











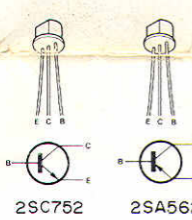
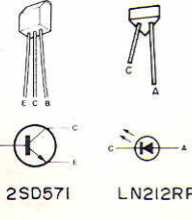
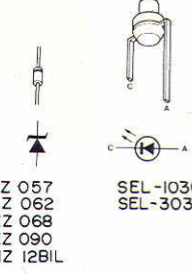
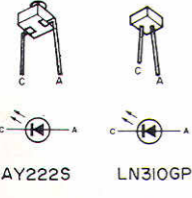
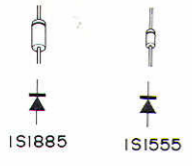
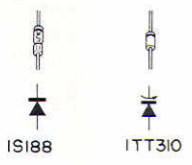
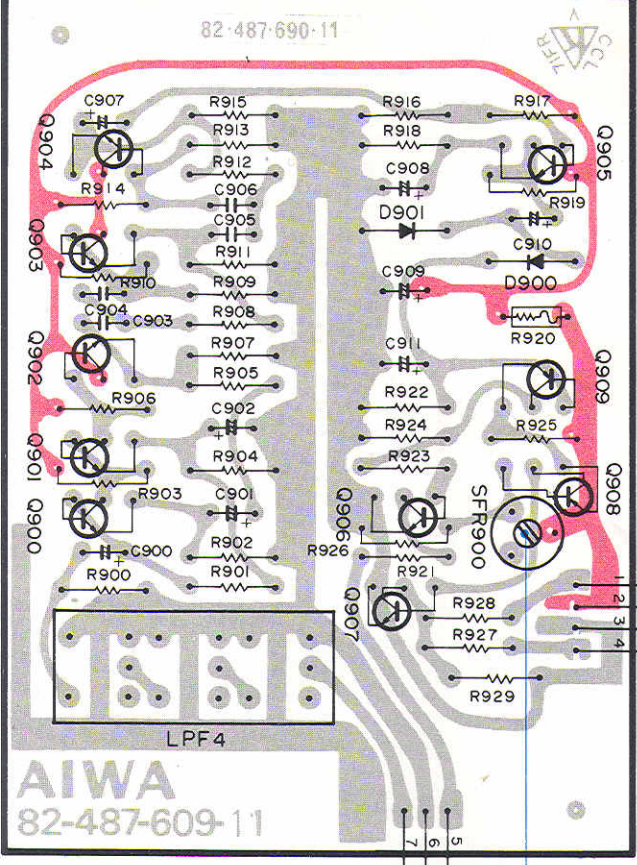


NOTES:

- 1)  B (+) power supply  B (-) power supply
 - 2)  Signal path (NORMAL)
 Signal path (NARROW)
 - 3) The voltage is the reference value measured with a tester (20 k-ohms/V DC) when there are no signals.
 The voltages with no designation have a NORMAL.
 But () is with NARROW.
 - 4) Resistors with no designation have a rated power of ¼W and a tolerance of ±5%.
 - 5) Capacitors with no designation have a dielectric strength of less than 50WV.
 - 6) The only capacitor tolerances indicated are ±5% (J) and ±10% (K).
 - 7) Ceramic capacitor symbols:
 For temperature compensation (SL)
 High dielectric constant system (YW, YP, YZ)
 For temperature compensation (SH)
 - 8) Explanation of symbols
 Mylar capacitor
 Polypropylene film capacitor
 Bi-polarized capacitor
 Fuse resistor
 Safety component symbol
 This symbol is given to important parts which serve to maintain the safety of the product, and which are made to conform to special safety specifications. Therefore, when replacing a component with this symbol, make absolutely sure that you use a designated part.
- This schematic diagram is subject to change without notice in the interests of improved performance.





B QUARTZ CONTROLLED
SERVO LOCK C.B.

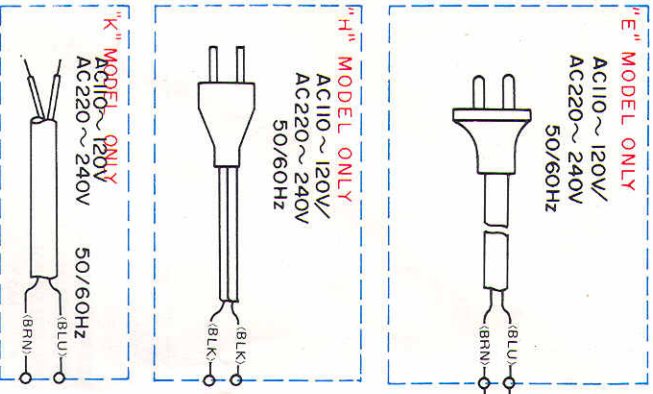
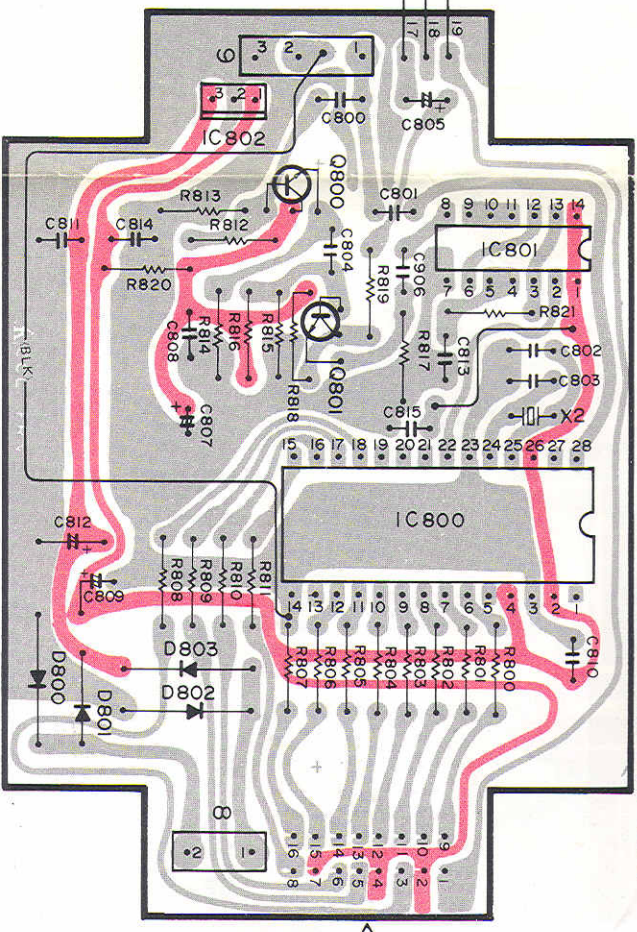
11 Locked LED Adjustment
Settings:

- Input signal: 98 MHz, 66 dB, 1 kHz (Mod. freq.), MOD. ON
- MODE SELECTOR: AUTO
- INDICATOR SELECTOR: MUTING OFF
- SELECTIVITY SELECTOR: NORMAL
- Test point: TP2, 3
- Adjustment location: SFR 900

