

BARCO

HOME CINEMA

BARCO CINE7

R9010040
R9010050

INSTALLATION MANUAL

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1. SAFETY INSTRUCTIONS

Overview

- Safety Instructions

1.1 Safety Instructions

Notice on Safety

This equipment is built in accordance with the requirements of the international safety standards EN60950, UL 1950 and CSA C22.2 No.950, which are the safety standards of information technology equipment including electrical business equipment. These safety standards impose important requirements on the use of safety critical components, materials and isolation, in order to protect the user or operator against risk of electric shock and energy hazard, and having access to live parts. Safety standards also impose limits to the internal and external temperature rises, radiation levels, mechanical stability and strength, enclosure construction and protection against the risk of fire. Simulated single fault condition testing ensures the safety of the equipment to the user even when the equipment's normal operation fails.

Installation Instructions

Before operating this equipment please read this manual thoroughly, and retain it for future reference. Installation and preliminary adjustments should be performed by qualified BARCO personnel or by authorized BARCO service dealers.

Owner's Record

The part number and serial number are located at the back side of the projector. Record these numbers in the spaces provided below. Refer to them whenever you call upon your BARCO dealer regarding this product.

Part Number:	
Ser. Number:	
Dealer:	

Safety Indication on the Product



The lightning flash with an arrowhead within a triangle is intended to tell the user that parts inside this product may cause risk of electrical shock to persons.



The exclamation point within a triangle is intended to tell the user that important operating and/or servicing instructions are included in the technical documentation for this equipment.

Image 1-1
Safety Indication

Safety Warning

TO PREVENT FIRE OR ELECTRICAL SHOCK HAZARD, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE !

Federal Communication Commission (FCC Statement)

This equipment has been tested and found to comply with the limits of 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

1. Safety Instructions

in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

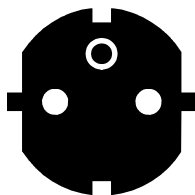


The use of shielded cables is required to comply within the limits of Part 15 of FCC rules and EN55022.

- All the safety and operating instructions should be read before using this unit.
- The safety and operating instructions manual should be retained for future reference.
- All warnings on the equipment and in the documentation manuals should be adhered to.
- All instructions for operating and use of this equipment must be followed precisely.

On Safety

- This product should be operated from an AC power source. Power input is autoranging from 90 V to 230V.
- All equipment in the system is equipped with a 3-wire grounding plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the purpose of the grounding-type plug.
- Do not allow anything to rest on the power cord. Do not locate this product where persons will walk on the cord. To disconnect the cord, pull it out by the plug. Never pull the cord itself.
- If an extension cord is used with this product, make sure that the total of the ampere ratings on the products plugged into the extension cord does not exceed the extension cord ampere rating.
- 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. This will prevent damage to the projector due to lightning and AC power-line surges.
- The wires of the main lead are colored in accordance with the following code.



CEE 7 Plug
Green and yellow : Ground
Blue : Neutral
Brown : Line

Image 1-2
Power cord plugs



ANSI 73.11 Plug
Green and yellow : Ground
White : Neutral
Black : Line



This apparatus must be grounded (earthed) via the supplied 3 conductor AC power cable. If the supplied power cable is not the correct one, consult your dealer.

Caution on Fire Hazard

DO NOT PLACE FLAMMABLE OR COMBUSTIBLE MATERIALS NEAR THE 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 to the 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 10 cm (4") for Barco Retro Projectors. Do not cover the projector 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 excessive 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.

On Installation

- Do not place this equipment on an unstable cart, stand, or table. The product may fall, causing serious damage to it.
- Do not use this equipment near water.
- Slots and openings in the cabinet and the back or bottom are provided for ventilation; to ensure reliable operation of the product and to protect it from overheating, these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should never be placed near or over a radiator or heat register. The projector should not be placed in a built-in installation or enclosure unless proper ventilation is provided.
- Do not block the projector cooling fans or free air movement under and around the projector. Loose papers or other objects may not be nearer to the projector than 4" on any side.

On Servicing

Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous voltage potentials and risk of electric shock!

Refer all servicing to qualified service personnel.

Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

- When the power cord or plug is damaged or frayed.
- If liquid has been spilled into the equipment.
- 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 product is in proper operating condition.

On Cleaning

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. To ensure the highest optical performance and resolution, the projection lenses are specially treated with an anti-reflective coating, therefore, avoid touching the lens. To remove dust on the lens, use a soft dry cloth. Do not use a damp cloth, detergent solution, or thinner.

On Repacking

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

On Illumination

In order to obtain the best quality for the projected image, it is essential that the ambient light which is allowed to fall on the screen be kept to an absolute minimum. When installing the projector and screen, care must be taken to avoid exposure to ambient light directly on the screen. Avoid adverse illumination on the screen from direct sunlight or fluorescent lighting fixtures. The use of controlled ambient lighting, such as incandescent spot light or a dimmer, is recommended for proper room illumination. Where possible, care should also be taken to ensure that the floors and walls of the room in which the projector is to be installed are non-reflecting, dark surfaces. Brighter surfaces will tend to reflect and diffuse the ambient light and hence reduce the contrast of the projected image on the screen.

1. *Safety Instructions*

2. PACKAGING AND DIMENSIONS

2.1 Projector Packaging

Way of Packaging

The projector is packed in a carton box. To provide protection during transportation, the projector is surrounded with foam. The package is secured with banding and fastening clips.

To unpack

1. Release the fastening clips.
2. Remove the banding. Handle as shown in the drawing. (image 2-1)
3. Take the projector out of its shipping carton and place it on a table.

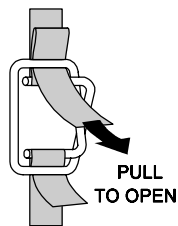


Image 2-1



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.

2.2 Box Content

Content

- 1 Barco Cine7
- 1 Remote Control Unit + 2 batteries (1.5 V)
- 1 Power Cord with outlet plug type CEE7
- 1 Power Cord with outlet plug ANSI 73.11
- 1 Installation Manual
- 1 Owner's Manual
- 1 Adjustment manual IRIS
- 1 CDROM

2.3 Projector Dimensions

Overview

Dimensions are given in mm.

