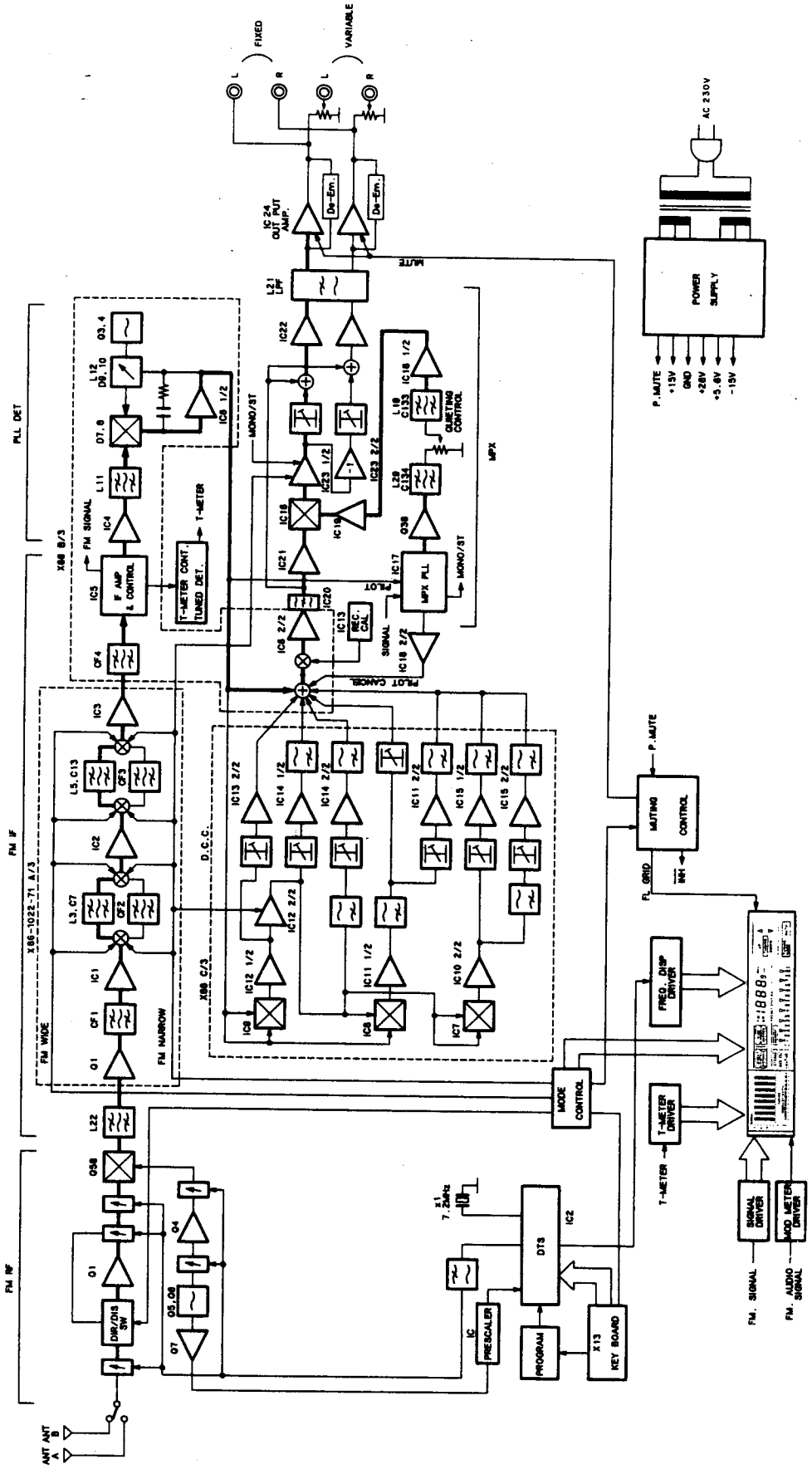
BLOCK DIAGRAM



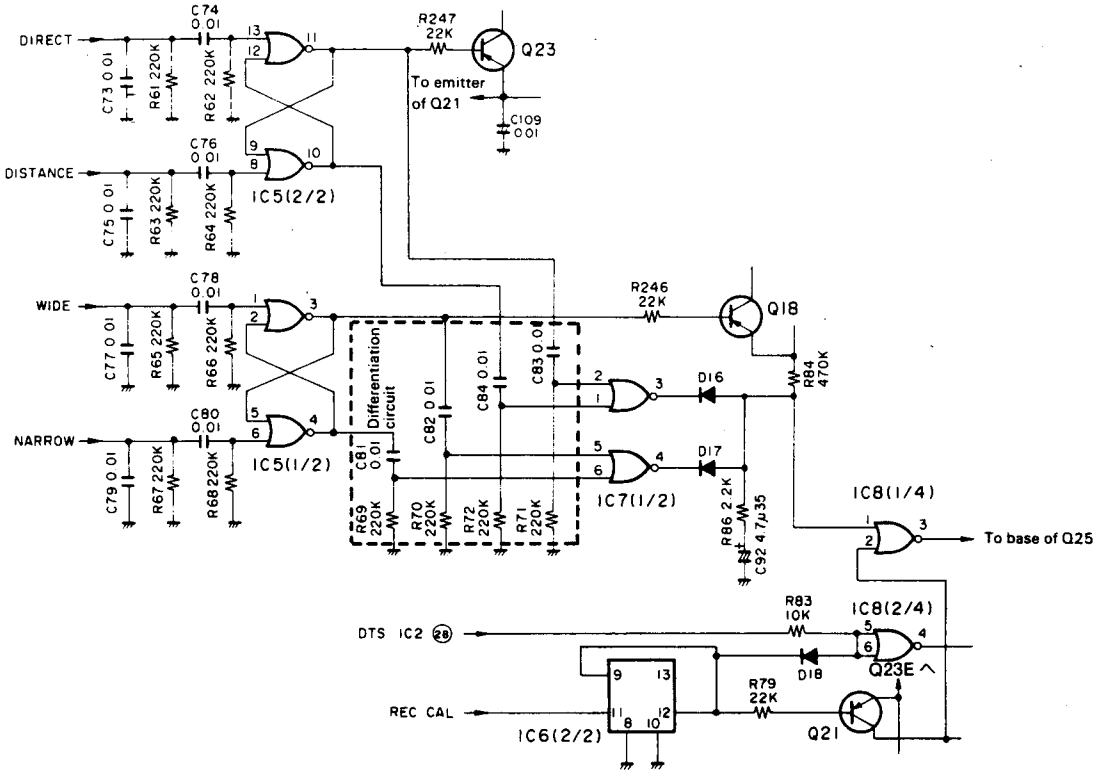


Fig. 1

Muting at Power ON/OFF

When the power is turned ON, IC10 generates the $\overline{\text{INH}}$, FL display ON and audio muting release signals successively. When the power is turned OFF, AC detector transistor Q33 displays the FL display, switches the audio signal in an instant, and turns $\overline{\text{INH}}$ OFF to stop the DTS.

The timing charts are as shown in the diagrams.

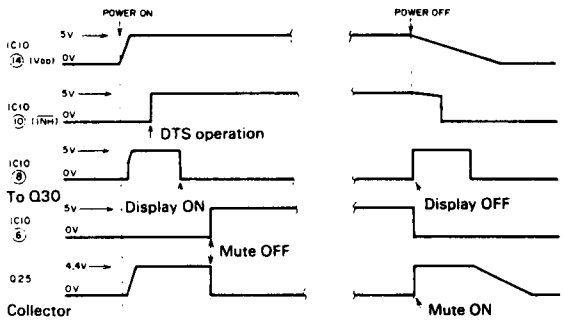


Fig. 2

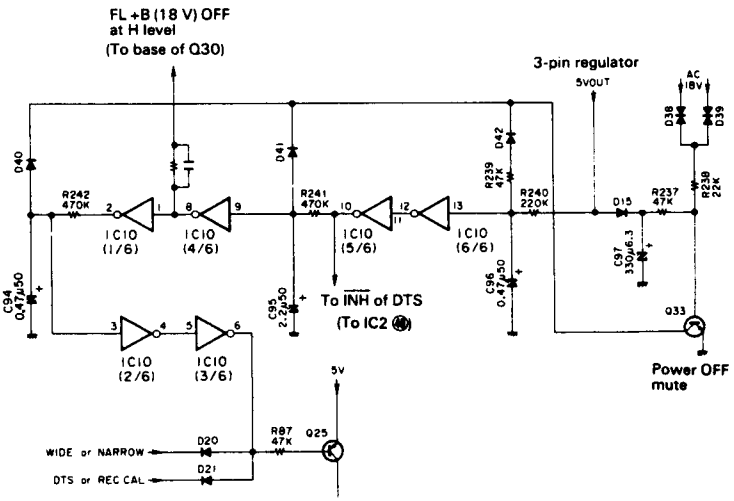


Fig. 3

Auto-Stop Signal Generator Circuit

When no signal input (at no station) (Detune):

Since the range mute signal (LA1231NS; X86-1022-71) is 5V, IC14 ⑦ is −15V. For this, Q36 turns ON and IC14 ② becomes 6.5V. At this time, as the S-meter voltage is less than 1 V, IC14 ① (auto-stop signal output) becomes −15V.

When a weak signal is input (receiving broadcast) (weak signal area: less then approx. 10 dBμV):

The range mute signal becomes 1V or less and IC14 ⑦ becomes +15V. For this, Q36 turns OFF. However, the S-meter voltage is low, IC14 ① is −15V.

