

**BARCO**  **GRAPHICS**  
1208

**90 00891 (230V AC)**

**90 00898 (120V AC)**

**SERVICE MANUAL**



**BARCO** **GRAPHICS**  
1208

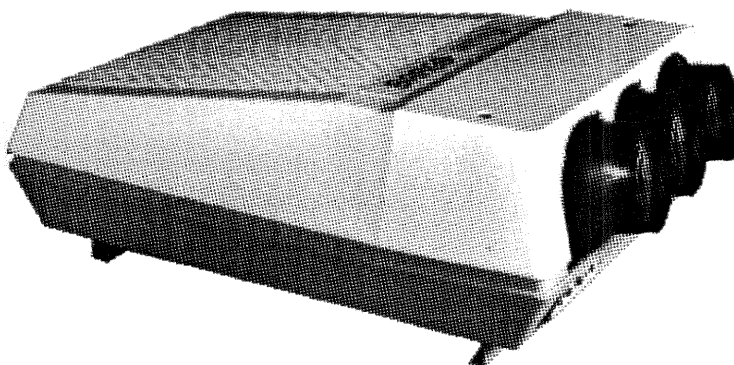
90 00891 (230V AC)

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## SERVICE MANUAL

BARCO PROJECTION SYSTEMS

# BARCO



**BARCO** **GRAPHICS**  
1208

90 00891 (230V AC)

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## SERVICE MANUAL

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BARCO Projection Systems

SECTION **A**

service sheet

BARCO PROJECTION SYSTEMS

**BARCO**

**BARCO** GRAPHICS  
1208

90 00891 (230V AC)


90 00898 (120V AC)

**SAFETY NOTICE**

DATE:15/09/94


ART. NR. : 59 75645

## PRODUCT SAFETY NOTICE

Components identified by  or \* have SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY. Before replacing any of these components, read carefully the service safety precautions.

**DO NOT DEGRADE THE SAFETY OF THIS SET THROUGH  
IMPROPER SERVICING.**

## SAFETY NOTICE

Components having special safety characteristics are identified by  on schematics and on the parts list in this SERVICE MANUAL and its supplements and bulletins. Before servicing this apparatus, it is important that the service technician read and follow the "SAFETY PRECAUTIONS" and "PRODUCT SAFETY NOTICES" in this Service Manual.

## SAFETY PRECAUTIONS

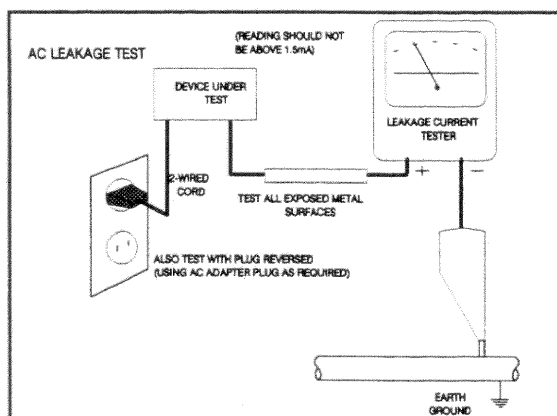
1. **Before returning an instrument to the customer**, always make a safety check of the entire instrument, including, but not limited to, the following items :

a. Be sure that no built-in protective devices are defective and/or have been defeated during servicing. (1) Protective shields are provided on this chassis to protect both the technician and the customer. Correctly replace all missing protective shields, including any removed for servicing convenience. (2) When reinstalling the chassis and/or other assembly in the cabinet, be sure to put back in place all protective devices, including, but not limited to, insulating materials, barriers, covers/shields, and isolation resistor/capacitor networks. **Do not operate this instrument or permit it to be operated without all protective devices correctly installed and functioning. Servicers who defeat safety features or fail to perform safety checks may be liable for any resulting damage.**

b. Be sure that there are no cabinet openings through which an adult or child might be able to insert their fingers and contact a hazardous voltage. Such openings include, but are not limited to, (1) excessively wide cabinet ventilation slots, and (2) an improperly fitted and/or incorrectly secured cover panels.

c. **Leakage Current Hot Check** - With the instrument completely reassembled, plug the AC line cord directly into a 220 V AC outlet. (Do not use an isolation transformer during this test.) Use a leakage current tester or a metering system that complies with American National Standards Institute (ANSI) C101.0 Leakage Current for Appliances and Underwriters Laboratories (UL) 1410, (50.7). With the instrument AC switch first in the on position and then in the off position, measure from a known earth ground (metal waterpipe, conduit, etc.) to all exposed metal parts of the instrument (antennas, handle bracket, metal cabinet, screwheads, metallic overlays, control shafts, etc.). Especially any exposed metal parts that offer an electrical return path to the chassis. Any current measured must not exceed 1.5 milliapp. Reverse the instrument power cord plug in the outlet and repeat test.

**ANY MEASUREMENTS NOT WITHIN THE LIMITS SPECIFIED HEREIN INDICATE A POTENTIAL SHOCK HAZARD THAT MUST BE ELIMINATED BEFORE RETURNING THE INSTRUMENT TO THE CUSTOMER OR BEFORE CONNECTING ACCESSORIES.**



**WARNING: RISK OF ELECTRIC SHOCK DURING THIS TEST. THE PROJECTOR IS NOT CONNECTED TO GROUND. DO NOT TOUCH THE PROJECTOR AND USE WELL INSULATED TEST PROBES.**

d. **X-Radiation and High Voltage** - Because the picture tubes are the primary potential source of X-radiation in solid-state projectors, they are specially constructed to prohibit X-radiation emissions. For continued X-radiation protection, the replacement picture tube must be the same type as the original. Also, because the picture tube shields and mounting hardware perform an X-radiation protection function, they must be correctly in place.

After replacement of any X-ray radiation related safety components (marked in this manual with an \*), the EHT voltage board must be checked.

2. Read and comply with all caution and safety-related notes on or inside the projector cabinet or on the projector chassis, or on the picture tube.

3. **Design Alteration Warning** - Do not alter or add to the mechanical or electrical design of this apparatus. Design alterations and additions, including, but not limited to, circuit modifications and the addition of items such as auxiliary audio and/or video output connections, might alter the safety characteristics of this apparatus and create a hazard to the user. Any design alterations or additions may void the manufacturer's warranty and may make you, the servicer responsible for personal injury or property damage resulting therefrom.

4. **Picture Tube Implosion Protection Warning** - The picture tube in this projector encloses a high vacuum. Do not remove, install, or otherwise handle the picture tube in any manner without first putting on shatterproof goggles equipped with side shields. People not so equipped must be kept safely away while picture tubes are handled. Keep the picture tube away from your body. Do not handle the picture tube by its neck.

For continued implosion protection, replace the picture tube only with one of the same type number.

5. **Hot Chassis Warning** - This projector chassis has two ground systems: the primary ground system is formed by the negative voltage of the rectified mains (power) and is only used as a reference in primary circuits; the secondary ground system is connected to earth ground via the earth conductor in the mains (power) lead. Separation between primary and secondary circuits is performed by the safety isolation transformers. Components bridging this transformers are also safety components and must never be defeated or altered.

All user-accessible conductive parts must be connected to earth ground, or are kept at SELV (Safety Extra Low Voltage).

6. Observe original lead dress. Take extra care to assure correct lead dress in the following areas:

- near sharp edges,
- near thermally hot parts - be sure that leads and components do not touch thermally hot parts,
- the AC supply,
- high voltage.

Always inspect in all areas for pinched, out-of-face, or frayed wiring. Do not change spacing between components, and between components and the printed-circuit board. Check AC power cord for damage.

7. Components, parts, and/or wiring that appear to have overheated or are otherwise damaged should be replaced with components, parts, or wiring that meet original specifications. Additionally, determine the cause of overheating and/or damage and, if necessary, take corrective action to remove any potential safety hazard.

**8. PRODUCT SAFETY NOTICE** - Many electrical and mechanical parts have special safety-related characteristics some of which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified in BARCO service data by  $\Delta$  on schematics and in the parts list. Use of a

substitute replacement that does not have the same safety characteristics as the recommended replacement part in BARCO service data parts list might create shock, fire, and/or other hazards. Product Safety is under review continuously and new instructions are issued whenever appropriate. For the latest information, always consult the appropriate current BARCO service literature.

## SERVICING PRECAUTIONS

**CAUTION:** Before servicing instruments covered by this service data and its supplements and addendums, read and follow the SAFETY PRECAUTIONS of this publication.

**NOTE:** If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions on page 2 of this publication, always follow the safety precautions.

Remember: Safety First.

### General Servicing Precautions

1. Always unplug the instrument AC power cord from the AC power source before:

- Removing or reinstalling any component, circuit board, module, or any other instrument assembly.
- Disconnecting or reconnecting any instrument electrical plug or other electrical connection.
- Connecting a test substitute in parallel with an electrolytic capacitor in the instrument.

**Caution:** A wrong part substitution or incorrect polarity installation of electrolytic capacitors may result in an explosion hazard.

2. Do not spray chemical on or near this instrument or any of its assemblies.

3. Unless specified otherwise in this service data, clean electrical contacts by applying the following mixture to the contacts with a pipe cleaner, cotton-tipped stick or comparable nonabrasive applicator: 10% (by volume) Acetone and 90% (by volume) isopropyl alcohol (90%-99% strength). **Caution:** *This is a flammable mixture.*

Unless specified otherwise in this service data, lubrication of contacts is not required.

4. Do not defeat any plug/socket B+ voltage interlocks with which instruments covered by this service data might be equipped.

5. Do not apply AC power to this apparatus and/or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.

6. Always connect the test instrument ground lead to the appropriate instrument chassis ground before connecting the test instrument positive lead. Always remove the test instrument ground lead last.

7. Use with this instrument only the test fixtures specified in this service data.

**CAUTION:** Do not connect the test fixture ground strap to any heatsink in this instrument.

### Electrostatically Sensitive (ES) Devices

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Wear a commercially available high impedance discharging wrist strap device.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a static dissipative surface such as a 3M No 8210 table mat to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static type solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminium foil or comparable conductive material.)
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed. **CAUTION:** Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device.)

**General Soldering Guidelines**

1. Use a grounded-tip, low-wattage soldering iron and appropriate tip size and shape that will maintain tip temperature within the range 260°C to 315°C.
2. Use an appropriate gauge of RMA resin-core solder composed of 60 parts tin/40 parts lead.
3. Keep the soldering iron tip clean and well tinned.
4. Thoroughly clean the surfaces to be soldered. Use a small wire-bristle (0.5 inch, or 1.25 cm) brush with a metal handle. Do not use freon-propelled spray-on cleaners.
5. Use the following unsoldering technique:
  - a. Allow the soldering iron tip to reach normal temperature (260°C to 315°C).
  - b. Heat the component lead until the solder melts.
  - c. Quickly draw away the melted solder with an anti-static, suction-type solder removal device or with solder braid.

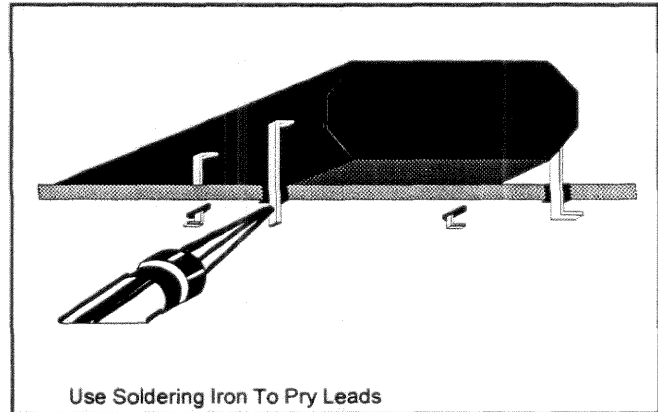
**CAUTION:** Work quickly to avoid overheating the circuit board printed foil.
6. Use the following soldering technique:
  - a. Allow the soldering iron tip to reach normal temperature (260°C to 315°C).

b. First, hold the soldering iron tip and solder strand against the component lead until the solder melts.

c. Quickly move the soldering iron tip to the junction of the component lead and the printed circuit foil, and hold it there only until the solder flows onto and around both the component lead and the foil.

**CAUTION:** Work quickly to avoid overheating the circuit board printed foil or components.

d. Closely inspect the solder area and remove any excess or splashed solder with a small wire-bristle brush.





**BARCO Projection Systems**

**SECTION B**

**service sheet**

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BARCO PROJECTION SYSTEMS

**BARCO**

**BARCO** **GRAPHICS**  
1208

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GENERAL INFORMATION



# BARCOGRAPHICS 1200 Series

## Ultra High-Resolution

## Digitally Controlled Projectors

### **BARCOGRAPHICS 1208**

### **BARCOGRAPHICS 1209**

- Display compatibility with all sources from VHS video to 2,500 by 2,000 pixel workstations
- Ultra high resolution through matched precision optics, electromagnetic focus CRTs and state-of-the-art electronics
- Flexible installation possibilities, even under difficult projection angles





## Precision graphics projection systems



**The BARCOGRAPHICS 1200 Series projectors are ultra high-resolution graphics projectors designed to provide superlative performance, not only by today's standards, but by tomorrow's as well. Two models are available: BARCOGRAPHICS 1208, with 8" electromagnetic focus CRTs and BARCOGRAPHICS 1209, equipped with 9" electromagnetic focus CRTs.**

### **WIDE COMPATIBILITY**

With an eye towards the future, the BARCOGRAPHICS 1200 Series projectors break new ground with their unequalled horizontal scan frequency range (15-135 kHz), ultra-wide bandwidth RGB amplifiers (120 MHz) and universal connection possibilities, making them compatible with virtually all existing graphics standards of today as well as those of tomorrow.

### **SECURE DESIGN**

The BARCOGRAPHICS 1200 Series projectors have been designed for extremely low RFI/EMI emissions for demanding military and industrial applications where unwanted interference could compromise critical communications lines.

### **ULTRA HIGH RESOLUTION APPLICATIONS**

Their unrivaled performance and nearly limitless display compatibility uniquely position the BARCOGRAPHICS 1208 and 1209 as the ideal

▲ *The unprecedented performance and exceptional display compatibility make the BARCOGRAPHICS 1200 Series projectors the perfect solutions for large screen simulation display systems. (Photo: Courtesy of Star Center, Dania, Florida).*

solutions for demanding applications such as: CAD/CAE imaging, graphics animation, industrial design, environment mapping, simulation, process control and traffic management centres, as well as military command control centres (C<sup>3</sup>I) and other applications where image quality can not be compromised.

# Ultra high-precision optical system Unequalled picture sharpness

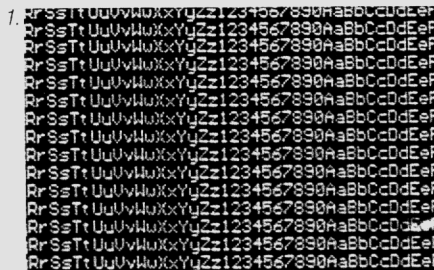
The BARCOGRAPHICS 1208 and 1209 incorporate an ultra-high resolution, state-of-the-art optical system, offering unmatched image quality with outstanding visual fidelity.

► Due to their wide signal bandwidth and high optical resolution, the BARCOGRAPHICS 1200 Series projectors are ideally suited for large screen process control and surveillance applications.



► The electrostatic focus system of conventional projectors offers good resolution only at moderate contrast levels.

- 1) 50 % contrast
- 2) 100 % contrast



► BARCO's electromagnetic focus system guarantees projected images that are razor sharp, even at maximum contrast levels.

- 3) 50 % contrast
- 4) 100 % contrast



## BARCOGRAPHICS 1208

- The BARCOGRAPHICS 1208 utilises high brightness, high definition liquid cooled 8" electromagnetic focus CRTs with digitally controlled dynamic astigmatism.
- High definition, fully colour corrected, F1.06 hybrid lenses, with centre-edge focus adjustment and adjustable Scheimpflug optical correction, provide razor sharp images on screens up to 6 m (20 ft.) wide.

