

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.

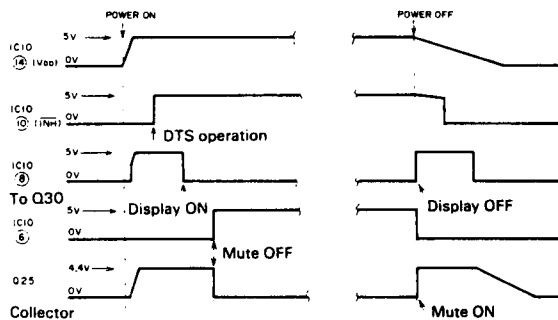


Fig. 2

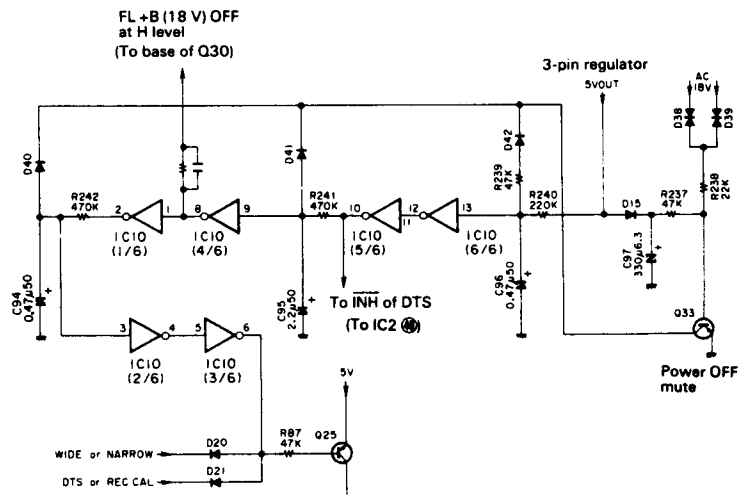


Fig. 3

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 ① 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 than approx. 10 dB μ V):

The range mute signal becomes 1V or less and IC14 ① be-

comes +15V. For this, Q36 turns OFF. However, S-meter voltage is low, IC14 ① is -15V.

When the broadcast station is received (more than 14 dB μ V):

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.

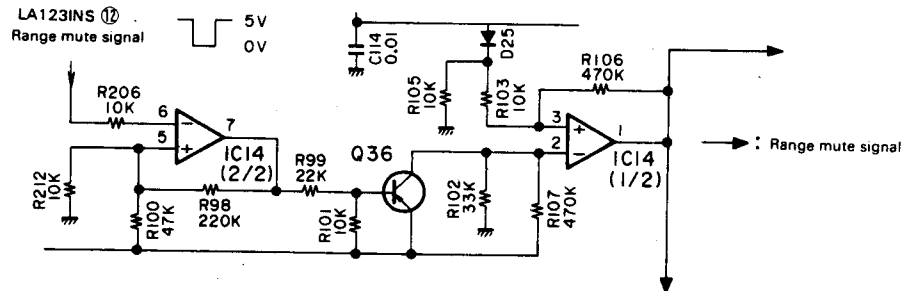


Fig. 4

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 sig-

nal 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.

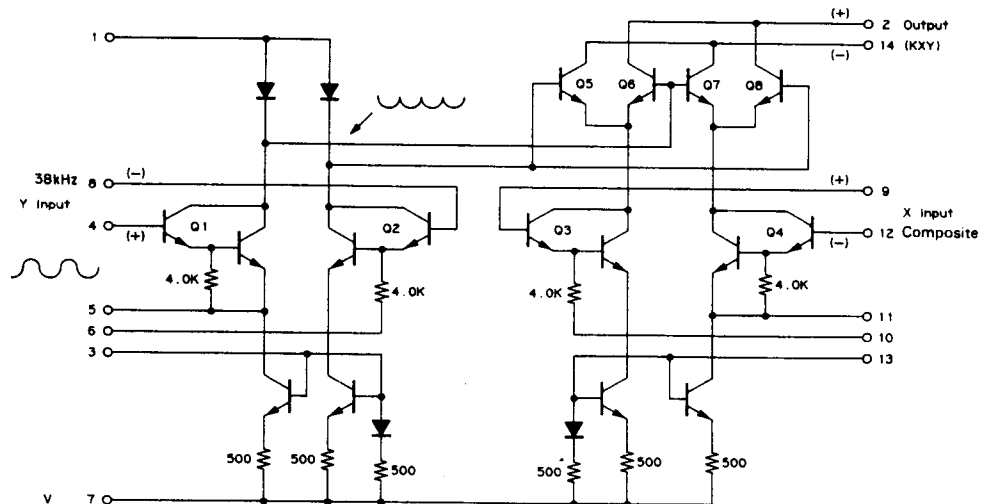


Fig. 5 MC1495L Internal equivalent circuit

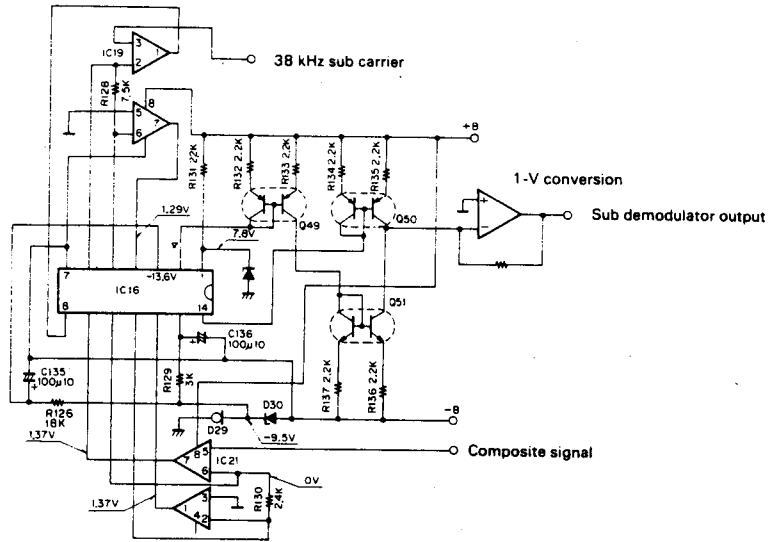


Fig. 6 Actual circuit

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 INH signal which is generated in synchronism with power ON/OFF.

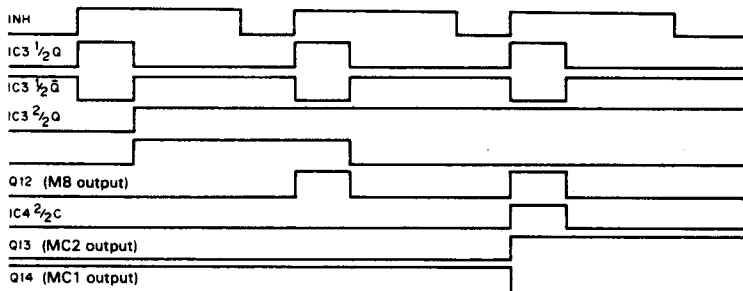


Fig. 7 Timing chart

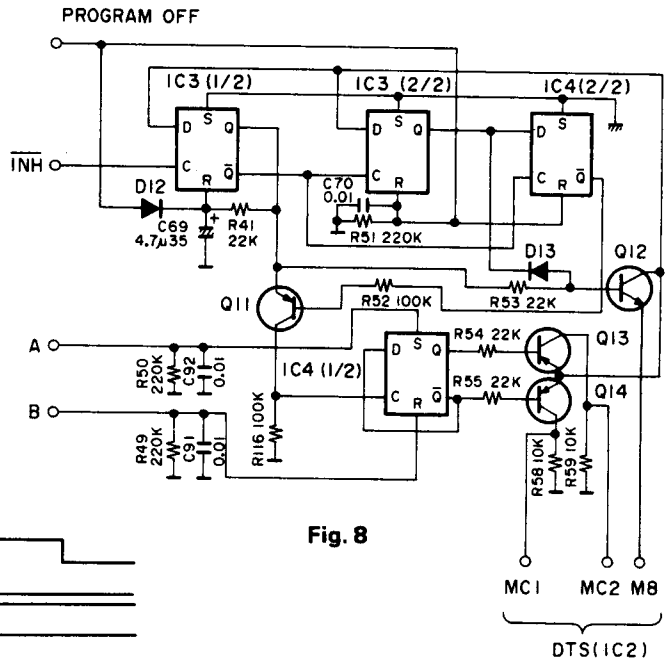


Fig. 8

MC1 MC2 M8
DTS (IC2)

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.

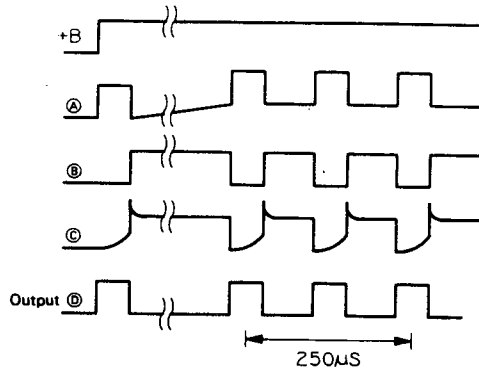


Fig. 9

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

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.

- 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.

prevent the circuit from entering non-oscillation/stable state at the power ON/OFF timing.

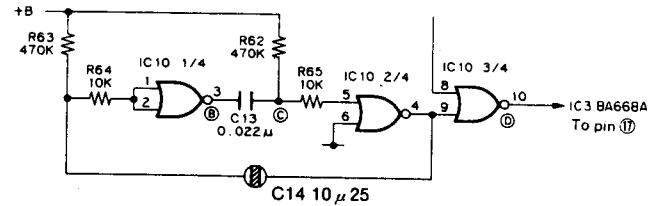


Fig. 10 IC10: µPD4001BC

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.

- The tuning speed is determined by the number of pulses to be output from pin 5 which are proportional to the number of slits.

IC7 distributes pulses for UP or DOWN directions. IC8 prevents malfunction and serves as a frequency divider and monostable multivibrator.

IC7 distributes pulses for UP or DOWN directions. IC8 prevents malfunction and serves as a frequency divider and monostable multivibrator.

