

Section 1

Operational Overview and Installation

The 80960 tester is a tool for troubleshooting the electronics and major components of Game King or Vision Series machines.

The tester provides a means of exercising machine components away from the machine. A component such as the processor board, hopper, ticket printer, video monitor or coin-in mechanism that is suspected of malfunctioning can be exchanged for a known good component in order to return the machine to normal game play as quickly as possible. The component in question can then be taken to another area to be thoroughly checked using the tester.

IGT developed the 80960 tester to work with all Game King/Vision Series game types, providing diagnostic information about the processor board, bill validator, meters, printer, hopper, I/O circuit boards, speaker, video monitor and coin-in mechanism.

The following information is presented in this section.

- **Section 1.1, Tester Overview** – provides an overview of tester features and physical, electrical and environmental specifications.
- **Section 1.2, Lithium Battery Precautions** – describes precautions that should be taken when removing or disposing of a lithium battery.
- **Section 1.3, Warning Decals** – identifies international warning labels that may be present in the machine.
- **Section 1.4, Component Identification** – illustrates and defines major operating components of the tester.
- **Section 1.5, Tester Installation** – describes procedures for inspection, installation and functional verification of the tester.
- **Section 1.6, Tester Operation** – provides an overview of tester operation, including controls and switch functions.

Refer to the Related Documentation section in the front of this manual for information about additional IGT publications.

1.1 Tester Overview

Features

- Digital voltmeter constantly monitors line voltage
- Variable transformer simulates high or low line voltage situations
- Internal touchscreen video monitor displays game play and test information
- Stepper reel unit with vacuum fluorescent display allows testing of reel strips and game play with diagnostic information also available
- External I/O controller allows testing of inputs and outputs for all I/O board configurations
- Control board allows for optical and mechanical coin counting and simulation of specific test situations
- Speaker simulates sound options
- External test cables allow remote testing of mechanical components
- Tester can be configured to operate on 110 or 220 VAC line voltage

Specifications

Refer to Tables 1-1, 1-2, and 1-3 for environmental, electrical and physical specifications for the 80960 tester.

Table 1-1 Environmental Specifications		
Characteristic	Performance Requirement	
Temperature (Environmental)	Operating	45_F-100_F (ambient)
		7 C-38 C
	Storage	0_F-176_F (ambient)
		-18 C-80 C
Relative Humidity (Environmental)	Operating	10% to 75%
	Storage	0% to 95%

Table 1-2 Electrical Specifications		
Characteristic	Performance Requirement	
Line Voltage Taps (Primary)	115	99-128 VAC RMS single phase
	220	198-244 VAC RMS single phase
	240	216-264 VAC RMS single phase
Power Consumption (Average)	Idle	110/115 VAC
		81 Watts (1.2 Amps)
		276 BTU/HR
	Hopper on	100/115 VAC
		155 Watts (3.1 Amps)
		529 BTU/HR
	Idle	220/240 VAC
		100 Watts (0.83 Amps)
		314 BTU/HR
	Hopper on	220/240 VAC
		180 Watts (3.0 Amps)
		950 BTU/HR
Current Protection	Power cord receptacle	IEC Connector
	Transformer voltages (secondary)	24 VAC @ 5 Amps maximum
		8 VAC @ 4 Amps maximum
		7 VAC @ 4 Amps maximum

Table 1-3 Physical Specifications		
Stepper Unit	Height	12.00" (30.48 cm)
	Width	22.00" (55.88 cm)
	Depth	18.50" (46.99 cm)
Video Unit	Height	12.00" (30.48 cm)
	Width	22.00" (55.88 cm)
	Depth	18.50" (46.99 cm)
Main Unit	Height	10.00" (25.40 cm)
	Width	25.00" (63.50 cm)
	Depth	18.50" (46.99 cm)

1.2 Lithium Battery Precautions

Replacement of the lithium battery installed on the processor board should only be carried out by a qualified service engineer. Observe polarity when replacing the battery.

WARNING: Incorrect installation may cause the battery to explode, causing bodily injury.



National and local laws relating to hazardous chemical disposal must be observed. Contact the necessary authorities to verify the correct method of disposal before discarding lithium batteries.

1.3 Warning Decals

Depending upon the jurisdiction of operation, various components or areas inside the tester may have adhesive warning decals permanently affixed. These either indicate potential for a shock hazard or identify an electrical grounding point. Table 1-4 illustrates the international symbols used on these labels to warn technicians and operators of these hazards.

