

## Magnification of Visual Display Units

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Visual display units can be of the storage tube or regenerative display variety. A storage tube display is now only seen on some graphical displays; with this type of display the picture has to be completely redrawn if one item is to be removed. However the advantage is that there is no flicker.

A regenerative display has a picture similar to a conventional television. The flicker is a function of the frequency of the regeneration of the display and the persistence of the phosphor on the screen. The longer the persistence the less the flicker but the greater the blurring for a moving image.

There are three main methods for magnifying the image of a visual display unit - conventional optical aids, enlargement of the display, and television magnifiers.

### Conventional optical aids

The simplest form of optical aid is a hand or stand magnifier but this may be very tiring to use for any length of time. A magnifier can be mounted on the visual display unit; for instance a bar magnifier can be mounted on sliders on both sides of the screen. Alternatively the magnifier can be on an arm similar to an Anglepoise lamp.

Magnification in spectacle form is available as either microscopic or telescopic lens system. For higher magnifications it is often helpful for the patient to use a reading stand so that the screen and any printed material being referred to are at the same distance from the eyes.

### Display enlargement

For low magnification, it is sometimes possible to substitute a larger screen in the visual display unit. Also it may be possible to modify the computer program controlling the visual display unit to magnify the image; this technique produces good results but is expensive since the modification is different for each type of visual display unit.

### Television magnifiers

If a television camera is pointed at a television display, there are usually severe striation effects. This is because the two pictures are out of synchronisation. This can be overcome by connecting the camera to the display so that the two systems scan in synchronisation. For a visual display unit, the synchronisation is much easier if there is an external video socket. The alternative is to delve in to the internal electronics of the visual display unit; this is expensive and often not practical if the visual display unit is rented or leased.

### Further reading

Gill J.M. "Television Magnifiers". The Ophthalmic Optician, Vol. 22, No. 17, August 1982, pp 573-576.

Gill J.M. "Survey of Reading Stands". The Ophthalmic Optician, Vol. 23, No. 2, January 1983, pp 38-40.