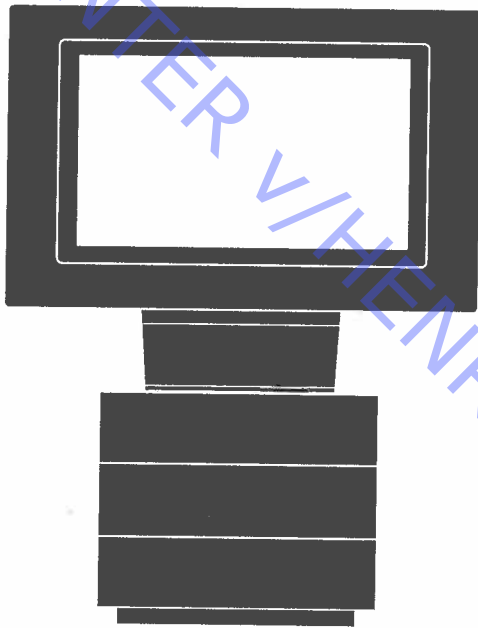


BeoVision 3 – 28

Type 885x

On-site service guide

English, German, French, Italian, Spanish, Danish, Dutch

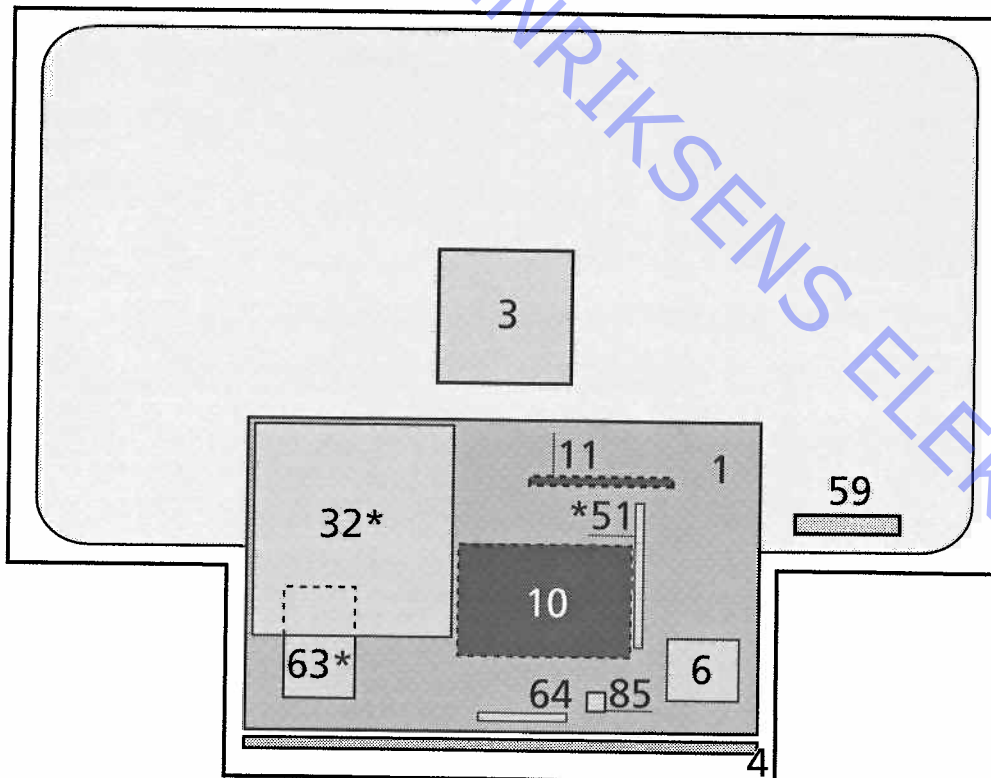


This On-site service guide must be returned with the defective parts/ back-up suitcase !

2.1	English
3.1	Deutsch
4.1	Français
5.1	Italiano
6.1	Español
7.1	Dansk
8.1	Nederlands
9.1	Illustrations
10.1	Replacement of Main chassis (999)
11.1	Replacement of modules (10, 11, 32, 51, 59, 63, 64, 85)
12.1	Overview of geometry parameter settings

There is no Brief operation guide in this On-site service guide. Instead an english version of the user guide is enclosed in the back-up suitcase.

Survey of modules



- PCB1, PCB3, PCB4, PCB6, PCB64, PCB85
- PCB10
- PCB11
- PCB32*
- PCB51*
- PCB59
- PCB63*
- *Optional modules

- Main chassis modules, module 999
- Sound output module
- IR Receiver module
- Dolby Digital Decoder (AC3)
- Masterlink module
- Camcorder interface module
- Splitter & Modulator module

- #1 Using the On-site Service guide
- #2 How to service
- #3 Fault flow chart
- #4 Replacing modules
- #5 Servicemenu
- #6 Adjustments
- #7 ServiceTool
- #8 Final check after repair
- 9.1 Illustrations
- 10.1 Replacement of Main chassis (999)
- 11.1 Replacement of modules (10, 11, 32, 51, 59, 63, 64, 85)
- 12.1 Overview of geometry parameter settings

ABO-CENTER V/HENRIKSENS ELEKTRONIK

#1 Using the On-site service guide (OSSG)

Scope of OSSG

The OSSG is primary dealing with fault located in the product as a stand alone product.

Faults that occur due to setting, link failure or other faults on external connected equipment, can not be expected to be described.

The On-site service guide will explain and guide you through repair of the product.

How to use and read the OSSG

Chapters

The chapters are identified by the prefix #, and are listed numerically, example #5 Adjustments.

Symbols and illustrations.

A survey of symbols are available.

Symbols are used to guide in following situations:

- User action shown in an illustration
- Reference to an illustration

The symbol > is used to refer to a specific illustration.

See >2, refers to illustration 2.

Illustrations are placed in the guide so that you can read an instruction and look at the illustrations at the same time.

Survey of symbols:



Make a shortcircuit between the marked points, usually for discharging e.g. a picture tube



Push with finger, in arrow direction



Disconnect internal plug



Connect internal plug



Disconnect mains plug



Connect mains plug



Disconnect aerial or other external plug



Connect aerial or other external plug



Loosen/remove or fasten/install screw



Dashed arrow. Push/pull e.g. PCB, chassis etc. in arrow's direction



Filled arrow. Refer to page/chapter for more information, e.g. 12.4 PCB51, if mounted:

Turn to 12.4 PCB51 and remove or install PCB if such is mounted

#2 How to service

Strategy

The product is to be serviced in the customer's home!

The static-protective field service kit must always be used when the product is disassembled or modules are being handled.

The repair is made by replacing modules supplied in the Back-up suite case. The replaced modules must be returned for repair at central module repair.

The EEPROM must be transferred to the chassis in the product, hereby maintaining the customer settings, eg. connections, picture, sound, etc.

Preparation before service

Fault symptom – demonstrate and explain

Before troubleshooting is initiated, let the customer demonstrate the fault, if possible.

PIN-code setting prior to service

The user guide gives the full information concerning the function and use of the PIN-code, eg. the purpose of the PIN-code, activating the pin-code, forgotten your PIN-code, etc.

This section gives information handling PIN-code in the service situation.

PIN-code active prior to service.

If the PIN-code is not deactivated prior to service, you must use the Service code to unlock the product.

Service code

The service code:

- Unlocks the product, but does not affect the pin-code setting
- Gives you 12 hours service time

Entering the Service code.

When the product asks, for PIN-CODE press and hold **◀** for 3 seconds.

The Master code menu appears

Enter the Service code: 1 1 1 1 1

Important notice concerning Service time.

The service time is active as long as the product is connected to the mains, including Standby.

To obtain maximum service time:

Only connect the product to the mains while you are performing actual service on the product.

When the service time is expired, the product can only be unlocked by entering the PIN-code or the Master code.

Registration of the modules.

The modules will be registered to the product in the following situations:

- the product has been connected to the mains for more than 12 hours, including Standby time.
- the PIN-code is activated or deactivated.

PIN-code deactivated by customer prior to service.

With the PIN-code deactivated prior to service you must be aware of the modules will be registered to the product in the following situations:

- the product has been connected to the mains for more than 12 hours, including Standby time.
- the PIN-code is activated or deactivated.

The registration of modules in the product can only be changed at Bang & Olufsen, Struer.

Error code

The error code contains data that may be used for repairing the chassis and must be returned with the chassis.

Handling the error codes

1. Take a note of the error code
2. Return the note with the chassis.
3. Repair the product
4. After the product is repaired, clear the error codes in the product.

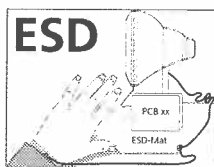
User guide / Brief operation guide

There is no Brief operation guide in this On-site service guide.

Instead an English version of the user guide is enclosed in the back-up suite case.

Handling and cleaning

Static electricity



Static electricity may damage the product.

Static-protective field service kit

A static-protective field service kit must always be used when the product is being disassembled or modules are being handled.

Follow the instructions in the guide and use the ESD-mat area for both old and new modules.

Please note:

When mains voltage on the product is required, remove the connection between the product and the ESD-mat.

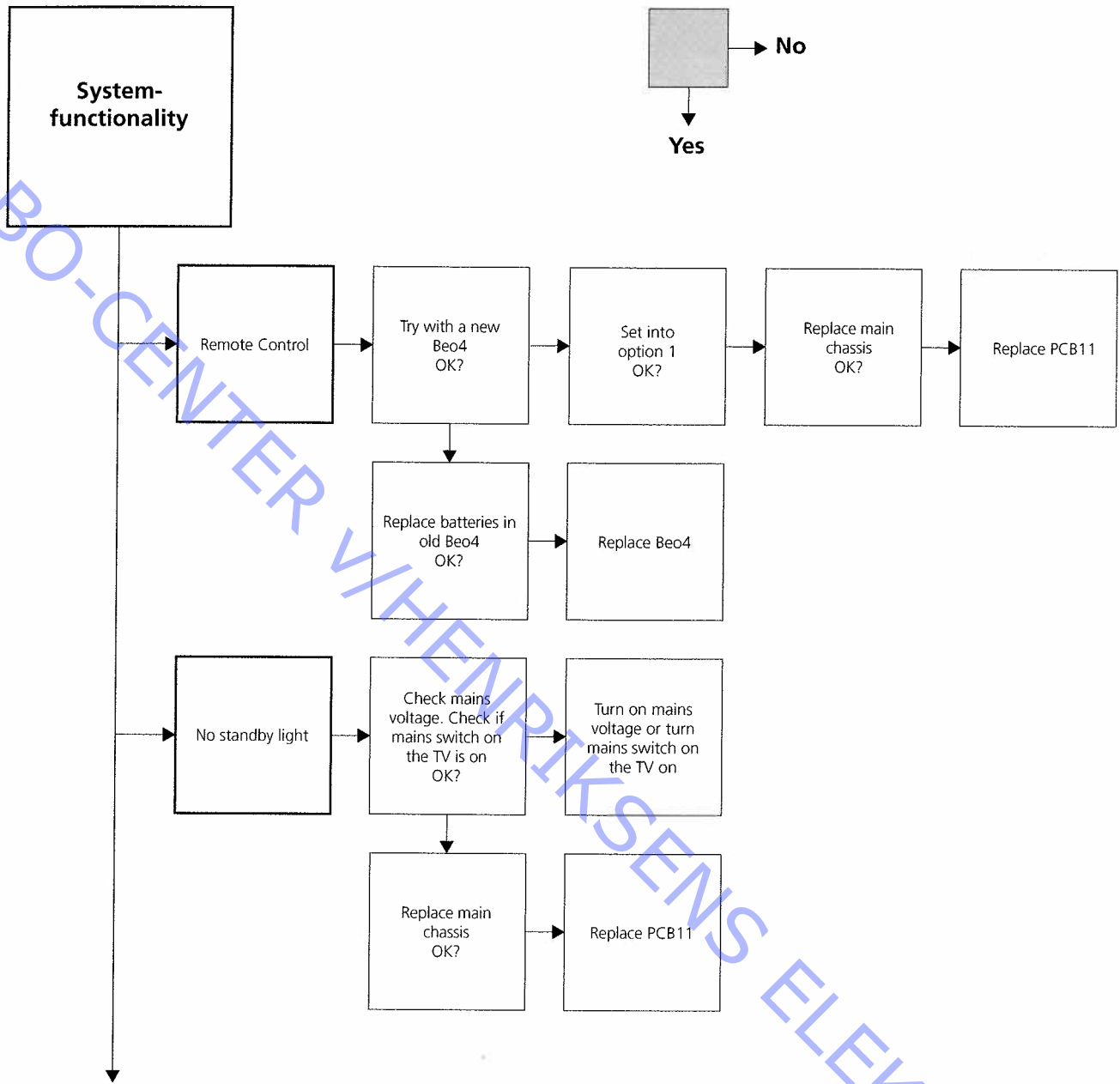
Transport and handling

The product must not be placed on the contrast screen.

