PS5010 MAINTENANCE INFORMATION

INTENT: Provide supplementary or additional maintenance information not available in the Service Implementation Plan or Service Manual. Reference should be made to the published Service Implementation Plan dated Nov. 9, 1981.

Required Support Fixtures

067-1028-00: Rigid and flexible extenders used to extend circuit boards from the instrument for troubleshooting.

067-0996-00: GPIB extender Cable allows instrument to be extended from mainframe for troubleshooting GPIB Problems.

067-0645-02: Standard TM500 instrument Extender Cable, 2 required.

Load Resistors: Four high wattage resistors will be required for various portions of the performance verification and adjustment procedures:

5 ohm	5 %	3W	P/N 308-0177-00
560 ohm	5%	3W	P/N 308-0298-00
0.1 ohm	0.1%	3W	P/N 308-0769-00
45 ohm	5%	25W	P/N 308-0744-00

The above fixtures are required for full support of the PS5010. All designated centers should have this equipment. (See list of designated centers in the Service Implementation Plan).

Power Up Diagnostics Description

The following is a brief description of the power up diagnostics and the sequence in which they occur.

1. All output relays are turned off.

2. All seven-segment display and annunciator LED's are turned on.

3. RAM Check.

The processor loads $FF at Memory Address $03FF (Top of RAM) then walks the data through RAM until reaching Memory Address $0000 (Bottom of RAM). The processor then checks for $FF at the Memory Address $0000. The processor writes and checks for $AA, $55, and $00 using the same basic procedure.

At the end of the RAM test, the RAM will be filled with all 0's.

If a bad RAM is found, the self-test will not continue.

4. ROM Placement Test

The processor checks for the correct data at the following address:

Checks for $F0 at address $F006

Checks for $E0 at address $E006

Checks for $D0 at address $D006

Checks for $C0 at address $C006

If the correct data is not found, then the specific ROM placement error is reported.

5. ROM Checksum Test

The Checksum algorithm computes the Checksum for each ROM and compares the computed value with a value stored in ROM. Errors are reported to the checksum test routine by setting the carry bit true. If a Checksum error is found, the appropriate error code is displayed.

6. GPIB Switch

The processor next reads the GPIB switch for the instrument address and checks for Cal Mode, signature Analysis Mode, and Cycle RACK mode.

7. Signature Analysis Mode

If the instrument is in signature analysis mode and the Run/Force Data Jumper is in the Run position, the processor writes alternating all 1's then all 0's to the 8 output lines of the addressable latches, A12U1315, A12U1411, and A12U1314.

(ARTICLE CONTINUED ON THE NEXT PAGE)

Also, this routine writes alternating $AA and $55 to the output of the logic supply and floating supply shift registers.

Because of the difference in delays between the opto-isolators, there is no standard signature analysis routine for the floating supply shift registers. However, the above bit pattern is still being written to the output of all the shift registers which should help in troubleshooting problems up to the floating supply DACs.

Cycle Rack Mode

There is a "Cycle Rack Mode" that is available in the PS5010 that is not and should not be made known to customers for safety considerations.

CAUTION: A possible shock hazard exists due to the fact that the instrument powers up with outputs on, maximum voltage and maximum current out.

By connecting pins 2, 3, and 4 together on A12J1320, the PS5010 will power up with all outputs on, full voltage and full current out.

Recommended resistor values for loading the PS5010 in cycle mode are two each 90 ohm, 25W, 5% Resistors, P/N 308-0744-00 for each floating supply to common and a 2 ohm, 25W, 5%, P/N 308-0205-00 resistor for the logic supply to chassis ground.

These resistors should be mounted on some sort of a metal chassis to help dissipate heat, and should be kept at least 2 inches from the front panel to prevent melting the plastic.

It should also be noted that in cycle mode, the remote light will flash denoting that the processor is functional.

Early Production Problems

The only known problem in early production is that some instruments may not have had the seven-segment display leads clipped on the back of the A10 front panel board. If the leads are long enough, they will short to the chassis, blanking various segments in the display.

--Terry Turner
92-236, Ext. 1288

TM5000 INSTRUMENT INTERFACING GUIDES AVAILABLE

Instrument Interfacing Guides which contain useful programming and GPIB information for all TM5000 instruments are now orderable. These reference guides should be a valuable training aid for those who are learning TM5000 instruments or have not done much programming with TM5000/4041 or 405X.

