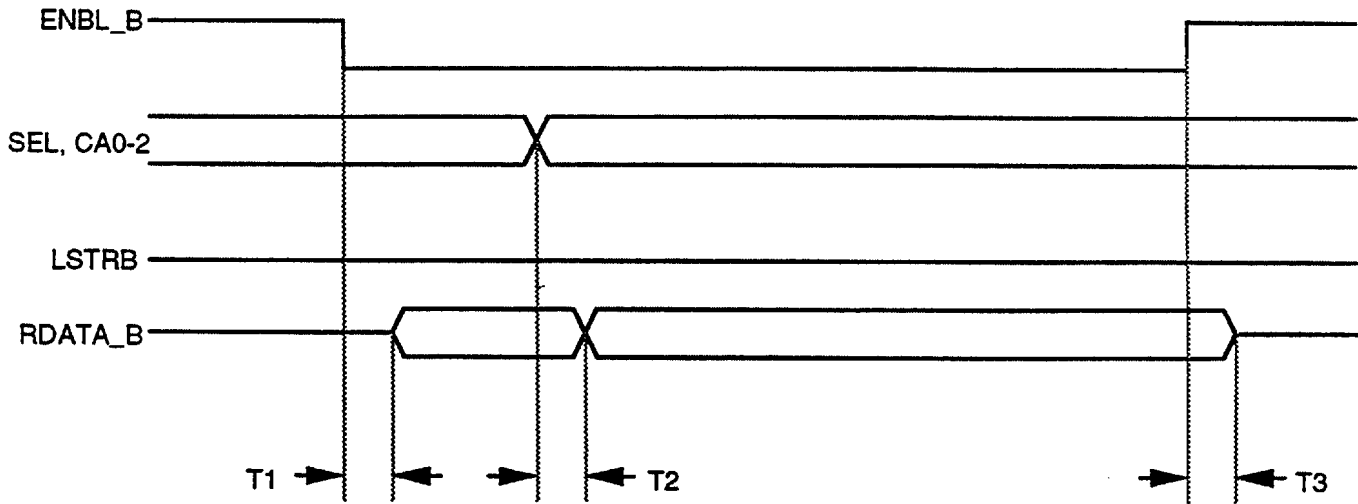


7.1 AC Timing Diagrams for the Apple Disk Interface

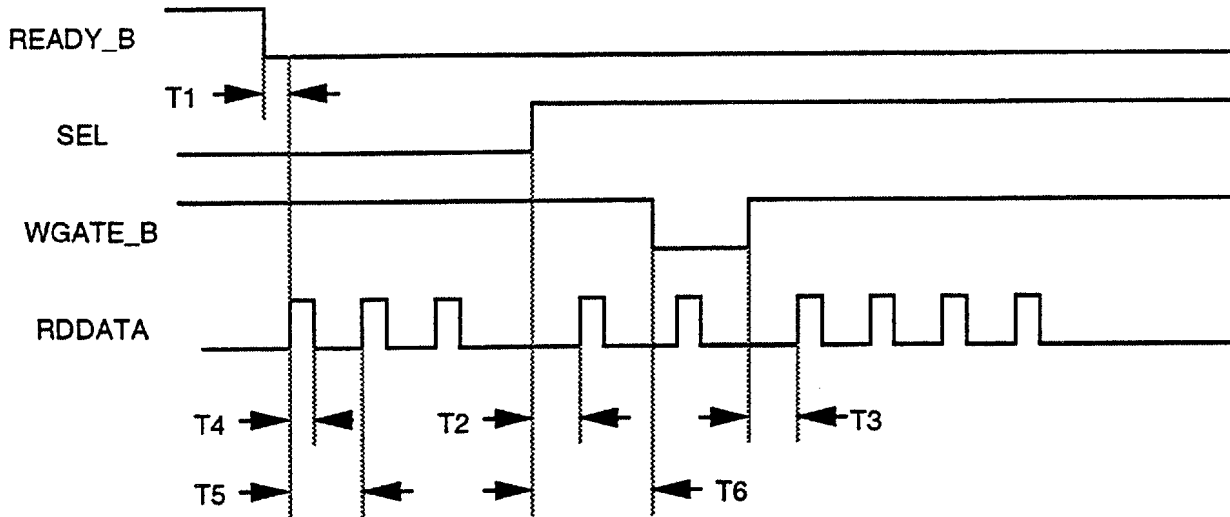
READING DRIVE STATUS

The following timing applies to /DIRTIN, /STEP, /MOTOR ON, EJECT, 2MB DRIVE, 4MB DRIVE, Mode ID, RDDATA, /DRVIN, /TACH, or INDEX, /READY, /CSTIN, /WRTPRT, /TK0, /2MB MEDIA, /4MB MEDIA, MFM MODE.



T1: 0.5 μ s max
T2: 0.5 μ s max
T3: 0.5 μ s max for high impedance state

READING RDATA



GCR mode

- T1: 0.5 μ sec max