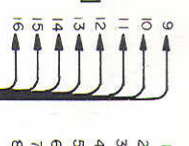
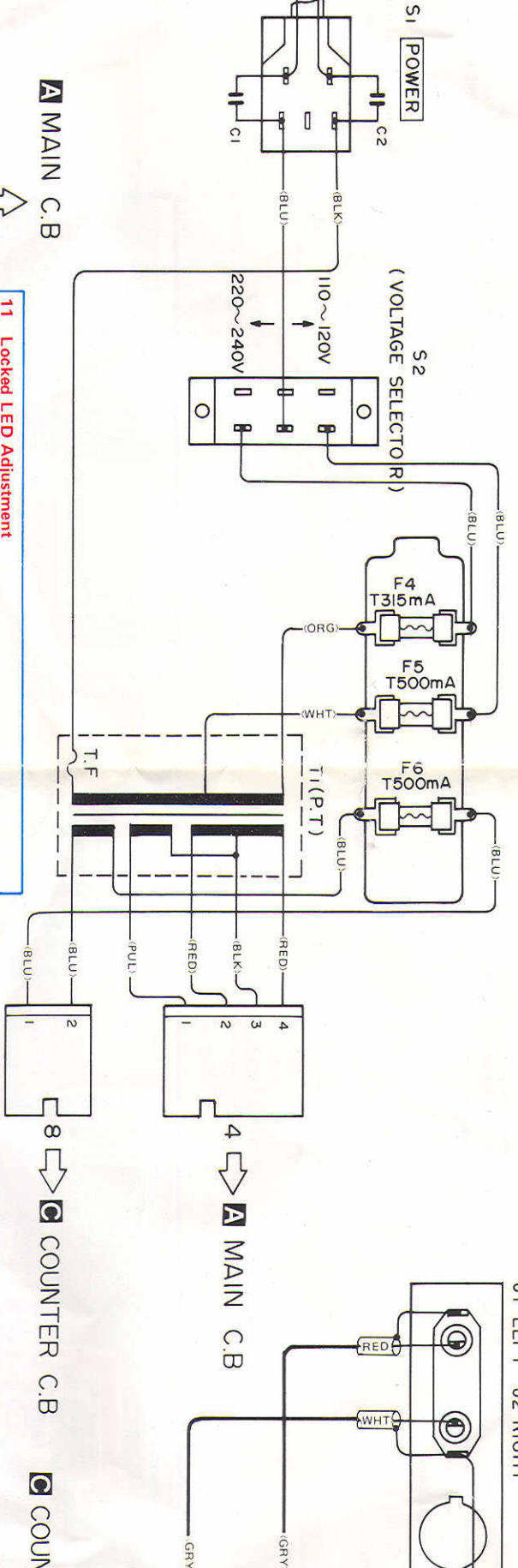
Method: Adjust SFR900 so that the LED light up when detuning level is 100 mV. Confirm that the LED vanish out when detuning level is 100 ± 30 mV.

Rating: 100 ± 30 mV

C COUNTER C.B.



A MAIN C.B.

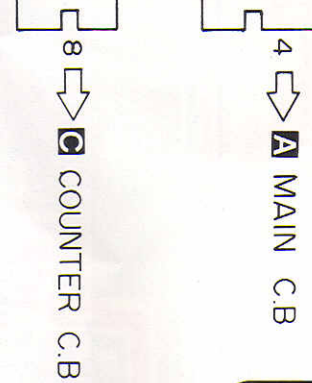
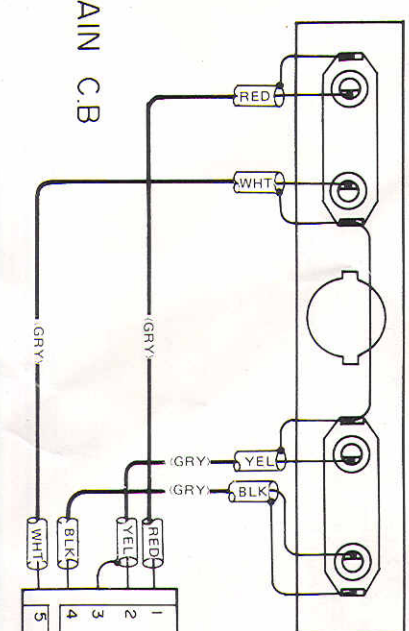


A MAIN

C COUN

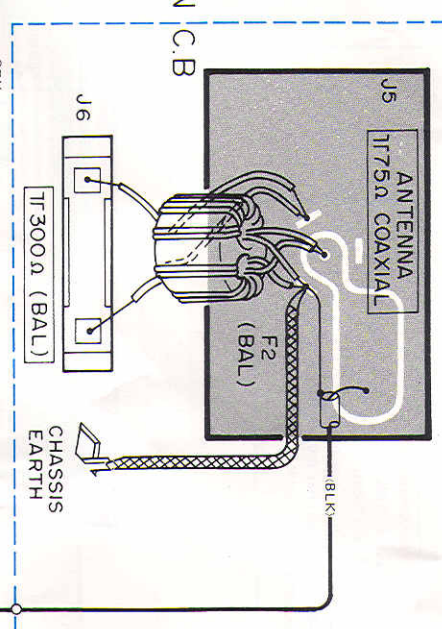
VARIABLE OUTPUT
J1 LEFT J2 RIGHT

VARIABLE OUTPUT
 J1 LEFT J2 RIGHT
 FIXED OUTPUT
 J3 LEFT J4 RIGHT

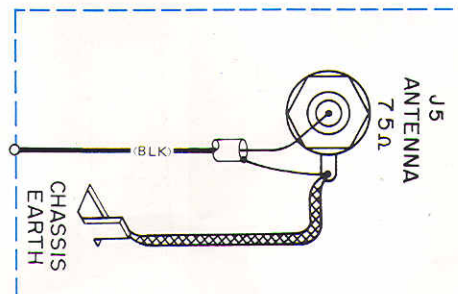


"E" "K" MODEL ONLY

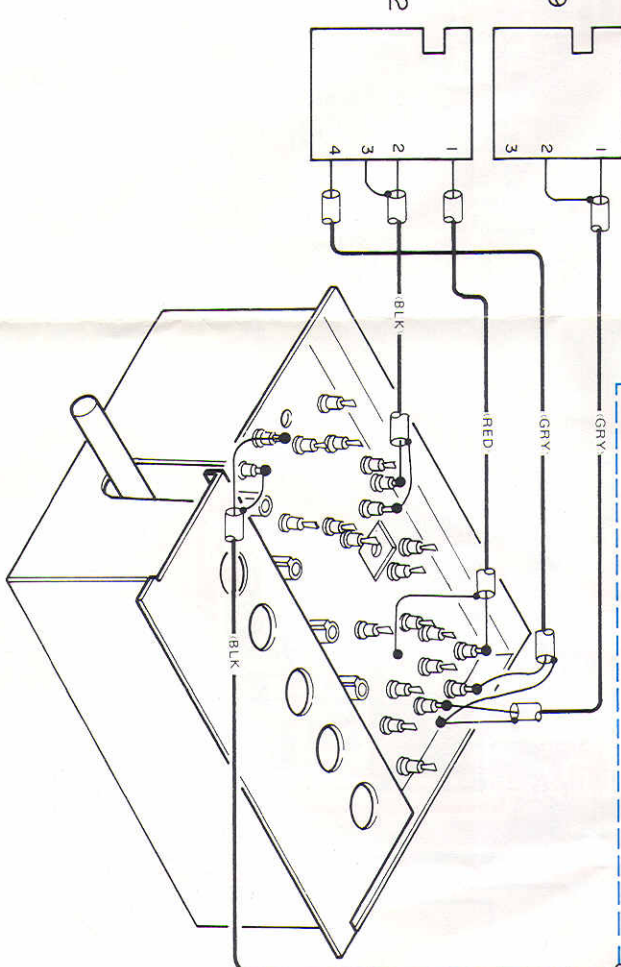
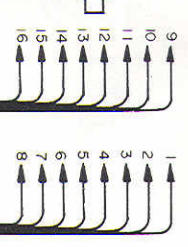
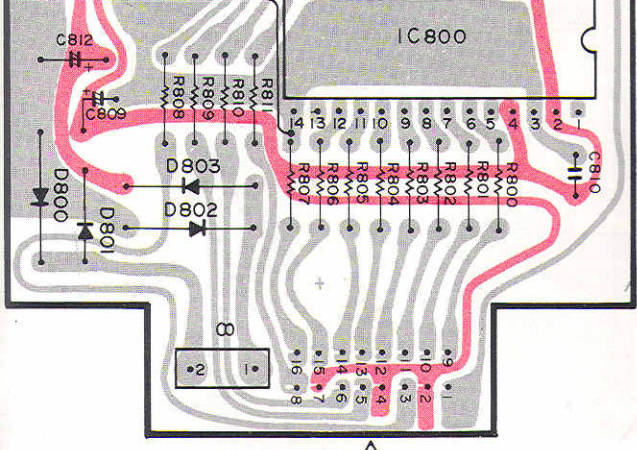
ANTENNA C.B.



