

209 Speedway Karters

Junior Flat Kart Rules

Age Requirement: Minimum age 8 to 14. Age is subject to the Race Director's Approval.

1.0 Engine Rules:

- A. Engine must be able to idle on its own in staging area.

1.1 Rules & Intent:

- A. This class is intended for young drivers to learn the sport of dirt oval racing.
- B. Birth Certificates are required for all minor drivers.

1.2 Approved engines:

- A. Ducar 224cc with a .550 Blue Restrictor plate. See section 2.0 Ducar 224cc Engine Components.
- B. Predator 212cc with a .550 Blue Restrictor plate. NO ghost or hemi. See 1.3 Predator 212cc Engine Components.

1.3 Predator 212cc Engine Components:

- A. Must be original, unmodified OEM components unless otherwise specified.
 - OEM defined as (original equipment manufacturer) unaltered in any way.
 - **THIS MEANS NO ALTERATIONS TO ANY INTERNAL PARTS ALLOWED** (Any exceptions are listed in this document only).
- B. The Predator 212 cc engine cannot use any component from the Predator 212cc Hemi engine.
 - Must maintain dished pistons from the Predator 212 cc engine.
- C. Removal of unnecessary OEM items (see specific sections for details & replacements).
 - Exhaust
 - Fuel Tank
 - Air Filter

- Governor
- Low oil switch / sensor

1.4 Exhaust System:

- OEM exhaust may be removed.
- Exhaust Header is OPEN.
- For safety reasons, if the header extends past rear bumper, it may be cut at the flange and turned within rear bumper.

1.5 Carburetor:

- Must be OEM Huayi or Ruixing or Tillotson PK-1A. NO SP, H series Tillotson or Slide carbs allowed.
- A Blue .550 restrictor plate is required to be mounted between the isolator and the carburetor. NO alterations or modifications to the restrictor is allowed. The restrictor may be checked in post tech with a no-go gauge.
- Choke must be as supplied from the factory, no modifying of carburetor/choke shafts and or blades in any way.
- Stock emulsion tube must be used and unaltered. Center hole .069" no go. 4 holes in bottom section max and must have 20 holes in middle section. All side holes in e-tube .036" no go. Minimum e-tube length is 1.092". Minimum outside diameter of the e-tube at any point is .154". Mounting flange of carb to e-tube is .970". Minimum protrusion of the e-tube into the venturi must be checked by the no go gauge. Huayi carb .488 no go, Ruixing carb .479" no go.



- Venturi may be machined to spec. Venturi checked with a .615" no-go gauge. No polishing permitted and all transitions must remain stock in and out of venturi. Rear carb bore .751 no go.
- Maximum jet sizes are .025" low speed jet and .039" high speed jet. No use of Loctite or other materials on high-speed jets or damaging threads are permitted in any attempt to lock the jet in a non-stock location.
 - No alterations to any other air bleed passages.

- G. Stock air filter may be removed and replaced with an aftermarket air filter adapter not to exceed 1.375" in thickness.
- H. May have pulse type fuel pump, ¼" pipe tap vacuum pulse fitting from valve cover only. No oversize drilling allowed.

- I. Carburetor dimensions to be checked with go/no go gauge.
 - a. Left low speed idle circuit air hole at choke side of carb .062" max., .053 must go.
 - b. Right high-speed circuit air hole at choke side of carb .045" max., .040 must go.

 - c. Throttle shaft .115" minimum.
 - d. Throttle butterfly screw minimum length .305". Screw must remain stock as produced with no alterations allowed to make minimum length.
 - e. Throttle butterfly .037" minimum with check with veneer gauge or micrometer.
 - f. Four low side circuit holes at throttle butterfly .031" no go.

- J. Plastic carburetor isolator must be OEM, unmodified and installed in its original location.

- K. All air/fuel entering engine must pass through the isolator. Subject to spray test (WD 40 or similar) and/or hose to check for leakage or introduction of air into the intake track. When performing the spray test the engine may stall or speed up, both indicate that the engine has failed the test.

- L. No other spacers, manifolds, or pulse adapters may be used.

1.6 Connecting Rods:

- A. Must be OEM unaltered rods only.