When the broadcast station is received (more than 14 dBμV):

Since the range mute signal is 0V, Q36 turns OFF and IC14 ② becomes 1V. And since the S-meter voltage is high (IC14 ③ > 1 V), IC14 ① becomes +15V.

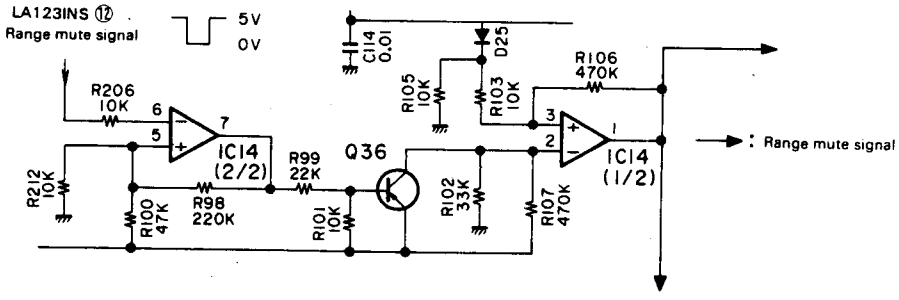


Fig. 4

MPX SUB Decoder (IC16: MC1495L)

The Direct Pure MPX enables stereo decoding without causing beat interference, in theory, by linear-multiplying two analog signals (stereo composite signal and 38 kHz sine wave sub carrier signal).

This unit provides the linear multiplier with high S/N ratio, which is designed with the new theory, so that the high signal-to-noise ratio of 94 dB for the MPX unit itself and the resistance to overmodulation of 400% (dynamic range: 106 dB) are realized while the conventional characteristics are maintained.

In Fig. 5, the composite signal is applied to the differential inputs "X input" (pins 9, 12) and the 38 kHz subcarrier signal is applied to the differential inputs "Y input" (pins 4, 8).

The Y-input differential amp has special non-linear load as shown in the symbol of diode in the diagram. When the signal generated here is used to drive the double-balanced differential amp of Q5 to Q8, switching is not performed but the linear multiplication with the composite signal applied to the X-input pins is executed.

In Fig. 6, the opamp shown by IC19 and IC21 is used for the backup in the voltage/current conversion at the Darlington differential amp in IC16. The opamp can include the Darlington differential transistor in the loop, eliminating distortion due to changes in parameters. The signal output from the differential open-collector design is composed into current by the dual-transistor, high-accuracy current Miller circuit of Q49, Q50 and Q51, and the current obtained is converted into a voltage signal by the current/voltage converter opamp.

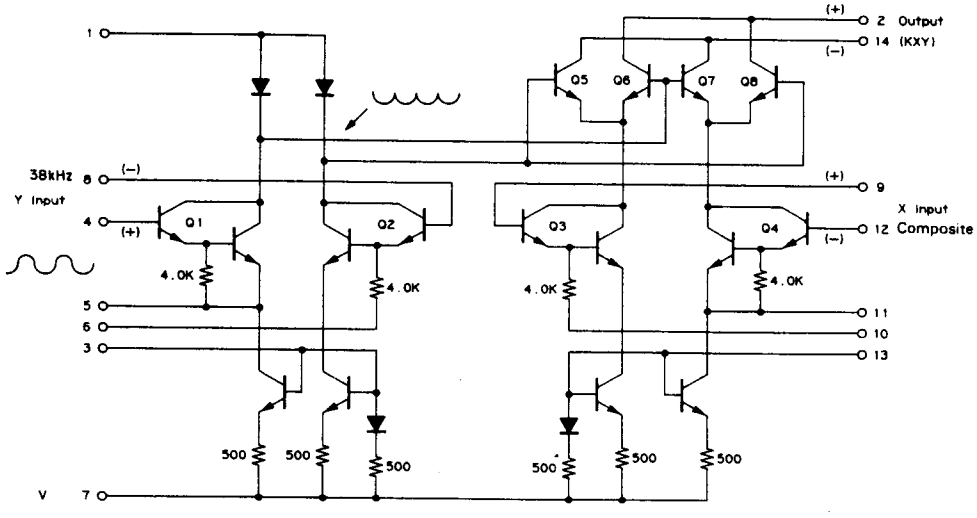


Fig. 5 MC1495L Internal equivalent circuit

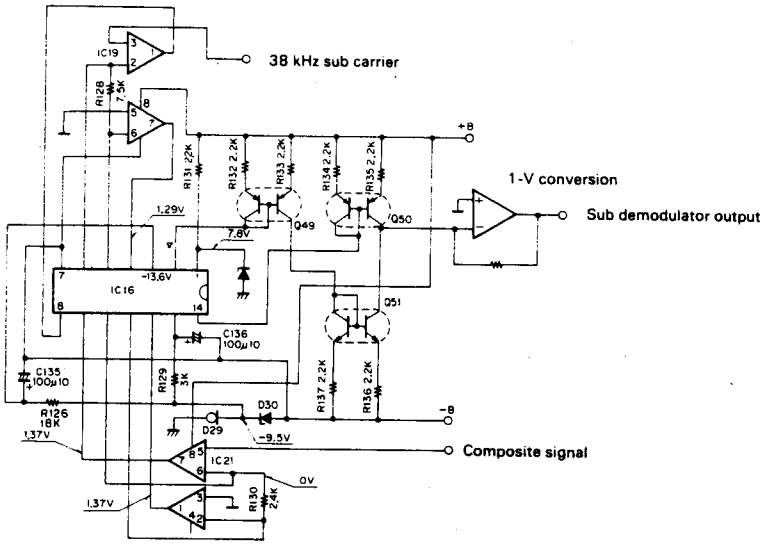


Fig. 6 Actual circuit

Program Circuit

Similarly to the program circuit used with the KT-1010F and KT-880F, the program circuit of this model has the following function cycles; 1) Last channel; 2) M8 of A or B (same side as the Last channel); 3) M8 of B or A; 4) repetition of 2 and 3; .... However, the circuit design is more simplified by using four D-FFs.

When the PROGRAM OFF signal is being applied, three D-FFs are reset so only the switching between A and B is available.

When the PROGRAM OFF signal is Low, the voltages at different points vary as shown below, in conformity with the $\overline{INH}$ signal which is generated in synchronism with power ON/OFF.

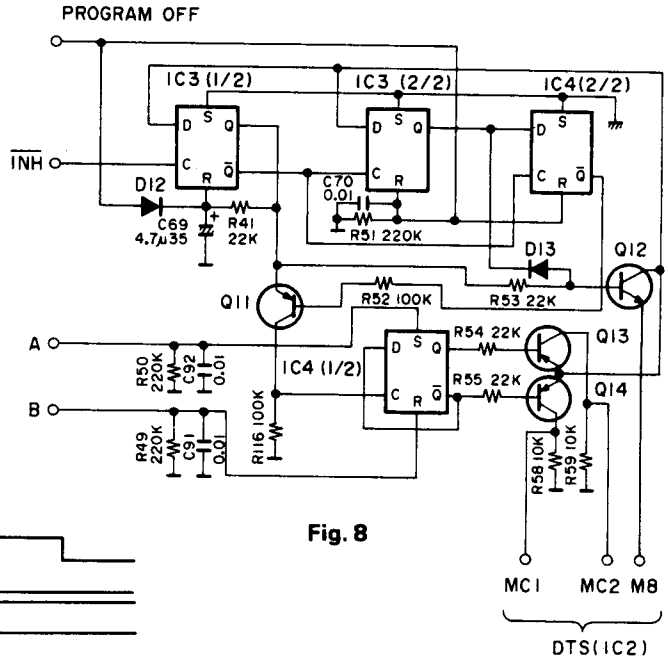


Fig. 8

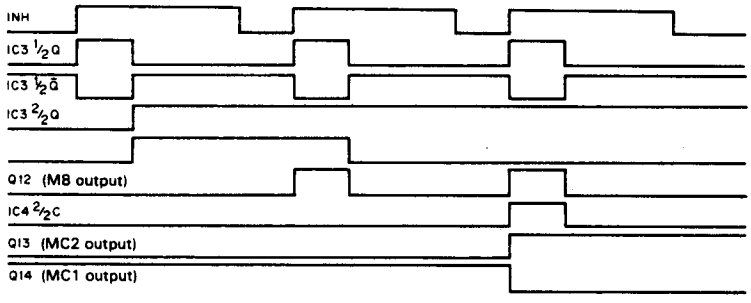


Fig. 7 Timing chart

Non-Stable Multi-Vibrator for Peak Hold and Reset

Since the BA668A deviation meter drive IC provides the peak-hold function as well as the reset pin, when random pulses are applied, a simple peak hold meter will be constructed. For this purpose, this circuit is used as the n vibrator consisting of two NOR gates (C-MOS) and oscilla by the mechanism as follows:

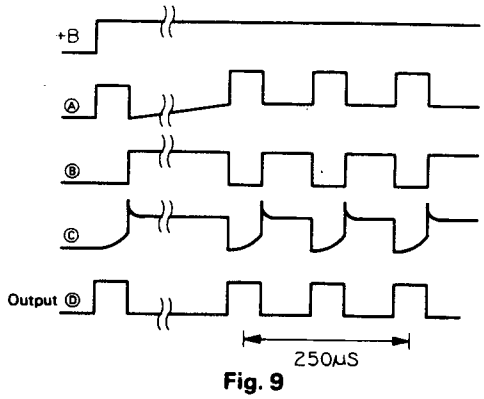


Fig. 9

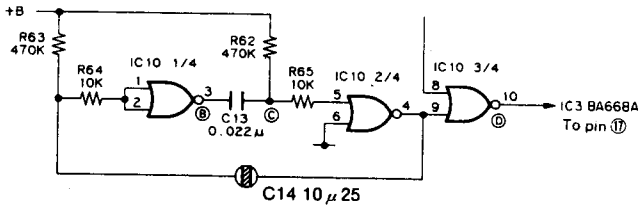


Fig. 10 IC10: μPD4001BC

While two inputs of the first NOR gate are short-circuited, one end of the second NOR gate is grounded. This is because the threshold values of two gates are set differently to prevent the circuit from entering non-oscillation/stable state at the power ON/OFF timing.

