

N. Custom Plot Symbols

GMT comes with several custom plot symbols ready to go. They are used in **psxy** and **psxyz** using the **-Sk** option. To make your own custom plot symbol, please follow the instructions given in the man pages of those two programs. The following is a plot of each symbol. Note that we only show the symbol outline and not any fill. Be aware that some symbols may have a hardwired fill or no-fill component. Also note that some symbols, in particular the geometric ones, duplicate what is already available as standard built-in symbols.

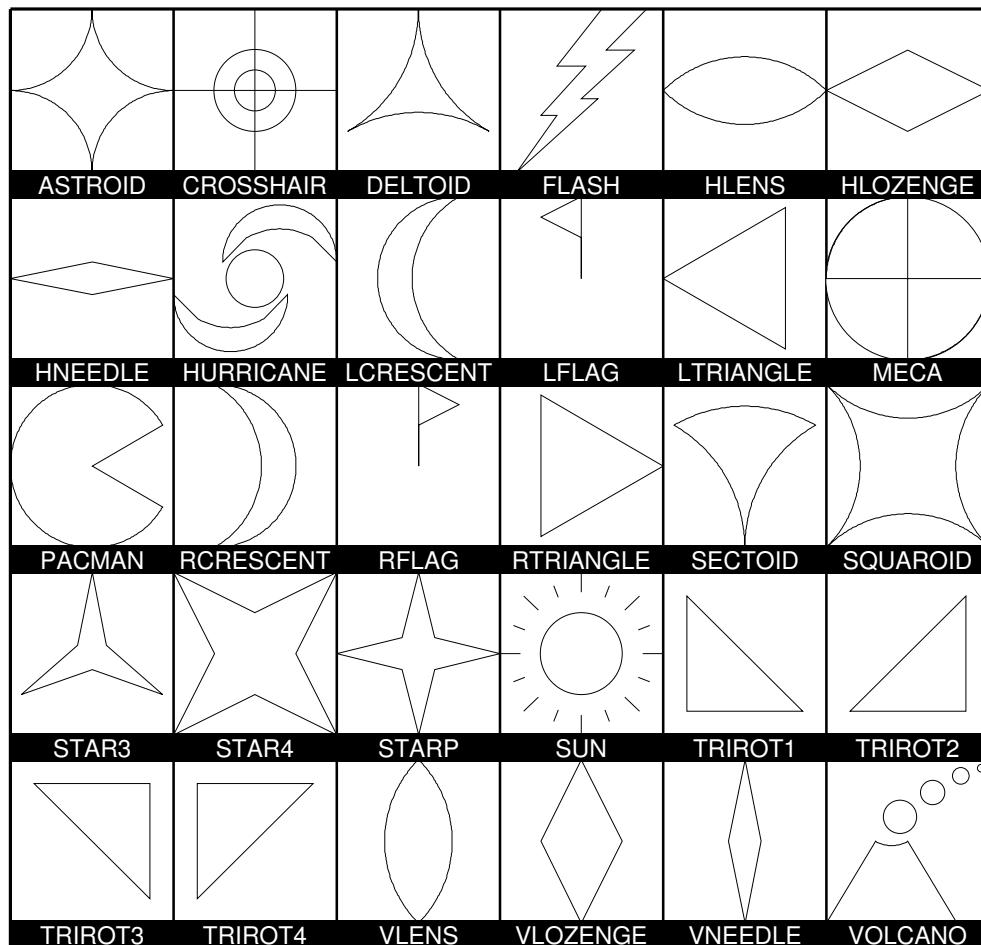


Figure N.1: Custom plot symbols supported by **GMT**.

O. Annotation of Contours and “Quoted Lines”

The *GMT* programs **grdcontour** (for data given as 2-dimensional grids) and **pscontour** (for x,y,z tables) allow for contouring of data sets, while **psxy** and **psxyz** can plot lines based on x,y - and x,y,z -tables, respectively. In both cases it may be necessary to attach labels to these lines. Clever or optimal placements of labels is a very difficult topic, and *GMT* provides several algorithms for this placement as well as complete freedom in specifying the attributes of the labels. Because of the richness of these choices we present this Appendix which summarizes the various options and gives several examples of their use.

O.1 Label Placement

While the previous *GMT* versions 1–3 allowed for a single algorithm that determined where labels would be placed, *GMT* 4 allows for five different algorithms. Furthermore, a new “symbol” option (**-Sq** for “quoted line”) has been added to **psxy** and **psxyz** and hence the new label placement mechanisms apply to those programs as well. The contouring programs expect the algorithm to be specified as arguments to **-G** while the line plotting programs expect the same arguments to follow **-Sq**. The information appended to these options is the same in both cases and is of the form **[code]info**. The five algorithms correspond to the five codes below (some codes will appear in both upper and lower case; they share the same algorithm but differ in some other ways). In what follows, the phrase “line segment” is taken to mean either a contour or a line to be labeled. The codes are:

- d**: Full syntax is **ddist[c|i|m|p][/frac]**. Place labels according to the distance measured along the projected line on the map. Append the unit you want to measure distances in [Default is taken from **MEASURE_UNIT**]. Starting at the beginning of a line, place labels every *dist* increment of distance along the line. To ensure that closed lines whose total length is less than *dist* get annotated, we may append *frac* which will place the first label at the distance $d = dist \times frac$ from the start of a closed line (and every *dist* thereafter). If not given, *frac* defaults to 0.25.
- D**: Full syntax is **Ddist[d|e|k|m|n][/frac]**. This option is similar to **d** except the original data must be referred to geographic coordinates (and a map projection must have been chosen) and actual Earth¹ surface distances along the lines are considered. Append the unit you want to measure distances in; choose among **d**egree, **m**eter [Default], **k**ilometer, **s**tatute **m**iles, or **n**autical miles. Other aspects are similar to code **d**.
- f**: Full syntax is **ffix.d[/slop[c|i|m|p]]**. Here, an ASCII file *fix.d* is given which must contain records whose first two columns hold the coordinates of points along the lines at which locations the labels should be placed. Labels will only be placed if the coordinates match the line coordinates to within a distance of *slop* (append unit or we use **MEASURE_UNIT**). The default *slop* is zero, meaning only exact coordinate matches will do.
- l**: Full syntax is **lline1[,line2[, ...]]**. One or more straight line segments are specified separated by commas, and labels will be placed at the intersections between these lines and our line segments. Each *line* specification implies a *start* and *stop* point, each corresponding to a coordinate pair. These pairs can be regular coordinate pairs (i.e., longitude/latitude separated by a slash), or they can be two-character codes that refer to predetermined points relative to the map region. These codes are taken from the **psxtex** justification keys **[L|C|R][B|M|T]** so that the first character determines the x -coordinate and the second determines the y -coordinate. In **grdcontour**, you can also use the two codes **Z+** and **Z-** as shorthands for the location of the grid’s global maximum and minimum, respectively. For example, the *line* **LT/RB** is a diagonal from the upper left to the lower right map corner, while **Z-/135W/15S** is a line from the grid minimum to the point (135°W, 15°S).
- L**: Same as **l** except we will treat the lines given as great circle start/stop coordinates and fill in the points between before looking for intersections.

¹or whatever planet we are dealing with.