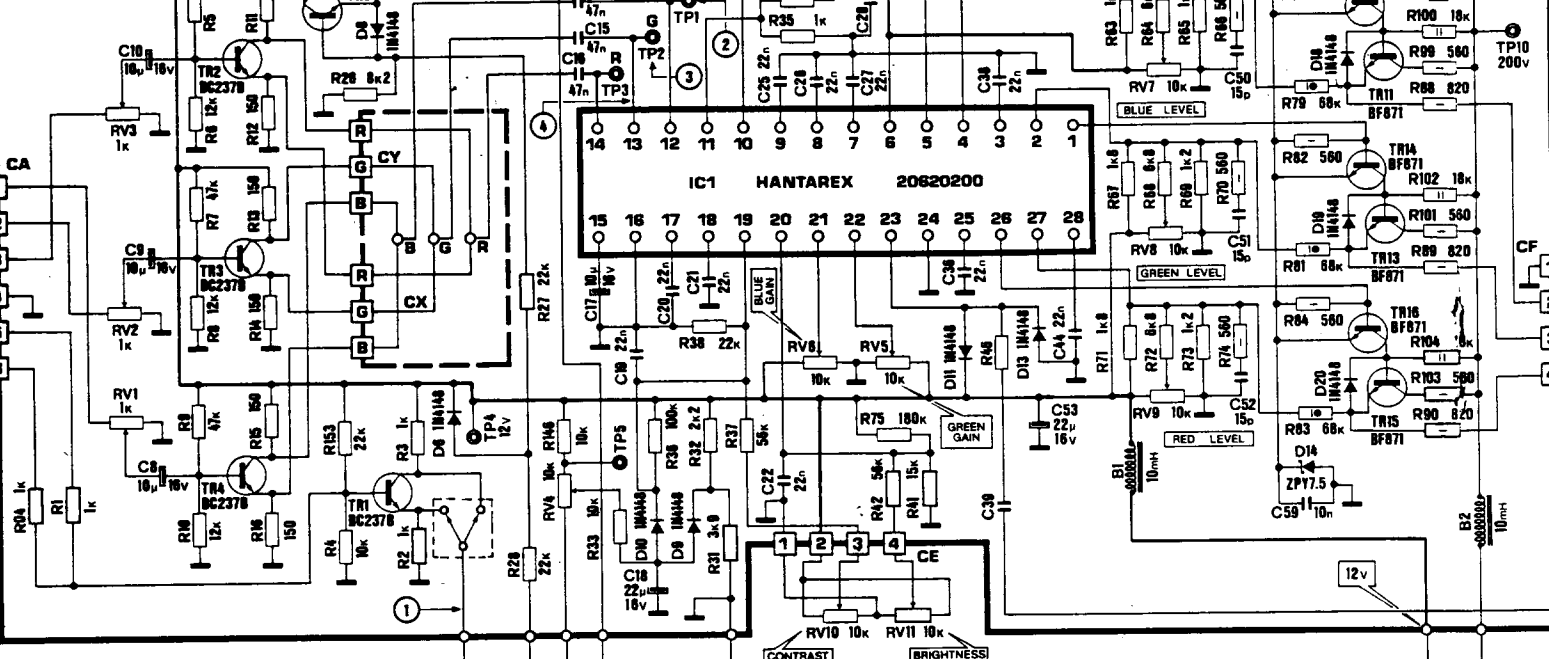




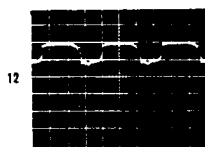
HANTA

MTC-900

I.S. 62000550

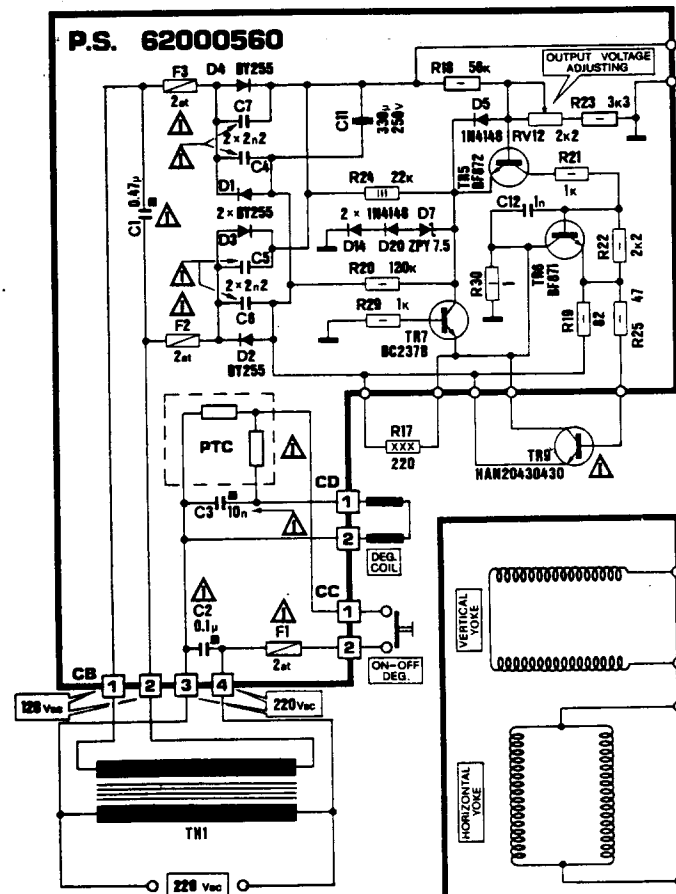


0.2 V div 5mS div

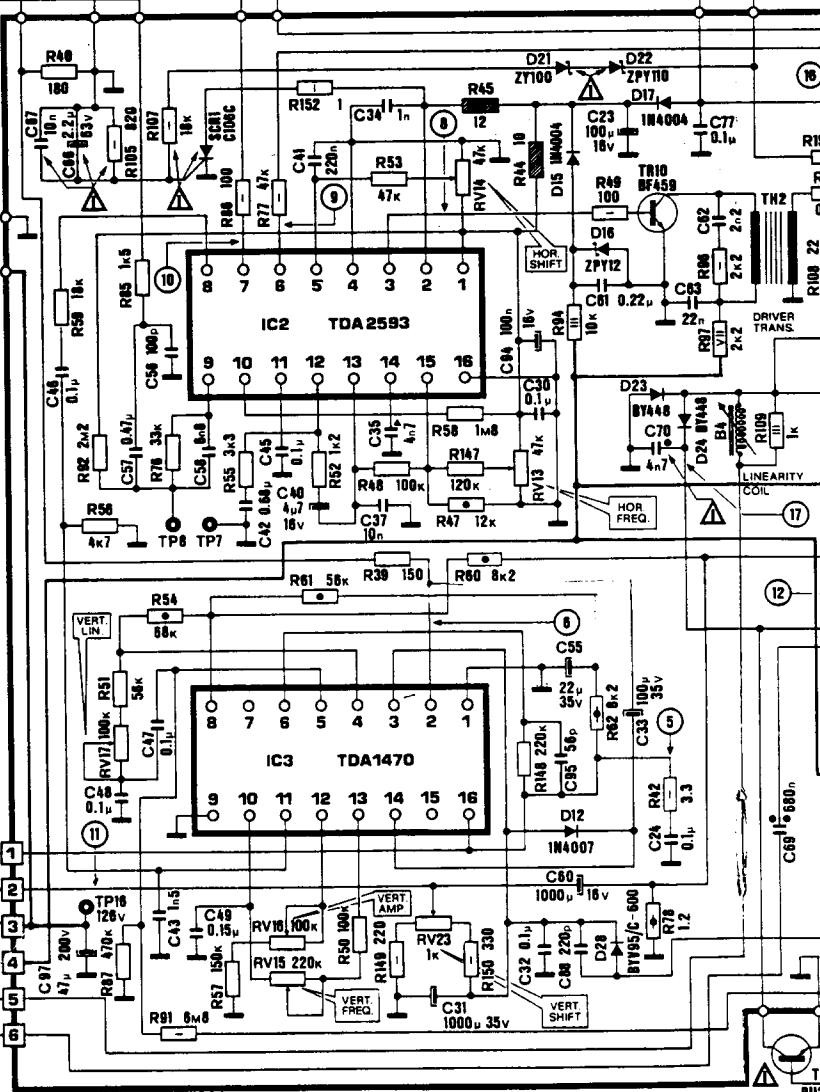


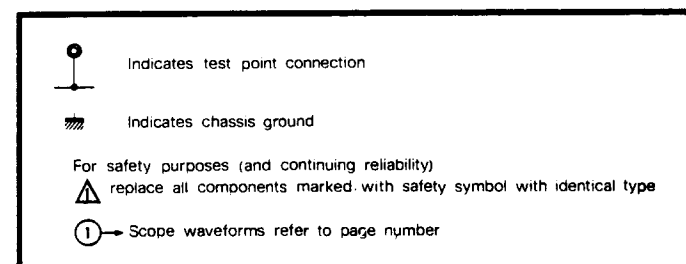
