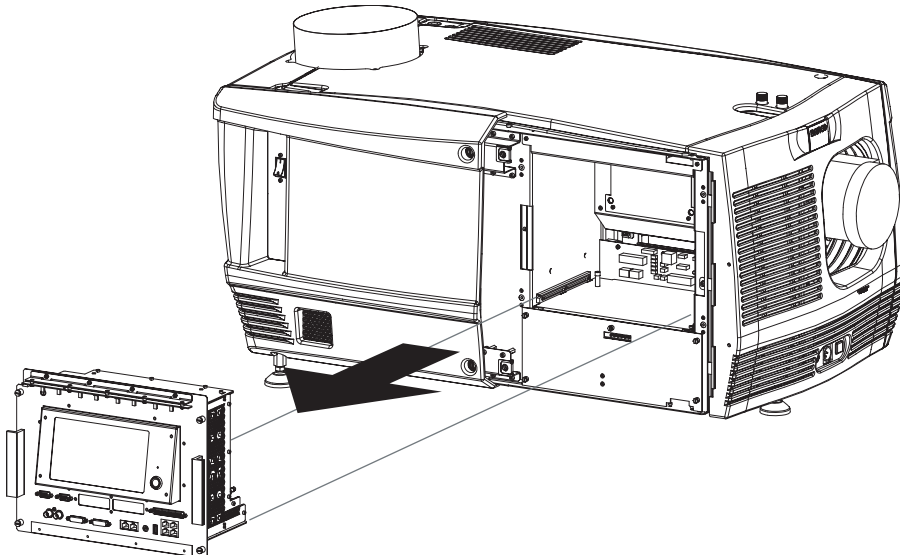


Image 12-2

12.2 Installation of the Input & Communication unit



Removing and reinstalling the Input & Communication unit will result in an authorization request upon startup.

Necessary tools

7 mm flat screw driver.

How to install the Input & Communication unit of the projector ?

1. Ensure that the projector is switched off.
2. Remove the input cover, if not removed yet.
3. Hold the Input & Communication unit by its handles and gently slide the unit into the guides at the bottom of the Input & Communication compartment.

Caution: It is important to be careful when plugging the Input & Communication unit into the socket (C) of the Formatting Interface Board. Always slide the Input & Communication unit at right angles into position. Neglecting this may result in damage to the pins of the Formatting Interface Board or Input & Communication unit.

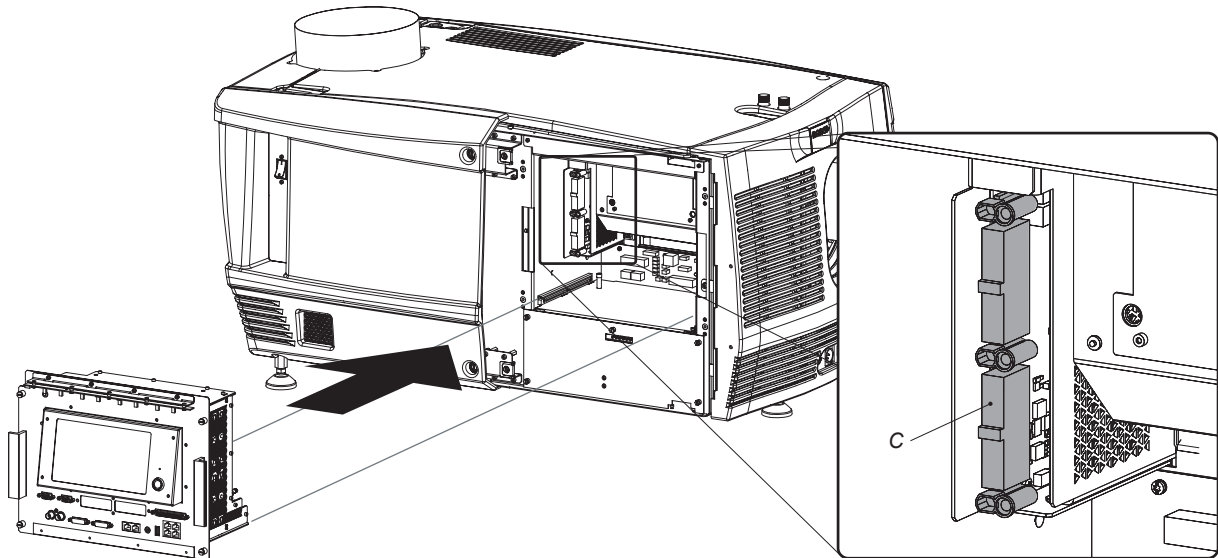


Image 12-3

4. Push the Input & Communication unit forward until you feel the connectors of the unit fit in their sockets. The back of the front plate of the unit must touch the chassis of the projector.
5. Secure the Input & Communication unit by fastening the four captive screws in the corners of the unit.

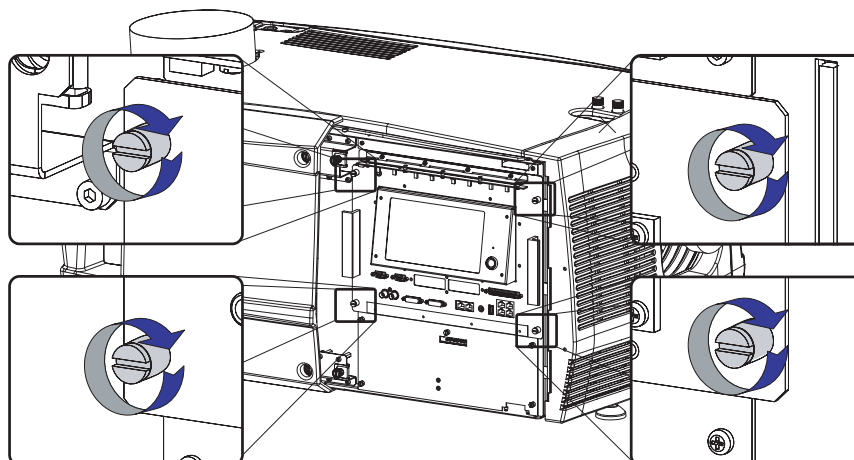


Image 12-4



When changing the Input & Communication Unit, a code must be entered before you can continue using your projector. This code contains the serial number of your projector and the different keys necessary for your projector. This unique code can only be generated by Barco. Therefore, copy the UN code and send it to Barco together with the installed keys. See procedure "Request for new serial number and corresponding keys" in the user guide of the Communicator software.

12.3 Convergence (with extenders)

About this chapter

This chapter describes how to prepare the projector for convergence adjustment and how to adjust the convergence in case the convergence mechanism is equipped with extenders.



The adjustment procedures described in this chapter are only valid for these Light Processors which are equipped with extended control knobs for convergence adjustment.

Overview

- Convergence controls
- Preparing for convergence adjustment
- Converging the red pattern onto the blue pattern
- Converging the green pattern onto the blue pattern

12.3.1 Convergence controls

Extended control knobs

As the DMD of the blue channel is not accessible in the projector, the image of this DMD will be taken as reference. Red and green will be aligned on blue when a small convergence drift is recognized. So, the DMD of the blue channel is fixed and can not be adjusted. The red and green channel are equipped with three extended control knobs for convergence adjustment. The adjustment knobs are numbered from 1 to 6 and have the same color as the channel which they effect.

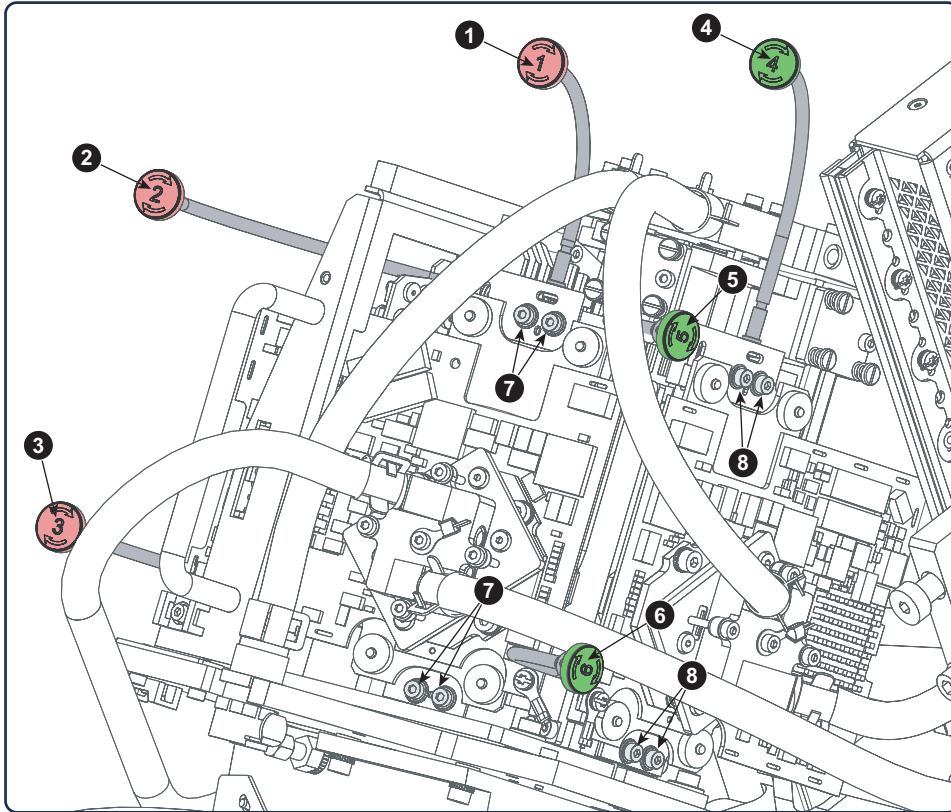


Image 12-5

- 1 Red channel, knob number 1.
- 2 Red channel, knob number 2.
- 3 Red channel, knob number 3.
- 4 Green channel, knob number 4.
- 5 Green channel, knob number 5.
- 6 Green channel, knob number 6.
- 7 Convergence lock screws of the red channel.
- 8 Convergence lock screws of the green channel.

To avoid convergence drift the position of the DMD is fixed with 4 screws per channel. These screws have to be released to enable the convergence mechanism.



CAUTION: Do not turn the convergence control knobs prior to releasing the four convergence lock screws. Neglecting may result in permanent damage of the convergence adjustment mechanism.

Convergence test pattern

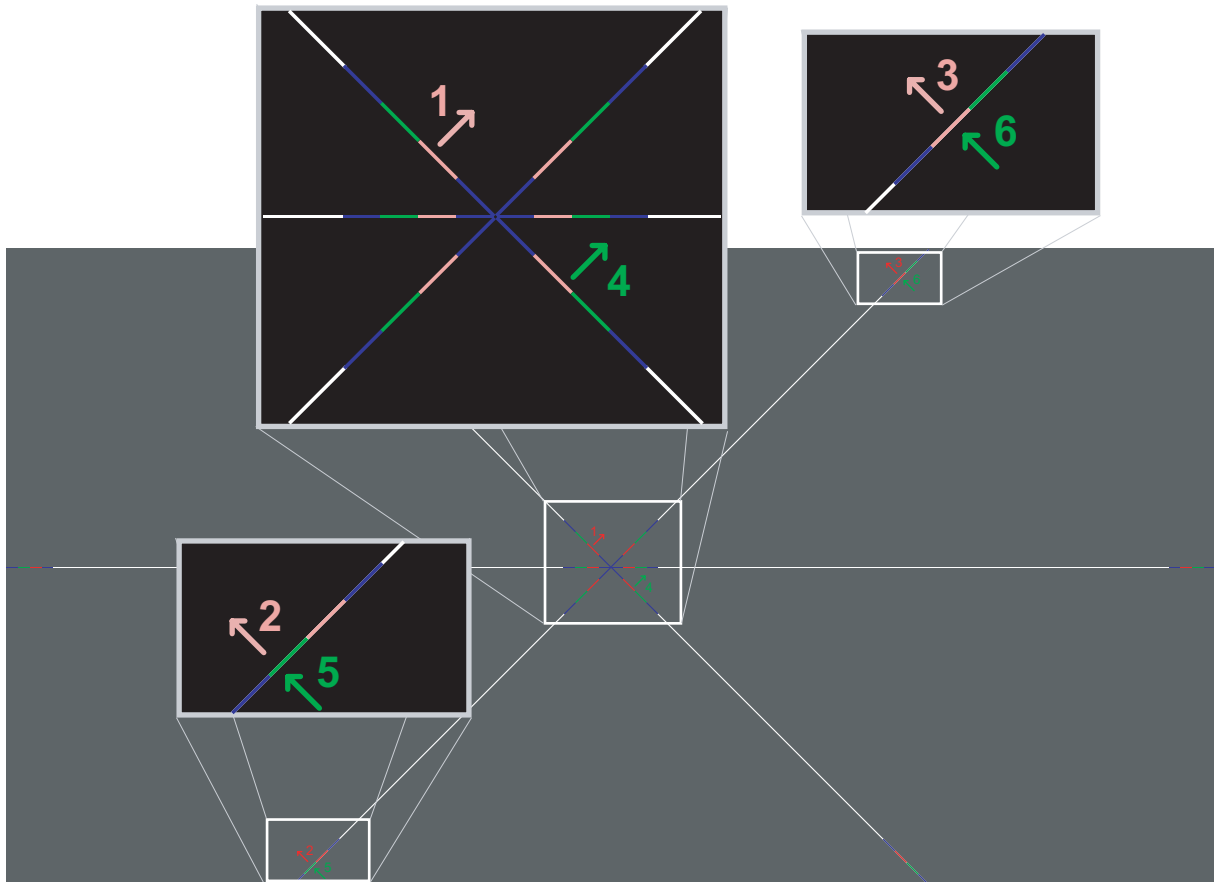


Image 12-6

The test pattern illustrated above is specially designed for convergence purposes. The test pattern has three red arrows numbered from 1 to 3 and three green arrows numbered from 4 to 6. These numbers and colors correspond with the numbers and colors of the extended control knobs (image 12-5). The direction of the arrow shows the movement of the channel color (red or green) when turning the corresponding knob in the direction indicated by the arrow marked on the knob.



The three convergence control knobs of one channel stand in relation with each other. So, a change to one of them will also effect the adjustment results of the two others. Therefore, all three control knobs have to be alternately and repeatedly adjusted until the projected color is perfectly converged with the blue reference color of the test pattern.

Adjustment range

- The adjustment range is limited to approximately 30 pixels in both directions.
- One turn (360°) of a control knob relates to an approximately 30 pixel displacement on the screen.
- When changing the adjustment direction there will be some play of approximately one turn (360°).

12.3.2 Preparing for convergence adjustment

Necessary tools

Flat blade screwdriver 7x150.

How to set up the projector for convergence adjustment?

1. Remove all side covers and top cover of the projector.
2. Open the sealed compartment of the Light Processor. See page 130.
3. Remove the convergence cover plate in the top plate as follow:
 - a) loosen both captive screws (reference 1).
 - b) slide the cover plate forward until it becomes free from the top plate.
 - c) take off the cover plate.