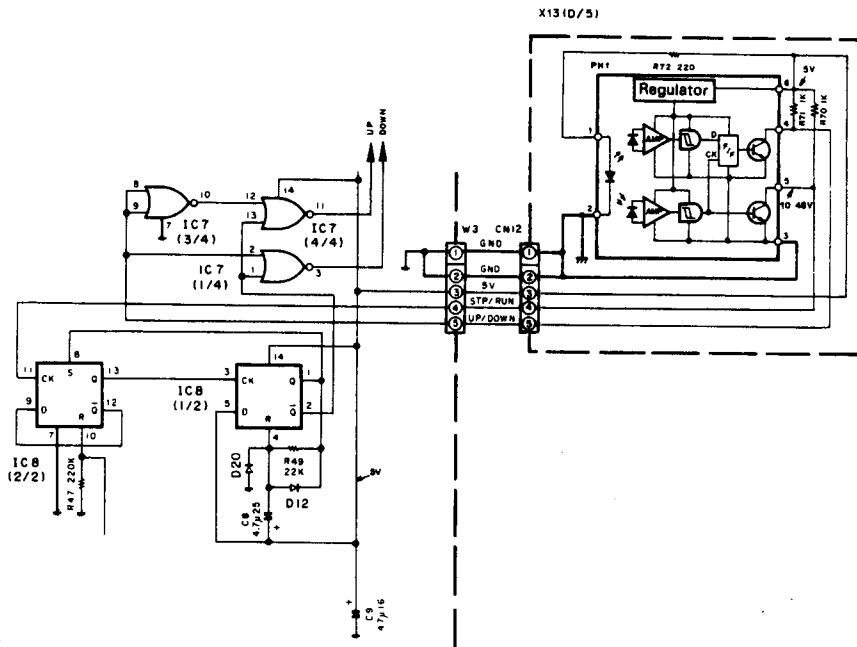


Fig. 11 Digital rotary tuning circuit

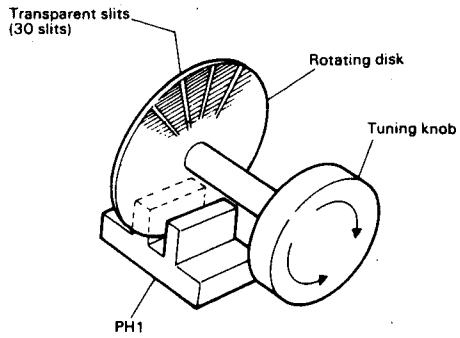


Fig. 14

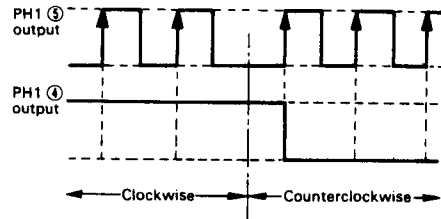


Fig. 12 Operation timing chart of PH1

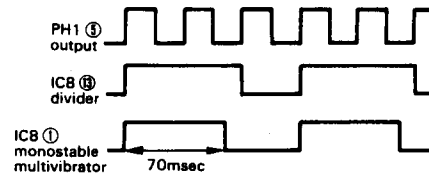
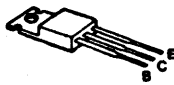


Fig. 13 Timing chart

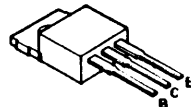
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2SC2003
2SC945(A)
2SD863



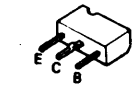
MC1495L



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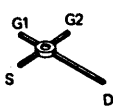
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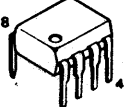
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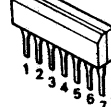
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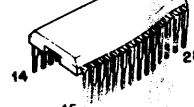
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NJM4560D