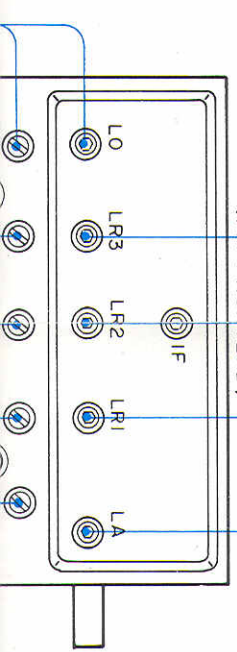
"H" MODEL ONLY



COUNTER C.B.



(FM FRONTEND)



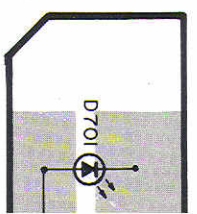
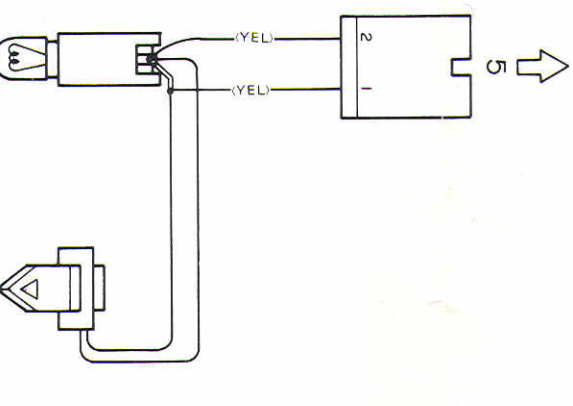
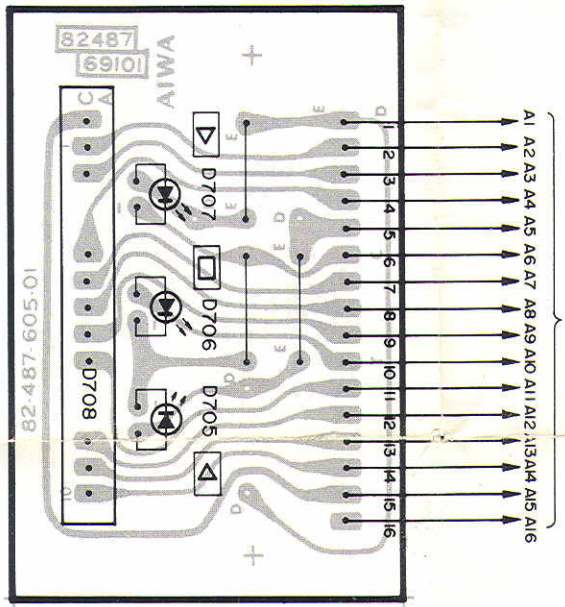
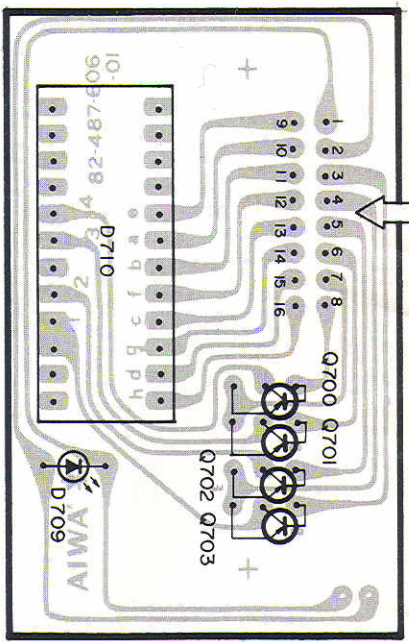
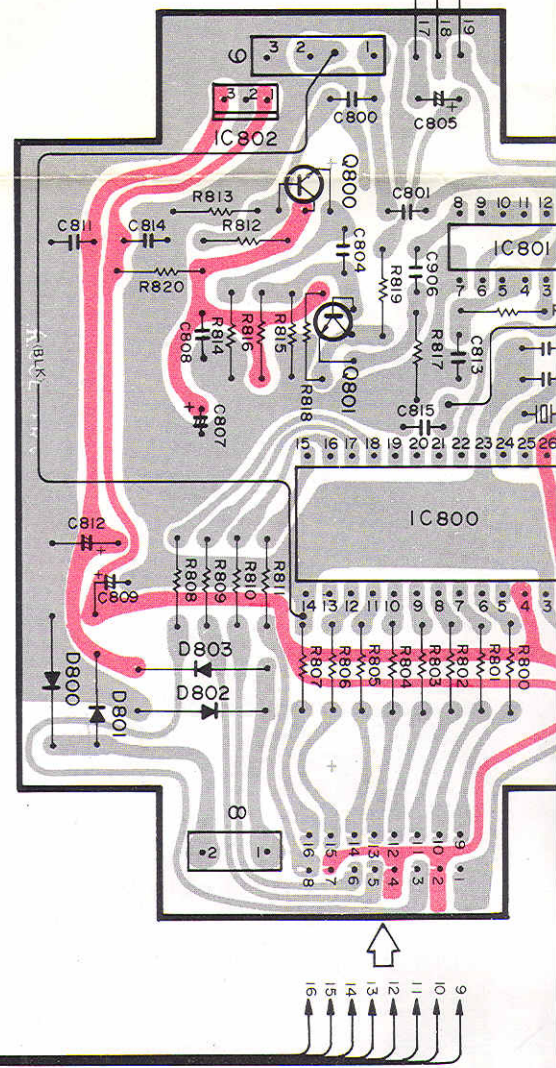
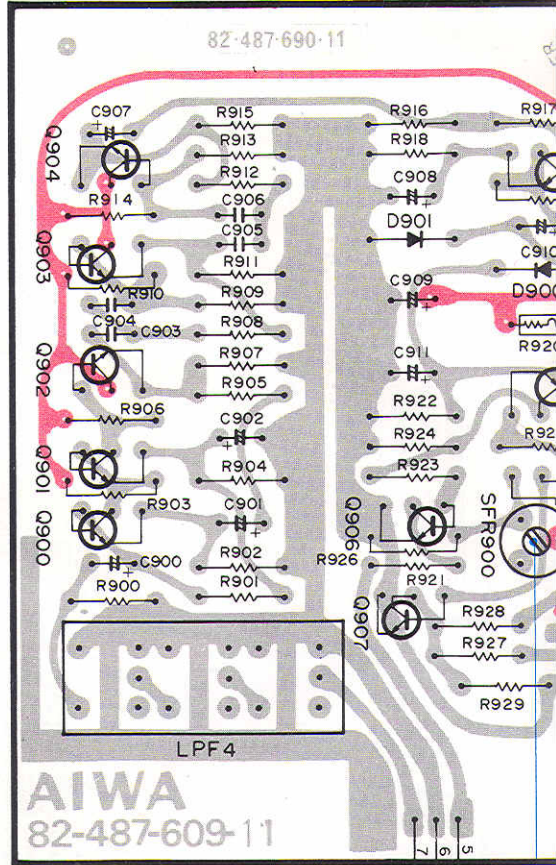
3 Sensitivity (at Distortion 3%) Adjustment

Settings:

- Input signal: 88, 98, 108 MHz, 10 dB, 1 kHz (Mod. freq.) MOD. ON
- Adjustment location: LA, LR1, 2, 3, TCA, TCRI, 2, 3, IFT2, 3, 4

Method: Adjust so that the distortion 3% sensitivity is 5 dB.

