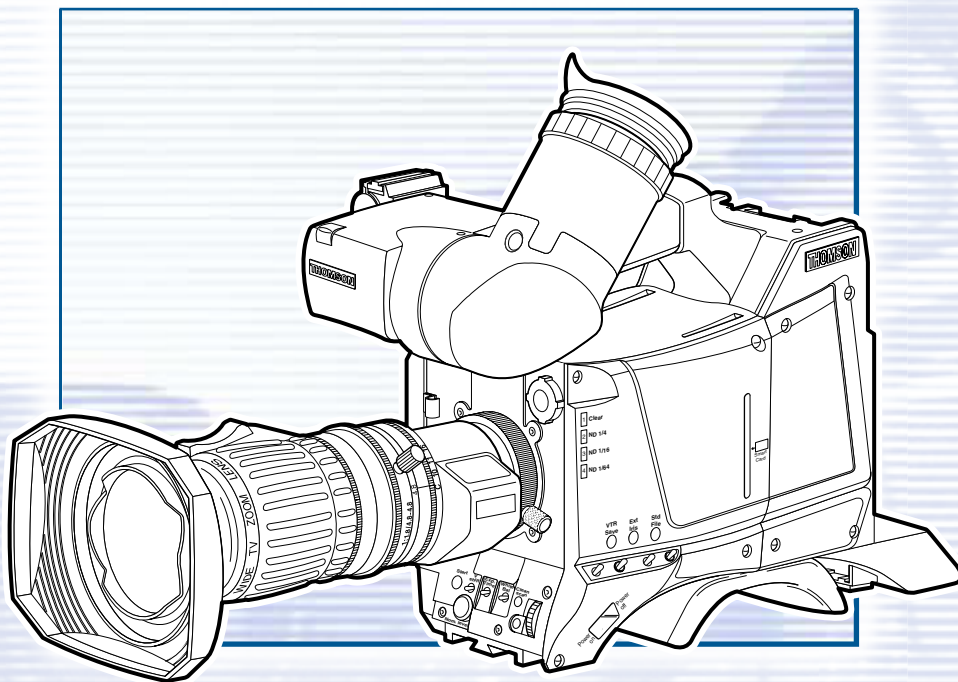


# LDK 5411

Betacam Adapter for LDK 100 Series



# Technical Manual

3922 496 46821 St.00

## Declaration of Conformity

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We, Thomson Broadcast Solutions Nederland B.V., Kapittelweg 10, 4827 HG Breda, The Netherlands declare under our sole responsibility that this product is in compliance with the following standards:

- EN60065 : Safety
- EN55103-1 : EMC (Emission)
- EN55103-2 : EMC (Immunity)

following the provisions of:

- a. the Safety Directives 73/23/EEC and 93/68/EEC
- b. the EMC Directives 89/336/EEC and 93/68/EEC

## FCC Class A Statement

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This product generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause interference to radio communications.

It has been tested and found to comply with the limits for a 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 product 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 may be required to correct the interference.

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**LDK 5411  
Betacam SP Adapter  
Technical Manual**

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## About This Manual

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### Service policy

The LDK 5411 is a sophisticated Betacam adaptor containing state-of-the-art electronic components which are designed to provide long-life operation without the need for maintenance. With this in mind, the service policy of Thomson Multimedia Broadcast Solutions endeavours to ensure that help will be quickly on hand in the unlikely event of anything going wrong. The guiding principles of the Thomson Multimedia Broadcast Solutions first line maintenance philosophy are speed and cost effectiveness. First line maintenance is dedicated to keeping your camera operational, despite a fault, by module replacement and the replacement of minor mechanical parts by the user.

### Purpose of this manual

The provision of correct information is the first step in ensuring the operational integrity of the camera. Information on the operation of the camera is to be found in the Operators's Manual.

This technical manual is an integral part of the service policy. It ensures that you will be able to install and set-up your camera to meet the requirements of your environment. This information on the installation of the camera is contained in Section 1 of the manual. The remaining sections of the manual provide first line service information so that suitably qualified service personnel can detect and repair faults, normally by module replacement.

Because of the complexity of some of the components, second line service can only be carried out at the specially equipped service centres and information concerning second line maintenance is not supplied in this manual.

### Intended audience

The manual is intended as a guide to those with a working knowledge of camera systems and installation techniques. The first line detection and repair of faults requires a general knowledge of test and measurement techniques.

### Structure of this manual

The manual is divided into two sections:

#### Section 1: Safety Information.

Contains important safety information and should be read before carrying out any work on the Betacam SP adaptor.

#### Section 2: Installation.

Gives instructions on the integration of the Betacam SP adaptor into the operating environment and the customization of certain hardware functions

#### Section 3: Adjustments.

Contains the adjustment procedures to be followed to obtain the best performance from the Betacam SP adaptor.

#### Section 4: Wiring Diagrams

Contains the wiring diagrams of the Betacam SP adaptor.

#### Section 5: Exploded Views

Contains the Exploded Views of the Betacam SP adaptor.

#### Section 6: Mechanical Partslist

Contains the Mechanical Partslist diagrams of the Betacam SP adaptor.

---

## Identification and Status

To indicate the status of a drawing, a box with the numbers 0 to 9 is shown in the bottom-right of the drawing. The number that is crossed-out is the status number of the drawing. For example, in the illustration below, the status is 1.

0	<del>1</del>	2	3	4
5	6	7	8	9

A sticker is used on the units themselves to identify them and to indicate their status. For example, in the illustration below, the top line is the 12-digit number that identifies the unit type.

3922 406 88991
00121107 <span style="background-color: #cccccc;">00</span> <span style="border: 1px solid black;">01</span>

The first four digits of the number on the second line represent a date code (year, week); the next four digits represent the serial number for that week.

The number in the grey area indicates the status of the unit. The last two digits represent the number that will be given to the next status. However, if these two digits are contained in a box, then this is the current status. For example, in the illustration above, the current status of the unit is 01.

Line 1	392240700000
Line 2	123456AA0101
Line 3	VR/0123456789

### Line 1

This is the code number of the printed circuit board assy. (PCB)

### Line 2

This is the serial number of the PCB. The first 6 digits and the 2 letters are for internal use. The last four digits represent the date of the manufacturing: wwyy.

Example:

123456AA1402 means the PCB is manufactured in week 14 of the year 2002.

### Line 3

This is the status of the PCB.

The digit after the first slash is the status. If there is no number before the slash, it means that the status is less than 10, a 1 before the slash means the status is between 10 and 19, a 2 before the slash means between 20 and 29 etc.

Example:

- VR4567891012 means status 4

- VR3/78901234 means status 37.

Example of LDK number:

LDK 4501/01 means 8926 **450 10101**

LDK 4500/00 means 8926 **450 00001**

Numbers of printed circuit board assy

- 3922 406 xxxxx or 3922 407 xxxxx

Number (screened in PCB layout) of printed circuit board assy: 3922 411xxxxx. (not a sparepart)



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# Section 1

## Safety Instructions

*This section outlines the precautions that must be taken into account when using the Betacam SP Adapter.*

---

### Contents

Safety Summary .....	1-2	Earthing .....	1-3
Cautions and Warnings .....	1-2		

This information is intended as a guide for trained and qualified personnel who are aware of the dangers involved in handling potentially hazardous electrical/electronic equipment. It is not intended to contain a complete list of all safety precautions which should be observed by personnel in using this or other electronic equipment.

The installation, maintenance and service of this equipment involves risks both to personnel and equipment and must be performed only by qualified personnel exercising due care.

Personnel engaged in the installation, operation, maintenance or servicing of this equipment are urged to become familiar with First Aid theory and practices.

During installation and operation of this equipment, local building safety and fire protection standards must be observed.

Before connecting the equipment to the power supply of the installation, the proper functioning of the protective earth lead of the installation needs to be verified.

Whenever it is likely that safe operation is impaired, the apparatus must be made inoperative and secured against any unintended operation. The appropriate servicing authority must then be informed. For example, safety is likely to be impaired if the apparatus fails to perform the intended function or shows visible damage.

This product has been designed and tested according to EN60065.

When performing service, be sure to read and comply with the warning and caution notices appearing in the manuals. Warnings indicate danger that requires correct procedures or practices to prevent death or injury to personnel. Cautions indicate procedures or practices that should be followed to prevent damage or destruction to equipment or property.

### **WARNING**

THE CURRENT AND VOLTAGES PRESENT IN THIS EQUIPMENT ARE DANGEROUS. ALL PERSONNEL MUST AT ALL TIMES FOLLOW THE SAFETY REGULATIONS.

ALWAYS DISCONNECT POWER BEFORE REMOVING COVERS OR PANELS.

ALWAYS DISCHARGE HIGH VOLTAGE POINTS BEFORE SERVICING.

NEVER MAKE INTERNAL ADJUSTMENTS, PERFORM MAINTENANCE OR SERVICE WHEN ALONE OR WHEN FATIGUED.

IN CASE OF AN EMERGENCY ENSURE THAT THE POWER IS DISCONNECTED.

ANY INTERRUPTION OF THE PROTECTION CONDUCTOR INSIDE OR OUTSIDE THE APPARATUS, OR DISCONNECTION OF THE PROTECTIVE EARTH TERMINAL, IS LIKELY TO MAKE THE APPARATUS DANGEROUS. INTENTIONAL INTERRUPTION IS PROHIBITED.

FOR SAFETY REASONS THE CPU MUST BE MOUNTED IN A 19-inch RACK WHICH HAS SAFETY COVERS ACCORDING TO IEC65.

WHEN TWO CPUs ARE MOUNTED ABOVE EACH OTHER THE MINIMUM DISTANCE BETWEEN THEM MUST BE 50MM OR THE RACK MUST BE FORCE-AIR COOLED.

USE ONLY FUSES OF THE TYPE AND RATING SPECIFIED.

### **CAUTION**

To prevent risk of overheating, ventilate the product correctly.

Connect the product only to a power source with the specified voltage rating.

Only connect a Triax cable from the LDK 6 camera family to an LDK 6 CPU. Never connect it to any other base station.