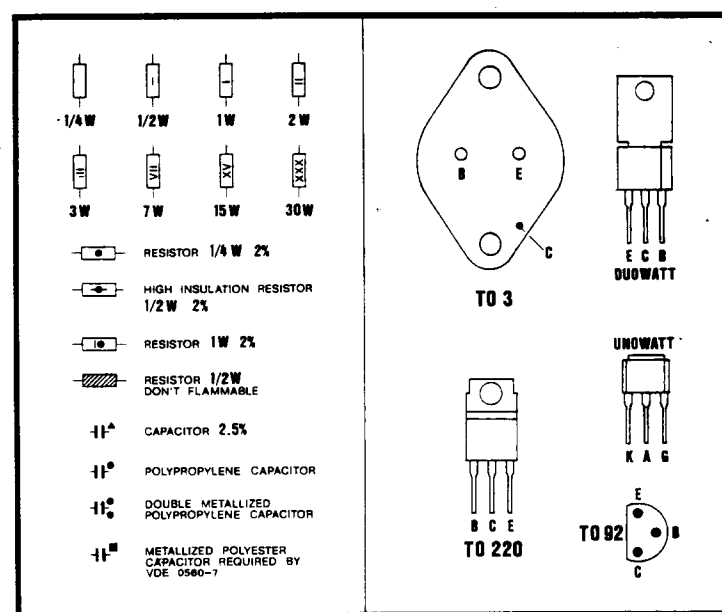
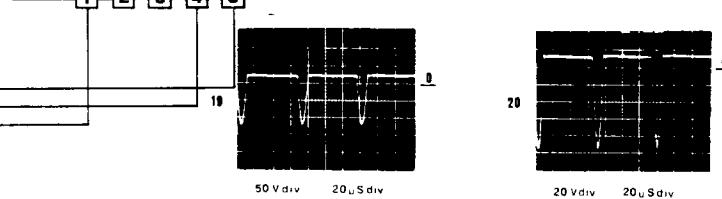
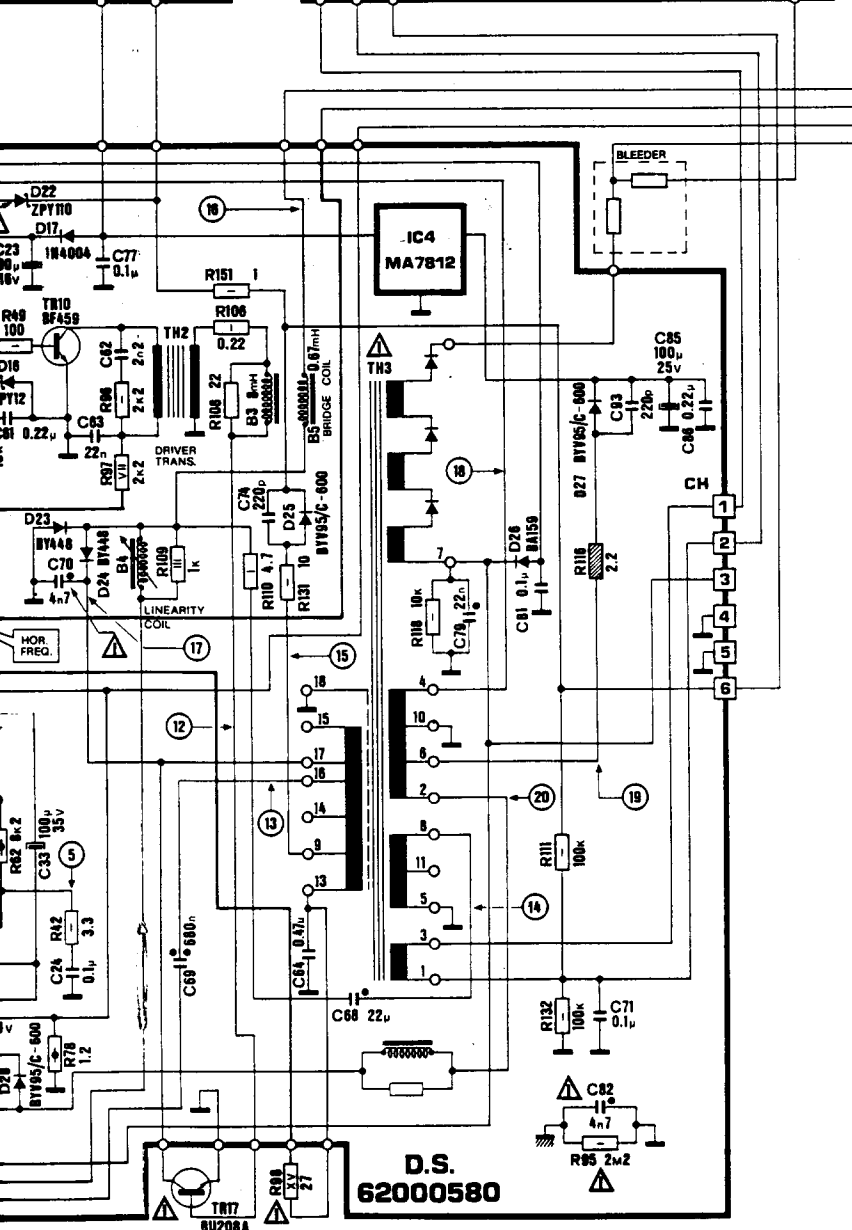
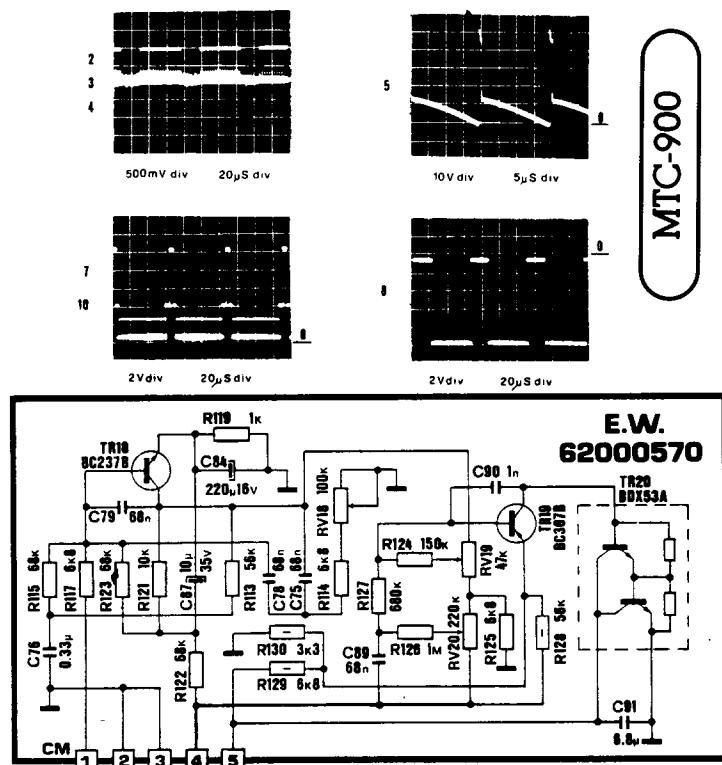
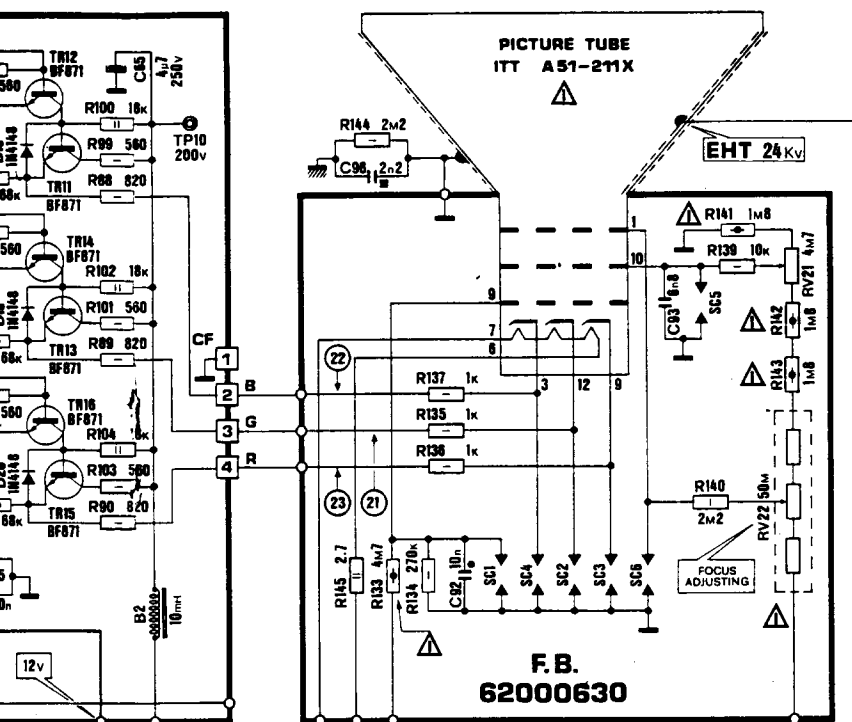
2 V div 20μS div