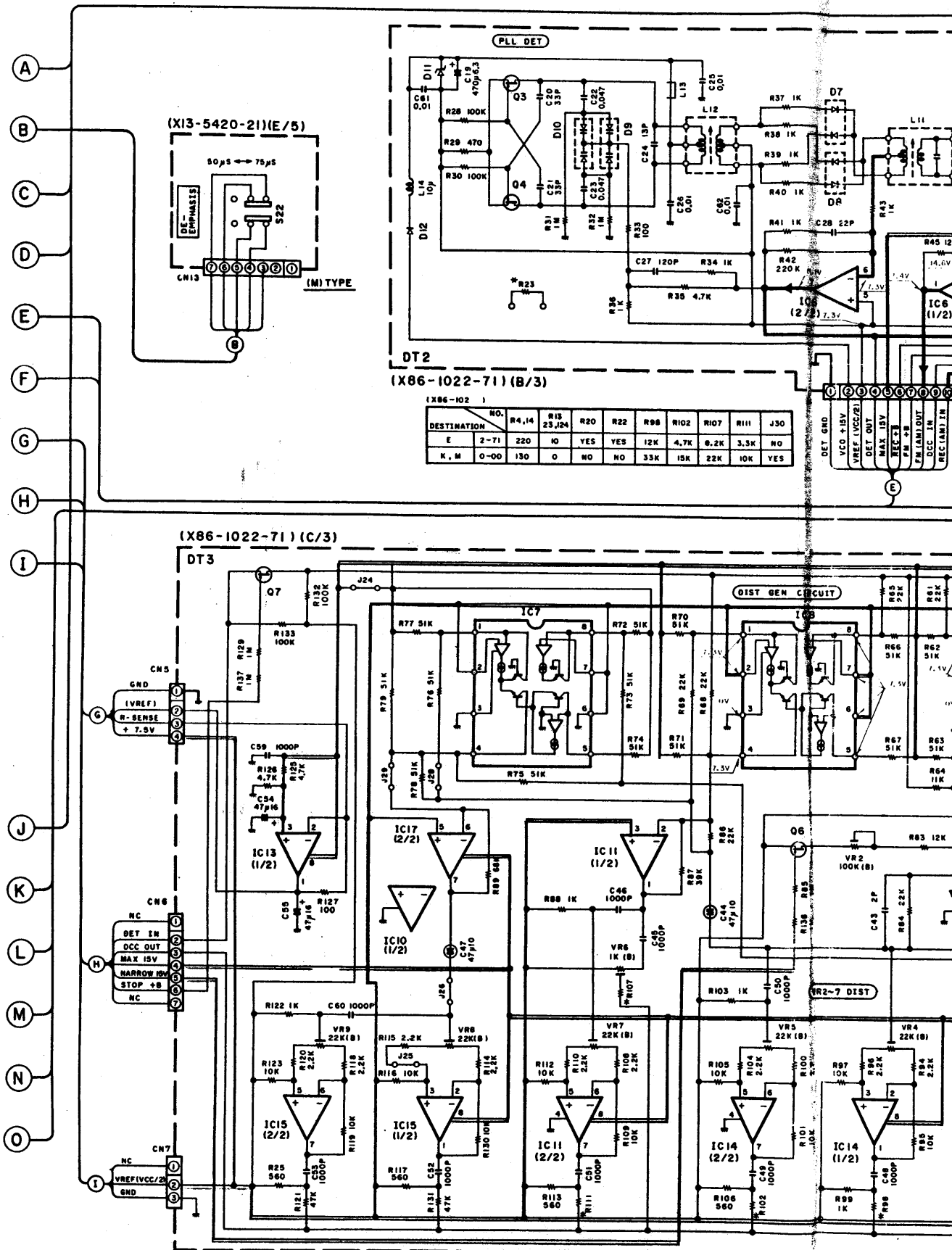
TD6104D



TD6301AP



µPD4001BC
µPD4013BC



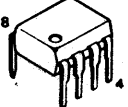
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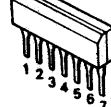
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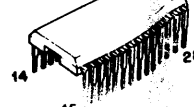
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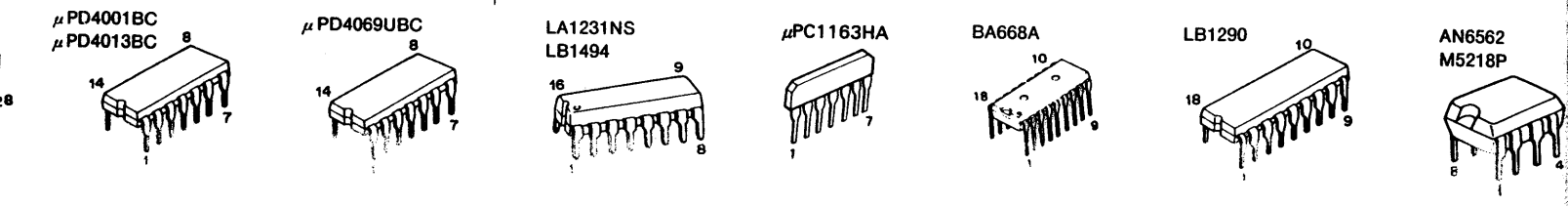
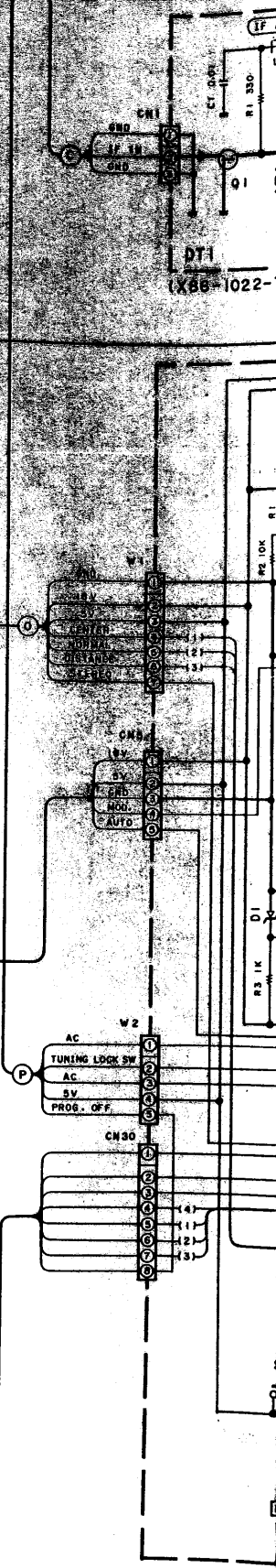
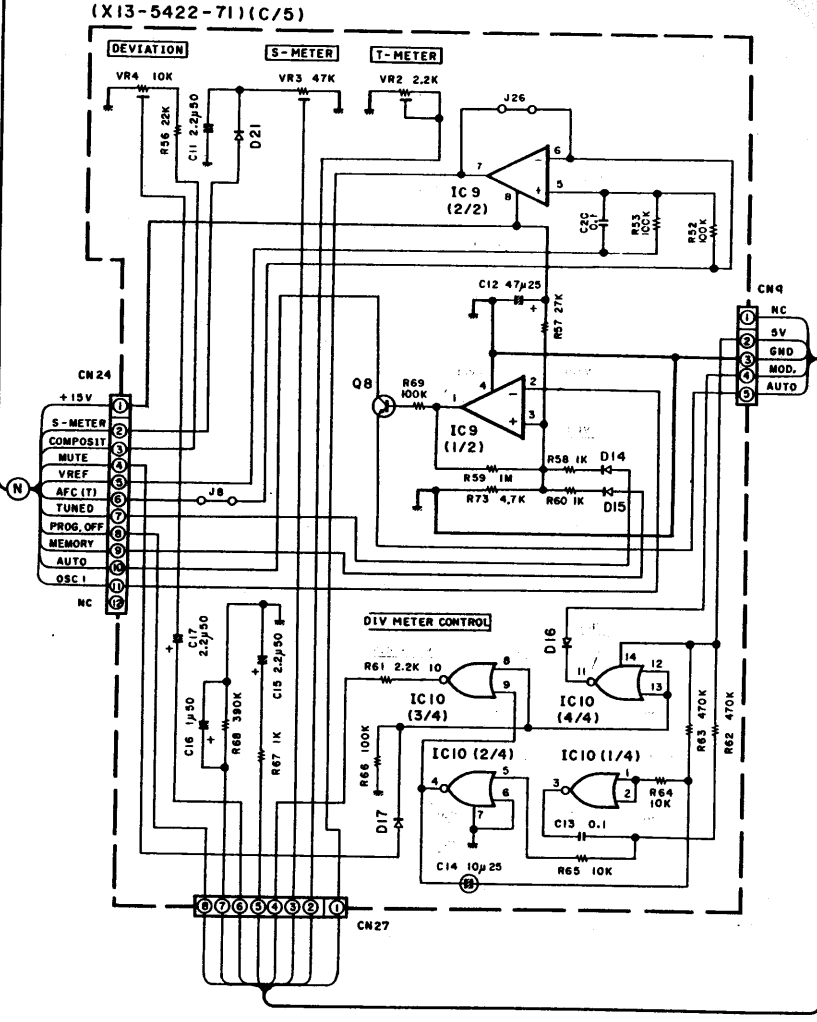
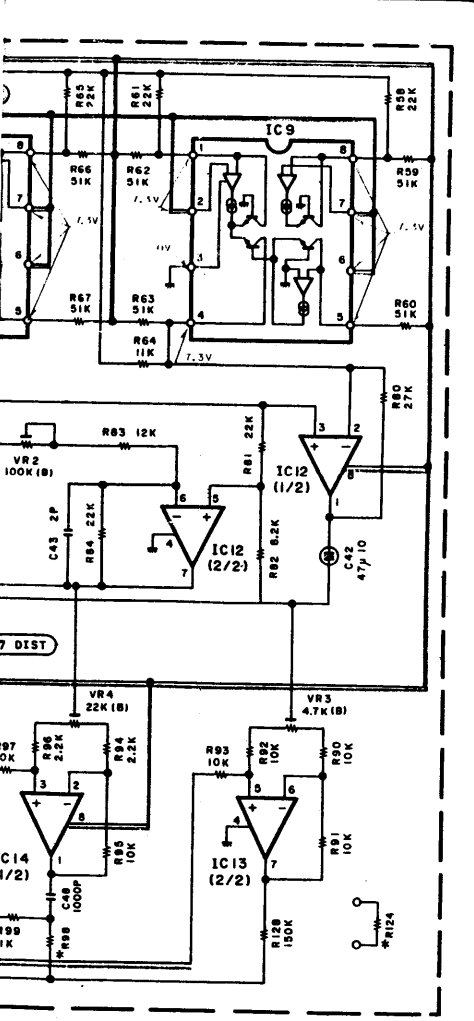
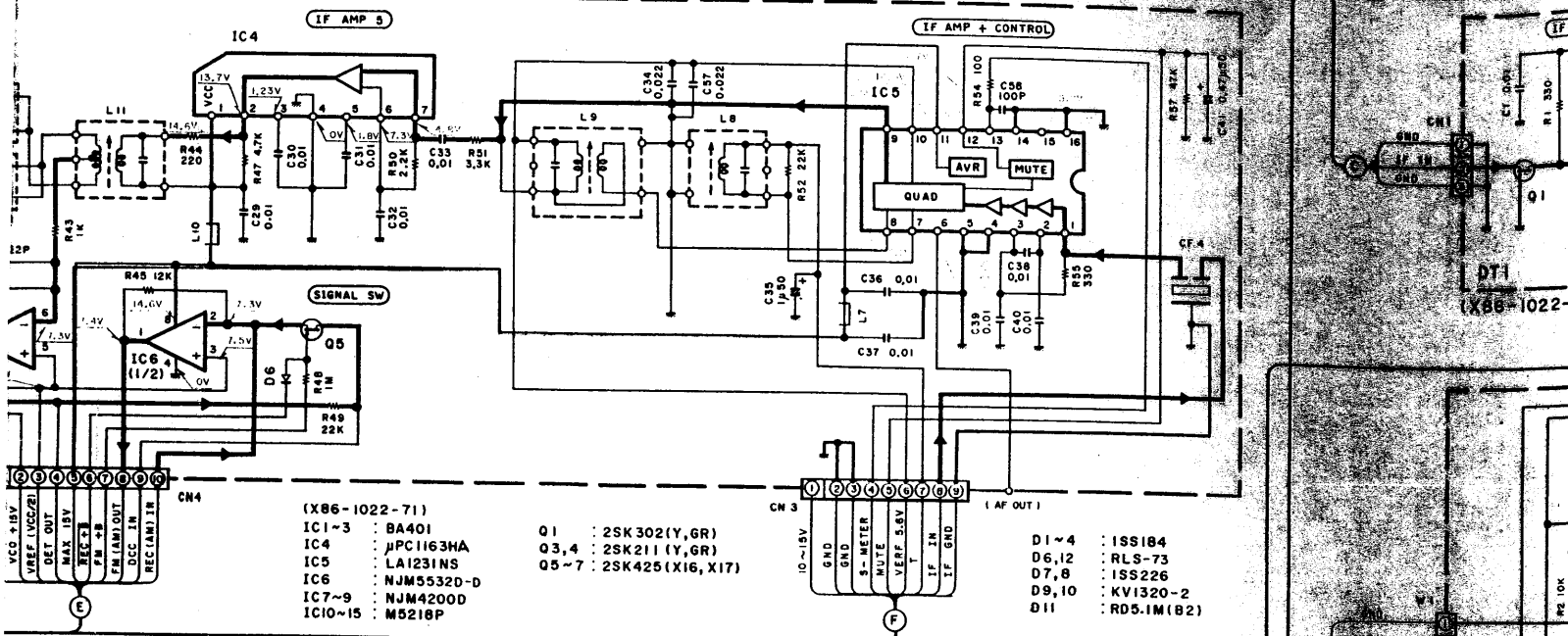
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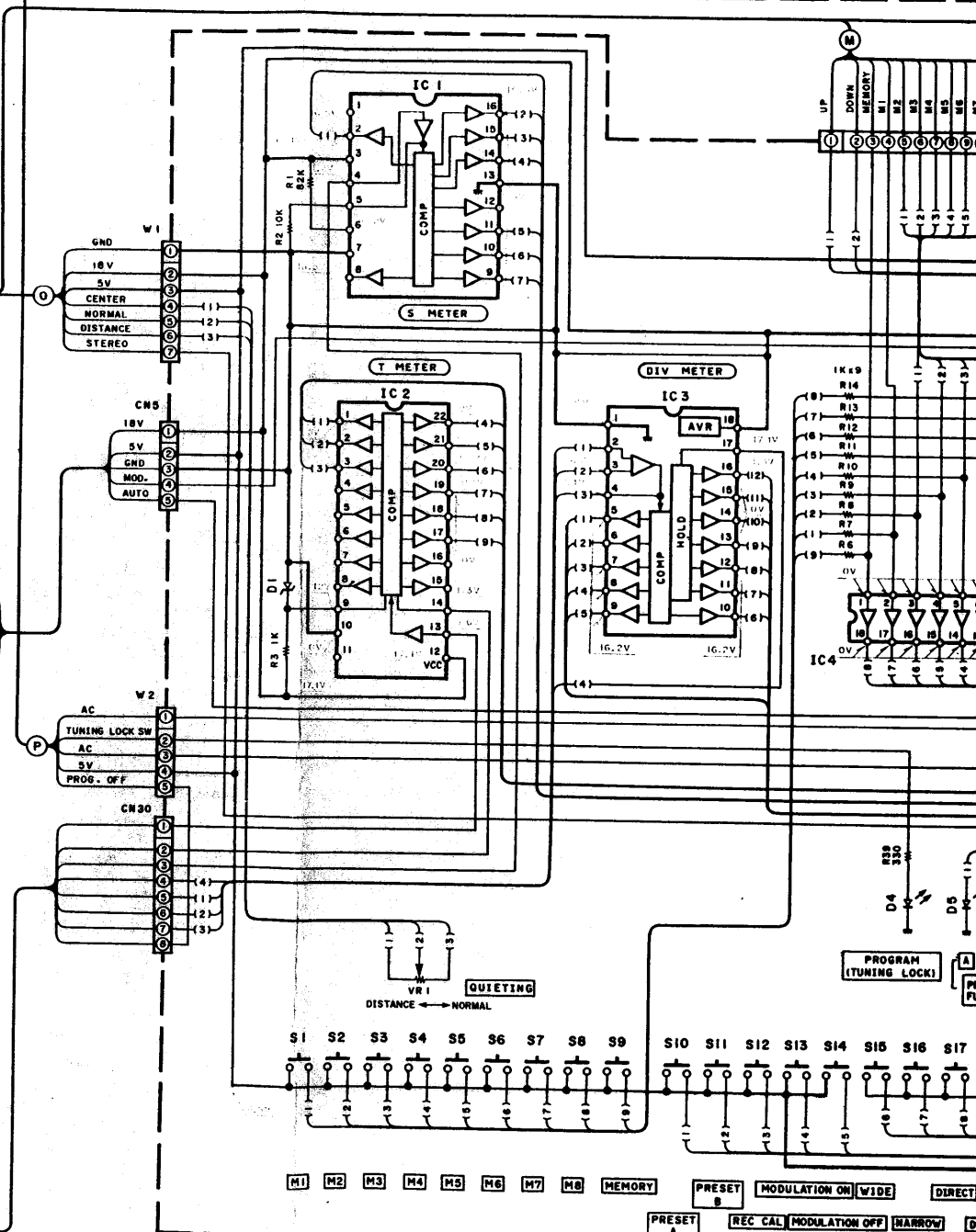
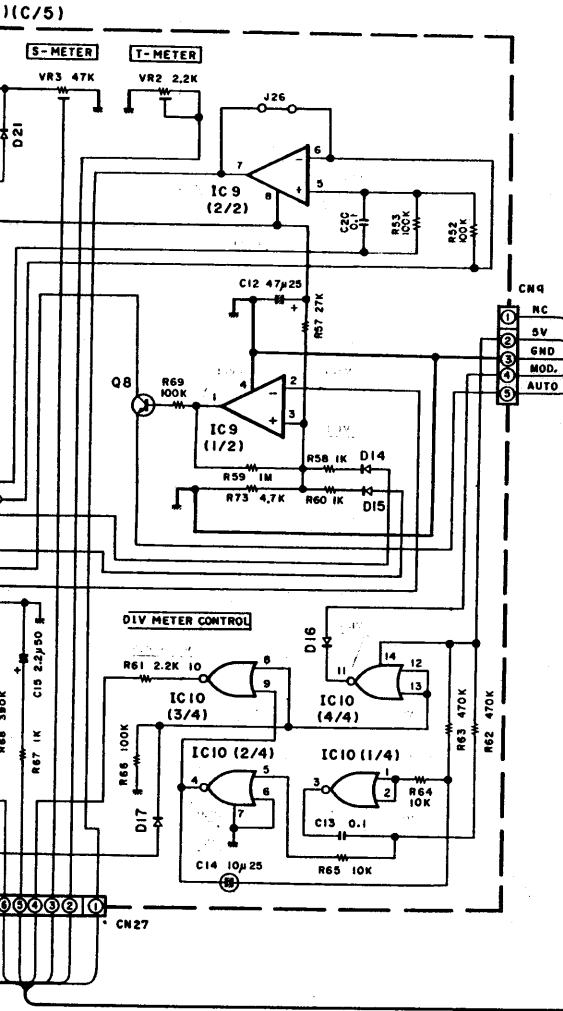
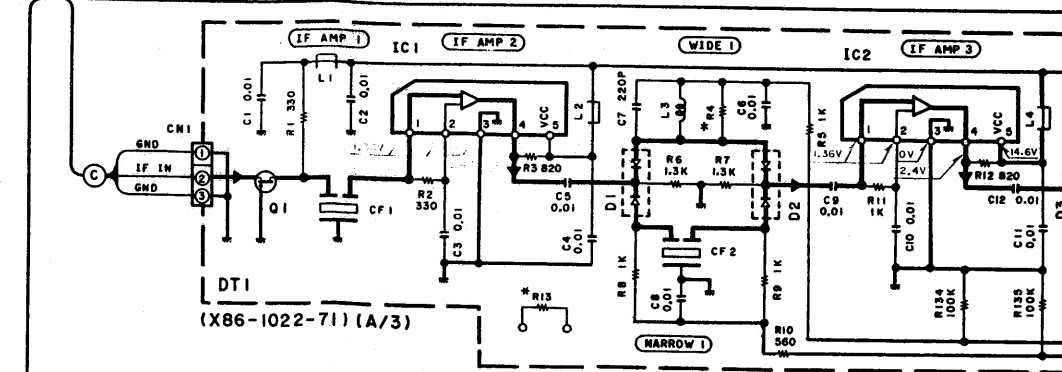
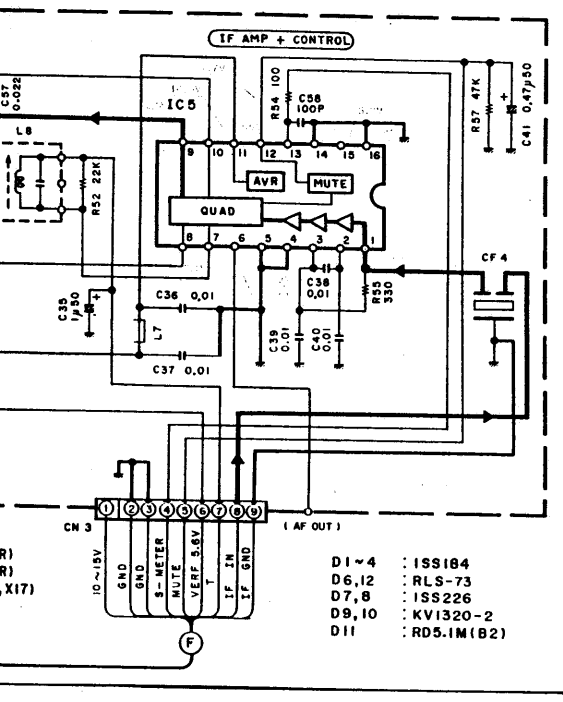