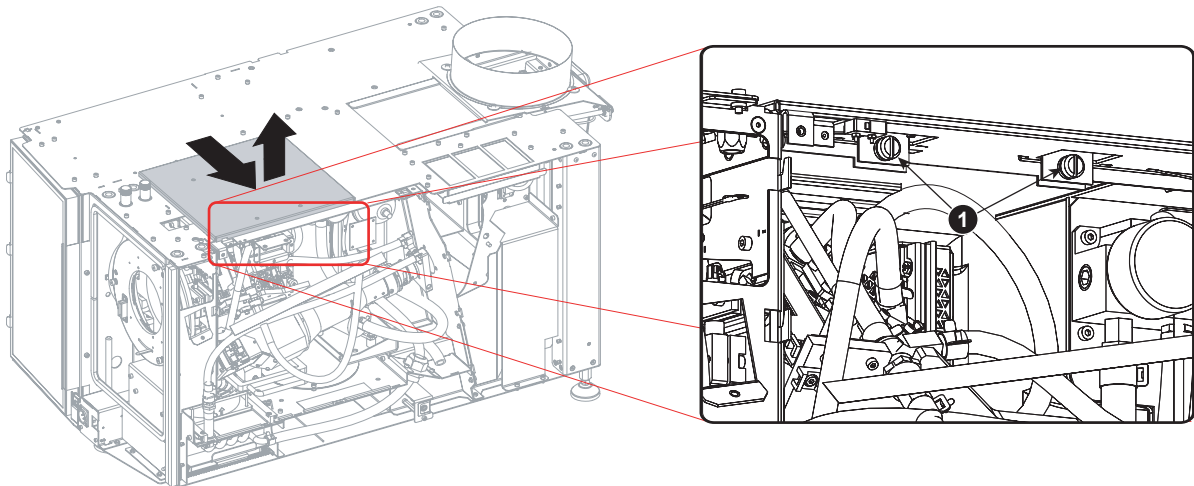


Image 12-7

4. Reinstall the lens and start up the projector.
5. Use the Communicator software to activate the convergence test pattern.

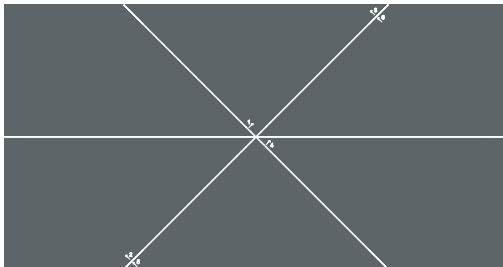


Image 12-8

12.3.3 Converging the red pattern onto the blue pattern



This adjustment procedure assumes that the projector is prepared for convergence adjustment. See page 106.

Necessary tools

2,5 mm Allen wrench.

How to converge the red pattern onto the blue pattern?

1. Release the four convergence lock screws (reference 7) of the red channel. Use a 2,5 mm Allen wrench

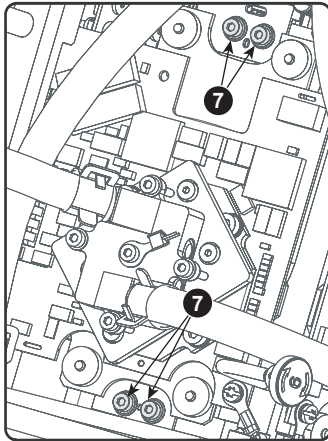


Image 12-9

2. Slightly turn the red colored control knob number 1 until the red pattern in the center of the projected image converges with the blue pattern. Note that a turn of a few degrees corresponds with one full pixel. The direction on the control knob corresponds with the direction of the arrow of the test pattern.

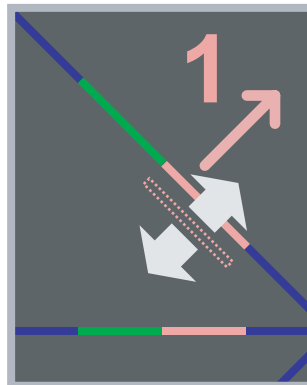
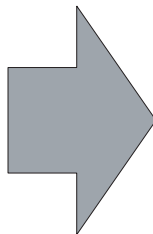
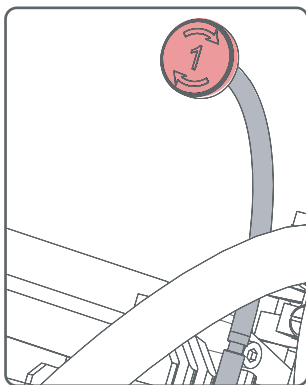


Image 12-10

3. Slightly turn the red colored control knob number 2 until the red pattern in the lower left of the projected image converges with the blue pattern.

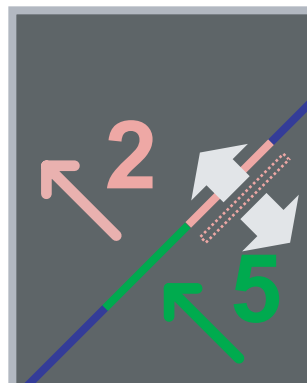
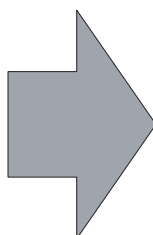
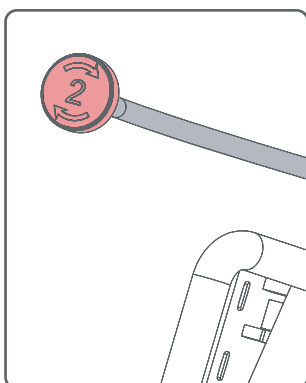


Image 12-11

12. Servicing

4. Slightly turn the red colored control knob number 3 until the red pattern in the upper right of the projected image converges with the blue pattern.

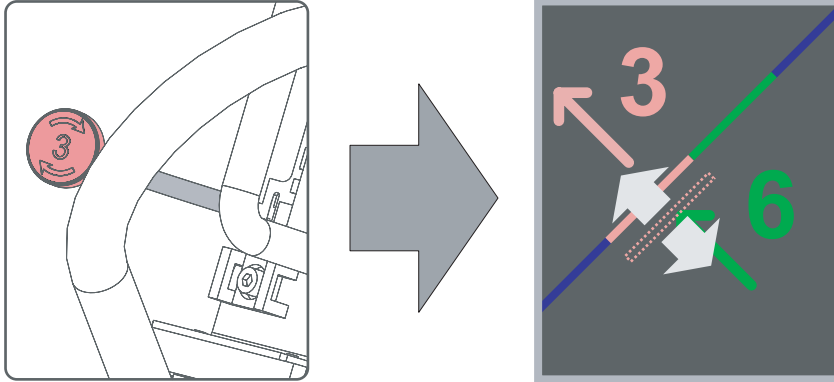


Image 12-12

5. Repeat step 3 and 4 until coincidence is obtained of the red pattern in the lower left and upper right of the projected image.
6. Repeat from step 2 until full coincidence is obtained of the red pattern in the center, lower left and upper right of the projected image.
7. Carefully secure the position of the DMD assembly by tightening the four convergence lock screws (reference 7 of image 12-9) of the red channel. Fasten the screws crosswise with small adjustments to each screw. Use a 2,5 mm Allen wrench.

12.3.4 Converging the green pattern onto the blue pattern



This adjustment procedure assumes that the projector is prepared for convergence adjustment. See page 106.

Necessary tools

2,5 mm Allen wrench.

How to converge the green pattern onto the blue pattern?

1. Release the four convergence lock screws (reference 8) of the green channel. Use a 2,5 mm Allen wrench

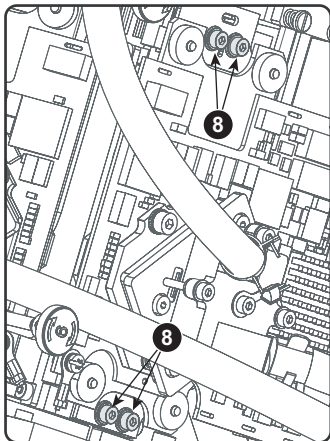


Image 12-13

2. Slightly turn the green colored control knob number 4 until the green pattern in the center of the projected image converges with the blue pattern. Note that a turn of a few degrees corresponds with one full pixel. The direction on the control knob corresponds with the direction of the arrow of the test pattern.

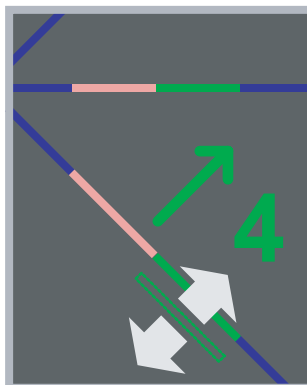
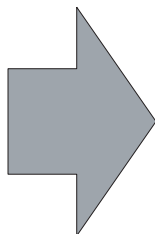
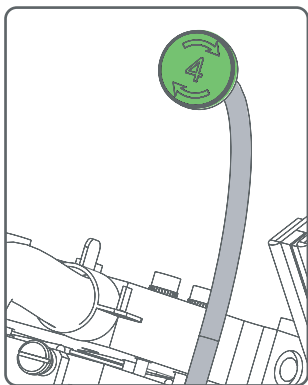


Image 12-14

3. Slightly turn the green colored control knob number 5 until the green pattern in the lower left of the projected image converges with the blue pattern.

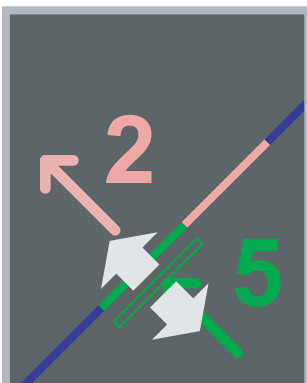
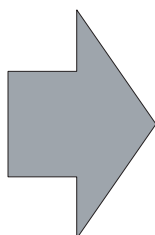
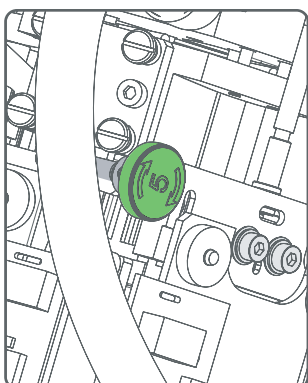


Image 12-15

12. Servicing

4. Slightly turn the green colored control knob number 6 until the green pattern in the upper right of the projected image converges with the blue pattern.

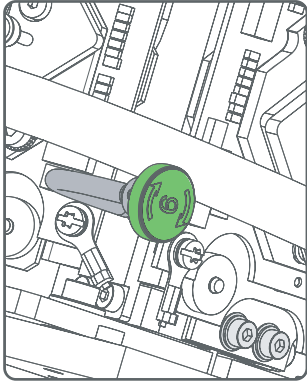
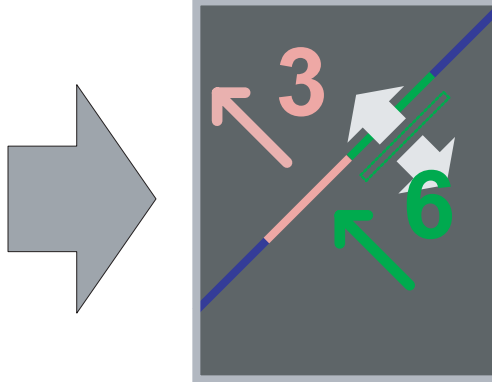


Image 12-16



5. Repeat step 3 and 4 until coincidence is obtained of the green pattern in the lower left and upper right of the projected image.
6. Repeat from step 2 until full coincidence is obtained of the green pattern in the center, lower left and upper right of the projected image.
7. Carefully secure the position of the DMD assembly by tightening the four convergence lock screws (reference 8 of image 12-13) of the green channel. Fasten the screws crosswise with small adjustments to each screw. Use a 2,5 mm Allen wrench.
8. Close the sealed compartment and reinstall all covers of the projector.

12.4 Convergence (old system)

About this chapter

This chapter describes how to prepare the projector for convergence adjustment and how to adjust the convergence in case the convergence mechanism is NOT equipped with extenders.

Overview

- Action of the convergence controls
- Re-converging Green on Blue
- Readjustment of the plungers
- Re-converging Red on Blue

12.4.1 Action of the convergence controls

Influence of the controls on the convergences

The DMD assemblies are provided with 3 adjustable screws. The assembly itself is kept in place by a plunger near the adjustable screw. These plungers may not be re-adjusted (indicated in the drawing with the prohibited sign).

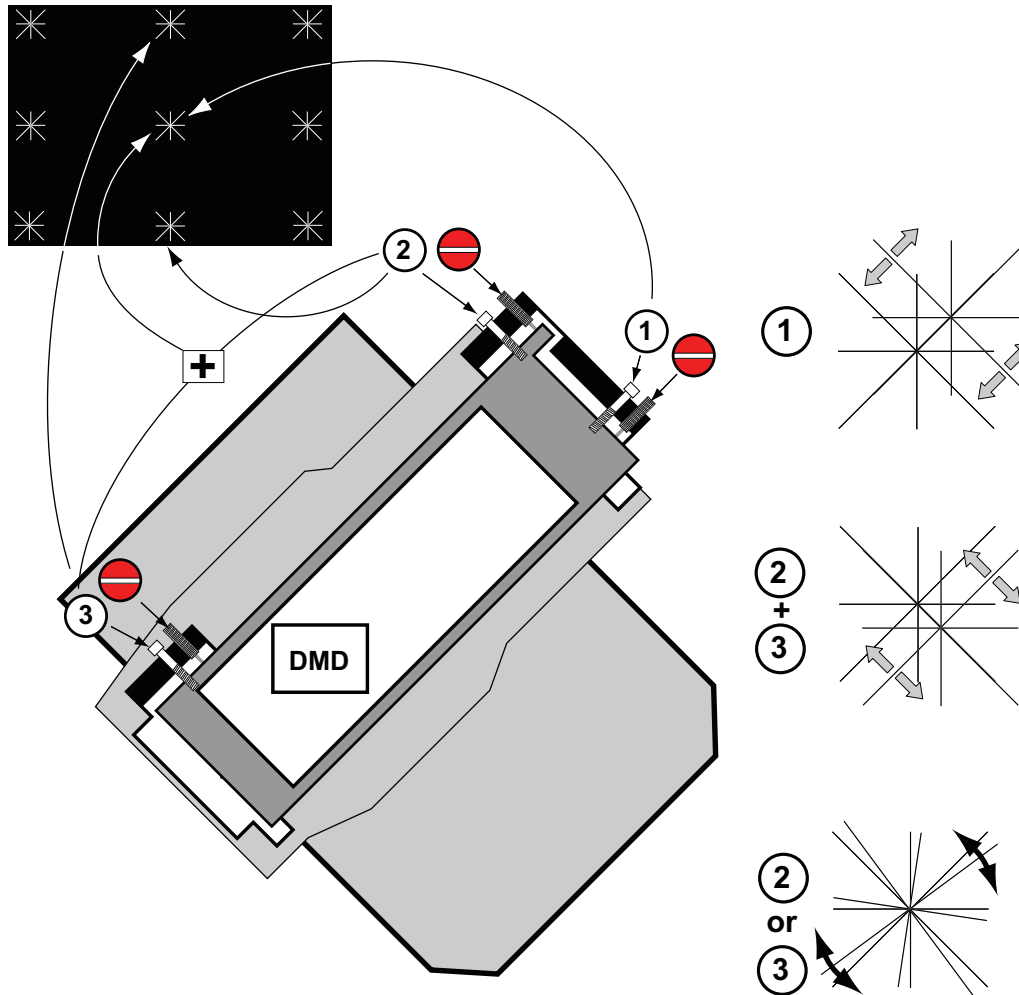


Image 12-17
Influence of the controls on the convergence

Adjusting the control(s):

- (1): Move the respective convergence pattern up or downwards 45° diagonally (Top-Left/Bottom-Right).
- (2) & (3) simultaneously: Move the respective convergence pattern up or downwards -45° diagonally (Top-Right/Bottom-Left).
- (2) or (3) separately: rotate the convergence pattern respectively +X° or -X°.

