



American Speedway Championship Series 2008 Rules & Regulations

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American Kart Racing Association

Class Structure

Participant ages are determined as of January 1.

JUNIOR I* Age 8 to 10 years - 265 lbs. - Methanol only - Approved engine: Briggs & Stratton stock 5hp only, with .425 inch maximum intake restrictor, no steering fairing allowed, maximum nose height 14 inches from ground level to top of nose, and AKRA approved exhaust required. (Tires HT-3 Maxxis / Dirt) and (YGF Firestone / Asphalt)

JUNIOR II* Age 10 to 12 years - 290 lbs. - Methanol only - Approved engine: Briggs & Stratton stock 5hp only, with .500 inch maximum intake restrictor, no steering fairing allowed, maximum nose height 14 inches from ground level to top of nose, and AKRA approved exhaust required. (Tires HT-3 Maxxis / Dirt) and (YGF Firestone / Asphalt)

JUNIOR III* Age 12 to 15 years – (320 lbs. Animal - 300 lbs. Raptor) - Methanol only - Approved engine: Briggs & Stratton stock 5hp only, with .575 inch(Raptor), and .505 inch(Animal) maximum intake restrictor, and AKRA approved exhaust required. (Tires HT-3 Maxxis / Dirt) and (YGF Firestone / Asphalt)

STOCK LITE* Age 15 years & up - 325 lbs. - Methanol only - Approved engine: Briggs & Stratton stock 5hp only, with AKRA approved exhaust required. (Tires HT-3 Maxxis / Dirt) and (YGF Firestone / Asphalt)

STOCK MEDIUM* Age 15 years & up - 350 lbs. - Methanol only - Approved engine: Briggs & Stratton stock 5hp only, with AKRA approved exhaust required. (Tires HT-3 Maxxis / Dirt) and (YGF Firestone / Asphalt)

STOCK HEAVY* Age 15 years & up - 375 lbs. - Methanol only - Approved engine: Briggs & Stratton stock 5hp only, with AKRA approved exhaust required. (Tires HT-3 Maxxis / Dirt) and (YGF Firestone / Asphalt)

SENIOR STOCK* Age 35 years & up - 375 lbs. - Methanol only - Approved engine: Briggs & Stratton stock 5hp only, with AKRA approved exhaust required. (Tires HT-3 Maxxis / Dirt) and (YGF Firestone / Asphalt)

STOCK SUPER HEAVY* Age 15 years & up - 400 lbs - Max Kart weight 200 lbs - Methanol only - Approved engine: Briggs & Stratton stock 5hp only, with AKRA approved exhaust required. (Tires HT-3 Maxxis / Dirt) and (YGF Firestone / Asphalt)

ANIMAL HEAVY* Age 15 years & up – 375 lbs. - Methanol only - Approved engine: Briggs & Stratton stock Animal 5.5hp only, with AKRA approved exhaust required. (Tires HT-3 Maxxis / Dirt) and (YGF Firestone / Asphalt)

BRIGGS LIMITED MODIFIED* Age 15 years & up – (375 lbs. Animal - 350 lbs. Raptor) - Methanol only - Approved engine: Briggs & Stratton 5hp Limited Modified or Animal Modified with any Tillotson HL-series carburetor with .850 inch minimum and .900 inch maximum venturi diameter, and AKRA approved exhaust required. Auxiliary vacuum fuel pump, pulsed from the intake, is permitted. (Tires HT-3 Maxxis / Dirt) and (YGF Firestone / Asphalt)

SENIOR CHAMP KART* Age 15 years & up – (425 lbs. Animal - 400 lbs. Raptor) - Methanol only - Approved engine: Briggs & Stratton stock 5hp and stock 5.5hp Animal. AKRA approved exhaust required. (Tires HT-3 Maxxis or Burris SS-55B / Dirt) and (Burris SS-55B / Asphalt)

JUNIOR CHAMP KART* Age 12 to 15 years - (360 lbs. Animal - 340 lbs. Raptor) (.575 Rest), 340 lbs. Raptor - Methanol only - Approved engine: Briggs & Stratton stock Animal with .505 inch intake restrictor or stock Raptor engine. AKRA approved exhaust required. (Tires HT-3 Maxxis or Burris SS-55B / Dirt) and (Burris SS-55B / Asphalt)

JUNIOR SPORTSMAN CHAMP KART* Age 8 to 12 years - 315 lbs. - Methanol only - Approved engine: Briggs & Stratton stock 5hp only, with .500 inch maximum intake restrictor, AKRA approved exhaust required. (Tires HT-3 Maxxis or Burris SS-55B / Dirt) and (Burris SS-55B / Asphalt)

KID KARTS* Age 5 to 7 years – Gas and oil only - Approved engine: Comer 50cc Box stock, unaltered, 1.8 HP, fixed jet carburetor, stock exhaust required, unaltered 89 tooth sprocket, maximum nose height 14 inches from ground level to top of nose.

PRO ALL-STARs* Age 18 years & up - Open Fuel - Engine & Chassis Rules (See <http://www.flallstars.com/rules1.htm>). Tire Rule Open.

American Kart Racing Association

General Rules & Regulations

The following rules are as stated “General”. There may be additional rules and regulations for each track and event. It is your responsibility to be familiar with the rules for each event that you participate in. These rules should be available in registration. If you do not understand a rule please ask a race official.

Spirit and Intent

Even if you are new to karting you have heard the term “spirit and intent”. It is the concise description of how karting is run, pure, simple and undeniable. It is not some politically correct catch phrase that has its day and then fades away. It is the law governing the sport of karting for the last 44 years. It means that you may be judged based on your perceived spirit and apparent intent for your conduct at any time at the track. Indeed, you should judge yourself using the same criteria. The law of spirit and intent comes into effect when race officials are encountered with facets of karting not specifically addressed in the rulebook. At this point, officials must make decisions based not only on fact, but also on whether the infraction was a clear case of attempting to controvert the spirit of the event. It is many times the hardest decision for an official to make. Nobody likes to invoke the spirit and intent rule.

We urge you avoid causing a spirit and intent ruling by being fully aware of all the regulations that apply to you and your kart. It is impossible to write a rule for every aspect of karting. Before attempting modifications to your kart that are not specifically addressed in the rulebook, talk to the technical inspector and clarify the requirements. You should “intend” to compete successfully, but if your “intent” is winning by circumventing the rules, then you should reconsider your involvement in this sport.

Series Sticker

All karts entered in a series race will be required to display, in plain view, a legible series sticker.

Driver Eligibility & Requirements

- A. You must be entered in a class in order to practice in all AKRA sanctioned events.
- B. You must be an AKRA member, in good standing, in order to receive year-end awards. If you wish to participate in an AKRA sanctioned event but do not wish to join the AKRA, you can purchase a temporary race pass for \$5.00. This race pass will permit the holder to receive race awards but not year-end points/awards.
- C. The kart is the official entry in the race. Once a lap has been made in a race with the entered kart, the kart cannot be changed without the permission of the race director.
- D. Relief Drivers must meet all class rule requirements and be approved by race officials.
 - a. Enduro: Driver of record must complete at least one lap of race and be scored.
 - b. Speedway: Driver of record must qualify kart. Relief driver may race in feature.
 - c. Sprint: Driver of record must take the green flag and weigh in during the 1st qualifying heat. Relief driver can take over for 2nd qualifying heat and feature.
- E. Minimum driver age is listed in all class structures. However, if during the racing season, the driver has a birthday that would make them old enough to move to an “older” class, they will have the option to move up at any time during the racing season, with the exception of the Novice class. If a driver chooses to move up to a senior class he may not move back to a junior class. All drivers must produce a current state photo I.D. card or certified birth certificate upon request. A minor’s release is required for all persons under the age of 18.

Protest Procedure

All protests must be submitted and acknowledged by an official in registration within 30 minutes of completion of the race that is being protested or, in the case of a scoring protest, within 30 minutes after

official results have been posted. Protests will not be accepted after 30 minutes. A protest can only be submitted by an entrant from the same class that is being protested, and can only be signed by one entrant.

Once the official has accepted a protest, additional protests for the same infraction will not be accepted. Official protest forms will be made available in registration and post-tech. Any national race disqualification or suspension can be appealed in writing to the American Kart Racing Association Advisory Committee.

Points & Scoring

- A. To receive year-end awards in each class, the entrant must be an American Kart Racing Association member and pass post-tech. All classes must maintain an average of three entries for the season to be eligible for year end awards.
- B. In the event of a tie in the year-end point total, the tie will be broken by the highest finishing positions. For example: the most wins, seconds, thirds will be considered.
- C. Entrants may be required to place a scoring transponder on their kart in a location that is recommended for proper signal strength. It is the driver's responsibility to securely fasten the scoring transponder in a proper location prior to entering the track.
- D. Disqualification: In the event that a driver is disqualified from an event for unsportsmanlike conduct on or off the racetrack, he may NOT use that race as a drop race. If a driver is disqualified for mechanical failure on the track, improper driving, post-race engine, oil or fuel tech or at the scales in post-tech, he may use that as a drop race. However, if repeatedly disqualified for any reason, the driver may be subject to the penalty of not being able to use a race as a drop race.
- E. To receive points, you must leave the grid under power, take the green flag, sign at the scales when you are weighed in and pass post-tech.
- F. In the event of a rainout all entrants will receive 200 points plus the number of entries in the class.
- G. At the final race of the season, any competitor who is racing in a given class for the first time will be removed from the points calculations for year end awards. All other competitors will be moved ahead for year end points calculations.
- H. The following point method will be used for calculating season points in all divisions:

Finish	Points	Finish	Points	Finish	Points	Finish	Points
1 st	200 + # of entries	9 th	90 + # of entries	17 th	45 + # of entries	25 th	15 + # of entries
2 nd	175 + " "	10 th	80 + " "	18 th	40 + " "	26 th	12 + " "
3 rd	155 + " "	11 th	75 + " "	19 th	35 + " "	27 th	9 + " "
4 th	140 + " "	12 th	70 + " "	20 th	30 + " "	28 th	6 + " "
5 th	130 + " "	13 th	65 + " "	21 st	27 + " "	29 th	3 + " "
6 th	120 + " "	14 th	60 + " "	22 nd	24 + " "	30 th	0 + " "
7 th	110 + " "	15 th	55 + " "	23 rd	21 + " "	(All remaining finishers will receive entry points)	
8 th	100 + " "	16 th	50 + " "	24 th	18 + " "		

Miscellaneous Rules

- A. The pit lane will be a yellow flag condition and a safe speed will be maintained. No passing will be allowed entering the pit lane. Passing and/or unsafe driving in the pit lane will result in disqualification.
- B. Data acquisition is legal in all classes.
- C. Approved exhaust silencers or mufflers are mandatory in all classes.
- D. Drivers are responsible for their pit crew members. Unacceptable behavior may subject the driver to disqualification from an event. Verbal and/or physical abuse or threats directed at any individual at any event will subject the offender to immediate ejection from the event and/or a 1-year suspension.
- E. All individuals entering the AKRA event site must sign and execute all insurance related documents as prescribed for that event.
- F. Drivers' meetings are mandatory. If you are unable to attend the drivers' meeting, you are required to check in with the race director.
- G. Vendor fee of \$200.00 per event will apply to anyone selling products or services at any and all series events with the exception of series or class sponsors.
- H. American Kart Racing Association, its series and organization(s) reserve the right to refuse any and all entries / vendors at any event(s).

