

LI' WHITE RAM

32K Extended Ram Memory Expansion Unit

**The very first step is to disconnect the power and TV connections.
It is also advisable to remove all hand controls.
Remove any cartridges and keypad overlays.**

Rear View Of Arcade



Light Pen Jack Knock-Out

50 Pin Edge Connector Knock-Out

You'll notice that there are 2 knock-outs on the rear lower panel of your Arcade.

Both Knock-outs must be removed to be able to connect your new memory expansion unit properly. This must be done carefully so that you do not damage anything inside the Arcade. Both knock-outs are secured at the bottom, with the top and sides unconnected. CAREFULLY take a small screwdriver and pry each knock-out outward. You may need to push it back in and pry it out several times to get it to break off.

DO NOT USE ANY TYPE OF SAW OR LARGE KNIFE! TO DO SO MAY CAUSE DAMAGE TO YOUR ARCADE!

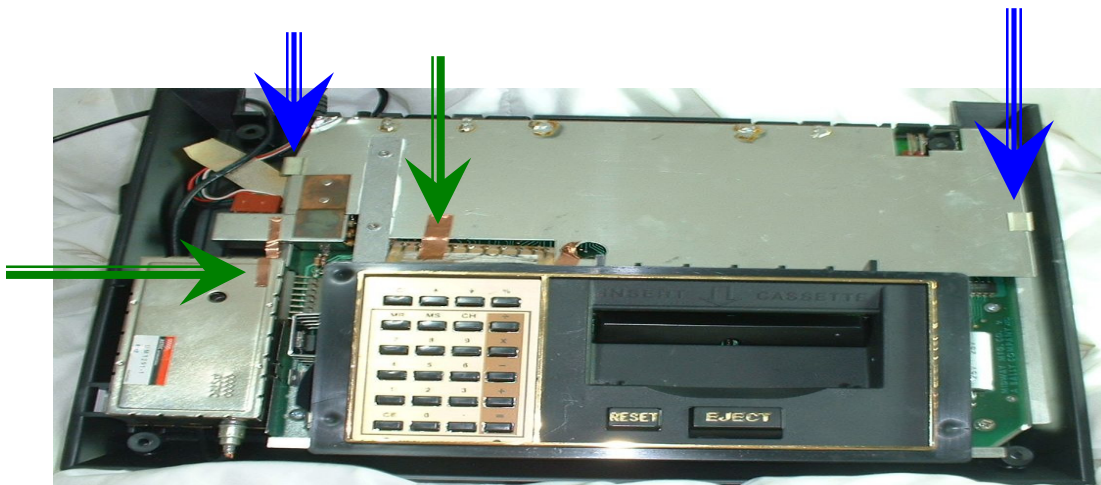
There are circuits behind the knock-outs. Cutting through them may cause your Arcade or your  to not work!

Now that the 2 knock-outs are removed, inspect the area under the 50 Pin Edge Connector of the Arcade. If there is a piece of cardboard-like material going all the way to the edge, you'll need to do the next step. Otherwise, skip these steps and continue on page 4 to the hook up instructions.

