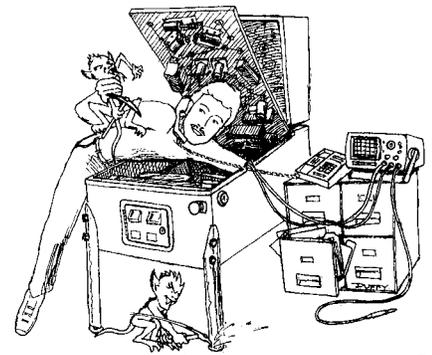| **Joe Blackwell** Director, Parts Sales & Technical Support	**Patty Schraps** Parts Sales Manager	**Dorothy Brown** Parts Sales Representative	**Chas Siddiqi** Technical Support Engineer	**Patrick Powers** Technical Support Engineer	**J. Alfer** Technical Support Doc. Administrator

TO: Parts & Service Managers

DATE: June 21, 2004

SUBJ: Back to Basics: Insertion/Replacement of EPROMS in SPI Pinball Games

Location and access to Pinball EPROMS (located in the Back Box) :

Remove the backglass to access the Back Box. Replacement of EPROMS when necessary *(i.e. Code Upgrades)* can be easily accomplished. From our website, www.sternpinball.com, you can check the latest version available for your game or if you have an EPROM Burner, you can download the Binary Code. Click **"Technical Support & Parts Sales"**, click **"ROM Code Library"** and then the *appropriate link* for the game desired. If code updates are required or necessary, it will be announced in a Service Bulletin, click "Service Bulletins." Typically, only the **CPU GAME EPROM U210** *(on the CPU/Sound Board)* and **DISPLAY EPROM U5 / ROM 0** *(on the Display Controller Board)* are the two EPROMS which are updated. If you do not have access to an EPROM Burner, you will have to order the EPROMs from you local distributor. Specify the Game Name and version desired to ensure your Distributor has the latest version.

Note: You can verify your CPU GAME and DISPLAY EPROM versions by the label on the individual EPROM and/or on the Dot Matrix Display upon Power-Up while holding the Right Flipper Button in.

//

▶▶▶▶ CAUTION! WHEN REPLACING EPROMS : ◀◀◀◀

Always POWER THE GAME OFF when servicing your Pinball Game! TAKE CARE when removing EPROMS. Ensure tool used is ***between the ROM and the socket (not the socket & PC Board)***. ***Damage will occur to the board & socket!*** When replacing, ensure all the pins are lined up properly before pushing them down. Double check to ensure each ROM is seated properly, with the underlined notch side lined up in the same direction as the other ICs on the board.

//

CPU GAME EPROM
U210

Display Controller Bd. ▼

520-5055-00 REV. F

U5

DISPLAY EPROM

The Display Controller has the Display EPROM (Location: U5 / ROM 0). This board is located behind the 128 X 32 Dot Matrix Display Board.

Dot Matrix Display 128 X 32

SOUND & VOICE ROMS
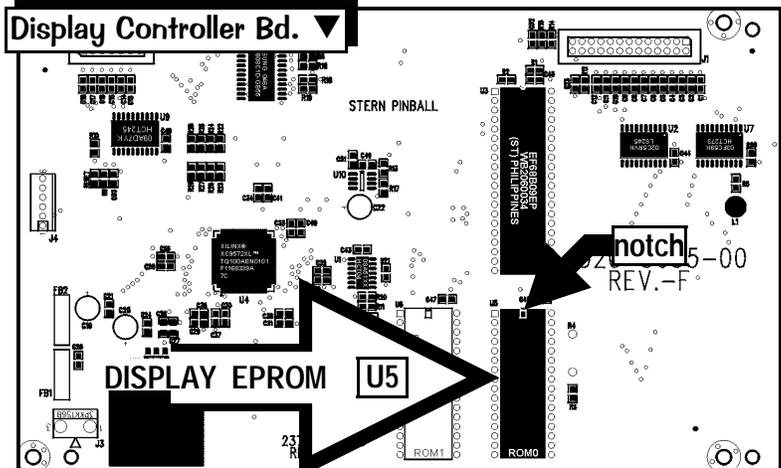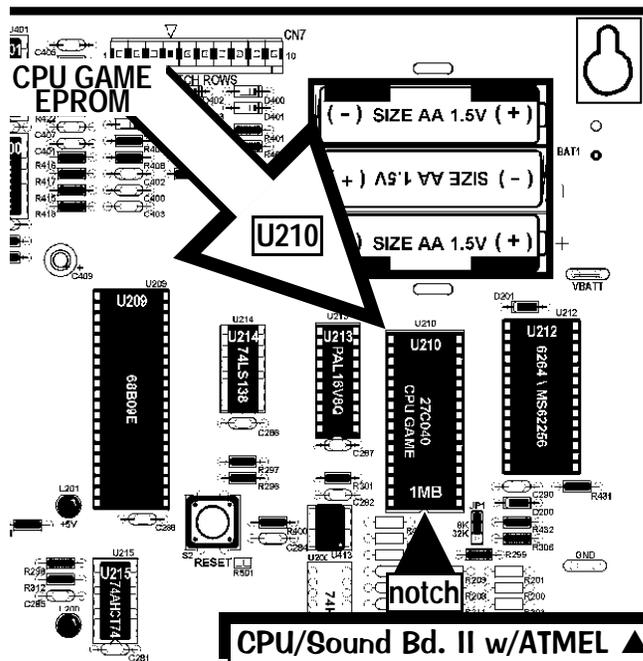U7 U37 U36 U21 U17

CPU/Sound Bd. II w/ATMEL ▲

How to Properly Remove and Install EPROMs (a 32-Pin EPROM is used as an example) :

Continued on Page 2.