1 inch = 25.4mm

2. Packaging and Dimensions

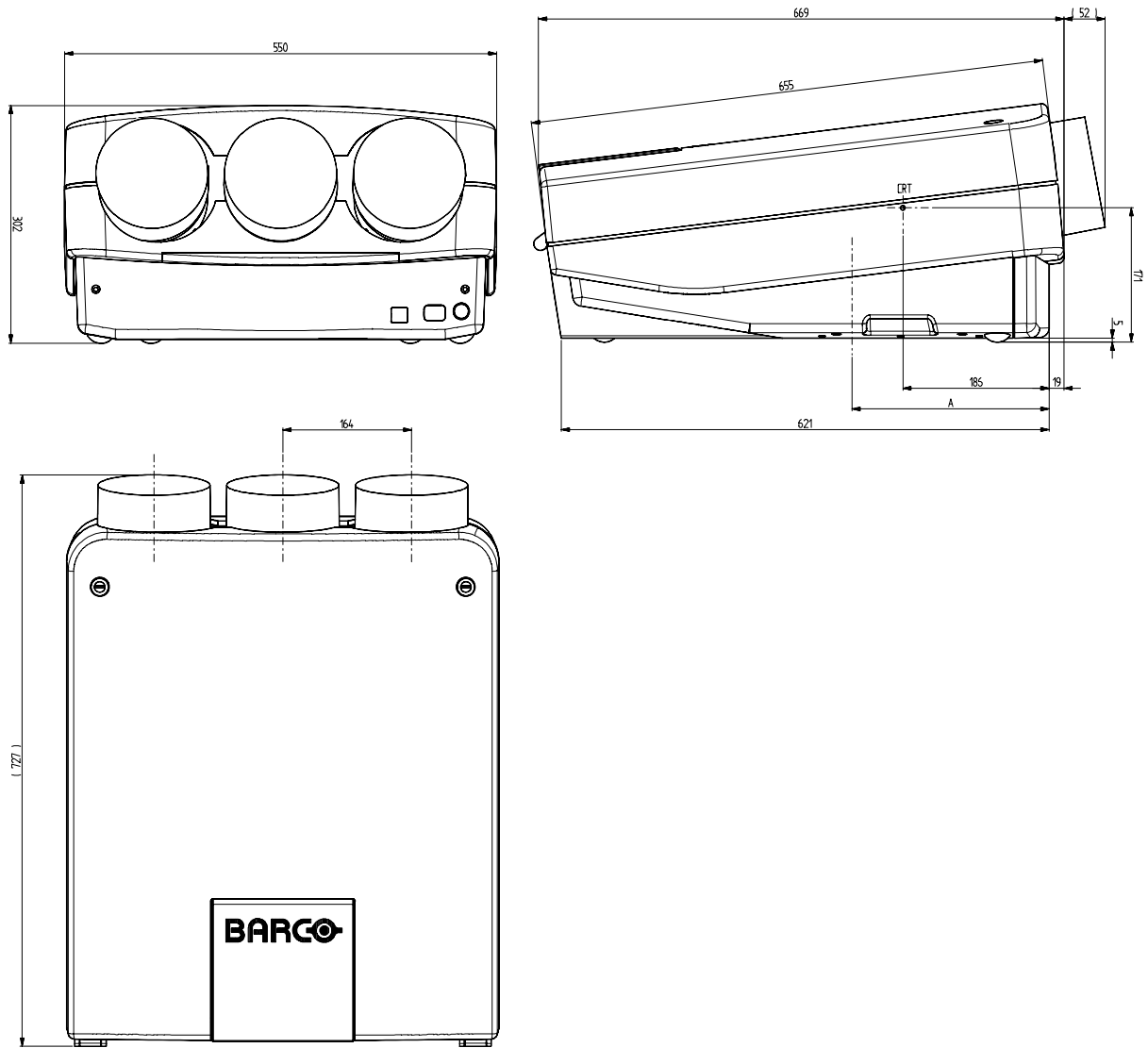


Image 2-2

3. INSTALLATION GUIDELINES

Overview

- General Installation Guidelines
- Configuration
- Lens Formulas
- Scan Adaptation

3.1 General Installation Guidelines

Ambient temperature check

Careful consideration of things such as image size, ambient light level, projector placement and type of screen to use are critical to the optimum use of the projection system.

Max. ambient temperature : 40 °C or 104 °F

Min. ambient temperature : 0 °C or 32 °F

The projector will not operate if ambient air temperature falls outside this range (0°C- 40°C or 32°F-104°F).

Humidity Conditions

Storage: 0 to 98 % RH Non-condensing

Operation: 0 to 95 % RH Non-condensing

Environment

Do not install the projection system in a site near heat sources such as radiators or air ducts, or in a place subject to direct sunlight, excessive dust or humidity. Be aware that room heat rises to the ceiling; check that temperature near the installation site is not excessive.



Harmful Environmental Contamination Precaution.

Environment condition check

A projector must always be mounted in a manner which ensures the free flow of clean air into the projectors ventilation inlets. For installations in environments where the projector is subject to airborne contaminants such as that produced by smoke machines or similar (these deposit a thin layer of greasy residue upon the projectors internal optics and imaging electronic surfaces, degrading performance), then it is highly advisable and desirable to have this contamination removed prior to it reaching the projectors clean air supply. Devices or structures to extract or shield contaminated air well away from the projector are a prerequisite, if this is not a feasible solution then measures to relocate the projector to a clean air environment should be considered.

Only ever use the manufactures recommended cleaning kit which has been specifically designed for cleaning optical parts, never use industrial strength cleaners on a projectors optics as these will degrade optical coatings and damage sensitive optoelectronics components. Failure to take suitable precautions to protect the projector from the effects of persistent and prolonged air contaminants will culminate in extensive and irreversible ingrained optical damage. At this stage cleaning of the internal optical units will be non-effective and impracticable. Damage of this nature is under no circumstances covered under the manufactures warranty and may deem the warranty null and void. In such a case the client shall be held solely responsible for all costs incurred during any repair. It is the clients responsibility to ensure at all times that the projector is protected from the harmful effects of hostile airborne particles in the environment of the projector. The manufacture reserves the right to refuse repair if a projector has been subject to willful neglect, abandon or improper use.

What about Ambient Light ?

The ambient light level of any room is made up of direct or indirect sunlight and the light fixtures in the room. The amount of ambient light will determine how bright the image will appear. So, avoid direct light on the screen. Windows that face the screen should be covered by opaque drapery while the set is being viewed. It is desirable to install the projection system in a room whose walls and floor are of non-reflecting material. The use of recessed ceiling lights and a method of dimming those lights to an acceptable level is also important. Too much ambient light will 'wash out' of the projected image. This appears as less contrast between the darkest and lightest parts of the image. With bigger screens, the 'wash out' becomes more important. As a general rule, darken the room to the point where there is just sufficient light to read or write comfortably. Spot lighting is desirable for illuminating small areas so that interference with the screen is minimal.

Which Screen Type ?

There are two major categories of screens used for projection equipment. Those used for front projected images and those for rear projection applications.

3. Installation Guidelines

Screens are rated by how much light they reflect (or transmit in the case of rear projection systems) given a determined amount of light projected toward them. The 'GAIN' of a screen is the term used. Front and rear screens are both rated in terms of gain. The gain of screens range from a white matte screen with a gain of 1 (x1) to a brushed aluminized screen with a gain of 10 (x10) or more. The choice between higher and lower gain screens is largely a matter of personal preference and another consideration called the Viewing angle. In considering the type of screen to choose, determine where the viewers will be located and go for the highest gain screen possible. A high gain screen will provide a brighter picture but reduce the viewing angle. For more information about screens, contact your local screen supplier.

Image Sizing

The projector is designed for projecting an image width from 1.4m (4.6') to 7m (23')The projector leaves the BARCO factory, adjusted as a Front/Ceiling projector for a screen width of 2400 mm (94.5 inch) with an aspect ratio of 4 by 3 (The projector can be factory aligned in other configurations if ordered).

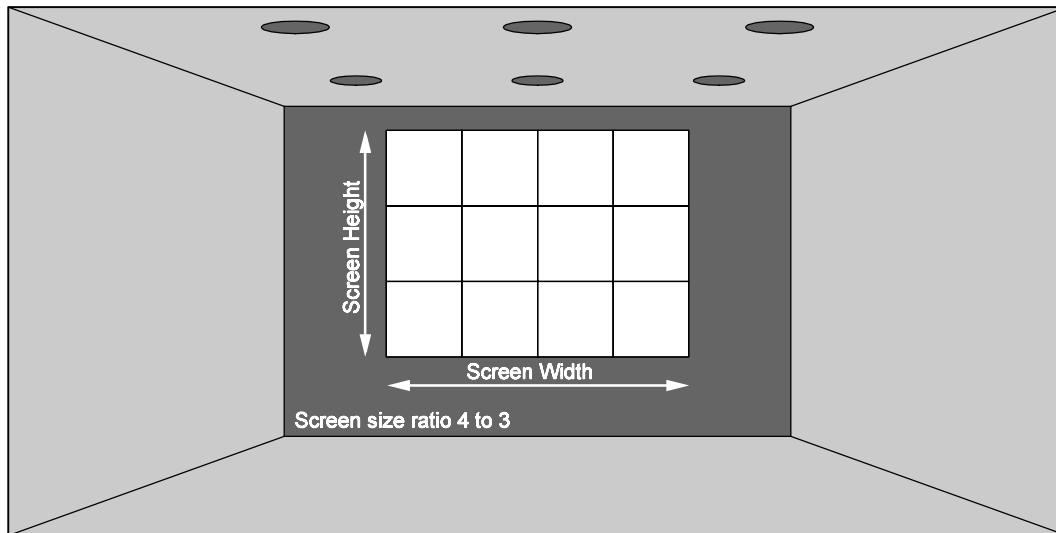


Image 3-1
Image Sizing



Changing the image size from the projector preset size requires a realignment of the projector.