## BARCOGRAPHICS 1209

- The BARCOGRAPHICS 1209 is equipped with ultra-high definition, liquid cooled 9" CRTs with an advanced electromagnetic focus system and dynamic astigmatism, which guarantee the projection of razor sharp images, even at maximum contrast levels.
- Super high definition, fully colour corrected, liquid coupled F1.15 lenses provide outstanding image contrast. Several types of lenses are available, optimised for particular screen sizes.



# Unequalled user-friendliness Easy set-up and control

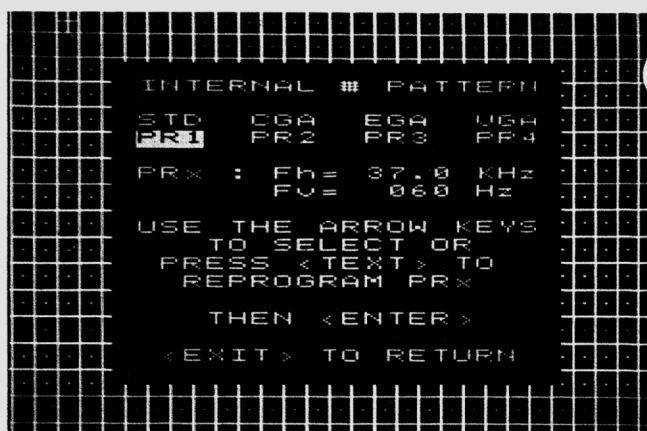
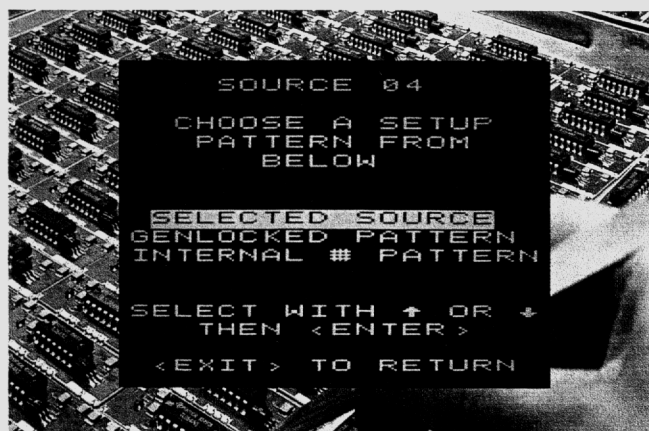
**The BARCOGRAPHICS 1200 Series projectors are based on BARCO's advanced digital architecture. This offers not only outstanding specifications, but also facilitates the use and installation of the projectors.**

## LOGICAL ON-SCREEN MENUS

For simple geometry and convergence adjustments, the BARCOGRAPHICS 1200 Series projectors combine a user-friendly backlit remote control unit with logical on-screen menus.

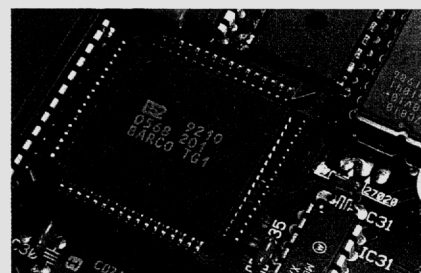
## GUIDED ADJUSTMENT PROGRAM

The projector offers a guided adjustment program which directs the user through the complete alignment procedure in the most efficient way, and a random adjustment mode which can be used for immediate access to one specific parameter.



▲ Convenient, well organised on-screen menus (available in several languages), combined with the user-friendly infrared remote control unit, simplify all adjustments of the projector, even for first-time and non-skilled users.

► A convenient backlit infrared remote control unit facilitates control and adjustment of the projector.



▲ The BARCOGRAPHICS 1200 Series projectors utilise micro-processor control and BARCO ASICs (Application Specific Integrated Circuits), which simplify adjustment and guarantee a consistent superb picture quality.

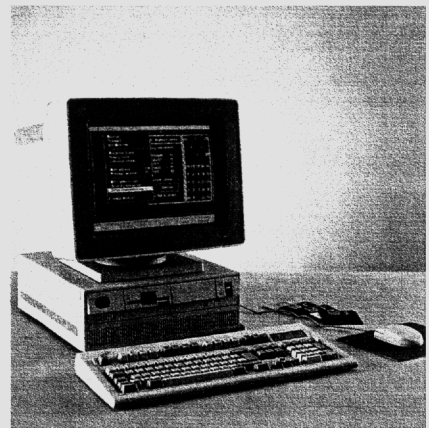
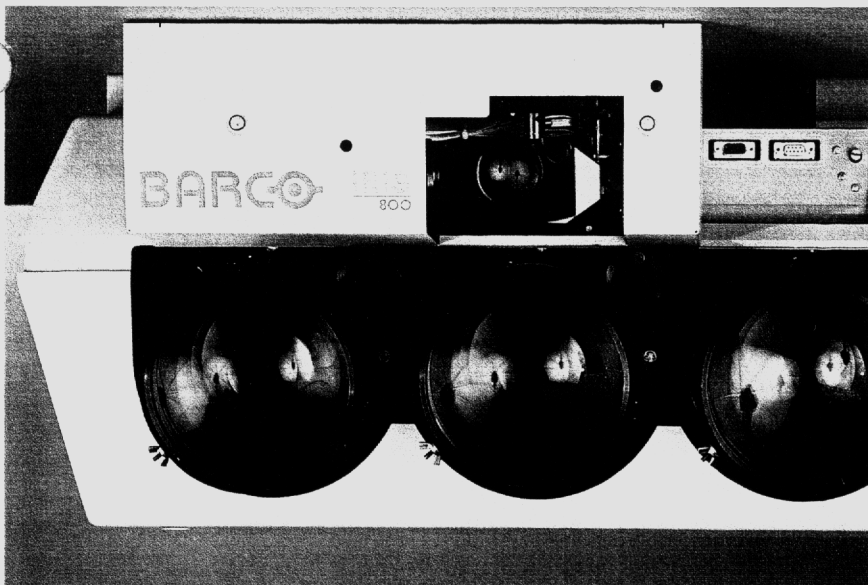
## INTERNAL PATTERN GENERATORS

Image adjustments may be accomplished 'on source', or through the use of an internally generated pattern, genlocked on the connected source or to a pre-programmed frequency, to allow for adjustment of the projector in the absence of an external source.

## IRIS 800 AUTOMATIC CONVERGENCE SYSTEM

The IRIS 800 is an optional user-friendly, automatic convergence system designed to automatically align the projected image on the screen faster and more accurately than ever before possible through the conventional 'manual' convergence process.

*The user-friendly concept of BARCO's 'Projector Control' software, with mouse-driven, pull-down menus and dialogue boxes, facilitates the adjustment of the projectors connected to the central computer.*



◀ *The IRIS 800 has a light-weight, rugged enclosure, and can be easily installed to the front of the projector.*

## 32 MEMORY BANKS

All image adjustments are individually set for each source and stored in one of the projector's 32 frequency related memory banks. Once image parameters are designated for each source, the projector will automatically select the correct settings for the source in use, thus providing consistently perfect image quality.

## LDI: LINEAR DIGITAL INTERPOLATION

Once parameters are selected for at least two sources, the LDI (Linear Digital Interpolation) feature of the projector will automatically calculate the image parameters of all additional sources in order to approximate the new source settings. The LDI feature creates these new settings through the use of frequency dependent weighting algorithms thus eliminating the need for time consuming readjustments.

The IRIS 800 incorporates a unique hardware/software system, which utilises a high resolution CCD camera in conjunction with an ultra light, high-quality front-surface mirror assembly. Together with built-in digital enhancement software this guarantees both a quick and precise alignment of the three projected images on the screen, even under high ambient lighting conditions.

## PROJECTOR SUPPORT SOFTWARE PACKAGE

Thanks to BARCO's optional proprietary projector support software package, it is possible to adjust brightness, contrast, hue, colour, sharpness and geometry and convergence settings for up to 256 projectors from one central computer. It is even possible to store image settings for each source for future use on a computer hard disk or diskette. The software is available for IBM (or compatible) computers equipped with DOS operating system.

## Optional peripheral devices

**BARCO** offers a wide range of peripheral devices and options, which further enhance the flexibility and versatility of the **BARCOGRAPHICS 1208** and **1209**.



### RCVDS 05 SWITCHER

The Remote Controlled Video and Data Source Selector RCVDS 05 is a high-bandwidth (>200 MHz) source selector capable of selecting a wide range of video, data and graphics sources to one or more projectors and to adjust all picture settings via the projector's infrared remote control.

For expanded use of the projector, it is possible to set several RCVDS 05 source selectors in series, so that up to 90 different sources may be connected simultaneously to a single projector.

### REMOTE INFRARED RECEIVER

An additional infrared remote receiver facilitates the use of the projector's infrared remote control in difficult installations.

### COMMUNICATION CABLES

Additional RS232/422 cables (D9/D9), with a length of 5 m (16'), 15 m (50') or 30 m (100') are available.

### EXECUTIVE REMOTE CONTROL

An executive infrared remote control is available, to accommodate source selection and adjustment of user settings without allowing changes to the projector's geometry and convergence settings.

▲ The RCVDS 05 allows for the connection of a wide range of sources to one or more projectors, and the adjustment of all picture settings via a convenient infrared remote control.

### SUSPENSION SYSTEM

BARCO's suspension system allows the BARCOGRAPHICS 1208 and 1209 projector to be mounted from the ceiling, adapting the projector perfectly to the local mounting requirements.

### FLIGHT CASE

Sturdy, easily transportable flight cases, for the packing of the BARCOGRAPHICS 1208 or BARCOGRAPHICS 1209.

### SPECIAL OPTIONS

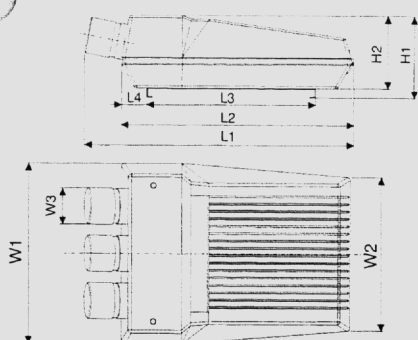
BARCO offers a series of special options for non-standard applications (multi-screen applications, non-standard projection angles,...): contrast modulation kit, soft-edge matching kit, orbiting kit, convergence on green, orbiting kit, automatic colour temperature alignment system...

For these kind of applications, a team of specially trained application engineers continuously develop custom-made solutions and configurations on sophisticated CAD systems.

# Technical specifications

► The BARCOGRAPHICS 1209 can be equipped with different lenses, optimised for particular screen sizes.

LENS TYPES BG1209	HD120	HD180	HD300
<b>F NUMBER</b>	F1.15	F1.15	F1.15
<b>SCREEN WIDTH</b>			
meters	2-3	3-4.2	2-8.8
feet	6.6-10	10-14	6.6-29
<b>OPTICAL RESOLUTION</b>	12 lp/mm	12 lp/mm	10 lp/mm
<b>STANDARD/OPTIONAL</b>	Standard	Optional	Optional



Dimensions		mm	inch
L1	BG1208	1101	43.3
	BG1209	1174	46.2
L2		1014	39.9
L3		735	28.9
L4		110	4.3
H1		355	13.9
H2		315	12.4
W1		782	30.8
W2		665	26.2
W3		160	6.3

## BARCOGRAPHICS 1208

## BARCOGRAPHICS 1209

### LIGHT OUTPUT

At 10 % peak white:  
At 20 % peak white:  
ANSI <sup>(1)</sup>

1000 lumen  
900 lumen  
210 lumen

1050 lumen  
1000 lumen  
225 lumen

### CRTs

High brightness, high definition liquid cooled  
8" CRTs with electromagnetic focus

High brightness, high definition liquid cooled  
9" CRTs with electromagnetic focus

### LENSES

High definition, fully colour corrected F1.06 hybrid lenses, with centre+edge focus adjustment and adjustable Scheimpflug optical correction

Super high definition, fully colour corrected F1.15 lenses, optimised for particular screen widths (see table)

### OPTIONAL LENSES

-

see table

### OPTICAL RESOLUTION

10 lp/mm at 50 % MTF throughout the field

see table

### CONTRAST RATIO

35:1

50:1

### SCREEN SIZE

Min.: 1.4 x 1.05 m (4' x 3')  
Max.: 6.0 x 4.5 m (20' x 15')

see table

### SCAN FREQUENCIES

Horizontal: 15-135 kHz autolock  
Vertical: 37-140 Hz autolock

### MINIMAL RETRACE TIME

Horizontal: < 2.5 µs in range 15 - 90 kHz  
< 1.25 µs in range 64 - 135 kHz  
(switching point adjustable between 64 and 94 kHz)  
Vertical: < 200 µs

### MAX. COMPATIBLE DISPLAY RESOLUTION

2,500 x 2,000

### HORIZONTAL LINEARITY

< 1.5 % distortion throughout the full horizontal frequency range

### RGB BANDWIDTH

120 MHz [-3 dB]

### REMOTE CONTROL

A user-friendly backlit infrared remote control of:  
- source switching  
- user settings per source (sharpness, hue, colour, brightness, contrast)  
- geometry per source (password protectable)  
- convergence per source (password protectable)  
An optional executive remote control unit is available for control of source switching and user settings per source

*(1) Measurement method conforms to ANSI IT 7.215 standard.*

### INPUTS

- RGB analog (BNC-connectors), sync on green or separate sync
- RGB analog input on D9-connector (optional D9-BNC adapter is available)
- Video (PAL, SECAM, NTSC 3.58, NTSC 4.43), loop through (2xBNC) with 75 Ohm termination switch
- 4-pin S-Video input, loop through with 75 Ohm termination switch

### SPECIAL FEATURES

- 32 frequency-related memory banks
- L.D.I. (Linear Digital Interpolation)
- Effective on-screen display: installation screens, help screens, barscale display of user settings, on-screen display of source frequencies
- Automatic storing of all adjustments
- Ability to set parameters to midposition
- Colour temperature adjustment (3200 K, 6500 K, 9300 K, or custom)
- Special sharpness control: improves picture quality for high-frequency sources
- Text generators for other languages are available
- 100 % modular construction: allows easy access to all controls and facilitates quick servicing
- A built-in Scheimpflug optical correction (BG1208 only), with stepless adjustments for both horizontal and vertical axis guarantees optimal optical focus from left to right and top to bottom for projection under non-standard angles

### WEIGHT

#### BARCOGRAPHICS 1208:

Net weight:	75 kg -	165 lbs.
Shipping weight:	105 kg -	231 lbs.

#### BARCOGRAPHICS 1209:

Net weight:	82 kg -	181 lbs.
Shipping weight:	112 kg -	247 lbs.

### POWER CONSUMPTION

Minimum: 400 Watt  
Maximum: 590 Watt  
Max. heat dissipation: approx. 2000 BTU/hr

### SAFETY REGULATIONS

The BARCOGRAPHICS 1208 and 1209 comply with UL 1950 and IEC 950 standards.

### ELECTROMAGNETIC INTERFERENCE

The BARCOGRAPHICS 1208 and 1209 comply with FCC part 15 Class B requirements.

### RADIATION REGULATIONS

The BARCOGRAPHICS 1208 and 1209 comply with DHHS radiation emission standards 21 CFR Subchapter J.