WARNING: In order to avoid injury from electric shock, observe the appropriate precautions when removing safety covers or working in an area bearing the shock hazard decal.

If servicing necessitates removal of any of the grounding points, ensure that the grounding connector is replaced afterwards.

Table 1-4 International Warning Symbols	
Symbol	Indication
	Potential Shock Hazard In This Area
	Electrical Grounding Point

1.4 Component Identification

Figure 1-1 identifies the major controls, indicators, receptacles and components of the 80960 tester, and Table 1-5 briefly describes their functions.

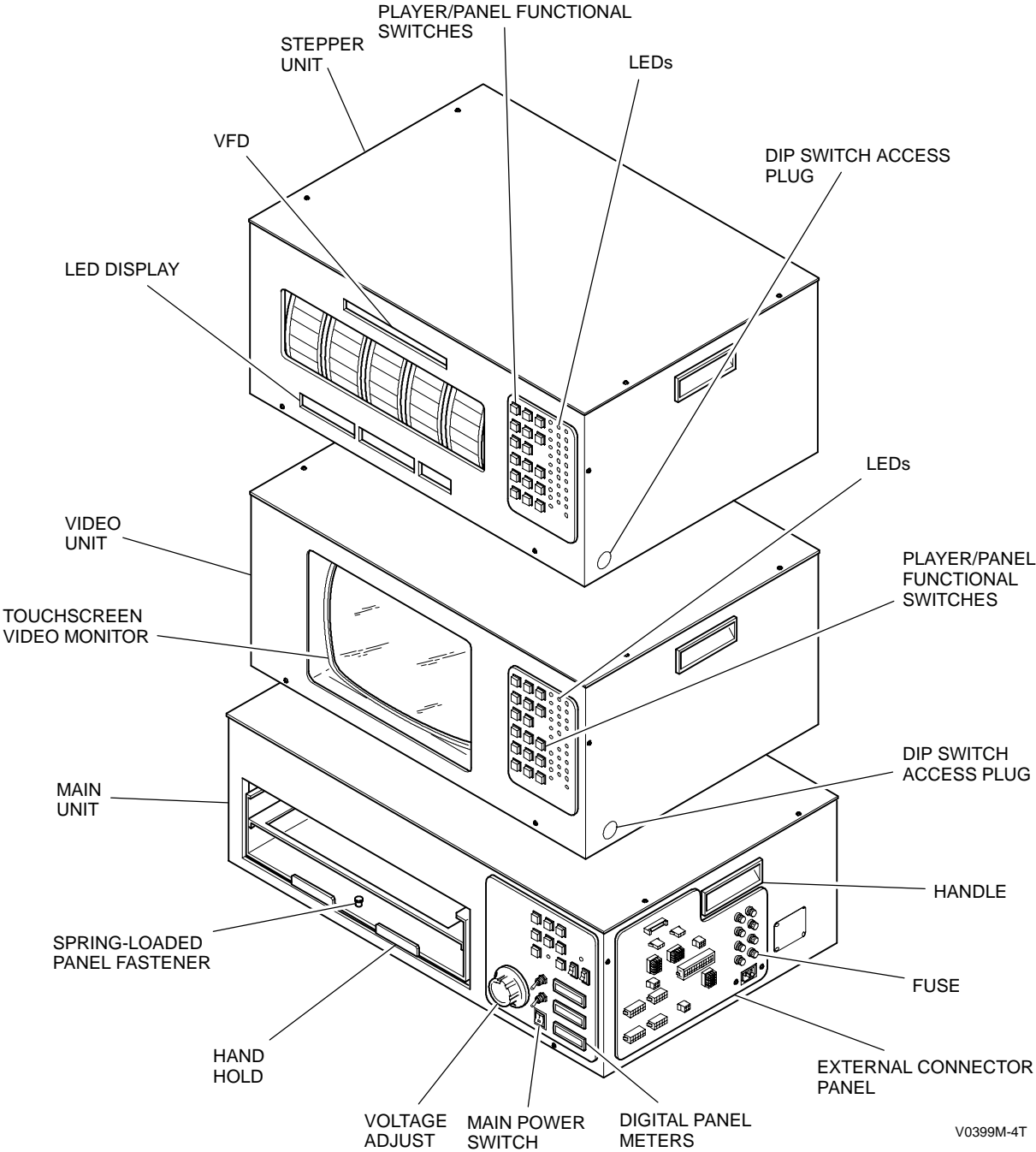


Figure 1-1. Tester Component Identification.

