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## Apple IIGS: RAM Upgrade, CAS and RAS

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TOPIC -----

I am trying to upgrade an early version of the Apple IIGS and having problems with the 256K chips. Please advise me on the need for CAS and RAS and when and where they are necessary. The solder-in chips on the expansion card don't fall into the category listed in the service manual for replacement. They are NEC/Japan D41256C-15.

DISCUSSION -----

The computer requires CAS before RAS refresh. At one time, we were describing the problem chips, but there are too many different RAM manufacturers. Run the Apple IIGS diagnostic 4.0. You must specifically choose the RAM card test to test the card. If the test comes back with "RAM out of spec," you have the wrong refresh. If the test fails, it is a straight failure. If the test passes, the RAM is the correct refresh and in working order.

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