REVERIE

Universal 110mm Chord Carbon Rear Wing

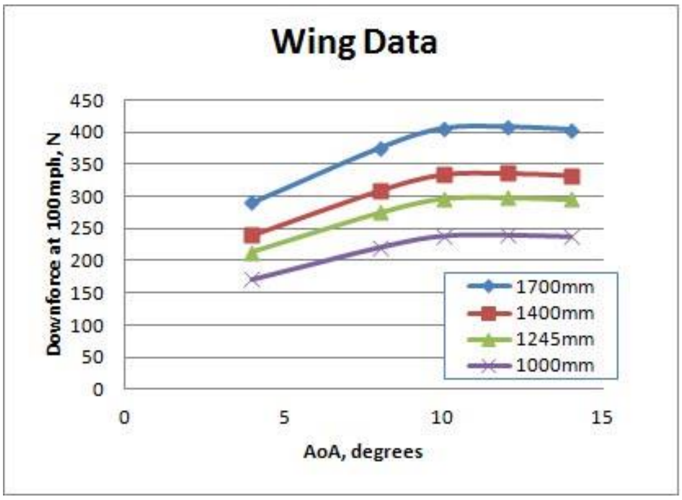
Two universal fit designs are available, either a straight design or a curved design with a 1600mm radius (chosen to suit lotus Elise type models).The wings feature internal longitudinal stringers and end spars with 2 x M5 threaded inserts for mounting between supports or for affixing end plates. The wings come ready to mount between supports on the end spars or can be supplied with underside double or single shear carbon fibre mounting plates.

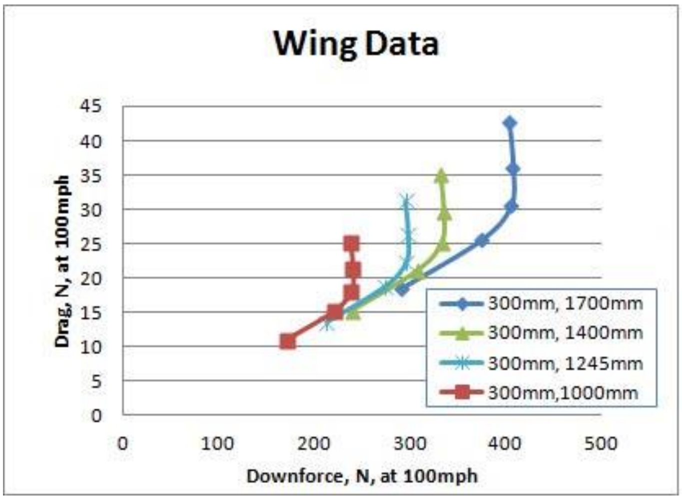
The 1700mm data given was produced by Ansys CFD-Flo software, all other widths have been calculated only using the wing width approximation formula found in our FAQ document.

*** Data marked in red show that the wing has either stalled or was close to stalling and has been omitted from the graphs ***

	1000mm Wingspan				1245mm Wingspan			
AoA	**Downforce (N)**	**Drag (N)**	**L/D**	**BHP Absorbed**	**Downforce (N)**	**Drag (N)**	**L/D**	**BHP Absorbed**
4	171	10.8	15.8	0.6	213	14	15.8	0.8
8	220	15	14.7	0.9	275	19	14.7	1.1
10	239	18	13.3	1.1	297	22	13.3	1.3
12	240	21	11.3	1.3	299	26	11.3	1.6
14	238	25	9.5	1.5	296	31	9.5	1.9

	1400mm Wingspan				1700mm Wingspan			
AoA	**Downforce (N)**	**Drag (N)**	**L/D**	**BHP Absorbed**	**Downforce (N)**	**Drag (N)**	**L/D**	**BHP Absorbed**
4	240	15	15.8	0.9	291	18	15.8	1.1
8	309	21	14.7	1.3	375	26	14.7	1.5
10	334	25	13.3	1.5	406	31	13.3	1.8
12	336	29.6	11.3	1.8	408	36	11.3	2.1
14	333	35.2	9.5	2.1	404	43	9.5	2.5

