

15.0 TROUBLESHOOTING

15.1 INTRODUCTION

The symptom--fix guide's information is based on our experience repairing Kaypro computers. The guide is a summary of the records that Kaypro Repair maintains on each computer received.

Fixes for each problem noted are presented in **descending** order of occurrence.

15.2 KAYPRO 2 AND 4 SYMPTOM—FIX GUIDE

CONDITION	POSSIBLE CAUSE	RECOMMENDED ACTION
No power, no lights, no video	Power cord not plugged in	Check all cord connections
	Fuse is blown	Replace fuse
	Mainboard not getting power	Check harness connections; check for proper voltages; replace either harness or power supply
	Defective mainboard	Replace mainboard
	Defective fuse holder	Replace fuse holder
	Power switch shorted internally	Replace power switch
	Power supply jumpered for wrong supply	Correct jumpering on power supply
	Defective power supply	Replace power supply
	Defective harness	Replace harness
Fuse blows when power is turned on	Defective power supply	Disconnect all modules from power supply; replace power supply if fuse still blows
	One module has a short	Disconnect all modules, replace fuse, and re-connect modules, one at a time, until fuse blows. Replace that module
	Defective harness	Replace harness
High-pitched squeal or "chirp"	One module is shorted	Unplug modules, one at a time, from the harness. Replace the module whose unplugging causes the noise to stop

KAYPRO 2 AND 4 SYMPTOM—FIX GUIDE (CONT'D)

CONDITION	POSSIBLE CAUSE	RECOMMENDED ACTION
Power LED flickers	Shorted module	Disconnect modules from power, one at a time, until LED stays on; replace module whose unplugging caused LED to stay on.
	Defective power supply	Replace power supply
	Defective harness	Replace harness
No video display, or poor quality display	Brightness not adjusted	Turn up brightness knob on rear of chassis; adjust brightness pot on CRT board, if necessary
	CRT not connected	Check all connections to CRT; be sure plug on rear of CRT tube is square
	Defective CRT	Replace CRT assembly
	Defective mainboard	Replace mainboard
	Defective power supply	Replace power supply
	Defective harness	Replace harness
Video is on, but screen is filled with "garbage" characters	Defective mainboard	Replace mainboard
	Reset harness shorted to chassis	Check lugs of reset button for grounding to inside of chassis
	Defective reset harness	Replace reset harness

KAYPRO 2 AND 4 SYMPTOM—FIX GUIDE (CONT'D)

CONDITION	POSSIBLE CAUSE	RECOMMENDED ACTION
"Raster" (horizontal lines) on video	Brightness not adjusted properly	Turn up brightness knob on back of chassis; adjust brightness pot on CRT board if necessary
	Loose connection from mainboard or power supply	Check black plug from power supply to CRT board, 4-pin jumper from main board to CRT board; check that plug on rear of CRT tube is square
Strange video image	Short in brightness-adjusting knob	Check for shorts between wires in rear of brightness-adjusting knob
	Defective mainboard	Replace mainboard
Missing characters on video display	Defective mainboard	Replace mainboard
	Defective CRT	Replace CRT assembly
Will not boot	Defective diskette	Change diskettes
	Diskette has no system image	Change diskettes; use a diskette with a known good system image
	Wrong CP/M for model of machine	Check that you're not trying to boot a KP 2 with a KP 4 CP/M (KP 4 WILL boot a KP 2 CP/M)
	Defective drive B	Unplug data cable from drive B, and reset machine; if it boots, replace drive B
	Defective mainboard	Replace mainboard
	Defective drive A	Replace drive A
	Defective data cable	Replace data cable

KAYPRO 2 AND 4 SYMPTOM—FIX GUIDE (CONT'D)