3.2 Configuration

Which configuration can be used?

The projector can be installed to project images in four different configurations:

- Front/table
- Rear/table
- Front/ceiling
- Rear/ceiling

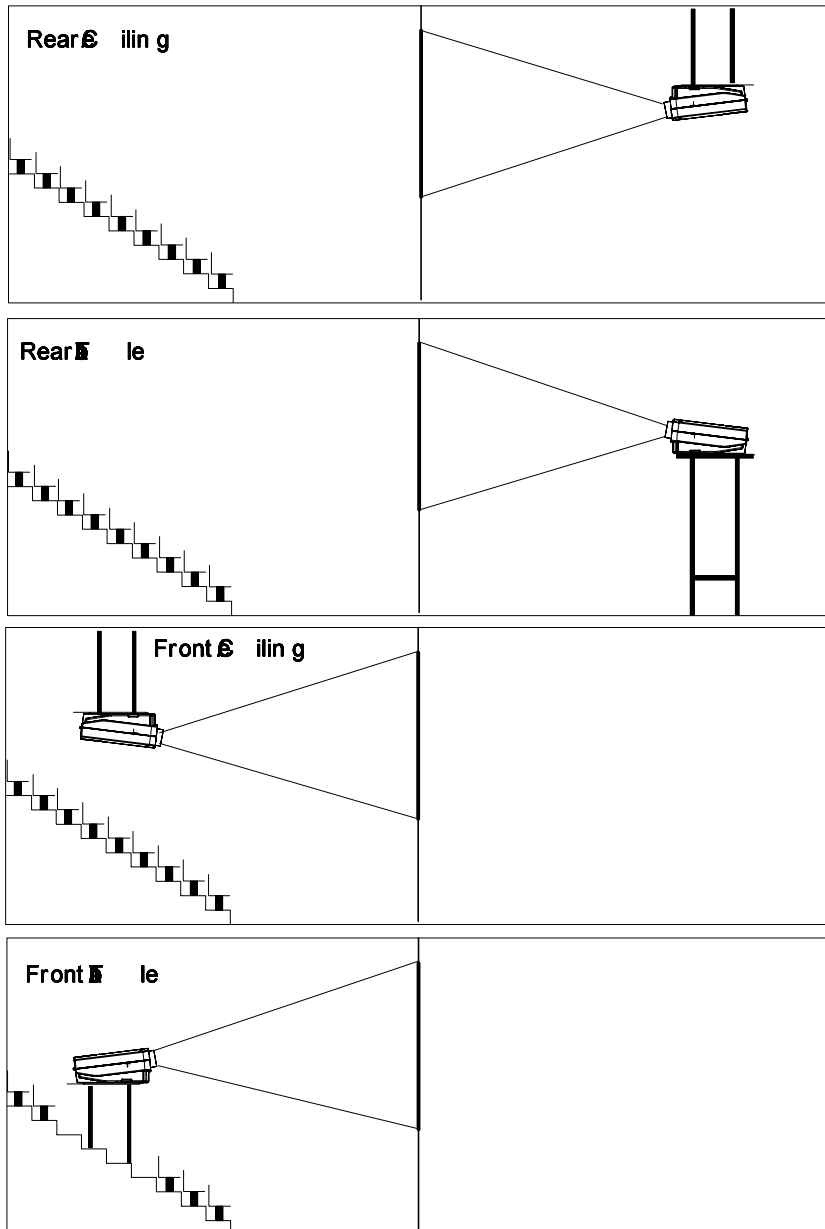


Image 3-2
Possible configurations

Positioning the projector



The projector should be installed perpendicular with the screen on a distance PD and water leveled in both directions.

3. Installation Guidelines

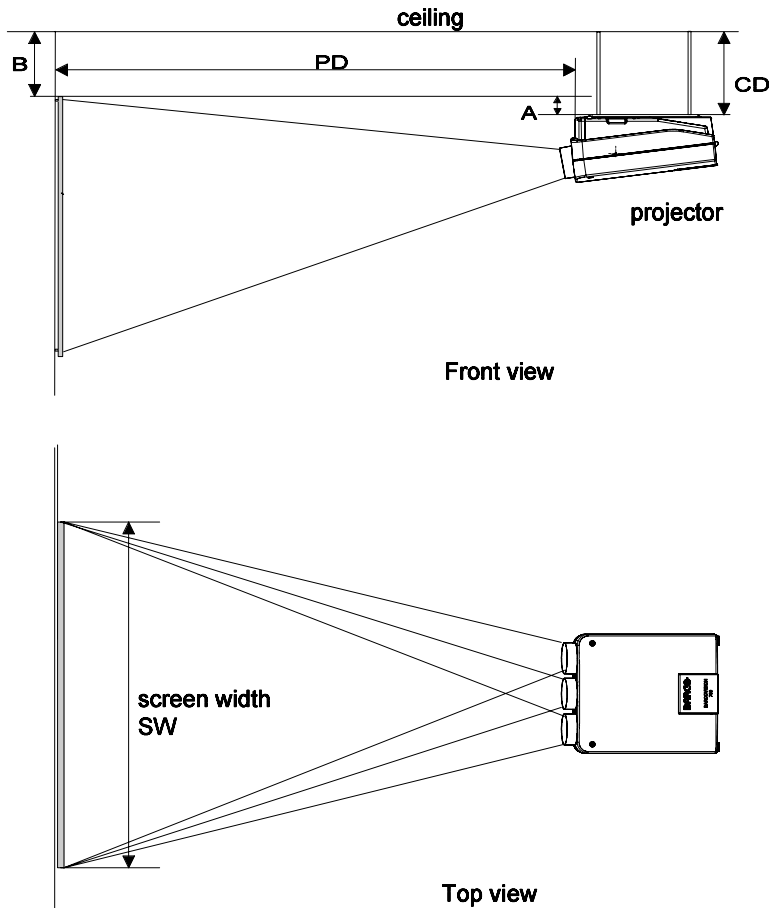


Image 3-3
Projector positioning

B Distance between ceiling and top of the screen

A Correction value, extra value to be added to B to obtain the correct installation position. (In some cases the A value can be negative).

CD Total distance between projector and distance.

SW Screen width

PD Perpendicular distance between screen and projector.

CD = A + B. When the result is negative, enlarge the distance between ceiling and top of the screen, mount screen lower, until CD becomes zero or positive)

3.3 Lens Formulas

Lens Formulas

The lens formulas should be used to calculate the ideal projector distance:

Lens type HD145	
PD[meter] = 1.2642 x SW[meter] + 0.2156	A[cm] = 12 x SW[meter] - 22.88
PD[inch] = 1.2642 x SW[inch] + 8.48	A[inch] = 0.12 x SW[inch] - 9

Max phosphor width on CRT = 11cm (4.33 inch).

3.4 Scan Adaptation

Overview

- Access to the scan controls
- Scan Inversion

3.4.1 Access to the scan controls

How to get access

1. Turn both lock screws with a screwdriver or a coin counter clockwise.
2. Lift up and pivot the top cover. (image 3-4)
3. Support the top cover with the hand, no support is incorporated.

During some installations it will become handy to remove the top cover totally. Therefore, continue with step 6.

4. To open the chassis, loosen both indicated retaining screws. (image 3-5)
5. Turn the chassis to the front of the projector until it grips in its locks. (image 3-6)
6. Pivot the top cover $\pm 60^\circ$. (image 3-7)
7. Push the top cover to the front side of the projector until it jumps out of its hinges.
8. Turn the top cover till 90° and lift it up.