P.S. 62000560

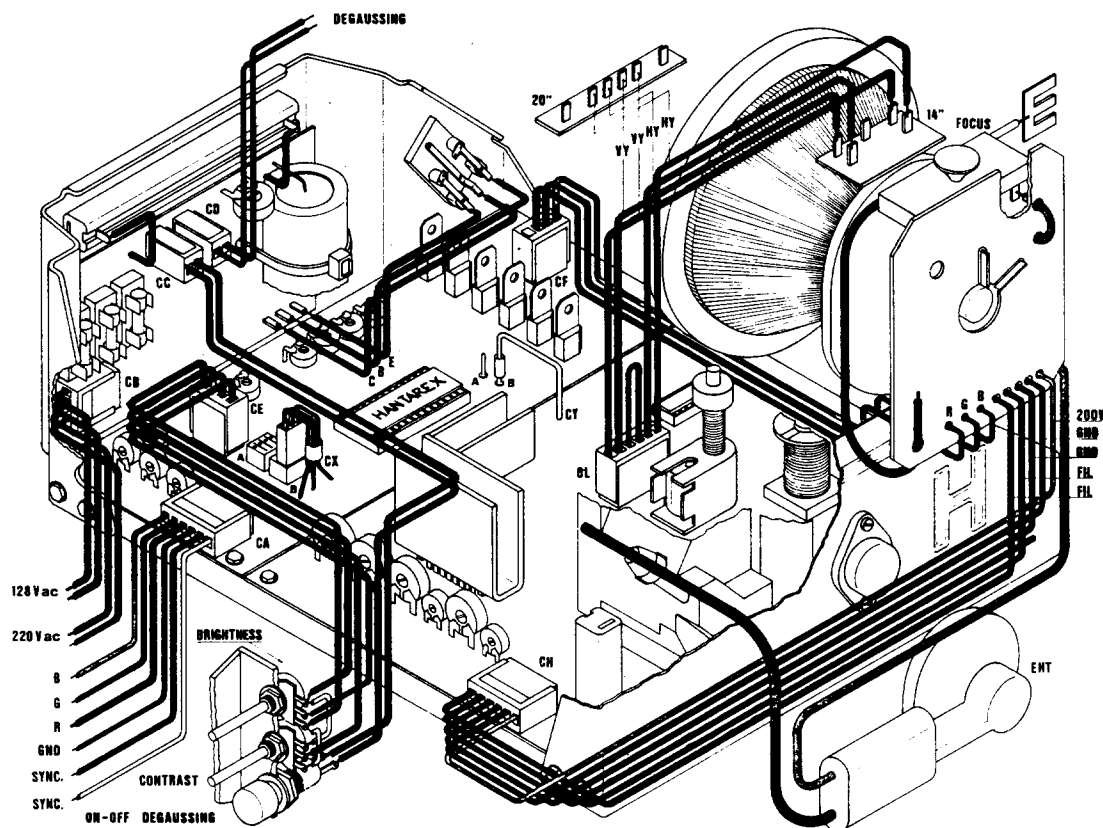


WARNING!
ISOLATION TRANSFORMER
MUST BE USED





MTC 900 CONNEXION DIAGRAM



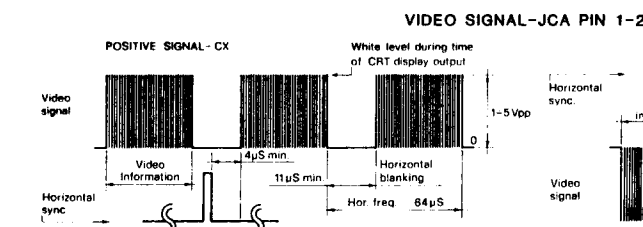
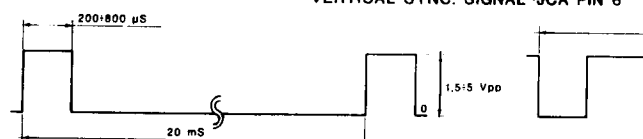
CALIBRATION

- NECESSARY INSTRUMENTATION** - Digital multimeter with an input impedance of 10 M Ω , oscilloscope with a bandwidth of greater than 10 MHz and 10X attenuator connected to inputs 1,2,3, of connector CA. RGB bar generator type HANTAREX mod. KG 159 or a monochrome bar generator, in which case the inputs are connected in parallel. After having had the monitor switched on for about 5 minutes, adjust the controls until an acceptable picture is obtained and then calibrate the monitor in accordance with the following instructions:
- POWER SUPPLY. NO SIGNAL:** Trimmer RV 12, which adjusts the power supply voltage output, this is only necessary in the event of repairs; in that case, proceed as follows:
 - ensure that the input a.c. voltage at terminals 1 and 2 of connector CB is between 120 and 135 V a.c.;
 - set the contrast and brightness controls to minimum;
 - connect a digital voltmeter to TP 16 and adjust RV 12 for a voltage of 126 V d.c. ($\pm 1V$)**WARNING:** Voltages higher than or lower than the rated voltage impair the operation of the monitor.
- RGB INPUT LEVELS** (colour bar signal) - Position connector CX so as to obtain a positive video signal at TP1, TP2, TP3. Adjust the BLUE input signal with RV1, the Green signal with RV2 and the Red signal with RV3, until an amplitude of 1 Vpp $\pm 5\%$ is obtained at TP1, TP2 and TP3 respectively.
- FINAL RGB LEVELS** (colour bar signal) - Detach the base from the picture tube. Adjust RV9 for red, RV8 for green, RV7 for blue so as to obtain, at TP14, TP13 and TP12 respectively, a horizontal blanking level of 160 V with respect to ground (see Fig. X, page Y).
Signal amplitude: Adjust the Brightness Control so as to make the black and blanking levels coincident. Adjust the Contrast Control to obtain a signal level on the red cathode TP 14, 60 Vpp from black to white level. Adjust RV6 for the green cathode and RV5 for the blue cathode until 60 Vpp is obtained at TP12 and TP13. Replace the c.r.t. base.
- PICTURE TUBE CUT-OFF** (colour bar signal). Adjust the contrast and brightness controls towards the minimum settings so as to set the white level at 140 V from 0 d.c. as measured at the green cathode TP13. Adjust the accelerator grid G2 by means of RV1 to set the picture tube at its cut-off point, as seen at the tube face.
- WHITE BALANCE** (no signal). Under the measuring conditions stated in paragraph 5, increase the brightness until the white field is visible.
Note: any dominant colour and reduce it; then increase the other colours so as to obtain the right grey tone. Do this by means of controls RV7 for blue, RV8 for green and RV9 for red. Repeat operation 5, as this will have altered the cut-off point.
- HORIZONTAL OSCILLATOR** (cross-hatch signal). Connect a short-circuit between TP7 and TP8; adjust RV13 (Horizontal Hold) to obtain the steadiest possible picture and remove the short-circuit.
- VERTICAL OSCILLATOR** (cross-hatch signal). Connect a short circuit between TP7 and TP8. Adjust RV13 so as to obtain a slight upward roll of the picture. Remove the short-circuit.
- HORIZONTAL GEOMETRY** (Cross-hatch signal). Adjust RV20 to obtain the desired horizontal amplitude, adjust RV18 and then RV19 (pin-cushion correction) so as to make the vertical lines straight at the right-hand and left-hand ends of the frame. Adjust the horizontal linearity coil B4 for maximum scan amplitude, then adjust for the best horizontal linearity. Adjust RV14 for the desired horizontal shift. Then finally re-adjust the horizontal amplitude by means of RV20.

