

# SEEKONK SPEEDWAY YOUTH RACING ASSOCIATION 2009 MINI CUP RULEBOOK

## DISCLAIMER STATEMENT

The rules and /or regulations set forth herein are designed to provide for the orderly conduct of racing events and to establish minimum acceptable requirements for such events. These rules shall govern the condition of all events, and by participating in these events, all participants are deemed to have complied with these rules. NO EXPRESS OR IMPLIED WARRANTY OF SAFETY SHALL RESULT FROM PUBLICATION OF, OR COMPLIANCE WITH THESE RULES AND/OR REGULATIONS. They are intended as a guide for the conduct of the sport and are in no way a guarantee against injury or death to a participant, spectator or official.

The race director shall be empowered to permit reasonable and appropriate deviation from any of the specifications herein or to impose any further restrictions that in his/her opinion does not alter the minimum acceptable requirements.

ALL PARTICIPANTS SUBJECT TO THE SYRA RULES ARE EXPECTED TO KNOW THE RULES AND ANY CLAIMED IGNORANCE OF THE RULES WILL NOT BE ACCEPTED OR TOLERATED AS AN EXCUSE.

## CONDUCT AND BEHAVIOR

1. The driver/parent/guardian is responsible for the actions and words of his owner and pit crew in all respects. The driver/parent/guardian shall be the sole spokesperson for his/her car owner and its crew in any and all matters, and must talk with the track officials in charge regarding their conduct and behavior.
2. There will be no harassments of officials, safety crews, ambulance crews or other SYRA members. All SYRA members and their crews are expected to conduct themselves as professionals and reflect it in all actions, words and appearance.
3. All personal property brought to the speedway by a team must be removed with them when they leave. Examples: tires, race car parts, used oil, etc.

## LICENSING

All drivers in SYRA must have a valid competition license. Age limits are 10 to 18yrs old. A minor release form signed by all parents or court-appointed guardians must be submitted for competition license. The SYRA director may penalize, suspend and/or revoke a competitor's license for any period of time if the member has violated or attempted to violate SYRA rules. Contact the speedway office for available forms @ 508-336-9959

## ENTRY AND SIGN IN

1. All entries must be signed in at least 45 minutes before the scheduled starting time of the first SYRA race. Upon entry to the pits, drivers must report to the handicapper's booth to sign in their car and receive the required restrictor plate for their division. If late, you may be put to the rear of the field.
2. All drivers must attend driver's meeting, this is MANDATORY.
3. All persons under the age of eighteen (18) must have signed a minor's release with all parent's or guardian's signatures.

## COMPETITION, RACE PROCEDURE and FLAG RULES

See Seekonk Speedway general rules.

## TIMING and SCORING

1. Electronic scoring equipment is used during all racing events.
2. Each car must have a working transponder for scoring purposes. Transponders can be purchased from the Speedway office or directly from AMB. The location of the transponder is directly in front of the fuel cell behind the engine with the arrow pointing towards the ground. There must be a clear view to the ground from the transponder. It's recommended to use an inline fuse in power feed and ground back to battery.

## POINTS

SYRA feature points start at 50 and drop 2 points per position. Heat points start at 15 and drop one point per position. No points are given to consolation races.

## HANDICAPPING FOR RACES

Handicapped points are given to the car and driver for each event the same as in the point system. Handicapped points are used to assign positions in qualifying and feature races starting the lowest at the front and highest to the rear. All races (except start of season) will use the handicapped point standings accumulated from each race the driver has attended. Additional points are added to the handicapping system for reasons listed follow. Any car/driver that misses an event will be credited with 65 handicapped points for that given night also when a car misses a regular race night, the car must run at the rear of the field when the said car returns. Any car disqualification will receive handicapped points of 15 for heat/consi & 50 points for features or combination of both when rules violations can be proven for both events. When there is a driver change, handicapping will be according to whichever is greater, the car or driver points. At any time during the season track management may deem necessary to start any competitor toward the rear of the field for rough riding, technical issues or if, in their opinion a car is not competitive on a given night based on lap times and handling problems. Feature winners may not start any closer than the third row unless car count can not support this rule. Cars that do not complete their heat races will start at rear of feature.