Never connect the Triax cable from a camera to a CPU of a different family; never connect the LDK family to the TTV family.

Do not allow system ground currents to exceed 1.5A in the outer shield of the triax cable or 0.2A in other cable shields.

It is strictly prohibited to short circuit the inner and outer shields of a triax cable used to connect a camera to a base station.



# Earthing

Symbol	Colour	Explanation
	Red	High voltage terminal at which a voltage, with respect to an other terminal, exists or may be adjusted to 1000V or more.
	Yellow/Black	Live part.
	Yellow/Black	This marking indicates that the operator must refer to an explanation in the Instruction Manual, or that a specific component must be replaced by the component specified in the documentation for safety reasons.
	White/Black	Protective earth (ground) terminal.

## Cathode ray tubes

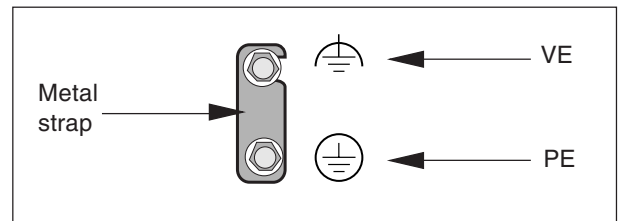
Components marked on the circuit diagram are critical for safety and include those specified to comply with X-ray emission standards for units using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

When servicing units that use cathode ray tubes (CRTs), the cathode ray tubes themselves, the high voltage circuits and related circuits are specifically chosen so that they comply with recognized codes pertaining to X-ray emission.

Consequently, when servicing, replace the cathode ray tubes and other parts with specified parts only. Do not attempt to modify these circuits as any unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

Handle the cathode ray tube only when wearing shatterproof goggles and after discharging the high voltage completely.

The rear of a CPU has two separate screw terminals for protective earth (PE) and video earth (VE).



These are normally connected by a metal strap. The protective earth terminal is internally connected to the protective earth conductor of the power cable. If required, the central earth connection wire of the studio can be connected to terminal PE.

In normal circumstances the connection between the protective earth and the video earth should not be broken.

The metal strap may be removed only if the studio (or OB van) is equipped with separate protective and video earth systems. Under these circumstances the video earth terminal must be connected to the central functional earth potential (video earth) of the studio. This earth potential should have functional protective and noiseless earth (FPE) qualities as stated in the VDE regulation 0800/part2. A low impedance interconnection of both earth conductors must be provided at the central studio earthing point.

## WARNING

THE UNIT MUST ALWAYS BE CONNECTED TO PROTECTIVE EARTH.

## Mains Lead Wiring for UK Users

The wires in the mains lead are coloured in accordance with the following code:

GREEN AND YELLOW	-	EARTH
BLUE	-	NEUTRAL
BROWN	-	LIVE

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows:

- The wire coloured GREEN AND YELLOW must be connected to the terminal on the plug marked with the letter E or by the safety earth symbol or coloured GREEN or GREEN AND YELLOW.
- The wire coloured BROWN must be connected to the terminal marked with the letter L or coloured RED.
- The wire coloured BLUE must be connected to the terminal marked with the letter N or coloured BLACK.

Ensure that your equipment is connected correctly - if you are in any doubt consult a qualified electrician.



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## Section 2

### Installation

*This section provides information which is relevant when the camera is to be used for the first time. Packing and unpacking instructions together with information on the integration of the camera into your system are provided. The procedures for the customization of certain hardware functions and connector information is also provided.*

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### Contents

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Hardware Customization .....	2-4		

## Packing/Unpacking

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Inspect the shipping container for evidence of damage immediately after receipt. If the shipping container or cushioning material is damaged, it should be kept until the contents of the shipment have been checked for completeness and the units have been checked mechanically and electrically.

The shipping container should be placed upright and opened from the top. Remove the cushioning material and lift out the contents.

The contents of the shipment should be checked against the packing list. If the contents are incomplete, if there is mechanical damage or defect, or if the units do not perform correctly when unpacked, notify your Thomson Multimedia Broadcast Solutions sales or service centre within eight days. If the shipping container shows signs of damage or stress, notify the carrier as well.

If a unit is being returned to Thomson Multimedia Broadcast Solutions for servicing, try to use the containers and materials of the original packaging. Attach a tag indicating the type of service required, return address, model number, full serial number and the return number which will be supplied by your Thomson Multimedia Broadcast Solutions service centre.

If the original packing can no longer be used, the following general instructions should be used for repacking with commercially available materials:

- a. Wrap unit in heavy paper or plastic.
- b. Use strong shipping container.
- c. Use a layer of shock-absorbing material around all sides of the unit to provide firm cushioning and prevent movement inside container.
- d. Seal shipping container securely.
- e. Mark shipping container FRAGILE to ensure careful handling.

## Attaching an Adapter

The LDK 100 Camera is a multi-role camera that can be used with various adapters. To attach an adapter to the camera head proceed as follow:

### Caution

Be extremely careful with the connectors between the camera head and the adapter. Do not allow the guide pins to damage the pins of the connector.

### Caution

Follow these steps in the order given. Tightening the screws in the wrong order could result in mechanical damage to the camera.

### Remove the handgrip from the camerahead. (Only for the Betacam adapter)

- Using the rail **1** on the bottom of the camera head as a guide, fit the guide pins **2** on either side of the connector and the guide pin **3** at the top rear of the camera head into the corresponding slots of the adapter.
- First, tighten the two horizontal screws **4** on the top of camera.
- Next, tighten the two horizontal screws **5** at the front of the camera.
- Lastly, tighten the vertical screw **6** in the handle of the camera.

## Detaching an Adapter

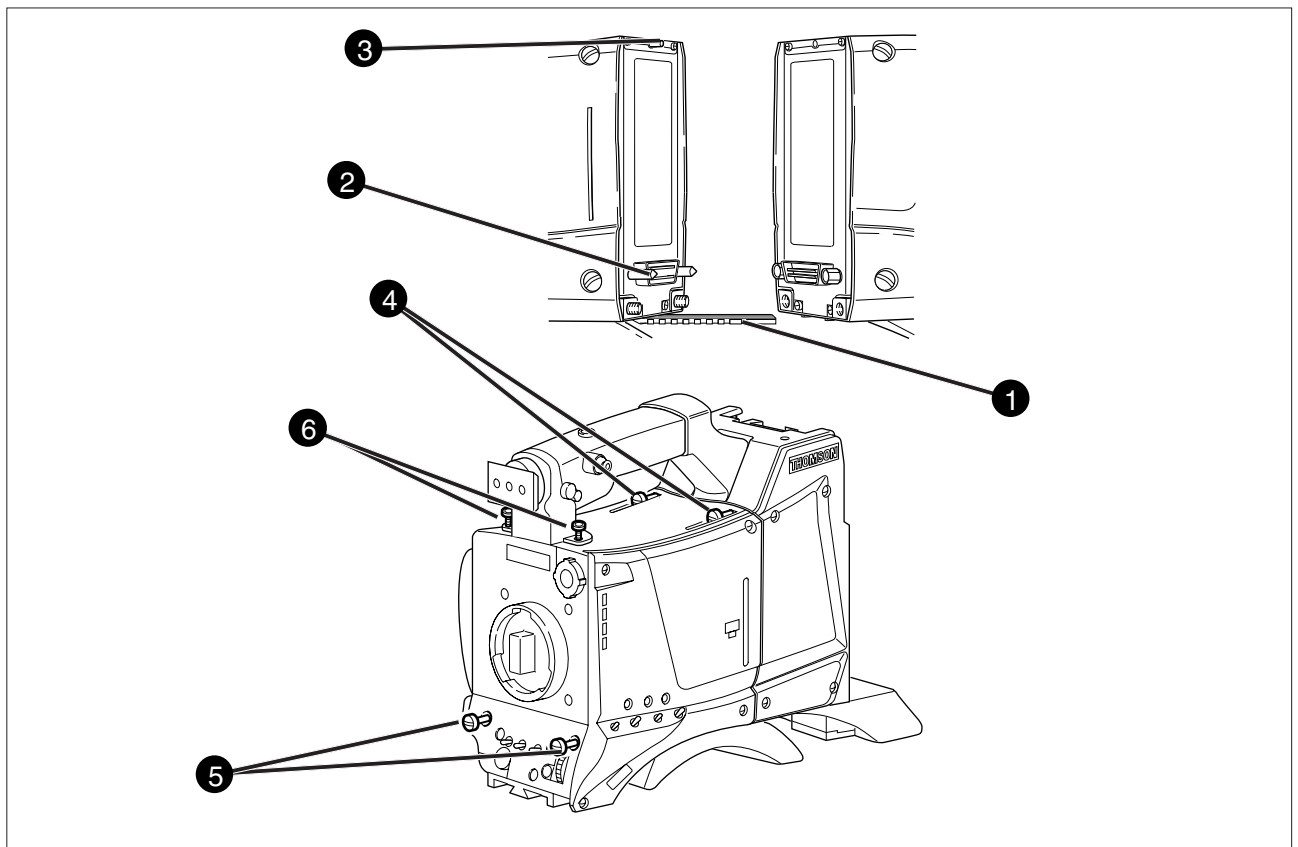
To detach an adapter from the camera head follow the steps for attaching it in the reverse order.

### Caution

Loosening the screws in the wrong order could result in mechanical damage to the camera.

### Note

The procedure is given for the Triax adapter LDK 5400. Follow the same procedure for the other adapters.



## Hardware Customization

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The adaptor is delivered in a ready-to-use state, however, there are occasions when it might be necessary to re-adjust some functions after, for example, fitting a new board.