Rating: 5 ± 2 dB



D LED-1 C.B

E LED-2 C.B

A MAIN C.B

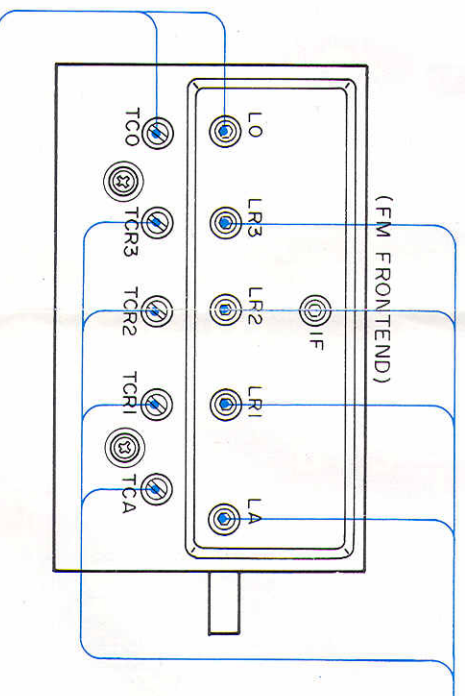
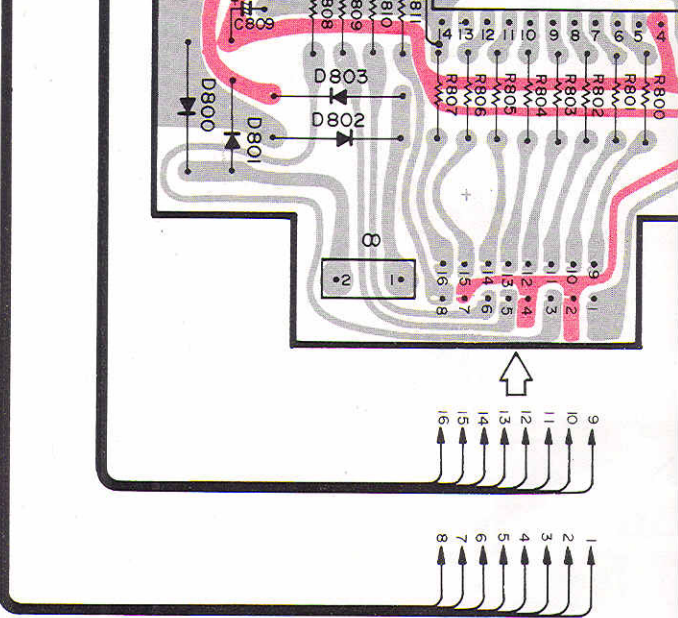
A MAIN C.B

A

NOTES (1) B (+) Pattern

Others pattern (2)

The voltage is the reference value measured with a tester (20 K ohms/V DC) when there are no



3 Sensitivity (at Distortion 3%) Adjustment

Settings:

- Input signal: 88, 98, 108 MHz, 10 dB, 1 kHz (Mod. freq.) MOD. ON
- Adjustment location: LA, LR1, 2, 3, TCA, TCR1, 2, 3, IFT2, 3, 4

Method: Adjust so that the distortion 3% sensitivity is 5 dB.

Rating: 5 ± 2 dB

2 Frequency Range Adjustment

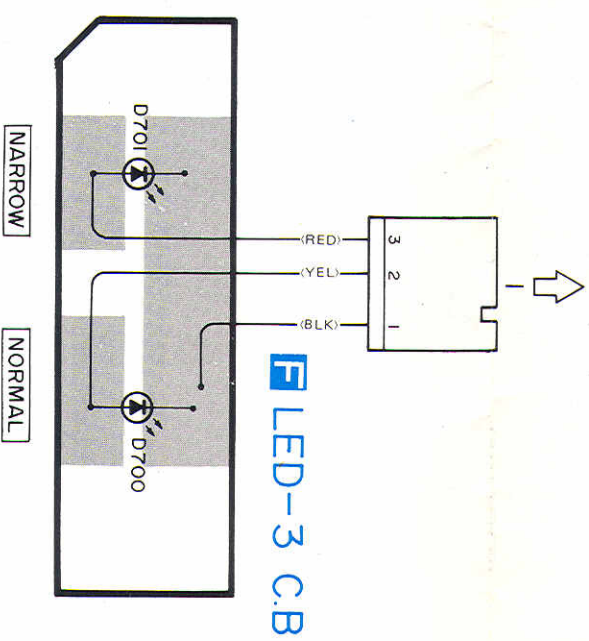
Settings:

- Input signal: 10 dB, 1 kHz (Mod. freq.) 75Ω (Antenna terminal)
- MODE SELECTOR: AUTO
- INDICATOR SELECTOR: MUTING OFF
- SELECTIVITY SELECTOR: NORMAL

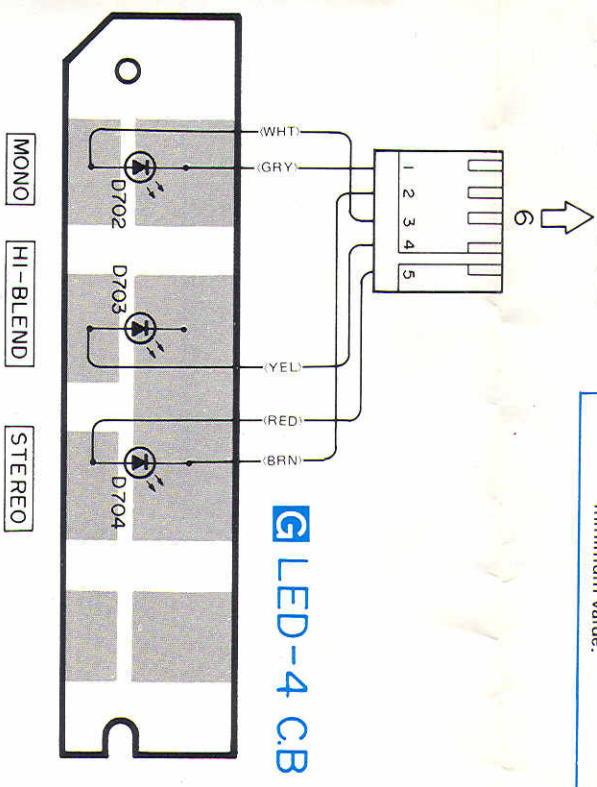
Adjustment location: LO (87.4 MHz), TCO (109.0 MHz) West Germany Model: LO (87.5 MHz), TCO (108.0 MHz)

Method: Adjust LO, TCO so that the distortion is brought to its minimum value.