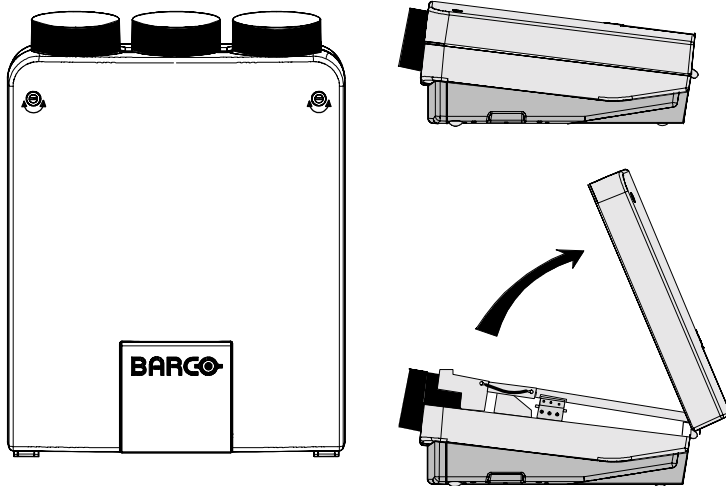


Image 3-4
Access to the scan controls

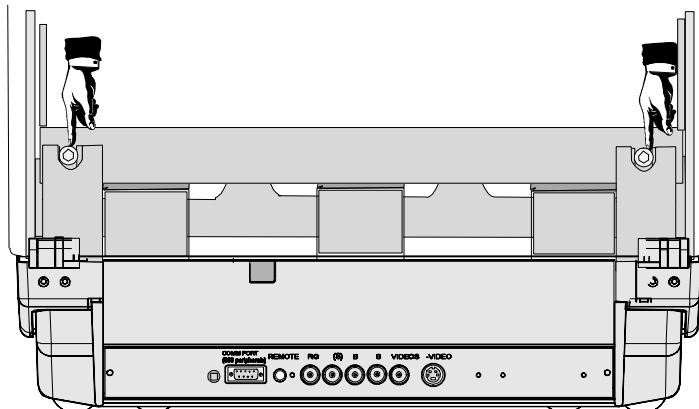


Image 3-5
Opening chassis

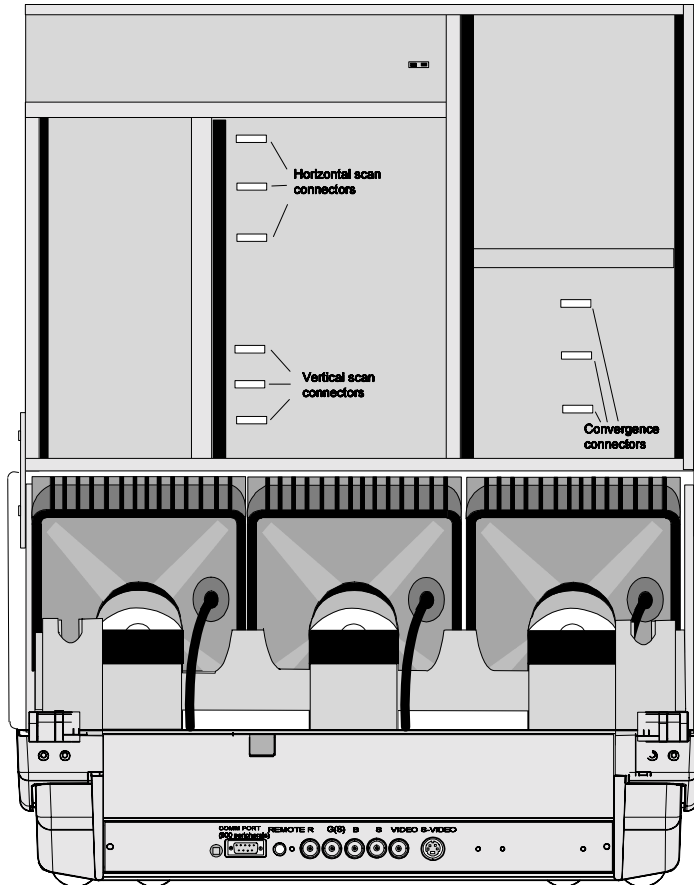


Image 3-6
Chassis open

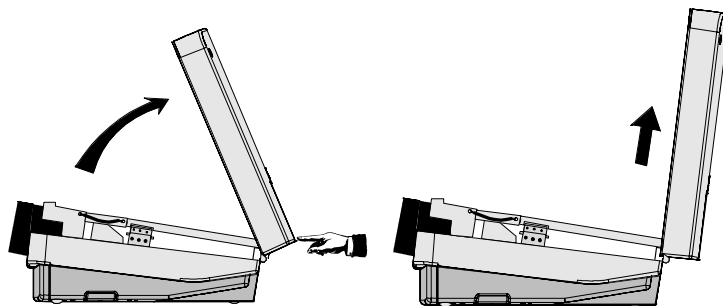


Image 3-7
Removing the top cover

3.4.2 Scan Inversion

Horizontal scan inversion

Three connectors are used, one for each horizontal deflection coil. When changing the horizontal scan, insure that all three connectors are set in the same position.

See position of the connectors for the corresponding projector configuration.

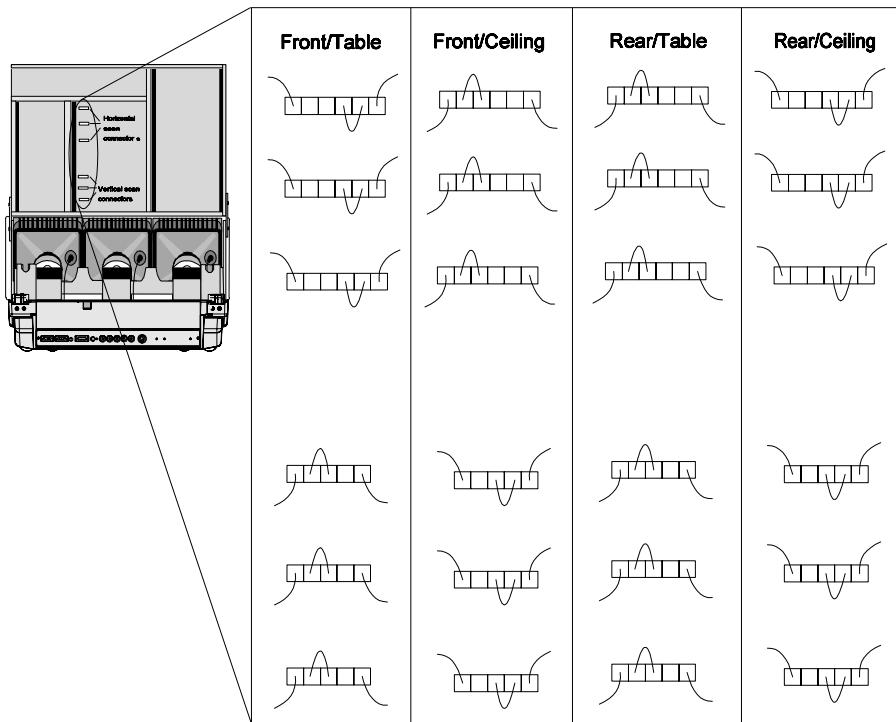


Image 3-8
Scan connectors

Vertical Scan Inversion

Three connectors are used, one for each vertical deflection coil. When changing the vertical scan, insure that all three connectors are set in the same position. See position of the connectors for the corresponding projector configuration.

Top view of the connectors; upper three connectors for horizontal scan inversion, lower three for vertical scan inversion (image 3-8).

Convergence Connectors

Three connectors are used. The position of these connectors has to be changed when switching from one configuration to another. With an open chassis, for a front-table or a rear ceiling configuration, the connectors must be plugged in with the contacts upwards (away from the tubes). For a front-ceiling or rear-table configuration, the connectors must be plugged in with the contacts facing the tubes

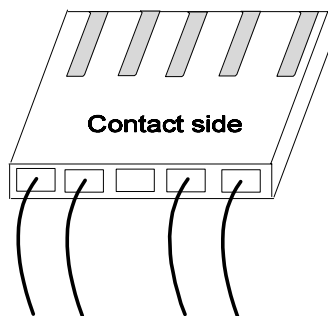


Image 3-9



After scan inversion, close the chassis and close the top cover. Reconnect the power cord to the wall outlet.