CG5001:	070-4616-00
DC5009:	070-4612-00
DC5010:	070-4611-00
DM5010:	070-4603-00
FG5010:	070-4613-00
MI5010:	070-4614-00
PS5010:	070-4610-00
SI5010:	070-4615-00

-- Terry Turner
92-236, Ext. WR 1288
Issue 13-10

May 13, 1983

PS5010 PLUS FLOATING SUPPLY DISPLAY BLANKS WHEN THE REAR INTERFACE IS USED

In the rear output configuration, each sense line is diode clamped to the output to prevent uncontrolled regulation should the sense lines be left unconnected. Remote sensing improves voltage regulation by compensating for voltage drops in the output leads. If the sense lines are unconnected, the plus Floating Supply will blank, indicating the supply is neither in constant voltage nor constant current. The same problem applies to the minus Floating Supply. The display will not blank, but the regulation will be affected.

Supply regulation depends on the sense voltage at A14R1541 and A14R1533 (A14R1432 and A14R1540 for the minus Floating Supply). In the front panel output configuration, the sense and sense common lines are connected to the output at the connector.

When the rear output is used, the sense lines including the sensing common, must be connected at the load.

Please contact me, if you have any questions.

--Terry Turner
92-236, Ext. 1288-WR
Issue 13-11

PS5010 A14 FLOATING SUPPLY BOARD
RELIABILITY IMPROVED

S/N Affected: Below B030000

Ref: PS5010 Instruction Manual
P/N 070-3391-00
Schematic #9

In an effort to meet all specifications for conducted emissions in MIL-461A, four capacitors were added late in the design of the PS5010.

These capacitors were added in parallel with the Power Module 25V AC windings prior to the fuse for best filtering and least amount of ripple on the output. If one of these capacitors shorts, the Power Module will supply 500ma of current until the capacitor or the internal board run

(ARTICLE CONTINUED ON THE NEXT PAGE)

August 19, 1983

PS5010 A14 FLOATING SUPPLY BOARD RELIABILITY IMPROVED (CONT.)

burns open. The failure rate for these capacitors has been much higher than expected (five instruments to date have experienced burned A14 boards).

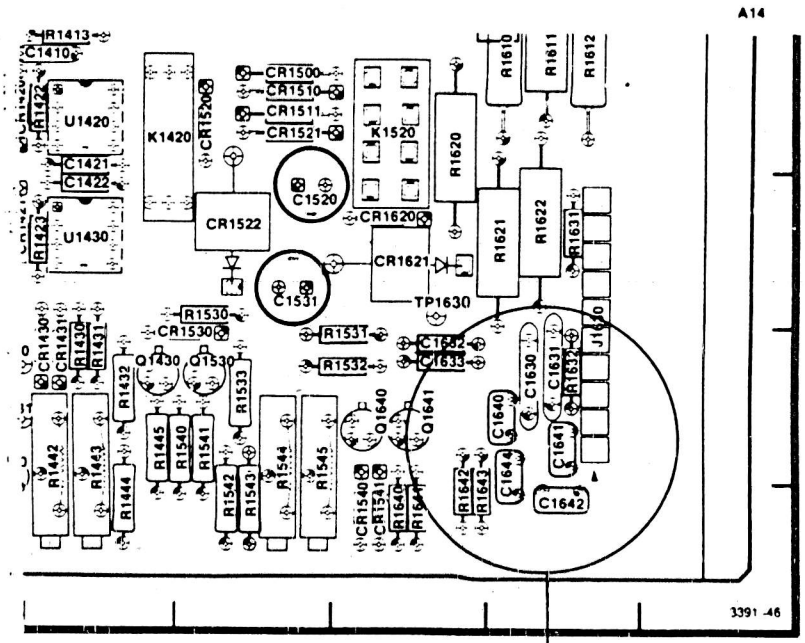
The solution for this problem will be to remove the four capacitors and exception the CE 02 test of MIL 461A. The specification will now state that CE 02 is exceeded by 15dB below 80KHz. This should not affect instrument performance.

These capacitors should be removed in all PS5010's below B030000 that come into the Service Center for repair or calibration. See the diagram below for details.

For instruments that are not under warranty, customers will not be expected to buy a new A14 board that has been burned due to a short in one of these four capacitors. The GPI marketing group has agreed that a replacement board should be customer accommodated by the local Sales Engineer.

Please call if you have any questions.