1.7 Pistons:

- A. Must be OEM unaltered dished piston only.
 - Standard bore only.

1.8 Crankshaft:

- Standard OEM item with stock stroke length of 2.165" (55mm) plus or minus .005". No alterations permitted.

1.9 Flywheel and Ignition Coil:

- A. Must use stock ignition coil, plug wire, and resistor spark plug boot.
- B. Spark plug is open.
- C. No off-set key must be a factory unaltered key.
- D. Aluminum Flywheels are allowed from the below approved flywheel list.
- E. 3.3-pound minimum weight.
- F. No flywheel modifications allowed.
- G. Approved flywheel list:
 - OEM Cast Iron.
 - ARC: 6619, 6625, 6626, 6695.
 - Race Seng: RSP13075, RSP13077.
 - King: Billet Steel, Billet Aluminum Slipstream.
 - Dyno: PVL aluminum flywheel.

1.10 Cylinder Head:

- A. OEM unaltered heads only, no modifications allowed.
- B. The outside face of the valve may not be below the floor of the combustion chamber. (i.e., don't sink the valves.)
- C. Head gasket required,
 - Type and thickness are open.

1.11 Valve Train:

- A. OEM push rods, push rod guide plate, retainers, springs, keepers, stock stamped steel pedestal mounted 1:1 rocker arms and adjusters only.
- B. Rocker arm minimum overall length 2.145". Minimum thickness of the upper valve stem end of the rocker arm is minimum .030". Surface finish of the contact area of the rocker arm at the valve stem **ONLY** is non tech.

- C. OEM valves with 45 seat angles only. No lightening or polishing.
- D. OEM valve springs only with a maximum spring diameter of .798” and wire diameter .073” maximum. Maximum spring tension of 10.8 lbs. at .850” compressed height. Each spring is also to be tested using a .750 height gauge and a .250 square no go gauge to check the center spacing of the spring coils. Once inserted into the plate gauge, the spring coils are checked from both sides with the .250 no go gauge. The .250 no go gauge must be parallel to the spring wire and perpendicular to the center of the spring when checking. The .250 no go gauge must pass the check on at least one side of the spring. If the .250 pin does not enter either side the spring is deemed a legal spring. If the .250” pin does not enter one side but does enter the other side, the spring is deemed a legal spring. If the .250 pin enters both sides the spring is deemed ILLEGAL. The springs ends must be parallel within .040” when the height of the spring is checked with a veneer gauge. One side is checked, and the opposite side (180 degrees) is checked. Both sides must be within .040 of each other. SPRINGS MUST PASS ALL CHECKS.
- E. Installed height of spring is .815” minimum with any spacers or seals.

1.12 Camshaft:

- A. CL 1 cam, in stock condition, is the only cam shaft allowed.
- B. Dyno tech sheet will be used for tech.
- C. Lift readings are taken with a dial indicator on the valve spring retainer as run.
- D. Duration readings are taken with a dial indicator off the pushrods.

<u>Non-Hemi</u>	<u>Intake</u>	<u>Exhaust</u>
Open:	43.0 BTDC	80.5 BBDC
Close:	76.5 ABDC	41.0 ATDC
Lift:	.224”	.231”
C/L:	108.5 ATDC	110.0 BTDC
DUR @ 50:	219.0 Deg	222.5 Deg
DUR @ 200:	85.5 Deg	98.0 Deg

2.0 DUCAR 224cc Engine Components:

- A. Must be original, unmodified OEM components unless otherwise specified.
 - OEM defined as (original equipment manufacturer) unaltered in any way.
 - **THIS MEANS NO ALTERATIONS TO ANY INTERNAL PARTS ALLOWED**
(Any exceptions are listed in this document only).
- B. Removal of unnecessary OEM items (see specific sections for details & replacements).
 - Exhaust
 - Fuel Tank
 - Air Filter
 - Governor
 - Low oil switch / sensor

2.1 Exhaust System:

- D. OEM exhaust may be removed.
- E. Any aftermarket pipe may be used.
- F. For safety reasons... if header extends past the rear bumper, it may be cut at the flange and turned within rear bumper.

