

CIRCUIT DESCRIPTION

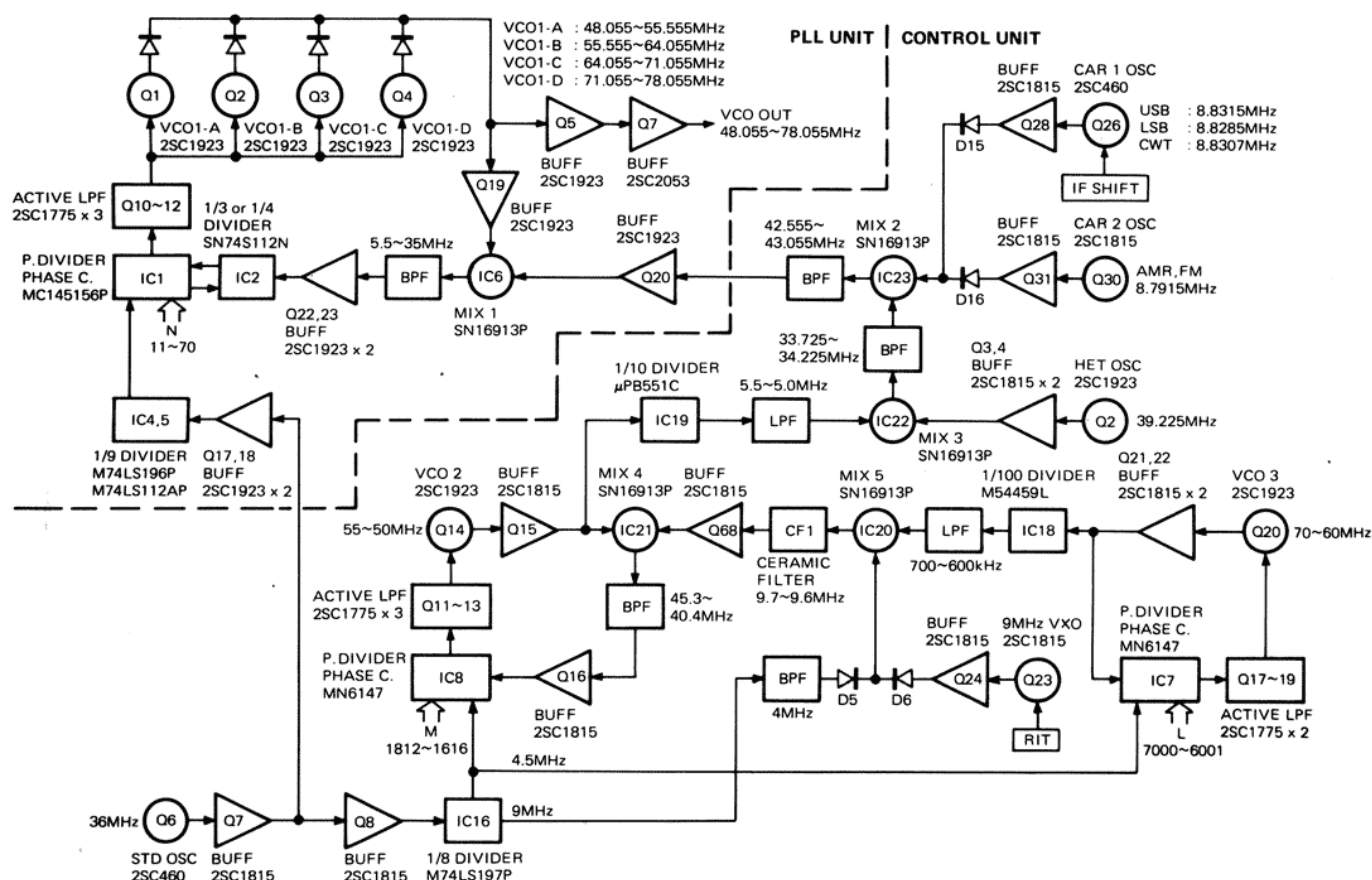


Fig. 3 PLL Block diagram

DIGITAL CONTROL CIRCUIT

The TS-430 digital Control unit consists of a μ PD8049C-279 8-bit microcomputer (IC1), 2 I/O expanders, 2 data selectors, a C-MOS RAM IC for memory and a diode matrix for interfacing.

