TROUBLESHOOTING GUIDE

VIOS COMPUTER

VIOS does not answer

a. Check J1 pin 6 for +5vDC
   If no, check wiring from CPU J11 to VIOS J1
b. Check dip switch #1 and 4 should be on, 2 & 3 off
c. Check J1 pin 9 for Logic high when enabling
   If no, check U40 (CPU) pin 3
   If yes, check wiring from CPU to VIOS
   If no, replace U40
d. Check base Q3 for approximately 3.5vDC
   If no, check Q4 or Q# for emitter base short
   If yes, check emitter Q3 for low
   If no, replace Q3
   If collector is low, check Q1 collector for 5vDC
   If no, check emitter for 5vDC
   If yes, replace Q1
e. Check serial communications signals from CPU on IC 8 (3,4,10,11). Replace IC 8 if necessary
f. Check cathode D2 for 5vDC
   If no, replace D2 or Q5
g. Check emitter Q5 for 5vDC
   If no, check R8, Q5, replace as necessary
h. Check IC 2 pin 8 for 5vDC
   If no, check continuitybetween that and +C1
i. Check IC 2 pin 37 for 1M HZ clock signal
   If no, check IC 4, Y1, C9, and C10 replace if necessary
j. Check IC 2 pin 40 for logic high
   If no, check IC 4 pin for high
   If yes, replace IC 4
   If no, check C8, R14, D4 replace if necessary
k. Check IC 2 pin 39 for clock signal
   If no, but clock in is good, replace IC 2

VIOS OK BUT NO SOUND FROM SPEAKERS

a. Check J1 pin 8 for 12vDC
   If no, check continuity between VIOS and MAIN CPU J11 (pin 8)
b. Check IC 15 and 16 pin 6 for 12vDC
   If no, check base Q2 for approximately 2vDC
   If good, check Q2 emitter for 12vDC replace Q2 if signal is present

If good, replace Q4

Check Q10 (Speech) or Q6 (Sound) emitter for 12vDC

If good but no output on collector, check Q11 (Speech) or Q7 (Sound) for proper switching operation

c. Check IC 15 or 16 pin 3 for audio signals when VIOS should be speaking or playing music. Check R39 or R42 to make sure signal is getting through. If the signal is present on pin 3, but no sound, replace either IC 15 or 16. If no signal is present, check IC 9 pin 1

If no, replace IC 9 or check the ROM chips to insure good setting, etc.

TROUBLESHOOTING GUIDE

PROPULSION COMPUTER

Procon does not answer

a. Check connector from J2 procon to J10 CPU for good contact and proper orientation
b. Check J2 pin 6 for 5vDC
   If no, check CPU J10 pin 6 for 5vDC
   If good, double check cable
c. Check IC 18 pin 13 for logic low when procon is enabled
   If no, check U40 CPU pin 4 for low
   If no, replace U40
   If good, check IC 18 (procon) pin 11 for high
   If no, replace IC 18
   If good, check base Q2 for approximately 3.5vDC
   If no, replace Q@, R4, or R27
   If good, check base Q1 for approximately .2 vDC
   If no, replace Q2, R5 or R3
   If good, check collector Q1 for 5vDC
   If no, replace Q1
d. Check IC 1 pin 8 for 5vDC
   If no, check 5vDC supply from collector Q1
e. Check IC 1 pin 37 for clock signal (1 M HZ)
   If no, check IC 3 associated clock circuitry
f. Check IC 1 pin 40 for logic high.
   If no, check IC 18 pin 9 for low
   If yes replace IC 18
   If no, check collector Q2 replace if necessary
   Check R1 for an open circuit
   If yes, replace R1
g. Check IC 1 pin 39 for clock output
   If no, replace IC 1
h. Check IC 1 pin 4 for a high
   If no, check R11 for open
   If yes, replace R11
   If no, replace ICS
i. Check IC 9 and 10 for proper serial signals replace if necessary
j. Check setting of dip switch. #2 should be on, all others off