Flags

Green Flag

The race track is clear for racing.

Yellow Flag

There is a need for caution. There is something in the track ahead and you should proceed with caution. If the flag is waving, there is a problem in that corner. No passing will be allowed in the corner when a waving yellow flag is displayed. When the yellow flag is displayed at the starter's stand or by the Race Director, this is a full course yellow. Slow down. No passing until the green flag is displayed again.

White Flag

One lap to go in the race. White flag is not mandatory.

Checkered Flag

The race is finished. Slow to a moderate pace for exiting the track. Proceed slowly to the post-tech area. However, the checkered flag may be thrown in conjunction with red or yellow flags, resulting in finish being determined by last completed scored lap. Racing back to red / yellow flags in conjunction with checkered flag is not permitted. Note that all karts involved in an incident causing a red or yellow flag will be placed at rear of field.

Red Flag

The race has been temporarily halted. Slow to a safe stop, drivers shall proceed safely to the starting grid under direction of the corner workers and flagman.

Restarts will be in the same order as the last completed and scored green flag lap prior to the red flag.

Any driver leaving the racetrack, due to an accident, by ambulance will not be allowed to restart. Any driver causing a red flag may be subject to not restarting or disqualification, as determined by the race director. Any kart involved in an accident whose driver is transported to a health care facility is subject to post-tech. If driver does not return from the health care facility prior to the end of post-tech, scales will be waived.

Blue Flag

Faster traffic is about to overtake you; this is not the time to try to protect your position. You are to allow those attempting to pass to do so safely and without difficulty. If you continue to block the process of the lapping karts, you may be black flagged and pulled off the course.

Black Flag

Racing is not a contact sport, although it is understood some inadvertent contact will occur. Intentional and avoidable bumping, nerfing, pushing, etc., will be grounds for disqualification. You will be warned only once with a rolled black flag. A second instance will result in a waved full, black flag.

Rolled & pointed: A warning about driver conduct.

Waved Black Flag: You must exit the track immediately. You have been disqualified for a driving infraction. If a participant ignores the black flag along with his/her number being displayed by the flagman, that person will be disqualified for that day in that class.

Meatball Flag (Black with a red ball): Will be thrown for technical or mechanical problems. Requires that the driver stop for consultation.

NOTE: Flags can vary from track to track. If there is a variation from the above it will be brought up at the drivers' meeting.



Section 1 - Foreword and Introduction

The following document and those that support it are authored with one intent – the clarification and consolidation of the technical performance rules that govern kart racing. As such, the primary issues dealt with in this manual are those metrics from which a direct performance gain may be achieved by violation. Kart standards are also addressed in this manual though no implication of safety is made or warranted if the rules specified herein are adhered to. Personal conduct is not directly addressed in this manual as it is expected that the competitor, builder, inspector and administrator will conduct themselves in a manner conducive to orderly and proper results.

The sport of karting has always been governed by the rule of spirit and intent. No effort is made here to change that. No pretense is made that the documentation herein will cover every situation that can be encountered in technical inspection. The ultimate responsibility for chassis and engine legality lies with the competitor. Should the competitor encounter a situation that is not specifically addressed in this manual, it is his responsibility to get clearance from the technical inspector *prior* to using the kart in a race. Should the technical inspector encounter a situation in post-race technical inspection that is not specifically addressed in this manual, it is his responsibility to make a determination of legality based first on whether or not the modification represents a definable performance gain and ultimately on the spirit and intent of the competitor/builder. If, in the opinion of the technical inspector, the spirit or intent of the modification was clearly that of circumventing the rules to provide performance gain then he has the right to disqualify the competitor based solely on this criteria. When confronted with this scenario, the inspector must weigh the decision carefully and use discretion, insight and integrity.

In all cases where series specific rules contradict the rules specified herein, the series specific rules shall have precedence. There is no expressed or implied warranty given here in regards to safety if the rules herein are adhered to and the authors and authorizers of this document are to be held harmless in any litigation or actions as a result of accident.

Section 2 - Metrology

Wherein this manual deals specifically with dimensional conformity to specifications, some discussion regarding measurement and gauging is necessary. Field metrology is limited and handicapped by a number of factors including, but not limited to, available measuring instruments and environmental conditions. The inspector must give some consideration to measurement uncertainty especially when approaching a dimension's limits of acceptability. When a dimension as measured exceeds its tolerance limits, the inspector must ensure that the best and most accurate available method of measurement is being employed prior to a disqualification decision being made. *The inspector may take whatever steps he deems necessary to ensure proper results, including impound and inspection at another location. Method of measurement in all cases is at the sole discretion of the inspector.* The preferred method will be designated later in this manual under generic technical procedures. Standard industrial metrology techniques shall be used as a guideline for methods used in the field. All dimensions given in this manual will either be toleranced or designated as maximum or minimum. Limits of size are absolute and are not to be rounded to the nearest whole integer to facilitate acceptability; i.e. a .500 diameter max hole that actually measures .5001 is to be found out of tolerance and not rounded to .500. The exception to the limits of size rule is when measuring “nominal” sized tubing or bar stock. This material comes from the manufacturer with rather generous tolerances and this must be considered when inspecting same. If “nominal” is noted on the element in question, a tolerance of +/-1/32 inch is generally acceptable with consideration to spirit and intent.

Many of the inside (width of slot, diameter, etc.) dimensions found in this manual are listed as maximum. Wherever possible, a gauge of maximum size shall be employed to measure these dimensions. For example, a .500 max diameter should be measured with a .500 gauge pin. If the gauge enters the feature in question, it shall be found out of tolerance. For designated inside minimum dimensions, a gauge of minimum size shall be employed. For example, a .625 minimum diameter should be measured with a .625 gauge pin. The gauge must

pass through the entire area in question with light, torsional, finger pressure. Perceptible drag on engagement is not reason for disqualification as long as full feature engagement may be achieved. All gauges and measuring instruments must be calibrated to standards with a direct line of traceability to the National Institute of Standards and Technology a minimum of once per year. Visual checks of gauging should be performed periodically to ensure that damage has not occurred. Whenever possible, all inspections should be performed with components and gauges at ambient temperature.

Section 3 - Pre-tech Requirements

1. Personal Safety Equipment

A. Head Gear

1. Full-face helmets designed for competitive motorsports use that comply with Snell Foundation specifications K98, M2000, SA2000 or higher are mandatory. SA rated helmets recommended for champ karts. Helmet must be available at pre-tech inspection. Helmets must be secured with a strap. Failure to do so will result in disqualification. A full visor, integral with the helmet, is mandatory.

B. Neck Braces

1. Collar-type, unaltered neck braces designed for motorsports use are mandatory in all sit up classes. Loss of neck brace during an event will cause a black flag with an orange circle "meatball flag" to be given to the driver losing the neck brace. He must immediately proceed to the pits and may replace the missing neck brace and then return to the race or practice session.

C. Driver Apparel

1. Drivers are required to wear jackets made of leather, vinyl, abrasion resistant nylon, or equivalent, and full length pants. Gloves, socks, and shoes are mandatory. Nomex apparel is recommended for champ kart drivers.
2. If driver's hair extends appreciably below the helmet, it is mandatory that the driver wear a head sock or balaclava to prevent the driver's hair from extending below the helmet.
3. Loose clothing, bandanas, scarves, hoods, loose belts, etc. are not allowed.
4. The use of flak jackets, or other chest protection devices is strongly recommended in all classes.
5. All personal safety equipment is subject to, and shall be available for, pre-tech inspection.

2. Kart Requirements

A. General

1. The kart must be neat in appearance, in good repair, and show quality workmanship.
2. The kart must meet the requirements set forth in the AKRA Tech manual for its particular class.
3. Rear view mirrors are allowed as long as they are mounted to the kart. No hand mounted mirrors allowed.
4. European style clevis snap pins shall be safety wired.

B. Ballast

1. All weights added to the kart must be securely fastened to the kart with a minimum 5/16-inch diameter bolt. Any single weight weighing in excess of seven pounds shall utilize a minimum of two 5/16-inch minimum diameter bolts.

2. All bolts used to fasten weights to the kart must be cotter keyed, safety wired, or double nutted.

C. Steering Components

1. All steering component bolts and nuts must be cotter keyed and/or safety wired.
2. All steering component bolts must be a minimum Grade 5 rating.
3. All rod ends must have universal type swivel joints and jam nuts.
4. Fasteners used on any component that will enable adjustment of camber, caster, etc. must be cotter keyed and/or safety wired.
5. Steering Shafts: Solid steering shafts shall be a minimum .625-inch diameter, made of cold rolled steel, and one-piece design. Welding the steering wheel or hub to the shaft is not allowed. Shaft extensions, and cutting and welding the shaft to alter its length, are not allowed. The steering wheel must be secured to the shaft with a nut or cap screw in the axial position.

Hollow steering shafts shall be a minimum .700-inch diameter, with a minimum wall thickness of .070 inch, made of steel tubing, and one-piece design. Welding the steering wheel or hub to the shaft is not allowed. Shaft extensions, and cutting and welding the shaft to alter its length, are not allowed. The steering wheel hub must be secured using a 5/16 inch minimum diameter bolt through the axis of the shaft. Tiller, vertical shaft steering systems are not allowed.

6. Steering Wheels: Steering wheels may be circular, with a ten-inch minimum diameter, and a minimum of three spokes. Steering wheels may be of the butterfly type, with a ten-inch minimum diameter, and four spokes, and a minimum grip length of five inches on each side.

D. Wheels and Tires

1. Pneumatic tires designed specifically for racing only.

Minimum 9.0-inch diameter. Maximum 12.5-inch diameter.

Maximum width, mounted on wheel 10.375 inches

2. Tires must be available on the general market for a minimum of sixty days prior to use in an AKRA sanctioned event.
3. Wheel balancing weights shall not exceed ¼ ounce each. It is recommended that additional tape be placed over stick on type weights.
4. “G-Rings” or lateral supported wheels are not permitted.

E. Wheel Hubs and Axles

1. Wheel hubs and axles shall be constructed of metallic materials.

2. Rear axles shall be one-piece design, driving both wheels. Either solid or hollow axles are allowed. .984-inch minimum diameter. 1.25-inch maximum diameter. Snap rings or similar fasteners are required at both ends of the rear axle, and must be safety wired. Axle stiffeners are allowed as long as they are secured by cotter key, circlip, or through bolted. Axle may not protrude beyond the outside of rim and tire. Any device that allows the rear wheels to rotate at different speeds is not allowed.
3. Front axles: Front axle nuts must be secured with safety wire, cotter keys, circlips or berry clips. Ground ball or roller type bearings only, and must be adjusted so there is not excessive play. Split race type bearings are not allowed. The spindle axle may not protrude beyond the outside of rim and tire.

