9000/1001

TECHNICAL SERVICE REFERENCE MANUAL

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Megatouch XL™ Technical Service Manual Contents

Section 1
Cabinet Information

Cabinet Information Section

General Information

The Megatouch XL video games are available in several different cabinet styles:

Countertop*

Dimensions: H - 15-1/4”; W - 20”; D - 18-1/4”
Shipping weight: approx 95 lbs.
Bill acceptor option*

19” Upright

Dimensions: H - 54-1/4”; W - 24”;D - 26-1/2”
Shipping weight: approx 250 lbs.
Bill acceptor option

19” Cabaret

Dimensions: H - 61”;W - 22-1/2”;D - 24”
Shipping weight: approx. 250 lbs.
Bill acceptor option

*An optional coin mech/bill acceptor (Mars 2000) combination unit is available for all countertop models.

Countertop

Dimensions: H - 15-1/4”; W - 20”; D - 18-1/4”

CPU Board Information

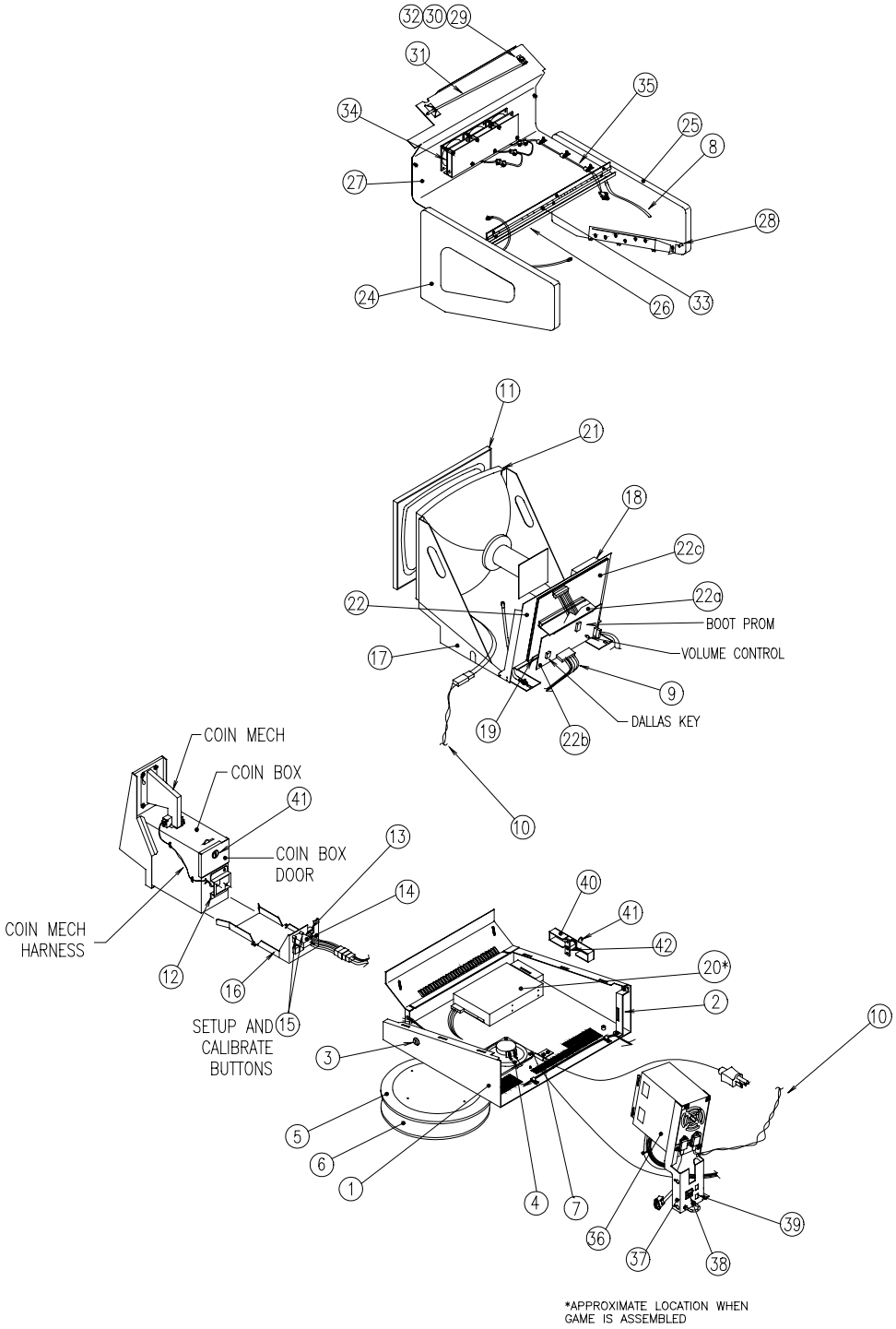
DeAmertek

Telco

Touchscreen Type

Microtouch

ELO



13” COUNTERTOP

MEGATOUCH XL PARTS LISTS

Megatouch XL CTOP
Part List

CALLOUT #	PART #	DESCRIPTION
	SA0100-01	***ASSY, MEGATOUCH XL, CTOP***
1	MW0009-01	CHASSIS, CTOP, XL
2	MW0015-01	BRACKET, LOCK, CTOP XL
3	HW8741	LOCK, CIRC, BNT, DIFF, 1/2”
4	SA4084-02	SPEAKER ASSY, 4”, W/6-PIN CONN
5	HW8993-02	LAZY SUSAN, 12” DIA, 15 DEG. STOPS
6	HW8018-01	ANTI-SKID PAD, 11.5”DIA, RA65 RBR
7	MW0038-01	CORD CLAMP, XL
8	HW9001	TUBING, PLASTIC
9	SA0108-01	HARNESS, MAIN, CTOP, XL
10	SA0111-01	HARNESS, DISPLAY, AC, CTOP, XL
11	SA5129-01	GASKET/BEZEL ASSY
11a	HW8087	TAPE, NEOP, .18W X .38THK, PSA
11b	HW8953	BEZEL, 13’ T/S
	SA0102-01	***HARNESS, COIN BOX, MGATCH XL, CTOP***
12	CN7508	METRIMATE PLUG, 12 PIN
13	CN7501	METRIMATE PIN, FEMALE 20-24 AWG
14	EC9154	COUNTER, 12V FROG EYE MTG
15	SW3005	PB SWITCH, MOMENTARY (SETUP/CALIBRATE)
16	MW0012-01	BRACKET, CONN/COUNTER, CTOP XL
	SA0104-01	***DISPLAY/MOTHERBOARD ASSY, XL***
17	MW0010-01	FRAME, DISPLAY, CTOP, XL
18	EC9840	TOUCHSCREEN CONTROLLER, SMT3
19	HW8171-01	PCB GUIDE, 8”, SNAP-ON, DEEP CHANNEL
20	EC0003-01	CD-ROM PLAYER, IDE, 4X
21	SA0103-01	TOUCHSCREEN/VGA DSPLY ASSY, 13”
21a	EC9377	MONITOR, VGA, 13” (W/ CHASSIS BOARD & FRAME)
21b	EC9824	TOUCHSCREEN OVERLAY, 13’
21c	HW8078	TAPE, POLYESTER, 1”, W/ADH
21d	HW8067	TAPE, FOAM, .5W X .03 THK, DBL
22	SA0112-01	ASSY, MOTHER BOARD & I/O, XL
22a	SA10025-01	PCA, CRT-402, DE-AMER, RISER BOARD
22b	SA10023-01	PCA, I/O BOARD, XL VID, CTOP
22c	SA0101-01	ASSY, MOTHERBOARD
23	SA0118-01	CABLE, POWER EXTENSION, CD-ROM
	SA0105-01	***COVER ASSY, CTOP, XL***
24	WD0001-01	SIDE PANEL, RIGHT, CTOP XL
25	WD0001-02	SIDE PANEL, LEFT, CTOP XL
26	MW0013-01	TOP, CTOP, XL
27	MW0016-01	DOOR, CTOP, XL
28	MW0014-01	PLATE, LATCH, CTOP, XL
29	HW8734-01	LOCK, W/O CAM, 564, 5/8”L (REAR DOOR)
30	MW0024-01	CAM, LOCK (REAR DOOR)

31	MW0023-01	BOLT, LOCK, CTOP, XL
32	HW8911-01	PIN, SPRING, STL, .094OD X .50L
33	MW5164-01	HINGE, REAR DOOR CTTS
34	EC9410	FAN, TUBAXIAL, 3", 110V
35	SA0117-01	CABLE, POWER EXTENSION, FAN
	SA0106-01	***PWR ENTRY ASSY, CTOP, XL, 120V***
36	EC7528	POWER SUPPLY, SW, PS/2-PC
37	MW0011-01	BARCKET, PWR SUPPLY, CTOP, XL
38	SW4024	ROCKER SW, DPST, 250V, PANEL MTG
39	TA10028-01	PCA, RS-485 COMMUNICATIONS BD, XL SYS
	SA0119-01	***DOOR ASSY, CD-ROM ACCESS, XL, CTOP***
40	MW0039-01	DOOR, CD-ROM ACCESS, XL, CTOP
41	HW8727	LOCK, FLAT, STR, DIFF, 1-1/8 CAPKY (CD DOOR/COIN BOX)
42	MW0037-01	CAM, LOCK, .75 X 2.0
DECALS AND SIGNS		
	GL3100-01	DECAL, SIDE PANEL, XL, CTOP
	GL3101-01	DECAL, FRONT, XL, CTOP
	SA7297-06	SIGN HOLDER, MEGATOUCH XL (HOLDER & SIGN ASSEMBLY)
	HW9461-03	SIGN HOLDER, PETG, 4 X 12, CTOP
	PM8928-09	SIGN, MEGATOUCH XL, CTOP
COIN MECHS/BILL ACCEPTORS		
25¢ USA		
	HW8249	FR/PLATE, SINGLE, M, .25, ROLL DOWN
$1 CANADIAN		
	HW8295	FR/PLATE, SINGLE, M, $1 CANADIAN
COIN BOX ASSY		
	SA5161-01	HARNESS, COIN BOX, MECHANICAL, CTOP, XL
	MW0017-01	COIN BOX, CTOP, XL
	MW5153-01	DOOR, COIN BOX, CTOP
		COIN BOX/JCM B/A ASSY, $1-20, XL
	EC9797	JCM B/A DBV-45 $1-20, W/ STACKER
	SA0109-01	HARNESS, JCM B/A, CTOP, XL

19” Upright

Dimensions: H - 54-1/4”; W - 24”;D - 26-1/2”

CPU Board Information

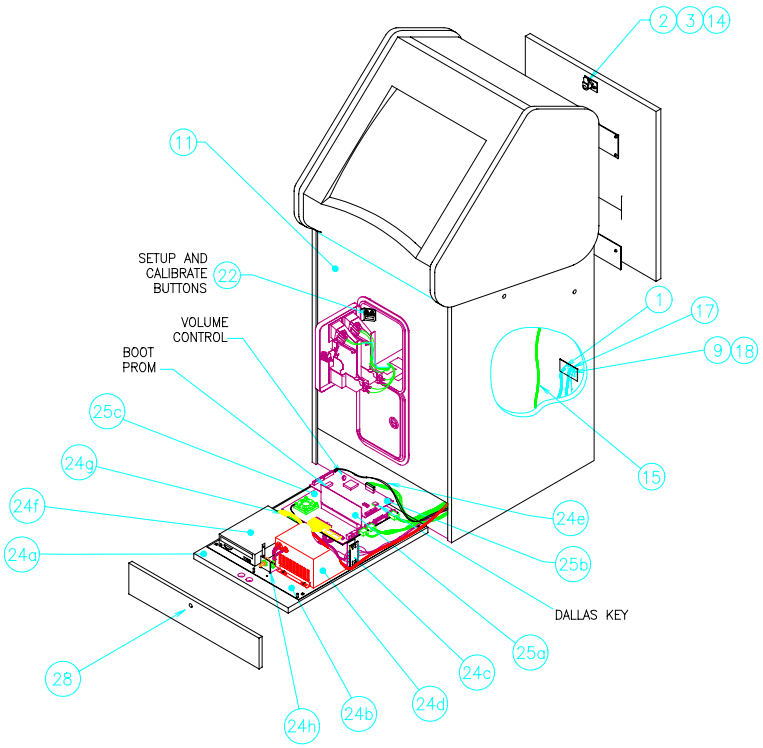
DeAmertek

Telco

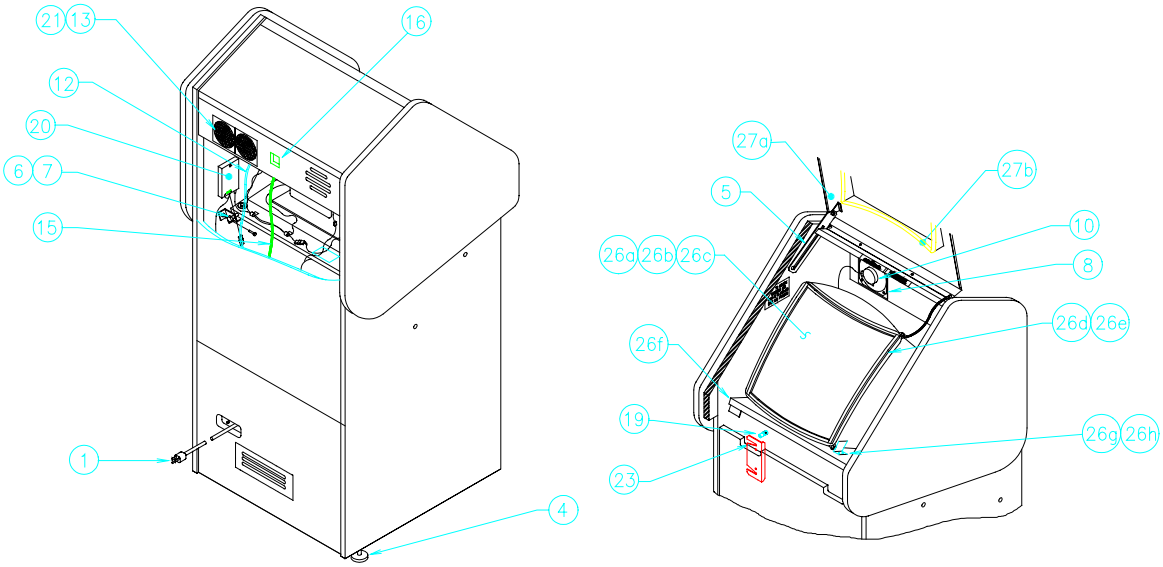
Touchscreen Type

Microtouch

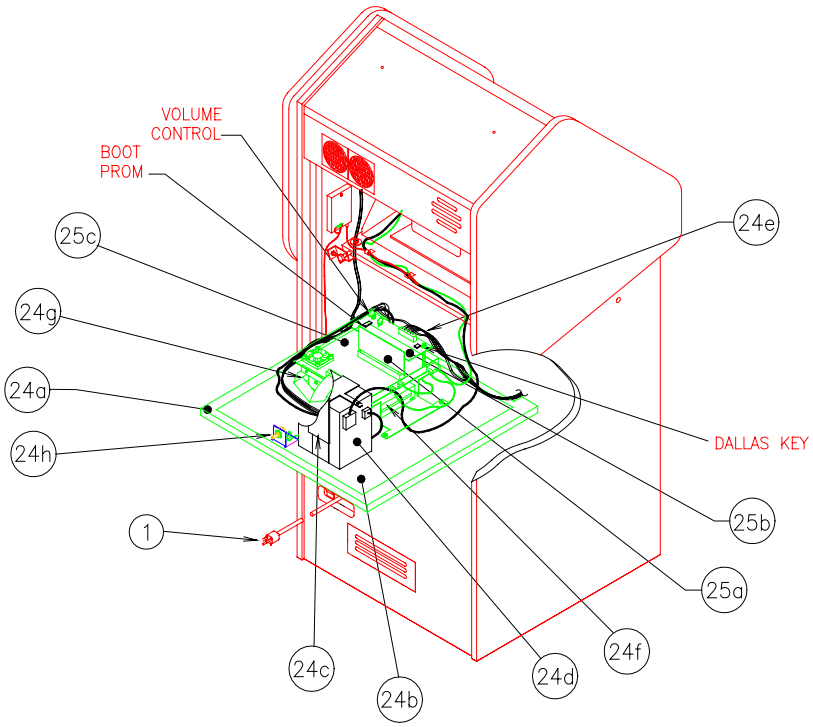
ELO



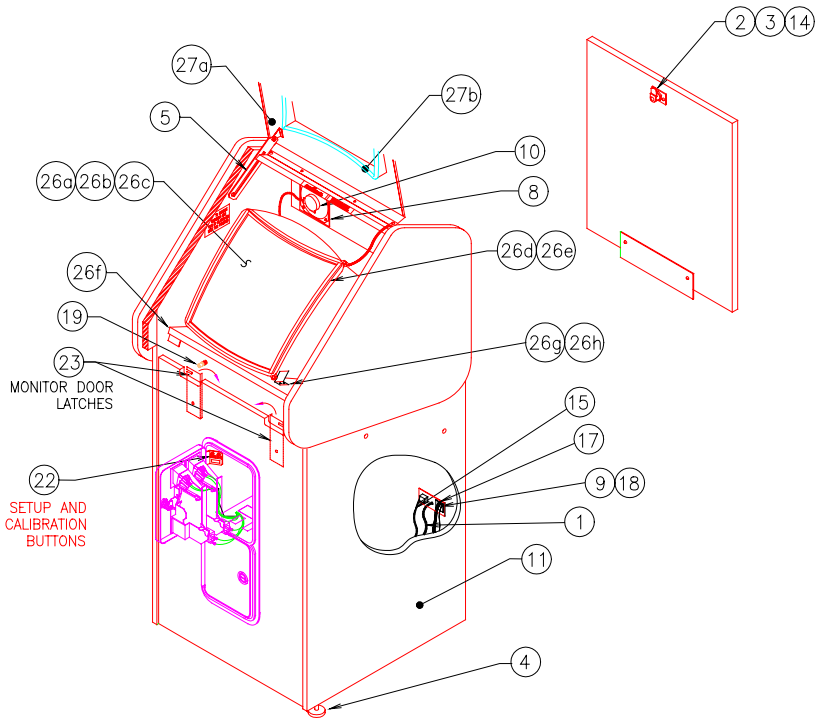
19” UPRIGHT (FRONT ACCESS)