Digital Rotary Tuning

The basic configuration is that the transparent slits (30 slits) on the rotating disk attached to the tuning knob pass through PH1 as shown, whereby the rotary direction is identified, until the required reception frequency is obtained (Fig. 14). PH1 is a photo-interrupter incorporating LED (light-emitting diode), phototransistor and logic circuits.

The phototransistors are arranged in a pair.

1. The signal which identifies the rotary direction is output from pin 4.
   Clockwise rotation (tuning to high frequency band): high level.
   Counterclockwise rotation (tuning to low frequency band): low level.
2. The tuning speed is determined by the number of pulses to be output from pin 5 which are proportional to the number of slits.
   So that by using these two signals (a and b) the UP and DOWN pulses are obtained, logic circuits IC7 and IC8 are added.
   IC7 distributes pulses for UP or DOWN directions.
   IC8 prevents malfunction and serves as a frequency divider and monostable multivibrator.

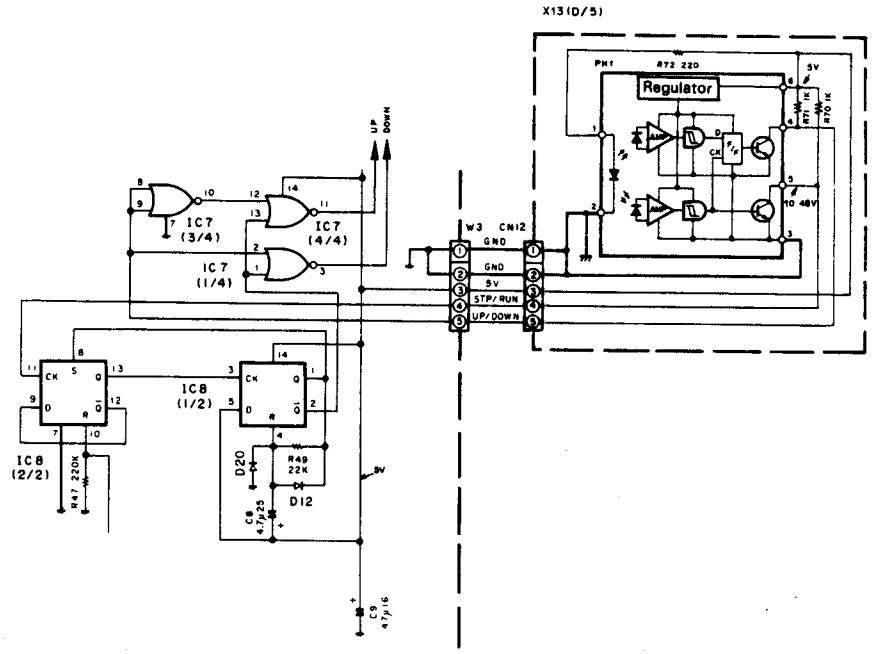


Fig. 11 Digital rotary tuning circuit

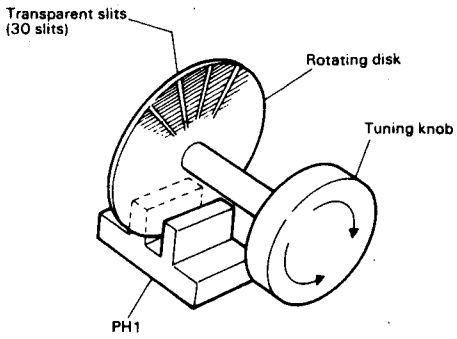


Fig. 14

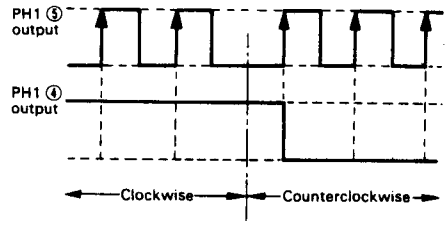


Fig. 12 Operation timing chart of PH1

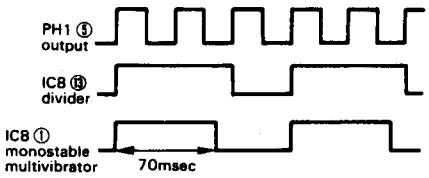


Fig. 13 Timing chart

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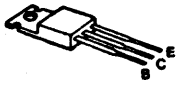
2SC2003
2SC945(A)
2SD863

MC1495L



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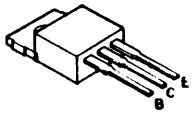

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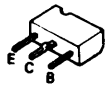

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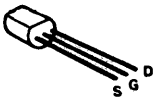

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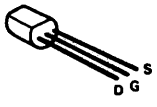

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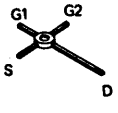

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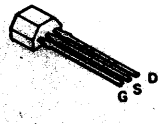

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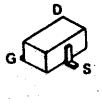

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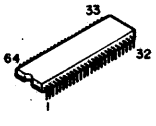

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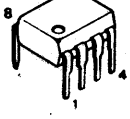

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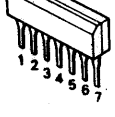

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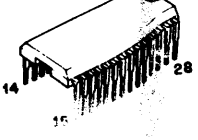

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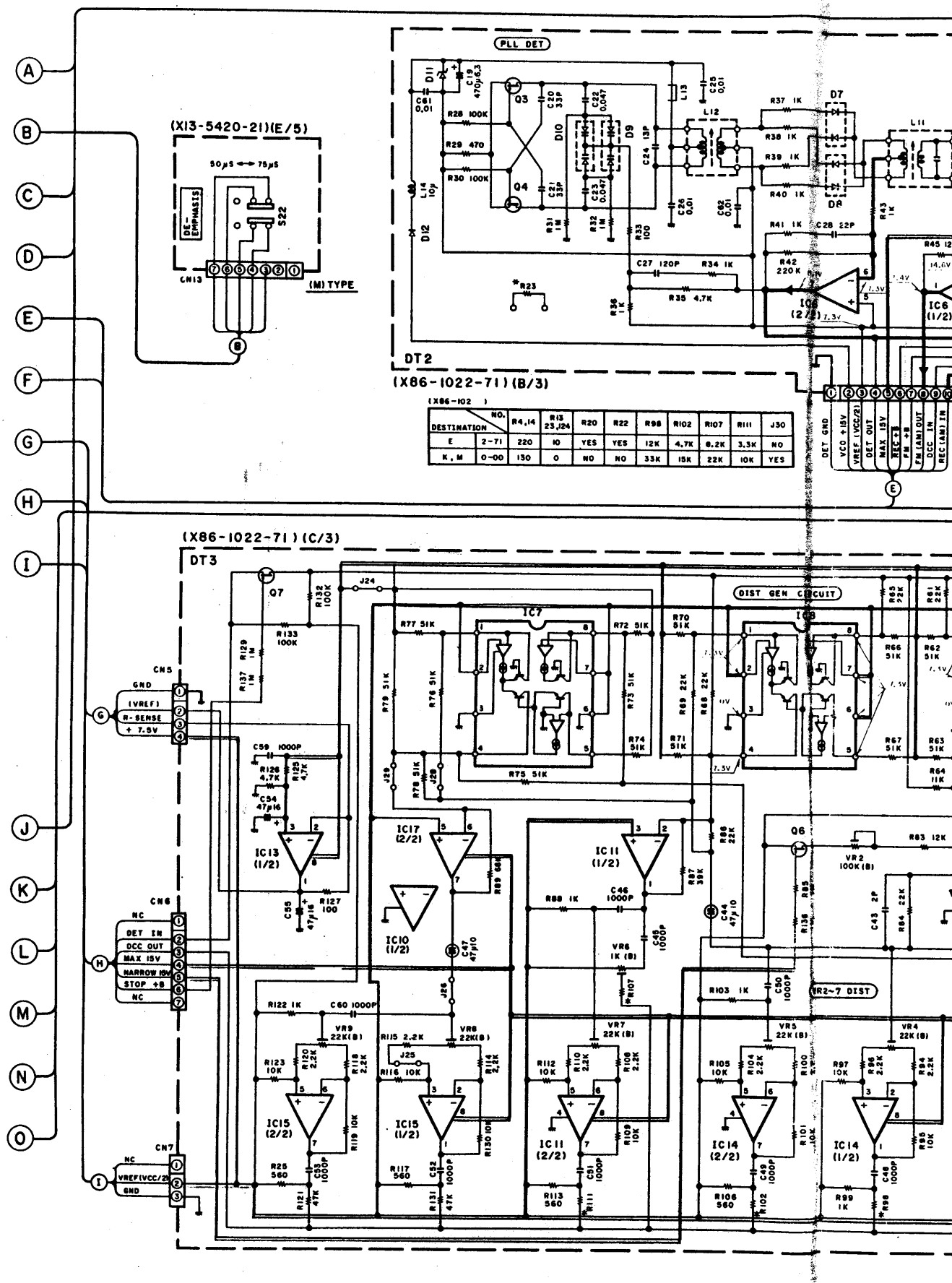

