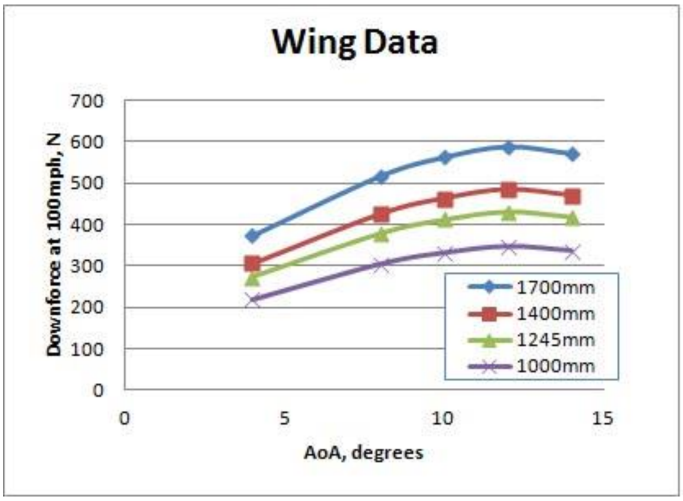
Universal 150mm Chord Carbon Rear Wing

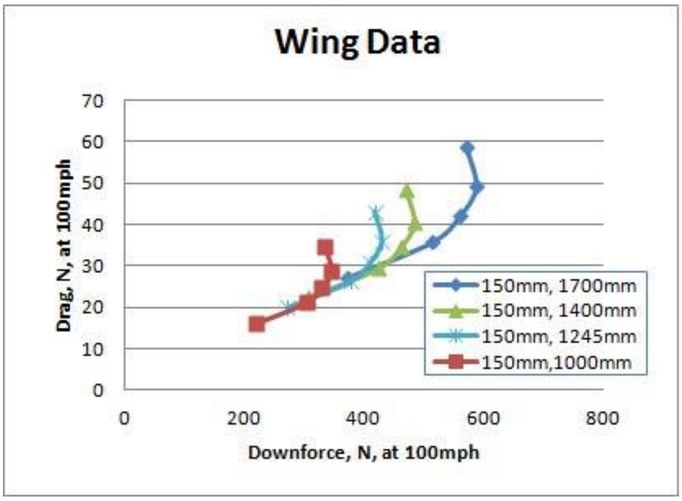
Two universal fit designs are available, either a straight design or a curved design with a 1600mm radius (chosen to suit lotus Elise type models).The wings feature internal longitudinal stringers and end spars with 2 x M5 threaded inserts for mounting between supports or for affixing end plates. The 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	219	16	13.7	1.0	273	20	13.7	1.2
8	304	21	14.4	1.3	378	26	14.4	1.6
10	331	25	13.3	1.5	412	31	13.3	1.8
12	346	29	12.0	1.7	431	36	12	2.1
14	336	35	9.7	2.1	419	43	9.7	2.6
	1400mm Wingspan				**1700mm Wingspan**			
AoA	**Downforce (N)**	**Drag (N)**	**L/D**	**BHP Absorbed**	**Downforce (N)**	**Drag (N)**	**L/D**	**BHP Absorbed**
4	306	22	13.7	1.3	372	27	13.7	1.6
8	425	30	14.4	1.8	516	36	14.4	2.1
10	463	35	13.3	2.1	562	42	13.3	2.5
12	485	40	12.0	2.4	588	49	12.0	2.9
14	471	48	9.7	2.9	571	59	9.7	3.5





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

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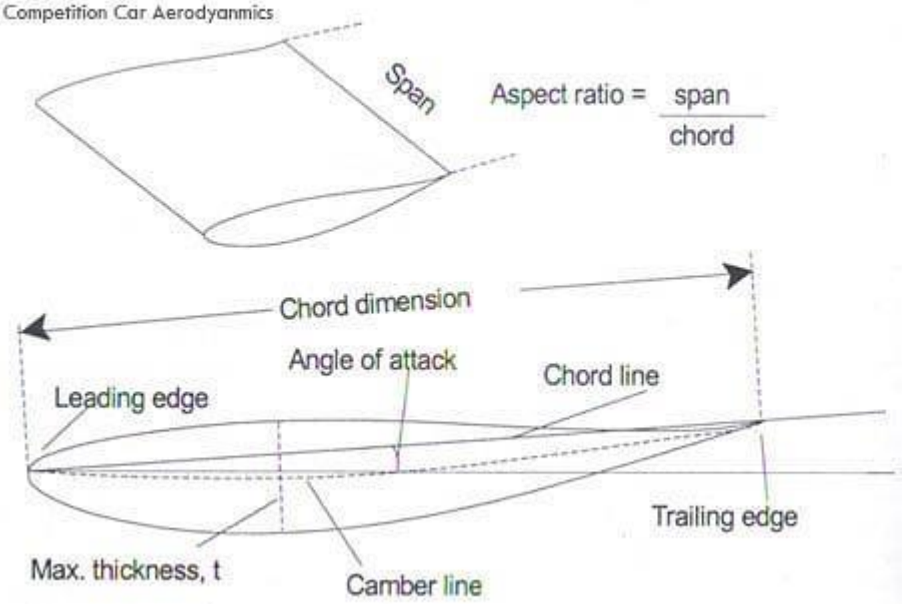
Figure 5-1 *Wing terminology*

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

Ordering details:

