BARCO VISION 1600HDTV

# 90 00670 - 90 00671
# 90 00678 - 90 00679

# INSTALLATION MANUAL

BARCO

BARCO Projection Systems

BARCO VISION 1600HDTV

**90 00670 - 90 00671**
**90 00678 - 90 00679**

# INSTALLATION MANUAL

*for software release 3.x*

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Due to constant research, the information in this manual is subject to change without notice.



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## SAFETY INSTRUCTIONS

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# SAFETY INSTRUCTIONS

## INSTALLATION INSTRUCTIONS

***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 BARCO authorized service dealers.***

**OWNER'S RECORD**

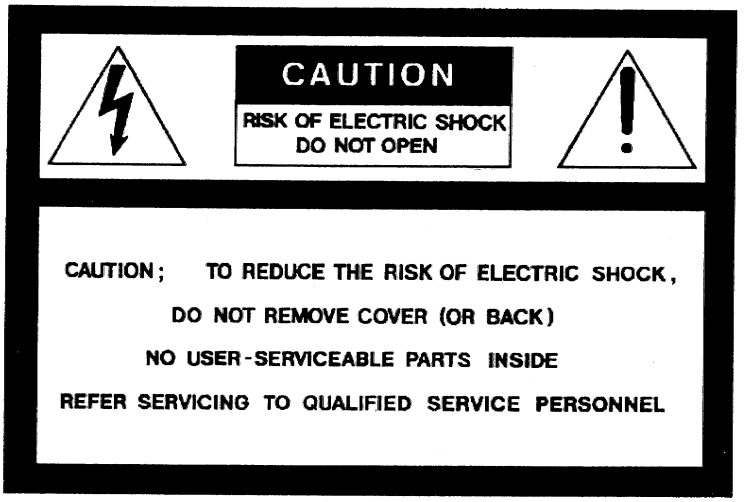
The part number and serial number are located at the rear. Record these numbers in the spaces provided below. Refer to them whenever you call upon your BARCO dealer regarding this product.

**PART NUMBER:** _____

**CH.** ___

**SER. NUMBER:** _____

# SAFETY INSTRUCTIONS




The lightning flash with an arrowhead within a triangle is intended to tell the user that parts inside this product are 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.

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

### FEDERAL COMMUNICATION COMMISSION (FCC STATEMENT)

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures be required to correct the interference.

# SAFETY INSTRUCTIONS

* 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 projector and in the documentation manuals should be adhered to.

* All instructions for operating and use of this equipment must be followed precisely.

## ON SAFETY

1. Operating AC power voltage of the projector:

**BARCOVISION 1600**
**Art.No. 90 00670 - 90 00671 (*230V AC*)**
**Art.No. 90 00688 - 90 00689 (*120V AC*)**

If you are not sure of the type of AC power available, consult your dealer or local power company.

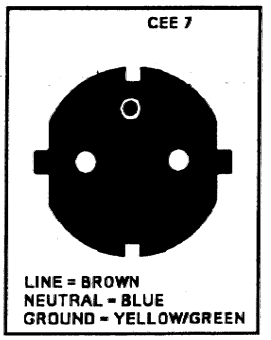
2. This product is equipped with a 3-wire grounding plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the purpose of the grounding-type plug.

## WARNING:THIS APPARATUS MUST BE GROUNDED (EARTHED)

**WARNING FOR THE CUSTOMERS**: THIS APPARATUS MUST BE GROUNDED (EARTHED) via the supplied 3 conductor AC power cable in accordance with the following instructions:
(If the supplied power cable is not the correct one, consult your dealer.)

# SAFETY INSTRUCTIONS

**A. Mains lead (AC Power cord) with CEE 7 plug:**




The colors of the mains lead are colored in accordance with the following code:

| | |
|---|---|
| Green-and-yellow: | Earth (safety earth) |
| Blue: | Neutral |
| Brown: | Live |

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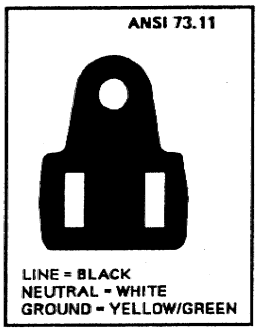
**B. Power cord with ANSI 73.11 plug:**




The wires of the power cord are colored in accordance with the following code.

| | |
|---|---|
| Green/yellow: | ground |
| White: | neutral |
| Black: | live |

---

**3.** 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.

**4.** 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. Also make sure that the total of all products plugged into the wall outlet does not exceed 15 amperes.

**5.** 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.

**6.** 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.

# SAFETY INSTRUCTIONS

## ON INSTALLATION

1. Do not place this projector on an unstable cart, stand, or table. The projector may fall, causing serious damage to it.

2. Do not use this projector near water.

3. Slots and openings in the cabinet and the back or bottom 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 on a bed, sofa, rug, or other similar surface. This product should never be placed near or over a radiator or heat register. Thisprojector should not be placed in a built-in installation or enclosure unless proper ventillation is provided.

## ON SERVICING

Do not attempt to service this projector yourself, as opening or removing covers may expose you to dangerous voltage potentials and risk of electric shock!
**Refer all sevicing to qualified service personnel.**

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

a. When the power cord or plug is damaged or frayed.

b. If liquid has been spilled into the projector.

c.If the product has been exposed to rain or water.

d. 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;

e. If the product has been dropped or the cabinet has been damaged;

f. If the product exibits a distinct change in performance, indicating a need for service.

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**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.

# SAFETY INSTRUCTIONS

## 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 projector. 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 florescent 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.

# SAFETY INSTRUCTIONS

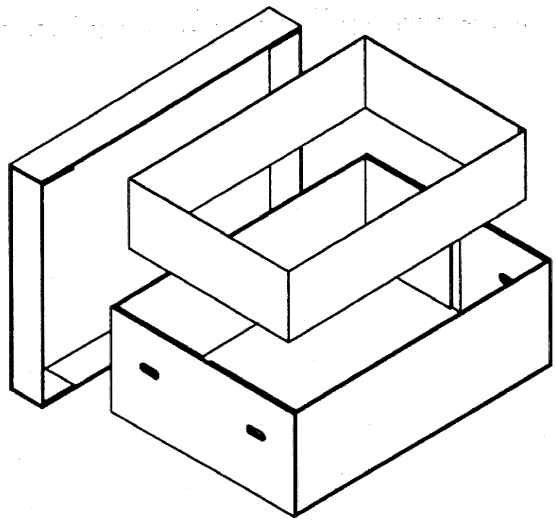
# UNPACKING

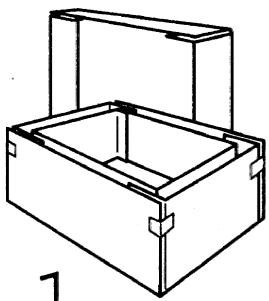
## UNPACKING

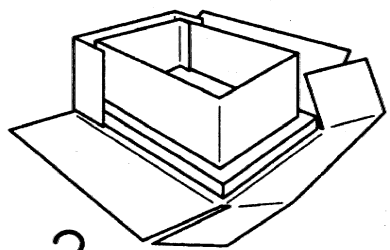
## DIMENSIONS

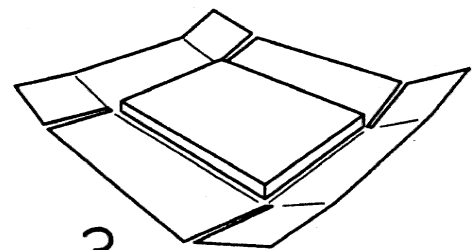
# UNPACKING

**Unpacking**






Take the projector out of its shipping carton and place it on a table.
For transportation utilities, the projector is mounted on a plank with 4 bolts. Use two 13 mm wrenches to loosen these bolts.

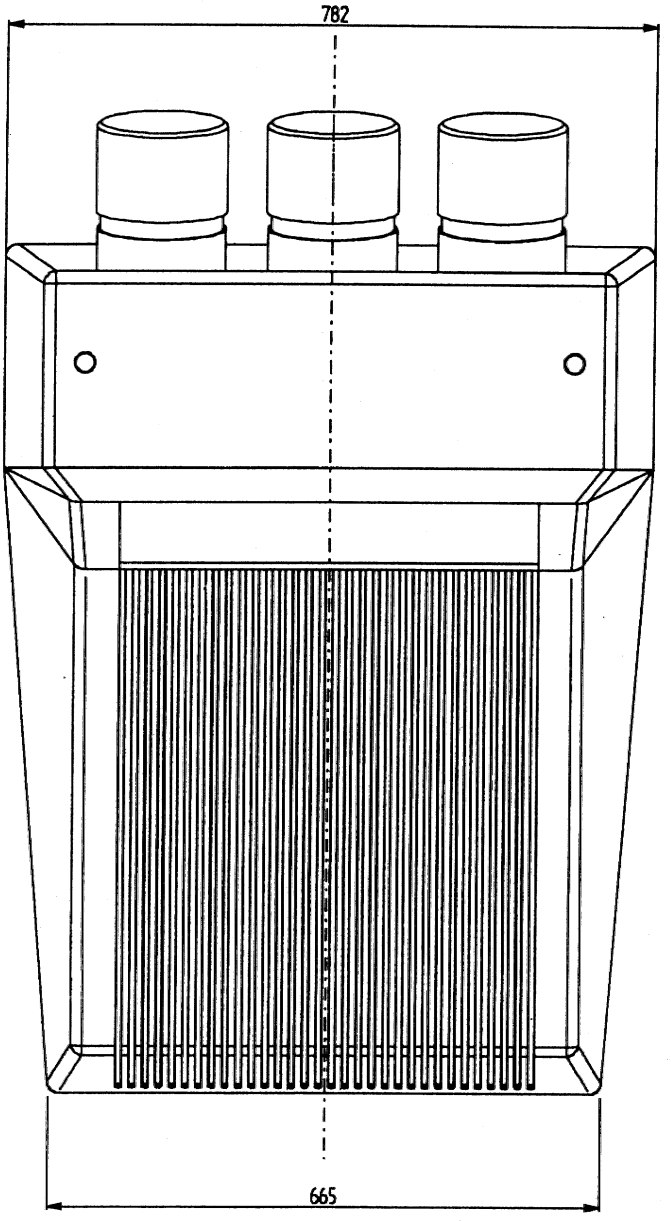
*Save the original shipping carton and packing material : they will come in handy if you ever have to ship your projector. For maximum protection, repack your projector as it was originally packed at the factory.*

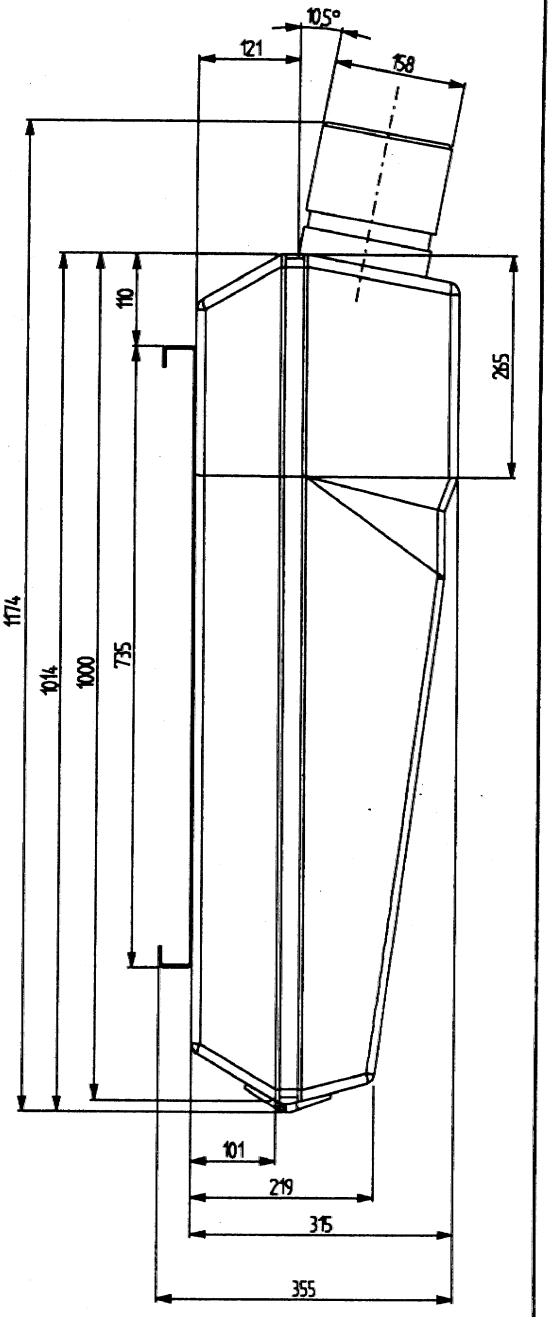
Contents of the shipped box :

- 1 BARCOVISION 1600
- 1 remote control unit RCU800.
- 1 power cable with outlet plug type CEE7 or ANSI 73.11.
- 1 connector clamp
- 1 owner's manual
- 1 installation manual (only for qualified technicians)

# PROJECTOR DIMENSIONS

**Projector dimensions**



*Notes*

## INSTALLATION GUIDELINES

**environment**

**what about ambient light?**

**which screen type?**

**what image size? How big should the image be?**

**where to install the projector?**

**how to install the projector?**

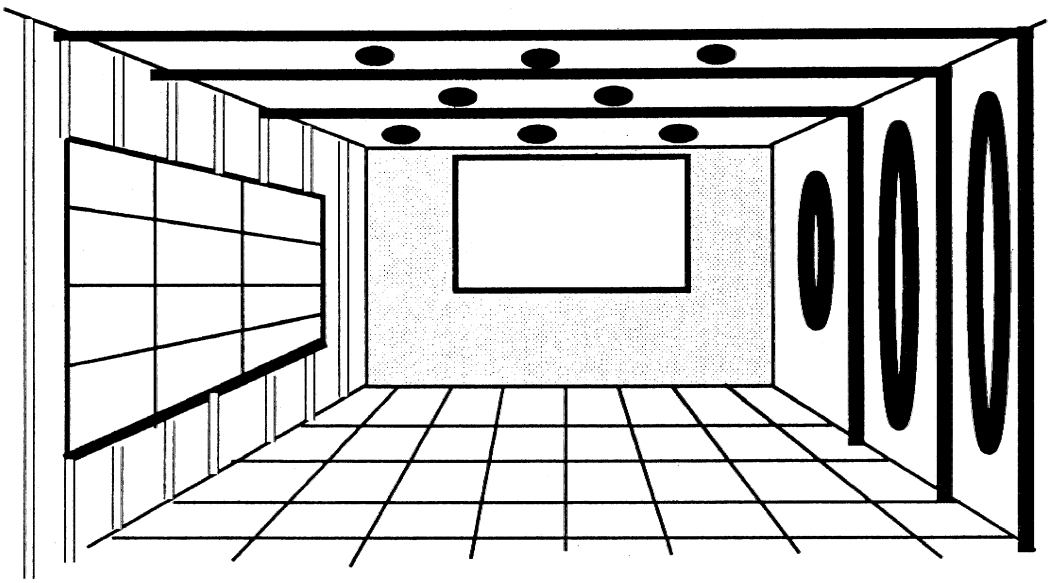
# INSTALLATION GUIDELINES

## INSTALLATION GUIDELINES

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

### * 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.



### * 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 projecting 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 results in a 'wash out' of the projected image. That appears as a less of 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.

# INSTALLATION GUIDELINES

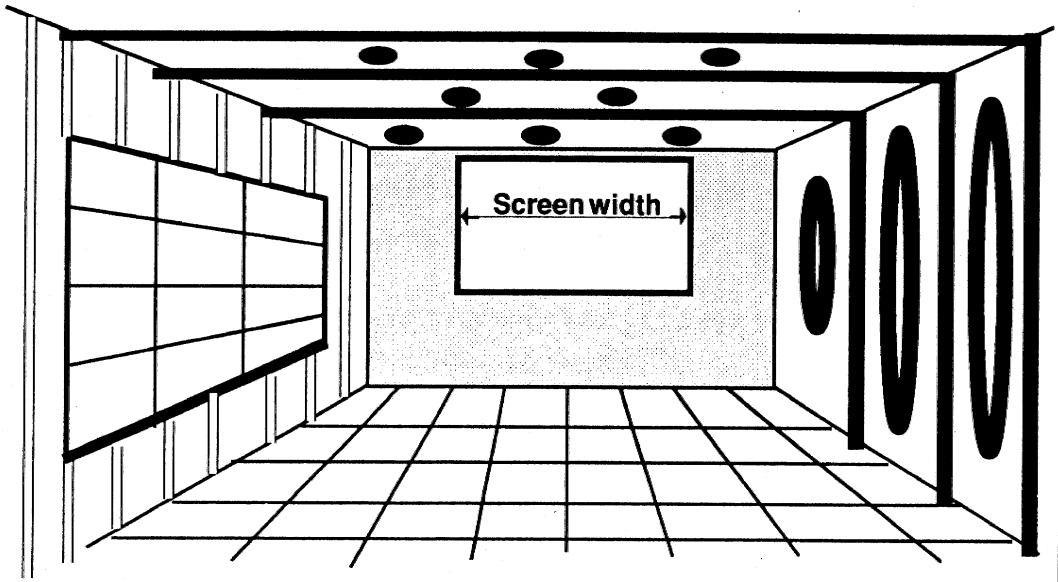
*** Which screen type?**

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

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.*




*** What image size? How big should the image be?**

The BARCOVISION 1600 is designed for projecting an image size from 2.0m (6.6') to 8.80m (29') with a aspect ratio of 4 to 3. It leaves the BARCO factory, adjusted as a ceiling front projector for a screen width of 4m. Changing the image size from the factory preset requires a realignment of the projector.

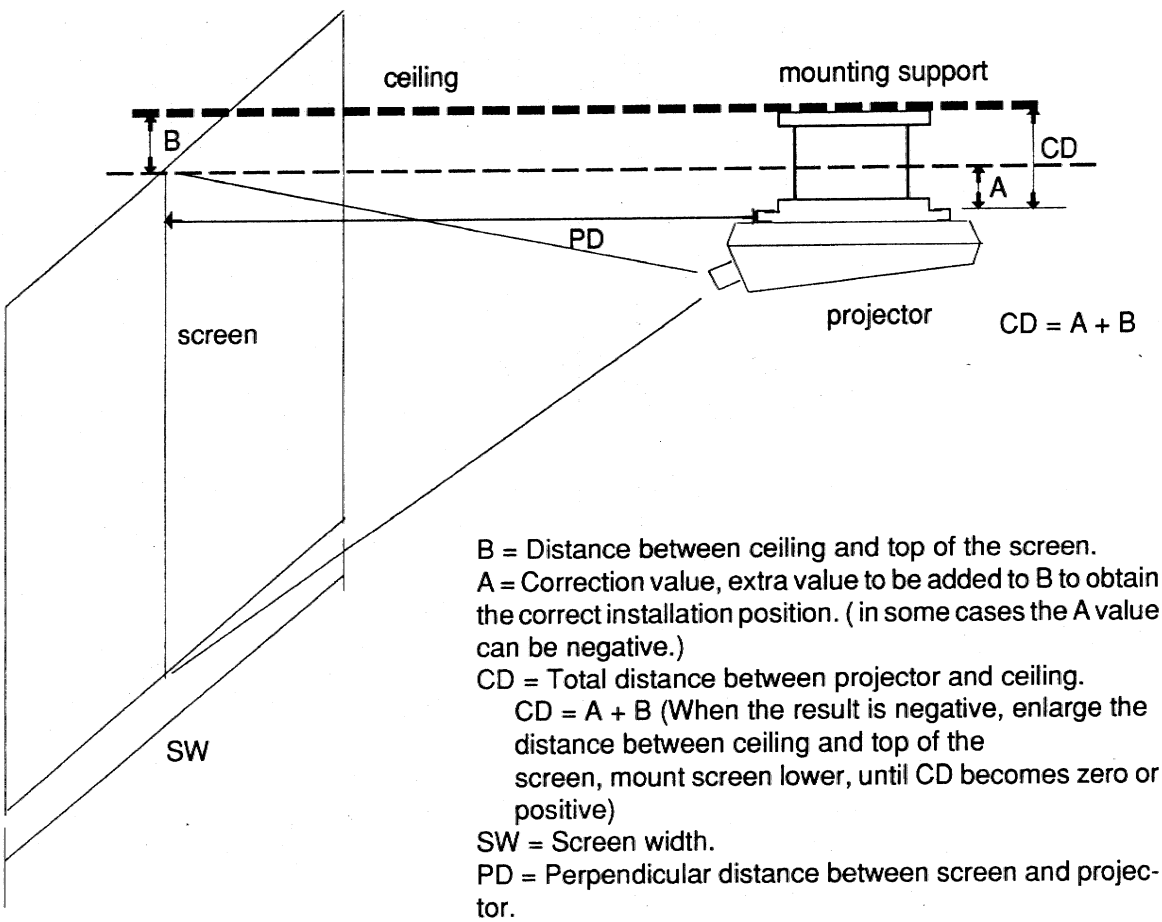
# INSTALLATION GUIDELINES

*** Where to install the projector?**

To indicate a correct installation position it is necessary to know the distance :
- projector - ceiling
- projector - screen

To find this correct position for the BARCOVISION 1600,equipped with TOC7, HD120, HD180 or HD300 lenses, 3 possible ways are indicated in the next paragraphs. Two groups of diagrams and formula are given, once for TOC7 and once for the HD lenses, the optical resolution and the work area is different. See specifications.

- a diagram which indicates PD and correction value A in function of the screen width.
- a table which immediately gives the correct position PD and the correction value A for different screen widths.
- a formula which directly gives the correct position PD and the correction value A.




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 ceiling.
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)
SW = Screen width.
PD = Perpendicular distance between screen and projector.

**Attention :**

The ceiling distance Correction Value A in next diagrams, tables and formulas is given for a projector installation which uses both aspect ratios, 4 by 3 and 16 by 9.

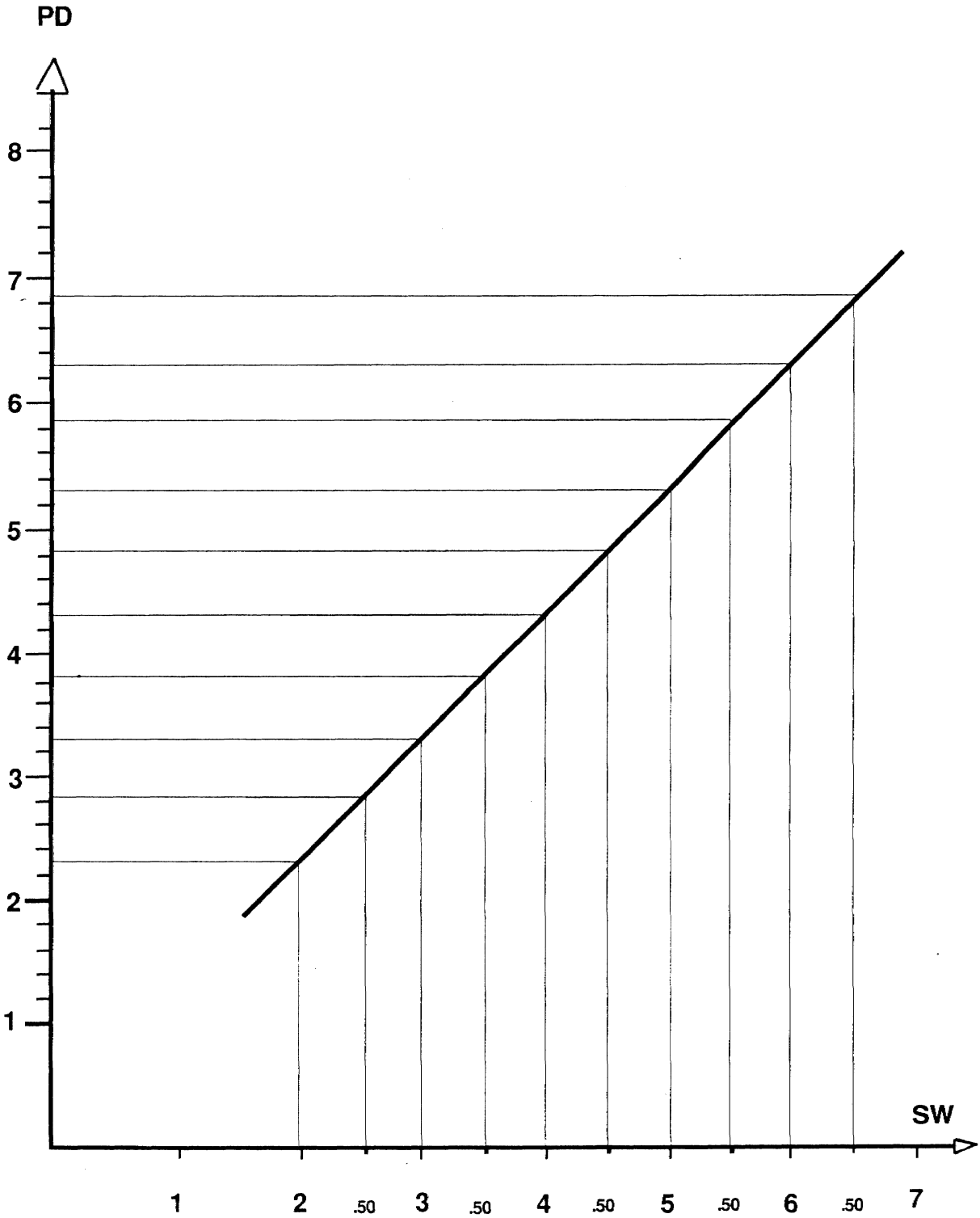
When only the aspect ratio 16 y 9 is used, subtract the value of next calculation :

9.375cmxSW[m] (0.09375inchxSW[inch]