12.4.2 Re-converging Green on Blue



CAUTION: Be cautious when adjusting the convergence controls, because a small turn causes a large degree of shift.



Before starting the re-convergence, remove both side covers, front cover and top cover.

Location of the lock-down screws

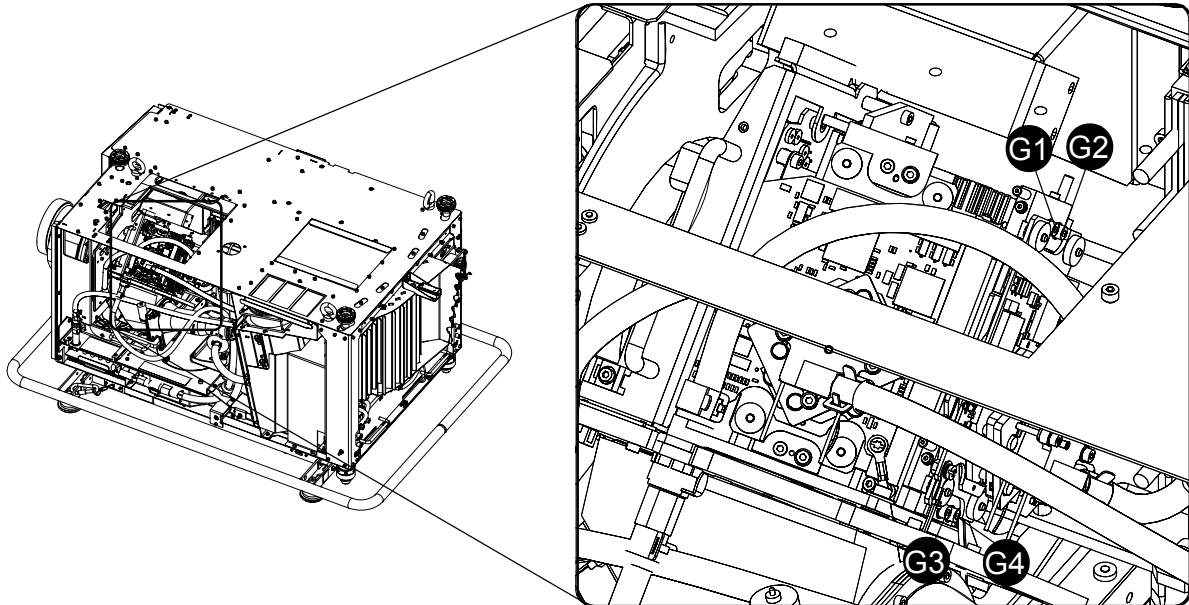


Image 12-18
Lock down screws green

Location of the convergence adjustable screws

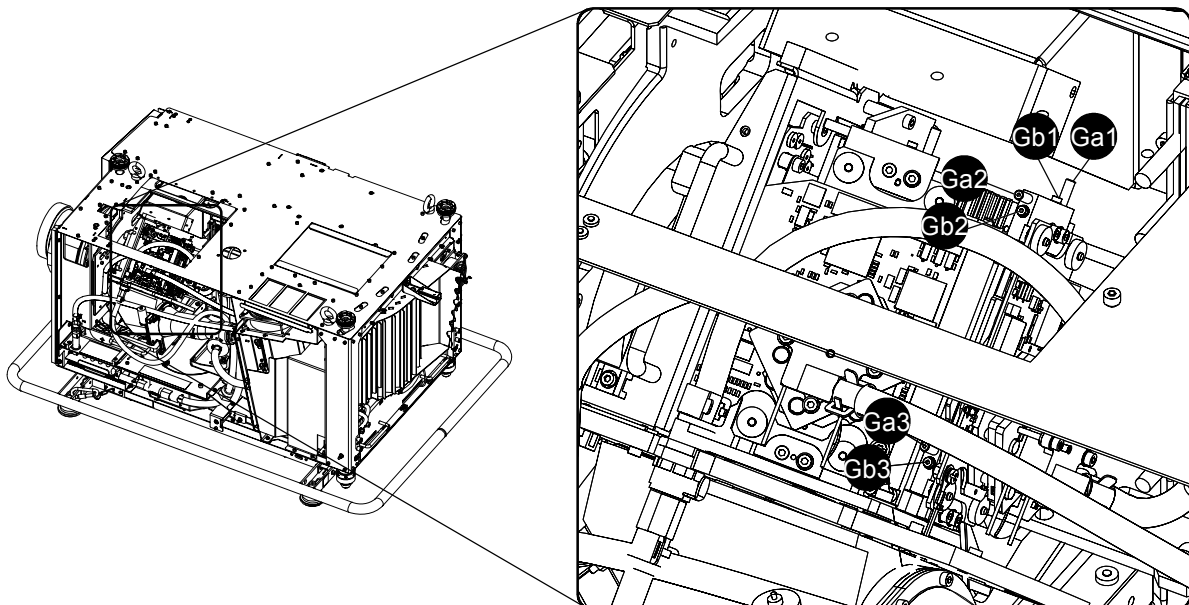


Image 12-19
Convergence screws green

Necessary tools

- 2x R847204 : steel screwdriver with 1/16" ended hex blade.
- R847205 : square drive socket with soldered hexagon key of 2.5 mm
- R847203 : Steel screwdriver with 0.05" ended hex blade
- Allen key 3 mm
- Allen key 2.5 mm

How to re-converge

1. Remove the convergence cover plate (A) in the top plate by removing the necessary screws.

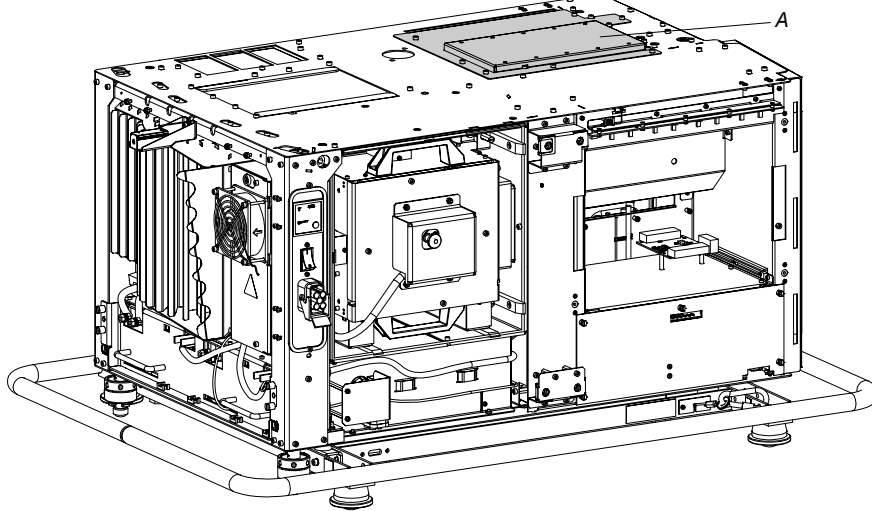


Image 12-20
Convergence cover

2. Is your projector an FLM HD projector?
If yes, Loosen the 4 screws Cr and the 4 screws Cg on the heat pipes of HD light processors. Then continue with step 3.

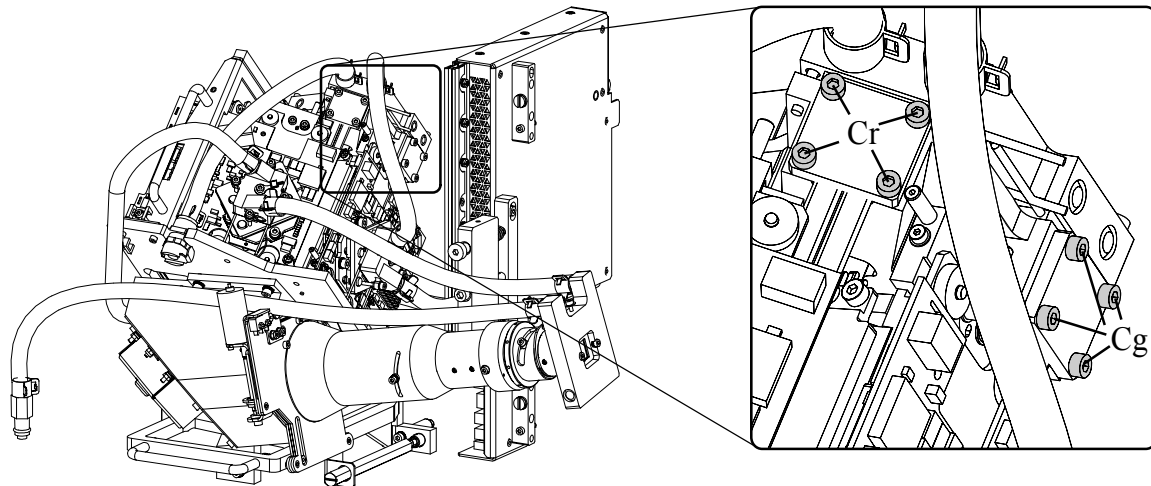


Image 12-21
Heat pipes on HD light processor

If no, go to step 3

3. Put the square drive socket, with a soldered hexagon key onto a ratchet.
4. Carefully release the 4 lock-down screws, holding the DMD unit onto Prism frame.
Tip: Release the lock-down screws in a way the DMD assembly becomes slightly movable. Keep in mind that at the end of the re-convergence, tightening the DMD unit can cause some small convergence drift.
5. Start the re-convergence in the center of the image as follows (using tool R847204):
 - Adjust the control Gb1 until the crossing of the center Green convergence pattern coincides with the Top left/Bottom right diagonal line of the center Blue convergence pattern.
 - Adjust the control Gb2 & Gb3 simultaneously until the crossing of the center Green convergence pattern coincides with the Top right/Bottom left diagonal line of the center Blue convergence pattern.

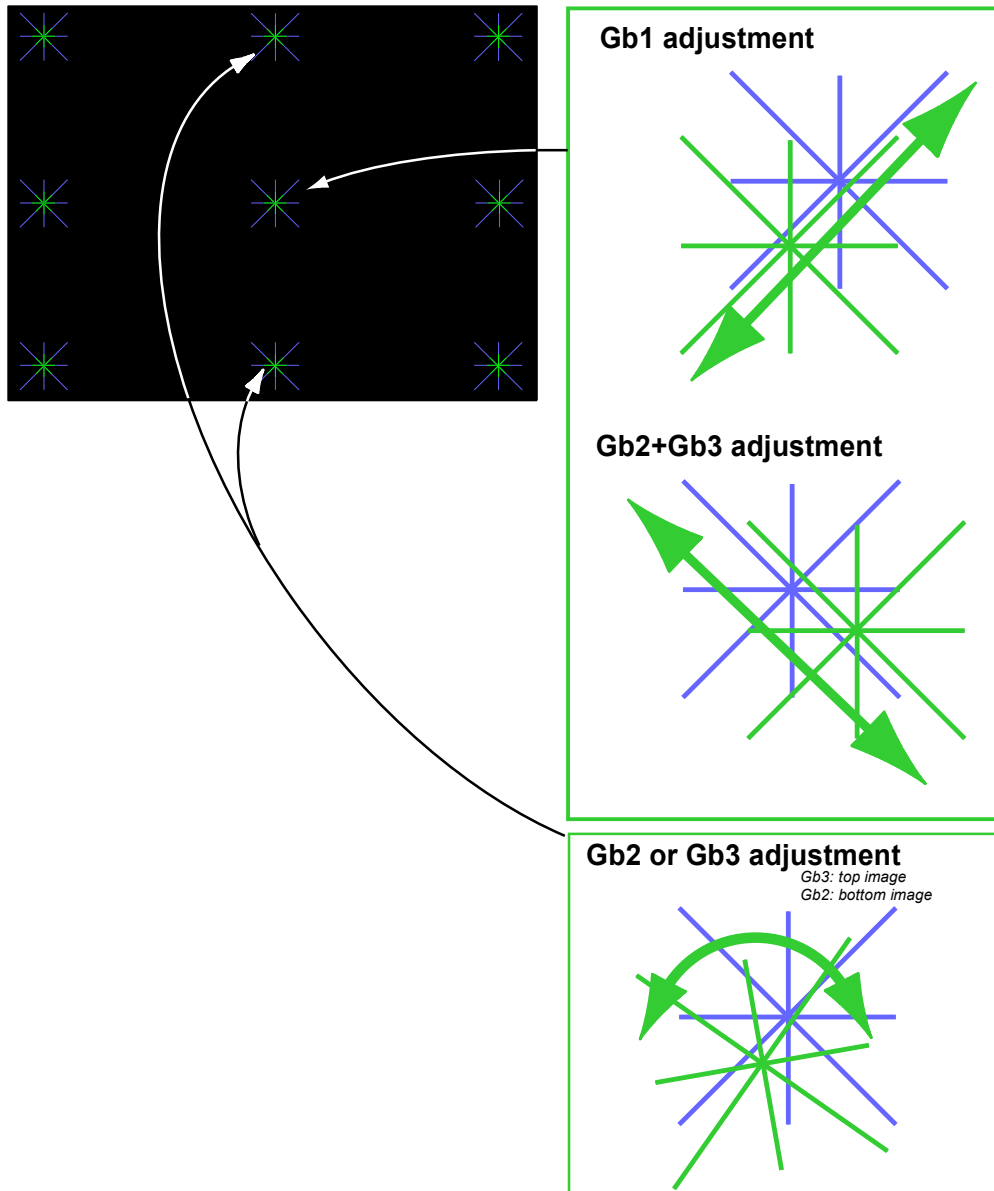


Image 12-22
Green convergence adjustment

6. Continue with re-convergence in center at the Top and the Bottom of the image as follows (using tool R847204):
 - Adjust the control Gb3 for coincidence of the diagonal Green line of the Green convergence pattern with the Blue line of the Blue convergence pattern in the center at the top of the image.
 - Adjust the control Gb2 for coincidence of the diagonal Green line of the Green convergence pattern with the Blue line of the Blue convergence pattern in the center at the bottom of the image.
7. Because the different adjustments interact, step 4 and 5 have to be repeated until full coincidence of both convergence patterns is obtained.
8. Carefully secure the position of the DMD assembly by tightening the 4 lock-down screws.

12.4.3 Readjustment of the plungers



CAUTION: Do NOT adjust the plungers on the DMD assembly, if small convergence drifts have to be corrected only.