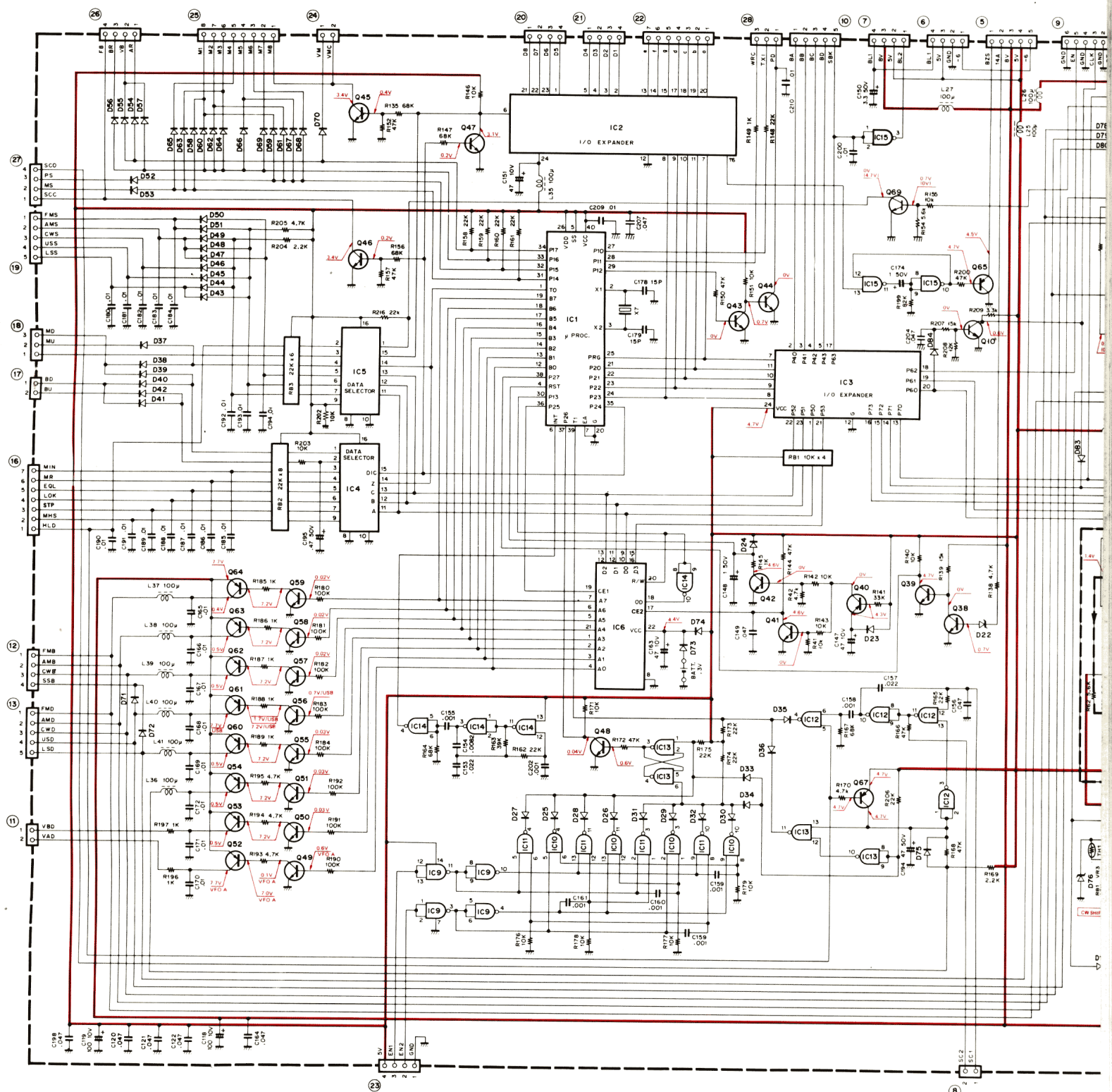
The MODE SW, BAND SW, M-IN, MR, A=B, HOLD, STEP, MIC UP/DOWN and LOCK switches are connected to the data selectors (IC4 and IC5 : TC4512BP) either directly or through the diode matrix so that the setting of each switch is input to the microcomputer as 1 data bit. The FUNCTION, MEMORY CH, MS and PG.S SW switches are also connected to the microcomputer through the diode matrix. Thus, the settings of these switches are input to the microcomputer as 4 data bits.

I/O expander IC3 (μ PD8243C) is used to output the frequency division data for the PLLs and the band data. The frequency division data is changed only when the frequency is changed. The frequency range from 0 to 30MHz is divided into 10 band segments, and these segments are selected by band data which is output as 4-bit BCD code. The other I/O expander (IC2) outputs frequency data for the 7-segment display and the digit dynamic drive signal. The clock signal used to dynamically drive the display is generated by astable multivibrator IC14 (TC4011BP), which oscillates at approximately 1kHz.