TD6301AP



µPD4001BC
µPD4013BC





- D1 ~ 4 : ISS104
- D6, 12 : RLS-73
- D7, 8 : ISS226
- D9, 10 : KV1320-2
- D11 : RD5.1M(B2)

μPC1163HA

BA668A

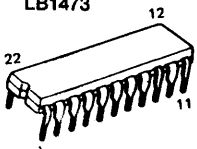
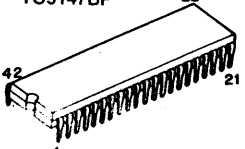
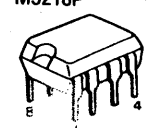
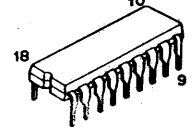
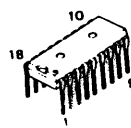
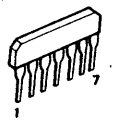
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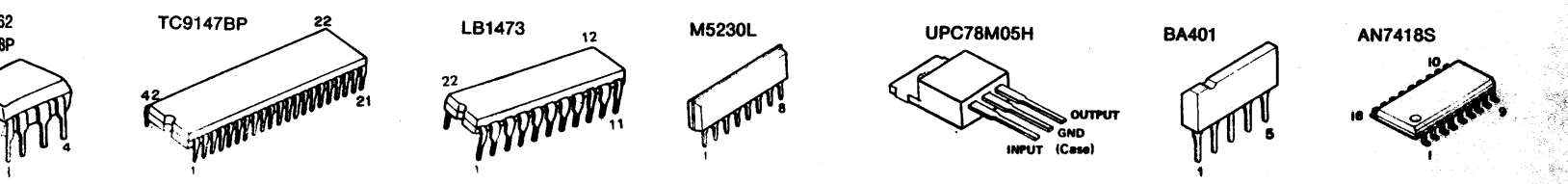
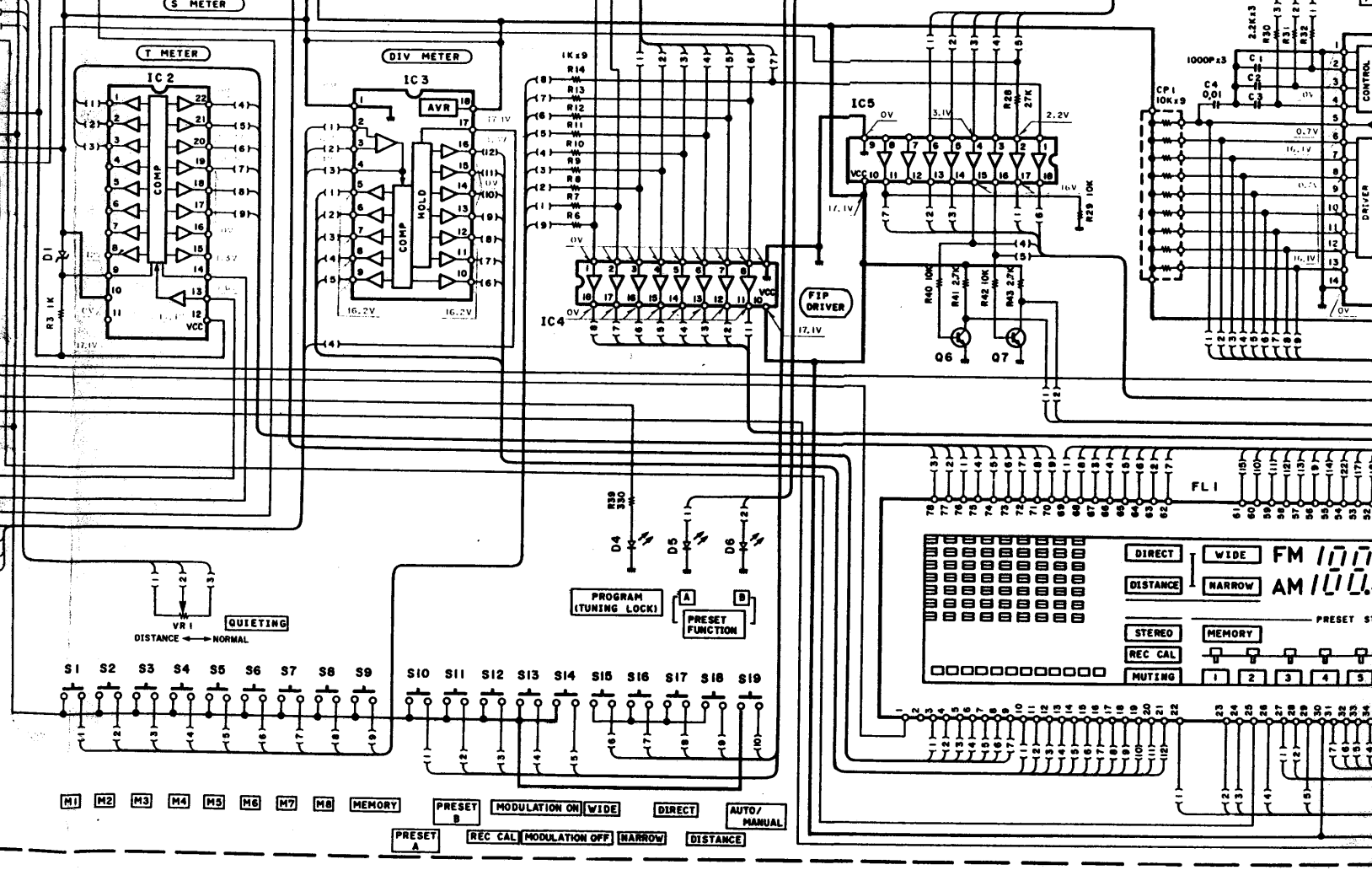
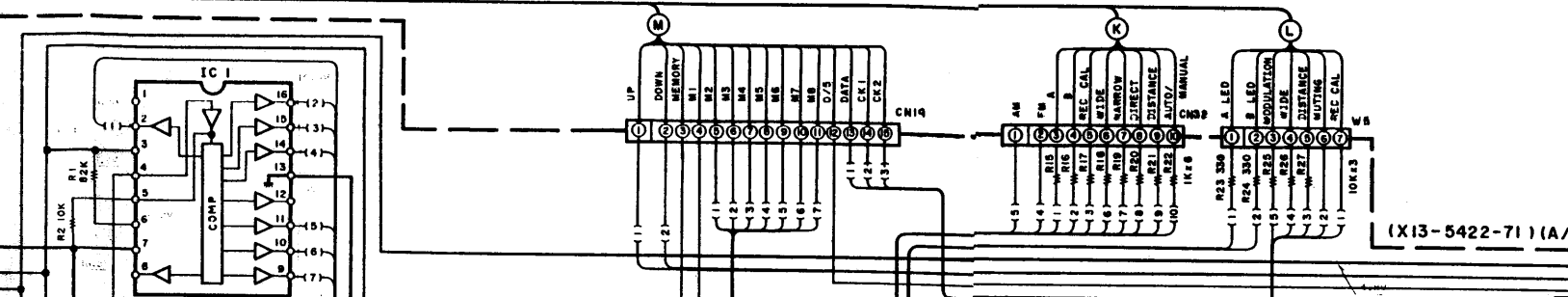
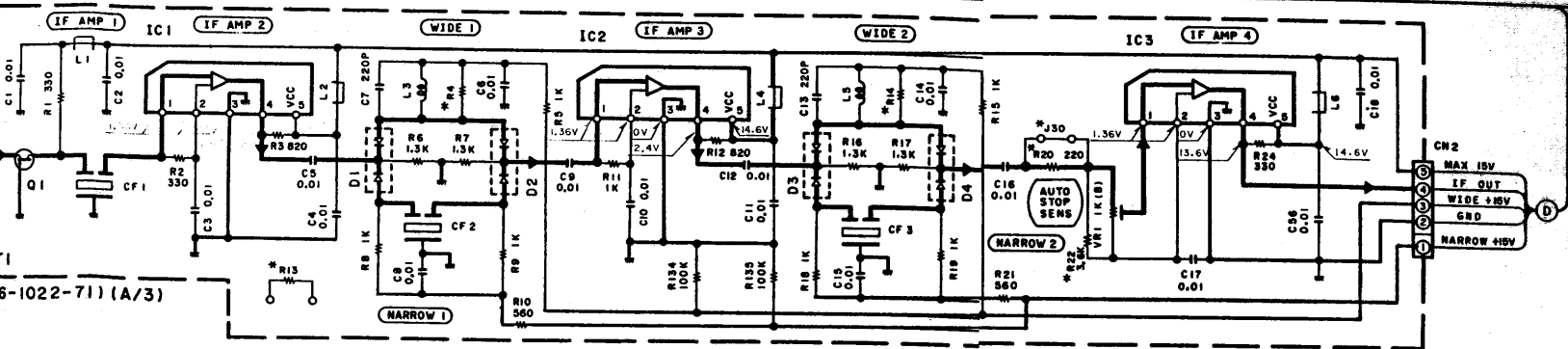
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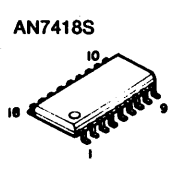
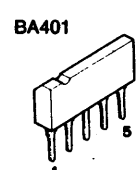
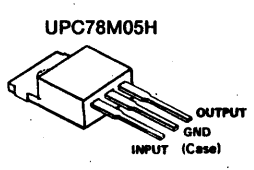
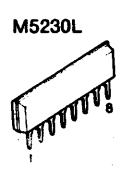
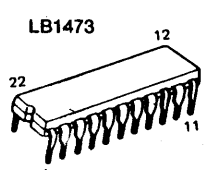
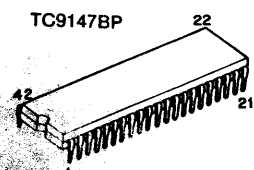
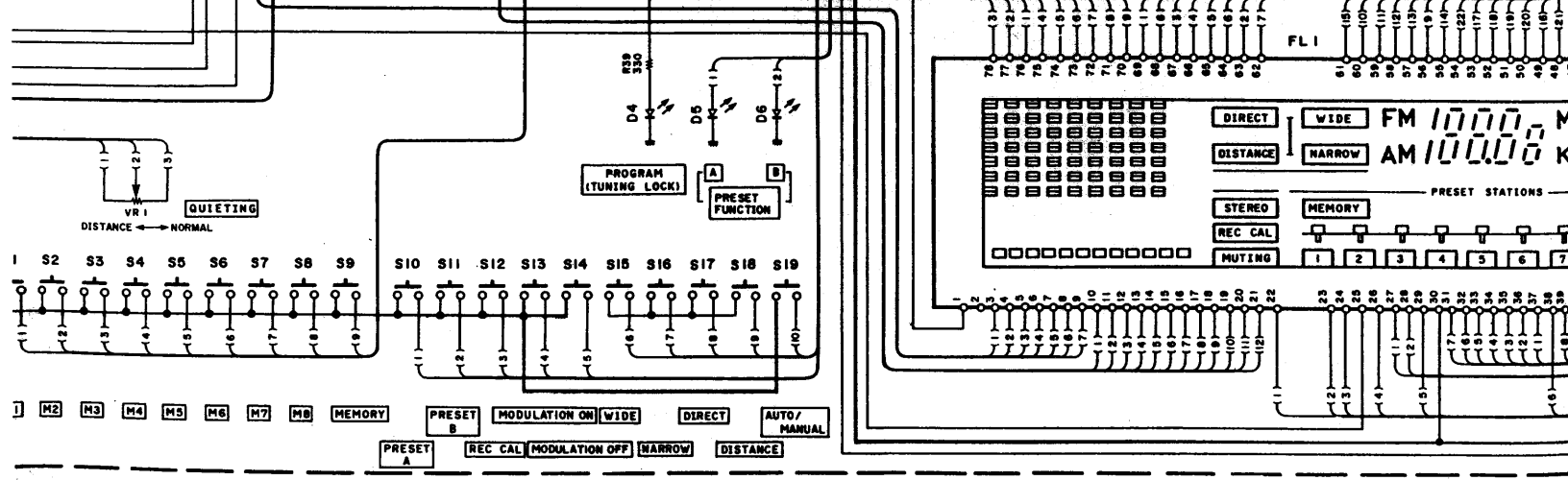
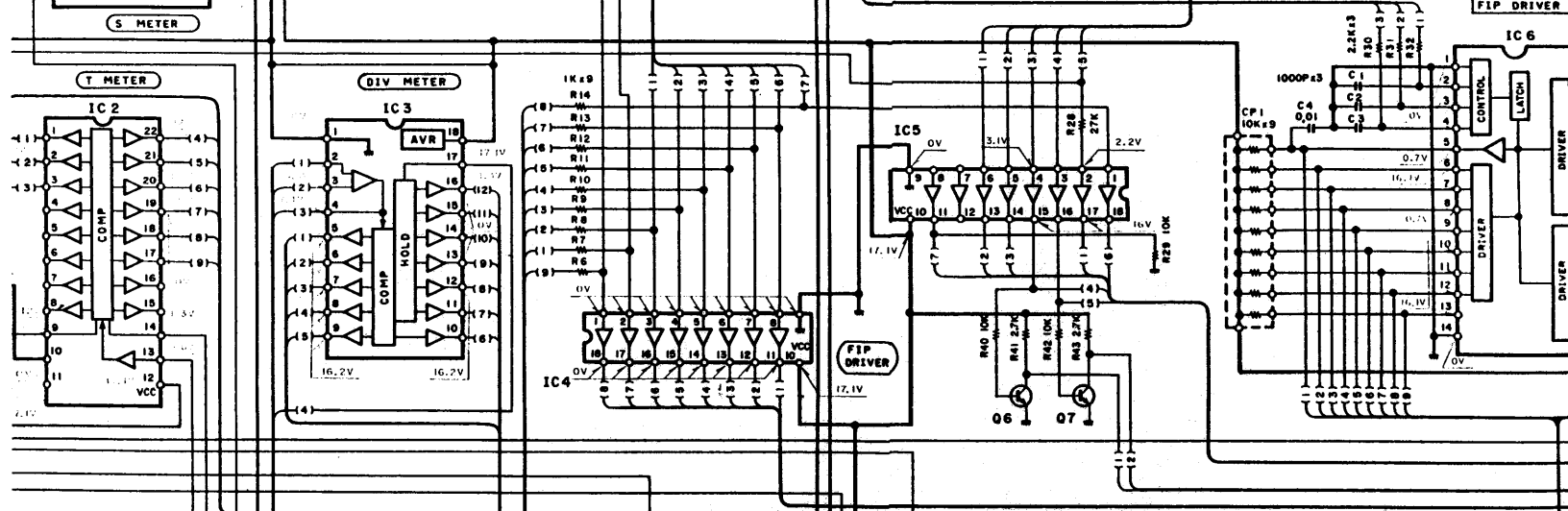
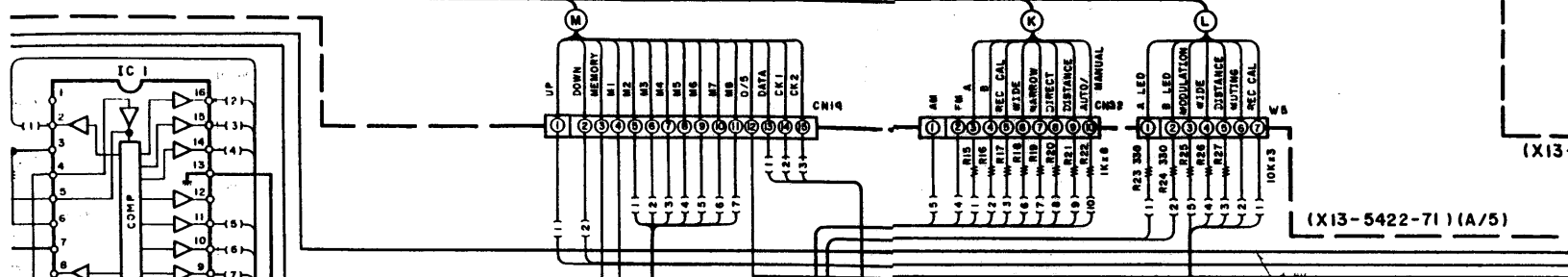
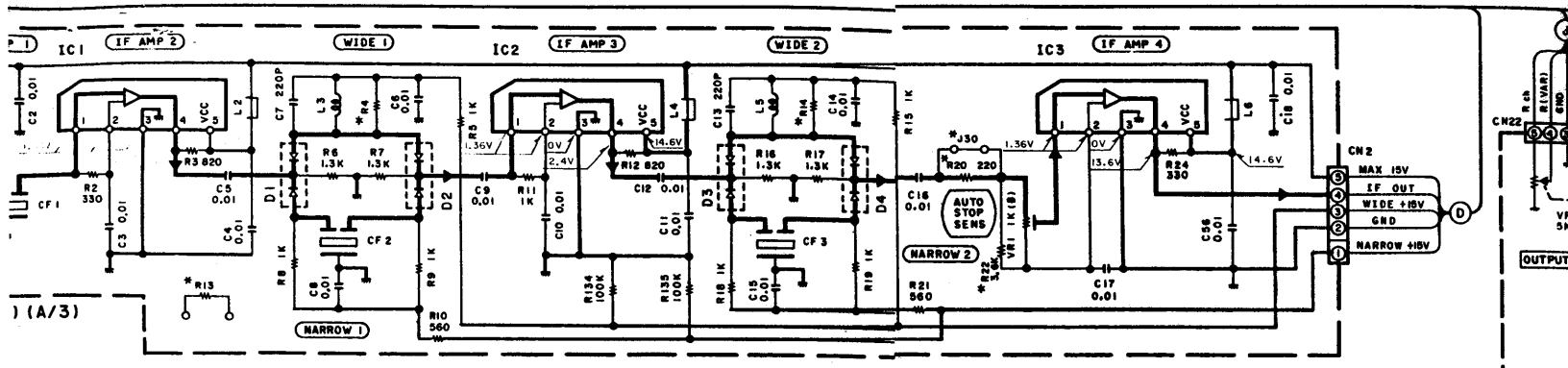
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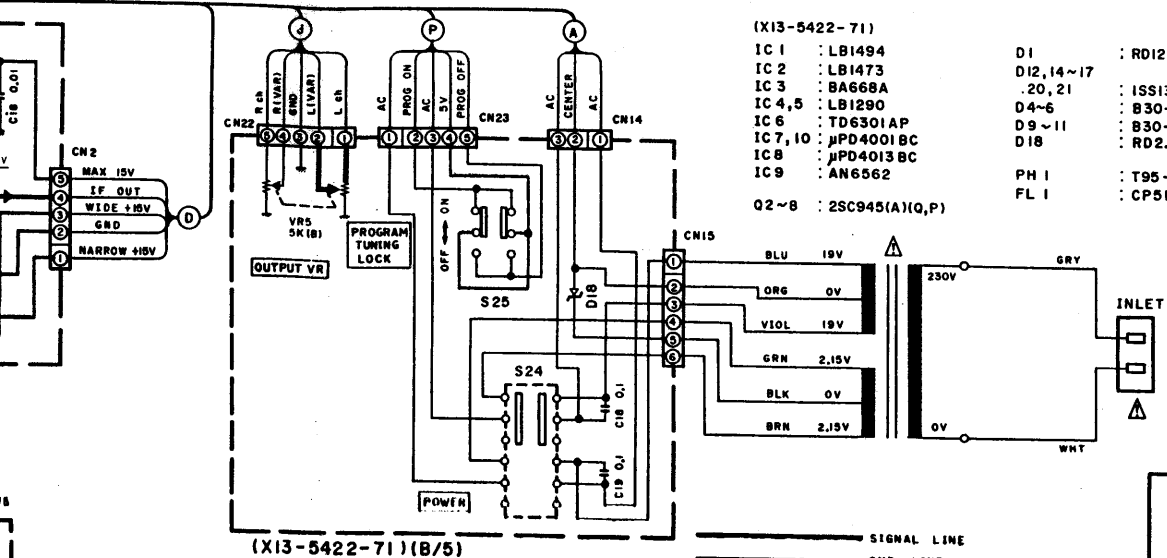
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M5230L









