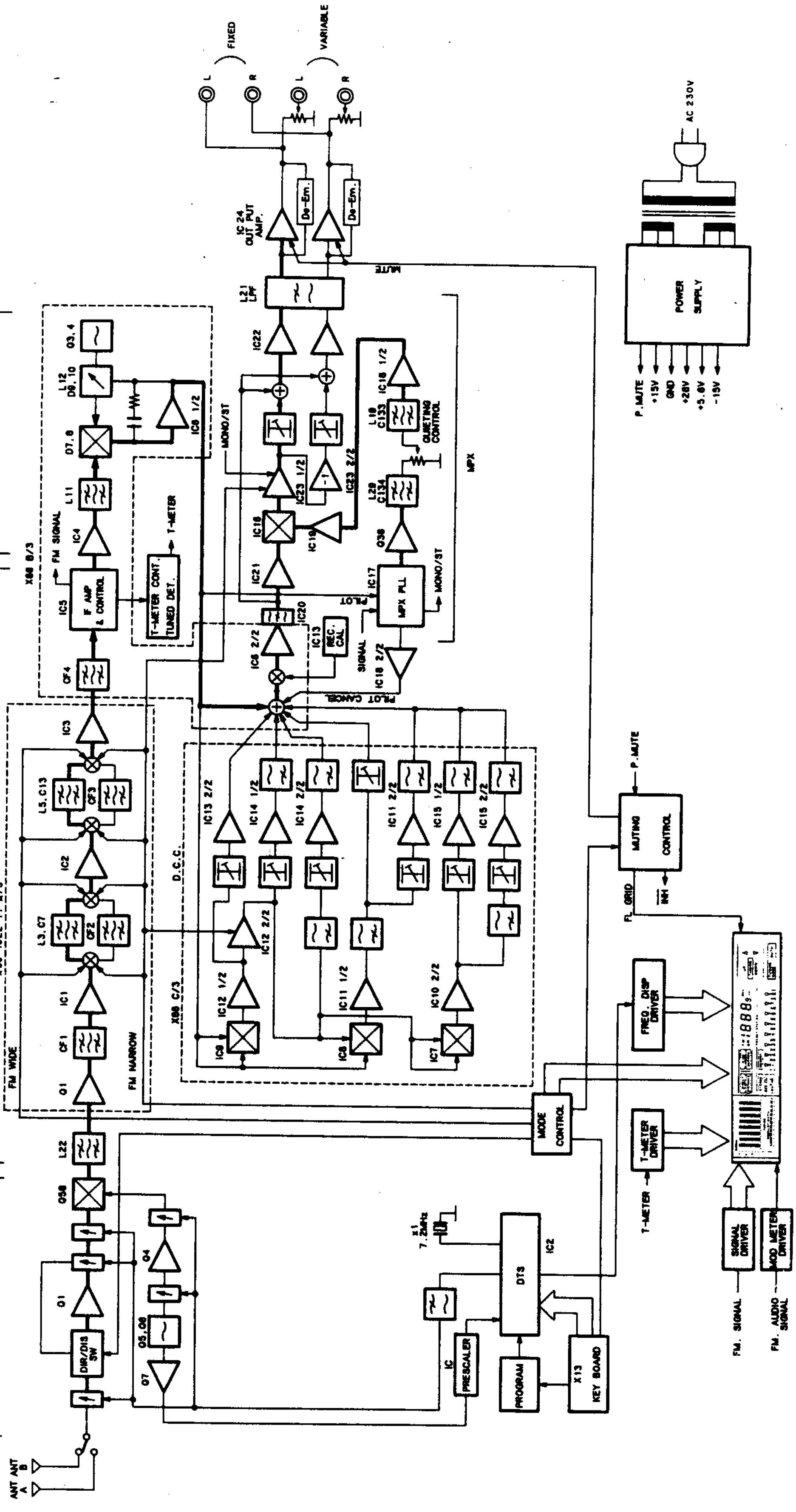
BLOCK DIAGRAM



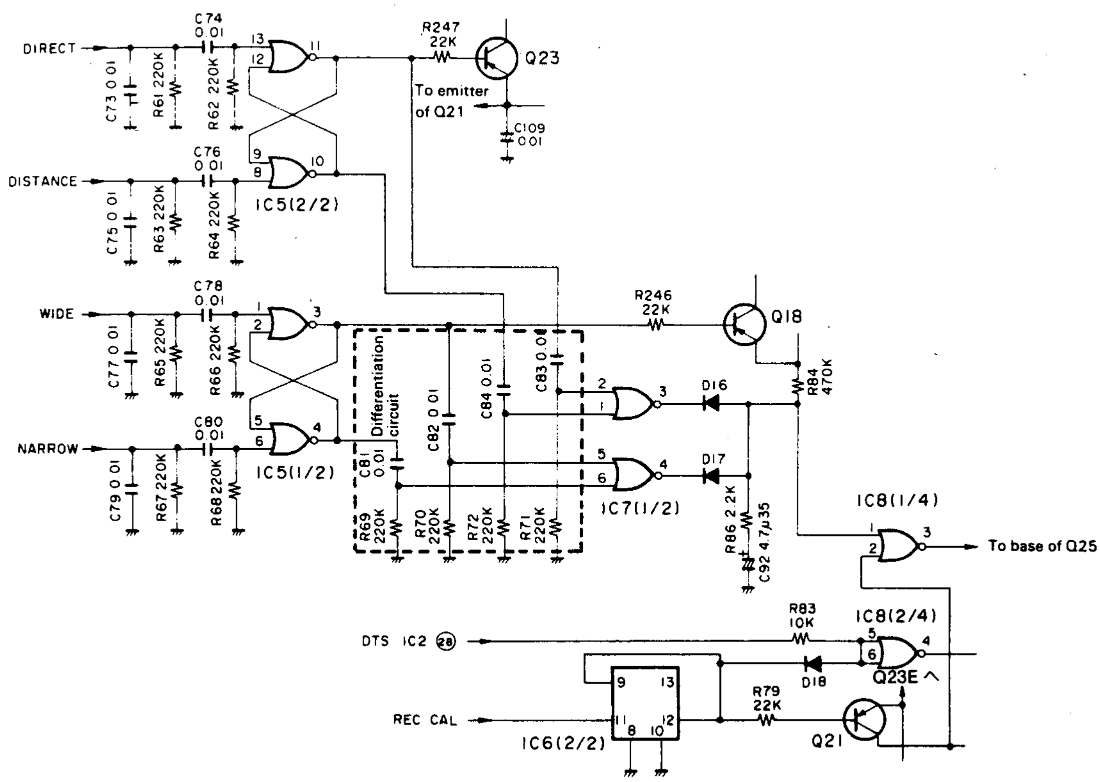


Fig. 1

Muting at Power ON/OFF

When the power is turned ON, IC10 generates the $\overline{INH}$, 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 $\overline{INH}$ OFF to stop the DTS.

The timing charts are as shown in the diagrams.

