

# TROUBLESHOOTING GUIDE

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**DIAGNOSTIC  
FEATURES**

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There are several diagnostic features built into the HyperBlast system to assist with inevitable repairs. Most of the problems that come up with LaserBlast vests and phasers are actually caused by one of the following:

- 1) A connector has been jarred loose.
- 2) A cable has a broken wire.
- 3) A wire has been pinched in the phaser or chest.
- 4) The LCD glass is cracked or broken.

These 4 problems account for the majority of the required repairs. Many problems can be corrected by doing a very careful visual inspection of all of the connectors to make sure they are fully seated. Also, carefully examine the wires to see if they have been pinched between the phaser plastic halves.

To test the 3 ribbon cables in the vest, you should keep a spare ribbon cable that you know is good so that you can replace a suspicious cable. To temporarily verify whether a vest ribbon cable is good or bad, remove the chest cover, and either the back, or shoulder cover. Disconnect the suspicious ribbon cable, but leave it in the vest. Connect the known good ribbon cable on the outside of the vest, making sure to pay attention to the red stripe (pin 1) orientation. If the problem goes away, you can tape the new ribbon cable to the old one, and pull it through the vest fabric.

This section of the manual contains a list of symptoms and their suggested repairs.

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**NO LCD SCREEN  
OR DIM LCD**

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1. Check that the LCD cable is plugged in correctly and completely.
2. Check that the cable has no damage or pinched areas on the cable.
3. Check that the Coiled Cord is plugged in on the chest and the phaser.
4. Check that the LCD is not cracked.
5. Check that the Speaker and LCD are in their plastic cradles and not moving around causing shorting to each other.
6. Check that the solder joints on the LCD connector board are good (excessive vibrations can crack them).
7. If none of these work, replace the LCD assembly.

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**LCD HAS SQUARES ON  
SCREEN**

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1. Unplug and plug the battery to the vest. If the battery connector is bounced just right, the LCD powers up with all squares.
2. Check that the LCD cable is not damaged.
3. Check that the solder joints on LCD connector board are good.
4. The main IC on the phaser may have been damaged. Unsolder and replace the main phaser processor. A LaserBlast technician needs to do this repair because the chip needs to be reprogrammed.

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**LCD SAYS "VEST RESET"**

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The LCD will say "VEST RESET" every time when it loses battery power while a game is being played. This can occur because the battery is fully discharged, or it can also happen if a wire is broken somewhere along the path between the battery and the phaser. It can also happen if there is some metal-to-metal short somewhere in the vest, such as a speaker bouncing around

(not in its cradle), or an LCD bouncing around (not in its cradle). In order to get the vest ready to play a new game (without keeping the previous game scores), you need to start the vest using the referee unit, and then terminate the game.

If you have determined that the “VEST RESET” message is not the result of simply a discharged battery during a game, follow these steps to isolate the cause.

1. Check that the Coiled Cord is completely plugged in on both sides of the cable. The white part of the connector should be fully plugged in. It is not too uncommon for the connector to get pulled loose a little bit. You can tighten the strain relief nut as tight as you can with your bare hands. Do not torque strain relief nut with a wrench, because it will dent the curly cord and cause premature failure. We glue the connectors to the chest circuit board to make it more difficult to tug the connector loose.
2. Wiggle all the cables that carry the battery power to the phaser. This includes the battery cable itself, the power cable leading to the back circuit board, the 10 pin ribbon cable going from the back circuit board to the chest circuit board, and lastly, the curly cord going to the phaser. Gently flex each cable about every 1 inch, looking to see if the phaser power gets interrupted. Make sure that both sides of the ribbon cable are firmly seated.
3. Check to see if any of the crimp pins on the curly cords have become loose. You can do this by wiggling each wire near the connector.
4. Check that the shoulder lights on both shoulders are blinking. If one of the shoulders lights are not blinking the chest to shoulder cable could be broken.
5. Check that all sensors on the boards have good solder joints and that no sensor is broken or has a broken leg. If a solder joint is broken or leg broken you can bridge it with solder, or replace the sensor.