For extreme convergence adjustments, possible in case after the replacement of a DMD assembly, a readjustment of the plungers can be necessary.

Convergence screw is end of course

1. Turn the plunger (A) a few turns counterclockwise.

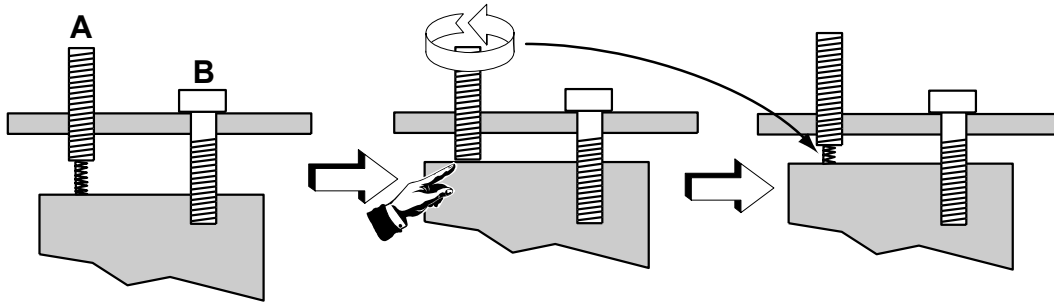


Image 12-23
Readjustment plunger

2. Continue with the fine convergence adjustment

Convergence screw senses no resistance

1. Turn the plunger clockwise until resistance is sensed again.

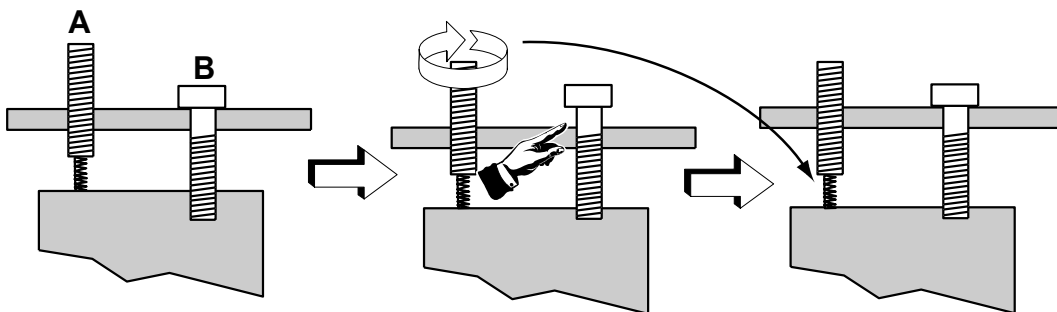


Image 12-24
Readjustment plunger

2. Continue with the fine convergence adjustment

12.4.4 Re-converging Red on Blue



CAUTION: Be cautious when adjusting the convergence controls, because a small turn causes a large degree of shift.

Location of the lock-down screws

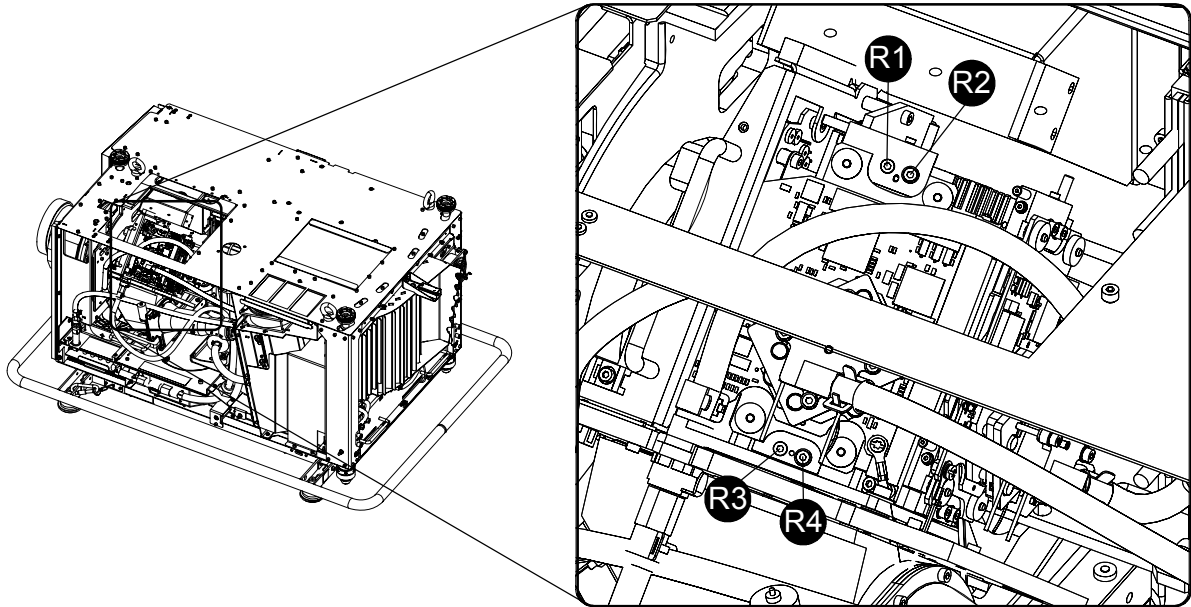


Image 12-25
Lock down screws red

Location of the convergence adjustable screws

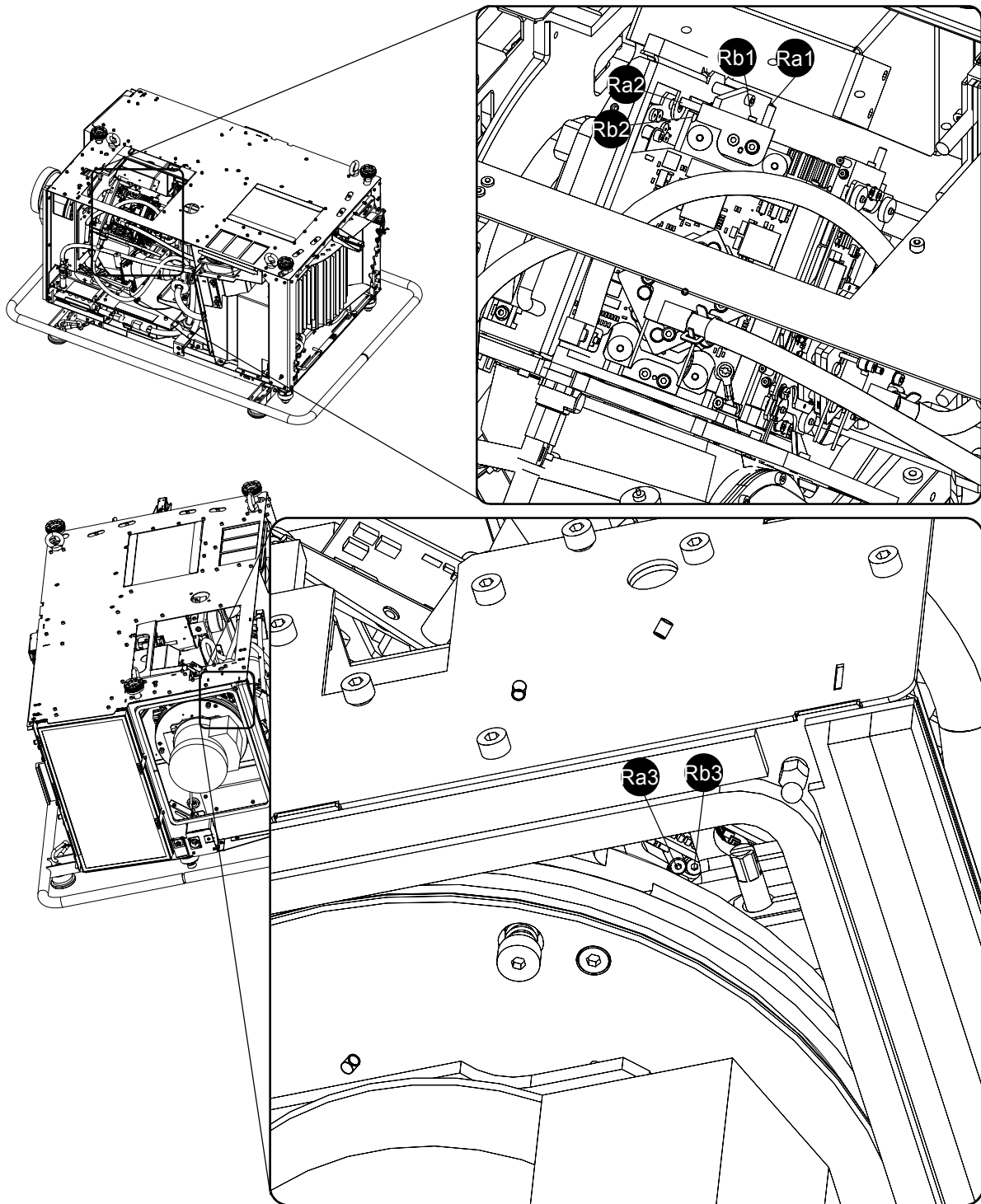


Image 12-26
Convergence screws red

Necessary tools

- 2x R847204 : steel screwdriver with 1/16" ended hex blade.
- R847205 : square drive socket with soldered hexagon key of 2.5 mm
- R847203 : Steel screwdriver with 0.05" ended hex blade
- Allen key 3 mm
- Allen key 2.5 mm

How to re-converge

1. Put the square drive socket, with soldered hexagon key, onto a ratchet.

2. Carefully release the 4 lock-down screws, holding the DMD unit onto Prism frame.

Tip: Release the lock-down screws in a way the DMD assembly becomes slightly movable. Keep in mind that at the end of the re-convergence, tightening the DMD unit can cause some small convergence drift.
3. Start the re-convergence in the center of the image as follows (using tool R847204):
 - Adjust the control Rb1 until the crossing of the center Red convergence pattern coincides with the Top left/Bottom right diagonal line of the center Blue convergence pattern.
 - Adjust the control Rb2 & Rb3 simultaneously until the crossing of the center Red convergence pattern coincides with the Top right/Bottom left diagonal line of the center Blue convergence pattern.

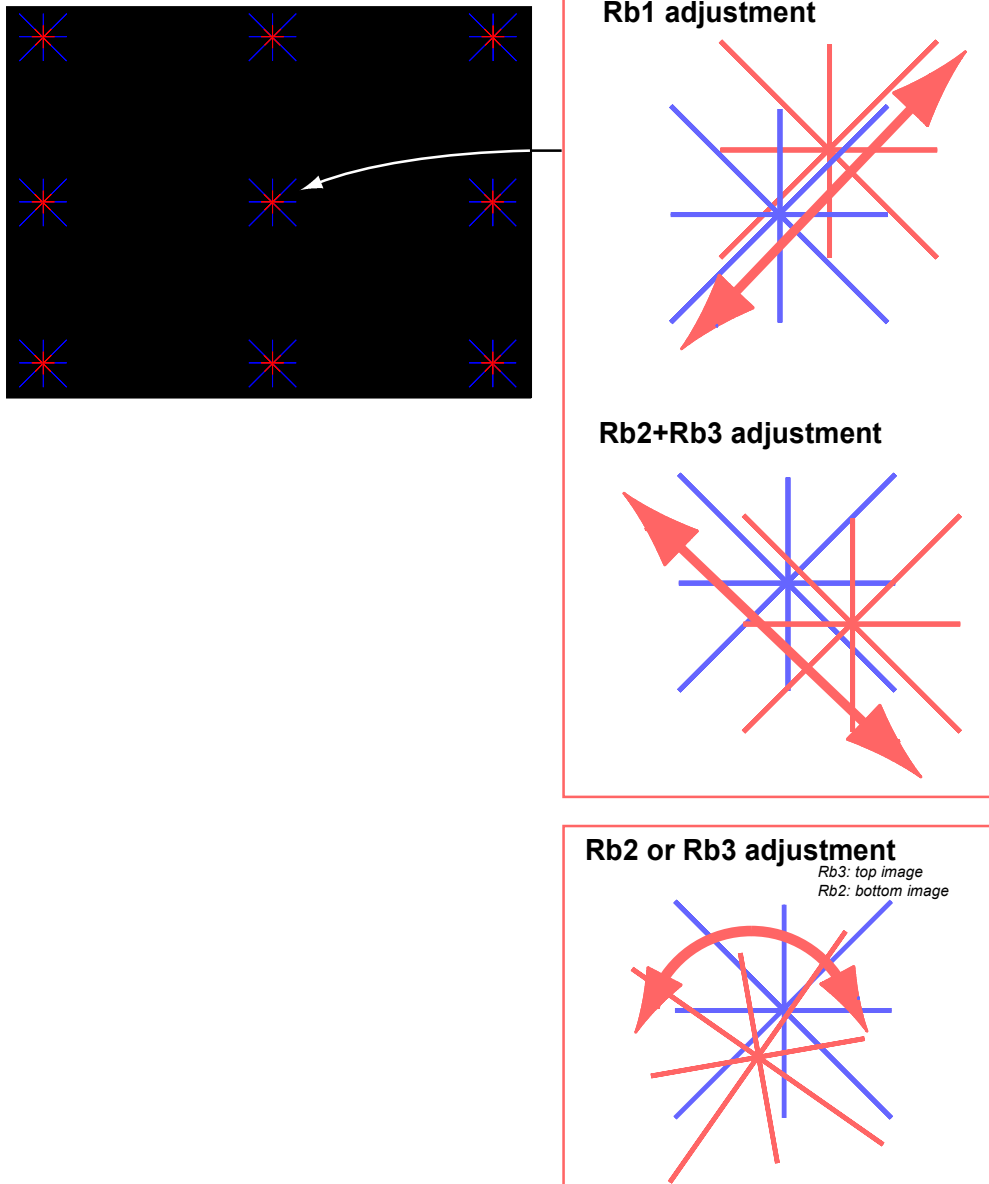


Image 12-27

4. Continue with re-converging the center at the Top and the Bottom of the image as follows (using tool R847204):
 - Adjust the control Rb3 for coincidences of the diagonal Red line of the Red convergence pattern with the Blue line of the Blue convergence pattern in the center at the top of the image.
 - Adjust the control Rb2 for coincidences of the diagonal Red line of the Red convergence pattern with the Blue line of the Blue convergence pattern in the center at the bottom of the image
5. Because the different adjustments interact, step 3 and 4 have to be repeated until full coincidence of both convergence patterns is obtained.
6. Carefully secure the position of the DMD assembly by tightening the 4 lock-down screws.
7. Is the projector an FLM HD projector?
 - If yes, Secure the 4 screws on the heat pipes for red and green (Cr an Cg).



If necessary to readjust the plungers, see "Readjustment of the plungers", page 116.



Close the convergence cover, reinstall all covers of the projector.

12.5 Authorization to clear security warning

When is an authorization required to clear the security warning?

If the Input & Communication unit has been removed or the sealed compartment has been opened an authorization will be required to clear the security warning.

Necessary tools

- Security key (Dallas iButton®).
- Authorization pin code.

Authorization procedure to clear security warning

1. Ensure that the Input & Communication unit is properly installed.
2. Start up the projector (standby mode).
3. Initiate authorization by holding the security key in the security socket D..