The encoder interface circuit (consisting of IC9, IC10 and IC11 [TC4011BPs]) multiplies the 250 pulses/rev. 2-phase clock signal generated by the encoder unit by 4 to obtain a 1000 pulses/rev. clock signal which is applied to the microcomputer. The relationship between the phases is detected by IC13 to determine the tuning knob direction of rotation, and this directional data is applied to the microcomputer as the UP/DOWN signal.

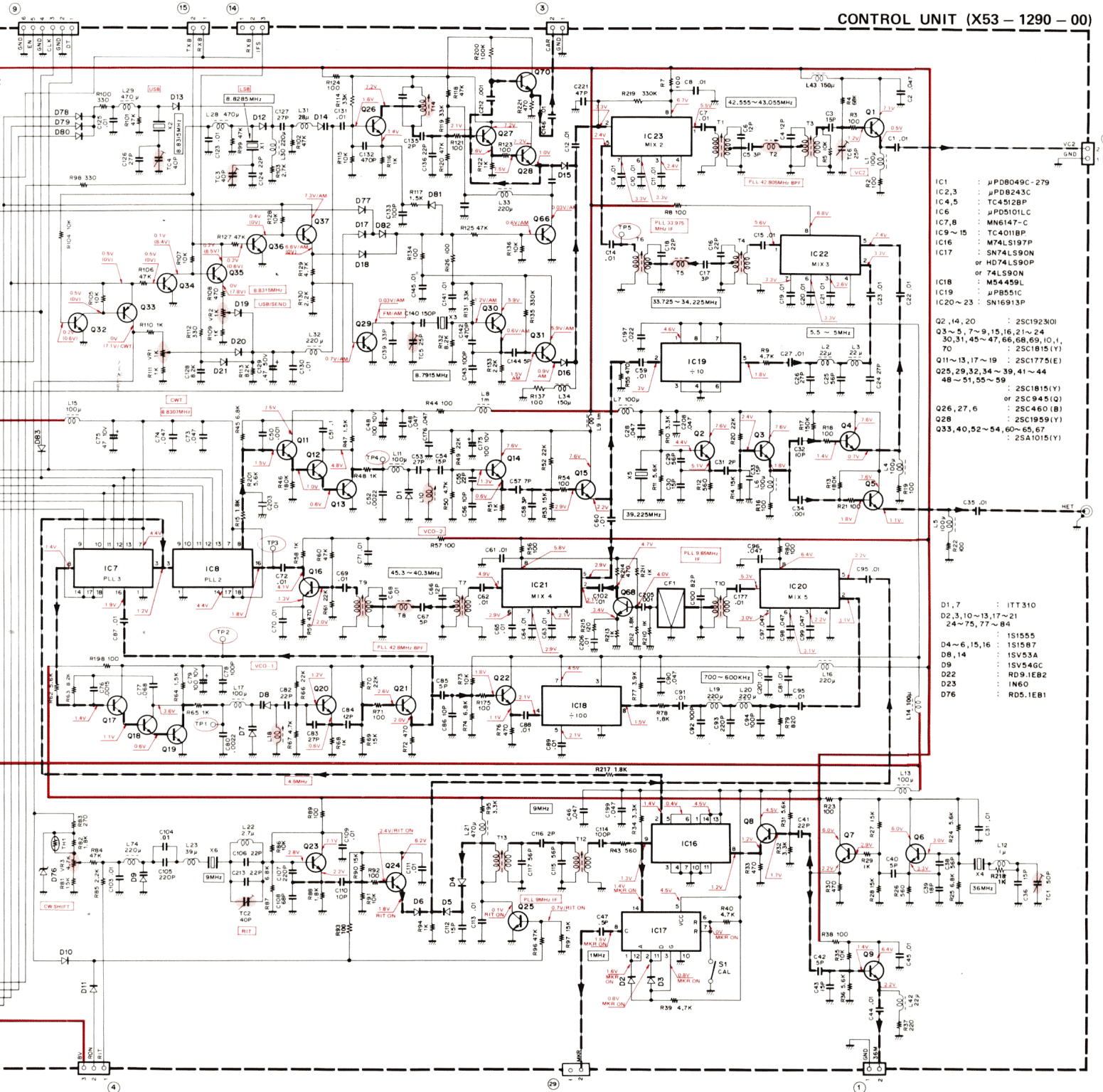
The microcomputer clock signal input terminal is also used to input the speed control data for program scan. A clock signal generated by astable multivibrator IC12 (TC4011BP) is applied to this terminal in the program scan mode. The frequency of this multivibrator can be varied from 50 to 250Hz by the slide potentiometer located on the top panel.