### ORDER INFORMATION

#### BARCOGRAPHICS 1208:

230 V:	90 00891
120 V:	90 00898

#### BARCOGRAPHICS 1209:

230 V:	90 00970
120 V:	90 00976

#### RCVDS 05:

230 V:	98 27880
120 V:	98 27889

Projector Control software (DOS):	98 27530
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IRIS 800:	98 27695
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Executive remote control:	98 27970
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Remote infrared receiver:	98 27515
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#### Communication cables:

5 m (16 ft.):	98 27770
15 m (50 ft.):	98 27560
30 m (100 ft.):	98 27570

D9-BNC cable adapter:	98 27840
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Suspension system:	98 27341
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Flight case:	98 27650
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#### Special add-in boards:

- Contrast modulation kit:	98 27800
- Soft-edge matching & contrast modulation kit:	98 27810
- Orbiting kit:	98 27781
- Convergence on green:	98 28080

### Contact

**BARCO Projection Systems**  
**Head Office**  
Noordlaan 5  
8520 Kuurne, Belgium  
Tel.: +32/56/36 82 11  
Fax: +32/56/35 16 51

**BARCO**

*The information and data given are typical for the equipment described. However any individual item is subject to change without any notice.*

*Photo on front page: High-resolution 5 megapixel image rendered by a CX-2500 workstation. Photo Courtesy of BARCO Chromatics.*

*Ref. no. 59 90991 -Photographs: P. Labarque/Studio DSP- Printed in Belgium*





BARCO Projection Systems

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**SECTION C**

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**service sheet**

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BARCO PROJECTION SYSTEMS

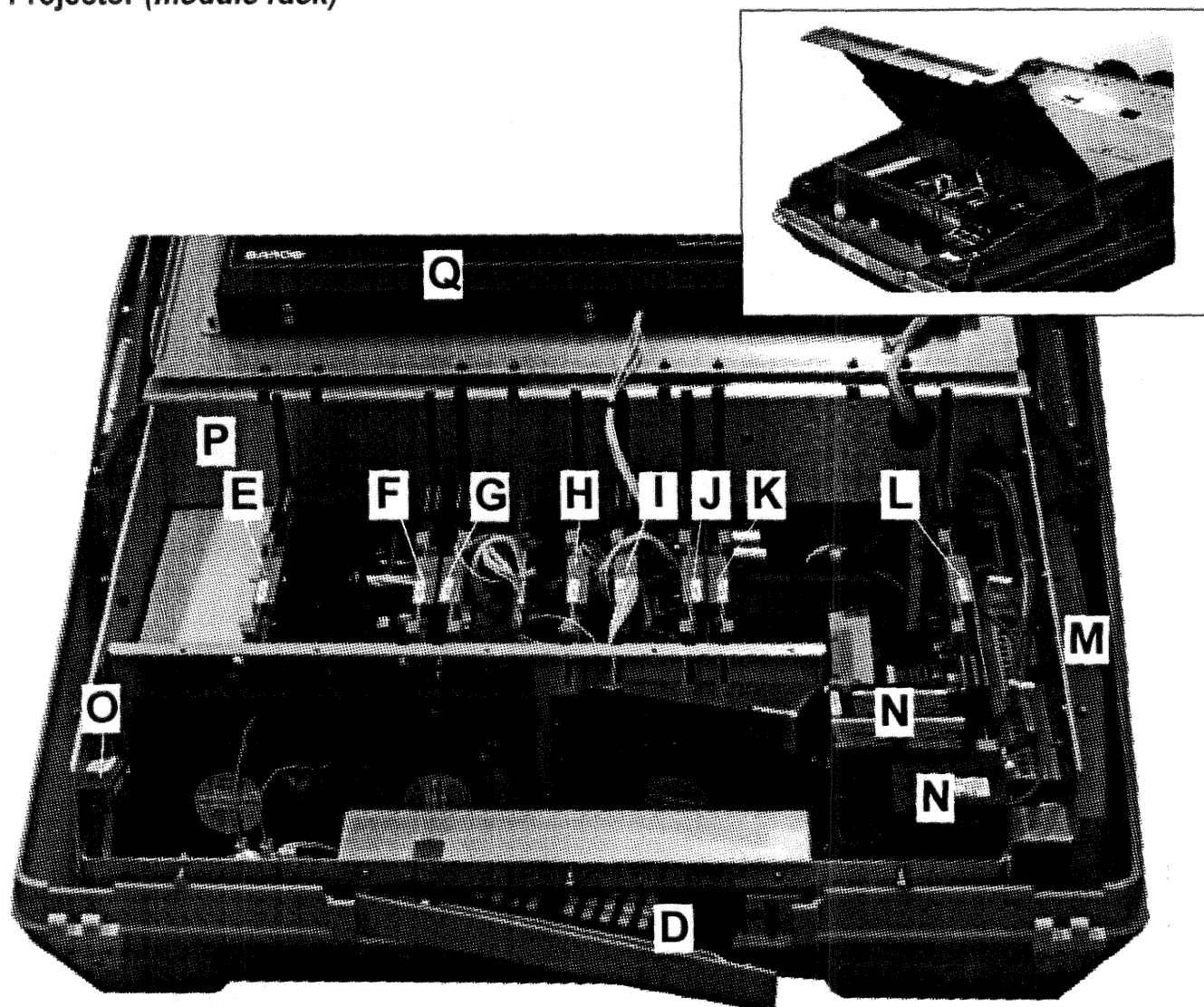
**BARCO**

**BARCO** GRAPHICS  
1208

90 00891 (230V AC)

90 00898 (120V AC)

PARTS LIST ON BOARD LEVEL  
PARTS LIST ON COMPONENT LEVEL

**Projector (module rack)**

**SHEET REF.**

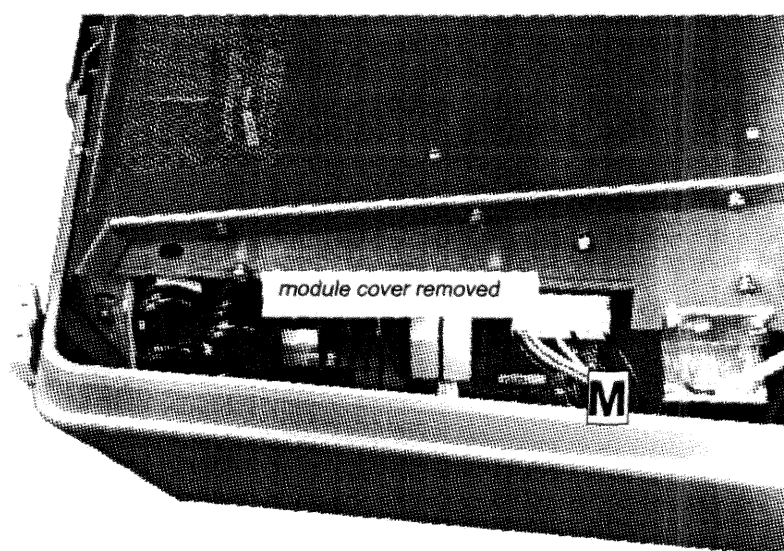
<b>D</b>	79 1666	Internal control unit
<b>E</b>	76 2271	MAG FOCUS+SHIFT
	76 2271S	MAG FOCUS+SHIFT VHPAR
<b>F</b>	76 21085	HOR DEFLECTION
<b>G</b>	76 21127	SYNC+VERT DEFLECTION
	76 21127S	SYNC+VERT DEFLECTION I <sup>2</sup> C
<b>H</b>	76 21055	RGB INPUT AUT SYNC TRACK
<b>I</b>	76 17481	INPUT RGB+SWITCHING
<b>J</b>	76 21175	RGB DRIVER+QUAD DECODER
	76 21175S	RGB DRIVER+QUAD DECODER

**SHEET REF.**

<b>K</b>	76 2106	SM POWER SUPPLY+STDBY
	76 2106S	SM POWER SUPPLY+STDBY
<b>L</b>	76 2120	G2+DIAGN
	76 2120S	G2+DIAGN
<b>M</b>	76 2284	POWER INPUT
<b>N</b>	76 17427	EHT GENERATOR
<b>N</b>	76 1743	EHT QUADRUPLER
<b>O</b>	76 1781	IR RECEIVER (Rear)
<b>P</b>	76 2290	Frame PJ 51 (G1208)
<b>Q</b>	76 2166	CONTROLLER

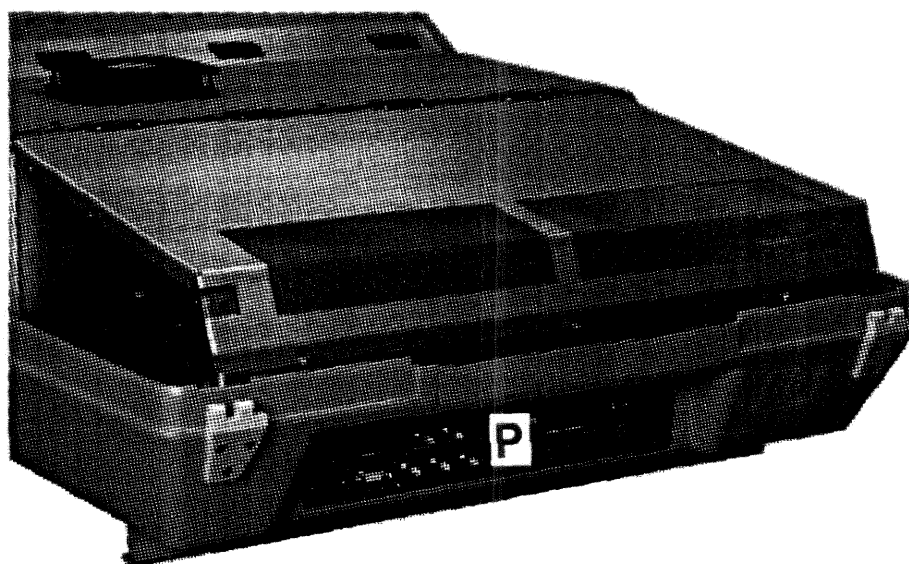
**Projector (Power input-module rack)**

**Projector (Power input module)**



**Projector (rear view)**

Input panel forms part of the  
module rack [P]



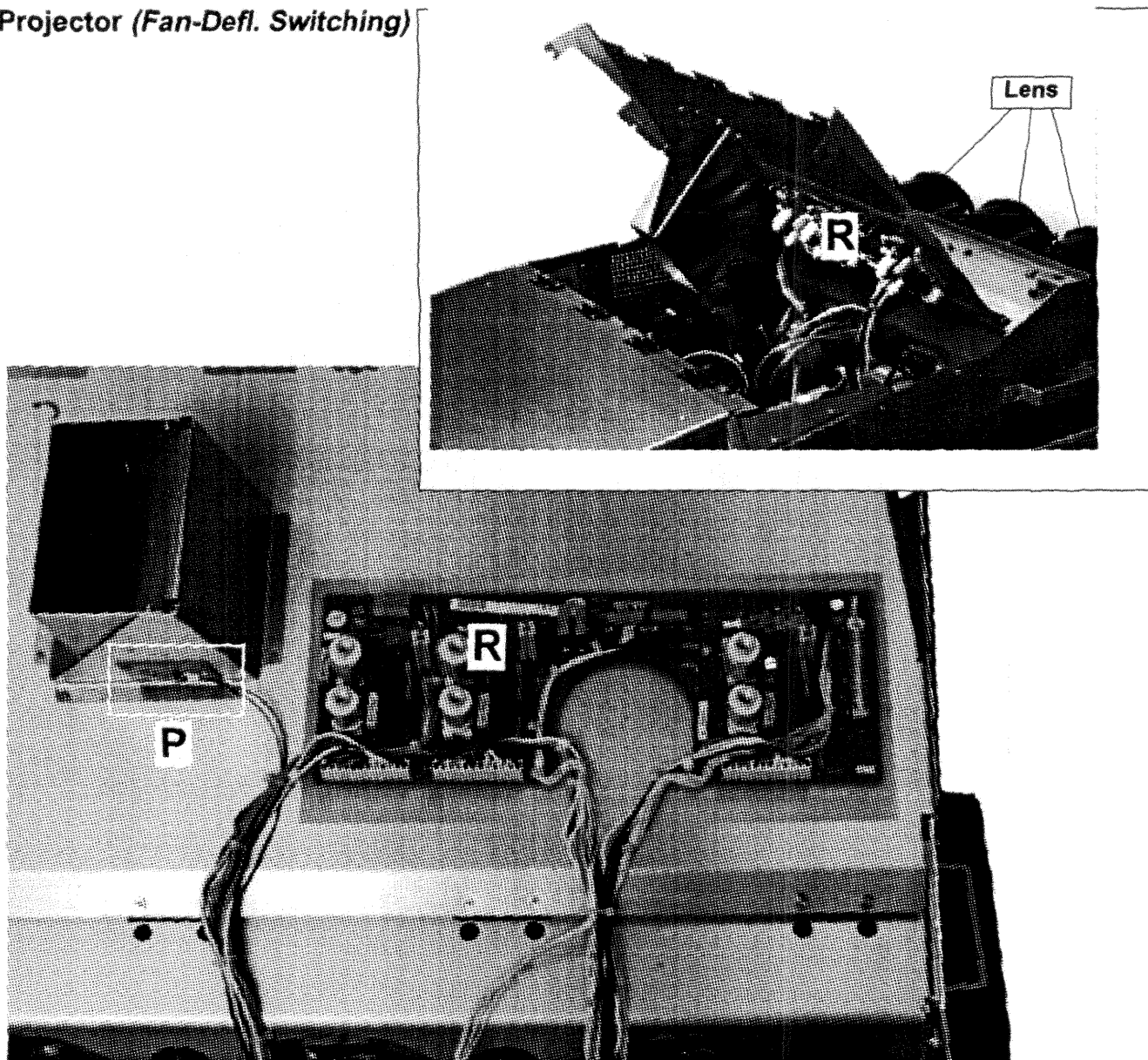
**SHEET REF.**

**[M] 76 2284 Power Input**

**SHEET REF.**

**[P] 76 2290 Input panel (part of the module rack)**

Projector (Fan-Defl. Switching)



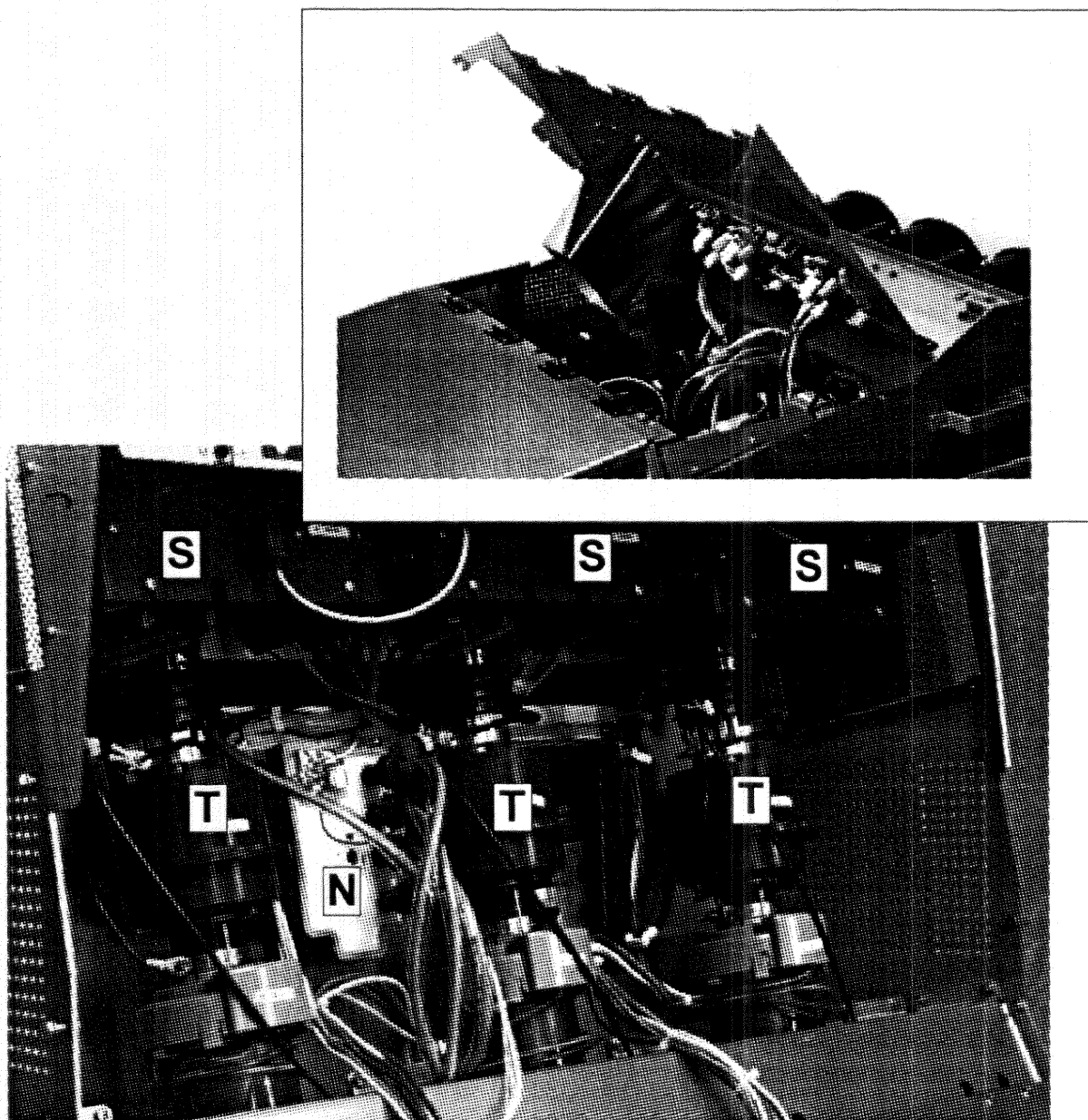
SHEET REF.