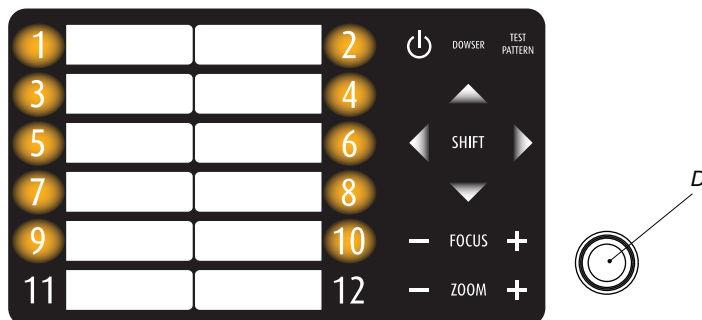


Image 12-28

The color of the backlight of the numeric keys 1 to 10 of the local keypad changes from blue to yellow.

4. Enter pin code within 5 seconds. Maximum five (5) attempts permitted.
 - In case no keys are pressed, the color of the backlight of the numeric keys 1 to 10 changes back to blue.
 - In case of an **incorrect code** entry, the color of the backlight of the numeric keys 1 to 10 changes to **red** for 1 second and than back to blue.
 - In case of a **correct code** entry, the color of the backlight of the numeric keys 1 to 10 changes to **green** for 1 second and than back to blue.



Each attempt to clear the security warning and its result (successfully or unsuccessfully) is logged inside the projector.

13. REMOVAL AND INSTALLATION OF PROJECTOR COVERS

About this chapter

Most maintenance and servicing procedures demand removing one or more of the projector covers to gain access to the parts to maintain or to service. To avoid redundancy, all procedures about cover removing or installing are grouped together in this chapter. The maintenance and servicing procedures also refer to this chapter if required. The procedures in this chapter describe, with detailed step by step actions and illustrations, how to remove or install the projector covers. Note that some covers may only be removed by qualified service personnel, see remarks above each procedure.



WARNING: Always switch off the projector and unplug the power cord before removing one of the covers, unless otherwise stated.

Overview

- Removal of the lamp cover
- Removal of the input cover
- Removal of the front cover
- Removal of the side cover
- Removal of the rear cover
- Removal of the top cover
- Open the sealed compartment
- Close the sealed compartment
- Installation of the top cover
- Installation of the rear cover
- Installation of the side cover
- Installation of the front cover
- Installation of the input cover
- Installation of the lamp cover

13.1 Removal of the lamp cover



WARNING: This procedure may only be performed by qualified technical service personnel.

Necessary tools

7 mm flat screw driver.

How to remove the lamp cover of the projector?

1. Release the two captive screws at the top and bottom right side of the lamp cover, using a flat screw driver.

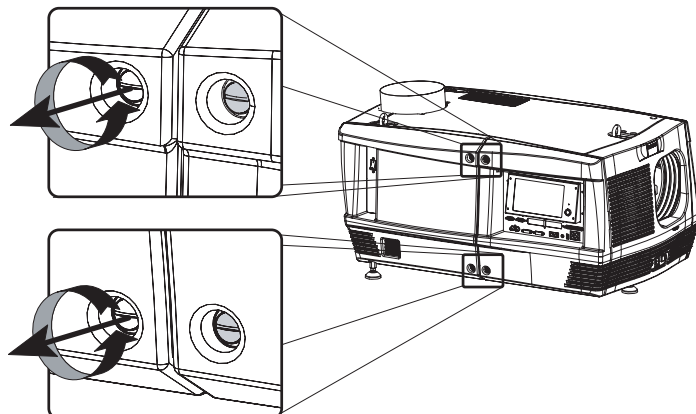


Image 13-1

2. Remove the lamp cover from the projector doing the following:
 - a) gently pull out the left bottom corner (A) of the lamp cover,
 - b) then gently pull out the left top corner (B) of the lamp cover,
 - c) then move the lamp cover away from the projector (C).

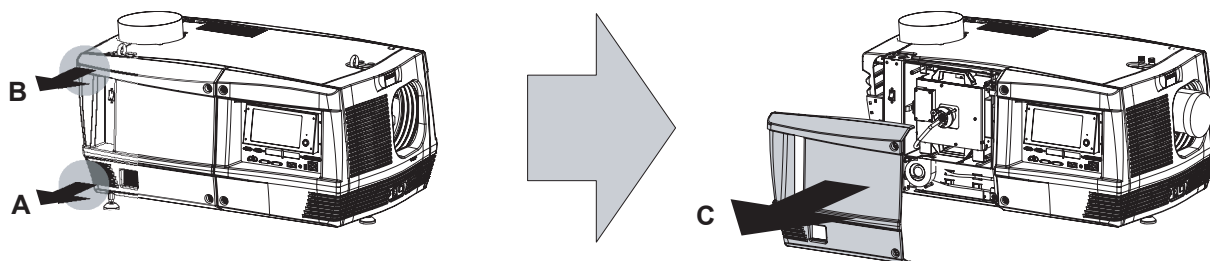


Image 13-2

13.2 Removal of the input cover



WARNING: This procedure may only be performed by qualified technical service personnel.

Necessary tools

7 mm flat screw driver.

How to remove the input cover of the projector?

1. Release the two captive screws at the top and bottom left side of the input cover, using a flat screw driver.

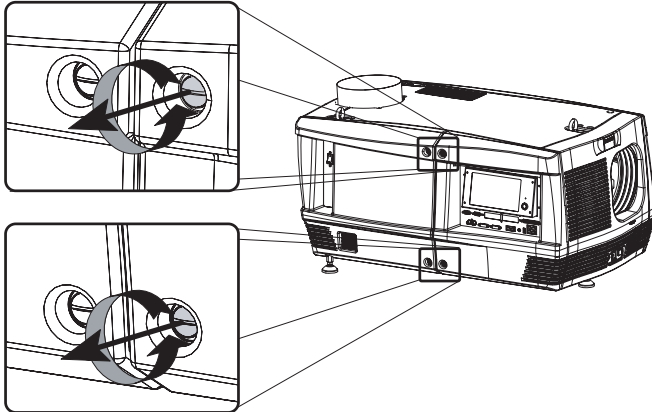


Image 13-3

2. Remove the input cover from the projector doing the following:
 - a) gently pull out the right bottom corner (A) of the input cover,
 - b) then gently pull out the right top corner (B) of the input cover,
 - c) then move the input cover away from the projector (C).

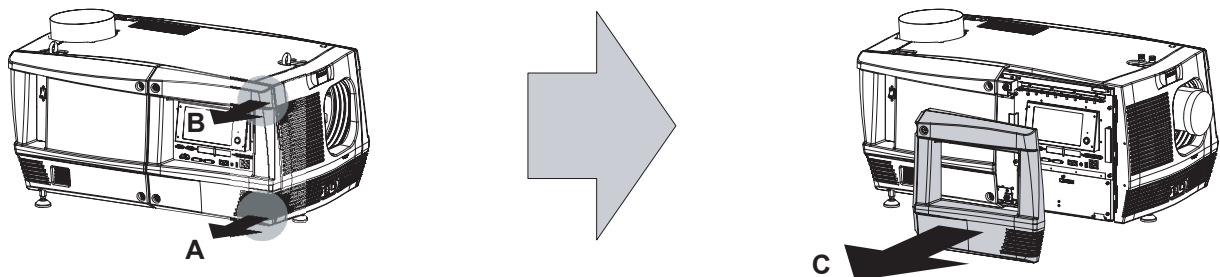


Image 13-4

13.3 Removal of the front cover



The input cover and the lens have to be removed before removing the front cover. See procedures "Removal of the input cover", page 125, and "Lens removal", page 37.

Necessary tools

7 mm flat screw driver.

How to remove the front cover of the projector?

1. Check if the input cover and the lens are removed.
2. Remove the rubber dust ring from the lens holder. See the detail at the right side of image 13-5.
3. Release the captive screw at the middle bottom of the front cover, using a flat screw driver.

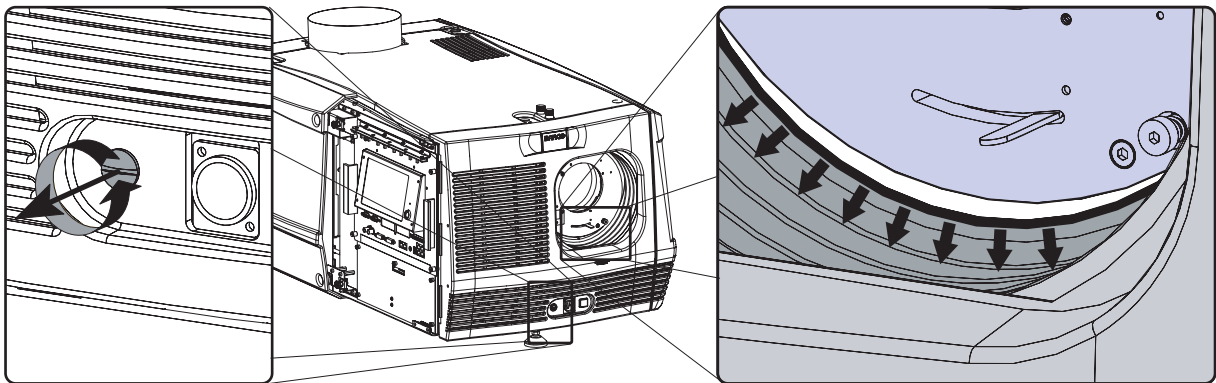


Image 13-5

4. Remove the front cover from the projector doing the following:
 - a) standing in front of the projector, pull the upper right corner (A) of the front cover toward you until the latch releases,
 - b) pull the lower right corner (B) of the front cover toward you until the latch releases,
 - c) then move the front cover away from the projector.

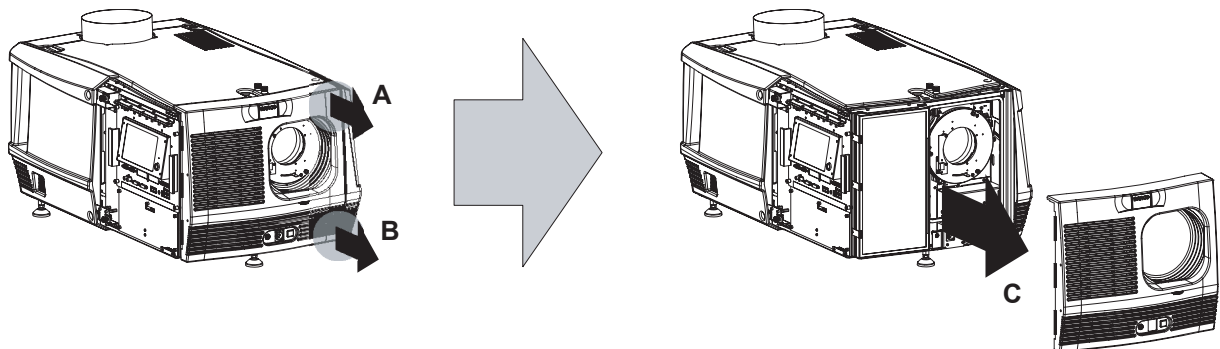


Image 13-6

13.4 Removal of the side cover

Necessary tools

7 mm flat screw driver.

How to remove the side cover of the projector?

1. Release the captive screw at the middle bottom of the side cover, using a flat screw driver.

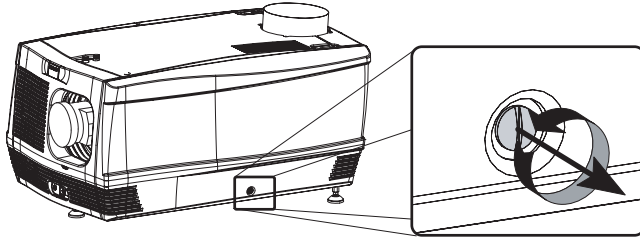


Image 13-7

2. Remove the side cover from the projector doing the following:
 - a) gently pull out the bottom corners (A) of the side cover,
 - b) then gently pull out the top corners (B) of the side cover,
 - c) then move the side cover away from the projector (C).

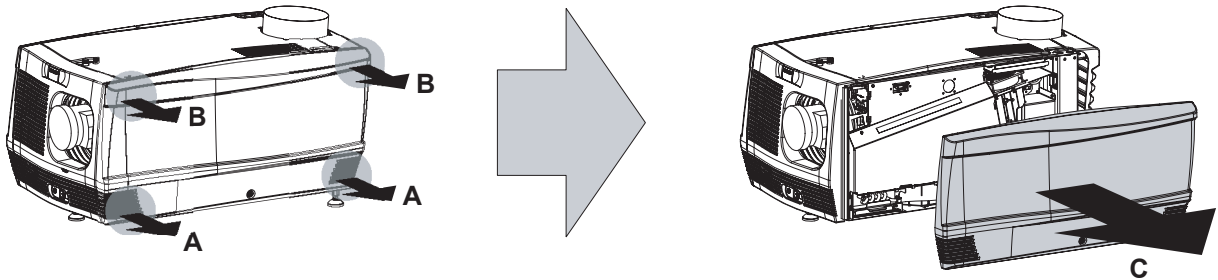


Image 13-8

13.5 Removal of the rear cover



WARNING: This procedure may only be performed by qualified technical service personnel.

Necessary tools

7 mm flat screwdriver.

How to remove the rear cover from the projector?

1. Release the two captive screws at the bottom corners of the rear cover, using a flat screw driver.

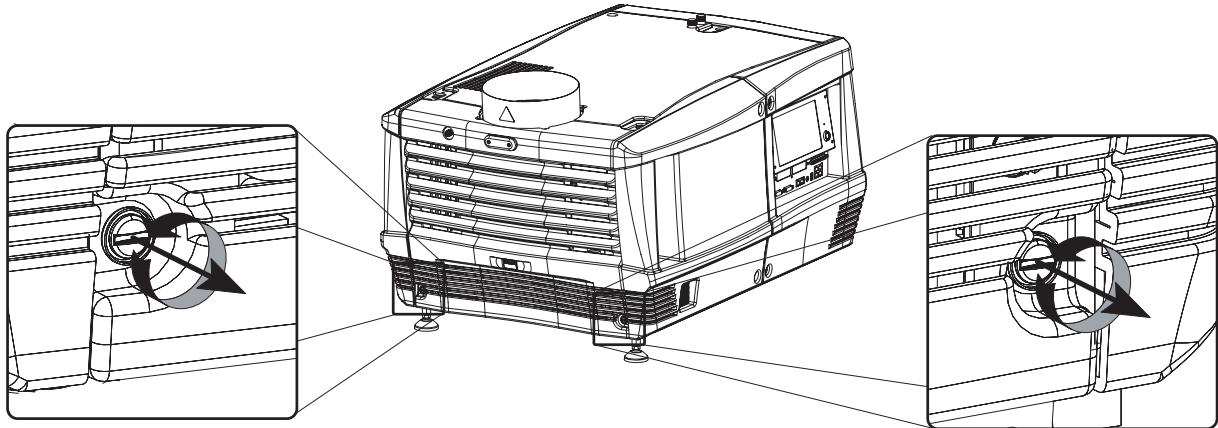


Image 13-9

2. Remove the rear cover of the projector doing the following:
 - a) gently pull out the top corners of the rear cover,
 - b) then move the rear cover away from the projector.

