American Champion

Tailwheel Guide

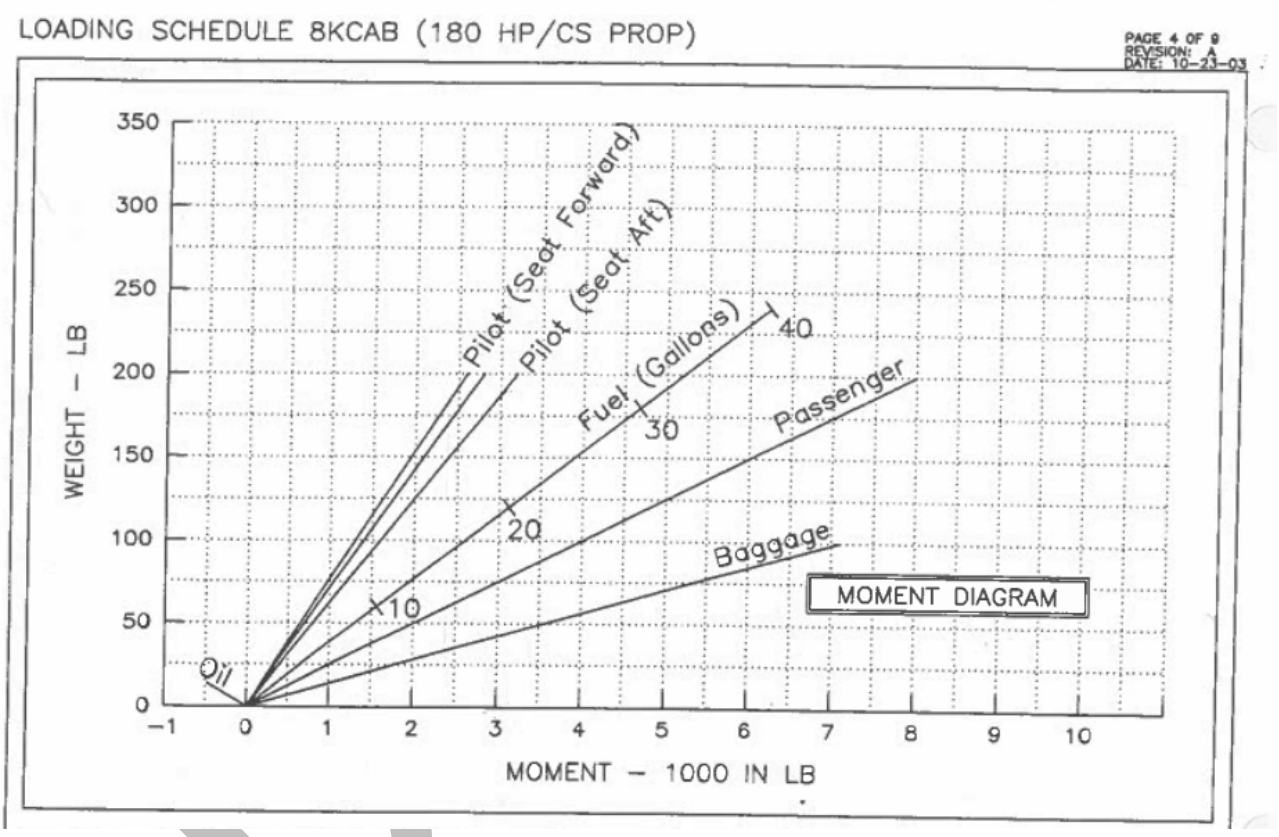
Super Decathlon Speeds

Speed Designation	Calibrated Air Speed		Airspeed Indicator Marking
	MPH	Knots	
Maneuvering (V_A)	107	93	None
Normal Operating Range	54-160	47-139	Green Arc
Maximum Structural Cruising (V_{NO})	160	139	
Caution Range	160-200	139-174	Yellow Arc
Never-Exceed (V_{NE})	200	174	Red Radial Line