(X13-5422-71)

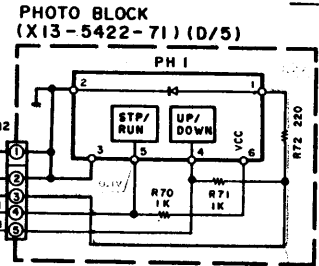
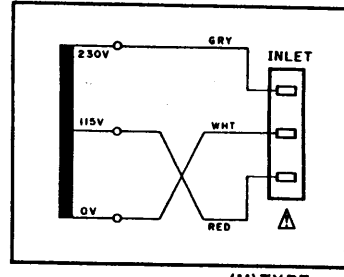
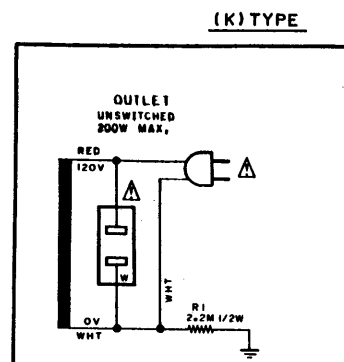
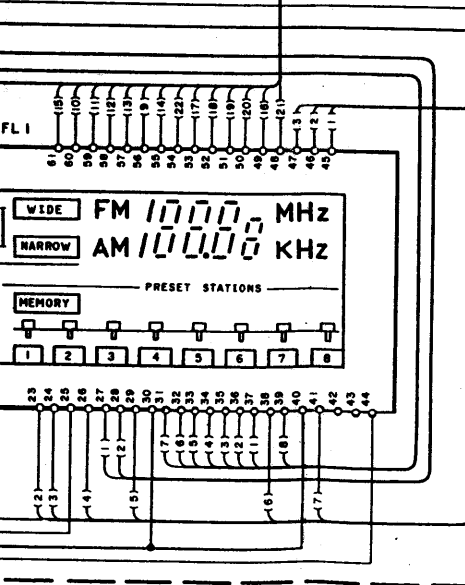
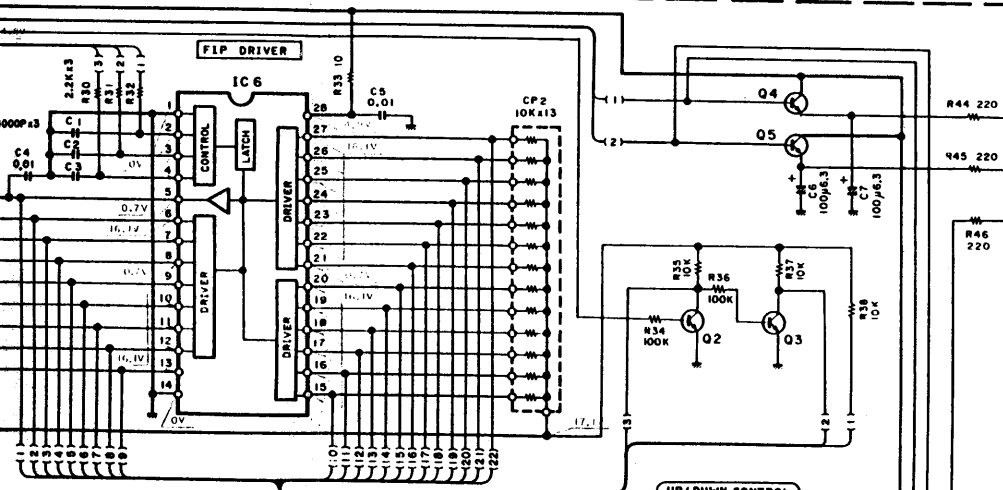
- IC 1 : LB1494
- IC 2 : LB1473
- IC 3 : BA668A
- IC 4,5 : LB1290
- IC 6 : TD6301 AP
- IC 7, 10 : μ PD4001 BC
- IC 8 : μ PD4013 BC
- IC 9 : AN6562

