MAINTENANCE AND ADJUSTMENT

Reading through "PROGRAM FUNCTION" and "WHAT ADJUSTED" in MODULE BOARD ADJUSTMENT section and "MODULE CONTROL VOLTAGES" in the Circuit Description will help in understanding the JP-6 performance, in troubleshooting as well as in understanding adjustment theory. In maintaining the JP-6 observe the following cautions.

CAUTIONS:

When the JP-6 program cannot proceed orderly or overruns intermittently, first check the power line for excessive fluctuation, loose contact or external pulses.

When Patch Memories are volatile, check power-backup circuitry (CPU board—diodes D1 and D2 and the battery).

NOTE: Nominal battery voltage ..... 3V.
Minimum backup voltage .... 2V.
Battery voltage must be more than 2.6V.

IC24 RAM SHOULD BE TC5517APL or MB8416-25LP (low current consumption) for the longer battery life expectancy.

When the program can not escape the TAPE modes, see Panel Board R Circuit diagram for modification.

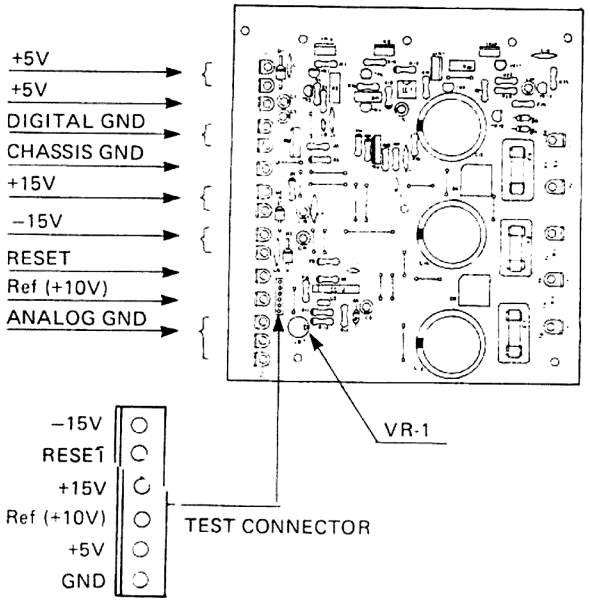
Saving the Patch memories on tape before starting troubleshooting is recommended to prevent the possible volatilization.

ADJUSTMENT

Check and readjust DC supply (as necessary) before starting particular adjustment.

POWER SUPPLY BOARD

1. Connect the digital voltmeter to Ref (+10V) terminal.
2. Adjust VR-1 for +10.00V.



3. Confirm the remaining terminal voltages. They must be:

+5V ± 30mV
+15V ± 100mV
−15V ± 400mV

The JP-6 contains the adjustment program to provide specific parameters for individual adjustment which can be evoked through BANK and NUMBER buttons when the JP-6 is in the TEST mode. To put the unit into the TEST mode, first turn the power ON, then place SW-1 (DIP SW) of the CPU board at JIG position.

CAUTION:

* Setting SW-1 before power up does not turn the JP-6 to the TEST mode.

MODULE BOARD

Refer to ADJUSTMENT LOCATIONS at the end of this section for the locations of TEST POINTs and TRIMMERs.

CAUTION:

* Adjustment Order:
Each of the following two groups is considered as an adjustment unit (set) and must be conducted in the order numbered.

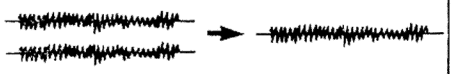
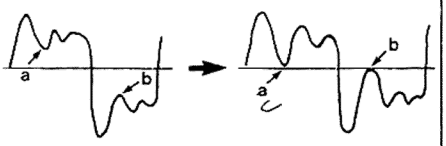
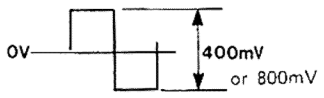
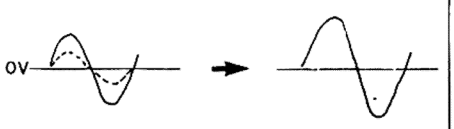
A1 and A2 A4, A5 and A6