- VERTICAL GEOMETRY** (Cross-hatch signal). Adjust RV16 (vertical linearity) until the vertical lines are smaller than the picture tube. Centre the Cross-hatch vertically with RV15 (vertical amplitude) and RV17 (height) for the best linearity (i.e. equal spacing).

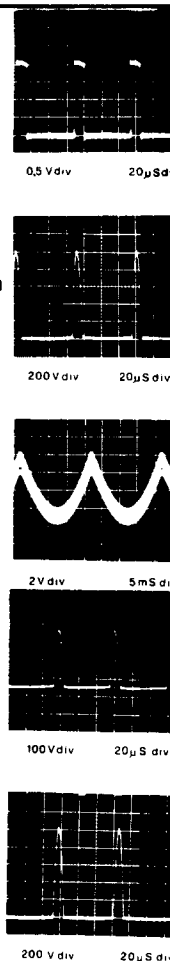
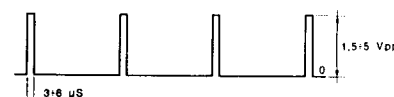
- BEAM CURRENT LIMIT** (colour bar signal). Set the contrast and brightness controls to minimum. Adjust RV4 (Beam Current control) until a voltage of $10.25V \pm 0.25V$ is obtained at TP16. The beam current of about 1 mA.

- DEGAUSSING** (cross-hatch signal). If the raster picture is coloured in spots, switch the ON-OFF DEGAUSSING control on for 2-3 seconds.