F. Brakes

1. Karts must, at minimum, have a braking system capable of braking both rear wheels equally and adequately.
2. Classes of over 150cc displacement require the use of dual braking systems, one front and one rear. This shall consist of two independent and separate systems, operated by separate master cylinders. One system must be fully functional if either system fails.
3. All brake system fasteners, including pedals, clevis pins, and master cylinder roll pins, must be safety wired or cotter keyed. If safety wiring or cotter keying is infeasible, as in the case of some brake pad fasteners, an appropriate thread locking compound shall be used to prevent loss of the fasteners. All metal locking type nuts to secure the brake disk or drum to the hub are allowed in lieu of safety wire or cotter pinning. If the pedal is mounted to the front bumper, the bumper must be welded to the frame, or through bolted or pinned, and the through bolts or pins shall be safety wired or cotter keyed. Hydraulic brake fittings shall be tight and leak free. Hydraulic brake lines shall be routed in a fashion so as to not wear through or be pulled loose. Master cylinder actuating rod must be .250-inch diameter minimum or equal quality cable with positive stops on both ends.
4. No carbon fiber components allowed.

G. Driveline Components

1. Clutches are mandatory in all classes except those designated as direct drive. Oil bath clutches are allowed as long as they are sealed to prevent leakage. If outboard clutch mounting is used, a third bearing support or guard to contain the clutch in the event the crankshaft breaks is mandatory. Clutches mounted inboard are not required to have a support or guard. Transmissions or other devices that allow the change of gear ratios while the kart is in motion are not allowed, except in shifter classes. Torque converters are not allowed.
2. Chain and Belt Guards: All karts shall be equipped with a chain or belt guard. Outboard drive systems will be allowed only if the chain or belt and sprocket are completely enclosed from the front, top, rear, and sides. Any sprocket not used for driving the kart must be fitted with a device to prevent exposure from any angle, or be completely encircled with a chain. Chain oilers, up to 8-ounce capacity, are allowed. Competitors using chain oilers shall use a drip pan while on the grid. If a chain oiler is the highest point on the kart it must be protected with a roll bar, not to exceed 26 inches high from the ground.

H. Fuel Systems

1. No pressurized fuel delivery systems allowed. No fuel injection systems allowed.
2. Fuel lines must be safety wrapped at all connection points.

3. Fuel tanks must be securely bolted to the primary structure, frame, or floor pan.
4. Fuel tanks on sprint karts must be located between the frame rails, and beneath the steering shaft.
5. The length of fuel line shall be only of adequate length to supply fuel to the carburetor. Excessive fuel line length is not allowed.
6. If a fuel tank is the highest point on the kart it must be protected with a roll bar, not to exceed 26 inches high from the ground.
7. If “pump-around” or “recirculating” type fuel delivery and evacuation systems are used, a positive, free vent to atmosphere must be employed on the fuel tank to prevent tank pressurization.

Section 4 - Kart types and construction

There are eight different types of racing karts described herein. A general description of a kart chassis is a welded, tubular steel space frame. Side nerf bars, front and rear bumpers are required, except as noted. Aerodynamic bodywork covering the chassis is permitted but not required in any type except as noted. While overall construction of each is similar there are significant dimensional differences and as such will be detailed separately below.

A. Sprint speedway chassis specifications

1. Main frame members shall be constructed of cold rolled, electric weld, round, steel tubing or other material of equal or greater strength, of one inch minimum nominal outside diameter and .078 inch minimum wall thickness and 1.400 inch maximum nominal diameter. Tubing of 1.125 inch nominal and greater may have a wall thickness of .060-inch minimum. Main frame rail members shall be no higher than a horizontal line extending from the centerline of the front wheel to the centerline of the rear wheel. No oval tubing allowed.
2. Wheelbase: 43.0 inches maximum, 40.0 inches minimum. Wheelbase is measured from true axle centerlines, each side.
3. Track width: 28.0 inches minimum. Track width may be measured from the outside edge of one tire to the inside edge of the opposite tire when both tires are of identical width.
4. Overall width: 50.0 inches maximum for all classes. Overall width is measured at any cross section of the kart, perpendicular to the longitudinal centerline axis.
5. Overall length: 74.0 inches maximum. Overall length is measured at any cross section of the kart, parallel to the longitudinal centerline axis.
6. Overall height: 26.0 inches maximum. Overall height is measured such that all elements of the kart must pass under a bar set parallel to ground level, 26.0 inches above ground level.
7. Dry kart weight: 85 pounds minimum in race ready trim without fuel.
8. Front bumper: If CIK-style nose cone is not used, all components shall be constructed of round, steel tubing of .750 inch nominal diameter minimum. The upper hoop of the bumper must be supported by a minimum of two vertical uprights. These uprights must be within .50 inch of vertical when measured 3.0 inches down from the top of the top hoop. The uppermost tangent point of the top hoop must be 7.75 inches minimum from ground level. Otherwise, front bumper must conform to CIK specifications.
9. Rear bumper: All components shall be constructed of round, steel tubing of .750-inch nominal diameter minimum. The uppermost tangent point of the top hoop shall be 7.5 inches maximum from ground level and above the lowermost tangent point of the rear axle minimum. Minimum width shall

be no less than the lateral distance between the main chassis frame rails as measured at the rear of the kart. Maximum width shall be no wider than the rear overall width of tires. Continuous loop type bumpers with vertical or angled supports are allowed. The lower bar of this type must be below the rear axle, the upper bar no higher than the top of the rear tires.

10. Nerf bars: If CIK-style side pods are not utilized, nerf bars must be double rail type. All components shall be constructed of round, steel tubing of .750-inch nominal diameter minimum. Overall height from uppermost to lowermost tubing tangent points shall be 6.0 inches minimum. Vertical uprights are mandatory at the leading and trailing ends of the nerf bar, creating a closed, rectangular construction. The leading and trailing vertical uprights must be positioned such that the smallest gap created between the front and rear tires respectively measures 3.0 inches maximum. If CIK-style side pods are utilized, nerf bars must conform to CIK specifications.
11. Seat: Must be of conventional, unaltered, bucket type, molded construction, designed to keep the driver's posterior in place without undue movement. The seat shall be mounted between the main frame rails. The lowermost point of the seat must be positioned no lower than the lowermost point of the adjacent frame rails and no higher than the uppermost point of the adjacent frame rails. Height of the uppermost point of the seat backrest is 10.0 inches minimum from ground level for junior sportsman classes, and 12.0 inches minimum from ground level for junior and senior classes. The rearmost point on the seat may not extend beyond the back of the rear axle. Headrests are not permitted. Steering uprights shall be positioned in such a manner as to prevent the driver's posterior from being positioned forward of the bucket portion of the seat.
12. The use of any type of suspension components is strictly prohibited.

B. Champ kart chassis specifications

1. Main frame members shall be constructed of cold rolled, electric weld, round steel tubing or other material of equal or greater strength, of 1.125 inch nominal minimum diameter, .083 inch wall thickness. Conventional tubular space frame construction methods only are allowed. Non-conventional construction techniques must receive review and approval of the race director and/or tech inspector prior to competition.
2. Wheelbase: 42.0 inches minimum, 45.0 inches maximum. Wheelbase is measured on true axle centerline, each side.
3. Overall width: 40.0 inches minimum, 52.0 inches maximum. Overall width shall be measured from outside tire sidewall to opposite outside tire sidewall.
4. Overall length: 95.0 inches maximum. Overall length is measured at any cross section of the kart, parallel to the longitudinal centerline.
5. Roll cage specific specifications
 - a. Full roll cage of four point conventional construction is mandatory. The four uprights and top horizontal connecting tubes must be constructed of 1.125 inch nominal minimum diameter mild steel tubing. All attachments by welding unless otherwise specified.
 - b. Uprights and positioning: Each of the rear uprights must be welded to the main frame rails at a point aft of the rear axle centerline. Each of the front uprights must be welded to the side frame rails at a point forward of the steering wheel mount point and aft of the leading edge of the front tire. All uprights must create an angle of no less than 45 degrees with the main frame rails and have no bends within three inches of attachment point except for left rear.
 - c. Top hoop rails: Corner construction shall be of rounded type with no sharp edges or corners allowed.
 - d. Shoulder harness mounting bar shall be welded laterally between rear uprights, double braced to the top lateral bar, at a height suitable for harness mounting. A minimum 6.0 inch square headrest shall be mounted to the braces level with the driver's head.

- e. Side protection bars are mandatory and must run horizontally between front and rear uprights each side. One end connection may be slip jointed. Side protection bars must be positioned vertically between the driver's shoulder and elbow.
 - f. Roll cage overall width: 16.0 inches minimum. Width to be measured outside to outside between any two uprights.
 - g. Roll cage overall height: 38.0 inches minimum. Height to be measured vertically from highest lateral cross bar centerline to main frame rail centerline.
 - h. All roll cages that deviate in any way from the above description must be brought into conformance or receive approval from the race director or tech inspector prior to be used in competition.
6. Front bumper: All components shall be constructed of round steel tubing of .750 inch nominal diameter minimum. Front bumper must encircle entire front nose area at a height of 7.75 inches minimum from ground level. Double bumpers are recommended.
 7. Rear bumper: All components shall be constructed of round steel tubing of .750 inch nominal diameter minimum. Double bar construction is mandatory. Rear bumper must encircle the tail section of the kart. The top of at least one bar must be 7.50 inches maximum from ground level.
 8. Nerf bars: All components shall be constructed of round steel tubing of .750 inch nominal diameter minimum. Double bar construction is mandatory. The top of the upper bar must be no higher than the top of the rear tire. The bottom of the lower bar must be no lower than the bottom of the main frame rails. Nerf bar must extend from an area inside a longitudinal line from the outer portion of the front tire to a point no further outboard than 1.0 inch from outer tire surface.
 9. Seat positioning: No part of the seat may be positioned closer than six inches inside the left hand nerf bar.
 10. Harness: Five-point, SFI-rated racing harness is mandatory. Metal to metal harness fastener is mandatory. Mounting bolts must be cotter-keyed and attached to a 3/16 inch minimum thick, 2.0 inch minimum square steel mounting plate that is welded to the frame and/or roll cage. Arm restraints, attached to the harness, are mandatory.

C. *Junior Sportsman Champ Kart Specifications*

1. Main frame members shall be constructed of cold rolled, electric weld, round steel tubing or other material of equal or greater strength of 1.125 inch nominal minimum diameter, .083 inch wall thickness. Conventional tubular space frame construction methods only are allowed. Non-conventional construction techniques must receive review and approval of the race director and/or tech inspector prior to competition.
2. Wheelbase: 40.0 inches minimum, 43.0 inches maximum. Wheelbase is measured on true axle centerline, each side.
3. Overall width: 38.0 inches minimum, 50.0 inches maximum. Overall width shall be measured from outside tire sidewall to opposite outside tire sidewall.
4. Overall length: 80.0 inches maximum. Overall length is measured at any cross section of the kart, parallel to the longitudinal centerline.
5. Roll cage specific specifications
 - a. Full roll cage of four point conventional construction is mandatory. The four uprights and top horizontal connecting tubes must be constructed of 1.125 inch nominal minimum diameter mild steel tubing. All attachments by welding unless otherwise specified.

