BGA Handicap Adjustments for 2025

For the 2025 season, the Competitions Committee has decided to increase the BGA handicap for the Arcus, the ASG32, and HPH304TS from 107 to 109. This decision has received some push back from a few Arcus owners who feel that it is unjustified, although some of the concern was that only the Arcus handicap was being increased and not other gliders in their peer group.

Decisions have been made in consideration of the following:

1) The decision has been based upon measured data provided by the Institute of Aerodynamics and Flow Control in Germany utilising a German Aerospace Centre (DLR) owned calibrated comparison test aircraft with assistance of Idaflieg to test the performance of an Arcus T flown at 703-706Kg (c. 45.2Kg/M wing loading) in August 2024. This measured test method is the only one that is respected as accurate and all gliders over the years benefit by not only being tested to the same standard but tested to the same benchmark glider.
2) BGA handicaps are designed to be used for general (e.g. ladder) cross country flights using much of the day at an average climb rate of 2.5 knots for the reference standard class LS8 glider. Flapped gliders are expected to achieve slightly better climb rates in the same conditions.
3) BGA handicaps are also used in UK Regional Competitions. Although racing tasks tend to be flown in the strongest conditions in a small time window, this is set against the great variation in skill levels of competing pilots bringing the average climb rate close to the reference 2.5 knots.
4) IGC Handicaps are used in 20M and Club Class National Competitions. IGC Handicaps are 'compressed' to compensate for the following factors:
    a. Pilots in IGC events are of high calibre and mostly use only the strongest thermals.
    b. IGC competition tasks are flown in the best conditions of the day.
    c. IGC competitions typically involve large gaggles and there is a significant leeching effect.
    d. IGC competitions are normally flown at venues throughout Europe and the World where thermal conditions are much stronger than in UK.

How are BGA handicaps arrived at?

The current BGA handicap system was overhauled in 2001 by reference to a large body of measured DLR Idaflieg data that became available. Using these measured gliders as reference points, unmeasured gliders were handicapped appropriately based on similarity to designs with measured data.

When new gliders arrive in the UK, the Competitions Committee Handicap Group set an initial handicap based upon the following criteria:

1) Polar data provided by the manufacturer, if any
2) By reference to similar gliders from other manufacturers
3) By reference to previous generations of the same glider
4) By reference to the well respected German handicap list

In the absence of reliable measured or manufacturers data (which is often the case), the initial handicap is an estimate. For example the Ventus 3 can be expected to be superior to the Ventus 2 and roughly equivalent to the AS33 and JS3. Consequently it received a handicap of 111.5 (same as AS33 and JS3) against 111 for the Ventus 2CXA. Both Schleicher and Jonkers provided design polar data for their gliders.

Should the manufacturer or an independent organisation subsequently provide credible measured data, the handicap will be reviewed and, if necessary, revised. Also, if real life experience shows that the initial handicap is incorrect, an adjustment may be made although such changes need to be carefully analysed to ensure that any compelling real life experience occurred in approximately average conditions.

What about wing loading?

Clearly, gliders are flown at a variety of wing loadings. BGA Handicaps are set for typical UK conditions where the intention is to set a handicap that is relevant across a whole day's flying. Because flapped gliders are able to climb using thermal flap they are able to achieve higher rates of climb than standard class gliders due to lower sink rate and smaller circling diameter, even at higher wing loadings. The handicap setting process assumes that the average climb achieved on such a flight is 2.5 knots at 40Kgm/M^2 for standard class gliders and slightly better, based upon the minimum sink rate, at 44Kgm/M^2 for flapped gliders. At low climb rates it is sub-optimal to fly with much ballast so in most cases differences in MAUW are not relevant.

What measured data do we have?

We reviewed data measured by Akaflieg for the Arcus T D-0867 and the ASH26.
The key numbers being:

Glider	Handicap	Sink at 97km/h	Sink at 140km/H	Sink at 165km/H	Weight
Arcus T	109	0.59 m/s	0.90 m/s	1.25 m/s	705Kg