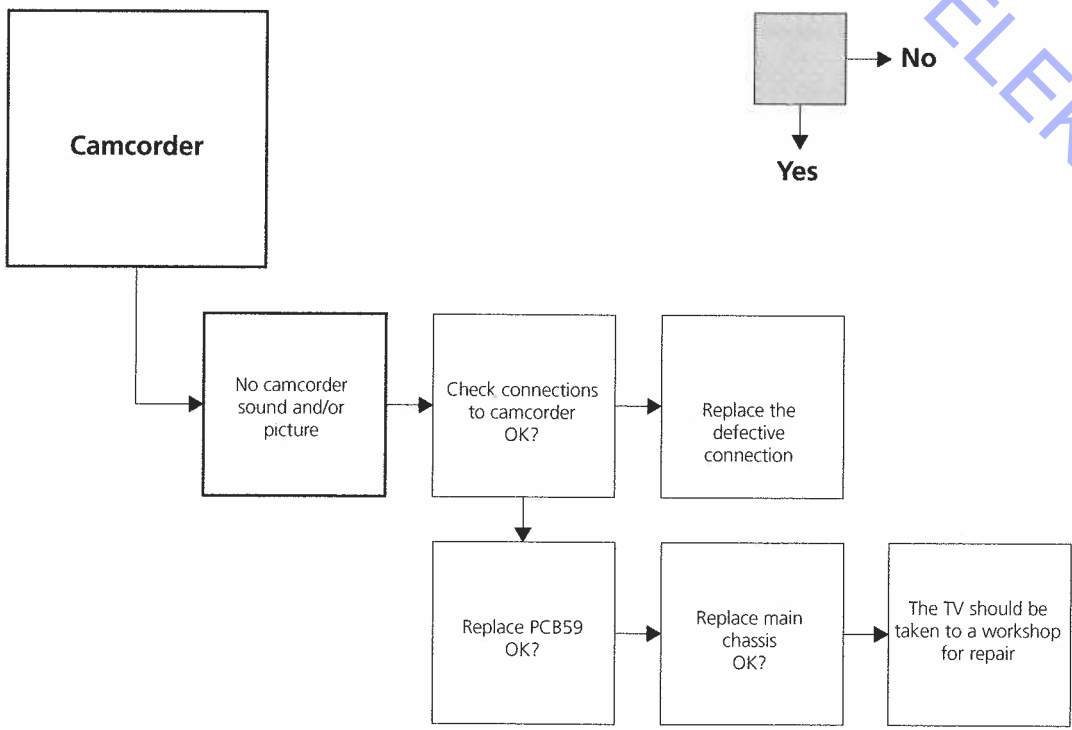
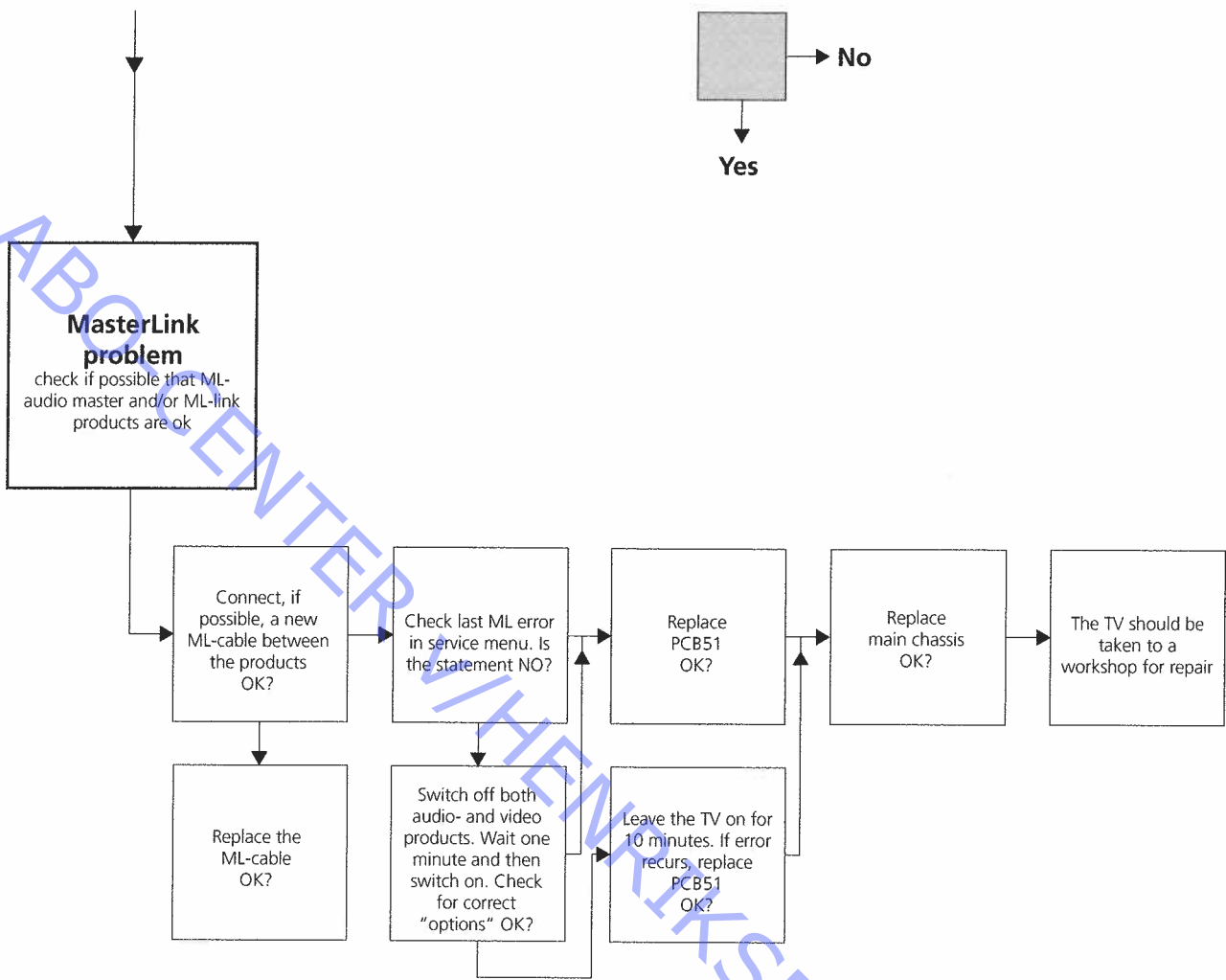
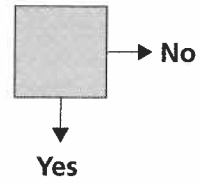
Cleaning

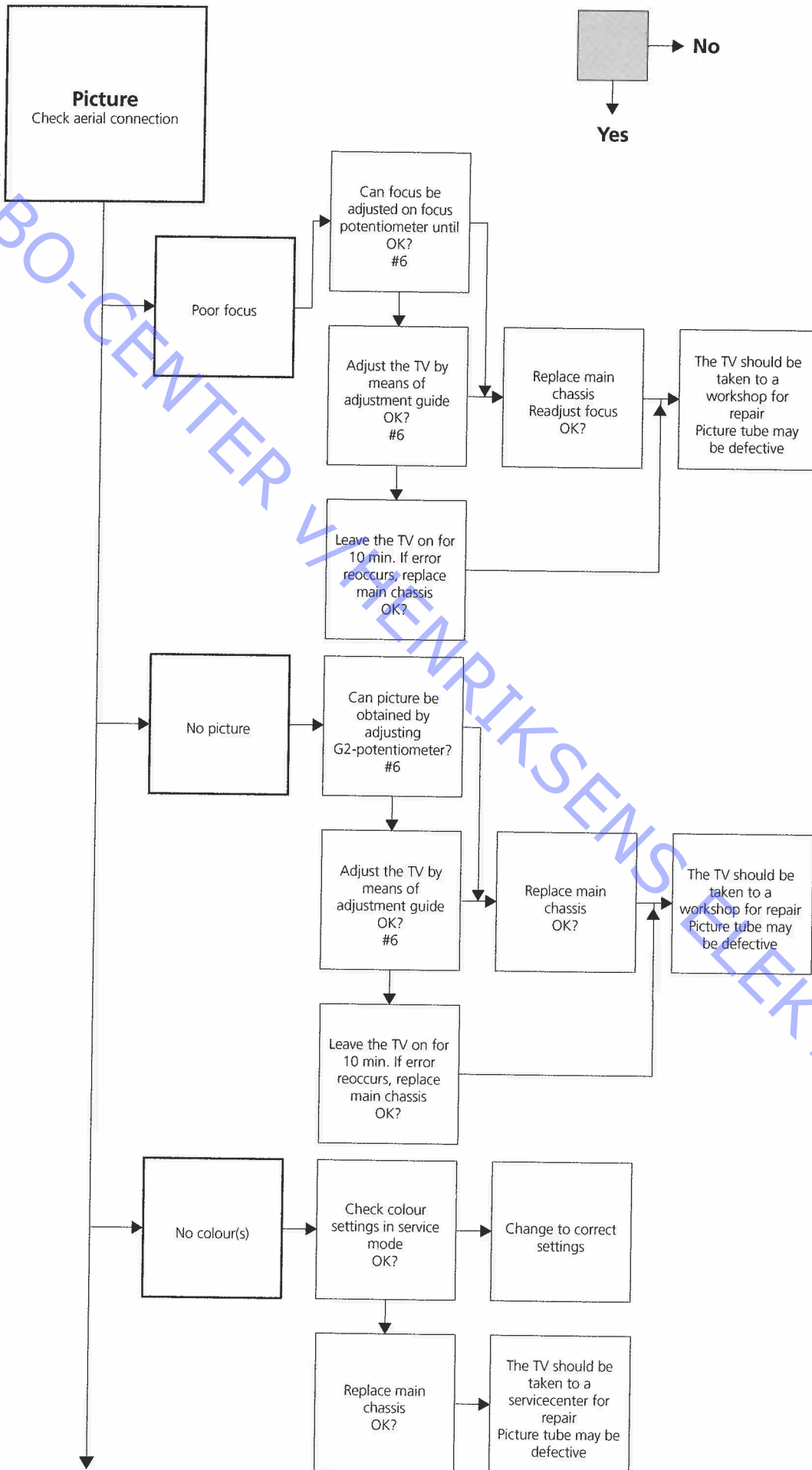
Refer to chapter Final check after repair, or User guide.