- b. Uprights and positioning: Each of the rear uprights must be welded to the main frame rails at a point aft of the rear axle centerline. Each of the front uprights must be welded to the side frame rails at a point forward of the steering wheel mount point and aft of the leading edge of the front tire. All uprights must create an angle of no less than 45 degrees with the main frame rails and have no bends within three inches of attachment point except for left rear.
 - c. Top hoop rails: Corner construction shall be of rounded type with no sharp edges or corners allowed.
 - d. Shoulder harness mounting bar shall be welded laterally between rear uprights, double braced to the top lateral bar, at a height suitable for harness mounting. A minimum 6.0 inch square headrest shall be mounted to the braces level with the driver's head.
 - e. Side protection bars are mandatory and must run horizontally between front and rear uprights each side. One end connection may be slip jointed. Side protection bars must be positioned vertically between the driver's shoulder and elbow.
 - f. Roll cage overall width: 16.0 inches minimum. Width to be measured outside to outside between any two uprights.
 - g. Roll cage overall height: 30.0 inches minimum. Height to be measured vertically from highest lateral cross bar centerline to main frame rail centerline.
 - h. All roll cages that deviate in any way from the above description must be brought into conformance or receive approval from the race director or tech inspector prior to be used in competition.
6. Front bumper: All components shall be constructed of round steel tubing of .750 inch nominal diameter minimum. Front bumper must encircle entire front nose area at a height of 7.75 inches minimum from ground level. Double bumpers are recommended.
 7. Rear bumper: All components shall be constructed of round steel tubing of .750 inch nominal diameter minimum. Double bar construction is mandatory. Rear bumper must encircle the tail section of the kart. The top of at least one bar must be 7.50 inches maximum from ground level.
 8. Nerf bars: All components shall be constructed of round steel tubing of .750 inch nominal diameter minimum. Double bar construction is mandatory. The top of the upper bar must be no higher than the top of the rear tire. The bottom of the lower bar must be no lower than the bottom of the main frame rails. Nerf bar must extend from an area inside a longitudinal line from the outer portion of the front tire to a point no further outboard than 1.0 inch from outer tire surfaces.
 9. Seat positioning: No part of the seat may be positioned closer than six inches inside the left hand nerf bar.
 10. Harness: Five point, SFI-rated racing harness is mandatory. Metal to metal harness fastener is mandatory. Mounting bolts must be cotter-keyed and attached to a 3/16 inch minimum thick, 2.0 inch minimum square steel mounting plate that is welded to the frame and/or roll cage.
 11. Arm restraints, attached to the harness, are mandatory.

D. Sprint Speedway racing bodywork requirements

1. All bodywork components must be constructed of high strength plastic, fiberglass, aluminum or advanced composites only, with the exception of no metallic materials to be used for side panels.
2. No component of the bodywork may be adjusted or controlled in any way while the kart is in motion.
3. Skirting devices must be constructed of a flexible, non-metallic material.
4. The sides of the tires may not be covered in any way by the nose cone or side panels. It must be

possible to remove the wheel straight through the opening in the bodywork.

5. Nose cones: The nose cone may cover the driver's foot area, but is not to extend further than 3.0 inches rear of the pedals in relaxed position. This measurement shall be made directly over each of the two pedals. The bottom of nose cone may extend full width no farther than the rear of the front tires, in a straight ahead position, beyond that the bottom of the nose cone must be within the main frame rails. The nose cone may be no narrower than to expose one half of a tire width per side. Maximum nose cone height 14.0 inches for 4-cycle novice classes only.
6. A connecting strip from nose cone or floor to steering fairing is allowed up to 6.0 inches maximum chord width, so as not to cover the driver's feet, or legs. Minimum six inch clearance from connecting strip or steering fairing to any other bodywork component begins three inches maximum aft of the pedals, extending rearward to the mounting point for the steering wheel.
7. Steering fairings: Chord length 14.0 inches maximum. Chord width 14.0 inches maximum. Clearance to steering wheel 3.0 inches minimum. Clearance to any other bodywork or fuel tank 6.0 inches minimum. Clearance from steering wheel to any other bodywork 6.0 inches minimum. No steering fairings allowed in 4-cycle novice classes only.
8. Tire recess: All or any of the four wheels may be inside the bodywork a maximum of one inch per side, regardless of bodywork configuration. This measurement shall be made square to the outer face of the tire nearest the bodywork component in question, wheels straight.
9. Belly pans: Full width belly pans within the main frame rails are allowed for all classes. Belly pans can be bent up to a point no higher than the centerline of the rear axle.
10. Height from ground level of all side panels and rear pods: 16.0 inches maximum.
11. Except as noted in section 4.h.5, no part of the driver's body may be covered by any bodywork component, as viewed from above.
12. No bodywork component may extend aft of the rear bumper.
13. Distance from seat to any bodywork component: 1.0 inch minimum.
14. Lateral distance between bodywork components in area from the mounting point for steering wheel to the point where the seat rises above the side panels: 22.0 inches minimum. If the seat remains below the side panels, 22 inch minimum distance applies from mounting point for steering wheel to rearmost part of seat.
15. CIK style nose cones and side pods are allowed. The use of CIK mounting hardware is not mandatory.
16. Height from ground level of all side panels and rear pods: 16.0 inches maximum.
17. Except as noted in section 4.j.5, no part of the driver's body may be covered by any bodywork component, as viewed from above.
18. No bodywork component may extend aft of the rear bumper.
19. The nose cone may be no narrower than to expose one half of a tire width per side.

E. Champ kart bodywork requirements

1. All bodywork components must be constructed of high strength plastic, fiberglass or advanced composites only.
2. No component of the bodywork may be adjustable in any way while kart is in motion.
3. Bodywork must be confined to the area defined by the front and rear bumpers, inside the area defined by the inside sidewalls of the tires.
4. Cockpit must be entirely open when viewed from above.

5. Wings, spoilers or other aerodynamic effects are prohibited.
6. Full, midget/sprint type, open wheel, conventional construction methods only are approved. Flat panels are allowed only for side panels and all other body components must have rounded, compound curve configuration. Nose bodywork is mandatory (tail optional).
7. Tail section must be full, midget/sprint type, fully enclosing the tail section, 15.0 inches minimum length, 13.0 inches minimum width and 14.0 inches minimum height.

Section 5 – Fuels and Lubricants

Fuels and fuel testing: It shall be the right of the technical inspector on his own volition or on instruction from the race director to conduct any type of fuel testing deemed necessary at any time the competitor is under race administration direction, i.e. during pre-tech inspection, on the grid or in post-tech inspection.

A. Two-cycle fuels

Unless otherwise specified in class structure description, the only acceptable fuel in two-cycle classes is gasoline and lubricating oil.

None of the following substances may be added to the fuel. This list is inclusive only in that these are known ingredients that have been used in the past. Additionally, all other substances recognized by bonafide race sanctioning bodies or deemed to exceed the Threshold Limit Value for human exposure as listed by the American Conference of Governmental Industrial Hygienists are considered part of this list.

Alcohols (all), Aldehydes, Aminodiphenyl, Benzene (in excess of EPA limits), Benzidine, Beryllium compounds, Bromine compounds, Butadienes, Chlorinated compounds, Chromates, Dioxanes, Ethyl acrylate, Ethylene oxide, Hydrazine compounds, Methylene dianiline, Naphthylamine, Nitrogen compounds (nitromethane, nitropropane, etc.), Styrenes, Toluidine, Zylidine.

1. Testing

a. Field testing

1. Digatron meter: The preferred method of field testing two-cycle fuel is with a Digatron meter. The meter shall be set at -75 with the probe fully immersed in a plastic container of clean cyclohexane at ambient temperature. The probe is then fully immersed in the competitor's fuel and allowed to settle. Care must be taken to not touch the probe on any part of the fuel tank while the meter is coming to settle. The final meter reading must be zero or below (negative). The competitor has the right, and the inspector may allow removal of the fuel from the kart's fuel tank into a suitable plastic container for testing. This is done to eliminate the effects of aluminum tanks on the meter and to facilitate cooling to **ambient** temperature. Artificial cooling of the sample (ice baths, etc.) is not allowed. Final testing shall occur no later than ten minutes after time of sample removal.

- b. Laboratory testing may be performed on a competitor's fuel either on the tech inspector's own volition or on instruction from the race director. Upon request, the competitor shall draw a sample from his tank or container (inspector's preference) into a suitable, clean container. The tech inspector shall then mark the container in an indelible fashion and provide tamper-proof sealing of the container. The sample shall be forwarded to an accredited testing laboratory for full chemical analysis. Presence of any listed prohibited substances shall be grounds for disqualification.

2. Oil Test Procedure

1. Make sure engine is on the compression stroke.
2. Remove fill plug and get fresh sample of oil to be tested in appropriate container.
3. Heat oil to 300 degrees Fahrenheit, pass the flame over the top of oil sample. If oil burns, it has failed the initial test.
4. Wait 5 minutes and redo step #3. If oil fails this step, the competitor will be disqualified from that

- race. No further review will be allowed!
5. If a competitor is disqualified for illegal oil he/she will be placed on immediate probation for a period of 6 months. During that probation period, if the competitor is caught again with illegal oil he/she will be placed on immediate suspension for a period of one year (starting the day/date of second offense).

B. Four-cycle fuels and lubricants

All additives to methanol fuel are prohibited.

1. Testing

a. Field testing

The preferred method for field testing methanol is the water test. The premise is that methanol is completely water-soluble. Equal parts methanol and pure, distilled water shall be combined in a clean, transparent container. The mixture shall be shaken and allowed to settle for approximately thirty seconds. After settling, the mixture shall be completely clear. Comparison to a sample of pure, distilled water is an acceptable clarity comparison. Contamination prevention is paramount when using this technique. All sample gathering equipment, test containers and hands that come into contact with the fuel must be absolutely clean. If a contaminated sample is found all tooling and hands must be cleaned prior to testing another sample.

- b. Laboratory testing may be performed on a competitor's fuel either on the tech inspector's own volition or on instruction from the race director.

Upon request, the competitor shall draw a sample from his tank or container (inspector's preference) into a suitable, clean container. The tech inspector shall then mark the container in an indelible fashion and provide tamper-proof sealing of the container. The sample shall be forwarded to an accredited testing laboratory for full chemical analysis. Chemically significant presence of any substance other than methanol is grounds for disqualification.

Crankcase lubricants may contain no oxygen bearing or vapor producing substances. Tech inspector reserves the right to test for these substances by any means deemed necessary.

