

May 20, 1983

Dear Service Manager:

Due to the unavailability of the LM379S amplifier IC from our vendor, we are now utilizing an LM2002T or TDA2002T amplifier in a piggyback configuration to replace the LM379S (U23) on all of our A6 Sound and Sound/Speech Boards. This applies to any new boards ordered from stock or boards returned for repair that require replacement of a defective LM379S. Also, the MA-483 or MA-488 Piggyback Board will be sent as a replacement for the LM379S on all service orders.

The 2002T has different power requirements than the LM379S, which requires minor changes to the +30V DC supplied to the amplifier. The attached pages explain how to modify the +30V DC as well as how to install the Piggyback Board as a replacement for the LM379S for both Pinball and Video Boards.

As a reminder, the modification kit to update the System 80 Bench Tester to the System 80A Bench Tester is now available. This kit allows the technician the ability to test all of the System 80 and all of the System 80A boards. This includes the updated Control Board, the 7-Digit Display, etc. For additional details, please feel free to call me.

Enclosed is a little note-mate with our toll-free lines to keep handy near your phone.

Thank you.

Sincerely,

D. GOTTUEB & CO.



Abi C. Carmen
Director
Technical Marketing Services

ACC:jh

Enclosures

TECHNICAL SERVICE BULLETIN-

BULLETIN #18-V0583

DATE: MAY 18, 1983

PAGE 1 OF 1

ATTENTION:

GAMES AFFECTED:

SUBJECT:

VIDEO

GAME OPERATORS AND SERVICE MANAGERS

ALL VIDEO GAMES FROM REACTOR (GV-100) THROUGH KRULL (GV-105) INCLUSIVE

PIGGYBACK BOARD REPLACEMENT FOR THE U23 LM379S AMPLIFIER USED ON THE A6 SOUND AND SOUND/SPEECH BOARDS AND THEIR ASSOCIATED A3 POWER SUPPLY VOLTAGE REQUIREMENTS

For replacement of the LM379S (U23) amplifier utilized on Gottlieb's Sound and Sound/Speech Boards, a Piggyback Board substitute has been designed to replace the amplifier. The new amplifier is mounted in a piggyback configuration using an LM2002T or a TDA2002T which operate at approximately one-half of the voltage required by the LM379S. This voltage requirement necessitates minor changes on the A3 Power Supply Board, which supplies the amplifier voltage, because the 2002T cannot operate at the +30V DC level supplied by the MA-303 or MA-430 A3 Power Supply Boards. The new MA-492 A3 Power Supply Board supplies the correct voltage (+16V DC) to operate the piggyback amplifier. The chart below identifies the correct Sound or Sound/Speech Board and its associated piggyback configuration with the correct A3 Power Supply Board to be used.

GAME	A6 SOUND OR SOUND/SPEECH (INCLUDES PIGGYBACK WHERE APPLICABLE)	PIGGYBACK	AMPLIFIER VOLTAGE	A3 POWER SUPPLY
REACTOR GV-100	MA-216	NOT USED	+30V DC	MA-303
Q*BERT GV-103, A, B	MA-216	NOT USED	+30V DC	MA-303 MA-430
Q*BERT LATER PRODUCTION GV-103B	MA-486	MA-483	+16V DC	MA-492
Q*BERT CT GV-103CT	MA-486	MA-483	+16V DC	MA-492
MAD PLANETS GV-102	MA-484	MA-483	+16V DC	MA-492
KRULL GV-105	MA-487	MA-483	+16V DC	MA-492

(OVER)

All A6 Sound or Sound/Speech Boards ordered from stock or returned for repair requiring a LM379S replacement will have the Piggyback Board modification.

CAUTION: WHEN A PIGGYBACK TYPE SOUND OR SOUND/SPEECH BOARD IS TO BE USED FOR REPLACEMENT PURPOSES, MAKE CERTAIN THAT THE PROPER A3 POWER SUPPLY BOARD IS USED.

To update an MA-303 or MA-430 A3 Power Supply Board to the new MA-492 A3 Power Supply Board, please make the following circuit board changes to the A3 Power Supply Board. See Figure 1.