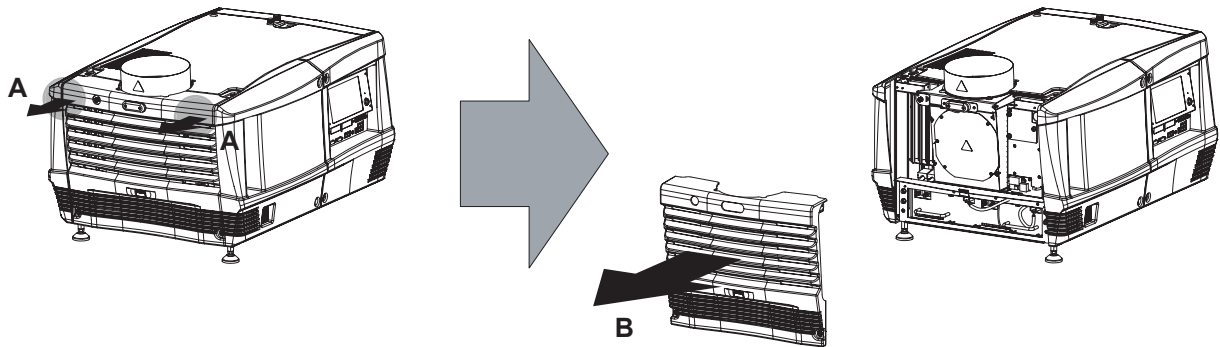


Image 13-10

13.6 Removal of the top cover



WARNING: This procedure may only be performed by qualified technical service personnel.



All side covers, front cover and back cover have to be removed before removing the top cover.

Necessary tools

Allen key 5 mm

How to remove the top cover of the projector?

1. After all side covers, front and back cover are removed, turn out both fixation screws.

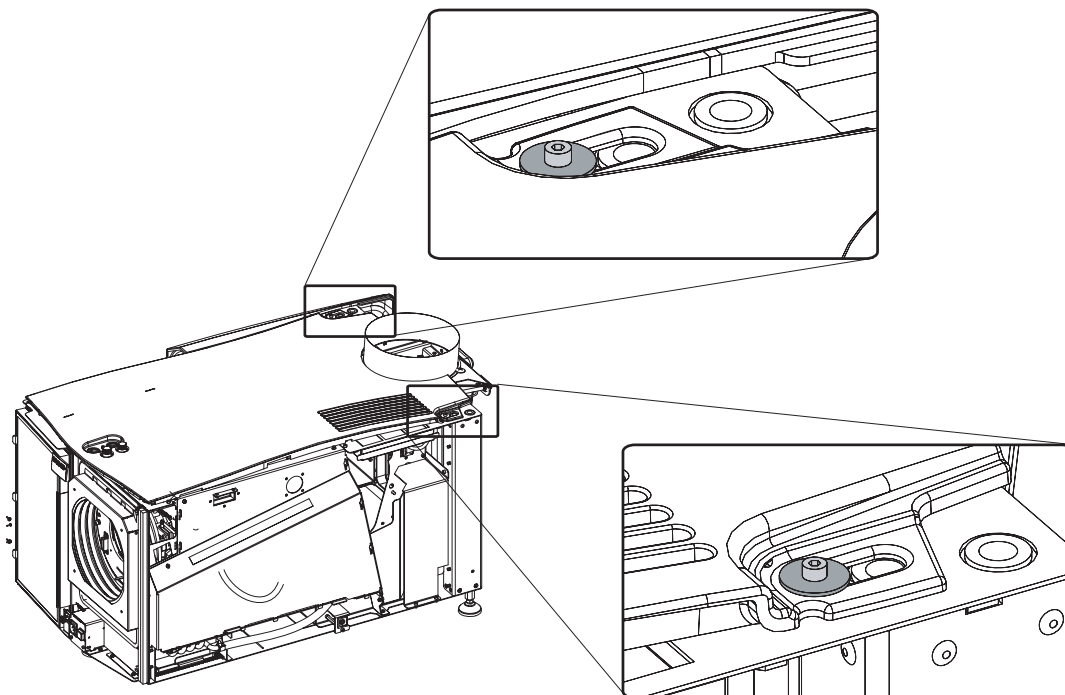


Image 13-11

2. Lift up the top cover and take it off.

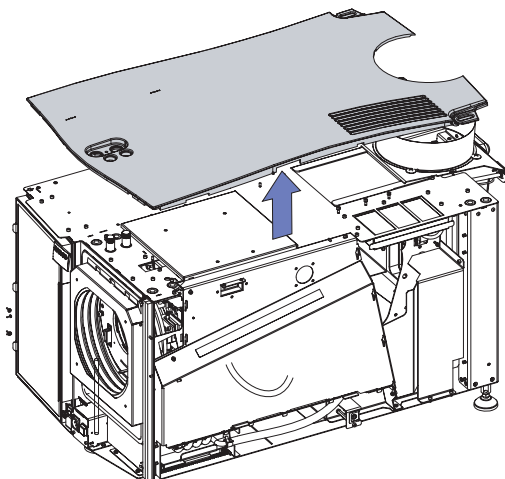


Image 13-12

13.7 Open the sealed compartment



This procedure assumes that the left side cover of the projector is already removed.

Necessary tools

3 mm Allen wrench.

How to open the sealed compartment of the Light Processor Unit?

1. Release the three hexagon head cap screws as illustrated. Use for that a 3 mm Allen wrench.

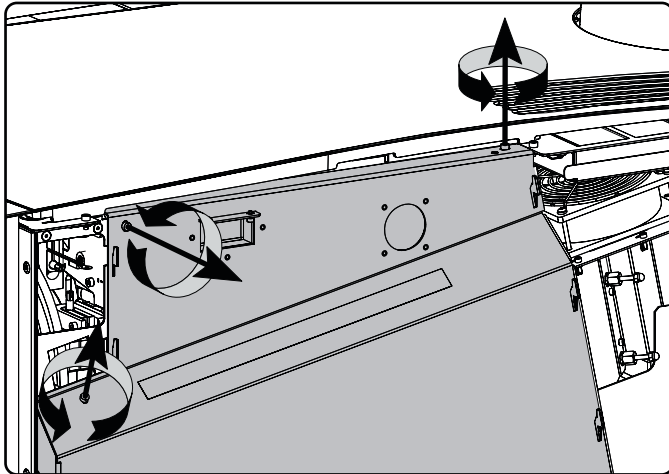


Image 13-13

2. Lift up the cover plate slightly, using the two lower lips provided, and then remove the cover plate away from the projector.

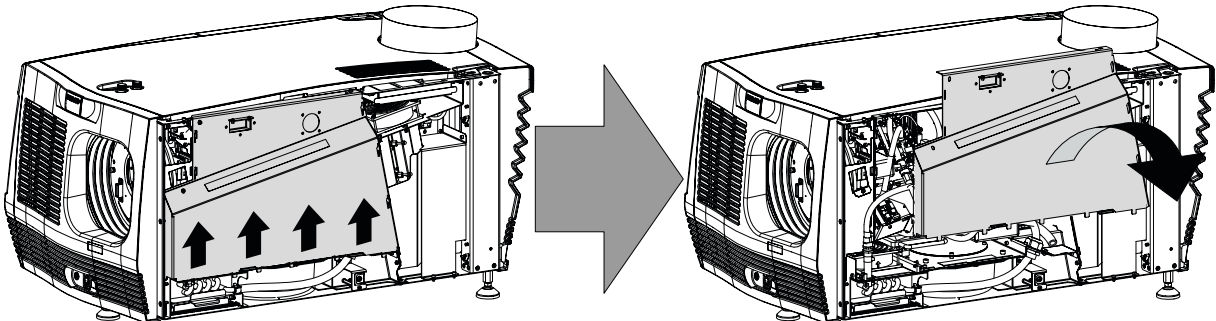


Image 13-14

13.8 Close the sealed compartment

Necessary tools

3 mm Allen wrench.

How to close the sealed compartment of the Light Processor Unit?

1. Place the cover plate in its place as illustrated.

Caution: Do not damage the micro switch at the top of the projector.

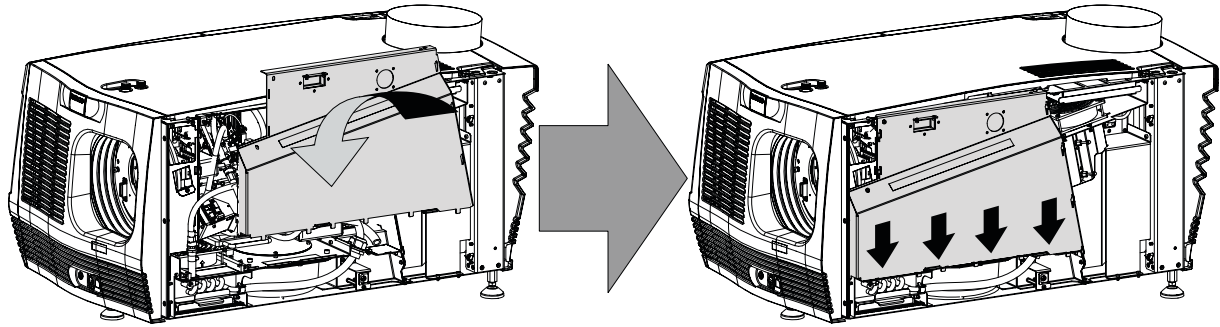


Image 13-15

2. Fasten the three hexagon head cap screws as illustrated. Use for that a 3 mm Allen wrench.

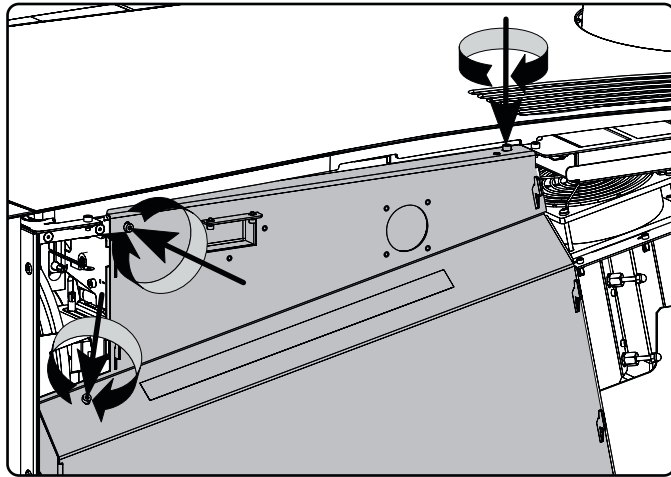


Image 13-16

13.9 Installation of the top cover

Necessary tools

Allen key 5 mm

How to install the top cover of the projector?

1. Place the top cover on the projector so that both holes matches the adjustment studs on top of the projector.

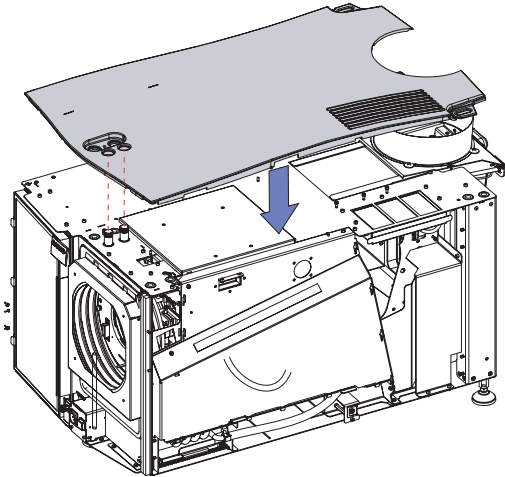


Image 13-17

2. Turn in both fixation screws. Insert the washer between the screw and the top cover.

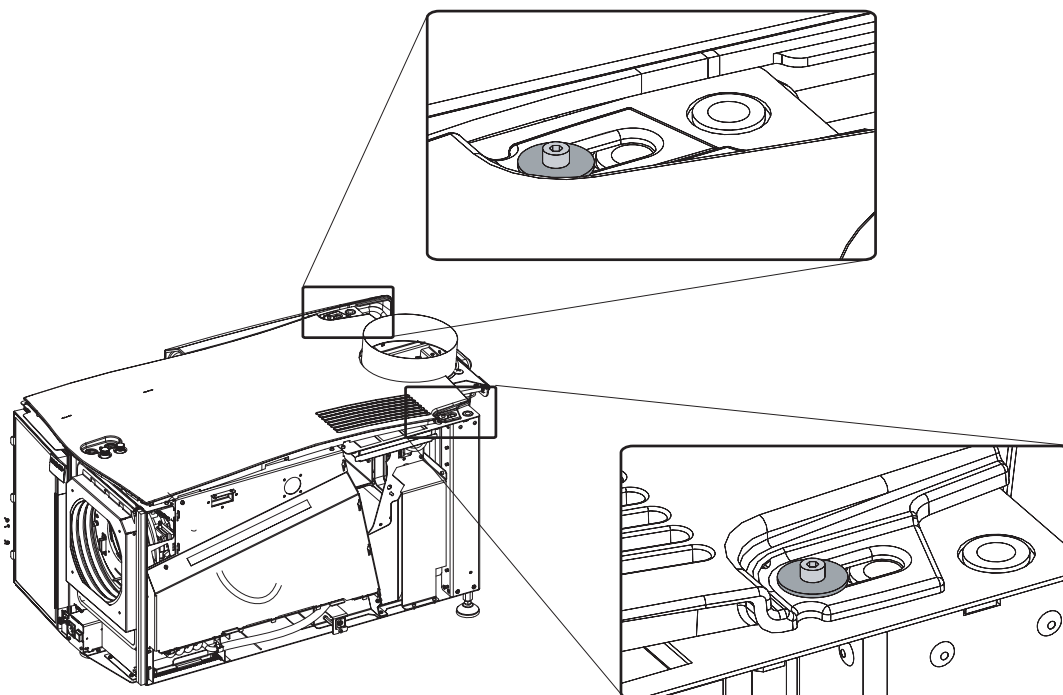


Image 13-18

13.10 Installation of the rear cover

Necessary tools

7 mm flat screwdriver.

How to install the rear cover of the projector?

