

2024 TECHNICAL MANUAL

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(Rule updates to 2023 Tech Manual in blue text)

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Van Gilder acquires AKRA from McCutcheon family

MONROE, N.C. — At a meeting Wednesday, January 17, 2024, American Kart Racing Association ownership was transferred from the McCutcheon family to Van Gilder of Tifton. Ga.

A new Limited Liability Company has been formed titled American Kart Road-Racing Alliance LLC (AKRA LLC) with Gilder as the single member. Effective immediately, AKRA Inc. will operate as AKRA LLC.

Gilder has served as AKRA's National Road Racing Series Director since 2016. In recent years he has also been AKRA Vice President. He assumes the business operations of AKRA from Linnie McCutcheon, who has operated the company since her husband Bill McCutcheon's death on August 7, 2023.

"All efforts will remain to continue AKRA into the future along the path of growth we've accomplished with the Road Racing Series and other programs over the past five years," Gilder stated. "The continued growth of karting is our primary goal, and I'm pleased to help keep AKRA intact. With the help of several capable people, I plan to work hard to build on Bill McCutcheon's evolving vision of the company since he founded AKRA in 2005."

Linnie McCutcheon echoed Gilder's statement after the transfer of ownership was finalized.

"I'm happy to see that AKRA will continue in the hands of Van and others who helped Bill grow the organization into what it's become. I wish for nothing but the best for Van, the racers, and everyone involved." McCutcheon said.

AKRA's 4-cycle rules package, certified tech official program, and committee members will remain in place. Don Gordner will remain as 4-cycle tech director and he will continue to oversee the program.

The steering committee for the AKRA / Hoosier Kartsport National Road Racing Series, including Gene Davis, Bill Kassy, Arthur McKenny and Gilder, will also remain in place.

Keith Shampine will continue as manager of AKRA's official website at akraracing.com.

Van Gilder can be reached via phone/text at 229-848-0483 or email americankartroadracing@gmail.com.





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AKRA CLASS STRUCTURE

Participant ages are determined as of January 1st.

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.

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.

JUNIOR III * Age 12 to 15 years – (320 Animal-290 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.

STOCK LITE* Age 15 years & up - 330 lbs. - Methanol only - Approved engine: Briggs & Stratton stock 5hp only, with AKRA approved exhaust required.

STOCK MEDIUM* Age 15 years & up - 350 lbs. - Methanol only - Approved engine: Briggs & Stratton stock 5hp only, with AKRA approved exhaust required.

STOCK HEAVY* Age 15 years & up - 375 lbs. - Methanol only - Approved engine: Briggs & Stratton stock 5hp only, with AKRA approved exhaust required.

SENIOR STOCK* Age 35 years & up - 375 lbs. - Methanol only - Approved engine: Briggs & Stratton stock 5hp only, with AKRA approved exhaust required.

STOCK SUPER HEAVY* Age 15 years & up - (400 lbs. Animal-375 lbs. Raptor) - Max Kart weight 200 lbs - Methanol only - Approved engine: Briggs & Stratton stock 5hp only, with AKRA approved exhaust required.

ANIMAL HEAVY* Age 15 years & up – 375 lbs. - Methanol only - Approved engine: Briggs & Stratton stock Animal 5.5hp only, with AKRA approved exhaust required.

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.

SENIOR CHAMP KART* Age 15 years & up – (425 lbs. Animal-375 lbs. Raptor) - Methanol only - Approved engine: Briggs & Stratton stock 5hp only. AKRA approved exhaust required.

JUNIOR CHAMP KART* Age 12 to 15 years - (360 lbs. Animal-340 lbs. Raptor) - Methanol only - Approved engine: Briggs & Stratton stock Animal with .505 inch intake restrictor or stock Raptor engine. AKRA approved exhaust required.

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.

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.

UNLIMITED ALL STARS * Age 16 years & up – Open Fuel (See UAS Rules) a) 100cc - 315 lbs, b) 135cc - 345 lbs, c) up to 150cc - 360 lbs, any reciprocating, normally aspirated, single-cylinder 2-cycle engines, 4-cycle Open Modified Engines, and F 2000 Engines without gearbox and AKRA approved exhaust required.

AKRA 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 more than 50 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 \$20.00. 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. The drivers age on January 1st is his or her's for the season. 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 awrds.

- 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 pts. 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:

Finis	h Poi	nts	Finis	h Po	ints	Finisl	n Poi	nts	Finis	h Poi	nts
1 st	200 + # o	f entries	9th	90 + # c	f entries	17 th	45 + # o	f entries	25 th	15 + # o	f entries
2 nd	175 + "	**	10 th	80 + "	44	18 th	40 + "	66	26 th	12 + "	**
3rd	155 + "	66	11 th	75 + "	66	19 th	35 + "	66	27 th	9 + "	**
4th	140 + "	66	12 th	70 + "	44	20 th	30 + "	66	28 th	6 + "	**
5th	130 + "	66	13 th	65 + "	44	21st	27 + "	44	29th	3 + "	**
6 th	120 + "	66	14 th	60 + "	44	22nd	24 + "	**	30 th	0 + "	**
7 th	110 + "	**	15 th	55 + "	44	23rd	21 + "	44	(All ren	naining finis	shers
8th	100 + "	66	16 th	50 + "	66	24 th	18 + "	66	will rec	eive entry p	oints)

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).
- The use of two way radios prohibited by competitor in all divisions with the exception of our Road Racing division. Only the track may use radios for communication to drivers.

FLAGS

Green Flag

The racetrack 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, checkered flag may be thrown in conjunction with red or yellow flag, 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, requiring the driver to 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.

Use of these Rules and Regulations require Tracks, Clubs, Promoters, or Series be sanctioned by American Kart Road-Racing Alliance LLC (AKRA LLC). Any other use is strictly prohibited with-out the express written consent of AKRA LLC.



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 when approaching a dimension's limits of acceptability. Especially 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. 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 SA, K or M 2020 (expires 12/2031), SA, K or M 2015 (expires 12/2026), CMS 2016 (expires 12/2027), CMR 2017 (expires 12/2027), SFI 24.1/2015 (expires 12/2025), SFI 31.1/2015 (expires 12/2025), SFI 41.1/2015 (expires 12/2025), SFI 31.1/2020 (expires 12,2030), SFI 31.1/2020 (expires 12/2030), SFI 31.1/2020 (expires 12/2030), FIA 889-2015, FIA 8860-2018, FIA 8860-2018-ABP, BSI A-type and A/FR types are legal for 10 years after date of manufacture. 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. Cameras may not be mounted on the helmet or any part of the drivers body... all cameras/recorders must be securely mounted on the top of body or frame, and within the confines of the bodywork.

B. Neck Braces

 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

- 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.
- 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.
- All personal safety equipment is subject to, and shall be available for, pre-tech inspection.
- 6. There is to be no weight added to the driver apparel.
- 7. Open-toe or slip-on shoes, e.g., Crocs, are not allowed. Shoes must be laced, either race driving shoes or sneakers. Racing shoes are recommended.

2. KART REQUIREMENTS

A. General

- 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.
- Rear view mirrors are allowed as long as they are mounted to the kart. No hand mounted mirrors allowed. This applies to champ karts only.
- 4. European style clevis snap pins shall be safety wired
- 5. All body panels must be securely mounted and fastened properly. No sharp edges to be exposed that may cause injury

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. Any weight bolts attached to seat must use large fender washers to secure. Placing weight in the seat to participate in another class without said weight fastened properly is a violation of the ballast ruling.
- All bolts used to fasten weights to the kart must be cotter keyed, safety wired, or double nutted.

C. Steering Components

- 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.
- 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 is 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 is 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. New 2pc adjustable design allowed in all divisions.

D. Wheels and Tires

- 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. No Carbon Fiber axles allowed!
- 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 1/4 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.
- 5. The use of a bead lock is permitted to prevent tire from rolling off the rim. Bead lock must be threaded through the rim.

NOTE: Drilling a hole in the rim and the use of everyday screws not permitted. Rule clarification: Maximum 4 screw in style bead locks per rim. Allowed fasteners are BUTTON HEAD, SOCKET HEAD ALLEN BOLTS or traditional bead locks available thru many kart shops. Sealing washers or orings allowed. NO OTHER additional products are allowed only the tire, rim and above listed items are acceptable.

