

ARD-101

ALIGNMENT REFERENCE DISK
FOR 1541 DISK DRIVES

COMPATIBILITY

The ARD-101 is compatible with the VIC-1541, 1540, 1541 and EXECUTIVE disk drives from COMMODORE. This includes versions with the ALPS or NEWTRONICS drive units.

REFERENCE DATA

Alignment procedures are published in the 1541 SINGLE DRIVE FLOPPY DISK MAINTENANCE MANUAL and the 1541 MAINTENANCE GUIDE. Both of these publications are written by MICHAEL G. PELTIER and published by PELTIER INDUSTRIES, Inc.

TOOLS / TEST EQUIPMENT REQUIRED

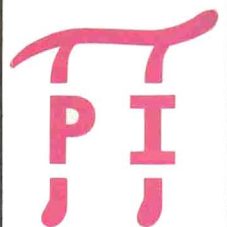
To use the ARD-101 require one of the above publications and the following:

- DC Voltmeter
- Philips screwdriver with 4 inch shank
- Video detector - (Parts list and assembly instructions are in appendix of above publications.)

VIC-1541 is a registered trademark of:
COMMODORE BUSINESS MACHINES, Inc.

PELTIER INDUSTRIES, Inc.

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GENERAL

The ARD-101 is an alignment standard for the 1541 series disk drives by Commodore. This alignment standard uses a different approach to disk drive alignment than the "cat's eye" approach which dominates the industry. The "cat's eye" approach requires an oscilloscope to perform the alignment.

The ARD-101 is recorded with a 1 MHz tone on each of the 35 tracks. This 1 MHz tone can be measured using a video detector and DC voltmeter. Correct alignment is achieved by "peaking" the voltmeter reading. Additionally the 1 MHz tone can be applied to a frequency counter for motor speed calibration on 1541's which do not have a timing disk on the flywheel.

For alignment procedures and instructions to fabricate a video detector see the 1541 Single Drive Floppy Disk Maintenance Manual or the 1541 Maintenance Guide, both by Michael G. Peltier and published by Peltier Industries, Inc.

CONTROL PROGRAM

On the reverse side of this document is a BASIC program listing for a control program which may be used to exercise the electro-mechanical functions of the drive unit. This program allows the user to step the read/write head in or out, turn the drive motor on or off and perform a bump (position read/write head over track #1) using the C-64 function keys.

Enter the control program using the C-64 keyboard, then run the program. See the following table for description of function key commands:

Function Key	Command
f1	Step in ½ track (1 step)
f3	Step out ½ track (1 step)
f5	Drive motor on
f7	Drive motor off
f2	Bump
f4	Exit control program

Because the alignment disk has no headers the DOS will not be able to seek a specific track, rather the control program must perform this function. The control program keeps record of the track number by adding or subtracting ½ track for each step in or step out command. It is important to note that if an adjustment is made or the read/write head is physically moved by some means other than the stepping motor, the track displayed on the screen may not agree with the actual head position. To avoid any discrepancy, perform a bump (f2) after an adjustment and after the read/write head is moved by some means other than activating the stepping motor. The bump command will bring the read/write head to track #1 and set the screen display to track #1. Below are some additional alignment notes which apply to the ARD-101.

NOTE:

1. Connect video detector to the following test points:

Model	Test Points
1540 (VIC-1541, Long Board)	Pins 7&8 of UH5
1541 (Short Board w/Alps Drive)	Pins 7&8 of UF4
1541 (Short Board w/Newtronics Drive)	Pins 7&8 of UF4

2. Typically the alignment can be adjusted over 2 tracks, therefore two peaks can usually be obtained. Select the strongest peak. If, after adjustment, the unit fails the performance test (will not write to track #1) or track 35 is below specifications, repeat the alignment procedure using the other peak.

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10 OPEN15,8,15,"U+":T=1:M=0:GOSUB7000:GOSUB8000
15 B$="M-E"+CHR$(5)+CHR$(2)+CHR$(238)+CHR$(0)+CHR$(28)+"L"+CHR$(130)+CHR$(249)
16 C$="M-E"+CHR$(5)+CHR$(2)+CHR$(206)+CHR$(0)+CHR$(28)+"L"+CHR$(130)+CHR$(249)
40 A$="":FORX=631TO640:POKEX,0:NEXTX
50 GETA$:IFA$=""THEN50
60 IFA$="■"THEN130:REM"■"=F1
70 IFA$="▣"THEN140:REM"▣"=F3
80 IFA$="▤"THENGOSUB150:GOTO40:REM"▤"=F5
90 IFA$="▥"THENGOSUB6000:GOTO40:REM"▥"=F7
100 IFA$="▦"THENGOSUB7000:GOSUB8000:GOTO40:REM"▦"=F2
110 IF A$="■"THENGOSUB7000:GOSUB6000:END:REM"■"=F4
120 GOTO40
130 PRINT#15,B$:T=T+.5:M=1:GOSUB8000:GOTO40
140 PRINT#15,C$:T=T-.5:M=1:GOSUB8000:GOTO40
150 PRINT#15,"M-E"+CHR$(130)+CHR$(249):M=1:GOSUB8000:RETURN
6000 PRINT#15,"M-E"+CHR$(232)+CHR$(249):M=0:GOSUB8000:RETURN
7000 PRINT#15,"M-W"+CHR$(0)+CHR$(0)+CHR$(1)+CHR$(192):T=1
7010 FORX=1TO4000:NEXTX:IF M=1 THEN GOSUB150:RETURN
7020 IF M=0 THEN GOSUB 8000:RETURN
8000 PRINT"▶▶STATUS:":PRINT"TRACK ";T:REM"▶"=SHIFT CLR/HOME "▶"=CURSOR DOWN
8010 PRINT"MOTOR ";:IFM=0 THENPRINT"OFF":RETURN
8020 IF M=1 THEN PRINT"ON":RETURN

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