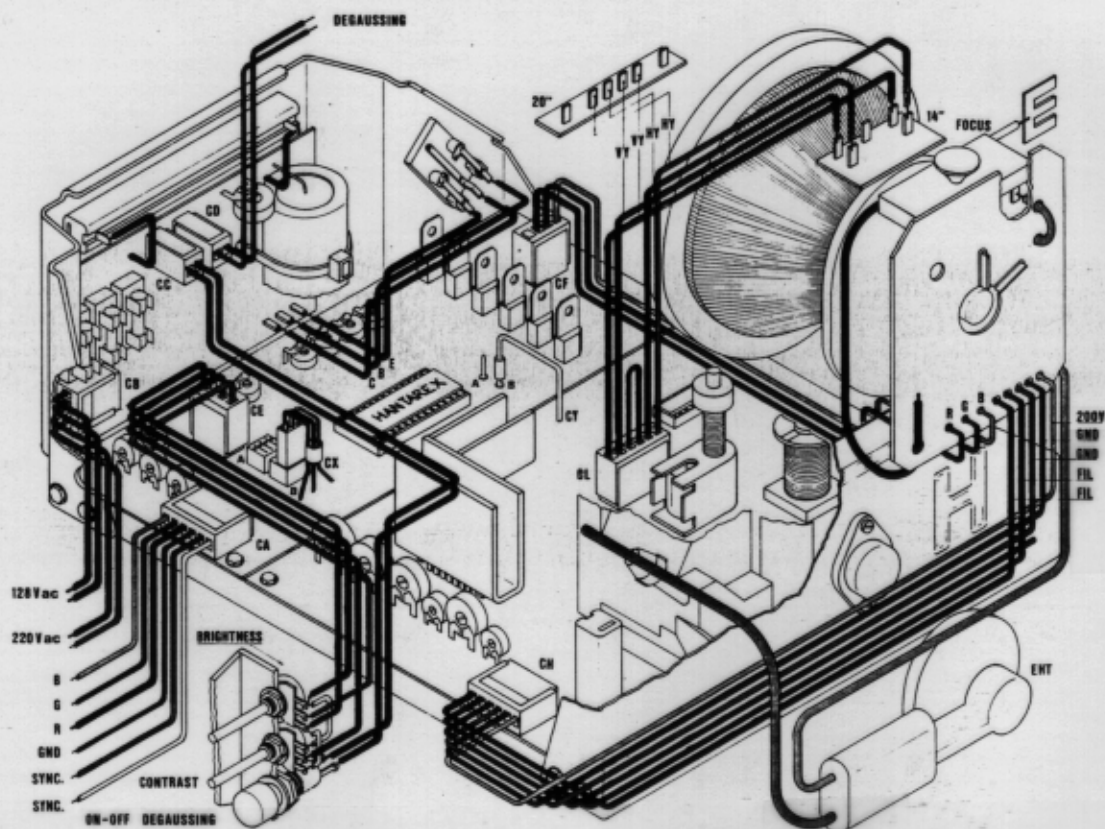


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MTC 900 CONNEXION DIAGRAM

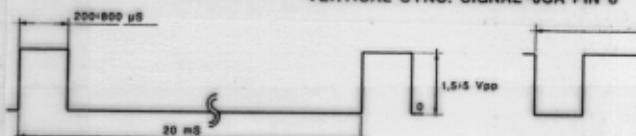


CALIBRATION

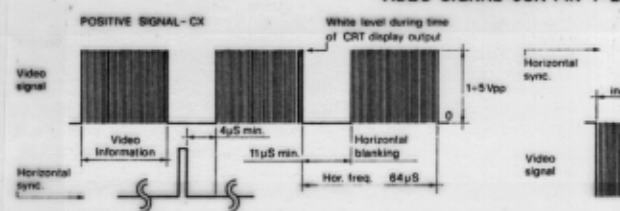
- NECESSARY INSTRUMENTATION** - Digital multimeter with an input impedance of 10 M Ω , oscilloscope with a bandwidth of greater than 10 MHz and 10X attenuator connected to inputs 1,2,3, of connector CA. RGB bar generator type HANTAREX mod. KG 159 or a monochrome bar generator, in which case the inputs are connected in parallel. After having had the monitor switched on for about 5 minutes, adjust the controls until an acceptable picture is obtained and then calibrate the monitor in accordance with the following instructions:
- POWER SUPPLY. NO SIGNAL:** Trimmer RV 12, which adjusts the power supply voltage output, this is only necessary in the event of repairs; in that case, proceed as follows:
 - ensure that the input a.c. voltage at terminals 1 and 2 of connector CB is between 120 and 135 V a.c.;
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 - connect a digital voltmeter to TP 16 and adjust RV 12 for a voltage of 126 V d.c. ($\pm 1V$)**WARNING:** Voltages higher than or lower than the rated voltage impair the operation of the monitor.
- RGB INPUT LEVELS (colour bar signal)** - Position connector CX so as to obtain a positive video signal at TP1, TP2, TP3. Adjust the Blue input signal with RV1, the Green signal with RV2 and the Red signal with RV3, until an amplitude of 1 Vpp $\pm 5\%$ is obtained at TP1, TP2 and TP3 respectively.
- FINAL RGB LEVELS (colour bar signal)** - Detach the base from the picture tube. Adjust RV9 for red, RV8 for green, RV7 for blue so as to obtain, at TP14, TP13 and TP12 respectively, a horizontal blanking level of 160 V with respect to ground (see Fig. X, page Y).
Signal amplitude: Adjust the Brightness Control so as to make the black and blanking levels coincident. Adjust the Contrast Control to obtain a signal level on the red cathode TP 14, 60 Vpp from black to white level. Adjust RV6 for the green cathode and RV5 for the blue cathode until 60 Vpp is obtained at TP12 and TP13. Replace the c.r.t. base.