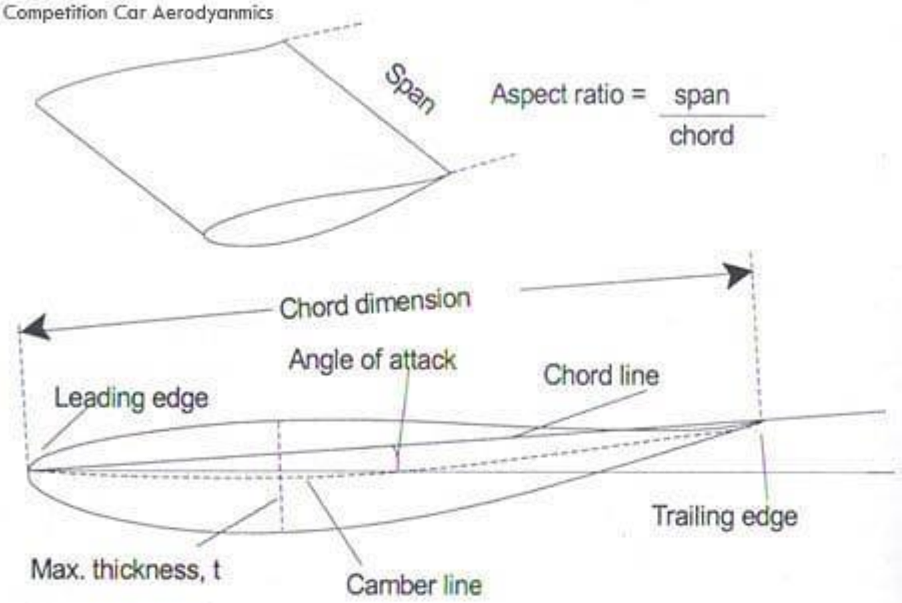




Reverie Ltd, Unit 2 Chandlers Row, Colchester, Essex, CO1 2HG, UK
Email: sales@reverie.ltd.uk
Tel: 0044 (0)1206 866663

Figure 5-1 *Wing terminology*

Image courtesy of Simon McBeath Competition Car Aerodyanmics



Tuning Advice:

The recommended maximum angle of attack with this wing in free stream air is 12^{O}, although this may be different when mounted on a car. Forces increase with span width as per tables above. The rise in the forces at speed is in line with the square of the velocity increase. Thus, to calculate forces at different speeds within the range bracketed here simply multiply by the square of the ratio of the speeds in question. Below 100mph some caution should be used when applying this square law, but approximations of forces down to perhaps 60mph or 70mph will be valid. A 5 or 10mm Gurney flap could be added to further add a reasonably efficient increment of down force. All the results obtained were from evaluations in free stream air, with horizontal onset flow to the wing. This is obviously not representative of the onset flow on the back of a car. Nevertheless, the generic findings of this project should be valid.

To Scale a Force to a Different Speed:

We will use the Notched end plate design figure at 100MPH from above. Then scale it to 150MPH.

New Force (N) = Original Force (N) x (New Speed^2 (MPH) ÷ Data Speed^2 (MPH))
New Force = 937.2 x ((150 x 150) ÷ (100 x 100))
New Force = 937.2 x 2.25
New Force = 2108.7