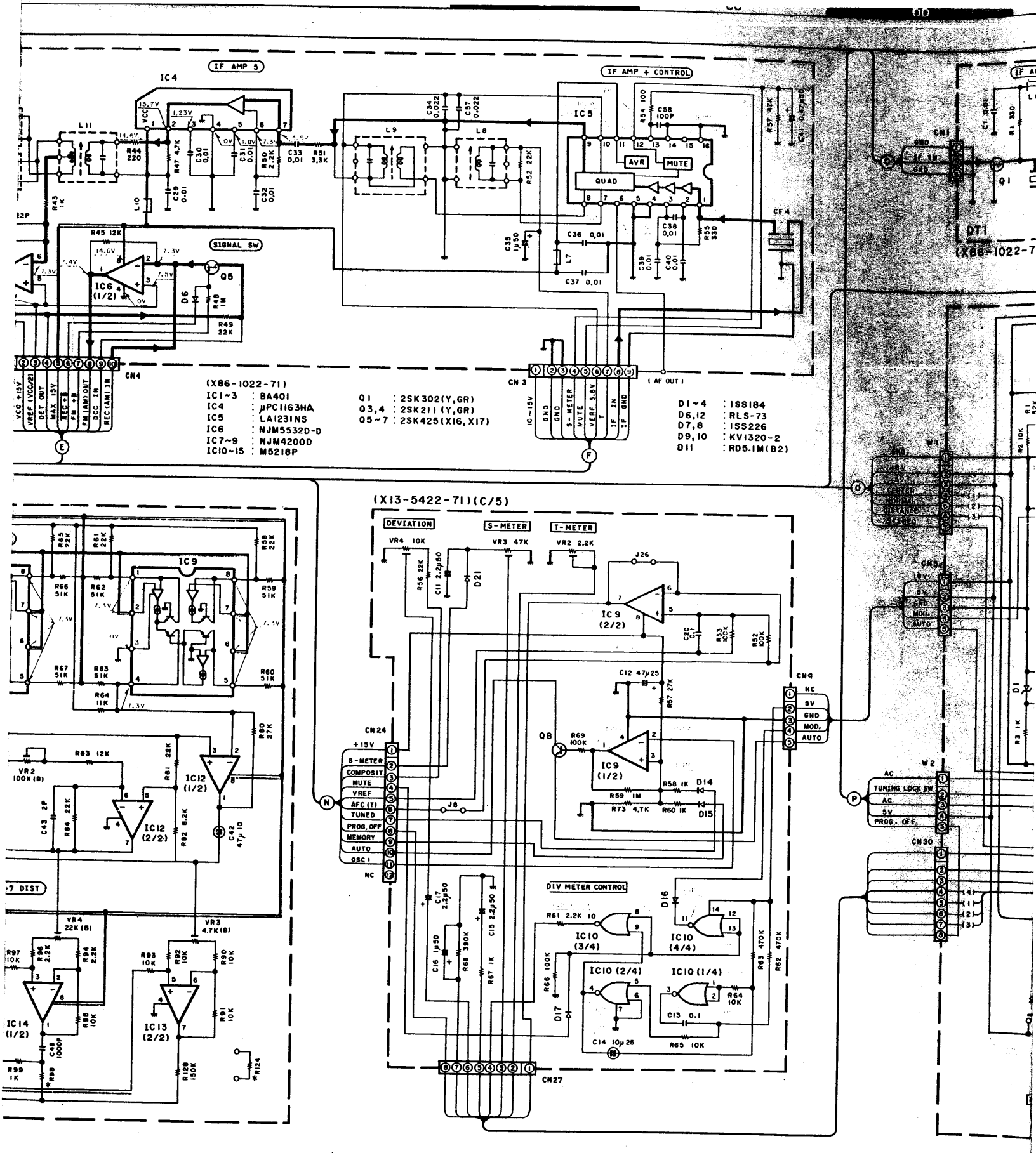

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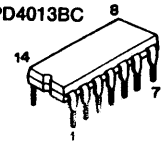

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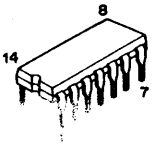

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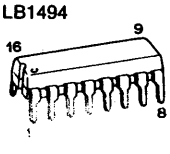

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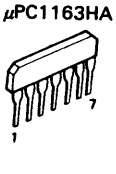

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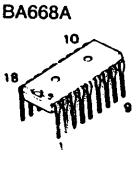

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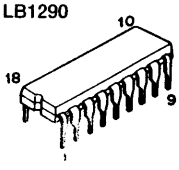

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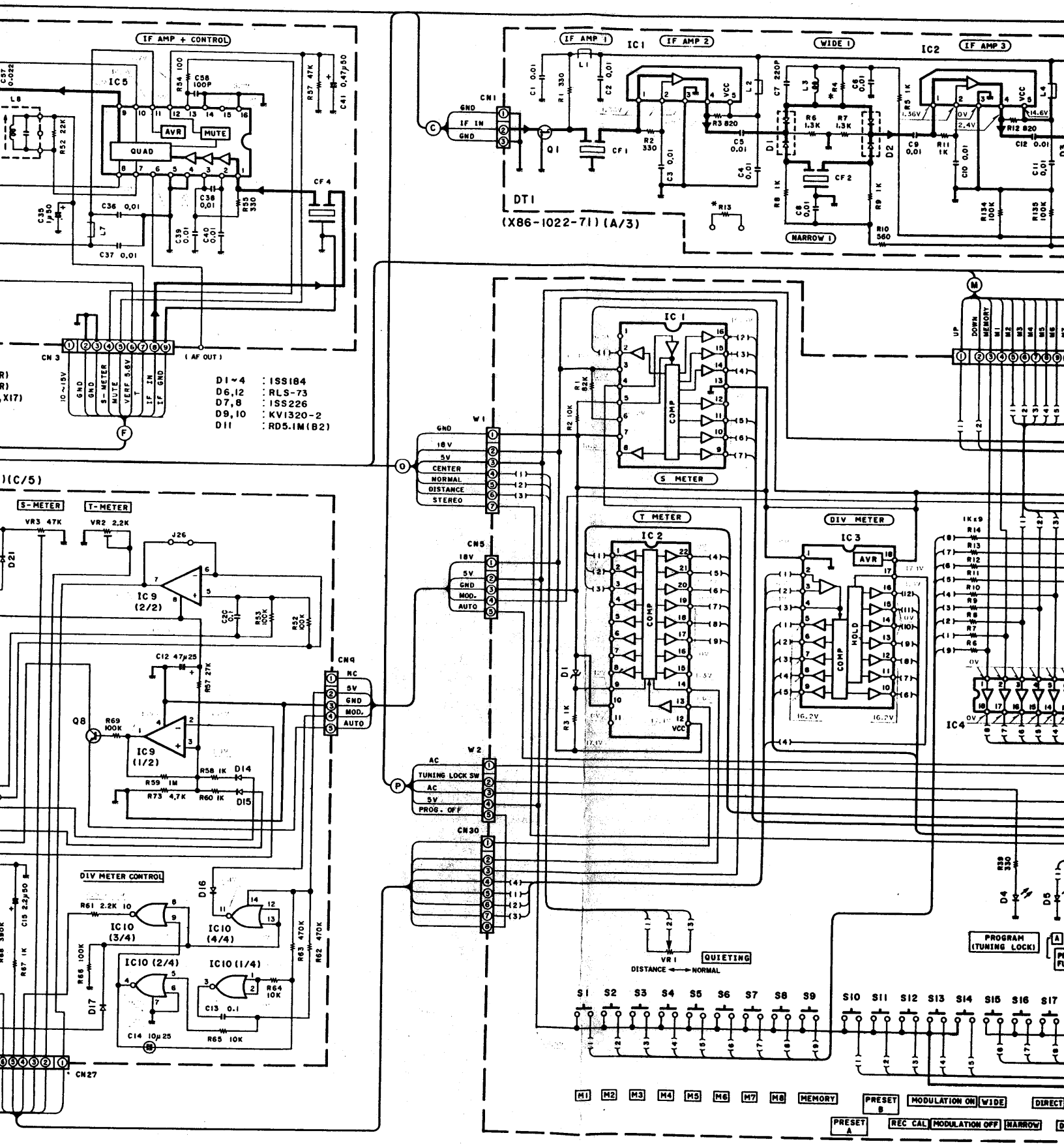

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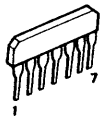

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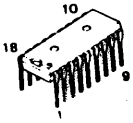

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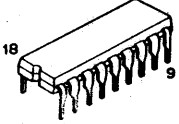

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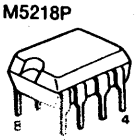

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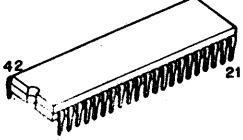

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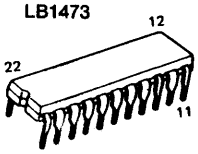

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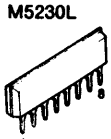