A MAIN C.B



A MAIN C.B



PL2
(DIAL NEEDLE)

With a tester (20 K ohms/V DC) when there are no signals.

How to change the upper limit of FM frequency range from 108 MHz to 104 MHz

Description	108 MHz	104 MHz
FM front end	82-487-645-01	82-487-695-0

16 Free Running Adjustment
Settings: • Test point: TP8
 • Adjustment location: SFR5
 For others, proceed as for 11. 12. Phase adjustment.
Method: Adjust SFR5 so that the frequency is 152,000 Hz
Rating: 152,000 Hz ± 0.001%

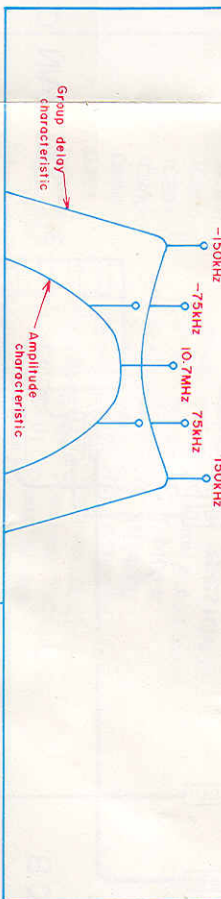
12 Phase Adjustment
Settings: • Input signal: 98 MHz, 66 dB, 1 kHz (Mod. freq.), MOD. OFF, 90%(L + R)
 • MODE SELECTOR: AUTO
 • INDICATOR SELECTOR: MUTING OFF
 • SELECTIVITY SELECTOR: NORMAL
 • Test point: TP7
 • Adjustment location: SFR4
Method: Adjust SFR4 so that the level is 0 V.
Rating: 0 + 0.5 V

14 Separation Adjustment
Settings: • Input signal: 98 MHz, 66 dB, 1 kHz (Mod. freq.), MOD. ON
 • Test point: TP8
 • Adjustment location: SFR9, SFR6
 For others, proceed as for 12. Phase adjustment.
Method: Adjust SFR9 so that the separation is more than 53 dB. And adjust SFR6 so that leakage is minimum value.
Rating: More than 53 dB

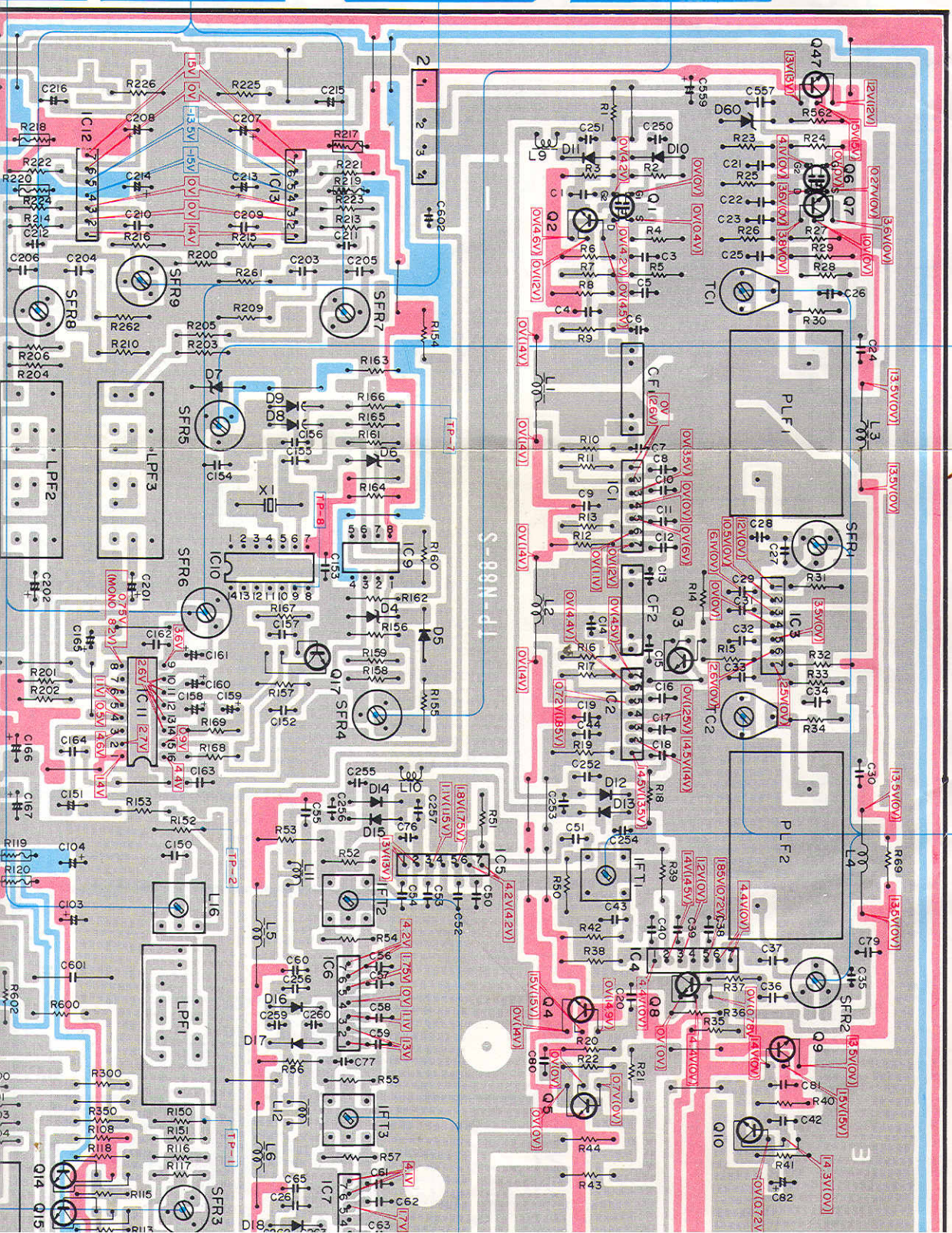
9 Frequency Response Adjustment
Settings: • Input signal: 10.7 MHz, 96 dB, 100 Hz, 1 kHz, 3 kHz (Mod. freq.), MOD. ON
 • MODE SELECTOR: AUTO
 • INDICATOR SELECTOR: MUTING OFF
 • SELECTIVITY SELECTOR: NORMAL
 • Test point: VARIABLE OUTPUT
 • Adjustment location: SFR7 (L-ch), SFR8 (R-ch)
Method: Adjust so that the 100 Hz and 3 kHz outputs are identical.