- PICTURE TUBE CUT-OFF (colour bar signal).** Adjust the contrast and brightness controls towards the minimum settings so as to set the white level at 140 V from 0 d.c. as measured at the green cathode TP13. Adjust the accelerator grid G2 by means of R21 to set the picture tube at its cut-off point, as seen at the tube face.
- WHITE BALANCE (no signal).** Under the measuring conditions stated in paragraph 5, increase the brightness until the white field is visible.
 Note any dominant colour and reduce it; then increase the other colours so as to obtain the right grey tone. Do this by means of controls RV7 for blue, RV8 for green and RV9 for red. Noe repeat operation 5, as this will have altered the cut-off point.
- HORIZONTAL OSCILLATOR (cross-hatch signal).** Connect a short-circuit between TP7 and TP8; adjust RV13 (Horizontal Hold) to obtain the steadiest possible picture and remove the short-circuit.
- VERTICAL OSCILLATOR (cross-hatch signal).** Connect a short circuit between TP7 and TP8. Adjust RV13 so as to obtain a slight upward roll of the picture.
 Remove the short-circuit.
- HORIZONTAL GEOMETRY (Cross-hatch signal).** Adjust RV20 to obtain the desired horizontal amplitude, adjust RV18 and then RV19 (pin-cushion correction) so as to make the vertical lines straight at the right-hand and left-hand ends of the frame. Adjust the horizontal linearity coil B4 for maximum scan amplitude, then adjust for the best horizontal linearity. Adjust RV14 for the desired horizontal shift. Then finally re-adjust the horizontal amplitude by means of RV20.

- VERTICAL GEOMETRY (Cross-hatch signal).** Adjust RV16 (vertical linearity) so as to obtain the desired vertical amplitude and RV17 (height) for the best linearity (i.e. equal spacing).
- BEAM CURRENT LIMIT (colour bar signal).** Set the contrast and brightness controls to minimum. Adjust RV4 (Beam Current control) until a voltage of 10.25V $\pm 0.25V$ is obtained at TP16. The beam current of about 1 mA.
- DEGAUSSING (cross-hatch signal).** If the raster picture is coloured in spots, adjust the degaussing control for 2-3 seconds.

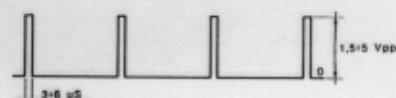
VERTICAL SYNC. SIGNAL-JCA PIN 6



VIDEO SIGNAL-JCA PIN 1-2

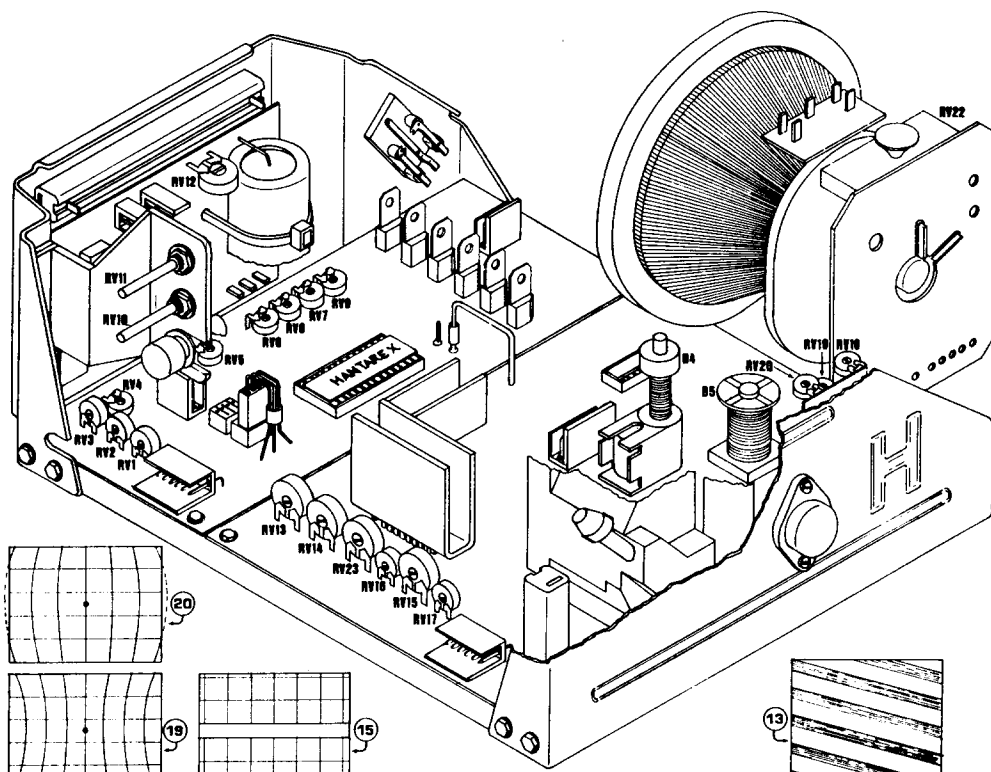
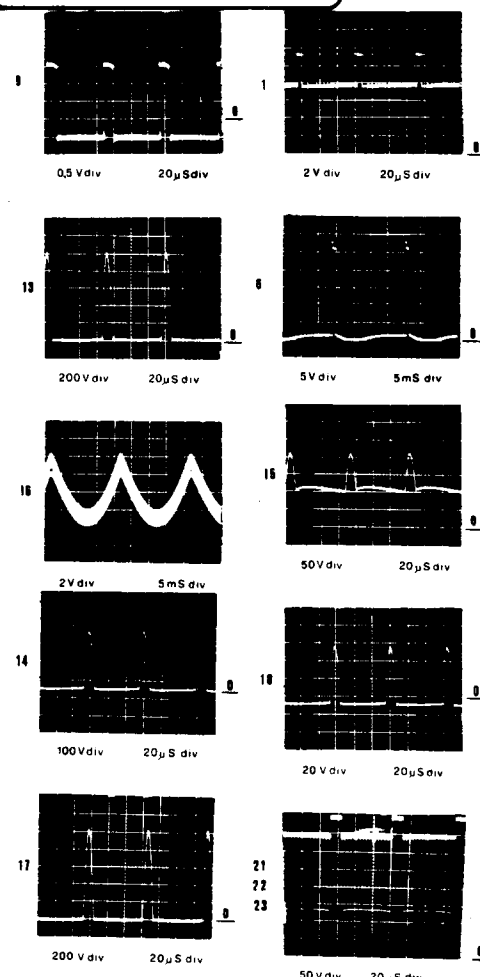