Table 1-5 Tester Controls and Indicators	
Control/Indicator	Function
LEDs	The LEDs illuminate for various game functions and monitor outputs during the self test mode
LED Display (Seven Segment)	Displays game information
Vacuum Fluorescent Display (VFD)	Displays test and diagnostic information
Player/Panel Functional Switches	Push-button switches allow various game inputs
Touchscreen Video Monitor	Displays game and test information
Voltage Adjust	Regulates power output of the AC supply line; use to simulate under/over voltage situations
Main Power Switch	Turns AC power on or off
Digital Panel Meters	Monitors the AC power supply, power supply voltages and current drain
External Connector Panel	Provides labeled harness connections for external components
Fuse 3A	Main monitor
Fuse 3A	Slave monitor
Fuse 3A	External power supply
Fuse 3A	Internal power supply
Fuse 1/8A	COMM AC
Fuse 3A SB	Monitor common
Fuse 1A	COMM DC
Fuse 1/8A	AC lin volt meter
Fuse 1/4A	Control board
Main Power Fuse 6A Slow Blow	Main power to tester - 120 VAC
Main Power Fuse 3A Slow Blow	Main power to tester - 240 VAC

1.5 Tester Installation

1.5.1 Inspection

1. Remove the tester video unit, the tester stepper unit, and the tester main unit from their shipping cartons.
2. Remove all extra tray assemblies, harnesses and any other loose materials that may have been shipped inside the tester units or shipping cartons.
3. Inspect the interior and exterior of the tester units, the processor trays and any other peripheral components for damage.
4. Verify that the appropriate external harnesses are included.

If any part of the tester is damaged or missing, refer to the front of this manual for IGT Customer Service information.

1.5.2 Installation

1. Verify the power configuration of the tester. This information is located on the tester label on the right side of the main unit.
2. Position the main unit of the tester on a service bench with clear space in front and at least 12” to the right of the tester to connect external components.
3. Place the video unit of the tester either directly on top of the main unit, or to the side of the main unit leaving enough space for easy access to any components.
4. Place the stepper unit of the tester either directly on top of the video unit, or to the side of the main unit leaving enough space for easy access to any components.
5. Connect speaker harness (p/n 607-566-00) from the internal port to the A output port on the main tester unit.
6. Connect the power harnesses as appropriate. The primary power cord for the machine connects on the right side of the main unit, directly below the fuses. The harnesses to supply power from the main unit to the active test unit should be connected on the left side of the main unit.

Connecting the Video Unit

See Figure1-2 and connect video/stepper I/O harness (p/n 607-564-01) to the main monitor port and both I/O ports (door and cabinet) on the left side of the main tester unit. Connect the other end of the harness to the corresponding ports on the video unit. This connection will provide electrical power to the video unit.