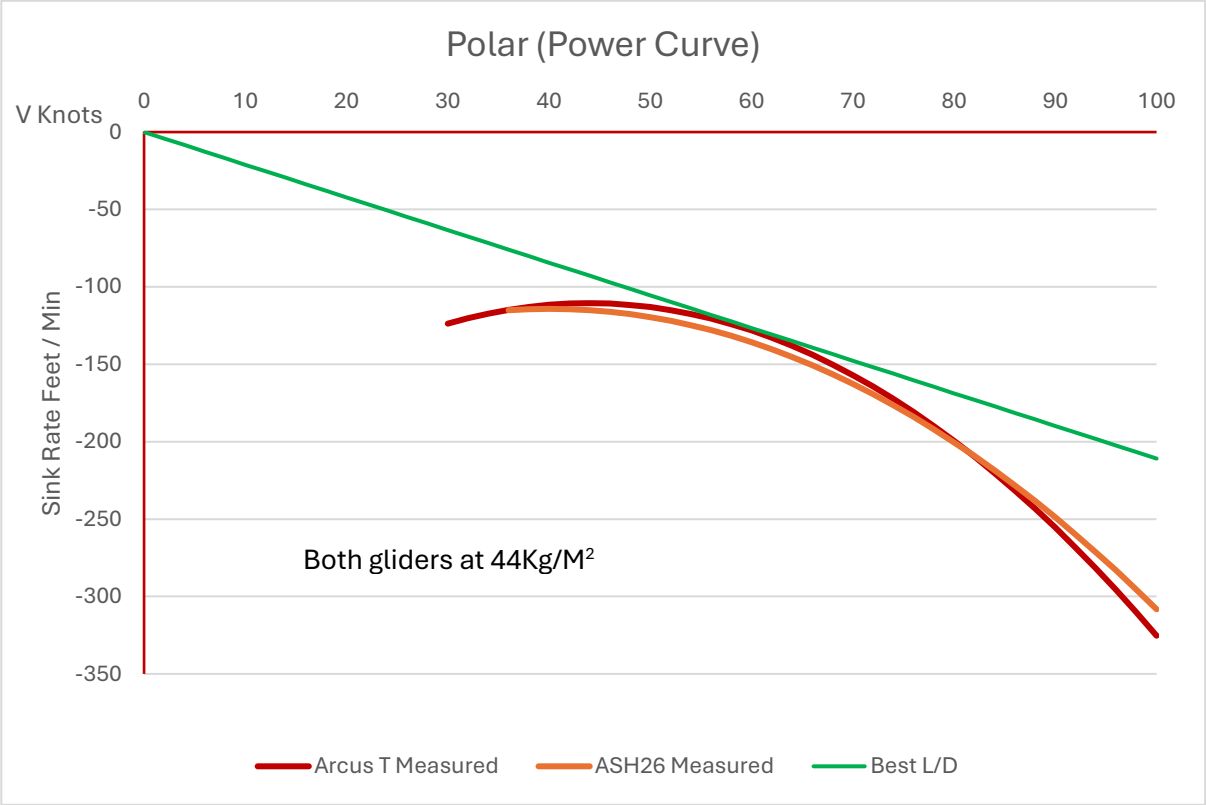
(See appendix 2)

Glider	Handicap	Sink at 75km/h	Sink at 100km/H	Sink at 150km/H	Weight
ASH 26	110	0.52 m/s	0.62 m/s	1.16 m/s	360Kg

When adjusted to 44Kg/M^2 and taken from the resulting polar these become:

Glider	Handicap	Sink at 100km/h	Sink at 130km/H	Sink at 160km/H	Weight	Best LD
Arcus T	109	0.60 m/s	0.79 m/s	1.18 m/s	686Kg	47.5
ASH 26	110	0.63 m/s	0.82 m/s	1.16 m/s	514Kg	44.8

Using the formulae detailed in Reichmann (pages 122-123 and appendix 1) these polars have been plotted and are shown in the diagram below:



This suggests that the two gliders have roughly the same performance in UK conditions indicating that a handicap of 110 for the Arcus T would be appropriate.

Should the Arcus be assessed against the reference LS8?

Yes. The competitions committee also compared the measured Arcus data to measured LS8 data as this is the reference glider for UK handicapping. Polars have been created for the LS8 at 40Kg/M^2 and compared to the Arcus T at 44Kg/M^2. Using average climb rates of 2.5Kts for the reference glider, the theoretical cross country speeds of the two gliders can be calculated. This calculation gives a 9.5% advantage to the Arcus T also indicating a handicap of 109 - 110 to be appropriate.

Should the handicap of the ASG32 and HPH304TS also be increased?

When considering the Arcus, other designs in the peer groups were not originally considered for adjustment - this was an oversight as we normally rebase such peer gliders when measured data suggests that the whole peer group has likely been misplaced in the initial assessment that was made without the benefit of measured data. Both ASG32 and HPH304TS are comparable gliders so these too will be increased to 109 pending measured evidence suggesting otherwise becoming available.

Review of German Handicap List

The competitions committee also reviewed the German handicap list. Germany tends to have more measured data than the UK. Their handicaps are also set for general cross country and regional competitions. For National competitions they are considering compressing the handicap spread by up to 50%.

Glider	German Handicap (Raw)	German Handicap (Normalised to 100)	UK Handicap (Proposed)
LS8	108	100	100
Duo Discus	113	104.6	101
Duo Discus W	113	104.6	101.5
Duo Discus X 700Kg	113	104.6	101.5
Duo Discus X 750Kg	113	104.6	102
Duo Discus XL	113	104.6	102
HPH304TS	119	110.2	109
Arcus (all variants)	120	111.1	109
ASH26	119	110.2	110
ASG32	120	111.1	109
ASG29E 18M	121	112.0	111

Comparing to the German handicap list it can be seen that they assess both the Duo and the Arcus (all variants) as higher performance than we do.

Spread of handicaps between the Arcus T and Duo Discus

In considering the handicap for the Arcus, it has been suggested that the spread between it and the Duo Discus XL should be examined across all appropriate handicap lists.