CONDITION	POSSIBLE CAUSE	RECOMMENDED ACTION
Both drive LEDs are on, won't boot	Problem on power-up	Reset machine
	Diskette has no CP/M	Try known good sysgenned diskette
	Defective mainboard	Replace mainboard
	Select jumpers on drives incorrect	Check select jumpers
Drive A LED only on during reset	Drive select jumpering incorrect	Check jumpering on drive A
No LED on drive A at any time	Data cable poorly connected	Check all connections on data cable
	Defective data cable	Replace data cable
	Defective drive A	Replace drive A
	Defective mainboard	Replace mainboard
Computer boots CP/M, but no A> prompt appears	Defective diskette	Try known good, sysgenned diskette
	Defective mainboard	Replace mainboard
Rattling sound from drive when accessing	Defective drive	Replace the diskette drive
	Defective mainboard	Replace mainboard

KAYPRO 2 AND 4 SYMPTOM—FIX GUIDE (CONTINUED)

CONDITION	POSSIBLE CAUSE	RECOMMENDED ACTION
Drive will not step through all tracks on diskette	Drive connectors loose	Check all connectors on rear of drive, esp. P12 (Tandon drives)
	Defective mainboard	Replace mainboard
	Defective drive	Replace diskette drive
	Defective data cable	Replace data cable
Errors on either drive during COPY	Defective diskette	Change the diskette (if problem is on drive B, insert another blank diskette; if on drive A, try to copy from a new master)
	Defective disk drive	Replace diskette drive
	Defective mainboard	Replace mainboard
No output to parallel printer	No power to printer	Check that printer is plugged in, and selected
	Poor cable connection	Check all cable connections from computer to printer
	Printer is assigned as serial by STAT	Use STAT to assign printer device as parallel, type: STAT LST:=LPT:
	Defective mainboard	Replace mainboard
No output to serial printer	No power to printer	Check that printer is plugged in and selected
	Poor cable connection	Check all cable connections from computer to printer; also check serial port connector pins for contamination
	Printer is assigned as parallel by STAT	Use STAT to assign printer device to serial; type: STAT LST:=TTY:

KAYPRO 2 AND 4 SYMPTOM—FIX GUIDE (CONTINUED)

CONDITION	POSSIBLE CAUSE	RECOMMENDED ACTION
No output to serial printer (cont'd)	Baud rate of printer does not match baud rate of computer	Use CONFIG to set baud rate for serial port
	Defective power supply	Check voltages (esp.-12 V) at power supply output; replace power supply
	Defective harness	Check voltages (esp.-12V) at main board power connector; replace harness
	Defective mainboard	Replace mainboard
No characters on video when keys struck on keyboard	Defective keyboard coil cord	Replace coil cord
	Defective keyboard	Replace keyboard
	Keyboard connector on mainboard defective	Check for shorted contacts on keyboard plug; esp. soldering to main board
	Defective mainboard	Replace mainboard
Wrong characters or too many characters appear when a key is struck	Defective keyboard	Replace keyboard
	Defective mainboard	Replace mainboard (if "^@^@@" appears, replace 8116 IC on mainboard)

15.3 KAYPRO 10 SYMPTOM—FIX GUIDE

IMPORTANT NOTE

Do not proceed with troubleshooting a Kaypro 10 until you verify that the computer has EPROM number 81-302-n (installed at the factory), or has been upgraded in the field with kit number 81-303.

This note only applies to Kaypro 10 computers with the 81-180-n mainboard; NOT to the Kaypro 10 computers with the 81-582-n mainboard.

CONDITION	POSSIBLE CAUSE	RECOMMENDED ACTION
No power, no lights, no video	Power cord not plugged in	Check all cord connections
	Fuse is blown	Replace fuse
	Mainboard not getting power	Check harness connections, then check for proper voltages from power supply; replace either harness or power supply
	Defective mainboard	Replace mainboard
	Defective fuse holder	Replace fuse holder
	Power switch shorted internally	Replace power switch
	Power supply jumpered for wrong supply voltage	Correct jumpering on power supply
	Defective power supply	Check for proper voltage output at power supply harness connector; replace power supply
	Defective harness	Replace harness
Fuse blows when power turned on	Defective power supply	Replace power supply
	One module has a short	Disconnect all modules, replace fuse, and re-connect one by one until fuse blows again; replace it
	Defective harness	Replace harness