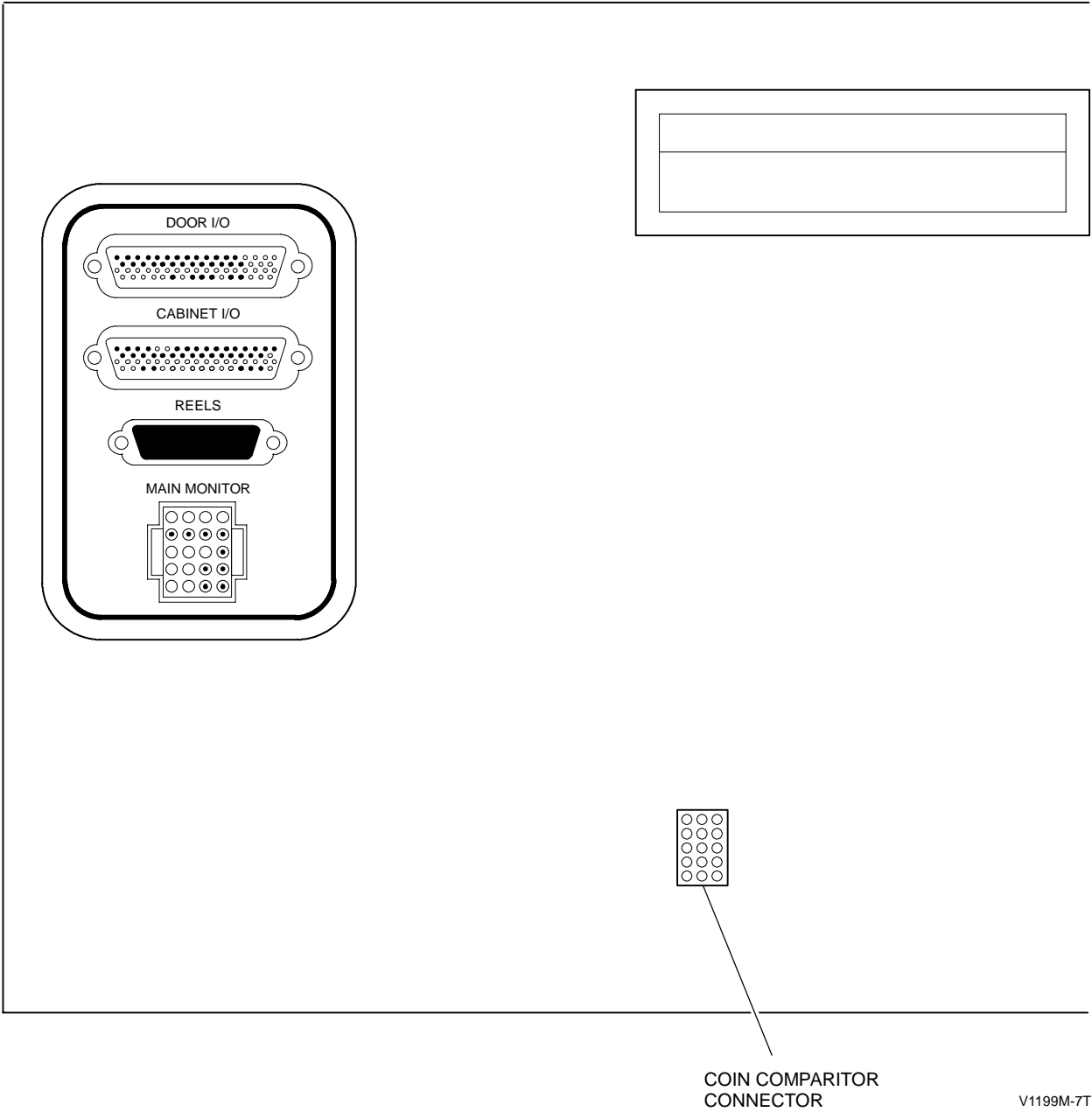


Figure 1-2. Video Tester Unit, Left Side.

Connecting the Stepper Unit

See Figure1-3 and use the following procedure to connect Vision wiring harnesses to the main and stepper tester units.

- 1. Connect reel harness 607-001-01 from the reels port on the main unit to the reels port on the stepper unit.
- 2. Connect video/stepper I/O harness 607-564-01 to the main monitor port and both I/O ports (door and cabinet) on the left side of the main tester unit. Connect the other end of the harness to the corresponding ports on the stepper unit. This connection will provide electrical power to the stepper unit.

Note: Only one test unit, stepper or video, can be connected and activated at any time. To switch from video to stepper tests, or vice versa, power down the machine, disconnect the harness(es) linking the main unit to the active test unit and reconnect to the alternate unit before resupplying power.