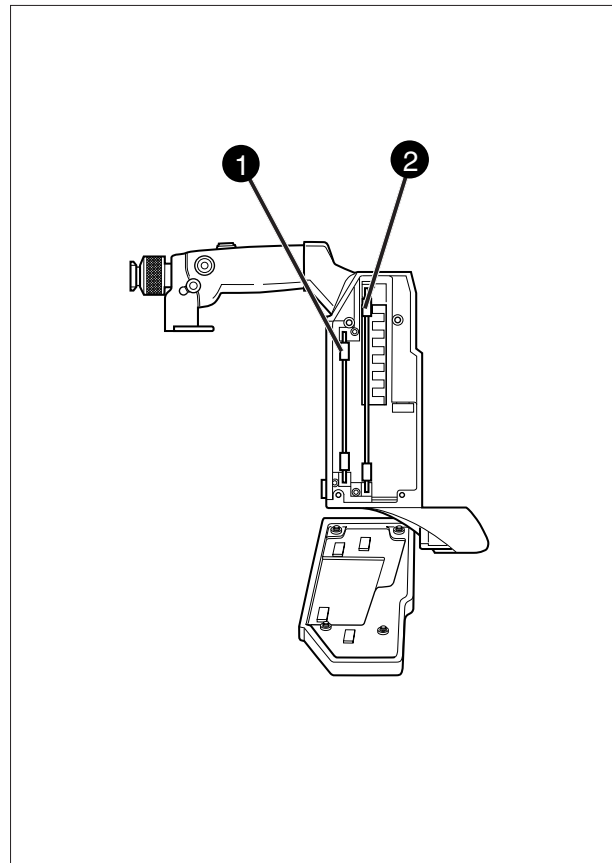
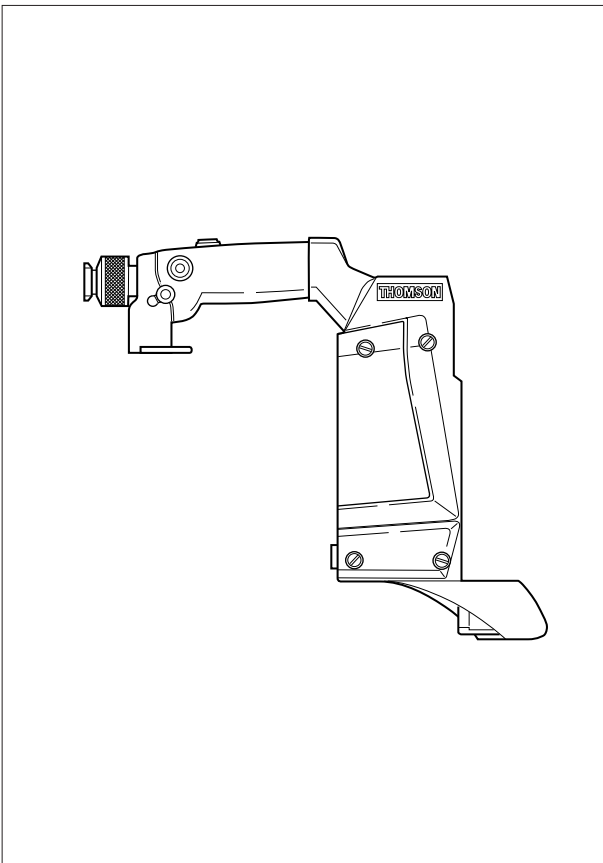
A large number of functions can be set-up using the control facilities of the menu system. In addition to this software set-up there are some functions which can be selected or adjusted internally in the camera.

Refer to the next chapters for instructions.

### Location of boards

Unscrew the four screws on the left side panel and swing down the cover.

- ① Encoder board
- ② Power board

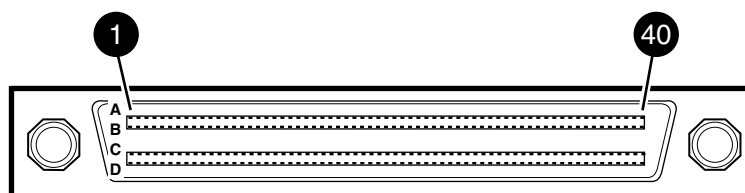


# Connectors

## Docking connector adapter

A row	name	B row	name	C row	name	D row	name
1	lon data	1	lon data N	1	<b>GND</b>	1	<b>+ batt</b>
2	SDA_C	2	<b>SCL_C</b>	2	<b>GND</b>	2	<b>+ batt</b>
3	INTN_C	3	<b>audio indication</b>	3	<b>GND</b>	3	<b>+ batt</b>
4	AB batt sense	4	<b>batt sense</b>	4	<b>GND</b>	4	<b>+ batt</b>
5	adpt id 0	5	<b>adpt id 1</b>	5	<b>GND</b>	5	<b>+ batt</b>
6	adpt id 2	6	<b>adpt id 3</b>	6	<b>GND</b>	6	<b>+ batt</b>
7	cam id 0	7	cam id 1	7	<b>GND</b>	7	<b>+ batt</b>
8	48 kHz	8	PIP	8	<b>GND</b>	8	<b>+ batt</b>
9	<b>sync</b>	9	blanking	9	<b>GND</b>	9	
10	white pulse 1	10	white pulse 2	10	<b>GND</b>	10	
11	<b>colour framing</b>	11	frame reset	11	<b>GND</b>	11	
12	<b>BS_TDA</b>	12	H lock	12	<b>GND</b>	12	
13	PIP video	13	PIP video ret	13	<b>GND</b>	13	
14	<b>BS_TDV</b>	14	BS_TMS	14	<b>GND</b>	14	
15	<b>adapter vf video</b>	15	<b>adapter vf video ret</b>	15	<b>GND</b>	15	
16	BS_TCK	16	BS_TRSTN	16	<b>GND</b>	16	<b>GND</b>
17	<b>ext video</b>	17	<b>ext video ret</b>	17	<b>GND</b>	17	<b>GND</b>
18	<b>-5V</b>	18	<b>-5V</b>	18	<b>-5V</b>	18	<b>-5V</b>
19	<b>+5V</b>	19	<b>+5V</b>	19	<b>+5V</b>	19	<b>+5V</b>
20	<b>+3.3V</b>	20	<b>+3.3V</b>	20	<b>+3.3V</b>	20	<b>+3.3V</b>
21	<b>+5VD</b>	21	<b>+5VD</b>	21	<b>+5VD</b>	21	<b>+5VD</b>
22	<b>shield</b>	22	shield s	22	<b>GND</b>	22	<b>GND</b>
23	<b>mic X</b>	23	mic Xs	23	<b>GND</b>	23	<b>GND</b>
24	<b>mic Y</b>	24	mic Ys	24	<b>GND</b>	24	
25	<b>audio level</b>	25	<b>audio level ref</b>	25	<b>GND</b>	25	
26	<b>power switch</b>	26	n.c	26	<b>GND</b>	26	
27	<b>R</b>	27	<b>R ret</b>	27	<b>GND</b>	27	
28	YC clock	28	YC clock ret	28	<b>GND</b>	28	
29	<b>G</b>	29	<b>G ret</b>	29	<b>GND</b>	29	
30	YC9	30	YC9 ret	30	<b>GND</b>	30	
31	<b>B</b>	31	<b>B ret</b>	31	<b>GND</b>	31	
32	YC8	32	YC8 ret	32	<b>GND</b>	32	
33	YC7	33	YC7 ret	33	<b>GND</b>	33	
34	YC6	34	YC6 ret	34	<b>GND</b>	34	housing
35	YC5	35	YC5 ret	35	<b>GND</b>	35	housing
36	YC4	36	YC4 ret	36	<b>GND</b>	36	housing
37	YC3	37	YC3 ret	37	n.c	37	
38	YC2	38	YC2 ret	38	n.c	38	
39	YC1	39	YC1 ret	39	-80V	39	
40	YC0	40	YC0 ret	40	-80V	40	

**Note:** Only bold signal names are used.



160-pin male; panel view

---

## Docking Connector Recorder

- |                           |                                      |
|---------------------------|--------------------------------------|
| 1. n.c.                   | 26. playback / camera switch control |
| 2. n.c.                   | 27. VTR start / stop                 |
| 3. n.c.                   | 28. n.c.                             |
| 4. n.c.                   | 29. R-Y                              |
| 5. GND                    | 30. R-Y ret                          |
| 6. GND                    | 31. audio ch-1 control               |
| 7. n.c.                   | 32. VTR save                         |
| 8. n.c.                   | 33. n.c.                             |
| 9. n.c.                   | 34. sync                             |
| 10. n.c.                  | 35. n.c.                             |
| 11. n.c.                  | 36. n.c.                             |
| 12. n.c.                  | 37. colour framing pulse             |
| 13. n.c.                  | 38. playback control                 |
| 14. n.c.                  | 39. +V batt                          |
| 15. cam mic gnd           | 40. +V batt                          |
| 16. cam mic X             | 41. Y                                |
| 17. cam mic Y             | 42. Y ret                            |
| 18. playback video        | 43. n.c.                             |
| 19. playback video ret    | 44. n.c.                             |
| 20. audio ch-1 indication | 45. n.c.                             |
| 21. n.c.                  | 46. n.c.                             |
| 22. tape ind. 1           | 47. n.c.                             |
| 23. tape ind. 2           | 48. n.c.                             |
| 24. rec / tally           | 49. B-Y                              |
| 25. battery alarm         | 50. B-Y ret                          |



# Specifications LDK 100 with Betacam Sp adapter LDK 5411

## General data

Power requirements triax powered or 12V dc  
Power consumption 20 W (Head + VF)

Operating temperatures  
-20 to +45°C (-4 to +113°F)

Storage temperatures  
-20 to +60°C (-4 to +140°F)

Weight (approx.)  
4.9 kg (14.1 lb) incl. 1.5-inch VF and triax adapter

Triax cable length  
2,400m (7,875 ft) max. with 16mm (0.63") cable

## Camera section

Pick-up device  
3 x 2/3-inch Philips Frame Transfer Sensors or  
3 x 2/3-inch switchable DPM Sensors

Picture elements  
NTSC: 1000(h) x 498(v)  
PAL: 1000(h) x 594(v)

Digital quantization  
12 bits A/d

Digital signal processing<sup>1</sup>  
18 MHz and 36 MHz, 24 bits accuracy

Sensitivity  
2000 lux (186 ft cd) at F9.0 reflectance 89.9%

Minimum illumination  
Approx. 1 lux at F 1.4 and +36 dB gain

Exposure control  
Down to 1/1000

Clean scanning  
NTSC: between 61.1 and 151.0 Hz  
PAL: between 51.0 and 103.0 Hz

Optical system  
F1.4 with quartz filter

Optical filters  
Clear; 1/4 ND, 1/16 ND, 1/64 ND

Modulation depth  
>70% at 5Mhz

S/N ratio  
Typical: 60 dB PAL and 62 dB NTSC

Registration  
<25 ns (0.05%) in all zones, without lens

Dynamic range  
>600%

Gain  
-6dB to +36dB in 3dB steps (user defined presets)

## Viewfinder

Type 1.5-inch B/W  
Resolution > 600 TVL

## Inputs

Front mic. 1 x XLR 3, balanced, +48V  
Mic. 1 x XLR 3, balanced, +48V  
Control input 9-pin, RS232 compatible

## Outputs

Lens 12p  
Viewfinder 20p  
Cameraman headset Option: XLR5/Tuchel  
VF (monitoring output) Y+sync 1Vpp; BNC  
CVBS output Luminance+sync 1 Vpp; BNC

These typical specifications are valid for PAL and NTSC systems and are subject to change without notice.