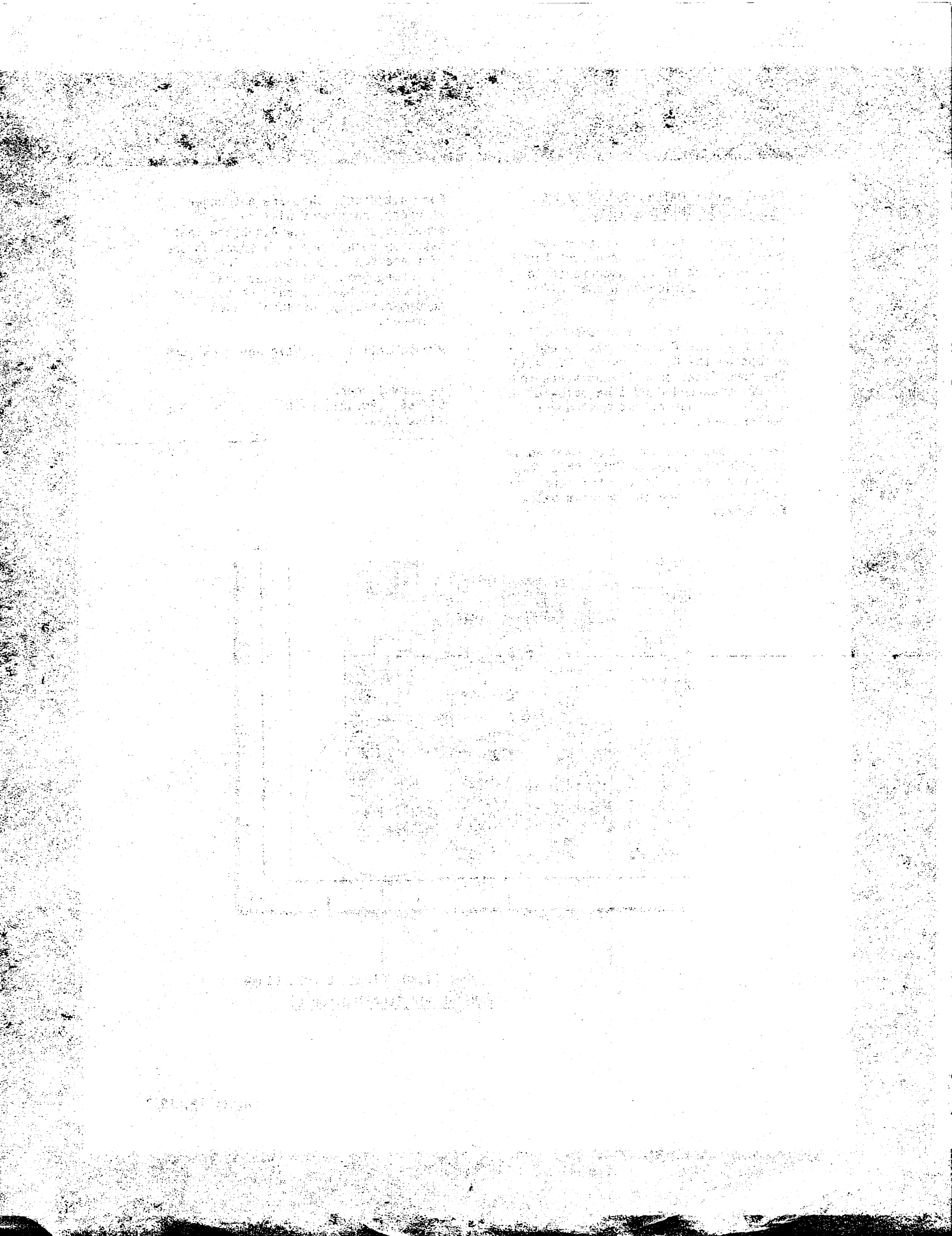
--Terry Turner
C1/866, (206)253-5616
Issue 13-17



Remove C1640, C1641, C1642, C1644

PARTIAL A14 FLOATING SUPPLY

August 19, 1983



PS5010 CAPACITORS SHORT

Ref: Mod 51828
SN B029999 and below

Some capacitors on the A14 board occasionally short and burn a hole in the circuit board. The capacitors are A14C1640, A14C1641, A14C1642 and A14C1644. To prevent this from happening, these capacitors must be removed from every PS5010 that comes in for service. These capacitors are not replaced by any other part. See Wizards Workshop article in issue 13-17, August 19, 1983 for more information.

Craig E. Vogel
Clark County Service Support
C1-866, (206) 253-5616 March 16, 1984
Issue 14-4

PS5010 LOAD RESISTOR TEKTRONIX P/N CHANGE

Ref: Instruction Manual Tektronix P/N 070-3391-00

The suggested test equipment list (Table 5-1) indicates a 5-ohm, 5%, 25W resistor, Tektronix P/N 308-0177-00. This part is no longer available and is replaced by Tektronix P/N 308-0842-00. The manual will be corrected appropriately.

Martin DeLuke
Clark County Service Support
C1-866, (206) 253-5617
Issue 16-17