

## Qume 242 8 inch Floppy Disk Drive as Altair Drive used with the Altair FDC+

The Qume 242 is a double-sided, half-height, DC only, 8 inch drive. The drive uses two MSI chips (MB14302, MB14303) to handle drive functions for which I cannot find documentation. The M14303 which processes index pulses from the drive works only for soft sector media – it does not pass through hard sector pulses properly. Therefore, this drive *only works with soft sectored media*. The FDC+ automatically injects virtual hard-sector pulses so that the Altair computer and software cannot tell the difference.

Index pulse timing cannot be adjusted on these drives. Drives are spec'd to be +/-500us of each other. This is not tight enough tolerance to ensure reliable Altair media interchange between two drives. The only solution for establishing a multiple-drive system is to experiment and find two drives that have index timing within +/-100us of each other or simple testing shows that the two drives exchange media reliably.

The stepper timing is designed to work with 3ms steps. When stepped at 10.5ms with Altair/Perotec timing, the stepper is *very* noisy. It is recommended that the step rate be changed to 3ms using the FDC+ monitor.

The following drive jumper settings should be used with the Altair FDC+:

- On the 16 pin programmable shunt: A, B, R, I should be closed. X, Z, HL should be open (lift pin out of socket)
- Install jumpers C and Y, all other header jumpers removed
- Factory defined PCB/soldered jumpers can remain as configured. Note: In the manual, the SF (switch filter) jumper shows to be factory installed, however, it was not installed on the drive I tested. The switch filter can be enabled when on track 60-76 to “improve read resolution.” The external Write Current signal (drive cable pin 2) is used to assert SF during reads. Since no Altair software manipulates this line for reads, it doesn't matter whether the SF jumper is installed or not. For writes, the Write Current line still controls write current independent of the SF jumper.
- Install drive select jumper DS1-DS4
- Install terminator packs TM1, TM2 in last drive on cable

For use with the Altair FDC and FDC+, the door latch should be disabled – sometimes ejecting a disk is the only way to de-select a drive and remove a disk when software is hung. Resetting the computer and re-starting doesn't necessarily release the drive. I disabled the door latch solenoid by removing pin B2 (+24v to solenoid) from the J2 housing.