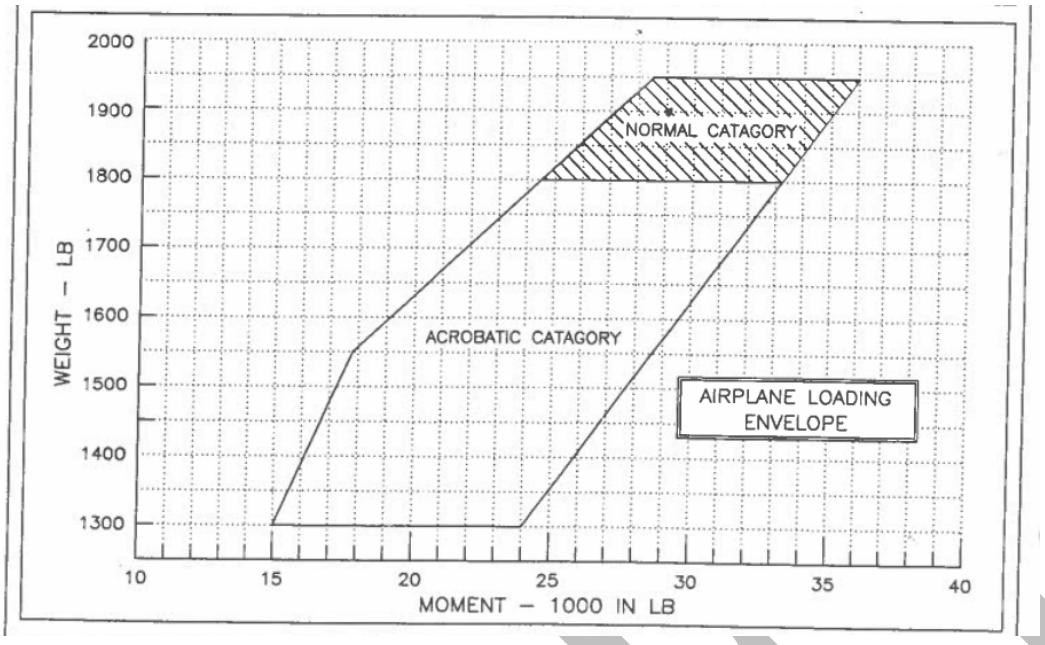
Super Decathlon Weight & Balance

As Received; Date of Previous Weight and Balance: 01/09/2020	**Useful Load:**	**EW:** 1343.5	**EWCG:** 11.76	**Moment:** 15797.19

Note: Max Gross Weight: Normal Category – 1950/Acrobatic Category 1800



Super Decathlon Weight & Balance Cont.



Citabria Speeds

Citabria Model 7ECA

Flight Operations

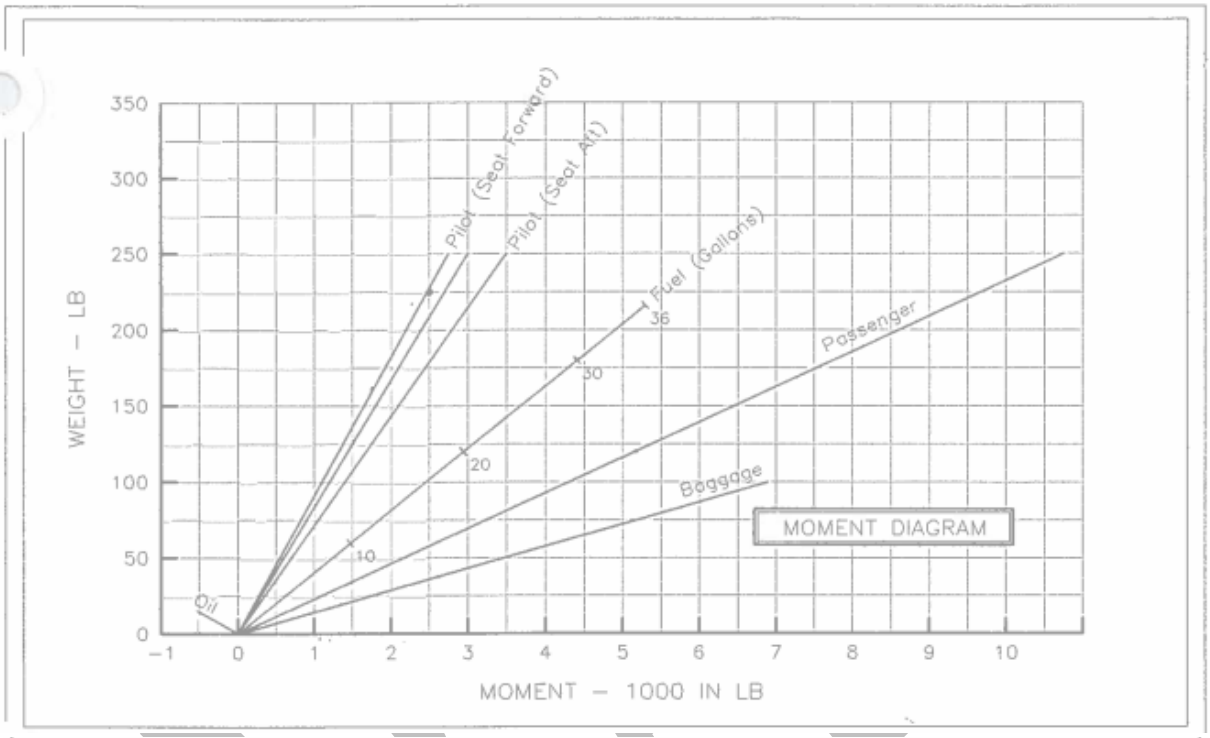
All 7ECA models are approved in the Normal and Acrobatic Category. Day or night flight in VFR conditions only is approved providing the aircraft is equipped with the required equipment and is in operating condition as specified under Part 91 of the Federal Air Regulations. Flight into known icing condition is prohibited