---

## Section 3

### Adjustments

*This section contains the adjustment procedures to be followed to obtain the best performance from the camera. These procedures need only be used if, following a module replacement, the camera does not perform according to specifications.*

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## Introduction

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This unit is factory tested and adjusted for operational use. Under normal circumstances, the internal automatic calibration procedures do not need to be started and the internal potentiometers do not need to be adjusted.

The only situation that might require some realignment of the adapter is when a printed circuit board has been replaced.

If the Encoder board is replaced, follow the procedure for its readjustment. The encoder timing adjustments can be carried out via the menu system.

If it is discovered that the unit is misaligned, the following procedures are given as a guide for competent service personnel, who have a thorough knowledge of the camera and have the use of calibrated equipment, to realign the unit.

If no improvement can be achieved or an adjustment is out of range, please contact your local supplier or the nearest Thomson Multimedia Broadcast Solutions Service Centre.

The adjustment procedures are designed as separate units. Within a numbered procedure do not change the position of switches or jumpers unless instructed to do so in the procedure.

These adjustment procedures are for the Betacam Adapter.

However, for practical purposes the Betacam Adapter is used together with the camera head to facilitate some measurements.

The following is a list of equipment required to carry out the adjustment procedure:

- Set of board extenders LDK 5820/01
- Oscilloscope (with cursor measurement)
- Waveform monitor

Before carrying out any adjustments the following steps are recommended:

- Attach the adapter to the camera.
- Install the camera on a tripod.
- Attach the lens and the necessary cables.
- Allow the camera to warm-up.

**CAUTION:**

Do not attempt to improve camera performance by adjusting individual potentiometers, jumpers or switches as this may lead to complete misalignment of the camera.

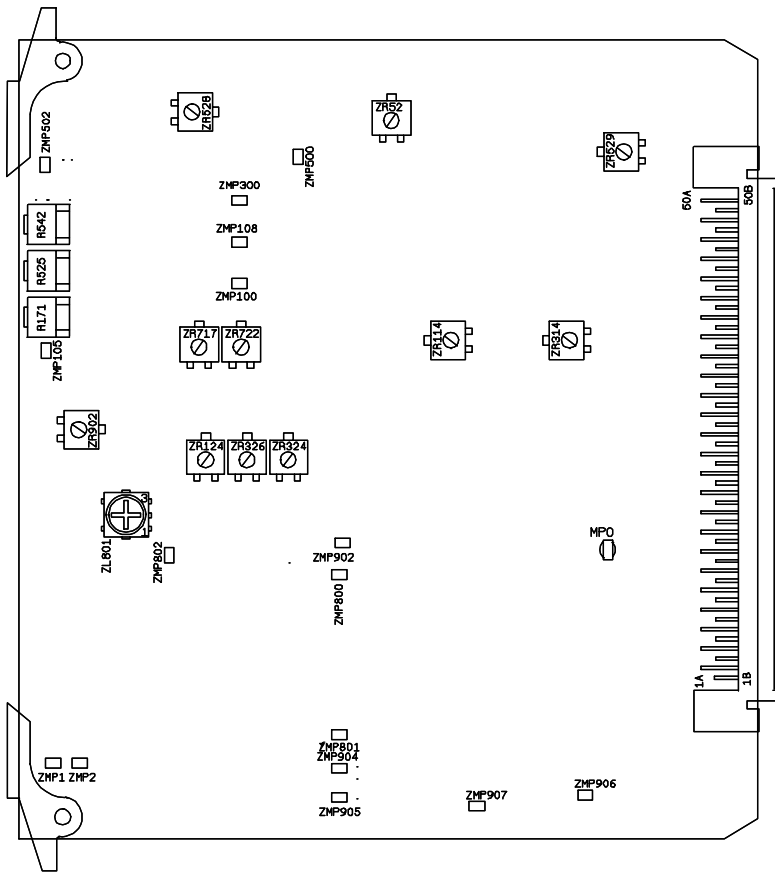
**CAUTION:**

Do not realign individual potentiometers, jumpers or switches not mentioned in this chapter or earlier in this manual. These adjustment points are for factory use only.

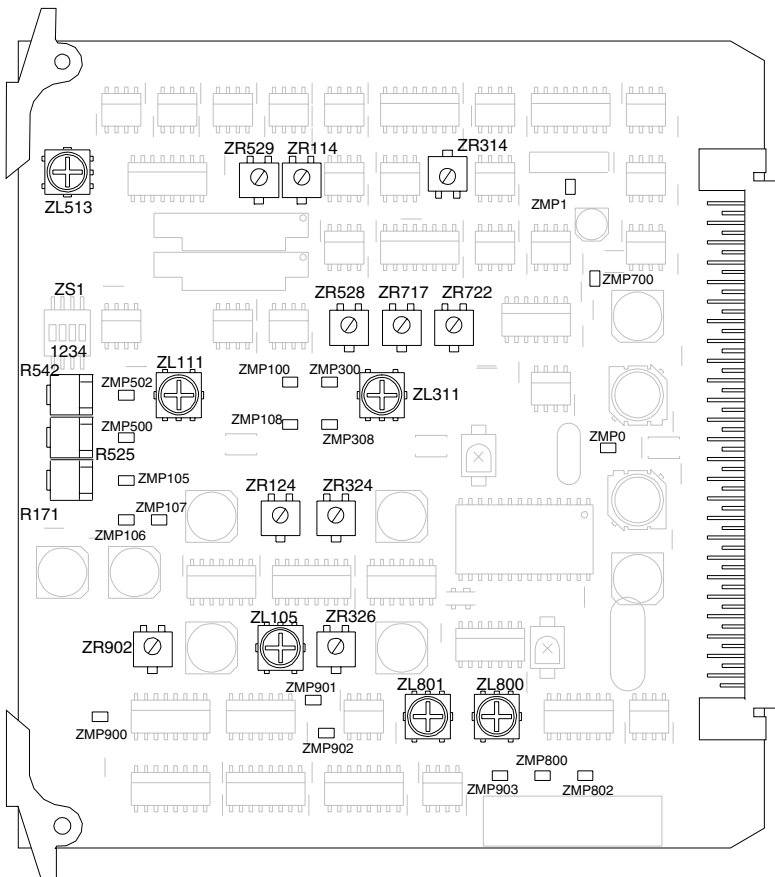
**CAUTION:**

Switch off the power supply to the camera before removing or replacing printed circuit boards.

# Encoder Board PAL



Encoder 3922 406 8715



Encoder 3922 406 8440

## Encoder Board PAL

### Set-up

1. Switch off power. Place encoder board on service extender. Genlock camera with black burst signal. Switch on power.
2. Connect oscilloscope via a vectorscope terminated with 75 Ohm to the CVBS output.
3. Switch on colour bar.

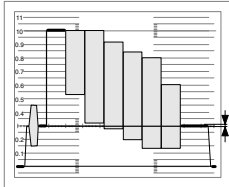
### Black balance

4. Turn chroma potentiometer R171 on encoder board fully clockwise (max. chroma).
5. Adjust the I and Q balance potentiometers for minimum unbalance in black.

Measure at:	Adjust with:	Required result:	
CVBS out	ZR124 ZR324	Smallest possible dot in centre of vectorscope	

### CVBS offset

6. Adjust the CVBS offset potentiometer to place the black bar at 0 Vdc.

Measure at:	Adjust with:	Required result:	Correct:
CVBS out	ZR529	Black bar = 0 Vdc	

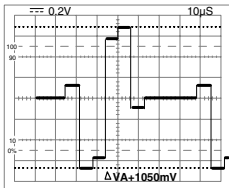
### CVBS amplitude

7. Adjust the CVBS gain potentiometer to obtain an output amplitude of 700mV.

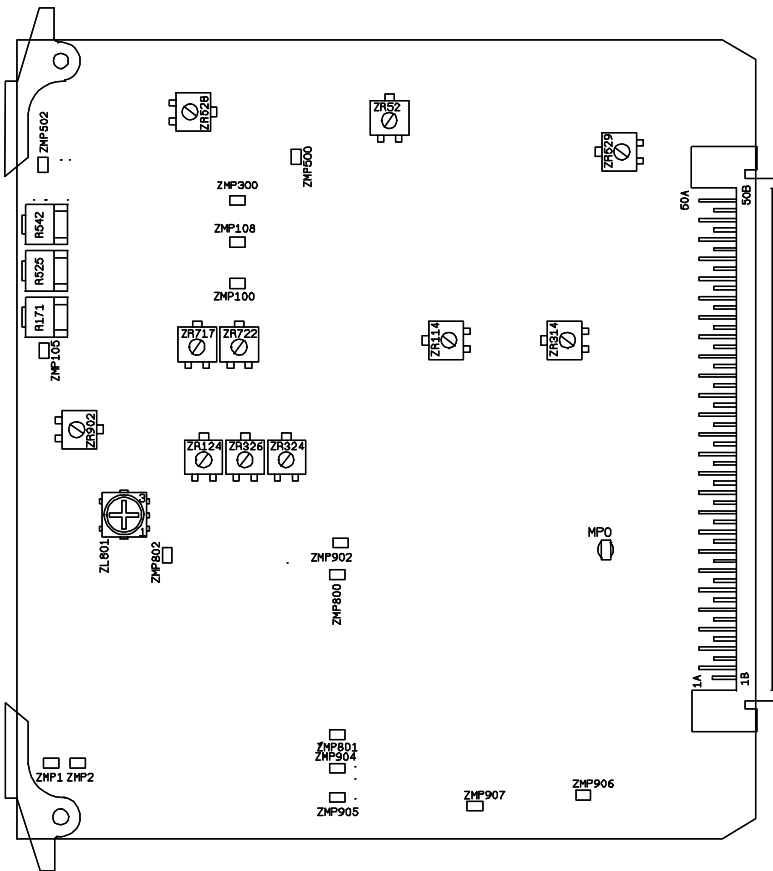
Measure at:	Adjust with:	Required result:	Correct:
CVBS out	R542	700mV	

