Proposed 2015-2016 Aerodynamic Rules Revisions

Revise the existing T 2.1 words to read as below. The Attachment at the end of this document shows the present words, deletions, amendments and additions.

T2.1 Vehicle Configuration
The vehicle must be open-wheeled and open-cockpit (a formula style body) with four (4) wheels that are not in a straight line.
Definition of "Open Wheel" – Open Wheel vehicles must satisfy all of the following criteria:
1) The top 180 degrees of the wheels/tires must be unobstructed when viewed from vertically above the wheel.
2) The wheels/tires must be unobstructed when viewed from the side.
3) No part of the vehicle may enter a keep-out-zone defined by two lines extending vertically from positions 75 mm in front of, and 75 mm behind, the outer diameter of the front and rear tyres in the side view elevation of the vehicle, with the tyres steered straight ahead. This keep-out-zone will extend laterally from the outside plane of the wheel/tyre to the inboard plane of the wheel/tyre. See figure "Keep Out Zones" below.
4) Must also comply with the dimensions/requirements of Article 9 Aerodynamic devices.
Note: The dry tires will be used for all inspections

ARTICLE 9: AERODYNAMIC DEVICES

T9.1 Aero Dynamics and Ground Effects - General
All aerodynamic devices must satisfy the following requirements:

T9.2 Location - Front Mounted Devices
T9.2.1 In plan view, no part of any aerodynamic device, wing, under tray or splitter can be:
a. Further forward than 700 mm (27.6 inches) forward of the fronts of the front tires
b. Wider than the outside of the front tires measured at the height of the hubs.
T9.2.2 When viewed from the front of the vehicle the part of the front wheels/tyres that are more than 250 mm (9.8 inches) above ground level must be unobstructed by any part of the aerodynamic device or other bodywork, with the exception of any vertical surfaces (end plates) less than 25 mm in thickness.
Note: 9.2.1 and 9.2.2 apply with the wheels in the straight ahead position.

T9.3 Location Rear Mounted Devices:
T9.3.1 In plan view, no part of any aerodynamic device, wing, undertray or splitter can be:
a. Further rearward than 250 mm (9.8 inches) rearward of the rear of the rear tires and no further forward than the Main Roll Hoop (excluding undertrays, which may be forward of the Main Roll Hoop).
b. Wider than the inside of the rear tires, measured at the height of the hub centreline.
T9.3.2 In side elevation, no part of the rear wing or aerodynamic device (including end-plates) may be higher than 1.2 metres above the ground when measured without a driver in the vehicle.

T9.4 Location – General

Between the centrelines of the front and rear wheel axles, an aerodynamic device (e.g. undertray) may extend outboard in plan view to a line drawn connecting the outer surfaces of the front and rear tyres at the height of the wheel centres. The keep out zones of T2.1 (3) must not be infringed.

T9.5 Minimum Radii of Edges of Aerodynamic Devices

T9.5.1 All forward facing wing edges, including wings, end plates, Gurney flaps, wicker bills and undertrays that could contact a pedestrian, must have a minimum radius of 5 mm (0.2 inches) for all horizontal edges and 3 mm (0.12 inches) for vertical edges (end plates). The 3/5mm radius requirements must be achieved with permanently affixed components and with specific design intent to meet this radius requirement.
For example, pushed on pieces of split tube relying on friction for retention, are not a satisfactory engineering method of achieving the radii.

T9.6 Ground Effect Devices

No power device may be used to move or remove air from under the vehicle except fans designed exclusively for cooling. Power ground effects are prohibited.