19” UPRIGHT (FRONT ACCESS)



19” UPRIGHT (REAR ACCESS)



19” UPRIGHT (REAR ACCESS)

19” Upright Parts List

CALLOUT #	PART #	DESCRIPTION
1	EC2001	POWER CORD, 120V
2	HW8711	ANCHOR PLATE FOR CAM LOCK
3	HW8716	LOCK, FLAT, STR, #564, 1-7/16” (REAR DOOR)
4	HW8960	LEG LEVELER, 2”, 3/8-16THD
5	MW5001-01	STAY LID, URTS, 19”
6	MW5003-01	BRACKET, CRT ADJUST, LEFT
7	MW5003-02	BRACKET, CRT ADJUST, RIGHT
8	MW5006-01	COVER, PERFORATED, SPEAKER, 4”
9	SB0010-01	COM, POWER CABLE
10	SA4084	SPEAKER ASSY, 4”
11	WD2017-01	CABINET, 19” URTS, XL/260, FA, BLK
12	SA0063-01	HARNESS, POWER, DUAL FANS, URTS
13	SA5117-05	FAN ASSY, 3”, 12V DC, 2 PIN, W/GUARD
14	HW8756	CAM, BENT, 1/8” OFFSET
15	SA0058-01	HARNESS, POWER SWITCH, URTB/URTS/CAB, XL
16	SW4024	ROCKER SWITCH, DPST, 250V, PNL MTG
17	TA10028-01	PCA, RS-485 COMM, XL SYS
18	EC2187-01	RIBBON CABLE, 9 COND, 31”L
19	HW6366	MOUNTING POST, KNURLED
20	EC9840	TOUCHSCREEN CONTROLLER BOARD, SMT-3
21	MW0057-01	COVER, FAN PROTECTOR
22	SA3209-01	BRACKET ASSY, METER/TEST SWITCH
23	MW0044-01	DOOR LOCK LATE, UR
24	SA3234-01 (-02)	SHELF, PC POWER, URTS, XL (-02 “CE” APPROVED ASSY)
24a	WD2018-01	SHELF, 19” VIDEO, UNIVERSAL
24b	MW0063-01	PLATE, MTG, PC/PWR, XL
24c	EC0007-01	TERMINAL BLOCK, 4 POSITION
24d	EC7528	POWER SUPPLY, SWT, PS-2/PC
24e	SA0077-01	HARNESS, MAIN, XL
24f	EC0003-01	CD-ROM PLAYER, IDE, 4X
24g	EC2191-06	RIBBON CABLE, 2X20 PIN, IDE, 7”L
24h	SA0067-01	HARNESS, VOLUME POT, URTS/CAB, 260
25	SA0112-01	ASSY, MOTHERBOARD & I/O, XL
25a	SA10025-01	PCA, CRT-402, DE-AMER, RISER BOARD
25b	SA10023-01	PCA, I/O BOARD, XL VID, CTOP
25c	SA0101-01	ASSY, MOTHERBOARD
26	SA3202-05	SHELF ASSY, TS/CRT (VGA)
26a	SA3210-03	TS/CRT (VGA) ASSY, COLOR, 19”
26b	EC9378	MONITOR, VGA, 19”
26c	EC9823	T/S OVERLAY, 19”
26d	HW8078	TAPE, POLYESTER, 1”, W/ADHESIVE
26e	HW8067	TAPE, FOAM, .5W, .03THK,DBL
26f	WD2013-01	SHELF, CRT MTG, 19” URTS
26g	MW5008-01	BRACKET, CRT LEFT, 19” URTS
26h	MW5008-02	BRACKET, CRT RIGHT, 19” URTS
27	SA3230-01	BEZEL ASSY, 19” URTS
27a	MW5014-01	BEZEL/HINGE ASSY, 19” URTS
27b	HW8951-02	BEZEL, MONITOR, 19” URTS
28	HW8713	LOCK, FLAT, STR, 564, 1-7/16 KYRM

19” Cabaret

Dimensions: H - 61”; W - 22-1/2”; D - 24”

CPU Board Information

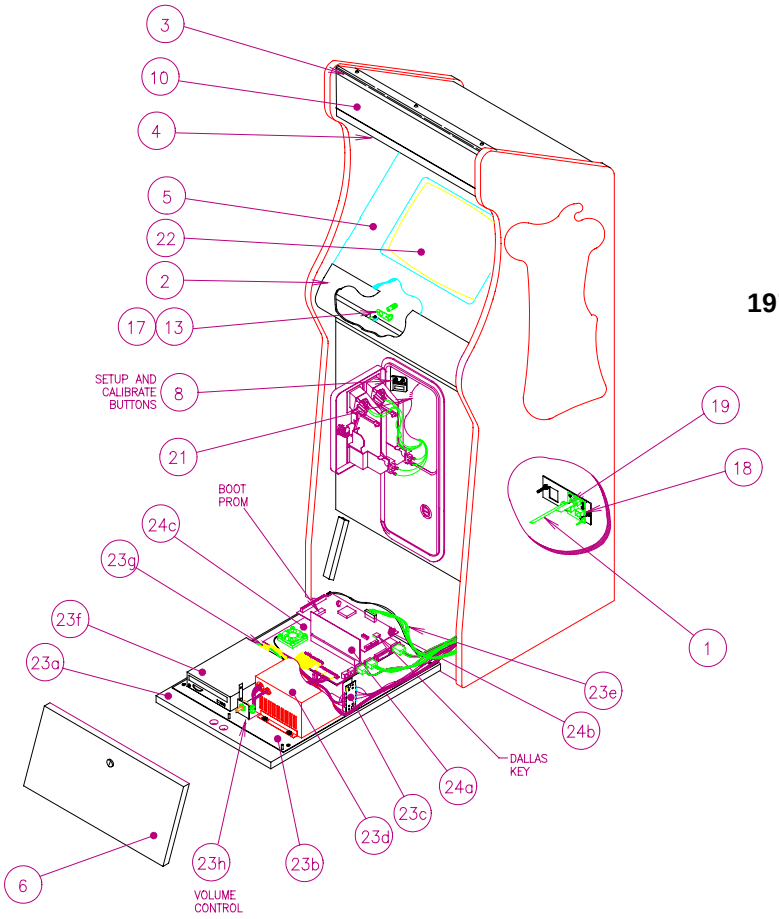
DeAmertek

Telco

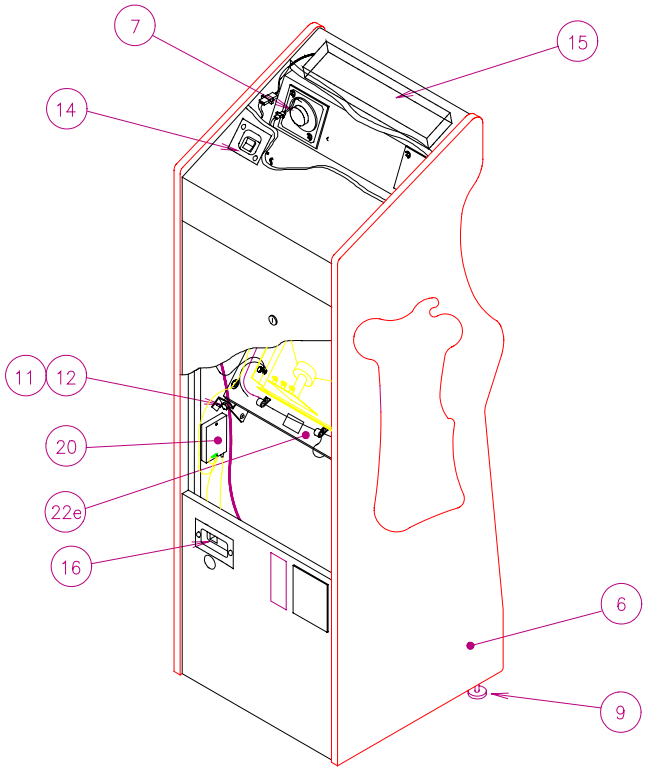
Touchscreen Type

Microtouch

ELO



19” CABARET



19” CABARET

19” Cabaret Parts List

CALLOUT #	PART #	DESCRIPTiON
1	EC2001	POWER CORD, 120V
2	MW1672-01	CONTROL PANEL, 19” CABARET
3	MW1671-01	BRKT, GLASS, UPPER, 19” CABARET
4	MW1670-01	SPEAKER, MTG BRKT, 19” CAB
5	HW8951-01	BEZEL, MONITOR, 19” CABARET
6	WD5060-01	WOOD CABINET, URTS, 19” CABARET
7	SA4084	SPEAKER ASSY, 4”
8	SA3209-01	BRACKET ASSY, METER/TEST SWITCH
9	HW8960	LEG LEVELER, 2”, 3/8-16THD
10	GL2411-03	PLEXI, CLEAR, 19” CABARET, SIGN
11	MW1674-01-0A	MONITOR, SUPPORT LEFT, 19” CABARET
12	MW1674-02-0A	MONITOR, SUPPORT RIGHT, 19” CABARET
13	HW8979	SLIDE LATCH
14	SA0058-01	HARN, PWR SWITCH, URTB/URTS/CAB, XL
14a	SW4024	ROCKER SWITCH, DPST, 250V, PNL MTG
15	SB6058-01	FLUOR LAMP ASSY, 120V/60HZ, 15W
15a*	LB2100	LAMP, FLUOR, 15W, F15T8CW
16	MW0028-01	PLATE, POWER ENTRY
17	HW6366	MOUNTING POST, KNURLED
18	TA10028-01	PCA, RS-485 COMM, XL SYS
19	EC2187-01	RIBBON CABLE, 9 COND, 31”L
20	EC9840	TOUCHSCREEN CONTROLLER BOARD, SMT-3
21	SA0014-01	HARN, E/M/CREJ, 19” CABARET
22	SA3266-03-0B	CRT ASSY, 19” CABARET, XL
22a*	EC9378	MONITOR, VGA, 19”
22b*	EC9823	T/S OVERLAY, 19”
22c*	HW8078	TAPE, POLYESTER, 1”, W/ADHESIVE
22d*	HW8067	TAPE, FOAM, .5W, .03THK,DBL
22e	WD5061-01-0A	SHELF, MONITOR, 19” CABARET
23*	SA3234-01 (-02)	SHELF, PC POWER, URTS, XL (-02 “CE” APPROVED ASSY)
23a	WD2018-01	SHELF, 19” VIDEO, UNIVERSAL
23b	MW0063-01	PLATE, MTG, PC/PWR, XL
23c	EC0007-01	TERMINAL BLOCK, 4 POSITION
23d	EC7528	POWER SUPPLY, SWT, PS-2/PC
23e	SA0077-01	HARNESS, MAIN, XL
23f	EC0003-01	CD-ROM PLAYER, IDE, 4X
23g	EC2191-06	RIBBON CABLE, 2X20 PIN, IDE, 7”L
23h	SA0067-01	HARNESS, VOLUME POT, URTS/CAB, 260
24*	SA0112-01	ASSY, MOTHERBOARD & I/O, XL
24a	SA10025-01	PCA, CRT-402, DE-AMER, RISER BOARD
24b	SA10023-01	PCA, I/O BOARD, XL VID, CTOP
24c	SA0101-01	ASSY, MOTHERBOARD

*This part is not called out in the drawing. It is either part of an assembly that is shown, or it is an assembly in which all of the parts are shown separately.

Section 2
Troubleshooting Information Section

Troubleshooting Your Touchscreen

Problem 1 The touchscreen appears to lose calibration if you touch the screen while touching the metal on the cabinet (this particular problem is most likely to affect upright and cabaret games, not countertops).

Solution Make sure the controller and/or the cabinet is properly grounded. NOTE: For the 19" upright, you may have to remove the paint from the hinge that the ground braid is attached to in order to get a better connection.

Problem 2 The touchscreen won't calibrate correctly. This is a vague problem that requires more information to determine the cause. To investigate further, go to the TEST SCREEN mode and slowly pull your finger down the screen in a vertical line.

A) If the crosshair moves in a wavy line (sine wave) then there is a bad EEPROM in the Microtouch touchscreen cable connector.

Solution Replace the touchscreen glass. NOTE: TO PRESERVE THE VALIDITY OF YOUR WARRANTY, CONTACT MERIT TECHNICAL SERVICE (at 1-800-445-9353) BEFORE ATTEMPTING ANY SERVICING.

B) If the cursor generally follows your finger, except for one particular area on the screen, the EEPROM is not correcting for flaws in the touchscreen glass.

Solution Repair or replace the touchscreen glass (or you can try switching touchscreen controllers, if you have another one. This can cause the EEROM to reinitialize itself, leaving you with both controllers working).

C) If the crosshair moves continually towards one of the corners (the same corner each time), every time you run your finger down the screen, the touchscreen glass has a broken wire.

Solution Return the glass to Merit Technical Service to have it fixed.

D) If the controller works for a while, but stops working (the TTL LED does not respond to a touch), the controller may not be properly grounded.

Solution Install the TTL Ground/Static kit (#SA1089-01) and the CRT-266 Electro-Static Discharge Board kit (SA1088-01). On the upright model, you may want to check the gray and green wires from the touchscreen controller cable. They should be attached to the ground on the power supply.

Problem 3 If the glass is totally unresponsive, check the LED on the touchscreen controller (board).

1. If the LED isn't flashing, touch the screen while keeping an eye on the LED. If the LED reacts to your touch (i.e. gets brighter), the problem is with the CRT-260 board.

a) The U41, UART chip has been minorly affected by a static hit.

Solution Turn the game off, then power up. If that fixes the problem, call Merit Customer Service for software that can prevent this problem from happening again.

b) The UART chip or the U39 Maxim chip (on the upright model) has been burnt out by a static hit.

Solution Call Merit Technical Service at 1-800-445-9353. NOTE: Make sure to install, if you haven't already, the SA1089-01 Ground/Static kit to help prevent this from happening again.

If the LED is flashing, refer to the following chart for interpretation of the error and contact Merit Customer Service.

Flashes per 10 Second Inerval	**Error Detected**
1	RAM Error
2	ROM Error
3	A/D Error
4	EEROM Error
5	Analog Error

Advanced Touchscreen Calibration

The following directions will help you calibrate your touchscreen more accurately.

1. Enter calibrate mode. When the first dot appears, intentionally touch the screen about 1” away from the dot, diagonally, towards the center of the screen (repeat this procedure for the second calibration dot; see Figures 1a and 1b). You are now in TEST SCREEN mode. As you test the screen, you should notice that the crosshair is considerably out of calibration. By completing this step, you have shown that the machine is accepting calibration input.

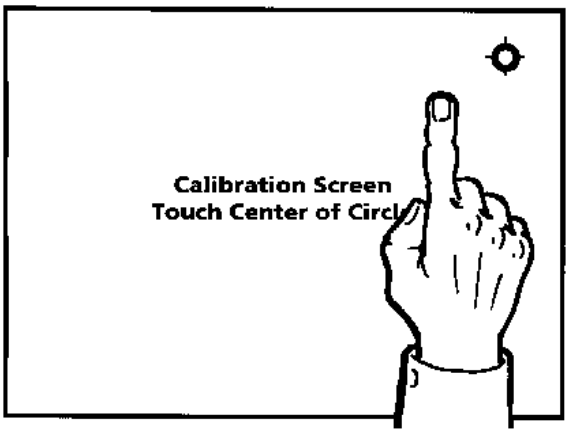


Figure 1a

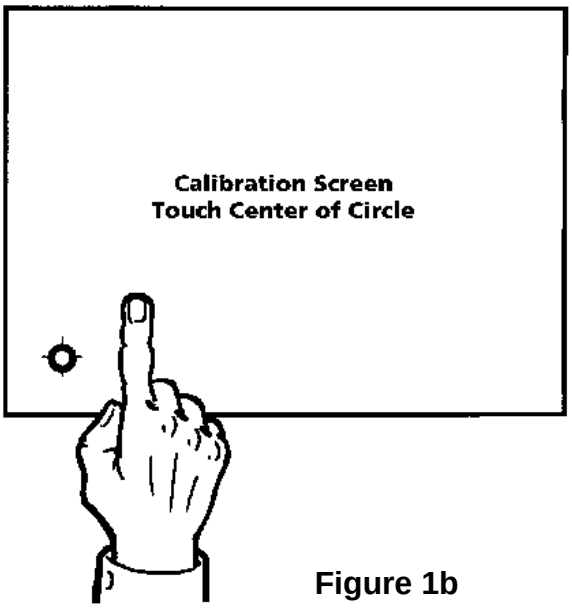


Figure 1b

2. Go back to calibrate mode, but this time touch exactly on the center of the calibration dots, to more accurately calibrate the screen (see Figures 2a and 2b). You are now back in TEST SCREEN mode. **Touch the approximate location where the first dot appeared**. If the crosshair is not centered on your finger, note the direction and approximate distance which it is off center. Repeat this procedure **at the approximate location of the second calibration dot** (see Figures 2c and 2d). (If the crosshair is centered on your finger, the screen is calibrated accurately.)