## DISPLAY OF SYRA and SPONSOR LOGOS

An official SYRA decal and sponsor decals may also be displayed in order to participate in any SYRA point races. The SYRA decal must be placed on the upper half of the front quarter panels in front of the door numbers. SYRA division sponsor decals/logos will be displayed in designated areas on all cars participating in SYRA events.

## MANDATORY SAFETY EQUIPMENT and GENERAL ACCESSORIES

1. SYRA REQUIRES THAT ALL CARS BE FITTED WITH AN ALUMINUM RACING SEAT THAT FITS THE DRIVER'S PHYSICAL CHARACTERISTICS.
2. All seats must be securely mounted in the center line of the vehicle. The seat center line must match that of the vehicle. There must be six mounting points connecting the seat to the frame. (2) Located near bottom of seat (2) located behind driver's back (2) located at neck support. Mounting bolts must be grade 8 minimum 3/8" with larger size washers on both sides.
3. No driver shall compete in any event with head or arms extended outside of any car opening. The top of the driver's helmet must be at least one (1) inch below the top edge of the roll cage. This will be measured with the driver securely buckled in the car's seat.
4. Only a racing helmet of current standards of SNELL 2000 rating (Special Application = SA) or later can be used. No open face helmets are allowed. Helmets involved in major accidents should be sent to the Snell memorial foundation for inspection.

5. All drivers must wear an approved driving suit, shoes and gloves. Driver suits must effectively cover the body from the neck to the ankles and wrist, manufactured of fire resistant material. All suits, shoes and gloves shall be manufactured of the following materials: NOMEX, KYNOL, FPT, IWS, Fiberglass (tm), DURETIE, FYPRO, PBI, KEVLAR or any suit carrying an SFI rating of 3-2A/1 or greater. A single layer suit is the minimum allowed.

6. ARM RESTRAINTS and NECK COLLAR: Driver arm restraints and neck collars are MANDATORY. Must be SFI rated and used at ALL times.

SYRA strongly recommends the use of any head and neck restraint systems and built in fire extinguishing systems, being a minimum of the cold fire system or equivalent. Strap mounted fire extinguishers prove to be more of a projectile in the cars causing more injuries in accidents.

All entrants must have in their pit area at all times as part of their equipment, a fully charged fire extinguisher.

### POST RACE TECH and SCALES

1. Cars directed to the scales or tech area by Speedway officials must stay with their cars at all times. No changes or adjustments allowed unless authorized by officials. When cars are directed to another area or even a competitor's pit stall for further inspections this area is still considered the tech area.

2. Trunk and hood must remain closed until such time as a tech official opens one or the other. The driver and car must remain in tech until given permission to leave by the official in charge. Drivers failing to follow this procedure are subject to disqualification.

3. If a car is submitted for tech with a completely flat tire (0 lbs pressure) which was caused by an on track incident, and tech official determines this to be the case, the competitor will be allowed to add a maximum of 18 lbs of air or replace the tire and wheel with another acceptable by tech official.

4. During any inspection at anytime if a car is found with a vagrant rules violation the said car can have all accumulated points stripped and be banned from racing the remainder of the year. This will be reviewed by the contest board. The Race Director will have final decision.

5. Seekonk Speedways general rules will be used for all other rules not outlined here.

### SYRA ENGINE SEAL PROGRAM

All engines competing in the SYRA division must have their engines inspected and sealed to be eligible for use at Seekonk Speedway. Each engine must have a total of four (4) seals. Two (2) seals attached to the flywheel side cover, one (1) seal to the engine block cover and one (1) seal to the cylinder head. If any seals are found missing or tampered with the SYRA officials can have the motor re-inspected at anytime. Engines can be rebuilt at any engine shop but must be sent to one of the two authorized engine sealers below.

Mountain Machine Services – Can perform engine rebuilds and inspections.

Location: Gibsonville, NC. Phone 828-685-0355

Nat's Racing Engines – Inspections only.

