



PRO FORMA DESIGN CRITERIA

Wagtail Aviation

DRAFT

Design criteria in support of build number application lodged in terms of
CAR 24.01.2 (4)

Abstract

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1. Description

1.1 General



Figure 1 - Sycamore with Subaru conversion

The proposed aircraft would be a two seat autogyro with tricycle undercarriage. The aircraft will be in tandem configuration. It shall be based on the well-established modifications and upgrades Wagtail Aviation has done on various Sycamore gyro's over the last 10 years.

1.2 Powertrain

The aircraft will utilize a Subaru EJ20 with forced induction in the form of a Turbocharger. The more powerful engine configuration is also used in the following autogyros, all of which was modified or installed by Wagtail Aviation for the purpose of higher altitude operation:

- ZU-BPU Sycamore autogyro
- ZU-DXB Sycamore autogyro
- ZU-DBE Sycamore autogyro
- ZU-CEU Sycamore autogyro

1.3 Fuselage/Cabin

The composite fuselage that is to be used is a derivative of the Sycamore autogyro with slight esthetic modification. Figure 3 shows the new fuselage. The following is a list of autogyros that utilize the Sycamore fuselage or derivatives there-off:

- ZU-BPU Sycamore autogyro
- ZU-DXB Sycamore autogyro
- ZU-DBE Sycamore autogyro
- ZU-CEU Sycamore autogyro
- ZU-RKJ Trojan autogyro

1.4 Rotor System

The autogyro will use one of Wagtail Aviation's proven 33 - 36' rotor system already used on the following registered autogyros:

- ZU-BPU Sycamore autogyro
- ZU-CEU Sycamore autogyro
- ZU- EHT Xenon autogyro
- ZU-DWI ELA autogyro
- ZU-EBP ELA autogyro
- ZU-DXB Sycamore autogyro
- ZU-DBE Sycamore autogyro
- ZU-RGG UFO autogyro
- ZU-RGF Kriek autogyro
- ZU-RKJ Trojan autogyro

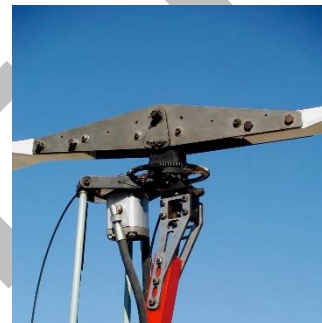


Figure 2 - Wagtail Rotor Head



Figure 3 - Trojan Fuselage



2. Regulatory Category

The regulatory category under which this autogyro is proposed to be registered will be Part 24 (NTCA) Experimental Amateur built.

The airworthiness standard with which the aircraft will comply is Section T of the British Civil Airworthiness Requirements, Light Gyroplanes.

3. This type of Autogyro

The aircraft will be built from plans. The plans was laid out by J. T. von Ludwig (B.Eng Chem) and C. W. Middel (B.Eng Mech)

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4. Expected maximum and empty take-off weights

Table 1 - Expected Weights

MTOW	750 kg
Empty Weight	440 kg
Useful Weight	310 kg

5. Dimensions

The following sketch and Artistic impressions will provide a clear idea as to the dimensions of the aircraft in question:

Table 2 - Dimensions

Total Height	2.8m
Total Length	5.1m
Total Width	1.2m





Figure 4 - Artist's impression



Figure 5 - Artist's impression

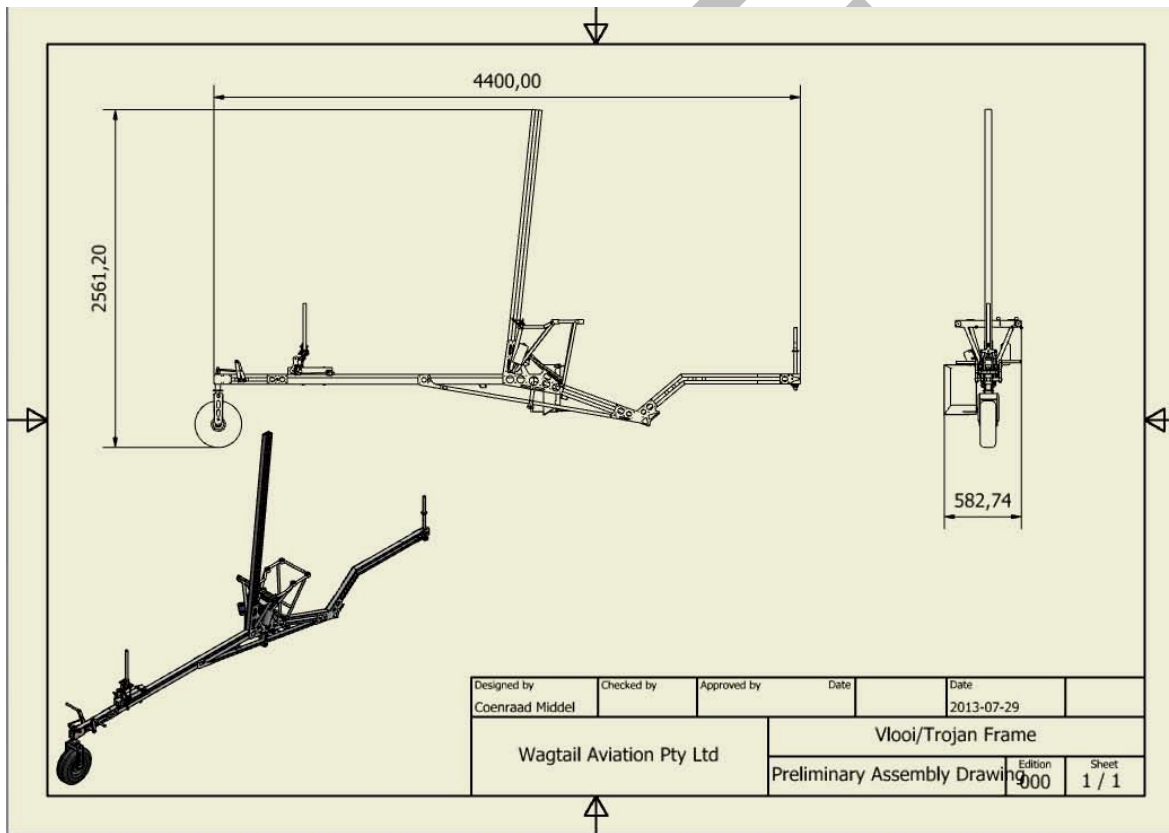


Figure 6 - Preliminary Assembly Drawing

6. Expected Performance

The aircraft's performance characteristics are summed up in the following table:

Table 3 - Performance characteristics

Comfortable Low Speed	45 - 50 mph
Most Economical Cruise	70 mph
Comfortable Long Distance Cruise	80 - 85 mph
High Speed Cruise	95 - 100 mph (34 ft. Rotor)/90 - 95 mph (36 ft. Rotor)
V _{NE}	100 mph (34 ft. Rotor)/115 mph (36 ft. Rotor)
Power	180 hp
Fuel Tank Capacity	120 - 150 l
Range	540 - 700km
Endurance	4.5 - 6 hours

7. Power plant

Table 4 - Power Plant Detail

Engine Type	Subaru EJ20
Power	180 - 220 hp
Induction Type	Turbocharged
No. of cylinders	4
Orientation of cylinders	Boxer type/Horizontally opposed
Propeller Manufacturer	IVO Prop - 3 Bladed Ground adjustable pitch Propeller