### R-Y amplitude

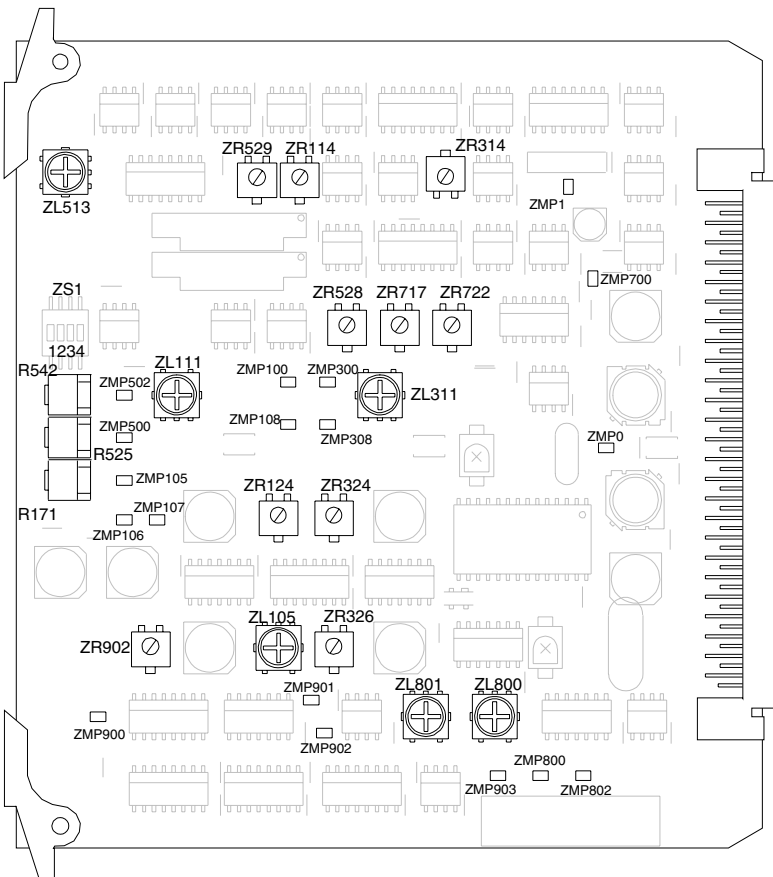
8. Adjust the R-Y potentiometer to obtain an output amplitude of 1050 mV

Measure at:	Adjust with:	Required result:	Correct:
X21-8A	R314	1050mV	

# Encoder Board PAL



Encoder 3922 406 8715



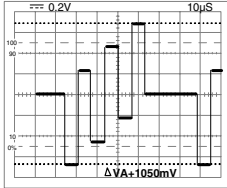
Encoder 3922 406 8440



## Encoder Board PAL

### B-Y amplitude

9. Adjust the B-Y gain potentiometer to obtain an output amplitude of 1050mV.

Measure at:	Adjust with:	Required result:	Correct:
X21-11A	ZR114	1050mV	

### BURST ADJUSTMENTS

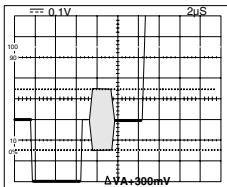
#### Burst phase

10. Measure in second quadrant of vectorscope.  
Adjust the input sensitivity potentiometer of the vectorscope so the burst vectors just touch the circle graticule.
11. Adjust the burst phase potentiometer for 90° phase output.

Measure at:	Adjust with:	Required result:	Correct:
CVBS out	ZR722		

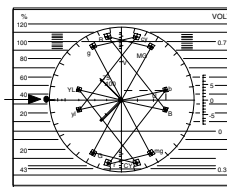
#### Burst amplitude

12. Adjust the burst amplitude potentiometer to obtain a burst amplitude of 300mV.

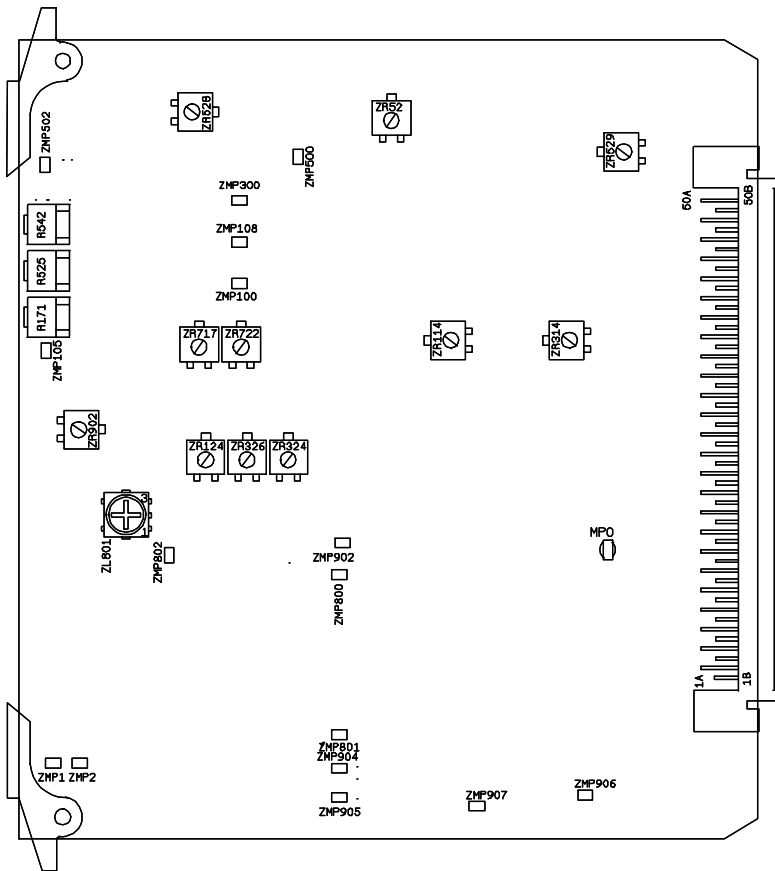
Measure at:	Adjust with:	Required result:	Correct:
CVBS out	ZR717	300mV	

#### Sc-H phase relationship

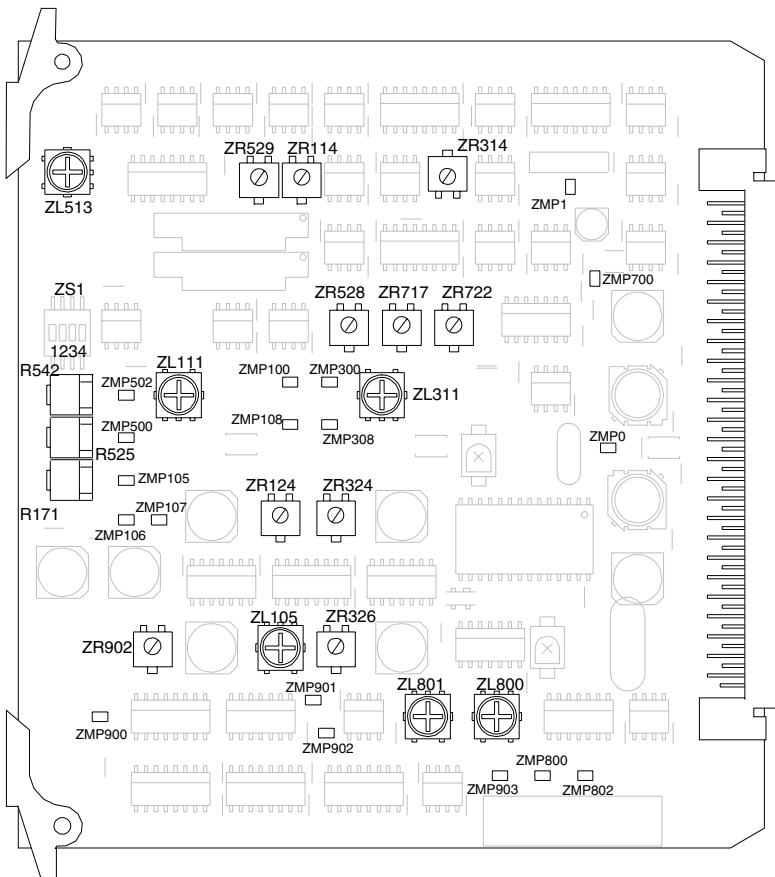
13. Switch vectorscope to internal synchronisation.
14. Adjust Sc-H phase potentiometer for 180°.

