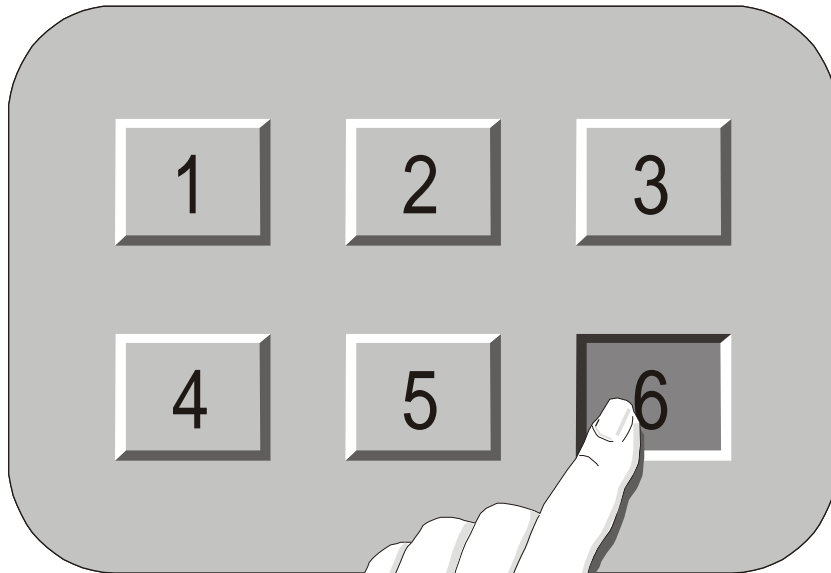





CHAPTER



Troubleshooting

	<p>CAUTION : Do not remove or install any connector when power is turned on. Doing so will damage the CPU board assembly or the hard disk drive and void the warranty.</p>
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Touchmaster® Infinity uses complex electronic components that are sensitive to static electricity. The following precautions must be observed and followed prior to handling any electronics.

- Ensure that the AC power to the cabinet is turned off prior to servicing.
- Discharge any static electricity build up in your body by touching any unpainted metal on the cabinet, such as the chain lug. This is to be done *before* touching or handling the assemblies.
- Handle the electronic assemblies by their edges and store them in an anti-static area when not in active use. Anti-static bags are to be used to store or transport the CPU Board Assembly.
- *Do not* touch, remove, or connect any electronic assemblies when the AC power is on. Doing so will damage electronic assemblies and void the warranty.
- Always replace ground wires, shields, safety covers, etc. when maintenance or service is completed. Ensure that all ground and mounting screws are installed and tightened firmly.

Touchmaster® Infinity Does Not Start

Symptom	Problem	Suggested Solution
<ul style="list-style-type: none"> • Machine appears non-functional. • No audio • No fan • No video display 	Lack of electricity	<ol style="list-style-type: none"> 1. Check that power switch is set to ON. 2. Verify that line cord is plugged in. 3. Try another power outlet. 4. Reset circuit breaker at rear of cabinet.
	Poor AC connection	<ol style="list-style-type: none"> 1. Check airflow out of cabinet near fan. (This does not mean that voltages or signals are correct, but it indicates that DC power is available from power supply.) 2. Turn off AC power. 3. Remove line cord cable clamp. 4. Test line cord, power plug and IEC connector for breaks or damage. 5. Verify continuity of each wire in cord. 6. Fully seat IEC connector into mating cabinet receptacle. 7. Replace cable clamp and its screw. 8. Ensure cabinet wiring harness connectors are fully seated in corresponding AC power wiring harness connectors. 9. Verify AC wire connections at power supply terminals.
	Tripped circuit breaker	<ol style="list-style-type: none"> 1. Examine AC circuit breaker on cabinet. 2. If circuit was broken, reset button protrudes from circuit breaker. 3. Press button in until it latches to restore power.
	Faulty AC line filter	<ol style="list-style-type: none"> 1. Examine AC line fuse on Power Supply Board Assembly. 2. Replace faulty fuse with identical fuse of proper voltage and current rating. 3. Connect line cord and verify operation. 4. Fully seat AC plug in outlet. 5. Verify AC line voltage is present. 6. Turn AC power on. 7. Check DC wiring harness and connectors if breaker opens circuit again.