- D1 : RD12ES(B2)
- D2,14~17 : .20, 21
- D3 : ISS133 or ISS176
- D4~6 : B30-1012-05
- D9~11 : B30-0431-05
- D18 : RD2.7ES(B) or HZS2.7N(B)
- PH 1 : T95-0024-05
- FL 1 : CP5185 GR

Q2~8 : 2SC945(A)(Q,P)

(X13-5422-71)(B/5)

(X13-5422-71)(A/5)

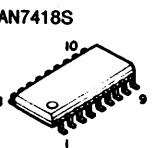


CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). Δ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably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

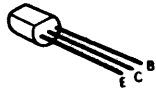
KT-3300D (E) (2/2)



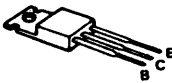
DC voltages are as measured with a high impedance voltmeter during reception of the FM broadcast signal (with a signal strength of 60 dB at the ANT terminal). Values may vary slightly due to variations between individual instruments or/and units.



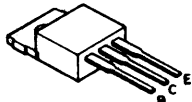
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MC1495L



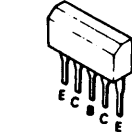
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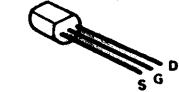
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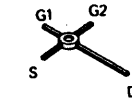
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2SK425

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NJM4560D

TD6104D

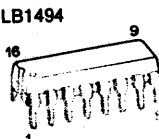
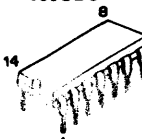
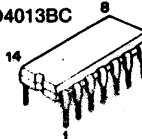
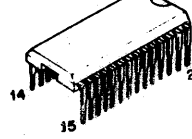
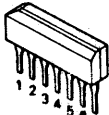
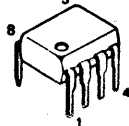
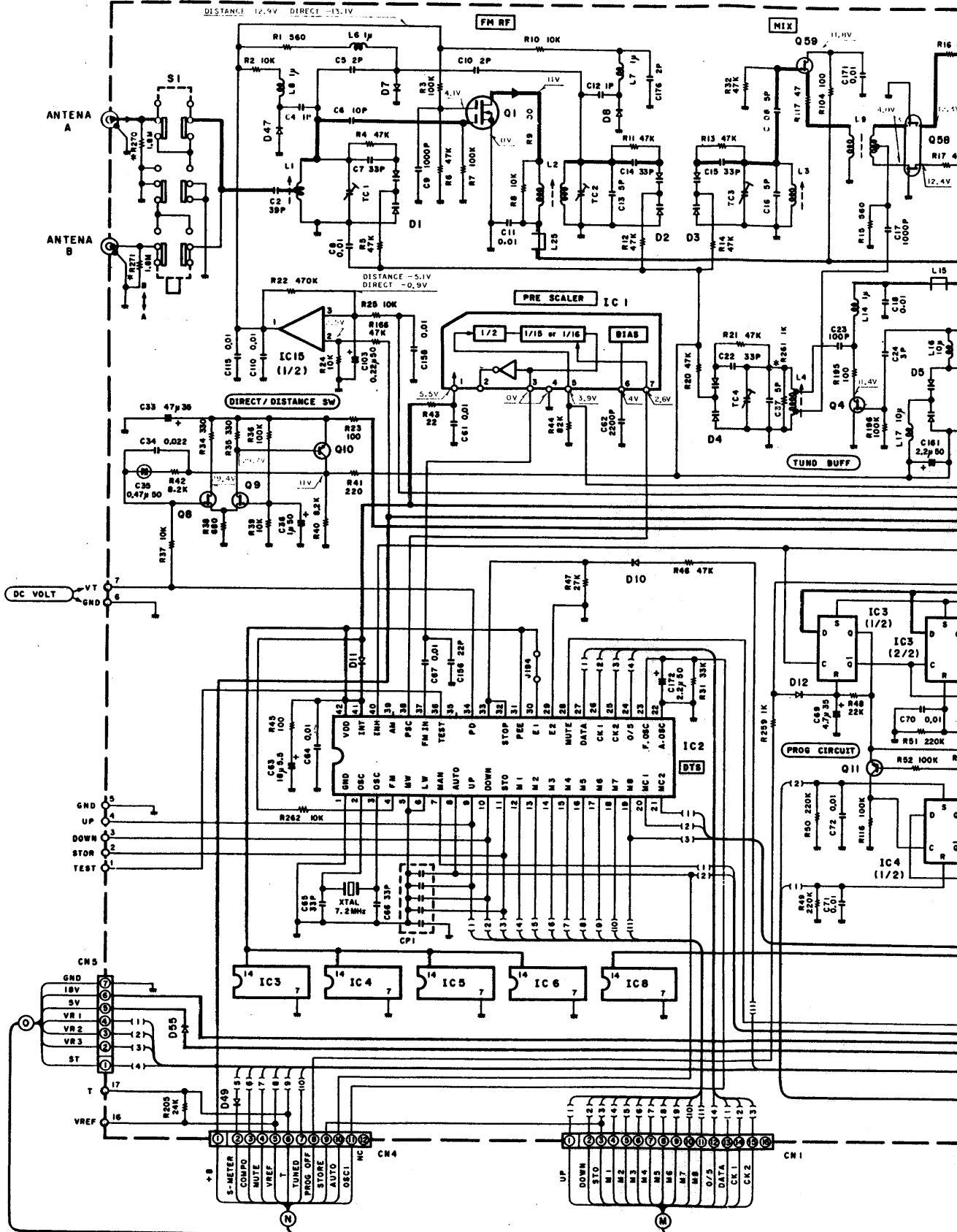
TD6301AP

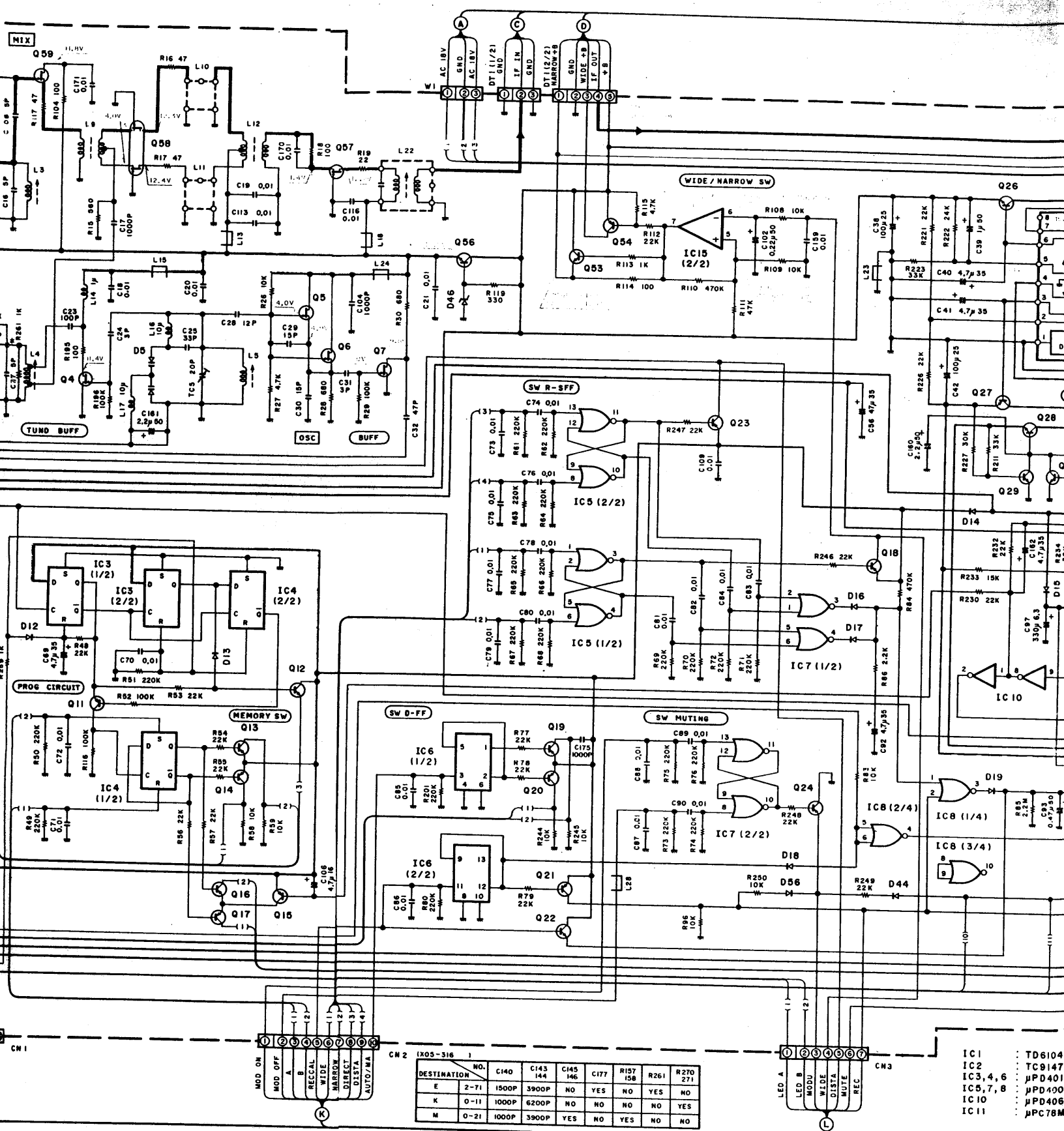
μ PD4001BC
μ PD4013BC

μ PD4069UBC

LA1231NS
LB1494

(X05-3162-71)





DESTINATION	NO.	C140	C143	C145	C177	R157	R261	R270
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