KAYPRO 10 SYMPTOM—FIX GUIDE (CONT'D)

CONDITION	POSSIBLE CAUSE	RECOMMENDED ACTION
High-pitched squeal or "chirp" upon power-on	One module is shorted	Unplug modules, one at a time, from the harness. Replace the module whose unplugging causes the noise to stop.
Power LED flickers	Shorted module	Disconnect modules from power one at a time until LED stays on; replace module whose unplugging causes LED to stay on
	Defective power supply	Replace power supply
	Defective harness	Replace harness
No video display, or poor quality display	Brightness not adjusted	Turn up brightness knob on rear of chassis; turn up brightness pot on CRT board, if necessary
	CRT not connected	Check all connections to CRT; ensure CRT tube plug is square
	Defective CRT	Replace CRT assembly
	Defective mainboard	Replace mainboard
	Defective power supply	Replace power supply
	Defective harness	Replace harness
Extra pixels on video	Defective mainboard	Replace mainboard
	Defective CRT	Replace CRT assembly
Inverse video only	Defective mainboard	Replace mainboard
	Defective CRT	Replace CRT assembly

KAYPRO 10 SYMPTOM—FIX GUIDE (CONT'D)

CONDITION	POSSIBLE CAUSES	RECOMMENDED ACTION
No graphics on video	Damaged system image	Run PUTSYS and PUTOVL
	Defective mainboard	Replace mainboard
	Defective CRT	Replace CRT assembly
No video; drives running	Poor cable connection	Check all cable connections, (esp. to/from video harness plug)
	Defective mainboard	Replace mainboard
	Defective CRT	Replace CRT assembly
	Elston CRT: fuse blown	Check continuity of pico-fuse on Elston video board (just above power connector) If open, replace
Hard drive boots, but no cursor on video	Defective system image	Run PUTSYS and PUTOVL from the diskette drive, push RESET
	Defective mainboard	Replace mainboard
Diskette drive boots, but no cursor on video	Defective system image on diskette	Run GENFLPY on the diskette; push RESET
	Defective mainboard	Replace mainboard
	Defective drive	Replace diskette drive
Diskette drive won't boot; or BDOS error on diskette drive	Diskette not centered	Remove diskette, center diskette in its jacket; try again
	No system image on diskette	Run GENFLPY on the diskette; push RESET
	Defective diskette	Try a known good diskette with a known good system image

KAYPRO 10 SYMPTOM—FIX GUIDE (CONT'D)

CONDITION	POSSIBLE CAUSE	RECOMMENDED ACTION
Diskette drive won't boot; or BDOS errors	Poor cable connection	Check all cable connections; esp. those to/from drives and the controller board
	No system image	Run GENFLPY
	Incorrect cable orientation	Verify that all cables are oriented properly
	Defective mainboard	Replace mainboard
	Defective drive	Replace diskette drive
Diskette drive won't format a disk	Diskette off center	Ensure that diskette is centered within its jacket
	Defective diskette drive	Replace diskette drive
	Defective mainboard	Replace mainboard
Diskette drive has BDOS errors or won't work if warm	Defective drive heads	Replace diskette drive
	Defective mainboard	Replace mainboard
Diskette drive makes a rattling noise, and won't boot	Defective diskette drive	Replace diskette drive
	Defective mainboard	Replace mainboard
High-pitched whine when diskette drive runs	Defective diskette drive ("singing heads")	Replace diskette drive

KAYPRO 10 SYMPTOM—FIX GUIDE (CONT'D)

CONDITION	POSSIBLE CAUSE	RECOMMENDED ACTION
Hard drive will not boot; or boots with "System Status 02" ("Read Fault") message	Machine not upgraded	Verify installation of eprom number 81-302-x (at the factory), or kit 81-303; install if needed
	Poor cable connection	Check all cable connections
	Incorrect cable orientation	Verify that all cables are oriented properly
	System image degraded	Boot on a disk in the diskette drive; then log onto hard drive. Run FINDBAD (or CHECK on cylinders 0 and 1) if no errors are found, run PUTSYS and PUTOVL
	Defective controller board	Replace controller board
	Degraded format on hard disk	Boot on a disk in the diskette drive; run FORMAT on entire hard drive; then run PUTSYS and PUTOVL
	Defective mainboard	Replace mainboard
	Defective hard drive	Replace hard drive
	Defective power supply	Replace power supply

Except in the case of an obvious head crash or brake assembly failure, ALWAYS suspect other modules first when a defect appears to be within the hard drive.