Startup Problems *continued*

Symptom	Problem	Suggested Solution
<ul style="list-style-type: none"> Machine appears non-functional, but currency acceptor price indicator is illuminated. 	Poor connection	<ol style="list-style-type: none"> Turn AC power off. Unplug AC line cord. Unlock and remove Rear Door and Top Cover Assembly. Inspect CPU Board Assembly. Ensure DC Power connector is attached and fully seated onto mating board connector. Check other wiring harness connectors in same way.
	Poor DC power	<ol style="list-style-type: none"> Turn AC power on. Using 20-Volt DC range on a digital voltmeter, measure DC voltages present at power connector pins. Refer to Cabinet Wiring Diagram for specific wiring information and voltage limits.
	Poor AC power	<ol style="list-style-type: none"> Using 2-Volt AC range on a digital voltmeter, measure same DC voltages as above. Any reading here indicates that power supply voltages are unstable and may contain ripple or noise.
	System errors	<ol style="list-style-type: none"> Verify that Touchmaster[®] Infinity completes Power-Up Self-Test sequence without errors. Note errors and/or failures found during tests. Remove Side Cover Assembly. Enter Menu System by pressing TEST pushbutton. From MAIN MENU, choose DIAGNOSTICS MENU, then VIDEO TEST. Perform tests, then proceed to HARDWARE TEST, and SOFTWARE TEST. Use these tests to check function of components and software.

Currency Does Not Start Game

Symptom	Problem	Suggested Solution
<ul style="list-style-type: none"> Machine does not accept currency or tokens. Machine cannot be started. Audio present Video present 	Bad currency	<ol style="list-style-type: none"> Turn AC power off. Unlock and remove Side Cover Assembly. Empty cash vault and DBV. Inspect revenue for counterfeit currency. Check vault and remove items that block path from coin mechanism.
	Blocked coin mechanism	<ol style="list-style-type: none"> Turn AC power off. Unlock and remove Side Cover Assembly. Check coin mechanism and DBV to ensure proper mounting. Remove coin mechanism and DBV and clear currency path.
	Unleveled coin mechanism	<ol style="list-style-type: none"> Verify coin mechanism is level. Ensure that connector is attached and fully seated. Repair or replace mechanism if bent or damaged. Ensure cables and wiring are connected to currency acceptor or coin mechanism.
<ul style="list-style-type: none"> Machine does not accept currency or tokens. Audio present Video present 	Software setting	<ol style="list-style-type: none"> Enter Menu System. At MAIN MENU, choose <u>GAME/COINAGE SETUP</u>. Check maximum credit limit.
<ul style="list-style-type: none"> Machine accepts currency or tokens. Machine does not start. Audio present Video present 	Faulty coin mechanism	<ol style="list-style-type: none"> Unlock and remove Side Cover Assembly. Check each mechanism to ensure proper mounting. Verify that each release latch is in closed and locked position. Test known good and bad coins to see if mechanism accepts and rejects currency correctly. Enter Menu System. From MAIN MENU, choose <u>DIAGNOSTICS MENU</u>, then <u>HARDWARE TEST</u>, then <u>SWITCH TEST</u>. Use tests to confirm operation of each switch.
	Poor connection	<ol style="list-style-type: none"> Inspect to see if external coin door indicators (pricing, flashing arrows, etc.) are illuminated. Check connectors and cables for wiring continuity from CPU board connector to the coin door. Turn AC power off. Ensure that no parts or wires are caught in hinges or switch contacts.

Currency Problems *continued*

Symptom	Problem	Suggested Solution
	Incorrect program	Examine currency acceptor for programmable features. Some devices require operator adjustment for each specific type of currency recognized. Refer to manufacturer's literature for assistance in setting acceptor features to required values.
	Faulty switch	Check for continuity in each suspect switch connection (Common to Normally Open or Common to Normally Closed). Replace faulty switches (bent levers, broken actuators, etc.).
	Defective mechanism	Verify that each mechanism operates properly by placing in a known good unit.
<ul style="list-style-type: none"> • Machine accepts currency or tokens. • Number of credits per coin or bill is incorrect. • Credits are sometimes not given for valid currency. 	System error	<ol style="list-style-type: none"> 1. Unlock and remove Side Cover Assembly. 2. Enter Menu System by pressing the TEST pushbutton. 8. From MAIN MENU, choose DIAGNOSTICS MENU, then HARDWARE TEST, then SWITCH TEST. 3. Use these tests to confirm operation of each switch.
	Incorrect pulse width	<ol style="list-style-type: none"> 1. From MAIN MENU, choose GAME/COINAGE SETUP and verify that currency acceptor is enabled. 2. Consult manufacturer's literature and adjust pulse width to <i>long</i> setting. 3. Verify that currency acceptor operates correctly by placing in a known good unit.
	Incorrect acceptor program	Refer to manufacturer's literature. Set acceptor features to required values.
	Poor wiring	<ol style="list-style-type: none"> 1. Check that cabinet wiring is correct. Ensure that coin meter and coin switches are properly connected. Refer to Cabinet Wiring Diagram for specific information.
	Defective acceptor	Verify that each acceptor operates properly by placing in a known good unit.