LA1231NS
LB1494

μPC1163HA

BA668A

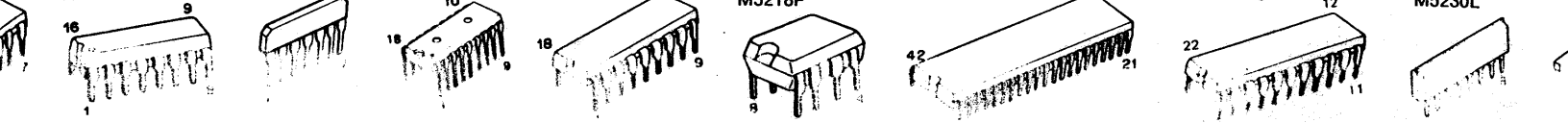
LB1290

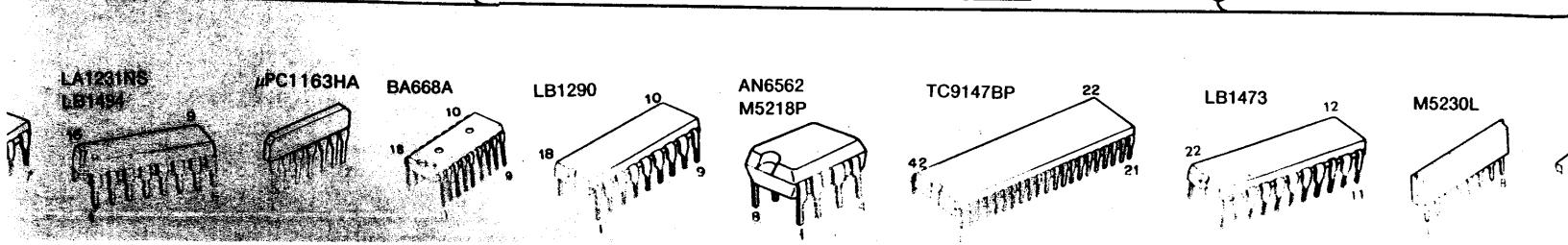
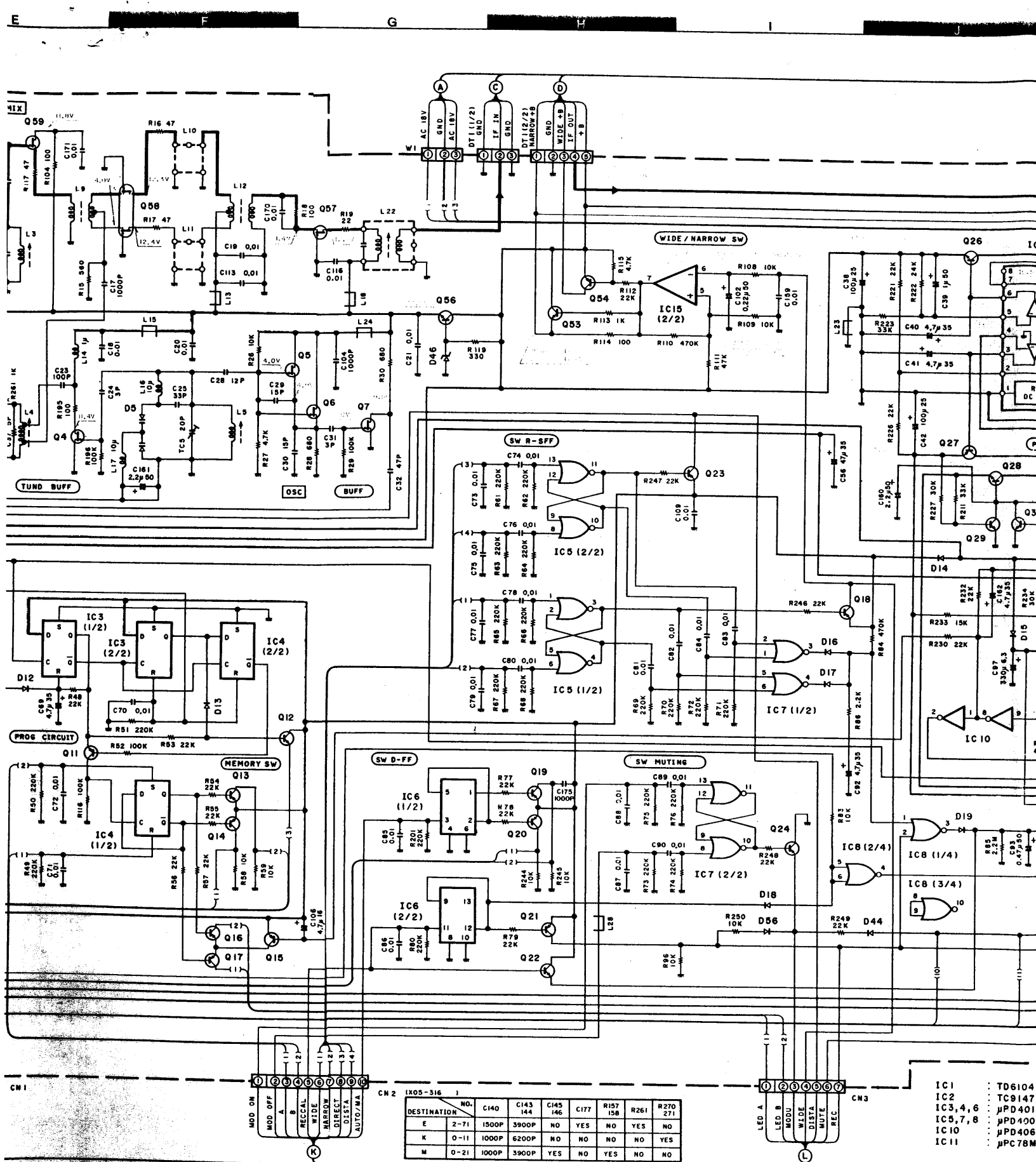
AN6562
M5218P