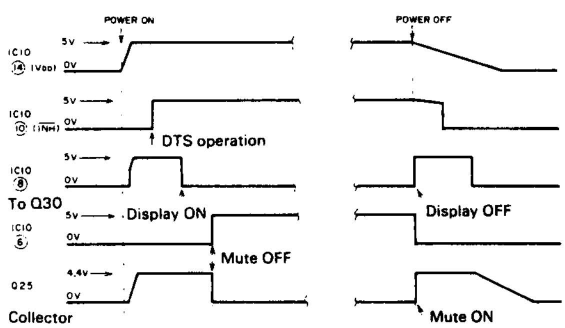


Fig. 2

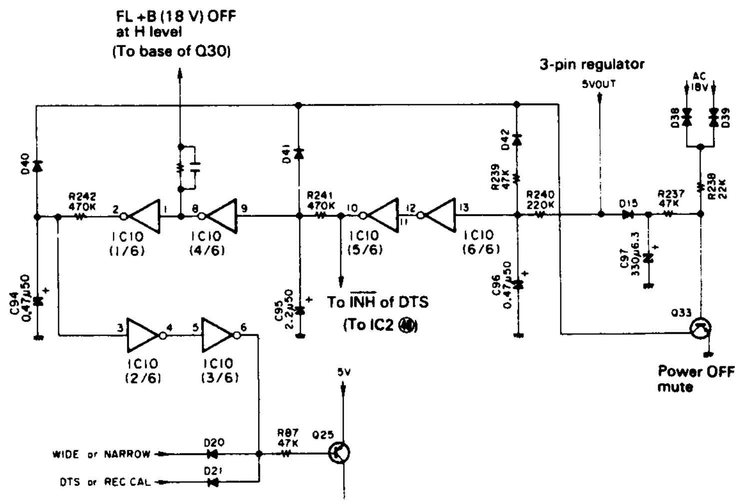


Fig. 3

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, as 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.

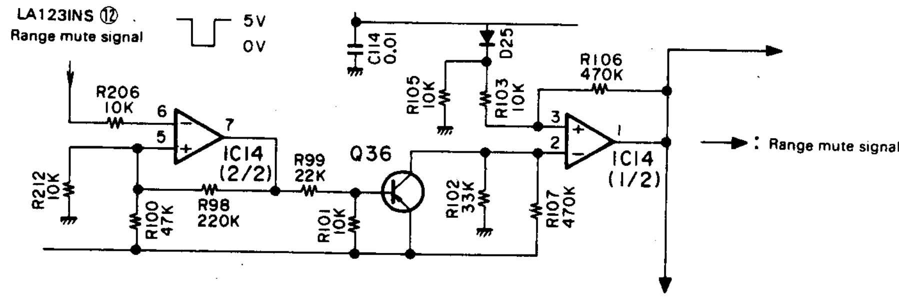


Fig. 4

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.

