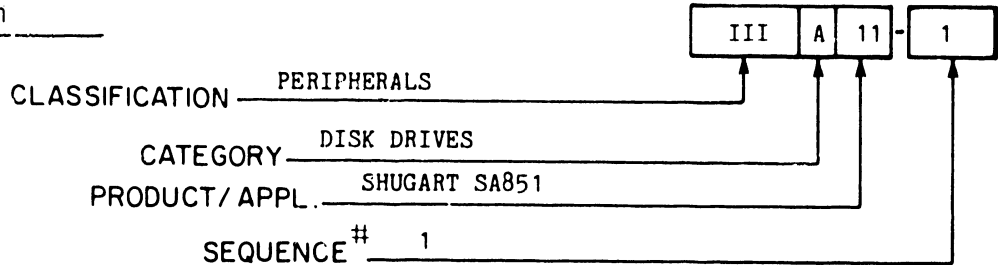


CUSTOMER ENGINEERING

PRODUCT SERVICE NOTICE

DATE : 6/15/81



TITLE:

SHUGART SA851 ADJUSTMENT PROCEDURE
FOR
VS/AWS SYSTEMS

INTRODUCTION

This PSN provides instructions for performing the following adjustments on Shugart SA851 DSDD Floppy Diskette Drives installed in VS/AWS Systems:

1. Index/Sector
2. Head Radial
3. Track 00 Detector

All adjustments are performed under control of the FTU program using appropriate screen menus and prompts. It is assumed that the customer engineer performing these procedures has a thorough working knowledge of the VS/AWS, the FTU program, and the SA851.

EQUIPMENT AND ACCESSORIES REQUIRED

The following equipment and accessories are required in the performance of the procedures specified in this PSN:

1. Oscilloscope, Tektronix type 465B (or equivalent)
2. Three sets of test leads for oscilloscope
3. Three 10X Probes, Tektronix type P6106 (or equivalent)
4. Alignment Diskette, Dysan 360/2A (Wang P/N 726-1922)
5. Customer Engineer Tool Kit

WANG

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PREALIGNMENT PROCEDURE

1. Disconnect AC primary power from the VS-AWS master.
2. Remove six screws and cover from the VS-AWS master.
3. Disconnect all cables between the SA851 Floppy Disk Drive and the VS-AWS.
4. Remove three screws that secure the SA851 to the VS-AWS. Two screws are accessible underneath the VS-AWS and the third screw attaches to a bracket at the top.
5. Loosen but do not remove the screw that secures the bracket to the VS-AWS chassis.
6. Remove the SA851 by pulling it straight out the front of the VS-AWS. Maneuver bracket as necessary.
7. Reconnect all cables to the SA851 and position it to provide access to both sides.
8. Connect AC primary power to the VS-AWS.
9. Run the FTU Diagnostic program.
10. Fill in the screen prompts for drive device number (DEVICE =) and volume name (VOLUME =).
11. Type in a "NO" for the prompt which asks if the diskette just installed is an alignment diskette (ALIGN PK = NO). NOTE - This false statement is necessary to set up the proper conditions for alignment.
12. Depress key PF1. When the "ASSISTANCE REQUIRED BY PROGRAM FTU" message appears, insert the Dysan Alignment Diskette 360/2A (WLI 726-1922) into the SA851.
13. Disregard any prompt such as "I/O ERROR ON MOUNT" and depress key PF15 to continue.
14. When the general menu appears, depress key PF8 (WRITE ENABLE) and then depress key PF4 (SET MFM MODE). This completes the prealignment procedure.