- T2: 100 μ sec max
- T3: 190 μ sec max
- T4: 0.15 μ sec min, 0.8 μ sec max
- T5: 2,4,6 μ sec normal
- T6: 100 μ sec min

MFM, 1MB mode

- T1: 0.5 μ sec max
- T2: 100 μ sec max
- T3: 190 μ sec max
- T4: 0.15 μ sec min, 0.8 μ sec max
- T5: 2,3,4 μ sec normal
- T6: 100 μ sec min

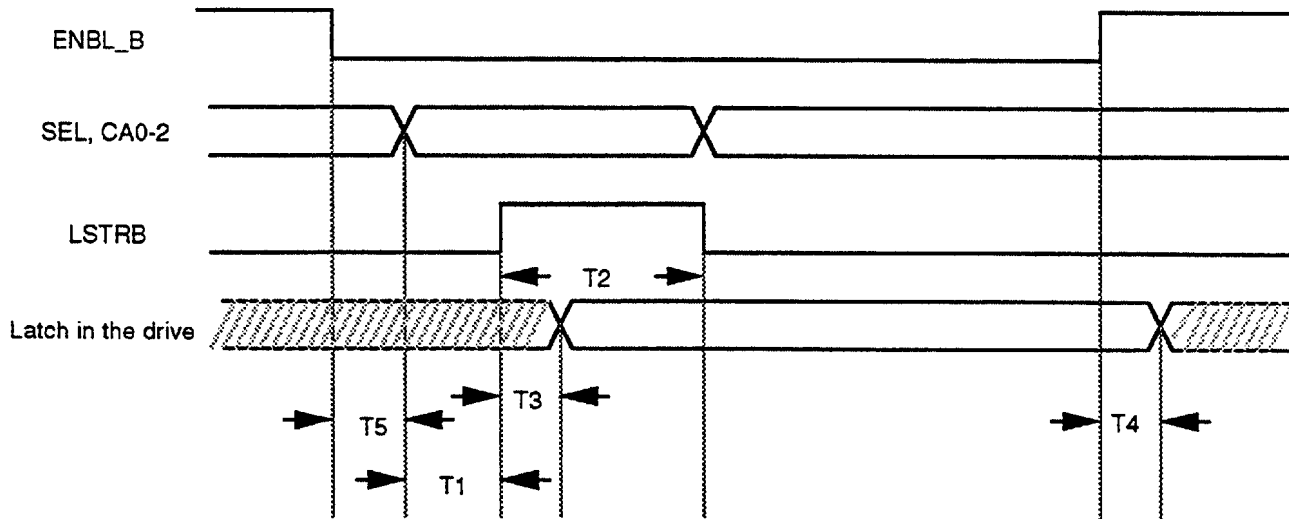
MFM, 2MB mode

- T1: 0.5 μ sec max
- T2: 100 μ sec max
- T3: 340 μ sec max
- T4: 0.15 μ sec min, 0.8 μ sec max
- T5: 2,3,4 μ sec normal
- T6: 100 μ sec min