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**NO LASER OR  
INTERMITTENT LASER**

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1. Check that the crimp connecting the laser wire to the connector is not broken. You can wiggle the wire, while firing the laser, and see if the laser begins working. The crimp pin may need to be recrimped or soldered.
2. Check that the wire on the laser is not broken or pinched. May need to cut out and resolder wire.
3. If the above does not fix the problem, the laser is probably blown. Replace the IR/Laser assembly.

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**VERY DIM LASER**

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Laser Diodes have delicate mirrored surfaces that make up their optical cavity. If the laser diode receives a static discharge, or a power spike, the mirror surfaces can be cracked. This causes the laser to put out about 10% of the light that it normally would. Replace the IR/Laser assembly.

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**VEST CHANGES COLOR BY  
ITSELF**

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- The phaser is monitoring 3 infrared sensors between games, looking for a “Change Color” command from a referee unit.
1. Determine if somebody is playing tricks on you and changing the color of the vest with a referee unit from a distance.
  2. Check the solder joints on the sensors in the phaser, check to see if the sensor legs are broken. If all three sensors do not have any broken leads, then the sensor has probably failed. If you want to check this, use a voltmeter, put black to ground and check the pins on

the sensor with the red probe—two of the pins of the sensor should read 4.85Volts to 5 volts and the other pin should be close to ground.

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**NO LEDS ON BACK**

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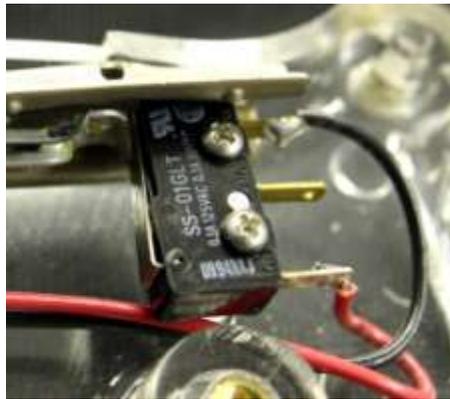
1. Check that the chest chip is in the socket firmly.
2. Check that the chest to back cable is plugged in properly and completely.
3. Unplug the phaser and the 2 shoulders from the chest. If there is a short or other failed component on these 3 boards, the resettable fuse in the back will be tripped and prevent any LEDS from coming on.
4. If the chest LEDS are working properly, replace the chest to back cable.

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**ONLY 1 LED LIT ON CHEST**

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1. Check to see if the trigger switch has popped out over the trigger actuator.
2. If it has, remove the 2 screws holding the trigger and reinstall the trigger so that the trigger actuator holds the trigger switch down when not pulled. The proper orientation is shown in the photo below (New unified trigger assemblies cannot be affected by this issue.)



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**PHASER ONLY SHOOTS 1 SHOT PER SECOND**

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The phaser updates the LCD display every time a shot is taken. If the LCD is broken, or not working properly, the phaser has to wait for a timeout when it tries to write data to the LCD. This causes the phaser to fire a little slower than usual.

1. Check that LCD is plugged in completely.
2. Trigger may be sticking due to dirt or debris that a customer stuffed in the phaser.

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**NO YELLOW LIGHT ON CHEST**

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1. Micro on chest may have taken a static hit; you can try a micro from another vest to see if the vest works with the other micro. If so, then replace the chest micro.

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**NO LEDS COME ON AT ALL**

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1. Check that all cables on vest are plugged in completely and correctly.
2. If you are in a game, check that the game setting is not on Stealth.

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**LEDS ON CHEST BLINK BRIEFLY THEN GO OUT**

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1. Check that all cables on vest are plugged in completely and correctly.
2. If you are in a game, check that the game setting is not on Stealth.

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**PHASER LEDS ARE NOT LIT**

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1. Use a voltmeter and make sure that pin 1 of the main micro reads between 4.5 and 5.2 volts. If not, find out if the 7805 regulator has battery input on one leg and 5 volts on the other leg, with ground in the middle.