# INSTALLATION GUIDELINES

## SCREEN WIDTH - PROJECTOR DISTANCE (metric)
## TOC7 lenses

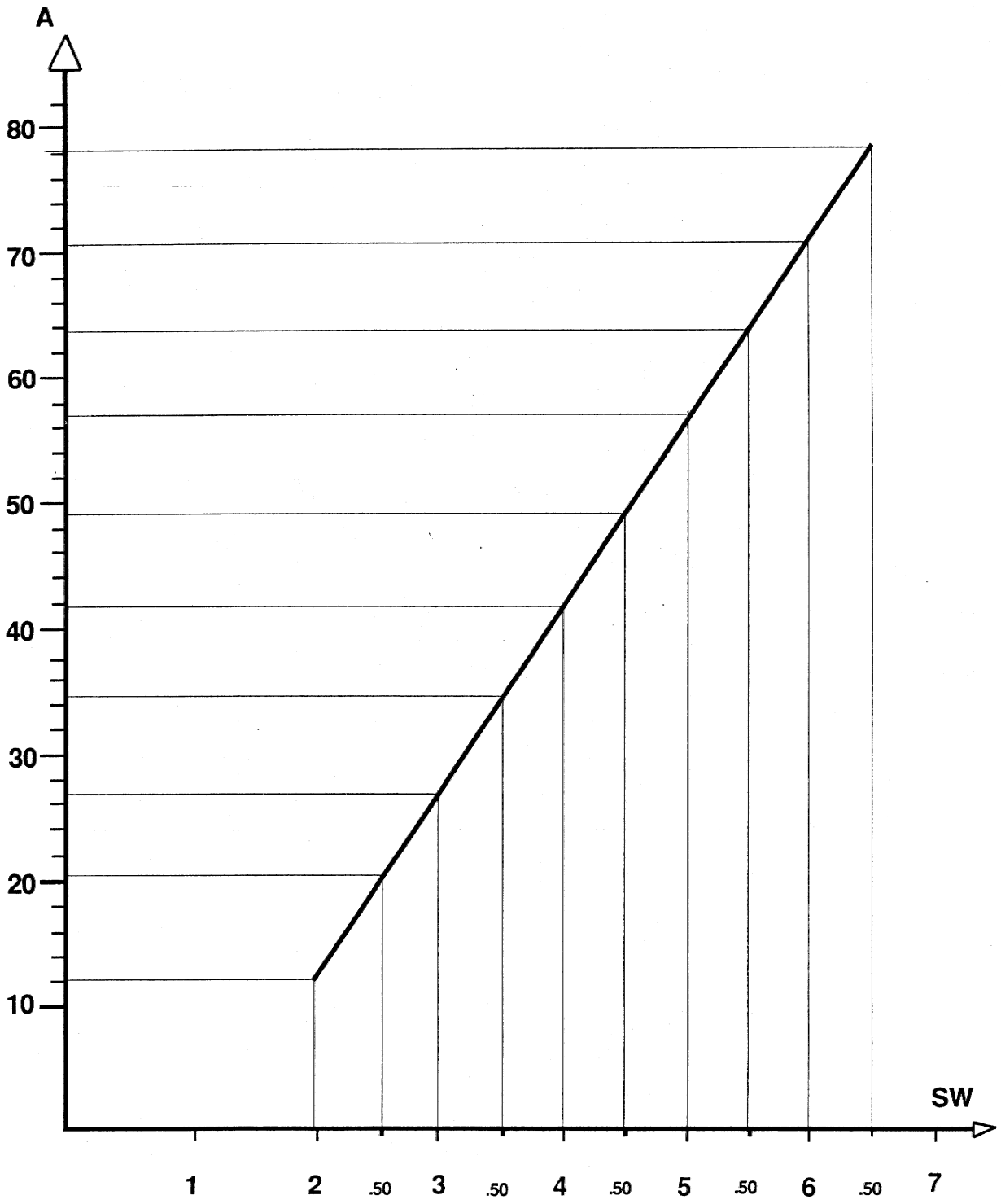
scale : 2 cm = 1 m



# INSTALLATION GUIDELINES

## SCREEN WIDTH - CEILING DISTANCE CORRECTION VALUE A (metric)
## TOC7 lenses

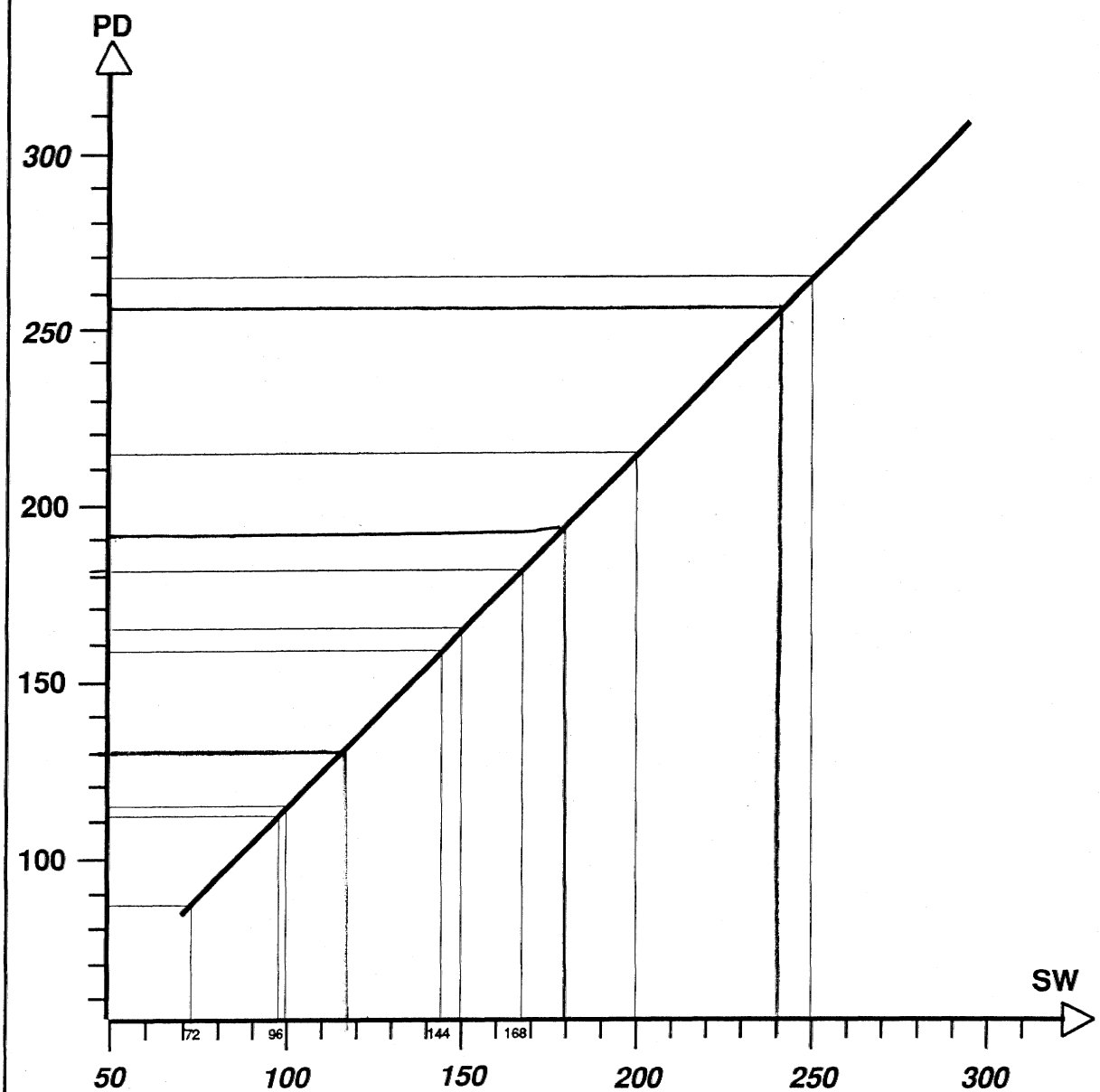
scale : SW 2 cm = 1 m
A : 2 cm = 10 cm



# INSTALLATION GUIDELINES

## SCREEN WIDTH - PROJECTOR DISTANCE (INCHES)
## TOC7 lenses

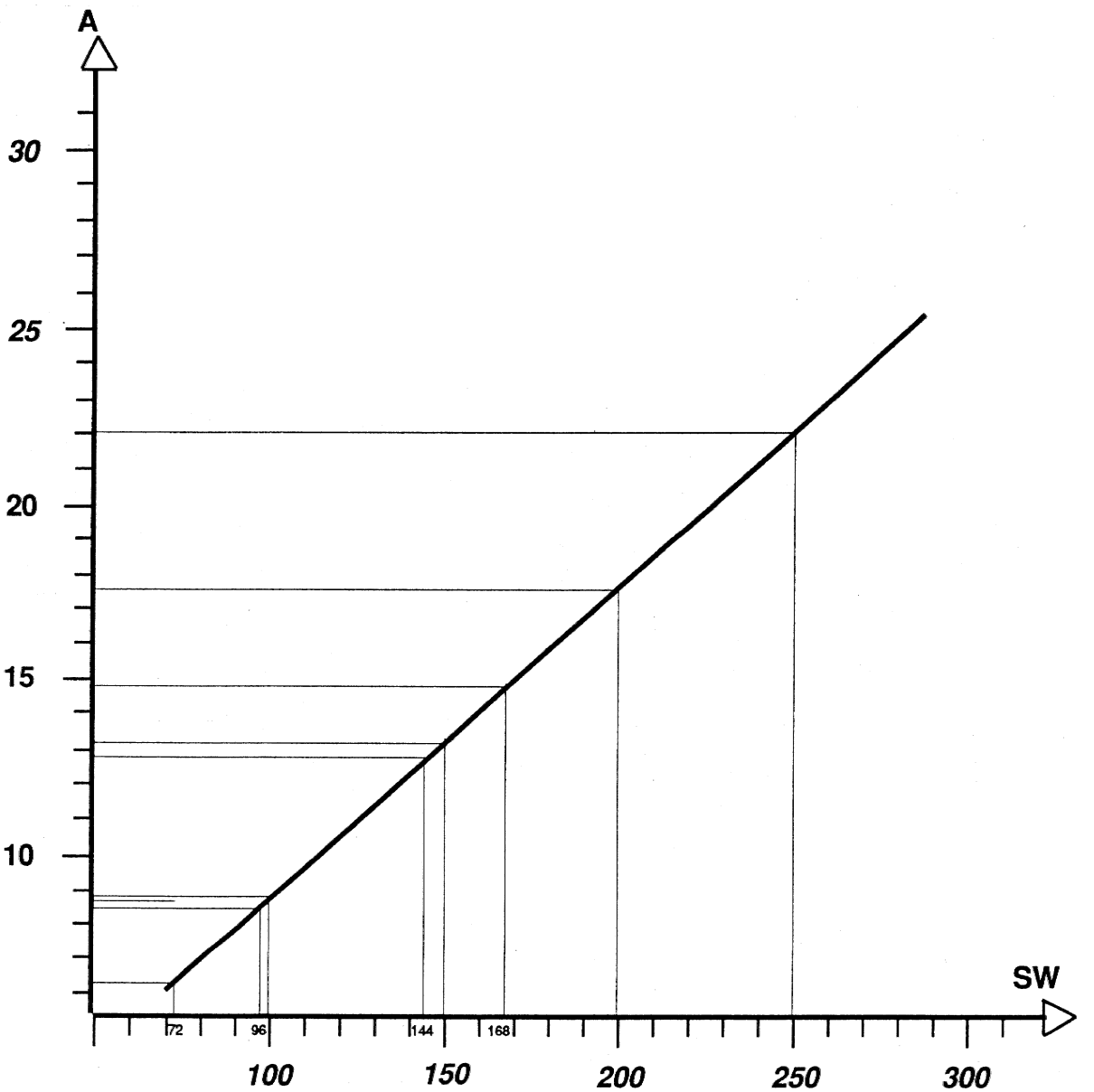
scale : 1 in = 50 inch



# INSTALLATION GUIDELINES

## SCREEN WIDTH - CEILING DISTANCE CORRECTION VALUE A (INCHES)
## TOC7 lenses

scale : SW : 1 in = 50 inch
A : 1 in = 5 inch



# INSTALLATION GUIDELINES

## Projector Distance and Ceiling Distance Correction value with regard to the screen width for TOC7 lenses.

| SW [m] | PD [m] | A [cm] |
|---|---|---|
| 1.80 | 2.15 | 9.15 |
| 1.90 | 2.25 | 10.62 |
| 2.00 | 2.35 | 12.09 |
| 2.10 | 2.45 | 13.56 |
| 2.20 | 2.55 | 15.03 |
| 2.30 | 2.65 | 16.50 |
| 2.40 | 2.75 | 17.97 |
| 2.50 | 2.85 | 19.44 |
| 2.60 | 2.95 | 20.91 |
| 2.70 | 3.05 | 22.38 |
| 2.80 | 3.15 | 23.85 |
| 2.90 | 3.25 | 25.32 |
| 3.00 | 3.35 | 26.79 |
| 3.10 | 3.45 | 28.26 |
| 3.20 | 3.55 | 29.73 |
| 3.30 | 3.65 | 31.2 |
| 3.40 | 3.75 | 32.67 |
| 3.50 | 3.85 | 34.14 |
| 3.60 | 3.95 | 35.61 |
| 3.70 | 4.05 | 37.08 |
| 3.80 | 4.15 | 38.55 |
| 3.90 | 4.25 | 40.02 |
| 4.00 | 4.35 | 41.49 |
| 4.10 | 4.45 | 42.96 |
| 4.20 | 4.55 | 44.43 |
| 4.30 | 4.65 | 45.90 |
| 4.40 | 4.75 | 47.37 |
| 4.50 | 4.85 | 48.84 |
| 4.60 | 4.95 | 50.31 |
| 4.70 | 5.05 | 51.78 |
| 4.80 | 5.15 | 53.25 |
| 4.90 | 5.25 | 54.72 |
| 5.00 | 5.35 | 56.19 |
| 5.10 | 5.45 | 57.66 |
| 5.20 | 5.55 | 59.13 |
| 5.30 | 5.65 | 60.60 |
| 5.40 | 5.75 | 62.07 |
| 5.50 | 5.85 | 63.54 |
| 5.60 | 5.95 | 65.01 |
| 5.70 | 6.05 | 66.48 |
| 5.80 | 6.15 | 67.95 |
| 5.90 | 6.25 | 69.42 |
| 6.00 | 6.35 | 70.89 |
| 6.10 | 6.45 | 72.36 |
| 6.20 | 6.55 | 73.83 |
| 6.30 | 6.65 | 75.30 |
| 6.40 | 6.75 | 76.77 |
| 6.50 | 6.85 | 78.24 |
| 6.60 | 6.95 | 79.71 |
| 6.70 | 7.05 | 81.18 |
| 6.80 | 7.15 | 82.65 |
| 6.90 | 7.25 | 84.12 |
| 7.00 | 7.35 | 85.59 |

| SW [inch] | PD [inch] | A [inch] |
|---|---|---|
| 70 | 83.78 | 3.48 |
| 75 | 88.78 | 4.22 |
| 80 | 93.78 | 4.95 |
| 85 | 98.78 | 5.69 |
| 90 | 103.78 | 6.42 |
| 95 | 108.78 | 7.16 |
| 100 | 113.78 | 7.89 |
| 105 | 118.78 | 8.63 |
| 110 | 123.78 | 9.36 |
| 115 | 128.78 | 10.10 |
| 120 | 133.78 | 10.83 |
| 125 | 138.78 | 11.57 |
| 130 | 143.78 | 12.30 |
| 135 | 148.78 | 13.03 |
| 140 | 153.78 | 13.77 |
| 145 | 158.78 | 14.51 |
| 150 | 163.78 | 15.24 |
| 155 | 168.78 | 15.98 |
| 160 | 173.78 | 16.71 |
| 165 | 178.78 | 17.45 |
| 170 | 183.78 | 18.18 |
| 175 | 188.78 | 18.92 |
| 180 | 193.78 | 19.65 |
| 185 | 198.78 | 20.39 |
| 190 | 203.78 | 21.12 |
| 195 | 208.78 | 21.86 |
| 200 | 213.78 | 22.59 |
| 205 | 218.78 | 23.33 |
| 210 | 223.78 | 24.06 |
| 215 | 228.78 | 24.80 |
| 220 | 233.78 | 25.53 |
| 225 | 238.78 | 26.27 |
| 230 | 243.78 | 27.00 |
| 235 | 248.78 | 27.74 |
| 240 | 253.78 | 28.47 |
| 245 | 258.78 | 29.21 |
| 250 | 263.78 | 29.94 |
| 255 | 268.78 | 30.68 |
| 260 | 273.78 | 31.41 |
| 265 | 278.78 | 32.15 |
| 270 | 283.78 | 32.88 |
| 275 | 288.78 | 33.62 |

formula (metric)

PD[m]=SW[m]+0.35m

A[cm]=14.7xSW[m]-17.31

formula (inch)

PD[inch]=SW[inch]+13.78

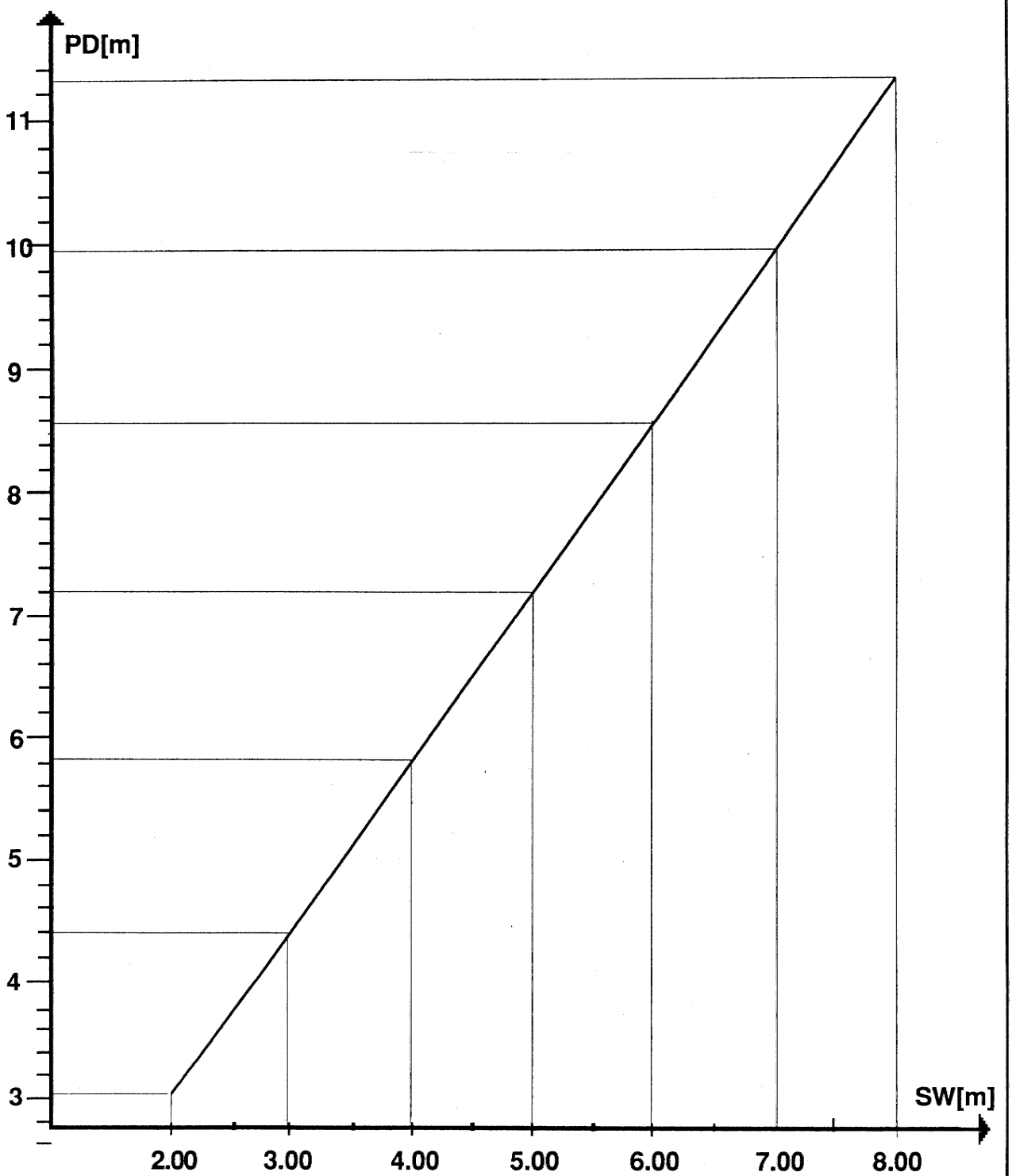
A[inch]=0.147xSW[inch]-6.81

# INSTALLATION GUIDELINES

## SCREEN WIDTH - PROJECTOR DISTANCE (metric)
## HD lenses

scale : 2 cm = 1 m

Screen width ranges for :
HD120 = 2.0m to 3.0m
HD180 = 3.0m to 4.2m
HD300 = 2.0m to 8.8m

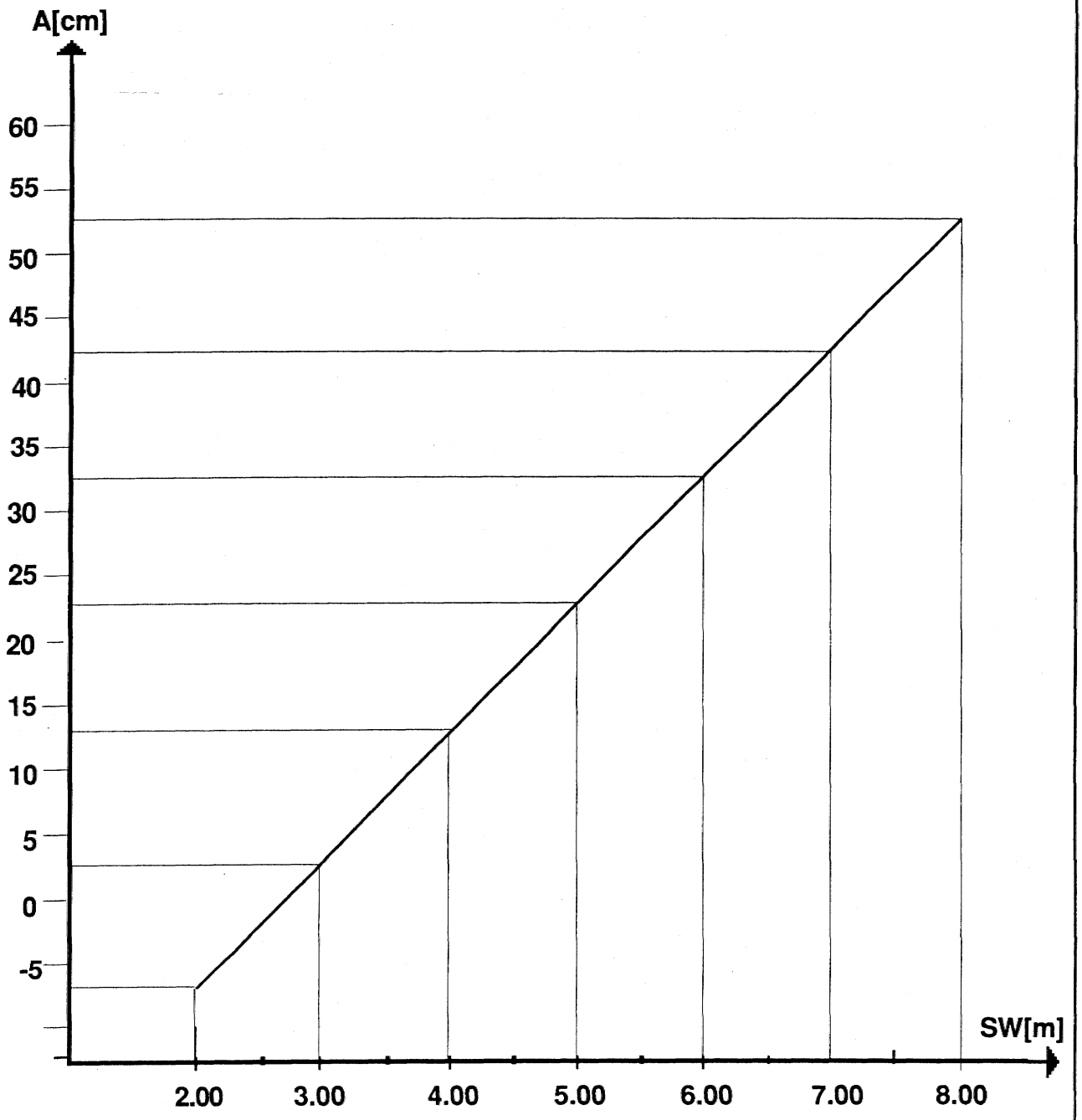


# INSTALLATION GUIDELINES

## SCREEN WIDTH - CEILING DISTANCE CORRECTION VALUE A (metric)
### HD lenses

scale : SW : 2 cm=1 m
A : 1cm=5 cm

Screen width ranges for :
HD120 = 2.0m to 3.0m
HD180 = 3.0m to 4.2m
HD300 = 2.0m to 8.8m

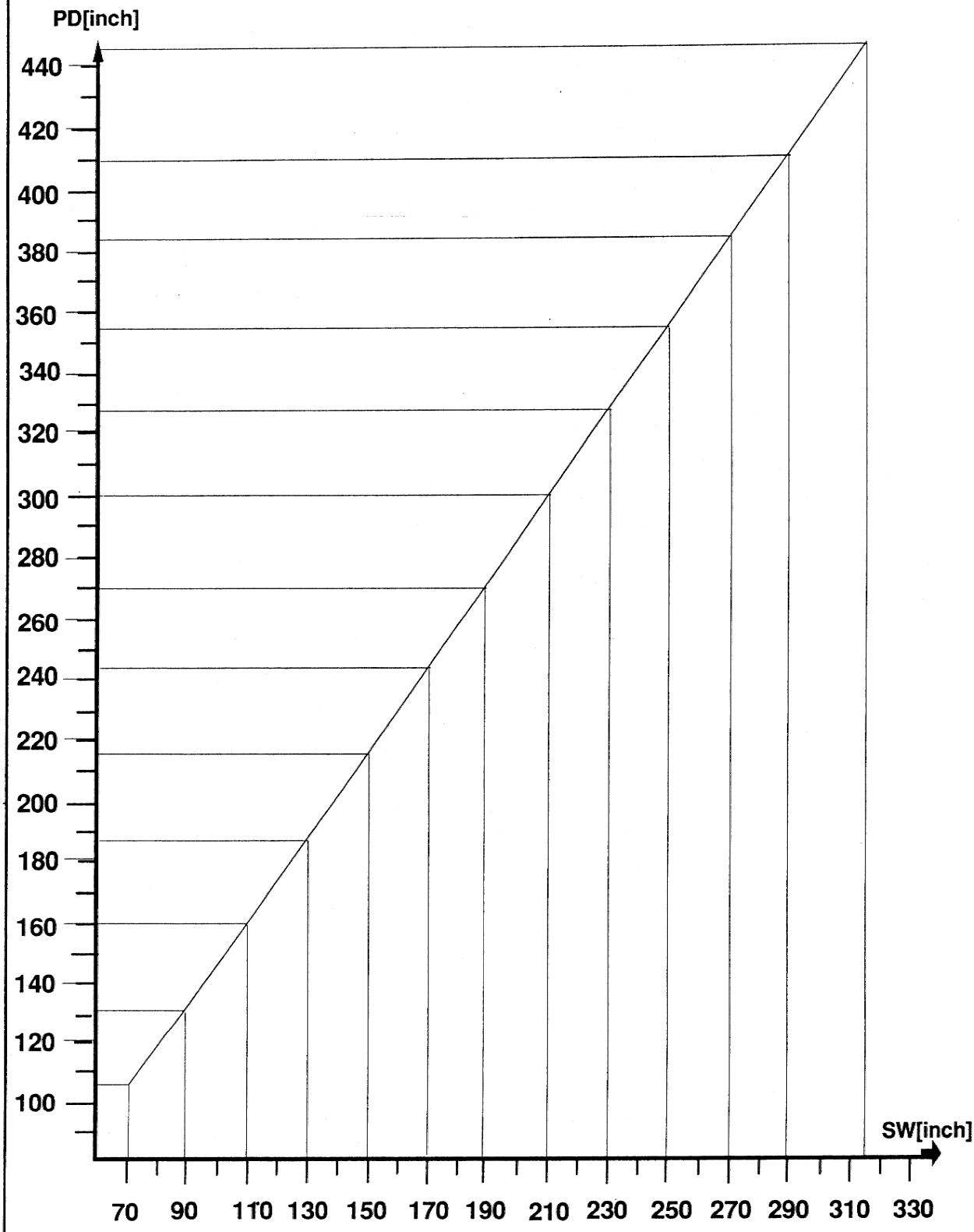


# INSTALLATION GUIDELINES

## SCREEN WIDTH - PROJECTOR DISTANCE (INCHES)
### HD lenses

Screen width ranges for :
HD120 = 78.74inch to 118.11inch
HD180 = 118.11inch to 165.35inch
HD300 = 78.74inch to 346.46inch

**scale :**
**PD : 1 Inch=10 Inch**
**SW : 1 Inch=20 Inch**

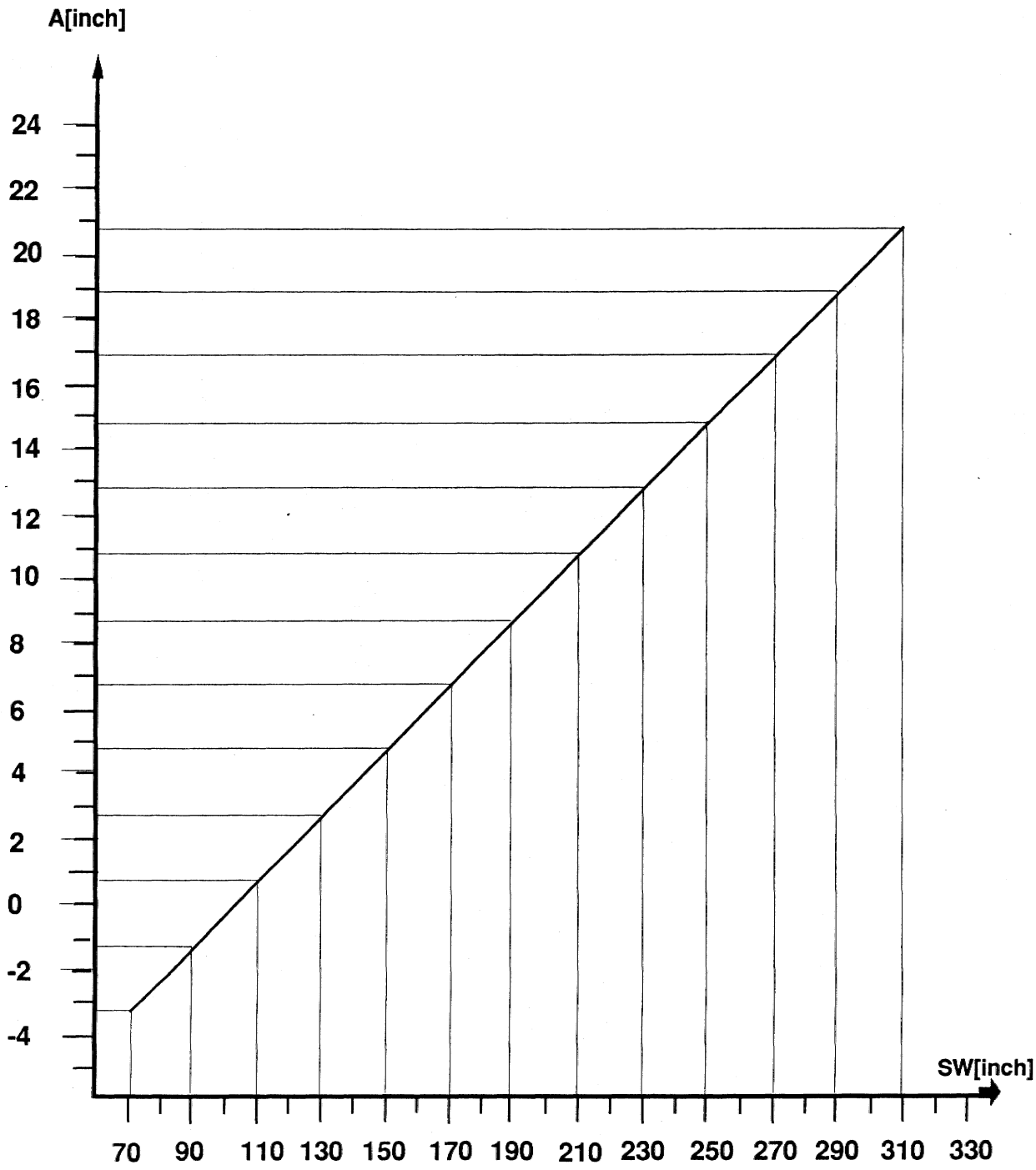


# INSTALLATION GUIDELINES

## SCREEN WIDTH - CEILING DISTANCE CORRECTION VALUE A (INCHES)
## HD lenses

**scale : SW: 1 Inch=10 Inch**
**A: 1 Inch=2 Inch**

Screen width ranges for :
HD120 = 78.74inch to 118.11inch
HD180 = 118.11inch to 165.35inch
HD300 = 78.74inch to 346.46inch