- ☒ 76 2457 DEFLECTION SWITCHING  
☒ 76 2286 Fan connector convergence

SHEET REF.

- ☐ 13 0938 LENS HD8

Projector (CRT units)



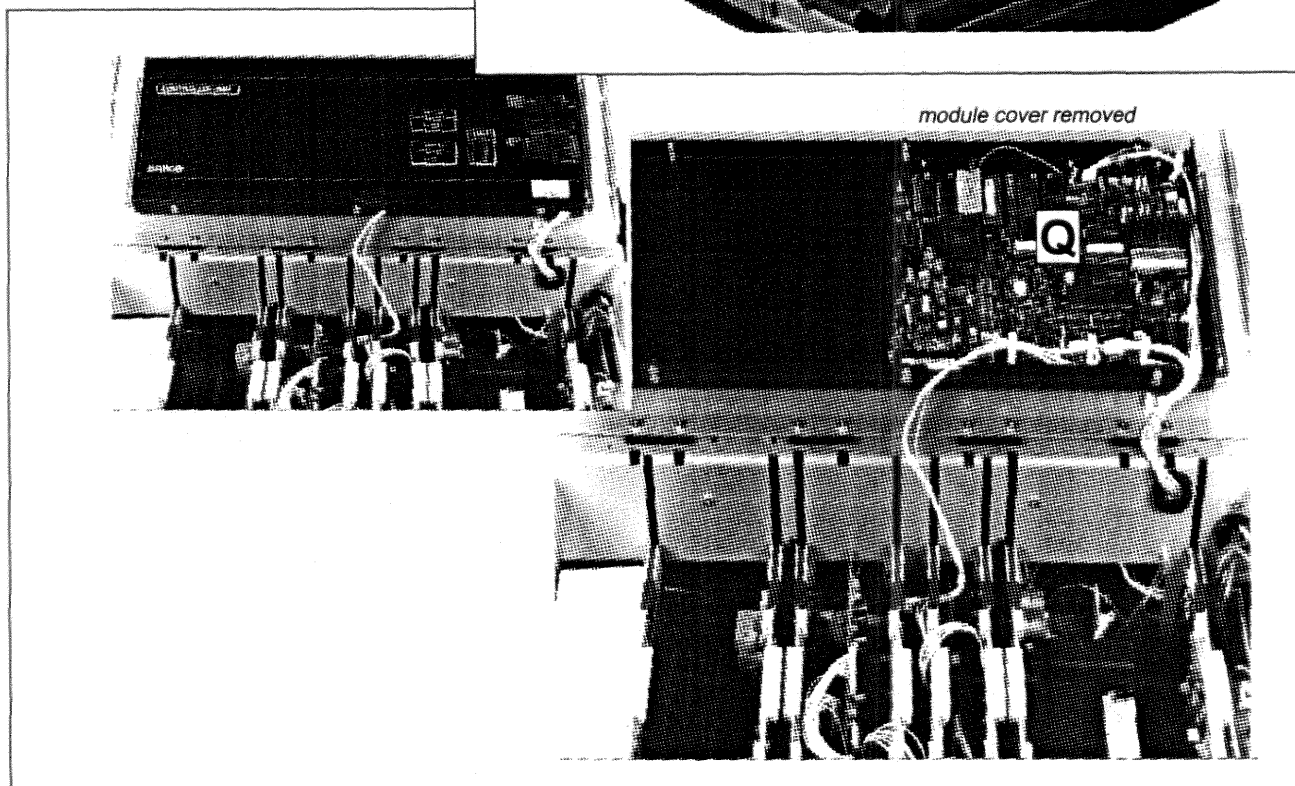
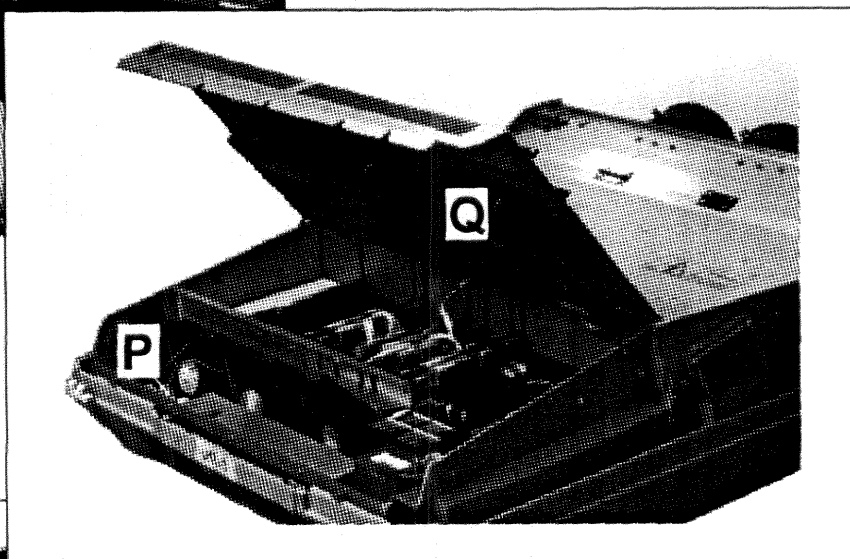
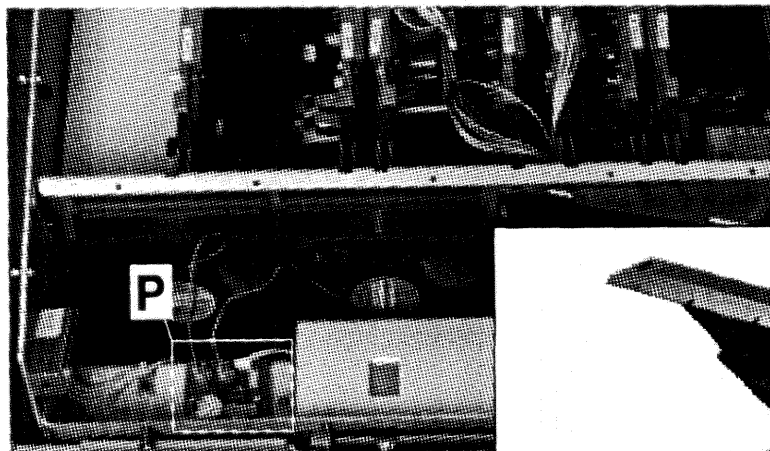
SHEET REF.

- S** 76 2292 R-G-B OUT
- N** 76 17447 EHT SPLITTER

SHEET REF.

- T** 76 24412 Unit CRT (M180) RED
- 76 24415 Unit CRT (M180) GREEN
- 76 24416 Unit CRT (M180) BLUE

**Projector (Controller module-Fan)**



**SHEET REF.**

**Q** 76 2166 Controller

**SHEET REF.**

**P** 76 2285 Fan connector frame

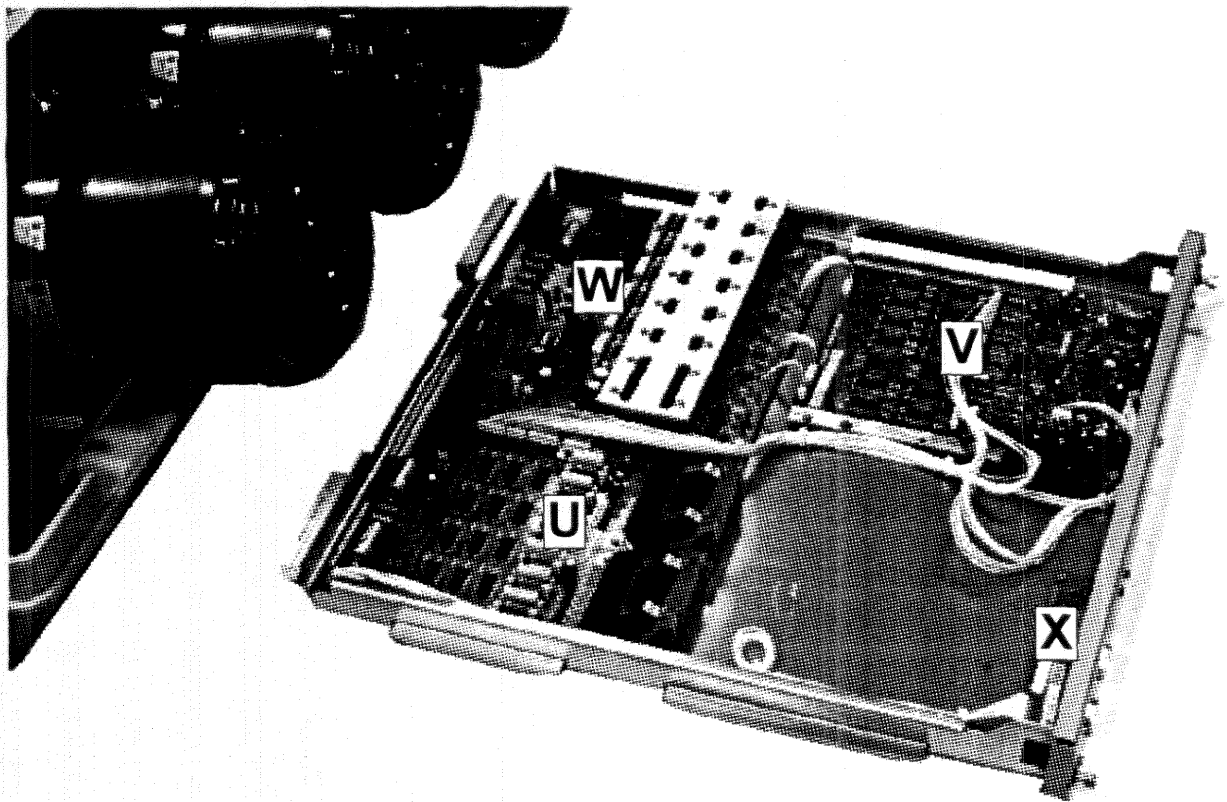
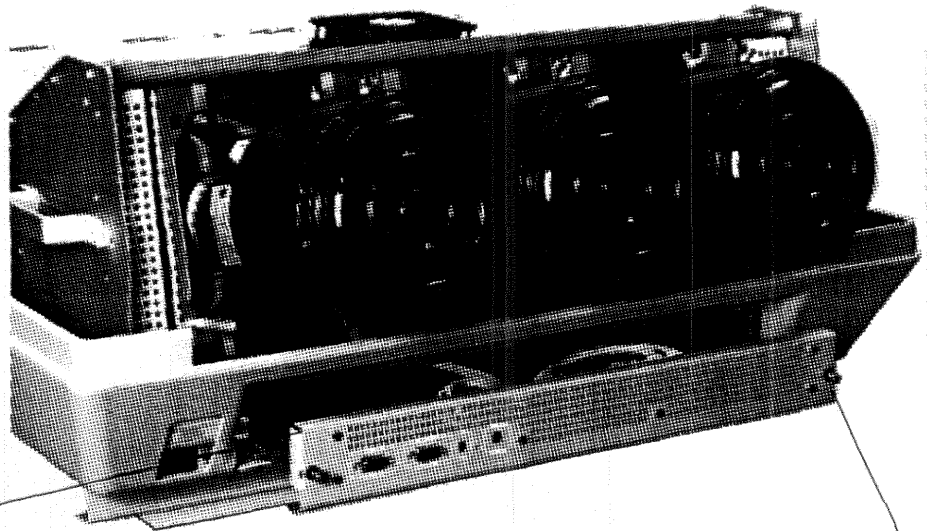
Parts list on module level

Date : 15/09/94



**Projector (Convergence-Dyn. Astigmatism)**

**Projector (front view)**



**SHEET REF.**

- U** 76 2514    Dynamic Astigmatism
- V** 76 2518    Convergence Driver

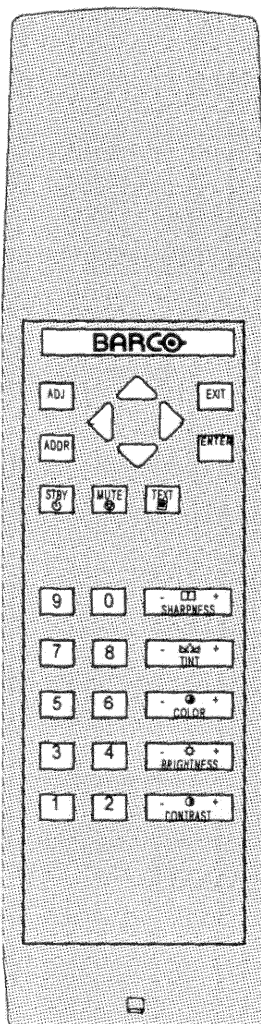
**SHEET REF.**

- W** 76 2519    Convergence Output
- X** 76 2510    RS232

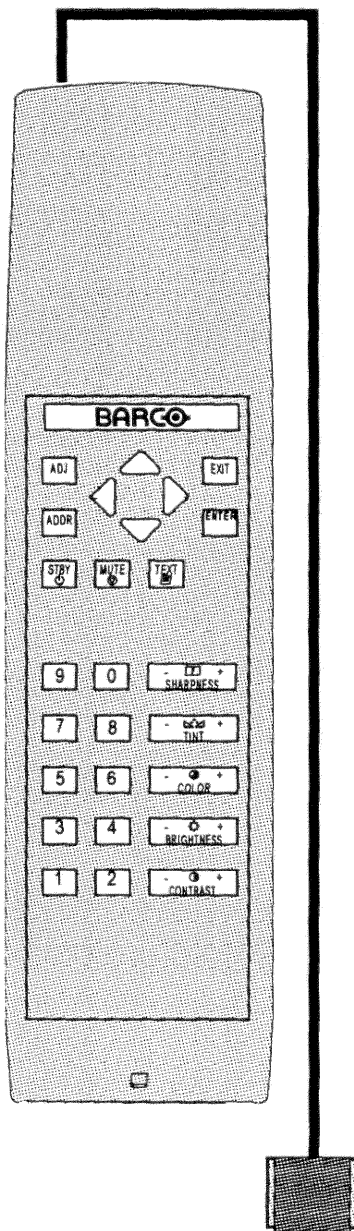


**Projector (control modules)**

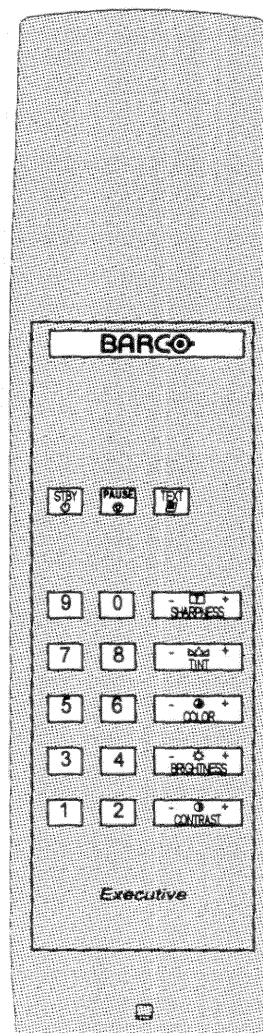
Infra Red Remote control  
79 1664



Internal Control unit  
79 1666



Executive Remote control  
79 1665



SHEET REF.