2.2 Carburetor:

- A. Must be OEM SP, Huayi/Ruixing or Huayi/Ruixing type, or Tillotson PK-1A only. No slide type carburetors.
- B. A Blue .550 restrictor plate is required to be mounted between the isolator and the carburetor. NO alterations or modifications to the restrictor is allowed. The restrictor may be checked in post tech with a no-go gauge.
- C. Choke must be as supplied from the manufacturer, no modifying of carburetor throttle or choke shafts and blades in any way.
- D. Emulsion Tube is open except must be a Huayi or Ruixing type.
- E. Venturi may be machined to spec. Venturi checked with a .615" no-go gauge. No polishing permitted and all transitions must remain stock in and out of venturi. Rear carb bore .751 no go.

- F. Jet sizes are open. No use of Loctite or other materials on high-speed jets or damaging threads are permitted in any attempt to lock the jet in a non-stock location.
- G. Stock air filter may be removed and replaced with an aftermarket air filter adapter not to exceed 1.375" in thickness.
- H. May have pulse type fuel pump, ¼" pipe tap vacuum pulse fitting from valve cover only. No oversize drilling allowed.
- I. Carburetor dimensions to be checked with go/no go gauge.
 - a. Left low speed idle circuit air hole at choke side of carb .062" maximum.
 - b. Right high-speed circuit air hole at choke side of carb .045" maximum.
 - c. Throttle shaft .115" minimum, except SP.
 - d. Huayi/Ruixing, Huayi/Ruixing type, and Tillotson throttle butterfly screw minimum length .305". Screw must remain stock as produced with no alterations allowed to make minimum length.
 - e. Throttle butterfly .037" minimum.
 - f. Predator OEM SP carburetor shaft, butterfly, and butterfly screw are non tech ONLY if the mushroom end on the butterfly screw remains intact and unaltered as supplied by the manufacturer. Alternate screws or signs of original butterfly screw removal are subject to full tech and the throttle butterfly screw must meet the minimum length of .305".
 - g. Four low side circuit holes at throttle butterfly .031" no go.
- J. Plastic carburetor isolator must be OEM, unmodified and installed in its original location.
- K. All air/fuel entering engine must pass through the isolator. Subject to spray test (WD 40 or similar) and/or hose to check for leakage or introduction of air into the intake track. When performing the spray test the engine may stall or speed up, both indicate that the engine has failed the test.
- L. No other spacers, manifolds, or pulse adapters may be used.

2.3 Connecting Rods:

- B. OEM connecting rod or ARC 6773 3.308" billet connecting rod only.

2.4 Pistons:

- B. OEM standard 70mm bore three ring dished predator 224 pistons only.

2.5 Crankshaft:

- Standard OEM item with stock stroke length of 2.283” (58mm) plus or minus .005".
No alterations permitted.

2.6 Flywheel and Ignition Coil:

- A. Must use stock ignition coil, plug wire, and resistor spark plug boot.
- B. Spark plug is open.
- C. No off-set keys. Flywheel key must be stock OEM in stock OEM position.
- D. Aluminum Flywheels are allowed from the approved flywheel list below.
- E. 3.3-pound minimum weight.
- F. No flywheel modifications allowed.
- G. Approved flywheel list:
 - OEM Cast Iron.
 - ARC: 6619, 6689.
 - SK200 rev wheel, SR Silver rev wheel (former Raceseng products).
 - King: Billet Steel, Billet Aluminum Slipstream.
 - Dyno: PVL aluminum flywheel.

2.7 Cylinder Head:

- A. Predator OEM YD106 casting, YD74 casting, JT21 casting, or other GX200 Series clone head with as manufactured 27mm intake valve and 25mm exhaust valve with 5.5mm valve stems.
- B. No modifications to head allowed.
- C. The outside face of the valve may not be below the floor of the combustion chamber. (i.e., don't sink the valves.)
- D. Head gasket required, type and thickness are open.

