Technical Note FL34
VCBs and Drive Numbers : The Real Story

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The top of page IV-178 in The File Manager chapter of *Inside Macintosh* in attempts to explain the behavior of two fields in a volume control block when the corresponding disk is offline or ejected. Due to the fact that a little bit is left unsaid, this paragraph is rather misleading. The two fields in question are `vcbDrvNum` and `vcbDRefNum` (referred to as `ioVDrvInfo` and `ioVDRefNum` in C and Pascal). `PBHGetVInfo` can be used to access these fields.

[Jan 01 1987]

Offline

When a mounted volume is placed offline, `vcbDrvNum` is cleared **and** `vcbDRefNum` is set to the two's complement of the drive number. Since drive numbers are assigned positive values (starting with one), this will be a negative number. If `vcbDrvNum` is zero **and** `vcbDRefNum` is negative, you know that the volume is offline.

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Ejected

When a volume is ejected, `vcbDrvNum` is cleared and `vcbDRefNum` is set to the positive drive number. If `vcbDrvNum` is zero and `vcbDRefNum` is positive, you know that the volume is ejected. Ejection implies being offline. There is no such thing as "premature ejection".

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Summary

online offline ejected

```
vcbDrvNum              >0 (DrvNum)       0                0
vcbDRefNum              <0 (DRefNum)         <0 (-DrvNum)          >0 (DrvNum)
```

Please refrain from assuming anything about a VCB queue element beyond what is documented in *Inside Macintosh*, and don't expect it to always be 178 bytes in size. It grew when we went from MFS to HFS, and it may grow again. It's safest to use calls like `PBHGetVInfo` to get the information that you need.

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References

The File Manager

Technical Note M.DV.DrvQEI -- Drive Queue Element Format

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