E. Wheel Hubs and Axles

- Wheel hubs and axles shall be constructed of metallic materials. No Carbon Fiber axles allowed!
- 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

- Karts must, at minimum, have a braking system capable of braking both rear wheels equally and adequately.
- Classes of over 350cc 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

- 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. All karts must utilize #35 size chain in all classes.
- 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

- No pressurized fuel delivery systems allowed. No fuel injection systems allowed.
- 2. Fuel lines must be safety wrapped at all connection points If fuel filter is used it must be placed before the fuel pump..
- 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, 39.75 inches minimum. Wheelbase is measured from true axle centerlines, each side. This measurement includes all sprint chassis.
- 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.
- 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. If single rail nerf bars are used they must be of Z bar design to protect driver from side impacts. Minimum diameter of 1" tubing OD and .065" wall thickness minimum
- 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.
- 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.
- 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

- 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. Nonconventional 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.
- 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.
- 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: Arm restraints, attached to the harness, are mandatory.

D. Sprint Speedway racing bodywork requirements

- 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. No component of the bodywork may be adjusted or controlled in any way while the kart is in motion.
- Skirting devices must be constructed of a flexible, non-metallic material.
 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.
- 3. 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.
- 4. 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.
- 5. 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.
- 6. 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.
- 7. 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.
- 8. Height from ground level of all side panels and rear pods: 16.0 inches maximum. Except as noted in section 4.D.3, no part of the driver's body may be covered by any bodywork component, as viewed from above.
- 9. No bodywork component may extend aft of the rear bumper.

- 10. Distance from seat to any bodywork component: 1.0 inch minimum. 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.
 - 11. CIK style nose cones and side pods are allowed. The use of CIK mounting hardware is not mandatory.
 - 12. Height from ground level of all side panels and rear pods: 16.0 inches maximum. Except as noted in section 4.D.3, no part of the driver's body may be covered by any bodywork component, as viewed from above. No bodywork component may extend aft of the rear bumper.
- The nose cone may be no narrower than to expose one half of a tire width per side.
 CIK style nose cones and side pods are allowed. The use of CIK mounting hardware is not mandatory.
- 14. 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.

E. Champ kart bodywork requirements

- All bodywork components must be constructed of high strength plastic, fiberglass or advanced composites only. No component of the bodywork may be adjustable in any way while kart is in motion. 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.
- 2. Cockpit must be entirely open when viewed from above.
- 3. Wings, spoilers or other aerodynamic effects are prohibited.
- 4. 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 section is optional.



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. 2-cycle fuels

Unless otherwise specified in class structure description, the only acceptable fuel in 2-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 dianailine, Napthylamine, Nitrogen compounds (nitromethane, nitropropane, etc.), Styrenes, Toluidine, Zylidine.

1. Testing

a. Field testing

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.

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!

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. 4-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 – 4-CYCLE ENGINES: GENERAL REQUIREMENTS AND INSPECTION PROCEDURES

1. Generic 4-cycle tech procedure

Note: The following is a description of a full, generic 4-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 will have a grace period of 20 minutes after the checkered flag before engine is inspected with the exception of checking fuel. The engine will sit in tech during the 20 minutes. Once the tech has started no further cool down time will be allowed. Fuel may be checked at any time. The competitor may wave the 20 minute time period if they so wish and tech can begin at the inspectors discretion. From the time the event is checkered, the engine is not to be cooled down by any artificial means (fans, etc.).

- 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 Marvel Mystery Oil. 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 with the pto side towards inspector. Level the valve cover gasket area. Tilt the engine to the right a total of 6 degrees.. 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 addingthe 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. AIR FILTER: Any one piece, round bodied filter ... maximum overall length, excluding flange, 8 1/4" ... maximum diameter, 6 1/4". Air may only enter from exterior surface on side(s) of filter body. Aftermarket air filter adapter allowed (max length of 1.375). No open, unfiltered area, allowed. End of filter must be flat with no entrance for air. Pre-filter (foam or nylon) allowed. Loss of filter during event does not constitute disqualification. Verify air filter adapter to specifications. Air filter adapter not permitted without air filter. The use of the Walker filter with one flat side allowed. Filter must have flat side positioned with flat side down towards tire or flat side towards rear of tire. Filter may not be mounted in a position as a air ram. 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. Restrictor Plates must remain as produced by Manufacturer. No alterations to plates permitted. No boring, reaming, chamfering, stretching, or other alterations permitted to the center or mounting holes. Plates must retain factory anodizing. Plates must remain flat across both side surfaces as checked with flat bar. Plate must be oriented with manufacturer stampings facing outward and to the bottom on the Box Stock engines and to the top on FH Briggs engines. 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. Exhaust Pipe must be double nutted or safety wired and silencer must be supported by clamped on brace to secure it in place.
- E. Verify ignition system. 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. When using the tool that indicates off the tip of the valve (new lift/build tool) and not using a degree wheel, make sure piston is as close to TDC as possible before zeroing dial indicator.

Note :The new build/lift tool will be the tool of choice. To view a video on how to use the tool correctly go to the following https://youtu.be/8JmS606QzTo

- 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 gage (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.

L. Verify that there is no foreign material in the crankcase or the head other than small pieces of sealant that may have splintered off from the use of sealing the sump cover or head gasket.

2. 4-cycle exhaust systems

RLV B91 series silencers are the only approved 4-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. All exhaust systems must be constructed in a manner that directs all exhaust gasses away from the driver and towards the rear of the kart. New RLV B91 silencers with safety cable attachment device allowed, Note: all B91 silencers must be so equipped with safety device by January 1, 2016. Add-on safety devices will also be allowed.

RLV B91 dimensional requirements.

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.

RLV B91L dimensional requirements

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.

RLV B91XL dimensional requirements

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.

RLV B91MO dimensional requirements

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.

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. All 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. Header bolts and header studs must be safety wired to prevent header pipe from becoming detached from block assembly.

SECTION 7 - 4-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 class structure description.*

ENGINE SPECIFIC TECH SHEET FOR: BRIGGS & STRATTON 5HP STOCK

Description: Single cylinder, 2-valve, 4-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. Burris Racing head BSF 301-00 allowed.

Bore and stroke: 2.620" (+.050") 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 maximum and a back flat depth of .030 inch minimum. 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?+/-1?, 1.115 inch minimum head diameter. Exhaust valve 45?+/-1?, .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 optional. Stock, unaltered plug connector required. Resistance from spark plug wire to ground is required. 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: Piston must be of stock configuration. 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 .318 inch maximum, length 1.732 inch + or - .005". The New Burris Raptor 3 Piston Kit will be allowed in all Stock Flat Head Classes. All pieces of the kit will be Teched per measurements in the 2011 AKRA Rules Book. The only exception will be the Inside diameter of wrist pin, .318 inch maximum.

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 grove 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 cicle 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.

CAIVI	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								

CAMCHAET DECELLE LIMITS

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 gage and the exhaust port will not accept a 1.005 inch diameter No-Go plug gage. 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. Burris Racing side cover BSF 107-00 allowed.

ENGINE SPECIFIC TECH SHEET FOR:BRIGGS & STRATTON LIMITED MODIFIED

Description: Single cylinder, 2-valve, 4-cycle

Displacement: 13.45056 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: 2.6455" 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 .205inch 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. No roller camshafts.

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 allowed. 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 gage and the exhaust port will not accept a 1.005 inch diameter No-Go plug gage. 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, 2-valve Overhead, 4-cycle

Cylinder head requirements: Stock Briggs & Stratton Animal cylinder head part # 555635. 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. Stockreplacement guide # 555645 only. Stock head bolts are required and all four are required. Head gasket may be B&S or aftermarket of stock configuration. BS fire ring head gasket allowed. No aluminum or copper allowed. Minimum thickness .042" 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. Sealer on gaskets allowed.

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". Aftermarket guides allowed. 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, World Formula, or Billet lifters allowed. 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", WF diameter .969" min -.974" max Od with a 1.535" max length. Billet diameter of .970" max Od with a 1.526" max length.

Camshaft requirements: Max valve lift of .310". 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 or PVL(555681) 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. Wrist Pin must 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 non tech, any rod and flat top piston combination allowed.