● 2020 Janice Ave ● Melrose Park, IL 60160 ● Tel 708-345-7700 (Option 1) ● Toll-Free (USA/Canada) 1-800-542-5377 ● Fax 708-345-7889 ●

How to Properly Remove and Install EPROMs (a 32-Pin EPROM is used as an example) :

Step 1: Locate the EPROMs which require replacing. For the **CPU GAME EPROM U210**, locate it on the **CPU/Sound Board II** *(the board is in the upper right corner)* under the 3X "AA" Battery Pack. *Sound & Voice ROMS are located at the bottom center of the board (see previous page graphic).* For the **DISPLAY EPROM U5 / ROM 0,** locate it on the **Display Controller Board** *(the board is behind the Dot Matrix Display; Lift the Speaker Assemly up and forward and carefully lay down on the Playfield Glass).* **IMPORTANT: ALWAYS CHANGE THE CPU GAME & DISPLAY EPROMS as a set.** For example, if the CPU GAME is version **3**.01, and the DISPLAY is version **3**.00 with the new CPU GAME at version **4**.02, *make sure to replace* the DISPLAY which will also be version **4.XX**.
Please Note: The important number is the 1st digit (before the "."), ensure they are both the same number !

CPU GAME EPROM

U210

CPU/Sound Bd. II w/ATMEL ▲

notch

Display Controller Bd. ▼

DISPLAY EPROM **U5**

notch

Step 2: Insert a small flat-blade screw-driver between the **EPROM** & **Socket**.

Step 3: *DO NOT PRY!* With a *left-to-right* gentle twisting motion lift the EPROM partially out of the socket. Remove the screw-driver and insert between the EPROM & Socket on the opposite end. Repeat the *left-to-right* twisting motion. *Now the EPROM can safely be removed.*
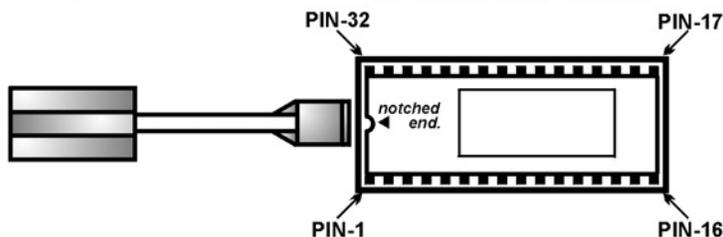
Insertion of the new EPROM: Ensure the pins on the EPROM are straight and in-line. If any pins are bent, carefully straighten using a flat surface. The EPROM "notched" end should align with the side indicated on the board with a screened "notch" or with the "notch" on the EPROM Socket itself.

Note: *All I.C.'s on the boards are laid out with their "notch" on the same side (all in the same direction), use the other I.C.'s on the board for reference. Now the EPROM can safely be pushed into the socket without bending any of the pins.*
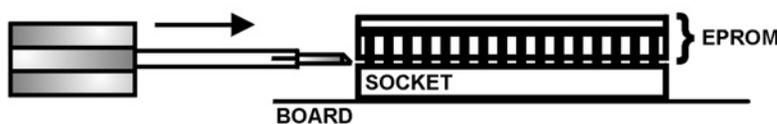
Line up the pins to the holes on 1-side (Pins 1-16) of the socket & EPROM first. ***Do NOT push*** in at this point. With the pins slightly in the holes of the socket on the one side, gently tilt the EPROM so the pins on the other side match up to the holes of the socket. Gentle pressure may be required to guide all the pins into the holes at the same time.
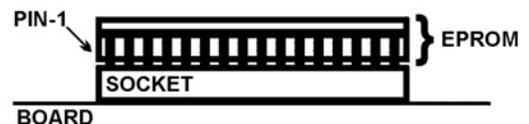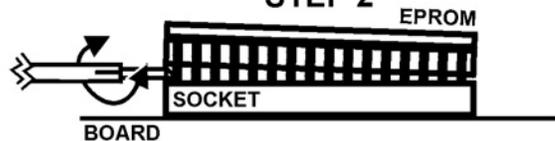

EPROM Removal

EPROM TOP VIEW

PIN-32   PIN-17

notched end.

PIN-1   PIN-16

STEP 1

EPROM

SOCKET

BOARD

EPROM SIDE VIEW

PIN-1

EPROM

SOCKET

BOARD

STEP 2

EPROM

SOCKET

BOARD

Please phone or eMail with any questions or comments at the below numbers or address.