#3 Fault flow chart

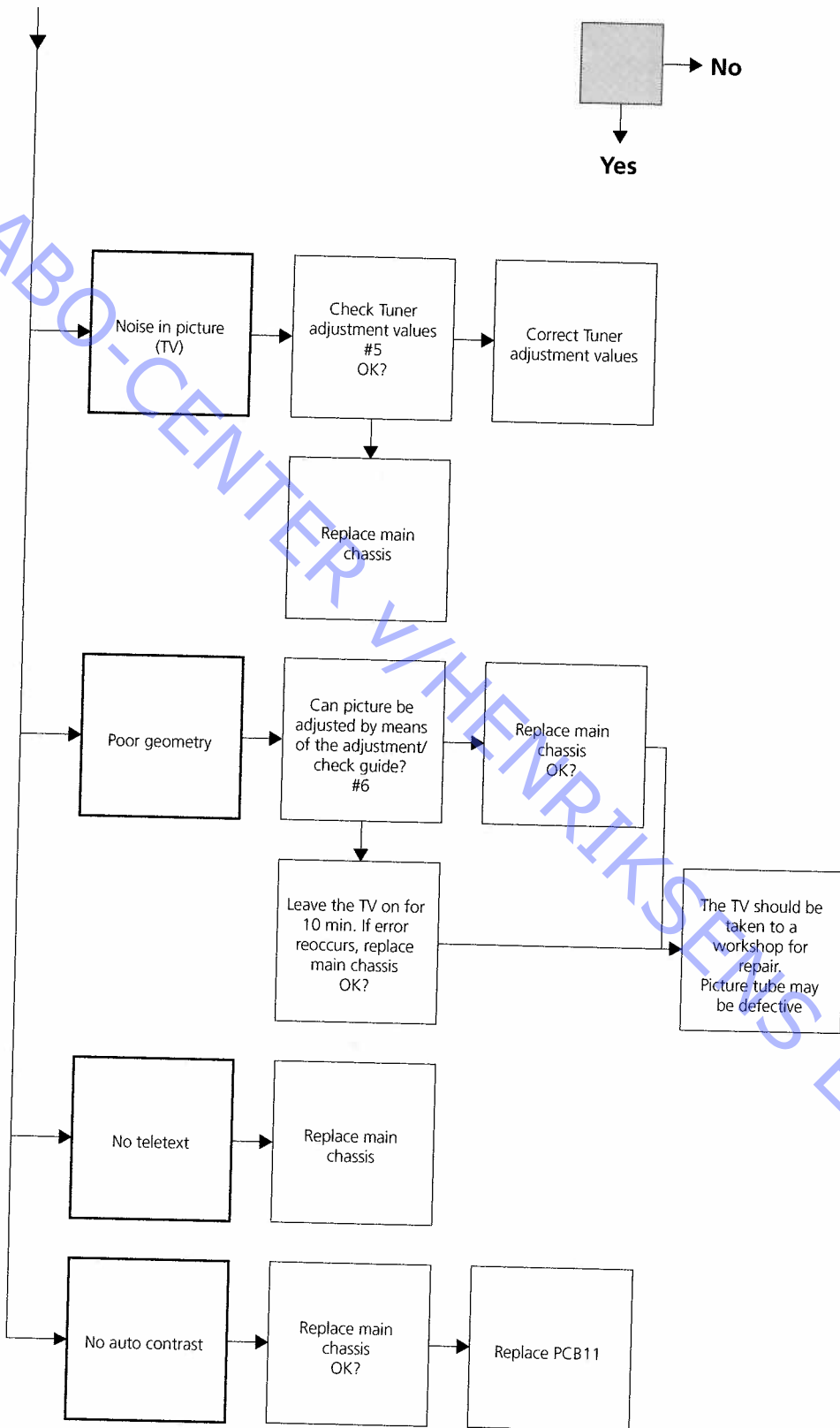


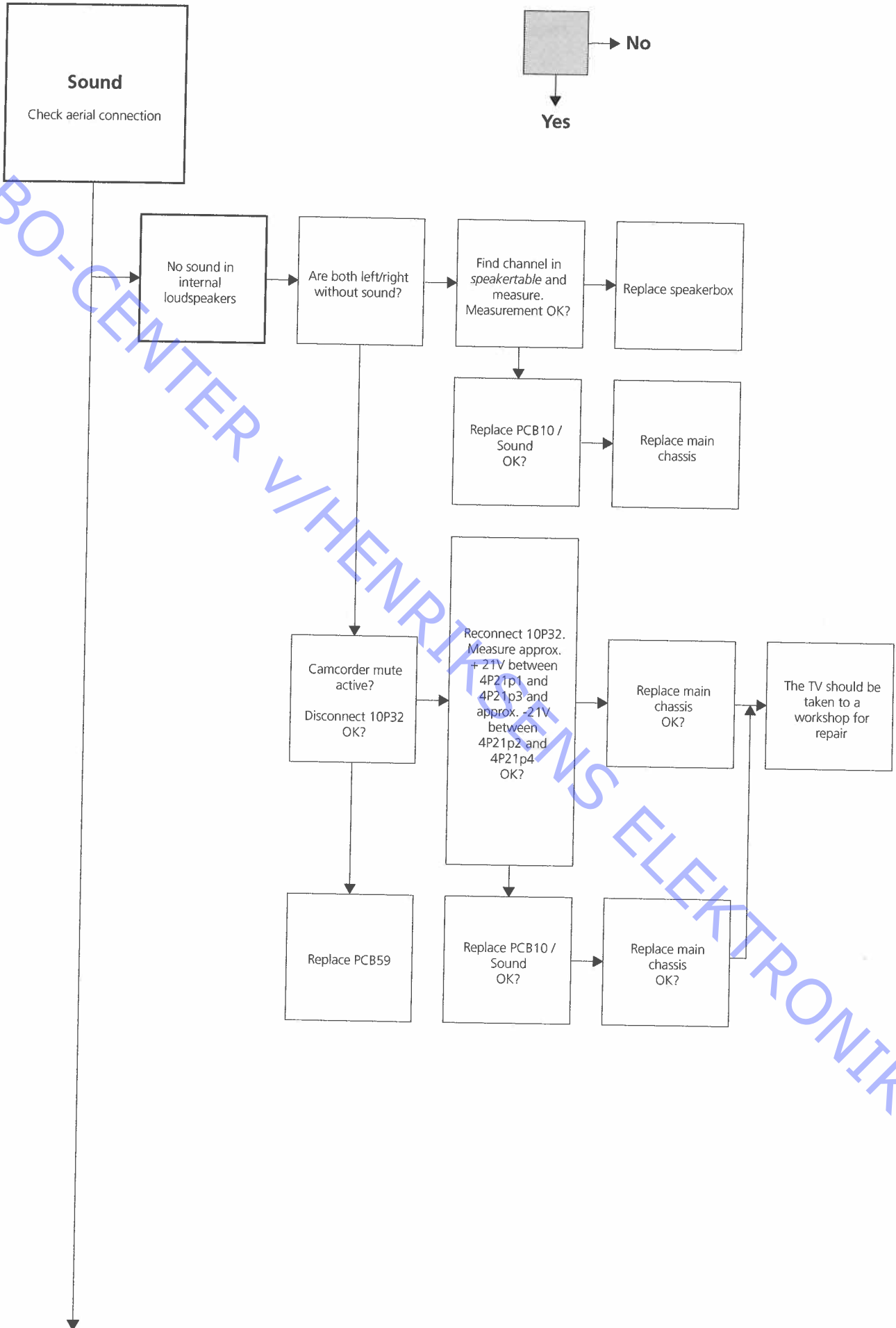
ABO-CENTER VILHEJMS ELEGTRONIK



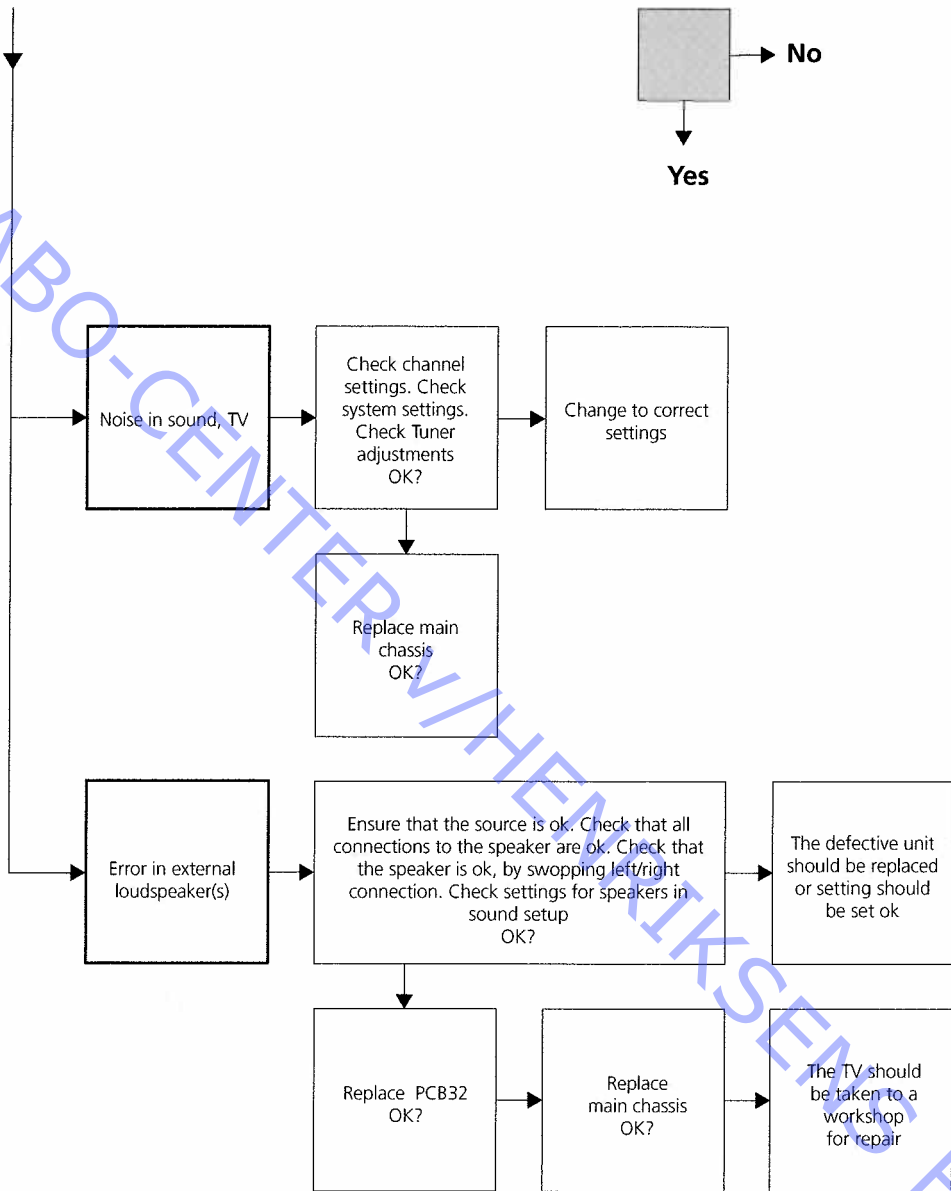


ABO-CENTER VIKENRIKSENS ELEKTRONIK





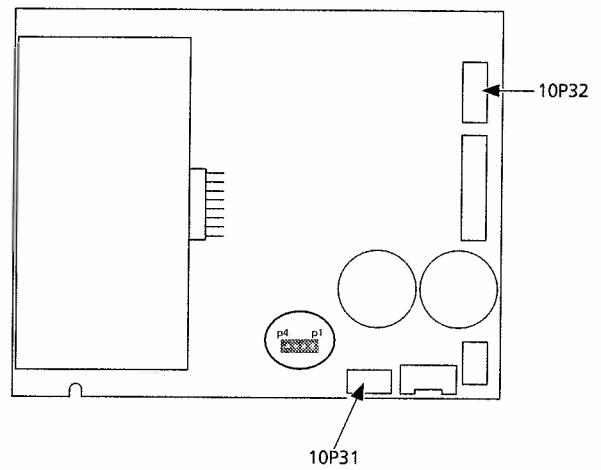
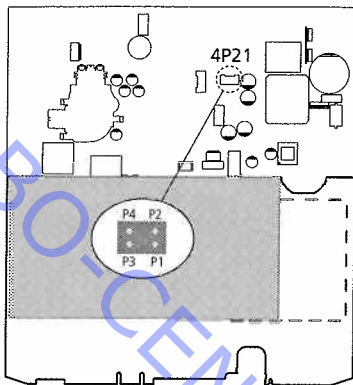
ABO-CENTER V/HENRIKSSONS ELEKTRONIK



ABO-CENTER WILHELMSKSEN'S ELEKTRONIK

Placement of measuring points, described in the fault flow chart

4P21



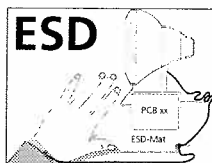
These tables are used in connection with fault-finding on BeoVision 3-28

Speakertable

No sound

- Find the channel and measure on the pins described, with multimeter in ohm's position. Resistance should be approx. 0 ohm. If not the speaker box should be replaced.

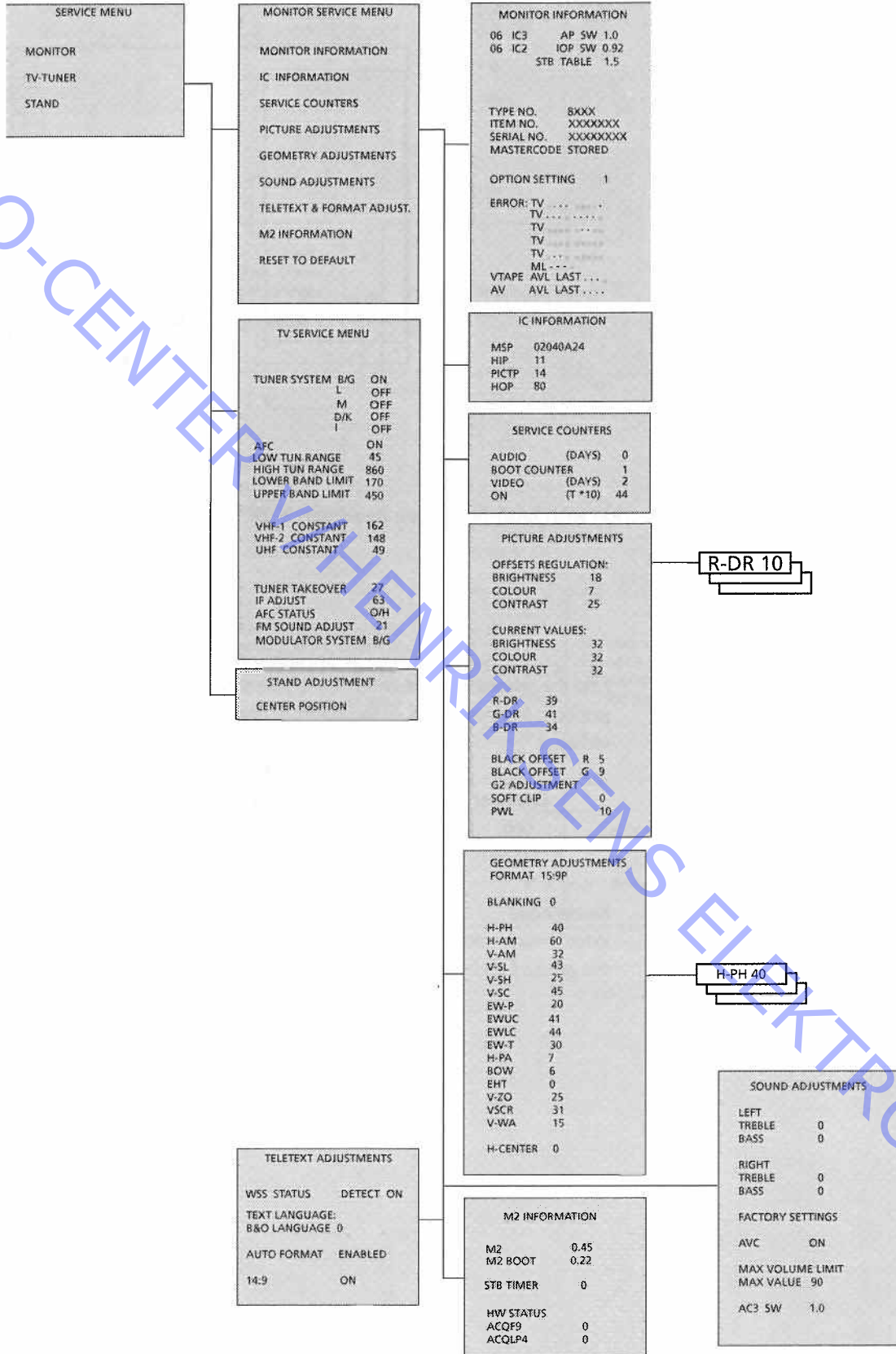
Channel	Pin no.	
Left	10P31	1 - 2
Right	10P31	4 - 3



Please note:

When mains voltage on the product is required, remove the connection between the product and the ESD-mat.

#4 Servicemenu



ABO-CENTER KEYSER ELEKTRONIK

Access to Service Mode

Select **TV SETUP** menu
Beo4: Press **0 0 GO** within 3 seconds

Reading the error code

To read an error code from the television you must access the Service Mode. Then select **MONITOR -> MONITOR INFORMATION**. If the television has registered an error, the error code will be shown in this menu under **ERROR**.

SERVICE MENU

The **STAND** line is only shown if the TV is fitted with motorized stand. The function is described in the section on adjustments.

MONITOR SERVICE MENU

The **PICTURE ADJUSTMENTS** and **GEOMETRY ADJUSTMENTS** lines are described in the section on adjustments.

MONITOR INFORMATION

- Software version numbers
- The "STB TABLE 1.0" line shows the version of conversion of set top box remote control codes into Beo4 codes.
- Type, item and serial numbers
- PIN-code status. Shows if the Master code is correctly entered (STORED/NOT STORED)
- Option programming
- Latest five TV errors
- Latest ML error
- Latest AVL error from the VTAPE and AV sockets

OPTION SETTING

- Option 0 = The IR receiver of the TV is disconnected.
- Option 1 = The TV and the Audio system (BeoLink system) are placed in the same room.
- Option 2 = The TV and the Audio system (BeoLink system) are placed in different rooms.
- Option 4 = Two TV's in the same room and the TV's are not linked together
- Option 5 = The TV and the Audio system (BeoLink system) are placed in the same link room.
- Option 6 = The TV is the only product in the link room.

ERROR:TV

The TV is able to detect certain types of error and display them on the screen. The five latest TV errors are shown as error codes and displayed with the month/date (four digits) as provided by the system clock. The most recent error is displayed at the top. As the TV has no hardware clock the displayed month/date will not be correct, but can be used to see if more errors have occurred at the same date.

The following TV error types can be displayed:

....	No error registered
DF	Data failure
POR1	Power on reset failure 1
POR2	Power on reset failure 2
PDD	Power down detected failure

ML error codes are for detection of errors in the Master Link system.

....	No error registered
CI	Address configuration impossible
TD	ML data pulled down
TU	ML data pulled up
??	Other undefinable error possibilities
NH	No Hardware. There is no Master Link PCB in the TV

AVL error codes from the V.TAPE and AV sockets

... ..	No error registered
TI	Transmission impossible
TD	Data link tied down

Motorized stand error codes

ST-01	Calibration error too few positions
ST-02	Calibration error too many positions
ST-03	Calibration error EEPROM
ST-04	Calibration error transducer
ST-05	Calibration error position

After repair of an error that has triggered the display of an error code, the error code has to be deleted. This is done by pressing **GO** in the **MONITOR INFORMATION** menu.

IIC bus error

An IIC bus error means that the communication on the bus fails when the microcomputer tries to communicate with the address in question.

Module no.	Error Code
1	8A
1	C0
1	A2
1	22
64	80
1	80
63	C8
1	8C
1	40
6	60
32	84

(DF) Data failure

If an error occurs in the EEPROM (61C6) that prevents output of geometry data to the TV set, the microcomputer will replace the missing data with default data stored in the EPROM (61C3) module 999.

(POR1) Power on reset failure 1

Reset or update failure of 11C100 (TDA9321H module 999) during start up.

(POR2) Power on reset failure 2

Reset or update failure of 11C350 (TDA9330H module 999) during start up.

(PDD) Power down detected failure

Power down failure detected on 11C300 (TDA9178 module 999).

(CI) Address configuration impossible

Error during address configuration. No address has been allocated because an excessive number of units has been connected to the Master Link.

- Disconnect all units from the link and reconnect them again one at a time.

(TD) ML data pulled down

The link is pulled down (Low). This error can occur in the form of a physical short circuit in the link. In the link drivers, or in the ML master/source circuit module 51 in the TV.

(TU) ML data pulled up

The link is pulled up (High). This error can occur in the form of a physical short circuit in the link. In the link drivers, or in the ML master/source circuit module 51 in the TV.

(TI) Transmission impossible

It is not possible to send data to pin 8 on the V.TAPE or AV socket, probably because of noise.

(TD) Data link tied down

The data link connection to pin 8 on the V.TAPE or AV socket is short circuited to ground.

(ST-01) Calibration error too few positions

Not enough positions are read during Stand calibration. The Stand may be blocked.

(ST-02) Calibration error too many positions

Too many positions are read during Stand calibration.

(ST-03) Calibration error EEPROM

Failure when the Stand offset should be stored in the EEPROM.

(ST-04) Calibration error transducer

An invalid position is read from the transducer.

(ST-05) Calibration error position

Several readings from the transducer with the Stand in the same position.

#5 Replacing modules

Modules that can be replaced.