Touchscreen Problems

Symptom	Problem	Suggested Solution
<ul style="list-style-type: none"> • Touchscreen is not accurate for two or more players. 	Dirty screen	<p>Clean entire cabinet frequently, especially video screen glass and Touchscreen area. It is not necessary to switch off AC power to clean Touchmaster® Infinity. Apply an isopropyl alcohol and warm water to a clean cloth or sponge, then use this to wipe surface. <i>Do not apply cleaner directly on unit.</i> Liquids could drip into circuits and cause erratic operation.</p> <p>Turn off AC power. Remove monitor bezel (refer to Service chapter for instructions). Clean Touchscreen, especially areas normally hidden by bezel.</p>
	Overzealous touching	Warn players to use only one finger at a time. Simultaneous touches confuse Touchscreen Controller.
	Players need grounding	Some players may find Touchscreen response improves when they touch the metal surface of cabinet with one hand as they operate the Touchscreen with other hand.
<ul style="list-style-type: none"> • Touchscreen chooses incorrect items. • Touchscreen does not respond when certain areas are touched. 	Incorrect calibration	<ol style="list-style-type: none"> 1. Unlock and remove Side Cover Assembly. 2. Enter Menu System by pressing TEST pushbutton inside coin vault. 3. From MAIN MENU, choose CALIBRATE TOUCHSCREEN. Calibrate, then test calibration. 4. Confirm that the Touchscreen is detecting and properly tracking finger position in all areas of the screen.
	Bad controller	Ensure Touchscreen Controller operates properly by placing in a known good unit.
<ul style="list-style-type: none"> • Touch controls are intermittent or completely non-functional. • Machine starts normally. 	Poor connection	<ol style="list-style-type: none"> 1. Unlock and remove Side Cover Assembly. 2. Enter Menu System by pressing TEST pushbutton inside coin vault. 3. From MAIN MENU, select DIAGNOSTICS MENU, then choose HARDWARE TEST and then SWITCH TEST. 4. Confirm operation of each switch in Video Game Machine.

Touchscreen Problems *continued*

Symptom	Problem	Suggested Solution
	CPU board power	Unlock and remove Rear Door and Top Cover Assembly. Observe CPU Board Assembly and touch the screen. You will see a glow from a red LED if touch is sensed.
	Poor Controller power	You can see a glow from a green LED on the end of Touchscreen Controller (underneath the CPU) if there is voltage in these circuits. Refer to LED Indicator Status Chart (Wiring Chapter). If the LED fails to glow, check power connection to Controller.
	Poor Controller connection	<ol style="list-style-type: none"> 1. Turn AC power off. Remove Rear Door and Top Cover Assembly. Pivot Deflection Board Bracket. 2. Check that Touchscreen Controller Cable is fully seated in connector of Touchscreen Controller.
	Bad controller	Ensure Touchscreen Controller operates properly by placing in a known good unit.
<ul style="list-style-type: none"> • Touchscreen does not calibrate. 	Bad controller or Touchscreen	<ol style="list-style-type: none"> 1. Ensure that Touchscreen Controller operates properly by placing in a known good unit. 2. If Controller works well in a known good unit, replace Touchscreen.
<ul style="list-style-type: none"> • "Touch Controller Not Found" error message 	Poor connection	<ol style="list-style-type: none"> 1. Turn AC power off. Remove Rear Door and Top Cover Assembly. Pivot Deflection Board Bracket. 2. Check that Touchscreen Controller Cable is fully seated in connector of Touchscreen Controller. 3. Ensure that Touchscreen Controller operates properly by placing in a known good unit.