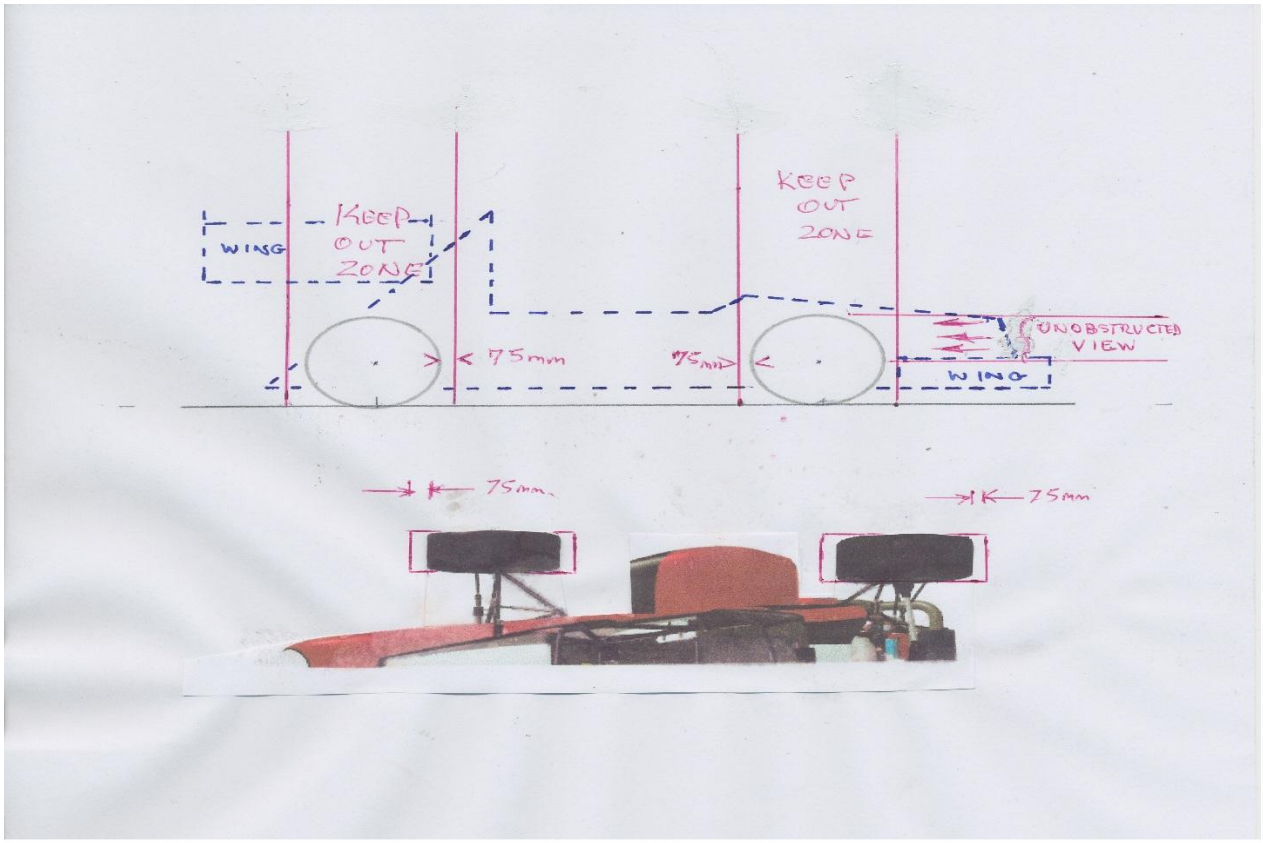
T9.7 Aerodynamic Devices Stability and Strength

T9.7.1 All aerodynamic devices must be designed such that the mounting system provides adequate rigidity in the static condition and such that the aerodynamic devices do not oscillate or move excessively when the vehicle is moving. In Technical Inspection this will be checked by pushing on the aerodynamic devices in any direction and at any point.

Note: The following should be seen as guidance as to how this rule will be applied but actual conformance will be up to technical inspectors at the respective competitions. The overall aim is to reduce the likelihood of wings detaching from cars whilst they are competing.
1. If any deflection is significant, then a force of approximately 200N can be applied and the resulting deflection should not be more than 25mm and any permanent deflection less than 5mm.
2. If any vehicle on track is observed to have large, uncontrolled movements of aerodynamic devices, then officials will have the right to Black Flag the car for inspection and the car may be excluded from that run and until any issue identified is rectified.

T9.7.2 The wing or wings must be mounted in such positions, and sturdily enough, that any accident is unlikely to deform the wings or their mountings in such a way to block the driver's egress.

Keep Out Zones



Attachment showing the Deletions/Additions from Existing Rules.
Red indicates deletions and blue the new/additional words.

T2.1 Vehicle Configuration
The vehicle must be open-wheeled and open-cockpit (a formula style body) with four (4) wheels that are not in a straight line.
Definition of "Open Wheel" – Open Wheel vehicles must satisfy all of the following criteria:
1) The top 180 degrees of the wheels/tires must be unobstructed when viewed 68.6mm (2.7 inches) above the plane formed by the tops of the front and rear tires. from vertically above the wheel.
2) The wheels/tires must be unobstructed when viewed from the side.
3) No part of the vehicle may enter a keep-out-zone defined as a circle 68.6mm (2.7 inches) larger radially than the outside diameter of the tire with the tires steered straight ahead with a 77kg (170 pound) driver seated in the normal driving position. The inner sidewall of the tire (vehicle side) is not included in this assessment. by two lines extending vertically from positions 75 mm in front of, and 75 mm behind, the outer diameter of the front and rear tyres in the side view elevation of the vehicle. This keep-out-zone will extend laterally from the outside plane of the wheel/tyre to the inboard plane of the wheel/tyre.
See the figure below.