# INSTALLATION GUIDELINES

## Projector Distance and Ceiling Distance Correction value with regard to the screen width for HD lenses.

| SW [m] | PD [m] | A [cm] |
|---|---|---|
| 1.80 | 2.73 | -8.0 |
| 1.90 | 2.87 | -7.0 |
| 2.00 | 3.01 | -6.0 |
| 2.10 | 3.14 | -5.0 |
| 2.20 | 3.28 | -4.0 |
| 2.30 | 3.42 | -3.0 |
| 2.40 | 3.56 | -2.0 |
| 2.50 | 3.70 | -1.0 |
| 2.60 | 3.83 | 0 |
| 2.70 | 3.97 | 1.0 |
| 2.80 | 4.11 | 2.0 |
| 2.90 | 4.25 | 3.0 |
| 3.00 | 4.39 | 4.0 |
| 3.10 | 4.52 | 5.0 |
| 3.20 | 4.66 | 6.0 |
| 3.30 | 4.80 | 7.0 |
| 3.40 | 4.94 | 8.0 |
| 3.50 | 5.08 | 9.0 |
| 3.60 | 5.21 | 10.0 |
| 3.70 | 5.35 | 11.0 |
| 3.80 | 5.49 | 12.0 |
| 3.90 | 5.63 | 13.0 |
| 4.00 | 5.77 | 14.0 |
| 4.10 | 5.90 | 15.0 |
| 4.20 | 6.04 | 16.0 |
| 4.30 | 6.18 | 17.0 |
| 4.40 | 6.32 | 18.0 |
| 4.50 | 6.46 | 19.0 |
| 4.60 | 6.59 | 20.0 |
| 4.70 | 6.73 | 21.0 |
| 4.80 | 6.87 | 22.0 |
| 4.90 | 7.01 | 23.0 |
| 5.00 | 7.15 | 24.0 |
| 5.10 | 7.28 | 25.0 |
| 5.20 | 7.42 | 26.0 |
| 5.30 | 7.56 | 27.0 |
| 5.40 | 7.70 | 28.0 |
| 5.50 | 7.84 | 29.0 |
| 5.60 | 7.97 | 30.0 |
| 5.70 | 8.11 | 31.0 |
| 5.80 | 8.25 | 32.0 |
| 5.90 | 8.39 | 33.0 |
| 6.00 | 8.53 | 34.0 |
| 6.10 | 8.66 | 35.0 |
| 6.20 | 8.80 | 36.0 |
| 6.30 | 8.94 | 37.0 |
| 6.40 | 9.08 | 38.0 |
| 6.50 | 9.22 | 39.0 |
| 6.60 | 9.35 | 40.0 |
| 6.70 | 9.49 | 41.0 |
| 6.80 | 9.63 | 42.0 |
| 6.90 | 9.77 | 43.0 |
| 7.00 | 9.91 | 44.0 |
| 7.10 | 10.04 | 45.0 |
| 7.20 | 10.18 | 46.0 |
| 7.30 | 10.32 | 47.0 |
| 7.40 | 10.46 | 48.0 |
| 7.50 | 10.60 | 49.0 |
| 7.60 | 10.73 | 50.0 |
| 7.70 | 10.87 | 51.0 |
| 7.80 | 11.01 | 52.0 |
| 7.90 | 11.15 | 53.0 |
| 8.00 | 11.29 | 54.0 |

formula (metric)

PD[m]=1.38xSW[m]+0.246m

A[cm]=10xSW[m]-26

| SW [inch] | PD [inch] | A [inch] |
|---|---|---|
| 70 | 106.3 | -3.24 |
| 75 | 113.2 | -2.74 |
| 80 | 120.1 | -2.24 |
| 85 | 127.0 | -1.74 |
| 90 | 133.9 | -1.24 |
| 95 | 140.8 | -0.74 |
| 100 | 147.7 | -0.24 |
| 105 | 154.6 | 0.26 |
| 110 | 161.5 | 0.76 |
| 115 | 168.3 | 1.26 |
| 120 | 175.2 | 1.76 |
| 125 | 182.1 | 2.26 |
| 130 | 189.0 | 2.76 |
| 135 | 195.9 | 3.26 |
| 140 | 202.8 | 3.76 |
| 145 | 209.7 | 4.26 |
| 150 | 216.6 | 4.76 |
| 155 | 223.5 | 5.26 |
| 160 | 230.4 | 5.76 |
| 165 | 237.3 | 6.26 |
| 170 | 244.2 | 6.76 |
| 175 | 251.1 | 7.26 |
| 180 | 258.0 | 7.76 |
| 185 | 264.9 | 8.26 |
| 190 | 271.8 | 8.76 |
| 195 | 278.7 | 9.26 |
| 200 | 285.6 | 9.76 |
| 205 | 282.9 | 10.26 |
| 210 | 299.4 | 10.76 |
| 215 | 306.3 | 11.26 |
| 220 | 313.2 | 11.76 |
| 225 | 320.1 | 12.26 |
| 230 | 327.0 | 12.76 |
| 235 | 333.9 | 13.26 |
| 240 | 340.8 | 13.76 |
| 245 | 347.7 | 14.26 |
| 250 | 354.6 | 14.76 |
| 255 | 361.5 | 15.26 |
| 260 | 368.4 | 15.76 |
| 265 | 375.3 | 16.26 |
| 270 | 382.2 | 16.76 |
| 275 | 389.1 | 17.26 |
| 280 | 396.0 | 17.76 |
| 285 | 402.9 | 18.26 |
| 290 | 409.8 | 18.76 |
| 295 | 416.7 | 19.26 |
| 300 | 423.6 | 19.76 |
| 305 | 430.5 | 20.26 |
| 310 | 438.4 | 20.76 |
| 315 | 444.3 | 21.26 |

formula (inch)

PD[inch]=1.38xSW[inch]+9.69

A[inch]=0.1xSW[inch]-10.24

# INSTALLATION GUIDELINES

*** How to install the projector?**

Ceiling mount or table mount?
To install the BARCOVISION 1600, apply always the BARCO kits which are specially designed for this function.

*BARCO ceiling support.*

Always use the BARCO ceiling support to attach your BARCOVISION 1600 to the ceiling. (BARCO order number : 98 27340)

The installation instruction for this support is enclosed in the packet of the set. You can order these instructions also by BARCO. (BARCO order number 59 75693)

Appendix A gives a short overview of the set up of a BARCO ceiling support.

*BARCO projection table.*

Height adaptable projection table provides a stable stand for your projector, and makes it possible to adapt the projector perfectly to the local requirements. (BARCO order number 98 27740).

# INSTALLATION GUIDELINES

# INSTALLATION SET UP

## ACCESS TO CONTROLS

## SCAN ADAPTATION

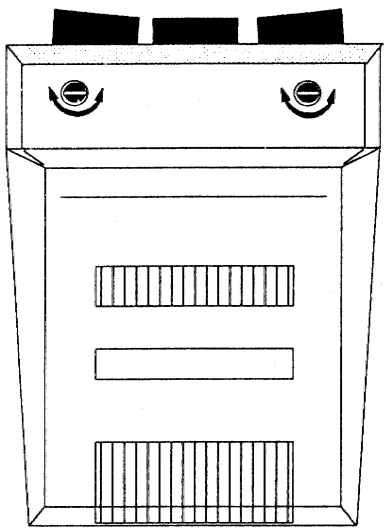
# INSTALLATION SET UP

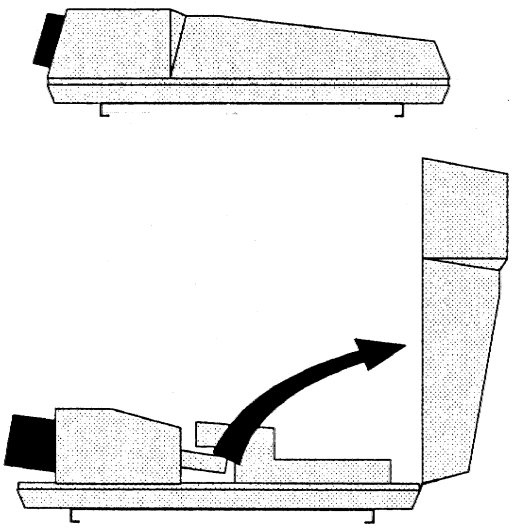
**ACCESS TO CONTROLS.**

Opening procedure :
During the projector set-up and the installation procedure it is necessary to open the top cover. To get access, handle as follow :

*Turn both lock screws with a screwdriver or a coin counter clockwise.

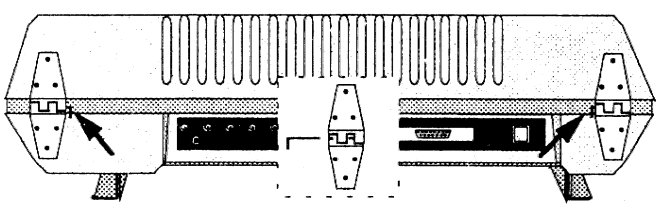
* Lift up and pivot the top cover. **Attention** : the cover is not secured with an incorporated support. When opening, do not let it flip over; otherwise the hinges will break.





During some installations it will become handy to remove the top cover totally.
Therefore,
- loosen the screw locks by turning a quater counter clockwise

and
- pull out the two hinge-joints



Re-install the cover :
Hook the top cover to the cabinet and insert the hinge-joints. Pivot the top cover and secure the lock screws by turning clockwise with a screwdriver or coin.

# INSTALLATION SET UP

## SCAN ADAPTATION

The scan switches must be placed in the correct position

**Warning**
***TURN OFF PROJECTOR AND UNPLUG THE POWER CORD BEFORE CHANGING A SCAN SWITCH POSITION***

*A : Horizontal scan inversion*

Three switches are used, one for each horizontal deflection coil. When changing the horizontal scan, insure that all three switches are left in the same position. See position of the switches (diagrams on next page) for the corresponding projector configuration.

*B : Vertical scan inversion*

One switch is used for the three vertical deflection coils. See position of the switch (diagrams on next page) for the corresponding projector configuration.

Procedure : (see also on next page)

*Make sure that the projector is switched off and the power cord is disconnected (unplugged).*

- Open the top cover.
- Loosen the fixation screws on both sides of the controller module (1).
- Turn the controller module to the lens side of the projector (2).
- Take out the Horizontal deflection module (3)

A. For horizontal scan inversion :

- toggle the positions of the three horizontal scan inversion switches.

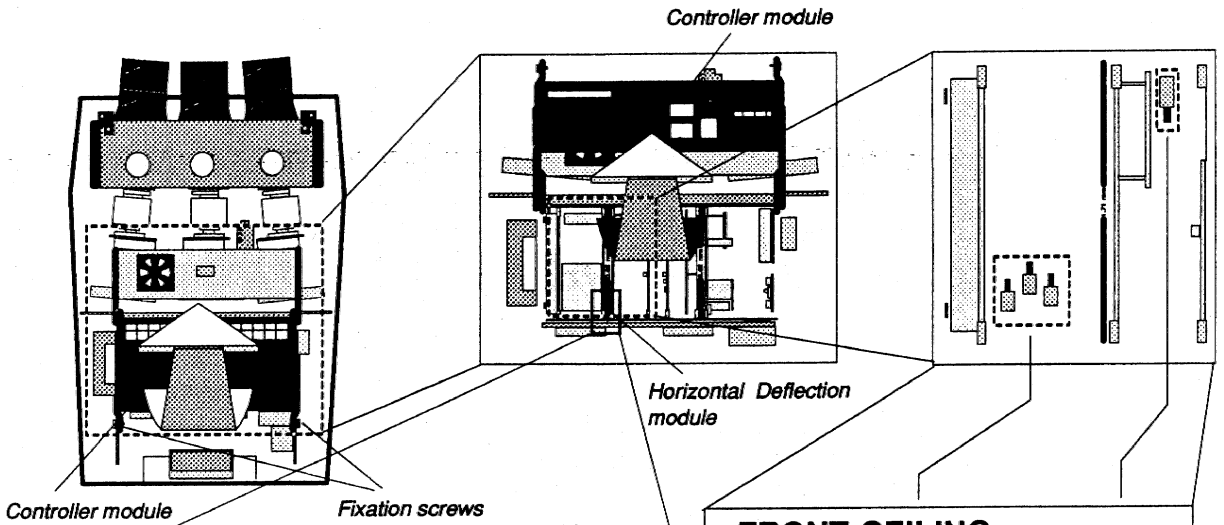
B. For vertical scan inversion :

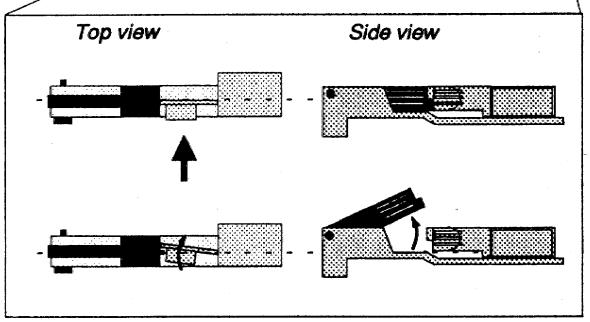
- toggle the position of the single vertical scan inversion switch.

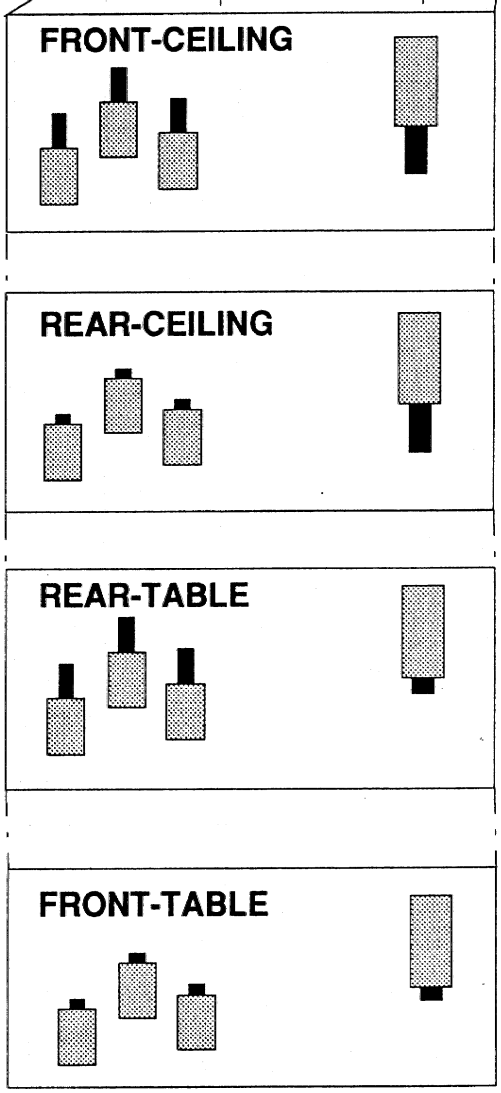
After scan inversion, re-insert the Horizontal deflection module, turn back the controller module and close the top cover. Reconnect the power cord to the wall outlet.

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

# INSTALLATION SET UP




1. Loosen the indicated fixation screws.
2. Turn the controller module to the lens side of the projector. The module chassis becomes visible.
3. Take out the Horizontal Deflection module. The Horizontal scan switches become visible.
   The Vertical scan switch is within easy reach.
4. Switch the scan switches in the correct position corresponding to the projector configuration.

# INSTALLATION SET UP

Check

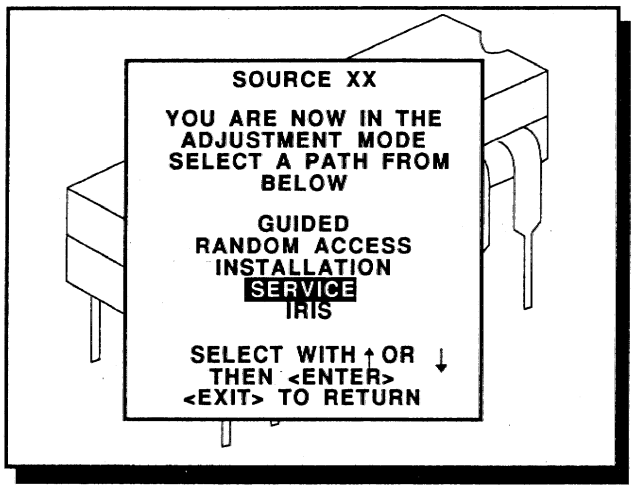
Note : this check procedure can only be done after power (mains) connection. So, first continue with the *projector set up* and the *connections* and then return to this checking procedure.

Switch on the BARCOVISION 1600 and look at the *"Start up screen"*. This screen is available in the *'Service mode'* . There you will find an indication of the projectors configuration.

Configuration when leaving the factory : ceiling/front configuration.

Follow next procedure to check the configuration :

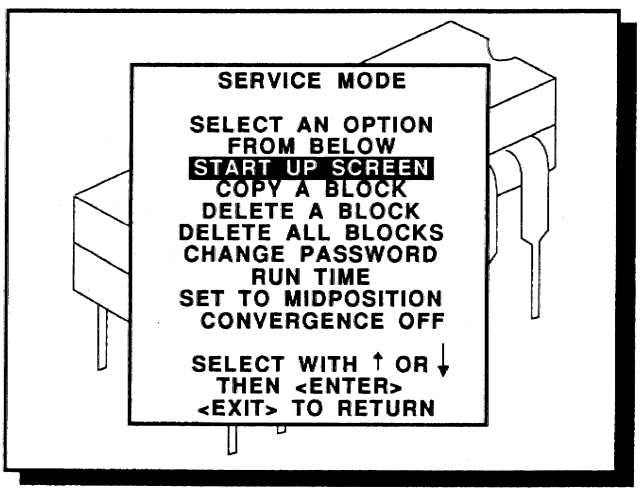
- switch on the projector.
- the projector starts up on the last selected source.
- press the **ADJUST** key on the RCU800.
- your password will be asked (if activated). If it is correct, the path selection menu will be displayed (menu S1)
- select with the arrow keys *'Service'* and press **ENTER**.




*menu S1*

The *'service mode menu'* will be displayed (menu SE1)

- select with the arrow keys *'start up screen'* and press **ENTER**.




*menu SE1*

The projector displays the *"BARCO start up screen"*.

This screen gives information about the projector configuration in the subject *'config.'*.


*Start up screen*

# INSTALLATION SET UP

*Notes*

## PROJECTOR SET UP

PROJECTOR ADDRESS

POWER UP MODE

BAUD RATE FOR COMMUNICATION WITH A PC OR MAC

PASSWORD

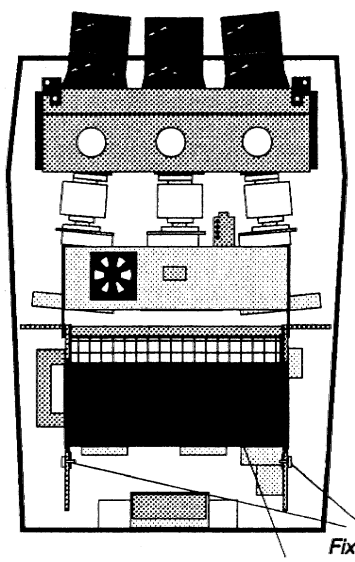
# PROJECTOR SET UP

**PROJECTOR SET UP.**

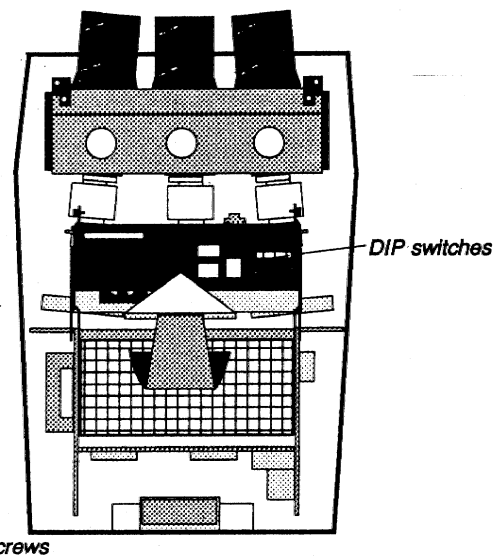
The DIP switches on the controller unit allow a set up of the projector.

- projector address (8 DIP switches)
- Power up (1 DIP switch)
- baud rate (3 DIP switches)
- password (1 DIP switch)

Getting access to the DIP switches : loosen on both sides the indicated screws on drawing 1and rotate the controller module to the front side of the projector as shown in drawing 2.




drawing 1




drawing 2

# PROJECTOR SET UP

**a) Setting the projector address.**

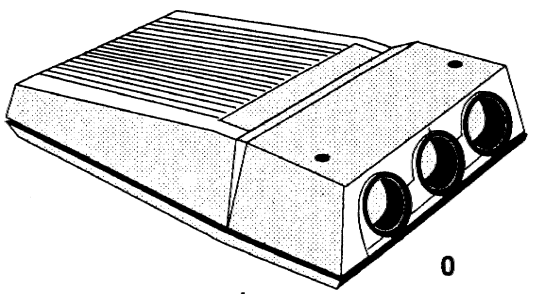
The projector's address may be set to any value between 0 and 255. When the address is set, the projector can be controlled now :

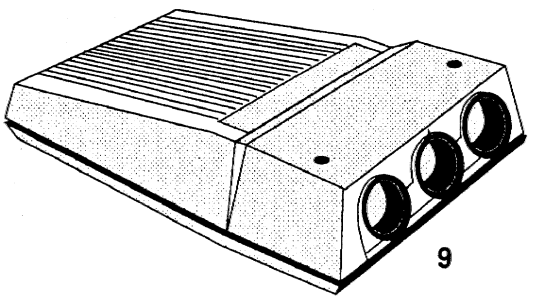
- RCU800 for addresses between 0 and 9.
- computer, e.g. IBM PC (or compatible), Apple MAC, etc., for addresses between 0 and 255.

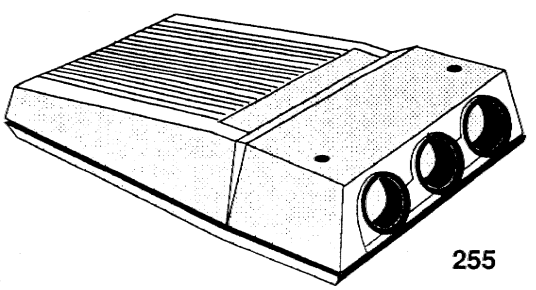
Note : A projector controled with the RCU800 will respond to an address of '0' regardless of which address is set.

Addressable with the RCU800
(address 0 to 9)

Addressable with PC or MAC
(address 0 to 255)



# PROJECTOR SET UP

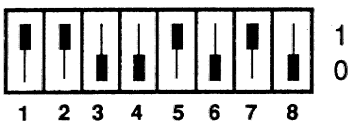
Address setting is a hardware set up of your projector which must be done during installation. Therefore 8 DIP switches are provided on the controller unit.

Each DIP switch has its own decimal value. The summary of the values associated to those DIP switches gives the address (see table 'address setting').

| Switch | Value |
|---|---|
| 1 | 128 |
| 2 | 64 |
| 3 | 32 |
| 4 | 16 |
| 5 | 8 |
| 6 | 4 |
| 7 | 2 |
| 8 | 1 |

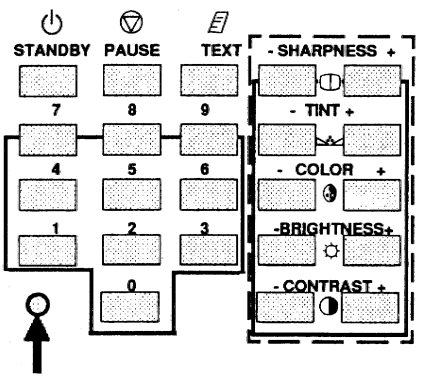
Example : address 202

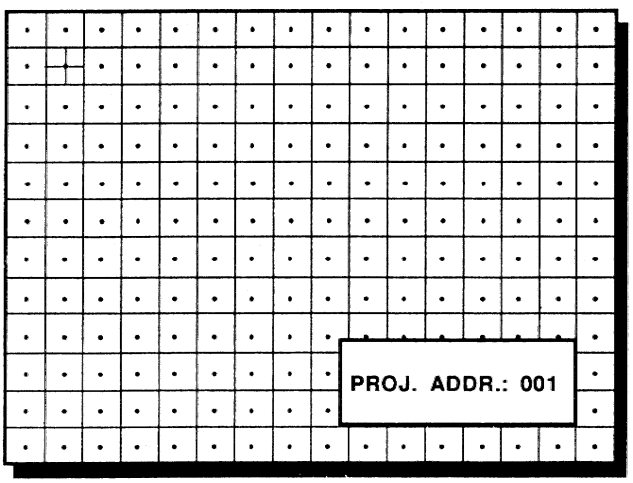
| DIP switch | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| setting | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |




Summary : 1x128 + 1x64 + 0x32 + 0x16 + 1x8 + 0x4 + 1x2 + 0x1 = 202

Note : With the address button on the RCU800, the projector will display its own address on the screen. Once the address button is pressed, to continue, it is necessary to enter an address with the numeric keys, even when the address remains the same.



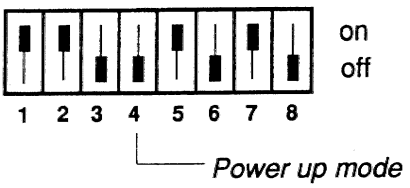



**b. Power up mode.**

The projector can start up in two different modes. The start up mode is determined by the position of DIP switch 4 on the controller unit.

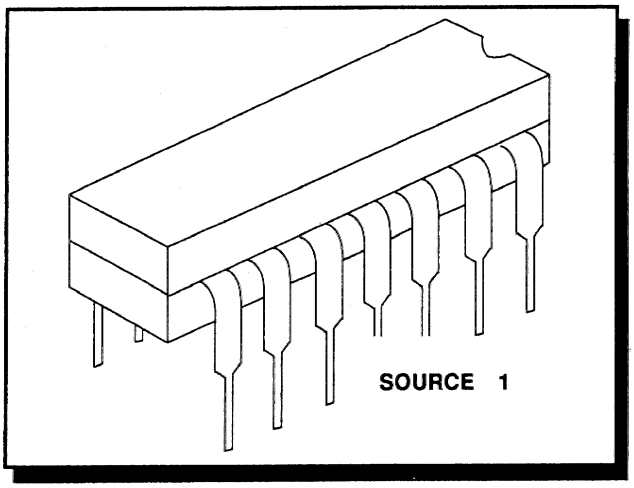
Position of the DIP switch 4 :

ON : operational mode
OFF : stand-by mode




**1. Operational mode :**

When the power switch on the rear of the projector is pressed, the projector displays the last selected source if available,




otherwise the BARCO start up screen is displayed if no source is present.


*BARCO start up screen*

**2. Stand by mode :**

When the power switch on the rear of the projector is pressed, the projector goes into stand-by mode. The stand-by key on the RCU800 is used to turn the projector ON and OFF.

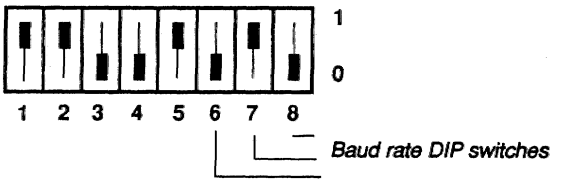
**c. Baud rate for communication with a computer, e.g. IBM PC (or compatible), MAC, ....**

The communication speed between projector and computer, e.g. PC or MAC, has 8 possible settings. With DIP switches 6, 7 and 8 on the controller unit, labelled *'Baud rate code (sum)'*, it is possible to select the baud rate (communication speed). Each DIP switch has its own decimal value. The summary of the values associated to those DIP switches gives the baud rate code. With each baute rate code corresponds an communication speed.

Position of DIP switches and baute rate codes

| baute rate code | speed |
|---|---|
| 0 | 110 |
| 1 | 150 |
| 2 | 300 |
| 3 | 600 |
| 4 | 1200 |
| 5 | 2400 |
| 6 | 4800 |
| 7 | 9600 |

| switch | value |
|---|---|
| 6 | 4 |
| 7 | 2 |
| 8 | 1 |




More information about computer communication with the BARCOVISION 1600 is available in the 'Control 800 software' manual

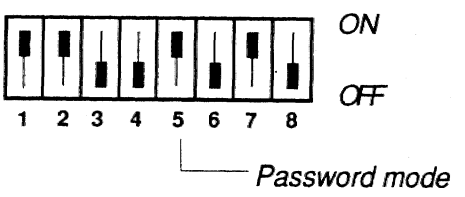
**d. Password mode**

With DIP switch 5 on the controller unit, the projector adjustments can be protected with a password. When the password feature is enabled, the customer has to enter a password before he can enter the adjustment mode (for more information about password setting and reprogramming the password, see Installation adjustment).

When the password menus are disabled (adjust mode is unprotected), the adjust mode can be selected by pressing on the **ADJUST** key. This position of the DIP switch is useful for qualified service technicians because they do not need a password to enter the adjust mode.