Section 6 – Four-cycle engines: General requirements and inspection procedures

1. Generic four cycle tech procedure

Note: The following is a description of a full, generic four-cycle technical inspection procedure. The inspector may choose to inspect all or parts of the competitor's engine and chassis. All paragraphs that follow in this section apply universally unless specifically excepted by engine tech sheet.

It is the competitor's responsibility to provide the necessary tools and labor to disassemble the engine and/or chassis upon the technical inspector's request for verification. Refusal to disassemble for inspection is grounds for immediate disqualification. The competitor has the right to request a reasonable time period to allow for cooling to ambient temperature prior to inspection.

- a. Visually inspect engine for class type acceptability and appearance of compliance. Unless otherwise specified, all components must be of the same make and model as originally supplied for that engine, i.e. no interchanging components from different makes or models is allowed.
- b. Verify minimum combustion chamber volume (OHV only). Fill a calibrated, glass burette up above the zero line with clean automatic transmission fluid, diluted 20-30 percent with mineral spirits. Hold the burette as close to vertical as possible, open the stopcock and run the fluid out until the bottom of the curved line is lined up with the zero line. Wipe any drips from the tip of the burette. Install the cc plug in the spark plug hole and bottom by hand. Back the cc plug out two turns. Set the engine such that the centerline axis of the spark plug hole is plumb. Turn the

crankshaft by hand until the piston is .100 inch (approximately) before top dead center with both valves closed. Re-check the zero and add the prescribed fluid amount from the burette to the combustion chamber such that the bottom of the curved line is lined up with the prescribed combustion chamber volume for that particular engine. Torque cc plug to 90 inch/pounds. Slowly turn the crankshaft such that the piston moves through top dead center. An acceptable result is if all fluid remains within the combustion chamber or bore of the special tool with no fluid spilling over the upper edge of the tool, with piston at top dead center. An unacceptable result is if any fluid spills out onto the top of the tool.

Note: Verification of combustion chamber volume may only be done reliably one time. It is therefore in the best interest of the inspector and competitor to reach consensus on the readings of the burette both before and after adding the fluid and before turning the piston through top dead center. The zero of the burette should be checked immediately prior to adding the fluid to the chamber. Due to the geometry of some four-cycle combustion chambers, air entrapment during the verification process is possible. When in doubt, the engine may be disassembled and the volume of each element verified separately.

- c. Verify intake. Air filter may not be configured as an air ram. Verify air filter adapter to specifications. Air filter adapter not permitted without air filter. Visually inspect carburetor for class type acceptability and stock appearance. Any additional holes, vents, ports, etc. in the carburetor or any other means to controvert manufacturer's intended flow is strictly prohibited. Remove carburetor and verify mounting gasket and intake restrictor requirements. Intake restrictors must be unaltered stock with one only gasket on each side. Disassemble and verify carburetor to specifications. If required, verify fuel tank to specifications.
- d. Verify exhaust. Entire exhaust system must be attached to the engine and intact for the entire race and when submitted for tech inspection. Silencer brace is mandatory and may not be welded. Visually inspect exhaust system for class acceptability and stock appearance. Coating or wrapping of the exhaust header and pipe is permitted. Coating or wrapping of the silencer is prohibited. Visually inspect exhaust system for any supplementary holes or ports venting to atmosphere. Unless specifically allowed, all holes other than those intended for exhaust exit must either be plugged or have a sensor fitted in them. An unplugged, supplementary hole in the exhaust system is grounds for disqualification. Inspect entire system for stock appearance and configuration. Header must be of fixed design with no adjustability permitted. Preferred method for silencer attachment is clamping although three .250 inch maximum diameter spot welds are permitted at junction of silencer and exhaust pipe for secure attachment. Silencer must be removable for tech. Remove exhaust system and verify that header pipe does not protrude into the exhaust port. Disassemble exhaust as required and verify all prescribed dimensions for that particular exhaust system. Excepting sensors, no protrusions or projections into the interior of the header, pipe or silencer are permitted.
- e. Verify ignition system. Inspect spark plug for reach and stock configuration. Remove ignition cover and visually inspect ignition assembly for stock configuration and class type. Unless otherwise specified, all ignition components must be unaltered stock. Using an ohmmeter, check resistance from spark plug wire to ground, if applicable. Remove coil and, if applicable, verify that coil positioning is stock, i.e. no means to alter coil position has been attempted. Unless otherwise specified, any means to alter the position of the coil from stock is grounds for disqualification. Remove flywheel and inspect for stock appearance. No machining to alter position of the flywheel on the crankshaft is allowed. Verify flywheel conformance to specifications.
- f. Verify valve train and running cam lift (OHV only). Remove valve cover. Inspect valve train for visual conformance to specification. Establish a dial indicator bearing on the top of the intake valve spring retainer and ensure free range of motion. Turn engine over by hand to find lowest point of valve travel and set indicator to zero. Turn engine over to find the highest point of valve travel. The indicator reading at the highest point of valve travel is total running cam lift. Repeat for exhaust valve. Verify running lift for each lobe is within specifications.
- g. Verify cylinder head. Inspect cylinder head gasket for conformance to specification. Visually inspect cylinder head for conformance to specification. Using a depth micrometer, inspect

combustion chamber depths as required. Carbon deposits in the combustion chamber that cannot be easily removed by wiping with a rag are considered part of the cylinder head and are subject to tech. Chamber depths apply full width and length of the area in question, i.e. all measurements taken anywhere in area of question must conform to depth requirements.

- h. Verify valve train. Remove and inspect valve cover/breather and inspect for conformance to specification. Visually inspect valve train for conformance to specification. Remove valves, springs and retainers and inspect for conformance to specification. Inspect valve chamber, valve seats and ports for conformance to specification.
- i. Verify bore, stroke, piston-cylinder deck protrusion and cam profile. Install a long travel dial indicator on a bridge over the center of the piston. Turn the crankshaft such that the piston comes to bottom dead center. Lightly tap on the top of the piston to take up any play in the crankshaft journal. Zero the indicator at bottom dead center. Turn the crankshaft until top dead center is seen on the indicator. Total indicator reading from bottom to top dead center is the stroke. Using an indicating, two point bore gauge (preferred) or caliper (alternate) measure the diameter of the cylinder. This is the bore.

For total cubic inch engine displacement (bore and stroke dimensions taken in decimal inch units) the formula is: **bore x bore x stroke x .7854=total cubic inch displacement**

- j. Turn crankshaft to recess piston below cylinder deck. Clean cylinder deck mating surface of any residual head gasket material. Lay a precision parallel bar on top of the cylinder deck, parallel and inline with the wrist pin. Zero the indicator on top of the parallel bar. Turn the crankshaft through top dead center. As piston goes through top dead center, read the indicator. Maximum reading is the piston-cylinder deck protrusion (pop-up). *Note: Coil should be removed for this procedure.* Replace intake valve with a dummy valve with head ground down so as to not to bear on the valve seat. Install a dial indicator directly over the centerline of the intake valve. Install a degree wheel on the crankshaft and establish top dead center of the combustion stroke using standard practice. Zero both indicators at top dead center. Verify that cam profile limits at specified lift conforms to specification. Repeat procedure on exhaust valve.
- k. Verify crankcase and associated components. *(Note: Complete disassembly of the crankcase and associated components is only necessary to verify certain elements of this paragraph.)* Disassemble crankcase. Remove side cover. Visually inspect side cover and gaskets for conformance to specification. Remove camshaft. Inspect camshaft for conformance to specification. Remove valve lifters. Inspect lifters and lifter bores for conformance to specification. Remove connecting rod bolts and connecting rod/ piston assemblage. Disassemble piston from connecting rod. Inspect connecting rod, piston, rings and wrist pin for conformance to specification. Remove crankshaft. Inspect crankshaft counterweights for visual and dimensional conformance to specification. Unless otherwise specified, no alteration of any kind is permitted to crankshaft counterweights. Verify block for conformance to specification.

2. Four-cycle exhaust systems

- a. RLV B91 series silencers are the only approved four-cycle silencers. Silencer must be stock, unaltered as delivered by RLV. All B91 series silencers, outside diameter 2.240 inch maximum. All B91 silencers must exit aft of the fuel tank and forward of the rear bumper.
 - 1. RLV B91 dimensional requirements
 - a. Silencer shall be equipped with minimum of three internal baffles and one end baffle. All baffle holes diameter .1285 inch maximum. Exhaust pipe mating inside diameter 1.0 inch nominal.
 - 2. RLV B91L dimensional requirements
 - a. Silencer shall be equipped with minimum of three internal baffles and one end baffle. All baffle holes diameter .1285 inch maximum. Exhaust pipe mating inside diameter 1.125 inch nominal.

3. RLV B91XL dimensional requirements
 - a. Silencer shall be equipped with minimum of three internal baffles and one end baffle. All baffle holes diameter .1285 inch maximum. Exhaust pipemating inside diameter 1.3125 inch nominal.
4. RLV B91MO dimensional requirements
 - a. Silencer shall be equipped with minimum of three internal baffles and one end baffle. All internal baffle holes diameter .1285 inch maximum. End baffle may have round holes of .1935 inch maximum diameter or square screen of .2031 inch maximum width and height. Exhaust pipe mating inside diameter 1.3125 inch nominal.
 - b. Exhaust pipe/header must extend beyond the fuel tank but not extend past the rear bumper (including silencer). Header pipe must be of fixed design. Loop type header pipes must be wrapped to protect the driver from burns. Header pipe may not protrude inside the exhaust port so as to alter the port configuration. Studs are allowed for header pipe attachment. Header support brace is optional and may be welded.

Section 7 - Four-cycle engine specific technical inspection data

Note: Generic requirements are listed in section 6.1 and are applicable in their entirety unless specifically excepted on the engine specific tech sheet. The following specifications take precedence over any contradicting requirements of section 6. Exhaust requirements per section 6.2 and class structure description. Carburetor requirements per section 6.3 and class structure description.



Engine Specific Tech Sheet for: Briggs & Stratton 5hp Stock

Description: Single cylinder, two valve, four-cycle

Displacement: 13.017 cubic inches maximum

Cylinder head requirements: Machining permitted on the gasket mating surface and the top of the post bosses only. Welding on the cylinder head is prohibited. Helicoil repair of spark plug threads in original position permitted, no protrusion into combustion chamber allowed. Bolt hole diameters .348 inch maximum. Combustion chamber depths: piston area .011 inch minimum, spark plug area .408 inch minimum, valve area .300 inch minimum. Any head gasket, not made of aluminum or copper, in stock configuration and .043 inch minimum thickness midway between bolt holes is permitted. Gasket sealer of any type is prohibited. Eight stock head bolts required.