INDEX/SECTOR ADJUSTMENT

1. Set the oscilloscope controls as follows:

Channel 1: AC
Channel 2: AC
Sync: DC, External Negative
Time Base: 50 usec/division
Amplitude: 0.2v (For 10X Probes)
Mode: Add and Invert Channel 2

2. Connect the oscilloscope to the following points on the SA851 PCB:

Channel 1 to TP1, Ground to TP5
Channel 2 to TP2, Ground to TP6
Sync to TP12 (INDEX pulse), Ground to TP5

3. Select "ALTERNATE SEEKS" from the FTU main menu by depressing key PF6.
4. Initiate an alternate seek to the same cylinder by typing in 0003 as the beginning and ending cylinder address (FROM CYL = 0003, TO CYL = 0003).
5. Hit ENTER and observe that the timing between the start of the sweep and the Index pulse is $200 \text{ usec} \pm 100 \text{ usec}$ (Figure 1). If not, slightly loosen the holding screw on the index/sector photo transistor (Figure 2) and reposition it. Tighten the screw and recheck the timing again. Repeat as necessary.

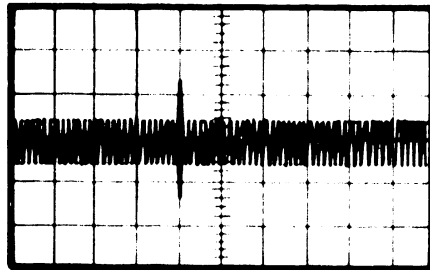


FIGURE 1 INDEX PULSE TIMING

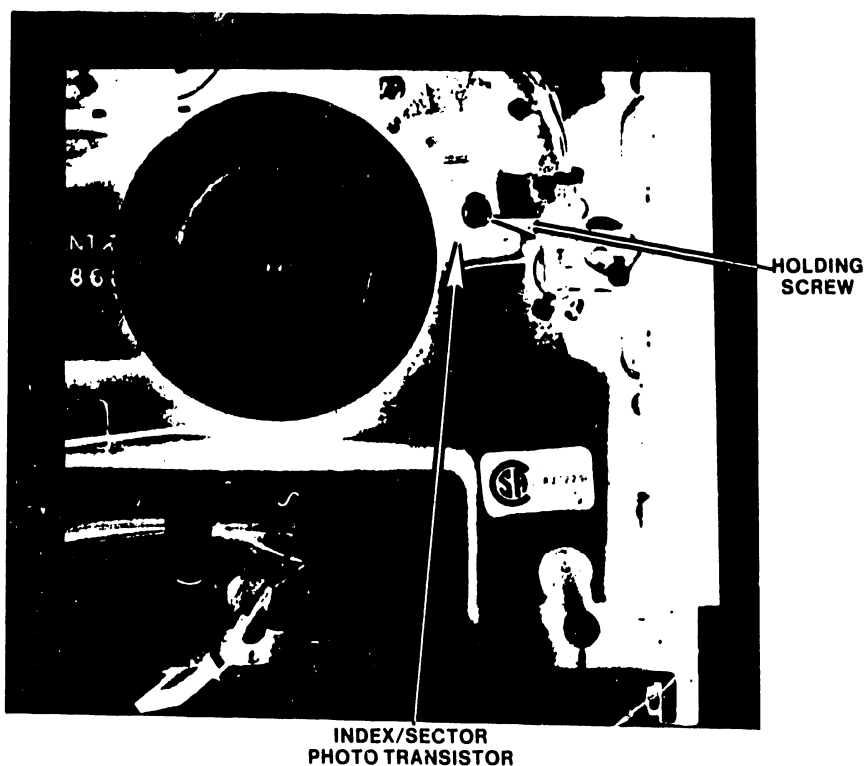


FIGURE 2 INDEX/SECTOR ADJUSTMENT

HEAD RADIAL ALIGNMENT

1. Set the oscilloscope controls as follows:

Channel 1: AC
Channel 2: AC
Sync: DC, External Negative
Time Base: 20 msec/division
Amplitude: 0.1v (For 10X Probes)
Mode: Add and Invert Channel 2

2. Connect the oscilloscope to the following points on the SA851 PCB:

Channel 1 to TP1, Ground to TP5
Channel 2 to TP2, Ground to TP6
Sync to TP12 (Index Pulse), Ground to TP5

3. Select "ALTERNATE SEEKS" from the FTU main menu by depressing key PF6.
4. Initiate an alternate seek to cylinder 0076 (track 38, side 0) by typing in FROM CYL=0076, TO CYL=0076. See Figure 3 for track 0076 location.