HORIZONTAL SYNC. SIGNAL



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ADJUSTING TRIMMERS



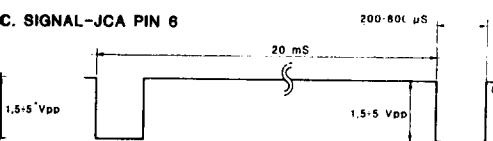
- | | | | |
|---|--|---|--|
| 1 LIVELLO DI INGRESSO BLU
blue input level | 2 LIVELLO DI INGRESSO VERDE
green input level | 3 LIVELLO DI INGRESSO ROSSO
red input level | 4 LIMITAZIONE CORRENTE DI FASCIO
beam current control |
| 5 GUADAGNO DEL VERDE
green gain | 6 GUADAGNO DEL BLU
blue gain | 7 LIVELLO IN D.C. DEL BLU
blue dc level | 8 LIVELLO IN D.C. DEL VERDE
green dc level |
| 9 LIVELLO IN D.C. DEL ROSSO
red dc level | 10 CONTRASTO
contrast | 11 LUMINOSITÀ
brightness | 12 REGOLAZIONE ALIMENTAZIONE
power supply |
| 13 FREQUENZA ORIZZONTALE
horizontal hold | 14 FASE ORIZZONTALE
horizontal shift | 15 FREQUENZA VERTICALE
vertical hold | 16 LINEARITÀ VERTICALE
vertical linearity |
| 17 AMPIEZZA VERTICALE
height | 18 AMPIEZZA ORIZZONTALE
width | 19 EFFETTO CUSCINO ESTERNO
peripheral pincushion | 20 EFFETTO CUSCINO INTERNO
control pincushion |
| 21 REGOLAZIONE G2
cutoff G2 (pre-set brightness) | 22 REGOLAZIONE FUOCO
focus | 23 SPOSTAMENTO VERTICALE
vertical shift | 24 BOBINA DI LINEARITÀ
linearity coil |

adjust RV16 (vertical linearity) to reduce the picture to be 1 inch high-hatch vertically with RV18, readjust RV16 for the desired vertical linearity (i.e. equal spacing of the squares of the cross-hatch).

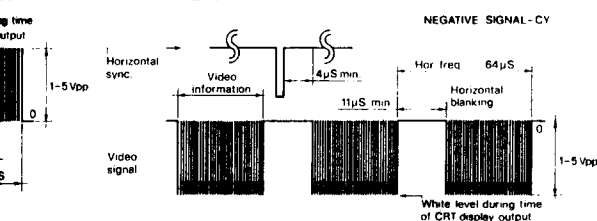
the contrast and brightness controls to maximum and adjust 0.25V ± 0.25V is obtained at TP4 and TP5, corresponding to a