MFM, 4MB mode

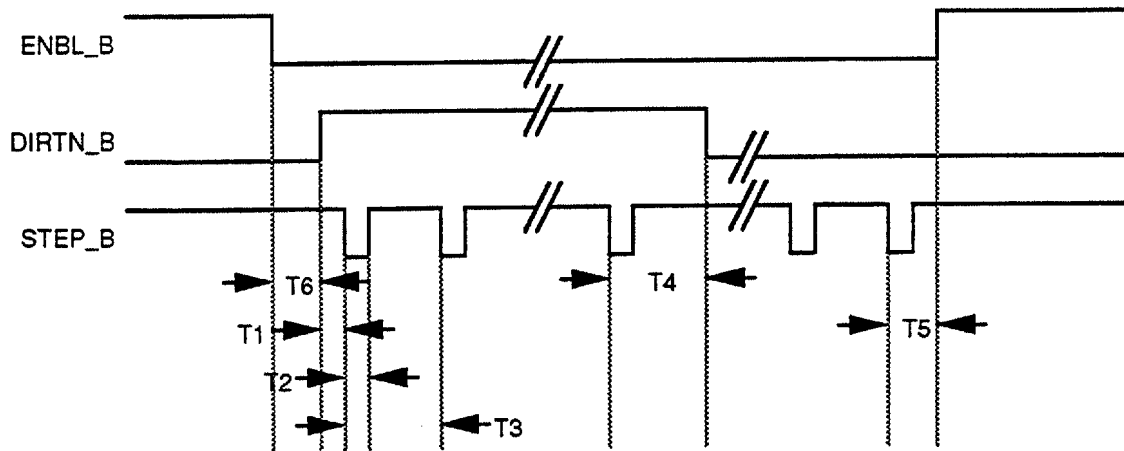
- T1: 0.5 μ sec max
- T2: 100 μ sec max
- T3: 340 μ sec max
- T4: 0.15 μ sec min, 0.8 μ sec max
- T5: 1,1.5,2 μ sec normal
- T6: 100 μ sec min

SENDING A CONTROL COMMAND



- T1: 0.5μsec min
- T2: 1.0μsec min
- T3: 1.0μsec max
- T4: 0.5μsec max
- T5: 0.5μsec min