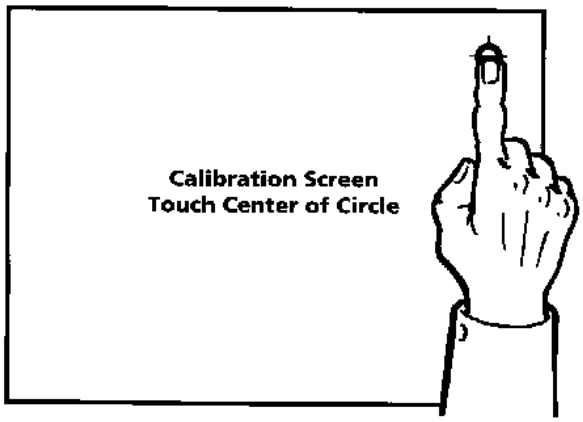


Figure 2a

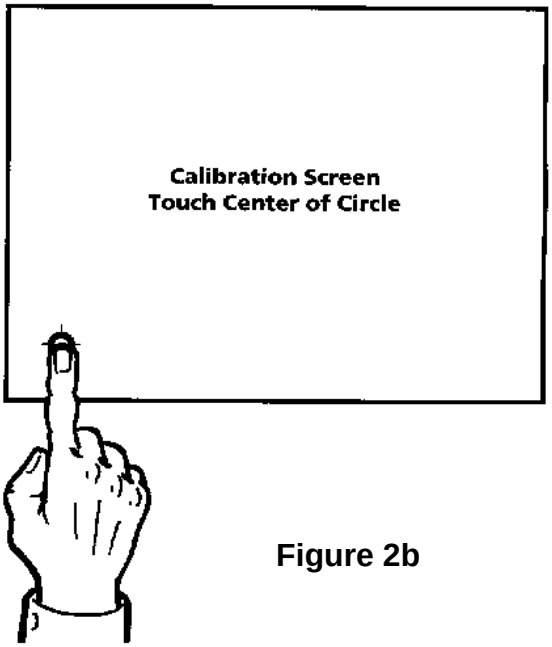


Figure 2b

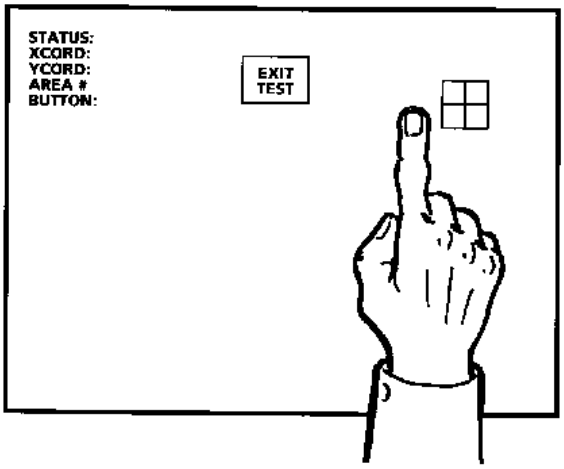


Figure 2c

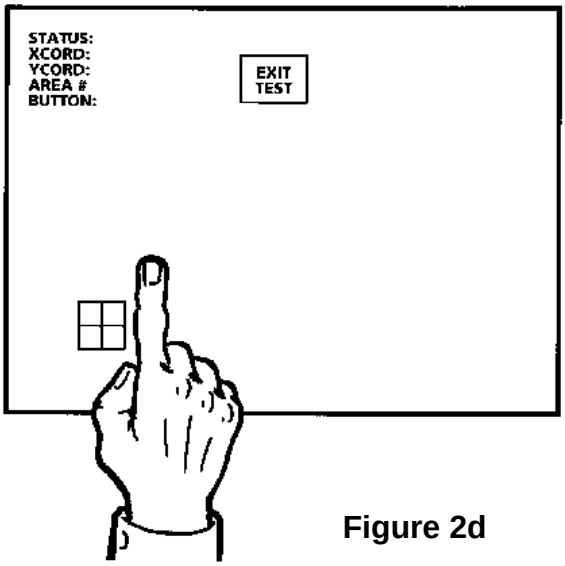


Figure 2d

3. To compensate if the screen is not calibrated accurately, return to the calibration screen. Recalibrate the way you normally would, but don't touch exactly on the center of the dots. This time, touch slightly away from the dot, ***in the SAME direction and approximate distance*** which the dot was off center (see Figures 3a and 3b). For example, if the crosshair comes up slightly below where you touched, when you recalibrate, touch slightly below the calibration dot, if the crosshair appears slightly above and to the right of where you touched, when you recalibrate, touch slightly above and to the right of the dot. This should compensate for the individuality of the touchscreen glass and the way it was mounted on the CRT.

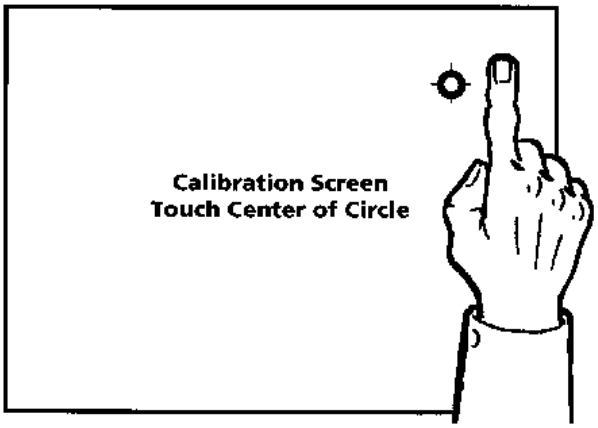


Figure 3a

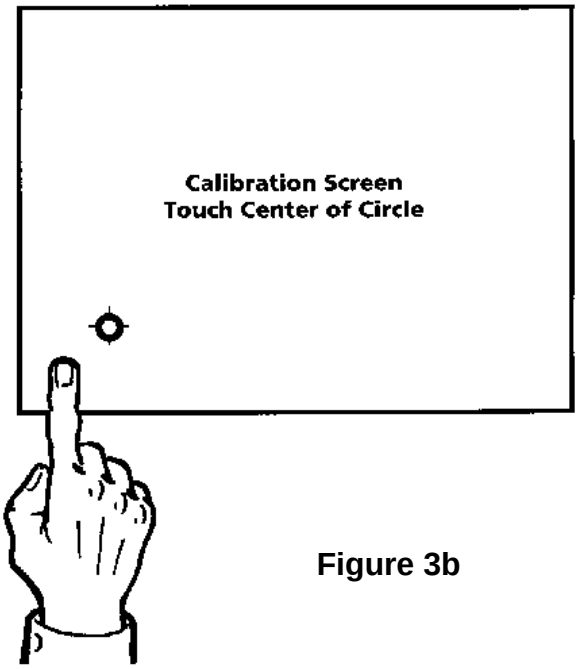


Figure 3b

It may take several attempts to get the screen calibrated exactly.

Removal and Installation of Microtouch Touchscreen Glass Overlay

Removing the Touchscreen Overlay

1. Remove the monitor assembly as explained in the *Cabinet Information Section - Removal of Major Parts*.
2. Remove the first layer of black tape around the edge of the glass.
3. Spray alcohol over the second layer of tape to loosen the adhesive.
4. Carefully cut the second layer of tape by running a razor blade along the gap between the monitor and the touchscreen overlay.
5. While continuing to spray the tape with alcohol, remove the remaining tape by CAREFULLY running the blade under the tape and gently peeling it up from the glass. Do this until all tape and adhesive have been removed from the glass.

Installing the Touchscreen Overlay*

Countertop model:

1. Place the touchscreen glass over the monitor glass, so that the touchscreen cable is to your right (when facing the monitor).
2. Apply one piece of the black, double-sided tape to each edge of the glass, to hold it to the monitor.
3. Apply the black cloth tape around the entire perimeter of the monitor, securing the touchscreen glass to the monitor and covering the double-sided tape.
4. Place the monitor assembly back into the cabinet and secure it in position.
5. Run the cable through a hole on the side of the monitor chassis and into the CPU section.
6. Attach the touchscreen connector to the back of the SMT-3 controller.

Upright and Cabaret models:

1. Place the touchscreen glass over the monitor glass, so that the touchscreen cable is to your right (when facing the monitor). *Upright models only*:* Install the supplied foam tape around the edges of the monitor, where it meets the bezel.
2. Place the monitor assembly back into the cabinet and secure it in position.
3. Run the cable through the rear of the cabinet and into CPU section.
4. Attach the touchscreen connector to the back of the SMT-3 controller.

* When installing a new touchscreen overlay on a 19” upright model, make certain that the metal of the monitor bezel door does not contact the glass. The bezel should fit snugly against the foam tape, *WITHOUT CRUSHING THE TAPE.* You must also recalibrate the touchscreen after closing the monitor door.

MicroTouch

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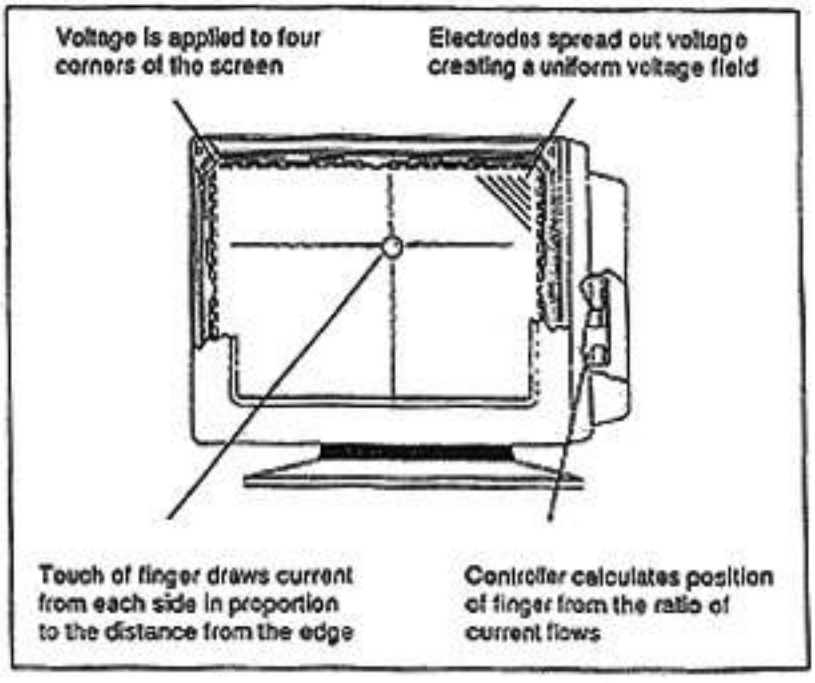
Methuen, MA 01844

508 659-5000
Fax 508 659-9100

ClearTek 1000
Technology Backgrounder

Theory of Operation

The MicroTouch ClearTek 1000 uses the only touch technology based on sensing electrical signals — analog capacitive touch technology. At the core of this proprietary technology, which all of MicroTouch's touch screen products are based on, is an all-glass screen with a transparent, thin-film conductive coating fused to its surface. A proprietary glass overcoat is applied over the conductive coating, completely protecting and sealing the entire sensor. Along the edges is a narrow, precisely printed electrode pattern that uniformly distributes a low voltage, AC field over the conductive layer. When a finger makes contact with the screen's surface, it "capacitively couples" with the voltage field drawing a minute amount of current to the point of contact. The current flow from each corner is proportional to the distance to the finger and the ratios of these flows are measured by the controller and used to locate the touch.



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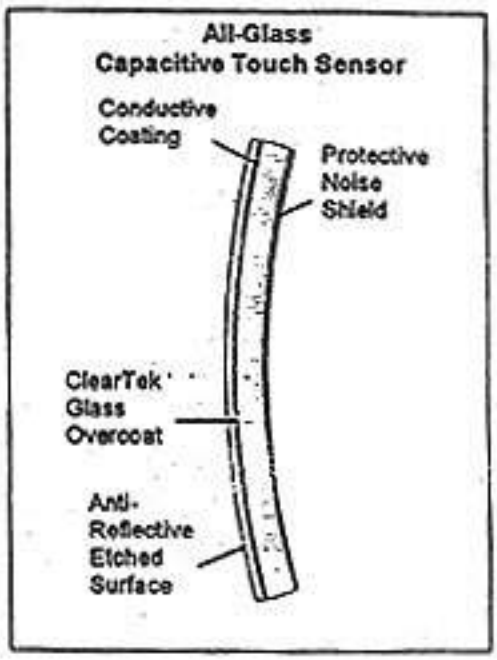
Performance: Unparalleled Speed and Accuracy

The ClearTek 1000 has the greatest touch sensitivity of any touch system. While each screen has a resolution of 1,024 x 1,024 touch points, its controller averages the entire area of finger contact to a single point, giving users pixel-by-pixel control when touching the screen.

The ClearTek 1000 also provides the fastest response of any touch screen, recording a touch within 15 milliseconds of finger contact. This performance gives users virtually instant response, making it well-suited for various applications, including point-of-sale where touch-entry cash registers are replacing traditional push-button cash registers.



As importantly, the ClearTek 1000 offers this fast performance with even the lightest touch. Because the point of capacitive coupling occurs exactly when a finger makes contact with the screen's surface — absolutely no additional pressure is required to register a touch. Other competing products based on pressure-sensing technologies require significantly more force to activate the screen and can register different locations depending on the angle of contact and the pressure applied.

One of the most significant advantages of the ClearTek 1000 system is its ability to perform in contaminated environments. This robustness is due to the physics of capacitive coupling — an effect which is very difficult to interrupt. Contaminants such as grease, water, and dirt will not interfere with the capacitive screen's speed, accuracy, or resolution as they will with SAW or infrared touch screens. In addition, the lack of sensitivity to non-capacitive materials gives the MicroTouch sensor the capability of being sealed with a gasket to make the display water tight.

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Reliability and Durability

The ClearTek 1000 screen is also extremely durable. It uses the only technology on the market employing a solid state sensor with no active or moving components such as the infrared emittors, ultrasonic transducers, flexible plastic sheets, or strain gauges found in other touch screen technologies. And unlike resistive touch screens, its glass overcoat allows it to be resistant to scratches from sharp objects and not show wear over time. The controller electronics of the ClearTek 1000 are built around MicroTouch's proprietary ASIC chipset and, as a result of a vastly reduced parts count, offer unsurpassed reliability. In addition, the ClearTek ASIC-based controller overcomes the weaknesses present in older capacitive touch screen designs, enabling it to eliminate noise from EMI sources, drifting caused by temperature shifts and humidity, and damage from static discharges.

While capacitive sensing provides unparalleled performance when used with a finger, it doesn't work well if the user is wearing thick gloves as these can prevent capacitive contact from occurring. New firmware does allow the use of latex gloves.

The cost of MicroTouch's ClearTek 1000 is typically less than the cost of comparable products, with SAW and infrared systems being the most expensive. Pressure sensing and strain gauge products are new to the market and have not shipped in high volumes, and as a result are still selling at relatively high prices.

	Resolution	Touch Down Speed	Light Touch	Contaminants	Gasket-Sealable	Active or Moving Parts	Scratch/ Wear Resistant	Stylus	Cos
MicroTouch Capacitive	High	Fast	Very sensitive	Very resistant	Yes	No	Yes	Conductive	Low
Surface Acoustic Wave (SAW)	Medium	Slow	Insensitive	Not resistant	No	Yes	Yes	Not hard	High
Resistive Membrane	High	Fast	Sensitive	Resistant	No	Yes	No	Not hard/sharp	Low
Infrared	Lowest	Slow	Very sensitive	Not resistant	Yes	Yes	Yes	Any	High
Pressure Sensing	Low	Slowest	Insensitive	Very resistant	No	Yes	Yes	Any	High

Removal/Access of Monitor and CD Player - Countertop

1. Turn off the game and unplug it from its power source.
2. Remove the lid (for lid removal instructions see the decal located inside the rear door).
3. Remove the touchscreen controller and disconnect the touchscreen controller cable from the back of the controller. Also, disconnect the Molex connector connecting the orange and gray wires from the touchscreen controller cable to the main harness, and the green wire with ring lug, that is attached to the metalwork, next to the controller. See Figure 1 for touchscreen controller location.
4. Disconnect the monitor signal cable from the motherboard. See Figure 1.
5. Remove the four nuts securing the monitor chassis to the main chassis; two nuts are located on each side of the monitor board. NOTE: BE CAREFUL TO AVOID THE FLYBACK TRANSFORMER AND HIGH VOLTAGE WIRE RUNNING TO THE MONITOR. See Figure 2 for locations.
6. Disconnect the monitor power connection (black and white wires running from monitor board to right angle connector plugged into power supply).
7. Pick up the monitor assembly and remove it from the cabinet.
8. The CD player is located underneath the monitor assembly.