Audio Problems

Symptom	Problem	Suggested Solution
<ul style="list-style-type: none"> • Audio is non-functional. • Video present • Machine appears to operate normally. 	Volume set too low in software	<ol style="list-style-type: none"> 1. Unlock and remove Side Cover Assembly. 2. Enter Menu System by pressing TEST pushbutton inside coin vault. 3. From MAIN MENU, observe Volume Fixed level. 4. Verify that volume is not set at zero. Change level to maximum to make sounds audible.
	Volume set too low on CPU board assembly (some models)	<ol style="list-style-type: none"> 1. Select an endlessly repeating sound track. 2. With screen audio level at maximum, turn CPU Board Assembly master volume control full up. Some models do not have master volume control. 3. Reduce master volume until sound is as loud as possible without distortion. 4. Use screen adjustments to set a comfortable playing level.
	Software error	<ol style="list-style-type: none"> 1. While in SOUND TEST menu, select GAME SOUNDS and listen to sounds to confirm operation of audio amplifier and speaker. 2. Note if any sounds are unintelligible voice messages, strange noises, missing, etc.
	Faulty speaker wiring	<ol style="list-style-type: none"> 1. Turn AC power off. 2. Verify correct cabinet wiring for this Machine. 3. Ensure that speaker is properly connected to audio output wires from the audio connector. 4. Verify speaker continuity. 5. Refer to Cabinet Wiring Diagram for specific wiring information.
	Missing DC voltage	<ol style="list-style-type: none"> 1. Turn AC power off. 2. Using 20-Volt DC range on a digital voltmeter, measure DC voltages at Power connector pins. 3. Verify +5V, -5V and +12V sources. 4. Refer to Cabinet Wiring Diagram for specific wiring information and voltage limits.
	Ripple in DC supply	Using 2-Volt AC range on a digital voltmeter, measure same DC voltages as above. Any reading here indicates that power supply voltages are unstable and may contain ripple or noise.
	Bad CPU board	Verify proper operation of CPU Board Assembly by placing in a known good Machine.

Audio Problems *continued*

Symptom	Problem	Suggested Solution
<ul style="list-style-type: none"> • Audio distorted or muffled • Constant low hum present • Sounds missing 	System error	<ol style="list-style-type: none"> 1. Unlock and remove Side Cover Assembly. 2. Enter Menu System by pressing TEST pushbutton inside the coin vault. 3. From the SYSTEM SETUP menu, go to <u>DIAGNOSTICS</u> and choose <u>SOUND TESTS</u>. These tests verify some functions of the audio circuits.
	Wrong speaker	<ol style="list-style-type: none"> 1. Turn AC power off. 2. Unlock and remove cabinet cover. Locate the speaker. 3. Ensure that it is <i>full range</i> (100 to 10,000 Hz response) and rated for at least 15 watts continuous power.
	Poor connection	Inspect speaker and its wires. Ensure that no loose parts or wires are caught in speaker cone, terminals, mounting screws, or stuck to magnets.
<ul style="list-style-type: none"> • Sounds missing 	Poor wiring, bad ground	Check that cabinet wiring is correct for this Video Game Machine. Ensure all cabinet ground wires are connected. Refer to Cabinet Wiring Diagram for specific wiring information.
	Defective speaker	Verify that speaker operates properly by placing it in a known good unit.
	Defective amplifier	Temporarily connect a different speaker to Video Game Machine to test CPU Board Assembly audio amplifier operation.

Video Problems

Symptom	Problem	Suggested Solution
<ul style="list-style-type: none"> • Monitor non-functional • Audio present • Controls operate as expected. 	No power to monitor	<ol style="list-style-type: none"> 1. Unlock and remove Rear Door and Top Cover Assembly. Pivot Deflection Board Bracket. 2. Verify that AC Power is connected to the Video Monitor. 3. Inspect neck of the CRT under low light level conditions. 4. You can see a glow near the CRT base if there is voltage in the filament circuits. This does not mean that other voltages or signals are as they should be, but it does indicate that some of the monitor circuits are receiving power.
	Poor connection	<ol style="list-style-type: none"> 1. Turn AC power off. 2. Verify that video signal and the Remote Adjustment Board connectors are fully seated on the Video Monitor Board Assembly. 3. Check the other monitor connectors in same way. <i>Do not operate a monitor without a Remote Adjustment Board.</i>
	Faulty fuse	Examine AC line fuse on Video Monitor Board Assembly. If faulty, replace it with an identical fuse of the proper voltage and current rating.
	Bad settings	Check that the brightness (intensity) and contrast have not been set to their minimum levels.
	Defective monitor	Verify that the video monitor operates correctly by placing it in a known good Machine.
<ul style="list-style-type: none"> • Power-Up Self Test runs. • Game does not appear. • No audio 	System error	<ol style="list-style-type: none"> 1. Note and record any error messages that occur during self-test. 2. Turn AC power off. 3. Restore power after one minute. 4. Note and record any new messages that appear on the screen. 5. Unlock and remove Side Cover Assembly. 6. Enter Menu System by pressing TEST pushbutton inside coin vault. 7. From the SYSTEM SETUP menu, go to DIAGNOSTICS and choose VIDEO TEST. These tests verify some functions of video circuits.