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Tel: 0044 (0)1206 866663

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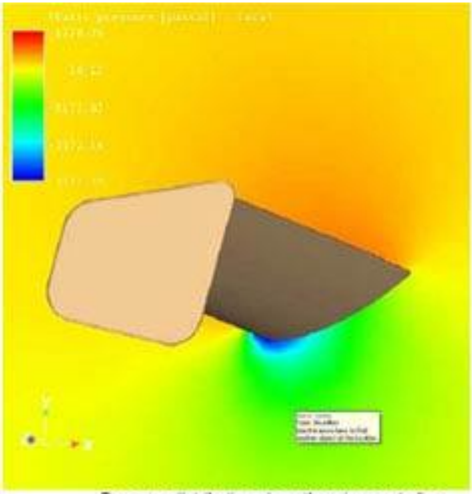
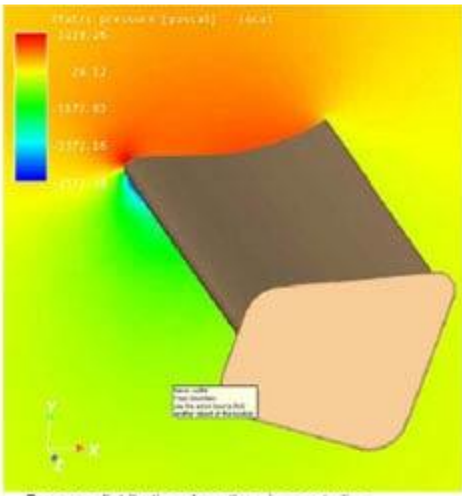
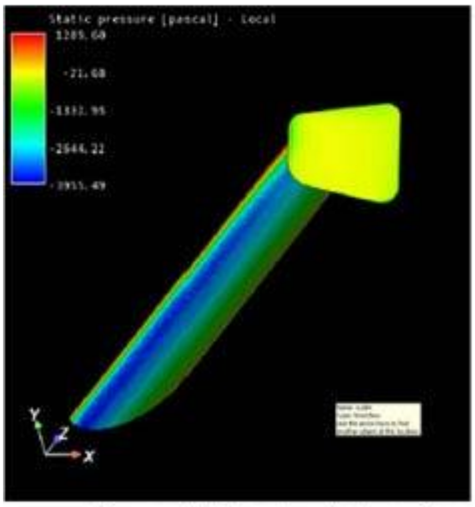
www.reverie.ltd.uk



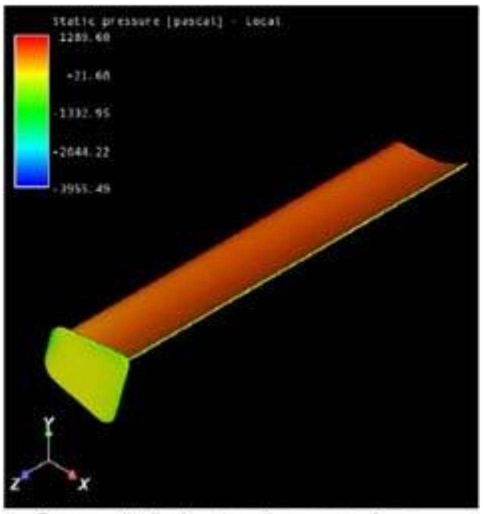
Pressure distribution along the wing centreline



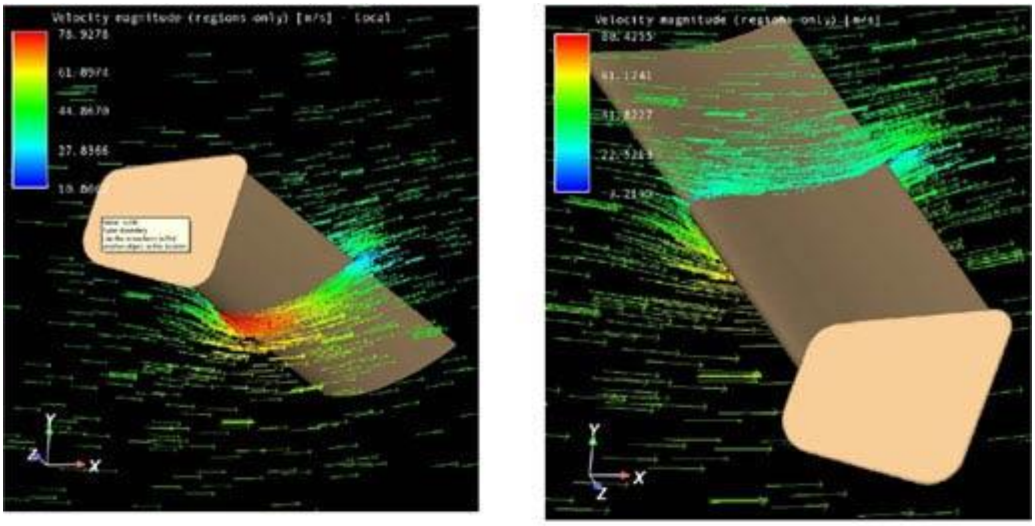
Pressure distribution along the wing centreline



Pressure distribution along the lower surface



Pressure distribution along the upper surface



Velocity vectors, coloured by static pressure, along the wing centreline over upper & lower surfaces of the wing.