Crankshaft requirements: Stock factory crankshaft only with stock factory or steel aftermarket 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: 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. Sealer, pin pouching of gasket surface on side of block and pin pouching of bearing pockets allowed. Welding or epoxing a plate or support on the flywheel side for block support allowed. Venting of crankcase with B/S # 555688 bypass tube, vent to catch can or an aftermarket PVC valve recycle system allowed. If running a baffle in valve cover it may be tack welded. (Can run with of without the baffle).

Flywheel: Stock ONLY flywheel is permitted B&S part # 555625 with plastic fins B&S part # 555526 or PVL Flywheel (555683). No modifications allowed. Any or no key permitted. Stock flywheel washer must be used.*



Description: Single cylinder, 2-valve, 4-cycle

Cylinder head requirements: Must be OEM casting. "Animal" cylinder head part # 555635 only. Porting and/or grinding is 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 tickness from head gasket surface to head plate gasket surface is 2.420". Width of combution 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. B&S fire ring head gasket part #798461 allowed. Minimum thickness of .042" on the metal fire ring.



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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 accomodate 1/4" fuel line. Max throttle borre 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 narrowist 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 only, 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.

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" - 5.658". Cylinder head plate must as stock from factory. Cylinder head plate gasket must be stock configuration. Stock valves only 45 degree angle only (both) . Can not be lightened or polished, minimum length of valves 3.250". 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 .060"- .075" 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: 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) Complete PVL System with Flywheel allowed.

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: Any Stock Configuration Animal Piston Allowed. 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 grove must be present. Oil ring thickness is .098" - .102".

Connecting rod requirements: Stock B&S rods and aftermarket Billet rods allowed. The uses of first and second generation rods 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.



INTAKE LIFT	DEGREES	EXHAUST LIFT	DEGREES
0.020"	18° TO 13° BTDC	0.020"	61° BBDC TO 56° BBDC
0.050"	0° TDC TO 4° ATDC	0.050"	44° BBDC TO 40° BBDC
0.100"	16° ATDC TO 20° ATDC	0.100"	27° BBDC TO 23° BBDC
0.150"	33° ATDC TO 37° ATDC	0.150"	11° BBDC TO 7° BBDC
0.175"	42° ATDC TO 46° ATDC	0.175"	1° BBDC TO 2° ABDC
0.200"	53° ATDC TO 57° ATDC	0.200"	10° ABDC TO 14° ABDC
0.225"	67° ATDC TO 71° ATDC	0.225"	24° BC TO 28° ABDC
MINIMUM LIFT	0.252"	MINIMUM LIFT	0.252"
MAXIMUM LIFT	0.257"	MAXIMUM LIFT	0.257"
0.225"	39° BBDC TO 35° BBDC	0.225"	78° BTDC TO 74° BTDC
0.200"	25° BBDC TO 21° BBDC	0.200"	64° BTDC TO 60° BTDC
0.175"	15° BBDC TO 11° BBDC	0.175"	53° BTDC TO 49° BTDC
0.150"	5° BBDC TO 1° BBDC	0.150"	43° BTDC TO 39° BTDC
0.100"	12° ABDC TO 16° ABDC	0.100"	27° BTDC TO 23° BTDC
0.050"	28° ABDC TO 32° ABDC	0.050"	10° BTDC TO 6° BTDC
0.020"	44° ABDC TO 49° ABDC	0.020"	5° ATDC TO 10° ATDC

ENGINE SPECIFIC TECH SHEET FOR: OPEN MODIFIED

Description: Single Cylinder, 2-valve, 4-cycle **Displacement:** 14.500 cubic inches maximum

Carburetor requirements: Any single and normally aspirated bowl or pumper style carb allowed. Auxiliary vacuum fuel pump allowed, may be pulsed from intake or crankcase.

Ignition system: Any magnitron style ignition system allowed. Any means to alter position of coil is prohibited. Unaltered billet flywheels only, ARC #6608, ARC 6607, Clements #BAFWL, # FWSLTD, J.R. Race car # 555-3284, or UMMF #1001 only. Flywheel weight 3 pounds 5 ounce minimum. Revolving or adjustable flywheel screens are prohibited.

Crankshaft requirements: Any billet crankshaft allowed. **Camshaft requirements:** No roller camshafts permitted. **Block requirements:** Any 5 hp flathead style block allowed.

2024 BRIGGS & STRATTON 206 ENGINE RULES (SCAN QR CODE)







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SECTION 8 - AKRA 6.5 CLONE OVH ENGINES CLASS STRUCTURE

Participant ages are determined as of January 1st.

A driver who changes age during the season may move up to the next class to participate.

Once the driver has made the choice to move up the driver may not move back down.

BOX STOCK* Age 15 years & up – BS Lite 330 lbs, BS Medium 350 lbs, BS Heavy 375 lbs, BS Super Heavy 425 lbs(min Driver weight 200 lbs) – 87 Octane Gas Only – Approved engine: All 6.5 Clone OHV Engines, with AKRA approved Exhaust System. Steel drum shoe type clutches only. (Tires – Local Club Tire Rule)

BOX STOCK SENIOR* Age 35 and over – 375 lbs. – 87 Octane Gas Only – Approved engine: All 6.5 Clone OHV Engines, with AKRA approved Exhaust System. Steel drum shoe type clutches only. (Tires – Local Club Tire Rule)

PRO BOX STOCK* Age 15 years & up –Pro Lite 330 lbs, Pro Medium 350 lbs, Pro Heavy 375 lbs, Pro Super Heavy 400 lbs(max kart weight 200 lbs) – 87 Octane Gas Only – Approved engine: All 6.5 Clone OHV Engines, with AKRA approved Exhaust System(Big Pipe Allowed w/B-91 RLV Silencer). Disc type clutches allowed. (Tires – Local Club Tire Rule or open)

BOX STOCK AMATEUR/NON PRO Age 15 to 17 years –375 lbs. – 87 Octane Gas Only - Approved engine: All 6.5 Clone OHV Engines, with .550 inch maximum intake restrictor, and AKRA approved Exhaust System required. Steel drum shoe type clutches only. (Tires – Local Club Tire Rule)

BOX STOCK SR CHAMP* Age 15 years & up – 400 lbs. – 87 Octane Gas Only - Approved engine: All 6.5 Clone OHV Engines, with AKRA approved Exhaust System. Steel drum shoe type clutches only. (Tires – Local Club Tire Rule)

BOX STOCK JUNIOR AMATEUR Age 5 to 8-230 lbs. 87 octane Gas Only. Approved engine All 6.5 Clone OHV Engines, with .375 inch maximum restrictor plate. No steering fairing permitted. Maximum nose height 14 inches from ground level to top of nose. AKRA approved exhaust system. Steel drum shoe clutch only. Tires local track option. NOTE: Gear rule also local track option and suggested.

BOX STOCK JUNIOR I* Age 8 to 10 years – 265 lbs. – 87 Octane Gas Only - Approved engine: All 6.5 Clone OHV Engines, 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 System required. Steel drum shoe type clutches only. (Tires – Local Club Tire Rule)

BOX STOCK JUNIOR II* Age 10 to 12 years – 290 lbs. – 87 Octane Gas Only - Approved engine: All 6.5 Clone OHV Engines, 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 System required. Steel drum shoe type clutches only. (Tires – Local Club Tire Rule)

BOX STOCK JUNIOR III* Age 12 to 15 years –320 lbs. – 87 Octane Gas Only - Approved engine: All 6.5 Clone OHV Engines, with .550 inch maximum intake restrictor, and AKRA approved Exhaust System required. Steel drum shoe type clutches only. (Tires – Local Club Tire Rule)

STOCK APPEARING 6.5 OHV, HEAVY – Age 15 years & up – 375 lbs. – Methanol Only – Approved Engine: All 6.5 Clone OHV Engines modified only according to AKRA Super Box 6.5 OVH Engine Spec. AKRA approved exhaust per Super Box 6.5 OHV Engine Spec required.

BUILDERS PREPARED/LIMITED MODIFIED – Age 15 years & up – Methanol Only – (All 6.5 Clone OHV Engines, per AKRA BP engine spec, with AKRA approved Exhaust System.)