Video Problems *continued*

Symptom	Problem	Suggested Solution
	Faulty DC voltage source	<ol style="list-style-type: none"> 1. Turn AC power on. 2. Using the 20-Volt DC range on a digital voltmeter, measure DC voltages present at the Power connector pins. 3. Refer to the Cabinet Wiring Diagram (Wiring Chapter) for specific wiring information and voltage limits. 4. Adjust the +5V source if it is variable.
	Ripple on DC supply pins	Using the 2-Volt AC range on a digital voltmeter, measure the same DC voltages as above. Any reading indicates that the supply voltages are unstable and may contain ripple or noise.
	Faulty power at CPU Board Assembly	Compare CPU Board Light Emitting Diode states with the CPU Indicator Chart (Wiring Chapter).
<ul style="list-style-type: none"> • Monitor does not lock onto signal. • Picture unstable • Colors are missing, etc. • Machine operates normally. • Picture wavers or rolls, has dark bars, uneven colors, etc. 	Poor connection	Check connectors and cables for wiring continuity from the CPU Board to the Video Monitor.
	Defective monitor	Verify that the Video Monitor operates correctly by placing it in a known good unit.
	Poor connection	<ol style="list-style-type: none"> 1. Check connectors and cables for wiring continuity from the CPU Board Assembly to Video Monitor. 2. Ensure that all cabinet ground wires are connected, especially at Video Monitor frame.
	Interference	Move cabinet away from machines, appliances, other Machines, etc. Some equipment emits very strong electrical or magnetic fields.
	Defective monitor	Verify that Video Monitor operates correctly by placing it in a known good Machine.

Miscellaneous

Symptom	Problem	Suggested Solution
<ul style="list-style-type: none"> Machine operates normally. Cabinet gets very warm after several hours of use. System may reset or freeze after time. 	Poor air circulation	<ol style="list-style-type: none"> 1. Check bottom and rear of cabinet for blocked airflow. Move Machine away from sources of heat. 2. Turn AC power off. 3. Apply high power vacuum cleaner to vent holes to remove dust. 4. Unlock and remove Rear Door. 5. Ensure all fans are connected and operate at full speed.
<ul style="list-style-type: none"> Touchscreen requires excessive recalibration to maintain Machine accuracy. 	Dirty screen	<ol style="list-style-type: none"> 1. Clean entire cabinet frequently, especially video screen glass and Touchscreen area. It is not necessary to switch off AC power to clean. 2. Apply an isopropyl alcohol and warm water to a clean cloth or sponge. 3. Use the sponge or cloth to wipe the surface. 4. <i>Do not apply the cleaner directly on unit.</i> Liquids could drip into circuits and cause erratic operation.
	Overzealous touching	Warn players to use only one finger at a time. Simultaneous touches confuse Touch Controller.
	Relocation	Repeat Calibrate and Calibrate Test sequence each time cabinet is relocated.
<ul style="list-style-type: none"> Error messages appear on screen. Machine does not work. No audio 	System error	<ol style="list-style-type: none"> 1. Check any assembly (RAM, ROM, battery, Touchscreen, etc.) identified in Error Message. 2. If errors seem to occur at random, try to determine what conditions are connected with appearance of message (i.e., time of day, when other equipment is turned off or on, when room temperature is elevated, only with certain players, periods of low or high humidity, etc.). 3. Call your authorized distributor for help with unresolved screen messages
<ul style="list-style-type: none"> "Security Key Error" message 	Security failure	<ol style="list-style-type: none"> 1. Check to see if security key is missing or incorrectly installed on board assembly. 2. Confirm that security key version matches software version.