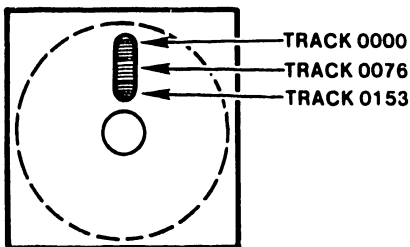


FIGURE 3 TRACK 0076 LOCATION

5. Hit ENTER and observe oscilloscope for waveform shown in Figure 4. The amplitude of the lobes ("Cats Eyes") must be within 80 percent of each other. If not, perform the following adjustments:
 - a. Locate the head radial alignment plate (Figure 5) and loosen the two mounting screws.

CAUTION
DO NOT FORCE THE ECCENTRIC ADJUSTMENT. IF EX-
CESSIVE RESISTANCE IS FELT, LOOSEN THE MOUNTING
SCREWS SOME MORE AND/OR CHECK FOR PLATE BINDING
 - b. Carefully rotate the eccentric adjustment screw to move the mounting plate in the direction that provides the correct lobes.
 - c. Tighten the two mounting screws and recheck the lobe amplitude. If necessary, repeat substeps a, b, and c.
6. Depress any PF key to display the main menu.
7. Move heads away and back again by initiating an alternate seek operation between cylinders 0000 and 0076 for approximately 15 seconds. Depress any PF key to stop the operation.
8. Type in "FROM CYL = 0076, TO CYL = 0076" to initiate an alternate seek to cylinder 0076 (track 38, side 0) to recheck the lobes. Re-adjust the head radial alignment plate as necessary and recheck again.