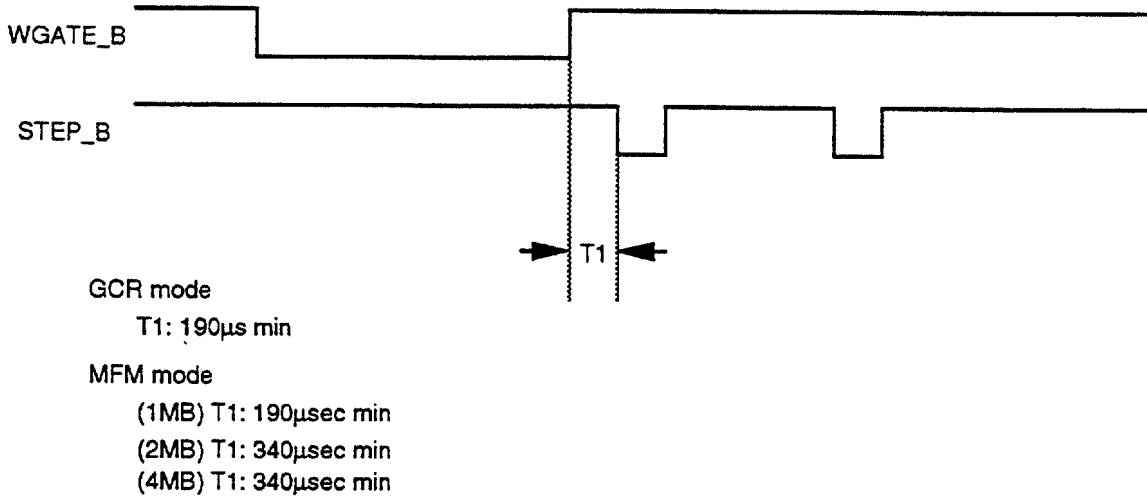
/STEP AND /DIRTN TIMING



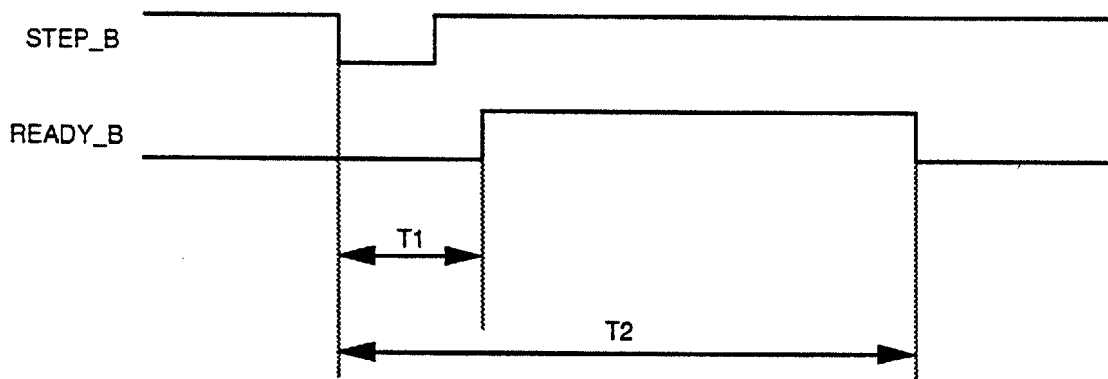
- T1: 1.0 μ s min
- T2: 0.5 μ s min
- T3: 72 μ s min
- T4: See NOTE
- T5: 37 μ s min
- T6: 0.5 μ s min

NOTE: It is not allowed to change /DIRTN during head movement or head setting.