Position of DIP switch 5 :

ON : password mode enabled
OFF : password mode disabled



# POWER (MAINS) CONNECTION

POWER (MAINS) CONNECTION

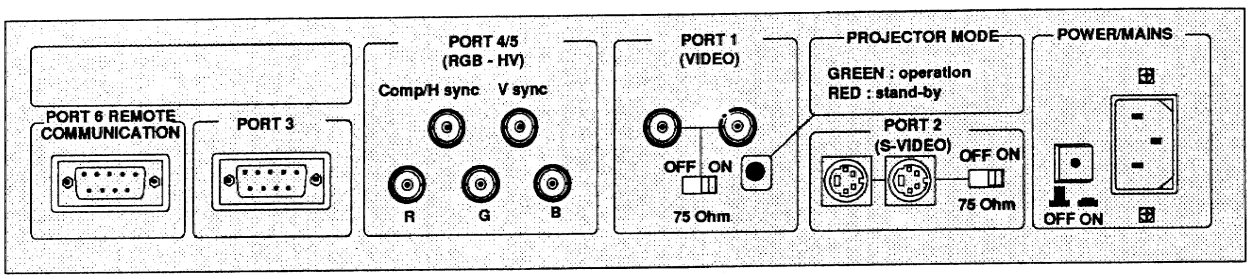
# POWER (MAINS) CONNECTION

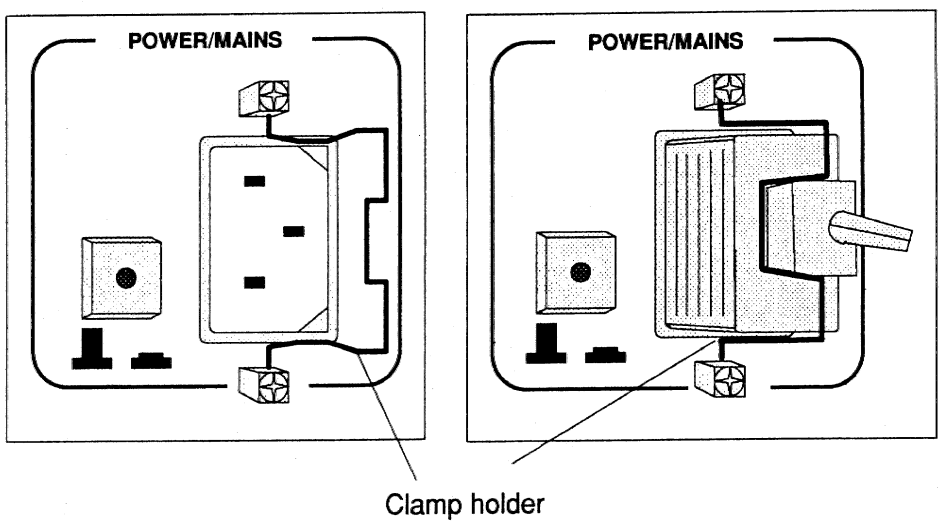
**Power (mains) cord connection**

Power (Mains) input : Male power connector at the rear of the projector.

Attention :

Before plugging the female power connector into the male connector on the projector put the connector clamp in the clamp holder.

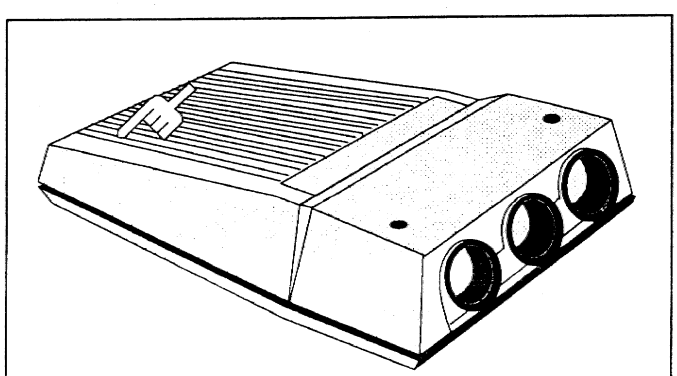



** Power check*

*Warning*
*Check by looking through the little window on the top cover if the indicated power voltage corresponds to that of the wall outlet.*

If the indication is different from that of the wall outlet, call a qualified technician for power adaptation of the projector.



# POWER CONNECTION

**Input power (mains) voltage adaptation.**

Attention

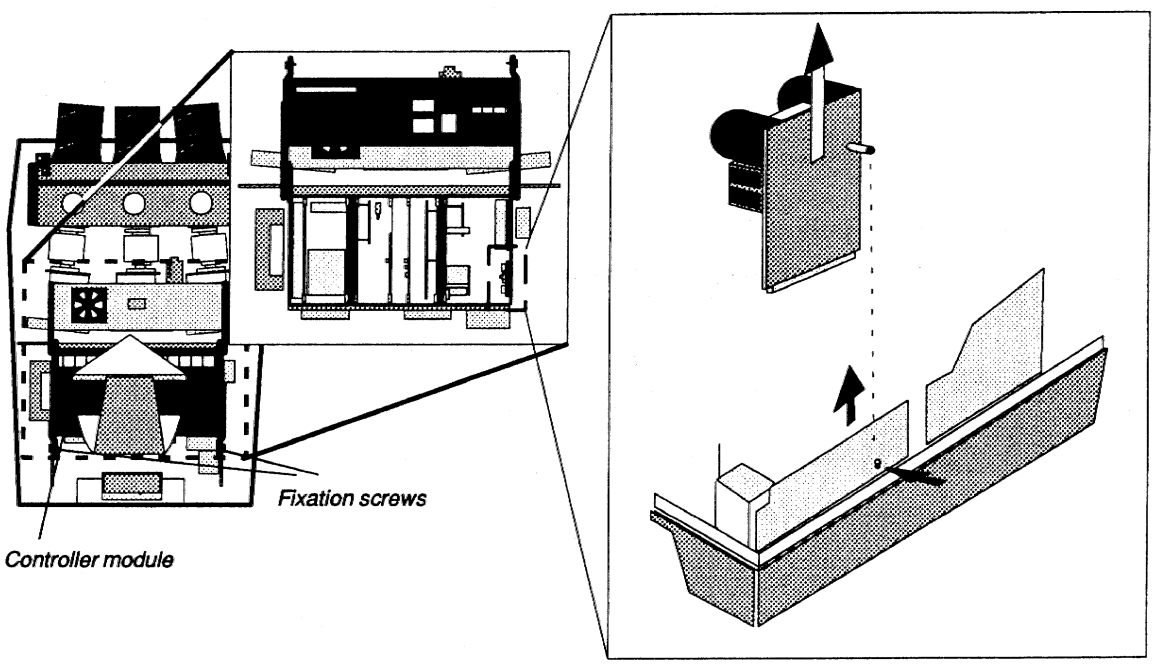
*The BARCOVISION 1600 - 90 00670/90 00671 leaves the factory to operate on a mains (power) input of 220 Vac.*

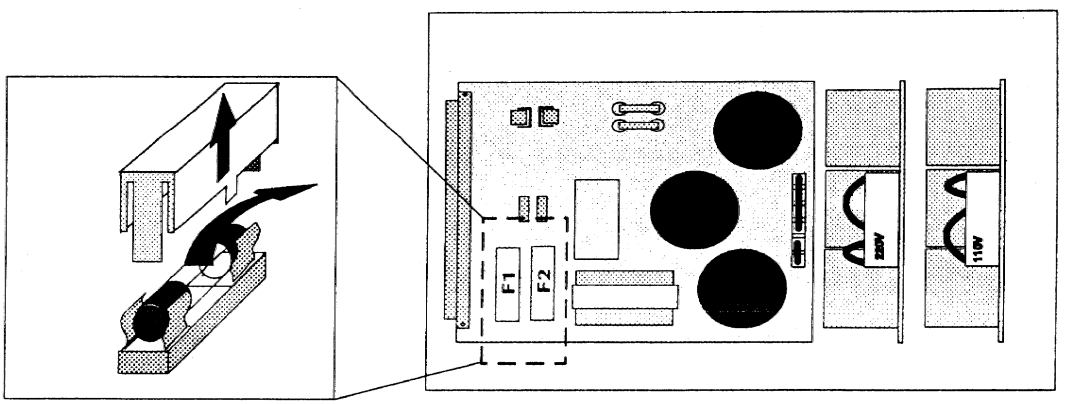
*The BARCOVISION 1600 - 90 00678/90 00679 leaves the factory to operate on a mains (power) input of 110 Vac.*

Adaptation of the power input of the projector between 220 Vac and 110 Vac or vice versa is possible. Follow the procedure as described below.

Procedure

1. Open the top cover (see § Top cover).
2. Loosen the controller module retaining screws and turn the controller module to the lens side of the projector.
2. Turn out the retaining screw of the power input board.
3. Remove the board by pulling it out.
3. Pull out the 'power selector plug' and re-insert it as illustrated in the drawing below, depending on the wall outlet in the room.
4. Pull out the fuses. Place the correct fuses in their sockets. Refer to table on next page for the correct fuses.
5. Re-insert the power input board and secure it with the retaining screw.



# POWER CONNECTION

## Fuses

**Warning**

**For continued protection against fire hazard :**

**- replace with the same type of fuse**
**- refer replacement to qualified service personnel**

| **F1, F2** | **BARCO ord. no.** |
|---|---|
| **For 220 Vac (2x) T2.5A/250V** | **31 4103** |
| **For 110 Vac (2x) T5A/250V** | **31 4104** |

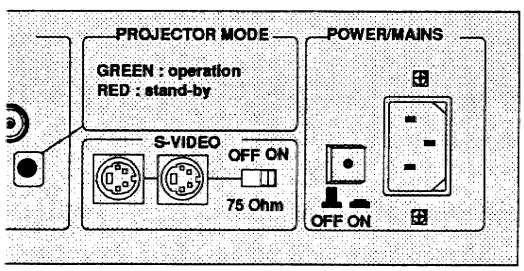
## Switching on

The projector is switched ON and OFF using the power (main) switch ON/OFF.

Pressed : ON
Not pressed : OFF


Power indication lamp :

Green : projector in operational mode
Red : projector in stand-by mode




The projector can now start in the *'operational mode'* (image displayed) or in the *'stand-by mode'*, depending on the position of the *'power up'* dip switch on the controller unit. This DIP switch is set during installation by a qualified technician. If you want to change this start up mode, call a qualified technician.

## SOURCE CONNECTIONS

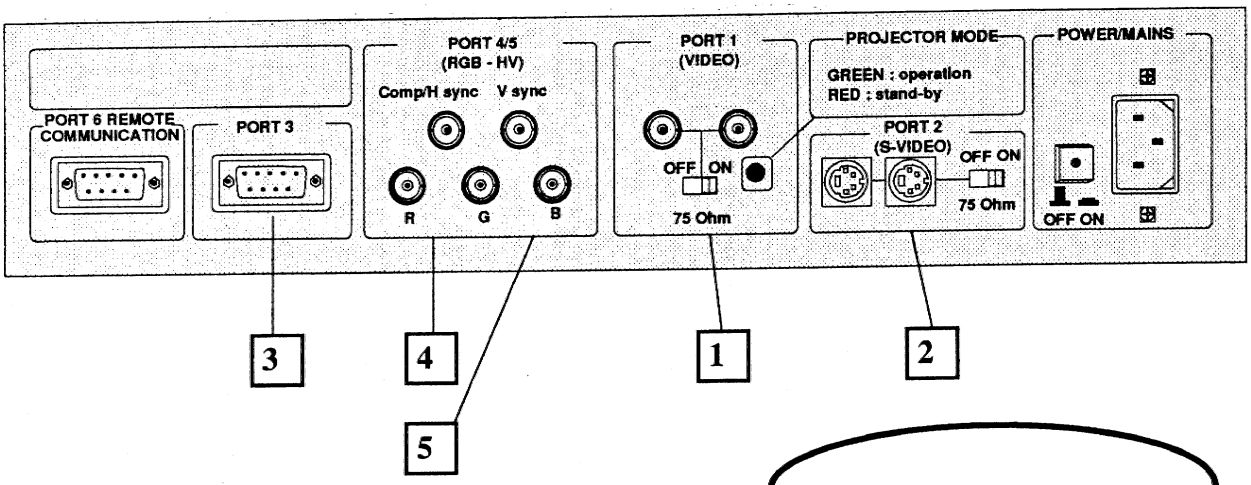
### INPUT SOURCES

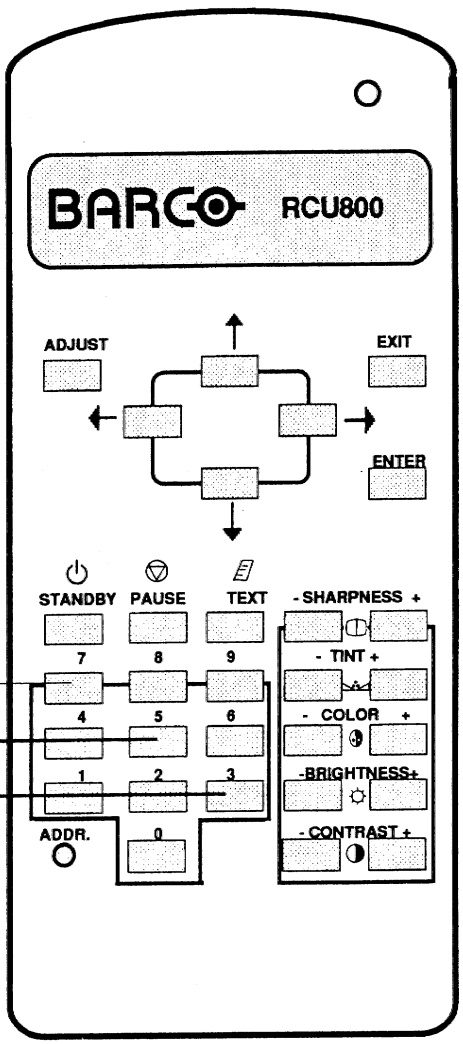
### EXAMPLES OF SOURCE CONNECTIONS

# SOURCE CONNECTIONS

**Signal input connections to a stand alone projector :**

Four different types of input sources may be connected directly to the BARCOVISION 1600




| PORT No. | SOURCE No. | PROJECTOR INPUT | PRESS DIGIT BUTTON |
|---|---|---|---|
| 1 | 1 | COMP VIDEO | 1 |
| 2 | 2 | S-VIDEO * | 2 |
| 3 | | not used | |
| 4 | 4 | RGsB ** | 4 |
| 5 | 5 | RGB/S *** | 5 |

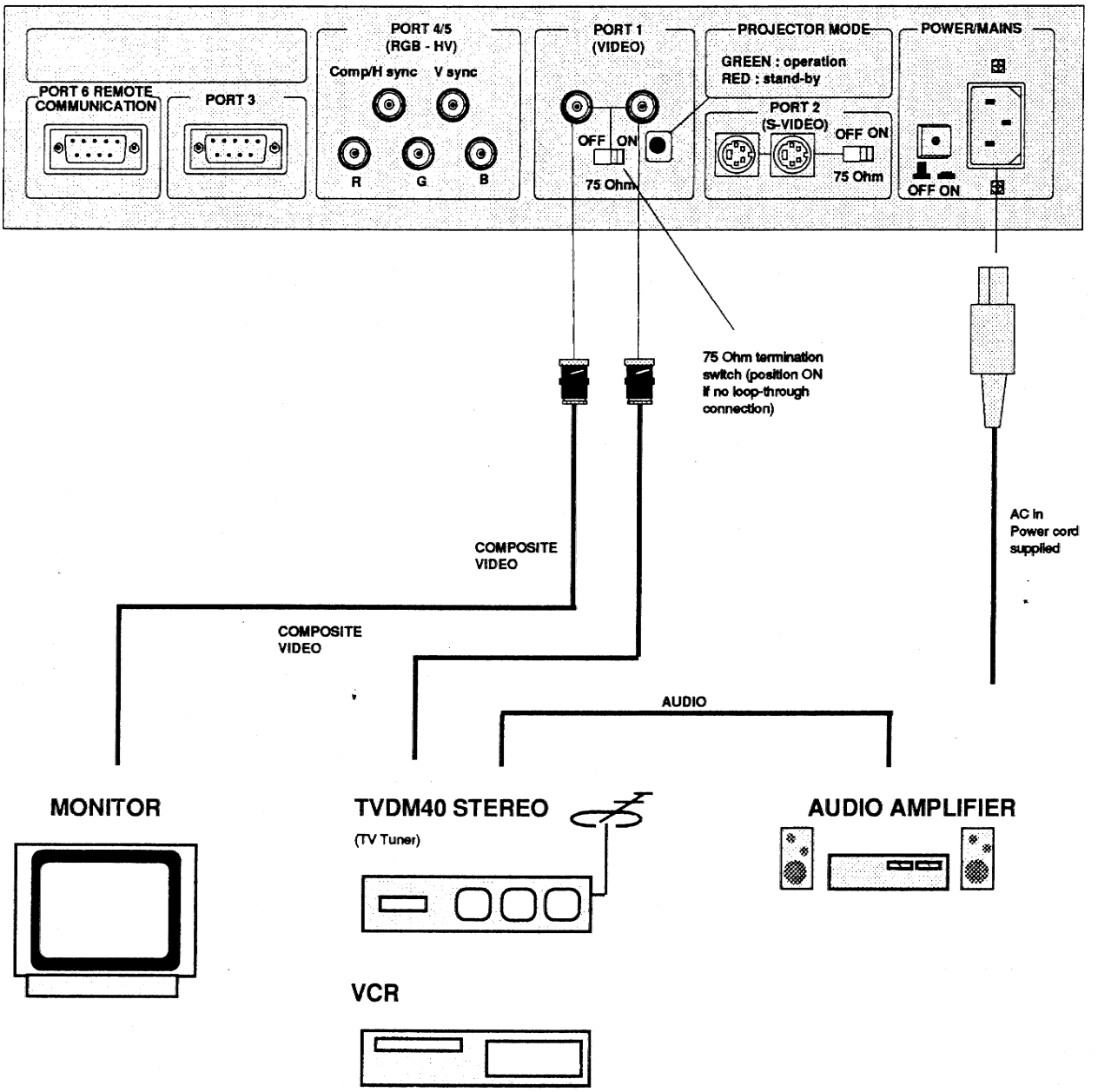
* Input signal Y/C (luma/chroma)
** Input signal: R,G and B with sync on G
*** Input signal: R,G,B and separate sync(S)

# EXAMPLES OF CONNECTIONS

**Connecting a COMPOSITE VIDEO source to input 1 (port 1)**

*Composite video signal from a VCR, OFF air signal decoder,etc...*

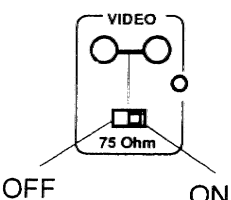
**COMPOSITE VIDEO INPUT SELECTION: PRESS digit button 1 on the**




**75 ohm termination switch.**

Terminate the video input of the projector using the 75 ohm switch next to the video input at the input panel when the projector operates alone or when it is the last projector on the video line when the projectors are connected in a loop through configuration.

ON : signal terminated
OFF : signal not terminated

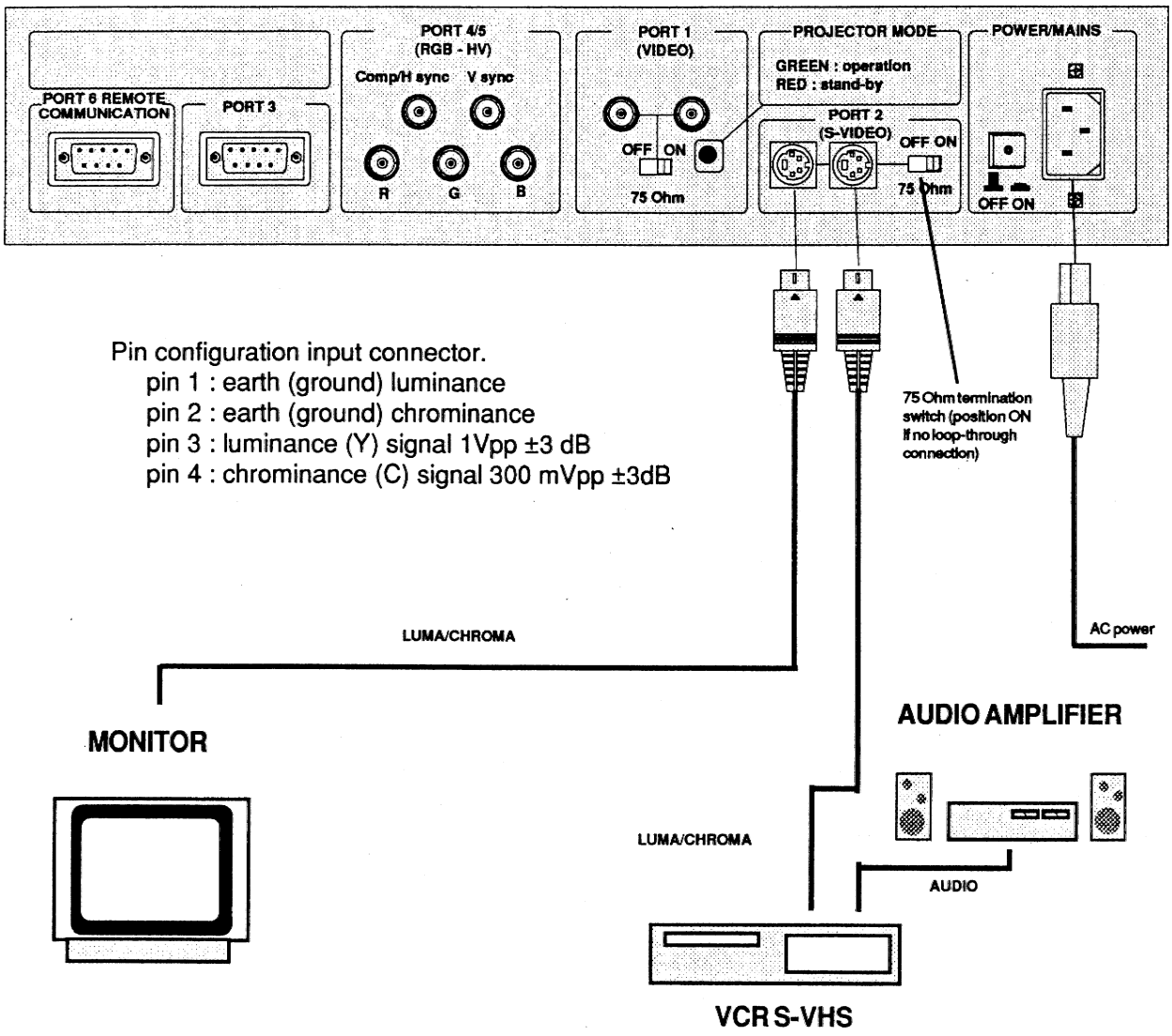


# EXAMPLES OF CONNECTIONS

**Connecting a S-VIDEO source to input 2 (port 2)**

*Separated Y-Luma / C -Chroma signal inputs for higher quality playback of Super VHS-signals*

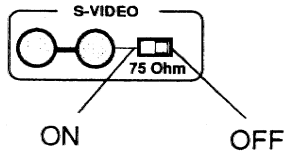
**S-VIDEO INPUT SELECTION: PRESS digit button 2 on RCU800.**




**75 ohm termination switch**

Terminate the S-video input of the projector using the 75 ohm switch next to the S-Video input at the input panel when the projector operates alone or when it is the last projector on the video line when the projectors are connected in a loop through configuration.

ON : signal terminated
OFF : signal not terminated



# EXAMPLES OF CONNECTIONS

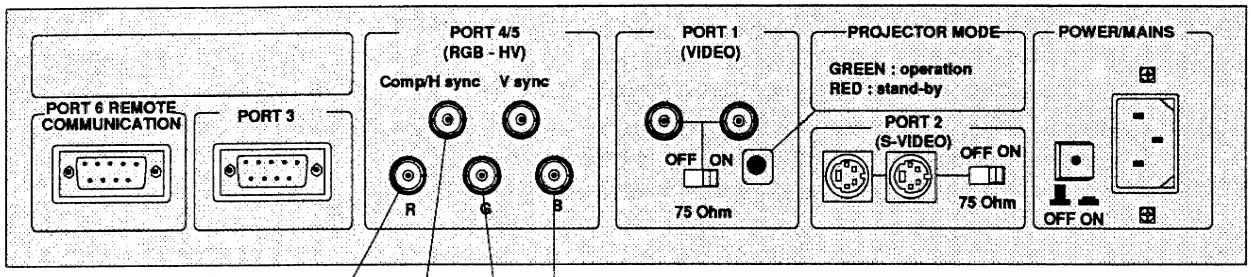
**Connecting a RGB Analog source to the analog inputs of the projector (port 4/5).**

RGB analog input terminals with separate H and V sync inputs, with composite sync input or with sync signals on green.
Always use an interface when a computer and local monitor have to be connected to the projector. Interfaces to be applied :

- universal analog interface. Order number 98 26100
- RGB 120 MHz analog interface. Order number 98 26570

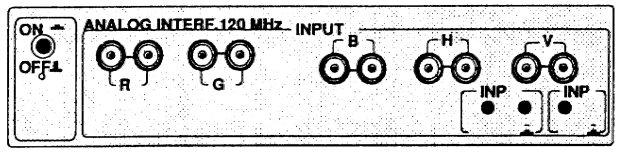
**RGsB input selection : press digit button 4 on the RCU800**
(RGsB : R, G, B signals with sync on GREEN)

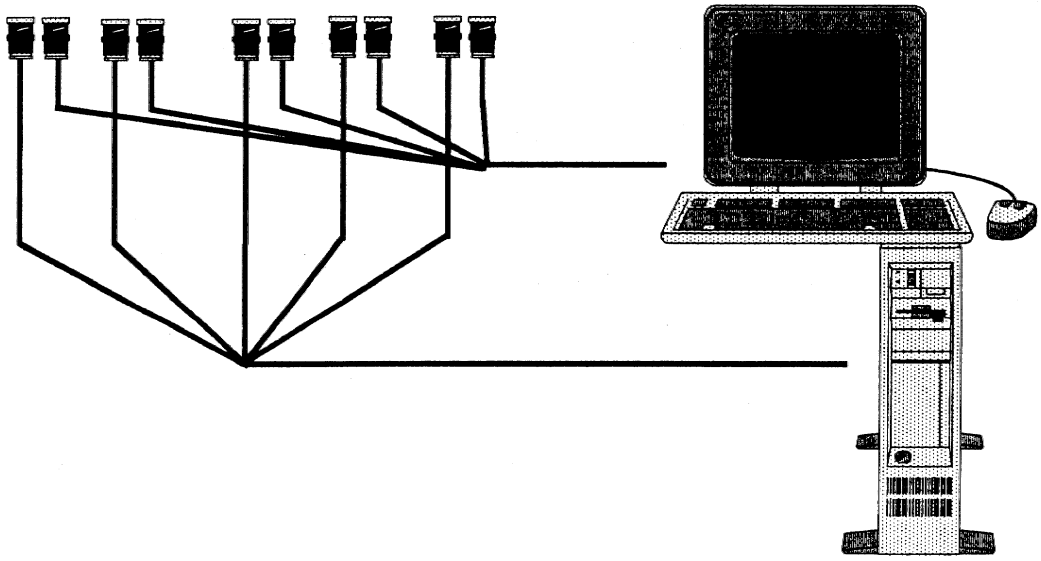
**RGB/S input selection : press digit button 5 on the RCU800**
(RGB/S : R, G, B and separate sync; H- and V- sync or COMP sync)




***ATTENTION!***

The RGB Analog 120 MHz interface has no separate output for vert. sync.



# EXAMPLES OF CONNECTIONS

Line termination : The RGB analog inputs are factory line terminated.

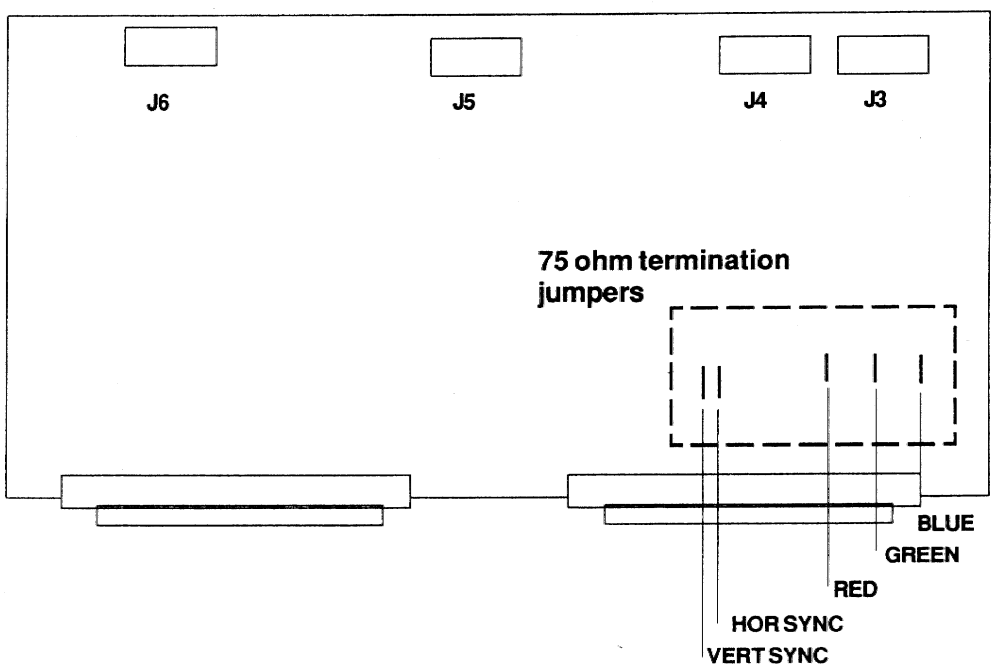
Stand alone projector : inputs must be line terminated.
Last projector in a loop through configuration : inputs must be line terminated.
In case of chaining the projectors with T-BNC connectors (BARCO order number : 31 3668) remove the line termination jumpers on the RGB analog input module.