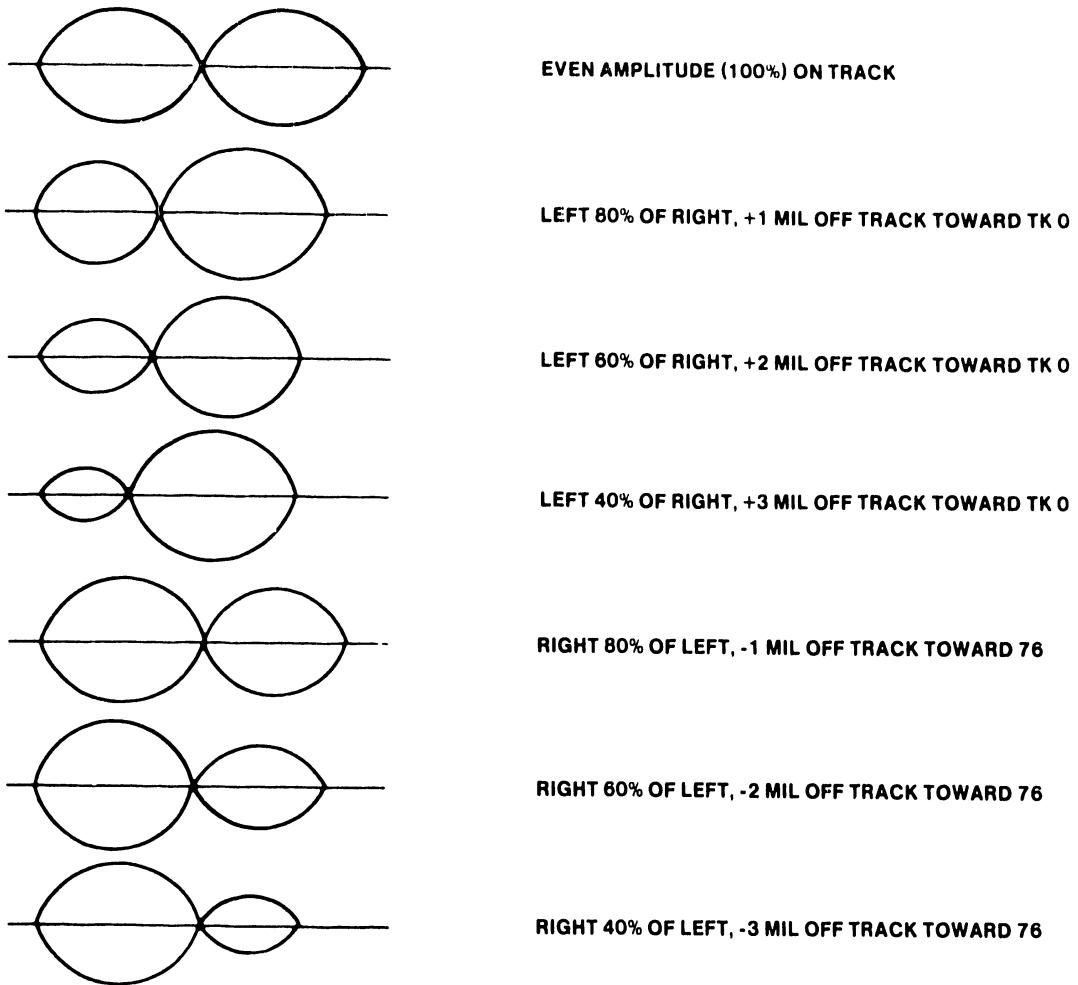


FIGURE 4 HEAD RADIAL ALIGNMENT WAVEFORMS

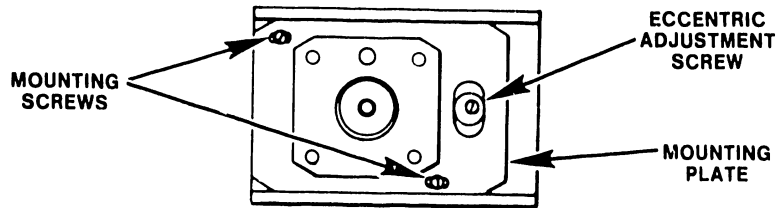


FIGURE 5 HEAD RADIAL ALIGNMENT PLATE

TRACK ZERO DETECTOR ADJUSTMENT

1. Check the Head Radial Alignment as specified in the preceding section of this PSN before performing the steps below.
2. Set the oscilloscope controls as follows:
 - Channel 1: DC
 - Sync: Auto (Channel 1)
 - Time Base: 10 msec/division
 - Amplitude: 2.0 volts (For 10X Probes)
 - Trace Line: Set equal to ground and position in center of screen
3. Connect oscilloscope Channel 1 to TP26, ground to TP5.
4. From the FTU main menu, select "ALTERNATE SEEKS" by depressing key PF6. Initiate an alternate seek to cylinder 0002 (track 1, side 0) by typing in the beginning and ending cylinder address as FROM CYL=0002, TO CYL=0002.
5. Hit ENTER and observe that the oscilloscope trace goes high (+5 volts). If not, locate the Track 0 Detector Assembly (Figure 6), loosen the holding screw, and move the assembly toward the spindle. Tighten the holding screw.
6. Initiate alternate seeks to cylinder 0004 (track 2, side 0). Hit ENTER and observe that the trace goes low (0 volts). If not, loosen the holding screw and move the Track 0 Detector away from the spindle.
7. Initiate alternate seeks between cylinders 0002 and 0004, and hit ENTER. Observe the oscilloscope for a square wave going between 0 and +5 volts. This square wave is produced by alternately seeking between the high level (adjusted in Step 5) and the low level (adjusted in step 6).
8. Repeat Steps 4, 5, 6, and 7 if the high and low readings are incorrect.

ADJUSTMENT VERIFICATION

1. Disconnect AC power from the VS-AWS master.
2. Remove the Dysan Alignment Diskette from the SA850.
3. Re-install the SA850 into the VS-AWS and secure the cover to the cabinet.
4. Turn power on. Insert a new diskette into the SA850.
5. Utilizing the FTU program, first initialize the new diskette and then write a worst case pattern of 6DB66DB6.
6. Read and verify the data just written on the VS-AWS.
7. Remove the diskette and insert it into another known good diskette drive. Read and verify that the diskette produces the same results on this system as it did on the original VS-AWS (and SA850 adjusted in this procedure).
8. As an alternative check, insert a known good diskette recorded on another system into the SA850 adjusted in this procedure. Using the FTU program, perform a read-and-verify function to check that the same results occur on both systems.