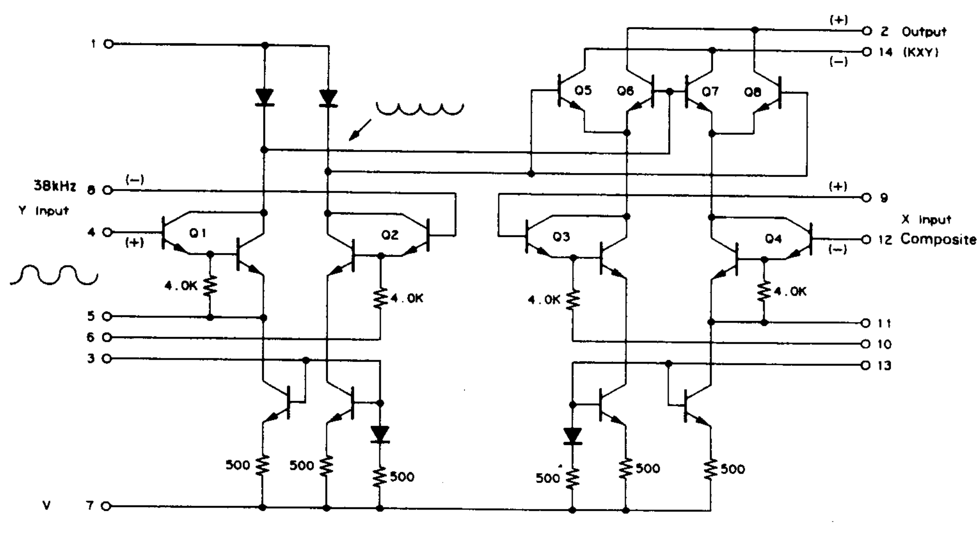


Fig. 5 MC1495L Internal equivalent circuit

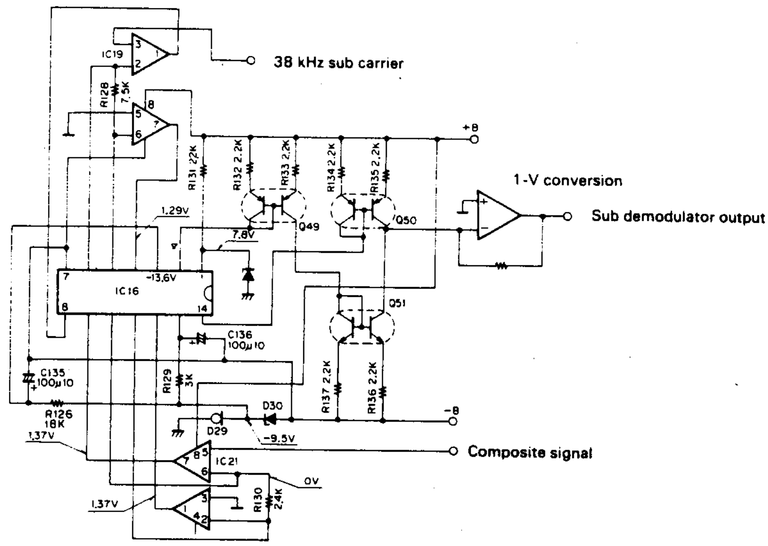


Fig. 6 Actual circuit

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.

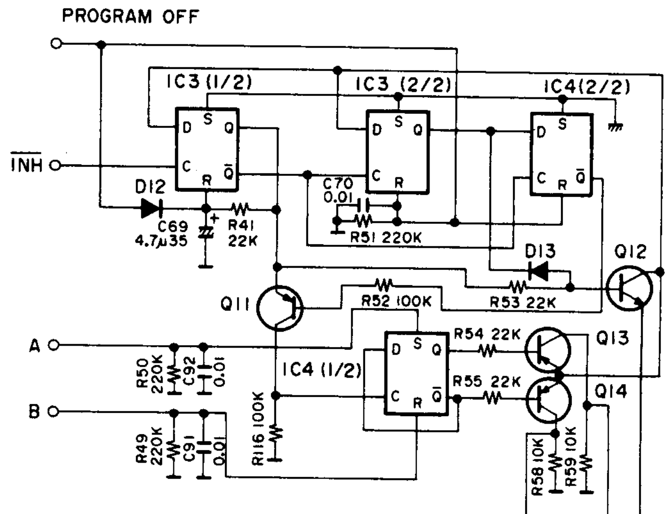


Fig. 8

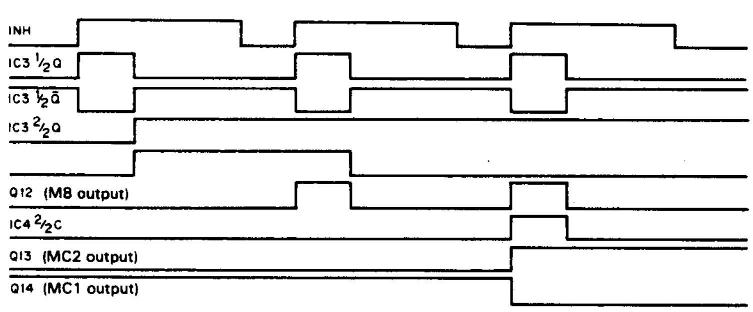


Fig. 7 Timing chart

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:

