



2076/01

ORTOFON A/S

PC BOARD 6315

COLOUR MONITOR 10 IN  
MODEL HD 6315

17-040005-03

SEE 17-040005-03  
1/1/88

## ADJUSTMENT INSTRUCTION

### 1. VERTICAL HOLD

The potentiometer R24 (vert.freq.) should be adjusted in such a way that the picture rolls slowly upwards and just synchronizes.

### 2. HEIGHT

For the adjustment of the height of the picture, the R43 (height) is adjusted to the wanted size.

### 3. VERTICAL LINEARITY

A grid pattern picture is used. R28(vert lin) is adjusted until the horizontal lines of the grid pattern have the same spacing..

### 4. HORIZONTAL HOLD

The test point F. O. at IC1 is short-circuited (elimination of horz sync). R8 (horz freq) is adjusted in such a way that the picture just does not roll. After this the short circuit is removed.

### 5. PIN-CUSHION DISTORTION

R58 east/west amplitude is adjusted so that vertical lines in right and left side become straight.

### 6. WIDTH

The width of the picture is adjusted by means of R55 (width) to the wanted size.

### 7. HORIZONTAL LINEARITY

A grid pattern picture is used. L2 (horz lin) is adjusted until the vertical lines have the same space.

### 8. BLACK LEVEL ADJUSTMENT

An oscilloscope is connected to the collector on one of the three video output transistors, e.g. V6 red. The matching black level potentiometer R12 (black level) is adjusted so that 80 V is measured on the oscilloscope during the trace. The R68 brightness is adjusted to maximum. The R71 screen grid is adjusted so that the red colour can be seen faintly as background colour.

The black level for green and blue is now adjusted with R17 and R22 until the three colours together form a white background. The R71 screen grid is now adjusted in such a way that white can just be seen faintly as background colour.

The amplification of the video amplifiers is now adjusted with R15, R20, and R25 until 20 V p-p is measured on the cathodes. These adjustments may have a minor influence on the black level. Therefore, this has to be rechecked and fine corrected with R12, R17, and R22. In a section with peak white is checked that the setting between R15, R20, and R25 is correct.



**9. HORIZONTAL SHIFTING**

R73 horz. shift allows a horizontal centering so that the picture is placed in the middle of the screen. If the picture cannot be shifted enough to one side, the cable at the coil L5 is just soldered on the neighbouring soldering terminal.

**10. VERTICAL SHIFTING**

R51 vertical shift is adjusted so that the picture upwards and downwards is placed in the middle of the screen.

**11. FOCUS**

The focus is adjusted with R66 (focus) so that the best possible focus is obtained, both in the corners and in the middle of the picture, at normal brilliancy.

## FUNCTION DESCRIPTION

The monitor has been built-up around a high resolution 10" colour valve with in-line guns and dotted mask with a pitch of 0.29 mm.

In principle the circuit consists of 5 basic elements:

- Line oscillator
- Line output stage with horizontal deflection and high-voltage unit
- Vertical deflection
- East/west raster correction
- Video amplifier

The line oscillator consists of the horizontal combination TDA 2593. Besides the oscillator itself, it consists of two phase comparison loops:

- one loop that locks the oscillator to the synchronizing signals entered, and
- another loop that compares the phase of the oscillator to the fly-back impulses of the line transformer.

This circuit structure results in a stable picture as regards phase - independent of stress variations such as varying brilliancy across the screen and any noise impulses received.

To control the line output transistor V15, a driver is needed (consists of V14 and the transformer V1). The output stage is a normal horizontal deflection system, essentially consisting of a high-voltage transformer AT 2076/81. This is a diode split type, i.e. it contains rectifier diodes for generation of the high voltage for the picture tube anode. Another auxiliary winding of the transformer provides the vertical deflection with DC voltage from pin 5. The rectifier diodes for this are V7 and V11. Furthermore, these two diodes are part of the so-called diode modulator principle. This principle is characterized by making it possible to vary the width of the picture by varying the DC voltage on C22. Besides, if a parabola voltage is inserted here, it will be possible to correct for the pin-cushion distortion of the picture tube. Moreover both corrections can be made without changing the recovery time and thus the high voltage. On the transformer L5 a voltage is rectified with V9 by which the picture can be displaced a little to each side with a DC current through the deflector coil. V8 provides for the generation of a voltage for supply and adjustment of the screen-grid voltage. It is similar with V6 that provides for a varying voltage on grid 1 for adjustment of the brilliancy. The voltage for the focus electrode is generated by the first diode on the high voltage winding. The filament of the valve is provided direct from the transformer.

As previously described, the east/west raster correction is to provide for the equalization of the pin-cushion distortion of the picture tube so that vertical lines in right and left side are achieved. For this a paraboliform voltage synchronous with the vertical deflection is required. If, at the same time, this can be varied DC-wise, the width of the picture can also be adjusted. This voltage is obtained on the V18 output and is from here carried into the diode modulator circuit. The amplifier for generation of the voltage wanted consists of V16, V17, and V18. V16 integrates the input voltage via R49 which is a saw tooth originating from the vertical deflection. This causes a parabola voltage on the collector of the V16. Together with a variable DC voltage, the parabola voltage is carried to the output stage V17 and V18.

The TDA 2653A contains all circuits necessary for generation of the vertical deflection. The saw tooth oscillator consists of C37, R23, and R24, the synchronization of which is made through V12. The output stage containing a fly-back generator is connected direct to the deflector coil so that with an internal high auxiliary voltage, the recovery time will be short enough. As the output stage is degenerated both AC- and DC-wise, a stable picture is achieved, independent of the temperature.

The video amplifiers consist of three identical amplifiers in which the output transistors have a grounded base. By this, an updraft time of the collector is achieved which is short enough. V5 is supplied with line and picture fly-back impulses to enable the output stage to be interrupted during these time intervals. By this, visible fly-back shafts on the screen are avoided. The drive signals for the amplifiers must be TTL-signals.