Weight and Balance report, (Rotary-Wing) for C-_____

Helicopter/gyrocopter builder / importer / owner _____

Address_____

Helicopter/gyrocopter model _____serial number _____

Date_____ and place of weighing_____

Levelling reference used
Fore & Aft_____ Datum _____

Lateral_____ Datum _____

Ensure that the ballast is in the proper place for solo flight.

Weighing results:				**Longitudinal axis**		**Lateral Axis**	
Weighing Point	**Scale reading**	**Tare**	**Net Weight**	**Arm, in**	**Moment lbs**	**Arm, in**	**Moment lbs**
Right Forward							
Left Forward							
Right Aft							
Left Aft							
		Total Weight		**Total Moment**		**Total moment**	

Total moment, longitudinal axis_____ divided by the total weight of the helicopter/gyrocopter_____ equals the longitudinal axis empty Centre of Gravity of the helicopter/gyrocopter_____in inches to the datum.

Loaded centre of gravity operating range; forward_____ in inches, rearward_____ in inches

Total moment, lateral axis_____ divided by the total weight of the Helicopter/gyrocopter _____ equals the lateral axis empty Centre of Gravity of the helicopter/gyrocopter_____ in inches to the 1/2 distance between the skids/wheels.

Loaded centre of gravity operating range; right_____ left_____

I certify that these data have been prepared in accordance with the applicable airworthiness/kit manufacturer requirements and to the best of my knowledge represent the true empty weight and centre of gravity of this aircraft.

Date_____Signature_____
yyyy/mm/dd

Weight and Balance report for C- _____

Ensure that the ballast is in the proper place for this loading condition_____

1. Loading condition that results in most forward centre of gravity

		Longitudinal axis		Lateral Axis	
Item	**Weight, pounds**	**Arm, inches**	**Moment lbs**	**Arm, inches**	**Moment lbs**
Helicopter/gyrocopter					
Pilot					
Passenger,					
Fuel, location 1					
Fuel, location 2					
Baggage, location 1					
Baggage, location 2					
Cargo Hook					
Total weight		**Total moment**		**Total moment**	

Total moment, longitudinal axis_____ divided by the total weight _____= CG_____

Total moment, lateral axis_____ divided by the total weight_____= Lat CG_____

Ensure that the ballast is in the proper place for this loading condition_____

2. Loading condition that results in most rearward centre of gravity

		Longitudinal axis		Lateral Axis	
Item	**Weight, pounds**	**Arm, inches**	**Moment lbs**	**Arm, inches**	**Moment lbs**
Helicopter/gyrocopter					
Pilot					
Passenger,					
Fuel, location 1					
Fuel, location 2					
Baggage, location 1					
Baggage, location 2					
Cargo Hook					
Total weight		**Total moment**		**Total moment**	

Total moment, longitudinal axis_____ divided by the total weight _____= CG_____

Total moment, lateral axis_____ divided by the total weight_____= Lat CG_____

Date_____Signature_____
yyyy/mm/dd

Weight and Balance report for C- _____

Ensure that the ballast is in the proper place for this loading condition_____

3. Loading condition that results in the gross weight

		Longitudinal axis		Lateral Axis	
Item	**Weight, pounds**	**Arm, inches**	**Moment lbs**	**Arm, inches**	**Moment lbs**
Helicopter/gyrocopter					
Pilot					
Passenger,					
Fuel, location 1					
Fuel, location 2					
Baggage, location 1					
Baggage, location 2					
Cargo Hook					
Total weight		**Total moment**		**Total Moment**	

Total moment, longitudinal axis_____ divided by the total weight _____= CG_____

Total moment, lateral axis_____ divided by the total weight_____= Lat CG_____

4. Hang Test Procedure

This procedure is required by some helicopter and all gyrocopters. This procedure does not replace the above Weight & Balance procedure it complements it.

Test	Longitudinal angular displacement	Maximum permissible angular displacement	Lateral angular displacement	Maximum permissible angular displacement
Empty Aircraft				
Pilot only				
Pilot & Passenger				

Date_____Signature_____
yyyy/mm/dd

Weight and Balance report for C- _____

Equipment List

The empty weight of an aircraft stated in a weight and balance report includes all items forming part of the basic structure of the aircraft and all additional items of installed equipment. Any item not forming part of the basic structure must be entered in an equipment list with its associated weight, arm and moment.

