DIVERSION IN FLIGHT OR NAVIGATION PLANNING

1) Using the stencil cut-outs, mark the departure and destination waypoints.

2) Using the DP-1 straight edge, draw and measure the track distance. (Our example 30nm)

3) Line up the compass rose with the north-south lines on a chart and read off the required track.

4) Using the Windstar correction boxes closest to the track required, read off the correction angle and groundspeed. Interpolate if necessary.

5) In this example the groundspeed would be 81kts and Correction angle 10.

WHAT DOES THIS MEAN?

To maintain a track of 045º, the heading flown would need to be 055º (045 + 10 = 055). The calculations on the app and website have taken the mental stress out of diversions.

The groundspeed (81kts) has been calculated based on the required track and wind direction and speed.

6) Apply the correction angle to the track, to give heading.

7) Using the distance groundspeed table, read off the time to the diversion waypoint. In this example 30nm = 22 minutes

8) Add magnetic variation and diversion technique complete!

FURTHER EXAMPLE

Using the same results from the wind direction, speed and TAS calculated earlier;

If the required track was 225º the correction angle would be -10 and groundspeed 116.
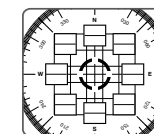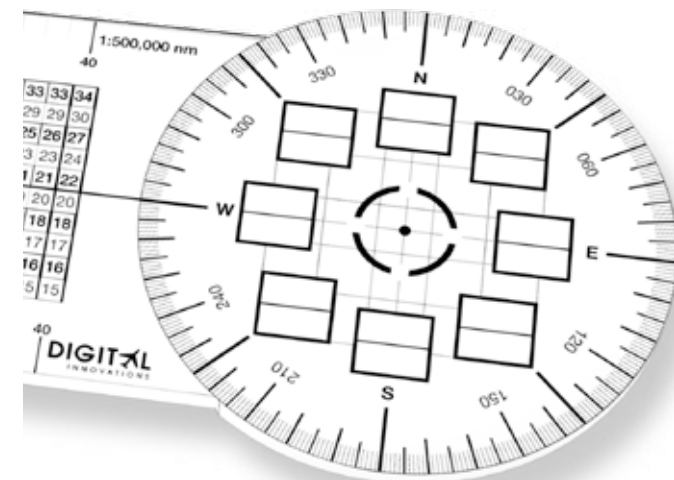
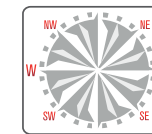This would give resultant heading of 215º.

Time to 30nm of 16 minutes.

DP-1
DIVERSION PLOTTER
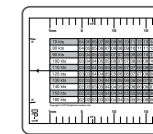

DIGITAL
**INNOVATIONS**

INSTRUCTIONS

BACKGROUND

The DP-1 is aimed at those undertaking a Private Pilot Licence (PPL) or Commercial Pilot Licence (CPL) course. The DP-1 has been designed by qualified flight instructors to assist students during the planning and diversion segments of the syllabus. The DP-1 is the answer to diversion worries, taking away the mental calculations during the time when the pilot's workloads are at the limits.

DESIGN

The DP-1 is manufactured using durable, flexible plastic allowing, the DP-1 to mould with the contours of a chart when overlaid on uneven surfaces. The plotter components are printed on the reverse side so that the print is better protected when the pilot removes writing on the front side. Using harsh chemicals to remove writing is not recommended.
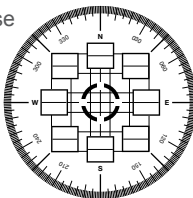
DP-1 COMPONENTS
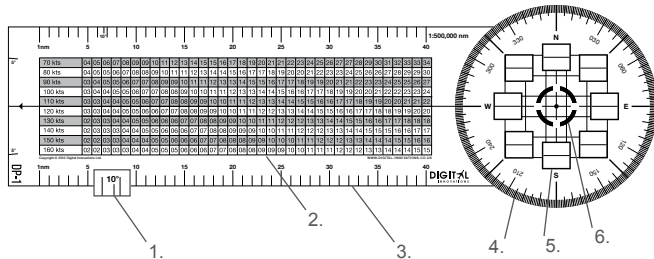
1. 10 Degree Markers
2. Time / Dist / Speed Table
3. 1:500,000 scale
4. Compass Rose
5. Windstar
6. Waypoint Stencil

COMPASS ROSE

The plotter provides a conventional compass rose allowing measurement of track.

Horizontal and vertical lines assist accuracy lining these up with the latitude and longitude lines on a chart.

WINDSTAR

The unique feature of the DP-1 is the Windstar. During the flight planning stage a pilot/student will complete the Windstar using the apple app or web application. For a small charge the app can be downloaded via the app store searching "pilot windstar". Once downloaded no internet connection is required. Alternatively the free web service can be found at:
www.digital-innovations.co.uk/windstar.aspx

Pilot Windstar is available for iphone/touch and ipad mobile devices. Simply enter wind direction in degrees, windspeed and TAS in knots, press calculate and let the app do the work for you!

The groundspeed figures appear in green, and correction angle applied to heading to maintain track are shown in blue. These are displayed around the compass rose. Interpolation between the compass points give data for all 360 degrees.

Take the mental stress out of practical diversions!

1:500,000 SCALE

The DP-1 also combines a standard 1:500,000 nm scale. The scale is strictly for ½ mill charts designed to coincide with PPL and CPL training. In addition to this the straight edge of the scale can be used to draw a straight line between two points on a chart.

SPEED / DISTANCE / TIME

Below the 1:500,000 scale is a Speed/Distance/Time grid.

The table provides speeds from 70kts to 160kts up to a distance of 40nm. The speeds and distance are usually sufficient for the training aircraft and diversion leg of the skills test. The table is used in conjunction with the Windstar and allows the pilot to quickly provide an accurate ETA as well as required times to chosen checkpoints en-route. Anything outside of this range can be easily interpolated.

70 kts	04	05	06	07	08
80 kts	04	05	05	06	07
90 kts	03	04	05	05	06
100 kts	03	04	04	05	05
110 kts	03	03	04	04	05
120 kts	03	03	04	04	05
130 kts	02	03	03	04	04
140 kts	02	03	03	03	04
150 kts	02	02	03	03	04
160 kts	02	02	03	03	03

5 AND 10 DEGREE MARKERS

5 and 10 degree markers on the DP-1 allow the pilot during pre-flight planning to denote 5 and 10 degree fan lines from the departure waypoint.

The waypoint stencil in the centre of the compass rose is designed to mark around the departure and destination waypoint.
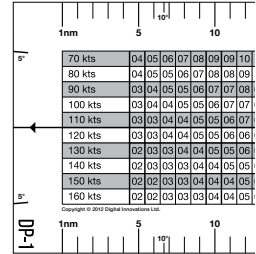
DP-1 – HOW IT WORKS

The DP-1 and windstar is based around the max drift formula:

Max Drift = Wind Speed / TAS x 60

As an Example, assume:
Wind Direction: 090
Wind Speed: 25kts
TAS: 100kts

Required Diversion Track: 045º Required Diversion Distance: 30nm

PRE - FLIGHT

1) Load the figures in to the app or web app.

2) Transfer all the cardinal results onto the white boxes on the windstar.

Then the North East Cardinal point would calculate:-

Groundspeed: 81
Correction Angle: 10