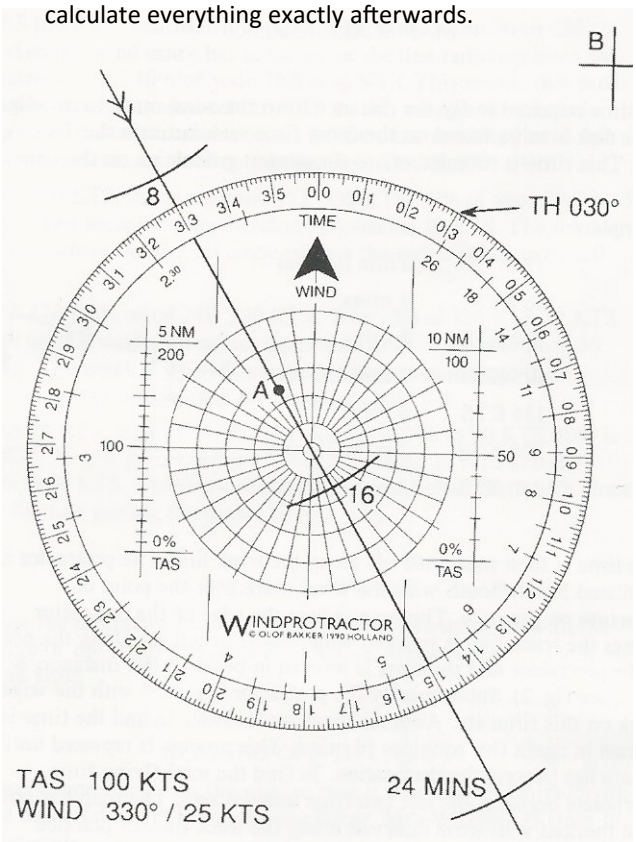
IN CASE OF UNEXPECTED DIVERSION

Before the flight began, the wind was plotted on the protractor and time intervals drawn along the intended track. As soon as a diversion is required it is a simple matter to calculate your actual position by using the time intervals on the track line followed.

- Note position and time on map (A)
- Place the protractor with the wind mark in this position and mentally draw in a line from the wind mark to the new destination (B). Estimate where this imaginary line will meet the edge of the protractor: TH 030
- Turn the aircraft onto the new heading
- Estimate the flying time: a little less than twice 8 minutes, say 15 minutes
- If you are not too busy: draw a line on the map and calculate everything exactly afterwards.



WINDPROTRACTOR

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AN EASY TO USE NAVIGATION AID

FOR FLYING ON COURSE AND ON TIME

- SOLVES ALL WIND PROBLEMS WITH A SIMPLE PENCIL MARK
- WORKS WITH ANY TAS UP TO 340KTS
- WORKS WITH ALL AVIATION CHART SCALES
- NO MOVING PARTS
- ALL YOU NEED IS A PENCIL
- GIVES SIMPLE AND ACCURATE ESTIMATES OF
- FLYING TIME
- TRUE HEADING IS EASILY READ
- ACCURATE TO 1°
- ESPECIALLY USEFUL WHEN DIVERTING
- CAN ALSO BE USED AS A PROTRACTOR

ABBREVIATIONS USED

KTS	Knots, nautical miles per hour
NM	Nautical Mile, 1852m, 6076.1ft
TAS	True Air Speed, measured in KTS
TH	True Heading
TT	True Track

SCALE DIVISIONS

In addition to the usual scale graduations from 0° to 360° required for measuring angles orientated to North on a map, the Windprotractor contains the following scale divisions:

TAS scale—this coincides with the 360° around the edge of the disk and therefore also runs from 0 to 360 KTS.

Time scale—This is directly under the 360°/TAS scale and it can be read off from 2minutes 20 seconds to 26 minutes.

Adapter scale 5NM—For use with maps on a scale between 1:250,000 and 1:500,000

Adapter scale 10NM—for use with maps on a smaller scale than 1:500,000.

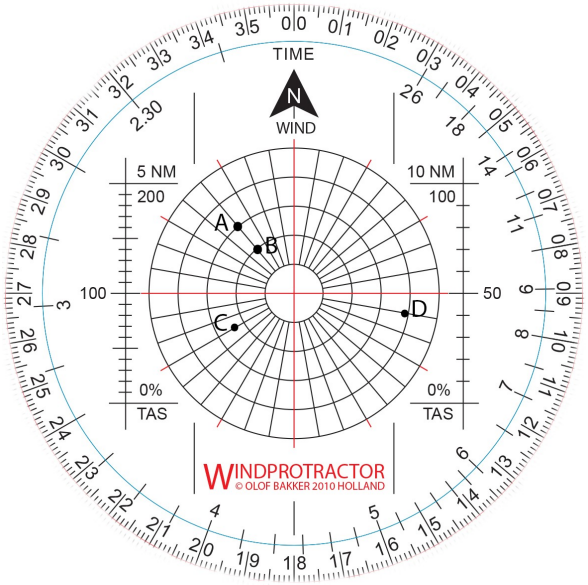
Wind circles—Five concentric wind circles

A sharp soft pointed pencil is recommended for using the Windprotractor

ENTERING THE WIND MARK

In order to give the wind direction, the pencil mark should be placed in the direction from which the wind is coming. The 10° radials are drawn for this so that the wind direction can be read from the out-er scale. The wind speed is indicated by the distance from the mark to the centre of the disk. As an aid the protractor has five concentric wind circles. The value of these varies but is always 10% of the actual TAS (rounded off to the nearest 10 KTS if necessary).