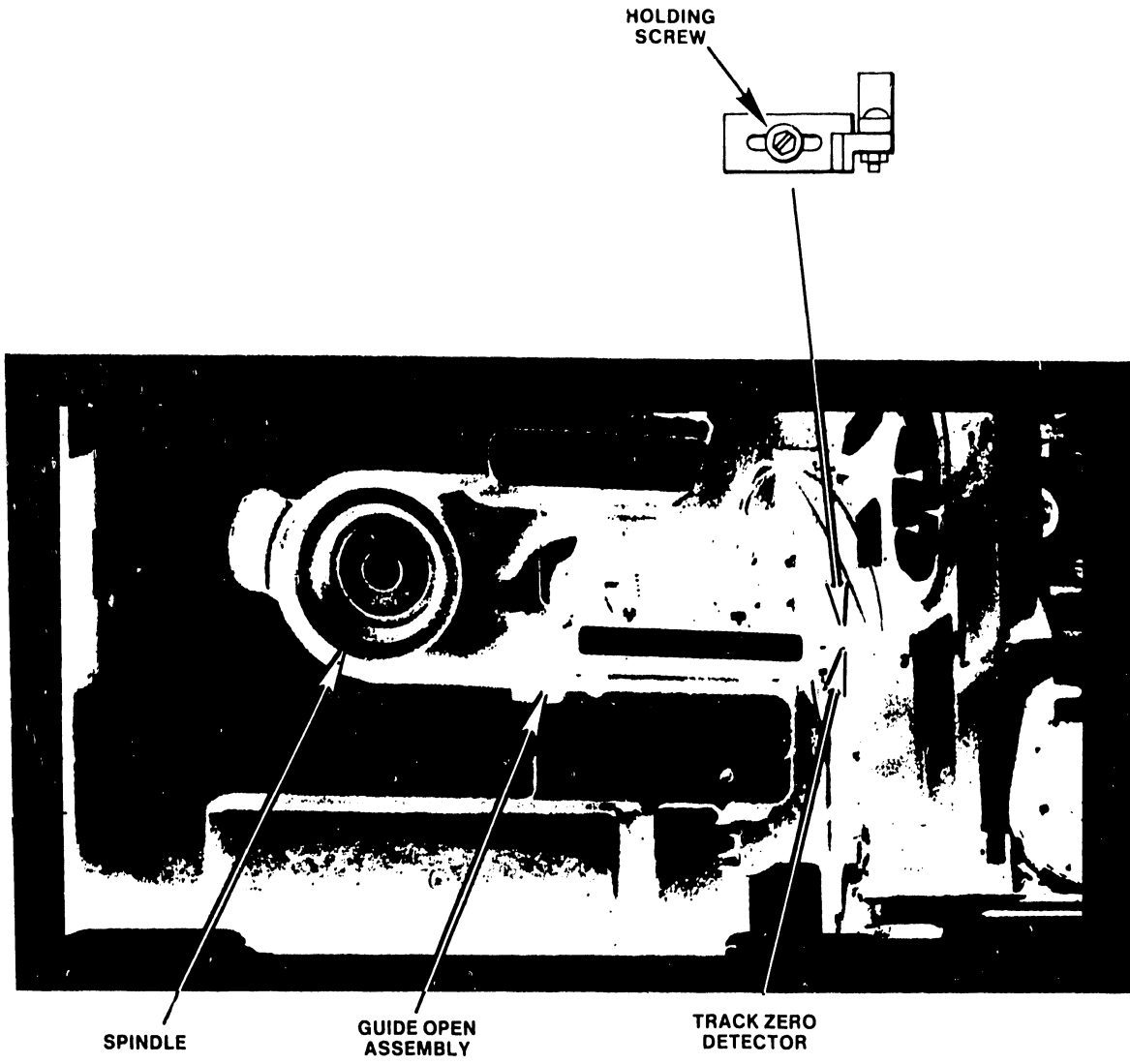


FIGURE 6 TRACK 0 DETECTOR



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