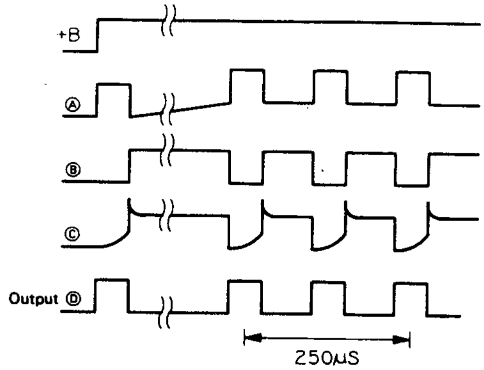


Fig. 9

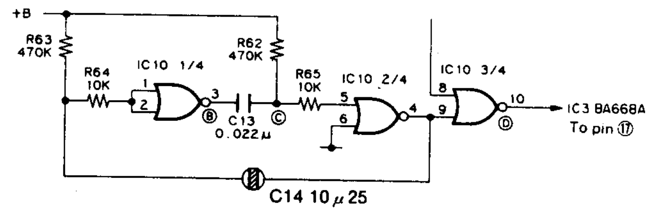


Fig. 10 IC10: μPD4001BC

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.

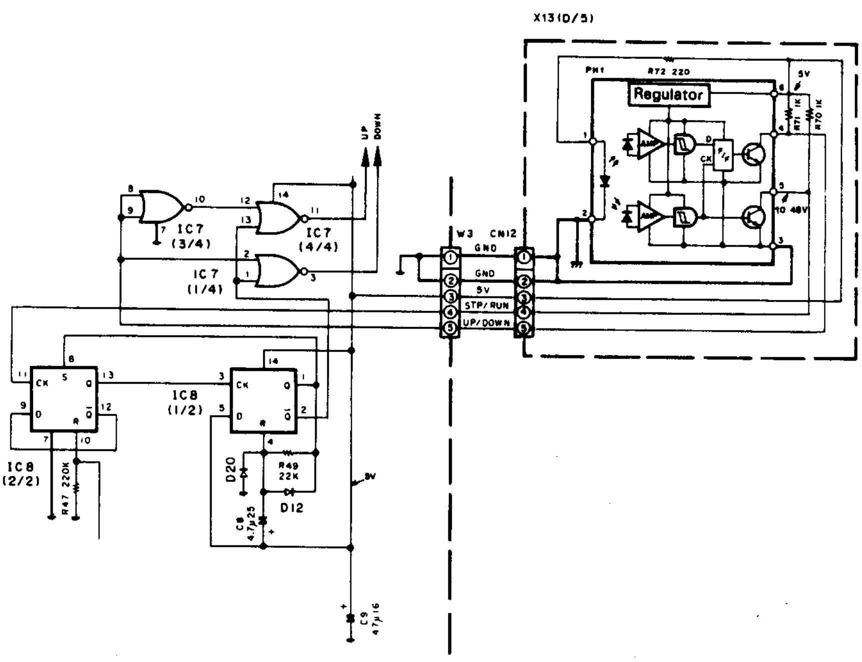


Fig. 11 Digital rotary tuning circuit

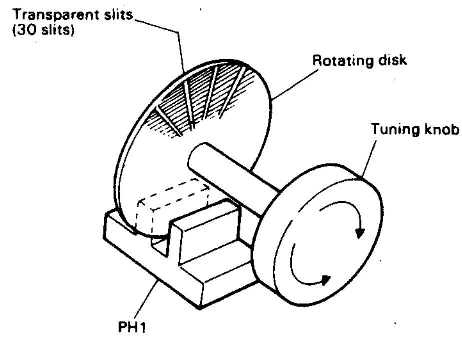


Fig. 14

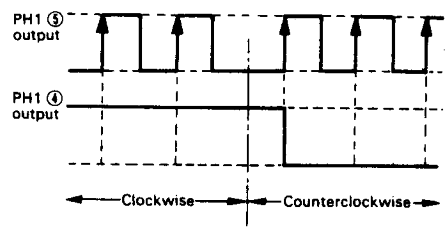


Fig. 12 Operation timing chart of PH1

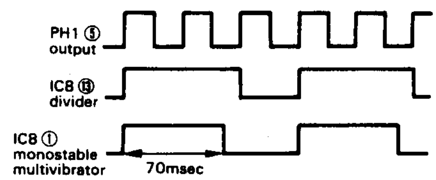


Fig. 13 Timing chart