999	Main chassis, module 1, 3, 4, 6, 64, 85	
10	Sound output	illustrations only, page 12.1
11	IR/Autocontrast	illustrations only, page 12.2
32*	Digital Surround Sound (AC3)	illustrations only, page 12.3
51*	Masterlink	illustrations only, page 12.4
59	Camcorder	illustrations only, page 12.5
63*	System modulator	illustrations only, page 12.6
64	Powerlink	illustrations only, page 12.7
85	Mini Jack STB	illustrations only, page 12.8

* Optional modules

Scope of replacing modules

Short instructions for replacing the available modules, with reference to additional illustrations:

1. The correct sequence for replacing modules.
2. Text and illustrations.
3. Reference to adjustment

Modules that do not require any special procedure may be shown as only illustrations.

Replace module 999, main chassis

For detailed dismantling instructions, please refer to illustrations on page 10.1

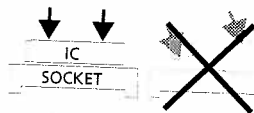
Notice

All modules must be placed on the ESD-mat or in an ESD-proof bag.

Replace module 999

1. Set the product in Service position
2. Disconnect ESD-mat
3. Discharge picture tube.
Wait minimum 30 seconds after the mains supply has been removed before discharging the picture tube.

4. Connect ESD-mat, required
5. Remove optional modules
6. Disconnect cables and modules from the main chassis
7. Remove the main chassis and place it on the ESD-mat
8. Insert the new main chassis in the product
9. Transfer 6IC6, EEPROM, from the old to the new chassis
10. Remount modules and reconnect cables to the main chassis
11. Reconnect remaining cables
12. Remove the front plate, to get access to G2/Focus potentiometer.



Replace using IC-pliers
(part no. 3629145)

The product is now ready for adjustment.

13. Disconnect ESD-mat
14. Connect mains
15. Turn on the product

Enter service mode

16. Transfer the values for: Tuner Taker Over, IF adjust and FM Sound adjust
17. Test and adjust according to #6
18. Finish service.

#6 Adjustments

Adjustments described:

Tuner Takeover, IF- and Sound adjust.

Stand adjustment, optional module.

Picture adjustments

Geometry adjustments

Sound adjustments, no adjustment possible

Scope of Adjustments

The content in the adjustment instructions is the following:

- contains text and illustrations if needed.
- the correct sequence for the adjusting the product.
- the correct procedure for the adjustment.

Illustration of:

- geometry parameters
- geometry measuring points
- special tools needed for the adjustment.

General considerations

Picture adjustments

Brightness, Contrast and Colour can only be adjusted in the Menu – Options – Picture.

The service menu does not give this opportunity.

Measurements

All measurements concerning the geometry are measured without the contrast screen mounted.

Measurements are performed with a ruler directly on the picture tube.

All measurements are measured from the phosphors edge, unless other is specified.

For the best result, measurements are performed in a straight angle to the picture tube, e.g. you see into the reflection of your own eye.

Geometry must be checked and adjusted in format

FORMAT 1, 15:9

FORMAT 1 (panoramic), 16:9

FORMAT 3, 16:9

Preparations before geometry checking and adjustment

1. Dismount the Contrast screen and holder for the Contrast screen.
2. Dismount the front plate, for access to potentiometer.
3. Cover the auto contrast.
4. Turn TV on.
5. TV must warm up for minimum 5 min before adjustment may be performed.
6. Select the correct test picture.
7. Set TV in correct FORMAT

Adjustment procedure and sequence:

1. Horizontal adjustment.
2. G2 adjustment.
3. Focus adjustment.
4. Vertical adjustment.
5. FORMAT 1, 15:9 adjustment.
6. FORMAT 1, 16:9 adjustment.
7. FORMAT 3, 16:9 adjustment.

Finishing procedure

8. Clean the picture tube.
9. Clean the contrast screen.
10. Remount the contrast screen.

Picture formats

Please refer to the user guide for full explanation.

BeoVision 3 – 28 provides the opportunity to choose from three different picture formats by means of the Beo4 remote control.

FORMAT 1

For standard TV pictures. Two variations are available: 15:9 and Panoramic view (for the largest view).

Press ◀ or ▶ to select variations of this format

Panoramic view is the default choice.

FORMAT 1 – 14:9

This format is only available via the service menu and on request of the customer.

FORMAT 2

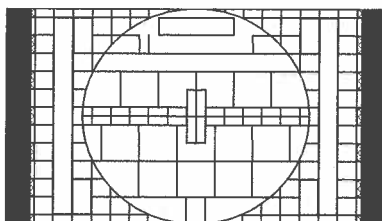
For letter-box pictures. When you select FORMAT 2, the picture is automatically adjusted vertically. This ensure that channel names or subtitles- if these appear in the broadcasted picture – can be seen.

Press up or down to move the picture up and down.

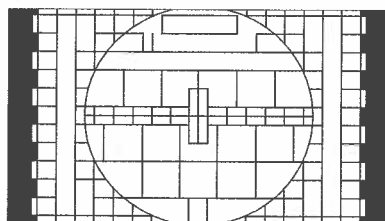
FORMAT 3

For 16:9 widescreen pictures. FORMAT 3 is usually selected automatically. If this is not the case, you can select it yourself.

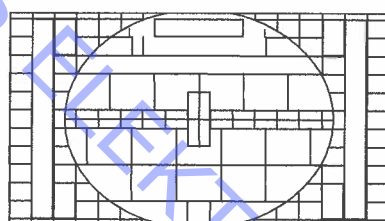
Format 1 - 14:9



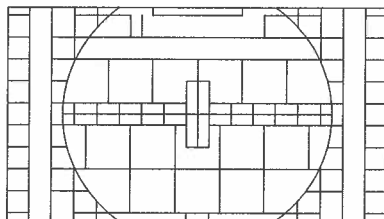
Format 1 - 15:9



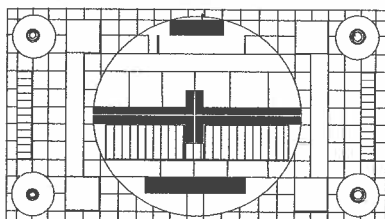
Format 1 - 16:9 panoramic



Format 2 - Letterbox



Format 3 - 16:9



Access to Service Mode

Select a SETUP menu.

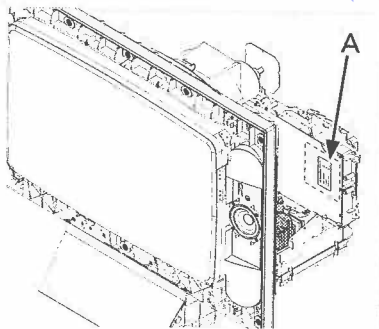
Beo4: Press **0 0 GO** within 3 seconds.

Select ordinary menu operation to leave Service Mode.

Operation in Service Mode.

Beo4	Activity
EXIT	Removes the menus
GO	- Selects the sub menu to the menu line where the cursor is placed - Stores the selected values and returns to the SERVICE MENU - Deletes error codes in the MONITOR INFORMATION menu and returns to the SERVICE MENU
▲	Moves the cursor up and returns to the previous menu
▼	Moves the cursor down and selects a sub menu in special occasions
◀ ▶	Selects new values in the menus and selects a sub menu in special occasions

Adjust Tuner takeover, IF adjust and FM sound adjust



The values (A) written on the label placed on PCB1, have to be written into the EEPROM (6IC6)

- Enter SETUP, select SERVICEMODE with **0, 0, GO**. Press the button combination within 3 seconds. Highlight TV-TUNER, select with **GO**. Change the settings by means of **◀▶** until they match the values on the label. Then press **GO** to store the settings.

Exit Service Mode.

Stand (Only TV with motorised stand)

The scope of this adjustment is to determine the center position.

The adjustment must be performed in the following situations:

- the motorised stand is connected to the television.
- the main chassis has been replaced.
- the EEPROM (6IC6) has been replaced.

Adjustment procedure

1. Enter the SERVICE MENU and select STAND.
2. Press **GO**, when CALIBRATION OK is displayed, the center position of the motorised stand is found.

Picture adjustment

Default values, do not change

OFFSET REGULATION:
 BRIGHTNESS 19
 COLOUR 25
 CONTRAST 8

 SOFT CLIP 0
 PWL 10

Adjustable values

R-DR
 G-DR
 B-DR

BLACK OFFSET R
 BLACK OFFSET G
 G2 adjustment refer to geometry adjustments

Picture setting (TV – MENU – OPTIONS – PICTURE)

Brightness	Contrast	Colour
Middle position (32)	Middle position (32)	Middle position (32)

Check default settings:

OFFSETS REGULATIONS
 Brightness
 Contrast
 Colour
 Soft Clip
 PWL

White level:

Adjust R-DR, G-DR and B-DR to correct white level.

Grey level – system PAL/NTSC.

Connect a PAL signal to the TV and adjust BLACK OFFSET R and BLACK OFFSET G to correct grey level.

Grey level – system SECAM.

Connect a SECAM signal to the TV and adjust BLACK OFFSET R and BLACK OFFSET G to correct grey level.

Geometry adjustments

Default values from factory

		FORMAT 1 15:9	FORMAT 1 16:9	FORMAT 3 16:9
H-PH	Horizontal phase			
H-AM	Horizontal amplitude			
V-AM	Vertical amplitude			
V-SL	Vertical slope			
V-SH	Vertical shift			
V-SC	Vertical S-correction	22	22	22
EW-P	EW parable			
EWUC	EW upper corner			
EWLC	EW lower corner			
EW-T	EW trapezium			
H-PA	Horizontal parallelogram			
BOW	Horizontal bow			
EHT	Horizontal EHT sensitivity Do not change this value	0	0	0
V-ZO	Vertical zoom Do not change this value	25	25	25
VSCR	Vertical scroll Do not change this value	33	33	31
V-WA	Vertical wait Do not change this value	14	14	14
H-CENTER	Horizontal center			

Initial settings in order to adjust the TV.

Access to potentiometers, G2 and FOCUS.

It is recommended to gain access to the potentiometer by removing the front plate.

Connections

Enter SETUP – CONNECTIONS
Set V.TAPE to V.TAPE
Set AV to none
Press **GO** and then **EXIT** to leave the menu.

Recommended test tape:

6780000,
15 min test picture format 16:9
15 min test picture format 4:3

H-Center, Horizontal Centert

Setup

TV-mode V.TAPE
 Format 16 :9, format 3
 Test picture 16:9 test picture

Picture setting (TV – MENU – OPTIONS – PICTURE)

Brightness	Contrast	Colour
Middle position (32)	Middle position (32)	Middle position (32)

Adjustment parameters

H-AM Horizontal amplitude.
 H-Center Horizontal center.
 H-PH Horizontal phase.

Adjustment procedure

1. Adjust H-AM until the picture fills the phosphorus area.
 2. Adjust H-CENTER until distance AB = CD within 2 mm.
 3. Adjust H-PH for centring the picture.
- Repeat step 2 and 3 if necessary.

G2 (cut off) adjustment

Setup

TV-mode V.TAPE / CAMCORDER
 Format 16 :9, format 3
 Test picture No picture applied
 – no V.TAPE connected

Picture setting (TV – MENU – OPTIONS – PICTURE)

Brightness	Contrast	Colour
Middle position (32)	Middle position (32)	Middle position (32)

Access to SCREEN potentiometer, See >3, page 9.4

Remove the front plate, remember the ground cord.
 The potentiometer can now be accessed from the front.

Adjustment procedure

Adjust the SCREEN potentiometer until the Standby LED turns green.
 (red = G2 to high, yellow = G2 to low, green = G2 ok.)

Focus

Setup

TV-mode V.TAPE
 Format 16 :9, format 3
 Test picture 16:9 test picture

Picture setting (TV – MENU – OPTIONS – PICTURE)

Brightness	Contrast	Colour
Middle position (32)	Max position (62)	Middle position (32)

Access to SCREEN potentiometer, See >3, page 9.4

Remove the front plate, remember the ground cord.
 The potentiometer can now be accessed from the front.

Adjustment procedure:

1. Cover the display panel e.g. with a soft cloth to prevent light adjusting the contrast.
2. Adjust Picture contrast to max (62).
3. Adjust FOCUS 1, Vertical line no 2 in the right side.
4. Adjust FOCUS 2, Horizontal line no 3 from the top.
Repeat step 3 and 4 minimum twice, always ending with horizontal, FOCUS 2.
5. Adjust Picture contrast to 32.

V-SH, Vertical Shift

Setup

TV-mode V.TAPE
 Format 16 :9, format 3
 Test picture 16:9 test picture

Picture setting (TV – MENU – OPTIONS – PICTURE)

Brightness	Contrast	Colour
Middle position (32)	Position (32)	Middle position (32)

Adjustment procedure

1. Press - SERVICE MENU - MONITOR – GEOMETRY ADJUSTMENTS
2. Select BLANKING 1 press **GO**
3. Press **▶▶**, sets BLANKING ON
4. Adjust V-SH until blanking is covering up to the vertical center \pm 1mm, 162 mm from top/bottom of the phosphor edge.
5. Press **▶▶**, sets BLANKING OFF
6. Press **GO** to leave the leave the function

The value for V-SH is used in all formats.

Geometry in Format 1, 15:9

Setup

TV-mode V.TAPE
 Format 15:9, format 1
 Test picture 4:3 test picture

Picture setting (TV – MENU – OPTIONS – PICTURE)

Brightness	Contrast	Colour
Middle position (32)	Position (32)	Middle position (32)

Illustrations for geometry parameter settings, See page 12.1

Adjustment procedure

1. V-AM Adjust EI = 10.0 ± 1.5 mm
2. V-SL Adjust NG = 13.6 ± 1.5 mm
3. H-PH Adjust HQ = TF ± 2.0 mm
4. H-AM Adjust HQ = TF = 20.6 ± 2.5 mm

EW adjustments might have to be performed more than one time in order to obtain the optimum result.

EW-P East/West Parabola

Adjust for straight line between A to D and B to C.
 Pay special attention to the middle 2/3 part of the line.

EWUC East/West Upper corner

Adjust for straight line in the upper 1/4 of the line A to D and B to C.
 Compare to the middle 2/3 part of the line.

EWLC East/West lower corner

Adjust for straight line in the lower 1/4 of the line A to D and B to C.
 Compare to the middle 2/3 part of the line.

EW-T East/West Trapezium

Adjust distance A to W + B to X = Z to D + C to Y, or
 Distance A to B = D to C.

H-PA Horizontal parallelogram

Adjust distance A to W = Z to D and
 distance B to X = C to Y.

BOW Horizontal bow

Adjust for straight line A to D and B to C.

Geometry in Format 1, 16:9

Setup

TV-mode V.TAPE
 Format 4:3, format 1
 Test picture 4:3 test picture

Picture setting (TV – MENU – OPTIONS – PICTURE)

Brightness	Contrast	Colour
Middle position (32)	Position (32)	Middle position (32)

Illustrations for geometry parameter settings, See page 12.1

Adjustment procedure

1. V-AM Adjust EI = 10.0 ± 1.5 mm
2. V-SL Adjust NG = 13.6 ± 1.5 mm
3. H-PH Adjust HQ = TF ± 2.0 mm
4. H-AM Adjust HQ = TF = 38 ± 2.5 mm

EW adjustments might have to be performed more than one time in order to obtain the optimum result.