**D** 79 1666 Internal control unit

SHEET REF.

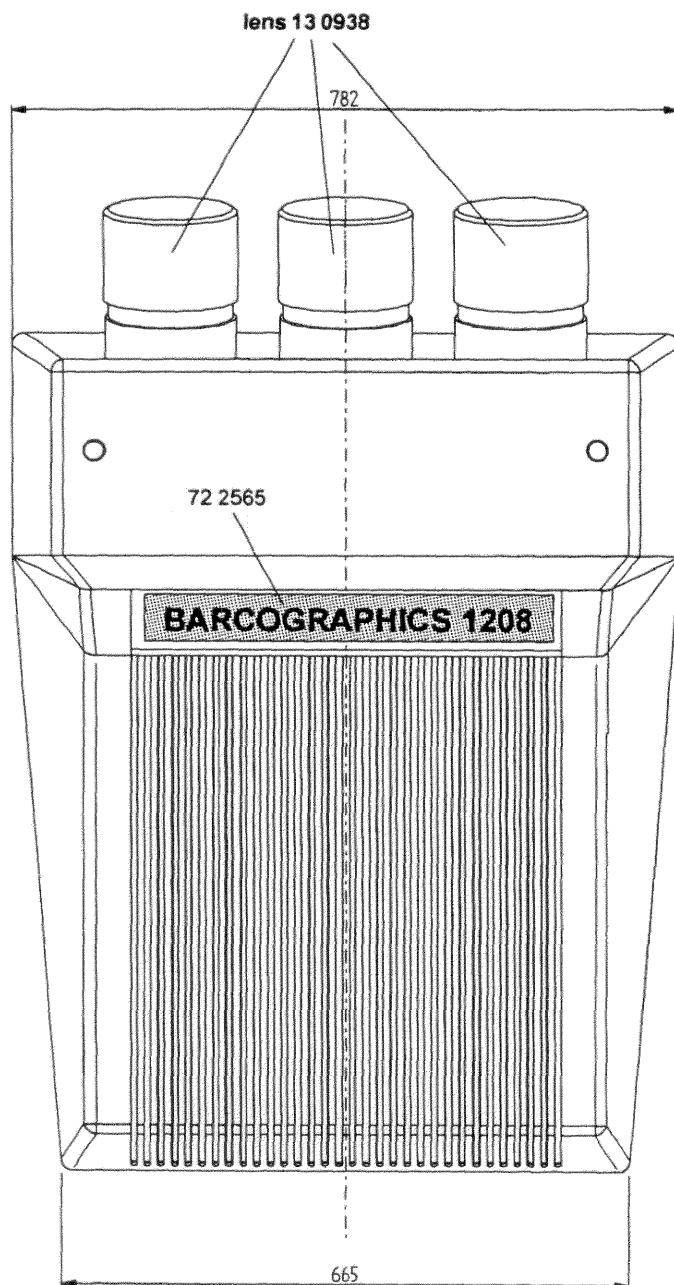
**D** 79 1664 IR Remote control

**Spare parts BARCOGRAPHICS1208**

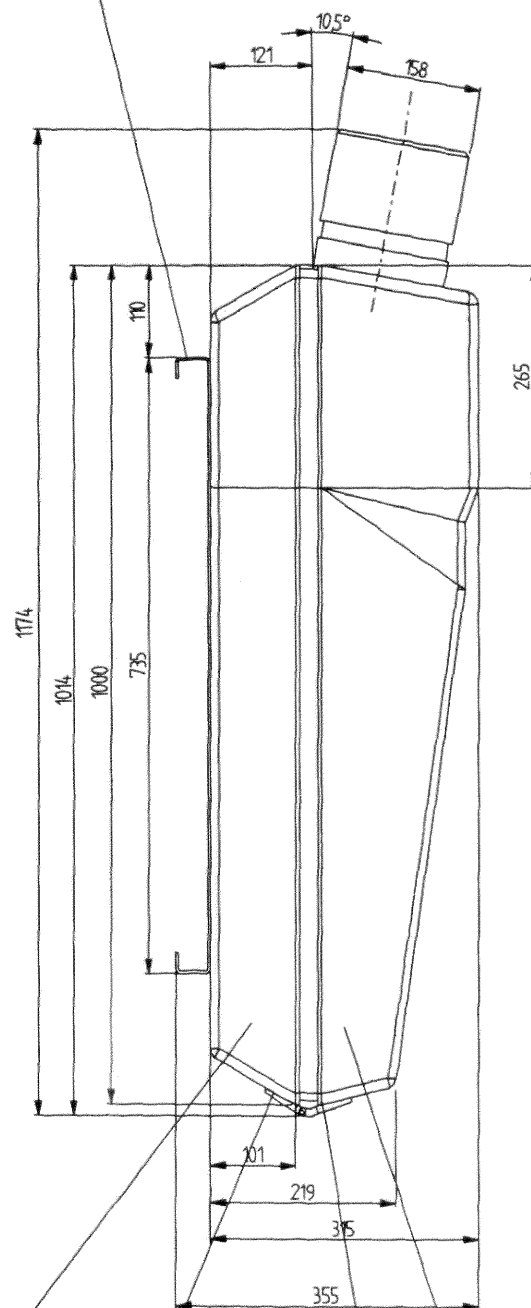
ART.NO	DESCRIPTION	QUANTITY	ART.NO	DESCRIPTION	QUANTITY
R130921	CRT M180 180DVB22 R	1	R3485094	CD CT FTFT P 9 480	1
R130922	CRT M180 180DVB22 G	1	R3495085	CD CT FTFT P 8 450	1
R130923	CRT M180 180DVB22 B	1			
R130938	LENS HD8	3	R356114	HDL CARRY AL 130MM WHT	1
R132080	CD HV HOBSON1 CRT 700	1	R356114	HDL CARRY AL 130MM WHT	1
R132081	CD HV HOBSON1 CRT 560	1			
R132081	CD HV HOBSON1 CRT 560	1			
R305915	CH MNS 2X 1.8 MH 10APMF	1	R361924	SCR D965 M 4 X 10 PS Z	1
R3066461	YOKE DEF DAV7667	1	R361924	SCR D965 M 4 X 10 PS Z	4
R3066461	YOKE DEF DAV7667	1	R3619265	SCR D965 M 4 X 16 PS B	6
R3066461	YOKE DEF DAV7667	1	R3619265	SCR D965 M 4 X 16 PS B	6
R306661	YOKE ACC MAGN 2/4P SHSP	1	R3621219	SCR D7985 M 3 X 6 PIC	5
R306661	YOKE ACC MAGN 2/4P SHSP	1	R3621229	SCR D7985 M 3 X 8 PIC	2
R306661	YOKE ACC MAGN 2/4P SHSP	1	R3621229	SCR D7985 M 3 X 8 PIC	2
R306664	YOKE FOC KF3203	1	R3621229	SCR D7985 M 3 X 8 PIC	4
R306664	YOKE FOC KF3203	1	R3621229	SCR D7985 M 3 X 8 PIC	2
R306664	YOKE FOC KF3203	1	R3621255	SCR D7985 M 3 X 16 PS B	2
			R362129	SCR D7985 M 3 X 25 PS Z	1
			R3623285	SCR D933 M 4 X 16 XSCZ	3
			R3623438	SCR D933 M 6 X 15 XI	3
			R3623438	SCR D933 M 6 X 15 XI	3
			R3623772	SCR D933 M 8 X 30 XS B	4
			R3626696	SCR D921 M 3 X 8 SI	2
			R3626696	SCR D921 M 3 X 8 SI	2
			R3626696	SCR D921 M 3 X 8 SI	3
			R3626696	SCR D921 M 3 X 8 SI	32
			R3626696	SCR D921 M 3 X 8 SI	4
			R3626696	SCR D921 M 3 X 8 SI	16
			R3626696	SCR D921 M 3 X 8 SI	2
			R3631059	SCR D933 M 3 X 8 XIC	2
			R3631059	SCR D933 M 3 X 8 XIC	2
			R3631059	SCR D933 M 3 X 8 XIC	2
			R3631059	SCR D933 M 3 X 8 XIC	29
			R3631079	SCR D933 M 3 X 12 XIC	3
			R3631239	SCR D933 M 4 X 10 XIC	2
			R3631239	SCR D933 M 4 X 10 XIC	12
			R3631239	SCR D933 M 4 X 10 XIC	24
			R3631239	SCR D933 M 4 X 10 XIC	1
			R3631239	SCR D933 M 4 X 10 XIC	6
			R3631239	SCR D933 M 4 X 10 XIC	2
			R3631239	SCR D933 M 4 X 10 XIC	6
			R3631239	SCR D933 M 4 X 10 XIC	4
			R3631239	SCR D933 M 4 X 10 XIC	6
			R3631249	SCR D933 M 4 X 12 XIC	2
			R3631469	SCR D933 M 5 X 16 XIC	9
			R3631469	SCR D933 M 5 X 16 XIC	6
			R3631479	SCR D933 M 5 X 20 XIC	12
			R366102	NUT D934 M 3 SZ	2
			R366103	NUT D934 M 4 SZ	4
			R366103	NUT D934 M 4 SZ	4
			R366103	NUT D934 M 4 SZ	2
			R3661036	NUT D934 M 4 I	6
			R3661575	NUT TWOLOK M 5 SCB	4
			R3661575	NUT TWOLOK M 5 SCB	8
			R3661766	NUT D439 M 6 I	2
			R3661766	NUT D439 M 6 I	2
			R3661766	NUT D439 M 6 I	2
			R366245	NUT D985 M 8 SZ	4
			R367080	FSTNR 8MM SANYO	3
			R367092	FSTNR 9MM STUD	2
			R367093	FSTNR 9MM RVT PLT	2
			R367094	FSTNR 9MM RTNR	2
			R367322	CIRCLIPS D6799 D 4 S	2
			R367355	WSHR D2093 12.5X6.2X.7	4
			R367355	WSHR D2093 12.5X6.2X.7	4
			R367355	WSHR D2093 12.5X6.2X.7	4
R3420004	CD RECRNG 1015AWG18BK 100	1			
R3420004	CD RECRNG 1015AWG18BK 100	1			
R3420004	CD RECRNG 1015AWG18BK 100	1			
R34200050	CD RNCRNG 1015AWG18BK 250	1			
R34200050	CD RNCRNG 1015AWG18BK 250	1			
R34200050	CD RNCRNG 1015AWG18BK 250	1			
R347965	FSTNR FAN	12			
R347965	FSTNR FAN	4			
R347968	CBL ACC SADDLE LWS 3.2	3			
R347968	CBL ACC SADDLE LWS 3.2	4			
R348003	GRMT T1.5 D 9.5	1			
R348005	CBL ACC TIE C D 3.5/6	5			
R348019	CBL ACC TIE B L100 W2.5	1			
R348019	CBL ACC TIE B L100 W2.5	4			
R348019	CBL ACC TIE B L100 W2.5	3			
R348024	CBL ACC SADDLE LWS 1.6	11			
R348085	FSTNR PJ49 NPL	1			
R348313	WU BRAID+GND 350+350	1			
R348313	WU BRAID+GND 350+350	1			
R348313	WU BRAID+GND 350+350	1			
R3485046	CD CT \$FTFT P 4 200	1			
R3485056	CD CT FTFT P 5 520	2			
R3485083	CD CT FTFT P 8 360	1			
R3485086	CD CT FTFT P 8 520	1			
R3485087	CD CT FTFT P 8 600	1			

R3673796	WSHR D125 A 5.3 B	1	R722296	HSG PJ51 CSB BRKT	1
R367382	WSHR D125 B 8.4 SZ	4	R722325	G PCB PJ49	8
R3673823	WSHR D 8.25X22.3 T1.5 S Z	4	R722411	FSTNR PJ53 RGB OUT	3
R367435	RVT POP D2.4 L 9.3 P AA	6	R722533	HSG PJ51 G1200 DN CLR BG	1
R367435	RVT POP D2.4 L 9.3 P AA	14	R722534	HSG PJ51 G1200 UP CLR BG	1
R367435	RVT POP D2.4 L 9.3 P AA	2	R722539	BSHG SNAP D12 / 8	1
R3674391	RVT POP D3.2 L 7.4 P ASW	4	R722544	HSG PJ51 G1200 RC BASE	1
R3674391	RVT POP D3.2 L 7.4 P ASW	4	R722565	NPL PJ51 G1202	1
R3674391	RVT POP D3.2 L 7.4 P ASW	4			
R3674411	RVT POP D3.2 L 9.8 P ASW	6	R732193	P BOX F WD 1206X811 G1200	1
R3674411	RVT POP D3.2 L 9.8 P ASW	4	R732219	P BOX PJ49 1100 PALLET	1
R3674411	RVT POP D3.2 L 9.8 P ASW	2			
R3674411	RVT POP D3.2 L 9.8 P ASW	2	R761740	UN FAN PJ49 G800 L100	3
R3674411	RVT POP D3.2 L 9.8 P ASW	4	R761740	UN FAN PJ49 G800 L100	1
R3674411	RVT POP D3.2 L 9.8 P ASW	6	R7617427	UN EHT PJ49 G800 MK2	1
R3674411	RVT POP D3.2 L 9.8 P ASW	8	R761743	UN EHT PJ49 G800 QDR	1
R3674411	RVT POP D3.2 L 9.8 P ASW	6	R7617447	UN EHT PJ49 G800 SPL	1
R3674411	RVT POP D3.2 L 9.8 P ASW	4	R7617481	UN RGB PJ51 G1200 SW +TLL	2
R3674411	RVT POP D3.2 L 9.8 P ASW	8	R761781	UN RX PJ49 G800 IR RR	1
R3674411	RVT POP D3.2 L 9.8 P ASW	4	R762100D	UN FRM PJ51 CPL G1200	1
R3674411	RVT POP D3.2 L 9.8 P ASW	8	R7621055	UN INP PJ51 RGB A_S_TRACK	1
R3674411	RVT POP D3.2 L 9.8 P ASW	2	R762106	UN SMP PJ51 G1200 CPL	1
R3674411	RVT POP D3.2 L 9.8 P ASW	2	R7621085	UN HOR PJ51 G1200 9MI MK2	1
R3674411	RVT POP D3.2 L 9.8 P ASW	3	R7621127	UN VER+S PJ51 G1200 MK3	1
R3674411	RVT POP D3.2 L 9.8 P ASW	4	R7621175	UN RGB PJ51 G1200 DVRDEC2	1
R3674411	RVT POP D3.2 L 9.8 P ASW	4	R762120	UN G2+CHK PJ51 G1200 CPL	1
R3674411	RVT POP D3.2 L 9.8 P ASW	4	R762166	UN CTRL PJ51 G1202 ASIC	1
R3674411	RVT POP D3.2 L 9.8 P ASW	4	R762271	UN M_F+SH PJ51 G1200 MK2	1
R367491	RVT PLT D8 SZCR	4	R762284	UN MNS PJ51 G1200/2 CPL	1
R367502	WSHR D6798 A 3.2 SZ	3	R762285	UN FAN PJ51 G1200 CNN FRM	1
R367502	WSHR D6798 A 3.2 SZ	1	R762286	UN FAN PJ51 G1200/2 CNN C	1
R367503	WSHR D6798 A 4.3 SZ	4	R762290	UN FRM PJ51 -UN G1200/2	1
R367503	WSHR D6798 A 4.3 SZ	4	R762292	UN O+S PJ51 G1200 M180	3
R367503	WSHR D6798 A 4.3 SZ	3	R762430D	SLV PVC D 7 HV L 470 CLR	1
R367611	WSHR D137 A 5 SSZ	1	R762430D	SLV PVC D 7 HV L 470 CLR	1
R367612	STD KNOB D8 SZB	3	R762432D	SLV PVC D 7 HV L 610 CLR	1
R367613	RTN D 4.5 X 10 SZCR	3	R7624401	UN FRM PJ51CPL G1208 M180	1
			R7624412	UN CRT G1202 180DVB R	1
R395196	GLUE LOCT 270		R7624415	UN CRT G1202 180DVB G	1
R395196	GLUE LOCT 270		R7624416	UN CRT G1202 180DVB B	1
R395196	GLUE LOCT 270		R762457	UN DEF PJ51 G1200 SW W_LG	1
R3953261	TAPE GLUE TSFR W 25.4 PO2	0,005	R762510	UN RS232 PJ56 G802	1
R3953261	TAPE GLUE TSFR W 25.4 PO2	0,005	R762514	UN AST PJ56 G802 DYN	1
R395353	TAPE LEAD 420 W25,4	1,2	R762518	UN CNV PJ51 G1200 DVR	1
R395353	TAPE LEAD 420 W25,4	1,2	R762519	UN CNV PJ51 G1200 OUT	1
R395353	TAPE LEAD 420 W25,4	1,2	R791664	UN RCU PJ49 700 IR+LGHT	1
R395390	TAPE GLUE 926 W 12 .13		R791666	UN RCU PJ51 1200 WIRE	1
R590234	PRM LBL PJ CEBEC 724 BLK	1	R800307	HNG PJ43 PLT FIX	2
R590257	PRM LBL PJ UL 49F0 BLK	1	R800307	HNG PJ43 PLT FIX	2
R590262	PRM LBL PJ LENS B_HD120	3	R800308	HNG PJ43 PIN	2
R590269	PRM LBL PJ NO_BATT INSTAL	1	R802349	SPG PJ45 MNS CD 326103	1
R590298	PRM LBL PJ P/S_NR	1	R802606	FRM PJ49 CNV FIX BRKT	1
R593001	P BAG PE 180X 250X 0.07	1	R802614	FRM PJ49 CTRL UP	1
R593430	P BOX F FOAM T1 W1500	0,005	R802635	SCR BPS M 4 X 35 I	2
R593600	P TAPE CORDSTRAP KY	2	R802672	FRM PJ49 HD8 BLOC SCR	1
R593601	P TAPE CORDSTRAP CC50/2	0,008	R802672	FRM PJ49 HD8 BLOC SCR	1
R5975565	MAN OWN PJ51 G1208	1	R802672	FRM PJ49 HD8 BLOC SCR	1
R5975575	MAN INS PJ51 G1208	1	R802675	FRM PJ49 CNV FIX BRKT R	1
			R802680	FRM PJ49 HD8 BLOC SPG	4
R721560	G PCB PJ L 97.5	2	R802680	FRM PJ49 HD8 BLOC SPG	4
R721560	G PCB PJ L 97.5	3	R802680	FRM PJ49 HD8 BLOC SPG	4
R721721	HNG PJ43 HSG BASE	2	R802682	SCR PJ49 FIX LENS SCR I	4
R721850	R ACC CLIPS TCE V PROTECT	1	R802745	FRM PJ49 HD8 FIX SPL	1
R722016	HNG PJ49 HSG BASE DN	2	R802959	FRM PJ49 CNV WSHR	2
R722226	FRM PJ49 CTRL CBL FIX	2	R803206	FRM PJ51 G12 HSG BASE PLT	1
R722241	G PCB PJ49 CNV	1	R803317	P BOX F COR EPERAN MK2	6
R722241	G PCB PJ49 CNV	1	R803406	FRM PJ49 HD8 LENS GRN	1
R722268	HSG PJ49 HSG UP IR CAP	1			