Measure at:	Adjust with:	Required result:	Correct:
CVBS out	ZR902		

# Encoder Board PAL



Encoder 3922 406 8715

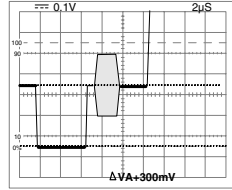


Encoder 3922 406 8440

## Encoder Board PAL

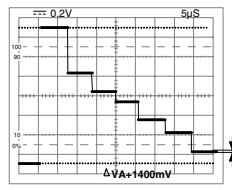
### Sync amplitude

15. Adjust the sync, amplitude potentiometer fto obtain a sync. ampliature of 300mV.

Measure at:	Adjust with:	Required result:	Correct:
CVBS out	ZR525	300mV	

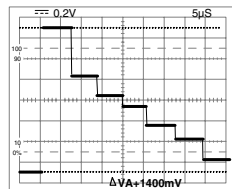
### Y offset

16. Adjust the Y offset potentiometer to place the black bar at the 0Vdc level.

Measure at:	Adjust with:	Required result:	Correct:
X21-14A	ZR52	Black bar = 0 Vdc	

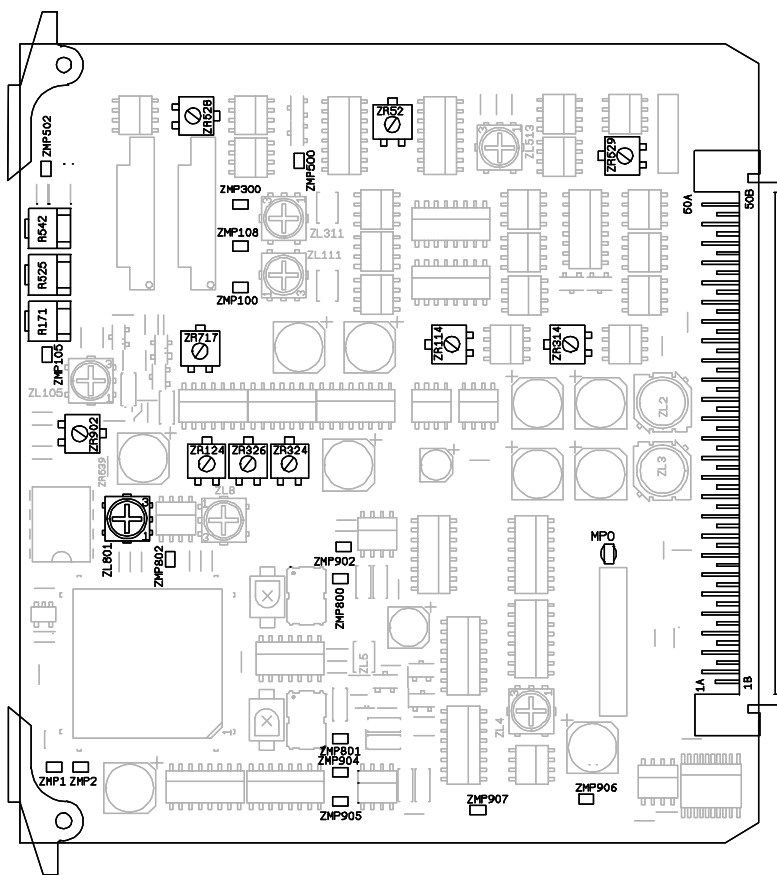
### Y amplitude

17. Adjust the Y gain potentiometer to obtain an output amplitude of 1400mV.

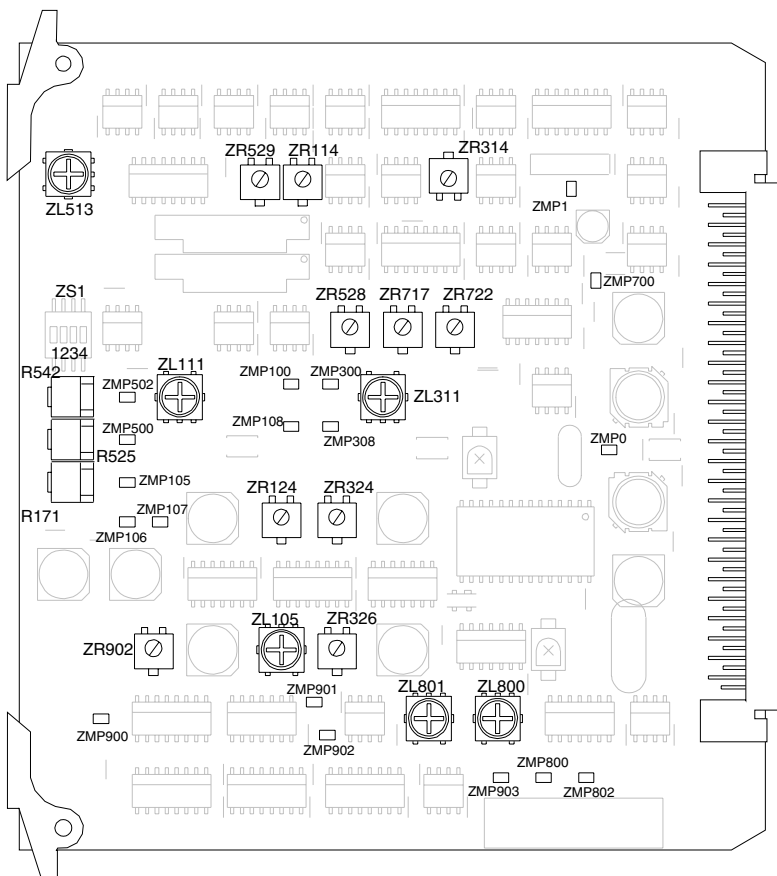
Measure at:	Adjust with:	Required result:	Correct:
X21-14A	ZR528	1400mV	

18. Switch off power and return encoder board to its position in the camera.

# Encoder Board NTSC



Encoder 3922 406 8716



Encoder 3922 406 8441

## Encoder Board NTSC

### Set-up

1. Switch off power. Place encoder board on service extender. Genlock camera with black burst signal. Switch on power.
2. Connect oscilloscope via a vectorscope terminated with 75 Ohm to the CVBS output.
3. Switch on colour bar.

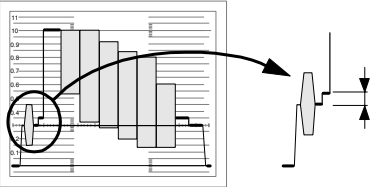
### Black balance

4. Turn chroma potentiometer R171 on encoder board fully clockwise (max. chroma).
5. Adjust the I and Q balance potentiometers for minimum unbalance in black.

Measure at:	Adjust with:	Required result:	
CVBS out	ZR124 ZR324	Smallest possible dot in centre of vectorscope	

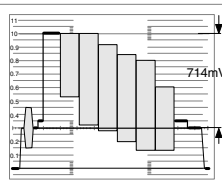
### CVBS offset

6. Adjust the CVBS offset potentiometer to place the black bar at 50 mVdc.

Measure at:	Adjust with:	Required result:	Correct:
CVBS out	ZR529	Black bar = 50mV	

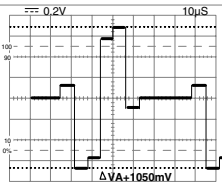
### CVBS amplitude

7. Adjust the CVBS gain potentiometer to obtain an output amplitude of 714mV.

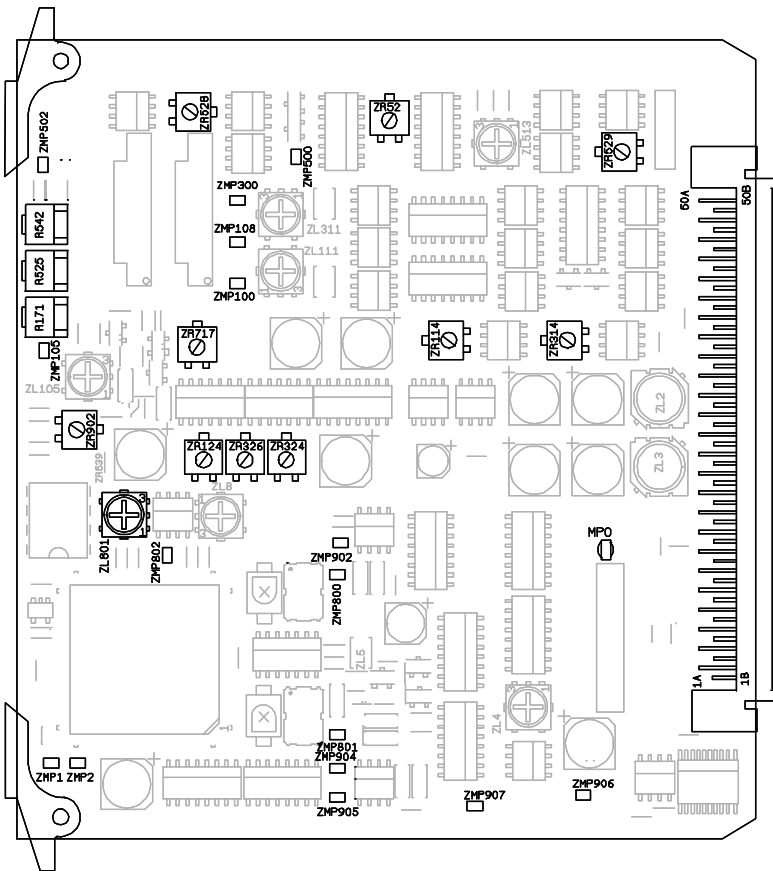
Measure at:	Adjust with:	Required result:	Correct:
CVBS out	R542	714mV	

### R-Y amplitude

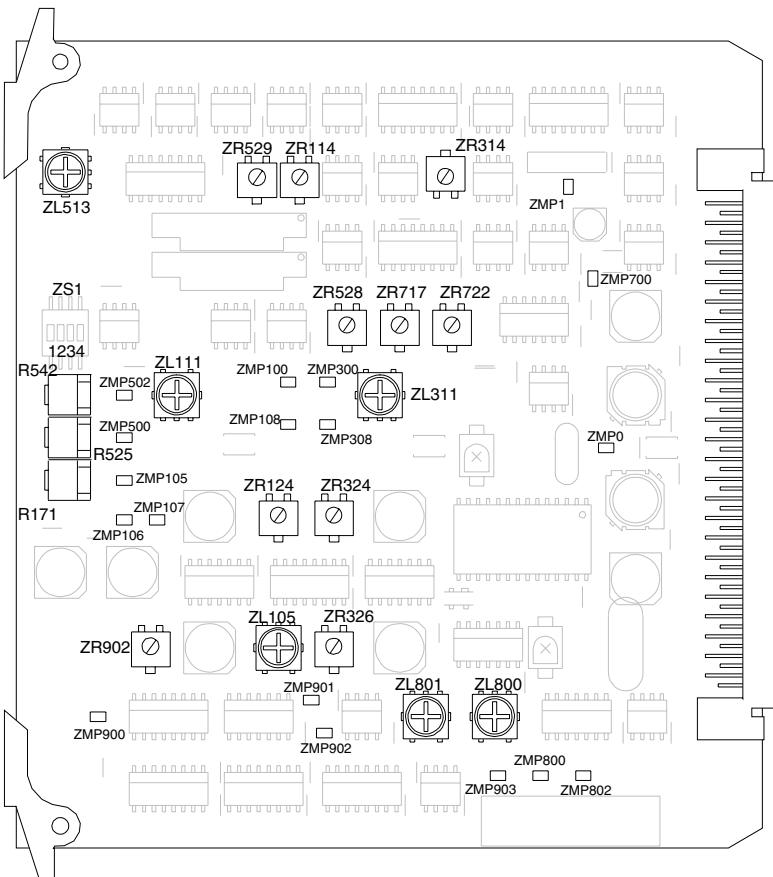
8. Adjust the R-Y potentiometer to obtain an output amplitude of 1050 mV