Note: The dry tires will be used for all inspections. For technical inspection the keep-out-zone may be inspected by use of a tennis ball fastened to the end of a stick. The ball will

have the 68.6mm (2.7 inches) diameter and must be able to be freely moved around the outside of the tire without contacting any portion of the car other than the tire.

ARTICLE 9: AERODYNAMIC DEVICES

T9.1 Aero Dynamics and Ground Effects - General
All aerodynamic devices must satisfy the following requirements:
T9.2 Location - Front Mounted Devices
T9.2.1 In plain plan view, no part of any aerodynamic device, wing, under tray or splitter can be:
a. Further forward than 762 700 mm (30 27.6 inches) forward of the fronts of the front tires
b. No further rearward than 250 mm (10 inches) rearward of the rear of the rear tires.
c. No Wider than the outside of the front tires or rear tires measured at the height of the hubs. whichever is wider.
T9.2.2 When viewed from the front of the vehicle and in side elevation the part of the front wheels/tyres that are more than 250 mm (9.8 inches) above ground level must be unobstructed by any part of the aerodynamic device, with the exception of any vertical surfaces (end plates) less than 25 mm in thickness.
Note: 9.2.1 and 9.2.2 apply with the wheels in the straight ahead position

T9.3 Location Rear Mounted Devices:
T9.3.1 In plan view, no part of any aerodynamic device, wing, under tray or splitter can be:
a. Further rearward than 250 mm (9.8 inches) rearward of the rear of the rear tires and no further forward than the Main Roll Hoop (excluding undertrays, which may be forward of the Main Roll Hoop).
b. Wider than the inside of the rear tires, measured at the height of the hub centreline.

T9.3.2 In side elevation, no part of the rear wing or aerodynamic device (including end-plates) may be higher than 1.2 metres above the ground when measured without a driver in the vehicle.

T9.4 Location – General
Between the centrelines of the front and rear wheel axles, an aerodynamic device (e.g. undertray) may extend outboard in plan view to a line drawn connecting the outer surfaces of the front and rear tyres at the height of the wheel centres. The keep out zones of T2.1 (3) must not be infringed.

T9.3 T9.5 Minimum Radii of Edges of Aerodynamic Devices
T9.3.1 **T9.5.1** All forward facing wing edges including wings, end plates, Gurney flaps, wicker bills and undertrays that could contact a pedestrian must have a minimum radius of 1.5 mm (0.060 inch). 5 mm (0.2 inches) for all horizontal edges and 3 mm (0.12 inches) for vertical edges (end plates). The 3/5mm radius requirements must be achieved with permanently affixed components and with specific design intent to meet this radius requirement.
For example, pushed on pieces of split tube relying on friction for retention are not a satisfactory engineering method of achieving the radii.

T9.4 T9.6 Ground Effect Devices
No power device may be used to move or remove air from under the vehicle except fans designed exclusively for cooling. Power ground effects are prohibited.

T9.5 Driver Egress Requirements
T9.5.1 Egress from the vehicle within the time set in Rule T4.8 "Driver Egress," must not require any movement of the wing or wings or their mountings. NOTE: This rule was probably redundant previously but is not required with the requirements now proposed.

T9.7 Aerodynamic Devices Stability and Strength
T9.7.1 All aerodynamic devices must be designed such that the mounting system provides adequate rigidity in the static condition and such that the aerodynamic devices do not oscillate or move excessively when the vehicle is moving. In Technical Inspection this will be checked by pushing on the aerodynamic devices in any direction and at any point.

Note: The following should be seen as guidance as to how this rule will be applied but actual conformance will be up to technical inspectors at the respective competitions. The overall aim is to reduce the likelihood of wings detaching from cars whilst they are competing.
1. If any deflection is significant, then a force of approximately 200N can be applied and the resulting deflection should not be more than 25mm and any permanent deflection less than 5mm.
2. If any vehicle on track is observed to have large, uncontrolled movements of aerodynamic devices, then officials will have the right to Black Flag the car for inspection and the car may be excluded from that run and until any issue identified is rectified.