**Warning**
**When removing the jumpers, turn off the projector and unplug the power cord from the wall outlet.**

Procedure :

- power down the projector and unplug projector power cord.
- open the top cover. (see § Top cover)
- Pull out the RGB analog input module from the mother board.
- Unsolder and remove the jumpers.
  Jumpers on the module : 75 ohm terminated
  Jumpers removed : not terminated

Location of jumpers on the module.



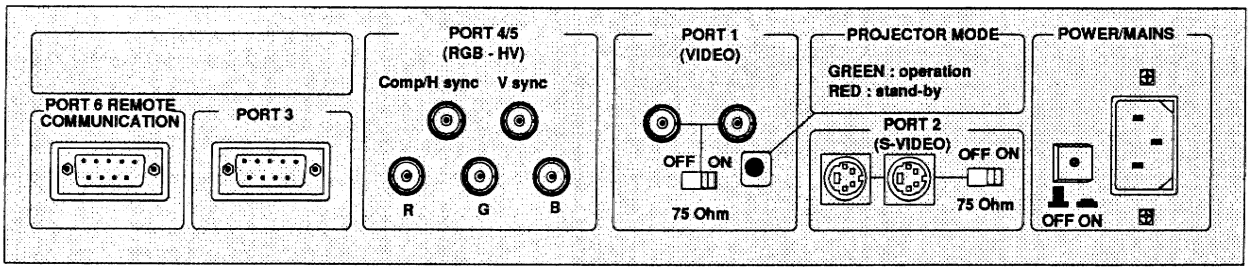
# EXAMPLES OF CONNECTIONS

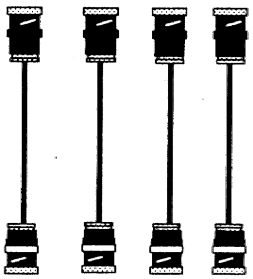
**Connecting a HDTV source to the analog inputs of the projector.**

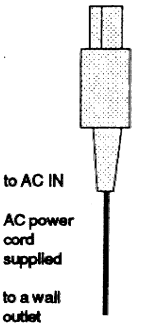
Connect your HDTV source via a HDTV interface to the Analog BNC input of the projector. (BARCO order number : 98 27430)

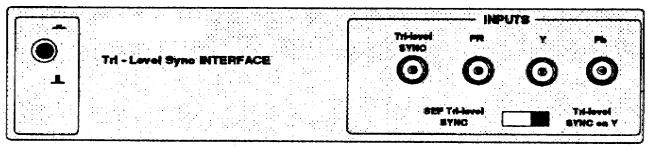
**RGsB INPUT SELECTION: PRESS digit button 4 on the RCU800**
**(RGsB : R, G, B signals with sync on GREEN)**

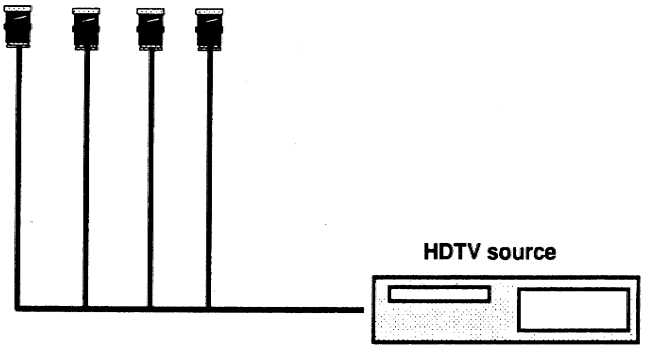
**RGBS INPUT SELECTION : PRESS digit button 5 on the RCU800.**
**(RGBS : R, G, B and separate sync S)**






The projector considers the input as a RGB analog input. For line termination sie 'Conncting a RGB analog source to the projector'.

# EXAMPLES OF CONNECTIONS

**Connecting a Computer, e.g. IBM PC (or compatible), Apple Macintosh or Workstation to the BARCOVISION 1600.**

The BARCOVISION 1600 projector has a RS 232 port that allows it to communicate with a computer. (RS422, 'Macintosh', can be directly connected to the projector's port without any problem if you respect RS 232 distances and baudrates.)

Applications :
Two main applications : remote control and data communications.

a) remote control :
- easy adjustment of projector via a computer, e.g. IBM PC (or compatible) or MAC connection.
- allow storage of multiple projector configurations and set ups
- wide range of control possibilities
- address range from 0 to 255.

b) data communications :
- sending adjustment data to the projector or copying the adjustment data from the projector to a hard memory device

When chaining projectors, slave the output on the front side through to the input of the next projector.

More information about this feature is included in the 'Control 800' software manual which is delivered together with the software or which can be ordered at BARCO

# EXAMPLES OF CONNECTIONS

**Connecting a RCVDS 800 to the BARCOVISION 1600.**

- Up to 10 inputs with one RCVDS 800 and 90 inputs when RCVDS 800 are linked via the expansion module
- Serial communication with the projector.
- Remote control buttons on the RCVDS 800 to control the BARCOVISION 1600 (source selection and analog settings).
- The selected source number will be displayed on a 2 digit display and the selected input module will be indicated with a LED on the rear.

For more information about the use of the RCVDS 800, consult the RCVDS 800 owner's manual, BARCO order number : 59 75004.

# EXAMPLES OF CONNECTIONS

# CONTROLLING



*Caution : Do not display a stationary image with high contrast and brightness for longer than 20 min., otherwise you risk damage to the CRT's.*

# CONTROLLING

## 1. The RCU800

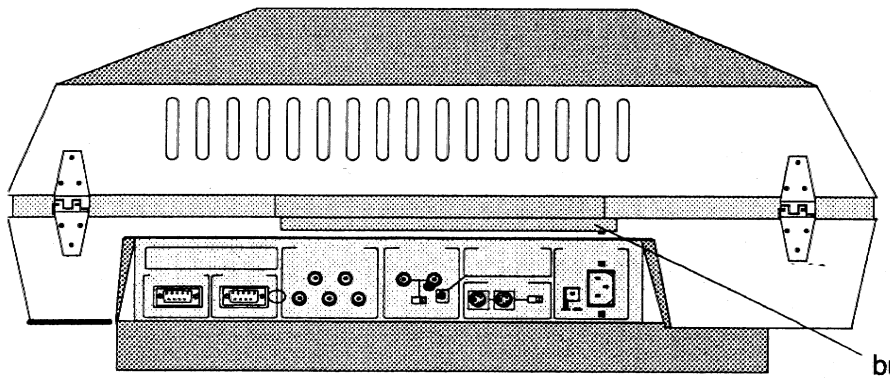
With the RCU800, there are three different ways of sending information to the projector. These ways are via :

a) The built in RCU800.
b) The IR transmission RCU800.
c) The hardwired RCU800.

The keys have the same function for all three ways of sending the information to the projector.

a) The built in RCU800.

This RCU800 is built to the rear of the projector. To gain access to it, push once on the door cover of the built in RCU and it will open. Now it is possible to turn the RCU 90°.

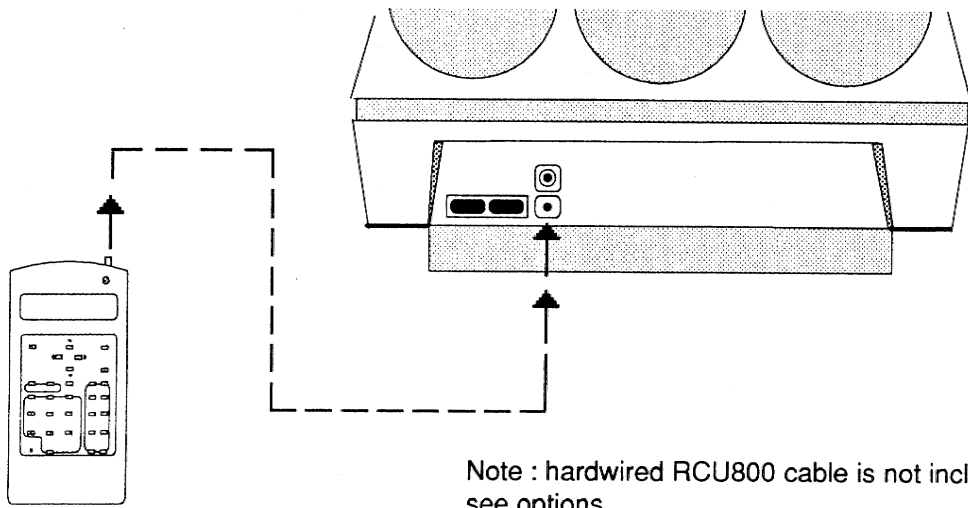



b) The IR transmission RCU800.

This remote control is included with the BARCOVISION 1600. When using this remote control, make sure that the projector address is programmed on the remote control (see 'Selecting the address').

c) The hardwired RCU800.

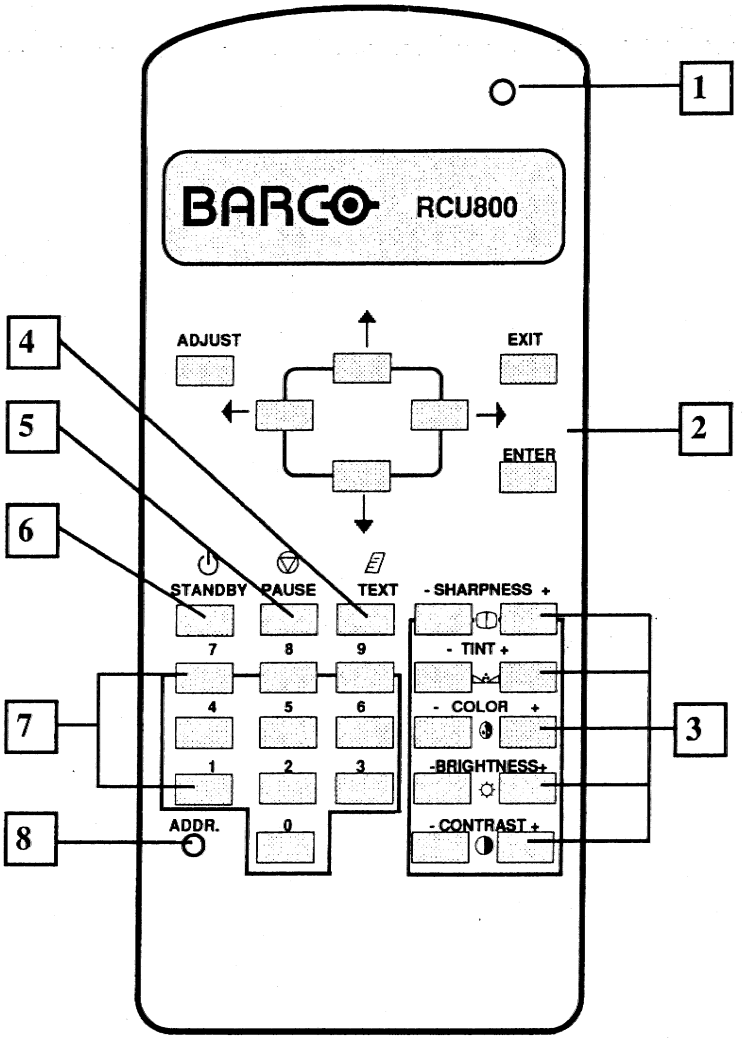
The IR transmission RCU800 may also be used in a hardwired configuration. Plug one end of the remote cable in the connector on top of the RCU800 and the second side in the connector in the front panel of the BARCOVISION 1600 labelled 'remote control'.



Note : hardwired RCU800 cable is not included.
see options.

# CONTROLLING

## 2. Terminology of functions on the RCU800.




**1** **RC operating indicator:** lights up when a button on the remote control is pressed. (This is a visual indicator to check the operation of the remote control.)

**2** **ADJUSTMENT-SETTINGS KEYS:** these keys are used for picture geometry and convergence adjustments.

**3** **PICTURE CONTROLS:** use these buttons to obtain the desired picture level.

**4** **TEXT key:** with 'TEXT' off, no information will be displayed during an analog adjustment and no warnings will be displayed. 'TEXT' key is only active in operational mode.

**5** **'PAUSE' key:** to stop picture projection for a short time, press button "PAUSE". The image disappears, but full power is retained for immediate restarting.

**6** **STANDBY:** to stop picture projection for a longer time without projector power off, press button 'STANDBY' to switch the projector in the standby position.

**7** **DIGIT BUTTONS:** direct input selection.

**8** **PROJECTOR ADDRESS SETTING (max 9):** press button *"address"*, followed by pressing the digit button, 1 to 9.

# CONTROLLING

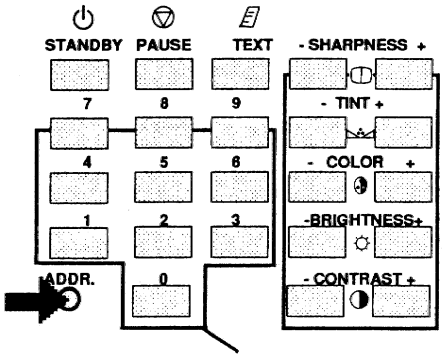
**3.Controlling stand alone projector with the RCU800.**

**A. Selecting the address.**

As already explained in the 'Projector set up', every projector requires an individual address.

*Address display :* When pressing with a pencil or other small object in the hole labelled ADDR on the RCU800, the projector's address will be displayed. To continue, it is necessary to enter an address with the numeric keys, even when that address is the same as the displayed address.

*Address programming :* The address of an individual projector may be programmed into the RCU800 by keying in the address with the num. (With RCU800, only addresses between 0 and 9).



*Numeric keys*

*Zero address :* If the RCU800 is programmed with an address of 0 (zero), it will control a projector regardless of the projector's address. This feature allows multiple projectors with different addresses to be controlled by a single RCU800.

**B. Selecting an input source.**

| SOURCE Nr | PROJECTOR INPUT | PRESS DIGIT BUTTON |
|---|---|---|
| 1 | VIDEO | 1 |
| 2 | S-VIDEO * | 2 |
| 3 | not used | |
| 4 | RGsB ** | 4 |
| 5 | RGB/S *** | 5 |

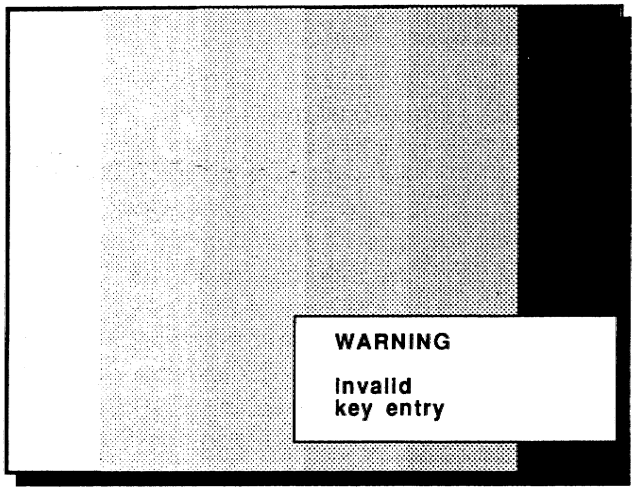
With the numeric keys, 1 to 5, on the RCU800, it is possible to select one of the five inputs. Those are :
When a valid and available source is selected, there will be information displayed on the screen about that source. This information includes :
- source number
- horizontal frequency
- vertical frequency

* Input signal Y/C (luma/chroma)
** Input signal: R,G and B with sync on G
*** Input signal: R,G,B and separate sync's

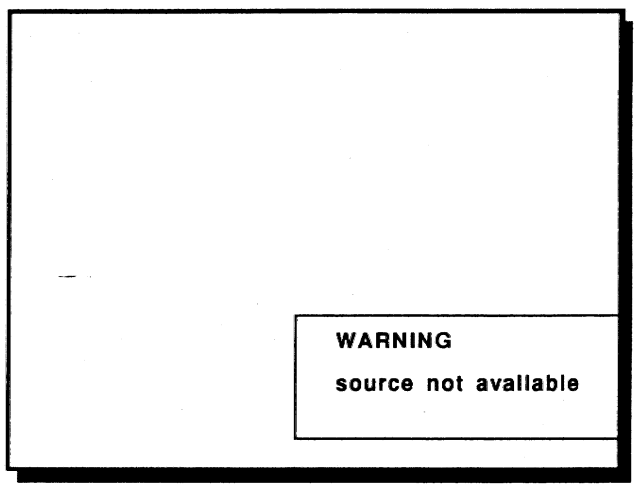
*Source information in example : source 02 = S-Video input signal with horizontal frequency of 15.6 Hz and a vertical frequency of 50 Hz.*

SOURCE 02
Fh = 15.6 Hz
Fv = 50 Hz

When the entry is a not valid source number, a warning appears on the screen : *'invalid key entry'*.



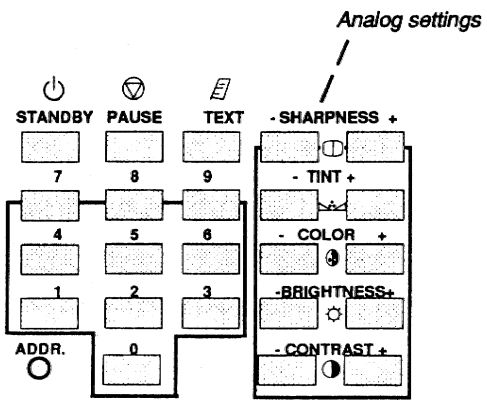

When a valid source number is selected, the projector will display this source or it will wait on the selected source number until the source becomes available. The message 'source not available' will be displayed for a short time.




## C. Analog picture controls

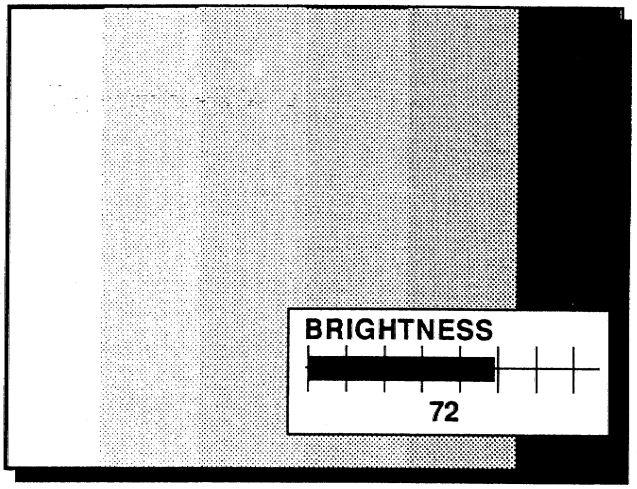
When an analog picture control is pressed, a bar scale and a number indicator appear on the screen with the function name of the control, e.g. "brightness" above it. The length of the bar scale and the number (between 0 and 100 ) indicate the current memorized setting for this source. The bar scale changes as the + or - buttons of the control are pressed.

The appearance of the text, bar scale and number can be prevented by pressing the ***'TEXT'*** key on the RCU800. This button acts as a toggle switch, switching between text 'ON' and 'OFF' each time the button is pressed. The latest position is stored and is recalled every time this source is chosen, even when the power to the projector is switched OFF and ON again.
The analog picture controls can be adjusted with the RCU800 in *'adjustment mode'* as well as in *'operational mode'*.



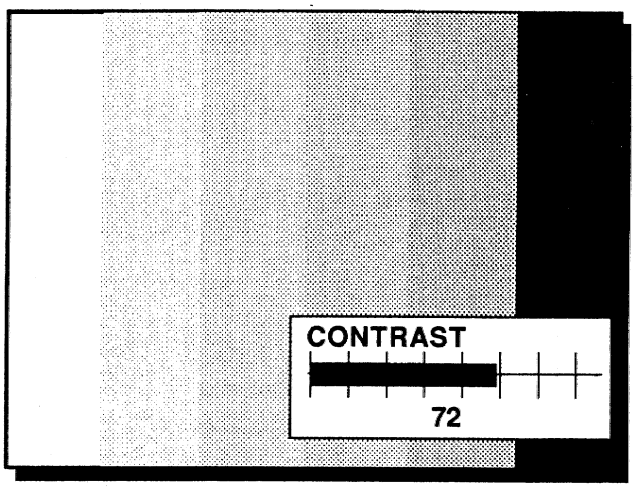
# CONTROLLING

### *a) Brightness control*



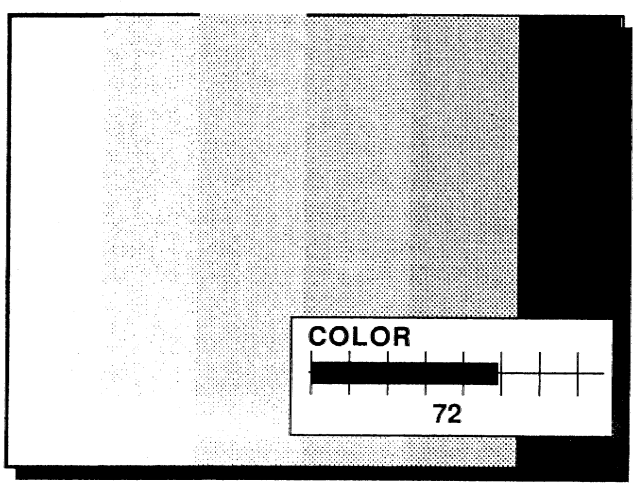

Brightness control for Video, S-video and RGB sources.
A correct *'brightness'* setting is important for good color reproduction.
Adjust the Brightness with the + button and - button until the darkest parts of the picture appear black.
A bar scale and number below the bar scale (between 0 and 100 ) give a visual indication on the screen of the current brightness setting while pressing the + or - buttons. If the bar scale is not visible on the screen, press **'TEXT'** key once and retry the + or - keys.
The scale bar and numeric indicator increase when pressing on the + button (higher brightness) and decrease when pressing on the - button (lower brightness).

### *b) Contrast control.*




Contrast control for Video, S-video and RGB sources.
A correct *'contrast'* setting is important for good color reproduction.
Adjust the contrast to the level you prefer, according to room lighting conditions.
A bar scale and a number below the bar scale (between 0 and 100) give a visual indication on the screen of the contrast setting while pressing the + or - buttons. If the bar scale is not visible on the screen, press **'TEXT'** key once and retry with the + or - keys.
The bar scale and number indicator increase when pressing the + button (higher contrast) and decrease when pressing on the - button (lower contrast).

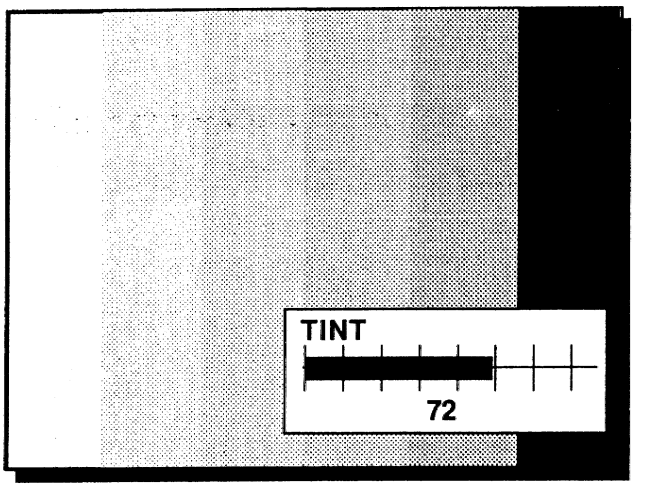
### *c) Color saturation*




Color saturation control for Video and S-video.
Adjust the color intensity of the picture. Use the + and - button on the remote control panel.
A bar scale and a number below the bar scale give a visual indication on the screen of the color setting while pressing the + or - buttons. If the bar scale is not visible on the screen, press **'TEXT'** key once and retry the + or - keys.
The bar scale and numeric indicator increase when pressing on the + button (richer colors) and decrease when pressing the - button (lighter colors).

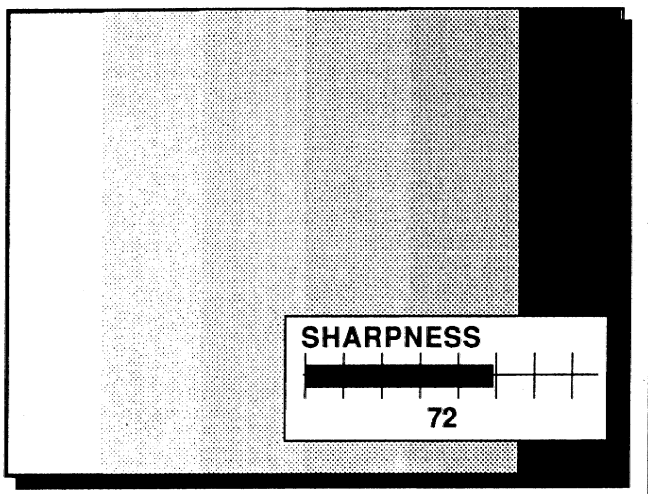
### *d) Tint control*

Tint control for Video and S-video.
This control is effective only when using the NTSC 4.43 or NTSC 3.58 system.
A bar scale and number below the bar scale (between 0 and 100) give a visual indication on the screen of the tint setting while pressing the + or - buttons. If the bar scale is not visible on the screen, press the **'TEXT'** key once and retry the + or - keys.
The bar scale and number indicator increase when pressing on the + button and decrease when pressing the - button.



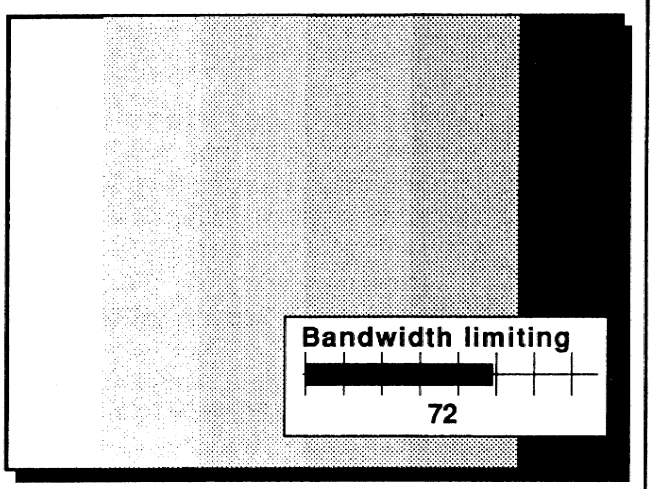

### *e) Sharpness control*

Sharpness control for Video and S-video.
A bar scale and a number below the bar scale (between 0 and 100 ) give a visual indication on the screen of the sharpness setting while pressing the + or - buttons. If the scale bar is not visible on the screen, press **'TEXT'** key once and retry the + or - keys.
The bar scale and number indicator increase when pressing on the + button (sharper picture) and decrease when pressing on the - button (softer picture).




### *f) Bandwidth limiting*

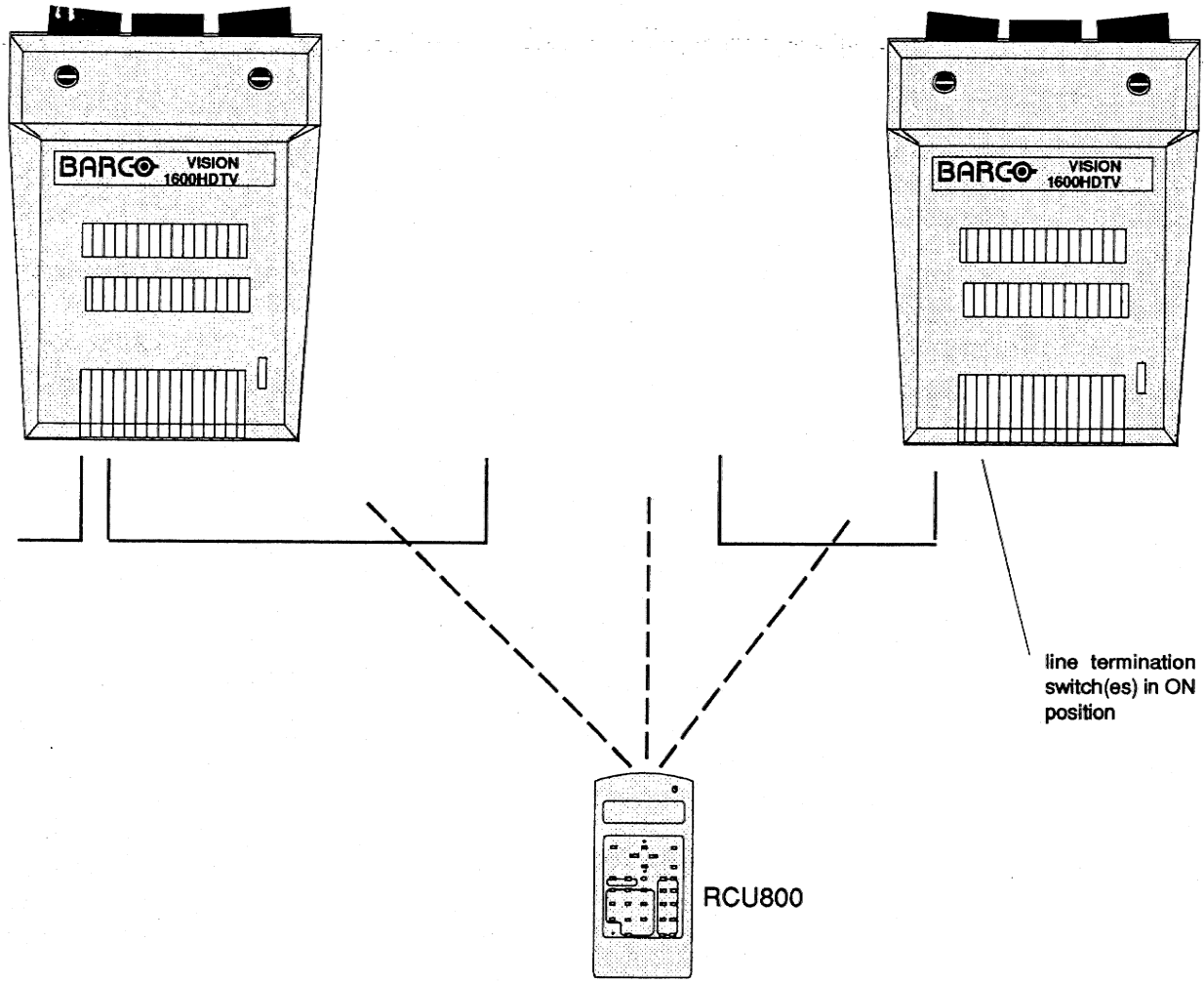
With the sharpness keys on the RCU800, it is possible to limit the bandwidth of the RGB amplifier. The bandwidth is maximum when set on zero, and minimum when set on 100. The setting in a new block wll be set to zero during the creation of that block.
A bar scale and a number below that bar scale (between 0 and 100) give a visual indication on the screen of the current bandwidth setting while pressing the + or - buttons.