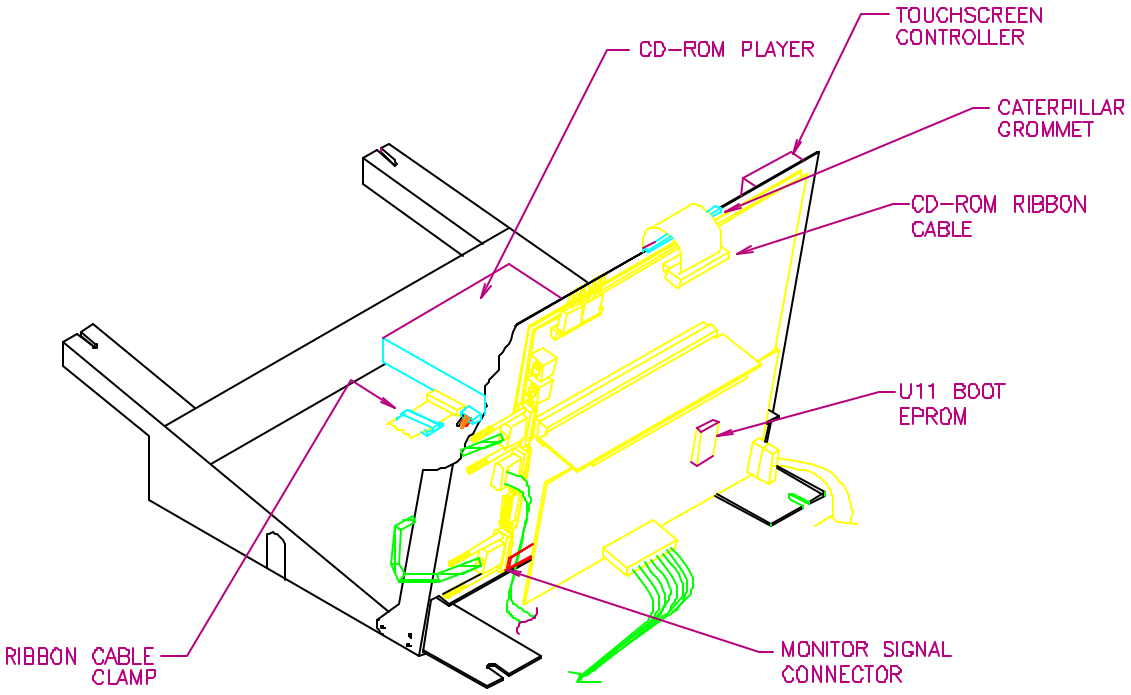


FIGURE 1 - COUNTERTOP - CD PLAYER REMOVAL

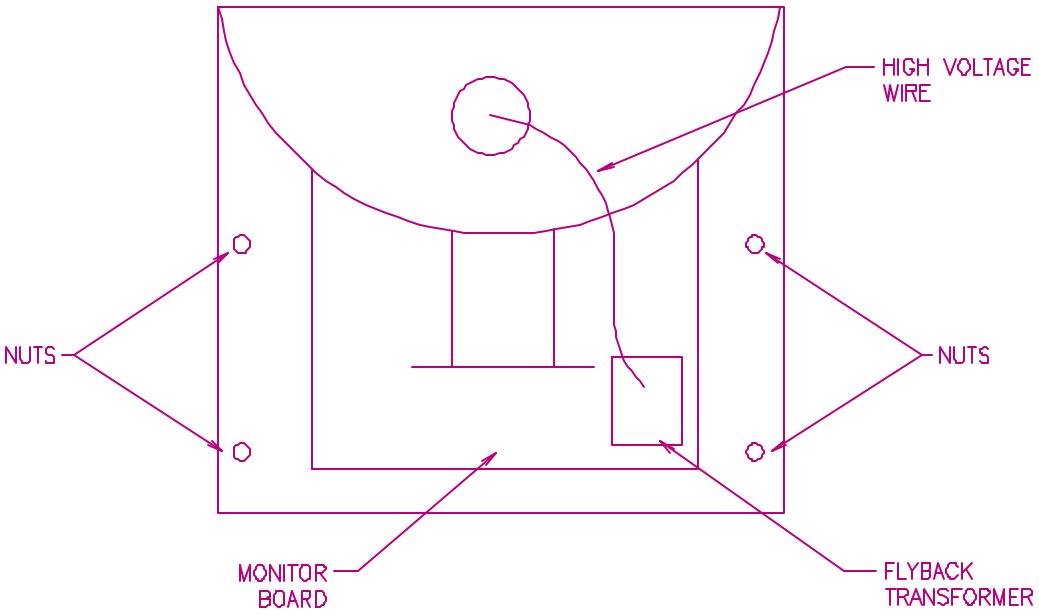


FIGURE 2 - COUNTERTOP - MONITOR REMOVAL

Removal/Access of Monitor and CD Player - Uprights/Cabarets

Monitor Removal

1. Power down the game and unplug the line cord from the power source.
2. Open the rear door to gain access to the monitor section.
3. Disconnect the touchscreen cable and all harnesses. (The touchscreen cable will be attached to the TTL board (located on the CPU board) or the SMT module, depending on which controller is used on your game. If your game uses an SMT controller you will have to remove the screws securing it to the cabinet in order to disconnect the touchscreen cable.)
4. Remove both bolts securing the rear of the monitor shelf to the cabinet. See Figure 1.
5. Open the monitor bezel door.
6. Remove both bolts securing the front of the monitor shelf to the cabinet (located on the underside of the shelf). See Figure 2.
7. Remove the ground strap attached to the monitor door.
8. Pull the monitor up and out through the monitor bezel door.

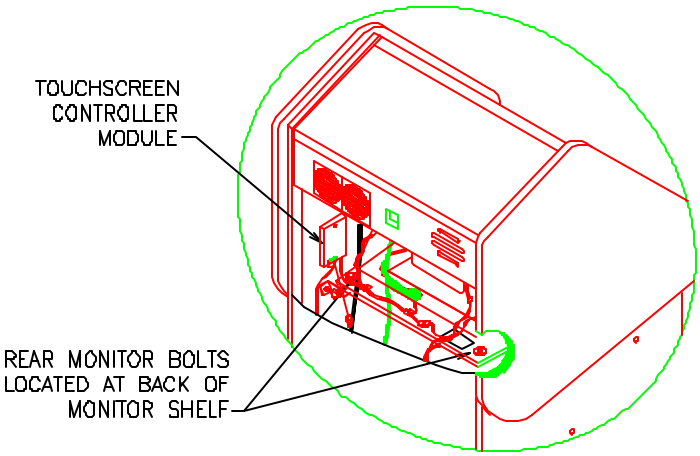


FIGURE 1 - UR/CAB - MONITOR REMOVAL

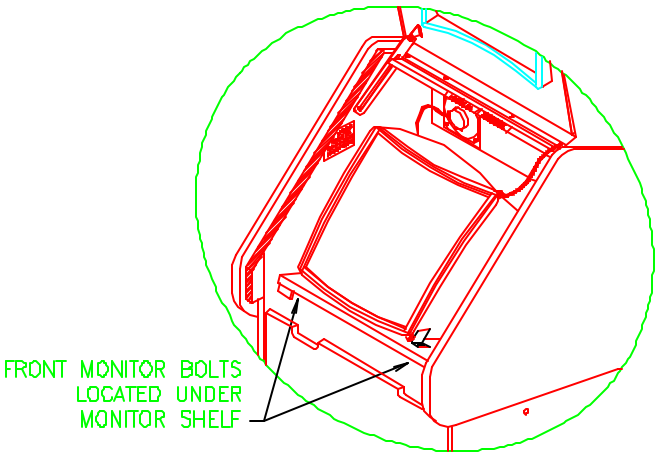


FIGURE 2 - UR/CAB - MONITOR REMOVAL

***CD Player Removal* (rear-access upright)**

1. Power down the game and unplug the line cord from the power source.
2. Open the coin mech door and locate the two screws securing the CD player to the metalwork (see Figure 5 for screw locations). Remove both screws.
3. Open the rear door.
4. Remove the screw securing the front edge of the metal work to the wood shelf (see Figure 6).
5. Gently push the power supply to the right to access the metal work behind it. (You may need to disconnect the line cord from the power supply and/or the cable clamp to the right of the power supply, in order to slide the power supply to the right.)
6. Locate the remaining screw, located behind the power supply and beneath the motherboard assembly, securing the CD player to the metal work, and remove it (see Figure 6 for location).
7. Slide the CD player to the left so you can access the rear of the player.
8. Disconnect the 4-pin power connector and the ribbon cable from the CD player.
9. Slide the CD player to the right to remove it from the game.

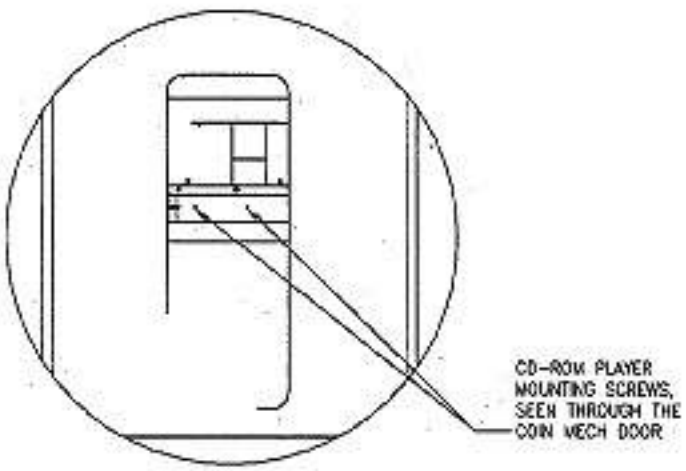


FIGURE 5 - REAR-ACCESS UR

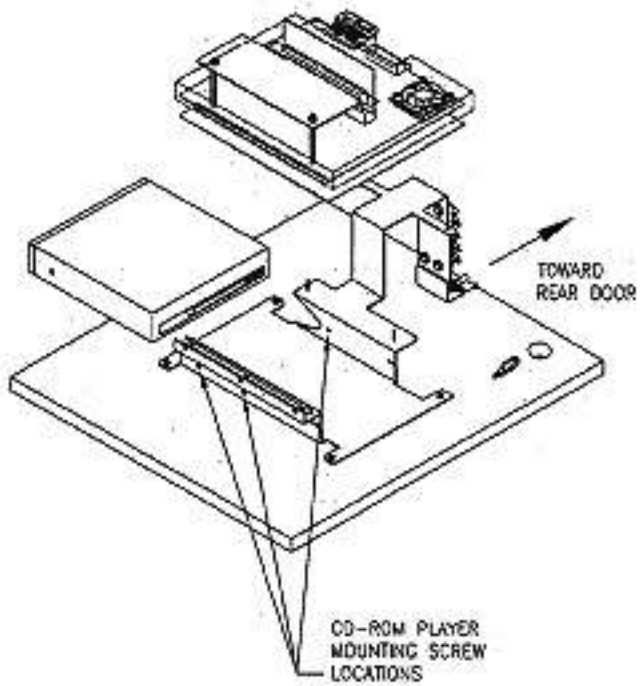


FIGURE 6 - REAR-ACCESS UPRIGHT

***CD Player Removal* (front-access upright/cabaret)**

1. Power down the game and unplug the line cord from the power source.
2. Open the CPU section door.
3. Slide the CPU shelf into its service position.
4. Locate the L-bracket on the right side of the CD player and remove the screw securing the CD player to the bracket. See Figure 7.
5. Remove the two screws on the left side of the CD player. See Figure 7.
6. Remove the CD player from the game.

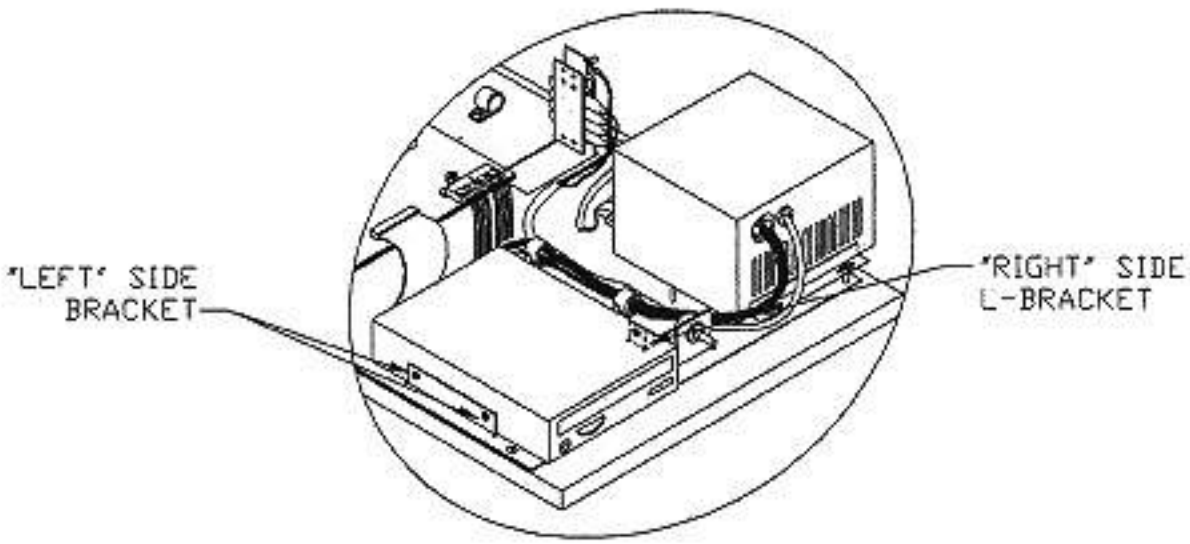


FIGURE 7 - FRONT-ACCESS UPRIGHT/CABARET

Removal/Access of Printed Circuit Boards - All Cabinets

NOTE:

Before handling any boards, observe the following procedures: Prevent Electro-Static Discharge by storing the boards in the anti-static bags in which they are shipped. Removing any static charge from your body before handling the boards. Using a ground strap when handling the boards. When plugging in connectors to the board, make sure the connector is inserted straight onto the header and that the connector covers all header pins. Do not connect any peripheral device to the board, if the power is still connected to the peripheral or if power is already applied to the board.

Motherboard (Telco or DeAmertek)

1. Turn off game and disconnect it from all power.
2. Locate and gain access to the motherboard (If unsure where to locate your motherboard, see you're game manual).
3. Disconnect all connectors from the CPU and I/O boards. Use Figures 1 and 2 to determine board type and connector locations.
4. Using a 1/4” nut driver, remove the two- (2) nuts from the motherboard assembly (shown in Figures 1 and 2).
5. Insert the board into an anti-static bag for storage.

CRT-500 I/O Board

1. Turn off game and disconnect it from all power.
2. Locate and gain access to the CRT-500 I/O board (If unsure where to locate your motherboard, see your game manual).
3. Disconnect all connectors from the I/O board (see Figures 1 and 2 for connector locations).
4. Using a 1/4” nut driver, remove the two- (2) nuts from the I/O board securing it to the standoffs (shown in Figures 1 and 2).
5. Insert the board into an anti-static bag for storage.

Communications Board (countertop)

1. Turn off game and disconnect it from all power.
2. Disconnect the blue communications ribbon cable connector from J12 on the motherboard (see Figures 1 and 2 for location).

For Steps 3 through 10, refer to Figure 3

3. Loosen the nuts securing the power cord strain relief and remove it.
4. Unplug the power cord from the power supply and lay it aside. Unplug the right angle connector from the power supply.
5. Remove the nut securing the ground braid to the power supply bracket.
6. Remove the three- (3) nuts securing the power supply bracket to the metalwork.
7. Push forward on the power supply and shift it to the right to remove it from the game.
8. Turn the bracket around to access the communications board.
9. Disconnect the communication ribbon cable from J1 and the power connector from J6.
10. Remove the three- (3) nuts securing the communications board to the metalwork and remove it.

Communications Board (cabaret/upright)

1. Turn off game and disconnect it from all power.
2. Open the rear door.
3. *REAR-ACCESS UPRIGHTS ONLY*: Disconnect the right angle connector from the power supply and disconnect the monitor power connector. Slide the CPU shelf out of the cabinet and rest it on end. See Figure 4.
4. Locate the communications board (shown in Figure 4).
5. Disconnect the communication ribbon cable from J1 and the power connector from J6.
6. Remove the three- (3) nuts securing the communications board to the metalwork and remove it.