SECTION 8 CON'T – AKRA BOX STOCK TECHNICAL INSPECTION DATA

Important Note: All parts must be Box Stock factory production parts unless otherwise specified in this rules manual. Compared to known stock part may be used when there is no language identifying the alteration of a part. No machining or alteration of parts is allowed unless specifically noted. Tumbling of engine parts is strickly prohibited. Engine will be teched as raced. There will also be a \$800 claiming rule in place for this engine (Track or Series Option). 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. Any new part must be submitted to and approved by AKRA before use. ALL New incoming engine & performance parts must be submitted to the AKRA office for review prior to them being allowed as legal components for competition. Whenever an engine or a part to an engine is in question and a request has been made by a holding card member of AKRA to send the item in question to AKRA for a second opinion, the item in question is to be sent "FIRST" to the representative of the region. Region is divided north and south of the Mason Dixon. North of the Mason Dixon will be sent to Don Gordner. South of the Mason Dixon to be sent to the AKRA Office

ENGINE SPECIFIC TECH SHEET FOR: BOX STOCK 6.5 OVH

Description: Single cylinder, 2 valve, and OHV 4 cycle

Combustion chamber volume: 26.5 cubic centimeter minimum, with piston at TDC, using prescribed procedure. **The Liquid CC check is the official check (IF THE ENGINE FAILS THE CC LIQUID CHECK AT ANY TIME DURING THE TECH PROCEEDURE IT MUST BE CALLED ILLEGAL)**.

Cylinder Head Requirements: Must be OEM casting only. Casting identification and number may not be ground off. Tillotson heads that meet AKRA specs permitted. Helicoil of the same threads may be used to repair damaged threads on exhaust only. All cylinder heads used must be the "JT" or "TG-1" 4 bolt valve cover 6.5hp gx200 Clone series heads with the 22cc style combustion chamber design. Valve seats may have up to three angles, 45 degrees valve face and 30 degrees top relief and 60 degree bottom relief. Bronze valve guides not permitted. The new tool to check the depth of the angle below the lower cut may not touch the valve guide when placed in the seat. Identify that the valve guide is in its correct position and its length is within spec. If the tool rotates freely without drag the seat is out of spec. All seat angles must be flat. There must be a clearly visible to the naked eye flat area to the top of the seat a total of 360 degrees. Cutting of the valve seats allowed to insure proper seal. Intake seat maximum ID .899", Exhaust seat maximum ID .863". Outside face of valve may not be below floor of combustion chamber (i.e. don't sink the valves). Area in question will be checked directly between the two valves. NO GO's for the intake opening Vertical(flat to oval sides) .962" - No Go: Horizontal(flat to flat sides) .950" and the exhaust exit Vertical(flat to oval sides) .974" - No Go: Horizontal(flat to flat sides) .967". Both ports must also retain their original D shaped design. Gasket matching of the D shape permitted. Total D shape design must have a defined edge as from factory on the gasket matting surface. Compared to known stock part applies to defined edge. No visual tech on surface finish, no adding of material, cannot touch the seat or valve guide in the porting process, and no rifling or dimpling of the port area. Valve Guide Length: 1.055" minimum (New gauge will check proper length as well as guide location or depth .890" into port area) also checks spring pocket flatness, stock guides ONLY. Head gasket/s may be after

market, must be of stock configuration, gasket thickness is a non tech item, sealer allowed to insure proper seal. Depth check between the valves, front to back and side to side may not vary by more than .005" max. No copper or aluminum gaskets allowed. Any stock configuration exhaust gasket allowed, sealer permitted, Header may also be run without gasket, sealer only. Allen head bolts permitted on Header to head. The use of Aftermarket FLANGED bolts of similar OEM design (head size, diameter, length and thread length/pitch) allowed as replacement for stock head bolts. Washers under head bolts permitted No studs allowed ... No additional washers allowed." Breather hole on valve cover may be tapped with 1/4" pipe tap to accommodate breather fittings, no over size drilling allowed. A tube attached at the valve cover breather hole and run to a catch can is mandatory. Must be functional.

Block Requirements: Stock cylinder bore is 2.678" may be bored to 2.691" maximum. No piston pop out allowed. Matting surface finish of block and cylinder head is a non-tech item, surfacing of both to correct gasket failure and meet cc check allowed however, **no piston pop out is allowed.** Radiousing the top of the cylinder for the purpose of gasket matching not allowed. May use 2 side cover gaskets of stock configuration? Block must remain stock as produced. Stub for governor may be removed and hole plugged. No machining of block allowed with the exception of, welding to the block shall be for rod damage repair only and may not constitute a functional modification. (Oil drain hole between lifters .250" max, .251" no go. Any type side cover fastener and lock washer permitted, must be original size, sealer permitted.) Solid dowel pin replacement for the side cover to block .317 maximum diameter allowed (Factory stock dowel pin is 8mm or .315). Dowel pin must remain in the factory position.

Carburetor requirements: Huayi, RUI*ING or Tillotson model carbs only. Carb to intake sealer is gasket only no other sealer allowed. Tillotson PK-1A carburetors approved for competition. Choke must be as supplied from factory, but may be fixed to stay in open position. (Choke area must remain as cast). Venturi .615" NO-GO. Venturi may be machined to spec, Minimum Venturi size is .608", no polishing permitted and all transitions must remain stock in and out of venturi. Rear carb bore .751" NO-GO. Carb bore at rear of carb .750" maximum depth(This measurement is taken from the flat surface on the rear of the carb down to the circular ridge at venturi edge). Main fuel jet .042" NO-GO. No use of locktite or other materials on high speed jets or damaged threads permitted in an attempt to lock jet in a non stock location. Main jet must seat firmly on bottom of E-Tube. Low speed idle jet is a Non Tech item. Stock emulsion tube must be used and unaltered, .066' max ID (NO-GO). Side holes in E-Tube 4 holes in bottom section max and must have 20 holes in middle section. Minimum E-Tube length 1.092". The minimum protrusion of the e-tube into the Venturi must be check by the NO GO gauge Huayi .488", Tillotson .488" or Ruxing .479. Minimum outside diameter of the E-Tube at any point is .154". Side holes in e-tube diameter .036" no go. Throttle shaft - .115" minimum. Stop arm of throttle shaft maybe filed to adjust for butterfly position. Butterfly - .037" minimum thickness. Butterfly screw minimum length .305", screw must remain stock as produced with no alteration allowed to achieve min length. Aftermarket air filter adapter allowed (max length of 1.375). Phenolic spacer must be flat across entire gasket mating surface, with a minimum thickness on gasket surface of .265" (not including gasket). Gasket surfaces must remain parallel ... no angle cutting allowed. Center inlet hole in black phenolic spacer may be enlarged. No rifling, grooving, dimpling or any attempt to redirect flow. (ie, enlargement only). Maximum mounting hole(s) size .300" NO-GO (checked with .300"+ pin gauge)". Phenolic spacer/gasket(s) subject to spray test to check for leakage or introduction of air into intake track. When performing the spray test the engine may stall or speed up, both indicate that the engine has failed this test.) Length of carburetor mounting stud I non tech. (Gasket Matching Allowed) The fuel filter if used, must be placed before the fuel pump.

Carburetor: When viewing the venturi from the airhorn side of the carburetor, the brightly machined portion of the venturi must begin immediately at the taper into the venturi. NOTE: no altering the taper to the venture.

The brightly machined portion of the venturi must be a straight non stepped cut in it's entirety. I.E., moving the brightly machined portion of the venturi left, right, top, or bottom not allowed.

A portion of the e-tube must be visibly present inside the brightly machined portion of the venturi on the airhorn side and must have a portion of the e-tube visibly present in the brightly machined portion of the venturi on the throttle plate side.

There is a gauge to measure the amount of visible venturi at the end of the gauge on the airhorn end of the carb. After installing the gauge there must be visible brightly machined venturi showing to the naked eye. Moving the gauge up and down (twelve o'clock or six o'clock) while the gauge is seated to the e-tube to show the area in question allowed.

The distance from the e-tube to the .750 step on the mounting flange end of the carb is also to be checked. The previous gauge (along with a newly designed gauge and plug) is to be used for this check. Place the plug in the mounting flange end of the carburetor making sure it is seated against the .750 step. Place the appropriate slot in the gauge (Ruixing or Huayi / Tillotson) in the bore over the e-tube making sure the gauge is seated against the e-tube. If the gauge pushes the plug out of the other end, the carb is considered "out of spec". The distance from the back side of the e-tube to the step is: Ruxing .405; Huayi .430.