Bore and stroke: 2.6025 inch maximum bore, 2.437+.007" or - .010" stroke. Protrusion of the piston above the top of the cylinder deck .005 inch maximum parallel and inline with the wrist pin. *Note: Acceptance criteria of .015 inch maximum is allowable if specifically stated in series-specific rules and/or class structure.*

Carburetor requirements: Stock Briggs & Stratton 5hp carburetor only. Pressurized fuel delivery systems are prohibited. Any means of providing fuel or air flow not originally intended by the manufacturer is strictly prohibited. No welding to carburetor body or any component except outside end of mixture screw is permitted. Filter adapter top surface must be flat and .250 inch maximum thickness from mounting face. Inside diameter of adapter may be radiused .250 inch maximum. No more than one filter adapter gasket may be used, thickness .075 inch maximum. One or two carburetor mounting flange gaskets may be used with no sealer of any type. Swirl non-tech. Throttle shaft washer and rubber seal must be in place and stock configuration. Throttle shaft leading edge .040 inch minimum, trailing edge .086 inch minimum and a back flat depth of .030 inch minimum, flat on back side .030 min. depth. Butterfly must be unaltered stock with .059 inch minimum thickness at throttle shaft mating location. Butterfly screw must be unaltered stock, .322 inch minimum length. Except for outside end, needle screw must be unaltered

stock with o-ring and washer present. Jet must have stock recess on backside with no funneling of hole allowed. Main metering hole diameter .062 inch maximum. Idle hole diameter .028 inch maximum. Air horn diameter 1.011 inch maximum. Recess at flange end must be as cast, .726 inch maximum diameter. Carburetor bore, from flange end recess to intersection of air horn diameter, .695 inch maximum diameter - no attempts to modify fuel/air flow permitted (rifling, dimpling, protrusions, etc. not permitted). Diaphragm cover plate may be faced for proper sealing. Aftermarket diaphragm of stock configuration permitted. No sealing agents permitted on diaphragm side of cover plate gasket. Spring and cup must be unaltered stock. Long fuel pickup tube may not be brass. Short tube inside diameter .066 inch maximum. Breather tube must be removed. Any stock, single hole, domed Briggs & Stratton fuel tank cap is permitted including those with integral splash shields.

Valve train: Stock, unaltered breather valve only. Two gaskets permitted. Grommet and internal foam must be in place. Stock, unaltered, single angle valves only. Length of flat from seating surface to end of valve .035 inch minimum. Intake valve angle $30^\circ \pm 1^\circ$, 1.115 inch minimum head diameter. Exhaust valve $45^\circ \pm 1^\circ$, .990 inch minimum head diameter. Stock valve springs and lower retainers required. Springs may be machined to meet length requirements. Exhaust spring must be used on exhaust valve and may be used on intake valve. One stock upper retainer may be used on either valve, .058 inch maximum lip thickness. Intake valve spring (If used) length 1.240 inch maximum; .087 inch maximum wire diameter. Exhaust valve spring length 1.300 inch minimum, 1.500 inch maximum; .088 inch minimum wire diameter; inside spring diameter .625 inch minimum, .640 inch maximum. Both upper valve chamber surfaces may be spot faced for valve spring stabilization. Depth and geometry of spot face non-tech. Stock, single angle valve seats required. Valve seat height to cam centerline 5.740 inch minimum, 5.775 inch maximum. Valve seat may not protrude above cylinder deck surface. Valve seats must meet stock specs and may be replaced. May be pin punched in eight spots to tighten seat. They must be one angle 30 degrees intake and 45 degrees exhaust. Intake seat inside diameter is 1.004 max NO-GO, with thickness of .215" max and .199" min. Exhaust seat inside diameter is .880" max, with thickness of .215" max and .199" min.

Ignition system: Stock, unaltered coil and coil air vane required. Stock, unaltered plug connector required. Resistance from spark plug wire to ground is 2,000 ohms minimum, 5,000 ohms maximum. Any means to alter position of coil is prohibited. Stock, unaltered 5hp flywheel required. Flywheel weight 6.4 pounds minimum. Flywheel coating of any type is prohibited. Revolving or adjustable flywheel screens are prohibited.

Piston requirements: Stock Briggs & Stratton piston Mandatory. Length from top of piston to top of wrist pin bore .937 inch minimum. piston length is 1.671". Wrist pin outside diameter .490 inch maximum, inside diameter .291 inch maximum, length 1.732 inch + or - .005". Wrist pin must be unaltered as shipped from B&S.

Raptor III Rings Specs: Rings must be of Stock configuration and may be lapped with end gap cut. Rings must be in one piece when removed from piston, with the exception of Raptor III oil ring, however all pieces must still be present in ring land. Top two rings .090" min width. Top two rings may not exceed ring land thickness of .058" + or - .005". The step in second ring is .035" min. Oil ring min width is .070", ring groove must be present. Oil ring Thickness is .100" + or - .005".

Connecting rod requirements: Any commercially or Stock B&S available aluminum connecting rod and oil dipper is permitted. No .020" undersized rods allowed. Length from bottom of wrist pin bore to top of crankshaft journal bore 3.120 inch minimum, 3.1333 inch maximum. Connecting rod bolts steel 1/4" only. Min total rod weight is 135 grams. Min rod weight less inserts 113 grams. Min insert weight is 22 grams.

Crankshaft requirements: Stock crankshaft required. Machining, polishing, addition of material or otherwise altering of counterweights is prohibited. Stock timing gear in stock configuration required. Connecting rod journal diameter .990 inch minimum. Crankshaft journals may be clearanced to .775 inch minimum diameter to facilitate bearing removal. Thermal treatment of crankshaft is permitted.

Crankcase Side-Cover: Must be stock as supplied from B&S. May be pin punched to secure gasket. May use up to three gaskets of stock configuration.

Camshaft requirements: Camshaft base circle diameter .770 inch maximum. Ground cams are allowed but must retain stock configuration. Cams may be center drilled for grinding lobe face. Titanium lifters are prohibited. Lifter head diameter .982 inch minimum, 1.005 inch maximum; length 1.606 inch maximum.

Camshaft profile limits

Lift	Exhaust degrees	Intake degrees
.050	38°BBDC to 33°BBDC	7°BTDC to 0°TDC
.100	21°BBDC to 16°BBDC	10°ATDC to 17°ATDC
.150	2°BBDC to 3°ABDC	29°ATDC to 36°ATDC
.200	21°ABDC to 31°ABDC	55°ATDC to 64°ATDC

Max	.233 inch maximum	.233 inch maximum
.200	76°BTDC to 65°BTDC	43°BBDC to 33°BBDC
.150	48°BTDC to 40°BTDC	13°BBDC to 6°BBDC
.100	28°BTDC to 21°BTDC	6°ABDC to 13°ABDC
.050	10°BTDC to 4°BTDC	23°ABDC to 31°ABDC

EZ Spin start 45° to 60° ABDC

EZ Spin lift base .013 inch minimum, .019 inch maximum, 30° minimum duration, .001 inch maximum drop during duration.

Block requirements: Side cover must be stock. Stub for governor may be removed and hole plugged. Gasket mounting surface of side cover and block may be pin punched. A maximum of three stock configuration side cover gaskets are permitted. Block must be unaltered stock with the following exceptions: The lifter bores may be countersunk to provide lifter head fillet radius clearance. Any means to raise the bottom of the lifter bore boss is prohibited. Welding to the block shall be for damage repair or lifter bore reinforcement only and may not constitute a functional modification. The cylinder deck may be machined, not to extend into the rear fin. Carburetor and exhaust pipe mounting surfaces must be unaltered stock. Alterations to inside surfaces of intake and exhaust ports are allowed so long as the intake port will not accept an .880 inch diameter No-Go plug gauge and the exhaust port will not accept a 1.005 inch diameter No-Go plug gauge. No addition of material is allowed. No additional holes may exist in the intake and/or exhaust ports. No alterations on the underside of the valve seats are allowed. Cylinder sleeve, if present, shall be ferrous and uncoated. Welding of block to repair broken rod damage is permitted as long as it does not constitute a functional modification. Bottom exhaust hole may also be welded (cannot protrude into exhaust port). Extra oil hole may be drilled on flywheel side of block to help lubricate crankshaft 1/8" in diameter.

Engine Specific Tech Sheet for: Briggs & Stratton Limited Modified

Description: Single cylinder, two valve, four cycle

Displacement: 13.017 cubic inches maximum

Cylinder head requirements: Machining permitted. Helicoil repair of spark plug threads is permitted, no protrusion into combustion chamber allowed. Bolt hole diameters .348 inch maximum. Combustion chamber depth in spark plug area .400 inch minimum. Any head gasket is permitted. Eight stock diameter head bolts or studs required.

Bore and stroke: 2.6025 inch maximum bore, 2.437+/- .010 inch stroke.

Carburetor requirements: Any Tillotson HL series, with butterfly throttle assembly, and with .850 inch minimum and .900 inch maximum venturi diameter. Auxiliary vacuum fuel pump, pulsed from the intake, is permitted.

Valve train: Crankcase breather permitted. Stock, unaltered, single angle valves only. Length of flat from seating surface to end of valve .035 inch minimum. Intake valve angle 30°+/-1°, 1.115 inch minimum head diameter. Exhaust valve 45°+/-1°, .990 inch minimum head diameter. Valve springs and lower retainers non-tech. Both upper valve chamber surfaces may be spot faced for valve spring stabilization. Depth and geometry of spot face non-tech. Stock, single angle valve seats required. Valve seat thickness .205 inch maximum, .199 inch minimum. Valve seat height to cam centerline 5.740 inch minimum, 5.775 inch maximum. Valve seat may not protrude above cylinder deck surface.

Ignition system: Stock, unaltered coil required. Stock, unaltered plug connector required. Resistance from spark plug wire to ground is 2,000 ohms minimum, 5,000 ohms maximum. Any means to alter position of coil is prohibited. Unaltered billet flywheels only, ARC #6608, Clements #BAFWL, #FWSLTD, J.R. Race car # 555-3284, or UMMF #1001 only. Flywheel weight 4 pounds 12 ounce minimum. Revolving or adjustable flywheel screens are prohibited.

Piston requirements: Any commercially available aluminum flat topped is permitted. Coating permitted.

Connecting rod requirements: Any commercially available aluminum connecting rod and oil dipper is permitted. Connecting rod bolts are non-tech.

Crankshaft requirements: Stock crankshaft required. Machining, polishing, addition of material or otherwise altering of counterweights is prohibited, except for minor clearancing for camshaft may be tolerated. Connecting rod journal diameter .990 inch minimum. Crankshaft journals may be clearanced to .775 inch minimum diameter to facilitate bearing removal. Thermal treatment of crankshaft is permitted.

Camshaft requirements: Camshaft is non-tech.

Block requirements: Side cover may be clearanced to allow for adjustable camshaft bolts. Stub for governor may be removed and hole plugged. Gasket mounting surface of side cover and block may be pin punched. A maximum of three stock configuration side cover gaskets are permitted. Block must be

unaltered stock with the following exceptions: The lifter bores may be countersunk to provide lifter head fillet radius clearance. Any means to raise the bottom of the lifter bore boss is prohibited. Welding to the block shall be for damage repair or lifter bore reinforcement only and may not constitute a functional modification. The cylinder deck may be machined, not to extend into the rear fin. Carburetor and exhaust pipe mounting surfaces must be unaltered stock. Alterations to inside surfaces of intake and exhaust ports are allowed so long as the intake port will not accept an .880 inch diameter No-Go plug gauge and the exhaust port will not accept a 1.005 inch diameter No-Go plug gauge. No addition of material is allowed. No additional holes may exist in the intake and/or exhaust ports. No alterations on the underside of the valve seats are allowed. Cylinder sleeve, if present, shall be ferrous and uncoated.