You need to tell us straight or curved profile, mount position (front under slung mounting tabs or underside tabs), the required span of your wing and the distance between the lower mounts (inside to inside on wing) if you require, the distance between the outside of vehicle mounts and vehicle mount thickness if you want a double shear fixing (unless you would rather fit the mounts to the underside yourself) and if you would like the optional 5mm or 10mm high gurney flap (these can be purchased later if required). New end plates are also available separately if they become damaged

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Essex, CO1 2HG, UK
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Tel: 0044 (0)1206 866663

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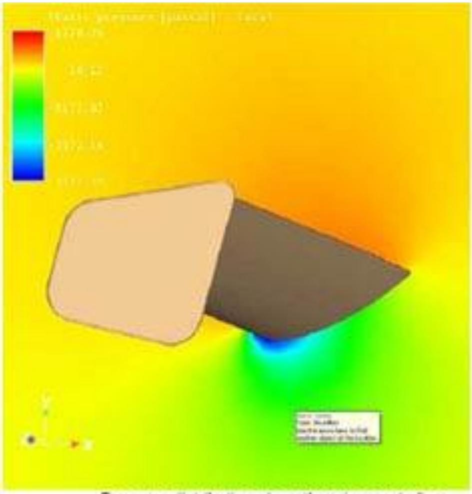
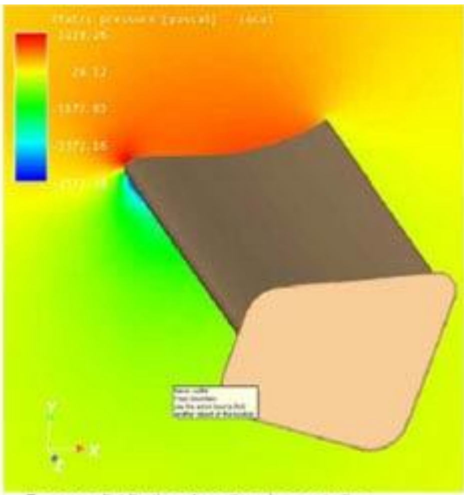
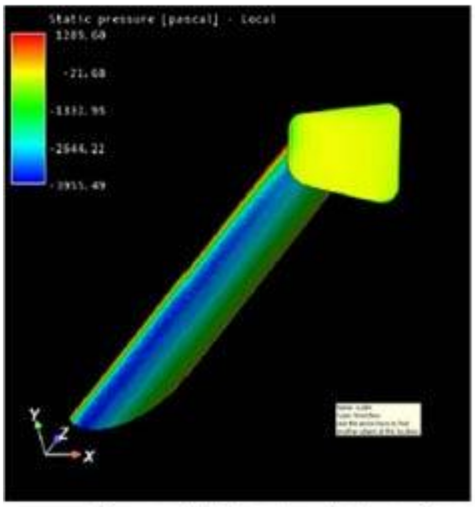


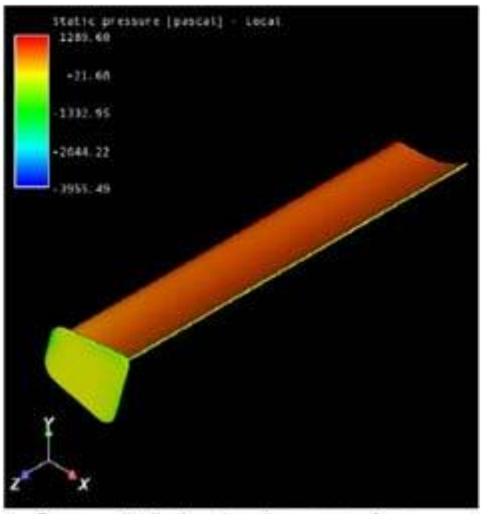
Pressure distribution along the wing centreline



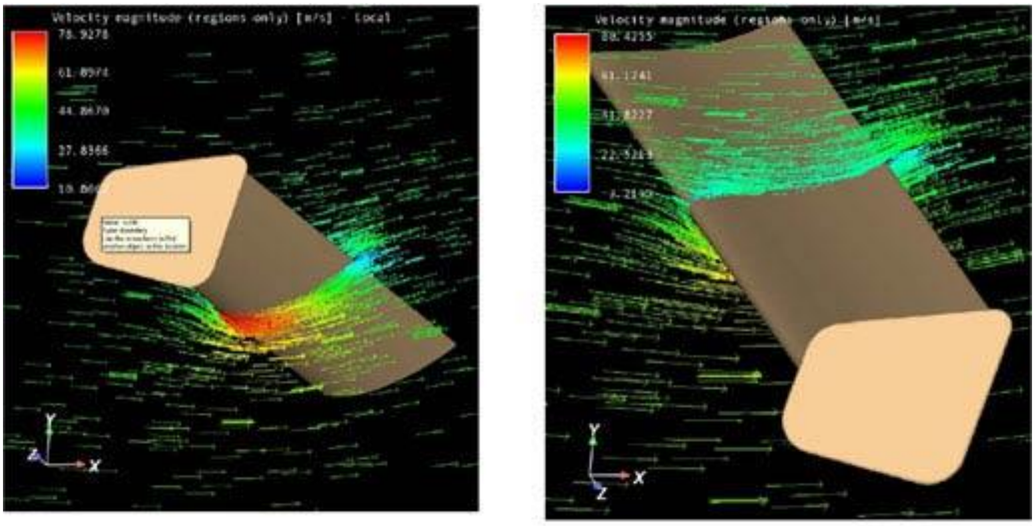
Pressure distribution along the wing centreline



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.