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Information and Installation Instructions for

The FIXIT kit

The FIXIT board contains the software for all Bally and Stern pinball machines manufactured from 1977 through 1985. Game selection is made by setting the DIP

switches according to the DIP Switch below. The kit is meant to permanently install on your MPU board and replace the ROM chips U1 through U6, RAM chips U7 and U8 and the battery.

As an additional feature, the FIXIT board contains our built-in TEST software which is activated when all of the DIP Switches are set to OFF.

The FIXIT can be used with or without removing the original ROMs or RAMs from the MPU board. The Jumpers (see thhe last paragraph in this document for more information) located on the FIXIT board select between the FIXIT's software or "original" software installed on the MPU board. Normally these jumpers are set to select the FIXIT board's software and RAM so the battery, 5101 RAM, the 6810 RAM and the GAME ROMs are not needed and these sockets can be empty. In addition, if the Q1 - Q5 transistors are corroded they can be cut off the MPU as the FIXIT kit provides a delayed reset drive to the MPU.

System Requirements

The FIXIT board will work with ANY Bally or Stern MPU model:

- Bally 2518-17
- Bally 2518-35
- Bally 2518-133
- Stern MPU-100
- Stern MPU-200

The FIXIT board will also work as a "piggyback" diagnostic tool on the *"Ultimate MPU"* and other replacement MPU boards. You can use the FIXIT Board to test ANY MPU board, including off-brand replacement models. Simply plug the FIXIT into any MPU board and turn all the FIXIT DIP Switches OFF.

How To Install the FIXIT Board

The FIXIT installs by plugging it into the J5 connector at the top of the MPU board. Be sure to align J5 pin number one on the MPU board with entry hole number one on the FIXIT connector. Once aligned, press the ROM board all the way down onto connector J5.

Select the game by setting the DIP SWITCHES according to the DIP Switch chart – see the file in our Documents Section titled Fixit Game List. The needed information is there in the PDF format.

Additional Installation Information

There are some subtle differences between MPU boards. Depending on the game you wish to run and the MPU board you have you may need to make some minor hardware modifications in order for your game to run properly. You only have to do these modifications if you are going to install the FIXIT permanently on the game board and put it in service. NONE of these mods will keep the LED from flashing in diagnostic mode!

If your MPU board is a Bally 2518-17, 2518-35 or a STERN MPU-100:
If you wish to run Bally's Granny & the Gators or Baby Pac-man game you must:

- Replace the 2K resistor R113 with a 1N914 diode with the banded end facing right.

- If you wish to run a Stern 200 game you must:

  - Run a jumper from Pin 18 of U11 to Pin 11 of connector J4.

  - Replace capacitors C14 and C15 with 220pF capacitors.

If your MPU board is a Bally 2518-17 or a STERN MPU-100:
If you wish to run any game software, not just the diagnostic program:

- Because these MPUs have no pin 33 to carry the A14 signal to the fixit, you will have to add one by running a jumper from pin 24 of the processor socket at U9 on the MPU to pin 33 of J5 on the fixit.
- The diagnostic software (all fixit dip switches turned off) will still work if you have not added the jumper, but if you intend to run game software with the fixit installed, then you must add this jumper.
- If you have a newer MPU that has 33 or 34 pins at J5, this is not an issue.

If your MPU board is a 2518-133 from Bally's Granny & the Gators or Baby Pac-man:
If you wish to run a Bally 2518-17, 2518-35 or Stern MPU-100 game you must:

- Replace the 1N914 diode CR52 with a 2K resistor.

- If you wish to run a Stern 200 game, you must:

  - Run a jumper from Pin 18 of U11 to Pin 11 of connector J4.

  - Replace the 1N914 diode CR52 with a 2K resistor.

  - Replace capacitors C14 and C15 with 220pF capacitors.

If your MPU board is a Stern MPU-200 board:
If you wish to run a Bally 2518-17, 2518-35 or Stern MPU-100 game, you must:

  - Remove jumpers E32 to E33 and E34 to E35.

- If you wish to run Bally's Granny & the Gators or Baby Pac-man, you must:

  - Remove jumpers E32 to E33 and E34 to E35.

  - Replace the 2K resistor R113 with a 1N914 diode with the banded end facing right.

DIP Switch Settings

Use the handy alphabetical table to help you locate the name of your game, then use the "Index" number to locate the DIP SWITCH setting in the FIXIT ROM Chart. See our document in the Downloads section – Fixit Game List in the PDF format.

Notes on the FREE PLAY ROM:

The FIXIT ships with a standard GAMEROM. There is also an alternate FREE PLAY ROM. Bally games in red are not available in FREE PLAY. The standard version of the software is included with the FREE PLAY EPROM for these games. There is no FREE PLAY version for the STERN games. Read more about this on my page regarding this at my Document Library, at the end of the site after the Products section.

Notes:

The TEST feature will work to test the MPU board for games in red but may not be fully capable of diagnosing all of the symptoms encountered with these games. It is best to test the MPU board as a "pinball" board first, then install it in your game.

Jumpers

The FIXIT board has three moveable jumpers:

- Setting the RAM jumper DOWN selects the FIXIT board's built-in CMOS RAM.
- Setting the RAM jumper UP selects the 5101 and 6810 RAM chips on the MPU board.
- Setting the ROM jumper DOWN selects the FIXIT board's U1 EPROM.
- Setting the ROM jumper UP selects any ROMs, PROMs or EPROMs in U1 - U6 on the MPU board.
- Setting the RESET jumper DOWN selects the FIXIT board's built-in RESET circuit.
- Setting the RESET jumper UP selects the Q1 - Q5 RESET circuit on the MPU board.