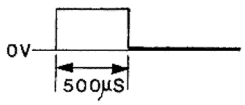
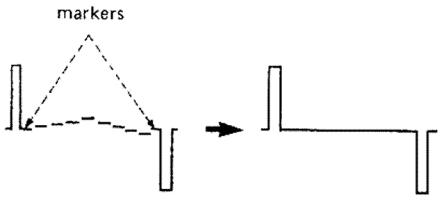
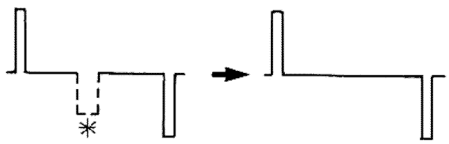
Other adjustments are independent of each other.
Be sure to turn SW-1 off after completion of the adjustment(s).

COMMON SETTINGS TO ALL THE FOLLOWING ADJUSTMENTS

VOLUME: 10
OUTPUT LEVEL (Rear Panel): H
KEY MODE: SPLIT-1 or SPLIT-2
PANEL MODE: LOWER-4 Voice MODULE BOARD
or UPPER-2 Voice MODULE BOARD
BANK and NUMBER: As stated in an adjustment.
OSCILLOSCOPE: SLOPE (TRIGGER) "+",
(otherwise stated) PROBE 1 : 1

Example: LINEARITY
Press SPLIT-1 or SPLIT-2. Press UPPER. Press BANK D and NUMBER (example 1 = VCO A1 of 2 VOICE MODULE). If successively adjust 4 VOICE MODULE, press LOWER. LEDs D and 1 change to A-1. Press D and a NUMBER again.

PANEL SETTINGS	ADJUST	PROGRAM FUNCTION	WHAT ADJUSTED/
1. D/A **1-1. OFFSET**			
PANEL MODE UPPER (2 VOICE) LOWER (4 VOICE) BANK/NUMBER A-1	1. Connect digital voltmeter between TP-1 and TP-0 (GND) (on MOD PCB). 2. Adjust VR1 (D/A OFFSET) for 0V ± 0.1mV.	Set the input bits to the D/A Converter (IC11 of the CPU Board) to 0.	The offset of the operational amplifier (IC12).
1-2. Checking D/A converter			
UPPER (2 VOICE) LOWER (4 VOICE) BANK/NUMBER A-2	After setting BANK/NUMBER, see if TUNE LED of the panel goes out within 2-3 seconds. If not, repeat steps in 1-1, (adjust D/A OFFSET VR1).	Connect D/A outputs of various voltages to VCO A-1 and measure its corresponding output sequences.	If the TUNE LED remains lit for more than several seconds, check D/A, VCO A-1 and A-2.
2. DC BAL			
PANEL MODE UPPER (2 VOICE) LOWER (4 VOICE) BANK/NUMBER A-3 OSCILLOSCOPE H: 0.1ms/cm V: 5mv/cm AC Coupling	1. Connect the scope to OUTPUT JACK or R21 (JACK BOARD). 2. Adjust VR10 (DC BAL) for the minimized DC drift. Increase scope sensitivity as necessary. 	Apply LFO output (square, between 0V and +10V) to the final VCA IC53.	The offset of the VCA.
3. RESONANCE			
PANEL MODE UPPER (2 VOICE) LOWER (4 VOICE) BANK/NUMBER A-4 (VR9AB) A-5 (VR9CD) OSCILLOSCOPE H: 0.1ms/cm V: 200mV/cm AC Coupling	1. Connect the scope to OUTPUT JACK or R21 (JACK BOARD). 2. Adjust VR9 (RESO) so that a and b in Fig. 2 are positioned to the 0V line. 	Apply VCO output, together with RESONANCE and CUT-OFF data, to two VCFs.	Amount of feedback for a proper regeneration.
4. OUTPUT LEVEL			
PANEL MODE UPPER (2VOICE) LOWER (4 VOICE) BANK/NUMBER A-6	1. Connect the scope to OUTPUT JACK. 2. Adjust VR-11 (LEVEL) for 400mVp-p (SN up to 280949) or 800mVp-p (SN 290950-up) as shown below. 	Apply the predetermined control voltages and input signal to the final VCA IC53.	See JACK BOARD diagram for change information.
5. CUTOFF			
PANEL MODE UPPER (2 VOICE) LOWER (4 VOICE) BANK/NUMBER B-1 (A) B-2 (B) B-3 (C) B-4 (D) OSCILLOSCOPE H: 0.1ms/cm V: 500mV/cm AC Coupling	1. Connect the scope to OUTPUT JACK or R21 (JACK BOARD). 2. Adjust VR8 (CUTOFF or FREQ) for the maximum amplification. 	Feed square wave (of a predetermined frequency and level) from a VCO to the VCF while set the VCF to full resonance.	Tune the resonance frequency to that of the VCO.