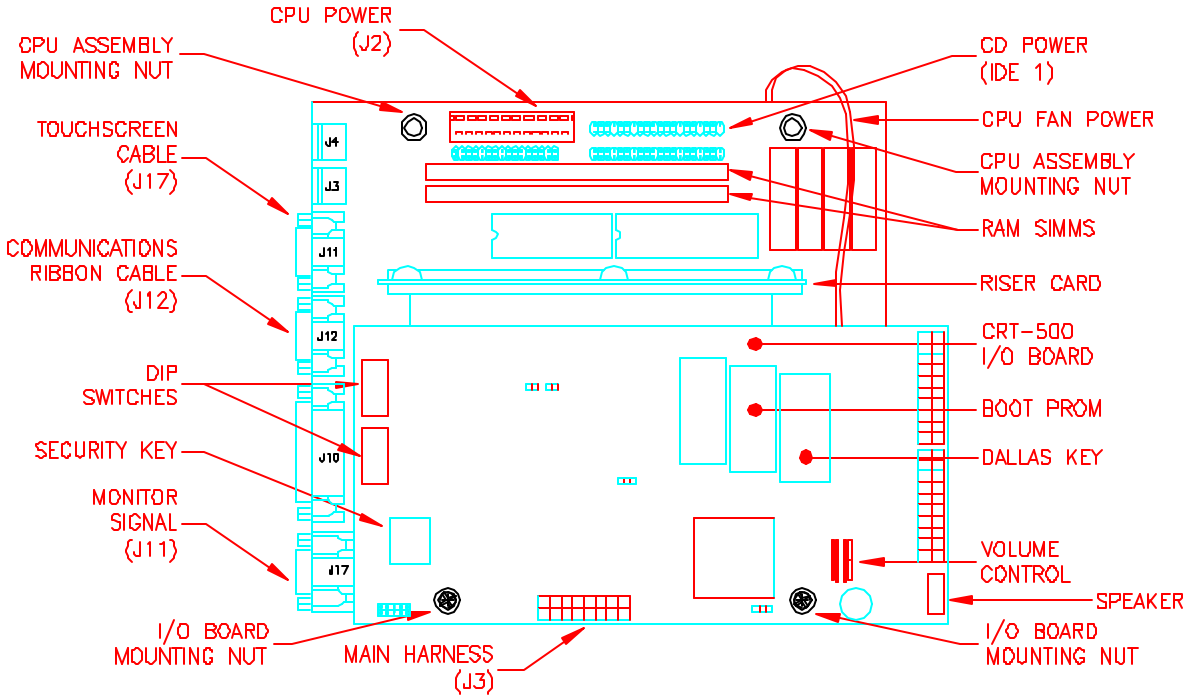


FIGURE 1 - TELCO MOTHERBOARD AND I/O BOARD ASSEMBLY

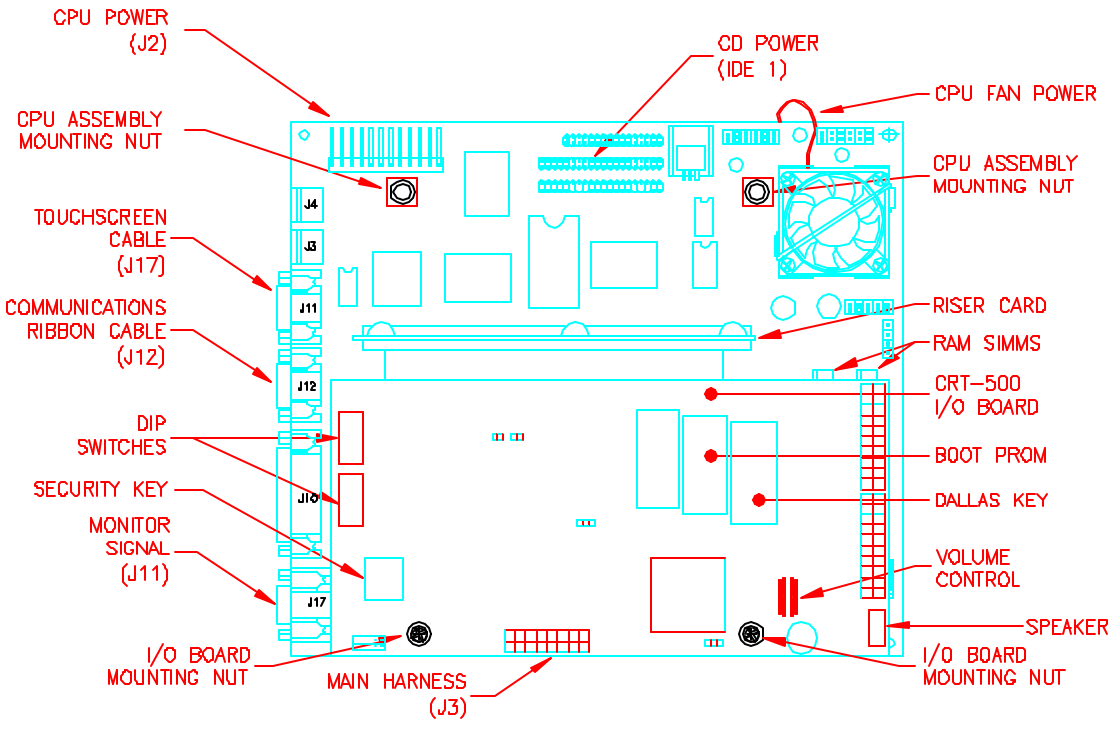


FIGURE 2 - DEAMERTEK MOTHERBOARD AND I/O ASSEMBLY

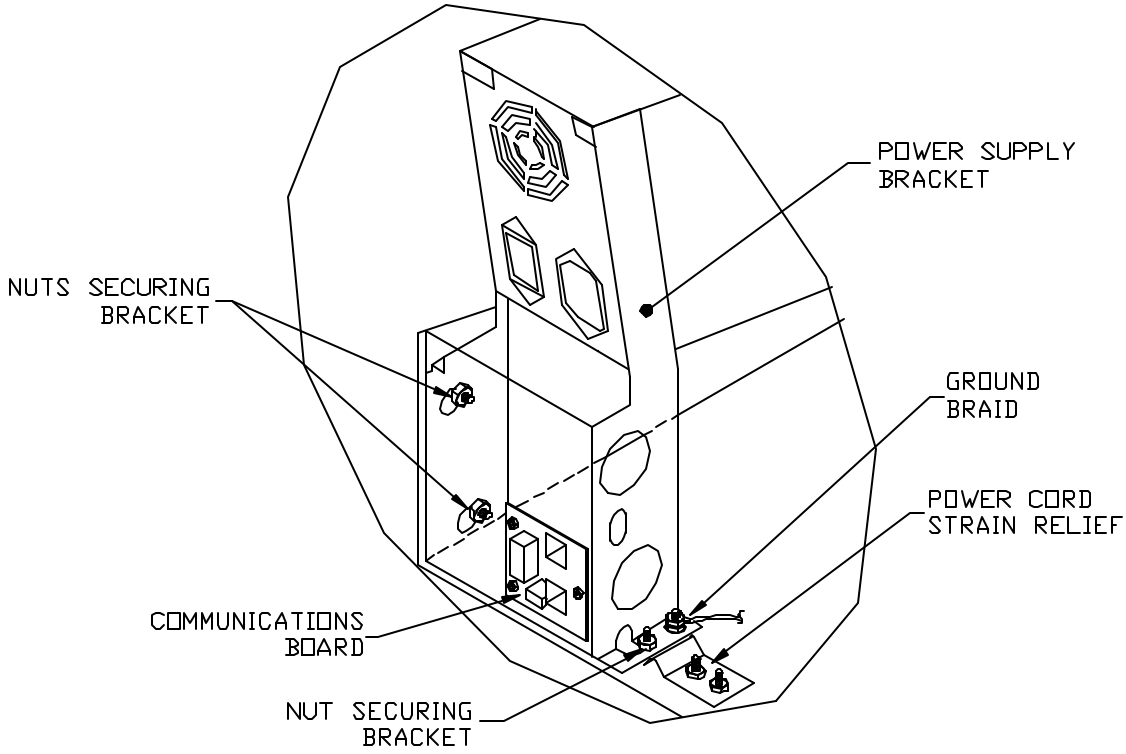


FIGURE 3 - COMMUNICATIONS BOARD LOCATION - CTOP

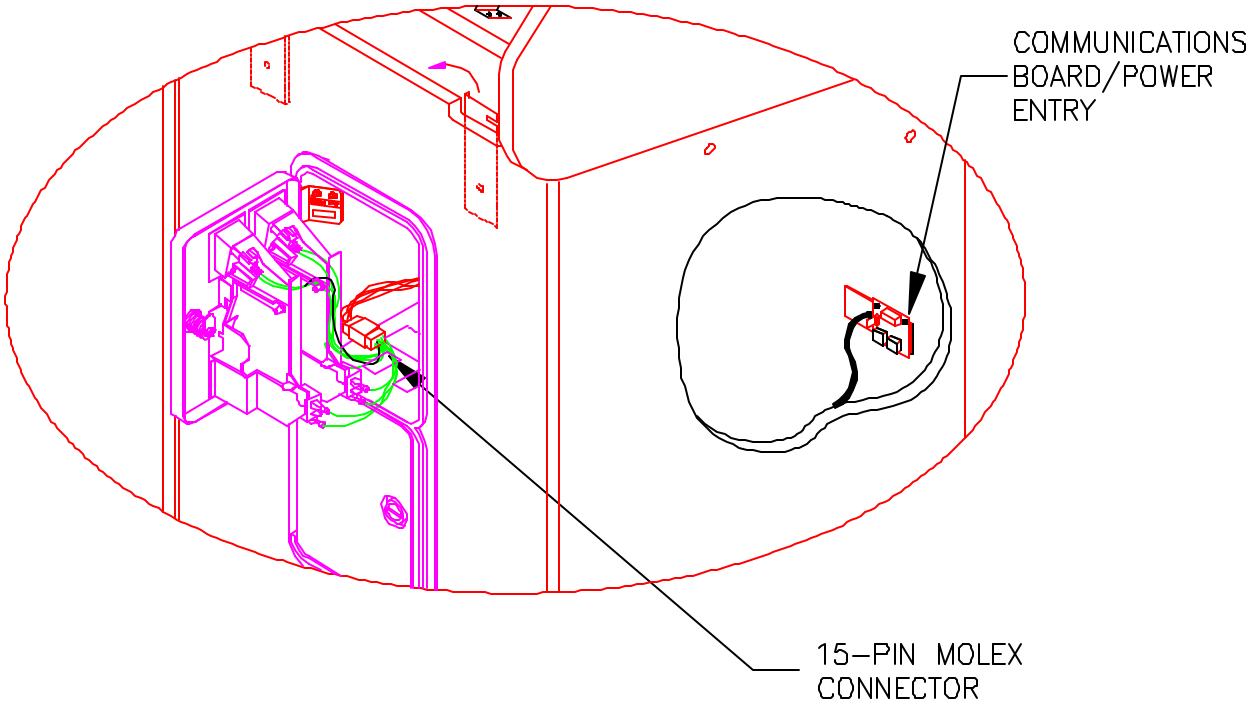


FIGURE 4 - COMMUNICATIONS BOARD LOCATION - CABARET/UPRIGHT

Merit Industries Inc.
Troubleshooting Guide for ***Megatouch™ XL***

Refer to the list below if you are experiencing a problem with your Megatouch XL Game…

PROBLEM	CORRECTIVE ACTION	COMMENT
No Power, Game reboots/monitor seems to power cycle	• Check that the power cord is connected to a "live outlet." • Check that the Power Switch is turned "ON." • Check that the power cord is connected to the game power supply. • Check that the power supply's voltage select switch is set to the proper voltage.	• "Live outlet" is an outlet powered with electricity. • The power switch is located in the rear of the game. • The power cord is plugged into the power supply inside the game.
No Video.	• Check that the game is powered and turned "ON." • Check that the monitor is connected to the game motherboard. • Check that the power is connected to the monitor and the motherboard. • Make sure the RAM SIMMs is properly seated.	• See "**No Power**" under "PROBLEM". • The monitor connection is located inside the rear compartment of the game. • The monitor is powered from a connection on the game power supply, located inside the rear compartment.
"BOOT ERROR - INSERT DISC IN DRIVE A," "OPERATING SYSTEM NOT FOUND," "SYSTEM BOOT FAILURE."	• Make sure that the I/O board is correctly installed and seated. • Make sure that the riser card is correctly installed and seated. • Check EPROM chips. Make sure it is installed and seated. • Check that no EPROM pins are bent. • Make sure that the JP1 jumper is shorted.	• I/O board is the small printed circuit board in the CPU section of the game. Board must be fully inserted in its socket. • Riser card is the printed circuit board connecting the I/O board to the motherboard. Riser card must be fully inserted in the socket. • The EPROM is the IC chip installed in U12 socket on the I/O board. EPROM must be fully inserted in the socket. • Bent pins on the EPROM result in unreliable contact with the circuit. • JP1 is located near U3 on I/O board. Install hardware jumper in JP1.
Game starts in cleaning or Troubleshooter mode when first turned on.	• Switch DS2-2 or DS2-1 is set in the wrong position.	• DS2-2 is located on the I/O Circuit Board in the back of the game. All switches (DS2 & DS3) should be UP for normal game operation.
"ERROR - INVALID KEY"	• Check the Dallas Key. Verify that it is installed and not damaged. • Verify that the CD is the most recent version.	• The Dallas key is located near DS2 & DS3 on the small circuit board inside the rear of the game. It is a black box approx. 3/4-inch square. Make sure that all pins are properly connected between the key and the board. • The R2/R3 CD will automatically reprogram the Dallas key for the latest version. Afterwards, the key will no longer work with older versions of game CDs (the R5 CD will not reprogram the key).
"FAILURE DRIVE F," "BAD FILE COMMAND," "FILE NOT FOUND," Unit comes on but no game is displayed.	• Check that the game CD is installed. (CD must be installed with label UP.) • Check the cable connections to CD-ROM drive (both ends). Re-seat if necessary.	• Game CD must be installed for operation. • If CD-ROM drive cables are not completely connected, CD-ROM will not operate. • Run the "Motherboard Tests," using the diagnostics software, to make sure the motherboard is working properly.

Game displays an error with memory.	• Check that the RAM SIMMs is installed/seated properly.	• The SIMMs is located on the motherboard in the rear of the game. Two 4MB or one 8MB SIMMs are factory installed in the game. The SIMMs must be fully seated and locked in place for proper operation.

PROBLEM	CORRECTIVE ACTION	COMMENT
"Causeway Error #9," Game locks up, Game graphics incorrect.	• Check that the RAM SIMMs is installed/seated properly. • Check CD for scratches or damage. • Clean CD. • Perform a *Two-button clear.* See "COMMENT" for instructions. • Check NV RAM (U11 on I/O card) for proper seating and/or bent pins.	• See "**Game displays an error with memory"** in the problem column. • Dirt, fingerprints, or scratches on the CD will cause game malfunction. • Use appropriate method to clean CD. • Two Button Clear: 1. Turn game power off. 2. Remove the coin box/bill acceptor. 3. Depress and hold the *Calibrate* and *Set-up* buttons located in the rear of the coin box opening. 4. With *Calibrate* and *Set-up* depressed, turn game power on. 5. Release *Calibrate* and *Set-up* buttons when "2-Button Clear Detected" is displayed on screen. 6. "2-Button Clear Complete" • Using the diagnostics software, run the "Motherboard Tests," "Processor Test" and "Co-Processor Test" to make sure they are each working correctly.
Touchscreen does not work. (Microtouch)	• Verify that the Touchscreen controller is connected to power. • Verify that the Touchscreen controller is operating. • Verify that the Touchscreen controller is connected to the motherboard. • Make sure the screen is not scratched. • Make sure no metal is touching the screen. • Upright games only - make sure the monitor door is closed properly. If it is loose, it can cause the game to lose calibration. • Check COM1 setting during boot-up.	• The touch screen controller is a small box mounted inside the rear compartment of the game. On a game with a Microtouch controller, an LED is illuminated when power is applied. When operating the LED will change intensity when the screen is touched. • Check for proper connection of the touch screen power lead with the power harness. The connection is made near the controller in the rear compartment of the game. • The Touch Screen is connected to COM 1 input on the motherboard in the CPU section of the game. • If the screen is scratched, it must be replaced. • Using the diagnostics software, run the "Motherboard Tests," "Serial Port Test" to make sure they are each working correctly. • If COM1 is bad, the motherboard needs to be replaced.

Touch screen does not work "ELO Graphic"	• U12 on the I/O board must be revision R2 or higher • Check the screen for any objects that may be stuck to it. • Check connections on the controller • Check that the gasket on the bezel is not dry	• LED on the control box will flash, then stay on steady when the screen is touched. • Anything stuck to the touch screen will cause it not work.
Poor picture quality.	• Adjust *Brightness*, *Contrast*, *Horizontal*, *Vertical* controls	• Monitor controls are located in the rear compartment of the game. • Using the diagnostics software, run the "Video Tests" too fully test all aspects of the monitor performance.

PROBLEM	CORRECTIVE ACTION	COMMENT
Game not recording credits from coins, Bill acceptor not working.	• Check that the Coin Box/Bill Acceptor is correctly installed. • Check that the wiring harness on the Coin Box/Bill Acceptor is intact and not damaged. • Check that the Bill Acceptor is powered. • Check the actuator wire on the coin mech micro switch. • Check that JP3 (on the I/O board) is shorted correctly.	• Coin Box/Bill Acceptor must be fully inserted and locked into place. • Inspect the wiring harness on the Coin Box/Bill Acceptor for damage. Make sure that it is fully connected. • Bill Acceptor (only) requires a power connection from the power supply. This power connection is the same plug that is used to power the monitor. There is a second connector (two conductors) behind the Coin Box/Bill Acceptor connector. Both connections must be complete for proper operation. • The actuator wire is the thin wire at the end of the coin chute. • Jumper JP3 (on the I/O board) should be shorted in the negative position.
Meter not advancing.	• Check connection at I/O board.	• Check wiring at *J3 METER* connector on I/O board in rear compartment. • Speaker magnet may interfere with the meter. If you believe this to be the case, the meter must be replaced.
No sound, Game volume low.	• Adjust volume control. • Make sure speaker is plugged in.	• Volume control is VR1 & VR2 on the I/O board. • Speaker connection is the small connector (J9) next to the larger white connectors on the I/O board.
Game volume loud, Sound distorted.	• Turn volume down.	• Volume control is VR1 & VR2 on the I/O board (and, on front-access, upright models, an auxiliary volume control is located on the front of the PC shelf).
Slow loading from CD player	• Clean CD • Clean the lens in the CD player • Replace the CD player	•
99 Credits when the game is turned on	• Check the U11 on the I/O board for bent pins. • JP2 on the I/O board should be shorted.	•

Megatouch™ XL Diagnostics Software

The Megatouch™ XL program includes software that will aid you in diagnosing any problems you may encounter with the game. In order to run the software, you must have Boot EPROM R2. *The Troubleshooter™* software, Copyright © 1996, is provided, under license, by ForeFront Direct, Inc.

Instructions

Starting the Software

1. Clear all credits from the game (perform a "2-Button Clear" or play the credits).
2. Turn off the game.
3. Open the rear door and connect your keyboard to the keyboard port.
4. Turn on the power.
5. When the idle screens start, press ESC to get to a DOS prompt (F:\>).
6. Change to C:\>.
7. Type "TS" at the C:\ prompt, to start the Troubleshooter software.
8. Choose "Advanced Diagnostics Test" from the Main Menu.

Exiting the Software and Starting Your Game

1. Return to the Main Menu and Exit to DOS.
2. Turn the game off and on to restart the game.

Test Descriptions

Test	Description
Processor Test	Tests that the processor is working properly. Returns a result of PASS or FAIL. Note that the processor speed should read approximately 100 MHz for Telco motherboards and 66 MHz for DeAmeritech motherboards.
Co-Processor Test	Tests that the co-processor is working properly. Returns a result of PASS or FAIL. Error Messages: "There is no Co-Processor Installed."* *The co-processor is part of the processor. If this test fails, the processor must be replaced.
Motherboard Tests	*DMA Controller Tests* Exercises the DMA controller's 3 types of registers. If any are defective, FAILED is displayed. *System Timer Tests* Tests the system timer chip (i.e. NOT the Real-Time Clock). Error Messages: "FAILED Output Test" "FAILED Wrap Test" "FAILED BCD Mode"

Motherboard Tests	*Keyboard Controller Tests* Has the keyboard controller perform its self test and interface test. The self test reports a pass or failure and the interface test reports either a pass or a specific problem with one of the signal lines between the controller and the keyboard. The software then confirms that the keyboard controller responds correctly to commands to disable and enable the keyboard. The result is displayed as PASS or FAIL. Error Messages: "FAILED: No reply" "Clock Low" "Clock High" "Data Low" "Data High" *PCI Bus Tests* *This test is not applicable to the Megatouch XL.* *CMOS RAM Tests* Checks the power-sense pin of the Real-Time Clock, exercises the standard CMOS RAM locations with a walking bit test, calculates the CMOS checksum and compares it with the stored value and confirms the real-time clock is running. *Clock Synchronicity* When this test reaches the Clock Synchronicity test, it may display a message stating that the clocks are not synchronized and will ask if you wish to synchronize them. Answer "YES" to this question.
Memory Tests	*You do not need to run this test, as it is not applicable to the Megatouch XL.*
Floppy Disk Tests	*You do not need to run this test, as it is not applicable to the Megatouch XL.*
Hard Disk Tests	*You do not need to run this test, as it is not applicable to the Megatouch XL.*
Input Device Tests	*You do not need to run this test, as it is not applicable to the Megatouch XL.*
Video Tests	*Video Card Information* Lists basic information about the video card. In the Megatouch XL, the video card is integral to the motherboard. *Select Modes for Testing* Defaults to all modes selected. You will need to de-select "800x600 Colour Graphics." Pressing <SPACE> or <ENTER> against an entry toggles between selection and non-selection of that mode. Press <F10> when selection is complete. *Character Generator Tests* Displays the standard character set, in a variety of attributes, for assessment. The standard PC character set is displayed in the top half of the screen, sequentially in each of the possible display modes. Four keys control the functions: <ESC> Returns to the Video Tests menu and records an "ABORTED" result. <+> Cycles the available colors within the current mode. <Y> Records a "PASSED" result and advances to the next possible mode

Video Tests

or returns to the Video Tests menu if no more modes are possible.

<N> Records a "FAILED" result and advances to the next possible mode or returns to the Video Tests menu if no more modes are possible.