/STEP AND WGATE TIMING



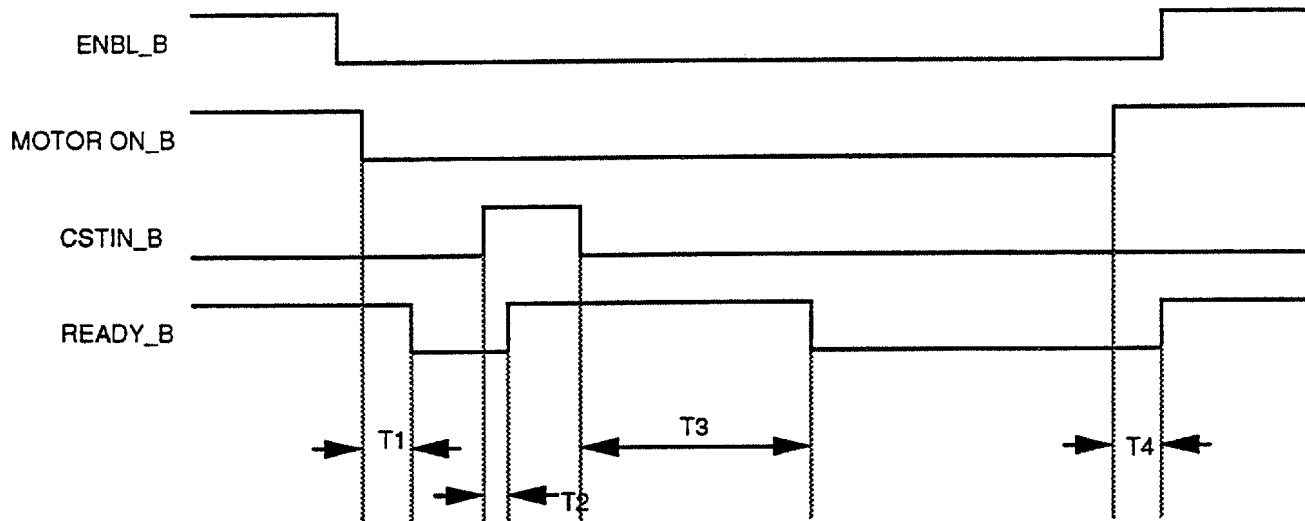
/READY FOR TRACK ACCESS



T1: 150 μ sec max.

T2: 18msec max. to move one track without speed block change
 250msec max. to move one track with speed block change (GCR mode)
 800msec max. for any case when step pulses are sent at the maximum rate

/READY FOR MOTOR-ON OR DISK-IN



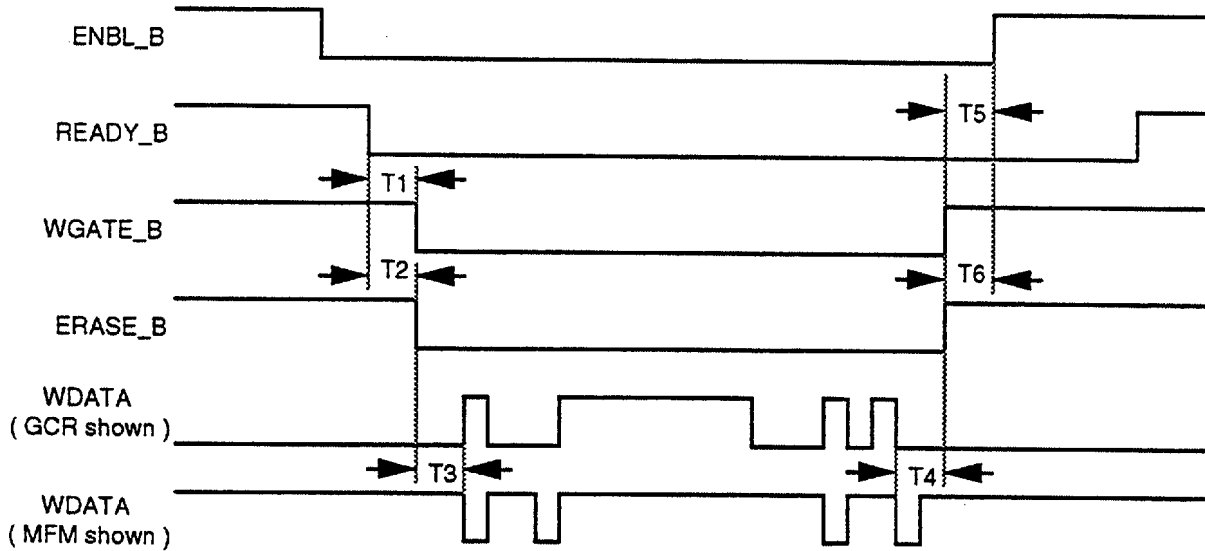
T1: 600msec max.

T2: 0.5 μ sec max.

T3: 1.0sec max.

T4: 5 μ sec max.

/WGATE, WDATA, AND /ERASE TIMING



Note: ERASE_B is a signal internal to the drive.