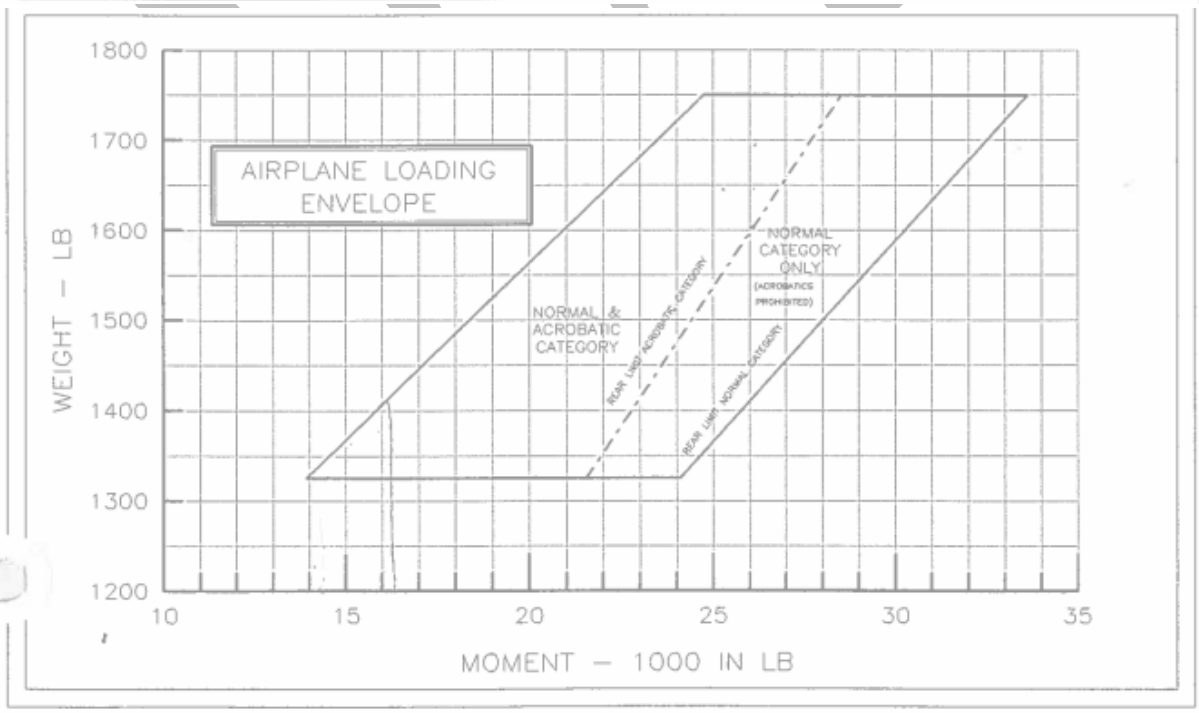
Airspeed Limitations	CAS (mph)
Never Exceed (red line)	162
Caution Range (yellow arc)	120 - 162
Maximum Structural Cruise	120
Normal Operating Range (green arc)	50 - 120
Maneuvering @ 1750	120
Stall Speed	52
Best Rate of Climb Speed	77

CAS - Calibrated airspeed is indicated airspeed corrected for installation and instrument error

Citabria Weight & Balance

Maximum Weight 1650	CG Range FWD 14.2	AFT 19.2		
As Received; Date of Previous Weight and Balance: 07/31/2019	**Useful Load:** 507.93	**EW:** 1142.07	**EWCG:** 11.16	**Moment:** 12750.12
Notes:				





Airframe & Wings

Both the Super Decathlon and Citabria's fuselages consist of a tubular steel frame wrapped in a stretched fabric. Mounted in a high-wing configuration, the wings consist of metal spars and aluminum ribs also wrapped in a stretched fabric. The fabric coverings go through numerous coats of primer and paint making them durable and UV resistant.