No output to parallel printer	No power to printer	Check that printer is plugged in, and selected
	Poor cable connection	Check all cable connections from computer to printer
	Printer is assigned as serial by STAT	Use STAT to assign printer device as parallel; type: STAT LST:=LPT:
	Defective mainboard	Replace mainboard

KAYPRO 10 SYMPTOM—FIX GUIDE (CONT'D)

CONDITION	POSSIBLE CAUSE	RECOMMENDED ACTION
No output to serial printer	No power to printer	Check that printer is plugged in and selected
	Poor cable connection	Check all cable connections from computer to printer; also check serial port connector pins for contamination
	Printer is assigned as parallel by STAT	Use STAT to assign printer device to serial; type: STAT LST:=TTY:
	Baud rate of printer does not match baud rate of computer	Use CONFIG to set baud rate for serial port
	Defective power supply	Check voltages (esp.-12 V) at supply output; replace supply
	Defective harness	Check voltages (esp.-12V) at main board power connector; replace harness
	Defective mainboard	Replace mainboard

KAYPRO ROBIE SYMPTOM—FIX GUIDE

CONDITION	POSSIBLE CAUSE	RECOMMENDED ACTION
No video display	Defective CRT	Replace CRT assembly
	Defective mainboard	Replace mainboard
	Defective power supply	Replace power supply
	Defective harness	Replace harness
Video is on, but screen is filled with "garbage" characters	Defective mainboard	Replace mainboard
	Reset harness shorted to chassis	Check lugs of reset button for grounding to inside of chassis
	Defective reset harness	Replace reset harness
"Raster" (horizontal lines) on video	Brightness not adjusted properly	Turn up brightness knob on back of chassis; adjust brightness pot on CRT board if necessary
	Loose connection from mainboard or power supply	Check black plug from power supply to CRT board, 4-pin jumper from mainboard to CRT board; check that plug on rear of CRT tube is square
Strange video image	Defective mainboard	Replace mainboard
Missing characters on video display	Defective mainboard	Replace mainboard
Will not boot	Defective diskette	Change diskettes
	Diskette has no system image	Change diskettes; use a diskette with a known good system image
	Wrong diskette for model of machine	ROBIE will only boot on 17 sector, 192 TPI diskettes
	Defective drive B	Unplug data cable from drive B, and reset machine; if it boots, replace B drive

KAYPRO ROBIE SYMPTOM—FIX GUIDE (CON'T.)

CONDITION	POSSIBLE CAUSE	RECOMMENDED ACTION
No video display	Defective CRT	Replace CRT assembly
	Defective mainboard	Replace mainboard
	Defective power supply	Replace power supply
	Defective harness	Replace harness
Video is on, but screen is filled with "garbage" characters	Defective mainboard	Replace mainboard
	Reset harness shorted to chassis	Check lugs of reset button for grounding to inside of chassis
	Defective reset harness	Replace reset harness
"Raster" (horizontal lines) on video	Brightness not adjusted properly	Turn up brightness knob on back of chassis; adjust brightness pot on CRT board if necessary
	Loose connection from mainboard or power supply	Check black plug from power supply to CRT board, 4-pin jumper from mainboard to CRT board; check that plug on rear of CRT tube is square
Strange video image	Defective mainboard	Replace mainboard
Missing characters on video display	Defective mainboard	Replace mainboard
Will not boot	Defective diskette	Change diskettes
	Diskette has no system image	Change diskettes; use a diskette with a known good system image
	Wrong diskette for model of machine	ROBIE will only boot on 17 sector, 192 TPI diskettes
	Defective drive B	Unplug data cable from drive B, and reset machine; if it boots, replace B drive

KAYPRO ROBIE SYMPTOM—FIX GUIDE (CON'T.)

