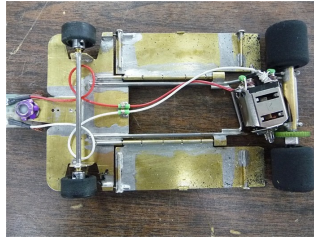


# IRRA™

*International Retro Racing Association*

## Retro Anglewinder Rules



### A. Simplified Specification Reference

- **Total Weight** = 100 grams minimum
- **Chassis Width** = 3.125" maximum
- **Body Width** = 3.250" at the wheel arches
- **Body Thickness** = .010" with .007" minimum on sides
- **Track Width, F & R** = 3.125"
- **Chassis Clearance, F & R** = .015" / .050" minimum
- **Front Tire Diameter** = .750" minimum
- **Front Tire Width** = .225" minimum
- **Rear Tire Diameter** = .790" minimum
- **Rear Tire Width** = .810" maximum
- **Motor Type** = PS 4002B, PS4002B-B, PS4002, JK Hawk Retro FK, Topline or JK Falcon 7, TSR D3, Slick 7
- **Body Height** = 1.375" maximum
- **Front Grill** = .063" (1/16") except Ti22
- **Spoiler Size / Height** = no wider than body; .500" maximum
- **GTC body** = Rear window must be painted, tinted, or covered with interior
- **Driver Figure / Interior** = Fully molded, minimum two-color, presentably / realistically painted, no paper interior

### B. General Specifications

1. **Maximum Overall Chassis Width:** 3.125" (79.38mm), measured across any part of the chassis, as well as across the front and rear axles.
2. **Maximum Body Width:** 3.250" (82.55mm), measured at the front and rear wheel arches.
3. **Maximum Rear Tire Width:** 0.810" (20.57mm).
4. **Minimum Rear Tire Diameter:** 0.790" (20.64mm) across the full width of the tire.
5. **Minimum Front Tire Width:** 0.225" (5.72mm).
  - 5a. Wheels with O-ring 'tires' are prohibited.

5b. The front tire contact patch must touch the track across the full width of the tire (i.e. no coning/angling or knife-edging is allowed).

5c. Tire edges may be rounded to a maximum 1/16" radius.

6. **Minimum Front Tire Diameter:** 0.750" (19.05mm) across the full width of the tire.

7. **Minimum Rear Chassis Clearance:** 0.050" (1.27mm).

7a. The entire motor bracket, gear, and all parts of the chassis (including pans) aft of the motor mounting face of the bracket must meet this clearance.

7b. Clearance will be measured with front and rear tires sitting flat on the test block with the guide unsupported.

8. **Minimum Front Chassis Clearance:** 0.015" (0.38mm)

8a. This will be measured at the most forward part of the chassis.

8b. Clearance will be measured with front and rear tires sitting flat on the test block with the guide unsupported.

**Axles (Front & Rear):** 3/32" (2.38mm) minimum diameter, one piece, solid steel.

9a. Hollow axles are not allowed.

9b. Axles may only be flattened in the areas where the wheels and gear are secured.

9. **Bushings/Bearings:** Oilite/bronze bushings or ball bearings may be used in the front and/or the rear.

10. **Minimum Weight:** 100 grams ready to race.

11. **Drive Type:** Anglewinder.

12. **Drive Gears:** Any drive gear and ratio may be used.

13. **Maximum Front Axle Play:** 0.125" (3.18mm), as part of the maximum front track width.

14a. At no time can tires extend out past the body.

14. **Maximum Rear Body Height:** 1.375" (34.93mm) measured with the car on all four wheels on a tech block (unsupported by the guide flag), from the tech block surface to the top of the highest point of the rear of the body, excluding any add-on spoiler.
- 15a. Severe raking of the body for aerodynamic effect is not allowed.
15. All chassis parts, including the guide flag, must be covered by the unmodified body.
16. The wheels shall be located in relation to the wheel arches in the body.
17. **Tires – Rear:** Any commercially-available black natural rubber tire, chemically-treated or untreated, on any size hub.
- 18a. Speed Rubber is prohibited.
- 18b. Tires may not be changed during a race. Should a racer encounter a damaged tire/wheel (stripped screw, bent hub, or chunked tire), the racer will be afforded the opportunity to make the repair under the green and present the car to the tech inspector at the end of the heat for checking before the racer will be allowed to continue.
- 18c. For those races where there is a move-up from one main to another, tires can be changed and the car will go through a full tech inspection.
- 18d. Those racers making a move-up from one main to another and not choosing to change tires will still be subject to tech inspection for legal tire diameter and chassis clearance.
18. **Tires – Front:** Must be made of two pieces, i.e. a wheel and a tire.
- 19a. Front wheels may be made of any material and can have any size hub (as long as the front wheel and tire dimensions listed elsewhere in these rules are observed).
- 19b. Front tires must be glued to the wheels and be made of black rubber; only SBR, Wonder, and natural rubber type materials are acceptable. Tires made from, or coated with, silicone, urethane, or other similar compounds, may not be used.
- 19c. Front tires may be coated with cyanoacrylate adhesive ("Super Glue") or nail polish.
- 19d. Tires may be cleaned during the race, in between heats, and during lane changes. Racers and their pit crews may **only** clean tires using the supplied cleaner (lighter fluid/naphtha) provided by the hosting raceway/race director/series director. The approved cleaner and supplied rag(s) that will be placed in a designated area prior to the race and tires must be cleaned in that designated area **only**.