Engine Specific Tech Sheet for: Briggs & Stratton Animal Limited Modified

Description: Single Cylinder, two valve Overhead, four cycle

Cylinder head requirements: Stock Briggs & Stratton Animal cylinder head part # 558. Machining of gasket surface only. Porting allowed, but seats must remain stock and cannot be touched in porting process, no pin punching or rifling allowed, and no addition of material in ports allowed. Depth of head at shallow part .011" Min. Depth at floor of the head .319" Min. Depth to top of valve seat .360" max .335" min. Head thickness measured from head gasket surface to head plate surface is 2.420". Width of combustion chamber at the widest part across the valve seat area is checked with a .2640" No-Go at a depth of .200" in the combustion chamber. Intake inlet .918 NO-GO, Exhaust outlet .980 NO-GO. Valve seats are one angle 45 degree (both) stock B&S only. Intake seat inside diameter .966"- .972". Exhaust seat inside diameter .844" - .850". Stock valve guides as supplied from factory. Stock replacement guide # 555645 only. Stock head bolts are required and all four are required. Head gasket may be B&S or aftermarket of stock configuration. No aluminum or copper allowed. Minimum thickness .049" measured in four places. Cylinder head plate must be stock. Bolt on reinforcement plate allowed .375" max thickness. Longer bolts may be used to attach the plate to stock plate on cylinder head.

Bore and Stroke: Stock bore is 2.690" and may be over bored to 2.725" (approximately .035" overbore). Stroke is 2.204" max stroke.

Carburetor requirements: Any HL series or similar carb with max carb bore of 1.005" and venturi max of .900". Butterfly must be held in place by screw. Filter adapter allowed and may use single or double pump stacks. Auxiliary fuel pump allowed, pulse- type only. Must be pulsed by intake manifold or upper oil fill cap only.

Valve train: Rocker Arms must be stock as from factory, min length is 2.865". Ball rocker as stock from factory. May be girdled or reinforced by similar means. A bolt or stud may replace set screw so that girdle may be used .600" + or - .010" diameter. Push Rod stock as from factory .185" - .190" diameter and length of 5.638"- 5.656". Rocker Arm studs must be stock but may be reinforced. The top of stud may be cut off if reinforcement plate is used. Stud must screw into stock plate. Stock valves ONLY. Must be one angle 45 degree. No polishing or lighting of valves. Intake valve diameter is 1.055" - 1.065". Depth of dish in valve is .099" - .119". Minimum height from combustion chamber surface to top of valve is .057". Exhaust valve diameter is .935" - .945". Depth of dish in valve is .084" - .104". Minimum height from combustion chamber surface to top of valve is .060". Any single or dual valve springs allowed. Aluminum or steel retainers only. Stock lifters as supplied from factory. Lifter head min diameter of .820" and max diameter of .860" with a max length of 1.525" and a min length of 1.515".

Camshaft requirements: Max lift of .310". Max valve lift of .307" taken with zero valve lash directly off of valve retainer. Max duration at .050" lift is 248 degrees and max duration at .200" lift is 153 degrees (check with zero lash).

Ignition system: Briggs & Stratton factory stock coils ONLY. No modifications of any type allowed. Spark plug connector must be stock type. Rubber plug boot allowed. Resistance from plug wire must be 3,000 ohms MIN and 6,000 ohms MAX.

Piston requirements: Aftermarket pistons allowed. From top of piston to top of wrist pin bore .658" min (check on circlip side of piston). Wrist Pin must be unaltered. Max inside diameter is .414". Outside diameter is .624" - .626" with Min length of 1.901". Aftermarket rings allowed. Min width top two rings .095" with a thickness of .059" - .064". Oil ring Min width is .065" with a thickness of .098" - .102". Expander ring must be installed.

Connecting Rod: Billet aluminum rods with or without inserts allowed. No titanium rods allowed. Rod length is 2.419" min, 2.429" max measured from top of wrist pin hole to top of journal.

Crankshaft requirements: Stock factory crankshaft only with stock factory timing gear installed in factory location. No modifications to crankshaft allowed. Aftermarket bearing of non self-aligning type with or without seal allowed (No ceramic bearings). Shims if used must be installed as from factory. Crankshaft journal diameter is 1.094"- 1.100".

Block requirements: Stock block as cast and produced with no alterations or modifications. Blocks repaired from broken rods are permitted as long as the repair does not constitute a functional modification to block. No bushings allowed except for those approved in this tech manual. The repair of one coil post is permitted as long as the remaining post is unaltered. No welding to block from the cooling fins upwards.

Flywheel: Stock ONLY flywheel is permitted B&S part # 555625 with plastic fins B&S part # 555526. No modifications allowed. Any or no key permitted. Stock flywheel washer must be used.



Engine Specific Tech Sheet for: Briggs and Stratton Animal 5.5 Stock

Description: Single cylinder, two valve, four cycle

Combustion chamber volume: 24 cubic centimeter minimum, with piston at TDC, using prescribed procedure.

Cylinder head requirements: Must be OEM casting. "Animal" cylinder head part # 558 only. Porting and/or grinding are not permitted. Depth of head at shallow part is .011" Min. Depth of head at the floor is .319" Min. Depth to top of valve seat .360" max and .335" min. Head thickness from head gasket surface to head plate gasket surface is 2.420". Width of combustion chamber at the widest part across the valve seat area is checked with a 2.640" NO-GO at a depth of .200" in the combustion chamber. Valve seats are one angle 45 degrees (both). Stock B&S seats only. Intake seat inside diameter is .966" - .972". Exhaust seat inside diameter is .844" - .850". Intake inlet .918" NO-GO. Exhaust outlet is .980" NO-GO. Stock valve guides as supplied from factory. Stock replacement guide part # 555645 is allowed. Max depth on intake guide is 1.255" from top of guide to the gasket surface above. Stock head bolts only, must have four. Head gasket B&S or after market allowed of stock configuration. No copper or aluminum. Min gasket thickness .049" measured in four places.

Bore and stroke: Stock cylinder bore is 2.690" with an overbore of 2.725" max (approx .035 overbore). Stroke is 2.204" max.

Carburetor requirements: PZ model 15 Carburetor only. Carb to intake sealer is o-ring only no other sealer allowed. Choke must be as supplied from factory, but may be fixed in open position. Adapter on fuel inlet allowed to accommodate 1/4" fuel line. Max throttle bore is .874" as cast. Choke bore 1.149" NO-Go. Venturi vertical .792"NO-GO, Horizontal .615" NO-GO, for top and bottom of venturi (widest part), and .602" NO-GO will be for horizontal for the narrowest part of venturi and this NO-GO may not enter slide area. Air pickup hole Max .061" NO-GO. Min length top edge of slide to deepest part of cut away 1.148". Must be as stock. Needle jet 1.690" max length and 1.680" min length. Taper on needle must remain stock and will be checked at .500" from the tip of needle and must not be smaller than .070". Any air cleaner allowed. Must be installed directly to carb. Filter can not create an air ram. Auxiliary fuel pump (pulse type), pulsed from the upper oil fill hole or intake manifold, is permitted. Stock Intake as supplied from factory only, no modifications allowed. May be drilled and taped for fuel pump fitting. Manifold length 1.740" min and 1.760" max. Inside I.D. .905" NO-GO max and .885" NO-GO. **Effective March 17, 2008, Auxiliary fuel pump (pulse type) must be pulsed from the upper oil fill hole on the crankcase only.**

Valve train: Stock valve cover only. Factory stock rocker arms and rocker plate only. Ball rocker as stock from factory. Ball .600 + or - .010" diameter. Push Rods as stock from factory .185" - .190" diameter. Length 5.638" - 5.656". Cylinder head plate must as stock from factory. Cylinder head plate gasket must be stock configuration and max thickness of .055". Stock valves only 45 degree angle only (both). Can not be lightened or polished. Intake valve diameter is 1.055" - 1.065". Depth of dish in valve is .099" - .119". Min height of combustion chamber to top of valve is .057". Exhaust valve diameter is .935" - .945". Depth of dish in valve is .084" - .104". Min height of combustion chamber surface to top of valve is .060". Valve springs stock B&S valve springs and keepers only. Springs must remain unaltered as supplied from B&S. Max valve spring length .930" with max wire diameter of .103" - .107" measured in three places. Inside spring diameter is .615" min, and .635" max. Valve spring retainers are as stock from factory with .060" - .070" thickness. Stock valve lifters only. Lifter head diameter .820" min, .860" max, with a max length of 1.525" and min length of 1.515".

Ignition system: B&S factory stock coils only and must be unaltered. There must be resistance from

ground to the plug wire. Min resistance is 3,000 ohms and a Max of 6,000 ohms. (May wait 10 minutes to make resistance check)

Flywheel: Only stock B&S flywheel allowed part # 555625 with Plastic fins. No alterations of any type allowed. Any or no flywheel key allowed. Minimum weight is 4lbs. 8oz.

Piston requirements: Stock unaltered B&S Animal piston only. No machining on piston is allowed. Wrist pin hole may be honed for clearance. Arrow must point towards flywheel. Min piston length is 1.768". Wrist pin must be as shipped from B&S. Max inside diameter is .414" with outside diameter of .624"-.626", and a Min length of 1.901".

Rings requirements: Three rings are mandatory. Rings must be as shipped from factory. Top ring must have chamfer or O must face up. Second ring must have inside chamfer down and O up. Stock oil ring must be installed with expander. Top two rings Min width is .095" with a thickness of .059" - .064". Oil ring Min width is .065", ring groove must be present. Oil ring thickness is .098" - .102".

Connecting rod requirements: Stock B&S rods and aftermarket Billet rods allowed. The use of first and second generation rods are allowed, also the aftermarket sock rods (ARC, WMS, etc.) are allowed. The new B&S rod bolts are allowed part #555654. Minor grinding of crankcase to clearance for new style rod bolts allowed. Rod length is 2.419" min, 2.429" max, measured from bottom of wrist pin hole to top of crank journal.

Crankshaft requirements: Stock crankshaft required. Machining, polishing, addition of material or other alteration of crankshaft is prohibited. Stock factory timing gear mandatory and must be installed in original location. Rod journal diameter 1.094" - 1.100".