EW-P East/West Parabola

Adjust for straight line between A to D and B to C.
 Pay special attention to the middle 2/3 part of the line.

EWUC East/West Upper corner

Adjust for straight line in the upper 1/4 of the line A to D and B to C.
 Compare to the middle 2/3 part of the line.

EWLC East/West lower corner

Adjust for straight line in the lower 1/4 of the line A to D and B to C.
 Compare to the middle 2/3 part of the line.

EW-T East/West Trapezium

Adjust distance A to W + B to X = Z to D + C to Y, or
 Distance A to B = D to C.

H-PA Horizontal parallelogram

Adjust distance A to W = Z to D and
 distance B to X = C to Y.

BOW Horizontal bow

Adjust for straight line A to D and B to C.

Geometry in Format 3, 16:9

Setup

TV-mode V.TAPE
 Format 16:9, format 1
 Test picture 16:9 test picture

Picture setting (TV – MENU – OPTIONS – PICTURE)

Brightness	Contrast	Colour
Middle position (32)	Position (32)	Middle position (32)

Illustrations for geometry parameter settings, See page 12.1

Adjustment procedure

1. V-AM Adjust EI = 10.0 ± 1.5 mm
2. V-SL Adjust NG = 10.0 ± 1.5 mm
3. H-PH Adjust HQ = $TF \pm 2.0$ mm
4. H-AM Adjust HQ = $TF = 21 \pm 2.5$ mm

EW adjustments might have to be performed more than one time in order to obtain the optimum result.

EW-P East/West Parabola

Adjust for straight line between A to D and B to C.
 Pay special attention to the middle 2/3 part of the line.

EWUC East/West Upper corner

Adjust for straight line in the upper ¼ of the line A to D and B to C.
 Compare to the middle 2/3 part of the line.

EWLC East/West lower corner

Adjust for straight line in the lower ¼ of the line A to D and B to C.
 Compare to the middle 2/3 part of the line.

EW-T East/West Trapezium

Adjust distance A to W + B to X = Z to D + C to Y, or
 Distance A to B = D to C.

H-PA Horizontal parallelogram

Adjust distance A to W = Z to D and
 distance B to X = C to Y.

BOW Horizontal bow

Adjust for straight line A to D and B to C.

#7 ServiceTool

Flash- programming of the M2 processor

It is not possible to built-in a Set-top-Box Controller module in the chassis.

The Set-top-Box Controller is software (STB-C software and STB-C table), which has to be flash-programmed into the M2 processor.

For this purpose Bang & Olufsen has developed a "ServiceTool" which is a PC/ LapTop application for installation/updating the STB-C software

Tools needed for Flash-programming

- PC/LapTop with Bang & Olufsen "ServiceTool" application.
ServiceTool CD-ROM part no: 3658949.
It can also be downloaded from the Retail System, file size is app. 22MB in September 2003.
- Cable kit no. 3375397.

Flash-programming - STB-C software

1. Disconnect the mains from the Television.
2. Connect cable to IR Output
3. Start the "ServiceTool", choose "Products" and follow the on-screen instruction on the PC.

Note!

Software versions can be checked in the "Service Menu".

#8 Final check after repair**Final check after repair**

The final check after repair, describes the activities that are needed to ensure the product will be returned in perfect condition to the customer.

The contents is:

- AC leakage test.
- Check product information.
- Restore the setup and check connections, picture and sound.
- Final cleaning of the product.
- PIN-code setting

AC leakage test

The scope of the test is, to check the antenna terminals and other exposed metal parts for AC leakage.

1. Remove the line cable from the AC source (the wall outlet.)
2. Place a jumper across the two AC plugs prongs.
3. Use a multi-meter, set for measurements in the ohm-area.
4. Place one lead from the multi-meter on the AC plug and place the other lead on each of the exposed metal parts, that is antenna connections and other exposed metal parts on the rear panel of the product.
5. The resistance during these measurements must be of 1 Mega Ohm or more. If resistance is below 1 Mega Ohm, this indicates an abnormal situation and corrective actions must be taken.

Monitor information

The scope of this check is, to ensure the following:

- The product has maintained the correct identity.
- Is set to correct option
- The error code register is cleared

Procedure

1. Enter Service menu – monitor service menu – monitor information
2. check the serial number is correct
3. check option setting is correct
4. clear the error code.
5. select error code and press **GO**.

Customer setup

Remember to inform the customer of any changed that has been made in the user setup, due to procedures in the ossg, eg. Connections, Sound, Picture, etc.

Restore the product to the customer setup.

TV SETUP - OPTIONS

Connections, eg DVD, STB, VTR
 Sound, eg. external speakers
 Picture
 Clock

Check all sources are working correctly

- Check that picture and sound on all sources are working correctly.
- Check the teletext are working correctly.

Clean the product

Clean the contrast screen.

Use white gloves to avoid smudging the contrast screen.

The illustrations are places in the back. See >2, page 9.3

We recommend to use the micro fibre cloth, part no 3375706 to clean the contrast screen.

Cleaning cabinet surfaces

Wipe dust off the surfaces using a dry, soft cloth. Remove grease stains or persistent dirt with a soft, lint-free, firmly wrung cloth, dipped in a solution of water containing only a few drops of mild detergent, such as washing-up liquid.

Never use alcohol or other solvents to clean any part of the television.

About the contrast screen and picture tube

To clean the picture screen, use a mild window cleaning fluid. To retain the optimum performance of the screen, make sure that no streaks or traces of the cleaning fluid are left on the screen or the picture tube.

To avoid soiling the speaker cover when you clean the television screen or the picture tube, we recommend that you remove the speaker cover beforehand.

Speaker cover cleaning instructions

Please refer to the user guide.

PIN-code

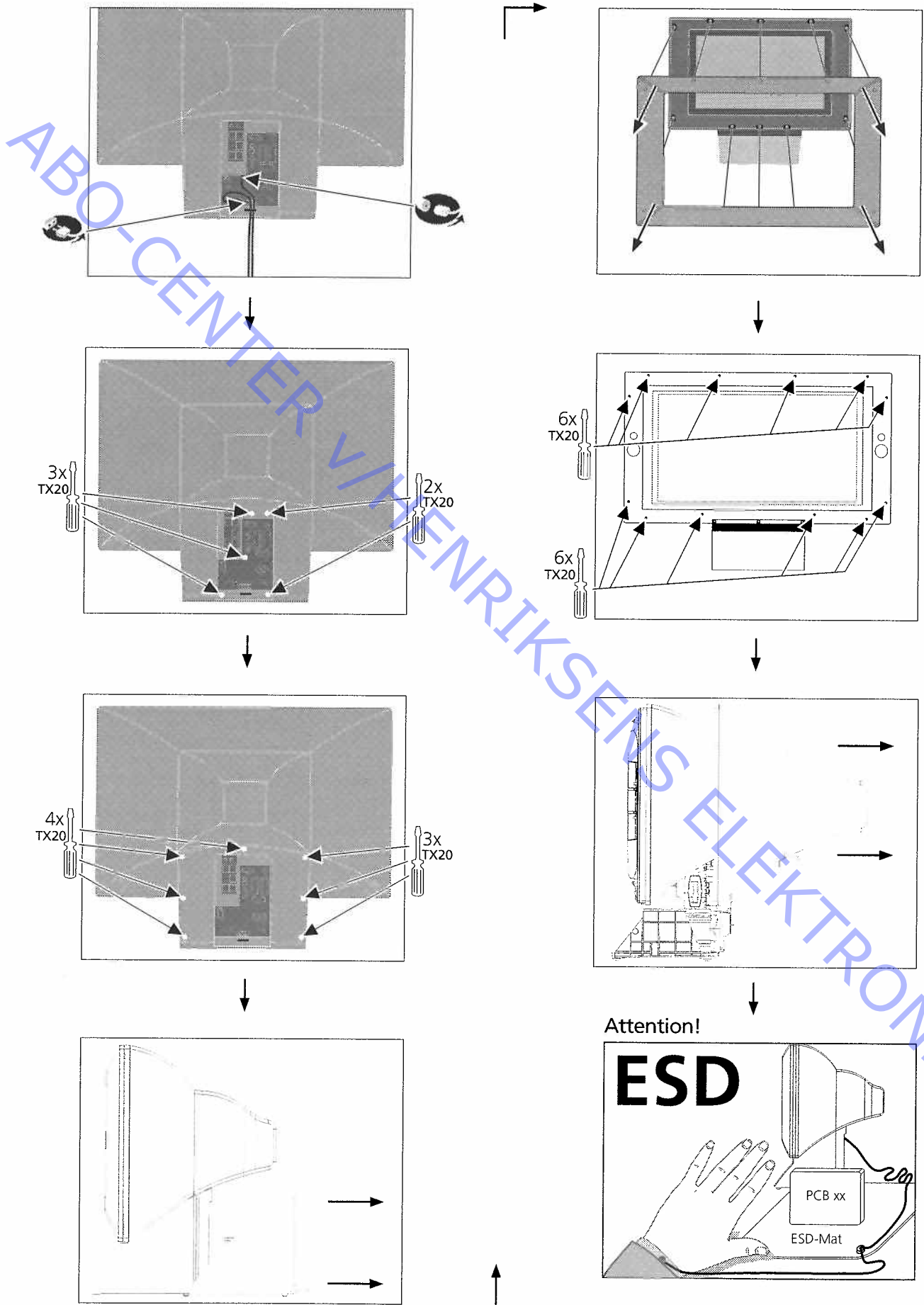
Please refer to the user guide for further information about the use of PIN-code

Information to the customer

The PIN-code must be activated by the customer.

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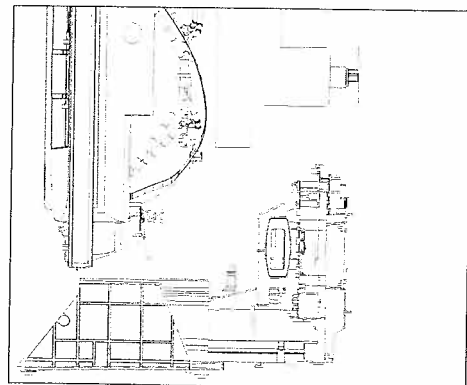
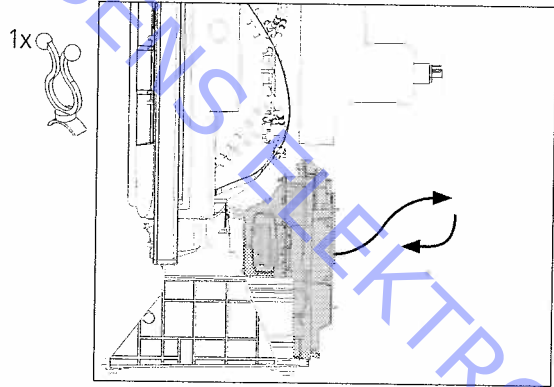
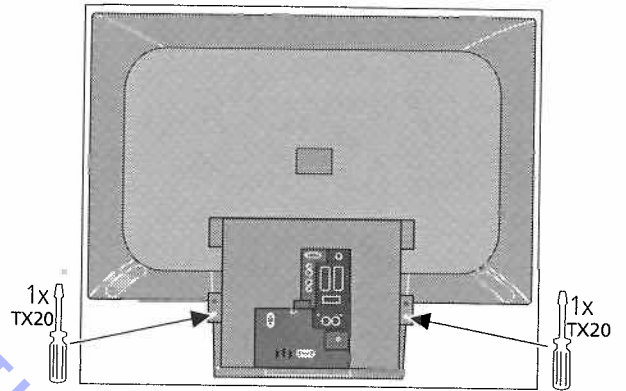
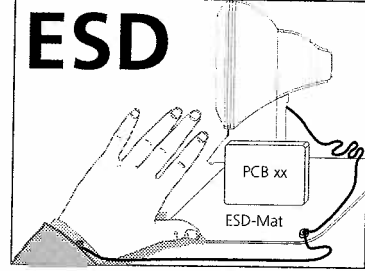
Service mode



Main chassis in service position

➔ 9.1 Service mode

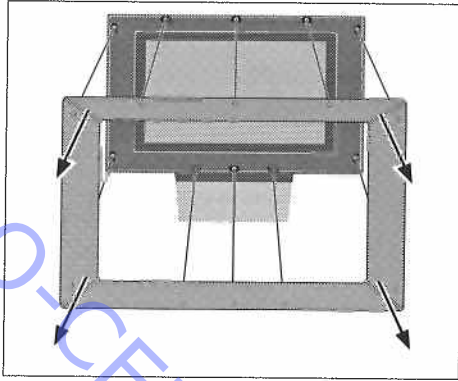
Attention!