15 Carrier Leak Adjustment
Settings: • Input signal: 98 MHz, 66 dB, 1 kHz (Mod. freq.), MOD. ON
 L + R (MOD. 0, 90%)
 • Test point: VARIABLE OUTPUT
 • Adjustment location: SFR6, L16

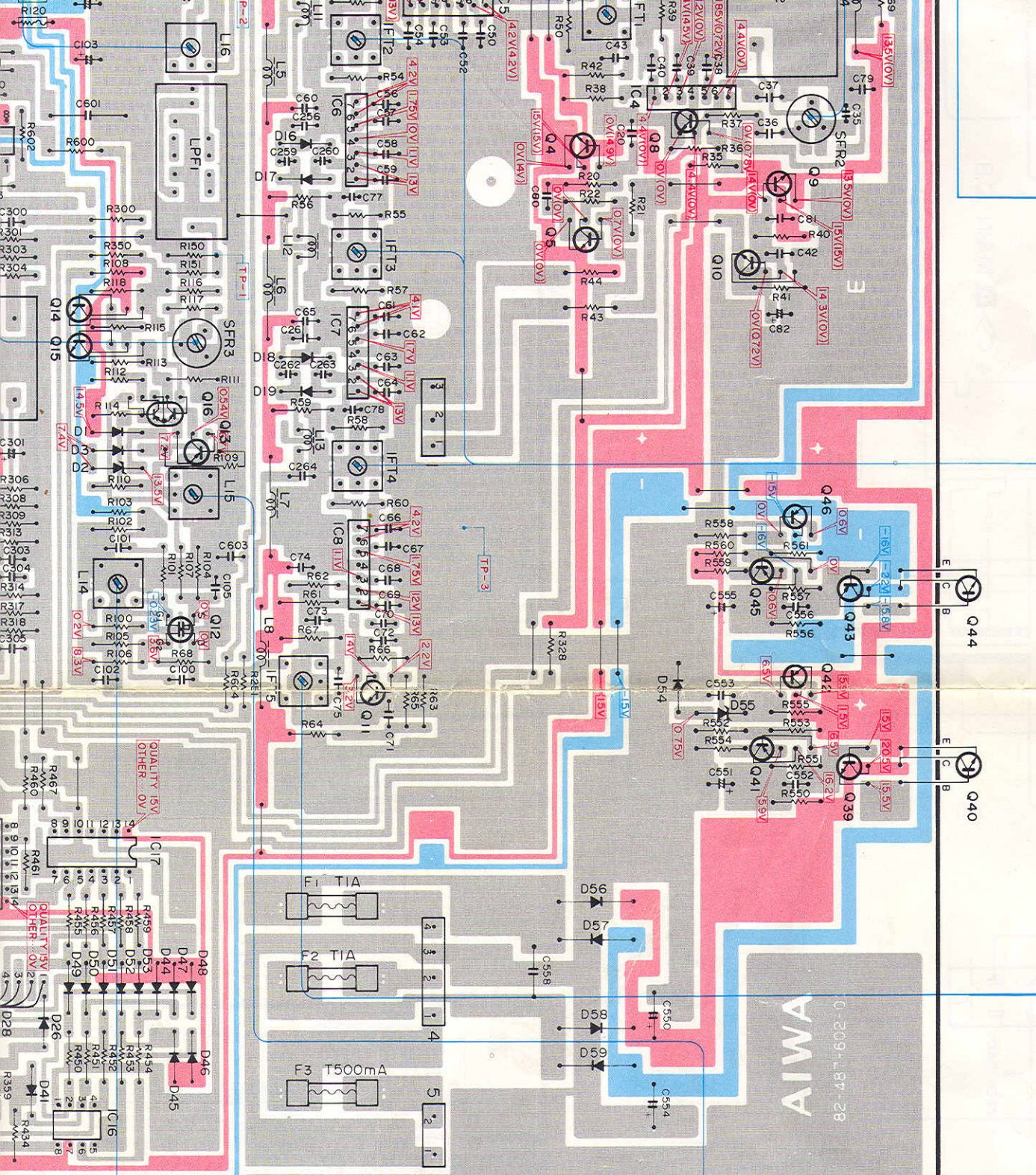
1 Group delay characteristic Adjustment
Settings: • Adjustment location: IFT 1, SFR 1, 2, TC 1, 2
Method: Adjust used to the direct viewing system. Adjust IFT 1 so that the amplitude characteristic level is maximum. Adjust SFR 1, 2 and TC 1, 2 so that the group delay characteristic is below wave form.



7 L
Setti
Meth
Rating



st IFT 1 so
just SFR 1,
below wave



7 Limiter Level Adjustment

Settings: • Input signal: 10.7 MHz, 30 dB, 1 kHz (Mod. freq.), MOD. ON

- Test point: TP6
- Adjustment location: IFT2, 3, 4

For others, proceed as for 4. 10.7 MHz Trap Coil adjustment. Adjust IFT2, 3, 4 so that the voltage is brought to its maximum value.

Method: Adjust IFT2, 3, 4 so that the voltage is brought to its maximum value.

Rating: 1,000 mV

6 Distortion (MONO) Adjustment

Settings: • Input signal: 10.7 MHz, 96 dB, 1 kHz (Mod. freq.), MOD. ON

- Test point: VARIABLE OUTPUT
- Adjustment location: IFT5

For others, proceed as for 4. 10.7 MHz Trap Coil adjustment. Adjust IFT5 so that the distortion becomes the same for both left and right channels.

Method: Adjust IFT5 so that the distortion becomes the same for both left and right channels.

Rating: 0.02 ± 0.01%

4 10.7 MHz Trap Coil Adjustment

Settings: • Input signal: 10.7 MHz, 96 dB, 1 kHz (Mod. freq.), MOD. OFF

- MODE SELECTOR: AUTO
- INDICATOR SELECTOR: MUTING OFF
- SELECTIVITY SELECTOR: NORMAL
- OUTPUT LEVEL: MAX
- Test point: TP1, TP3
- Adjustment location: L15

Method: Adjust L15 so that the output level is reduced to minimum value.