# CONTROLLING

**4. Controlling chained projectors with the RCU800.**

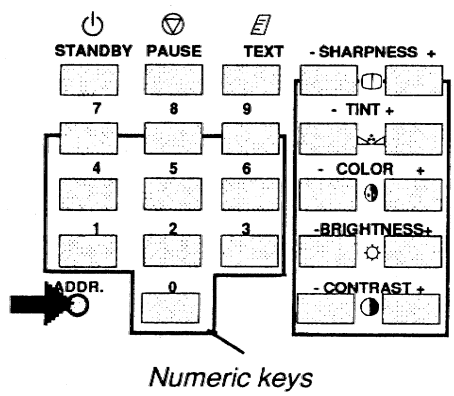
**A. Address setting**




Note :
Every projector has its own address, see Projector set up, so that it is possible to control each projector individually.

*Address display :* When pressing with a pencil or other small object in the hole labelled ADDR on the RCU800, the projector address will be displayed. To continue, it is necessary to enter an address with the numeric keys, even when that address is the same as the displayed address.

*Address programming :* The RCU800 is programmable with an individual projector address or with its 'zero address'. Therefore, key in an address with the numeric keys after key 'ADDR' is pressed.




*Numeric keys*

*Zero address :* master address, independent the hardware set up, for controlling all the BARCOVISION 1600's at once. So, the chain of projectors is addressable with the 'zero address' and an individual projector in the chain is addressable with its individual address (set during projector set up). When using that zero address, program the RCU800 as explained

### B. Selecting an input source

As the projectors have to display the same input source, the RCU800 must be programmed with the 'zero address' before selecting an input source.

| SOURCE Nr | PROJECTOR INPUT | PRESS DIGIT BUTTON |
|---|---|---|
| 1 | VIDEO | 1 |
| 2 | S-VIDEO * | 2 |
| 3 | not used | |
| 4 | RGsB ** | 4 |
| 5 | RGB/S *** | 5 |

* Input signal Y/C (luma/chroma)
** Input signal: R,G and B with sync on G
*** Input signal: R,G,B and separate sync's

Attention
Once address '0' is pressed all projectors will be controlled until a new address is entered on the RCU800. Once this new address is entered, only the projector with this address will follow the new instructions.

### C. Analog picture controls

With the RCU800 programmed with the 'zero address' all BARCOVISION 1600 willl be controlled in the same way. When one projector has to be adjusted, use the individual projector address to control this specific BARCOVISION 1600.
For explanation about the analog controls, see 'Stand alone projector controlled with the RCU800'.

## 5. Controlling stand alone and chained projectors with a computer, e.g. PC, MAC.

For detailed information about address setting, input selection and analog picture controls, consult the 'Control 800' software manual.

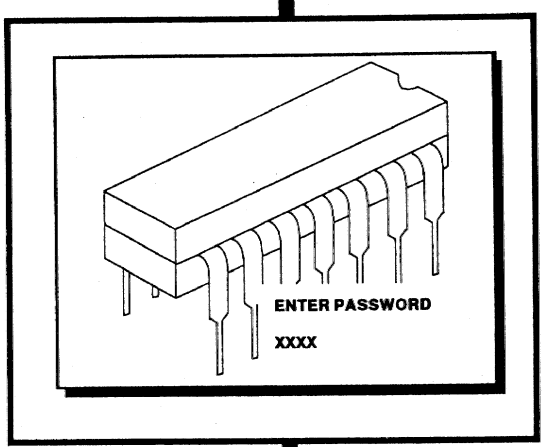
# CONTROLLING

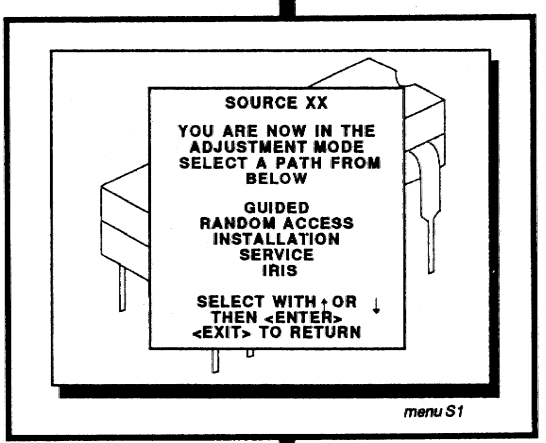
# INSTALLATION ADJUSTMENTS

# INSTALLATION ADJUSTMENTS

**Overview flow chart installation mode**


*BARCO start up screen*




*menu S1*

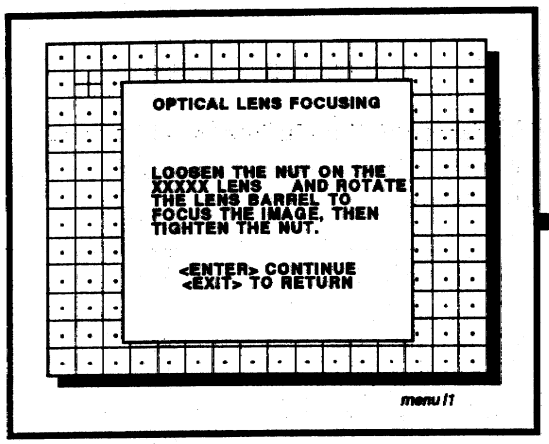
**RANDOM ACCESS OR GUIDED ADJUSTMENT**

**INSTALLATION**
(only for qualified technician)

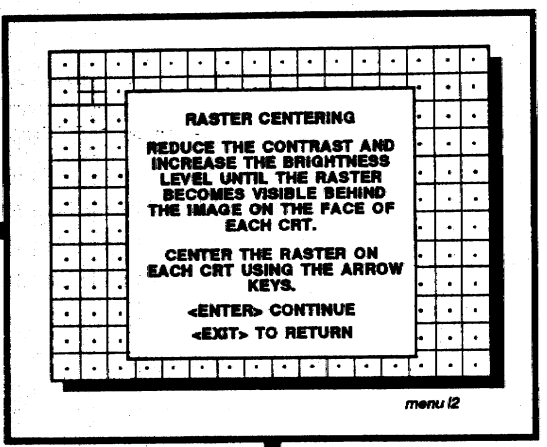
**IRIS**
(only with an IRIS800)

**SERVICE**

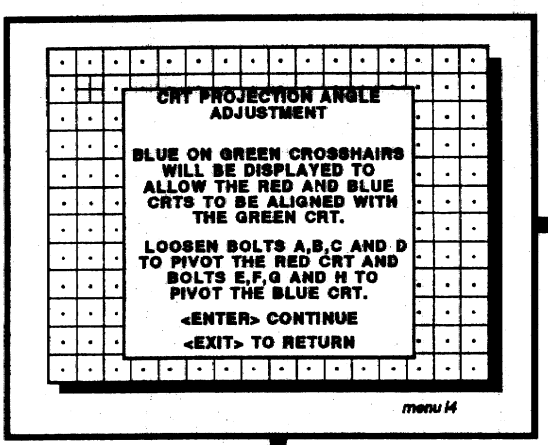
# INSTALLATION ADJUSTMENTS

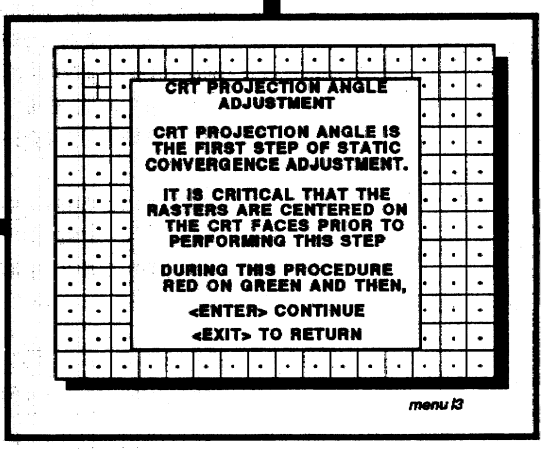


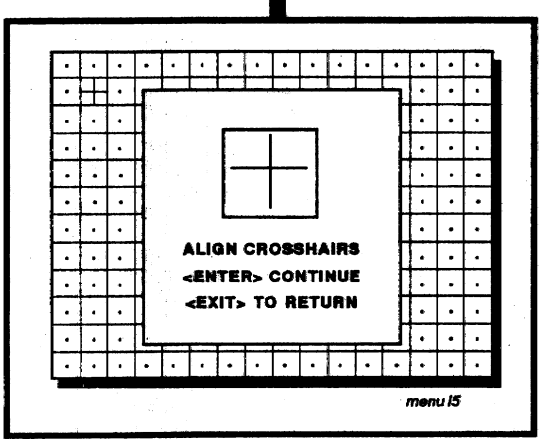

Menu I1 is repeated 3 times, first in Green, then in Red and then in Blue.




Menu I2 is displayed in green. After <ENTER> is pressed, only the green raster is displayed and the arrow keys may be used to center the raster on the CRT surface. This menu is also displayed, once in red and once in blue.



# INSTALLATION ADJUSTMENTS

## Introduction

After installing the BARCOVISION 1600 and connecting all necessary cables to it, proceed with the installation adjustments.
Press ADJUST key on the RCU800 to enter the *'Adjustment mode'*.
The projector asks to enter your password (if the password mode DIP switch is in the ON position; see also § password mode setting).

Your password contains 4 digits.
Enter the digits with the numeric keys on the RCU800.

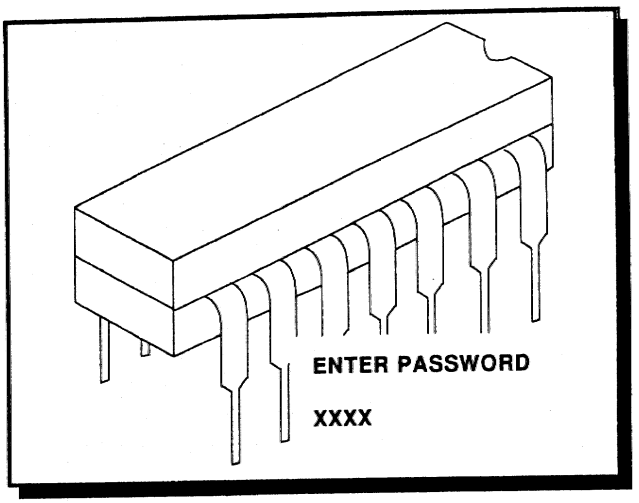
example : 2 3 1 9 .

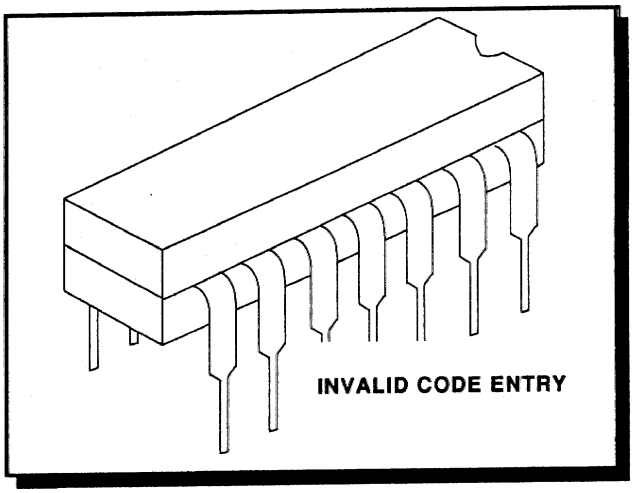
For each digit entered, a cross appears on the screen under the displayed text *'enter password'*.

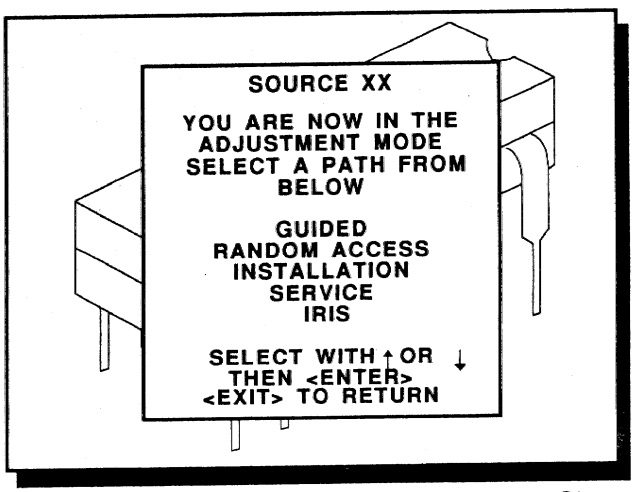
When your password is correct, you get access to the *'Adjustment mode'*.
When the entered password is wrong, the following message appears on the screen : *'invalid code entry'*.
The projector stays in operational mode.
Remark : when no password is entered within the first minute, the projector returns automatically to operational mode.

*Factory programmed password :*

**1990**



# INSTALLATION ADJUSTMENTS

**Selecting the installation path.**

The arrow keys on the RCU800 are used to make menu selections and also vertical and horizontal adjustments. The **ENTER** and **EXIT** keys are used to move forward and backward through the menu structure. The **ADJUST** key is used to return to operational mode. Installation adjustments contain :

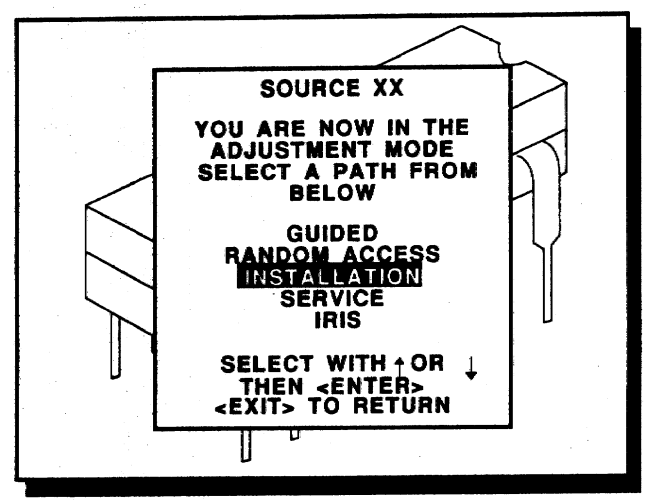
- Optical lens focusing
- Raster centering
- CRT projection angle adjustment

Caution : Installation adjustments should be selected every time the projector has been relocated and/or a different screen size is desired.

Start up of the installation mode.

It will be necessary to perform several mechanical adjustments while in the installation mode. Remove the top cover with the BARCOVISION 1600 label on it, in order to gain access to the adjustment points. (see § Access to controls)

Use the arrow key to highlight *INSTALLATION* and then press **ENTER**.

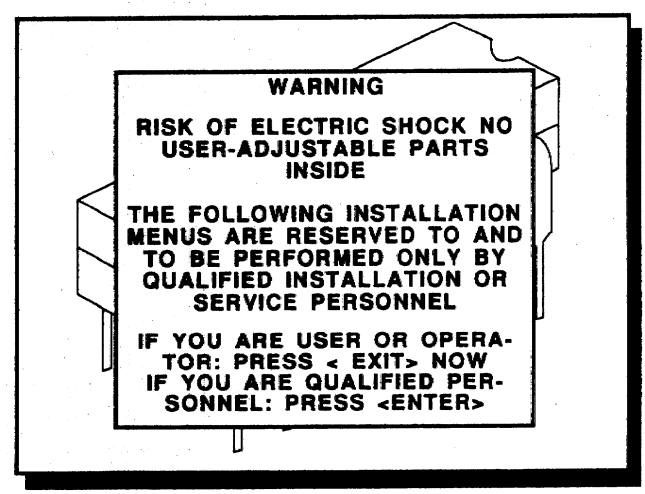



*menu S1*

<ENTER> continues to optical focusing (Menu I1)
<EXIT> returns to the selected source or the BARCO start up screen.
<ADJUST> returns to operational mode

A warning will be displayed on the screen :
If you are qualified installation or service personnel, press enter to start up the installation mode.

When entering the installation mode, the projector will automatically switch to the internal pattern on 15 kHz/50Hz without creating a new adjustment block (more info about adjustment blocks, see appendix B)




*warning*

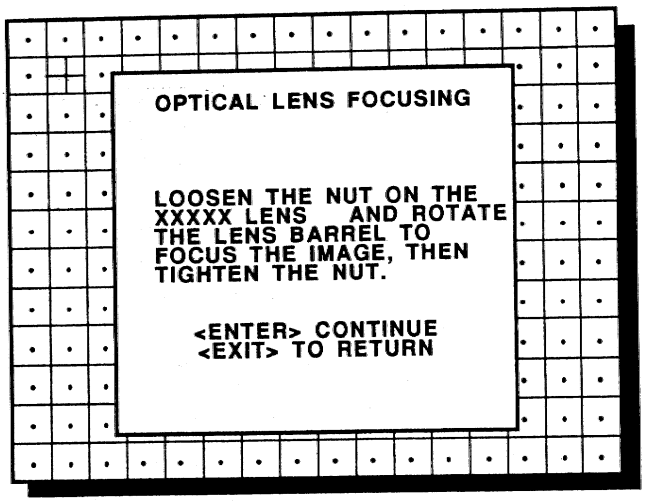
<ENTER> starts the installation mode.
<EXIT> returns to the path selection menu.

# INSTALLATION ADJUSTMENTS

## Optical lens focusing

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.

Each lens has one focus adjustment points. The projected image is focused by loosening the wing nut and rotating the lens barrel until the image is clearly focused.
Press **ENTER** key to continue.

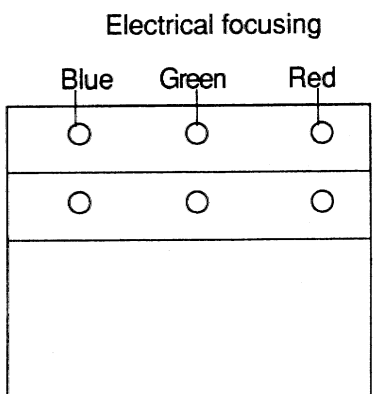



*menu I1*

<ENTER> continues to Raster centering (Menu I2)
<EXIT> returns to Path Selection (Menu S1)
<ADJUST> returns to operational mode

## Electrical focusing

The electrical focus for red, green and blue is factory preset. When they have to be readjusted, follow the procedure as described below :
- Be sure the lenses are correctly focused.
- Open the top cover.
- Adjust separately the focus control for red,



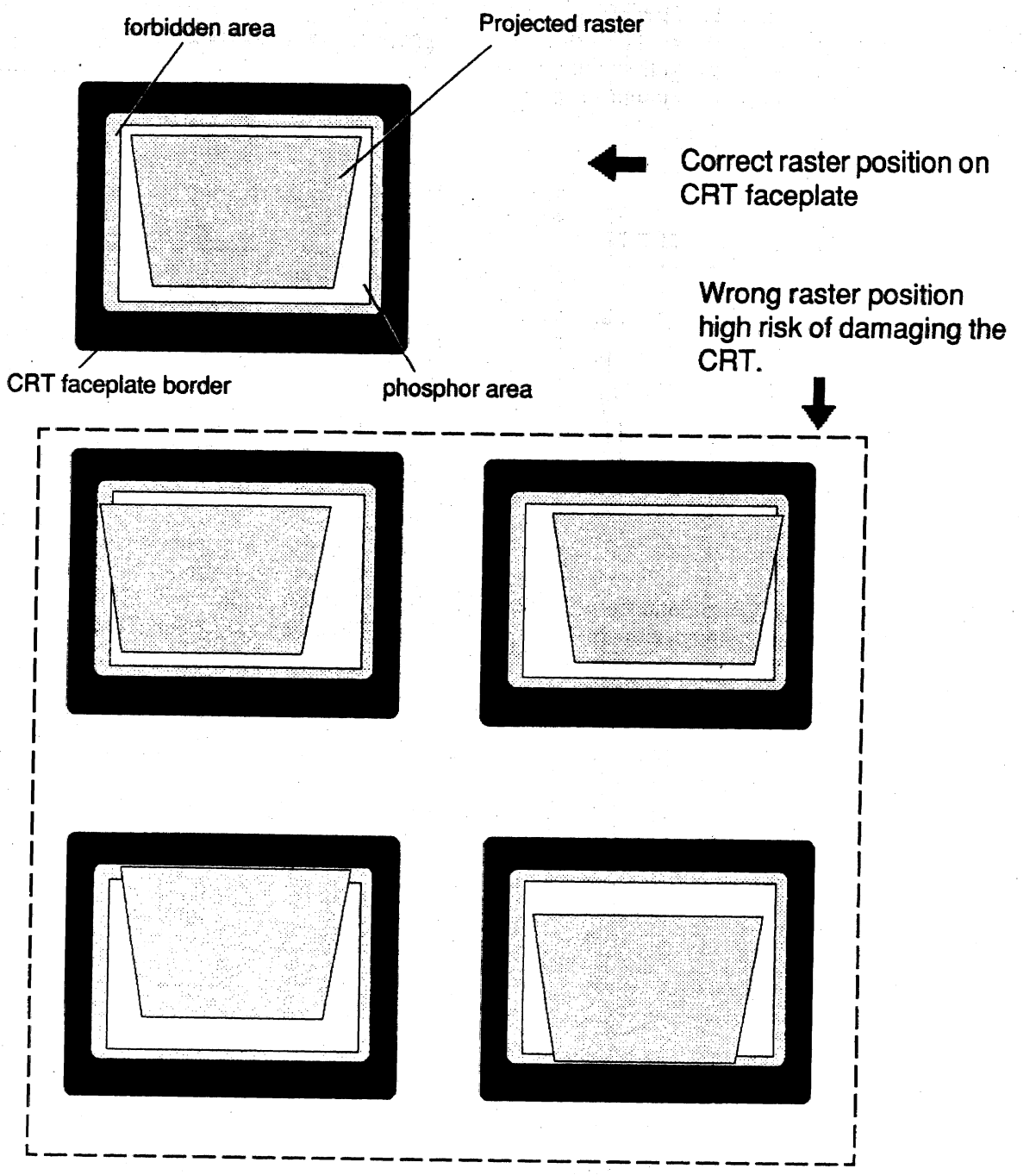
# INSTALLATION ADJUSTMENTS

**Raster centering**

The raster must be centered on the CRT screen surface of each tube, therefore, it is necessary to look into the lenses.

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

*Warning : In order to ensure maximum CRT longivity and to avoid CRT damage, do not shift the raster outside the phosphor area of the CRT.*



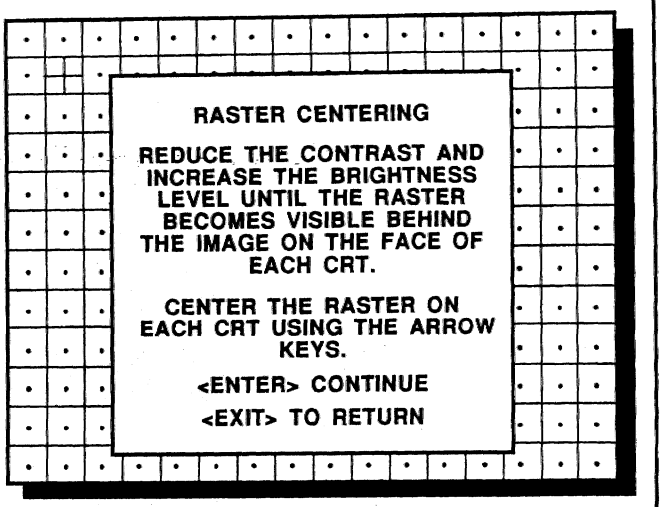
# INSTALLATION ADJUSTMENTS

Press **ENTER** to display the raster on the green CRT.

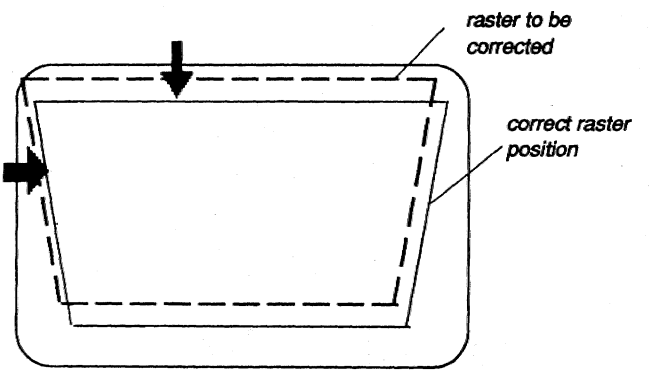
Look into the green lens and shift the raster with the arrow keys until it is centered in the middle of CRT faceplate.

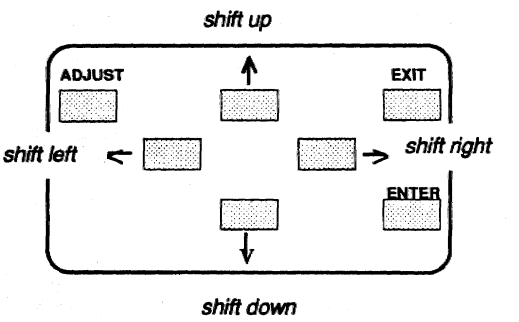
Press **ENTER** to activate the raster on the Red CRT faceplate.
Shift the raster with the arrow keys until the raster is centered in the middle of the CRT faceplate.

Press a second time **ENTER** to activate the raster on the Blue CRT faceplate.
Shift the blue raster with the arrow keys until the raster is centered on the CRT faceplate.




*menu I2*




Press **ENTER** to continue with the CRT Projection angle adjustment.

<ENTER> continues to CRT Projection angle Adjustment (Menu I4)
<EXIT> returns to Optical Focusing (Menu I2)

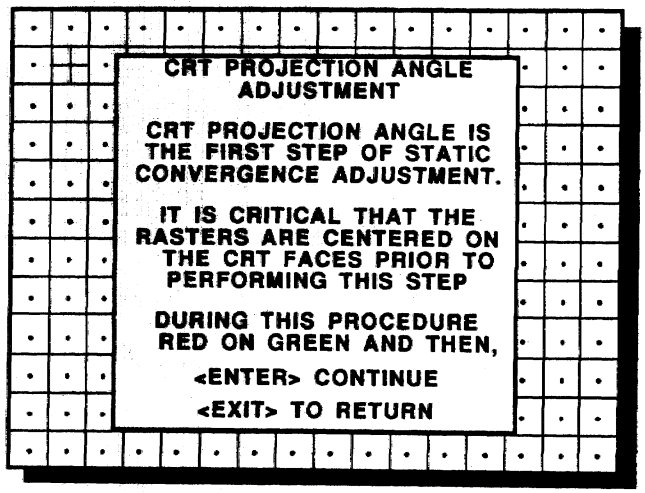
# INSTALLATION ADJUSTMENTS

## CRT projection angle adjustment

The projection angle of the red and blue CRTs is dependent on the desired size of the projected image. If the centers of green, blue and red do not coincide, the CRT projection angle must be adjusted. Never try to correct this misalignment with the shift correction or the static convergence controls. These controls may only be applied to correct small errors which cannot be corrected by the CRT angle adjustment.

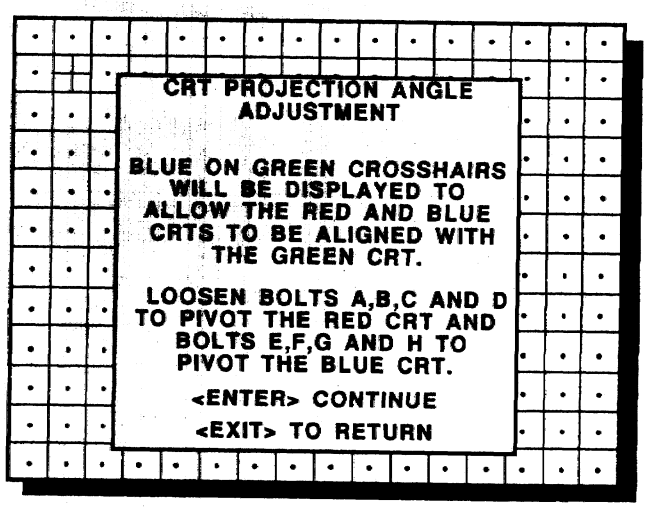
Be sure that the rasters are centered on the CRT face.

