

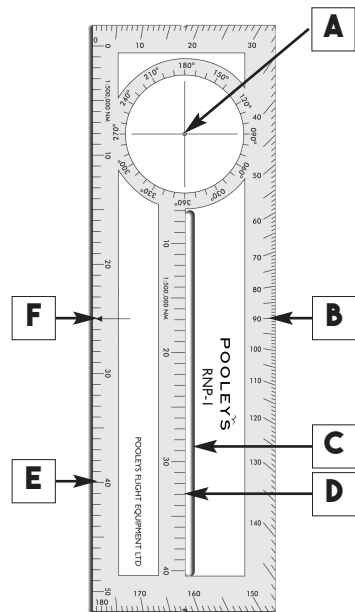
RNP-1 Plotter/Scale

The RNP-1 is primarily a diversion tool. It also has a protractor built in. It features:

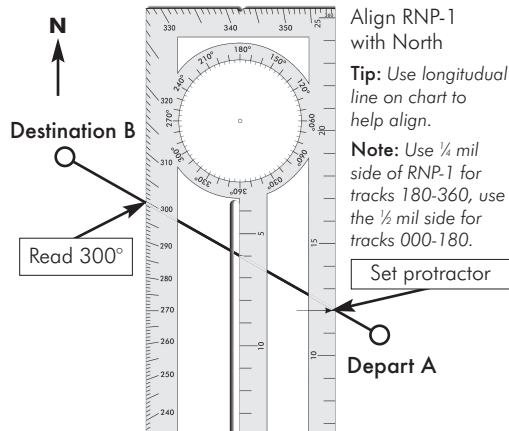
- **½ Mil Scale Rule**
- **¼ Mil Scale Rule**
- **Protractor**
- **Diversion Compass Rose**

KEY:

- A** = Diversion point and rose
- B** = Protractor graticule (000 - 180 on ½ mil side, 180 - 360 on ¼ mil side)
- C** = Slot for drawing diversion track
- D** = Diversion scale measured from centre point of compass rose
- E** = Scale Ruler (½ mil and ¼ mil depending on side used)
- F** = Protractor set pointer



The Protractor



Align RNP-1 with North
Tip: Use longitudinal line on chart to help align.
Note: Use ¼ mil side of RNP-1 for tracks 180-360, use the ½ mil side for tracks 000-180.

Simply align the RNP-1 to true north on the chart by placing the protractor set point on your track.

Read off the edge scale to determine track.

In the example:

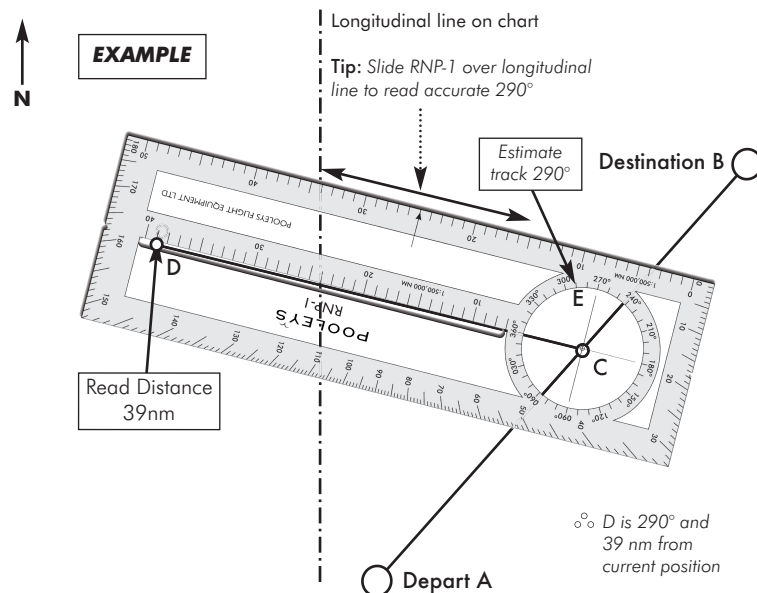
A line has been drawn from your departure A, to destination B:

- Align the RNP-1 with true north.
- Read off edge 300 degrees.
- Calculate magnetic heading to be flown.

The RNP-1 has a protractor. As the RNP-1 is rectangular not square the scales are split between 000 - 180 and 180 - 360.