R803406	FRM PJ49 HD8 LENS GRN	1	R805610	FRM PJ51 G1202 CRT DN	1
R803406	FRM PJ49 HD8 LENS GRN	1	R805611	FRM PJ51 G1202 CRT UP	1
R803679	FRM PJ51 G12 SMP SCRNI	1	R805612	FRM PJ51 G1202 CRT SCRNI S	1
R803830	PRM LBL PJ BOX B_GRAPHICS	2	R805612	FRM PJ51 G1202 CRT SCRNI S	1
R803836	P BOX PJ49 1100 BTM CVR T	1	R805616	FRM PJ51 G1202 CNV PIPE L	1
R804638	P BOX PJ** MAN TX CPL	1	R805617	FRM PJ51 G1202 CNV PIPE F	1
R804792	PRM LBL PJ BOX UNIVERSAL	1	R805618	FRM PJ51 G1202 CNV PIPE F	1
R804993	FRM PJ51 G12 RC SCRNI	1	R805619	FRM PJ51 G1202 DEF SWSCRNI	1
R805008	FRM PJ51 G12 L	1	R805620	FRM PJ51 G1202 CRT FIX DN	1
R805009	FRM PJ51 G12 R	1	R805620	FRM PJ51 G1202 CRT FIX DN	1
R805012	FRM PJ51 G12 CNV SCRNI	1	R805620	FRM PJ51 G1202 CRT FIX DN	1
R805013	FRM PJ51 G12 CNV PIPE R	1	R805622	FRM PJ51 G1202 CRT SPG	2
R805017	FRM PJ51 G12 SCR DN	1	R805622	FRM PJ51 G1202 CRT SPG	2
R805018	FRM PJ51 G12 SCRNI RGB	1	R805622	FRM PJ51 G1202 CRT SPG	2
R805018	FRM PJ51 G12 SCRNI RGB	1	R805626	FRM PJ51 G1202 CRT FIX	2
R805020	FRM PJ51 G12 RR FIX FAN	3	R805628	FRM PJ51 G1202 CRT L	1
R805025	FRM PJ51 G12 PMF FIX 2	1	R805629	FRM PJ51 G1202 CRT R	1
R805027	FRM PJ51 G12 PMF SCRNI3	1	R805634	FRM PJ51 G1202 CRT SCRNIUP	1
R805031	FRM PJ51 G12 CNV SCNR DN	1	R805640	FRM PJ51 G1208 CRT BRKT	2
R805037	FRM PJ51 G12 FIX CNTR	2	R805646	SCR PJ51 FIX CRT SCR I	2
R805039	FRM PJ51 G12 PIPE FE GRID	1	R805646	SCR PJ51 FIX CRT SCR I	2
R805071	FRM PJ51 G12 SCRNI UP CPL	1	R805646	SCR PJ51 FIX CRT SCR I	2
R805076	FRM PJ51 G12 RC SPR	1	R805647	FRM PJ51 G12** FRM R CPL	1
R805080	FRM PJ51 G12 CD-MNS FIX	1	R805648	FRM PJ51 G12** FRM L CPL	1
R805081	FRM PJ51 G12 CD-MNS DPL	1	R805650	FRM PJ56 HD8 CRT_T180	1
R805082	TAPE FOAM 30 W30 L230	4	R805650	FRM PJ56 HD8 CRT_T180	1
R805083	FRM PJ51 G12 PMF BRKT	1	R805650	FRM PJ56 HD8 CRT_T180	1
R805084	FRM PJ51 G12 PMF SCRNI5	1	R805659	FRM PJ51 G1208 CRT CPL	1
R805088	FRM PJ51 G12 PLT HNG DN	8	R805677	HSG PJ51 G1200 RC W CAP	1
R805089	FRM PJ51 G12 CD-MNS FIX	1	R805762	FRM PJ51 G1208 CNV FR	1
R805090	FRM PJ51 G12 CRT WSHR	1	R805764	FRM PJ56 G1208 CNV SLIDE	1
R805093	HNG PJ49 SCREEN UP	8	R805824	FRM PJ56 G802 CRT FR	2
R805096	FRM PJ51 PMF SCRNI CPL1	1	R805825	SPR L 5 D 9 D 5.2 P	2
R805097	FRM PJ51 PMF SCRNI CPL2	1	R805827	FRM PJ56 G802 CRT FR SIDE	2



projector support 80 3206



bottom cover  
72 2533

top cover  
72 2534

hinge 72 1721  
hinge fixation plate  
screws  
hinge pin

hinge 72 2016  
80 0307  
36 19265  
80 0308



BARCO Projection Systems

**SECTION D**

**service sheet**

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BARCO PROJECTION SYSTEMS



**BARCO** GRAPHICS  
1208

90 00891 (230V AC)

90 00898 (120V AC)

SERVICE SHEETS

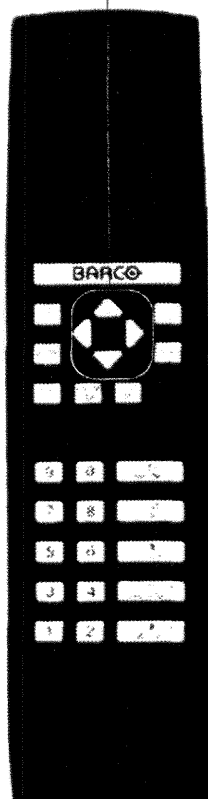
# Transmitter RCU (remote control unit)