Measure at:	Adjust with:	Required result:	Correct:
X21-8A	R314	1050mV	

# Encoder Board NTSC



Encoder 3922 406 8716

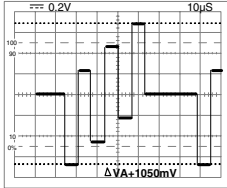


Encoder 3922 406 8441

## Encoder Board NTSC

### B-Y amplitude

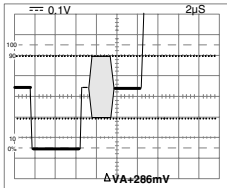
9. Adjust the B-Y gain potentiometer to obtain an output amplitude of 1050mV.

Measure at:	Adjust with:	Required result:	Correct:
X21-11A	ZR114	1050mV	

### BURST ADJUSTMENTS

#### Burst amplitude

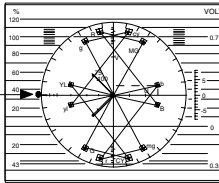
10. Adjust the burst amplitude potentiometer to obtain a burst amplitude of 286mV.

Measure at:	Adjust with:	Required result:	Correct:
CVBS out	ZR717	286mV	

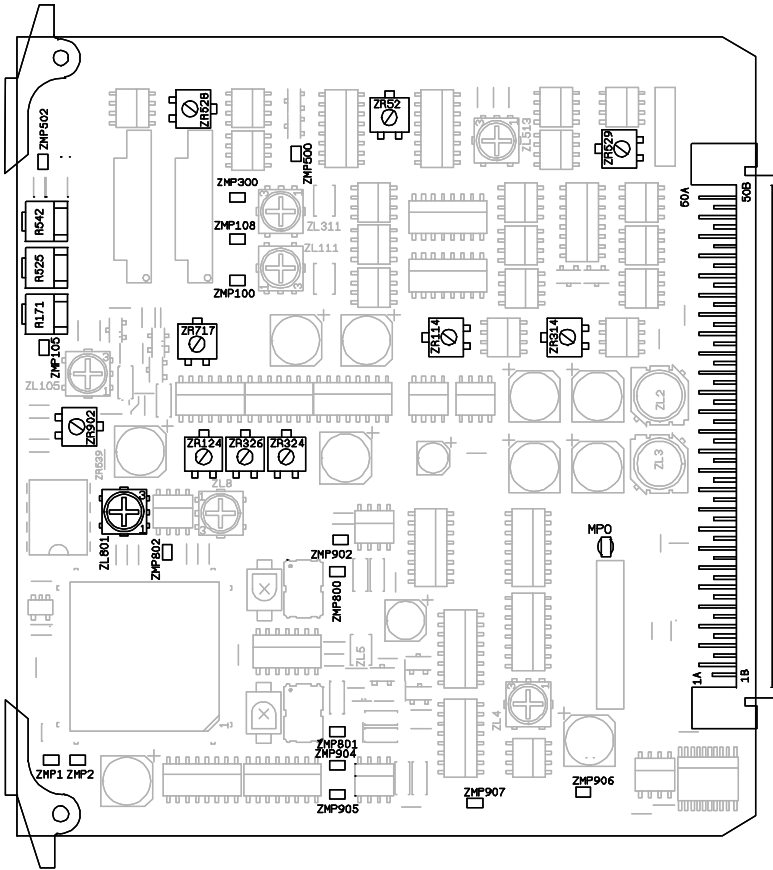
#### Sc-H phase relationship

11. Switch vectorscope to internal synchronisation.

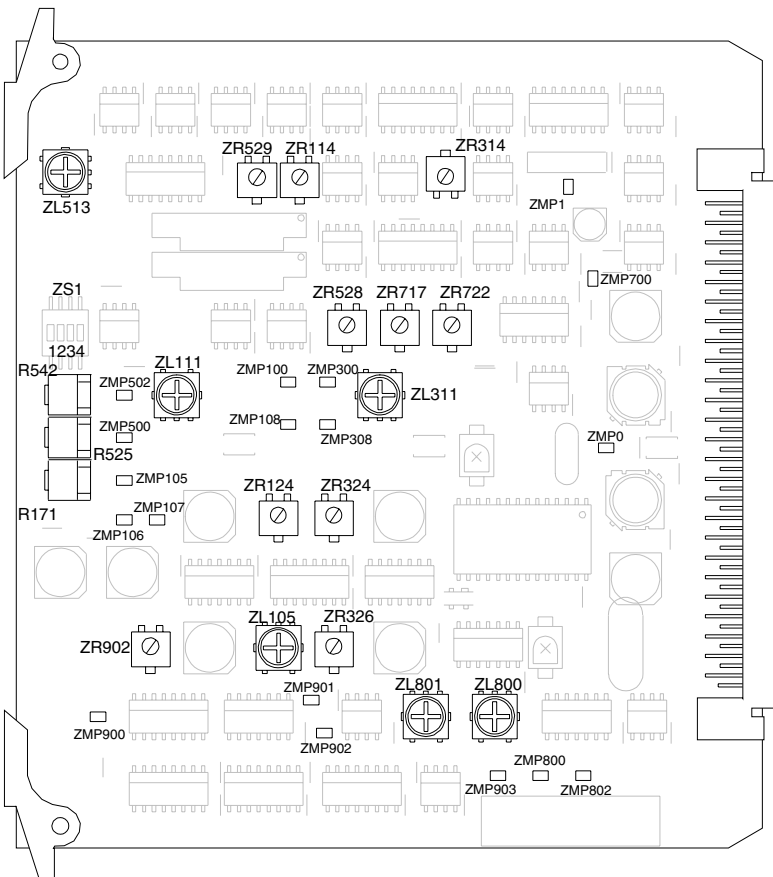
12. Adjust Sc-H phase potentiometer for 180°.

Measure at:	Adjust with:	Required result:	Correct:
CVBS out	ZR902		

# Encoder Board NTSC



Encoder 3922 406 8716



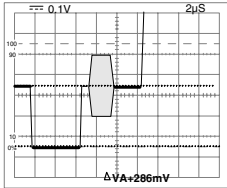
Encoder 3922 406 8441



## Encoder Board NTSC

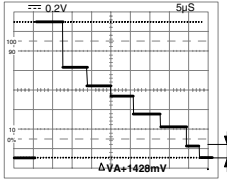
### Sync amplitude

13. Adjust the sync, amplitude potentiometer fto obtain a sync. ampliature of 286mV.

Measure at:	Adjust with:	Required result:	Correct:
CVBS out	ZR525	286mV	

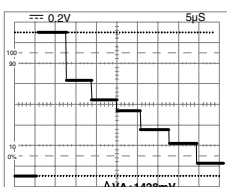
### Y offset

14. Adjust the Y offset potentiometer to place the black bar at the 50mVdc level.

Measure at:	Adjust with:	Required result:	Correct:
X21-14A	ZR52	Black bar = 50mV	

### Y amplitude

15. Adjust the Y gain potentiometer to obtain an output amplitude of 1428mV.

Measure at:	Adjust with:	Required result:	Correct:
X21-14A	ZR528	1428mV	

16. Switch off power and return encoder board to its position in the camera.



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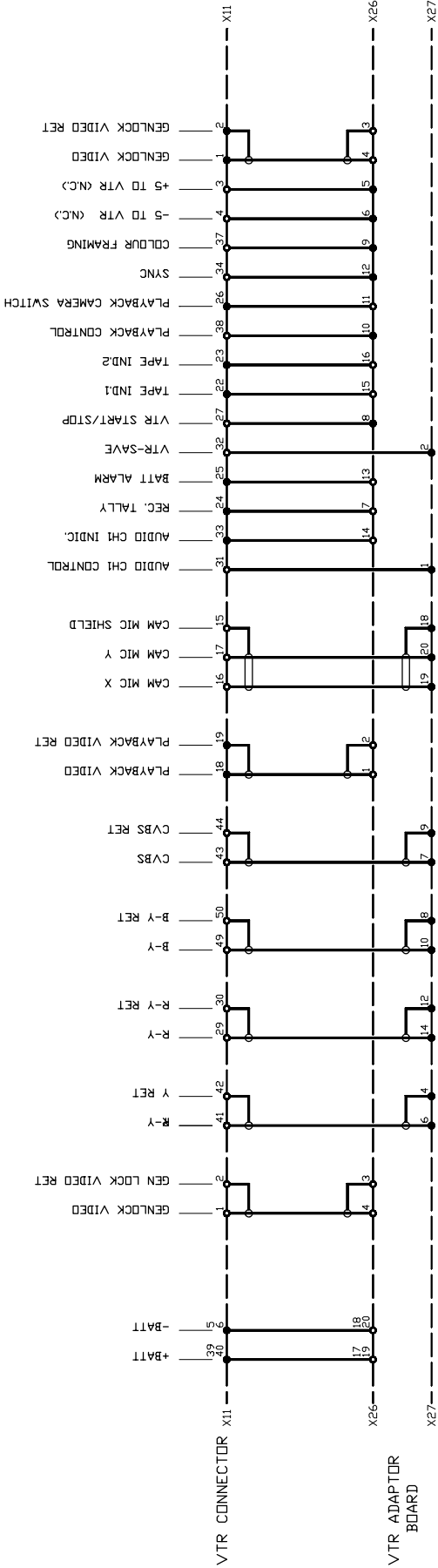
## Section 4

