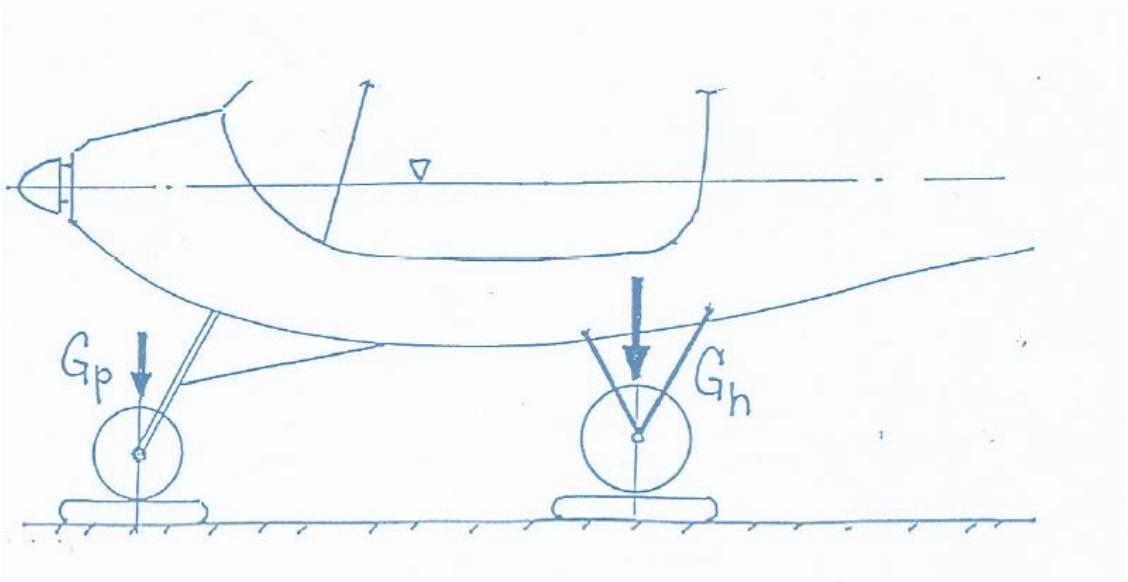
Weight and balance

JORA Build Number: _____ Aircraft registration number: _____ Date: ___/___ - _____

Content:

Procedure for weighing and calculating the centre of gravity on the Jora ULA



- Set the aircraft on three scales, each able to measure minimum 130 kg, each for one wheel.
- In order to get correct weights for points **Gp** and **Gh**:
    - Ensure the aircraft to be in absolute horizontal level using a spirit level on the floor.
    - A correct sideways level between the rear main wheels is also necessary.
    - Adjust by adding height under each scale if necessary.
- The two weights measured on each scale under the rear wheels is added as one sum **Gh**.

Weight and balance sheet:

- Arm - the horizontal distance from the reference datum of the Jora (prop mount).
- Centre of Gravity - the point the Jora would balance if suspended from that point.
- Moment - the product of the weight of an item multiplied by its arm.

Weight position	Weight	Arm in cm	Moment
Nose wheel		25	
Main wheels		166	
Pilot		161	
Co-pilot		161	
Fuel		120	
Baggage		210	
Total			
		CG:	

Weights measures for the wheels must be done with empty aircraft with little fuel.
CG: total moment divided by total weight.
Petrol weight is 0.73722 kg per litre.
According to JAA regulations the pilot and co-pilot is per definition 150 kg.
Max CG front: 140 cm
Max CG aft: 152 cm

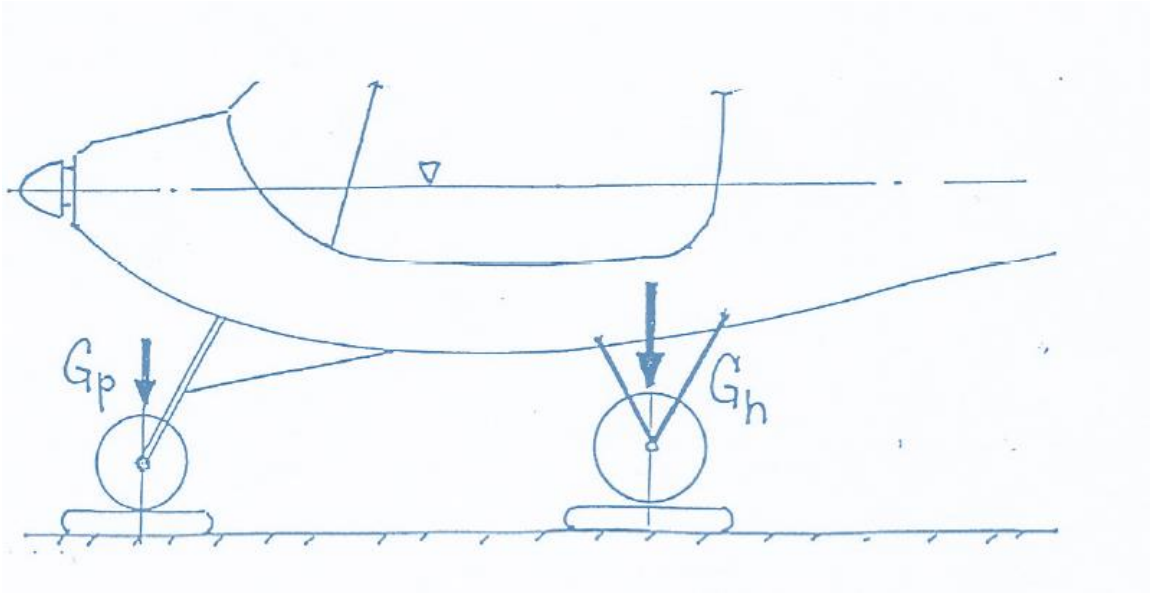
Example of a Jora ULA with a Rotax 582, belly radiator max loaded:

Weight position	Weight	Arm in cm	Moment
Nose wheel	36	25	900
Main wheels	209	166	34694
Pilot	75	161	12075
Co-pilot	75	161	12075
Fuel	29	120	3480
Baggage	26	210	5460
Total	450		68264
		CG: 68264 / 450	151,7

Example of a Jora ULA with a Rotax 582, belly radiator empty:

Weight position	Weight	Arm in cm	Moment
Nose wheel	36	25	900
Main wheels	209	166	34694
Pilot		161	
Co-pilot		161	
Fuel		120	
Baggage		210	
Total	245		35594
		CG: 35594 / 245	145,2

Calculating the centre of gravity



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    - A correct sideways level between the rear main wheels is also necessary.
    - Adjust by adding height under each scale if necessary.
- The two weights measured on each scale under the rear wheels is added as one sum **Gh**.
- Measure the distance between the **axle** of the main gear and the front wheel axle in millimetre as measure **Lp**.
- Measure with the help of a plumb-bob the distance from the wing leading edge to the **axle** of the main undercarriage in millimetre as measure **La**.

Lt = $\frac{\textbf{Gp} \times \textbf{Lp}}{\textbf{G}}$ Distance from the CG of the aircraft to the main undercarriage axle in millimetre.

Xt = **La** - **Lt** This distance is expressed in percentage by **MAC**, (mean aerodynamic chord), and is

xt = **Xt** / **bsat** * 100 = **Xt** / 12

Measure values	Max and minimums
MAC = mm Gp = kg Gh = kg G = kg Lp = mm Lt = mm Xt = mm X% = %	The centre of gravity according to the documentation can be between 30% and 40% from MAC. Max and minimum span for the centre of gravity from the wing leading edge: - Front max: 360 mm. - Aft max: 520 mm.