PANEL SETTINGS	ADJUST	PROGRAM FUNCTION	WHAT ADJUSTED/ DESCRIPTION
6. PW PANEL MODE UPPER (2 VOICE) LOWER (4 VOICE) BANK/NUMBER **C-1 (VR4A)** **C-2 (VR6A)** **C-3 (VR4B)** **C-4 (VR6B)** **C-5 (VR4C)** **C-6 (VR6C)** **C-7 (VR4D)** **C-8 (VR6D)** OSCILLOSCOPE TRIG: MANUAL H: 0.1ms/cm V: 500mV/cm AC Coupling	1. Connect the scope to OUTPUT JACK or R21 (JACK BOARD). 2. Adjust VR4 (VR6) (PW) for the 500μs pulse length.  	Apply predetermined control voltages (frequency, PW) to the VCO.	Pulse width to the specified duty ratio.
7. LINEARITY			
PANEL MODE UPPER (2 VOICE) LOWER (4 VOICE) BANK/NUMBER **D-1 (VR3A)** **D-2 (VR5A)** **D-3 (VR3B)** **D-4 (VR5B)** **D-5 (VR3C)** **D-6 (VR5C)** **D-7 (VR3D)** **D-8 (VR5D)** OSCILLOSCOPE H: 0.1ms/cm V: 500mV/cm AC Coupling	1. Connect the scope between TP-3 and TP0 (GND). 2. Adjust VR3 (VR5 LINEARITY) for straightness by aligning signals to the markers. Increase V sensitivity for fine adjustment. Press the BANK/NUMBER button again when the detune is too great for adjustment.  	Enable Compu-Tune feature (for WIDTH and FREQ) upon pressing BANK/NUMBER, then apply control voltages to the VCO in 8 steps. Measuring the result frequency, present detune data at TP-3.	Linearity of VCO.
8. X MOD			
PANEL MODE UPPER (2 VOICE) LOWER (4 VOICE) BANK/NUMBER **E-1 (VR7A)** **E-2 (VR7B)** **E-3 (VR7C)** **E-4 (VR7D)** OSCILLOSCOPE H: 0.1ms/cm V: 500mV/cm AC Coupling	1. Connect the scope between TP-3 and TP0 (GND) of MOD BOARD. 2. Adjust VR7 (X MOD) for flattening the part (*) as shown in Fig. 7.  Note: The part can be a positive going pulse.	Synchronize the VCO-2 with the VCO-1, then apply the VCO-2 output (amount equal to that when CROSS MOD MANUAL is 5) to the VCO-1. Present at TP-3 the difference between an ideal and the actual VCO-1 output frequencies.	Prevention of unfavorable modulation signals.

BENDER BOARD

1.			
BANK/NUMBER **F-1 (VR1)** **F-2 (VR2)** OSCILLOSCPE H: 0.1ms/cm V: 500mV/cm AC Coupling	1. Connect the scope between TP-3 and TP-0 of either MOD BOARD. 2. Adjust VR1 (VR2) in the same manner as in 8. X MOD. The BENDER lever must be at the neutral position.	Present at TP-3 the difference between the frequencies from the VCO while placing a ground intermittently to the BEND IN of the VCO.	BENDER output to 0.

NOTE: Designations for extention-lines VRs and TPs shown below are applicable to all PCB revisions.
Some PCBs have wrong designation(s).