2.8 Valve Train:

- A. OEM push rods, push rod guide plate, retainers, springs, keepers, exhaust valve lash cap, stock stamped steel pedestal mounted 1:1 rocker arms and adjusters only.
- B. Rocker arm minimum overall length 2.145". No grinding , polishing or removal of material in any form from the rocker arms in any area i.e.: cannot remove material from tips of rocker arms to adjust lift. The rocker arms are required to be run as manufactured in this class.
- C. OEM valves with 45 seat angles only. No lightening or polishing.
- D. OEM valve springs only with a maximum spring diameter of .798" and wire diameter .073" maximum. Maximum spring tension of 10.8 lbs. at .850" compressed height. Each spring is also to be tested using a .750 height gauge and a .250 square no-go gauge to check the center spacing of the spring coils. Once inserted into the plate gauge, the spring coils are checked from both sides with the .250 no go gauge. The .250 no go gauge must be parallel to the spring wire and perpendicular to the center of the spring when checking. The .250 no go gauge must pass the check on at least one side of the spring. If the .250 pin does not enter either side the spring is deemed a legal spring. If the .250" pin does not enter one side but does enter the other side, the spring is deemed a legal spring. If the .250 pin enters both sides the spring is deemed ILLEGAL. The springs ends must be parallel within .040" when the height of the spring is checked with a veneer gauge. One side is checked, and the opposite side (180 degrees) is checked. Both sides must be within .040 of each other. SPRINGS MUST PASS ALL CHECKS.
- E. NO shimming of valve springs is permitted.
- F. Valve stem seal is required on the intake valve only. A valve seal on the exhaust valve stem is NOT allowed.
- G. Exhaust valve lash cap min height is .150". The lash cap height may be machined for height only to adjust exhaust valve lift, NO chamfering of edges. The lash cap minimum diameter is .330" NO machining is permitted to reach the minimum diameter.
- H. Push Rod must be OEM unaltered. The pushrod weight is 9 grams minimum.

2.9 Camshaft:

- A. Stock OEM Ducar 224 all steel cam on the Ducar engine or Predator 224 plastic gear cam on the Predator engine are the only cam shafts allowed. The cam cores shall not be

reground in any way or any material removed from them. Original lobe profile must be retained.

- B. Readings are taken with a dial indicator on the valve spring retainer as run.
- C. Maximum Intake Lift is .226”
- D. Maximum Exhaust Lift is .229”
- E. Rocker arms are required to be used as manufactured. NO removal of material is allowed to adjust lift except exhaust lash cap height (1.14 G. above).

3.0 For Both Ducar 224 and Predator 224 Engines

3.1 Fasteners & Gaskets:

- A. Non-tech but must retain their original factory size.
- B. Heli-coils, studs, etc. allowed for repair purposes.

3.2 Crankcase:

- A. Breathers are to be routed internally through the valve cover as originally intended in OEM configuration.
- B. No additional breathers allowed.

3.3 Fuel Tank:

- A. Non-Tech. It is recommended that for safety reasons a remote/floor mounted tank may be used.
- B. Tank must be securely fastened.

3.4 Fuel:

- A. 87 or 91 Octane ONLY.

- B. No methanol, No E-85, No fuel enhancers, or additives of any type.
- C. Fuel must pass any or all of the following test: -Visual; -Continuity meter; -Gravity test, - Gas, Alcohol and Water Mix.
 - Maximum allowance is 10+ or – on the meter.
- D. Fuel meter will be calibrated to Fuel: 87 or 91 Octane ONLY.

3.5 Clutch:

- A. Any engine mounted shoe/drum clutch.
- B. Gear Ratio is open.
- C. No axle clutches.
- D. No disc Clutches.

3.6 Starter:

- A. Stock pull starter must be in place and functional.

3.7 Other:

- A. **All karts must have a 6” nylon tie attached to spark plug wire.**
- B. Kill switches are highly recommended.
- C. No traction control devices allowed. Kart must have a solid axle and fixed hubs.
- D. No Mirrors.

3.8 Protesting:

- A. Any competitor that started the main event may protest any other competitor in the same class for legality within 15 minutes of completion of the main event.

- B. Protest must be made in writing to the assigned tech steward for that race, accompanied by a \$150 protest fee.
- C. If kart in question is deemed legal, \$100 will be awarded to the driver receiving the protest, if the kart in question is deemed illegal, \$100 will be returned to the protesting driver.
- D. See General Rules section 2.1 for more details.