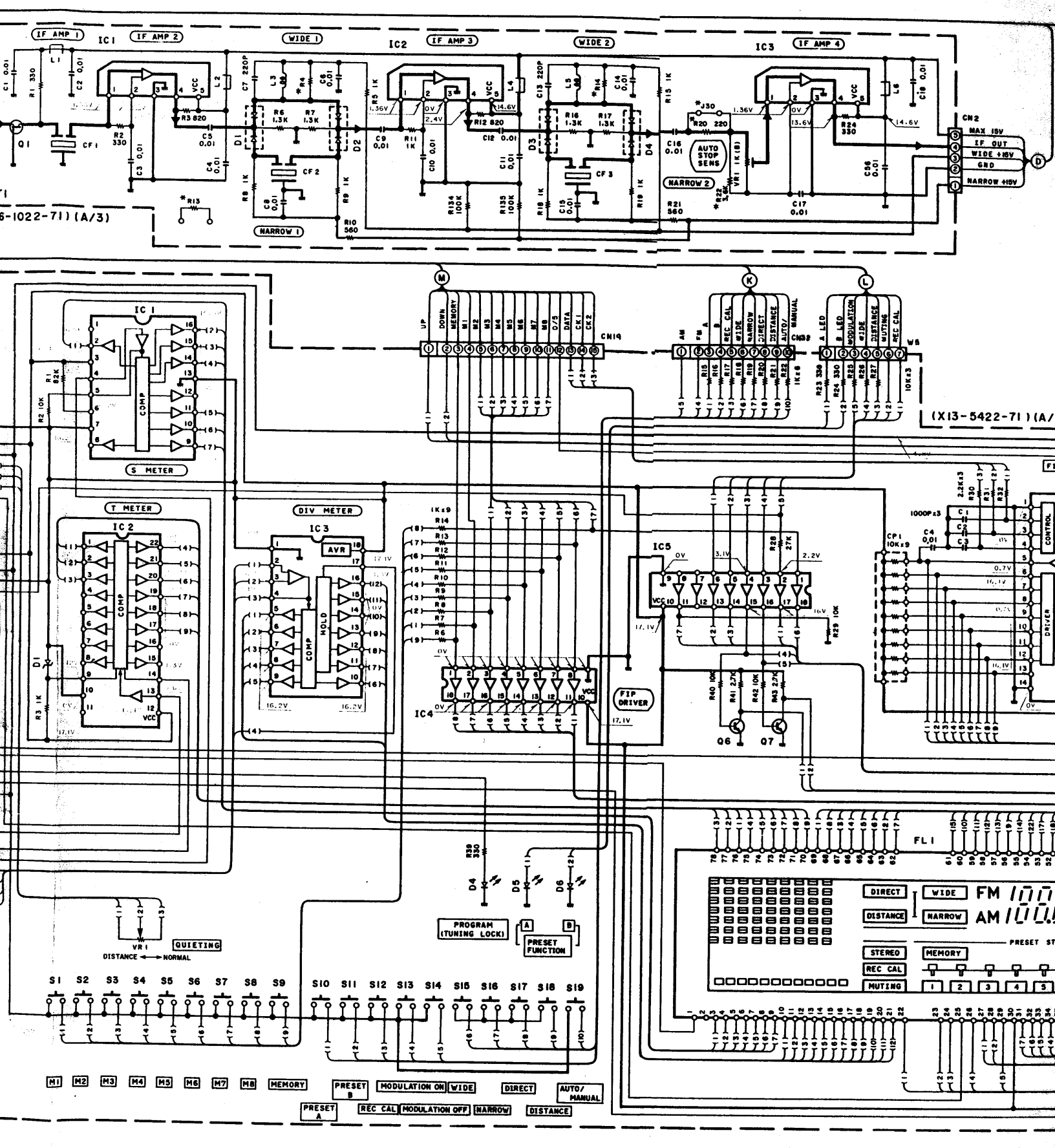

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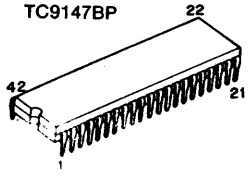

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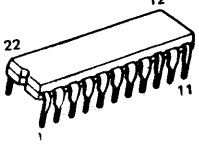

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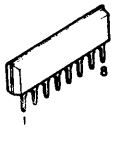

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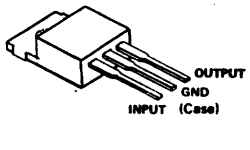

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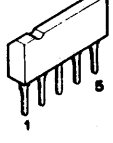

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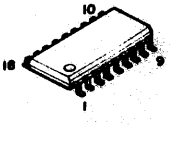
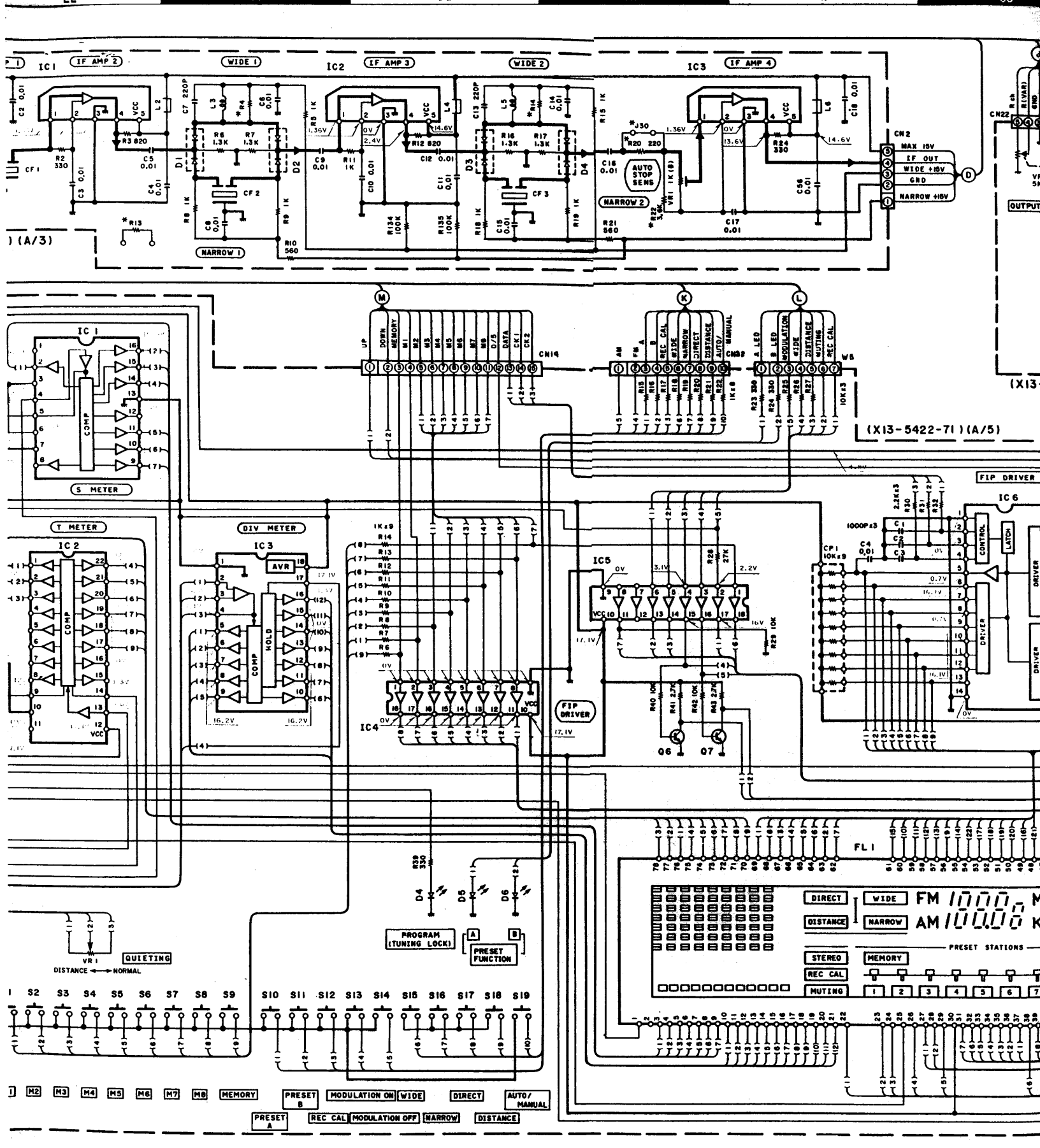
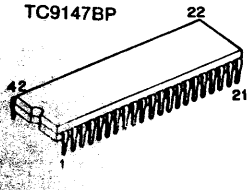
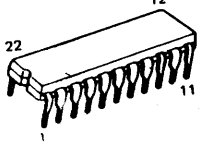




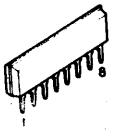
TC9147BP



LB1473



M5230L



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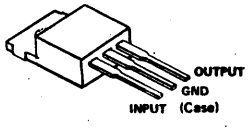

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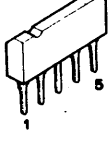