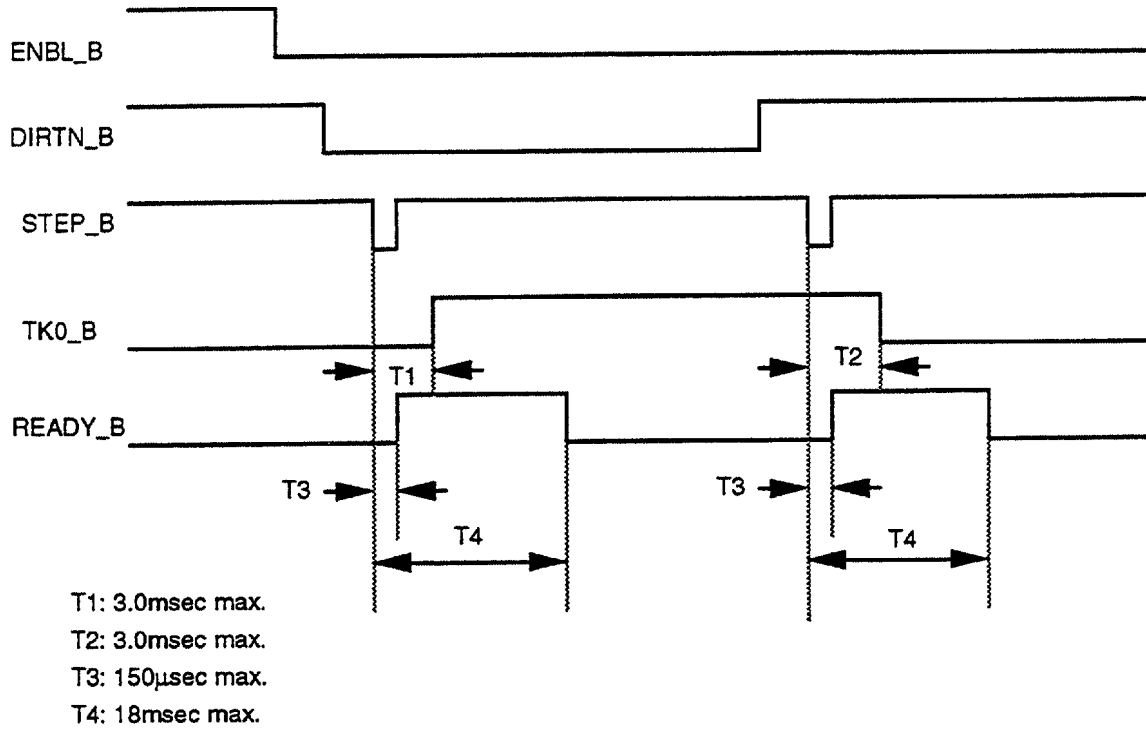
GCR mode

- T1: 0.5 μ sec min. after stepping
600msec min. after motor on
- T2: Same as T1
- T3: 1.8 μ sec min.
- T4: 2 μ sec min.
- T5: 0.5 μ sec min.
- T6: Same as T5