Motor will not work

a. Check J1 pins 1 & 3 for +12vDC referenced to pins 2 or 4
   If no, check power supply board

b. Check J6 for pulse-width modulated 12vDC Pin 7(+) to 8(-) for left motor, pin 9 (+) to 10(-) for right motor
   If no, check relay L1 (L) or L2(R)
c. Check Q7 or Q8 base for pulses
   If yes, check Q7 or 8 collector for pulse
   If no, replace
   If no base pulses check opt 1 or 2 pin 5 for pulses
   If no, check pin 2 for pulses
   If yes, replace opt 1 or 2
   If no, check IC 17 pin 3 or 11 for pulses
   If yes, replace IC 17
   If no, replace IC 5

Bumpers do not work

a. Check connection at J4 for good fit and proper orientation
b. Check bumper switches. Do this with J4 disconnected. Referenced to gnd., the resistance is 0 ohm when the switches are pushed.
   Switch 1 (front) J4 pins 2 & 9
   Switch 2 (left) J4 pins 3 & 4
   Switch 3 (back) J4 pins 5 & 6
   Switch 4 (right) J4 pins 7 & 8
   If any are bad, check wiring to base
c. Check IC 16 pins 2,4,6,8,11,13,15,17 All should be high. If any are low check step b. or R12 for an open circuit

TROUBLESHOOTING GUIDE

MAIN COMPUTER

1. CPU appears to be dead (no display, etc.)
   a. Check U1 pin 8 for 5vDC
      If no, check power supply
   b. Check U1 pin 6 for logic high
      If no, check U15 pin 9 for logic high
      If no, check U15 pin 11 for a low
      If no, check U9 pin 13 for a high
      If no, check Battery Low Indicator circuit on SSS (U14 pin 3 should be high)
   c. Check U1 pin 4 for logic high
      If no, check U36 pin 7, U 31 pin 1, and U 30 pin 1
      If U36 pin 7 is low, check U36 pin 2 and associated keyboard and keyboard IR circuitry.
      If good, replace U36
      If U31 pin 1 is low, check sonar gate and reset circuitry
      If U30 pin 1 is low, check for 2 M HZ clock (refer to schematic) and 5vDC on pins 7 & 24 Check reset circuitry
   d. Check U1 pin 2 for logic high
      If no, check U15 pin 5 replace if necessary
   e. Check U1 pin 40 for logic high
      If no, check U8 pin 5 for low
      If no, check U9 pin 1 for high
      If no, check reset button, wiring, etc.
   f. Check U1 pin 37 for clock input. Check for a clean square wave.
      If no, check U7 pin 8
      If no, check U6 pin 10
      If no, replace U8, X1, C21 and/or C22
   g. Check U1 pin 39 & 3 for clock signal
      If no, but U1 pin 37 has clock, replace U1

2. CPU signals are good but still no display
   a. Make sure intensity control for display is on full
   b. Check U4 pins 9,7,5,3,12,14,16,18 for data signals
      If no, check U4 pins 11,13,15,17,8,6,4,2, for data signals
      If no, U29 for bent pins or other malfunctions
      If U4 input signal is good (9,7,5,etc.) but no output, check U4 pins 1 & 19 for pulsing signal
   c. Check U29 pin 20 for a logic low
      If no, check signals through U28, U8
   d. Check J2 connector for proper seating and orientation
   e. Check dip switch - insure 4 is on and all others are off

3. Ram test fails
   a. Check U21-27 pins 1 & 28 for 5 vDC
      If no, check Anode of D1 for 5 vDC
      If yes, replace D1
   b. Check U21-27 pin 26 for 5vDC
      If no, check base Q2 for approximately 3.5vDC
      Check collector Q2 for 5vDC If all are good replace Q2
   c. Check U21-27 pin 20 for pulsing logic
      If no, check U13 replace if necessary

4. Ram 6 fails
   a. Check U27 pin 20 for pulsing signal
      If no, check U28 pin 2 for pulsing
      If no, replace HC138 on the ROM board