2. There could be a short somewhere else in the vest or phaser causing the resettable fuse in the back to not let any current through. You can unplug the shoulder cables in the chest to eliminate the shoulders and shoulder cables.

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**LEDS ON CHEST SHOULDER,  
AND BACK NEVER BLINK**

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1. Check the chest to shoulder cable(s).
2. Check the socketed chest chip, swap with another vest.
3. The crystal on the chest could have failed. Unsolder and replace the crystal.

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**SHOULDER LOW BATTERY  
INDICATOR STUCK ON**

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1. Try another battery you know is charged-- you may have a low battery.
2. Check the chest to shoulder cable for damaged wires.
3. Check the shoulder board for an open or a short on the board.
4. The low battery IC or the Low battery LED may be broken, unsolder and replace the low battery IC.

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**GAME WON'T START ON THIS  
VEST ONLY**

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1. Inspect the chest to shoulder cable for damage and make sure they are plugged in completely and correctly.
2. Check the shoulder boards for shorts or open solder joints.
3. Check that the Coiled cord wires are not broken and are plugged in completely.
4. Check the solder joints on the Shoulder boards on the sensors, and or voltage across the sensor- it should be 4.85-5 volts.
5. The U4 chip may be blown. Unsolder and replace, or replace the entire shoulder circuit board.

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**GAME STARTS SLOW**

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1. Make sure that the shoulders are not covered by long hair (this will slow down communication by blocking the sensors on the shoulders)
2. Check the chest /shoulder cable for any damage. Make sure the ribbon cables are secured.
3. Check the voltage on the shoulder sensors 4.85-5V. May need to replaced sensor.

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**GAME ENDS TOO EARLY**

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1. Up to 10 seconds early is a normal variation in crystal tolerances between vests.
2. The most likely cause of a vest ending early by more than 10 seconds is that the vest was started early, or was not in "Waiting for Game" mode when the game was started. It is very easy to get confused and let the vests get "out of sync" with the computer and the scanner.

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**VEST WON'T SCAN IN**

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1. Make sure that shoulders aren't being blocked by a very dirty plastic cover or by long hair covering sensors.
2. Inspect the Chest to shoulder cable for kinks, and unplugged connectors.
3. Check the voltage and the solder joints on the shoulder sensors as in "No start game."
4. Check that the IR tube opening at the end of the phaser is not blocked or partially blocked.
5. Check that the crimp pin and wire on the Wide beam IR is a good crimp and the wire is not damaged.
6. If during a game you can shoot a photon and tag vests with the photon the Wide beam IR is OK.
7. The transistor at the Phaser diode may be damaged. Replace the transistor.

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**NO SOUND EFFECTS**

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1. Check that the Speaker wires are not damaged.
2. Check that the speaker is plugged in.
3. Check the crimp pin is in the connector and that the crimp looks good.
4. Check the speaker for puncture and or damage. May need to replace speaker.

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**NO PHOTONS OR SHIELDS**

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1. Check that you do not have shields and photons on the computer set to 0.

2. Check that the option switch is plugged in.
3. Check that the options switch wires are not damaged, and the crimp pins are in the connector and the crimp looks good.
4. If none these fixes the problem you have a broken option switch.

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**SAFETY SENSOR NOT WORKING**

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1. Check that there is no tape or gum or residue on the sensor.
2. Check that Use Heat Sensor is checked on Game Setup Screen

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**SHOOTS BUT NOT TAGGING  
OTHER VESTS**

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1. Check that the IR Tube is not blocked with debris at the front of the phaser.
2. Check that the IR Tube is plugged in all the way, the wires are not damaged.
3. The IR DIODE may have failed.
4. The Friendly Fire checkbox is unchecked in the game setup screen.

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**NOT SHOOTING (NO SOUND,  
LASER OR SHOTS ON THE LCD)**

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1. Check that the Trigger is setting on top of the switch lever in phaser handle.
2. Check that the Trigger spring is not broken. Trigger will not bounce back after being pulled.
3. Check that the Switch wire is not broken and the switch is plugged in to board completely and that the crimp is good and the crimp is completely seating in the connector housing.