### Wiring Diagram

#### Contents

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Betacam SP Adaptor .....	4-2
--------------------------	-----



ALSO VALID FOR: 8826 541 1XXXX1

COMMON DOCUMENTS: 3922 407 30490

STATUS	X	1	2	3	4	5	6	7	8	9
ASSEMBLY No.	10	11	12	13	14	15	16	17	18	19
BETACAM SP ADAPTOR										
P.C.B. No.	No. 1									
WIRING DIAGRAM										
DATE	REV. DATE: 98-04-25									
NAME	REV. DATE: 98-04-28									
NO.	NAME: J. HOMMEL									
PHILIPS REPAIRCAST TELEVISION SYSTEM BV										
BREDAS 1 SH SHEET 131 - 1										
BREDAS, THE NETHERLANDS										

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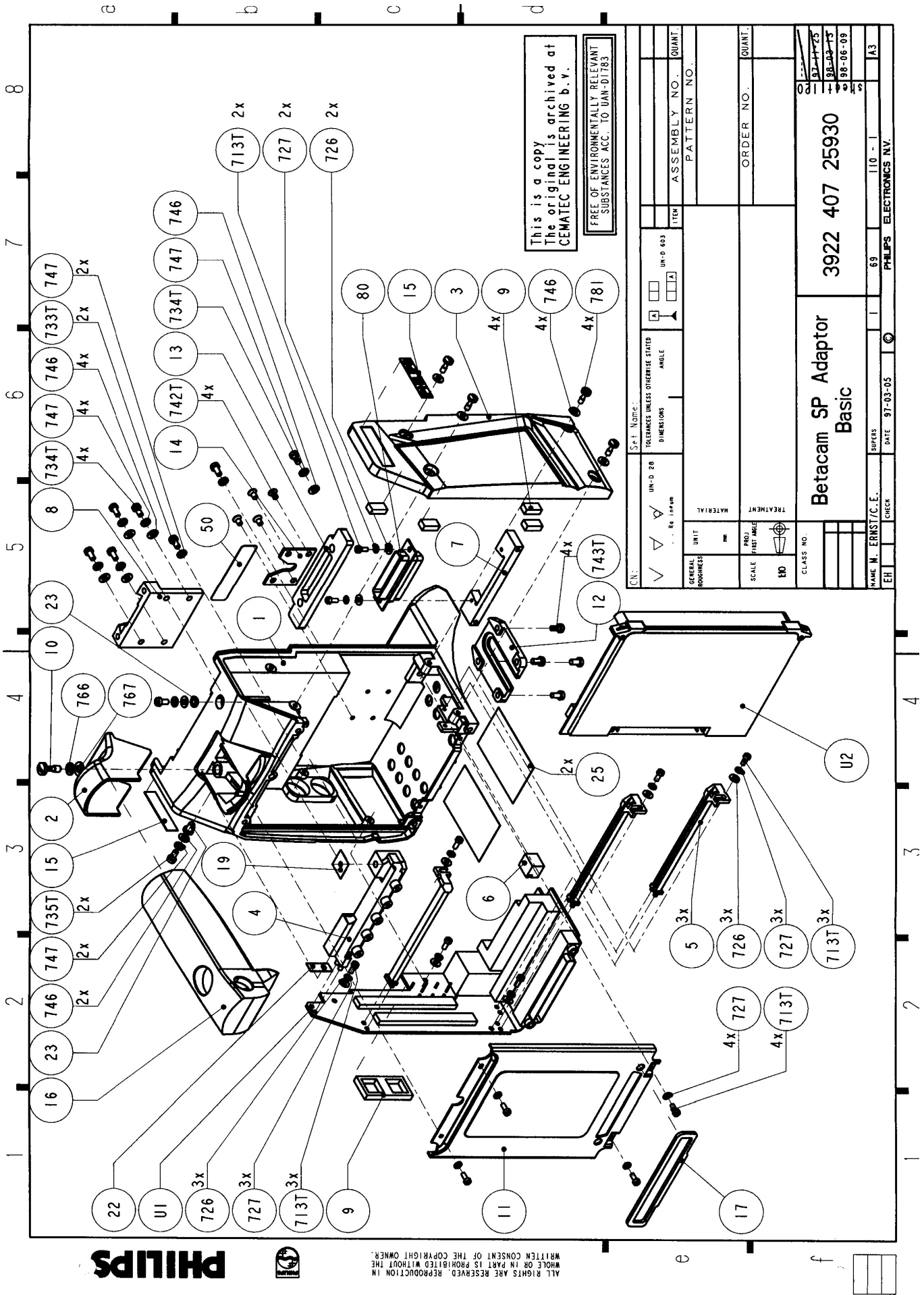
## Section 5

### Mechanical Exploded Views

#### **Contents**

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Betacam SP Adaptor Basic .....	5-2	Hand grip Betacam SP Adaptor .....	5-3
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This is a copy  
The original is archived at  
CEMATEC ENGINEERING b.v.

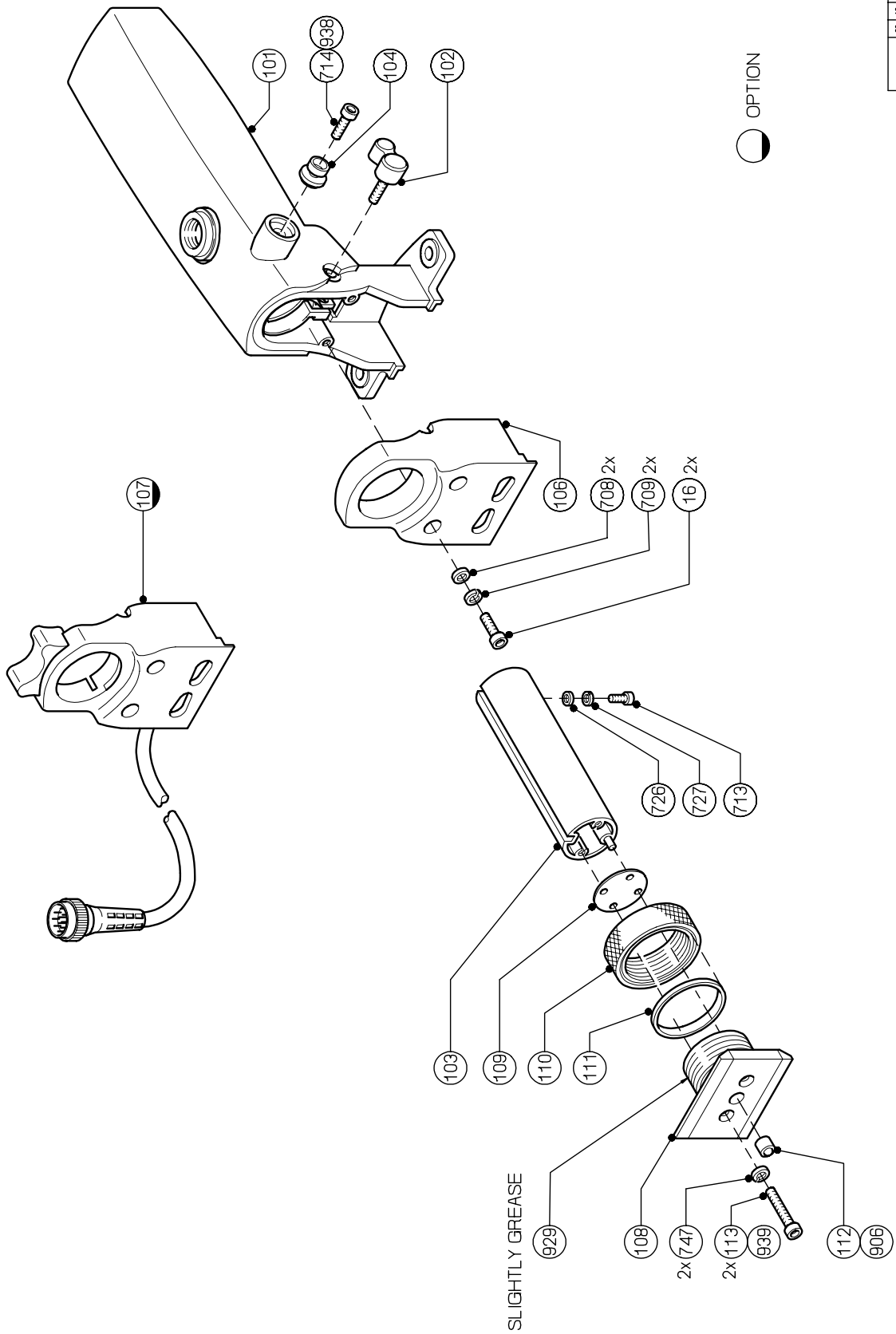
FREE OF ENVIRONMENTALLY RELEVANT  
SUBSTANCES ACC. TO DAN-D1783

Set Name:		UN-D 28		UN-D 603	
TOLERANCES UNLESS OTHERWISE STATED		DIMENSIONS		ANGLE	
Re feature		A		A	
GENERAL FINISHES	UNIT	MATERIAL	TREATMENT	ORDER NO.	QUANT.
SCALE	FIRST ANGLE				
1:10					
CLASS NO.					
Betacam SP Adaptor Basic			3922 407 25930		
DATE	CHECK	SUPERS	DATE	PHILIPS	ELECTRONICS N.V.
97-03-05		69	110 - 1		A3
97-11-05					
98-08-15					
98-06-09					

**PHILIPS**



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STATUS	00	10	20	30	40	50	60	70	80	90	97-11-13
	0	1	2	3	4	5	6	7	8	9	98-05-27
											98-11-12
NAME: LDK TITLE: PROJECTOR FILM PERIODIC TELEVISION SYSTEMS - BETA - THE BETACAMS PART: 3922 407 2730 DATE: 97-08-15 A3											





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## **Section 6**

### **Parts Lists**