Press **ENTER** to start the CRT angle adjustment procedure. A crosshairs (green and red) will be displayed on the screen.




*menu I3*

<ENTER> continues to CRT Projection Angle Adjustment (Menu I4)
<EXIT> returns to Raster Centering (Menu I2)

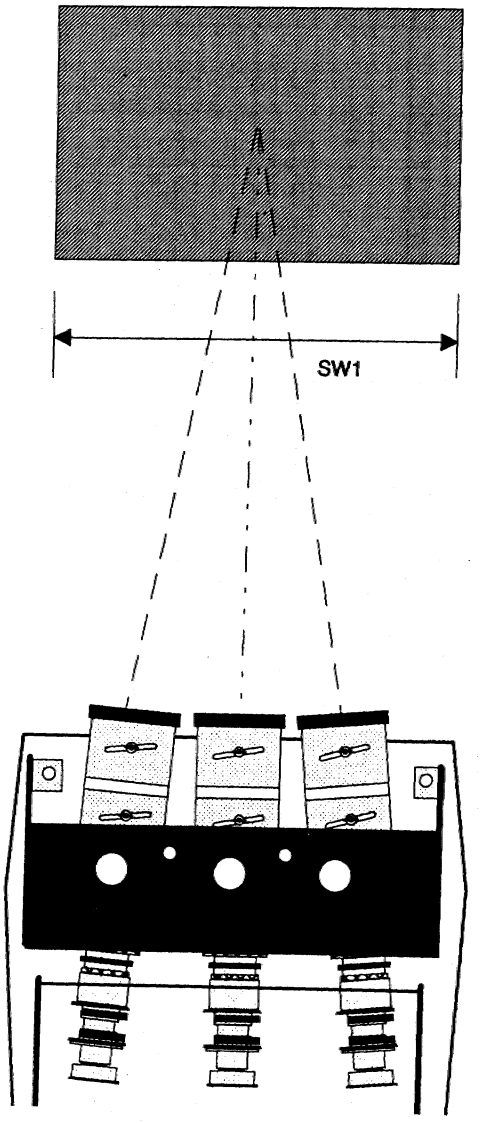



*menu I4*

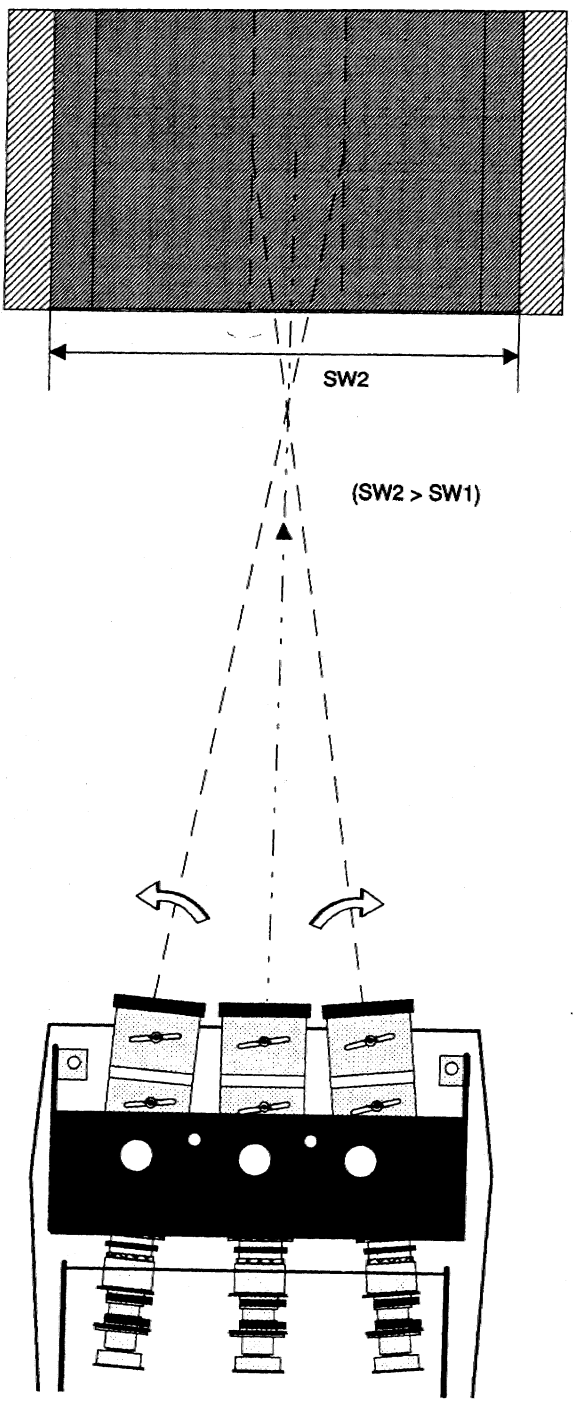
<ENTER> continues to the crosshairs alignment
<EXIT> returns to menu I3, CRT projection angle adjustment.
<ADJUST> returns to operational mode.

# INSTALLATION ADJUSTMENTS

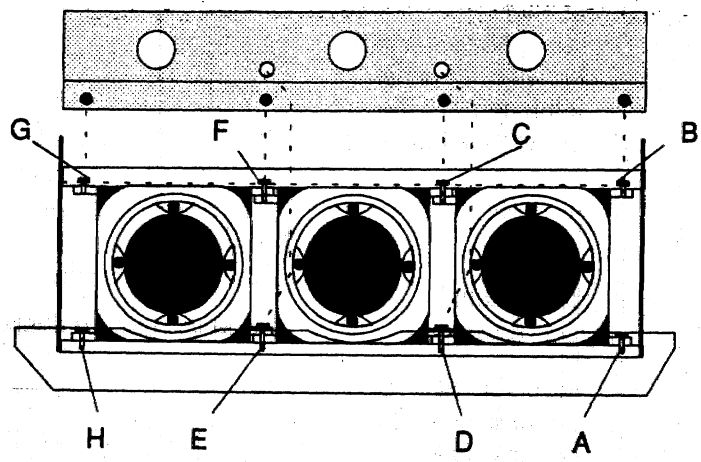
Projection angle correctly aligned for screen width SW1



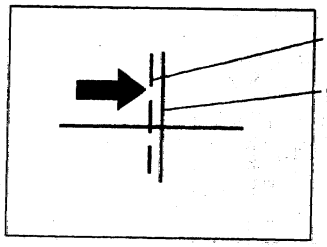

Projection angle mis-aligned for new screen width SW2. Re-alignment is necessary.



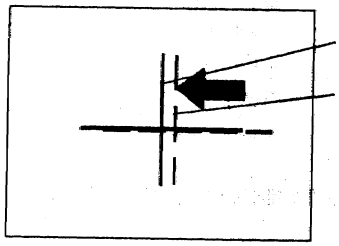
# INSTALLATION ADJUSTMENTS



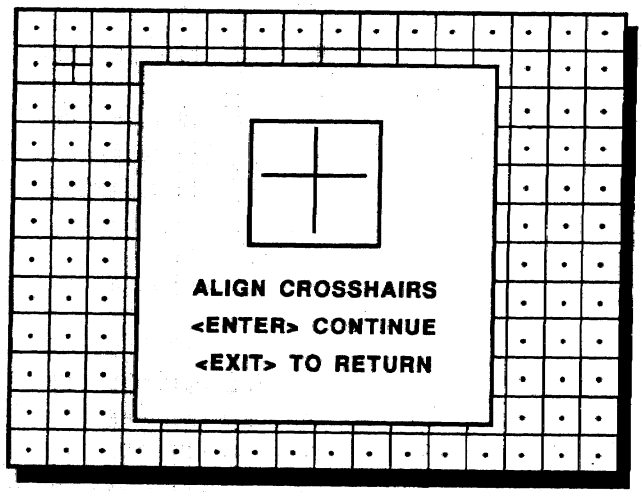

Loosen the two hexagon screws B and C, upper fixation latch, and screws A and D, lower fixation latch. These screws fasten the cooling house of the red tube to the upper and lower latch.
Pivote the red CRT until the center of the red image coincides with the center of the green image. If the angle of the red CRT is corrected, tighten the four bolts.




*Move the Red CRT and lens assembly towards the Green CRT.*




*Move the Red CRT and lens assembly to the outside, away from the Green CRT.*

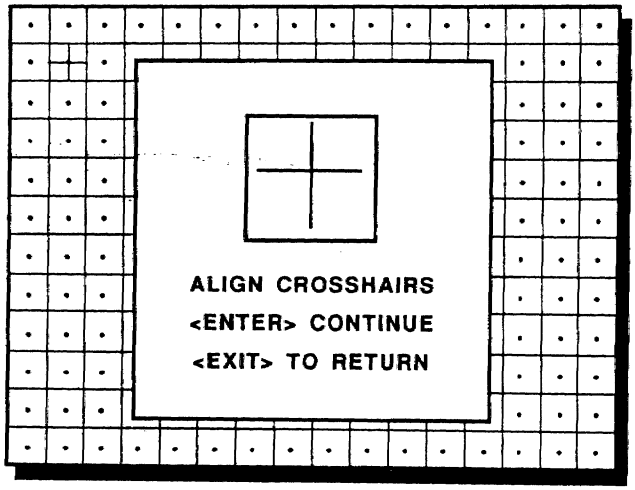



*menu I5*

<ENTER> continues to blue and green crosshairs. <EXIT> will return to CRT Projection Angle Adjustment, menu I4.

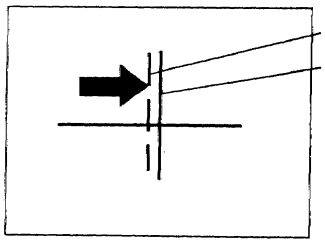
# INSTALLATION ADJUSTMENTS

Loosen the two hexagon screws G and F, upper fixation latch, and screws E and H, lower fixation latch. These screws fasten the cooling house of the red tube to the upper and lower latch.
Pivote 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.

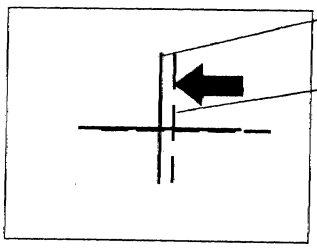



*menu I5*

<ENTER> continues to the path selection menu.
<EXIT> returns to menu I3, CRT projection angle adjustment.




*Move the Blue CRT and lens assembly to the outside, away from the Green CRT.*

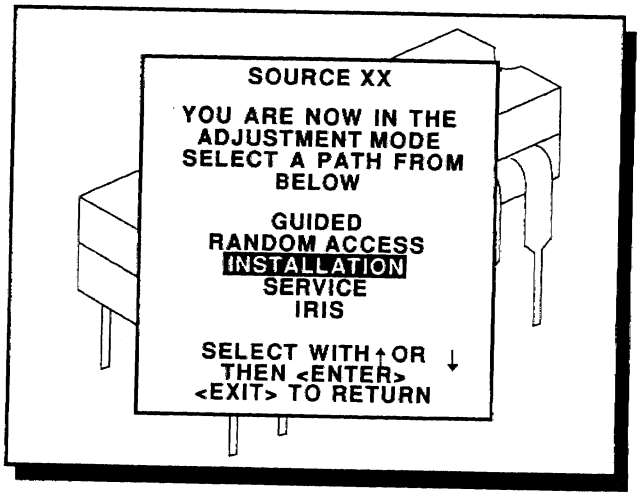



*Move the Blue CRT and lens assembly towards the Green CRT*

After finishing the installation adjustments procedure, the *'Path selection'* menu S1 returns on the screen. You are now able to start the alignment procedure for the projector. You have the choice between :

- Guided Adjustment Procedure
- Random Access Adjustment Procedure

The result of both procedures will be the same. More explanation about both procedures is given in the owners manual. The following page gives an overview of the image corrections.




*menu S1*

ENTER continues to the chosen path.
EXIT returns to operational mode.

# INSTALLATION ADJUSTMENTS

**Alignment of the projector.**

*Overview of the corrections.*

For detailed information about these corrections and procedures to be followed see owner's manual.

Shift corrections for the Red, Green and Blue image.

Left-Right adjustments
- Vertical center line bow and skew
- Side keystone adjustment
- Side bow adjustment
- Horizontal size adjustment

Top-Bottom adjustments
- Horizontal centerline bow and skew
- Top keystone adjustment
- Top bow adjustment
- Bottom keystone adjustment
- Bottom bow adjustment

Size-linearity adjustments
- Horizontal size adjustment
- Vertical linearity adjustment
- Vertical size adjustment
- Horizontal phase adjustment

Convergence adjustments
- Green only
- Red on Green
- Blue on Green

Blanking adjustment
- Top-Bottom, Left-Right

Color balance
White balance
Black balance

# INSTALLATION ADJUSTMENTS

MESSAGES, WARNINGS AND FAILURES.

# MESSAGES, WARNINGS AND FAILURES

| | |
|---|---|
| **SOURCE 01**<br>**Fh= 15.6 kHz**<br>**Fv= 050 Hz** | When selecting a new source, information about this source will be displayed on the screen. Source number, horizontal and vertical frequency of the displayed source. |
| **SOURCE 01** | Annoncement of the selected source. |
| **enter password**<br>**x x x x** | Message to enter your password. Password contains 4 digits, which must be entered with the numeric keys of the RCU800. |
| **text on** | These messages will be displayed on the screen when pushing the TEXT key.<br>Text ON : the *'bar scale indication'* will be enabled during the change of an analog control in the *'operational mode'* + all warnings and failures will be displayed.<br>Text OFF : the *'bar scale indication'* will be disabled during the change of an analog control in the *'operational mode'* + all warnings and failures will not be displayed. |
| **text off** | |
| **PROJECTOR ADDRESS : 003** | Indication of the projector address when activating *'ADDRESS'* on the RCU800 with pencil or other small object. |
| **WARNING :**<br>**input not available** | Warning in combination with the RCVDS 800. This warning will be displayed when selecting an input slot of an RCVDS where the input board is missing. |
| **WARNING :**<br>**source not available** | The input is a valid input but the source is not connected to the input terminals or the input source is switched off. |

# MESSAGES, WARNINGS AND FAILURES

| | |
|---|---|
| **WARNING :**<br>**invalid key entry** | When a wrong key is pressed on the RCU800. |
| **WARNING :**<br>**invalid code entry** | Message when the entered password is wrong. |
| **WARNING :**<br>**end of adjust range** | End of adjustment range. |
| **WARNING :**<br>**input no longer available** | Message will be displayed when the input source is no longer available. Immediate hereafter appears the following message : *'check input signal or select new source'*. |
| **check in-out signal or select new source** | Message will be displayed after the message *'input no longer available'*. It asks to check the connections between the source and the projector or to check if the source is switch on. |
| **WARNING :**<br>**input selector not available** | It warns you to check the power connection or the power status of the RCVDS800.<br>Next message will appear immediatly on the screen : *'go to stand-by'*. |
| **WARNING :**<br>**go to stand by** | Projector will switch to *'stand-by'* when the RCVDS 800 is not longer available. |
| **WARNING :**<br>**invalid frequency input** | Entered frequency or frequency of source is out of the projector's range. |

# MESSAGES, WARNINGS AND FAILURES

| | |
|---|---|
| **WARNING : default settings loaded in the E2PROM** | Adjustment settings are lost. Reset via PC or MAC, or readjust image. |
| **table is deleted** | Message to inform that selected table is deleted. This message will be followed by *'confirm message'*, on which the user has to anser. |
| **<ENTER> to confirm <EXIT> to return** | Confirm message for deleting tables. ENTER will delete the table. EXIT will return to the selected table. |
| **FAILURE invalid RWI soft version** | Wrong software version in your projector. Call for technical support. |
| **FAILURE invalid TAC soft version** | Wrong software version in your projector. Call for technical support. |
| **FAILURE I2C error addr. : 7FH3** | Hardware failure. Call a qualified service technician for repair. |
| **FAILURE short circuit on I2C bus** | Hardware failure. Call a qualified service technician for repair. |
| **FAILURE RCVDS com-munication error** | Serial communication error between RCVDS800 and projector. |

| | |
|---|---|
| **FAILURE TAC communication error** | Hardware failure. Call a qualified service technician. |
| **FAILURE RWI communication error** | Hardware failure. Call a qualified service technician. |

# MESSAGES, WARNINGS AND FAILURES

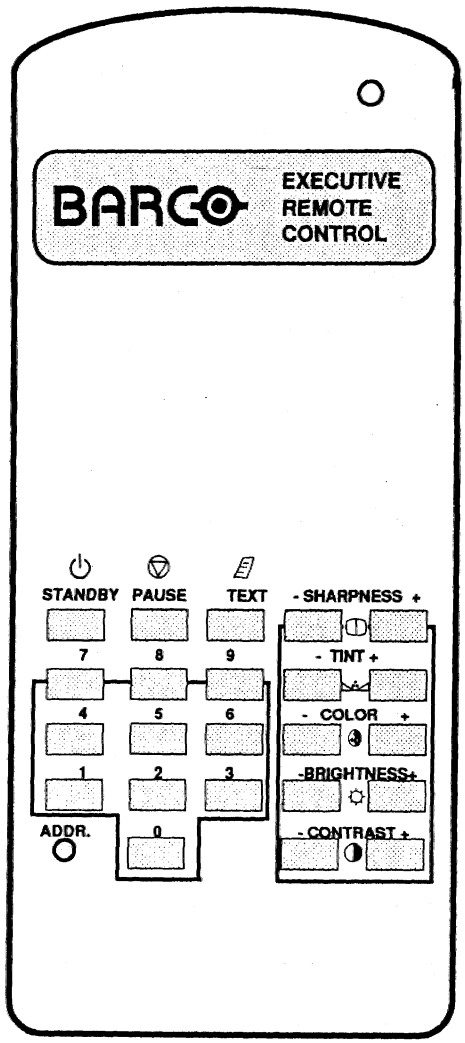
## OPTIONS

- RCU800U
- IR RECEIVER 800
- REMOTE CABLE RCU800
- CONTROL 800 SOFTWARE
- RCVDS 800
- IRIS 800
- HDTV interface
- ADAPTER AND COMMUNICATION CABLES

# OPTIONS

**RCU800U**

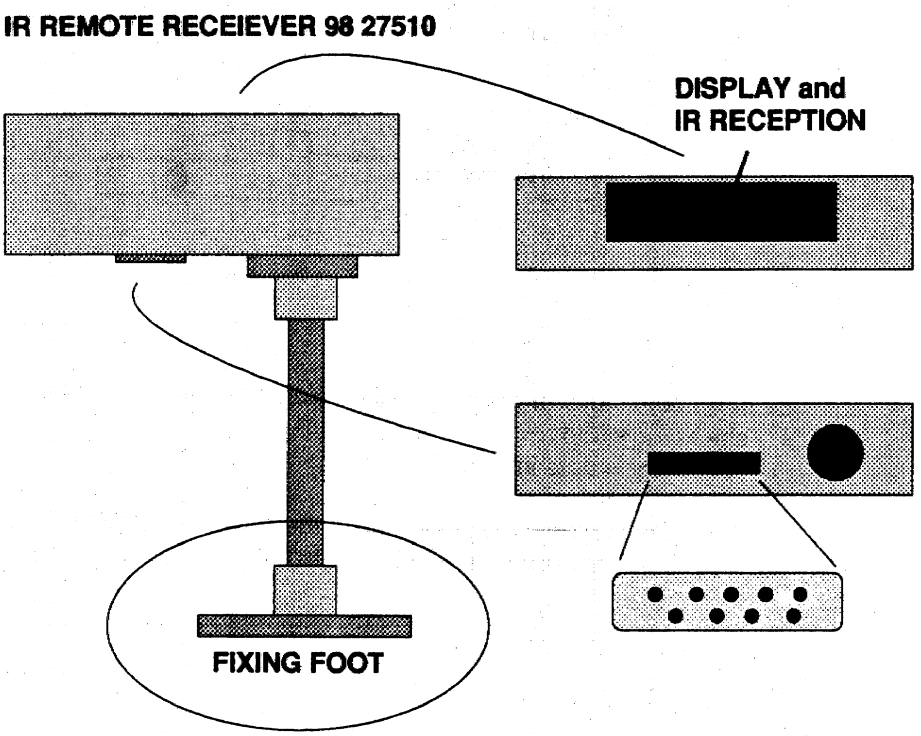
Executive Remote Contol.
Fixed address setting on 'zero address'. Every projector can be controlled with this RCU800U.
No access possible to the *'Adjustment Mode'*.
Order number : 98 27440



# OPTIONS

**IR Receiver 800**

This infra red receiver unit makes it possible to control the BARCOVISION 1600 from an other room.
There is a communication line with cable between the IR receiver and the projector or the RCVDS800. The control information from the RCU800 can now be sent to this IR receiver.
The IR receiver 800 displays the selected source on a 7-segment display.
Order number : 98 27510



# OPTIONS

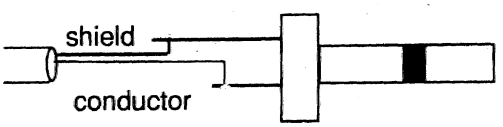
**Hardwired RCU800 or RCU800U.**

The control signals from the RCU800 or RCU800U can be sent to the projector via a wired connection.

Preparing your remote cable :

Use a shielded cable with a maximum length of 100 m and two mini-jack 2.5 mm connectors (order number : 31 3043).

- Peel back the vinyl covering of the cable on both sides and twist the wire core.




- Solder on both sides of the cable a jack plug as shown in drawing above.
  shield = ground
  conductor = data information

When the cable is ready, plug one side in the remote control and the other site in the connector on the front of the projector labelled 'remote'.

# OPTIONS

## Conrol 800 software

The software is user friendly designed : mouse control, pull down menus, dialog boxes.

Two main applications are available with this software : remote control and transfering and receiving data of settings.

remote control simulation. Advantage : address range 0 to 255.

adjustment data : where can it be located when a IBM PC (or compatible) or MAC or Workstation is connected :

- hard memory divice with files of settings.
- the contents of the local memory of the computer.
- the contents of the projector.

## RCVDS 800

An optional RCVDS 800 source selector makes it possible to connect up to ten sources to the projector. To maximize the flexibility of the projector, an optional expansion module makes it possible to link ten source selectors in series, enabling the simultaneous connection of up to 90 sources to the projector.

## IRIS 800

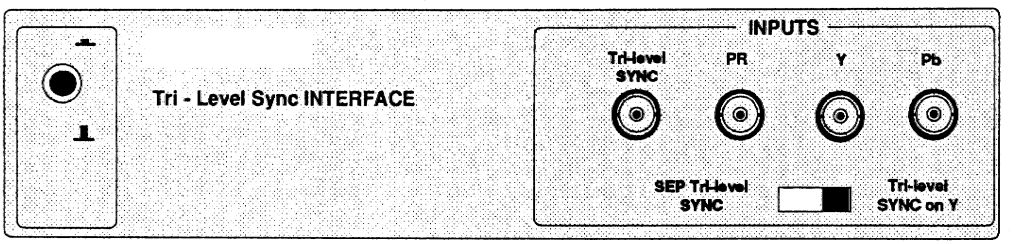
Easy-to-use, high precisioin automatic convergence system.
Using the IRIS 800's user-friendly onscreen displays, the unit effortlessly aligns the projected image on the screen faster and more accurately then ever before possilble through the conventional 'manual' convergence process.
The fexible design of the IRIS 800 allows it to operate either in a table or ceiling mount installation.

# OPTIONS

## HDTV / Tri-level sync interface

The HDTV/Tri-level sync interface converts an HDTV signal into a RGBS signal for an HDTV projector without any signal loss or image degradation.

- Possibility to convert an HDTV signal into an RGBS signal.
- Full compatibility with most advanced, improved, extended or HDTV-signals.
- Input signal can be in RGB or PrYPb format.
- Sync input can be Tri-level or standard sync.
- Separate sync or sync on G/Y is possible.
- Light weight, ruggedized design.
- Bandwidth : 20 MHz.
- Order number : 98 27430 (230V), 98 27439 (120V)




## Adapter and communication cables

Barco provides several cables to connect periphiral equipment to the BARCOVISION 1600.

*a. D9-D9 communication cable*
- To connect a IBM PC (or compatible) to the projector.
- To connect a RCVDS 800 to the BARCOVISION 1600.
- To connect a IR receiver to the RCVDS800 or to the BARCOVISION 1600.
- To be used as extension cable for all other adapter cables.

Available lenght : 15 m, order number 98 27640; and 30 m, order number 98 27570

*b. Din Mini8-D9 adapter cable.*
- To connect a Macintosh computer to the BARCOVISION 1600.

Available lenght : 1 m, order number 98 27640.

*c. D25-D9 adapter cable*
- To connect a workstation to the BARCOVISION 1600.

Available lenght : 1 m, order number 98 27630
Order number for 30 m cable : 98 27570

# APPENDIX A : BARCO CEILING MOUNT SUPPORT

## APPENDIX

A : BARCO CEILING MOUNT SUPPORT FOR 800, 1000, 1200 and 1600 SERIES PROJECTORS

B : ADJUSTMENT BLOCKS

C : SOURCE NUMBERS 90 - 99

D : SPECIFICATIONS

# APPENDIX A : BARCO CEILING MOUNT SUPPORT

This appendix gives only an overview of the contents of the installation guidelines and also some overview drawings.
The total installation guidelines for the BARCO ceiling mounting support can be ordered by BARCO.
BARCO order number : 59 75693.

## I. Contents of the installation guidelines.

### 1. Mounting instructions for the upper support to the ceiling.

a. Position of the upper support on the ceiling.
b. Mounting of the 4 screwed rods on the upper support.

### 2. Projector placement on lower support.

a. Projector placement on support.
b. Location of controls for projector-position correction.

### 3. Mounting instructions of the cord to lift up the projector.

a. Mounting the cord support on the upper support.
b. Cord insertion between the upper and lower support.
c. Cord fixation

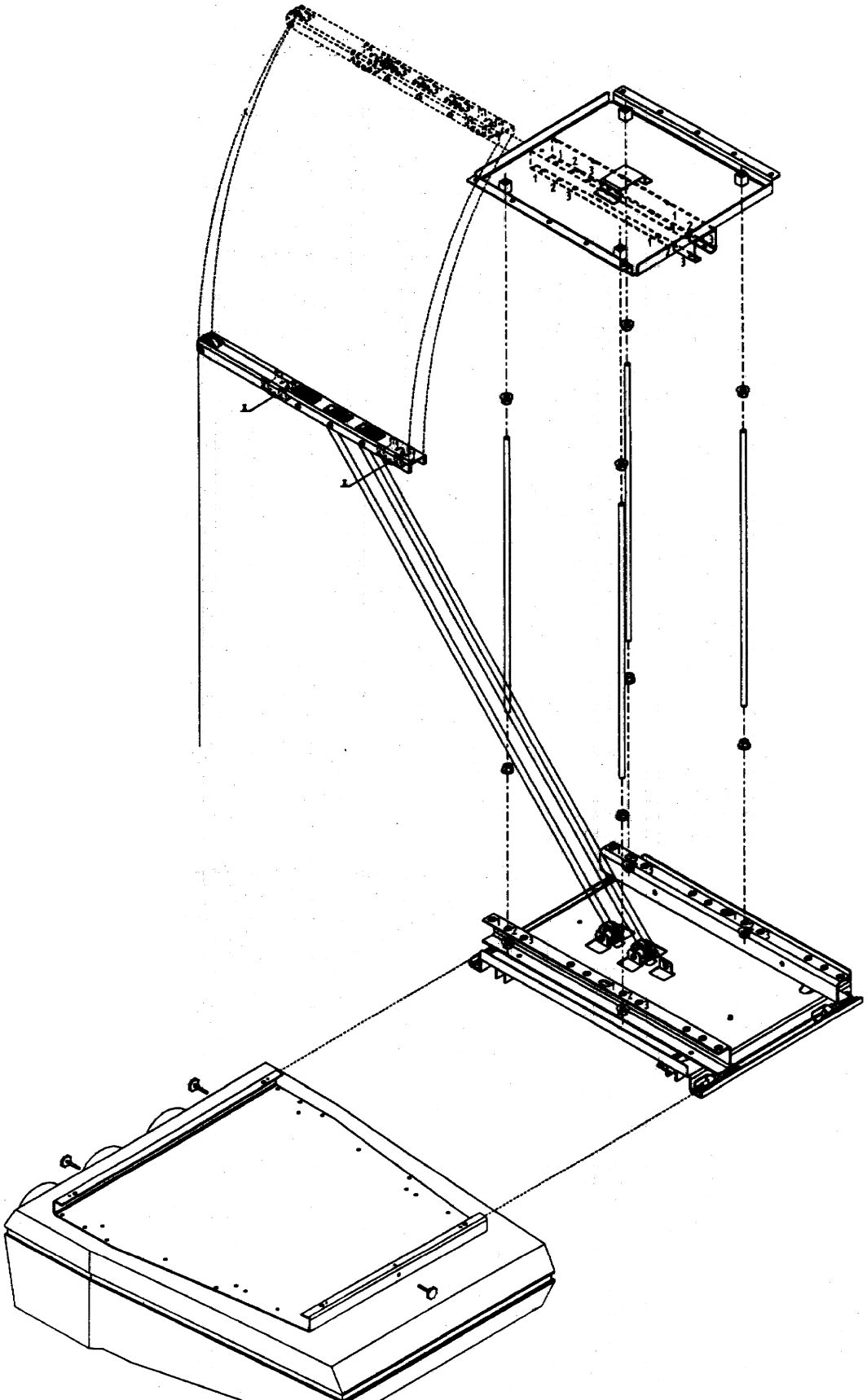
### 4. Lifting up and fixing the lower support (with projector) on the screwed rods.