5 DC Zero Center Adjustment

Settings: • Test point: TP2, TP3

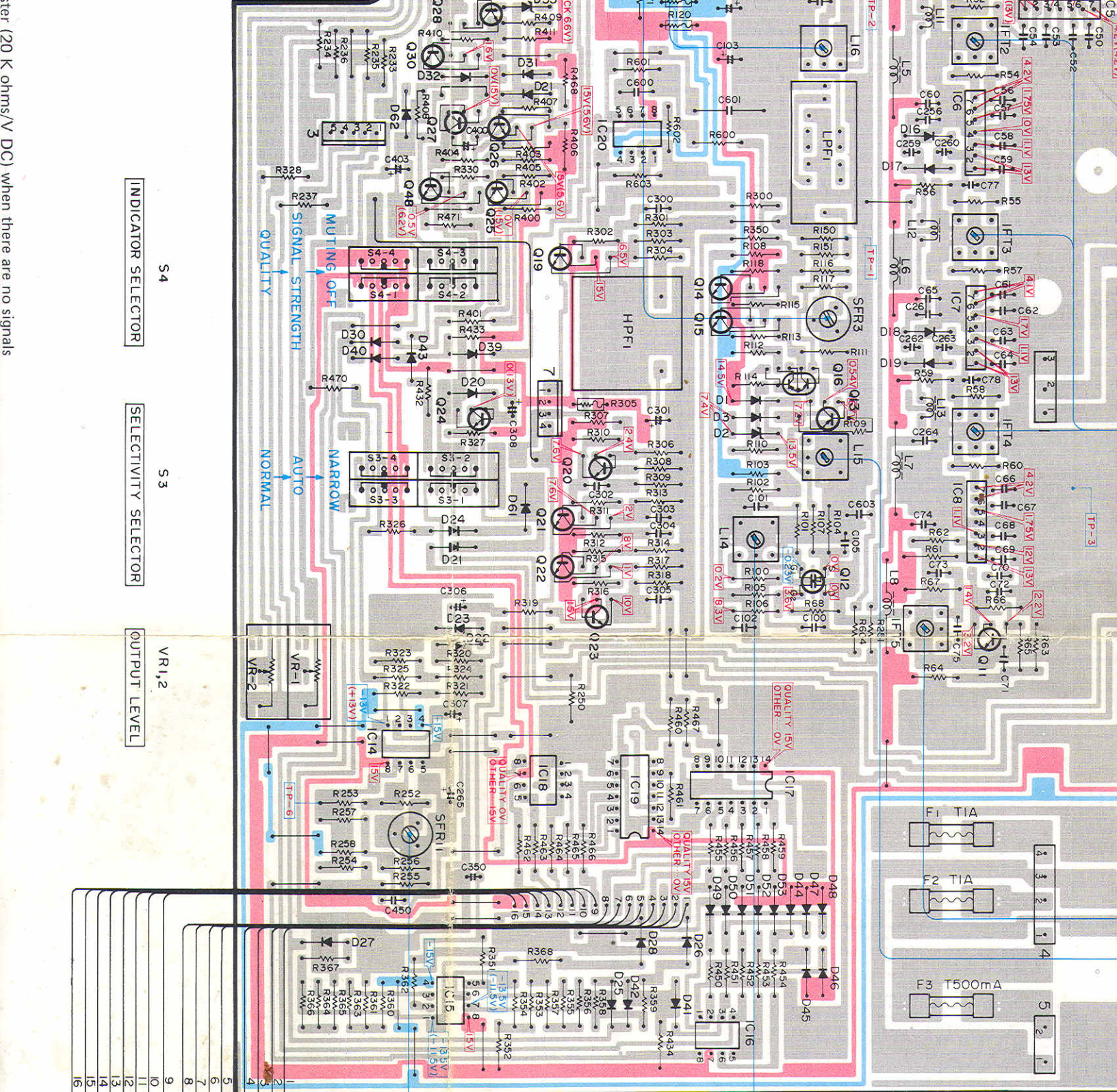
- Adjustment location: L14

For others, proceed as for 4. 10.7 MHz Trap Coil adjustment. Pointer is oscillated right and left of indicator points "0" center.

13 Muting Level Adjustment

Settings: • Input signal: 98 MHz, 66 dB, 1 kHz (Mod. freq.), MOD. OFF

- Test point: VARIABLE OUTPUT



INDICATOR SELECTOR

SELECTIVITY SELECTOR

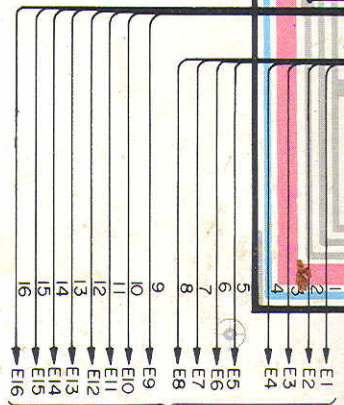
OUTPUT LEVEL

S4

S3

VR1,2

LED-3 C.B



5 DC Zero Center Adjustment

Settings:

- Test point: TP2, TP3
- Adjustment location: L14

For others, proceed as for 4. 10.7 MHz Trap Coil adjustment.

Method: Pointer is oscillated right and left of indicator points "0" center.

13 Muting Level Adjustment

Settings:

- Input signal: 98 MHz, 66 dB, 1 kHz (Mod. freq.), MOD. OFF
- Test point: VARIABLE OUTPUT
- Adjustment location: SFR11

For others, proceed as for 12. Phase adjustment.

Method: Adjust so that the signal to noise ratio is 45 dB. Adjust SFR11 so that the MONO indicator LED light up. Confirm that the STEREO indicator light up when the input level is increased by 1 dB.

Symbol No.	Part No.	Description	Symbol No.	Part No.	Description	Symbol No.	Part No.	Description
MAIN CIRCUIT BOARD SECTION								
PCB-A	82-487-602-11	Main circuit board	R119,120,	87-029-023-01	< Resistor > 47Ω	F4	87-035-217-01	Fuse, "T" 315mA
IC1,3	87-027-288-01	IC, TA7302 P	217,218,			F5,6	87-038-011-01	Fuse label, "T" 315mA
IC2,4,5,	87-027-290-01	IC, μPC1163 H	219,220,				87-035-219-01	Fuse, "T" 500mA
6,7,8			305				87-098-013-01	Fuse label, "T" 500mA
IC9,14,15,20	87-027-235-01	IC, NJM-4588 D	R552	87-029-068-01	1.5kΩ	S1	82-473-710-01	Fuse holder, 3P
IC10	87-027-291-01	IC, MSM5577	R553	87-029-069-01	2kΩ	S2	87-031-408-01	Push switch (POWER)
IC11	87-027-292-01	IC, HA11223 W	R233,234,	87-029-062-01	5.1kΩ		87-031-364-01	Slide switch (VOLTAGE SELECTOR)
IC12,13	87-027-289-01	IC, TA7136 P	235,236			PL1	82-487-661-01	Pilot lamp, 12V 0.3A (DIAL LAMP)
IC16,18	87-027-268-01	IC, SN16889 P				PL2	82-487-663-01	Pilot lamp, 12V 40mA (DIAL NEEDLE)
IC17,19	87-027-293-01	IC, SN16880 N					82-487-671-01	Connector ass'Y, 2P
O1,6	87-026-148-01	FET, 3SK40 (L)					82-487-670-01	Connector ass'Y, 3P
O2,3,7,8,11	89-319-233-01	Transistor, 2SC1923 (O)					82-487-674-01	Connector ass'Y, 3P
O4,9,47	89-405-712-01	Transistor, 2SD571 (L)					82-487-675-01	Connector ass'Y, 4P
O5,10,19,21,	89-318-154-01	Transistor, 2SC1815 (Y)					82-487-677-01	Connector ass'Y, 4P
22,23,24,							82-487-673-01	Connector ass'Y, 5P
26,27,28,							82-487-672-01	Connector ass'Y, 5P
29,30,31,							87-032-503-01	Pilot lamp socket
32,33,34,								
35,36,37,								
38,39,41,								
42,48								
Q12	87-026-149-01	FET, 3SK40 (K)						
Q13	89-107-336-01	Transistor, 2SA733 (P)						
Q14,15	89-314-005-01	Transistor, 2SC1400 (E)						
Q16	89-107-985-01	Transistor, 2SA798 (G)						
Q17	89-307-524-01	Transistor, 2SC752 (G, Y)						
Q18	89-319-594-01	Transistor, 2SC1959 (Y)						
Q20,43,45,	89-110-154-01	Transistor, 2SA1015 (Y)						
46								
Q25	89-105-624-01	Transistor, 2SA562 Y (TM)						
Q40	89-405-264-01	Transistor, 2SD526 (Y)						
O44	89-204-354-01	Transistor, 2SB435 (Y)						
D1,3,5,20,21,	87-027-097-01	Diode, 1S1555						
22,23,24,								
25,26,27,								
28,29,30,								
31,32,34,								
35,36,37,								
38,39,40,								
41,42,43,								
44,45,46,								
47,48,49,								
50,51,52,								
53,54,61,								
62,63								
D2,4,33	87-026-138-01	Zener diode, XZ062						
D6	87-026-139-01	Zener diode, XZ068						
D7	87-026-140-01	Zener diode, XZ090						
D8,9	87-026-136-01	Diode, 1TT310						
D10,11,12,	88-052-188-11	Diode, 1S188 (FM)						
13,14,15,								
16,17,18								
19								
D55	87-026-137-01	Zener diode, XZ057						
D56,57,58,	87-027-083-01	Diode, 1S1885						
59								
QUARTZ CONTROLLED SERVO LOCK CIRCUIT BOARD SECTION								
PCB-B	82-487-609-11	Quartz controlled servo lock circuit board						
Q900,901,	89-318-155-01	Transistor, 2SC1815 (GR)						
902,903,								
904,905,								
906,907								
Q908,909	89-110-154-01	Transistor, 2SA1015 (Y)						
D900,901	87-027-097-01	Diode, 1S1555						
LPF4	82-487-657-01	Low-pass filter						
SFR900	87-021-557-01	Semi-fixed resistor, 10kΩ-B						
R920	87-029-023-01	< Resistor > 47Ω 1/4W Fuse resistor						
COUNTER CIRCUIT BOARD SECTION								
PCB-C	82-487-607-21	Counter circuit board						
IC800	87-027-294-01	IC, T-1400 B						
IC801	87-027-302-01	IC, SN74S00						
IC802	87-027-295-01	IC, TA78005P						
O800	89-316-742-01	Transistor, 2SC1674 (L)						
O801	89-316-752-01	Transistor, 2SC1675 (L)						
D800,801,	87-027-083-01	Diode, 1S1885						
802,803								
X1	82-487-622-01	Crystal, 6.4MHz						
PIN-8	82-481-649-01	Pin, 2P						
PIN-9	87-032-897-01	Pin, 3P						
LED-1 CIRCUIT BOARD SECTION								
PCB-D	82-487-606-01	LED-1 circuit board						
Q700,701,	89-107-336-01	Transistor, 2SA733 (P)						
702,703								
D709	87-026-160-01	Light emitting diode, AYY222S						
Safety component symbol								
<p>This symbol is given to important parts which serve to maintain the safety of the product, and which are made to conform to special safety specifications. Therefore, when replacing a component with this symbol, make absolutely sure that you use a designated part.</p>								