Fig. 1



EXAMPLES (see fig. 1)

TAS 100KTS, wind 320°/30KTS. The wind comes from 320° and so the wind mark has to be set on the line radiating from the centre to 320°. 10% of your TAS is 10KTS, This means that each wind circle = 10KTS, In this case, the third circle from the centre represents 10KTS. The wind mark is placed on the third circle, on the line joining the centre to 320° (A).

TAS150KTS, wind 320°/30KTS. 10% of your TAS is 15KTS. The second circle therefore represents 30KTS. The mark is placed where the second circle crosses the 320° radial (B).

TAS120KTS, wind 240°/30KTS. Take 10% of 120KTS: 12KTS. The second circle therefore repre-sents 24KTS and the third 36KTS.The mark is set half way between the second and third circles on the 240° radial (C)

TAS 86KTS, wind 100°/35KTS. Round off 86 to 90KTS. 10% is 9 KTS. The third circle represents 27KTS and the fourth 36KTS. Set the mark just be-fore the fourth circle on the 100° radial.

READING TT Place the protractor on the map, orientated North/South with the centre of the protractor on the track line. Measure the TT from the outer scale.

READING TH (fig. 2) Place the protractor on the map so that it is orientated North/South with the wind mark on the track line. Read the TH from the outer scale.

ESTIMATING THE FLYING TIME, MAP SCALE 1:500,000

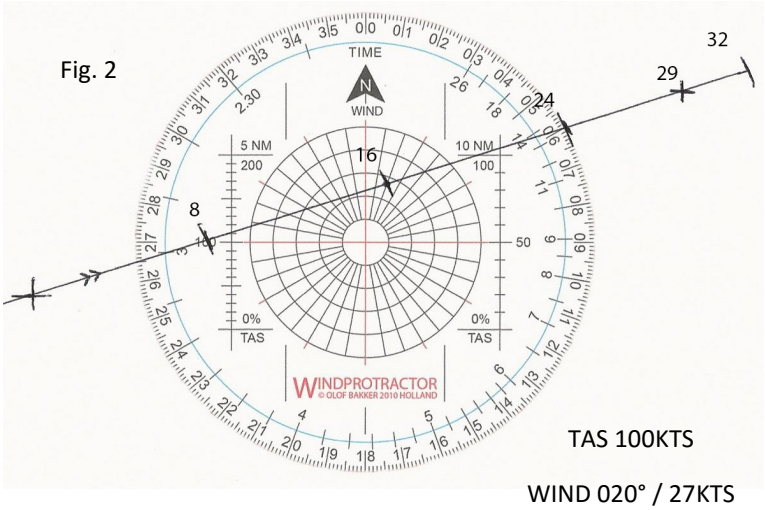
The time required to fly the distance from the wind mark to the edge of the protractor is to be found on the inner time scale beneath the TAS used, This time is rounded off to the nearest graduation on the time scale.

Examples

TAS	Time Interval
86KTS	9 mins
100KTS	8 mins
105KTS	7 mins 30 secs
134KTS	6 mins
230KTS	3 mins 30 secs
340KTS	2 mins 20 secs

This time is then measured off along the track line. The protractor is orientated North/South with the wind mark over the point of departure on the map, The point where the edge of the protractor crosses the track line is marked with a pencil arc along the edge of the protractor and the time is written beside it (for instance, 8 mins—see fig. 2. Subsequently the protractor is placed with the wind mark on this time arc and the process is repeated. This time the time noted will be 16 mins. Repeat until the arc lies beyond the destination. To find the flying time interpolate between the last two interval arcs. The map has now been marked with time intervals along the track line.

Fig. 2



ESTIMATING THE FLYING TIME—OTHER MAP SCALES

First try to line up 10 latitudinal minutes along the 10NM scale. If this proves impossible line up 5 latitudinal minutes along the 5NM scale. In this way you can read off the % TAS to be applied. For aviation charts this will always be a round percentage—50%, 100% or 200%. Instead of the actual TAS the percentage of the TAS is used to assess the time interval. For example TAS 100KTS, map scale 1:250,000. Line up 5 latitudinal minutes on the 5NM scale and you will find 200% TAS. Under 200KTS you will find a time interval of 4 mins. This is used to estimate flying time by the method show. ALWAYS USE THE ACTUAL TAS TO FIND THE WIND CIRCLE VALUE