The distance from the mounting flange to the e-tube is .970.

Left air bleed .053 must go; Right air bleed .040 must go

Four low side circuts to the right of the butterfly; .031 no go

The following are additional to the currently used gauges for inspecting Carburetor

Mounting Flange Gauge: Measures the distance from the e-tube to the mounting flange of the carburetor. Gauge may not touch e-tube.

Front Air Bleed Gauge: Measures the size of the air bleeds on the air cleaner end of the carburetor. This is a MUST GO gauge. Measures both left and right bleeds.

Small Fuel Bleed Gauge: Measures the 4 small holes opposite the butterfly. This gauge is a NO GO gauge. Do not apply excessive pressure when using the gauge.

Venturi Gauge: (2 piece; E-tube gauge and .750 step gauge): Gauge is designed for use in the Hauyi; Ruxing; and Tillotson carburetors. Gauge is stepped for different bore sizes. Gauge measures the following: In some carburetors it may be necessary to loosen the main jet to allow the tool to slide over e-tube for this check.

.750 step distance from e-tube. Place the largest of the two gauges (.750 step gauge) in the mounting flange end of the carburetor and seat against the .750 step area. NOTE: Be sure to use the tightest fitting end. Next place the appropriate end of the of the E-tube gauge in the opposite end of the carburetor and shove firmly against the E-tube. NOTE: The E-tube gauge has a long slot and a short slot in each end. The long slot is used for this check. If the E-tube gauge pushes the Step Gauge away (out of the bore) the carburetor is out of spec. (illegal)

E-tube Gauge: This gauge is used for checking the amount of visible highly machined venture in front of the gauge. The short slot is used for the check. NOTE: Be sure to choose the tightest fit section for the proper carburetor. Slide the gauge in the

mounting flange end of the carburetor and shove against the E-tube. Visually inspect the opposite end of the gauge for highly visible machined venture in front of the gauge. NOTE: It may be necessary to move the gauge to 12 o'clock or 6 o'clock while holding firmly against the E-tube to allow a visible area to be noticed. If no HIGHLY VISIBLE MACHINED AREA OF THE VENTURE can not be seen the carburetor is out of spec. (illegal). In some carburetors it may be necessary to loosen the main jet to allow the tool to slide over e-tube for this check.

Valve Train: Stock four bolt valve cover only with any stock configuration gasket, sealer allowed. Factory stock rocker arms 1:1 ratio and push rods only. Minimum over-all length of rocker arm 2.145". minimum thickness of the upper valve stem end of rocker arm .030". Surface finish of contact area of rocker arm to valve stem **ONLY**, non tech, to adjust for proper running lift. Square tiped rockers allowed. Stock steel/stainless nitrate coated valves only 45 degree angle only both valves with a minimum weight of 21 grams each valve, Stock valves only 45 degree angle only both valves, Intake valve Max OD .982" +/- .005" and Exhaust valve Max OD .945" +/- .005", Minimum margin on both valves .010. No modifications allowed. Single valve springs only. (Installed Height for valve springs .815", must be checked by using the .815" spring must go gauge with retainer seal and shims in place on intake an exhaust valve if used.) Shims may be used to achieve .815" Installed height. All shims used must remain flat. The valve stem seal when used as a shim may not be altered in any way. The spring must sit on the lower lip of the seal in it's entirety. Seal will be placed in the spring and it must rotate without drag. The valve stem seal can be used or not used and is no longer a tech item unless used as a shim. Also the rubber inside seal is a non tech item. Oil seal when being used on the exhaust side may have tiny washers that sit on top of valve guide and recess them selves into the bottom of oil seal when turned upside down. Should washers be used in this area the seal MUST sit flat in it's entirety either on the floor of the head or on top of other shims being used. Washers may only be used on the exhaust side. Exhaust lash cap minimum height is .150". Machining to achieve minimum height permitted. No machining allowed to top of lash cap. Lash cap minimum diameter .330. No machining permitted to reach minimum. Compared to known stock part. No chamferring to edges of lash cap allowed. Prescribed check procedure as follows Remove valve spring, reinstall spring retainer and shims, insert .815" must go gauge in spring location. Gauge must go in both locations Intake and Exhaust with any allowed retainers and shims in place, as raced, during check procedure. Verify that the spring ends are parallel to each other (procedure to check for parallel ends using dial calipers check overall length of spring then rotate spring 180 degrees and check overall length again 180 degrees from original check, the two checks cannot vary by more than .060") Max wire diameter on spring wire is .071" with a maximum tension of 10.8 lbs. at a height of .850", and a maximum tension of 18 lbs at .650". Prescribed procedure for using weight checker is as follows. Spring must slide over post on it's own to the bottom. When weight is placed gently on the spring, push weight down onto spacer so that it bottoms out, hold weight down for 5 seconds. Release weight and shine a flashlight between weight and spacer. Light must be visible in its entirety of 360 degrees to disqualify spring. Add (Additional check for valve springs - Each spring is to be checked using a .750"height by .800"width plate gauge and a .250" (square) no-go gauge to check the center spacing of the spring coils while inserted in the plate gauge.) Prescribed check procedure as follows -Insert the spring in the .750" X .800" plate gauge (spring must be centered in plate gauge and must fit inside of gauge with the ends of the spring wires perpendicular to the plate). Once inserted in the plate gauge take the .250" no-go gage and check the center coil spacing on both sides. The .250" no-go gauge must be parallel to the spring wire and perpendicular to the center of the spring when checking. The .250" no-go must pass check on at least one side of the spring. If the .250 pin does not

enter either side, the spring is deemed a legal spring. If the .250 pin does not enter one side but does enter the other side, the spring is deemed a legal spring. If the .250 pin enters both sides the spring is deemed "ILLEGAL". NOTE: The .250 pin is to be used on one side and then the other side. At no time is the .250 pin to be slid through the block to touch the coil on the opposite side.

This check is to be performed after the 10.8/lb , 18/lb check, and .071 max wire diameter check have been performed. Ends of the valve springs may be sanded to help meet spring checks. Springs MUST PASS both checks (Dead Weight & Spring Box) if available. Lash cap on exhaust valve only. Valve stem seal allowed on Intake and Exhaust valve. BS lifters only, no modifications allowed. Over-all length of push rod 5.285" max, 5.230" min. Push Rod must be of 3 piece design (Hollow or solid tube with 2 solid ball ends). Lifter Head diameter .915" min with no visible modifications. Weight check lifters 18 grams min and push rods 9 grams min. Machining to bottom of lifter allowed. Bottom must remain flat. To be mated bottom to bottom at tech to a known lifter. Machining to lifter on opposite side at base of stem permitted. No other machining to lifter allowed. Weight rule still applies. Retainer may be machined on top surface only to meet weight spec. Intake 4 grams. Exhaust 5 grams.

Ignition system: Stock Box Stock system only and must be unaltered. Spark Plug boot must be the stock black hard plastic boot ONLY! (Effective 3/1/2016) Kill switch and low oil sensor may be disabled and removed. Flywheel: BSFW-1 and DJ-168F-16200-A steel billet flywheels allowed, same weight check as stock flywheel.(5lbs 4oz minimum) including plastic fins. Also allowed the ARC 6619, ARC 6618, ARC 6686, ARC 6689, Raceseng/Speed Karts Flywheels RSP-13-075 Rewheel NF- S1 & RSP-13-077 Rewheel F-S1, Speed Karts Aluminum Billet, PVL 211-900 in the BS classes. (Minimum weight on aluminum flywheels 3.3lbs). Non-fin flywheels must utilize stock plastic fins. No alterations of any type allowed. As of 1/1/2013 stock cast flywheel are no longer allowed. Timing and flywheel key is non-tech. The factory plug wire may be replace with automotive 7mm wire of the same length.