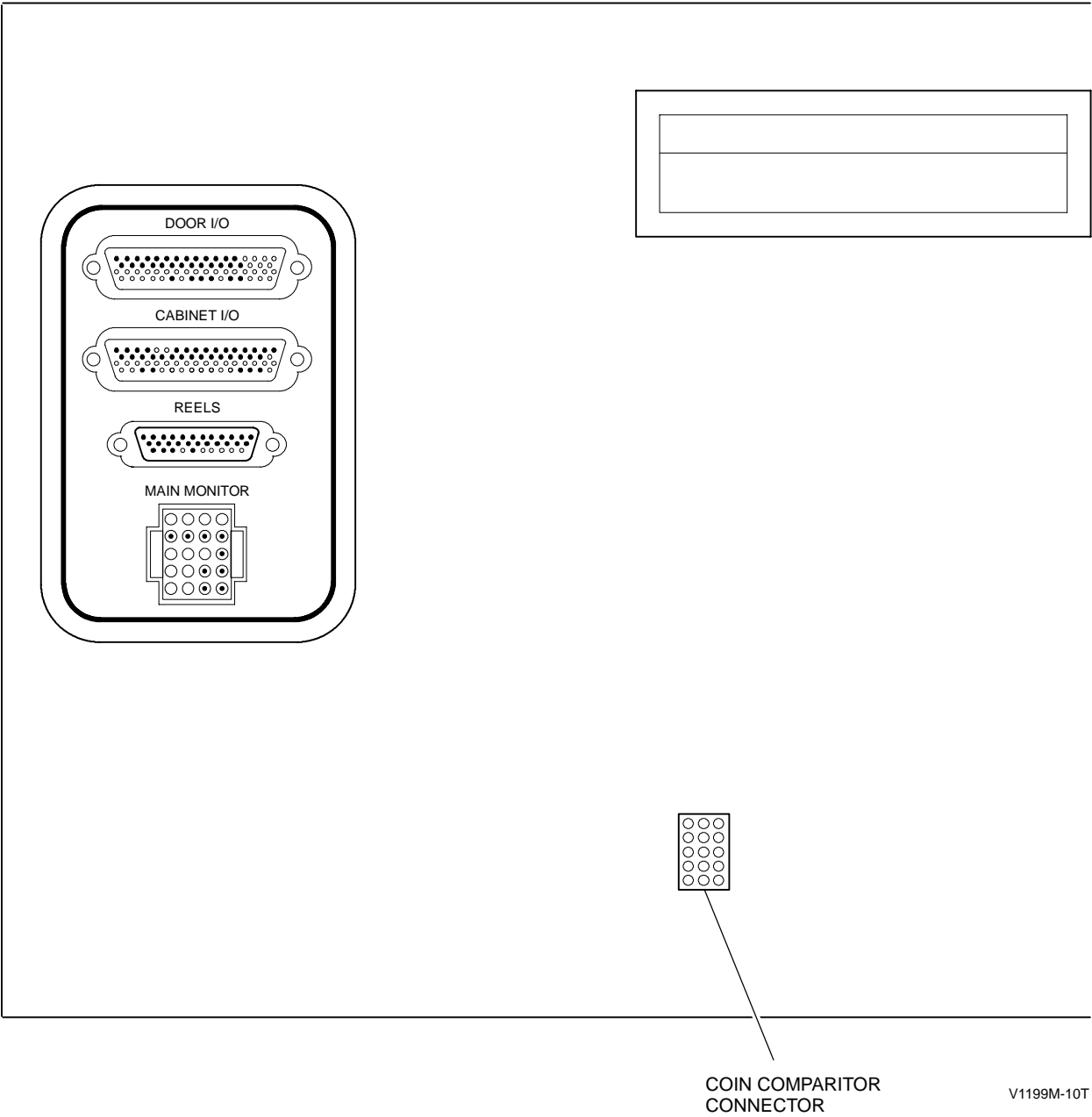


Figure 1-3. Stepper Tester Unit, Left Side.