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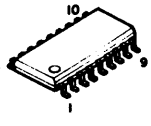
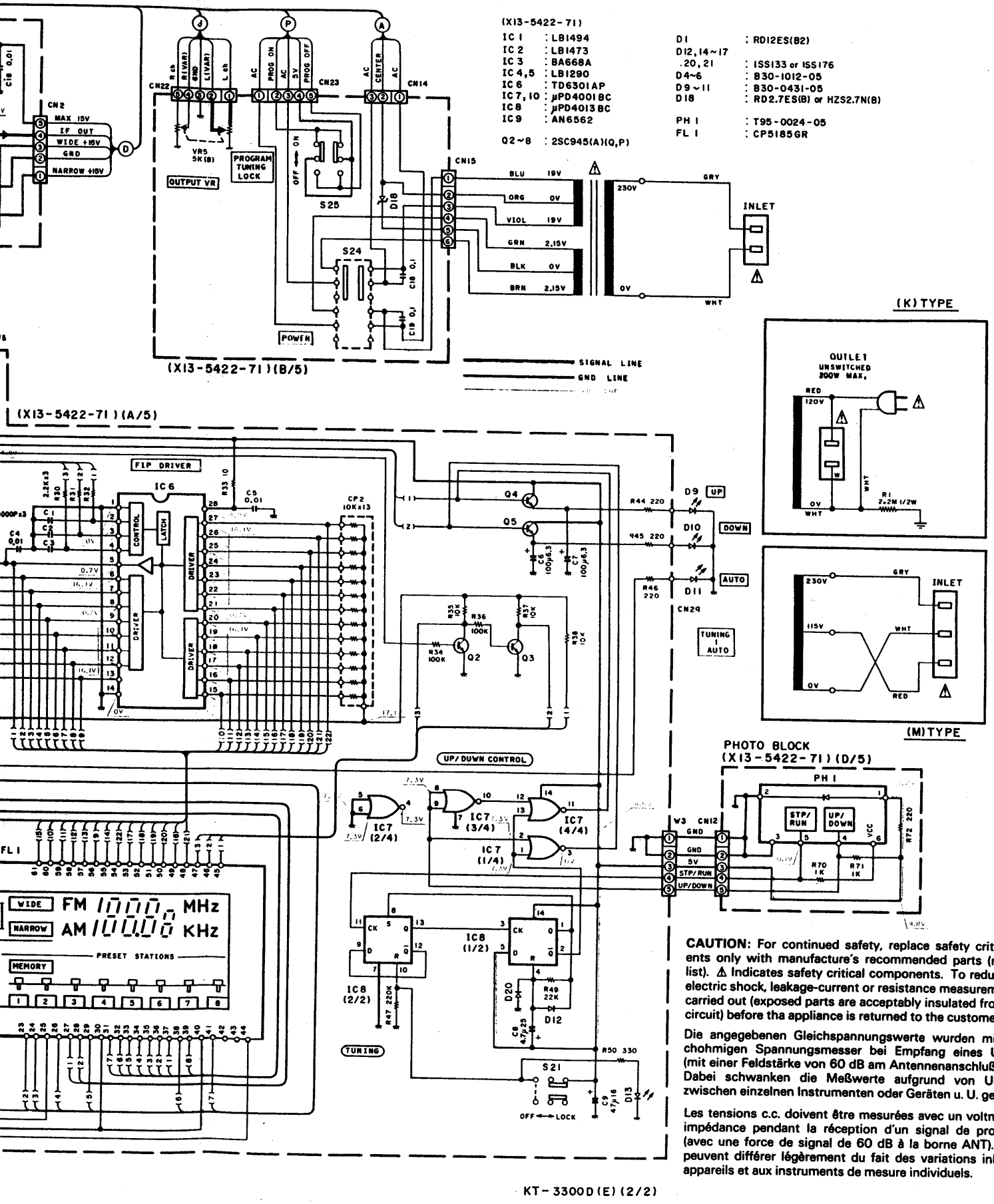




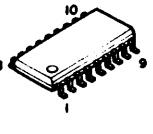
CAUTION: For continued safety, replace safety critical components only with manufacture's recommended parts (refer to parts list). ⚠ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before tha appliance is returned to the customer.

Die angegebenen Gleichspannungswerte wurden mit einem hochohmigen Spannungsmesser bei Empfang eines UKW-Signals (mit einer Feldstärke von 60 dB am Antennenanschluß) gemessen. Dabei schwanken die Meßwerte aufgrund von Unterschieden zwischen einzelnen Instrumenten oder Geräten u. U. geringfügig.

Les tensions c.c. doivent être mesurées avec un voltmètre à haute impédance pendant la réception d'un signal de programme FM (avec une force de signal de 60 dB à la borne ANT). Les valeurs peuvent différer légèrement du fait des variations inhérentes aux appareils et aux instruments de mesure individuels.

KT-3300D(E)(2/2)

AN7418S



DC voltages are as measured with a high impedance voltmeter during reception of the FM broadcast signal (with a signal strength of 60 dB at the ANT terminal). Values may vary slightly due to variations between individual instruments or/and units.

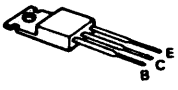
KT-3300D

KENWOOD

A B C D E

2SA733(A)
2SC2003
2SC945(A)
2SD863

MC1495L



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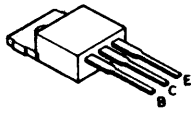

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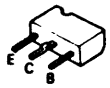

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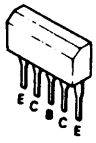
2SC2291



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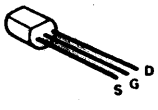
2SK125T
2SK246



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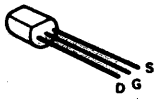

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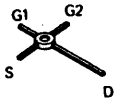

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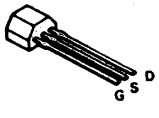

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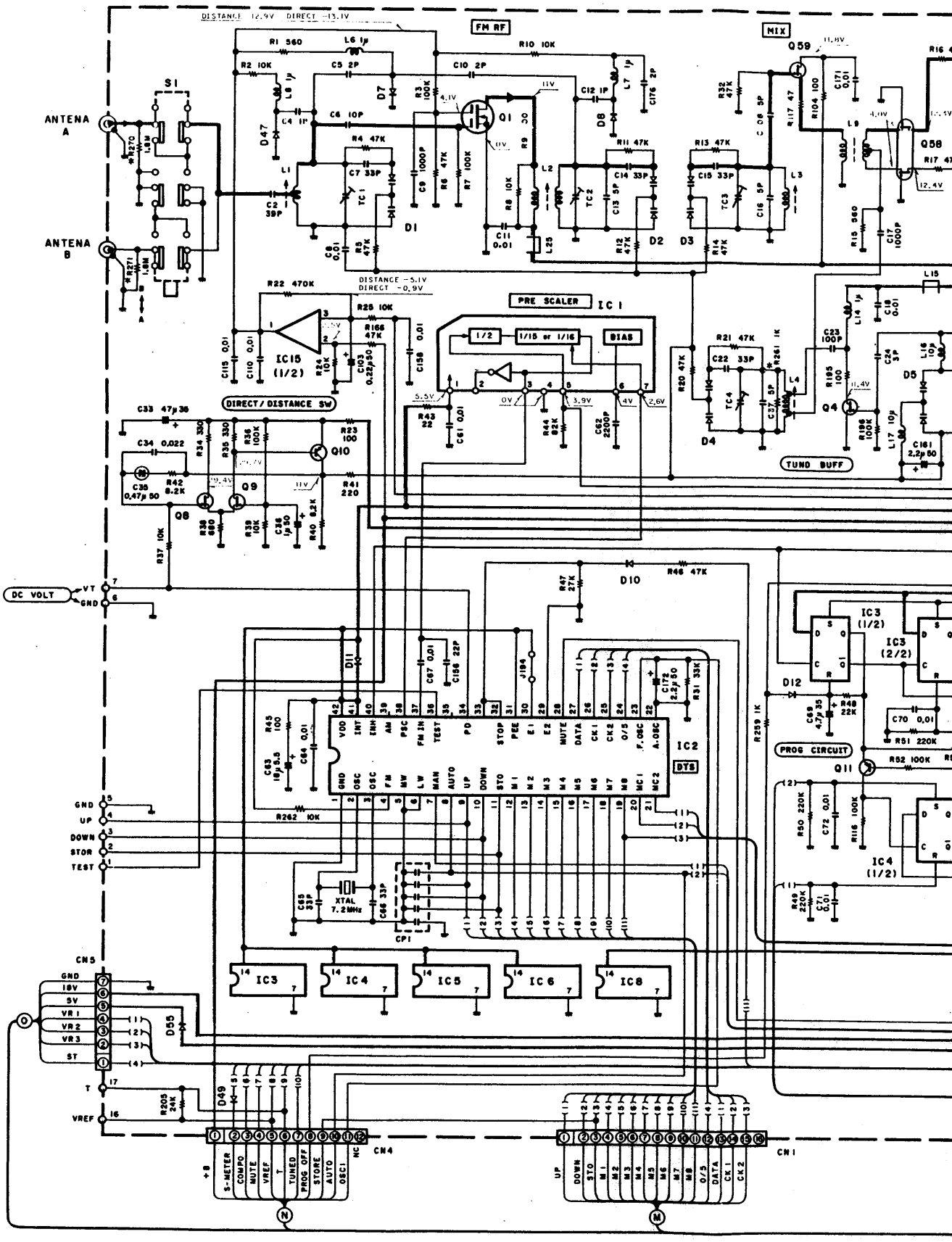
(X05-3162-71)



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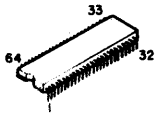
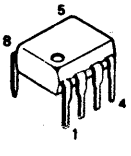
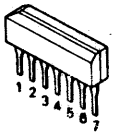


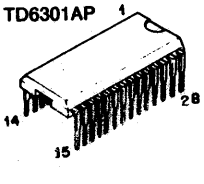
NJM4200D
NJM4560D
NJM5532D-D



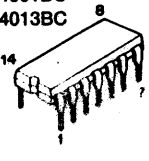
TD6104D



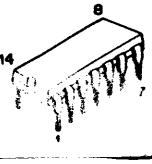
TD6301AP



μPD4001BC
μPD4013BC



μPD4069UBC



LA1231NS
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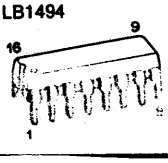


DESTINATION \ NO.		C140	C143 144	C145 146	C177	R157 158	R261	R270 271
E	2-71	1500P	3900P	NO	YES	NO	YES	NO
K	0-11	1000P	6200P	NO	NO	NO	NO	YES
M	0-21	1000P	3900P	YES	NO	YES	NO	NO