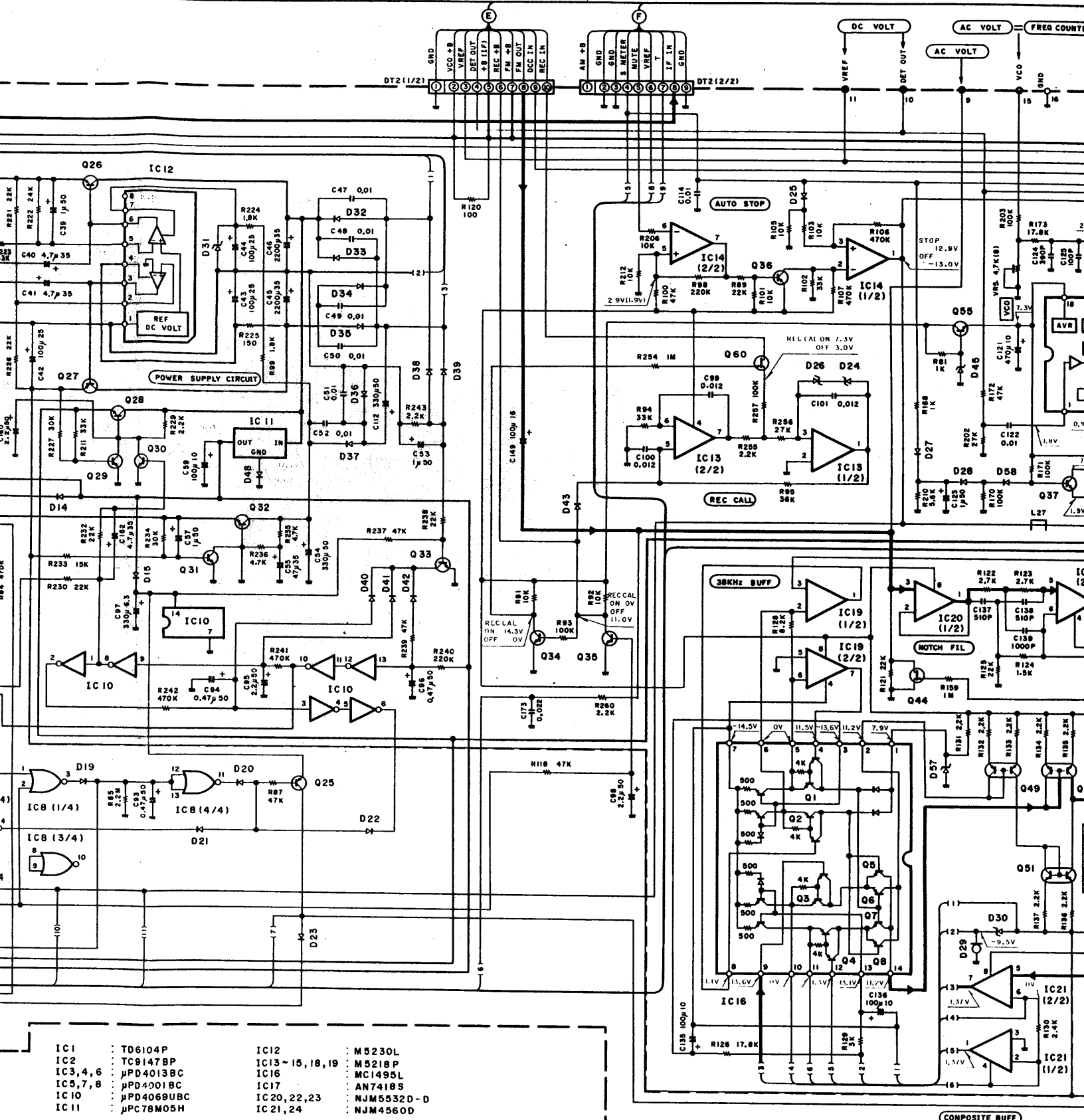
TC9147BP

LB1473

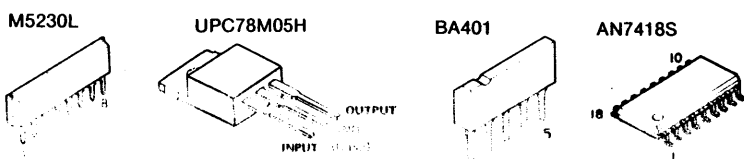
M5230L







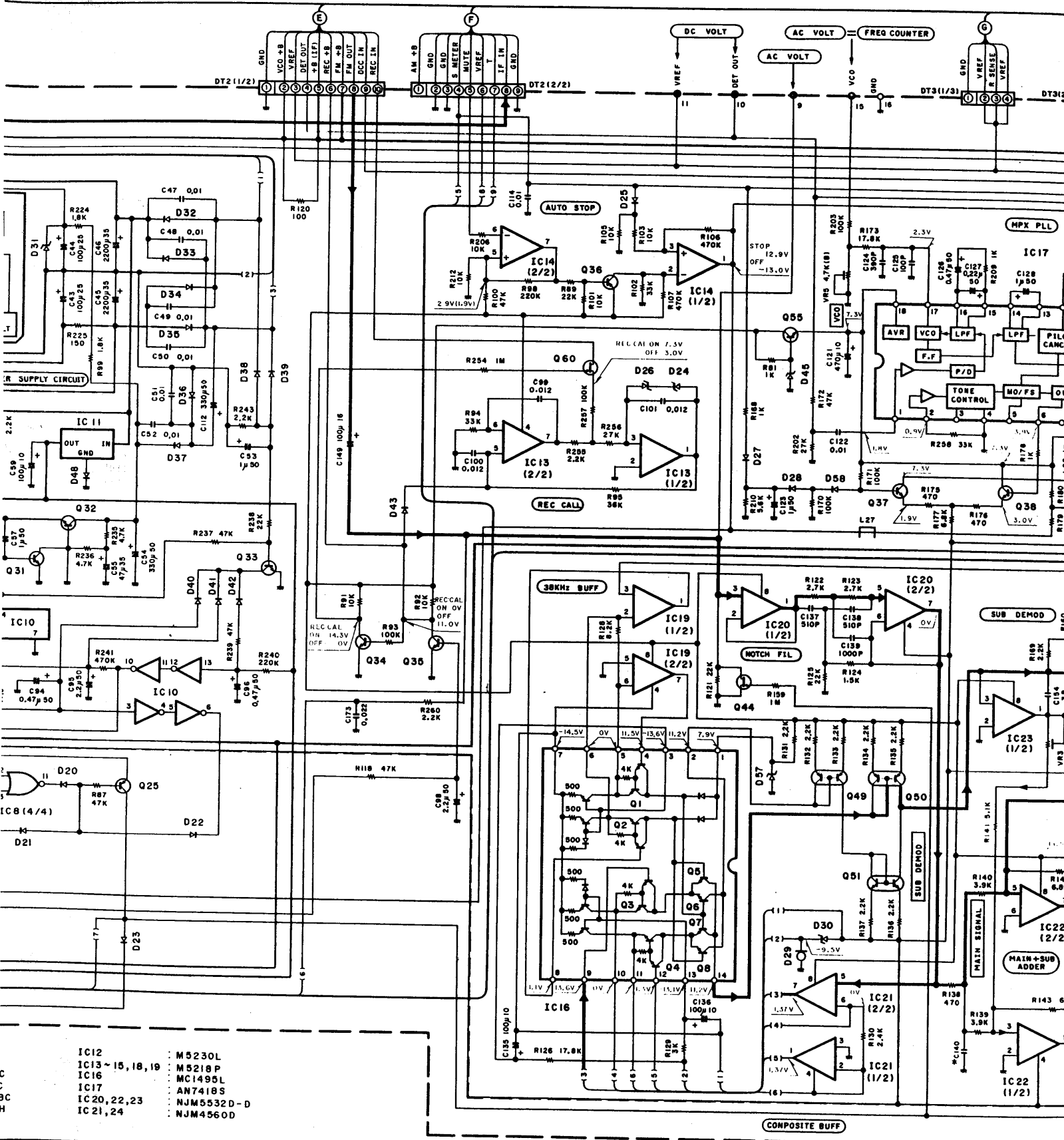
- | | | | |
|-----------|-------------------|-------------------|--------------|
| IC1 | : TD6104P | IC12 | : M5230L |
| IC2 | : TC9147BP | IC13 ~ 15, 18, 19 | : M5218P |
| IC3, 4, 6 | : μ PD4013BC | IC16 | : MC1495L |
| IC5, 7, 8 | : μ PD4001BC | IC17 | : AN7418S |
| IC10 | : μ PD4069UBC | IC20, 22, 23 | : NJM5532D-D |
| IC11 | : μ PC78M05H | IC21, 24 | : NJM4560D |



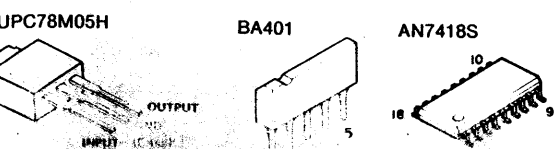
CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). Δ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably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

Les tensions c.c. de l'appareil (avec une force de coupure de 100mA) peuvent différer légèrement des valeurs indiquées sur le schéma et aux instants de mesure.

DC voltages are as measured with a high impedance voltmeter during normal operation. Peak-to-peak voltages are as measured across the load.



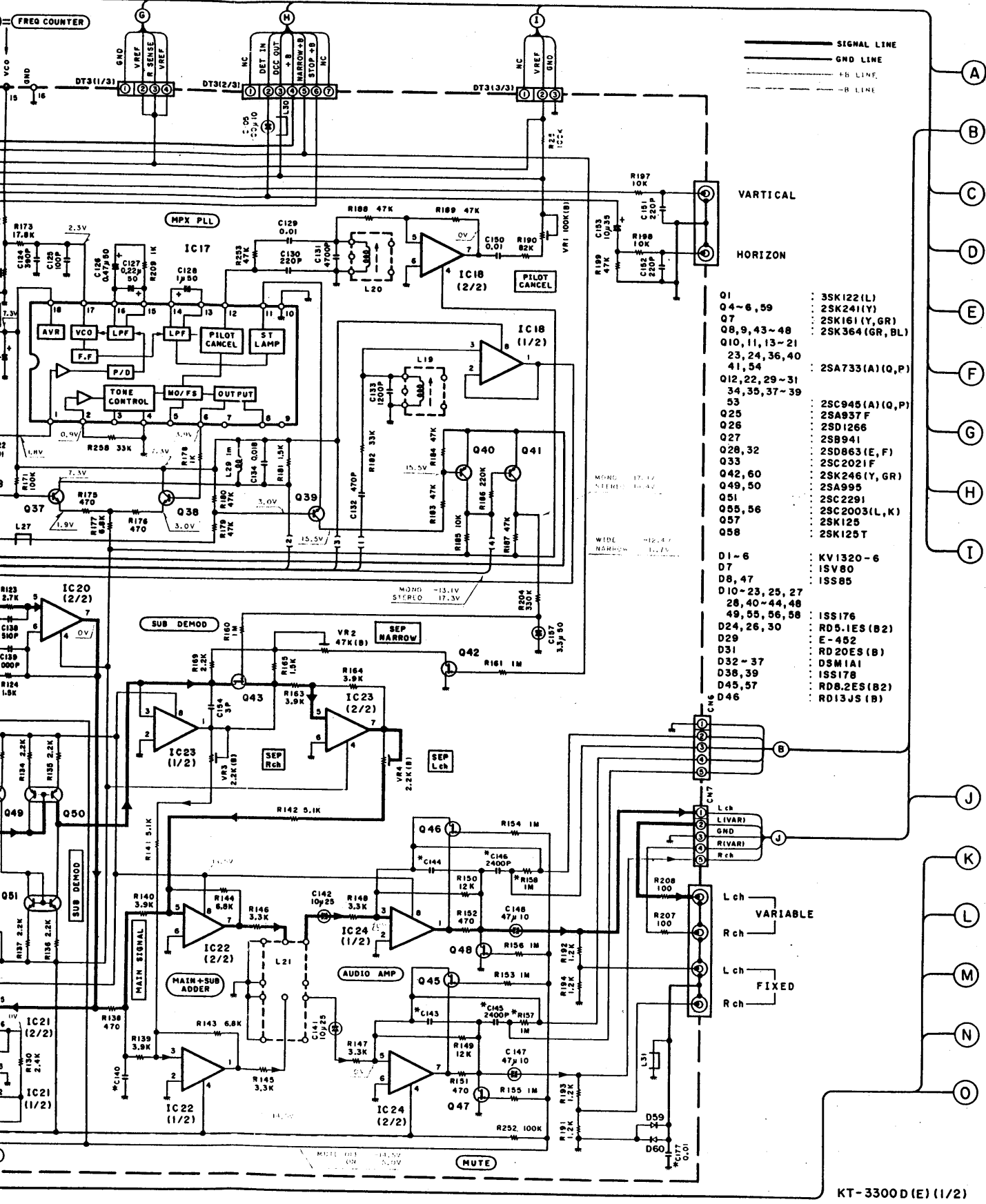
- IC12 : M5230L
- IC13 ~ 15, 18, 19 : M5218P
- IC16 : MC1495L
- IC17 : AN7418S
- IC20, 22, 23 : NJM5532D-D
- IC21, 24 : NJM4560D



CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). Δ 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 the appliance is returned to the customer.

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

DC voltages are as measured with a high impedance voltmeter during normal operation. Refer to parts list for signal strength of test signals.



- | | |
|-----------------|----------------|
| D1 | 3SK122(L) |
| D4-6, 59 | 2SK241(Y) |
| D7 | 2SK161(Y, GR) |
| D8, 9, 43-48 | 2SK364(GR, BL) |
| D10, 11, 13-21 | |
| D23, 24, 36, 40 | |
| D41, 54 | 2SA733(A)(Q,P) |
| D12, 22, 29-31 | |
| D34, 35, 37-39 | |
| D53 | 2SC945(A)(Q,P) |
| D25 | 2SA937F |
| D26 | 2SD1266 |
| D27 | 2SB941 |
| D28, 32 | 2SD863(E, F) |
| D33 | 2SC2021F |
| D42, 60 | 2SK246(Y, GR) |
| D49, 50 | 2SA995 |
| D51 | 2SC2291 |
| D55, 56 | 2SC2003(L, K) |
| D57 | 2SK125 |
| D58 | 2SK125T |
| D1-6 | KV1320-6 |
| D7 | 1SV80 |
| D8, 47 | 1SS85 |
| D10-23, 25, 27 | |
| D28, 40-44, 48 | |
| D49, 55, 56, 58 | 1SS176 |
| D24, 26, 30 | RD5.1ES(B2) |
| D29 | E-452 |
| D31 | RD20ES(B) |
| D32-37 | DSM1A1 |
| D38, 39 | 1SS178 |
| D45, 57 | RD8.2ES(B2) |
| D46 | RD13JS(B) |

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

ensions 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 ho-
chmohigen 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	
Usable sensitivity (IHF)	DISTANCE	DIRECT
	10.8 dBf (0.95 μ V)	31.2 dBf (10 μ V)
50 dB quieting sensitivity (IHF)	WIDE	NARROW
	16.2 dBf (1.8 μ V)	36.3 dBf (18 μ V)
Stereo	38.8 dBf (24 μ V)	58.8 dBf (240 μ V)
	WIDE	NARROW
Total harmonic distortion	0.007%	0.02%
	0.004%	0.01%
Mono: 100 Hz	0.009%	0.04%
	0.015%	0.04%
Stereo: 100 Hz	0.008%	0.03%
	0.04%	0.15%
Signal-to-Noise ratio (85 dBf IHF)	92 dB	
	86 dB	
Mono	92 dB	
	76 dB	
Stereo	WIDE	NARROW
	1.0 dB	2.5 dB
Capture ratio	70 dB	100 dB
Alternate channel selectivity (IHF: \pm 400 kHz)	70 dB	100 dB
Stereo separation	70 dB	58 dB
	55 dB	45 dB
1,000 Hz	45 dB	40 dB
	20 Hz to 15,000 Hz \pm 0.5 dB	
Frequency response	80 dB	
Image rejection ratio	110 dB	
IF rejection ratio	100 dB	
Spurious rejection ratio	70 dB	
AM suppression ratio	70 dB	
Sub carrier suppression ratio	70 dB	
Output level/impedance at 1,000 Hz, 100% dev.	0.6 V/2.3 k Ω	
	1.2 V/1.0 k Ω (MAX.)	
Fixed	0.05 V/10 k Ω	
	0.6 V/10 k Ω	
Vertical		
Horizontal		
[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)	

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.

- IEC/NF -

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

KENWOOD CORPORATION

Shinonogi Shibuya Building, 17-5, 2-chome Shibuya, Shibuya-ku, Tokyo 150, Japan

KENWOOD ELECTRONICS

1315 E. Watsoncenter Rd, Carson, California 90745,
75 Seaview Drive, Secaucus, New Jersey 07094, U.S.A.

KENWOOD ELECTRONICS CANADA INC.

1070 Jayson Court, Mississauga, Ontario, Canada L4W 2V5

KENWOOD ELECTRONICS BENELUX N.V.

Mechelsesteenweg 418 B-1930 Zaventem, Belgium

KENWOOD ELECTRONICS DEUTSCHLAND GMBH

Rembrücker-Str. 15, 6056 Heusenstamm, West Germany

TRIO-KENWOOD FRANCE S.A.

5, Boulevard Ney, 75018 Paris, France

TRIO ELECTRONICS (U.K.) LIMITED

17 Bristol Road, The Metropolitan Centre, Greenford, Middx. UB6 8UP England

KENWOOD ELECTRONICS AUSTRALIA PTY. LTD.

4E Woodcock Place, Lane Cove, N.S.W. 2066, Australia

KENWOOD & LEE ELECTRONICS, LTD.

Wang Kee Building, 5th Floor, 34-37, Connaught Road, Central, Hong Kong