### 5. Alignment of the projector-support assembly

a. Projector water-level adjustment.
b. Adjustment "projector axis perpendicular" on the screen surface.
c. Projector movement for- or backward.

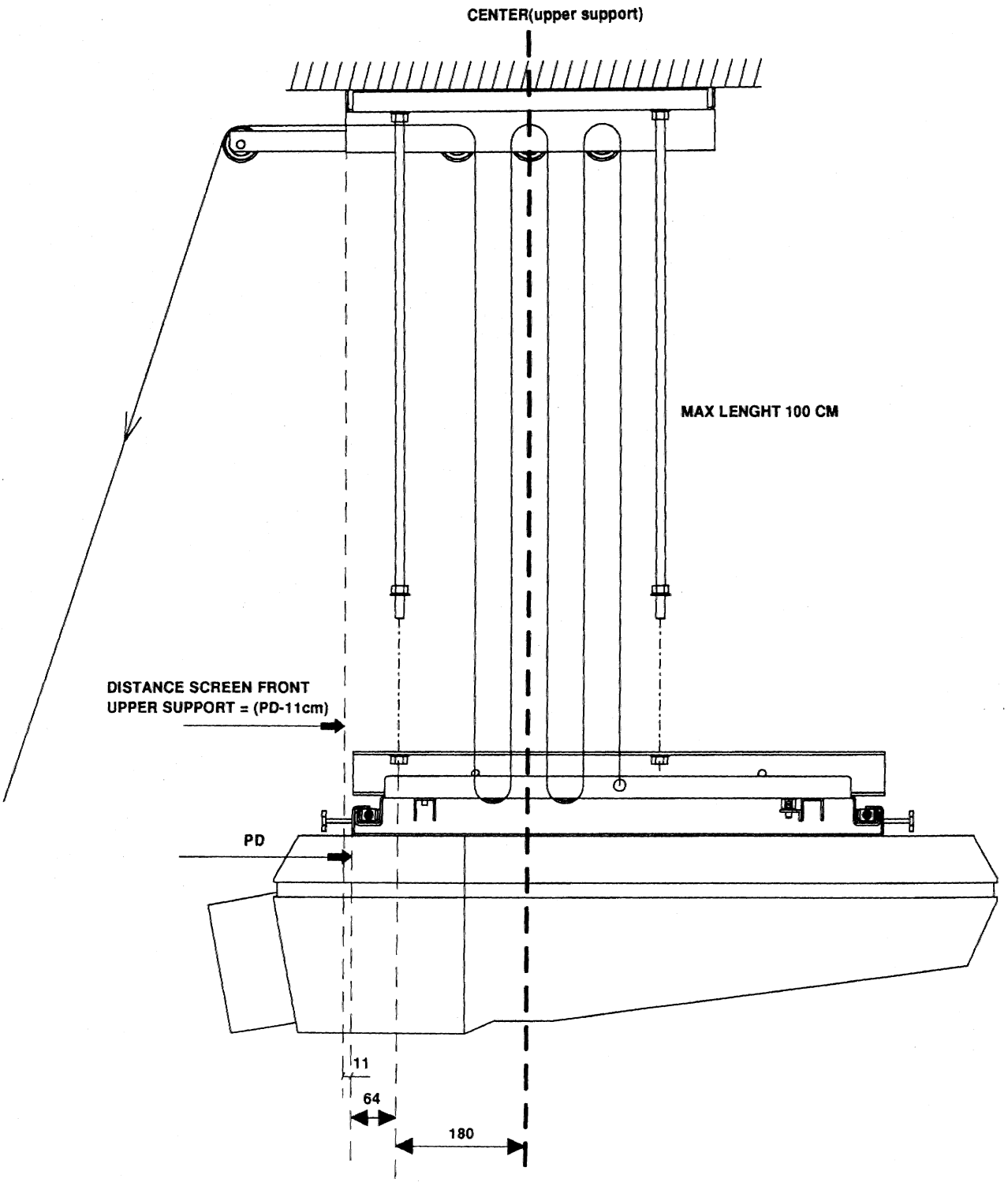
# APPENDIX A : BARCO CEILING MOUNT SUPPORT

**II. Exploded view of BARCO ceiling mount support.**



# APPENDIX A : BARCO CEILING MOUNT SUPPORT

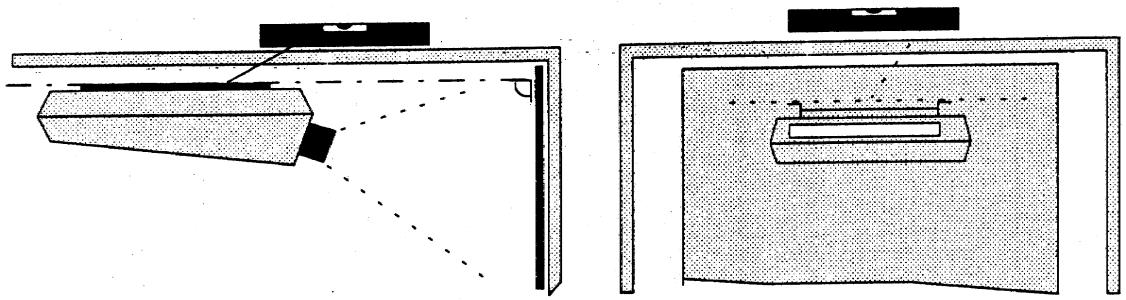
**III. Overview drawing of the total system.**

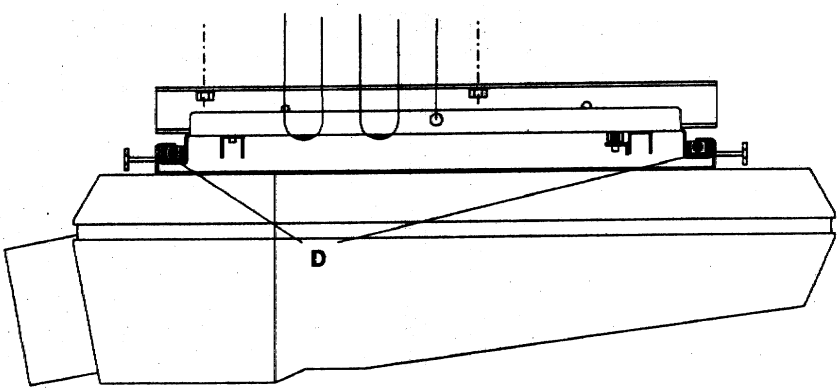


# APPENDIX A : BARCO CEILING MOUNT SUPPORT

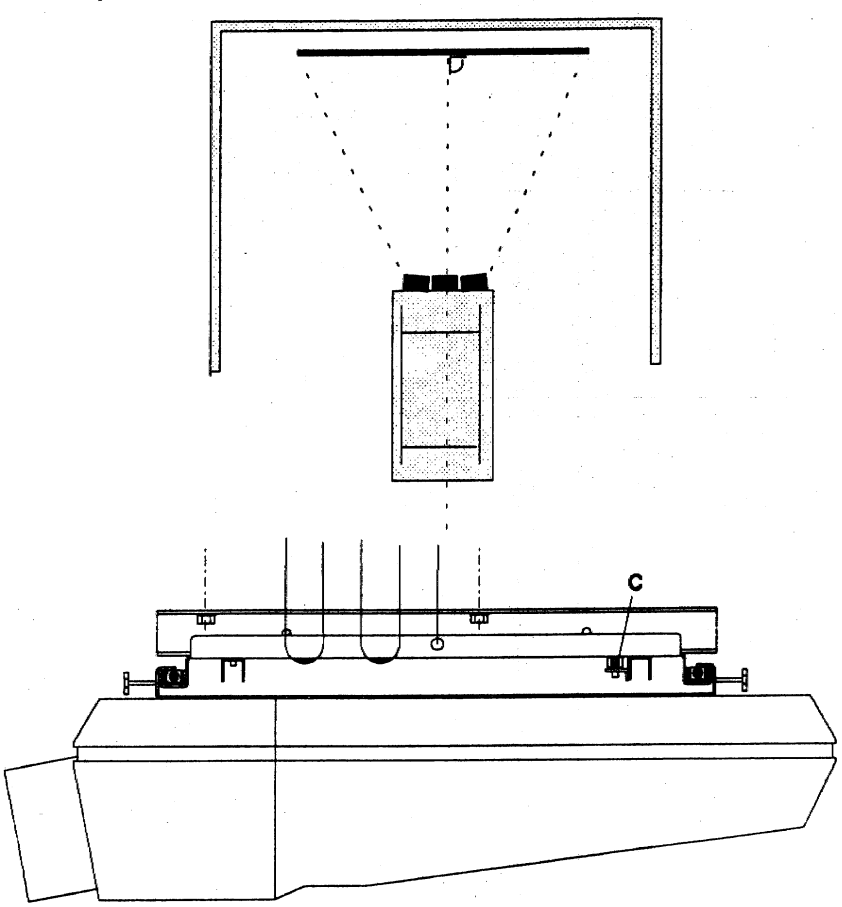
## IV. Projector-position corrections

Water-level adjustment



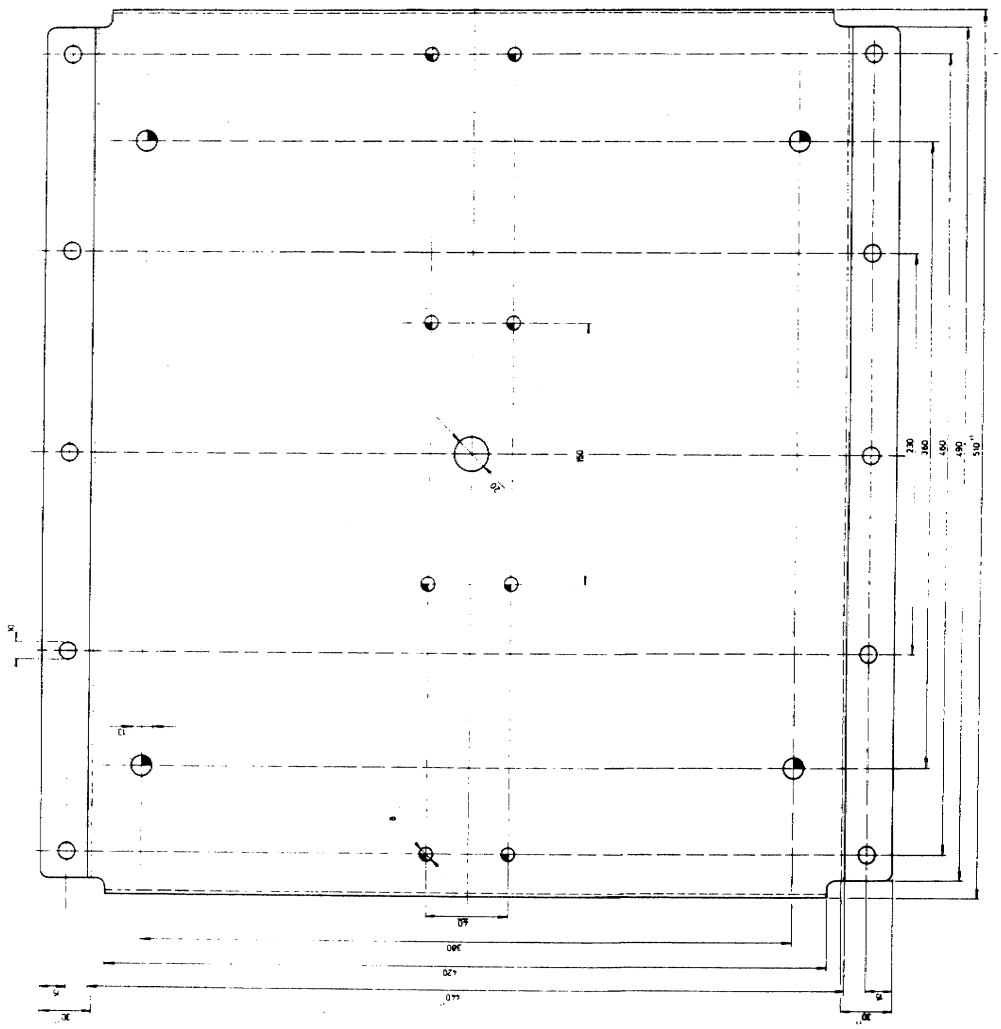



Projector axis adjustment



# APPENDIX A : BARCO CEILING MOUNT SUPPORT

**IV. Lay-out upper support**



# APPENDIX B : ADJUSTMENT BLOCKS

## Adjustment Blocks

As the Barcovision 1600 is digitally controlled, all geometry and convergence adjustments are stored in the projector's memory as numeric values. These numeric values are used to control digital potentiometers which in turn, control the projector. Each source connected to the projector has a unique set of adjustment data which is automatically downloaded into the projector's digital potentiometers as the source is selected. This set of adjustment data is referred to as an *"adjustment block"*.

An adjustment table is automatically created for a source when the source is first connected to the projector and the adjust mode is entered. If other sources have already been connected to the projector and geometry and convergence adjustments have been performed on these sources, the projector will use Linear Digital Interpolation to create a new block for the new source. This block will provide an initial set of adjustments for the new source that have been calculated by the projector from "previous experience".

The projector's memory has the capacity to store 38 adjustment blocks. The adjustment block consists of two parts, the block header and the data representing the convergence and geometry adjustments of the source the block corresponds to. The block header contains the basic characteristics of the source and the projector configuration used to display the source.

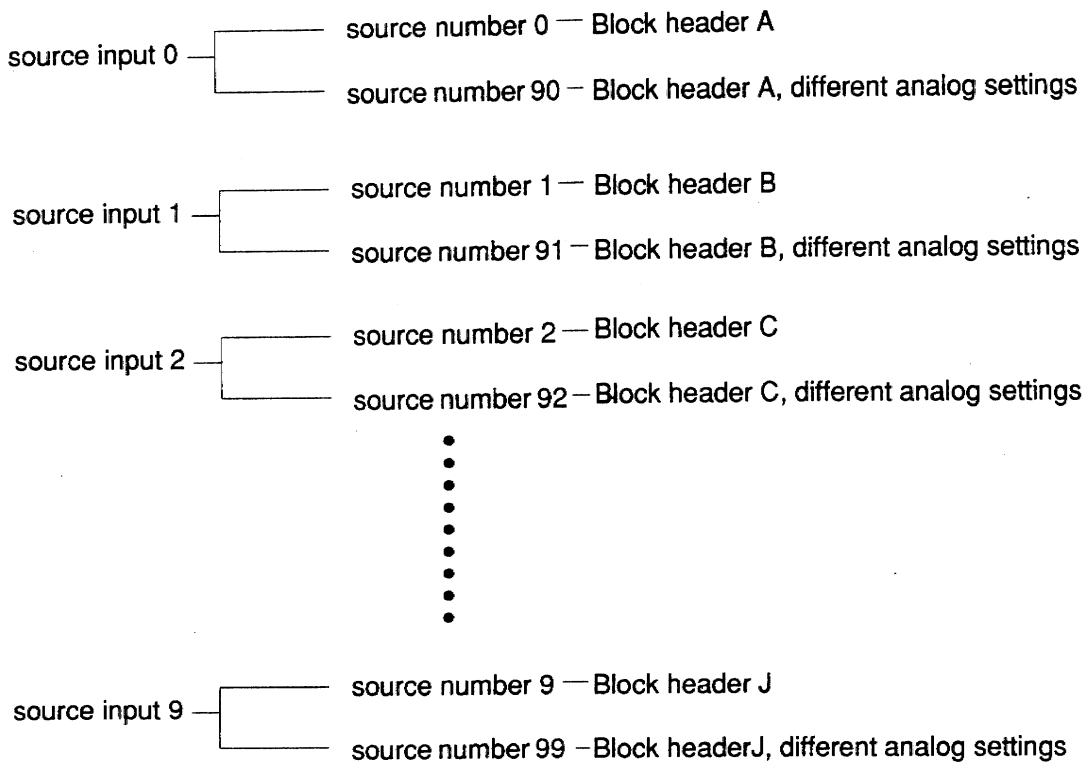
| *Block Header* | *example of block header* |
|---|---|
| Block number | 01 |
| Source number | 01 |
| Horizontal frequency | 15.6 kHz |
| Vertical frequency | 50 Hz |
| Input type | video |
| Scan inversion switch configuration | front/ceiling |

The data representing the geometry and convergence adjustments for the source follows the block header.

# APPENDIX C : SOURCE NUMBERS 90 - 99

**Source numbers 90 - 99**

Source numbers 90 - 99 do not correspond to physical inputs to the projector or RCVDS800. They are used to assign an additional adjustment block to a source. This additional adjustment block may contain different geometry and convergence settings, sync fast/slow positions and enhanced blue on/off settings. The relationship between source numbers 0 - 9 and 90 - 99 (projector with RCVDS) or 1 - 5 and 91 - 95 (stand-alone projector) is shown in the diagram below.




The alternate adjustment block for sources 0 - 9 (projector with RCVDS) or 1 - 5 (stand-alone projector) is activated by selecting the corresponding source number 0 - 9 (projector with RCVDS) or 1 - 5 (stand-alone projector). Once this source number is selected, the alternate block of adjustment data is in use and may be modified via the adjust mode of the projector. The alternate adjustment block is automatically stored.

Follow the steps below to create a second adjustment block for a source between 0 and 9.

1. Select the source between 0 and 9 that the second adjustment block is to be created for.

2. Select the corresponding source number between 90 and 99. The adjustment block for the source number between 0 and 9 is copied to the corresponding source number between 90 and 99.

3. Enter the adjust mode and make any desired changes (geometry, convergence, sync fast/slow, enhanced blue on/off) to the second adjustment block.

4. Exit the adjust mode.

# APPENDIX D : SPECIFICATIONS

## I. Video

Input : 2 x BNC connectors (looped through)
75 ohm termination switch
500 mVpp to 2 Vpp ±3dB

## II. Super Video

Input : 2 x 4 pins mini DIN connector (looped through)
Pin configuration DIN connector :
pin 1 : ground (earth) luma signal
pin 2 : ground (earth) chroma signal
pin 3 : luma (Y) signal 1 Vpp ± 3dB
pin 4 : chroma (C) signal 300 mVpp ±3 dB
75 ohm termination switch on rear panel.

## III. RGB analog circuit

RGsB : for sync on Green or
RGBS : for separate sync, Hor and Vert sync or composite sync.

Input : 5 BNC connectors
Red : 0.7 Vpp ± 3 dB
Blue : 0.7 Vpp ± 3 dB
Green : 0.7 Vpp ± 3 dB
1 Vpp ± 3 dB if sync on green
Vert sync : 1 Vpp ± 3 dB or 4 Vpp ± 3 dB
Hor sync / comp. sync : 1 Vpp ± 3 dB or 4 Vpp ± 3 dB

## IV. Deflection circuits

*Vertical deflection*
Frequency : from 37 Hz to 140 Hz

Retrace time : < 450 µs

*Horizontal deflection*
Frequency : 15 kHz and 30 to 35 kHz

Retrace time : < 4.7 µs

## V. High voltage

Stabilized EHT : 34.7 kV

## VI. Power requirements

- 220 V ac to 240 V ac or 110 V ac internal switchable
- frequency independence between 40-100 Hz
- Electrical ratings : 230V - 2.5A , 120V - 5A

# APPENDIX D : SPECIFICATIONS

## VII. Display

Projection tubes : - 9" high resolution projection tubes, electrical focus.
- liquid coupled system
- Red, Blue and Green CRT's

Lenses : 90 00670/90 00679 : TOC7, high resolution F1.07 Optical coupled Hybrid lenses
90 00671/90 00678 : HD300, high resolution fully color corrected F1.15 Optical coupled Hybrid lenses.
Convergence : calibration using 13 independent zones.

Optical resolution: TOC7 : 5 lp/mm, HD300 : 10 lp/mm for HD300 (option: HD120, HD180 : 12 lp/mm)

## VIII. Light output

At 10% peak white : 1620 lumen

## IX. RGB Bandwidth

50 MHz ±3dB

## X. Mechanical characteristics

Dimensions : see next page.

## XI. Mounting

Table or ceiling; front or rear projection possibility.

Adaptation ceiling-table : incorporated switches
Adaptation front-rear : incorporated switches

## XII. Safety

IEC950, UL1950

## XIII. Environment

The projector is designed to be used within the following operating range.

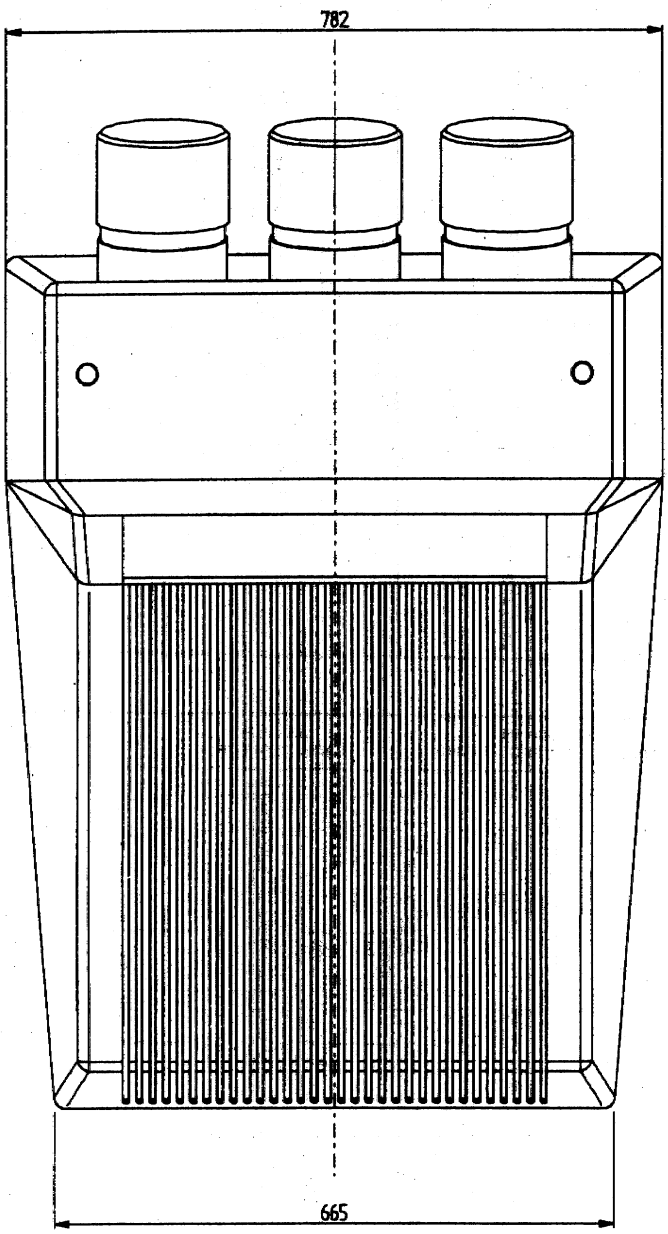
Max. operating range
Temperature : 0° - 40°C
Humidity : 0 - 90% non condensing
Altitude : 0 - 3000 m (0 - 10000 ft)

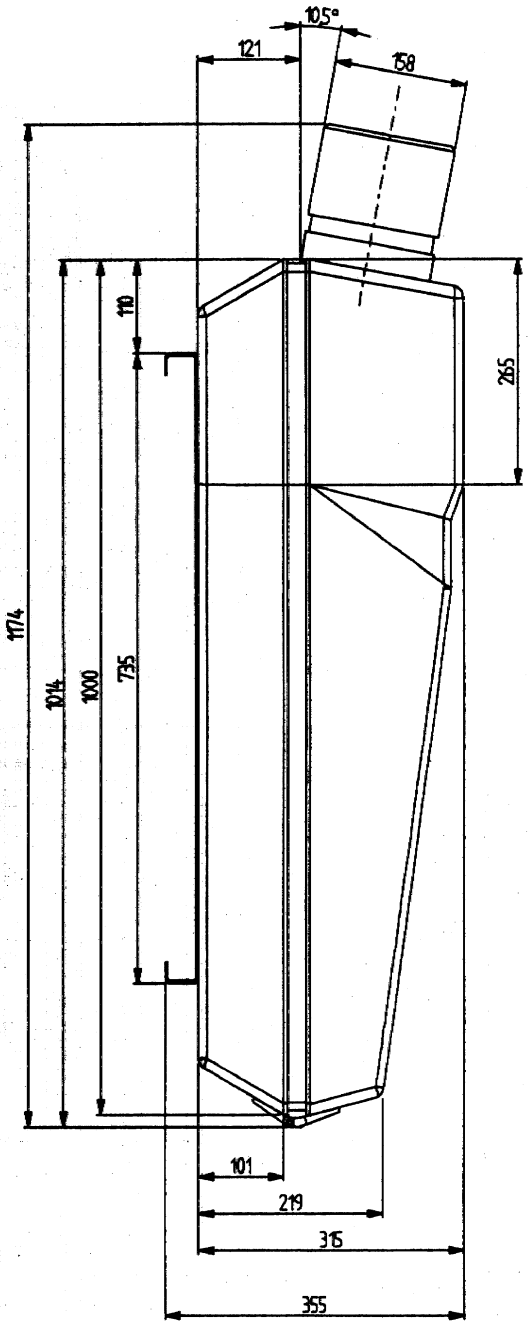
Storage
Temperature : - 30° to 65°C

## XIV. Weight

Net weight : 80 kg (176 lbs)

# APPENDIX D : SPECIFICATIONS



# MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

## SECTION I

MANUFACTURER'S NAME AND FSCM (*Federal Supply Code for Manufacturer's*): *BARCO n.v.*

EMERGENCY PHONE NO.: *32-56-368211*

ADDRESS (*Number, Street, City, State, and ZIP Code*): *Noordlaan 5 B- 8720 KUURNE*

CHEMICAL NAME AND SYNONYMS: *Ethylenglycol & glycerol*

TRADE NAME AND SYNONYMS: *Cooling liquid 512334*

CHEMICAL FAMILY: *Polyalcohols*

FORMULA: $C_2H_6O_2 + C_3H_8O_3$

FEDERAL STOCK NUMBER (*FSN*)

GROSS WEIGHT (*LBS*)

OUTSIDE PACKAGE DIMENSIONS

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL
FLAMMABILITY..... HEALTH..... REACTIVITY..... SPECIFIC HAZARD.....

## SECTION II - HAZARDOUS INGREDIENTS

| PAINTS, PRESERVATIVES, AND SOLVENTS | % | TRESHOLD LIMIT VALUE (*Units*) | ALLOYS AND METALLIC COATINGS | % | TRESHOLD LIMIT VALUE (*Units*) |
|---|---|---|---|---|---|
| PIGMENTS | / | | BASE METAL | / | |
| CATALYST | / | | ALLOYS | / | |
| VEHICLE | / | | METALLIC COATINGS | / | |
| SOLVENTS | / | | FILLER METAL PLUS COATING OR CORE FLUX | / | |
| ADDITIVES | / | | OTHERS | / | |
| OTHERS | / | | | | |

| HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES | % | TRESHOLD LIMIT VALUE (*Units*) |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

## SECTION III PHYSICAL DATA

| | | | |
|---|---|---|---|
| BOILING POINTS (°C.) | 201°C | SPECIFIC GRAVITY ($H_2O$ = 1) | 1.15 |
| VAPOR PRESSURE (*mm Hg.*) | 3 mm Hg | PRECENT VOLATILE BY VOLUME (%) | / |
| VAPOR DENSITY (*AIR = 1*) | 2.2 | EVAPORATION RATE (..... = 1) | / |
| SOLUBILITY IN WATER | ∞ | | |

APPEARANCE AND ODOR

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

| FLASH POINT (*Method used*) | FLAMMABLE LIMITS | LOWER EXPLOSIVE LIMIT | UPPER EXPLOSIVE LIMIT |
|---|---|---|---|

EXTINGUISHING MEDIA

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

DD FORM 1 JUN 71 1813 * GPO 794/643/30

S/N 0102-026-1060

## SECTION V HEALT HAZARD DATA

TRESHOLD LIMIT VALUE: *100ppm*

EFFECTS OF OVEREXPOSURE

EMERGENCY AND FIRST AID PROCEDURES

## SECTION VI REACTIVITY DATA

| STABILITY | | | CONDITIONS TO AVOID |
|---|---|---|---|
| | UNSTABLE | | |
| | STABLE | X | |

INCOMPATABILITY (*Materials to avoid*)

HAZARDOUS DECOMPOSITION PRODUCTS

| HAZARDOUS POLYMERIZATION | | | CONDITIONS TO AVOID |
|---|---|---|---|
| | MAY OCCUR | X | |
| | WILL NOT OCCUR | | |

## SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

*Rinse with water*

WASTE DISPOSAL METHOD

## SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (*Specific type*)

| VENTILATION | | |
|---|---|---|
| | LOCAL EXHAUST | SPECIAL |
| | MECHANICAL (*General*) | OTHER |

PROTECTIVE GLOVES | EYE PROTECTION

OTHER PROTECTIVE EQUIPMENT

## SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

*Harmful if swallowed*

*Keep out of the reach of children*

OTHER PRECAUTIONS

*To avoid from oxidants*