Camshaft requirements: All profile readings are to be taken with zero valve lash. Lobes may be ground but must have a Min base circle of .870". Maximum lift, either lobe, is .255 inch, measured at valve with zero valve lash. **Block requirements:** Block must be as produced by B&S. Stub for governor may be removed and hole plugged. Block must be unaltered stock except machining of the cylinder head mating surface is permitted. Overbore and installation of ferrous cylinder sleeve allowable. Sleeve must be installed in stock location and orientation. Welding to the block shall be for rod damage repair only and may not constitute a functional modification. The repair of one coil post is allowed as long as remaining post is unaltered. No Knurling of valve guides allowed. Use of steel bore block originally intended for "Animal" only permissible.

Additional requirements: External surfaces of cylinder heads and blocks may be machined to remove excess material from mounting bosses, cast-in brackets, etc. that are no longer in use. No external machining allowed that produce a performance gain. If recoil starter assembly is removed, starter cup must also be removed and a non-rotating flywheel screen must be installed.

Camshaft Profile Limits:

Intake		Exhaust	
Lift	Degrees	Lift	Degrees
.020"	18 to 13 BTDC	.020"	61 BBDC to 56 BBDC
.050"	0 TDC to 4 ATDC	.050"	44 BBDC to 40 BBDC
.100"	16 ATDC to 20 ATDC	.100"	27 BBDC to 23 BBDC
.150"	33 ATDC to 37 ATDC	.150"	11 BBDC to 7 BBDC
.175"	42 ATDC to 46 ATDC	.175"	1 BBDC to 3 ABDC
.200"	53 ATDC to 57 ATDC	.200"	10 ABDC to 14 ABDC
.225"	67 ATDC to 71 ATDC	.225"	24 ABDC to 28 ABDC
MAX	Max Lift is .257"	MAX	Max lift is .257"
.225"	39 BBDC to 35 BBTD	.225"	78 BTDC to 74 BTDC
.200"	25 BBDC to 21 BBDC	.200"	64 BTDC to 60 BTDC
.175"	15 BBDC to 11 BBDC	.175"	53 BTDC to 49 BTDC
.150"	5 BBDC to 1 BBDC	.150"	43 BTDC to 39 BTDC
.100"	12 ABDC to 16 ABDC	.100"	27 BTDC to 23 BTDC
.050"	28 ABDC to 32 ABDC	.050"	10 BTDC to 6 BTDC
.020"	44 ABDC to 49 ABDC	.020"	5 ATDC to 10 ATDC

Section 8 – AKRA Box Stock Project

Class Structure

Participant ages are determined as of January 1st.

BOX STOCK SENIOR* Age 15 years & up – 375 lbs. – 87 Octane Gas Only – Approved engine: BS Project 6.5 OHV only, with Factory Stock exhaust required. Stamped steel drum shoe type clutches only. (Tires EL Maxxis or Local Club Tire Rule)

BOX STOCK SR CHAMP* Age 15 years & up – 400 lbs. – 87 Octane Gas Only - Approved engine: BS Project 6.5 OHV only, with Factory Stock exhaust required. Stamped steel drum shoe type clutches only. (Tires EL Maxxis or Local Club Tire Rule)

BOX STOCK JUNIOR 1* Age 8 to 10 years – 265 lbs. – 87 Octane Gas Only - Approved engine: BS Project 6.5 OHV only, with .400 inch maximum intake restrictor, no steering fairing allowed, maximum nose height 14 inches from ground level to top of nose, and Factory Stock exhaust required. Stamped steel drum shoe type clutches only. (Tires EL Maxxis or Local Club Tire Rule)

BOX STOCK JUNIOR 11* Age 10 to 12 years – 290 lbs. – 87 Octane Gas Only - Approved engine: BS Project 6.5 OHV only, with .450 inch maximum intake restrictor, no steering fairing allowed, maximum nose height 14 inches from ground level to top of nose, and Factory Stock exhaust required. Stamped steel drum shoe type clutches only. (Tires EL Maxxis or Local Club Tire Rule)

BOX STOCK JUNIOR 111* Age 12 to 15 years – 320 lbs. – 87 Octane Gas Only - Approved engine: BS Project 6.5 OHV only, with .500 inch maximum intake restrictor, and Factory Stock exhaust required. Stamped steel drum shoe type clutches only. (Tires EL Maxxis or Local Club Tire Rule)

SUPER BOX * Age 15 years & up – 375 lbs. – Methanol Only – Approved engine: BS Project 6.5 OHV only, with ARC Billet rod, ARC Billet Flywheel, Stock Appearing BS Project carburetor with .625” maximum venturi diameter, and AKRA approved exhaust required. Stamped steel drum shoe type clutches only. (Tires EL Maxxis or Local Club Tire Rule)

***Special Note:** With the exception of the Super Box Class, these classes are intended for participation by Novice Competitors (racers without previous karting experience) in an effort to bring new clientele into our sport and industry. We also encourage the use of 2005 and older model chassis for these classes. Should you wish to purchase a new model chassis it is mandatory that your purchase one of the new non adjustable budget models available through your chassis manufactures some of which are (Ultramax, Phantom, Coyote, Phoenix, and others). There may be others who are making these new models so we suggest that you check for availability.*

ENGINE SPECIFIC TECH SHEET FOR: BOX STOCK PROJECT 6.5 OVH

Description: Single cylinder, 2 valve, OHV 4 cycle

Important Note: All parts must be Box Stock Project factory production parts unless otherwise specified in this rules manual. No machining or alteration of parts is allowed unless specifically noted. All parts will be subject to a comparison to a known Box Stock part (when performing a comparison check it is recommended to use a +/- .005” tolerance). Engine will be teched as raced. There will also be a \$200 claiming rule in place for this engine. Refusing to accept the claimer will result in immediate disqualification of competitor along with forfeiture of any points earned to date in class. **Competitor will also not be allowed to compete any longer in that class.**

Combustion chamber volume: 27.5 cubic centimeter minimum, with piston at TDC, using prescribed procedure.

Cylinder Head Requirements: Must be OEM casting only. Porting and / or grinding are not permitted. Valve seats are two angles 45 degrees valve face and 30 degrees top relief. Stock head bolts only, must have four. Head gasket maybe after market, must be of stock configuration. No copper or aluminum gaskets allowed. Stock exhaust system only with no modifications. Any stock configuration gasket allowed no other sealer.

Bore and Stroke: Stock cylinder bore is 2.685" max. Stroke is 2.123" +/- .005".

Carburetor requirements: Huayi model carb only. Carb to intake sealer is gasket only no other sealer allowed. Choke must be as supplied from factory, but may be fixed to stay in open position. Choke bore .810" NO-GO. Venturi .615" NO-GO. Rear carb bore .751" NO-GO. Main fuel jet .028" NO-GO. Stock air cleaner assembly only.

Valve Train: Stock valve cover only with any stock configuration gasket, no sealer. Factory stock rocker arms and push rods only. Stock valves only 45 degree angle only both valves, no modifications allowed. Only Box Stock valve springs only. Max wire diameter on spring wire is .698" with a maximum tension of 10.8 lbs. at a height of .850".

Ignition system: Stock Box Stock system only and must be unaltered. Kill switch and low oil sensor may be disabled and removed.

Flywheel: Box Stock flywheel only with plastic fins. No alterations of any type allowed. Must also run stock flywheel key.

Piston and Rings: Must be unaltered Box Stock only. No machining of piston and rings allowed.

Connecting Rod: Stock Box Stock rod only. No machining of any type allowed. Stock rod bolts only.

Crankshaft Requirements: Stock Box Stock crankshaft required. Machining, polishing, addition of material or other alteration of crankshaft is prohibited. Stock factory timing gear mandatory and must be installed in original location. Crankshaft journal diameter is 1.180"- 1.175" min.

Camshaft Requirements: Stock as cast camshaft only. Maximum running lift of .245" checked at valve as run.

Block Requirements: Block must remain stock as produced. Stub for governor may be removed and hole plugged. No machining of block allowed. Welding to the block shall be for rod damage repair only and may not constitute a functional modification.

ENGINE SPECIFIC TECH SHEET FOR: SUPER BOX 6.5 OHV

Description: Single Cylinder, 2-Valve Overhead, 4-cycle

Cylinder head requirements: Stock (Box Stock Project) cylinder head only. Machining of gasket surface allowed. Porting allowed, but seats must remain stock and cannot be touched in the porting process, no pin punching or rifling allowed, and no addition of material in ports or to cylinder head allowed. Valve seats are two angles 45 degrees valve face and 30 degrees top relief. Stock head bolts are required and all four are required. Head gasket may be aftermarket of stock configuration. Cylinder head plate must remain stock.

Bore and Stroke: Stock bore is 2.678" and may be over bored to 2.718" (approximately .040" overbore). Stroke is 2.123" +/- .005".

Carburetor requirements: Stock appearing BS Project (huayi) carb with .625" maximum venture diameter only. Filter adapter allowed as well as auxiliary fuel pump, pulse type only. Must be pulsed from crankcase or by intake manifold. One piece intake manifolds only and may be used in place of phenolic spacer. Choke assembly may be removed. Aftermarket intake manifold allowed.

Valve train: Rocker arms must be as stock as from the factory. Ball rocker must be as stock from the factory. Push rods and rocker arm studs must be as stock from the factory. Stock valves ONLY. Valves must be one angle only 45 degrees. No polishing or lighting of valves. Any single valve springs allowed. Aluminum or steel retainers only. Stock lifters as supplied from factory.

Camshaft requirements: Max lift of .275" taken with zero valve lash directly off of valve retainer.

Ignition system: Box Stock Project coils and ignition modules **ONLY**. No modifications of any type allowed. Spark plug connector must be stock as from the factory.

Piston requirements: Aftermarket pistons allowed. Piston **CAN NOT ALLOW FOR ANY POP OUT!** Flat top pistons only no dome pistons allowed.

Connecting Rod: Billet aluminum rods with or without inserts allowed. No titanium rods allowed. Rod length is a non tech item.

Crankshaft requirements: Stock factory crankshaft only with stock factory timing gear installed in factory location. No modifications to crankshaft allowed. Aftermarket bearings of non self-aligning type with or without seal allowed (No ceramic bearings). Crankshaft journal diameter is 1.180"- 1.175" min.

Block requirements: Stock block as cast and produced with no alterations or modifications. Block head matting surface may be machined **NO POP OUT ALLOWED**. Blocks repaired from broken rods are permitted as long as the repair does not constitute a functional modification to block. No welding to block from the cooling fins upwards.

Flywheel: Aftermarket billet flywheels with cooling fins allowed. Minimum weight for flywheel is 3.3 lbs. Any or no key permitted. Stock flywheel washer must be used. **Any attempt to increase the RPM's of the BOX STOCK PROJECT engine (example: stronger/non-stock valve springs or decreasing exhaust restriction from stock levels) is strictly prohibited.** Should this be allowed or performed, AKRA will mandate the use of an aftermarket Billet style flywheel for high RPM use. ARC currently has these parts in their product line (part #'s 6618/6619) and they are approved by AKRA for use, others may become available as demand increases. Note: Under no circumstance is this type of flywheel allowed in the Box Stock Project Classes, Stock Flywheel **ONLY**.

Have a great 2008 season racing with the American Kart Racing Association, Inc.

American Speedway Championship Series