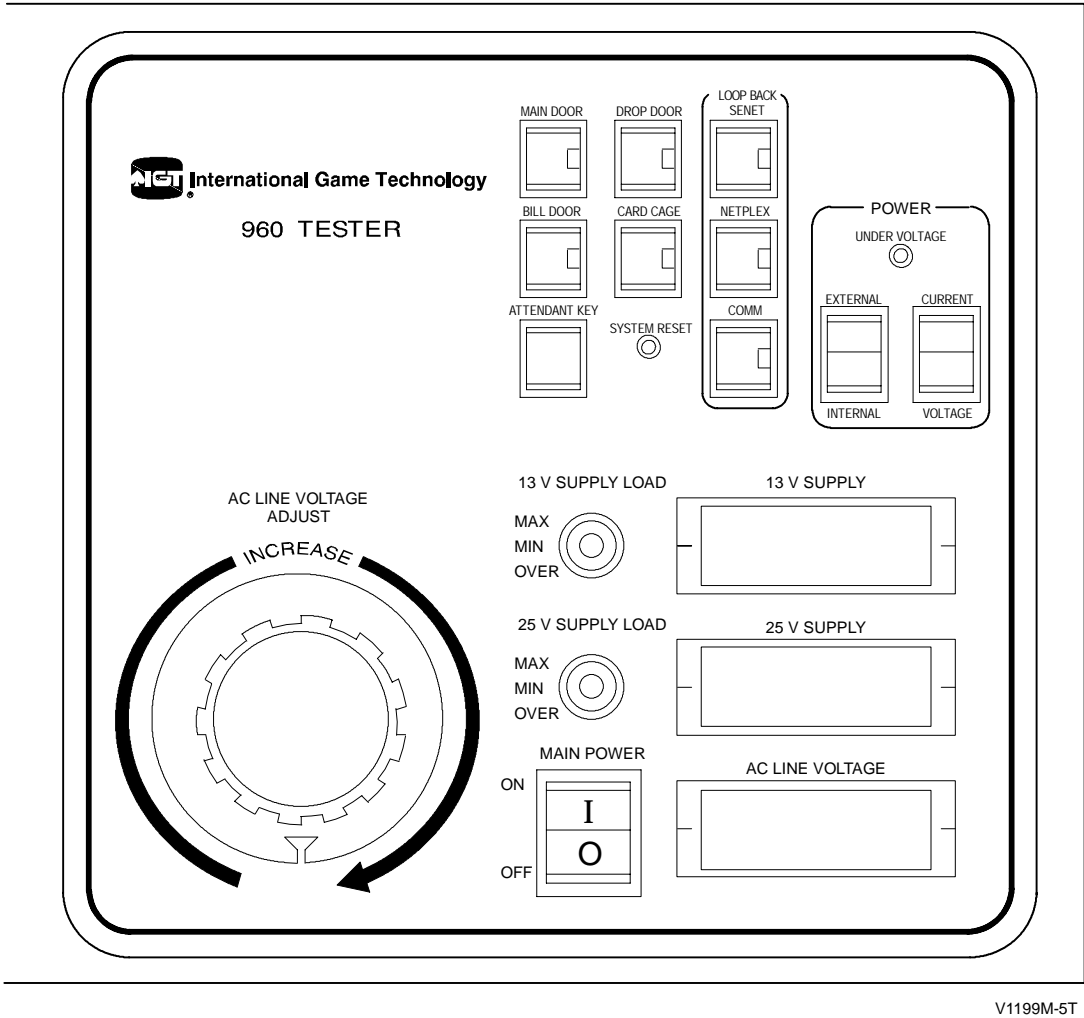
1.5.3 Power Up

See Figure1-4 and use the following procedure to power up the tester.

- 1. Verify that the tester power switch is in the **off** position.
- 2. Verify that a processor tray with diagnostic or game software is installed in the processor slot.
- 3. Plug the tester into an appropriate, grounded outlet.
- 4. Verify that the internal/external selector is in the internal position.

- 5. Verify that the 13 V and 25 V power supply switches are in the center positions.
- 6. Turn the voltage adjust knob counterclockwise all the way.
- 7. Turn the tester power switch **on** then slowly turn the voltage adjust knob clockwise until the AC line voltage reads the nominal voltage desired on the digital panel voltmeter (120 V or 240 V).
- 8. Verify that the digital panel voltmeter for the 13V power supply reads 13 V ± 1 V and the 25 V digital panel voltmeter reads 25 V ± 1 V.

Note: The digital panel voltmeters indicate voltage for general test purposes only.



