

ACU F1 Sidecar Specifications. (excerpts from WSC) Nov/03

Engine Specifications.

Two stroke engines.

- Maximum capacity of 500cc.
- Prototype engine design is allowed.
- Maximum of 4 cylinders.
- Maximum of 6 speed transmission.

Four stroke engines.

Motorcycle engines of mass production only.

Maximum capacity of 1200cc. (reducing to 1000cc. January 1st 2006)

Maximum of 4 cylinders.

Crankshaft is free.

Stroke is free.

Balancing is allowed.

Lightening is allowed.

Con rods may be changed, however the use of carbon or titanium is not allowed in their construction, unless as fitted by manufacturer to homologated engine.

Piston rings and pins may be changed.

The original cylinder head may be modified, however the number of ports and valves must remain as originally produced by the manufacturer.

Camshafts may be altered or replaced.

Method of cam drive must remain as originally produced by the manufacturer.

The Ignition/Injection Engine Control system is free.

Maximum of 6 speed transmission.

The type of clutch must remain as originally produced by the manufacturer.

Clutch springs and plates may be altered or replaced.

The generator may be removed.

The electric starter may be removed.

Carburettors may be altered or replaced.

The use of exotic materials is not allowed, (i.e. Ceramics, metal matrix/aluminium beryllium). Unless as fitted by manufacturer to homologated engine.

The oil lubrication system is free.

The engine

Must be positioned in front of the rear wheel in such a way that the centre line of the engine shall not extend more than 160 mm beyond the centre line of the rear wheel track of the motorcycle. By definition the centre line of the engine is the position midway between the centre lines of the outmost cylinders for transverse engines, or the crankshaft for in-line engines.

The drive

shall be transmitted to the ground, only through the rear wheel of the motorcycle. Any electronic *traction control system is forbidden.*

The sidecar

may be placed either side of the motorcycle.

The sidecar must be fixed to the motorcycle in at least three points, if it is not an integral part of the chassis.

Hinged sidecars and steer-able sidecar wheels are forbidden.

The wheel track.

The three wheels may be disposed so as to give two or three tracks. If three tracks are made, then the centres of the tracks of the motorcycle shall not be more than 75 mm apart.

The distance between the fore and aft centre lines of the tracks made by the motorcycle rear and sidecar wheels, must be not less than 800 mm and not more than 1150 mm.

Dimensions.

Overall width.	Maximum 1700 mm (including the exhaust system).
Overall height.	Maximum 800 mm. <i>(with exception of air box- max height 950 mm.)</i>
Overall length.	Maximum 3300 mm.
Overall wheelbase.	Maximum 2300 mm.

Ground clearance.

The ground clearance measured over the entire length and width of the vehicle, race ready, fully loaded with rider, passenger and fuel, must not be less than 65 mm with the handlebars in a straight position. No device is permitted to reduce the 65 mm ground clearance during the course of the race.

Steering.

The motorcycle must be steered by a handlebar. The handlebar *extremities* must not be lower than the front wheel spindle. *(nor more than 500 mm behind the front wheel spindle in the straight-ahead position.)*

(the steering axis must not be offset more than 75 mm from the front wheel centre line).

Throttle control. Must be self-closing when not held by hand.

Suspension.

The suspension of the front wheel must be designed so that under suspension action and in a straight-ahead position, the wheel shall only move vertically and in a single plane relative to the motorcycle. The plane must be in the driving direction.

This must occur without changes to the camber or the tracking.

The vertical travel of the front and rear wheel spindles under suspension action must be at least 20 mm.

The use of active suspensions is forbidden.

Streamlining/Bodywork.

The provision of coach-work or streamlining is optional, but the vehicle must have accommodation for a passenger and the coach-work or streamlining shall not impede complete freedom of movement by the rider or passenger when both riding and when getting on or off the vehicle without the streamlining or any part of it having to be displaced.

The rider nor the passenger must not be covered from above, with the exception of the riders arms and legs, nor may they be attached in any way. It is forbidden to use transparent materials to evade these rules.

(The riders position regardless of whether or not a driving seat is fitted, must be such that the riders feet are positioned behind the knees when looking in the driving direction).

The passenger must be able to lean out on either side of the sidecar. For this purpose the vehicle must be fitted with suitable hand-holds for the passenger to hold onto when leaning out. The hand-holds must be of the CLOSED-LOOP type, a single projection hand-hold is not permitted.

The windscreen edge and the edges of all other exposed parts of the streamlining must be rounded.

Whatever the position of the handlebars there must be a space of at least 20 mm between the streamlining and the ends of the handlebars or other steering systems, including any attachments thereto.

The forward extremity of the streamlining must not project forward in plan beyond the most forward part of the front tyre by more than 400 mm.

The extreme rear edge of the streamlining must be not more than 400 mm beyond the extreme edge of the rear wheel.

There must be no possibility of the streamlining coming into contact with the road surface, impeding the front wheel or steering of the machine in the event of the failure of any individual fairing mounting point.

Vehicles must have a solid and effective protection between the rider and the engine. This protection must prevent direct contact between the rider's body or his clothes and escaping flames or leaking fuel and oil.

Wheel protection.

The rear wheel and sidecar wheel must be enclosed down to the level of the sidecar platform on the inside. The sidecar wheel on the outside must be enclosed down to the height of its axle centre-line. The rear wheel must be enclosed down to the top of the rim flange on the outside.

Aerodynamic Devices.

Spoilers and aerodynamic devices are authorised on condition they do not extend beyond the overall dimensions of the bodywork and are an integral part of the fairing and/or bodywork. These must not exceed the width of the fairing nor the height of the handlebar.