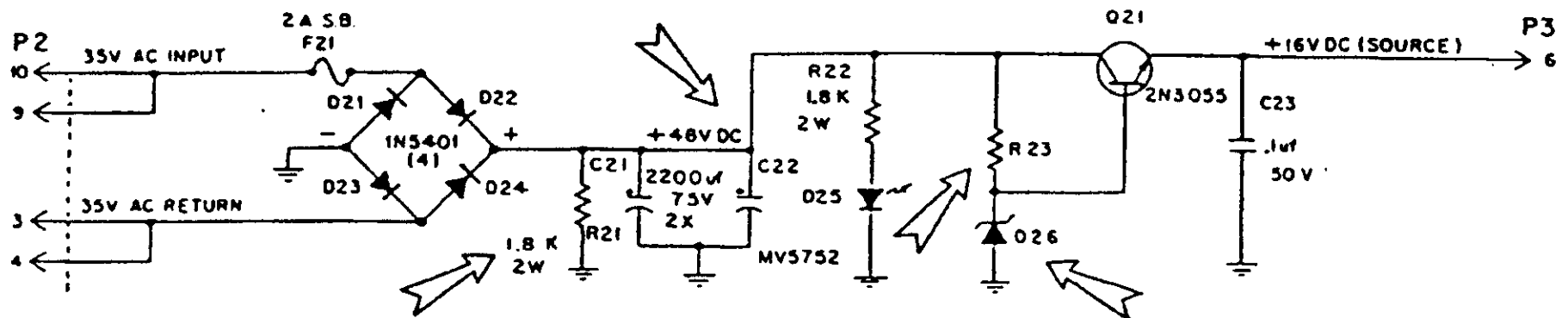


FIGURE 1.

Delete the following:

C22	Capacitor, 2200UF, 75V	XO-132
R21	Resistor, 1.8K ohm, 5%, 2W	XO-135

Remove:

D26	Diode, Zener 30V, 5%, 5W, 1N5363B	XO-273
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and replace with:

D26	Diode, Zener 16V, 5%, 1W, 1N4745A	XO-620
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Remove:

R23	Resistor, 200 ohm, 5%, 5W	XO-133
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and replace with:

R23	Resistor, 1K ohm, 5%, 2W	XO-627
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A6 SOUND OR SOUND/SPEECH BOARD MODIFICATION

To repair a Sound or Sound/Speech Board requiring a replacement for a defective LM379S, the new MA-483 Piggyback Board must be used as the replacement. For replacement, please follow the procedure below: See Figure 2.

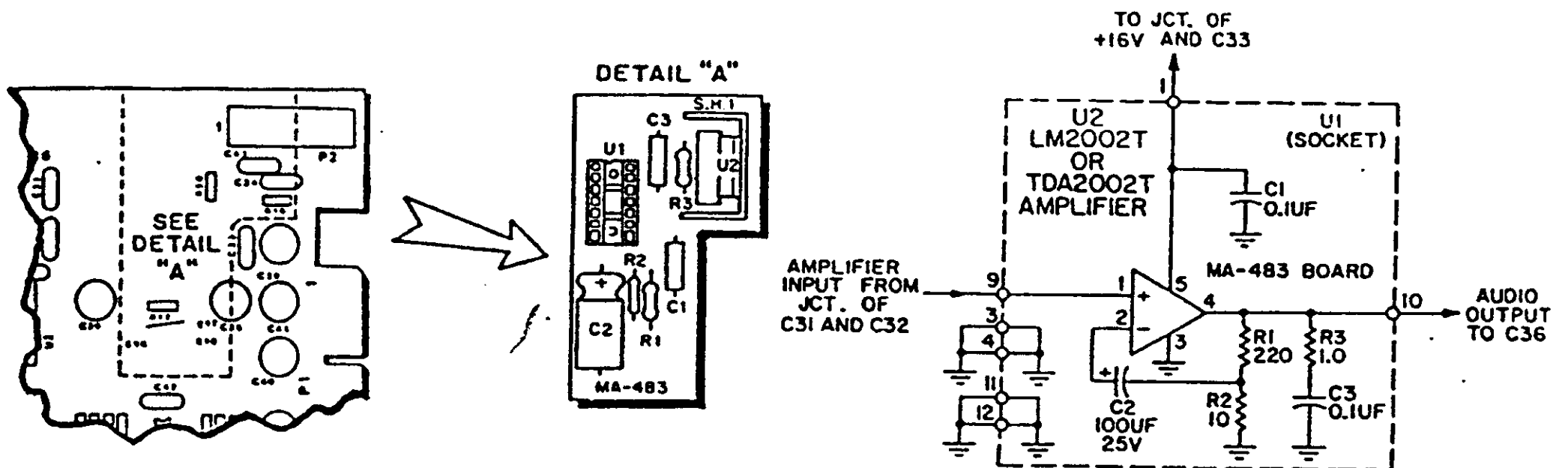


FIGURE 2.

Remove:

C37	Capacitor, 4.7UF, 35V	XO-291
R18	Resistor, 100K ohm, 5%, 1/4W	XO-45
R21		
R22	Resistor, 2K ohm, 5%, 1/4W	XO-14
U23	IC, LM379S	XO-395

Solder the leads of the U1 socket on the MA-483 Piggyback Board into the U23 feed-through holes on the A6 Sound or Sound/Speech Board.