



Using CDC's Sweep Cycle with Zetaco Controllers

TOPICS

Control Data Corporation (CDC) has a new feature on SABRE/9720 series disk drives that is called Automatic Sweep Cycle. This document explains how to enable it to operate with Zetaco Disk Controllers installed in Data General computers.

(Zetaco disk subsystems using SABRE drives are shipped from Zetaco with Sweep Cycle enabled. If you have one of the rare applications that cannot support this feature and must disable it, follow these guidelines.)

For background purposes, the Sweep Cycle function is discussed briefly here; for a detailed explanation, please refer to CDC's Engineering Change Notification on Sweep Cycle, which is shipped with the Technical Manual for each SABRE drive.

SWEEP CYCLE HELPS PREVENT HEAD CRASH

CDC's research shows that head crashes are more likely to occur when disk drive heads are moved to a different position after idling for a long period of time (such as over a weekend) in the same place. The Sweep Cycle feature, which automatically moves the heads across the disk surface every 12 minutes, reduces the chance of head crash by avoiding long idle time.

The starting position for the sweep is determined by an algorithm that increments from the last starting position. Each sweep moves through five cylinders from the start, goes to MAX CYLINDER, and returns.

In CDC's tests, Sweep Cycle affected drive performance so little that impact was virtually immeasurable -- the sweep requires less than 200 milliseconds about every 12 minutes.

The three ways to enable Sweep Cycle and the one disable setting are discussed on the next page.

FOUR WAYS TO JUMPER THE OPTION

There are 4 ways to jumper Sweep Cycle on the drive, as explained below. **Note that Mode 1, 2, or 4 must be used with Zetaco's ARZ-1 Disk Controller, and Mode 4 (Disable) must be used with Zetaco's BMX-3 and DC-297 Disk Controllers. Mode 3 should never be used.**

On drives with embedded control boards (see page 3), configure the modes via installation or removal of pin jumpers SWPD (sweep disable), SWP1 (sweep on seek disable), and RT (return enable).

The drives with daughter boards use a 3-pin set (RT, DR, & center pin) to enable or disable return, and SD & S1 pins. See the drawings on page 3 of this document.

MODE 1: Self-initiated sweeps, with return to cylinder upon select. The disk drive will perform a sweep every 12 minutes and return to original cylinder when selected again. When possible, the sweep will be combined with a seek. To select this mode, remove jumper SWPD, and install SWP1 and RT jumpers; on the daughter board, connect the center pin to RT. This mode may be used with our ARZ-1 Disk Controller. **SABRE drives in MAX Subsystems are shipped from Zetaco set in this mode.**

MODE 2: Sweep on seek command. The disk drive can only sweep in conjunction with required seeks. Every 12 minutes the disk drive will sweep before seeking to the cylinder requested, or it will wait for the next seek if none has been issued. To select this mode, remove jumpers SWPD and SWP1, and install the RT jumper; on the daughter board, connect the center pin to RT. This mode may be used with our ARZ-1 Disk Controller.

MODE 3: Self-initiated sweeps without return to cylinder upon select. This mode requires a REZERO command before the drive will respond to interface commands, causing a timeout, and SHOULD NOT BE USED with Zetaco Disk Controllers. Neglecting to install the RT jumper as noted in MODE 1 will select this mode instead. Note that drives shipped directly from CDC are usually set in this mode and must be reset to operate with Zetaco Controllers.

MODE 4: Sweep Cycle Disabled. All other jumpers are ignored, and the disk drive will operate as usual without sweep cycles. To select this mode, install jumper SWPD; on the daughter board, jumper the center pin to DR. This mode may be used with Zetaco's ARZ-1, and must be used with BMX-3 and DC-297 Disk Controllers.