		Longitudinal axis		Lateral Axis	
Item	**Weight, lbs**	**Arm, in**	**Moment lbs**	**Arm, in**	**Moment lbs**

Date_____Signature_____

yyyy/mm/dd

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md-ra@md-ra.com www.md-ra.com

Instructions to fill out the Weight and Balance form:

Preparing the helicopter/gyrocopter;

1. Drain the fuel, (leave the residual fuel in), ***Minimum fuel*** *= 1/12* (engine declared horsepower) / 2 = lbs*
   *Example: 1/12*160hp/2 = 6.6lbs*
2. Fill the engine oil and gearboxes tanks.
3. Check that all required listed equipment are install in their correct location; ELT, first aid kit etc.
4. Remove any unnecessary articles, the helicopter/gyrocopter should be clean and dry.
5. Ensure that the ballast is in the proper place for solo flight.
6. Install and secure doors.
7. Align the main rotor along the longitudinal axis of the helicopter/gyrocopter.

Weighing the helicopter/gyrocopter;

1. The helicopter/gyrocopter should be in a building, out of the wind.
2. Place the helicopter/gyrocopter on the scale; it should be leveled side to side and lengthwise using the designer's reference points. Record the scale readings.
3. Drop a plumb bob from the datum, mark the floor. Record the distance from the datum to the center of the scales.
4. Record the distance from the datum to; the engine oil tank, each seat, baggage area, fuel tanks and ballast location.
5. Measure the distance between the skids and calculate center between the skids.
6. Remove the helicopter/gyrocopter from the scales, weigh and record each tare.

Filling out the form: (Page 1)

1. Leveling reference used, enter the longitudinal and lateral structural reference used.
2. Enter all the scale readings, enter and subtract the tare from each scale reading resulting in calculated net weights.
3. Enter the arms, both longitudinal and lateral (distance in inches from datum to scales). Multiply the net weight by the arm to calculate the moment, enter it on the form.
4. Add all the net weights to get the total weight, enter it on the form.
5. Add all the moments to get the total moment, enter it on the form.
6. The total moment divided by the total empty weight equals the empty center of gravity in inches from the datum, enter it on the form.

Examples of helicopter/gyrocopter loading, while keeping within the loading envelope. (Page 2 & 3)

1. There are many different configurations of helicopter/gyrocopter, it may have the fuel, seats or baggage ahead or behind the center of gravity. Loading conditions 1 and 2 should be calculated keeping in mind the location of these variables so that the calculation results in the most forward (1) or the most rearward (2) while keeping within the loading envelope.

In forward example (1), the load is heavy ahead of CG, behind load is light.
In rearward example (2), the load is light ahead of CG, behind load is heavy.

2. Loading condition 3 shows the helicopter/gyrocopter loaded to its gross weight. Be sure to use the same gross weight as on the Application for C of A, (block 19).
Verify that the center-of-gravity stays within limits when the fuel is removed, this is for information only.

Notes:

1. Check all the scales for accuracy before weighing.
2. Read and understand the Weight and Balance section of AC 43.13
3. Do not use a datum that could be changed later.
4. A copy of the Weight and Balance report must be kept in the Journey Log Book.

HANG TEST PROCEDURE

This procedure is required by some helicopters and all gyrocopters. This procedure does not replace the above Weight & Balance procedure it complements it.
The hang test requires that the helicopter/gyrocopter be lifted using the main rotor head.
It requires a cable that can lift the helicopter/gyrocopter at the approved gross weight with some measure of safety redundancy.
The helicopter/gyrocopter should not be lifted unless there is a method of stabilizing the helicopter/gyrocopter.
The helicopter/gyrocopter should not be lifted anymore than is required for the actual test.

First test; helicopter/gyrocopter empty.

Prepare the helicopter/gyrocopter as per the procedure above to determine the empty center of gravity.
Measure the longitudinal angular displacement on the main rotor mast as specified on the aircraft plans.
Enter the data on the hang test procedure table
Measure the lateral angular displacement on the main rotor mast as specified on the aircraft plans.
Enter the data on the hang test procedure table

Second test; helicopter/gyrocopter Pilot only.

Measure the longitudinal angular displacement on the main rotor mast as specified on the aircraft plans.
Enter the data on the hang test procedure table
Measure the lateral angular displacement on the main rotor mast as specified on the aircraft plans.
Enter the data on the hang test procedure table

Third test; helicopter/gyrocopter Pilot & Passenger.

Measure the longitudinal angular displacement on the main rotor mast as specified on the aircraft plans.
Enter the data on the hang test procedure table
Measure the lateral angular displacement on the main rotor mast as specified on the aircraft plans.
Enter the data on the hang test procedure table