1. Install the rear cover of the projector doing the following:
 - a) Bring the rear cover towards its final position,
 - b) then gently push the locking studs of the top corners into their receivers

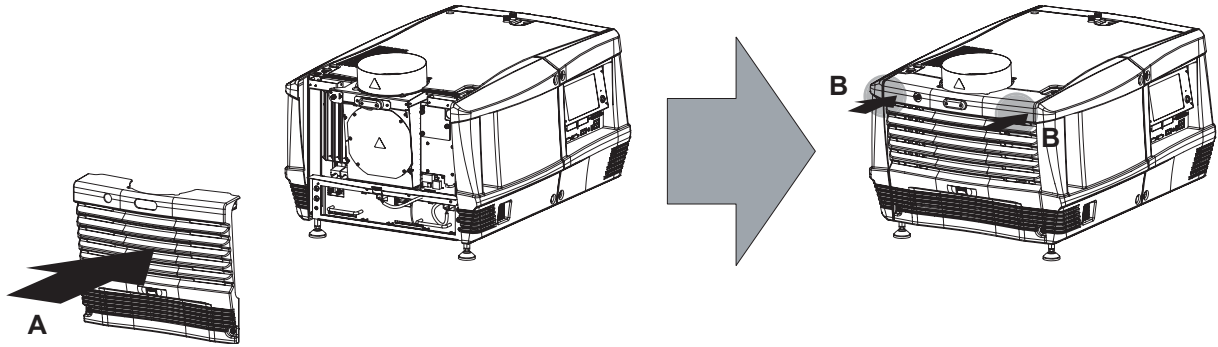


Image 13-19

2. Secure the rear cover by locking the captive screws at the bottom corners of the rear cover.

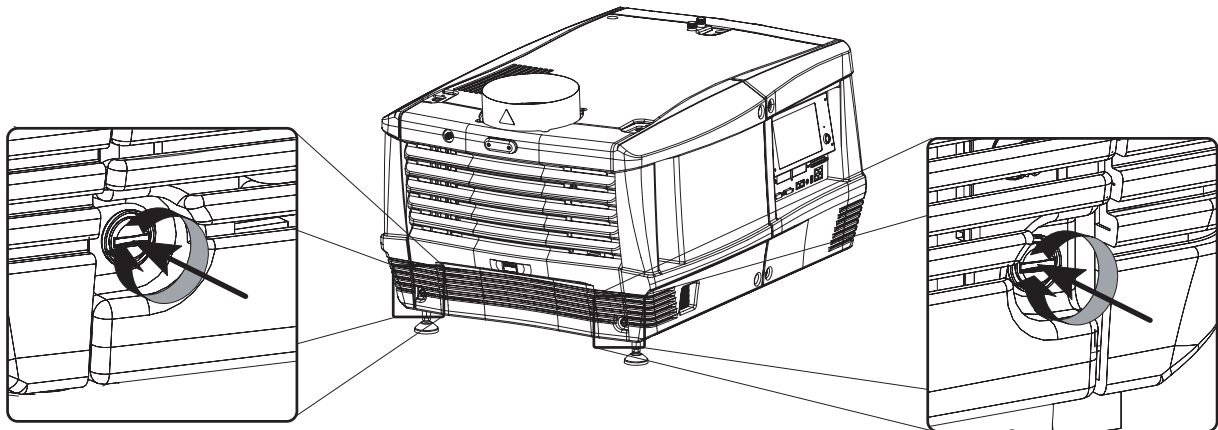


Image 13-20

13.11 Installation of the side cover

Necessary tools

7 mm flat screw driver.

How to install the side cover of the projector?

1. Check if the bottom and top filters are present.
2. Look through the small window, which is provided on the security cover of the light processor and check the pressure indicated on the internal manometer of the liquid cooling circuit. This pressure should be between 0,5 and 1 bar. If the pressure is out of range, inform the responsible and qualified technician, so he may take necessary corrective action.

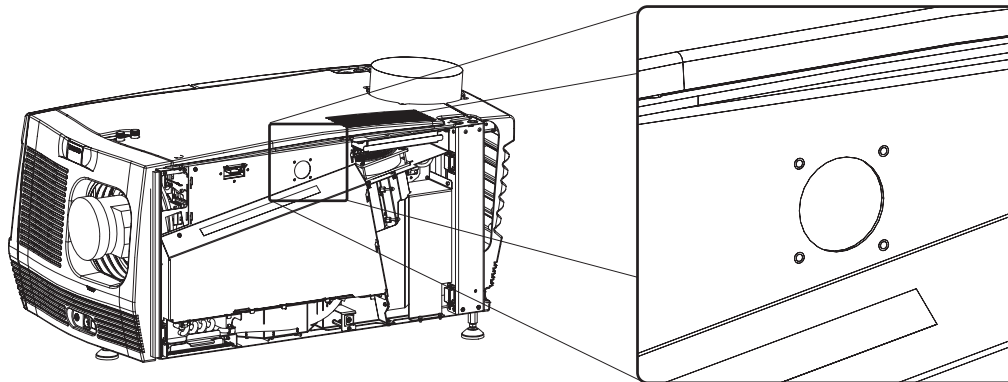


Image 13-21

3. Install the side cover of the projector doing the following:
 - a) Bring the side cover towards its final position (A),
 - b) then gently push the locking studs of the top corners (B) into their receivers,
 - c) then gently push the locking studs of the bottom corners (C) into their receivers.

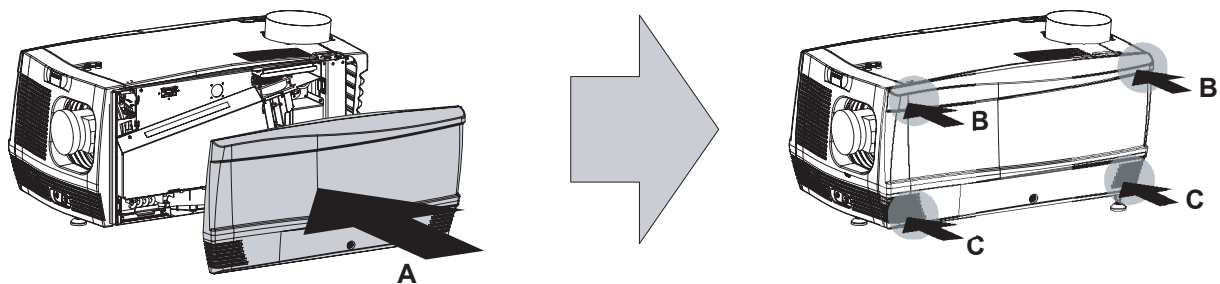


Image 13-22

4. Secure the side cover by locking the captive screw in the middle at the bottom of the side cover.

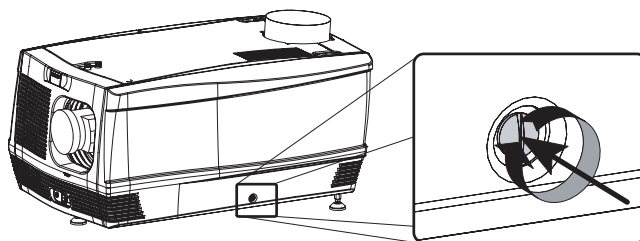


Image 13-23

13.12 Installation of the front cover



The input cover and the lens may not be installed yet.

Necessary tools

7 mm flat screw driver.

How to install the front cover of the projector?

1. Check if the front filter is present.
2. Ensure that no lens is mounted and that the input cover is not installed.
3. Install the front cover of the projector doing the following:
 - a) first hook in the side of the front cover at the front filter,
 - b) then gently push the other side of the front cover into position,
 - c) ensure that the locking studs in the corners click into their receivers.

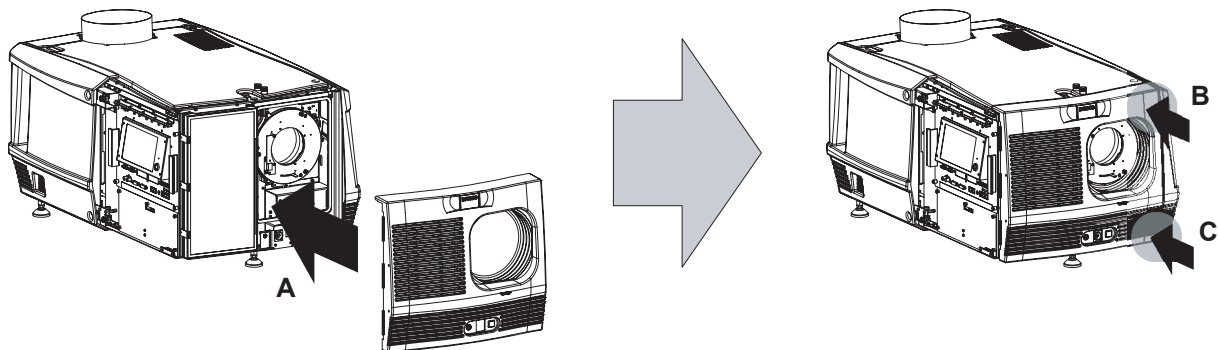


Image 13-24

4. Secure the front cover by locking the captive screw in the middle at the bottom of the front cover.

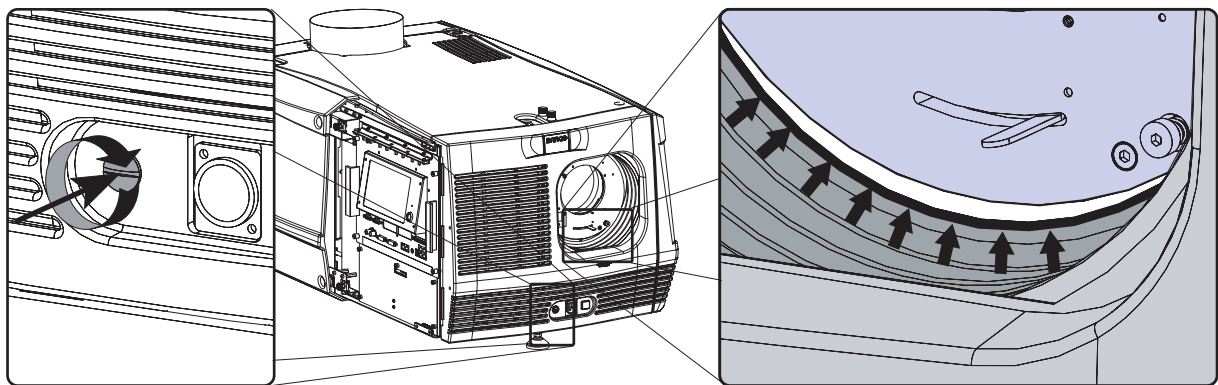


Image 13-25

5. Reinstall the rubber dust ring around the lens holder. See detail at the right of image 13-25.

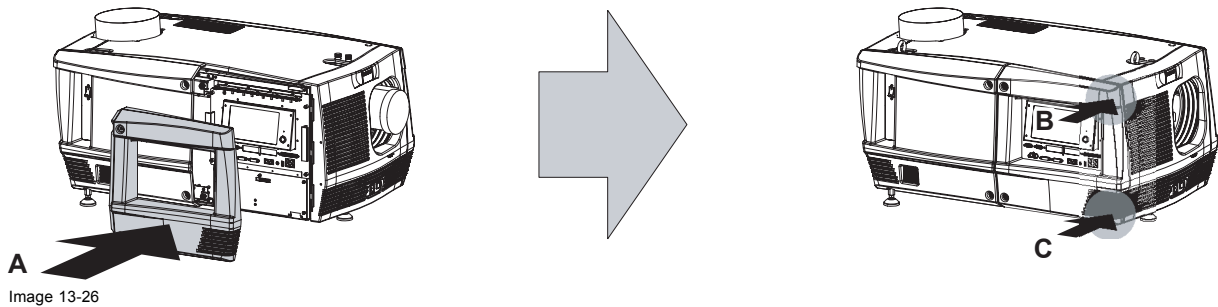
13.13 Installation of the input cover

Necessary tools

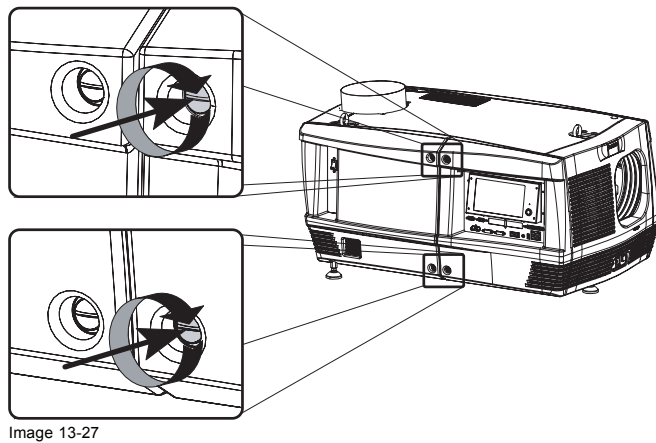
7 mm flat screw driver.

How to install the input cover of the projector?

1. Install the input cover of the projector doing the following:
 - a) Bring the input cover towards its final position (A),
 - b) then gently push the locking stud at the right top corner (B) into its receiver,
 - c) then gently push the locking stud at the right bottom corner (C) into its receiver.



2. Secure the input cover by locking the two captive screws at the left side of the input cover.



13.14 Installation of the lamp cover

Necessary tools

7 mm flat screw driver.

How to install the lamp cover of the projector?

1. Install the lamp cover of the projector doing the following:
 - a) Bring the lamp cover towards its final position (A),
 - b) then gently push the locking stud at the left top corner (B) into its receiver,
 - c) then gently push the locking stud at the left bottom corner (C) into its receiver.

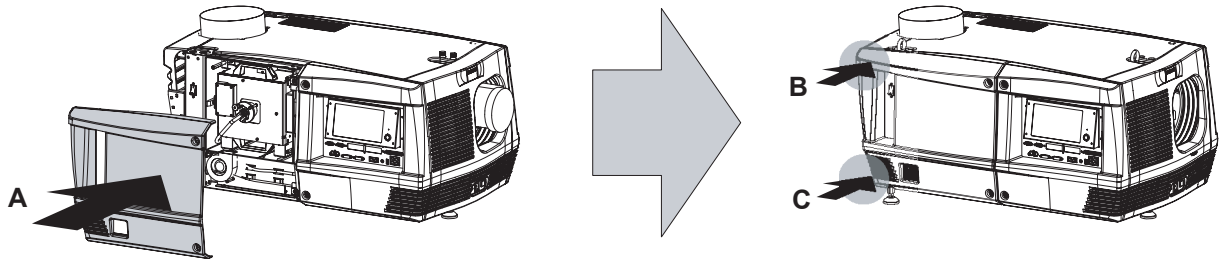


Image 13-28

2. Secure the lamp cover by locking the two captive screws at the right side of the lamp cover.

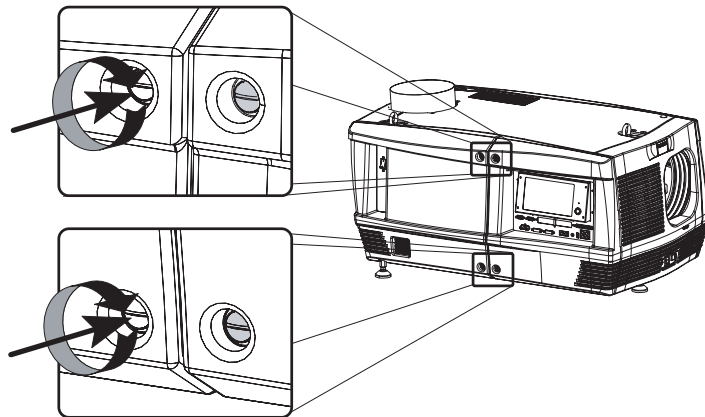


Image 13-29

A. SPECIFICATIONS

A.1 Specifications of the DP-2000

Specifications

Ambient Temperature	max. 35°C / 95°F
Contrast ratio	2000:1
Digital MicroMirror Device™	3 x 0.98" DC2K dark metal devices
Digital Video Inputs	2 x SMPTE 292M inputs 2 x DVI input both selectable as single or as dual link
Dimensions	Projector: 505(H) x 689(W) x 1018(D) mm 19.9(H) x 27.1(W) x 40.0(D) inch NB.: min. 5 cm of air inlet spacing required at the bottom of projector
Housing	Hermetically sealed DMD™ and optical assembly
Lamp	1.5kW - 4kW Xenon lamp size Lamp power: 1.5kW - 4kW
Mounting	universal pedestal (optional)
Native resolution	2048 x 1080
Options	CLO-constant light output ACS-2048 SNMP agent motorized/memorized lens focus, zoom & shift automatic XYZ lamp alignment
Order Information	R9004442
Power Requirements	220V 18.000 BTU / hr (with 4kW lamp)
Prime Lenses	Prime lens (1.2 - 1.8) 0.98" DC2K Prime lens (1.4 - 2.05) 0.98" DC2K Prime lens (1.6 - 2.5) 0.98" DC2K Prime lens (1.95 - 3.2) 0.98" DC2K Prime lens (2.4 - 3.9) 0.98" DC2K
Projector Diagnostics	via PC touch panel via Communicator control software via SNMP agent
Screen Width	Screen width (screen gain 1:8) @14ftL*: 20m - 65ft Screen width (screen gain 1:3) @14ftL*: 17m - 56ft (*) = +/- 10 variation possible between units
Weight	projector: 90kg (199lbs)