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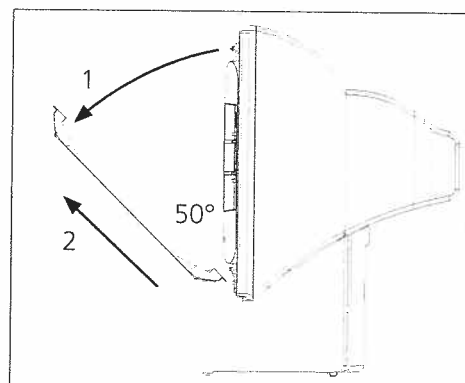
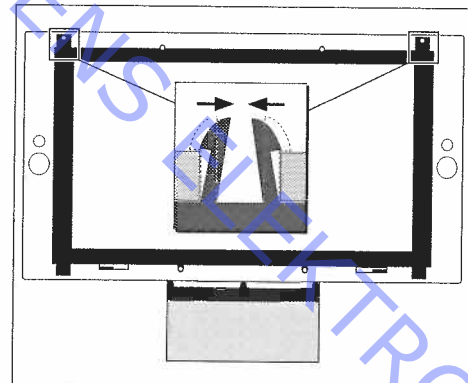
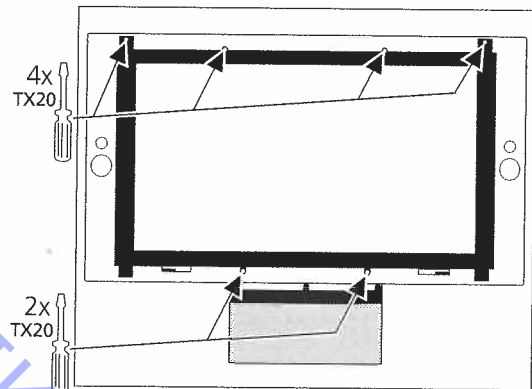
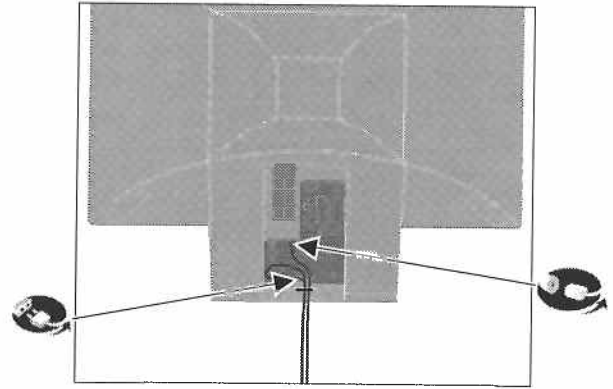
Removing speaker cover

>1



Removing contrast screen

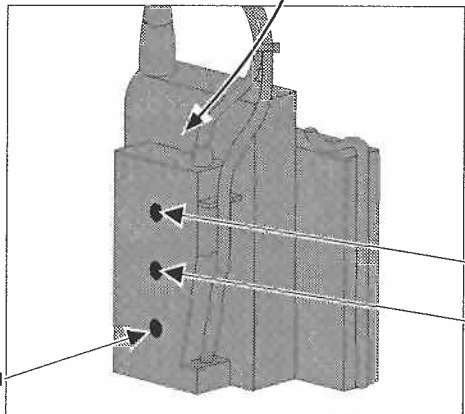
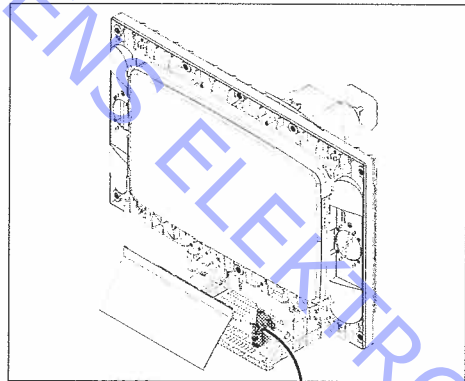
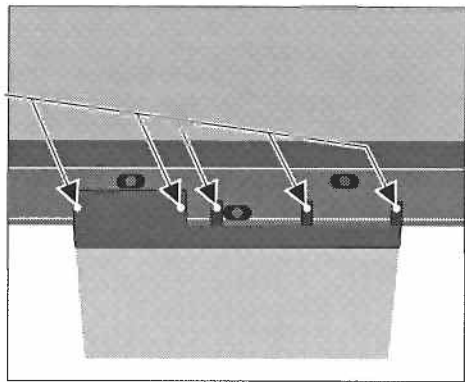
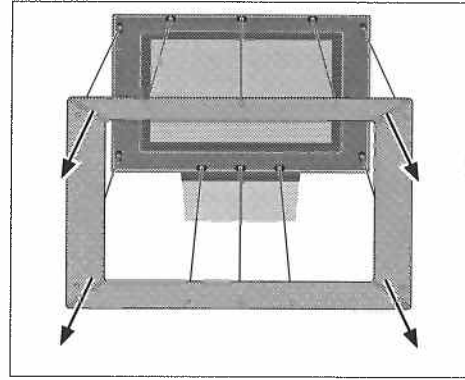
>2



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Placement of potentiometer

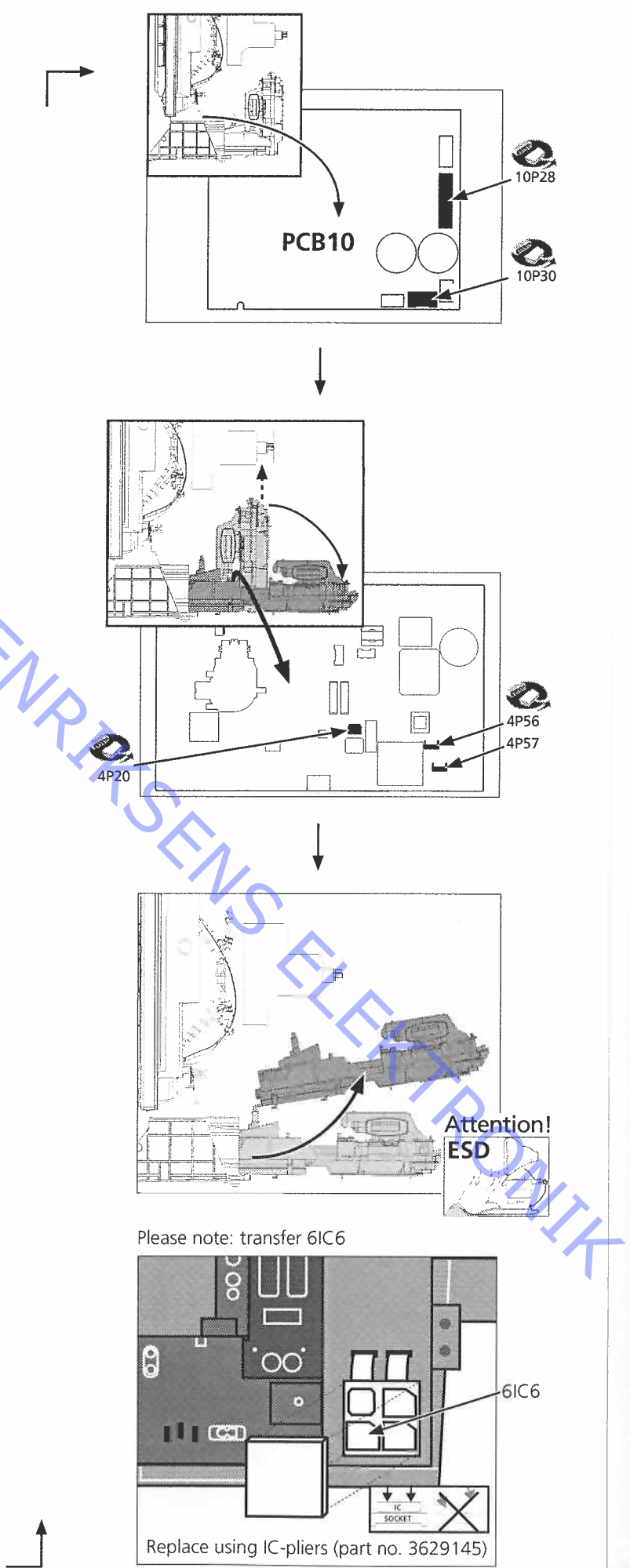
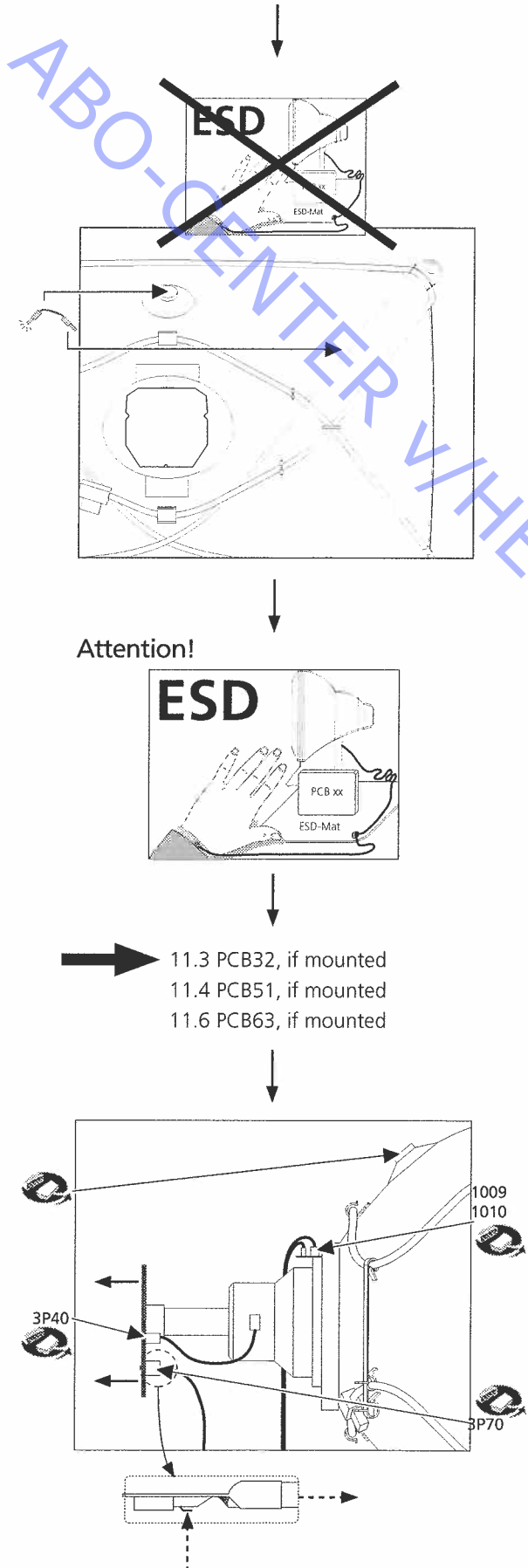
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ABO-CENTER V/HENRIKSENS ELEKTRONIK

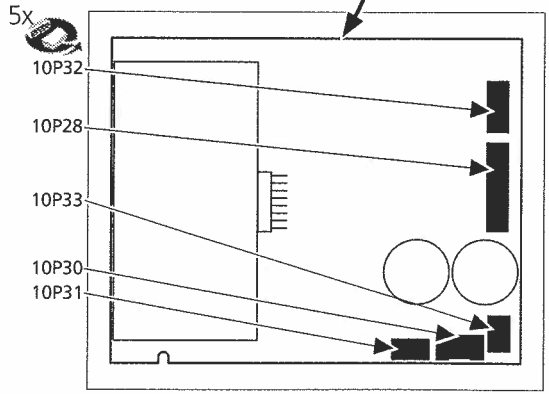
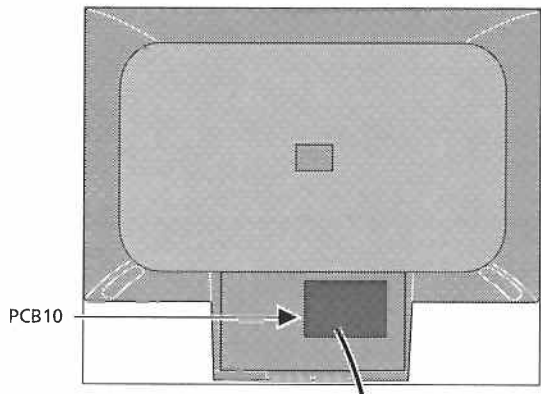
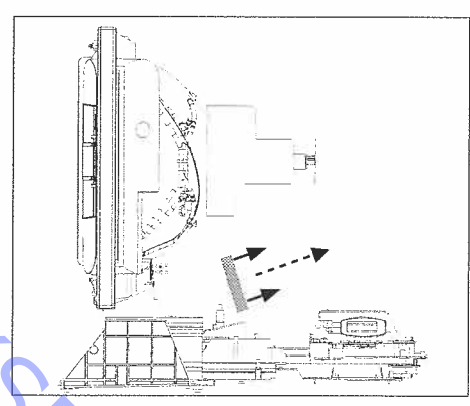
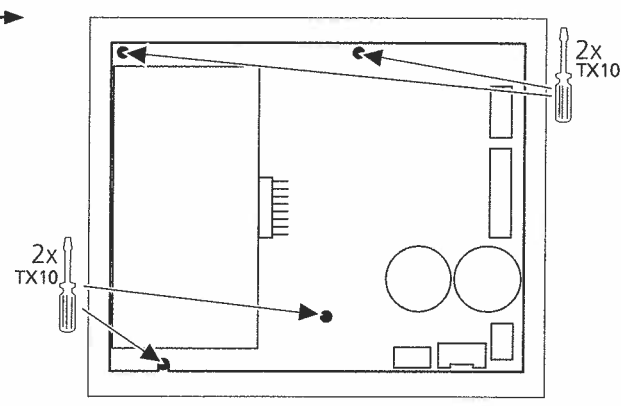
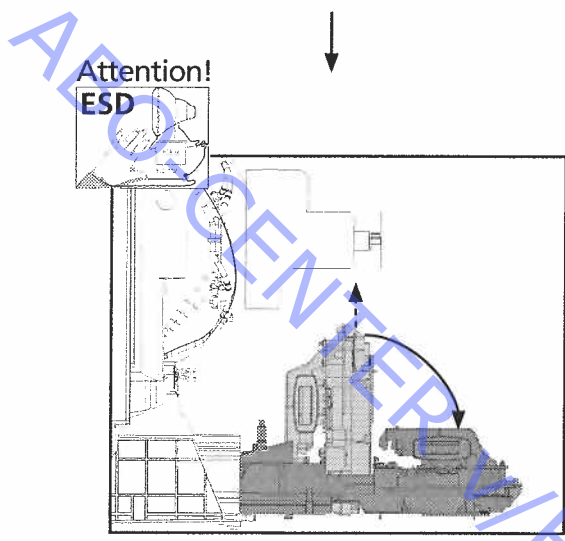
Main chassis