Switching over from floor to ceiling or vice versa requires a complete readjustment of picture geometry and convergence.

3. Installation Guidelines

Check procedure

This check procedure can only be done after power (mains) connection. So, first continue with the projector set up and the connections and then return to this checking procedure.

1. Switch on the projector
2. Press **ADJUST** to start up the adjustment mode. (menu 3-1)
3. Push the cursor key \uparrow or \downarrow to select *Service* and press **ENTER**.

The service menu will be displayed. (menu 3-2)

4. Push the cursor key \uparrow or \downarrow to select *PROJECTOR SET UP* and press **ENTER**.

The projector set up menu will be displayed. (menu 3-3)

5. Push the cursor key \uparrow or \downarrow to select *IDENTIFICATION* and press **ENTER**.

The Identification screen will be displayed. (menu 3-4)

On this screen, information is given about the projectors configuration. Configuration when leaving the factory : ceiling/front configuration.

```
ADJUSTMENT MODE
Select a path from below :

  IRIS
  GUIDED
  RANDOM ACCESS
  INSTALLATION
  SERVICE
  Source 01

Select with  $\uparrow$  or  $\downarrow$ 
then <ENTER>
<EXIT> to return
```

Menu 3-1

```
SERVICE MODE
PROJECTOR SET UP
MEMORY MANAGEMENT
COMMON SETTINGS
I2C DIAGNOSTICS

Select with  $\uparrow$  or  $\downarrow$ 
then <ENTER>
<EXIT> to return
```

Menu 3-2

```
PROJECTOR SET-UP
IDENTIFICATION
TOTAL RUN TIME
CHANGE PASSWORD
CHANGE LANGUAGE
CHANGE PROJECTOR ADDRESS
CHANGE BAUDRATE
POWER UP MODE: operating
COMMON ADDRESS: 0
BARCO LOGO

Select with  $\uparrow$  or  $\downarrow$ 
then <ENTER>
<EXIT> to return
```

Menu 3-3

```
BARCO
CINE 7
Proj. address: 001
Soft. Version: 2.11
Config: Ceiling
Front
Baudrate PC: 9600
Text: ON
Serial No.: 1035895
```

Menu 3-4

4. PROJECTOR SET UP

Overview

- Password strap

4.1 Password strap

What is allowed?

With a strap on the controller unit, the important projector adjustments can be protected with a password. When the password feature is enabled (strap mounted on both legs), the customer has to enter a password before he can enter the specific adjustment.

Gaining access

1. Open the top cover, see Installation Guidelines, page 9 .
2. Open the chassis.
3. Mount or remove the strap. (image 4-1, image 4-2)

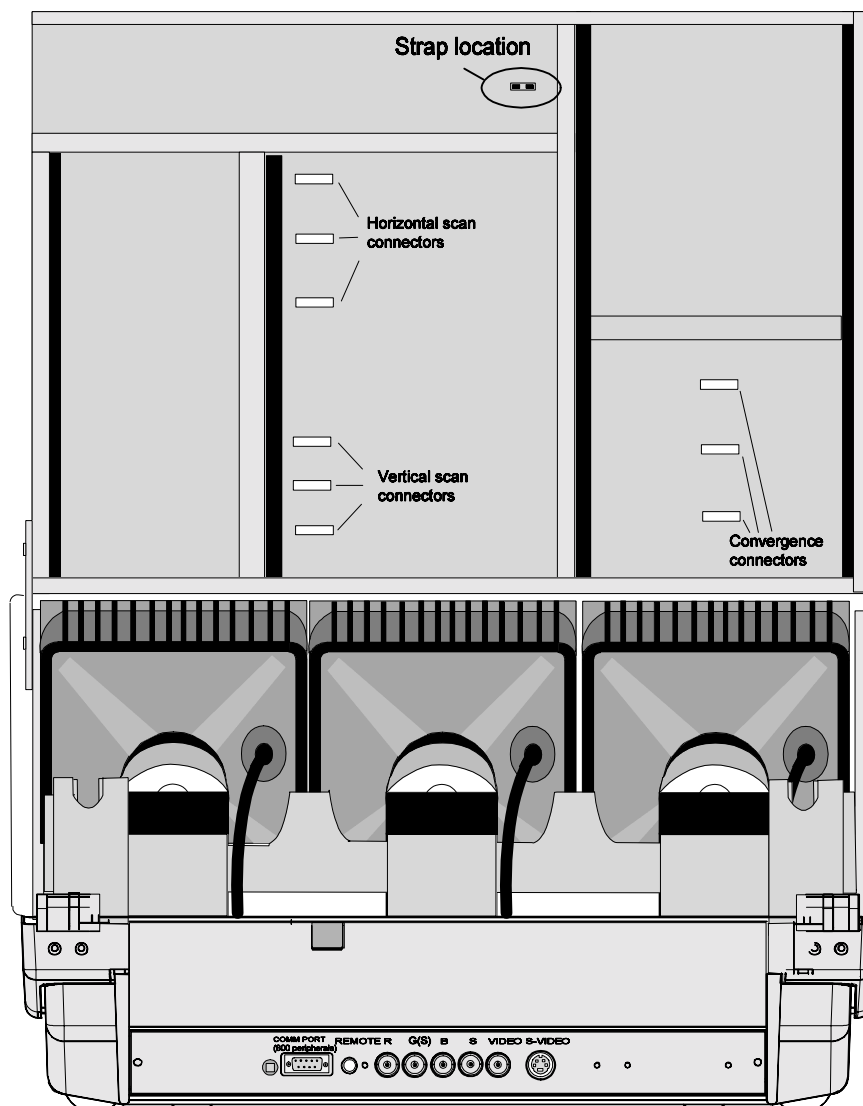


Image 4-1
Password strap location

4. Projector Set up

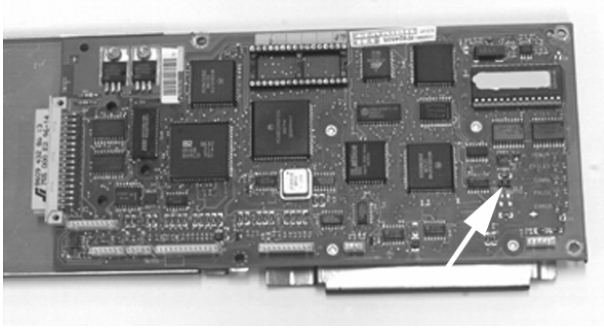


Image 4-2

5. INSTALLATION ADJUSTMENT

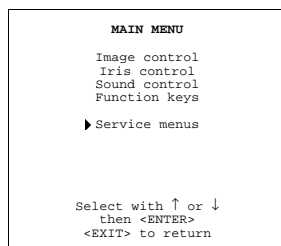
Overview

- Entering the Service menus
- Starting up the Installation Adjustment Mode
- Password Protection
- Overview Installation mode
- Scheimpflug Adjustment
- Optical Lens Focusing
- Electrical focusing
- Raster Centering
- CRT Projection Angle Adjustment

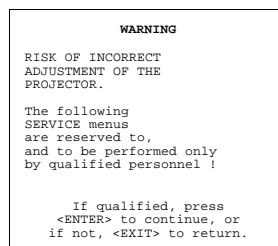
5.1 Entering the Service menus

How to enter the Adjustment menus with the RCU?

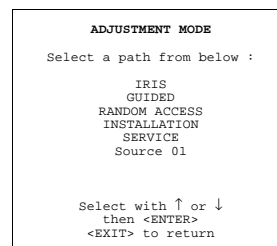
1. Press the **ADJUST** key.
The *Main menu* will be displayed. (menu 5-1)
2. Push the cursor key \uparrow or \downarrow to select *Service menus*.
3. Press **ENTER** to select.
A warning will be displayed. (menu 5-2)
4. If qualified, press **ENTER** to continue.
The Service main menu will be displayed. (menu 5-3)



Menu 5-1



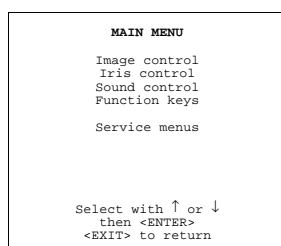
Menu 5-2



Menu 5-3

How to enter the Adjustment menus with the local keypad?