Piston and Rings: Piston must be unaltered Box Stock only. Overall piston length 1.935" max, 1.920" min and from top of wrist pin to top of piston .580" max. Arrow on top of piston must be pointed toward valves/lifters. Overall length wrist pin 2.100" min, inside diameter .550" max. Top ring and middle ring .115" max. / .105 min. width, .060" max thickness/.055 min...) Filing of ring end gaps permitted including oil expander, max end gap .040"(top 2 rings only). Lapping of rings permitted for proper seal. Piston ring must be in one piece (unbroken) when presented for tech. Piston rings must be self supporting in cylinder bore and concentric to cylinder bore. Oil ring assembly must be self supporting in cylinder bore when checked installed on piston with connecting rod attached (rod cap and bolts installed are not required for this check). Roll crankshaft to bottom dead center and place piston in engine as run. Minimum weight of piston 145 grams Piston to be weighed with the oil ring assembly on piston, minimum weight 145 grams.. Honing of wrist pin journals permitted ... bore surface must remain flat and retain stock configuration edges. Skirt of piston must remain as produced ... no chamfering, radiusing or breaking of edges permitted. Up to .010" over pistons allowed

Connecting Rod: Stock Box Stock rod only. Stock rod bolts only. Length of from top of journal to bottom of wrist pin hole 2.375" max and 2.350" min. Honing of journal end and wrist pin hole permitted, those sufaces must remain flat. Oil hole size .219 no-go. Resizing of factory chamfer not permitted. Angle drilling from factory angle not permitted. Minimum weight of rod assembly 133 grams. New stock performance CAST rod allowed.

Crankshaft Requirements: Stock Box Stock crankshaft required. Stroke is 2.123" +

.010" or -.010". Machining, polishing, addition of material or other alteration of crankshaft is prohibited. Stock factory timing gear mandatory. Crankshaft journal diameter is 1.180"max - 1.168" min. Any 9 ball self aligning bearing allowed. NO ceramic bearings allowed. Bearing may be clearanced for slip fit in block. The gear on the crank may have a tack weld to secure from movement. Weight of crankshaft 1680 grams minimum.

Camshaft Requirements: Stock camshaft cores only, ez-spin assy must remain as stock. Cam lobe base circle diameter .865" -.005"/+.010" Duration check for Intake and Exhaust lobes (taken off pushrod). Dial indicator must be set at zero with piston at top dead center. Intake duration of 219 degrees at .050 lift/86 degrees at .200 lift. Exhaust duration of 222 degrees at .050" lift/97 degrees at .200" lift. All checks will allow +2/-5(Minimum duration checks effective 3-1-2016) degrees for wear and gauge variances. Max Intake lift on cam .225" – Min .215"lift taken at the pushrod. Max Intake lift at the valve .238". Max Exhaust lift on cam .232" – Min .222" lift taken at the pushrod. Max Exhaust Lift at the valve .242" Running lift will be checked by the new running lift tool. Running lift will be checked at the tip of the valve stem. When checking lift without the use of the degree wheel, piston should be as close to top dead center as possible before setting dial indicator to "0". To view a video on proper use of the tool go to this link: https://youtu.be/8JmS606QzTo

Blower Housing Assembly: pull starter must be present and remain stock. Pull starter may be rotated for a better crank angle. Color and finish of Blower Housing, Valve Cover, and all sheet metal is a non tech item. Running lift will be checked by the new running lift tool.

Header and Muffler Requirements: PRO BOX STOCK EXHAUST: NOTE: To be used for all Junior classes as well as adult. (4104) RLV EXF B91 dimensional requirements.

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. Total length is 7 inches. All junior classes will have a grace period of March 1st 2024 to comply. Must be of traditional "candy cane" design, silencer must be directed down and towards the rear bumper. Flange for header maximum thickness .510. Allen bolts of original diameter permitted. Maximum height from top of header flange to top of pipe curve is 10". Bottom edge of silencer end cannot be higher than 9" from the bottom edge of the block mounting surface. Tech the pipe by placing engine on flat surface and measuring from the flat surface to the bottom edge of silencer, cannot exceed 9". All headers must be securely wrapped/sleeved from mounting flange to silencer ... no wrapping/sleeving permitted on silencer. Maximum height from top of header flange to top of pipe curve is 10 inches. Water/hose (worm style) clamps may not be used to secure silencer to pipe. Box Stock header length 16 1/2" min and 20 1/2" max (measured on inside of pipe with 1/4" steel tape). Sealer may be used to assist gasket seal. Header may also be run without gasket, sealer only.

NOTE #1. AKRA reserves the right to adjust the exhaust ruling as necessary.

NOTE #2. The use of a water/hose clamp (worm type) to secure muffler to pipe is not grounds for a DQ the first time discovered. A warning is to be issued first offense and ask to not bring the it back. Second offense is grounds for DQ.

Fuel Tank Requirements: Floor Mounted fuel tank mandatory (stock tank must be removed). Pulse type fuel pump allowed.

Fuel Pump Requirements: Fuel pump must be pulsed from either the crankcase or the valve cover. You may install a flat metal plate in the original tank location for the purpose of mounting the throttle linkage and fuel pump.

Clutches: Stamped steel drum shoe type clutches only. No disc clutches allowed in Box Stock Classes. (Exception: Pro BS Classes, Disc Clutches Allowed).

Claimer Rule: You must finish the race in the box stock class to purchase the winners engine for \$800 (minus the clutch/chain guard/throttle kit, header pipe/muffler, air filter adaptor/air filter, top plate & fuel pump).

ENGINE SPECIFIC TECH SHEET FOR: STOCK APPEARING 6.5 OVH

Description: Single cylinder, 2-valve overhead 4-cycle engine. Fuel – Methanol Only – The engine, unless otherwise noted, must appear like a BSP, or Harbor Freight 6.5 HP engine. Parts may be interchanged between engines. Internally, you can change whatever you want as long as it meets the restrictions below. The restrictions are only for cost control by restricting some expensive machining options, expensive billet parts, and containing performance to levels with reasonable durability expectations.

Cylinder Head Requirements: Stock cylinder head or Stout head allowed. Machining of gasket surface allowed. Porting allowed, and no addition of material in ports or to cylinder head allowed. Stock Head Bolts are required and all four are required. Four Head Bolts are required, may be aftermarket. Must use stock configuration head gasket, thickness non tech. Cylinder head guide plate for pushrods must appear stock.

Bore and Stroke: Stock bore is 2.678" and may be over bored to 2.758" (approximately .080" overbore). Stroke is 2.133" max taken from top piston

Combustion Chamber Volume: Non Tech.

Carburetor Requirements: Stock Appearing Huayi or RUI*ING carb. Air Filter adapter of 1.375" max length allowed, Air filter may be up to 8" long. Floor pan mounted fuel tank required (stock tank to be removed) and pulse-type fuel pump allowed. Fuel pump must be pulsed from either the crankcase or the valve cover. Black phenolic carb insulator must be used. Choke assembly may be removed, if removed, choke shaft hole must be plugged. Jets, tubes and orifices are non-tech. Any throttle mechanism allowed that works with the stock throttle shaft's bell crank. Remaining stock throttle mechanism parts may be removed. A plate may be bolted to the top of the engine to mount fuel pumps and/or throttle mechanisms.

Valve Train: (Champion Rocker Arm assembly and valve cover allowed.), pushrods, and lifters must appear stock. No additional support for rocker studs permitted. Any single valve springs allowed, aluminum retainers and keepers allowed. Valves and retainers may be used in any combination on either side. (Example: Exhaust valve, retainer and lash cap may be used on intake side). Valve head diameters must be between .940" and .990". Stainless steel valves allowed.

Camshaft Requirements: Max lift of .285" taken with zero valve lash directly off valve retainer.

Ignition system: Box Stock ignition module only. No modifications of any type allowed. Sparkplug connector must be stock as from factory.

Piston Requirements: Oversized Piston may be flat top or dished. Honda OEM dished (ZOT) pistons, Box Stock or Weisco piston's may be used. Piston **CAN NOT ALLOW FOR ANY POP OUT!**

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

Crankshaft Requirements: Stock, factory crankshaft only with stock, factory timing gear in factory location. Timing gear may be tack-welded to crankshaft in 2 places to avoid slippage. No modifications to crankshaft allowed. Aftermarket main bearings of non self-aligning type, with or without seal, allowed. (**No ceramic bearings**). Crankshaft Journal diameter is 1.180", 1.175" minimum.