- ➔ 9.1 Service mode
- ➔ 9.2 Main chassis in service position

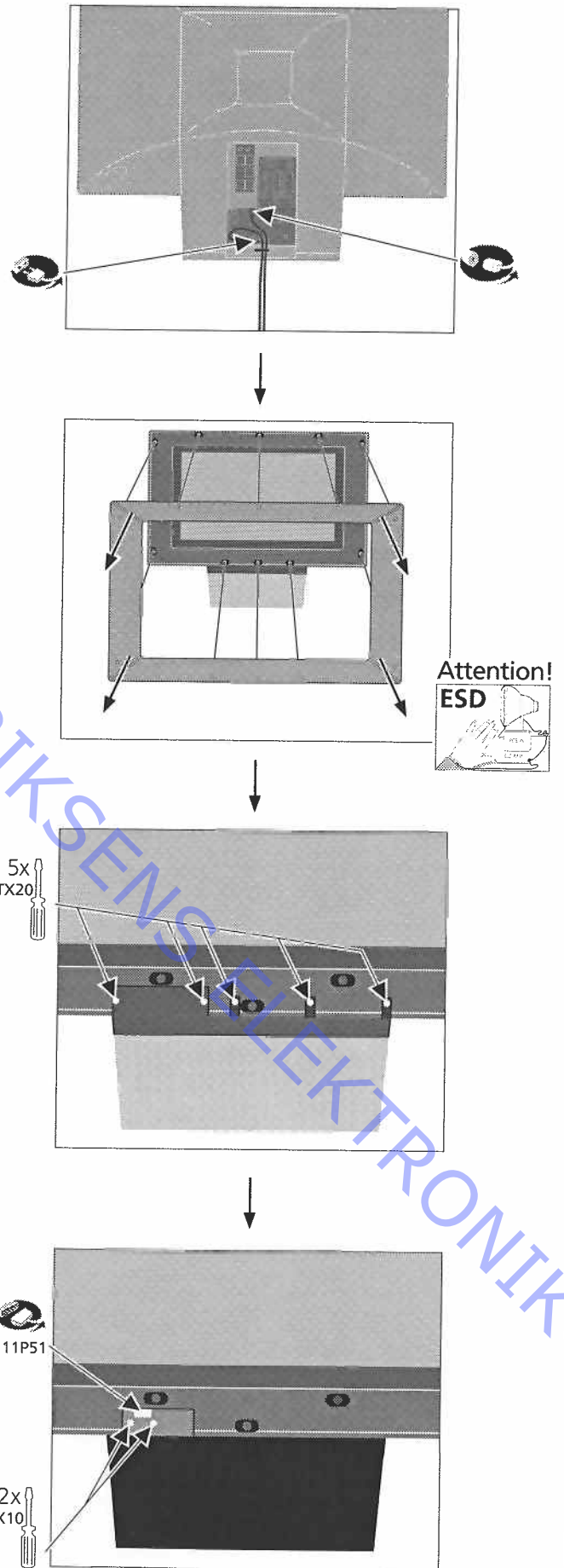


PCB10, Sound Output module

- ➔ 9.1 Service mode
- ➔ 9.2 Main chassis in service position



PCB11, IR receiver module

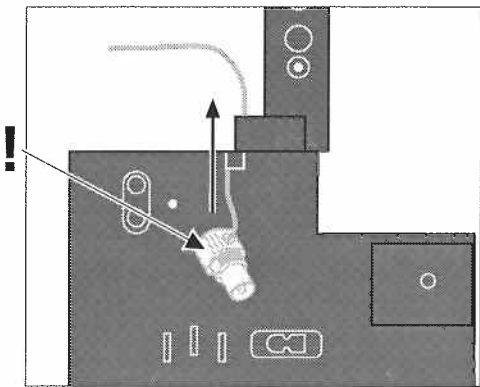
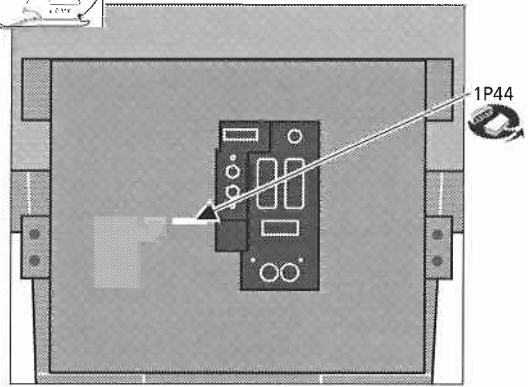
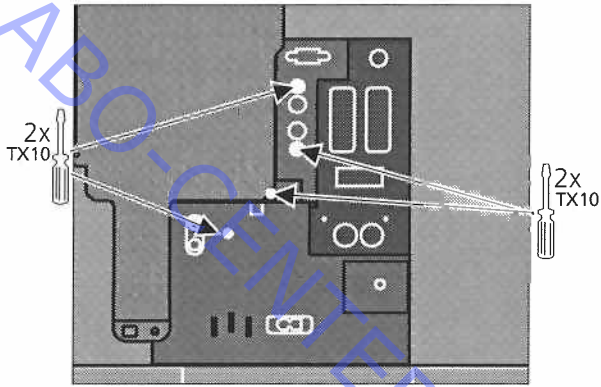


ABO-CENTER V/HENRIKSENS ELEKTRONIK

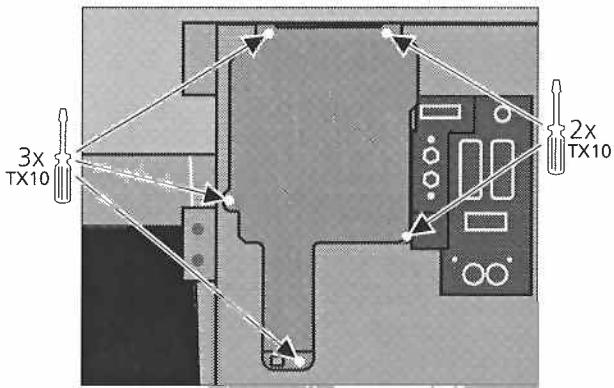
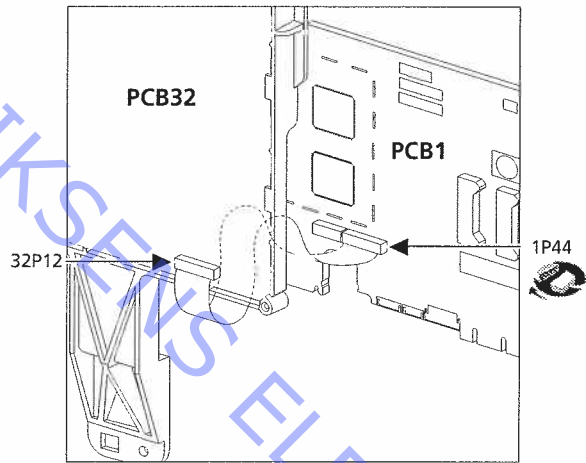
PCB32, AC3 module

9.1 Service mode

Attention!
ESD

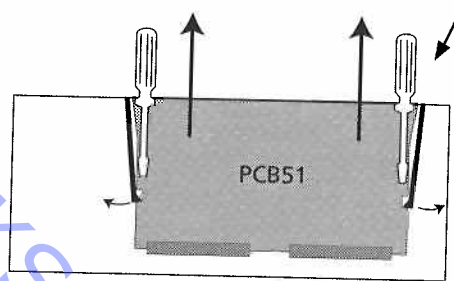
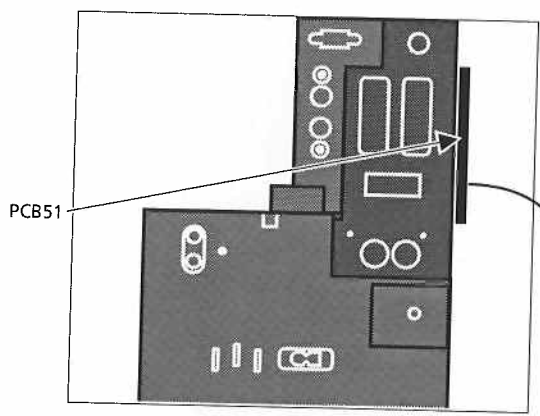


Remounting cable!



PCB51, Masterlink module

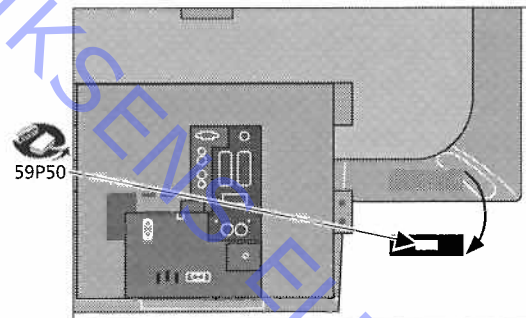
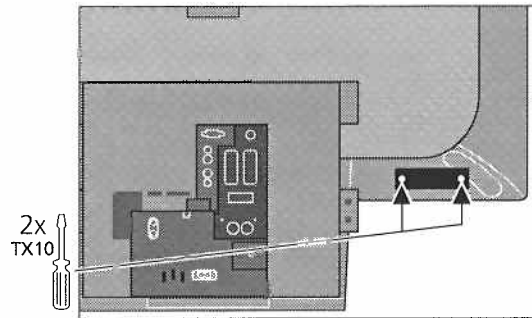
➔ 9.1 Service mode



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PCB59, Camcorder interface module

➔ 9.1 Service mode



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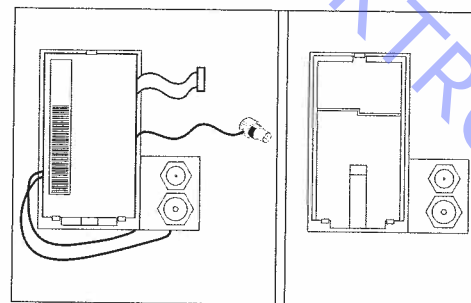
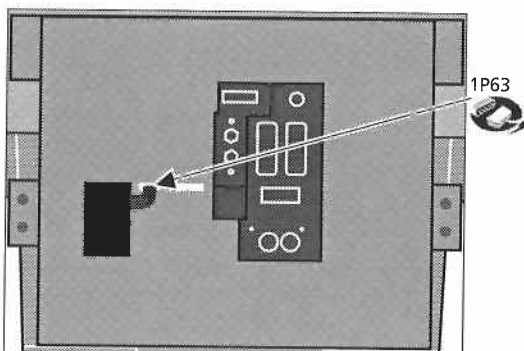
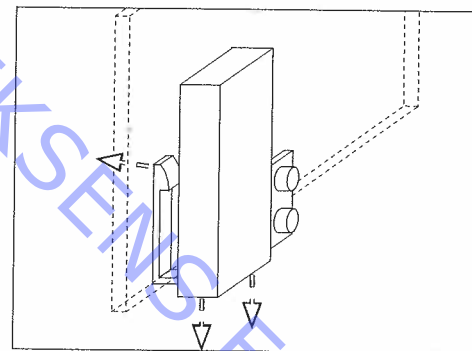
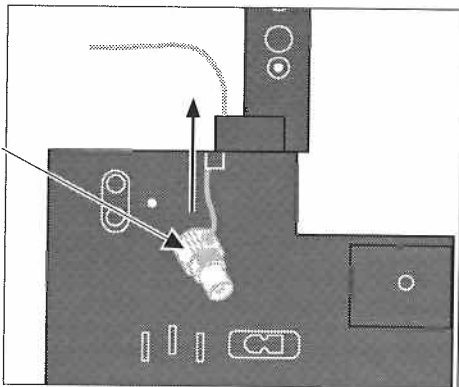
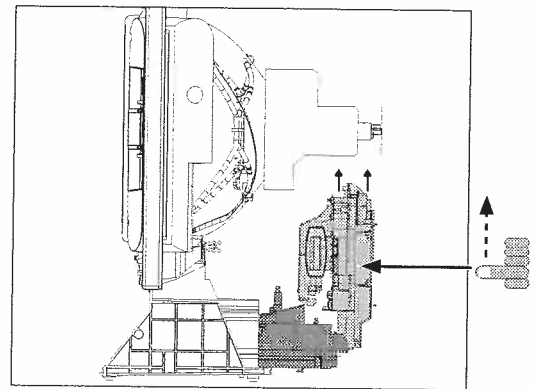
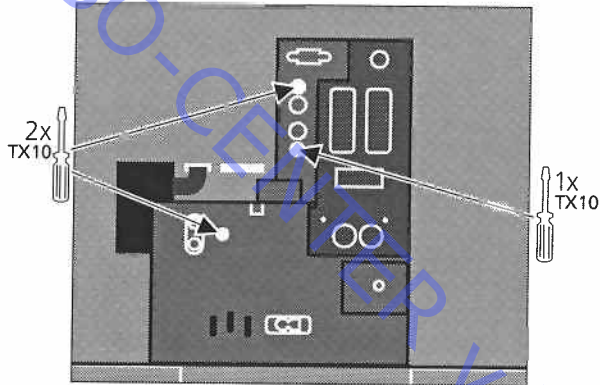
PCB63, Modulator module

➔ 9.1 Service mode



➔ 9.2 Main chassis in service position

➔ 11.3 PCB32, if mounted



PCB64, Powerlink module

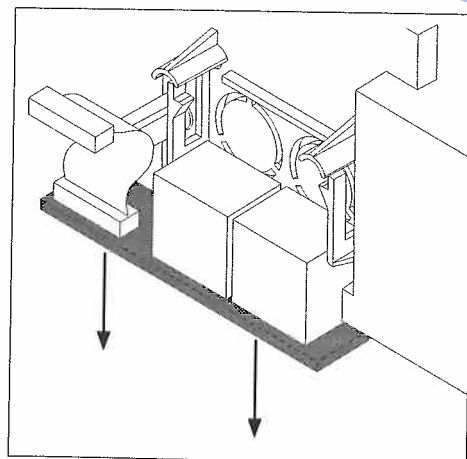
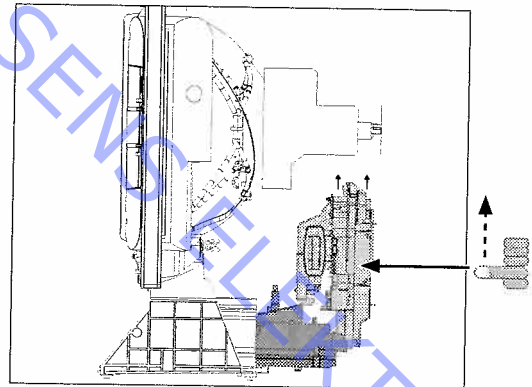
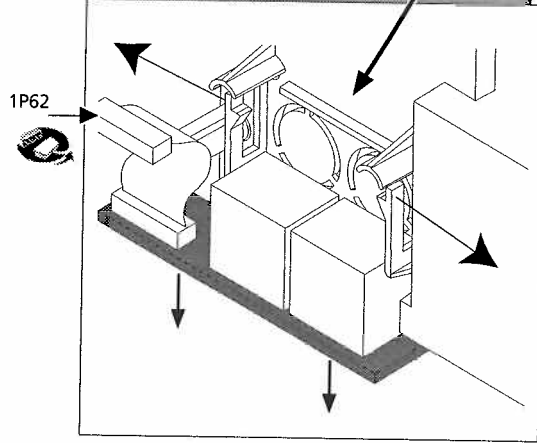
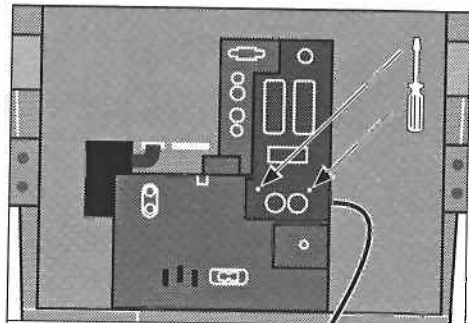
➔ 9.1 Service mode



➔ 9.2 Main chassis in service position

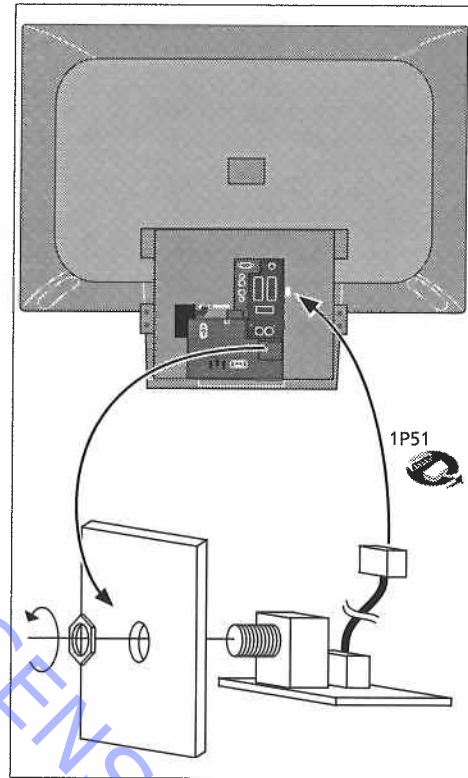


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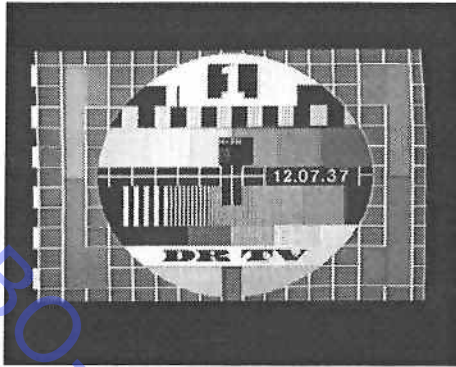