1. Press the **ADJUST** key.
The projector displays the *General Access Menu*. (image 5-1)
2. Use the cursor keys to highlight *enter ADJUST*.
3. Press **ENTER** to select.
The *Main menu* will be displayed. (menu 5-4)
4. Continue as described in *How to enter the Adjustment menus with the RCU*.



Menu 5-4

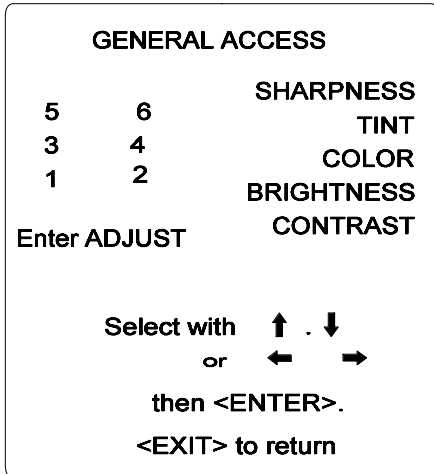
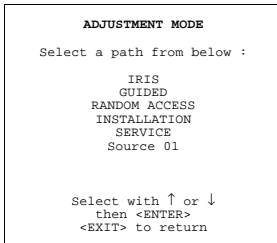


Image 5-1

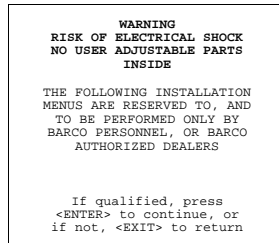
5.2 Starting up the Installation Adjustment Mode

How to Start Up the Installation Adjustment Mode?

1. Push the cursor key ↑ or ↓ to select *Installation* and press **ENTER** to select. (menu 5-5)
A warning will be displayed on the screen. (menu 5-6)
2. In case you are a qualified and authorized service person.
Press **ENTER** to start up the first step of the installation mode: Projector Position.
When entering the installation mode the projector will automatically switch to the internal pattern.
When the password mode is active you will be requested to enter the 4 digit password.
If no, Press **EXIT** to return.



Menu 5-5



Menu 5-6

5.3 Password Protection

Password Protection

Some items in the Adjustment Mode are password protected. While selecting such an item, the projector asks to enter your password.



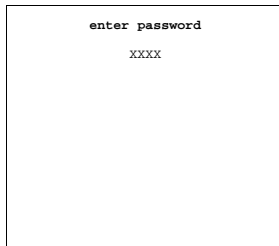
Password Protection is only available when the password strap on the controller module is on. Contact a Barco authorized technician when no password is requested during the adjustment procedure and Password Protection is desired.

Entering the Password with the RCU

The Password contains 4 digits, when the projector asks to enter your password:

1. Enter the digits with the numeric keys on the RCU (e.g.: 2319).

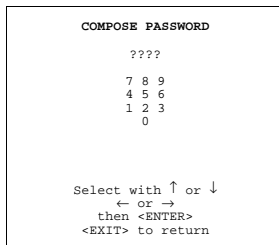
For each digit entered, a 'X' appears on the screen under the displayed text 'enter password' (menu 5-7)



Menu 5-7

Entering the password with the local keypad.

1. Select with the cursor keys to select the first digit of your password and press **ENTER**. (menu 5-8)
2. Continue in the same way for the other digits.



Menu 5-8



When the password is correctly entered, all other password protected items are accessible without reentering the password. When reentering the adjustment mode, it will be necessary to enter your password again when selecting a password protected item.

When the password is wrong, the error message "Wrong Password !!!" will be displayed.

5.4 Overview Installation mode

Overview

- Scheimpflug adjustment
- Optical lens focusing
- Raster centering
- CRT Projection Angle adjustment

5.5 Scheimpflug Adjustment

Range of the scheimpflug adjustment

The scheimpflug correction can be adjusted separately for the three tubes within 3 ranges:

- Range 1 : 1.4 m (55") to 1.9 m (75"), optimum screen width 1.4 m (55")
- Range 2 : 1.9 m (75") to 3.2 m (126"), optimum screen width 2.4 m (94")
- Range 3 : 3.2 m (126") to 6 m (236"), optimum screen width 4 m (157")

A correct scheimpflug setting gives the possibility to focus the lenses for a sharp image in all screen areas.

To change the setting from one range to another, some mechanical actions have to be done.

5. Installation Adjustment

Necessary tools

nutdriver 11 mm or screwdriver

Set up the scheinpflug range

1. Open the top cover, see Installation Guidelines, page 9 .
2. Loosen the lens bolts (do not remove them), and slide the lens to the front until the scheinpflug ring can move freely. (image 5-2)
3. Push the scheinpflug ring to its correct position (front view).
 - range 1 : to the right
 - range 2 : in the middle
 - range 3 : to the left (image 5-3)
4. Push the lens back till it fits in the ring and secure the four bolts.

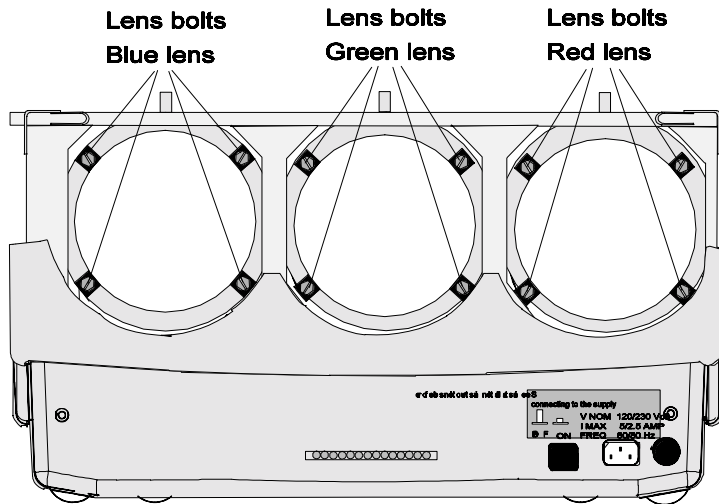


Image 5-2
Scheinpflug bolts

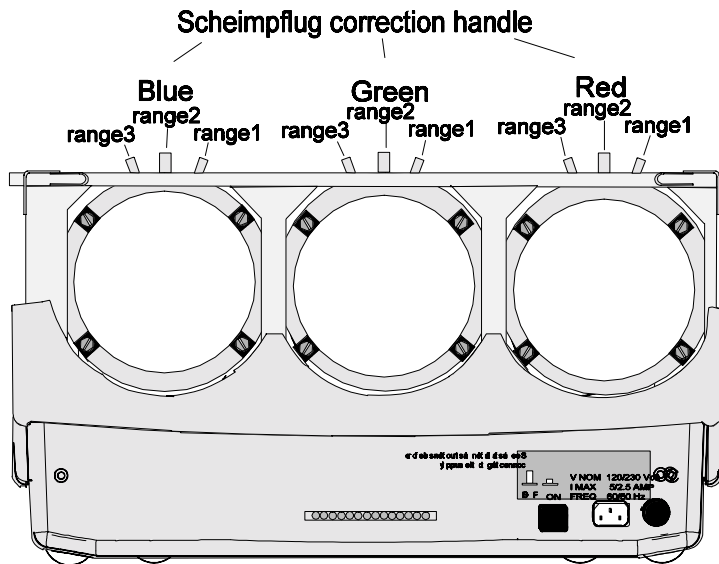


Image 5-3
Scheinpflug range setting

5.6 Optical Lens Focusing

What can be done?

The optical focusing procedure is performed separately for each lens. The appropriate CRT will be switched on as the user proceeds through the optical focusing adjustment sequence.