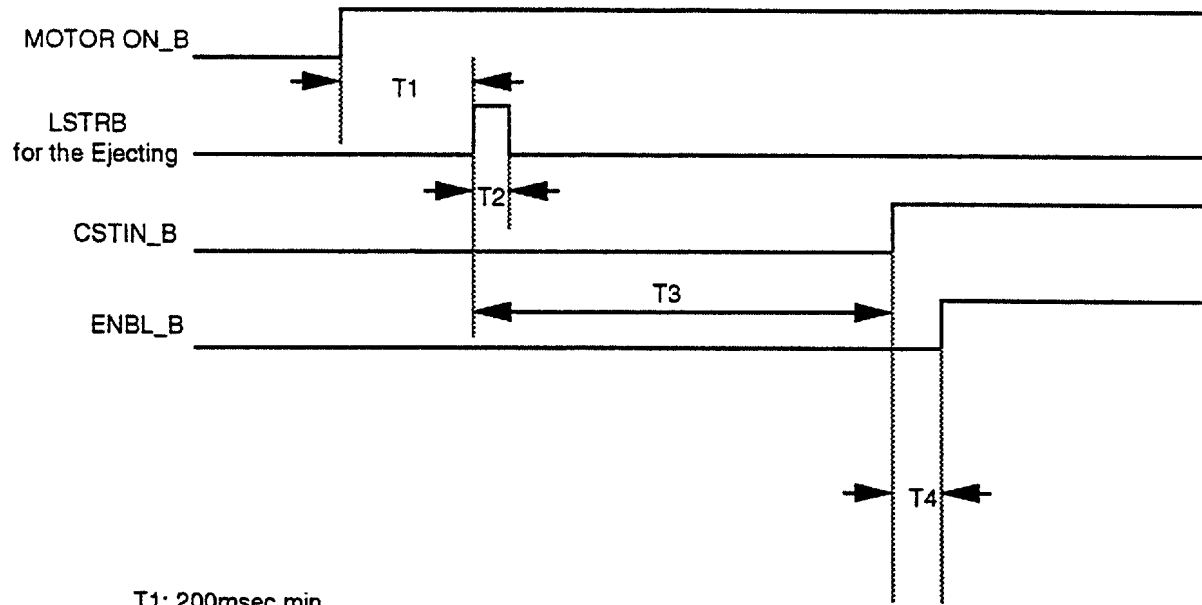
MFM; 1MB, 2MB, and 4MB mode

- T1: 0.5 μ sec min. after stepping
600msec min. after motor on
- T2: Same as T1
- T3: 4 μ sec min.
- T4: 2 μ sec min.
- T5: 0.5 μ sec min.
- T6: Same as T5

TK0 TIMING

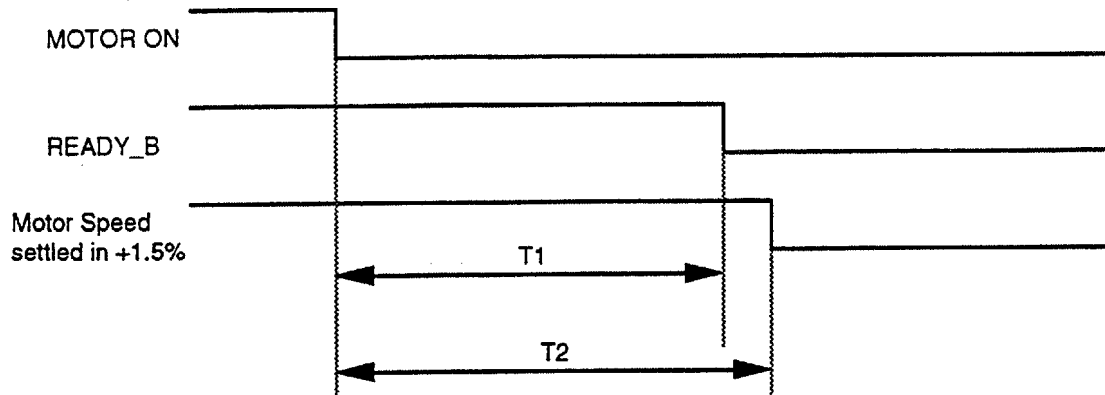


/CSTIN AND /MOTOR ON



- T1: 200msec min.
- T2: 1.0 μ sec min.
- T3: 1.5sec max.
- T4: 150 μ sec min.

