



May 2017

SKYWRITINGS

Newsletter of the *Kent Strut*



Weighing, Converting, Building, Cooling and at last some flying!

Pre flight Weight and balance, could you do one at short notice? Gary Smith

With the flying season getting under way and with warmer weather approaching we should give some consideration to our aeroplanes weight and balance. For most of us the PPL syllabus was completed a good many years ago and whilst it is no longer at the fore front of our minds, we should remember completing a “weight and balance (W&B) loading calculation” before every flight is a legal requirement. But could we actually produce one at a moments notice?

To make things easy for myself I have taken the figures from the aircrafts official W&B document and constructed two simple A5 sized EXCEL spread sheets. The first sheet shows the full W&B calculation for an average flight (two 12 stone pilots, half fuel, half luggage) and the second sheet I have left blank, allowing an accurate W&B to be performed before flight. I have bonded the two sheets back to back, plastic laminated them and stowed the document in my knee board.

I have used coloured boxes on the form so its easy to sum the weights (giving max take off weight) and sum the moments. By dividing the total moments by the total weight you achieve the loaded centre of gravity



Nigel Read - Editor

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May Meeting

McCudden VC - Mike Negus

Cobtree Manor Golf Club, ME14 3AZ 20:00hrs

www.laakentstrut.org.uk

position. I can refer my calculated figures to the limitations on the bottom of the sheet and ascertain if the flight will be legal.

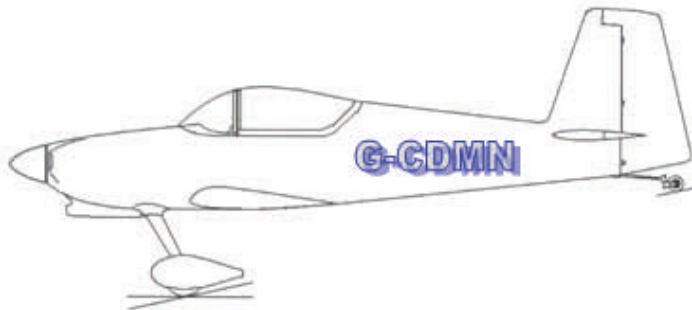
Note. It is also possible to calculate the point of balance as a percentage of the CofG range and this will give an indication of how the aircraft will perform (e.g. 20% CofG from fully forward may need more rearward stick force on take off, CofG 90% from fully forward may require caution when landing.)

I heard a story about a fellow pilot who, upon arrival in Holland, was actually asked to produce his loading weight and balance calculation for the flight he had just made into their country. Having a W&B calculation card allows the sums to be easily made before flight and may help if you should inadvertently forget!!

Member John Luck offers a weighing service :- www.wingweigh.co.uk.

Add a picture of your aircraft here and your figures below
See example on next page.

Weight and Balance	Type	Registration	Date
Item	Weight (Lb)	Arm (in)	Moment
Empty weight (inc oil)			
Fuel			
Pilot (1 st = 14lb)			
Passenger			
Baggage			
Totals			
(Total moment)		=	(C of G)
(Total weight)			
(1 stone = 14 Lb, 30 galls fuel = 216 Lb)		Fuel (1 imp gall = 7.2Lb)	
C of G limit is _____ to _____ ins aft of datum		Fuel (1lit = 1.58 Lb)	
Max take off weight _____ Lb			

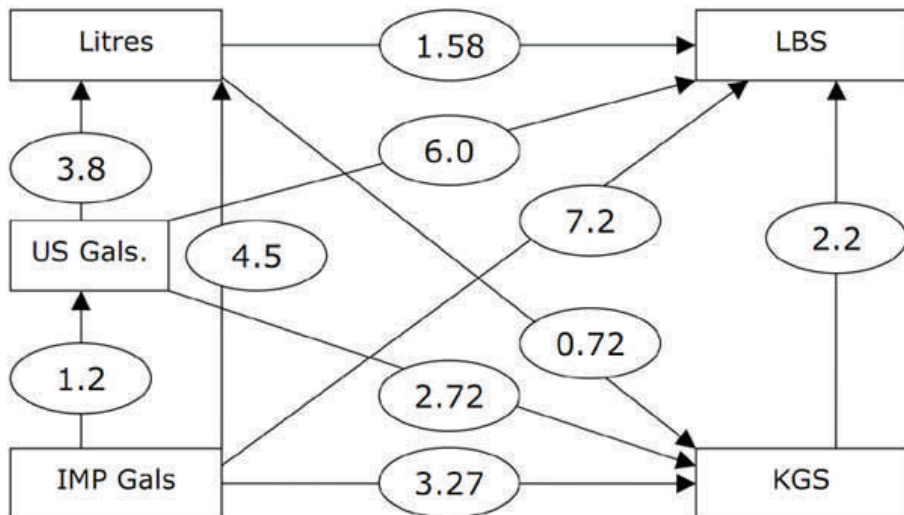


Weight and Balance RV9 G-CDMN (April 2016)