CONDITION	POSSIBLE CAUSE	RECOMMENDED ACTION
Will not boot	Defective mainboard	Replace mainboard
	Defective drive A	Replace drive A
	Defective data cable	Replace data cable
Both drive LEDs are on, won't boot	Problem on power-up	Reset machine
	Diskette has no CP/M	Try known good sysgenned diskette
	Defective mainboard	Replace mainboard
	Select jumpers on drives incorrect	Check select jumpers
Drive A LED only on during reset	Drive select jumpering incorrect	Check jumpering on drive A
No LED on drive A at any time	Data cable poorly connected	Check all connections on data cable
	Defective data cable	Replace data cable
	Defective drive A	Replace drive A
	Defective mainboard	Replace mainboard
Computer boots CP/M, but no master menu appears	Defective diskette	Try known good, sysgenned diskette
	Defective drive A	Replace drive A
	Defective mainboard	Replace mainboard
Rattling sound from drive when accessing	Defective drive	Replace the diskette drive
	Defective mainboard	Replace mainboard

KAYPRO ROBIE SYMPTOM—FIX GUIDE (CONT'D.)

CONDITION	POSSIBLE CAUSE	RECOMMENDED ACTION
Drive will not step through all tracks on diskette	Drive connectors loose	Check all connectors on rear of drive
	Defective mainboard	Replace mainboard
	Defective drive	Replace diskette drive
	Defective data cable	Replace data cable
Errors on either drive during COPY	Defective diskette	Change the diskette (if problem is on drive B, insert another blank diskette; if on drive A, try to copy from a new master)
	Defective disk drive	Replace diskette drive
	Defective mainboard	Replace mainboard
No output to parallel printer	No power to printer	Check that printer is plugged in, and selected
	Poor cable connection	Check all cable connections from computer to printer
	Printer is assigned as serial by STAT	Use STAT to assign printer device as parallel, type: STAT LST:=LPT:
	Defective mainboard	Replace mainboard
No output to serial printer	No power to printer	Check that printer is plugged in and selected
	Poor cable connection	Check all cable connections from computer to printer; also check serial port connector pins for contamination

KAYPRO ROBIE SYMPTOM—FIX GUIDE (CONT'D.)

CONDITION	POSSIBLE CAUSE	RECOMMENDED ACTION
No output to serial printer (cont'd)	Printer is assigned as parallel by STAT	Use STAT to assign printer device to serial; type: STAT LST:=TTY:
	Baud rate of printer does not match baud rate of computer	Use CONFIG to set baud rate for serial port
	Defective power supply	Check voltages (esp.-12 V) at power supply output; replace power supply
	Defective harness	Check voltages (esp.-12V) at main board power connector; replace harness
	Defective mainboard	Replace mainboard
No characters on video when keys struck on keyboard	Defective keyboard coil cord	Replace coil cord
	Defective keyboard	Replace keyboard
	Keyboard connector on mainboard defective	Check for shorted contacts on keyboard plug; esp. soldering to main board
	Defective mainboard	Replace mainboard
Wrong characters	Defective keyboard	Replace keyboard

15.5 KAYPRO 2/84 AND KAYPRO 2X SYMPTOM--FIX GUIDE

See KAYPRO 2 AND 4 SYMPTOM--FIX GUIDE for the 2/84. The problems and solutions will not be different.

For troubleshooting information on the KAYPRO 2X, see the KAYPRO 2 AND 4 SYMPTOM--FIX GUIDE for all problems.

15.6 KAYPRO 4X SYMPTOM-FIX GUIDE

For help in troubleshooting the KAYPRO 4X, see the KAYPRO ROBIE SYMPTOM—FIX GUIDE.