Internal Control Unit

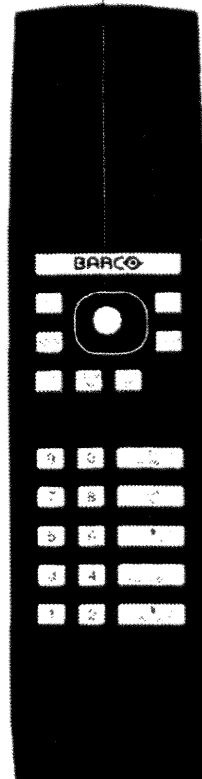
R791664  
R791672

Infra Red Remote control  
R791664

RCU with arrow keys



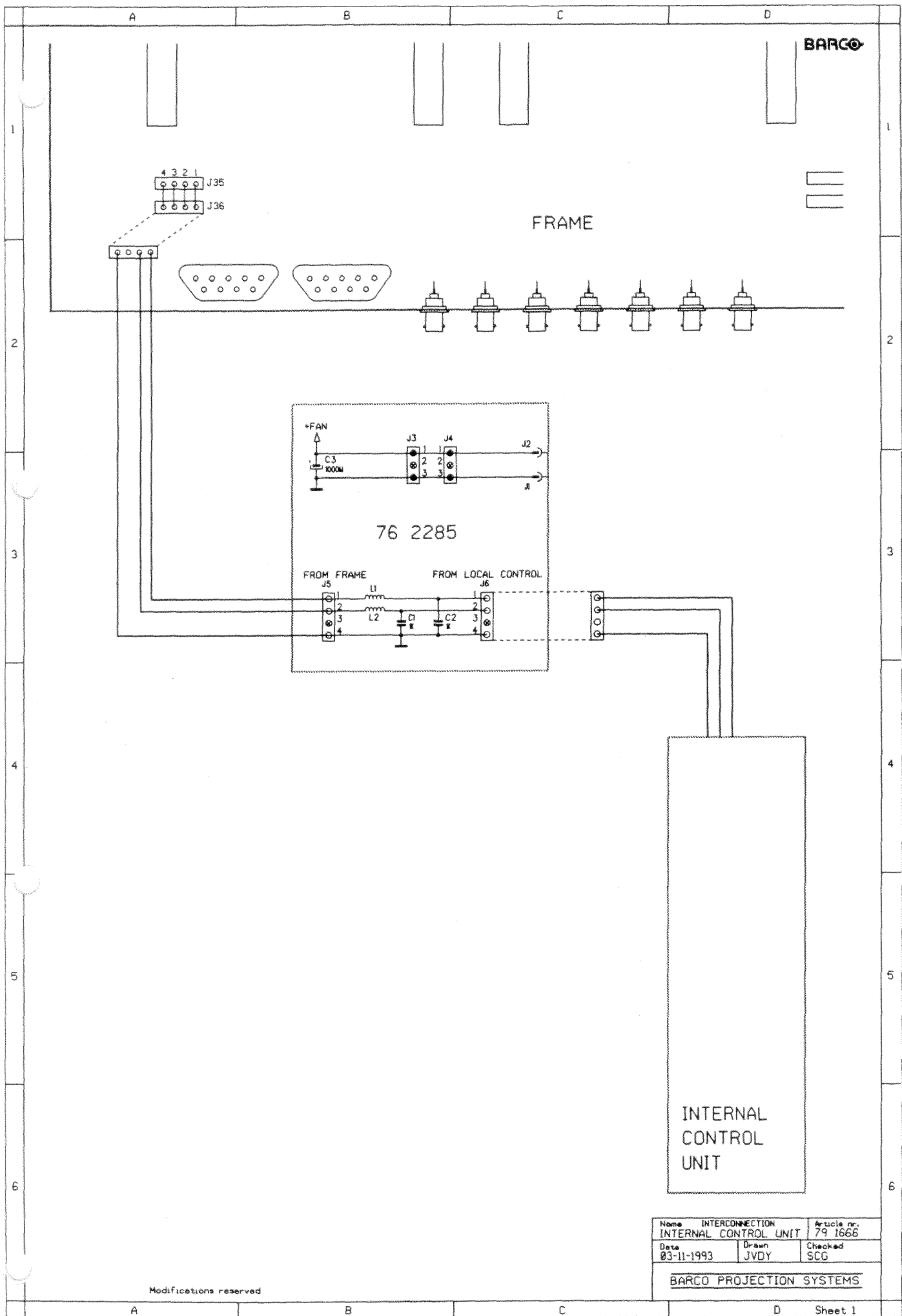
RCU with Joy stick



Internal Control Unit  
R791672

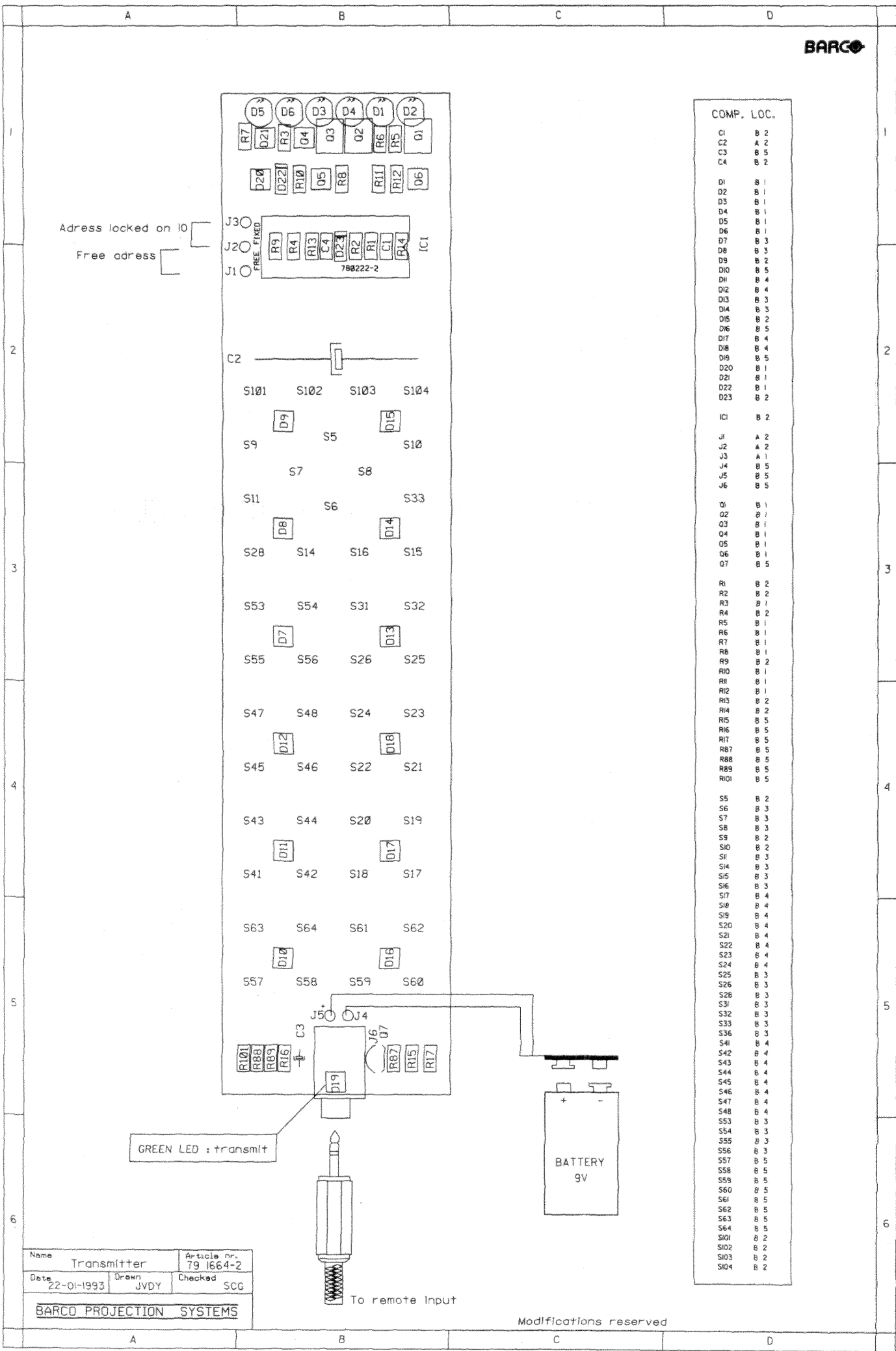


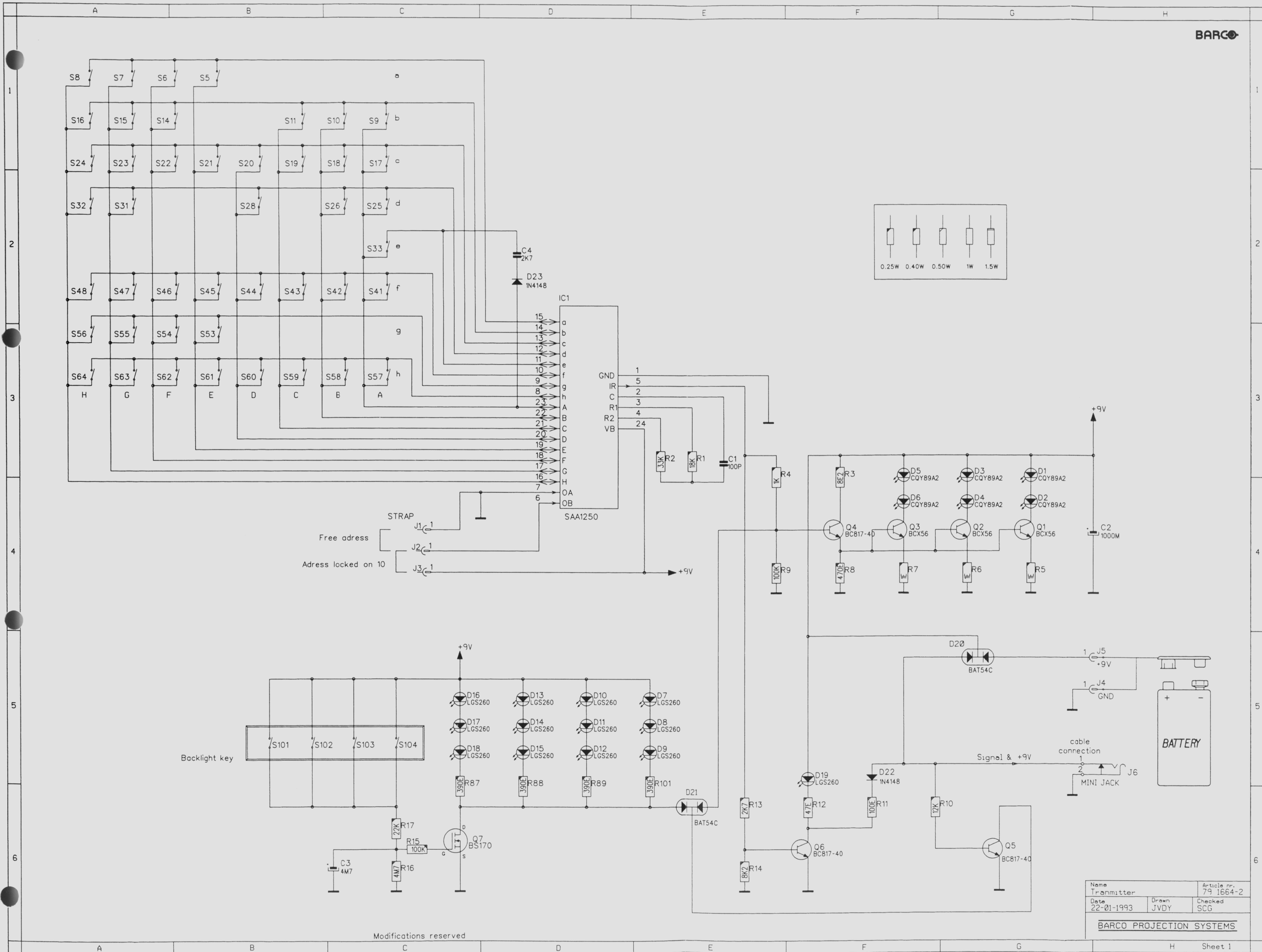




Modifications reserved

Name INTERCONNECTION INTERNAL CONTROL UNIT		Article nr. 79 1666
Date 03-11-1993	Drawn JVDY	Checked SCG
BARCO PROJECTION SYSTEMS		



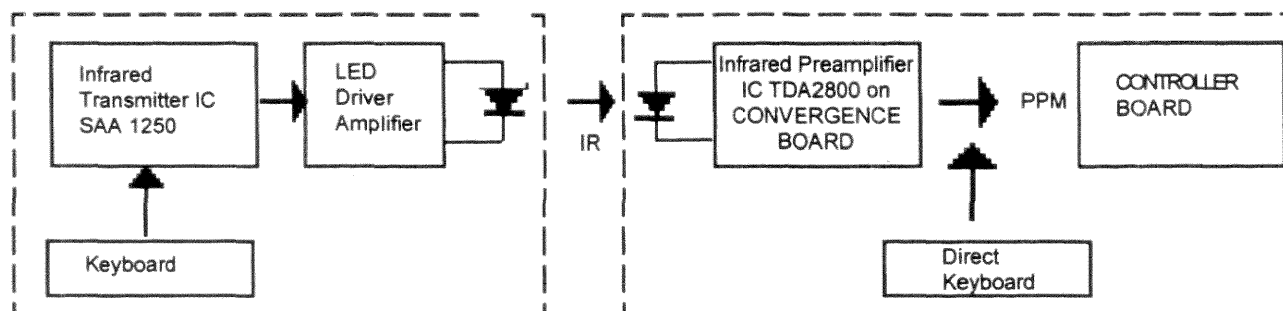


# Transmitter RCU (remote control unit)

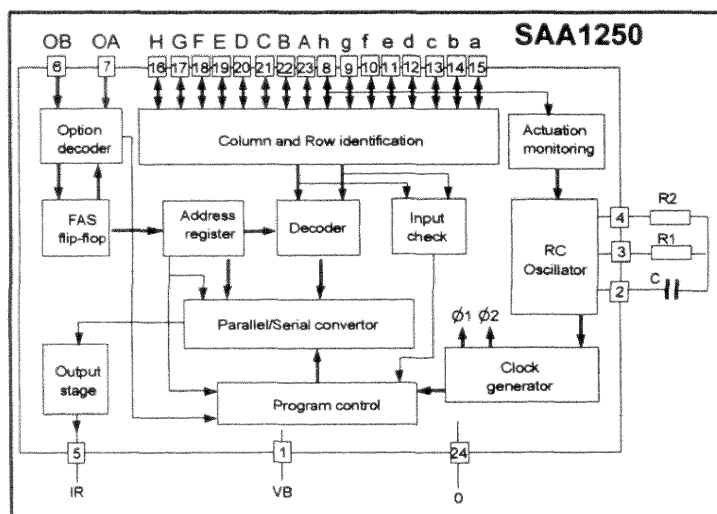
## Internal Control Unit

**R791664**  
R791672

### BLOCK DIAGRAM



### BLOCK DIAGRAM IC SAA1250



#### Code for the OA and OB address inputs

input	OA	OB
option I	H	H
option II	H	L
option III	L	H
free address selection	L*	L*

\* L impulse (min.30us)

#### Used options:

- Option III: alle commands are sent with address 10
- Option: free address selection

#### Command table of the infrared transmitter IC SAA 1250

Command	Input code		Option III	Free Address Selection
No	a b c d e f g h	A B C D E F G H	Address 10	OA and OB to L potential
S5 Up	x			
S6 Down	x			
S7 Right	x			
S8 Left	x			
S9 Exit	x	x		
S10 Adjust	x	x		
S11 Enter	x	x		
S14 Text	x			
S15 Stdbby	x			
S16 Pause	x			

# Transmitter RCU (remote control unit)

## Internal Control Unit

**R791664**  
R791672

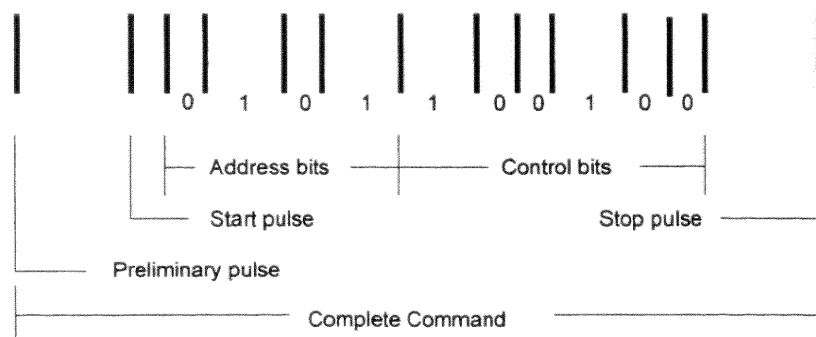
Command table of the infrared transmitter IC SAA 1250 (continu)

Command	Input code		Option III	Free Address Selection
No	a b c d e f g h	A B C D E F G H	Address 10	OA and OB to L potential
S17 1	x	x		Address 1
S18 2	x	x		Address 2
S19 3	x	x		Address 3
S20 4	x	x		Address 4
S21 5	x	x		Address 5
S22 6	x	x		Address 6
S23 7	x	x		Address 7
S24 8	x	x		Address 8
S25 9	x	x		Address 9
S26 0	x	x		Address 10
S27				
S33 Address	x	x		FAS OFF
S41 Contr+	x	x		
S42 Contr -	x	x		
S43 Bright+	x	x		
S44 Bright -	x	x		
S45 Sat+	x	x		
S46 Sat -	x	x		
S47 Tint+	x	x		
S48 Tint -	x	x		
S55 Sharp+	x	x		
S56 Sharp -	x	x		

## Operational mode

According to Table above, the SAA 1250 operates in two modes, which are determined via the OA and OB address input (see table on preceding page).

The first command is given about 20ms after contact actuation. All following commands are sent periodically every 130 ms.



The signals are transmitted by means of infrared light in the shape of packages pulses. For the transmission of a 10-bit word, 14 pulses are required. The binary information of a bit is contained in the time interval between two pulses. We define the time T (approx. 100us) as the basis for the code to be employed.

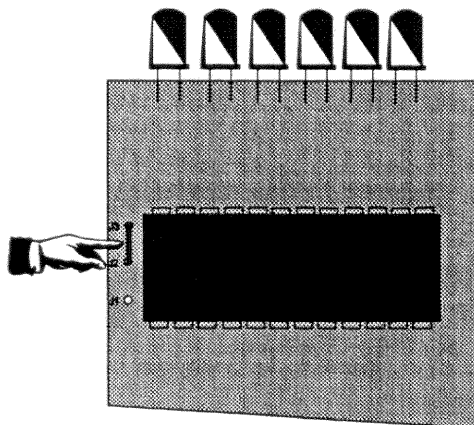
duration T = binary digit "0"  
duration 2T = binary digit "1"

Spacing between preliminary pulse and start pulse 3T. This is followed after a 1T by the 11 data pulses and terminated after a 3T interval by the stop pulse.

Only for the Infra Red Remote control

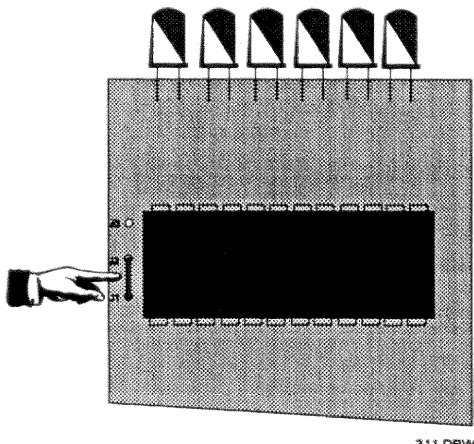
The OPTION III and the FREE ADDRESS SELECTION (FAS) are defined in the remote control RCU800 by means of an inserted jumper on the printed circuit board, see PCB lay-out.

## FIXED ADDRESS SELECTION MODE



First signal is transmitted 20ms after key depression, further signals periodically in a distance of 130ms with Address 10.

## FREE ADDRESS SELECTION MODE



First signal is transmitted 20ms after key depression, further signals every 130ms.

The commands can be transmitted consecutively to various addresses with free address selection.

In this mode the required address must be initially entered into the address register of the transmitter IC SAA1250, using one of the commands 17 to 32. Then all following commands are transmitted together with the stored address, including commands 17 to 32.

The command 33 (FAS off) clear, under the conditions of a L signal permanently applied to both address inputs, only the address register.