How to focus

1. To focus the center, loosen the wing nut at the rear end of the lens.
2. Rotate the lens barrel until the center of the image is clearly focussed.
3. Loosen the wing nut at the front end of the lens.
4. Rotate the lens barrel until the corners of the image are clearly focussed.
Note: *Repetition of these adjustments may be necessary to optimize optical focusing.*
5. Press **ENTER** key to continue to the next color. (menu 5-9)

```
OPTICAL LENS FOCUSING
1. Loosen the nut on the
   rear of the xxxx lens.
   Rotate the lens barrel
   to focus the center
   of the image.
   Then tighten the nut.
2. Loosen the nut on the
   front of the xxxx lens.
   Rotate the front
   section of the lens to
   focus the corners of the
   image. Then tighten the nut.

<ENTER> to continue
<EXIT> to return
```

Menu 5-9

5.7 Electrical focusing

What can be done?

The electrical focus for red, green and blue is factory preset. The electrical focus can be readjusted. Adjust only if really necessary. Mark first for future reference the blue focus control before adjusting. Focus adjustment should be done with high contrast settings.

How to readjust?

1. Ensure the lenses are correctly focused.
2. Open the top cover.
3. Adjust separately the focus control for red and green for the sharpest image on the screen. (image 5-4)

5. Installation Adjustment

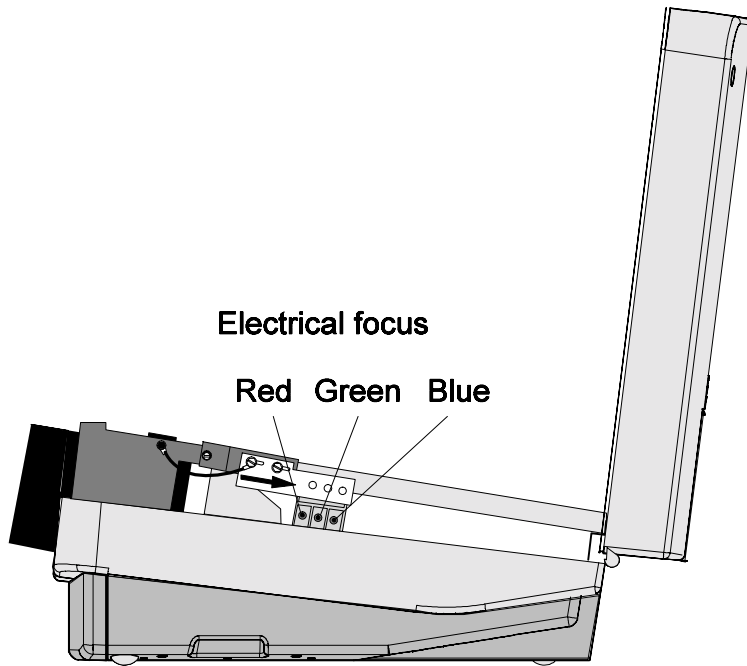


Image 5-4
Electrical focus adjustment

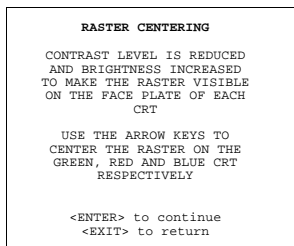


The blue focus has been factory adjusted for optimal color reproduction. Readjustment of the blue focus will effect color temperature and color tracking.

5.8 Raster Centering

Introduction

The raster must be centered on the CRT faceplate of each tube, therefore, it is necessary to look into the lenses. Following screen will be displayed:



Menu 5-10



To avoid eye discomfort while performing these adjustments, reduce the contrast setting and gradually increase the brightness level until the raster becomes visible behind the image.



In order to ensure maximum CRT longevity and to avoid CRT damage, do not shift the raster outside the phosphor area or the CRT.

CRT Phosphor Width

Following phosphor width is used for the green color:

CRT phosphor width for the green color
11,5 cm (4.5 inch)

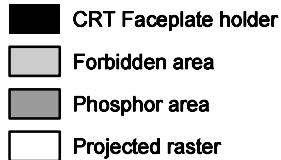
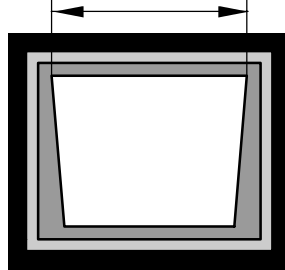
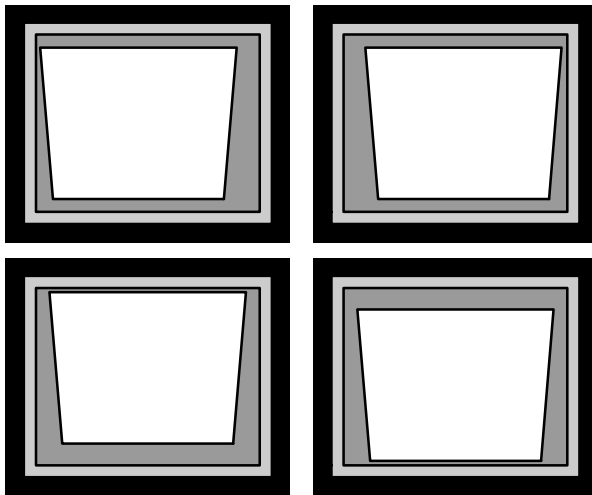


Image 5-5
CRT Phosphor Width

How to center the raster?

1. Press the **ENTER** key to activate the raster on the Green CRT faceplate.
2. Look into the Green lens and shift the raster with the cursor keys until it is centered in the middle of the CRT faceplate. (image 5-6)
3. Press the **ENTER** key to activate the raster on the Red CRT faceplate.
4. Shift the Red raster with the cursor keys until the raster is centered on the CRT faceplate.
5. Press the **ENTER** key to activate the raster on the Blue CRT faceplate.
6. Shift the Blue raster with the cursor keys until the raster is centered on the CRT faceplate.
7. Press **ENTER** to continue with the CRT Projection Angle Adjustment.

WRONG RASTER POSITIONS



PERFECT RASTER POSITION

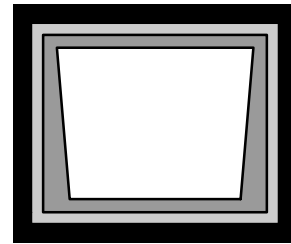


Image 5-6
Raster Positions

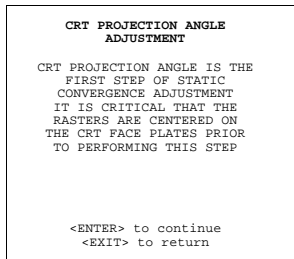
5.9 CRT Projection Angle Adjustment

Introduction

The projection angle of the Red and Blue CRT's is dependent on the desired size of the projected image. A new projection angle adjustment is required whenever a new screenwidth SW is adopted. If the centers of green, blue and red do not coincide, the CRT projection angle must be adjusted.

Following screen will be displayed when starting this CRT Projection Angle Adjustment:

5. Installation Adjustment



Menu 5-11



Never try to correct this misalignment with the shift correction or the static convergence controls. These shift correction controls may only be applied to correct small errors which cannot be corrected by the CRT angle adjustment. The Horizontal Shift and Vertical Shift for Red and Blue should be set near 50%.

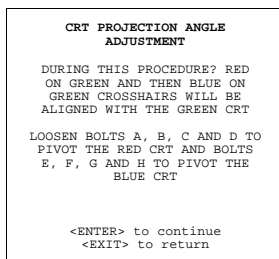
Be sure that the rasters are centered on the CRT faceplate.

How to adjust the CRT Projection Angle?

