CREATE

The CREATE function in VU-3D allows the user, through a simple set of commands, to construct a completely new object in 3 dimensions. After entering CREATE a command banner of 3 lines can be seen at the top of the screen with the data line at the bottom of the screen. This format is standard and is used throughout VU-3D. **The commands are invoked by pressing the first letter or symbol of each command.**

CREATE functions by taking, in sequence, sections or slices through the object. Each section, or slice, is called a Z plane and the different sections have different Z values. One may think of these Z planes as if one had sliced through the object with a knife and then examined the surface, so opened. The points on such a surface now lie in two dimensions which are called X and Y. The X axis and Y axis are shown along the bottom and the left-hand margin respectively.

Before invoking CREATE, the user should have some image in his mind of the object or set of objects he wishes to construct. You should choose the Z direction to be the axis with the greatest symmetry of the object. For example, a rugby football has an axis symmetry, (the Z direction), along the line through the two pointed ends of the ball. This line should be chosen as the Z direction and slices or cuts taken perpendicular to this line. Another example might be a glass or a cup: the greatest symmetry in these cases is along the line looking downwards into the cup (Z), and the slices or section (X-Y), should be taken in the horizontal plane across the cup. It is important for the user to choose Z and the corresponding X-Y planes before he proceeds.

The commands available to the user in CREATE are: Open, Close, Figure, Magnify, Reduce, Next Z, Quit and the arrowed cursor keys to shift.

Open

After entering CREATE the user may start an object by using the O for Open command. This command allows the user to define the shape of the object on the first plane or section. For example, if a rugby ball was being constructed the first section, or salami slice, would define a small, regular polygon approximating a circle. This polygon is defined in Open. After typing O or Open, the command banner will change and the user will see a cursor on the screen. The position of the cursor is given in the data line at the bottom of the screen. Press the arrow keys to move the cursor around the screen. The first face of an object is defined by a set of closed lines, (closed in the sense that the line joins up on itself). Position the cursor at the point where you wish to start the line. Press S for Start. Now move the cursor to the next position to which you wish to draw a line. Press L for Line and a line will be drawn between the start position and the present position. Move the cursor to the next point and press L again. Continue in this way until you have formed the particular figure you wish to draw. To close the figure, press E for End. The user will then be returned to the CREATE function. If, while drawing the lines making up the figure in Open, an error is made, you may delete the last line by pressing D for Delete. More than one figure may be included on a section or in the general display. To start another object, or indeed a hole inside another object, press O for Open again and draw the second, or more, closed curves under the Open command.

The lines of a figure may never cross and two figures are never allowed to intersect. Open will detect any attempt by the user to draw a line which intersects another line and will not allow such a line to be drawn. If this occurs, move the cursor until no such intersection occurs. This will also be the case if the line to complete a figure when the End instruction is invoked would intersect an existing line.

Figure

In CREATE, either through Open or by repeating a figure from the previous Z plane, several figures may be included at once. In the commands Magnify, Reduce and shift with the arrow keys, (below), each of these figures may be magnified, reduced or moved separately. This is done by choosing one of the figures in turn. Press F for Figure to choose the next figure displayed. The currently chosen figure is shown with a dotted line as opposed to the solid lines of the other figures.

Magnify

A figure which has been drawn from Open or repeated by moving to the next Z plane may be magnified by pressing the key M. Continue to press M until the figure is magnified to the size you desire.

Reduce

Reduce is the opposite of magnify. Press R to make an existing figure smaller.

← → ↑ ↓ Arrows

The cursor arrow keys in the Spectrum may be used to move or shift the figure left, right , up or down.

Next Z

When the figures on the first plane have been constructed satisfactorily, the user may move to the next Z plane by pressing the key N until the Z value required is displayed in the data line at the bottom of the screen. After pressing N the figures from the previous plane will be repeated on the new plane. These figures may now be modified using the Magnify, the Reduce and arrow shift commands. For example, to construct a rugby football, one starts on the first plane at one pointed end of the football which may be represented by, say, a regular 10-sided polygon (or with greater accuracy, more sides). This first polygon is made very small using the Reduce command. N is then pressed for the next plane and the polygon simply magnified. The next plane is taken again and the polygon magnified once more until a plane through the centre of the