B. DIMENSIONS

Overview

- Dimensions of the DP-2000
- Centre of gravity of the DP-2000
- Dimensions of the universal pedestal

B.1 Dimensions of the DP-2000

Dimensions

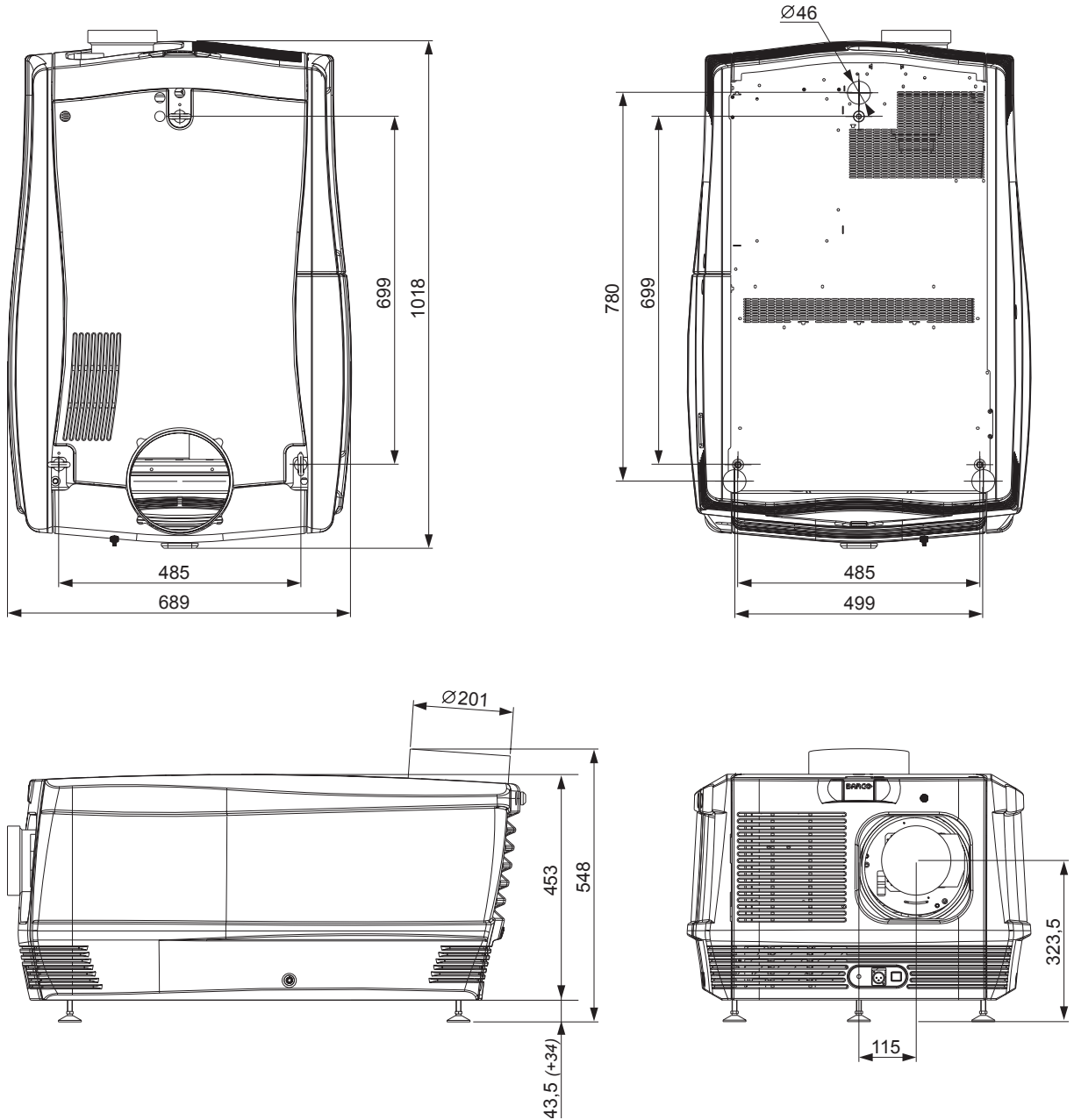


Image B-1
Dimensions given in millimeters.

B.2 Centre of gravity of the DP-2000

Centre of gravity

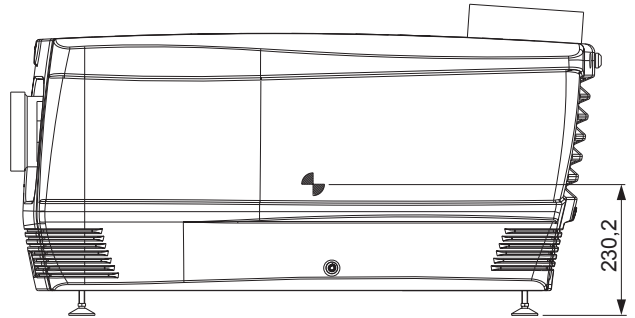
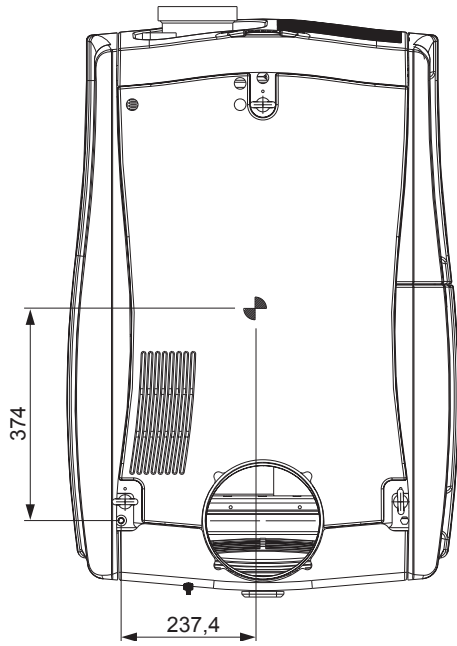


Image B-2
Dimensions given in millimeters.

B.3 Dimensions of the universal pedestal

Dimensions

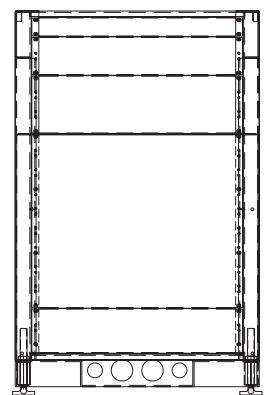
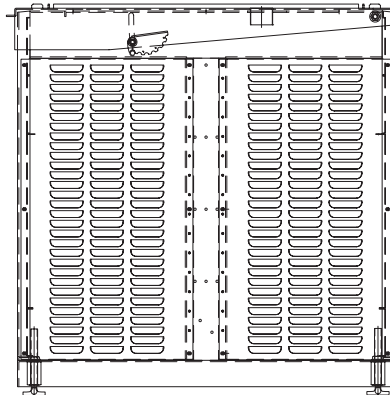
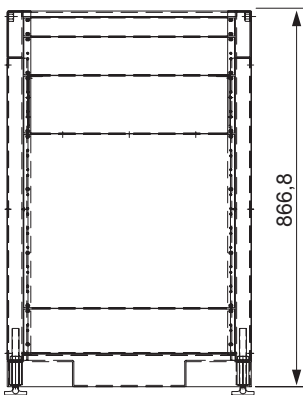
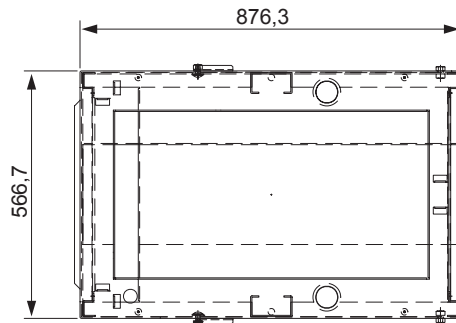


Image B-3
Dimensions given in millimeters.

C. PIN CONFIGURATIONS

About this chapter

This chapter contains the pin configurations of the communication ports of the Input and Communication unit.

Overview

- Pin configurations of the communication ports
- Pin configurations of the inputs

C.1 Pin configurations of the communication ports

RS232IN

RS232/422 IN			
1RTSE+	Request To Send (RTS)	6 RXE+	Data Set Ready (DSR)
2 RXE-	Receive Data (RD or RX or RXD)	7 RTSE-	Request To Send (RTS)
3 TXE-	Transmitted Data (TD or TX or TXD)	8 CTSE-	Clear To Send (CTS)
4TXE+	Data Terminal Ready (DTR)	9 CTSE+	Clear To Send (CTS)
5 GND	Signal Ground (GND)	-	-

General Purpose IN/OUT

General Purpose In/Out			
1	GPIN 1 P	20	GPIN 1 N
2	GPIN 2 P	21	GPIN 2 N
3	GPIN 3 P	22	GPIN 3 N
4	GPIN 4 P	23	GPIN 4 N
5	GPIN 5 P	24	GPIN 5 N
6	GPIN 6 P	25	GPIN 6 N
7	GPIN 7 P	26	GPIN 7 N
8	GPIN 8 P	27	GPIN 8 N
9	GPOUT 1 P	28	GPOUT 1 N
10	GPOUT 2 P	29	GPOUT 2 N
11	GPOUT 3 P	30	GPOUT 3 N
12	GPOUT 4 P	31	GPOUT 4 N
13	GPOUT 5 P	32	GPOUT 5 N
14	GPOUT 6 P	33	GPOUT 6 N
15	GPOUT 7 P	34	GPOUT 7 N
16	Projector Good P	35	Projector Good N
17	reserved	36	reserved
18	reserved	37	reserved
19	reserved		

Ethernet port

Ethernet 10/100 base T Port			
1	TXD+	5	++2.5VA
2	TXD-	6	RXD-
3	RXD+	7	RXD-
4	++2.5VA	8	GNDM

C.2 Pin configurations of the inputs

DVI-D

DVI IN A & B							
1	RX2-	7	DDC Data	13	nc	19	RX0 Shield
2	RX2+	8	nc	14	+5V	20	nc
3	RX2 Shield	9	RX1-	15	GND	21	nc
4	nc	10	RX1+	16	Hot Plug Detect	22	TMDS Clock Shield
5	nc	11	RX1 Shield	17	RX0-	23	TMDS RXC+
6	DDC Clock	12	nc	18	RX0+	24	TMDS RXC-

D. ORDER INFO

D.1 Spare part order info

Order info:

Order info	Description
R9855931	Motorized 0.98" DC2K Zoom (1.4–2.05 : 1)
R98559311	Manual 0.98" DC2K Zoom (1.4–2.05 : 1)
R9855932 or R9855933	Motorized 0.98" DC2K Zoom (1.6–2.5 : 1)
R98559321 or R98559331	Manual 0.98" DC2K Zoom (1.6–2.5 : 1)
R9855934 or R9855935	Motorized 0.98" DC2K Zoom (1.95–3.2 : 1)
R98559341 or R98559351	Manual 0.98" DC2K Zoom (1.95–3.2 : 1)
R9855936	Motorized 0.98" DC2K Zoom (2.4–3.9 : 1)
R98559361	Manual 0.98" DC2K Zoom (2.4–3.9 : 1)
R9855937	Osram xenon bulb lamp of 4 kW
R9855938	Osram xenon bulb lamp of 3 kW
To be determined	Osram xenon bulb lamp of 2 kW
To be determined	Ushio xenon bulb lamp of 4 kW
To be determined	Ushio xenon bulb lamp of 3 kW
To be determined	Ushio xenon bulb lamp of 2 kW
R9856020	Lamp house with manual lamp alignment (no lamp)
R9854470	DP-2000 front, top and bottom filters (6 pieces each).
R9854480	DP-2000 front, top and bottom filters (24 pieces each).
R9856070	Lens memory option. For memorizing lens position (Encoders)
R9856050	Universal pedestal
R9855910	Communicator touch panel for DP-xxxx digital projectors
R9861300	Scaler ACS-2048 (all inputs incl.)
R9855920	Rear Exhaust
R9806250	Constant Light Output (CLO) software

GLOSSARY

DVI

Digital Visual Interface is a display interface developed in response to the proliferation of digital flat panel displays.

The digital video connectivity standard that was developed by DDWG (Digital Display Work Group). This connection standard offers two different connectors: one with 24 pins that handles digital video signals only, and one with 29 pins that handles both digital and analog video. This standard uses TMDS (Transition Minimized Differential Signal) from Silicon Image and DDC (Display Data Channel) from VESA (Video Electronics Standards Association).

DVI can be single or dual link.

RS232

An Electronic Industries Association (EIA) serial digital interface standard specifying the characteristics of the communication path between two devices using either D-SUB 9 pins or D-SUB 25 pins connectors. This standard is used for relatively short-range communications and does not specify balanced control lines. RS-232 is a serial control standard with a set number of conductors, data rate, word length and type of connector to be used. The standard specifies component connection standards with regard to computer interface. It is also called RS-232-C, which is the third version of the RS-232 standard, and is functionally identical to the CCITT V.24 standard. Logical '0' is $> +3V$, Logical '1' is $< -3V$. The range between $-3V$ and $+3V$ is the transition zone.

Scheimpflug principle

The "plane of sharp focus" can be changed so that any plane can be brought into sharp focus. When the DMD plane and lens plane are parallel, the plane of sharp focus will also be parallel to these two planes. If, however, the lens plane is tilted with respect to the DMD plane, the plane of sharp focus will also be tilted according to geometrical and optical properties. The DMD plane, the principal lens plane and the sharp focus plane will intersect in a line below the projector for downward lens tilt.

SMPTE

Society of Motion Picture and Television Engineers - A global organization, based in the United States, that sets standards for baseband visual communications. This includes film as well video standards.

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