Linearity and Alignment Tests

Check and display the setup of the monitor on screen. For each of the possible display modes, two screens are displayed. First a cross hatch pattern is displayed; check for distortion and ensure all the lines are straight and the same distance apart. The second screen consists of a cross hair pattern with concentric circles. The following keys are available during this test:

<ESC> Returns to the Video Tests menu and records an "ABORTED" result.

<+> Cycles the available colors within the current mode.

<Y> Records a "PASSED" result and advances to the next possible mode or returns to the Video Tests menu if no more modes are possible.

<N> Records a "FAILED" result and advances to the next possible mode or returns to the Video Tests menu if no more modes are possible. If this key is pressed during the first of the two screens for each mode (cross hatch screen), the cross hair screen is skipped and the next mode is entered.

Color Bar And Palette Tests

The Color Bar Tests cycle through all possible display modes showing a bar of each color possible, in that mode. The following keys are available during this test:

<ESC> Returns to the Video Tests menu and records an "ABORTED" result.

<Y> Records a "PASSED" result and advances to the next possible mode or returns to the Video Tests menu if no more modes are possible.

<N> Records a "FAILED" result and advances to the next possible mode or returns to the Video Tests menu if no more modes are possible. If this key is pressed during the first of the two screens for each mode (cross hatch screen), the cross hair screen is skipped and the next mode is entered.

Video Text Memory Test†

This is a non-interactive test. An information panel indicates that this test produces a flicker effect on the screen: this message appears for about 5 seconds or until a key is pressed. Pressing <ESC> during this message will record an "ABORTED" result and return directly to the Video Tests menu. During the test, random characters are displayed in random colors, after which, a result panel will appear, informing the user of a "PASSED" or "FAILED" result.

Video Graphics Memory Tests†

This is a non-interactive test. An information panel indicates that this test produces a flicker effect on the screen: this message appears for about 5 seconds or until a key is pressed. Pressing <ESC> during this message will record an "ABORTED" result and return directly to the Video Tests menu. During the test, random pixels will be displayed in random colors, after which a result panel will appear informing the user of a "PASSED" or "FAILED" result.

Split Screen Test

The only valid key during the test is the <ESC> key, used to abort the test. After two cycles, the test completes automatically and a panel appears asking the user if the test passed. The following keys are valid:

<Y> Records a "PASSED" result returns to the Video Tests menu.

Video Tests	<N> Records a "FAILED" result and returns to the Video Tests menu. *Panning Test*† The only valid key during the test is the <ESC> key, used to abort the test. The test completes automatically and a panel appears asking the user if the test passed. The following keys are valid: <Y> Records a "PASSED" result returns to the Video Tests menu. <N> Records a "FAILED" result and returns to the Video Tests menu *Color Purity Test* The Color Purity Test displays three blocks of color, red, green and blue, each at 68% intensity. The control keys are as follows: <ESC> Returns to the Video Tests menu and records an "ABORTED" result. <Y> Records a "PASSED" result returns to the Video Tests menu. <N> Records a "FAILED" result and returns to the Video Tests menu. *EGA/VGA Write Mode Test* The VGA Write Mode Test draws three sets of concentric circles, drawn in three different ways. The control keys are: <ESC> Returns to the Video Tests menu and records an "ABORTED" result. <+> Cycles the available colors within the current mode. <Y> Records a "PASSED" result returns to the Video Tests menu. <N> Records a "FAILED" result and returns to the Video Tests menu. *Test Card Generator* The Test Card Generator steps through all of the available display modes and draws a video test card. Any key can be pressed to continue, except <ESC>, which will abort the test and return to the Video Tests menu. *VESA/SVGA Tests* *You do not need to run this test, as it is not applicable to the Megatouch XL.*
Serial Port Tests‡	Without loop-back connectors, you can not run the "Check Handshake Lines" test or the "External Loopback" test. You can only run the "Verify Controller" test. Use "Select next serial port" to change to COM2.
Parallel Port Tests‡	Without loop-back connectors, you can not run the "Check Status Port" test. Do not run the "Test Parallel Interrupt" test as it will always fail with the I/O card installed.
Printer Output Tests	*You do not need to run this test, as it is not applicable to the Megatouch XL.*
Multimedia Tests	Run the "CD-ROM Transfer Test" and the "CD-ROM Random Seek Test". The "CD-ROM Test Disc Read" function cannot be run.

† While you may choose to run all of the video tests, only these tests need to be run to fully test the Megatouch XL video capabilities.

‡ Loop-back connectors are needed for the two (2) serial ports and one (1) parallel port, as well as for the J1, J2 and J3 headers. You may make these connectors or contact Merit Customer Service to learn of the availability of the connectors. See the next page for instructions on making your own connectors.

Making the Loop-Back Connectors

Purchase two (2) serial and one (1) parallel port connectors.
Purchase two (2) 20-pin minifit junior (Molex part # 39-01-2200) and one (1) 16-pin minifit junior connectors (Molex part # 39-01-2160). These connectors use .165 female pins (Molex part # 39-00-0038).

Jump the pins in the connectors as follows:

Serial Connector		
Pin #		Pin #
1	to	9
2	to	3
4	to	9
6	to	7
7	to	8

Parallel Connector		
Pin #		Pin #
1	to	13
2	to	15
10	to	16
11	to	17
12	to	14

J1 and J2 (20-pin connectors)		
Pin #		Pin #
1	to	11
2	to	12
3	to	13
4	to	14
5	to	15
6	to	16
7	to	17
8	to	18

J3 (16-pin connectors)		
Pin #		Pin #
1	to	9
2	to	10
3	to	11
4	to	12
5	to	13
6	to	14
7	to	15
8	to	16

CMOS Configuration Procedure for the Megatouch XL*

The CMOS configuration should only be performed if your Megatouch XL experiences problems booting up.

1. Make sure the game is turned off.
2. Plug keyboard into the J4 port on the motherboard assembly.
3. Turn on the power.
4. Look for the sign-on signature.
5. After the sign-on signature, the screen will read “Press (DEL) to enter SETUP.”
6. As soon as you see this message, press **DEL**.
7. “Main Menu” will appear on the screen.
8. Use the **DOWN ARROW** key to highlight “Load ROM Default Values.”
9. Press **ENTER**.
10. “NOTICE” message will appear on screen.
11. Press **ENTER**.
12. “Main Menu” will appear on the screen.
13. Use the **UP ARROW** key to highlight “System Setup.”
14. Press **ENTER**.
15. Use **DOWN ARROW** to highlight “Diskette Drive A:”
16. Press **PAGE UP** four (4) times, until “Not Installed” appears.
17. Press **ESC**.
18. “Main Menu” appears on the screen.
19. Use **DOWN ARROW** to highlight “Boot Options.”
20. Press **ENTER**.
21. Press **PAGE UP** one time. “C: ONLY” appears on the screen.
22. Use **DOWN ARROW** to post errors, **PAGE UP** one (1) time to disable, then press **ESC**.
23. “Main Menu” appears.
24. Press the **DOWN ARROW** key to green PC feature, press **ENTER**.
25. A customized gray box appears.
26. **PAGE UP** to “Disabled.”
27. Press **ESC**.
28. Press **F10**.
29. “Warning!” appears on screen.
30. Press the “**Y**” key.
31. Press **ENTER**.
32. **Wait for the system to reboot and then turn the power off.**
33. Unplug the keyboard from J4.
34. Turn on the power.

*The CMOS setup only applies to games using the DeAmertek motherboard. Games using Telco motherboards will not need to have the CMOS set manually.

DIP switch settings for the Mars 2000 Bill Acceptor

(The DIP switches are located on the side of the bill acceptor)

SETTING	SWITCHES
1 WAY 2 WAY 4 WAY	DIP 1 ON/DIP 2 OFF DIP 1 OFF/DIP 2 ON DIP 1 ON/DIP 2 ON
HIGH ACCEPTANCE HIGH SECURITY	DIP 3 OFF DIP 3 ON
*$1 *$2 *$5	DIP 4 ON=ACCEPT/OFF=REJECT DIP 5 ON=ACCEPT/OFF=REJECT DIP 6 ON=ACCEPT/OFF=REJECT
1 PULSE PER DOLLAR *4 PULSES PER DOLLAR	DIP 7 OFF DIP 7 ON
ALWAYS ENABLE HARNESS ENABLE	DIP 8 OFF DIP 8 ON

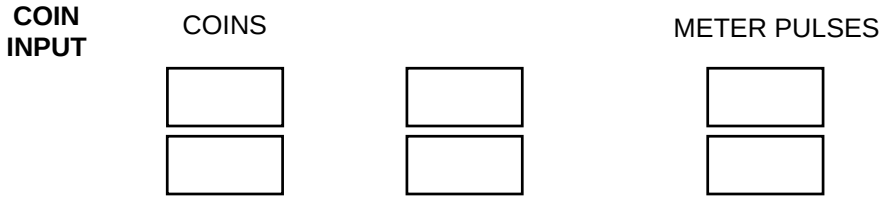
* Recommended factory settings allow for acceptance of $1, $2 and $5 bills at 4 pulses per dollar.

Setting the Coin-In Menu

Settings for the bill acceptor are controlled by the settings for Electronic Mech 2 (2E) in the Coin-In Menu screen.

To set the Coin-In Menu to provide a bonus credit for the use of a dollar, set the number of coins (for Electronic Mech 2) to “4” and set the number of credits to “5.” This will provide 5 credits for each dollar entered. “Meter Pulses” can be set to “4” to record the amount of “coins” in the cashbox, or it can be set to “5” to record the number of credits played, depending on your individual need. An illustration of the coin-in menu set to offer 5 credits for a dollar, with the meter counting coins, is shown below.

See your owner’s manual for complete operating instructions for the Coin-In Menu.



Section 3
Power Supplies

GlobTek

Parts list

PARTS LIST
GLOBTEK POWER SUPPLY

LOCATION	DESCRIPTION
R1	1/4W 470KΩ
R2, R3	1/2W 220KΩ
R4, R5	1/4W 220KΩ
R6, R9	1/16W 22Ω
R7, R10, R52	1/16W 1.8KΩ
R8, R11	1/16W 2.2Ω
R12	3W 100Ω
R13, R14	1/4W 4.7Ω
R15	1/4W 15Ω
R16	1/2W 56Ω
R17	1/2W 270Ω
R18, R20, R21	1/4W 1KΩ
R19, R41	1/16W 3.9KΩ
R22	1/4W 6.8KΩ
R23	1/16W 8.2KΩ
R24	1/4W 10KΩ
R25	1/4W 56KΩ
R26	1/4W 39KΩ
R27, R55	1/16W 22KΩ
R28, R34, R35, R36, 56	1/16W 1KΩ
R29, R48	1/16W 100KΩ
R30, R31	1/16W 1.5KΩ
R32, R33, R38, R42, R44	1/16W 4.7KΩ
R37	1/16W 560Ω
R39	1/16W 33KΩ
R40	1/16W 6.8KΩ
R43	1/16W 47KΩ
R45	1/16W 18KΩ
R46	1/4W 22Ω
R47	1/16W 27KΩ
R49, R50	1/16W 3.3KΩ
R51	1/16W 2.7KΩ

R53	1/4W 1.5KΩ
R54	1/2W 220Ω
PT	THERMISTOR, 5A 5Ω 055
ZNR1, ZNR2	VARISTOR, 140VAC/180VDC 220NR-10D
C1	0.22μF / 250VAC M.C.
C2	0.1μF / 250VAC M.C.
C3, C4	472ρF / 250VAC C.C.
C5, C6	470μF / 250V E.C.
C7, C8, C28, C29	2.2μF / 50V 105°C E.C.
C9	102ρF / 1KV C.C.
C10	1μF / 250V M.C.
C11, C12, C13, C22, C26	103ρF / 50V C.C.
C14, C15	1000μF / 16V 105°C E.C.
C16, C17	4700μF / 10V 105°C E.C.
C18, C19	470μF / 16V 105°C E.C.
C20	104ρF / 50V C.C.
C21	10μF / 25V 105°C E.C.
C23, C24	1μF / 50V 105°C E.C.
C25	330μF / 35V 105°C E.C.
C27	0.001μF / 400V M.C.
D1, D2	4.0A / 800V IN5408
D3, D4, D5, D6	1.5A / 600V FR155
D7, D8, D9, D10, D11	1.5A / 100V FR152
D12 - D23	0.1A / 75V IN4148
ZD1	11V / 1/4W ZENER HZ11C2
BD1	30A / 40V D83-004
BD2	10A / 40V C82-004
Q1, Q2	5A / 400V C4106
Q3, Q4, Q5	0.1A / 50V C945
Q6, Q7	0.1A / -50V A1015
IC	0.03A / 40V IR3M02
IC	0.03A / 40V LM339
T1	4mh / 8A ER-35F2
T2	6mh / 0.1A EEL-16
T3	4 mh / 0.1A UU10-5S
L3	3mh / 6A EE-25FF
L4	10μh / 30A 230WF

L5, L6	1μh / 30A PC9780
L7, L8	100μh / 2A
FUSE	T 5A / 250V H
FUSE	M TYPE
P8, P9	450mm 6-pin
WIRE	450mm 4-pin 5-1/4”
WIRE	450mm 4-pin 3-1/2”

Section 4
Circuit Boards

PARTS LIST
CRT-500 I/O Board

LOCATION	DESCRIPTION
CN01	CAP NETWORK, SIP 470pF 25V ±10
CN02	CAP NETWORK, SIP 470pF 25V ±10
C1	CAP, SMT, CERAMIC, 470pF 50V
C7	CAP, SMT, CERAMIC, 470pF 50V
C14	CAP, SMT, CERAMIC, 470pF 50V
C15	CAP, SMT, TANTA, 10µF, 25V
C16	CAP, SMT, TANTA, 10µF, 25V
C17	CAP, SMT, CERAMIC, 0.1µF, 50V
C20	CAP, SMT, CERAMIC, 0.1µF, 50V
C34	CAP, SMT, CERAMIC, 0.1µF, 50V
C35	CAP, SMT, CERAMIC, 0.22µF, 50V
C36	CAP, SMT, CERAMIC, 0.22µF, 50V
C37	CAP, SMT, CERAMIC, 0.1µF, 50V
C39	CAP, SMT, CERAMIC, 0.1µF, 50V
C56	CAP, SMT, CERAMIC, 0.1µF, 50V
C60	CAP, ELECT (RD), 1µF, 50V
C61	CAP, SMT, CERAMIC, 0.1µF, 50V
C62	CAP, ELECT (RD), 1µF, 50V
C63	CAP, SMT, CERAMIC, 0.1µF, 50V
C64	CAP, SMT, CERAMIC, 0.1µF, 50V
C65	CAP, SMT, CERAMIC, 0.1µF, 50V
C66	CAP, ELECT (RD), 1µF, 50V
C67	CAP, SMT, CERAMIC, 0.1µF, 50V
C68	CAP, SMT, CERAMIC, 33pF, 50V NPO
C71	CAP, SMT, CERAMIC, 33pF, 50V NPO
C72	CAP, TANTA (RD), 10µF, 25V ±20
C73	CAP, SMT, CERAMIC, 0.1µF, 50V
C74	CAP, SMT, CERAMIC, 0.47µF, 25V
C75	CAP, SMT, CERAMIC, 1000pF, 50V
C76	CAP, SMT, CERAMIC, 1000pF, 50V
C77	CAP, SMT, CERAMIC, .33µF, 50V
C85	CAP, SMT, CERAMIC, .33µF, 50V
C86	CAP, TANTA (RD), 10µF, 25V, ±20
C87	CAP, ELECT (RD), 470µF, 16V, ±20
C88	CAP, CERAMIC (AX), .22µF, 50V
C89	CAP, ELECT (RD), 2200µF, 16V, ±20
C90	CAP, TANTA (RD), 10µF, 25V, ±20
C91	CAP, ELECT (RD), 470µF, 16V, ±20
C92	CAP, CERAMIC (AX), .22µF, 50V
C93	CAP, ELECT (RD), 2200µF, 16V, ±20
C94	CAP, ELECT (RD), 470µF, 16V, ±20
C95	CAP, SMT, CERAMIC, 0.1µF, 50V
C96	CAP, ELECT (RD), 3.3µF, 16V ±20
C97	CAP, SMT, CERAMIC, 0.1µF, 50V

C100	CAP, TANTA (RD), 68µF, 10V ±20%
DN01	DIODE ISOLATED ARRAY X8
DS02	DIP SWITCH, 8-POSITION, VER. SPST
DS03	DIP SWITCH, 8-POSITION, VER. SPST
D2	DIODE SIGNAL 1N914/1N4148
D3	DIODE SIGNAL 1N914/1N4148
D4	DIODE, ZENER, 4.7V, 1N5230
D5	DIODE SIGNAL 1N277, GERMANIUM
JP01	HEADER, 2-PIN (SQ), .1 CTR
JP01	SHUNT, 2-PIN, .1 CTR
JP02	HEADER, 2-PIN (SQ), .1 CTR
JP02	SHUNT, 2-PIN, .1 CTR
JP03	HEADER, 3-PIN (SQ), .1 CTR
JP03	SHUNT, 2-PIN, .1 CTR
JP09	HEADER, 3-PIN (SQ), .1 CTR
JP09	SHUNT, 2-PIN, .1 CTR
JP10	25 AWG, PVC SOLID BLACK
JP11	25 AWG, PVC SOLID BLACK
JP12	25 AWG, PVC SOLID BLACK
JP13	25 AWG, PVC SOLID BLACK
J1	HEADER, 2X10 PIN, MINIFIT, ST
J2	HEADER, 2X10 PIN, MINIFIT, ST
J3	HEADER, 2X8 PIN, MINIFIT, ST
J4	HEADER, 2X5 PIN, 0.1 CTR, 0.025 SQ
J9	HEADER, 6-PIN (SQ), .1 CTR
L1	FERITE LEAD ON BEAD, #73 MTL
MW01	LEVER, CONTROL, STEREO, XL
PB01	PCB, IN/OUT XL VID CTOP
Q001	TRANSISTOR, SMT, 2907A, PNP
RN01	RESTF, 1/4W, 4.7KΩ, 5%, SIP
RN02	RESTF, 47Ω, 5%, 16-PIN, ISO SMT
RN03	RESTF, 1/4W, 4.7KΩ, 5% SIP
RN04	RESTF 47Ω, 5%, 16-PIN, ISO SMT
RN05	RESTF, 1/4W, 4.7KΩ, 5%, SIP
RN07	RESTF, 1/4W, 4.7KΩ, 5%, SIP
R1	RES, SMT, 1/4W, 10KΩ 5%
R4	RES, SMT, 1/4W, 10KΩ 5%
R5	RES, SMT, 1/4W, 5KΩ 5%
R6	RES, SMT, 1/4W, 1KΩ 5%
R7	RES, SMT, 1/4W, 3.6KΩ 5%
R8	RES, SMT, 1/4W, 10KΩ 5%
R9	RES, SMT, 1/4W, 47KΩ 5%
R10	RES, SMT, 1/4W, 100KΩ 5%
R13	RES, SMT, 1/4W, 100KΩ 5%
R14	RES, SMT, 1/4W, 68KΩ, 5%
R17	RES, SMT, 1/4W, 68KΩ, 5%
R18	RES, SMT, 1/4W, 8.2KΩ, 5%
R19	RES, SMT, 1/4W, 3.6KΩ, 5%
R20	RES, SMT, 1/4W, 2.2KΩ, 5%
R23	RES, SMT, 1/4W, 2.2KΩ, 5%
R24	RES, SMT, 1/4W, 270Ω, 5%