Block Requirements: Stock Block, as cast and produced with no alterations or modifications other than those specifically permitted. Block head matting surface may be machined, however, **no piston pop out is allowed.** Blocks may be welded for repairs as long as the repair does not constitute a functional modification to the block. No welding to block from cooling fins upward to deck surface. Governor stub hole may be tapped and plugged. All bolt bosses in block may be drilled and tapped for repairs or other uses. Additional side cover gaskets as required for crankshaft thrust are permitted. No welding or addition of material (such as epoxy) of any kind to the head, side cover, or block.

Flywheel: SFI certified flywheel with cooling fins only (mandantory) with no machining or alteration of any kind allowed. Minimum weight for flywheel is 3.3 lbs. Any timing key or no key at all may be used. A flat washer may be used, and is recommended, between the flywheel and the nut. Pull starter may be replaced with a flywheel cover and any electric starter nut may be employed.

Header and Muffler Requirements: Any header is allowed. No muffler unless required by track. If required use RLV-4106. Header may be bent in any configuration to keep it away from the driver and so the muffler will not extend past the rear bumper. Header must be securely wrapped from flange to swedge prior to the race.

ENGINE SPECIFIC TECH FOR: BUILDERS PREPARED / Limited Modified

The intent of this class is to give those who want to make an incremental move up from Box Stock. The rules allow a builder into the engine, but are written with the intent of making it possible for the average quy to build his own engine.

BP (Builder Prepared) / Limited Modified 6.5 OHV – Fuel Methanol ONLY – Approved Engine: 6.5 OHV 196cc clone engine modified only according to BP/ Limited Mod OHV Engine Spec. Tires are track/series option.

ENGINE SPEC SHEET FOR BP/LIMITED MODIFIED 6.5 OHV CLASS

Description: Single cylinder, 2-valve overhead 4-cycle engine. No aftermarket coatings of any type are permitted on any part of the engine.

Cylinder Head Requirements: Stock cylinder head or Stout head allowed. Machining of gasket surface is allowed. No addition of material in ports or to cylinder head allowed. Porting and / or grinding permitted. Valve seats may have three angles, 45° valve face and 30° top relief and 60° bottom relief. Inside diameter of valve seats must be stock(Into .899" max ID and Ex .862" max ID). Valve seats must appear stock and must be in stock position and depth. Stock head bolts are required and all four are required. Head gasket/s maybe after market, must be of stock configuration, and gasket thickness non-tech. Depth check between the valves, front to back and side to side may not vary by more than .005" max. (Champion Rocker Arm assembly and valve cover allowed.) No other alterations to the stock head are permitted.

Bore and Stroke: Stock bore is 2.678" and may be over bored to 2.718" Stroke is 2.123" +.010"-.005".

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

Combustion Chamber Volume: 25 cubic centimeter minimum with piston at TDC using procedure posted below. The CC check is the official check.

Carburetor/Intake 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 or crankcase, is permitted. Pulse-type fuel pump is mandatory. Carburetor Manifold is of one piece design only.

Ignition system: Ignition timing is non-tech. Stock ignition module only. No modifications of any type allowed. Sparkplug connector NON TECH.

Piston Requirements: Any flat top piston assy up to .035" oversize. Piston may not pop out above cylinder deck.

Valve Train: Stock valve-train only in stock configuration (Stainless Valves allowed). Any dual valve springs with aluminum retainers and steel keepers are allowed. No additional support for rocker studs permitted. Valves must be one angle only, 45°. No polishing, lightening or knife edging of valves (1mm min. margin). Valve length is non-tech. Outside face of valve head may not be below the combustion chamber floor. (i.e. don't sink the valves) Valve cover may be drilled for fuel pump pulse fitting, otherwise, it must remain unaltered. Valve cover gasket is non-tech. Champion rocker assembly with raised valve cover allowed, riser for stock valve cover allowed.

Camshaft Requirements: Stock camshaft cores only, Duration check for Intake and Exhaust lobes (taken off pushrod). Maximum Duration at .050" lift of 248 degrees and Maximum Duration at .200" lift of 153 degrees. Maximum lift of .310" at the pushrod

Crankshaft Requirements: Stock, factory crankshaft only with stock, factory timing gear in factory location. No modifications to crankshaft allowed. Aftermarket steel main bearings of non self-aligning type, with or without seal are allowed. No ceramic bearings. Crankshaft Journal diameter is 1.180", 1.168" minimum.

Block Requirements: Stock Block, as cast and produced with no alterations or modifications other than those specifically permitted. Block head matting surface may be machined, however, no piston pop out is allowed. 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. All bolt bosses in block may be drilled and tapped for repairs or other uses. Additional side covers gaskets as required for crankshaft thrust are permitted. All parts associated with the governor and the low oil sensor may be removed, plugging any associated holes.

Flywheel: Approved SFI certified billet aluminum flywheel only. No machining or alteration of any kind allowed. Minimum weight for flywheel is 3.3 lbs. Any timing key or no key at all may be used. A flat washer or spacer may be used, and is recommended, between the flywheel and the nut. Handheld electric starter may be used. Current Approved flywheels: ARC 6619, ARC 6618, ARC 6689, Raceseng Flywheels RSP-13-075 Rewheel NF- S1 & RSP-13-077 Rewheel F-S1, Speed Karts Aluminum Billet.

Header and Muffler Requirements: Header Pipe Length: Minimum 16 ½"-Maximum 20 ½". (measured on inside of pipe with ¼" steel tape). Silencer must be a RLV B91MO type. Header must be securely wrapped from flange to muffler prior to the race. Exhaust Pipe must be double nutted or safety wired and silencer must be supported by clamped on brace to secure it in place.

DYNO CAMS DUCAR (DCD212) DCD212 TRACK OPTION CLASS

This class is designed to reach Karter's who choose to race on a budget. We desire to keep this class as affordable as possible in order to bring new Karters into our sport as well as maintain Karter's who would otherwise have to get out due to budget constraints. This class is NO WAY intended for the PRO KARTERS and should never be utilized as a "BIG MONEY CLASS". The 212 should be used in adult entry-level classes and entry-level restricted classes by simply using the current Red Green Purple and Blue restrictor plates. Dyno Cams also offers a 5200 rpm coil should tracks choose not to use restrictor plates.

In the following set of specs you will notice language that states "REFERENCE ONLY." It is there because the engine is new to AKRA. We need to work with officials in the field to assist us on visuals in the areas that we have identified numbers around. If any officials in the field notice that the areas we have identified are significantly out of spec please contact Dyno Cams or myself Don Gordner immediately so that the area in question can be corrected.

Engine must be factory rated Ducar 212 cc and run in box stock configuration. All parts must be stock OEM factory production parts unless otherwise specified in the rules. No alterations, cutting, grinding or machining of any parts. No sand blasting, tumbling or polishing of any kind. This is strictly prohibited. All parts are subject to be checked by a known stock part when in question. Absolutely no reading between the lines. If it is not specifically mentioned in these rules, then it must remain stock. Should there be any doubt as to the legality of a part on the engine the competitor has the right to file a protest with the track/official. The part in question can then be shipped to Dyno cams or AKRA for a review. Please include contact information for the promoter so Dyno Cams or AKRA will be able to contact the promoter. When shipping a part or a complete engine it is imperative that the engine or parts be put in the proper box. The box then should be taped shut and signatures of the owner and the promoter or inspector be written in magic marker across the taped portion of the box.

DCD212 1: FUEL: 87 octane only.

DDC212 2: BLOCK: Stock OEM 212 Block with no machining allowed with the exception of cylinder clearance. Maximum bore size 2.758. Zero piston pop-up.

DCD212: 3: Cylinder Head: no machining permitted on gasket surface and absolutely no porting of any kind. Depth from gasket surface to floor of combustion chamber between the valves .485 +/- .010. "FOR REFERENCE ONLY".

DCD212: 3-1: HEAD GASKET: Stock OEM graphite style head gasket only. Minimum .043 thickness. No sealer.

