Service Bulletin Nº 78

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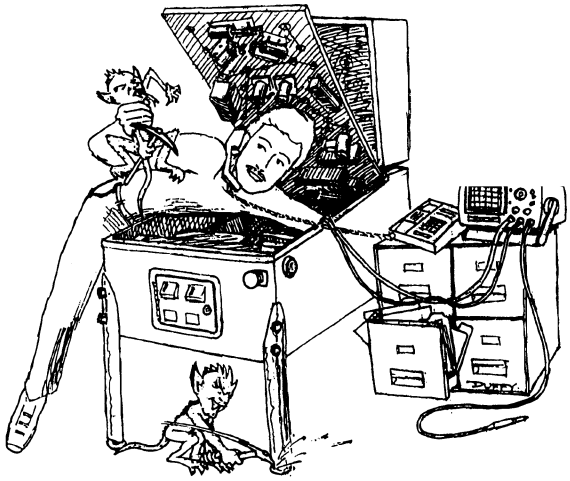

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TO: Parts & Service Managers

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SUBJ: A handy little **CPU** troubleshooting gimmick that has been used many times to repair those *bow-wow* boards.

The **"NO-OP" (hereafter "NOP")** socket isolates the data pins of a given **CPU** and forces the **NOP** instruction onto them. When a microprocessor comes out of reset, it looks for start-up instructions at a specific ROM address (the same address every time it comes out of reset). If the micro "sees" the **NOP** code, (instead of what the board or game or whatever has been programmed at that location), the micro simply does nothing for that instruction cycle, then ***MOVES ON*** to the ***NEXT*** location on the address bus. (Again, the micro sees the **NOP** code since this code comes from the Diagnostic socket and not the board, and it ***MOVES ON*** to the next address, and so on and so forth.) The net effect of all this is a continuously cycling address bus (in an orderly pattern) as the micro repeatedly tries ***EVERY ADDRESS*** looking for an instruction. This means that all CHIP selects and other address-bus derived signals regularly become active, and are now ***VERY EASY*** to check with a scope.

TO USE
Remove the original 6802 or 6809 processor and install the diagnostic socket in place of the original.

CONSTRUCTION
STEP 1
Using a known good stock 6802 (Fig. 1) or 6809E (Fig. 2) Microprocessor I.C. Place it into a 40-pin socket leaving the Data Pins indicated in Fig. 1 & 2 out of the socket.

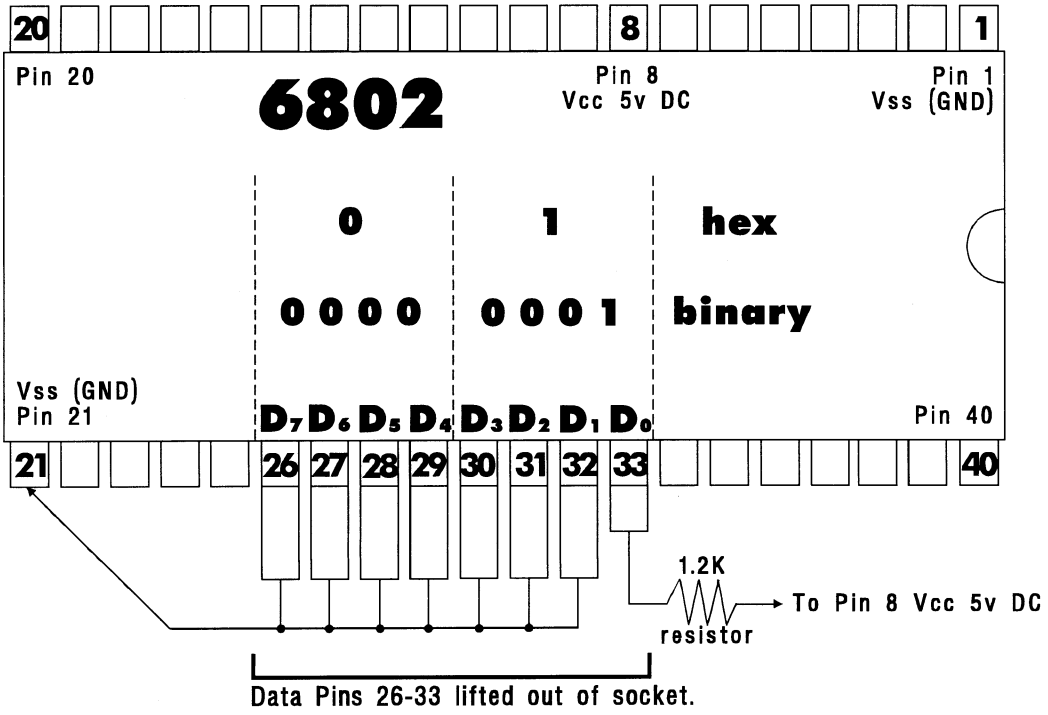
STEP 2
Using trace jumper wire, solder the appropriate pins together per figures 1 and 2.

NOTE
This I.C. / Socket combination can now be put in place of the existing Microprocessor on our (SEGA) **CPU** (6802) or **Sound** (6809) **Boards** for diagnostic purposes.

(See page 2 for Figures 1 and 2.)

6802
NOP = 01 hex
Vss = Pin 1 (GND)
Vcc = Pin 8 (5v DC)

Fig. 1



6809E
NOP = 12 hex
Vss = Pin 1 (GND)
Vcc = Pin 7 (5v DC)

Fig. 2