Both the Super Decathlon and Citabria have completely rectangular wing planforms. The Super Decathlon features a shorter wingspan compared to the Citabria (by around a foot and a half) as well as a semi-symmetrical airfoil. Both characteristics improve the Super Decathlon's aerobatic handling and precision at the cost of lift production, particularly at low speed. Neither the Super Decathlon nor Citabria have flaps.

Flight Controls

Ailerons

Ailerons control roll about the longitudinal axis. The Super Decathlon is equipped with Frise-Type Ailerons. Frise Type Ailerons pivot on an offset hinge, causing the leading edge of the raised aileron to catch airflow, causing drag. This not only helps combat adverse yaw but increases roll precision critical for aerobatics. The Citabria has differential ailerons equipped with an outboard spade. The differential aspect of the ailerons counteracts adverse yaw, while the spade reduces pilot control pressures.

Elevator

The elevator controls aircraft pitch about the lateral axis. Unlike the stabilator of most Piper aircraft, both the Super Decathlon and Citabria have a traditional separate horizontal stabilizer and elevator.

Rudder

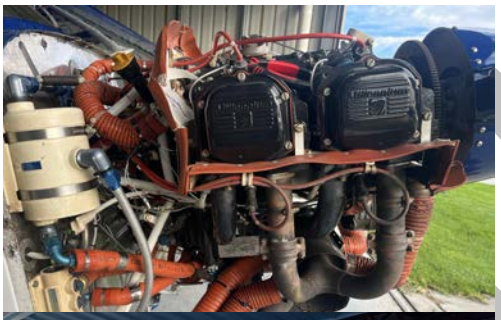
The rudders control yaw about the vertical axis and are connected via cables and pulleys. Unlike a tricycle gear airplane, the tailwheel is connected to the rudder via springs rather than direct linkages. This reduces “shimmy” on taxi and takeoff roll but can make taxi and turning more challenging. To make more precise turns, pilots should utilize differential braking of the main gear. Additionally, unlike nose-gear, tailwheels can caster 360 degrees, allowing for better turning radius.

Trim

Both the Super Decathlon and Citabria have traditional trim tabs. Unlike a balance tab or anti-servo tab, traditional trim tabs are static, meaning their angle relative to the elevator doesn't change with elevator deflection.

Powerplant and Propeller

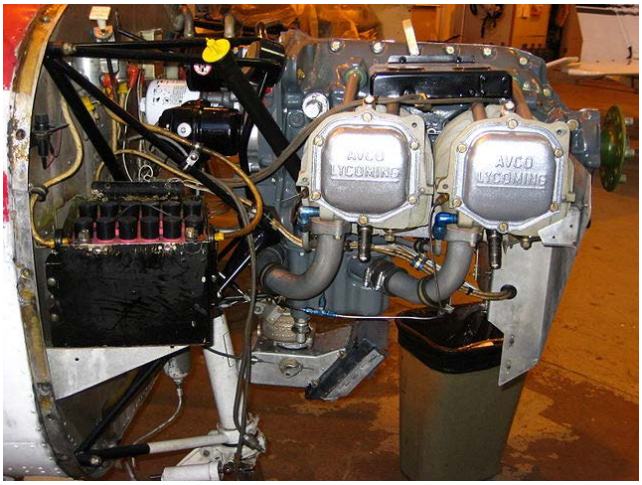
Super Decathlon



The Super Decathlon is equipped with a **Lycoming AEIO-360-H1B**, 4-cylinder, fuel injected engine rated at 180 horsepower at 2700 RPM. The engine is direct drive, air cooled, and naturally aspirated. Engine ignition is provided by two engine driven magnetos which are independent of each other and the aircraft's electrical system.

The Super Decathlon is equipped with an MT-Propeller, manufactured by MT-Propeller Entwicklung GmbH, a German company renowned for its advanced propeller designs. These propellers feature a natural composite construction, utilizing multilaminate spruce and compressed plastified beech wood (also known as "Superwood"). The wooden core is reinforced with carbon fiber composite and protected by a Nickel-Cobalt erosion sheet, providing durability and performance.