The memory backup circuit uses a C-MOS RAM (IC6 : μ PD5101LC) and a 3V lithium battery. The microcomputer monitors the main power supply voltage using a circuit consisting of D22 (RD9.1EB2) Q38 and Q39 (2SC1815s). When the voltage (normally 13.8V DC) drops below about 9.5V, the microcomputer stops normal operation and starts transferring frequency data to the backup RAM (IC6 : μ PD5101LC). The microcomputer then detects a drops in the 5V line voltage and sets the RAM in the standby (or backup) state. Current consumption during backup is approximately 0.1 μ A (typ.), and the



CIRCUIT DIAGRAM TS-430S

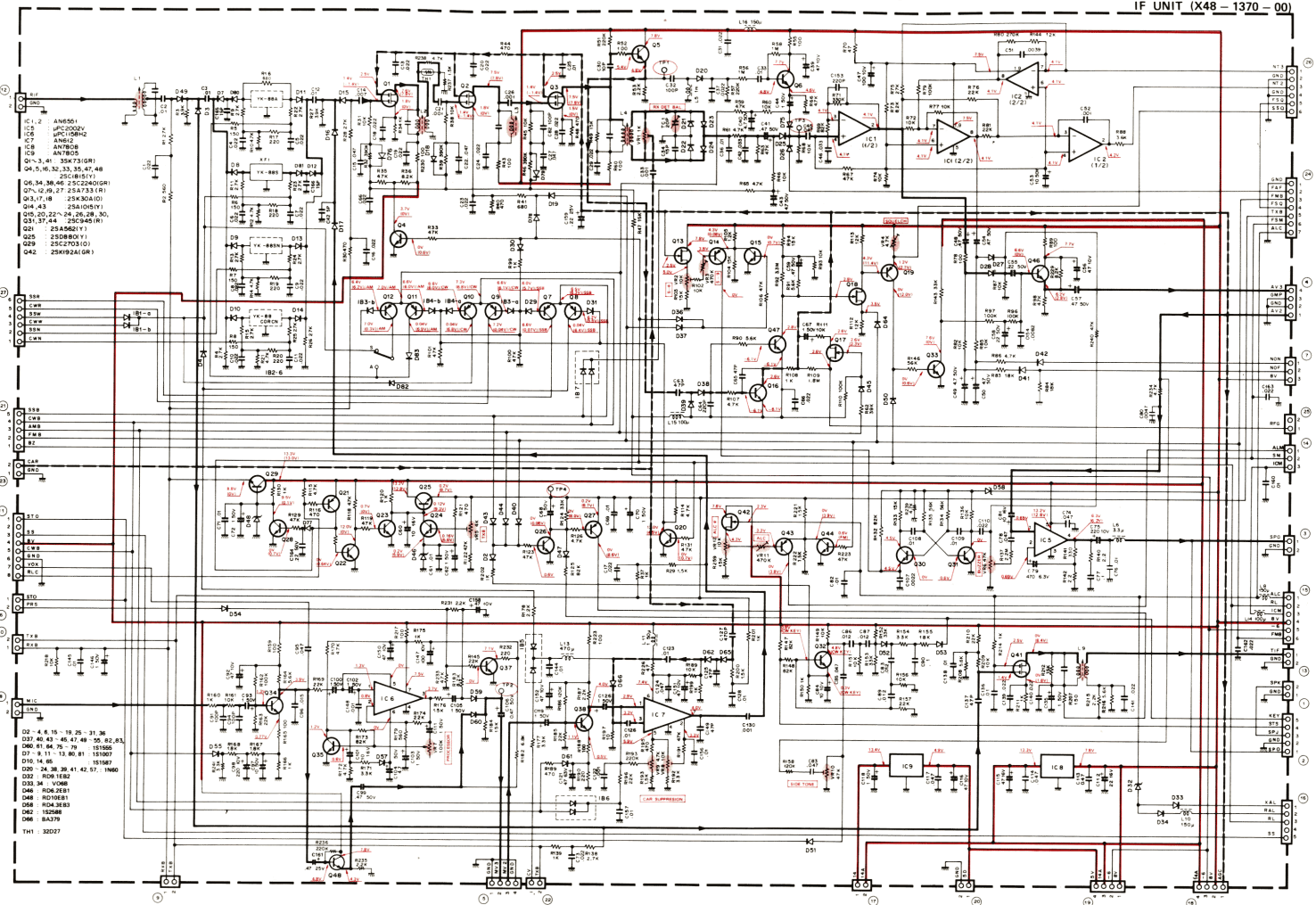
CONTROL UNIT (X53 - 1290 - 00)



IF UNIT (X48-1370-00)

CIRCUIT DIAGRAM TS-430S

IF UNIT (X48-1370-00)



PLL UNIT (X50-1910-00)