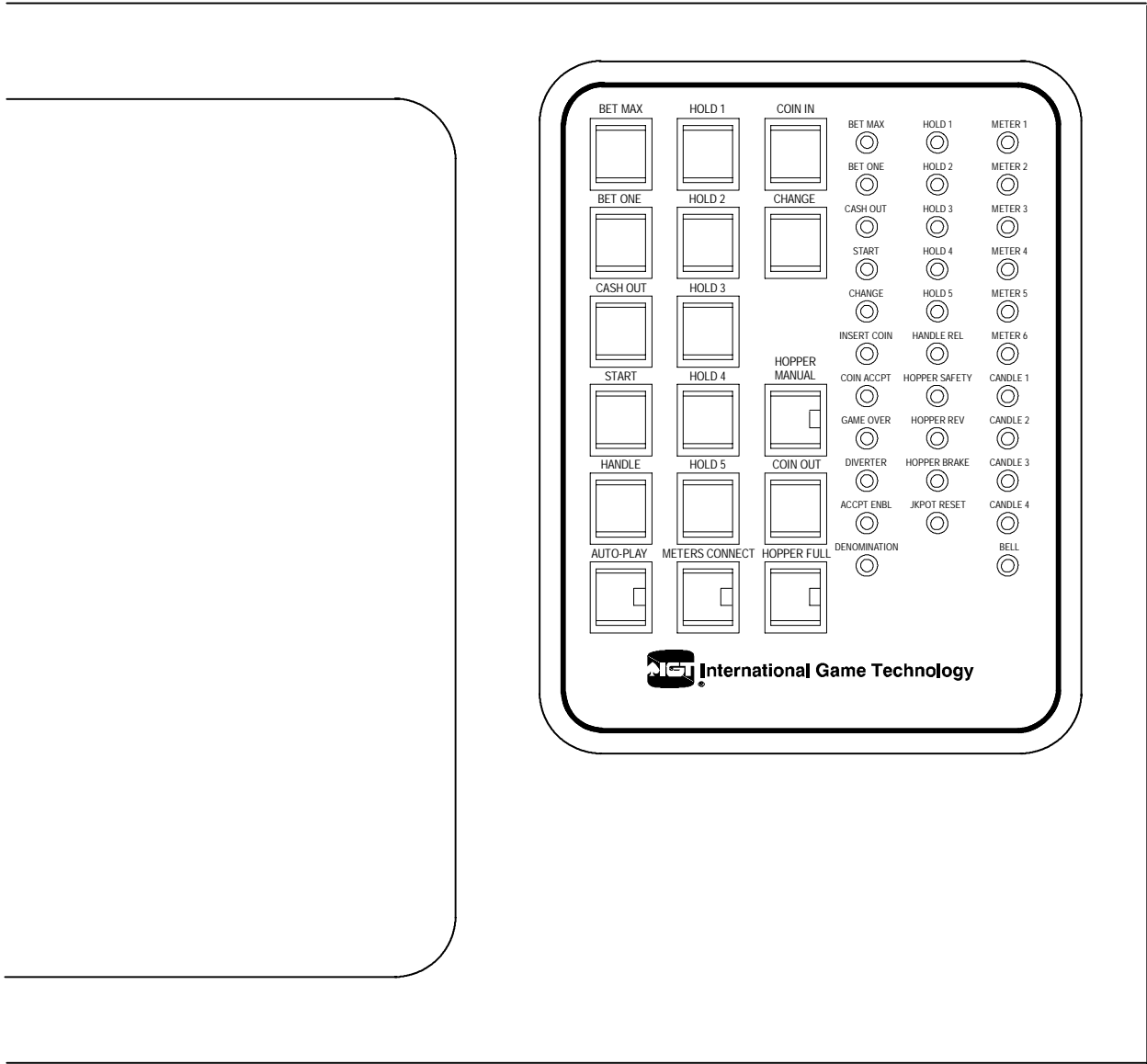
Slant-top and Upright Modes of Operation

The default mode of operation for the tester is slant-top. To change the machine type to upright, press one of the following switches before power-ing up the tester:

- Game King - press the **HOLD 5** switch on the video unit. See Figure 1-5 for switch location on the video tester unit.
- Vision - press the **SPARE 5** switch on the stepper unit. See Figure 1-6 for switch location on the stepper tester unit.