311.DRW

# Transmitter RCU (remote control unit)

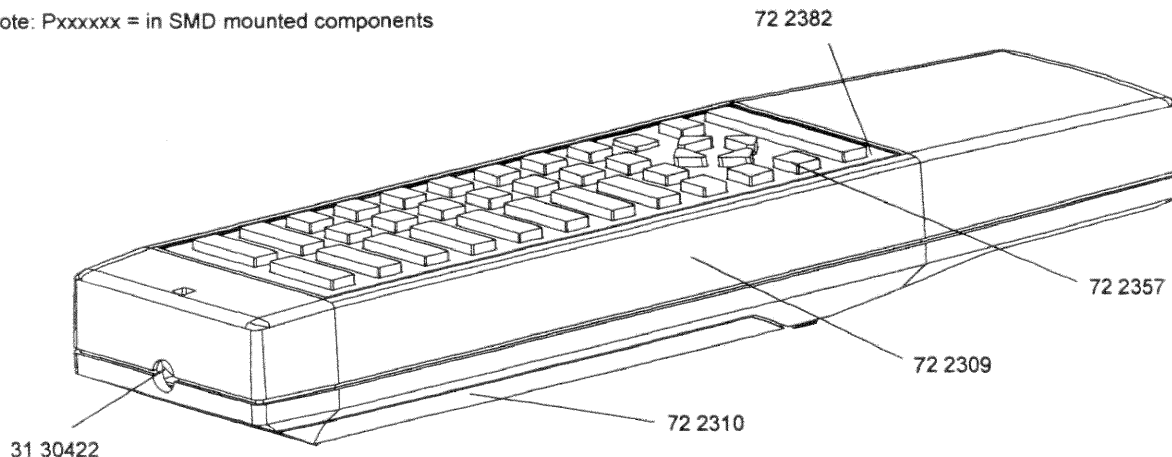
## Internal Control Unit

**R791664**  
R791672

### Parts listing Transmitter RCU 79 1664 (RCU with arrow keys)

ITEM NO.	SIT.	DESCRIPTION	ITEM NO.	SIT.	DESCRIPTION
P210137	C..1	C(S)CEC1CH1206COG101J 50	P232122	Q..1	SMC(S)TRNPN BCX56 SOT89
11 11355	C..2	C EL AX1000M T 10E14 85	P232122	Q..2	SMC(S)TRNPN BCX56 SOT89
11 15915	C..3	C EL5 RA 4M7M 35E2 85	P232122	Q..3	SMC(S)TRNPN BCX56 SOT89
P210147	C..4	C(S)CEC1CH1206COG272J 50	P232026	Q..4	SMC(S)TRA BC817-40
			P232026	Q..5	SMC(S)TRA BC817-40
			P232026	Q..6	SMC(S)TRA BC817-40
13 16666	D..1	D LED D5 T IR 89A2	13 2910	Q..7	Q BS170 FN SS TO92 060A5
13 16666	D..2	D LED D5 T IR 89A2			
13 16666	D..3	D LED D5 T IR 89A2	P200103	R..1	R# CE H 18K J 0W12 1206
13 16666	D..4	D LED D5 T IR 89A2	P200109	R..2	R# CE H 33K J 0W12 1206
13 16666	D..5	D LED D5 T IR 89A2	P200023	R..3	R# CE H 8E2 J 0W12 1206
13 16666	D..6	D LED D5 T IR 89A2	P200073	R..4	R# CE H 1K J 0W12 1206
P234063	D..7	SMC(S)DIOLED LGS260	P200001	R..5	R# CE H 1E J 0W12 1206
P234063	D..8	SMC(S)DIOLED LGS260	P200001	R..6	R# CE H 1E J 0W12 1206
P234063	D..9	SMC(S)DIOLED LGS260	P200001	R..7	R# CE H 1E J 0W12 1206
P234063	D..10	SMC(S)DIOLED LGS260	P200065	R..8	R# CE H470E J 0W12 1206
P234063	D..11	SMC(S)DIOLED LGS260	P200121	R..9	R# CE H100K J 0W12 1206
P234063	D..12	SMC(S)DIOLED LGS260	P200099	R..10	R# CE H 12K J 0W12 1206
P234063	D..13	SMC(S)DIOLED LGS260	P200049	R..11	R# CE H100E J 0W12 1206
P234063	D..14	SMC(S)DIOLED LGS260	P200041	R..12	R# CE H 47E J 0W12 1206
P234063	D..15	SMC(S)DIOLED LGS260	P200083	R..13	R# CE H 2K7 J 0W12 1206
P234063	D..16	SMC(S)DIOLED LGS260	P200095	R..14	R# CE H 8K2 J 0W12 1206
P234063	D..17	SMC(S)DIOLED LGS260	P200121	R..15	R# CE H100K J 0W12 1206
P234063	D..18	SMC(S)DIOLED LGS260	P200161	R..16	R# CE H 4M7 J 0W12 1206
P234063	D..19	SMC(S)DIOLED LGS260	P200105	R..17	R# CE H 22K J 0W12 1206
P234205	D..20	SMC(S)DISCH BAT54C SOT23	P200063	R..87	R# CE H390E J 0W12 1206
P234205	D..21	SMC(S)DISCH BAT54C SOT23	P200063	R..88	R# CE H390E J 0W12 1206
P234099	D..22	SMC(S)DIO 4148	P200063	R..89	R# CE H390E J 0W12 1206
P234099	D..23	SMC(S)DIO 4148	P200063	R101	R# CE H390E J 0W12 1206
13 7371	I..1	U 1250 SAA DIP24 PIRTRA			
31 30422	J...	J PHN FBS D 2.5MON P			
31 3196	J...	J BAT NWS P 2 9V			
78 0222	PC..	PCD#PJ52 D5000 TX			

Note: Pxxxxxx = in SMD mounted components



# Transmitter RCU (remote control unit)

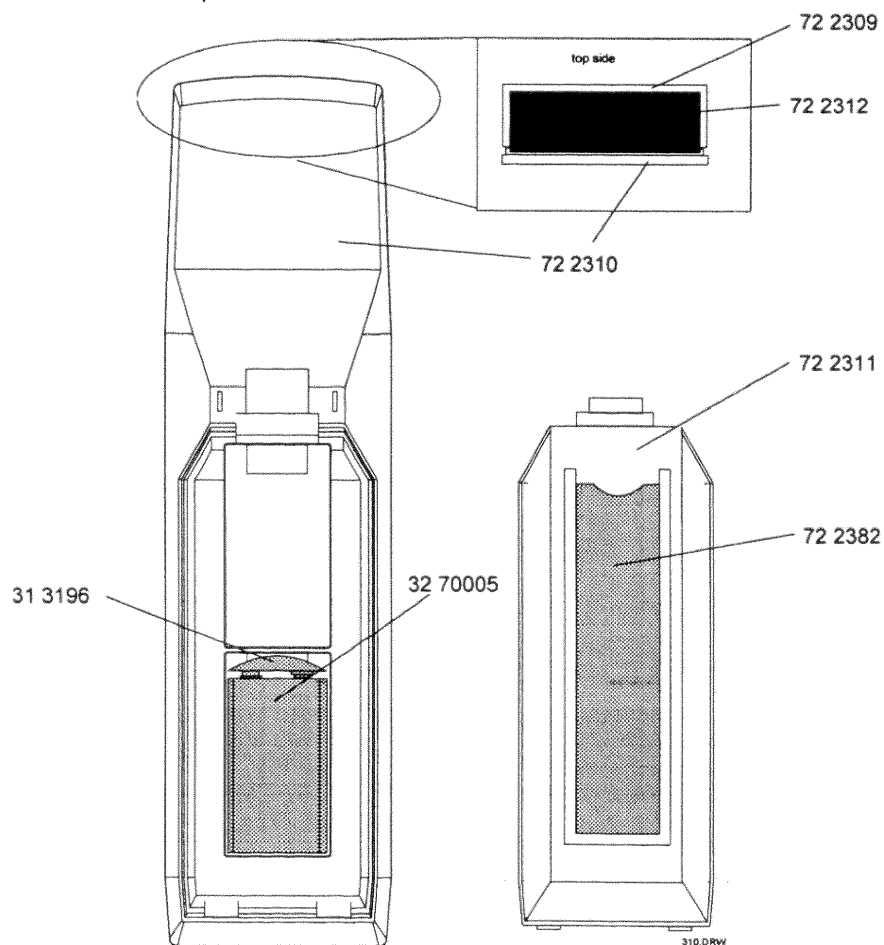
## Internal Control Unit

**R791664**  
R791672

### Spare parts Transmitter RCU 79 1664 (RCU with arrow keys)

ART.NO.	DESCRIPTION	QUANTITY	ART.NO.	DESCRIPTION	QUANTITY
13 16666	D LED D5 T IR 89A2	6	72 2309	HSG PJ49 TX2 CVR UP	1
13 2910	Q BS170 FN SS TO92 060A5	1	72 2310	HSG PJ49 TX2 CVR DN	1
13 7371	U 1250 SAA DIP24 PIRTRA	1	72 2311	HSG PJ49 TX2 CVR BAT	1
31 30422	J PHN FBS D 2.5MON P	1	72 2312	HSG PJ49 TX2 WDW IR	1
31 3196	J BAT NWS P 2 9V	1	72 2353	HSG PJ53 TX2 FOIL V700	1
32 70005	BAT 9V 6F22 ALK 0A525	1	72 2357	SW KYBD RUB PJ53 TX V700	1
36 15075	SCR HILO_P 3.2X 8,5HS B	1	72 2382	HSG PJ49 TX2 LFLT WDW	1
59 75045	LFLT RCU700 TX	1	78 0222	PCD#PJ52 D5000 TX	1

Note: Pxxxxxx = in SMD mounted components





# Transmitter RCU (remote control unit)

## Internal Control Unit

**R791664**  
**R791672**

### Parts listing Transmitter RCU 79 1664 (RCU with Joy stick)

SIT.	ITEM NO.	DESCRIPTION	QUANTITY	SIT.	ITEM NO.	DESCRIPTION	QUANTITY
1000	R3615075	SCR HILO_P 3.2X 8.5HS B	1	R 5	P200001R#	CE H 1E J 0W12 1206	1
9000	R593540	BAG PE 85X270	1	R 6	P200001R#	CE H 1E J 0W12 1206	1
7000	R5975045	LFLT RCU700 TX	1	R 7	P200001R#	CE H 1E J 0W12 1206	1
5010	R722310	HSG PJ49 TX2 CVR DN	1	R 8	P200065R#	CE H470E J 0W12 1206	1
5020	R722311	HSG PJ49 TX2 CVR BAT	1	R 9	P200121R#	CE H100K J 0W12 1206	1
5030	R722312	HSG PJ49 TX2 WDW IR	1	R 10	P200099R#	CE H 12K J 0W12 1206	1
5021	R722382	HSG PJ49 TX2 LFLT WDW	1	R 11	P200049R#	CE H100E J 0W12 1206	1
5000	R722686	HSG PJ49 TX2 JOY CVR UP	1	R 12	P200041R#	CE H 47E J 0W12 1206	1
4000	R722689	SW KYBD PJ53 TX JOY V700	1	R 13	P200083R#	CE H 2K7 J 0W12 1206	1
4010	R722690	HSG PJ53 TX2 JOY FOIL	1	R 14	P200095R#	CE H 8K2 J 0W12 1206	1
C 1	P210056C#	COG MU 100P F 50 0805	1	R 15	P200121R#	CE H100K J 0W12 1206	1
C 2	R1111355C	EL AX1000M M 10E9 85	1	R 16	P200676R#	CE H 10M K 0W12 1206	1
C 3	P212001C#	TA 2M2M 20 3528	1	R 17	P200105R#	CE H 22K J 0W12 1206	1
C 4	P210147C#	COG MU 2N7J 50 1206	1	R 18	P201063R#	CE H100E F 0W1 0805	1
D 1	R1316666D	O LTE5208C T IR	1	R 19	P201089R#	CE H 1K2 F 0W1 0805	1
D 2	R1316666D	O LTE5208C T IR	1	R 20	P201109R#	CE H 8K2 F 0W1 0805	1
D 3	R1316666D	O LTE5208C T IR	1	R 21	P201111R#	CE H 10K F 0W1 0805	1
D 4	R1316666D	O LTE5208C T IR	1	R 87	P200063R#	CE H390E J 0W12 1206	1
D 5	R1316666D	O LTE5208C T IR	1	R 88	P200063R#	CE H390E J 0W12 1206	1
D 6	R1316666D	O LTE5208C T IR	1	R 89	P200063R#	CE H390E J 0W12 1206	1
D 7	P234062D#	LED LYS260 YEL SOT23	1	R101	P200063R#	CE H390E J 0W12 1206	1
D 8	P234062D#	LED LYS260 YEL SOT23	1	W	R348100WU	JUMP 0,6	1
D 9	P234062D#	LED LYS260 YEL SOT23	1				
D 10	P234062D#	LED LYS260 YEL SOT23	1				
D 11	P234062D#	LED LYS260 YEL SOT23	1				
D 12	P234062D#	LED LYS260 YEL SOT23	1				
D 13	P234062D#	LED LYS260 YEL SOT23	1				
D 14	P234062D#	LED LYS260 YEL SOT23	1				
D 15	P234062D#	LED LYS260 YEL SOT23	1				
D 16	P234062D#	LED LYS260 YEL SOT23	1				
D 17	P234062D#	LED LYS260 YEL SOT23	1				
D 18	P234062D#	LED LYS260 YEL SOT23	1				
D 19	R131662D	LED D3 T RD	1				
D 20	P234205D#	BAT54C SCH SOT23	1				
D 21	P234205D#	BAT54C SCH SOT23	1				
D 22	P234099D#	4148 R DMMELF	1				
D 23	P234099D#	4148 R DMMELF	1				
I 1	R137371U	1250 SAA DIP24 P	1				
J	R313196J	BAT WS P 2 T-TYPE 9V	1				
J 6	B338800J	PHN FBS D 3.5MON P	1				
PC	R780456	PCD#PJ53 V701 TX	1				
Q 1	P232122Q#	BCX56 N P SOT89	1				
Q 2	P232122Q#	BCX56 N P SOT89	1				
Q 3	P232122Q#	BCX56 N P SOT89	1				
Q 4	P232026Q#	BC817-40 N SS SOT23	1				
Q 5	P232026Q#	BC817-40 N SS SOT23	1				
Q 6	P232026Q#	BC817-40 N SS SOT23	1				
Q 7	P232046Q#	BSS123 F SS SOT23	1				
Q 8	P232050Q#	BC857B P SS SOT23	1				
Q 9	P232050Q#	BC857B P SS SOT23	1				
R 1	P200103R#	CE H 18K J 0W12 1206	1				
R 2	P200109R#	CE H 33K J 0W12 1206	1				
R 3	P200023R#	CE H 8E2 J 0W12 1206	1				
R 4	P200073R#	CE H 1K J 0W12 1206	1				

# Transmitter RCU (remote control unit)

## Internal Control Unit

**R791664**  
**R791672**

### Parts listing Internal Control Unit R791672 (RCU with Joy stick)

SIT.	ITEM NO.	DESCRIPTION	QUANTITY	SIT.	ITEM NO.	DESCRIPTION	QUANTITY
41	R348003	GRMT T1.5 D 9.5	1	I 1	R137371	U 1250 SAA DIP24 P	1
55	R349504	CD CT FTFT P 4 400	1	J 1	R313944	J CT H MBS P 4 M2SN	1
50	R3615085	SCR HILO_P 3.2X 16 HS B	3	PC	R780456	PCD#PJ53 V701 TX	1
51	R367502	WSHR D6798 A 3.2 S Z	3	Q 6	P232026	Q#BC817-40 N SS SOT23	1
42	R395301	TAPE RUB W10X8 BLK	0,06	Q 10	P232026	Q#BC817-40 N SS SOT23	1
10	R722686	HSG PJ49 TX2 JOY CVR UP	1	R 1	P200103	R# CE H 18K J 0W12 1206	1
30	R722704	SW KYBD RUB PJ56 TX G802/	1	R 2	P200109	R# CE H 33K J 0W12 1206	1
20	R722705	HSG PJ56 G808 TX2 FOIL2	1	R 4	P200083	R# CE H 2K7 J 0W12 1206	1
40	R805855	FRM PJ56 G808 CSB SCRN	1	R 9	P200095	R# CE H 8K2 J 0W12 1206	1
C 1	P210056	C# COG MU 100P F 50 0805	1	R 12	P200041	R# CE H 47E J 0W12 1206	1
C 4	P210147	C# COG MU 2N7J 50 1206	1	R 13	P200083	R# CE H 2K7 J 0W12 1206	1
C 5	P210122	C# X7R MU 100N K 50 1206	1	R 14	P200095	R# CE H 8K2 J 0W12 1206	1
C 6	P212001	C# TA 2M2M 20 3528	1	R 22	P200049	R# CE H100E J 0W12 1206	1
D 7	P234062	D#LED LYS260 YEL SOT23	1	R 87	P200063	R# CE H390E J 0W12 1206	1
D 8	P234062	D#LED LYS260 YEL SOT23	1	R 88	P200063	R# CE H390E J 0W12 1206	1
D 9	P234062	D#LED LYS260 YEL SOT23	1	R 89	P200063	R# CE H390E J 0W12 1206	1
D 10	P234062	D#LED LYS260 YEL SOT23	1	R101	P200063	R# CE H390E J 0W12 1206	1
D 11	P234062	D#LED LYS260 YEL SOT23	1	R115	P201354	R# CE H 0E J 0W1 0805	1
D 12	P234062	D#LED LYS260 YEL SOT23	1				
D 13	P234062	D#LED LYS260 YEL SOT23	1				
D 14	P234062	D#LED LYS260 YEL SOT23	1				
D 15	P234062	D#LED LYS260 YEL SOT23	1				
D 16	P234062	D#LED LYS260 YEL SOT23	1				
D 17	P234062	D#LED LYS260 YEL SOT23	1				
D 18	P234062	D#LED LYS260 YEL SOT23	1				
D 23	P234099	D#4148 R DMMELF	1				
D 24	P234099	D#4148 R DMMELF	1				
D 25	P234099	D#4148 R DMMELF	1				
D 26	P234099	D#4148 R DMMELF	1				