1. Press **ENTER** to continue with the crosshair alignment.

Following screen will be displayed: (menu 5-12)

2. Press **ENTER** to begin with the angle adjustment of the Red CRT.
3. Loosen the four hexagon screws A, A', B and B', upper and lower fixation latch. These screws fasten the cooling house of the red tube. Pivot the red CRT until the center of the red image coincides with the center of the green image. If the angle of the red CRT is corrected, tighten the four bolts. (image 5-7, image 5-8)
Note: Screws A, B, C and D (M4) : upper fixation latch. nutdriver 7mm.
Screw A', B', C' and D' (M4) : lower fixation latch. nutdriver 7mm.
4. When the angle of the Red CRT is corrected, tighten the four bolts.
5. Press **ENTER** to continue with the angle adjustment of the Blue CRT.
6. Loosen the four hexagon screws C, C', D and D', upper and lower fixation latch. These screws fasten the cooling house of the blue tube. Pivot the blue CRT until the center of the blue image coincides with the center of the green image. If the angle of the red CRT is corrected, tighten the four bolts. (image 5-9)
7. When the angle of the blue CRT is corrected, tighten the four bolts.
8. Press **ENTER** to continue.



Menu 5-12

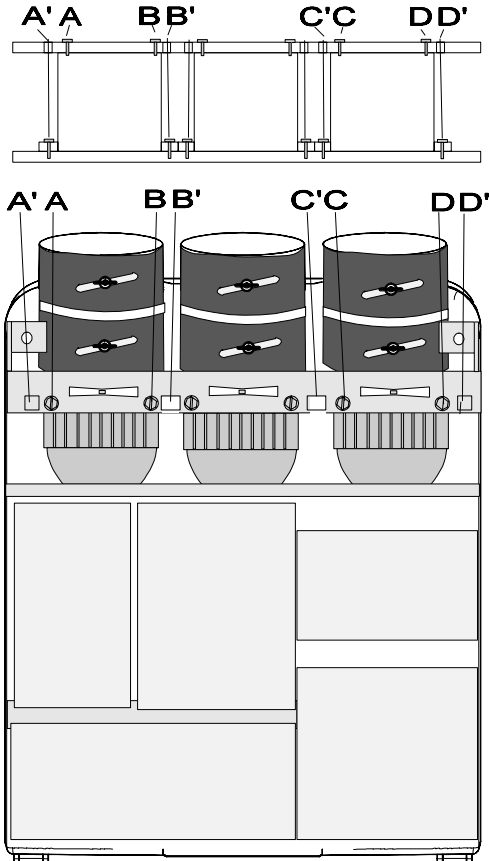
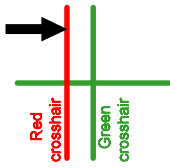


Image 5-7
CRT angle correction

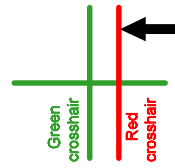
Case 1: Red crosshair on the Left of the Green crosshair



Action on CRT: Move the Red CRT towards the Green CRT

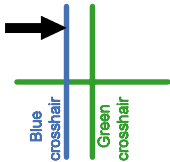
Image 5-8
Red CRT Projection Angle Adjustment

Case 1: Red crosshair on the Right of the Green crosshair



Action on CRT: Move the Red CRT away (to the outside) from the Green CRT

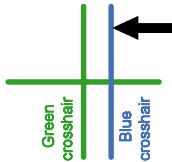
Case 1: Blue crosshair on the left of the green crosshair



Action on CRT: Move the blue CRT away (to the outside) from the green CRT

Image 5-9
Red CRT Projection Angle Adjustment

Case 1: Blue crosshair on the right of the green crosshair



Action on CRT: Move the blue CRT towards the green CRT

6. G2 ADJUSTMENT

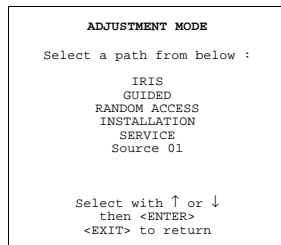
6.1 Start up the G2 adjustment

Start up

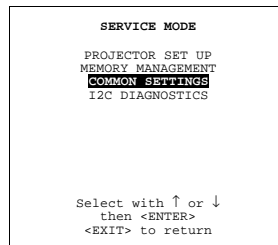
1. Enter the adjustment mode by pressing **ADJUST**. (menu 6-1)
2. Highlight *Service*.
3. Press **ENTER** to start up the service mode.
4. Highlight *Common settings*. (menu 6-2)
5. Press **ENTER**.
6. Highlight G2 adjust. (menu 6-3)
7. Press **ENTER**.

A safety notice will be displayed to warn the operator. (menu 6-4)

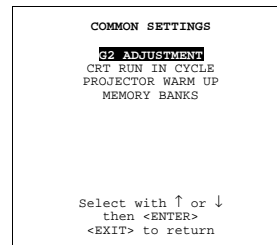
If you are qualified, press **ENTER** to continue with the G2 adjustment, otherwise press **EXIT** to return to the service menu. If **ENTER** is pressed, the G2 menu will be displayed (menu 6-5)



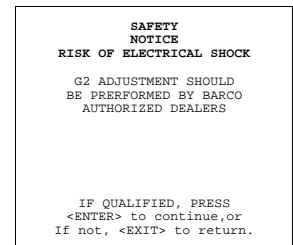
Menu 6-1



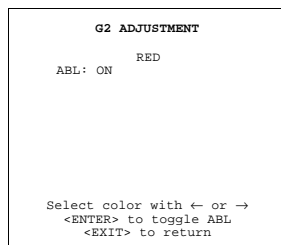
Menu 6-2



Menu 6-3



Menu 6-4



Menu 6-5

6.2 Adjusting the G2

How to adjust

1. Open the top cover to reach the G2 controls for red, green and blue. (image 6-1)

While starting the G2 control, the controller will automatically increase brightness and contrast until the raster behind the displayed text becomes visible.
2. Look to the projected image and observe the raster behind the image while the ABL function is ON.
3. Switch ABL to OFF by pressing **ENTER** and adjust the G2 control until the raster brightness looks the same as when the ABL function is ON.
4. Check the correct raster adjustment by pressing **ENTER** to toggle ABL to ON. Repeat these steps if necessary.
5. Continue with the other colors. Use the right or left arrow to select the next color.

6. G2 Adjustment

Loosen screws and move the cover plate to the left to access the G2 controls.
Cover the G2 controls again after alignment

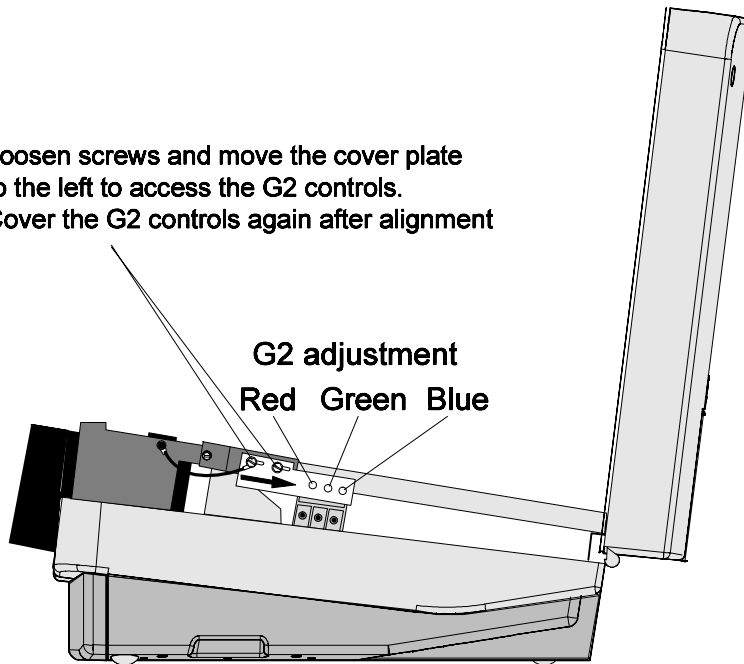


Image 6-1



The best result is obtained in a completely dark room or by looking into the lenses, but be aware that brightness and contrast are on a high level.

Revision Sheet

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Date: _____

Please correct the following points in this documentation (**R5976585/00**):

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