DCD212: 3-2: INSTALLED HEIGHT: Intake installed height .990. Exhaust installed height .885. "Reference Only"

DCD212: 3-3: VALVE GUIDE: intake length 1.160 minimum. exhaust length 1.395 minimum. Valve guide height under valve spring to be measured with a 7/16 washer. Hole in washer may need to be opened just a bit to fit over guide assembly. (Proper tooling to be made for purchase). Washer is approximately .087 thick. Guide may not extend out of washer. "NOTE": this check is a "REFERENCE" at this point in time. The purpose of the check is to discourage shoving the exhaust guide upwards out of the port to create a better flow.

DCD212 4-1: SEATS: The seats must remain stock and may have three angles of 30/45/60 as from the factory. However, you may not attempt to excessively sink the valves in an effort to increase airflow. Excessive cutting of the 30 or the 60 cut will be grounds for "DISQUALIFIED"

DCD212 5: VALVES: 45 degree face on both valves.

5-1: Length: Minimum length of valves 2.915. To be measured from top/head of valve to top of stem where retainer clips rest. "For reference only "

5-2: Valve head diameter: Maximum intake head diameter 1.062 +/- .005. Maximum exhaust head diameter .946 +/- .005. "For reference only"

5-3: Oil seal: Permitted on intake side only. Rubber to remain on seal. Maximum thickness of seal .025.

5-4: SHIMS. No shims permitted.

DCD212 6: Pushrods: stock OEM push rods must be used with a maximum length of 5.825 + -0.010.

DCD212 7: lifters: Stock unaltered. .920 Head. 1.360 length.

"For reference only"

DCD212 8: Spring Retainers: no light weight components. .055 lip minimum.

DCD212 9: Piston: Stock OEM dished piston with valve relief on the exhaust side only. Maximum size 2.7565 measured at the bottom of the skirt.

DCD212 10: RINGS: Stock OEM rings. No altering of the rings permitted especially the oil ring. End gap of top and middle ring not to exceed .030.

DCD212 11: CONNECTING ROD: Stock unaltered Rod. Rod may be honed for oil Clarence. No rounded or broken edges. No billet rods.

DCD212 12: CRANKSHAFT: Stock unaltered. Governor gear must be installed in stock location. Max stroke 2.163+/- .010.

DCD212 13: FLYWHEEL: PVL aluminum diecast flywheel only. No cast iron flywheels. Must utilize stock unaltered timing key. Stock OEM unaltered ignition coil. Timing to be tested at 26 or 27 degrees

13-1: Rev limited coil, 5200 rpm. Governor may be removed.

13-1-1: We would like to make sure that all Tech Officials are aware that when using a rev-limiting coil on any type of engine, the tachometer will show rpm spikes when the engine hits the limiter. As a result of this, you will need to watch the tachometer if free revving the engine in post-race tech. The engine should rev to 5200-5300 rpm on average before showing spikes. You should NOT issue a DQ based on maximum recall due to the spikes shown by the rev limiting coil. Please be advised and contact us should you have any questions. We are committed to the continued growth of this program and appreciate your support.

DCD212 14: GOVERNOR: governor gear arm and linkage must remain intact and functional if not using rev limiting coil. Track may require engine to be free revved on the stand to a certain rpm to determine if the governor is properly functioning. It has been our findings that some engines surge and some will not. We do not require the surge because in stock form the engine will perform best at 5000 RPM or less. However RPM requirements will be left entirely up to race promoters.

DCD212 15: CAMSHAFT: Stock OEM cam only.

15-1: Base Circle: .865 + .010 / -.005

15-2: Max Lift: Intake: .225

Exhaust: .232

15-3: DURATION: Intake: @ .050 = 210

@.200 = 75

Exhaust: @ .050 = 212

@.200 = 84z

15-3-1: ALL CHECKS At PUSH ROD

DCD212 16: ROCKER ARM: Must remain as supplied from factory. Absolutely no alterations or machining permitted.

DCD212 17: SPRINGS: Wire diameter .079 maximum. Uninstalled height 1.383 maximum.

DCD212. 18: CARBURETOR: Stock OEM Ruixing carburetor only.

"NOTE": May be checked with clone tooling and rules 18-1: Venturi: .615 maximum and .608 minimum.

18-2: E-tube: Stock E-tube with with maximum of 20

holes. Maximum center hole .066. Minimum length 1.092.

18-3: Butterfly: .037 minimum

18-4: Throttle shaft: .115 minimum 18-5: Throttle-shaft screw: .305

18-6: Carb bore: .750

18-7: Phenolic spacer: must remain stock as produced

18-8: Jetting: Pilot - .019 no go both o rings present

Main - .030 no go

18-9: Gaskets: Clone metal gasket with rubber attached may be used instead of "thin" paper gasket at choke end.

DCD212 19: AIR BOX: Stock OEM airbox must be used and in stock unaltered form only. Air must enter through the air filter only. Any open unused holes must be plugged. Stock OEM air filter with foam sock must be used.

DCD212 20: MUFFLER: Stock OEM muffler in unaltered form must be used. If any doubts about the integrity of the muffler should arise simply cut the muffler in half to determine legality by comparing it to a known stock muffler.

DCD212 21: FUEL TANK: stock tank should be removed and an auxiliary tank mounted on the floor pan should be used. A top plate and fuel pump are permitted with the pump to be pulsed off the valve cover only.

If track option is to retain the fuel tank up to 4 1/8 inch holes in the fuel cap for venting is permitted. Vent tube may be unplugged.

NOTES: Low oil shut off may be disconnected no taping or decals added to the recoil in any attempt to block off air.

No engine builder advertisement permitted on the engine.

Chain guard throttle linkage top plate and fuel pump are the only aftermarket parts permitted on the engine.

There is no claimer rule. The engine in question must be protesting by competitor or subject to tech by the track if the promoter or tech deems necessary. The protest and acceptance fees are to be determined by the track.

Should there be any doubt as to the legality of any part on the Ducar 212 engine the competitor has the right to file a protest with the track officials. The part in question may then be shipped to DynoCams or AKRA for a review. Please include the contact information for the promoter so contact can be made to discuss the situation. When shipping Parts be sure to tape the box securely and signatures of the owner and the tech inspector and the promotor must be signed over the tape with a magic marker.

AKRA is pleased to add the following update to the DCD 212 engine platform...

ADD to DCD212: Muffler. For the remainder of the 2024 AKRA events the following Exhaust change is permitted.

RLV EXF 5066 pipe and RLV 4125 Silencer may be used.

Pipe may be wrapped with heat wrap in its entirety or wrapped to the mounting brace only. Wrapping not mandatory. It is highly recommended for the use of the Big Bertha type chain guard if not wrapping.

Following are the specs for the exhaust:

DCD 212 Header: EXF 5066

20-1: Length- maximum 7 inches minimum 6 7/8. To be measured from inside short radius using right side bolt hole with 1/4 inch tape when removed from engine. By placing a 1/4 measuring tape under the corner of the bottom fin of the head stretch measuring tape across top of pipe to end of pipe. Measurement should be 16 1/8 plus or minus 1/8 inch.

20-2: Outside diameter: 1 inch

20-3: Height- 10.5 inches. Measured with engine off mount on flat surface to tallest area of header.

20-4: Flange: .250 Maximum with consideration to metrology

20-5: Weld: Not to exceed .250 in height, total circumference from flange to pipe on both inside and outside.

20-6: Pipe must extend into silencer to a depth that does not permit exhaust to leak through slots in the silencer. Place the end of a 1/4 inch tape in the corner of the bottom fin of the head. Stretch measuring tape from bottom of head fin across highest portion of pipe to slotted end of silencer. Slotted end of silencer must be 7 3/4 inches or less.

20.6-1: Wrap: pipe may or may not be wrapped. If wrapping, pipe may be wrapped to brace or beyond brace to end of silencer. If not wrapping big Bertha type guard to be used!!

20-7: Silencer: EXF 4125

20-7-1: Screens: 5 screens.

20-7-2: Hole size of screens .1285 no go.

20-7-3: Diameter: 2.224

20-7-4: Body: 6 3/16

20-7-5: Mounted Height: Measured with engine off mount on flat surface to highest point at end of silencer. 6 inches.

20-7-6: Gasket: One gasket or Silicone. One or the other.

20-7-8: Maximum length of pipe and silencer not to exceed 16 1/8 inches. To be measured by placing the end of a 1/4 measuring tape under the bottom corner of the bottom fin of the head. Stretch measuring tape across the top of the pipe to the end of the silencer.