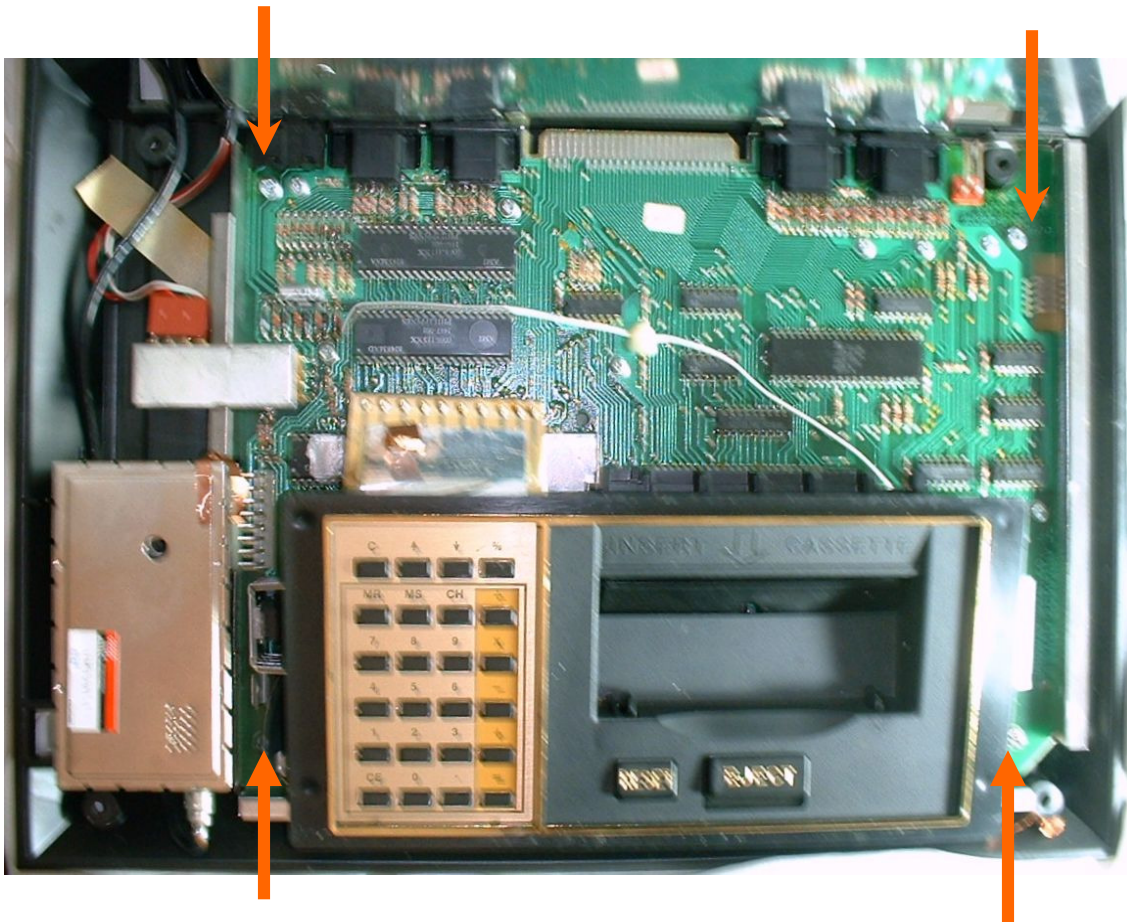


First, you'll need to remove the 5 screws that hold the top of the Arcade on. They are the ones in red above.

Next you'll need to lift up the heat shield by carefully lifting the copper foil strips (green arrows) and remove all clips (blue arrows). Your heat sink may be larger than this on pictured. You will need to lift all sections to get at the screws that you need to remove in the next step.



Now, you'll need to remove the 4 screws that hold the chassis pan to the bottom of the Arcade. They are marked with orange arrows below.



CAREFULLY lift out the chassis pan from the front. It may catch on the shield, so you will have to pull it forward carefully.

Turn the unit over. You will see a cut-out in the center, rear part of the pan. If you cannot see the circuits like the next picture, you will need to trim off the cardboard (yellow arrows) around the cut-out. To do this, carefully cut **UPWARD** using a box cutter or EXACTO® knife. **Cutting downward will cut through the circuits, making it impossible for your new**



Finally, you can reassemble you unit in the reverse order of the previous steps.

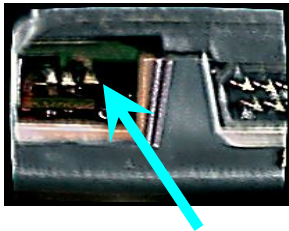
Connecting your

Lil' WHITE RAM

MAKE SURE THAT POWER IS DISCONNECTED TO YOUR ARCADE BEFORE CONTINUING. FAILURE TO DO SO MAY DAMAGE THE Lil' WHITE RAM UNIT!

Take your Lil' WHITE RAM 32K Extended Memory Unit and push the blue edge connector onto the 50 pin edge connector of your Arcade, making sure that the gray ribbon cable is coming out of the top of the connector. The **RED** stripe should be on the left, closer to the hand control #2 socket.

The long single **red** wire is the power wire. It is going to be connected to the light pen +5V connection (the end of the teal arrow below). This is the pin closest to the hand control #3 jack.



There are 3 different possible connections here, depending on the Arcade you have and whether or not you have a 300 BAUD cassette interface unit.



300 Baud Cassette Interface Unit



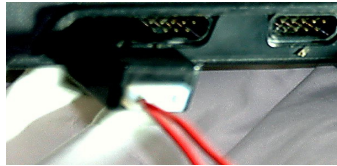
Adapter separated



Adapter alone
Notice **TOP** marking

The recommended connection uses the 300 BAUD cassette *adapter* unit (only) .

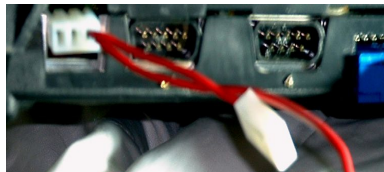
Plug in the adapter and connect the 3 wire plug into the adapter. The reason this is preferred is because of the ease of connection and that the adapter has chokes in it, which helps stabilize the +5V line a little. Using this method, the **red** wire will actually be on the LEFT side. See picture below



If you don't have the adapter, plug in the 5 pin connector with the wire to the side of the hand control #3.



If by chance this doesn't fit, use the 3 pin directly in the light pen connector with the wire inserted towards the #3 port.