R25	RES, SMT, 1/4W, 270Ω, 5%
R26	RES, SMT, 1/4W, 10KΩ, 5%
R27	RES, SMT, 1/4W, 10KΩ, 5%
R28	RES, SMT, 1/4W, 100Ω, 5%
R29	RES, SMT, 1/4W, 36KΩ, 5%
R30	RES, SMT, 1/4W, 36KΩ, 5%
R31	RES, SMT, 1/4W, 100KΩ, 5%
R32	RES, SMT, 1/4W, 39KΩ, 5%
R33	RES, SMT, 1/4W, 1KΩ, 5%
R34	RES, SMT, 1/4W, 10KΩ, 5%
R35	RES, SMT, 1/4W, 10KΩ, 5%
R40	RES, SMT, 1/4W, 2.2KΩ, 5%
R42	RESCF, 1/4W, 220Ω, 5%
R43	RESMF, 1/4W, 2.2Ω, 5%
R45	RESCF, 1/4W, 220Ω, 5%
R46	RESMF, 1/4W, 2.2Ω, 5%
R47	RES, 1/4W, 10Ω, 5%
R48	RES, SMT, 1/4W, 3.6KΩ, 5%
R51	RES, SMT, 1/4W, 3.6KΩ, 5%
R52	RES, SMT, 1/4W, 100Ω, 5%
R53	RESTF, SMT1/8W, 1.0MΩ, 5%
R54	RES, SMT, 1/4W, 36KΩ, 5%
R55	RES, SMT, 1/4W, 36KΩ, 5%
SW01	PB SWITCH, MOM, SPST
SW02	PB SWITCH, MOM, SPST
U1	IC, SMT, 74HC245A, BUS TRANSCEIVER
U2	IC, SMT, 74HC541A, BUFF/LINE RCVR
U4	IC, SMT, 74HC541A, BUFF/LINE RCVR
U5	IC, SMT, 74HC138A, 1 OF 8 DECODER
U6	IC, 74HC682, MAG COMPARATOR
U7	IC, SMT, 74HC08, AND GATE
U8	IC, SMT, 74HC32A, OR GATE
U9	IC, DS1232 MICRO MONITOR CHIP
U10	IC, SMT, 74HC139A, 1 OF 4 DECODER
U11	SOCKET, IC, 28 PIN DIP MACHINE
U12	SOCKET, IC, 32 PIN DIP, DUAL WIPE
U13	IC, FLASH MEM, 4MBT, 32 PIN DIP
U13	SOCKET, IC, 32 PIN DIP, DUAL WIPE
U14	IC, SMT, 74HC573, D LATCH
U15	IC, SMT, 74HC573, D LATCH
U16	IC, SMT, 74HC541A, BUFF/LINE RCVR
U17	IC, SMT, 74HC541A, BUFF/LINE RCVR
U18	IC, SMT, 74HC138A, 1 OF 8 DECODER
U19	IC, SMT, 74HC574, D FLIP FLOP
U20	IC, SMT, 74HC574, D FLIP FLOP
U21	IC, ULN2803, OCTAL DRIVER
U22	IC, ULN2803, OCTAL DRIVER
U23	IC, SMT, 74HC374A, TRI-STATE D FF
U24	IC, UDN 2540B, QUAD DARLINGTON P
U25	IC, UDN 2540B, QUAD DARLINGTON P
U26	IC, SMT, 74HC138A, 1 OF 8 DECODER

U27	IC, SMT, 74HC541A, BUFF/LINE RCVR
U28	IC, SMT, 74HC374A, TRI-STATE D FF
U29	HEADER, RCPT, 5-PIN, .1 CTR, SIP, RA
U29	ELECTRONIC KEY, DS1205V
U30	IC, SMT, 7406, HEX INVERTYER
U31	IC, SMT, LM339A, VOL COMPARATOR
U32	IC, SMT, 74HC14A, SCH TRGR INVER
U33	IC, SMT, 74HC157A, QUAD, 2 I/P MUX
U34	IC, SMT, LM324A, OP AMP
U35	IC, SMT, 74HC244A, BUFF/LINE RCVR
U38	IC, PLCC, MUL'MEDIA AUDIO, XL
U39	SOCKET, IC, 68-PIN PLCC
U39	MHSCR, PAN/PHL, 4-40X3/8
U39	IC, LM383 AUDIO AMP
U40	KEPNUT, STL, #4-40
U40	MHSCR, PAN/PHL, 4-40X3/8
U41	IC, SMT, UA78L05, VOLTAGE REG'R
U42	IC, SMT, 74HC244A, BUFF/LINE RCVR
U43	IC, SMT, 74HC174A, D FF, W/CLR
VR01	POT, 1/4W, 10KΩ, MTG, STR
VR02	POT, 1/4W, 10KΩ, MTG, STR
WJ01	24 AWG 1/64", PVC SOLID BLACK
W1	22 AWG, W/TIN SOLID BUSS WIRE
W2	22 AWG, W/TIN SOLID BUSS WIRE
XI01	INSULATOR PAD CRYSTAL HC-49
XI02	INSULATOR PAD CRYSTAL HC-49
X2	CRYSTAL, 16.934MHZ, HC-49S
X3	CRYSTAL, 24.576MHZ, HC-49S

Section 5
VGA Monitors

Monitor Adjustments

Degaussing

TelcoVISION™

KT-1403V PARTS LIST

CODE No.	DESCRIPTION			REF.No
	RESISTORS			
RT-00005	3W	35 Kohm	CEMENT	R100
RT-00005	3W	35 Kohm	CEMENT	R101
RT-00078	5W	10 Kohm	CEMENT	R102
RT-00077	5W	390 ohm	CEMENT	R103
RC-00977	1/4W	200Kohm	CARBON	R104
RC-00960	1/4W	150Kohm	CARBON	R105
RC-00660	1/4W	4.7Kohm	CARBON	R106
RC-00810	1/4W	22 Kohm	CARBON	R107
RC-00520	1/4W	1 Kohm	CARBON	R108
RT-00001	3W	0.33ohm	CEMENT	R109
RM-00660	2W	27 Kohm	CEMENT	R110
RC-	1/4W	27 Kohm(1%)	CARBON	R112
RC-00310	1/4W	47 ohm	CARBON	R113
RC-00450	1/4W	470 ohm	METAL	R114
RC-00325	1/4W	56 ohm	CARBON	R115
RC-00270	1/4W	22 ohm	CARBON	R116
RC-00520	1/4W	1 Kohm	CARBON	R117
RC-00770	1/4W	12 Kohm	CARBON	R118
RM-00641	2W	10 Kohm	METAL	R119
RC-00750	1/4W	10 Kohm	CARBON	R121
RC-00960	1/4W	150Kohm	CARBON	R122
RT-00045	5W	2 ohm	CEMENT	R123
RC-01360	1/2W	1 Mohm	CARBON	R124
RM-00170	1W	220 ohm	METAL	R125
RC-00540	1/4W	1.5Kohm	CARBON	R200
RC-00540	1/4W	1.5Kohm	CARBON	R201
RC-00540	1/4W	1.5Kohm	CARBON	R202
RC-00350	1/4W	100 ohm	CARBON	R203
RC-00660	1/4W	4.7Kohm	CARBON	R204
RC-00770	1/4W	12 Kohm	CARBON	R205
RC-00430	1/4W	390 ohm	CARBON	R206
RC-00270	1/4W	22 ohm	CARBON	R207
RC-00810	1/4W	22 Kohm	CARBON	R208
RC-00770	1/4W	12 Kohm	CARBON	R209
RC-00770	1/4W	12 Kohm	CARBON	R210
RC-00590	1/4W	2.7Kohm	CARBON	R211
RC-00890	1/4W	56 Kohm	CARBON	R212
RC-00530	1/4W	1.2Kohm	CARBON	R213
RC-00570	1/4W	2.2Kohm	CARBON	R214
RC-00520	1/4W	1 Kohm	CARBON	R215
RC-00750	1/4W	10 Kohm	CARBON	R216
RC-00570	1/4W	2.2Kohm	CARBON	R217
RC-00520	1/4W	1 Kohm	CARBON	R218
RC-	1/4W	39 Kohm(1%)	CARBON	R219
RC-	1/4W	100Kohm(1%)	CARBON	R220
RC-	1/4W	430Kohm	CARBON	R221
RC-00881	1/4W	47Kohm(1%)	CARBON	R222
RC-00370	1/4W	150 ohm	CARBON	R223
RC-00590	1/4W	2.7Kohm	CARBON	R224
RC-00590	1/4W	2.7Kohm	CARBON	R225
RC-00590	1/4W	2.7Kohm	CARBON	R226
RC-00660	1/4W	4.7Kohm	CARBON	R227
RT-00520	1/4W	1 Kohm	CARBON	R228
RT-00890	1/4W	56 Kohm	CARBON	R230
RT-	1/4W	91 Kohm	CARBON	R232
RC-00470	1/4W	560 ohm	CARBON	R233
RC-00810	1/4W	22 Kohm	CARBON	R300
RC-00800	1/4W	20 Kohm	CARBON	R301
RC-00710	1/4W	6.8Kohm	CARBON	R302
RC-00660	1/4W	4.7Kohm	CARBON	R304
RC-	1/4W	430Kohm	CARBON	R305
RC-	1/4W	91 Kohm	CARBON	R306
RC-00210	1/4W	2.2 ohm	CARBON	R307
RC-00580	1/4W	2.4Kohm	CARBON	R308
RC-00600	1/4W	3 Kohm	CARBON	R309
RC-01150	1/2W	220 ohm	CARBON	R310
RC-00370	1/4W	150 ohm	CARBON	R311
RM-00040	1W	1 ohm	METAL	R312
RC-00350	1/4W	100 ohm	CARBON	R313
RM-	1W	15 ohm	METAL	R314
RC-00730	1/4W	8.2Kohm	CARBON	R315
RC-00840	1/4W	30 Kohm	CARBON	R316
RC-00520	1/4W	1 Kohm	CARBON	R317
RC-00730	1/4W	8.2Kohm	CARBON	R319
RC-00760	1/4W	15 Kohm	CARBON	R321
RC-00610	1/4W	3.3Kohm	CARBON	R400
RC-00720	1/4W	7.5Kohm	CARBON	R401
RC-00860	1/4W	39Kohm	CARBON	R402
RC-00750	1/4W	10Kohm	CARBON	R403
RC-01287	1/2W	100 Kom	CARBON	R404
RC-00970	1/4W	180Kohm	CARBON	R405
RC-00800	1/4W	20 Kohm	CARBON	R406
RC-	1/4W	1.5Kohm	CARBON	R407
RC-00660	1/4W	4.7Kohm	CARBON	R408
RC-00610	1/4W	3.3Kohm	CARBON	R409
RC-00530	1/4W	1.2Kohm	CARBON	R410
RC-00930	1/4W	100Kohm	CARBON	R411
RC-00720	1/4W	7.5Kohm	CARBON	R412
RC-00900	1/4W	68 Kohm	CARBON	R413
RC-00370	1/4W	150 ohm	CARBON	R414
RC-00690	1/4W	5.6Kohm	CARBON	R416
RM-	1W	22 ohm	METAL	R417
RC-00490	1/4W	680 ohm	CARBON	R418
RM-00200	1W	330 ohm	METAL	R419

KT-1403V PARTS LIST

CODE No.	DESCRIPTION			REF.No
	RESISTORS			
RC-00310	1/4W	150 ohm	CARBON	R420
RC-00610	1/4W	3.3Kohm	CARBON	R421
RC-00270	1/4W	22 ohm	CARBON	R422
RC-00310	1/4W	47 ohm	CARBON	R423
RC-00430	1/4W	390 ohm	CARBON	R424
RC-	1W	56 ohm	METAL	R425
RC-00520	1/4W	1 Kohm	CARBON	R426
RC-00590	1/4W	2.7Kohm	CARBON	R427
RC-00660	1/4W	4.7Kohm	CARBON	R428
RC-00570	1/4W	2.2Kohm	CARBON	R429
RC-00770	1/4W	12Kohm	CARBON	R430
RC-00930	1/4W	100Kohm	CARBON	R431
RC-00950	1/4W	220Kohm	CARBON	R432
RC-00880	1/4W	47Kohm	CARBON	R433
RC-00930	1/4W	100Kohm	CARBON	R434
RC-	1/4W	43Kohm	CARBON	R435
RC-00780	1/4W	15Kohm	CARBON	R436
RC-00520	1/4W	1 Kohm	CARBON	R437
RC-00930	1/4W	100Kohm	CARBON	R438
RC-00280	1/4W	27 ohm	CARBON	R439
RC-00780	1/4W	15Kohm	CARBON	R440
RC-01030	1/4W	330Kohm	CARBON	R501
RC-01255	1/2W	10Kohm	CARBON	R502
RC-00970	1/4W	180Kohm	CARBON	R503
RC-00930	1/4W	100Kohm	CARBON	R504
RC-00660	1/4W	4.7Kohm	CARBON	R505
RC-00750	1/4W	10Kohm	CARBON	R506
RC-00650	1/4W	4.3Kohm	CARBON	R507
RC-00690	1/4W	5.6Kohm	CARBON	R508
RC-00300	1/4W	39 ohm	CARBON	R509
RC-	1/2W	10Kohm	CARBON	R600
RC-00330	1/4W	75 ohm	CARBON	R601
RC-00330	1/4W	75 ohm	CARBON	R602
RC-00330	1/4W	75 ohm	CARBON	R603
RC-00730	1/4W	8.2Kohm	CARBON	R604
RC-00730	1/4W	8.2Kohm	CARBON	R606
RC-00730	1/4W	8.2Kohm	CARBON	R607
RC-00470	1/4W	560 ohm	CARBON	R608
RC-00430	1/4W	390 ohm	CARBON	R609
RC-00400	1/4W	220 ohm	CARBON	R610
RC-00430	1/4W	390 ohm	CARBON	R611
RC-00340	1/4W	91 ohm	CARBON	R612
RC-00400	1/4W	220 ohm	CARBON	R613
RC-00350	1/4W	100 ohm	CARBON	R614
RC-00530	1/4W	1.2Kohm	CARBON	R615
RC-00400	1/4W	220 ohm	CARBON	R616

CODE No.	DESCRIPTION			REF.No
	RESISTORS			
RC-00340	1/4W	91 ohm	CARBON	R617
RC-00430	1/4W	390 ohm	CARBON	R619
RC-00340	1/4W	91 ohm	CARBON	R620
RC-00326	1/4W	68 ohm	CARBON	R621
RC-00340	1/4W	91 ohm	CARBON	R622
RC-00326	1/4W	68 ohm	CARBON	R623
RT-00220	5W	1.8 Kohm	CEMENT	R624
RT-00220	5W	1.8 Kohm	CEMENT	R625
RT-00220	5W	1.8 Kohm	CEMENT	R626
RC-01050	1/4W	820Kohm	CARBON	R627
RC-00430	1/4W	390 ohm	CARBON	R628
RC-00830	1/4W	27 Kohm	CARBON	R629
RC-00430	1/4W	390 ohm	CARBON	R630
RC-01050	1/4W	820Kohm	CARBON	R631
RC-00830	1/4W	27 Kohm	CARBON	R632
RC-00430	1/4W	390 ohm	CARBON	R633
RC-00830	1/4W	27 Kohm	CARBON	R634
RC-01050	1/4W	820Kohm	CARBON	R635
RC-00690	1/4W	5.6Kohm	CARBON	R636
RC-00310	1/4W	47 ohm	CARBON	R637
RC-00340	1/4W	91 ohm	CARBON	R638
RC-00326	1/4W	68 ohm	CARBON	R639
RC-00690	1/4W	5.6 Kohm	CARBON	R640
RC-00310	1/4W	47 ohm	CARBON	R641
RC-00310	1/4W	47 ohm	CARBON	R642
RC-00690	1/4W	5.6 Kohm	CARBON	R643
RC-01130	1/2W	100 ohm	CARBON	R644
RC-01130	1/2W	100 ohm	CARBON	R645
RC-01130	1/2W	100 ohm	CARBON	R646
RC-01200	1/2W	1 Kohm	CARBON	R647
RC-01262	1/2W	10 Kohm	CARBON	R648
RC-00270	1/4W	22 ohm	CARBON	R649
RC-00270	1/4W	22 ohm	CARBON	R650
RC-00270	1/4W	22 ohm	CARBON	R651
RF-00050	1W	1 ohm	FUSIBLE	FR101
RF-00060	1W	4.7 ohm	FUSIBLE	FR102

	VARIABLES			
VR-00917	CET 065C	B5K	SEMI-FIXED	VR101
VR-00917	CET 065C	B5K	SEMI-FIXED	VR201
VR-	CET 92H	B50K	ROPOT	VR203
VR-	CET 92H	B20K	ROPOT	VR301
VR-00220	CET 065C	B300K	SEMI-FIXED	VR303
VR-01000	CET 065C	B10K	SEMI-FIXED	VR403
VR-	CET 92H	B100K	ROPOT	VR401
VR-	CET 92H	B5K	ROPOT	VR402