Location: Seekonk, Ma. Phone 508-336-4142

2008: Only older MMS seals that have been recorded with the Speedway and current SYRA seals will be accepted. 2009 all engines must be equipped with Seekonk SYRA seals.

## 2008 (SYRA) Rules

### 1.0 VEHICLE TECHNICAL SPECIFICATIONS

#### 1.1 FUELS

Unleaded gasoline available at a corner service station only. No mixing of brands. Racing fuel, aviation fuel or additives of any type are not allowed. All fuels used must adhere to these specifications by means of any test deemed appropriate.

2) Specific gravity equals 0.700 to 0.780 at 60 Deg. Farenheight

3) Nitrogen-bearing additives are prohibited in the fuel or in the engine oiling systems.

4) All fuels must be Dielectric constant as per DC meter from any local supplier of standard unleaded automotive gasoline sold under 94 octane. The director at his/her discretion may disqualify any competitor based upon any traces of these additives or readings whether detected by a device or sense of smell.

#### 1.2 OILS SPECIFICATIONS

The use of combustible oils and/or additives is strictly forbidden. SYRA reserves the right to require competitors to adhere to these specifications by the use of spec oils and any/or other test deemed appropriate. Oils and/or additives found to be an irritant to other drivers and or people would be banned.

#### 1.3 WEIGHT SPECIFICATIONS

All cars using 600 restrictor plate minimum 650lbs. Cars using 750 restrictor plates shall weigh minimum of 680lbs with a maximum 55% left side at the post race inspection for all cars. This is with driver in racing suit and helmet - race ready.

#### 1.4 BALLAST

Ballast shall be added to all cars as required to meet minimum weight. Ballast shall be securely mounted to the frame or placed inside frame rails on newer chassis. Each section of ballast must be mounted directly to the frame, each mount must attached to the frame tubing in two places. Weight blocks may not be bolted to each other. Ballast shall be mounted by means of grade 8 hardware, minimum 3/8 thread, two per block. Ballast shall be solid with no sharp edges. No mechanical or electrical devices for shifting weight permitted.

#### 1.5 BATTERIES

Battery shall be mounted securely behind the driver outside the driver's cockpit to the frame or chassis structure. Maximum dimensions of the battery shall be: L 6.5 W 5.0 H 8.0 inches. Battery mounting, wiring and/or charging post are subject to approval by the Tech Official.

#### 1.6 FUEL CELLS

All fuel cells shall be securely mounted and centered to the frame. The location shall be behind engine in front of rear bumper. It is mandatory the fuel cell is mounted inside a (Steel) metal enclosure. The filling neck of the fuel cell shall not be in the driver's compartment. Minimum capacity of the fuel cell shall be 1.5 gallons. Filler caps, fuel pickup openings and lines, breather vents, and fuel lines shall be so designed that if the car is partially or totally inverted, fuel shall not escape. Fuel cell breathers shall vent outside the vehicle and away from the exhaust system Fuel lines shall not enter or run through the driver's compartment.

#### 1.7 FIREWALL AND FLOOR

A firewall constructed of aluminum and/or steel (minimum 22 gauge) shall completely separate the vehicle into two areas known as the engine and driver compartments. The floor of the vehicle shall be constructed of STEEL only with a minimum thickness of .030"

#### 1.8 CATCH TANKS AND FILTERS AND BREATHER

All orifices within the engine compartment shall vent into a catch tank that is securely mounted within the engine compartment (1.E.Valve cover)

### 1.9 ELECTRICAL AND SWITCH SPECIFICATIONS

All electrical wiring shall be neatly routed within the chassis of the vehicle. No part of the harness may be capable of "floating" within the driver compartment. Switches shall be mounted to a dash or panel located in front of and accessible by the driver. The ignition or master kill switch shall be located on the left-hand side of the vehicle and marked on/off Accessibility to the ignition or kill switch through the left side window is mandatory and shall be unobstructed:

#### 1.10a WINDOW SAFETY NETS

All vehicles are required to have safety nets on BOTH sides of driver that are securely fastened to the chassis (No wire ties) All drivers must use arm restraints that restrict his/her arms from exiting the vehicle.