E F G H I J

DESTINATION	NO.	C140	C143 144	C145 146	C177	R157 158	R261	R270 271
E	2-71	1500P	3900P	NO	YES	NO	YES	NO
K	0-11	1000P	6200P	NO	NO	NO	NO	YES
M	0-21	1000P	3900P	YES	NO	YES	NO	NO

IC1	: TD6104
IC2	: TC9147
IC3,4,6	: μPD401
IC5,7,8	: μPD400
IC10	: μPD406
IC11	: μPC78M

LA1231NS
LB1494

μPC1163HA

BA668A

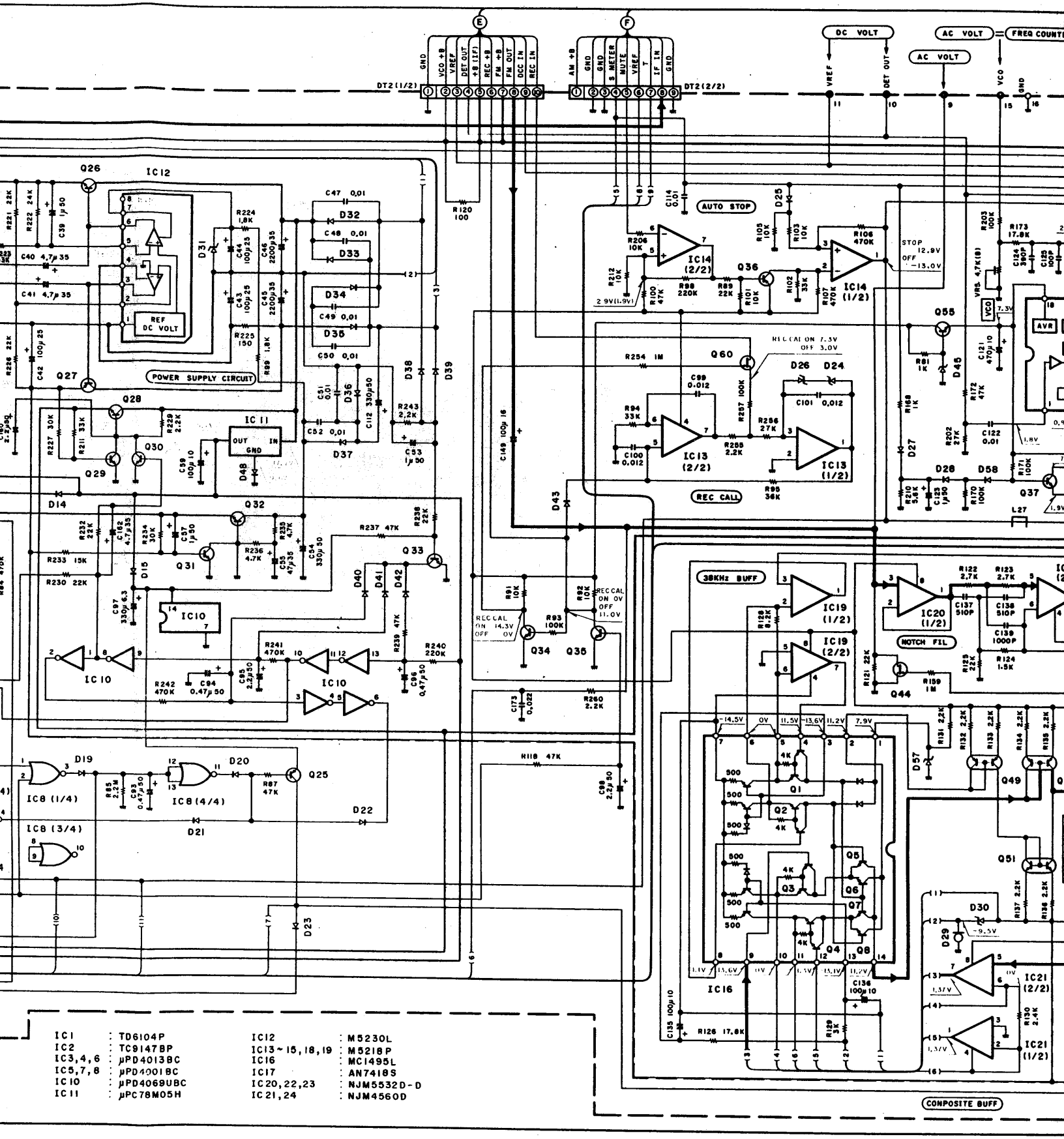
LB1290

AN6562
M5218P

TC9147BP

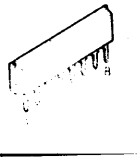
LB1473

M5230L



IC1	: TD6104P	IC12	: M5230L
IC2	: TC9147BP	IC13~15, 18, 19	: M5218P
IC3, 4, 6	: μPD4013BC	IC16	: MC1495L
IC5, 7, 8	: μPD4001BC	IC17	: AN7418S
IC10	: μPD4069UBC	IC20, 22, 23	: NJM5532D-D
IC11	: μPC78M05H	IC21, 24	: NJM4560D

M5230L



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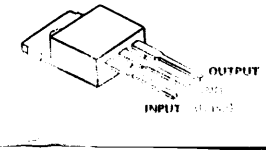

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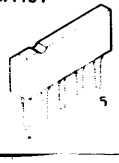
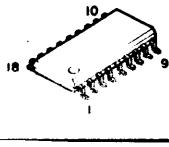


AN7418S



CAUTION: For continued safety, replace safety critical components only with manufacture's recommended parts (refer to parts list). ⚠ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before tha appliance is returned to the customer.

DC voltages are as measured with a high impedance voltmeter dur-

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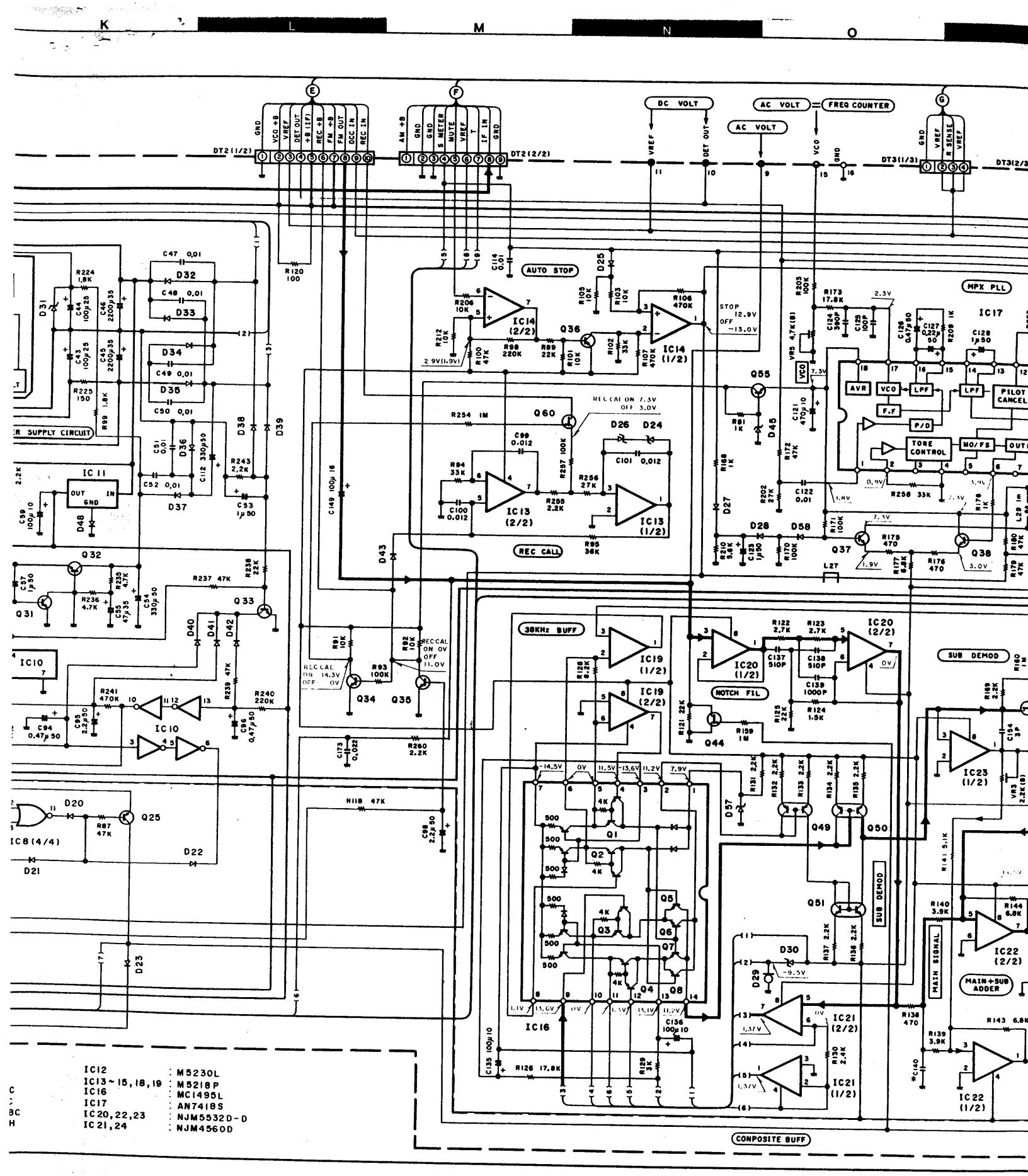
appareils et aux inst



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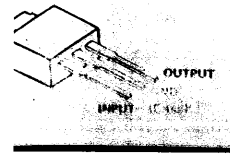