Country	Spread
UK 2024	4.9%
UK 2025	6.9%
Germany	6.2%
IGC (compressed)	4.0%

The table shows disparity between the UK and Germany. As mentioned before, the IGC handicaps are compressed for use in International elite competition. The UK uses the IGC list for the 20M and Club Class Nationals. The proposed change will not affect these classes at National competitions.

The table shows that our spread differs from the German handicap list. This suggests that the UK handicaps for the Duo are possibly too low rather than the proposed Arcus handicap being too high. The competitions committee has decided to review the Duo handicaps for the 2026 competition year. We hope that measured data will be available to support any change that is found to be necessary.

Conclusion

The Competitions Committee is satisfied that the process used to set UK handicaps has been followed correctly and, using measured data provided by DLR Idaflieg, the adjustment of the Arcus handicap and its peers to 109 is justified and appropriate.

Some pilots / owners have made representations that the increase in Arcus handicap is unfair but have provided no data to substantiate their claims. We understand that the Arcus manufacturer has their own separate measured data for the glider, from the same authority, from earlier testing. If this were available to the UK handicap committee, it would be considered. In the absence of further data, the change in handicap for the Arcus in all variants, ASG32, and HPH304TS to 109 will stand.

During 2025/26 off season the handicaps of all Duo variants will be reviewed and further adjustments may be proposed.

Finally, setting handicaps is a complicated matter and, when outcomes are contested, this results in considerable extra effort and time spent by members of the committee. For 2026 the committee will consider whether it is appropriate to simply adopt the well researched and formulated German handicap list for use in the UK.

Jim White
Chair BGA Competitions Committee

March 2025

Note: DLR Idaflieg reports are not generally placed in the public domain and Idaflieg retain copyright of their information / reports. Consequently we are unable to publish or share the whole report. The report provided to the BGA is redacted to show the Arcus data only. Pilots may request information therein but the entire report cannot be shared.

Appendix 1: Formulae used for constructing polar curves

(See pages 122-123 Cross Country Soaring Helmut Reichmann ISBN 1-883813-01-8)

Sink Ws = $aV^2 + bV + c$ using si units velocity in m/s and sink in m/s

Where coordinates are derived from 3 pairs (sink W vs velocity V) using measured data:

$a = ((V2–V3) * (W1-W3) + (V3-V1) * (W2-W3)) / (V1^2 * (V2-V3) + V2^2 * (V3-V1) + V3^2 * (V1-V2))$

$b = (W2 – W3 – a * (V2^2 – V3^2)) / (V2 -V3)$

$c = (W3 – aV3^2 - bV3)$

Affect of increased wing loading from G1 to G2:

Scale factor A = SQRT(G1 / G2) which is applied to coefficients thus:

a' = a / A b’ = b c’ = Ac

Appendix 2: Measured performance data for Arcus T D-0867

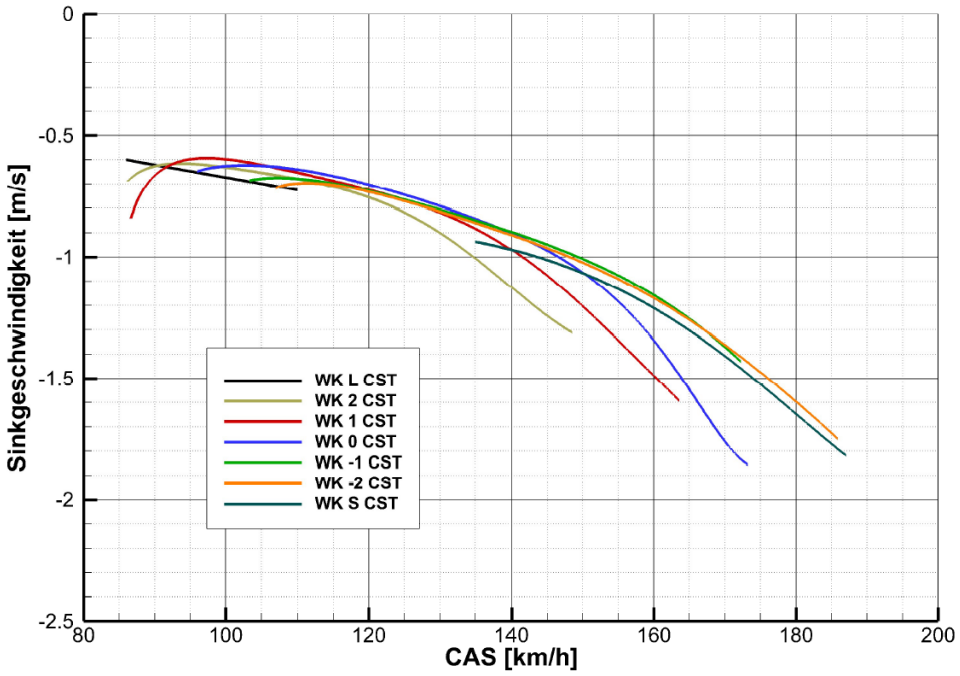


Abbildung 5: Geschwindigkeitspolare des Arcus T D-0867 bei 704.7kg Abfluggewicht und SP: 142.5mm h. BE