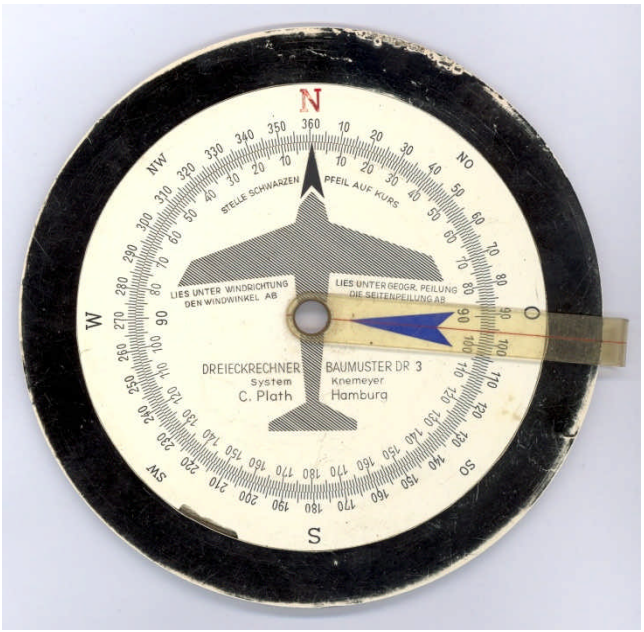
Dreieckrechner revisited: an “impossible” DR3 and finally the DR1?

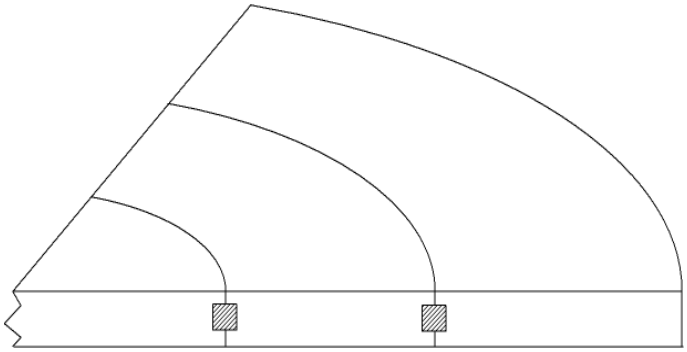
Ronald van Riet

For background information on the Dreieckrechner, the reader is referred to the paper presented at IM2007 in Lelystad; this document is available at http://sites.google.com/site/sliderulesite/dreieckrechner, where it will be updated at irregular intervals.

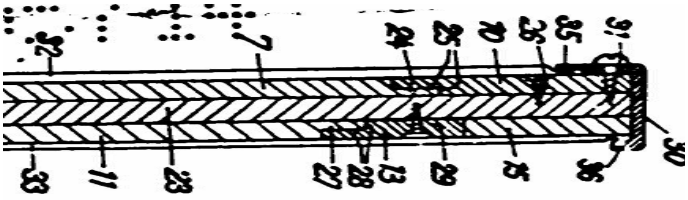
In September 2010, John Vossepoel offered to sell me a DR3 Dreieckrechner, of a type that looked impossible (see scans): it had the exact layout of the very early DR2 (1935/1936) but the DR3 is generally known to have replaced the DR2 from 1943, so how could a DR3 exist that was so old? Of course, I was very interested and purchased the DR3 during IM2010.



It has a decidedly different construction from any DR2 or DR3 I have ever seen or that I have ever seen being described. The example I purchased has a small piece broken off one of the rings (between 200 and 215 degrees on the compass rose), allowing a look at the interior construction, which I have tried to sketch in a 3D cross section. All three disks/rings are of equal thickness and lie in the same plane, they are held together by sinuous springs running around in the grayed areas. With a 4mm thickness, it is as thick as the disks/rings of the DR2, although the metal outer rim makes the DR2 thicker overall at 8.5 mm.



Compare this to the multi-plane construction of a DR2 where the top and bottom disks/rings are screwed together (riveted in the DR3Tp) as shown in the extract from its patent application (numbers 24 and 31 point to the screws).



Speculation arose on where the designation came from; my own idea was that perhaps various different construction methods were tried by Plath, called DR1, DR2 and DR3 respectively, the DR2 being the more sturdy and this was continued with. When, in 1943, a newer version of the DR2 was constructed, DR3 was chosen as a logical designation, people having forgotten that this designation had been used before.
I discussed this with Otto van Poelje who responded that in his opinion, Germans would have been more efficient than that. As we shall see, he was proven right.

At two months' intervals, two more of this very same type of early DR3 showed up: Huib Ottens purchased one on eBay and Marc Bressan, a Swiss collector of Luftwaffe items who I had corresponded with before, e-mailed me that he had purchased one as well. What a weird coincidence that these showed up in some numbers in a few months' time, where no earlier mention of them had been made.

So I asked Marc what his ideas were on the designation and he produced a completely logical explanation (coming from a wartime flight instructor at the Warnemünde flight school, so we should assume that it is correct), along the following lines:

DR2s have a closed center, DR3s are open, to allow these to be used not only as a flight computer, but also as a protractor (Transporteur in German). This apparently is the true difference between DR2 and DR3. Adding the central hole saves a separate protractor which was a Lufthansa demand to simplify navigating on long range flights. So in 1943 "Tp" (for **T**rans**p**orteur) was added to the designation which thus became DR3Tp. In earlier documents, DR3Tp has usually been mentioned for the yellow night version, but that doesn't hold since all DR3s from 1943 and 1944 seem to be called DR3Tp, even those for daytime use. A series of photographs of a DR3Tp used as a protractor is included (courtesy Marc Bressan). Why the central hole in the early DR3 seems too large (8 mm) for normal pencils and the hole in late DR3s seems too small (4 mm), has yet to be explained. Also, the accuracy of drawing the line when the cursor hairline is a full centimeter from the outer edge of the DR3Tp must leave something to be desired, so perhaps this is not (yet) the full explanation.



The "3" in the DR3 designation on this early flight computer is not well aligned and has a heavier print, suggesting that it was imprinted separately. The suggestion that the same stamp was used as for the DR2 with the change of the "2" into a "3" seems to make sense only partly, since the airplane figure and the compass roses are of different dimensions between the early DR2 and DR3, only the text portions being of equal size, see comparison of details between this DR3 and a very early undated DR2 of Huib Ottens (please compare the position of the wingtip and the word "PEILUNG" relative to the 70 and 80 degree marks on the compass rose).

Apparently, the early DR3 was deemed too fragile by the Luftwaffe and they preferred the sturdier DR2 with its metal rim. When in 1943, to save on the strategically important metals, a new design with plastic rim was developed, the protractor function was reinstated and therefore, the DR3 designation was reused with the addition of Tp. It is interesting to note that in 1944, with the DR4, the need for a separate protractor reappeared: with the sliding wind scales there simply was no way to open up the centre.

But Marc came with even more news: another collector had told him that he had seen a reference to a DR1 in the Dennert & Pape archives at the Deutsches Museum. This was said to be a navigation computer for maritime use, but this friend had not made any copies, so we don't know what that DR1 looked like. Could it have been like the "Lagenwinkelscheibe" on a recent auction at eBay (see photograph) that constructionally at least seems identical to a DR2?

Summarizing: although some interesting questions have been answered and answers for others have been hinted at, more research is clearly needed to complete the story of the Dreieckrechner.