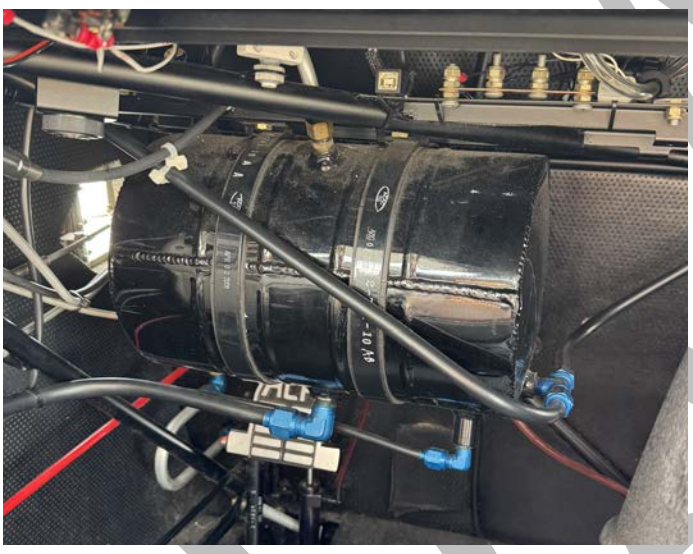
Citabria



The Citabria is equipped with a **Lycoming O-235-K2C**, 4-cylinder, carbureted engine rated at 115 horsepower at 2700 RPM. The engine is direct drive, air cooled, naturally aspirated, and has a wet-sump oil system. Engine ignition is provided by two engine driven magnetos which are independent of each other and the aircraft's electrical system.

Fuel and Oil System

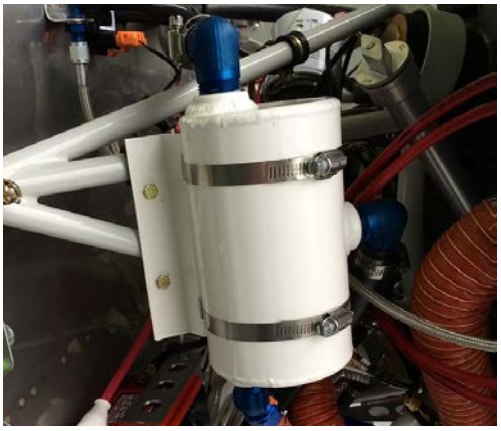
Super Decathlon – Inverted Fuel System



The Super Decathlon has two 20-gallon wing tanks for 40 total usable. The wing tanks are interconnected both in the vent system and the fuel feed system, and may be considered as one tank. Fuel feeds simultaneously from both tanks and the total fuel quantity in each tank is shown by a right and left tank gauge. Fuel tank caps are not vented and must seal completely to prevent a difference in fuel level between the two tanks.

The inverted fuel system consists of a 1.5 gal. header tank in the forward cabin with a standpipe to draw fuel from the center of the tank. One-half of the tank capacity is usable when inverted, allowing for 2 continuous minutes of inverted flight. The system is completely automatic; however, up to one minute of positive "g" flight might be required to refill an exhausted header tank.

Super Decathlon – Inverted Oil System



The inverted oil system consists of an inverted/upright shuttle valve, an oil/air separator canister and a system of interconnecting lines. Oil pressure may be interrupted momentarily in certain aircraft attitudes or during certain combinations of maneuvers. These interruptions are normal but should not be allowed to extend beyond 15 seconds (avoid extended right knife edge flight).

Citabria

Fuel is supplied by two 17.5-gallon interconnected wing tanks for 35 total usable gallons. Fuel is gravity fed to the engine carburetor, and quantity is registered by two direct reading float-type gauges. The fuel shut-off valve is located on the lower left side of the cabin forward of the pilot.

Electrical System

Super Decathlon

The Super Decathlon POH has no description of its electrical system, however it's *assumed* to be similar to the electrical system described in the Citabria POH

Citabria

The Citabria has a 12-volt electrical system, powered by a 60 ampere, self-exciting, engine driven alternator. A voltage regulator maintains a system voltage of 14 volts plus or minus 0.5 volts. The alternator circuit includes an overvolt relay which automatically removes it from the circuit to prevent damage to the alternator or radio equipment should an overvoltage condition occur.