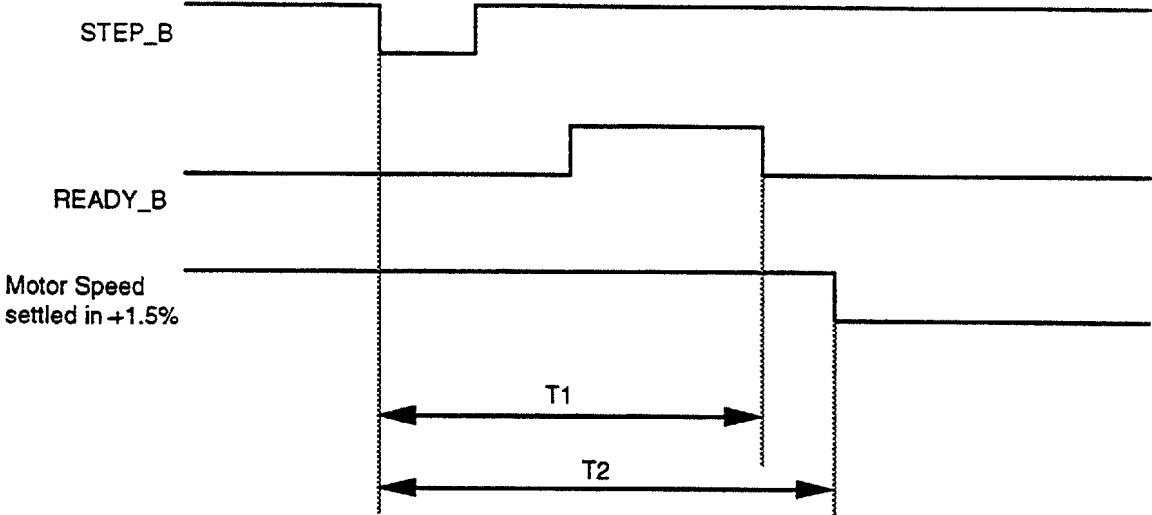
MOTOR START



T1: 600msec max

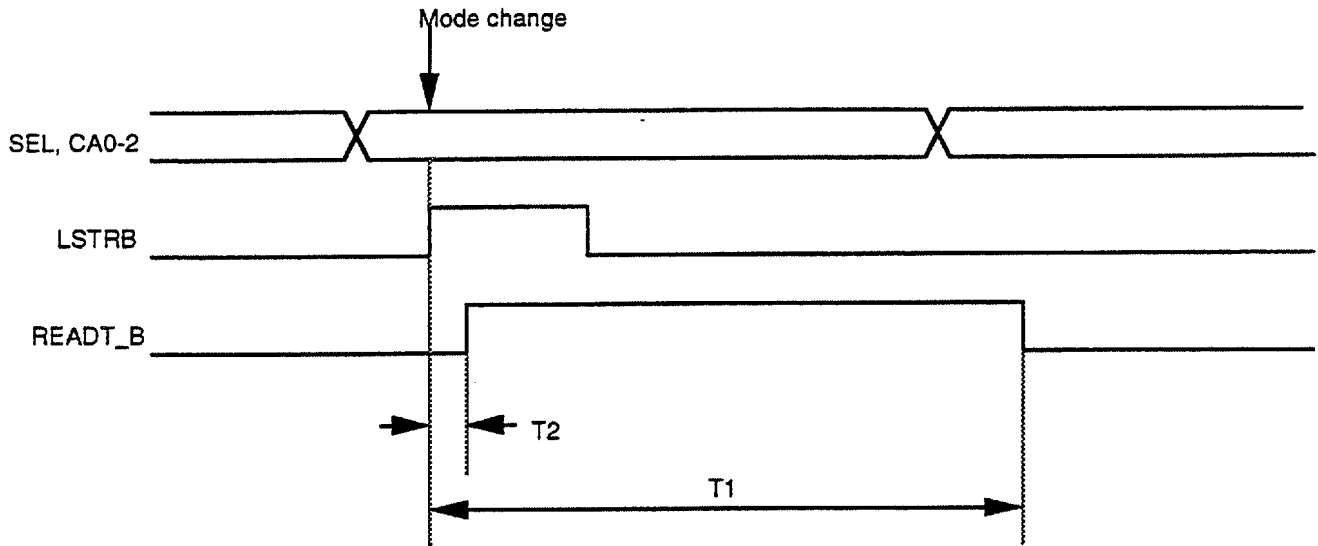
T2: 1sec max

SPEED ZONE BOUNDARY CROSSING, MOTOR SPEED SETTLING TIME



T1: 250msec max.
T2: 250msec max.

/READY FOR MODE CHANGE (MFM TO GCR OR VISE-VERSA)



T1: 800msec max.
T2: 20msec max.

SPECIAL CONDITION FOR INDEX WHEN WRITING DATA