If calculating an **Easterly track** then use the **½ mil side**
 If calculating an **Westerly track** then use the **¼ mil side**

The Diversion



The RNP-1 is designed to give you two critical pieces of information when performing a divert.

1. **The track to the new destination/point.** (true until magnetic variation is applied)
2. **The distance to the new destination/point.** (½ mil and ¼ mil scales available)

The heading to be flown and the time it will take depends on the direction of the wind and its speed.

On the ground, time can be spent planning a route and a PLOG created. NB A diversion may involve a significant change in heading. As a result, you must be acutely aware of the wind speed, its direction and the impact this will have on your heading in order to achieve your desired track. Furthermore, it will affect your groundspeed and ETA at the diversion point. An Air Traffic Controller may ask you for this information, so it is helpful to have it all worked out in advance. Therefore, this will need to be calculated.

Some consideration should be given to this calculation on the ground. One way is by the use of a wind star. This in effect gives you the adjustments in both direction and speed.

Another way is to record wind speed and direction directly onto your chart. Ask your instructor for their views.

In the example:

You have planned to fly from A to your destination B. You have drawn a line on a chart and it is a track of 040.

Approaching point C you need to divert and you identify point D as your diversion point or destination.

Place the RNP-1 so that the compass rose centre hole is over point C. Holding the centre point of the rose over point C align so that slot joins point C to point D.

Draw a line in that slot.

Check scale in slot and read off 39 nm (make sure you are using the correct scale for ½ mil or ¼ mil charts).

You have now calculated that point D is 39 nm from Point C. If you have a permanent pen you could make a small mark on the protractor so you have a record of the distance.



Without moving the RNP-1 from its position, turn your attention to the rose.

You need to read off the compass point that is pointing **NORTH**.

In this example it is **290**.

Ideally, you can more accurately read off this track if there is a longitudinal line on the chart that intersects the compass rose. So simply slide the ruler up and down your marked diversion track until your rose is over a line of longitude. In this case it is **POINT E**, you can then read off **290**.

So you now know:-

1. The track to your new destination/point 290
2. The distance to your new destination/point 39 nm

Apply magnetic variation to get magnetic heading.

Apply drift +/- to track for estimated winds.

Apply headwind/tailwind +/- to airspeed to obtain ground speed.

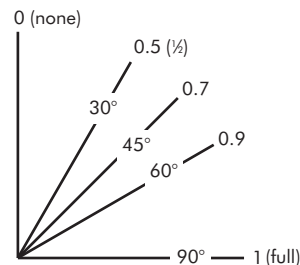
Maximum Wind Effects

Gross max wind components can be calculated in several ways. Ask your instructor for their preferred method. Remember your aircraft airspeed is also important. Here is an example of one method:

QUICK CALCULATOR Max Drift

For example:

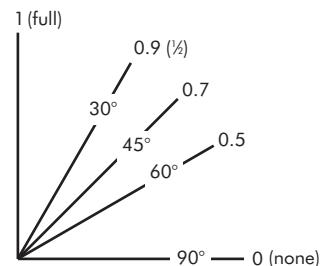
Wind at 30° at 20 knots = Max Drift
 $20 \times 0.5 = 10$ knots.



Headwind/Tailwind

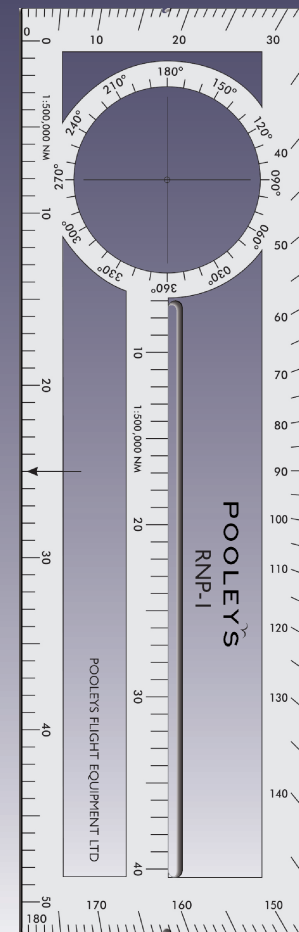
For example:

Headwind at 45° at 20 knots = Max Headwind
 $-20 \times 0.7 = 14$ knots
 GS = IAS - 14
 eg. 100 IAS - 14 = GS = 86



POOLEYS

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