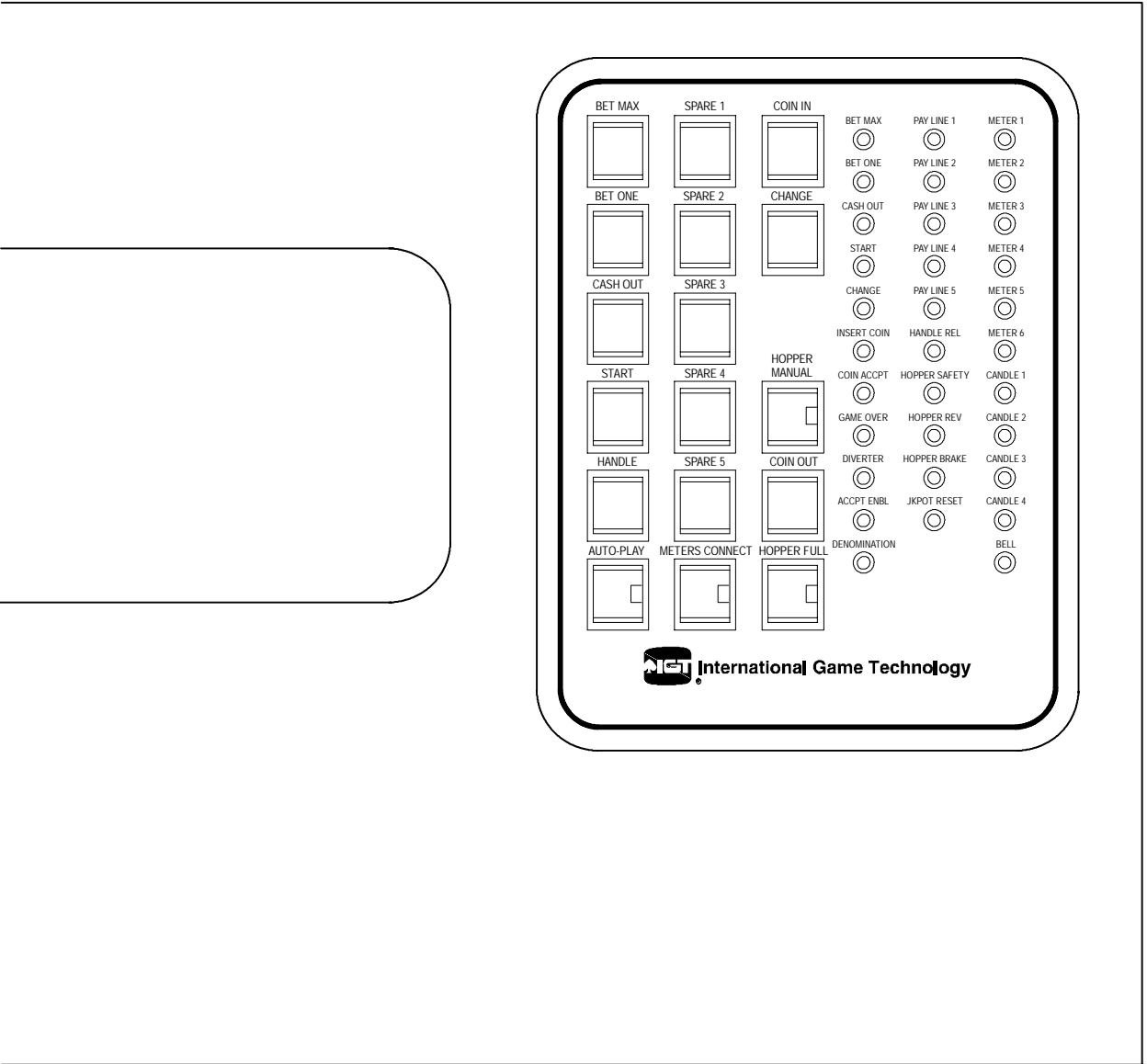
Hold the switch down while the tester performs its power-up tests.

Figure 1-4. Main Tester Unit Switches, LEDs and Indicators.



V1199M-9T

Figure 1-5. Video Tester Unit Switches and LEDs.



V1199M-8T

Figure 1-6. Stepper Tester Unit Switches and LEDs.

1.5.4 Functional Verification

The initial tester display may vary according to the game program/diagnostic software that is installed on the processor board and the test unit that is connected to the main assembly. Only one of the test units can be activated at one time. Selection of the video or reel test unit must be made before the tester is powered on. The following tester functions should be verifiable regardless of the program:

- The digital panel voltmeter registers current line voltage; the digital numbers illuminate and the voltage adjust knob can be turned to the right or left to achieve an appropriate reading.
- For the video test unit, the touchscreen video monitor shows a display and various messages, depending on the software.
- For the spinning reel unit, the VFD shows a display and various messages, depending on the software.
- The output LEDs illuminate appropriate to their function.

Note: Check the fuses carefully when powering up the tester, and periodically when using the tester.

If a fuse fails, immediately turn the tester off, investigate and correct the problem and replace the fuse before resuming any testing.

Refer to the troubleshooting section of this manual to isolate and eliminate any tester problems.

Player Panel/Functional Switches and LEDs

Figures 1-4, 1-5 and 1-6 show the functional switches and LED indicators on the front panel of each of the tester units.

The functional switches and LED indicators allow simulation of a machine's functions in order to both recreate all of the situations in the game program's self test mode and to test certain game situations when a specific problem is suspected.

The functional switches simulate inputs and the LED indicators show the status of the various outputs. During testing of external components, the external component also acts as an output device.

1.6 Tester Operation

The tester simulates machine operation. A technician can exercise machine components by:

- Using the tester controls and player/panel functional switches to input various situations
- Observing both physical and LED/VFD outputs

Tester Controls

See Figure 1-1 and refer to Table 1-5 for help in identifying the major controls, indicators and receptacles on the tester.