PCB85, Mini jack f. STB-Controller

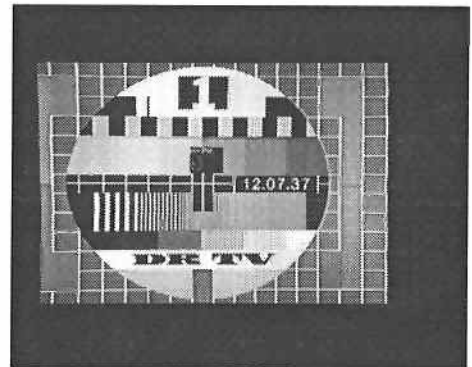
➔ 9.1 Service mode



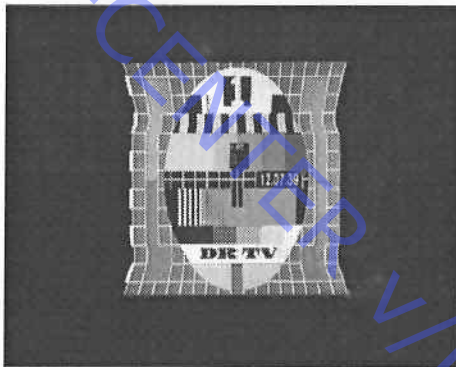
ABO-CENTER V/HENRIKSENS ELEKTRONIK



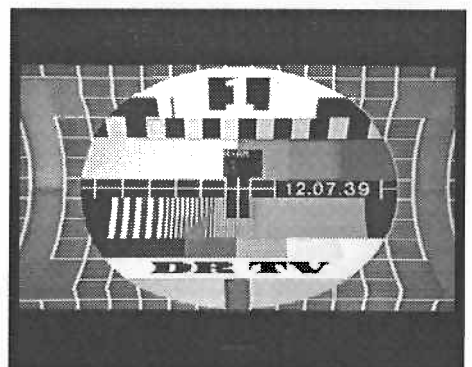
H-PH 00



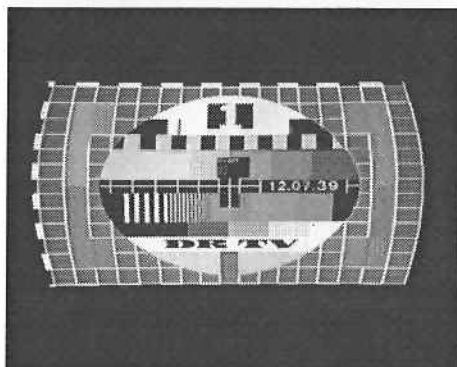
H-PH 63



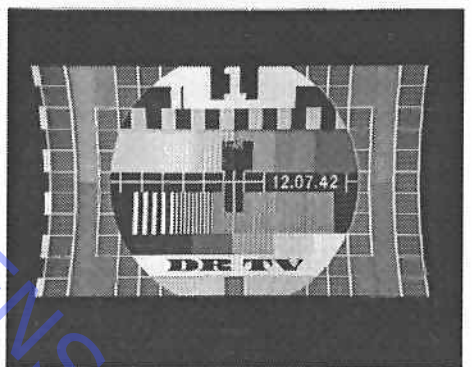
H-AM 00



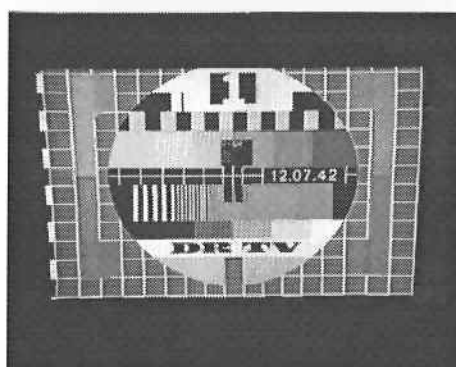
H-AM 63



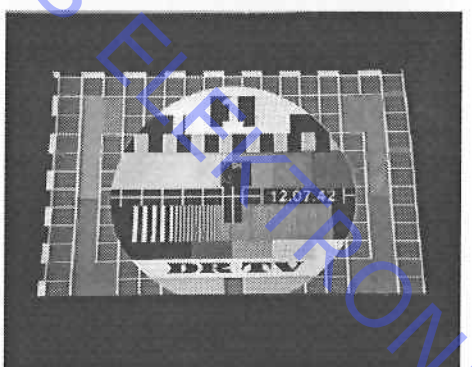
V-AM 00



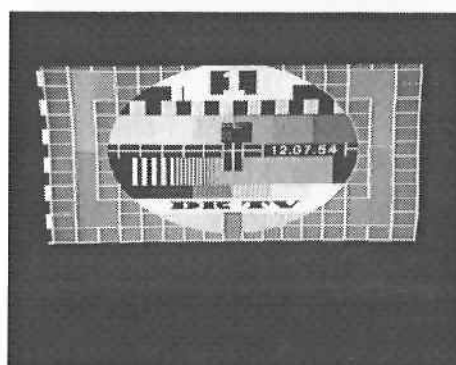
V-AM 63



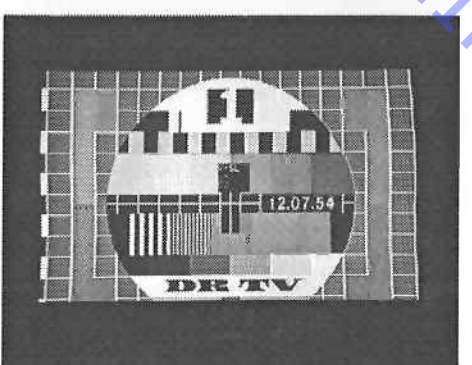
V-SH 00



V-SH 63

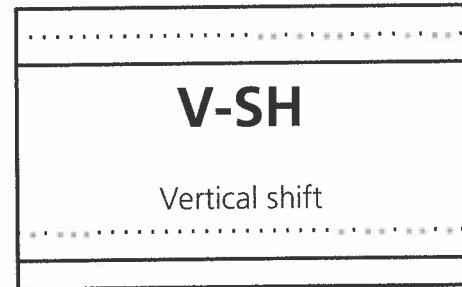
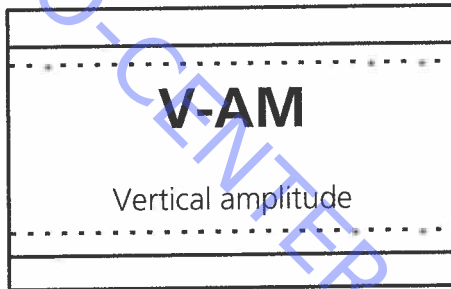
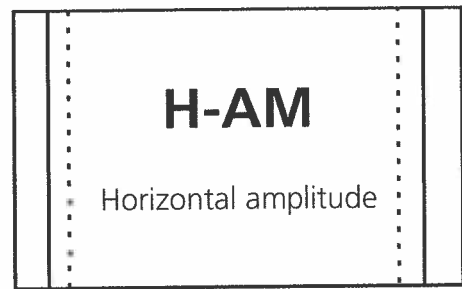
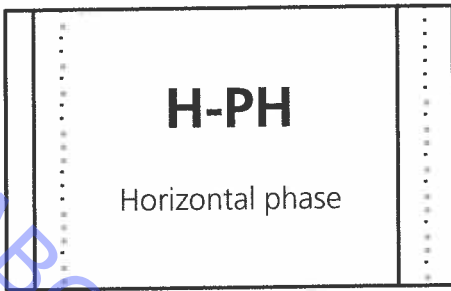


V-SL 00

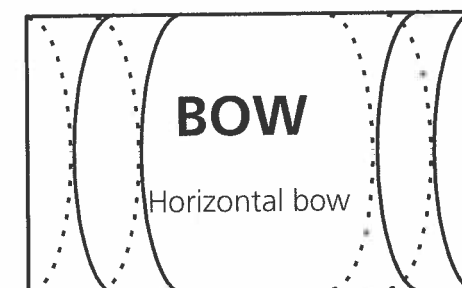
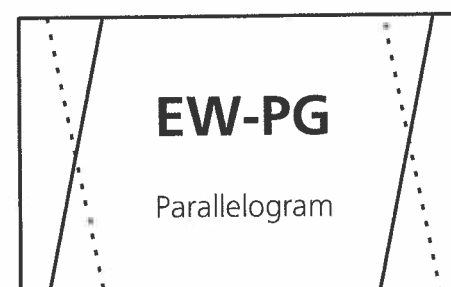
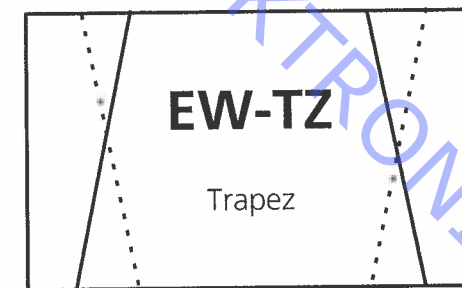
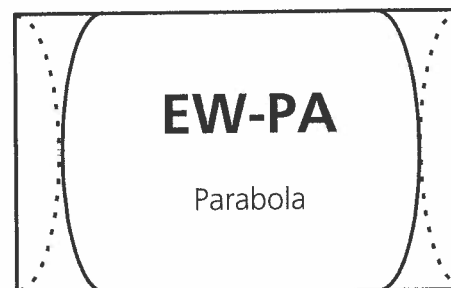
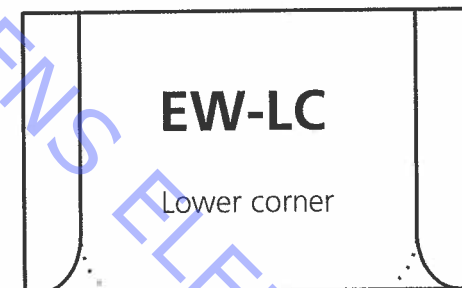
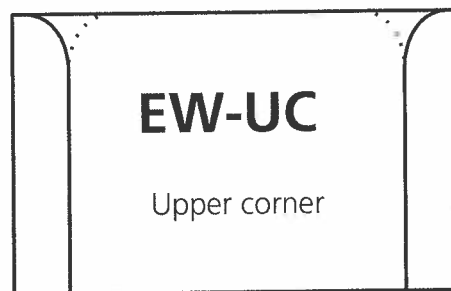


V-SL 63

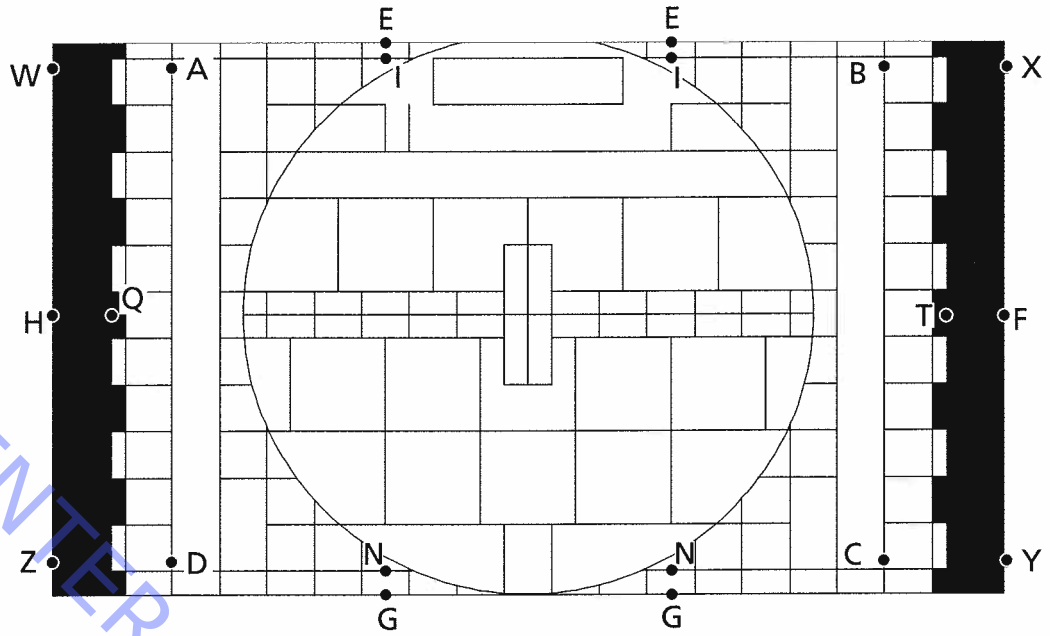
ABO-CENTRO
V HENRIKSENS ELEKTRONIK



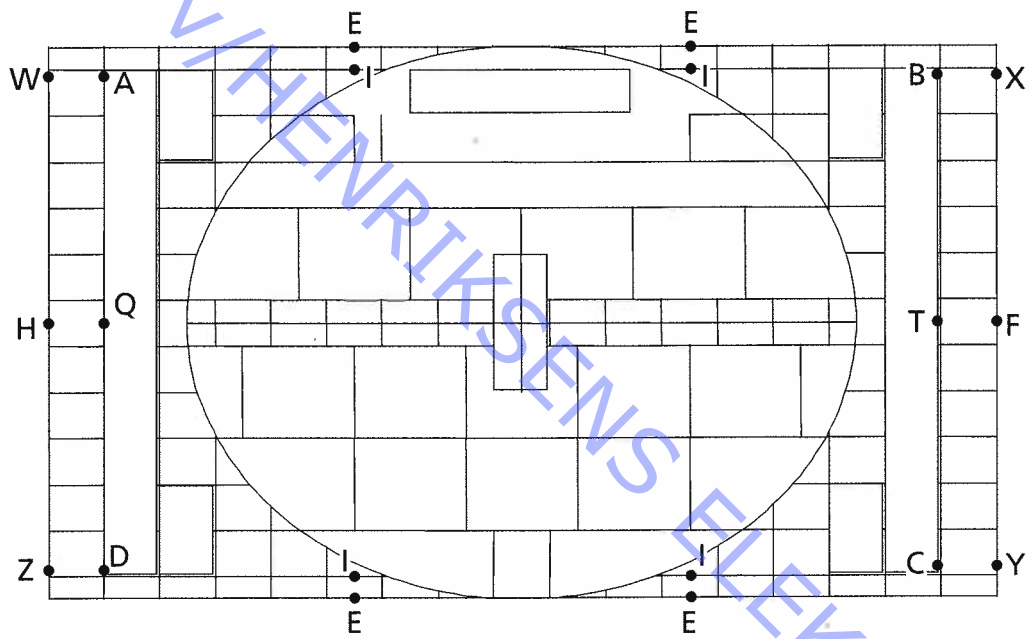
Filled line = maximum setting
Dashed line = minimum setting



Format 1 (15:9)



Format 1 (16:9)



Format 3 (16:9)