Passenger space.

Minimum dimensions of the passengers space on the platform.

Length 800 mm

Width 300 mm

(both measured 150 mm above the platform).

Height of screen protecting the passenger, 300 mm.

Fuel Tank.

The fuel tank must be sufficiently independently protected from the ground. A non-return valve must be fitted to the petrol tank breather pipe, this pipe must discharge into a suitable catch-tank, minimum capacity 500 ml.

The fuel filler-cap must be fitted in such a way that it does not protrude from the fairing and cannot be torn off in a crash.

Battery.

The battery must be covered in such a way that neither the rider nor the passenger can come directly into contact with the battery or its contents.

Kill-switch.

A cut-out device must be fitted in a prominent position within easy reach of the driver and a marshal. The device must be prominently marked and may be a conventional switch or of a push-button type. If of a push-button type it must "kill" the engine when pushed and not rely on the button being held down for any length of time. This applies up to and including National level only.

For International events, FIM rules apply which requires the use of lanyards.

Fuel pump.

Any electric fuel feed pump must be wired in such a way as to cut out if the engine "kill" device is operated.

Fog lamp.

Sidecars must be equipped for all the duration of the event with a functional rear-facing red anti-fog lamp, measuring a minimum of 30 sq. cm., and producing a minimum of 1500 MCD light.

The light must be installed at least 100 mm off the ground, located in the area between the back wheel and the sidecar platform.

The light must be mounted on a part of the suspended body, (not on any unsuspended parts) and ensure no obstruction from the fairing and/or the passenger.

Exhausts.

The exhaust pipe must not extend beyond the width of the sidecar and the furthest extremity of the exhaust pipe must not exceed the vertical line drawn at a tangent to the rear edge of the sidecar bodywork.

Exhaust pipes fitted to the side of the sidecar must be covered so that it is impossible for the passenger to be burnt. The ends of the exhaust pipes fitted to the sidecar must be so positioned or protected that it is impossible for them to become entangled with another machine.

Oil and coolant containment.

In the area directly below the engine, the oil containment tray must be constructed to hold, in the case of an engine breakdown at least half of the total oil and engine coolant capacity used in the engine (min 5 litres).

The surrounding edges of the tray must be at least 30 mm above the bottom of the tray.

This tray should incorporate a maximum of two holes of 25 mm diameter and be closed with rubber plugs. These holes must remain closed in dry conditions, and only opened when wet-race conditions have been declared by the clerk of the course.

The frontal edge from the oil bay reservoir wall must be extended upwards to arrive just below, (within 20 mm) the exhaust ports of the engine.

Holes for engine mounts (hangers) must be sealed.

From a vertical view, the engine must be located completely inside the oil bay platform.

The rear wheel must be protected from any possible oil spray. To make this protection, the engine and the rear wheel compartment must be separated. This separation must be created by installing a solid divider (wall) running from the top of the inside of the bodywork to the bottom of the oil tray. This divider (wall) must overlap the rear edge of the oil tray down to the bottom.

All machines must use this tray.

*All sidecars shall attach oil-absorbent materials of no less a quality than **3M product T156** or CEP Sorbents product CEP-EP100.*

This material shall be securely fixed to the following areas of the sidecar.

- 1. The entire oil-tray, both the bottom and inside walls of the same. The volume of material used in this area, according to the manufacturer's specifications, shall absorb not less than 3 litres of oil.*
- 2. Any bodywork directly covering the engine.*

In the event that oil is absorbed by the material, it must be replaced before the next track session.

The material must be attached in such a way that it should be easily replaced, yet must not become dislodged whilst on the track, and its effectiveness is not inhibited, i.e. if an adhesive is used it must not clog the material, causing it to lose its absorbent properties.

All absorbent material shall be non-flammable by design.

Oil-lines containing positive pressure, if replaced, must be of metal reinforced construction with swaged or threaded connectors.

Oil coolers must not be mounted on or above the bodywork of the sidecar.

The location of the oil tank and oil cooler should be placed in a location where it is least likely to be damaged in an accident.

Air-box.

An air-box must be used with all four-stroke engines.

The air-box intake size is not restricted. The air-box must completely close around the induction bell-mouths.

All the air inlet into the air-box must be above the height of the lowest point of the bell-mouth edges.

The carburettors or throttle-bodies may be entirely within the air-box.

The engine must have a closed breather system. (See diagram C)

The engine breather must be connected and discharge in the air-box.

The air-box must cover and collect fluids discharged from the bell-mouths.

The air-box must be constructed in such a way as to prevent any oil discharged in the air-box from spilling on the track.

This oil containment must hold a minimum of 1000 cc of oil.

The air-box must be sealed to prevent any spillage of oil or fuel.

Oil catch tanks.

Two-strokes. Where an oil breather pipe is fitted, the outlet must discharge into a catch tank located in an easily accessible position and which must be emptied before the start of the race. The minimum size of catch tank shall be 250 ml for gearboxes. *All four-stroke motorcycles must have a closed breather system. The oil breather line must be connected and discharge in the air box.*

Brakes.

- a) Must have one main system with at least two circuits operating separately.
- b) One of the circuits must work upon at least two of the three wheels.
- c) If one system fails the other must work efficiently.
- d) An emergency system operated by a handlebar lever with a simple circuit operating on either the front or rear wheel of the vehicle.
- e) Dispensation has been given to LCR type machines manufactured from 1990 ref. the auxiliary handlebar operated brake.
- f) A sidecar brake is mandatory.
- g) *Only ferrous brake discs allowed.*