KT-1403V PARTS LIST

CODE No.	DESCRIPTION			REF No.
	VARIABLES			
VR-00917	CET 065C	850K	SEMI-FIXED	VR604
VR-00940	CET 065C	82K	SEMI-FIXED	VR605
VR-01000	CET 065C	810K	SEMI-FIXED	VR606
VR-	CET 92H	850K	ROPOT	VR501
VR-	CET 92H	810K	ROPOT	VR502
VR-01000	CET 065C	810K	SEMI-FIXED	VR503
VR-	CET 065C	8100	SEMI-FIXED	VR601
VR-	CET 065C	8100	SEMI-FIXED	VR602
VR-	CET 065C	810K	SEMI-FIXED	VR603
VR-	CET 065C	810K	SEMI-FIXED	VR604
VR-	CET 065C	810K	SEMI-FIXED	VR605
	CAPACITORS			
CC-	250V AC	224pF	CERAMIC	C102
CC-00610	250V AC	222pF	CERAMIC	C103
CC-00610	250V AC	222pF	CERAMIC	C104
CE-00710	400V	330uF	ELECTROLYTIC	C105
CL-00210	630V	473pF(K)	METALLIZED	C106
CE-00180	25V	100uF	ELECTROLYTIC	C107
CE-00360	50V	47uF	ELECTROLYTIC	C108
CC-00020	50V	100pF	CERAMIC	C109
CM-00090	100V	332pF	MYLAR	C110
CM-00090	100V	332pF	MYLAR	C112
CM-00110	100V	334pF	MYLAR	C111
CC-00430	1KV	471pF	CERAMIC	C114
CM-00050	100V	222pF	MYLAR	C115
CM-00020	100V	103pF	MYLAR	C116
CE-00687	160V	100uF	ELECTROLYTIC	C118
CE-00230	35V	100uF	ELECTROLYTIC	C119
CE-00687	160V	100uF	ELECTROLYTIC	C121
CE-00240	35V	220uF	ELECTROLYTIC	C122
CE-00200	25V	470uF	ELECTROLYTIC	C123
CE-00090	16V	100uF	ELECTROLYTIC	C126
CE-00100	16V	220uF	ELECTROLYTIC	C127
CC-00110	50V	104pF	CERAMIC	C128
CC-00110	50V	104pF	CERAMIC	C129
CC-00110	50V	104pF	CERAMIC	C130
CC-00620	250V AC	472pF	CERAMIC	C131
CC-00620	250V AC	472pF	CERAMIC	C132
CC-00360	500V	221pF	CERAMIC	C133
CE-00330	50V	10uF	ELECTROLYTIC	C201
CE-00330	50V	10uF	ELECTROLYTIC	C202
CM-00020	100V	103pF	MYLAR	C204
CC-00110	50V	104pF	CERAMIC	C205
CM-00220	100V	102pF(J)	MYLAR(P)	C206
CM-00060	100V	224pF	MYLAR	C207
CM-00060	100V	224pF	MYLAR	C208
CE-00080	16V	47uF	ELECTROLYTIC	C209

CODE No.	DESCRIPTION			REF No.
	CAPACITORS			
CE-00090	16V	100uF	ELECTROLYTIC	C210
CM-00033	100V	104pF	MYLAR	C211
CC-00110	50V	104pF	CERAMIC	C212
CM-00109	100V	333pF	MYLAR	C300
CM-00110	100V	334pF	MYLAR	C301
CM-00020	100V	103pF	MYLAR	C302
CM-00030	100V	104pF	MYLAR	C303
CM-00030	100V	104pF	MYLAR	C304
CM-00010	100V	102pF	MYLAR	C305
CM-00060	100V	224pF	MYLAR	C306
CE-00220	35V	47uF	ELECTROLYTIC	C307
CM-00020	100V	103pF	MYLAR	C308
CE-00240	35V	220uF	ELECTROLYTIC	C309
CC-00130	50V	104pF	CERAMIC	C310
CE-00210	25V	2200uF	ELECTROLYTIC	C311
CE-00210	25V	2200uF	ELECTROLYTIC	C312
CE-00340	50V	22uF	ELECTROLYTIC	C313
CE-00365	50V	100uF	ELECTROLYTIC	C314
CE-00220	50V	2.2uF	ELECTROLYTIC	C315
CM-00060	100V	224pF	MYLAR	C316
CM-00030	100V	104pF	MYLAR	C320
CE-00300	50V	3.3uF	ELECTROLYTIC	C400
CC-00110	50V	104pF	CERAMIC	C401
CE-00100	16V	220uF	ELECTROLYTIC	C402
CE-00280	50V	1uF	ELECTROLYTIC	C403
CM-00030	100V	104pF	MYLAR	C404
CM-00030	100V	104pF	MYLAR	C405
CM-	100V	102pF(J)	MYLAR	C406
CE-00270	50V	0.47uF	ELECTROLYTIC	C407
CE-00310	50V	4.7uF	ELECTROLYTIC	C408
CM-00020	100V	103pF	MYLAR	C409
CM-00020	100V	103pF	MYLAR	C410
CC-00130	50V	151pF	CERAMIC	C411
CE-00330	50V	10uF	ELECTROLYTIC	C412
CM-00010	100V	102pF	MYLAR	C413
CL-00330	1.6KV	332pF(J)	METALLIZED	C414
CL-00192	630V	153pF(J)	METALLIZED	C415
CL-00380	1.6KV	392pF(J)	METALLIZED	C416
CL-	250V	824pF(J)	MYLAR	C417
CE-00200	25V	470uF	ELECTROLYTIC	C418
CE-00200	25V	470uF	ELECTROLYTIC	C419
CE-00530	160V	22uF	ELECTROLYTIC	C420
CE-00280	50V	1uF	ELECTROLYTIC	C421
CE-00280	50V	1uF	ELECTROLYTIC	C422
CE-00520	160V	10uF	ELECTROLYTIC	C423
CE-00330	50V	10uF	ELECTROLYTIC	C424
CE-00480	150V	1uF	ELECTROLYTIC	C425
CM-	120VAC	2%152pF(J)	MYLAR	C426

KT-1403V PARTS LIST

CODE No.	DESCRIPTION			REF.No
	CAPACITORS			
CE-	400V	1uF	ELECTROLYTIC	C501
CM-00040	100V	153pF(K)	MYLAR	C502
CE-00310	50V	4.7uF	ELECTROLYTIC	C503
CE-00380	50V	10uF	ELECTROLYTIC	C504
CE-00475	100V	10uF	ELECTROLYTIC	C506
CE-00310	50V	4.7uF	ELECTROLYTIC	C601
CE-00310	50V	4.7uF	ELECTROLYTIC	C602
CE-00310	50V	4.7uF	ELECTROLYTIC	C603
CE-00100	16V	220uF	ELECTROLYTIC	C604
CC-00110	50V	104pF	CERAMIC	C605
CC-00110	50V	104pF	CERAMIC	C607
CE-00310	50V	4.7uF	ELECTROLYTIC	C608
CC-00110	50V	104pF	CERAMIC	C610
CC-00110	50V	104pF	CERAMIC	C611
CE-00080	16V	47uF	ELECTROLYTIC	C613
CM-00030	100V	104pF	MYLAR	C614
CC-00365	500V	151pF	CERAMIC	C615
CC-00365	500V	151pF	CERAMIC	C617
CC-00110	50V	104pF	CERAMIC	C622
CE-00730	50V	1uF(B.P)	ELECTROLYTIC	C623
CE-00480	160V	1uF	ELECTROLYTIC	C624
CE-00480	160V	1uF	ELECTROLYTIC	C525
CE-00480	160V	1uF	ELECTROLYTIC	C526
CC-00390	500V	222pF	CERAMIC	C527
CC-00365	500V	151pF	CERAMIC	C528
CE-00730	50V	1uF(B.P)	ELECTROLYTIC	C529
CE-00080	16V	47uF	ELECTROLYTIC	C531
CE-00471	100V	47uF	ELECTROLYTIC	C532
CC-00455	1KV	102pF	CERAMIC	C533
CE-00730	50V	1uF(B.P)	ELECTROLYTIC	C534
	DIODES			
DO-00165	1N967B		ZENER	ZD101
DO-00120	1N5231		ZENER	ZD201
DO-00115	0.5W 3.6V		ZENER	ZD301
DO-00160	0.5W 12V		ZENER	ZD401
DO-00120	1N5231		ZENER	ZD602
DO-00456	D3SBA60.RBV406		BRIDGE	D101
DO-00060	1N4937		DIODE	D102
DO-00060	1N4937		DIODE	D103
DO-00060	1N4937		DIODE	D104
DO-00050	1N4148		DIODE	D105
DO-00055	1N4935		DIODE	D107
DO-00403	S2L60		DIODE	D108
DO-00403	S2L60		DIODE	D109
DO-00480	RGP15J		DIODE	D110
DO-00480	RGP15J		DIODE	D111
DO-00055	1N4935		DIODE	D112

CODE No.	DESCRIPTION		REF.No
	DIODES		
DO-00055	1N4935	DIODE	D114
DO-00050	1N4148	DIODE	D201
DO-00050	1N4148	DIODE	D202
DO-00050	1N4148	DIODE	D203
DO-00050	1N4148	DIODE	D204
DO-00050	1N4148	DIODE	D205
DO-00050	1N4148	DIODE	D206
DO-00050	1N4148	DIODE	D301
DO-00010	1N4002	DIODE	D302
DO-00050	1N4148	DIODE	D303
DO-00055	1N4935	DIODE	D401
DO-00455	RU4DS	DIODE	D402
DO-00404	HER305	DIODE	D403
DO-00055	1N4935	DIODE	D404
DO-00055	1N4935	DIODE	D405
DO-00060	1N4937	DIODE	D501
DO-00055	1N4935	DIODE	D502
DO-00010	1N4002	DIODE	D503
DO-00010	1N4002	DIODE	D504
DO-00050	1N4148	DIODE	D601
DO-00050	1N4148	DIODE	D602
DO-00050	1N4148	DIODE	D603
DO-00055	1N4935	DIODE	D604
DO-00055	1N4935	DIODE	D605
DO-00055	1N4935	DIODE	D606
	ICS		
IC-00080	UC3842	IC	IC101
IC-00700	GD74LS86	IC	IC201
IC-00730	MC14538BCP	IC	IC202
IC-	GD74LS139	IC	IC203
IC-00240	TDA1675A	IC	IC301
IC-00710	TDA1180P	IC	IC401
IC-00720	GL358	IC	IC402
IC-	LM1203N	IC	IC601
	TRANSISTORS		
TR-	K1537	TRANSISTOR	Q101
TR-00510	B989	TRANSISTOR	Q102
TR-00640	C3206-Y	TRANSISTOR	Q103
TR-00620	C3198Y	TRANSISTOR	Q201
TR-	C102M	TRANSISTOR	Q202
TR-00620	C3198Y	TRANSISTOR	Q203
TR-00620	C3198Y	TRANSISTOR	Q204
TR-00620	C3198Y	TRANSISTOR	Q205
TR-	C102M	TRANSISTOR	Q206
TR-	C102M	TRANSISTOR	Q207
TR-00620	C3198Y	TRANSISTOR	Q208

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CODE No.	DESCRIPTION		REF.No
	TRANSISTORS		
TR-	C102M	TRANSISTOR	Q209
TR-00590	A1271-Y	TRANSISTOR	Q301
TR-00630	C3203-Y	TRANSISTOR	Q302
TR-00620	C3198-Y	TRANSISTOR	Q303
TR-	C102M	TRANSISTOR	Q401
TR-00620	C3198Y	TRANSISTOR	Q402
TR-	D667C,C2235	TRANSISTOR	Q403
TR-00370	D1879	TRANSISTOR	Q404
TR-00600	A1023-Y	TRANSISTOR	Q405
TR-00600	A1023-Y	TRANSISTOR	Q406
TR-00640	C3206-Y	TRANSISTOR	Q407
TR-	B601	TRANSISTOR	Q408
TR-00620	C3198Y	TRANSISTOR	Q501
TR-	C102M	TRANSISTOR	Q502
TR-00560	C3503	TRANSISTOR	Q602
TR-00560	C3503	TRANSISTOR	Q606
TR-00560	C3503	TRANSISTOR	Q610
TR-	C3504	TRANSISTOR	Q601
TR-00570	A1381	TRANSISTOR	Q603
TR-	C3502	TRANSISTOR	Q604
TR-	C3504	TRANSISTOR	Q605
TR-00570	A1381	TRANSISTOR	Q607
TR-	C3502	TRANSISTOR	Q608
TR-	C3504	TRANSISTOR	Q609
TR-00570	A1381	TRANSISTOR	Q611
TR-	C3502	TRANSISTOR	Q612
	COILS & TRANS		
CO-00720	KTV-2532	LINE FILTER	L103
CO-00680	200	CHOKE	L104
CO-00680	200	CHOKE	L107
CO-00690	402	CHOKE	L401
CO-00730	KTL. 5L	LINEARITY	L402
CO-	501	LINEARITY	L403
CO-00650	4.7uH	03형	L601
CO-00650	4.7uH	03형	L602
CO-00650	4.7uH	03형	L603
CO-00650	4.7uH	03형	L604
CO-00430	100	CHOKE-COIL	L605
SG-00010	1KV	SPARK GAP	SG601
SG-00010	1KV	SPARK GAP	SG602
SG-00010	1KV	SPARK GAP	SG604
CO-00700	KTV-4042	SWITCHING	T101
CO-00710	KTV-2218	DRIVE	T401
FS-00090	250V 3A	FUSE	F101
FC-00010		FUSE CLIP	
T-00200	KFS-61202	FBT	T402
TH-00010	8D-13	THEMISTOR	TH101

CODE No.	DESCRIPTION		REF.No
	COILS & TRANS		
PR-00010	200M03C8	POSISTOR	PO101

Degaussing your Monitor

If your monitor is displaying “purity problems,” (a display with purity problems will have parts of an all-white screen affected by blotches of color) the monitor needs to be degaussed using a “degaussing coil.” A degaussing coil is a circular electromagnet, used to cancel out any stray magnetic fields that may build up on a metal object.

All of our monitors have built-in degaussing coils that are automatically activated on power-up. If your game is experiencing minor purity problems, try powering down the game for 5 minutes and then reapplying power to activate the degaussing coil. If the problem is not corrected, you will have to use a manual degaussing coil.

Follow the instructions below for degaussing a monitor.

1. Plug in your degaussing coil.
2. Hold the coil about three feet from the monitor, press the trigger to activate the magnetic field (for circular-shaped coils, orient the coil so you see the monitor through the hole in the middle; for wand-shaped coils, point the wand towards the screen).
3. Move the coil in a circular motion around the face of the monitor and slowly approach the game.
4. Continuing to move the coil in a circular motion, slowly back away from the monitor.

5a. CIRCULAR-SHAPED COILS: When you are about three feet away, quickly turn the coil perpendicular to the monitor and release the trigger.

5b. WAND-SHAPED COILS: When you are about three feet away, point the wand away from the monitor and release the trigger.

Monitor Colors Adjustment Procedure

For adjusting the colors on any of our monitor types, we suggest following the procedures described below.

The vertical/horizontal controls and brightness/contrast controls are located on the monitor control panel, Velcroed inside the game. The monitor RGB controls are located on the monitor neckboard. Adjust the RGB controls until the screens look as suggested in the following steps.

Ducksan/Telco/Tatung Monitors

1. Set the game to the Run 21 game screen.
2. Adjust the vertical and horizontal size and vertical and horizontal position to make sure that the game screen fills the monitor screen and that the game screen is centered.
3. Adjust the brightness and contrast controls until the playing cards are a light, ivory color. (Adjusting the brightness and contrast can also correct for a lack of sharpness in the picture.)
4. Exit Run 21 and enter the Hoop Jones game screen. Make sure that the court surface is greenish in color and look for a clean, white border around the number on the player’s jersey.
5. Exit Hoop Jones and enter the Great Solitaire game screen. Make sure that the game background is a light, greenish-gray (may be bluish-gray for Tatung monitors).

Section 6
Technical Service Bulletins

Field Bulletin

Date: 1-20-97

merit industries, inc.

Issue: Assorted problems with XL countertop games.

Games affected: XL countertop games with serial numbers 490857 and DOWN.

Symptoms: “Abort, retry, fail”, “Not reading drive” or “Causeway Error #9” error messages.

Cause: Improper CD-ROM cable and software bugs.

Solution: Install updated software (CD and EPROM) and change the CD-ROM cable. Contact Merit Customer Service, at 1-800-445-9353, to receive the FREE update kit needed to correct the problem; the kit number is KSV-107-002.

The kit includes the latest revision of the software CD and a new boot-up EPROM, a new CD-ROM ribbon cable and cable clamp, a grommet to protect the cable, a ground braid for the coin mech and installation instructions.

Field Bulletin

Date: 2-27-97

merit industries, inc.

Issue: Megatouch XL games purchased with the R0D program CD may crash after the first credit is entered.

Games affected: Megatouch XL games purchased with the R0D program CD.

Symptoms: Game crashes after first credit is entered.

Cause: This revision of the program was not set to clear the NV RAM on first power up.

Solution: Do a 2-button memory clear to clear the NV RAM. To perform a 2-button clear: Turn off the game. Press and firmly hold the SETUP and CALIBRATE buttons (located in the coin mech section of the game) while turning the power on. Wait for the “2 BUTTON CLEAR DETECTED” message to appear on the screen before releasing the buttons (this may take up to 40 seconds)

merit industries, inc.

Date: 3-5-97

Tech Notes

Re: Over-torquing the screws, securing the I/O board standoffs to the motherboard, in Megatouch XL games.

When reinstalling the I/O board on any XL game, be ***extremely careful*** not to over-tighten the screws securing the I/O board standoffs. Over-tightening can cut traces on the board, causing the board to short out when power is applied.

Merit recommends *no more than* 9 in./lb. of torque for tightening the screws. It is also necessary to replace the existing sems screws (screws *with* star washers) with #6-32 x 1/4 machine screws (screws *without* star washers).

If you have any questions, contact Merit Customer Service at 1-800-445-9353.