Item	Weight (Lb)	Arm (in)	Moment
Empty weight (inc oil)	1098	6.84	7,510
Fuel (1 imp gall = 7.2Lb)	216	6.75	1,458
Pilot (12 st)	168	22.7	3,813
Passenger (12st)	168	22.7	3,813
Baggage	100	52	5,200
Totals	1750		21,794
(Total moment)	21,794	= 12.45" (C of G)	
(Total weight)	1,750		
(1 stone = 14 lb, 30 galls fuel = 216 lb)			
C of G limit is 7.95 to 14.84 ins aft of datum			
Max take off weight 1750 lb			

AVGAS

Conversion Charts

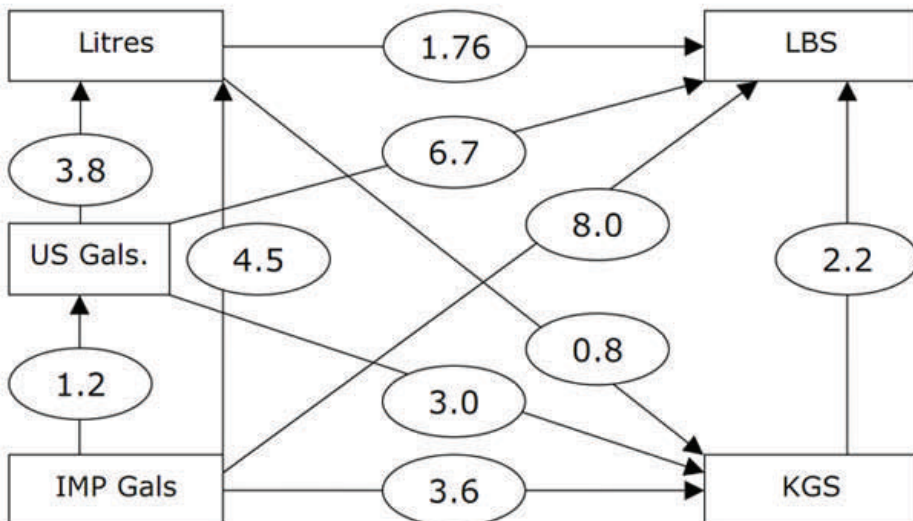


To convert multiply by the factor in the balloon when moving in the direction of the arrow, or divide by that factor if converting in the opposite direction.

Fuel SG (0.8 AVTUR and 0.72 AVGAS) is based on ISA temperature at MSL. Therefore, fuel weights will be approximate for temperatures other than 15°C.

<http://www.streamline-ops.com>

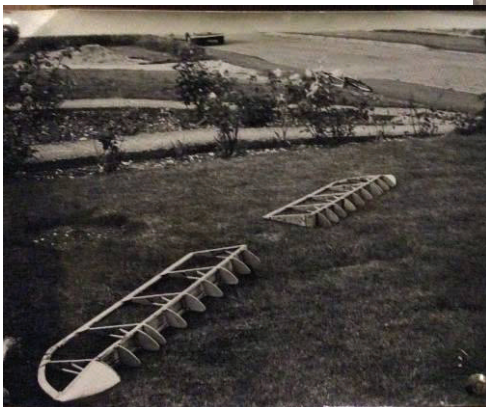
JET A1 AVTUR



April Meeting PFA 1653 Druine D.31 Turbulent

Derek Levermore gave an interesting talk on constructing a Turbulent back 1970 when materials had to be sourced for the plans he borrowed including making his own propeller. The aircraft no longer exists, being deregistered in 2005, permit expiring in 1997 and total hours 942 as of 1995. Two ladies owned it from 1984 to 1991 and three others in Essex, the final one purchasing it in 1997 but apparently not getting to enjoy it for very long. It's owners and history can be traced on the CAA's GINFO site. Gary brought along his model Turb and Derek had a display of photographs from the build.





Editors news

New LAPL Licence as discussed in the March *skywritings* arrived and so has my replacement propeller! This one only varies by about half a degree between blades but is still slightly finer than the original prop apart from a section checked 340mm from the centre. Remains to be seen how it performs on the aircraft with regard to takeoff, cruise and cooling. Still it looks nice with black and white stripes similar to the original GT which can be seen on their website.

As of Sunday, (21st) I at last managed to get airborne with the new prop. It looks good but is still down a few kts on the original. Take off was similar but as it was quite a thermic day there was no real idea of climb which varied between 500' min and 1000 ft/min and the takeoff was affected by a 90 deg cross wind plus a bit of wind shear as thermals took off drawing in air from all around. Flying down to the coast the sea air was much smoother and the speed topped out at about 115 kts. The figures do vary a lot with different loads and we were near full fuel.



Three point levelled mounting face



Vernier level, hooked around trailing edge and sitting on two 'rollers'



Various points marked out with tape for comparison blade to blade and with the remains of the original.



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The spinner has been resprayed to include a couple of vanes added to encourage some cooling on the ground when used with the Arplast ground adjustable.



No problems with cooling on the ground but in the air it is showing about 75 °C so we will revert to the original smaller main jet and see what happens. I should add, the 'skirt' of the ram air duct was extended down about 1/2" to cover the rear fins at the same time which seems to be surprisingly effective?

Peacehaven**Dates for your Diary****25 May McCudden VC****29 Jun Ripple BBQ****30 Jul Fly-in EGTO (Sunday)**