36,39,40, 41,42,43, 44,45,46, 47,48,49, 50,51,52, 53,54,61, 62,63
 D2,4,33
 D6
 D7
 D8,9
 D10,11,12, 13,14,15, 16,17,18 19
 D55
 D56,57,58, 59
 D60
 L1,2,3,4,5,6, 7,8
 L9,10,11,12, 13
 L14
 L15
 L16
 TC1,2
 CF1,2
 PLF1,2
 IFT1
 IFT2,3,4
 IFT5
 LPF1
 LPE2,3
 HPF1
 RY1,S6
 X1
 VR1,2
 S3,4
 S5
 △F1,2
 △F3

87-026-138-01
 87-026-139-01
 87-026-140-01
 87-026-136-01
 88-052-188-11
 87-026-137-01
 87-027-083-01
 87-027-368-01
 87-003-048-01
 87-005-091-01
 82-487-684-01
 82-487-685-01
 82-487-654-01
 85-720-609-01
 82-487-651-01
 82-487-652-01
 82-487-681-01
 82-487-682-01
 82-487-683-01
 82-487-653-01
 82-487-655-01
 82-487-656-01
 87-045-112-01
 82-487-621-01
 82-487-641-01
 82-487-643-01
 82-487-642-01

Zener diode, XZ062
 Zener diode, XZ068
 Zener diode, XZ090
 Diode, 1TT310
 Diode, 1S188 (F/M)
 Zener diode, XZ057
 Diode, 1S1885
 Zener diode, HZ-12BIL
 Coil, 15μH
 Micro inductor, 3.3mH
 Coil, GD
 Coil, LPF
 Coil, PE
 Trimmer 10pF
 Ceramic filter
 Liner phase filter, 10.7MHz
 IFT
 IFT
 IFT
 Low-pass filter
 Low-pass filter
 High-pass filter
 Reed relay, HA-212S
 Crystal, 480kHz
 Volume, 10KΩ-A
 (OUTPUT LEVEL)
 Rotary slide switch
 (SELECTIVITY SELECTOR,
 INDICATOR SELECTOR)
 Rotary switch
 (MODE SELECTOR)
 Fuse, "T" 1A
 Fuse label, "T" 1A
 Fuse, "T", 500mA
 Fuse, label, "T", 500mA
 Fuse clamp
 Semi-fixed resistor, 470Ω-B
 Semi-fixed resistor, 3.3KΩ-B
 Semi-fixed resistor, 10KΩ-B
 Semi-fixed resistor, 100KΩ-B
 Semi-fixed resistor, 220KΩ-B
 Semi-fixed resistor, 470Ω-B
 Pin, 2P
 Pin, 3P
 Pin, 4P
 Pin, 4P
 Pin, 5P

PCB-C
 IC800
 IC801
 IC802
 Q800
 Q801
 D800,801,
 802,803
 X1
 PIN-8
 PIN-9
 PCB-D
 Q700,701,
 702,703
 D709
 D710
 PCB-E
 D705,707
 D706
 D708
 PCB-G
 D700
 D701

82-487-607-21
 87-027-294-01
 87-027-302-01
 87-027-295-01
 89-316-742-01
 89-316-752-01
 87-027-083-01
 82-487-622-01
 82-481-649-01
 87-032-897-01
 82-487-606-01
 89-107-336-01
 87-026-160-01
 87-026-147-01
 82-487-605-01
 87-026-145-01
 87-026-146-01
 87-026-144-01
 82-487-603-01
 87-026-142-01
 87-026-143-01

Counter circuit board
 IC, T-1400 B
 IC, SN74S00
 IC, TA78005P
 Transistor, 2SC1674 (L)
 Transistor, 2SC1675 (L)
 Diode, 1S1885
 Crystal, 6.4MHz
 Pin, 2P
 Pin, 3P
 LED-1 circuit board
 Transistor, 2SA733 (P)
 Light emitting diode, AY222S
 (LOCKED INDICATOR)
 Light emitting diode, TLG2110
 (DIGITAL FREQUENCY
 DISPLAY)
 LED-2 circuit board
 Light emitting diode, LN212RP
 (TUNING INDICATOR)
 Light emitting diode, LN310G P
 (TUNING INDICATOR)
 Light emitting diode, TLG401
 (10 STEP DISPLAY)
 LED-3 circuit board
 Light emitting diode,
 Light emitting diode,
 SEL-303C (GR)(MONO)
 Light emitting diode, SEL-103C,
 RED (NARROW)

PCB-H
 T2
 J5
 J1,2,3,4
 J5
 J6
 D703,704
 87-026-143-01
 82-487-604-01
 87-026-142-01
 87-026-143-01
 82-487-608-01
 87-006-047-01
 87-032-922-01
 82-487-631-01
 82-487-633-01
 82-487-645-01
 82-306-670-01
 87-032-923-01
 82-488-656-01

Antenna circuit board
 Balun transformer
 Jack, IEC, antenna (75Ω COAXIAL)
 Power transformer
 (E, H model only)
 Power transformer (K model only)
 Front end ass'y
 4P pin jack ass'y (VARIABLE
 OUTPUT, FIXED OUTPUT)
 Antenna connector
 (H model only)
 FM DIN antenna terminal 300Ω
 (E, K model only)

PCB-I
 J1,2,3,4
 J5
 J6
 D703,704
 87-026-143-01
 82-487-604-01
 87-026-142-01
 87-026-143-01
 82-487-608-01
 87-006-047-01
 87-032-922-01
 82-487-631-01
 82-487-633-01
 82-487-645-01
 82-306-670-01
 87-032-923-01
 82-488-656-01

PCB-J
 J1,2,3,4
 J5
 J6
 D703,704
 87-026-143-01
 82-487-604-01
 87-026-142-01
 87-026-143-01
 82-487-608-01
 87-006-047-01
 87-032-922-01
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 82-487-633-01
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 82-306-670-01
 87-032-923-01
 82-488-656-01