4.0 General Kart and Bodywork Specifications:

4.1 Frame:

- A. Frames must be of kart configuration. Not to exceed 90" in overall length. **NO EXCEPTIONS.**
- B. Driver must fit safely within the kart and is subject to tech approval.
- C. If the driver is too large or tall, they will not be allowed to race in that kart.

4.2 Wheels & Tires:

- A. Maximum 6" diameter kart type wheel.
- B. Tread tires only. Right rear tire minimum durometer reading 48.
- C. No Chemical "preps" are allowed on the tire at any time, tire may be washed at the track with water only.
- D. Tires must be dry before coming to the grid.
- E. Grinding, Siping, and grooving allowed.

4.3 Weight:

- A. Kart and driver 300 lbs.
- B. Kart Weight must be displayed on the engine shroud or top plate to aid track officials at the scales.

- C. Specified karts and drivers must go to scales after A main event or will be DISQUALIFIED and will forfeit any money or points for that night.
- D. All weights added to the kart must be securely fastened to the kart with a minimum 5/16-inch diameter bolt that is double nutted, or safety wired.
 - If weight is attached to the seat area a large “fender” washers must be used.
- E. ALL weights must be painted bright white and marked with kart number.
- F. Any kart that loses a weight will be disqualified from that session and lose points/position from that session.

4.4 Bodywork:

- A. All bodywork components must be constructed of high strength plastic, fiberglass, or advanced composites.
- B. No metallic materials to be used for side panels front nose piece.
- C. Bodywork must not obstruct the driver’s forward or peripheral view.
- D. No panels or bodywork may cover the drivers head.
- E. All karts must have body work or bumpers that protect the leading edge of the front tires from contact with another kart.
- F. No sharp edges or protruding parts.

4.5 Bumpers and Nerf bars:

- A. All karts must have front bumpers that adequately protect the driver’s feet.
- B. Karts must have nerf bars that adequately protect the kart from side impact, and will prevent karts from “hooking” wheels.
- C. “Speedway” style rear bumpers are required and must extend to at least the centerline of the rear tires.

4.6 Brakes:

- A. Hydraulic brakes are mandatory.

- B. Brake rotor must have a guard “wolf plate” to protect the seat from contacting the brake rotor in the event of a seat mounting failure.

5.0 Tech:

5.1 Tech Procedures:

- A. After the main event the top 5 karts will proceed to the designated tech area, at this point the kart will be considered “impounded”.
- B. Karts will be inspected in their finishing order.
- C. Drivers/Crew will be required to assist with removal of parts, drain their oil, and to help facilitate the technical inspection on their kart.
- D. Track official has the option to exchange any motor they feel is performing beyond its ability. They will have a new replacement motor on hand. This rule will not apply to old motors that are built to perform just to exchange for a new one.
- E. See General Rules section 5 for more details.

5.2 Tech Items:

- A. Post Tech items will include but are not limited to ALL sections of the rules.
- B. Tire Durometer:
 - Right Rear tire must read a minimum of “48” on the house durometer after given adequate time to cool. The Right Rear durometer reading may be taken on the hot grid prior to leaving for the track.
- C. Carburetor air leak and Fuel.
- D. Any motor showing enhanced performance will have full tech after main event.
 - If anything is found to be in fault of the rules that motor will be banned from racing and must be replaced.

5.3 Race Procedures & Safe Driving:

- A. Competition is expected to proceed without you endangering yourself or others.

- B. If in the judgment of the race official, a driver bumps, crowds, or pushes another driver, the offending driver may be penalized or disqualified.
- C. A one-way radio receiving device (i.e., Raceceiver) is mandatory for all classes (1 race grace period only).
 - Drivers must have their unit on and working at all times while on hot grid and the track.
 - Failure to observe this rule shall result in your kart not being scored and/or additional penalties.
 - No 2-way radio communication between the driver and crew.

5.4 Penalties:

- A. Any kart found in blatant tech or protest violation may lose all points, prizes, and recognized finishing position for the event, as well as earned points towards the championship up to that point in time.
- B. Certain nonperformance rule infractions may be handled with a written warning and correct by next race waiver per the governing bodies/tech steward's discretion.
- C. The Race Director's decision is final.