Any racer transferring tire cleaner to the track surface will be disqualified.

Tire treatments such as Zip Grip, Sticky Fingers, or any other tire treatment may only be applied before the car is teched-in. No treatments will be allowed at any time after tech. The rear tires must be dry when the car is presented at tech.

Any racer or pit crew found applying tire treatments after tech, or cleaning tires with anything other than the supplied cleaner and rags, will result in racer disqualification.

## C. Chassis

1. **Chassis Type:** Any personally-built or commercially-available scratchbuilt chassis in kit form or built conforming to these specifications is allowed.
2. **Chassis Materials:**
  - 2a. Brass: sheet, rod, and tube are allowed. Pans, if used, must be brass.
  - 2b. Steel: Wire, rod, and tube are allowed. Steel sheet is allowed for guide tongues only.
  - 2c. The use of spring steel is not allowed
  - 2d. Steel commercial guide tongues are allowed and are limited to a maximum 1" (25.4mm) total width and 1.50" (38.1mm) total length.
  - 2e. No other materials are allowed.
  - 2f. Chassis parts, such as pans, brackets, guide tongues, etc., that are made using EDM, laser, or water-cutting techniques are allowed only if they are individual commercially-available components or components of chassis kits (i.e. these techniques may not be used in the private manufacture of one-off components).
  - 2g. Each car must have a brass rear axle tube that can be notched to clear the motor.
  - 2h. No "pillow block" (bearing holders made where only a piece of brass or steel holds the bearing place) type rear ends allowed.
  - 2i. Motors may be mounted with or without a bracket. If a bracket is used, it must be made of brass.
  - 2j. The motor can or endbell cannot be notched or cut.
  - 2k. Pre-made steel motor to axle braces are not allowed.
  - 2l. Floating pin tubes inside another tube are allowed.
  - 2m. Pieces of steel used for guide tongues are limited to a maximum 1" (25.4mm) total width and 1.50" (38.1mm) total length. Steel tongues cut from the flexi and wing car chassis are not considered "commercial guide tongues" and are no longer allowed. All legal steel tongues must

be purpose built as steel tongues and meet all IRRA™ measurement specifications.

2n. The joining of brass sheet, plate, or strip parts via tab and slot or "keyed" construction is not permitted.

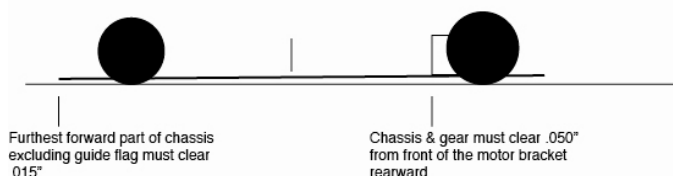
2o. Main chassis rails constructed of round steel or brass wire maybe ground or sanded flat on the bottom, but no more than 20% of the rail diameter may be removed.

2p. Wire or tubing rails must connect the front and rear sections of the chassis. Using metal strip for this purpose is not permitted. A rail is defined as that which connects the motor bracket to the front of the chassis.

2q. The bottom surface of the whole chassis (including the motor, but excluding the motor seal and guide flag) must be flat and straight in all directions, with no bowing or drooping of any parts below the plane defined by the front and rear clearance specifications. This will be checked by applying a straight edge to the underside of the car both across the frame and along the length of the frame.

No part of chassis including pans, hinges, main rails, nose piece, motor (excluding seal), etc may extend below the plain created by the .015"-.050" tech points.

Tape is not allowed on bottom of chassis at any point.



3. **Hinged Movements:** Hinges are unrestricted/unlimited.
  - 3a. The number of individual hinges is not restricted.
  - 3b. Centerline hinges are **not** allowed.
4. **Front axle:** A single straight, 3/32" (2.38mm) minimum diameter, one-piece front axle is required, carrying both front wheels. The axle may be fixed or in a tube. No hinged front wheel movements are allowed (i.e. no "L" arms). Front wheels may rotate independently.
5. **Guide:** A single guide flag is allowed, centered on the longitudinal axis of the chassis (i.e. no sideways "free float" or offset) and with a blade no larger than .086" (2.20mm) wide x 1.060" (27.18mm) long.
6. **Tape/Lead:** Lead weight may be added to a chassis but may only be affixed to the top side of the chassis. Strapping or other tape to control or restrict movements is allowed but may only be affixed to the top side of the chassis.

Taping a damaged body to a pan to finish a heat is now permitted. The body must be repaired, and the tape removed, before the start of the next heat of racing. Otherwise, the prohibition against the use of tape of any kind on the bottom of the chassis remains in place.