NEVER TURN ON YOUR ARCADE WITH THE 50 PIN CONNECTOR PLUGGED IN AND THE RED POWER WIRE UNCONNECTED! TO DO SO MAY CAUSE IRREPARABLE DAMAGE!

FINALLY! Now you can re-connect the TV connection, and plug the power supply back into the outlet. Turn on your Arcade. A white light should glow white on the top of your **III WHITE RAM** .

If the light doesn't glow, **TURN OFF YOUR ARCADE IMMEDIATELY!** The problem is either that your 50 pin connector is not fully plugged in (the unit gets its ground from this connector) or the **RED** wire is not connected properly in the light pin connector. Recheck all connections.

If you still cannot get the unit to light up, please call Ken Lill at 847.984.2222. Maybe it can be resolved over the phone.

About Your New



Your 32K memory expansion unit has some very unique features.

All Extended BASICs use an exclamation point before the number to tell the BASIC program that the number that follows is going to be Hex rather than decimal. To make it easier for typing this out, this is the format used here.

- 1) It is the largest expansion unit made for the Bally / Astrocade computer system. There have been limited other 32K units. One was the Blue Ram, the other was the Viper 5 unit. We actually have not known anyone to have the latter, but there were a few 32K Blue Ram units.
- 2) It will give you 12,287 contiguous EXTRA bytes of programming space for the Bally (# 6002 gold label) or Astro (# 6004 silver label and audio interface) BASICs. This starts from `%(!5000 [%(20480)])` and goes through to `%(!7FFF) [%(32767)]`. You can use this for strings using peek and poke, or for storage of programs that you will “shift” down to the regular programming area of `%(!4000) [%(16384)]` to `%(!4708) [%(18184)]`
- 3) It will allow you to play all extended memory games and all but very few other extended memory programs. 2 such programs are the Blue Ram Diagnostic Program and Snoop Camera, written by Mike White for his printer.
- 4) This memory can be described as either “floating” or “overlapping”. It starts at `%(!5000)` and ends at `%(!CFFF)`. Anything past `%(!7FFF) [%(32767)]` is NOT accessible with the Bally or Astro BASIC Cartridges. NOW comes the tricky part. If you write something to `%(!5000)`, it will also appear at address `%(!D000)`, and vice versa! This continues on like `%(!6000) = %(!E000)`, up to `%(!7FFF) = %(!FFFF)`.

5) There are 2 switches on the top of your  .

They are marked RAM - ROM and 6K – 2K.

RAM – This allows you to be able to write into the entire extended RAM.

ROM – This protects the RAM from being written to, so that any thing you may have there will be protected from accidental writing to. **DO NOT ASSUME THAT IT WILL BE PROTECTED INDEFINATELY.** Once you turn off power to the Arcade, **ALL MEMORY WILL BE LOST!**

All of the extended BASICS need access to the RAM. Trying to use one of these BASICS while in the ROM position will make the program crash!

6K – This is also the normal operating position. It allows all memory to be used as normal.

2K – This position allows you to test a properly coded machine language program located @ %(!6000) to be tested in the 2K %(!2000) cassette position. This is helpful while trying to check a cartridge program.

The recommended BASIC program to use is ViperSoft BASIC. This is because it uses your ASTRO BASIC for it's input / output. ViperSoft BASIC can access all of the memory, so you CAN load past %(!7FFF) [%(!32767)]. If you use Blue Ram or Hot Rod Bally BASIC, you won't be able to get or save to tape or IBM computer.

 From




If you have any questions, please feel free to post them on www.ballyvalley.com We will be more than happy to answer all. Who knows, maybe your question is already answered there!



Post Office Box 252
Wellington, OH 44090

Limited Warranty

Gambits warrants to *the original owner* that your  is free from manufacturing defects.

This warranty provides that should your  fail to operate under normal operating conditions,

Gambits will either repair or replace your unit at Gambits discretion. To be eligible for this warranty,


- 1). You **MUST** be the original owner and it must be within 30 days of purchase.
- 2). You have not tampered with the unit
- 3). Your unit has not had any physical abuse, such as, but not exclusive to:
 - a. Damage to the box
 - b. Damage to the switches
 - c. The power wire is not cut or broken
 - d. The 50 pin ribbon cable is not cut or damaged by pulling it from Arcade
- 4). You must have installed this unit according to this Installation Guide.

In order to get a replacement or repairs under this warranty, you must receive an RMA authorization number from Gambits. This is done in either of 2 ways.

- 1). Calling Ken Lill @ 847 – 984 – 2222 or
- 2). Writing to us @ Gambits, PO Box 252, Wellington OH 44090

Please give a full description of the problem and your current address.

WE ARE NOT RESPONSIBLE FOR LOSS OF DATA OR DAMAGE TO ANY UNIT OTHER THAN

THE  UNIT ISSUED TO YOU AT THE TIME OF PURCHASE.