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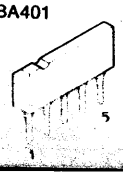

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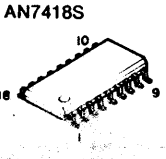

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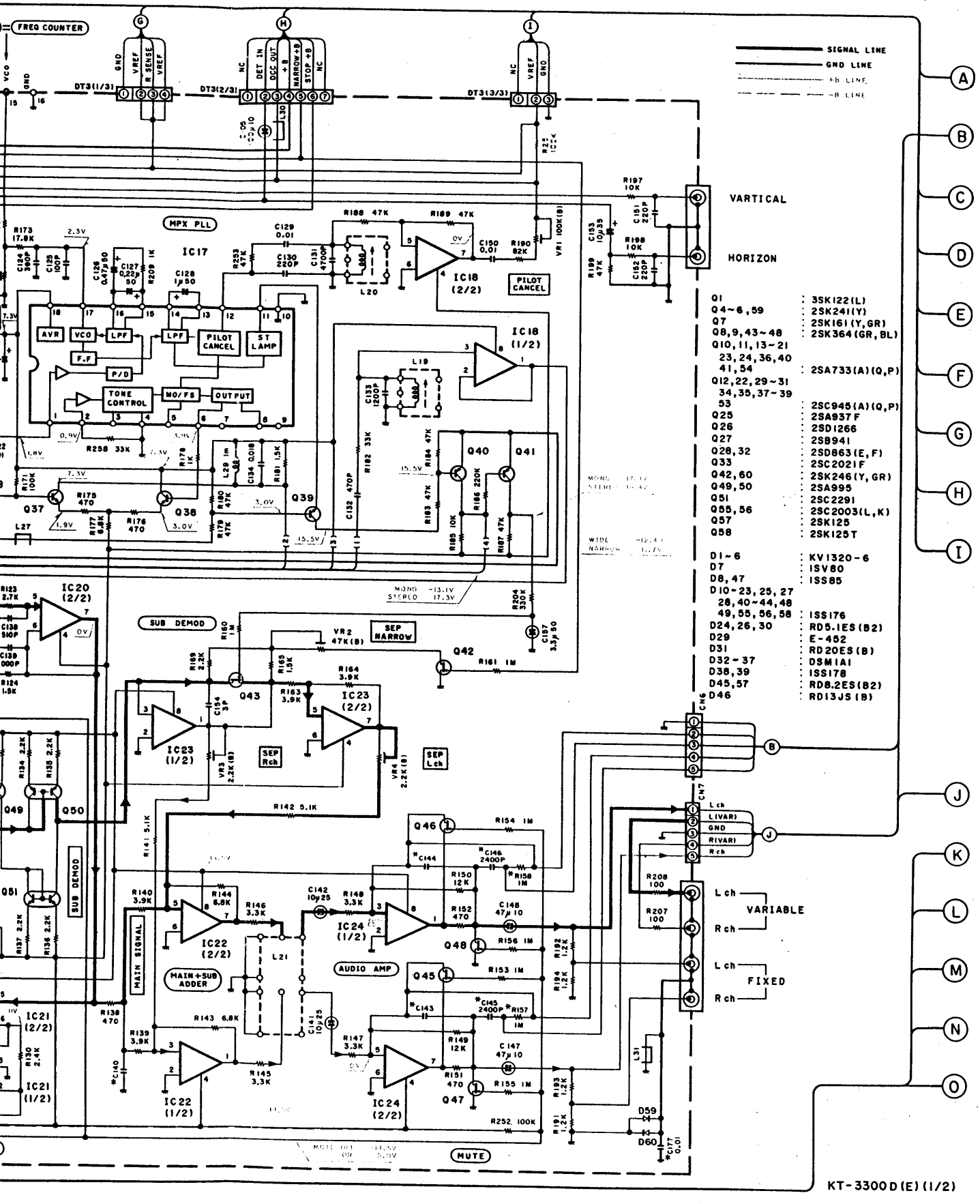
DC voltages are as measured with a high impedance voltmeter dur-

Les tensions c.c. doivent être mesurées avec un impédance pendant la réception d'un signal d (avec une force de signal de 60 dB à la borne peuvent différer légèrement du fait des variatio appareils et aux instruments de mesure individuel



KT-3300D(E)(1/2)

sions c.c. doivent être mesurées avec un voltmètre à haute nce pendant la réception d'un signal de programme FM ne force de signal de 60 dB à la borne ANT). Les valeurs t différer légèrement du fait des variations inhérentes aux ils et aux instruments de mesure individuels.

Die angegebenen Gleichspannungswerte wurden mit einem hochohmigen Spannungsmesser bei Empfang eines UKW-Signals (mit einer Feldstärke von 60 dB am Antennenanschluß) gemessen. Dabei schwanken die Meßwerte aufgrund von Unterschieden zwischen einzelnen Instrumenten oder Geräten u. U. geringfügig.

KT-3300D

SPECIFICATIONS

– EIA –

[FM tuner section]

Tuning frequency range	87.5 MHz to 108 MHz	
Antenna impedance	75 ohms unbalanced	
	DISTANCE	**DIRECT**
Usable sensitivity (IHF)	10.8 dBf (0.95 μV)	31.2 dBf (10 μV)
50 dB quieting sensitivity (IHF)		
Mono	16.2 dBf (1.8 μV)	36.3 dBf (18 μV)
Stereo	38.8 dBf (24 μV)	58.8 dBf (240 μV)
Total harmonic distortion	**WIDE**	**NARROW**
Mono: 100 Hz	0.007%	0.02%
1,000 Hz	0.004%	0.01%
50 Hz to 10,000 Hz	0.009%	0.04%
Stereo: 100 Hz	0.015%	0.04%
1,000 Hz	0.008%	0.03%
50 Hz to 10,000 Hz	0.04%	0.15%
Signal-to-Noise ratio (85 dBf IHF)		
Mono	92 dB	
Stereo	86 dB	
(65 dBf)		
Mono	92 dB	
Stereo	76 dB	
	WIDE	**NARROW**
Capture ratio	1.0 dB	2.5 dB
Alternate channel selectivity (IHF: ±400 kHz)	70 dB	100 dB
Stereo separation		
1,000 Hz	70 dB	58 dB
50 Hz to 10,000 Hz	55 dB	45 dB
15,000 Hz	45 dB	40 dB
Frequency response	20 Hz to 15,000 Hz ±0.5 dB	
Image rejection ratio	80 dB	
IF rejection ratio	110 dB	
Spurious rejection ratio	100 dB	
AM suppression ratio	70 dB	
Sub carrier suppression ratio	70 dB	
Output level/impedance at 1,000 Hz, 100% dev.		
Fixed	0.6 V/2.3 kΩ	
Variable	1.2 V/1.0 kΩ (MAX.)	
Multipath output		
Vertical	0.05 V/10 kΩ	
Horizontal	0.6 V/10 kΩ	

[General]

Power consumption	25 W
Dimensions	W: 440 mm (17-5/16") H: 88.5 mm (3-7/16") D: 327 mm (13-1/4")
Weight (Net)	5.3 kg (11.7 lb)

– IEC/NF –

[FM tuner section]

Tuning frequency range	87.5 MHz to 108 MHz	
Antenna impedance	75 ohms unbalanced	
Sensitivity (DIN)		
Mono: S/N 26 dB, 40 kHz dev.	0.9 μV	
Stereo: S/N 46 dB, 46 kHz dev.	20 μV	
Limiting level		
–3 dB point, 40 kHz dev.	0.45 μV	
Total harmonic distortion (DIN)	**WIDE**	**NARROW**
Mono: 1 kHz, 40 kHz dev.	0.01%	0.03%
Stereo: 1 kHz, 46 kHz, dev.	0.04%	0.1%
Signal-to-Noise ratio		
Weighted		
Mono: 40 kHz dev., 1 mV input	82 dB	
Stereo: 46 kHz dev., 1 mV input	67 dB	
Unweighted		
Mono: 40 kHz dev., 1 mV input	78 dB	
Stereo: 46 kHz dev., 1 mV input	67 dB	
	WIDE	**NARROW**
Capture ratio	2.0 dB	3.5 dB
Alternate channel selectivity		
±300 kHz 20 dB input (DIN)	55 dB	80 dB
Stereo separation		
1 mV input (DIN)		
250 Hz	60 dB	50 dB
1 kHz	62 dB	50 dB
6.3 kHz	52 dB	40 dB
12.5 kHz	45 dB	33 dB
Frequency response	20 Hz to 15 kHz ±0.5 dB	
Image rejection ratio	80 dB	
IF rejection ratio	110 dB	
Spurious rejection ratio	100 dB	
AM suppression ratio	70 dB	
Sub carrier suppression ratio		
19 kHz: 46 kHz dev.	55 dB	
38 kHz: 46 kHz dev.	70 dB	
Output level/impedance at 1,000 Hz, 100% dev.		
Fixed	0.6 V/2.3 kΩ	
Variable	1.2 V/1.0 kΩ (MAX.)	
Multipath output		
Vertical	0.05 V/10 kΩ	
Horizontal	0.6 V/10 kΩ	

[General]

Power consumption	25 W
Dimensions	W: 440 mm H: 88.5 mm D: 327 mm
Weight (Net)	5.3 kg

Note:

We follow a policy of continuous advancements in development. For this reason specifications may be changed without notice.

Note:

Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on the Europe (E) standard, and provides information on regional circuit modification through use of alternate schematic diagrams, and information on regional component variations through use of parts list.

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