## D. Motor

1. **Motor types:** May use any one of the following motors, which must remain unopened and unmodified.
  - **Topline or JK Falcon 7**
  - **JK Hawk Retro FK**
  - **Pro Slot Euro Mk 1 4002, Sealed** with Chinese arm. May be refurbished by an IRRA™ Service Center
  - **Pro Slot Euro Mk 1 4002B and 4002B-B**, sealed, with American arm, with regular bushing or ball bearing in can. May be refurbished by an IRRA™ Service Center
  - **TSR D3**
  - **Slick 7 Mini Brute**

**Note:** No other motors will be allowed unless approved by the IRRA™ and added to the approved motor list. **Please refer to the Motor Rules for more information on motors.**

2. At designated large IRRA™ scheduled races, the track owner may elect to utilize a hand-out motor system, using one of the approved motors. This will be announced well in advance and ample time will be allowed on the day of the race for the racer to obtain the motor and install it. If a race for this class is conducted using handout motors then the racer must use the motor(s) assigned to him/her.
3. **Exclusion Clause:** Clear violation of the motor-tampering rule will result in permanent exclusion from future IRRA™ events of any kind.
  - 3a. Racers will be required to sign a tech sheet giving permission for the Race Director, at his discretion, to tear their motors down for inspection to prove legality.
  - 3b. If a motor is deemed illegal due to unapproved modifications (including, but not limited to, incorrect armature, bushing alterations, magnet shimming, magnet change, timed brush hoods, etc.), the racer will be disqualified from the event and future events until reinstated by IRRA™ officials.
  - 3c. If the motor is legal and can be refurbished, it will be sent to an approved IRRA™ refurbishing program at no cost to the racer. Non-refurbishable motors found legal will be replaced at no cost to the racer.

3d. Racers wishing to have their motor refurbished for continued use can participate in the IRRA™ Motor Refurbishing Program.

4. A motor may not be changed after tech inspection or during a race except as follows:
  - 4a. For those races where there is a move-up from one main to another, motors can be changed and the car will go through a full tech inspection.
  - 4b. Should a racer's hand-out motor fail during the qualifying run or the warm-up, the racer will be given the opportunity to change to another hand-out motor without penalty, if a second hand-out motor purchased by the racer is available.

## E. Body

1. This class can have either the approved Can-Am bodies used or the GT Coupe bodies used as determined prior to a scheduled race and announced in advance. The two types of bodies are not allowed in the same race.

All approved Can-Am and GT Coupe bodies are listed in the "Approved Body Lists" section. All bodies must be representative of pre-1970 cars.

1a. Bodies may not be any less than .007" thick on the sides. Any body found to be flimsy or a detriment to marshaling will need to be corrected by the racer. Tape or body armor may be used to achieve the desired side thickness.

2. **Body style:** Racers are encouraged to present cars with scale realism. Bodies must be those on the approved body list.

2a. No "flattened" or "aerodynamically-improved" bodies allowed (i.e. no molded-in spoilers, wings, etc., that were not on the original full-size car or original mold). Note: molded-in spoilers may not exceed the allowed specification governing the maximum width of the body.

2b. Front wheel arches must be cut out. Rear wheel arches may be left closed if the original full-size car ran with closed wheel arches.

2c. Bodies must be presentably-painted and carry at least three racing numbers. To further clarify this regulation, all bodies must be fully opaque on all sides except for those areas deemed to be windows. Windows may be tinted. The term opaque means covered by paint, tape, or other suitable material such that a finger is not visible through the paint or other covering under normal lighting.

2d. No part of the chassis may be seen when looking down on the car from above. Legal openings, such as air vents, etc., may be cut out.

2e. There should be a minimum 1/16" (1.59mm) vertical component and/or part of the grill along the front edge of the body unless this element was not on the original car (example: Ti22).

2f. Area of body behind rear wheel wells must not project below the center of rear axle.

3. **Spoilers and Air Control:** A single, flat plastic spoiler set at any angle may be added to the rear of the body only.

3a. The spoiler's length is limited to a maximum of 1/2" (12.7mm) from the rear edge of the body and must be no wider than the outer edges of the body.

3b. No additional bends are allowed except for the one used to set the initial angle.

3c. No side dams of any type are allowed.

3d. Front diaphragms are not allowed.

3e. High-mounted wings are allowed if they are used on the original full-size car. Such wings must be securely attached to the body and/or chassis.

3f. No notches can be cut in the spoiler above the bend line.

Here is an illustration. The .500" shown is the maximum allowed height of the spoiler from the edge of the body. This is where the bend line in the spoiler is positioned.

**Straight - no holes - on the section above the bend line.**



**Cut outs above the bend line not allowed. No punched holes.**



4. **Cockpit:** All bodies must carry a painted (at least two colors), fully-molded three-dimensional interior comprising a driver (helmet, shoulders, and arms), a steering wheel, and cockpit representation.

4a. Interiors must be presentably painted and realistically detailed. No paper interiors.

4c. If a Can-Am body does not have a molded-in driver, then the body must be totally cut out so the interior is in full view.

4d. Bodies with molded in interiors must still have something to cover the view of the frame through the window.