picture is coloured in some areas, press the degaussing but-

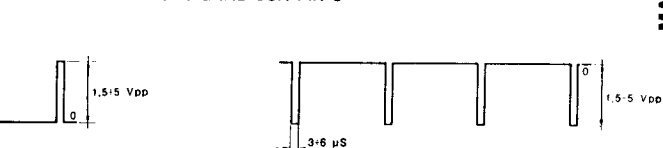
C. SIGNAL-JCA PIN 6



VIDEO SIGNAL-JCA PIN 1-2-3

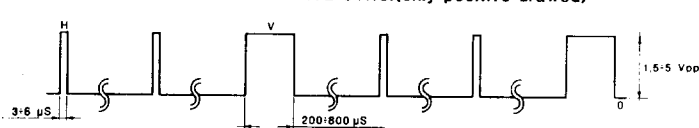


HORIZONTAL SYNC. SIGNAL-JCA PIN 5

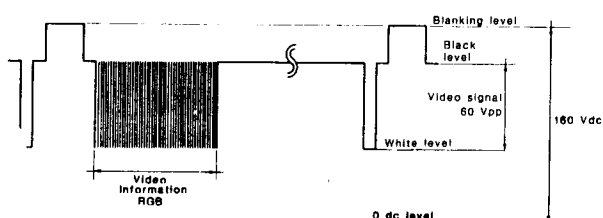


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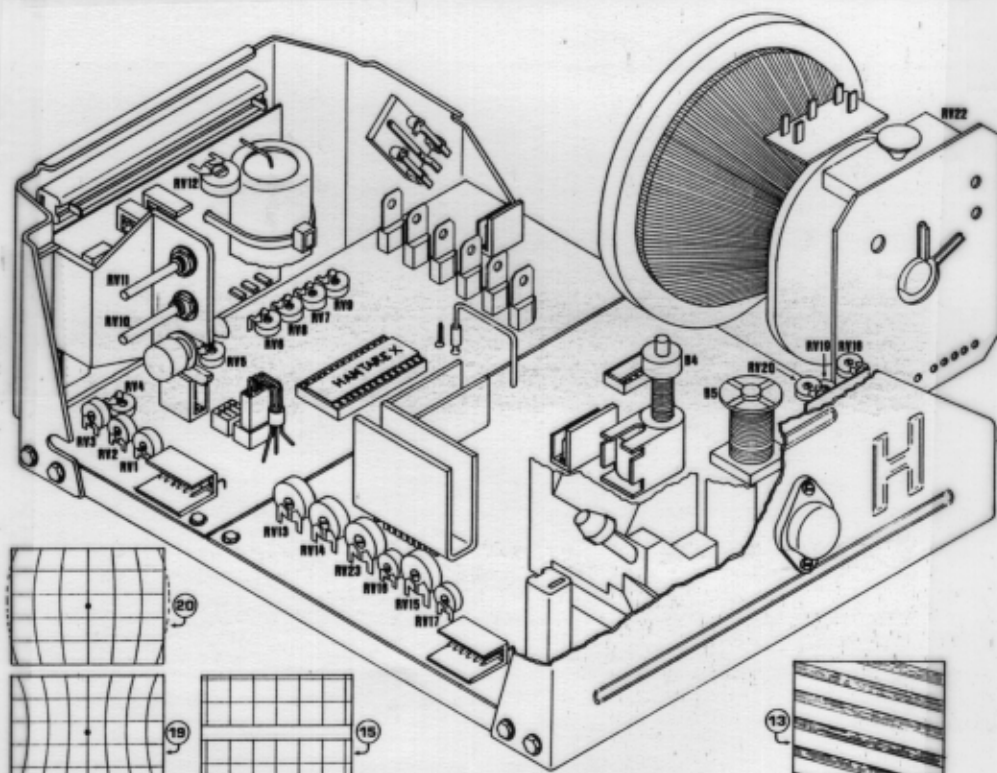
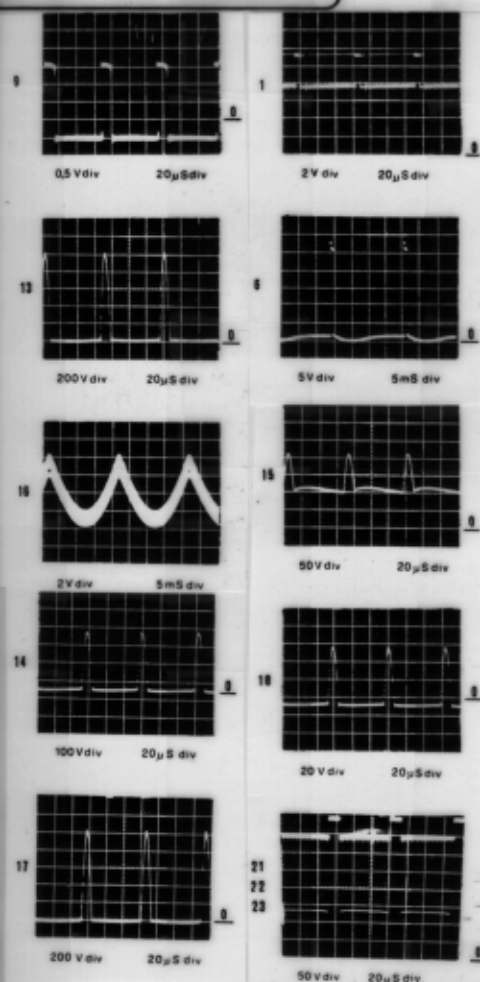
H+V POSITIVE OR NEGATIVE SYNC.(only positive drawn)



VIDEO SIGNAL RGB AT TP12-TP13-TP14



ADJUSTING TRIMMERS



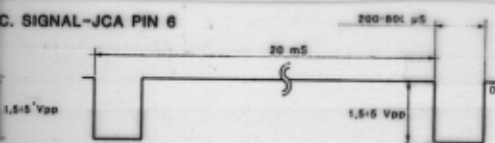
- | | | | |
|---|--|---|--|
| 1 LIVELLO DI INGRESSO BLU
blue input level | 2 LIVELLO DI INGRESSO VERDE
green input level | 3 LIVELLO DI INGRESSO ROSSO
red input level | 4 LIMITAZIONE CORRENTE DI FASCIO
beam current control |
| 5 GUADAGNO DEL VERDE
green gain | 6 GUADAGNO DEL BLU
blue gain | 7 LIVELLO IN D.C. DEL BLU
blue dc level | 8 LIVELLO IN D.C. DEL VERDE
green dc level |
| 9 LIVELLO IN D.C. DEL ROSSO
red dc level | 10 CONTRASTO
contrast | 11 LUMINOSITÀ
brightness | 12 REGOLAZIONE ALIMENTAZIONE
power supply |
| 13 FREQUENZA ORIZZONTALE
horizontal hold | 14 FASE ORIZZONTALE
horizontal shift | 15 FREQUENZA VERTICALE
vertical hold | 16 LINEARITÀ VERTICALE
vertical linearity |
| 17 AMPIEZZA VERTICALE
height | 18 AMPIEZZA ORIZZONTALE
width | 19 EFFETTO CUSCINO ESTERNO
peripheral pincushion | 20 EFFETTO CUSCINO INTERNO
central pincushion |
| 21 REGOLAZIONE G2
cutoff G2 (pre-set brightness) | 22 REGOLAZIONE FUOCO
focus | 23 SPOSTAMENTO VERTICALE
vertical shift | 24 BOBINA DI LINEARITÀ
linearity coil |

Adjust RV16 (vertical linearity) to reduce the picture to be 1 inch high vertically with RV18, readjust RV16 for the desired vertical linearity (i.e. equal spacing of the squares of the cross-hatch).

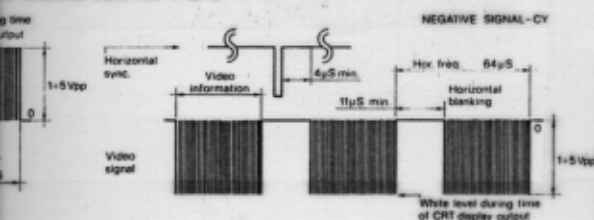
the contrast and brightness controls to maximum and adjust 0.25V \pm 0.25V is obtained at TP4 and TP5, corresponding to a

picture is coloured in some areas, press the degaussing but-

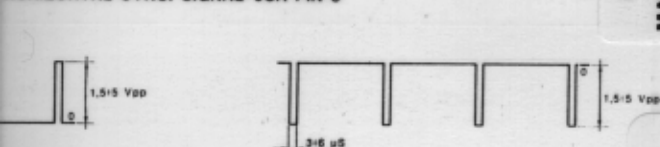
C. SIGNAL-JCA PIN 6



VIDEO SIGNAL-JCA PIN 1-2-3

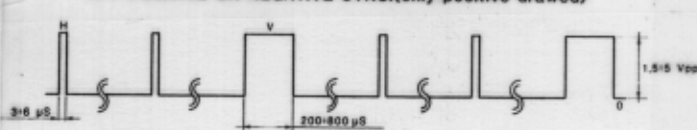


HORIZONTAL SYNC. SIGNAL-JCA PIN 5



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H+V POSITIVE OR NEGATIVE SYNC.(only positive drawn)



VIDEO SIGNAL RGB AT TP12-TP13-TP14