#### 1.10b WINDOW MATERIALS AND FASTENING

The windows front and rear are mandatory and shall be constructed of a clear polycarbonate (i.e. Lexan) material with a minimum thickness of .0625. Windows shall be securely fastened in place. Plexiglas is not a polycarbonate material. There shall be no holes in -the front windshield the rear window may have holes maximum of 1" inch in size located at bottom portion of window, no more then five (5) permitted. Door windows are not permitted.

### 1.11 DATA COLLECTION DEVICES

If used, data collection devices shall fall within these parameters. Device shall collect and/or remember only these approved inputs:

- 1) Head Temperature
- 2) Exhaust Gas Temperature
- 3) Exhaust Air/Fuel Mixture
- 4) Revolutions Per Minute

All devices shall be securely mounted and shall not obstruct the driver in any way.

### 1.12 DRIVER RESTRAINT SYSTEM

The use of a 5-point quick-release style safety harness is mandatory. The safety harnesses shall have a SFI rating of at least 16.1 and a minimum of 3 inches wide. The safety harness shall be free of fretting and visible wear with a manufactured date less then 3 years old. The safety harness shall be mounted securely to the chassis with grade 5 SAE bolts minimum of 3/8 thread. It is recommended that all drivers wear a HANS or Hutchens head and neck restraint device.

### 1.13 \* BODY REQUIREMENTS

The body is required to duplicate the look of a late model stock car as closely as possible. Hand made and/or home built bodies shall be subject to SYRA approval. SYRA encourages the purchase of bodies from reliable and known sources. A list of approved body manufacturers is available by request. All cars must maintain a minimum roof height of no less than 30.5 inches. No body vanes permitted. Body must meet minimum chassis height requirements (with driver) and can not be offset on the frame. Side body protectors are permitted by these specifications, lexan material only ¼" x 2" maximum, centered to axle placed on doors only.

### 1.14 BODY CONSTRUCTION

The body, which includes, trunk, hood and roof panel, shall be constructed of fiberglass and /or plastic. If the body is constructed of more then one material, no visible difference of the two shall be evident. If the body is constructed of multiple pieces (i.e. clips, fenders etc.), the seams shall have close fits and an appealing look. All bodies shall have separate trunk, hood and roof panels. The trunk and hood panels shall have hinges. The hood panel shall have 2 positive pin style latches toward the front of the panel. The roof panel shall be hinged in the front.

Body dimensions shall be:

<i>Inches</i>	MIN	MAX
Width	40	45

Length	105	115
Height	30.5	35

#### 1.15 BODY MOUNTING

Body shall be mounted to the center of chassis by means of screws or bolts. Body must meet chassis height rule. The only holes allowed in the body shall be located on the front spoiler under the bumper. A maximum of 2 holes, 3 inches by 6 inches or 4 holes 3 inches by 3 inches. A metal mesh screen mounted from inside the body is required for any/all holes.

#### 1.16 SPOILER REQUIREMENTS

Spoiler must be non-adjustable and mounted on the rear deck lid. Spoiler must maintain the same contour as the deck lid. Spoilers shall meet a minimum width of 35 inches. The height of the spoiler shall be a minimum of 3 inches tall. Spoiler angle must be at 45 degrees at all times. Spoiler shall be constructed of a material thick enough to keep it from flexing while at speed. Supports permitted.

#### 1.17 BUMPER SPECIFICATIONS

Bumpers are required on front and rear of the vehicle. Bumpers shall not be visible or protrude outside the body. Bumpers shall be in a fixed fore and aft location by means of bolts or welding.

#### 1.18 SEAT REQUIREMENTS

The seat shall be constructed of aluminum by a reputable manufacturer of automobile racing seats and fits the driver's physical characteristics. Seat shall be securely mounted on the centerline of the chassis between the center frame rails. The top of the driver's helmet must be at least one (1) inch below the top edge of the roll cage. There should be (6) mounting points (2) at the base (2) back panel and (2) top headrest. The only materials allowed for the mounting of the seat shall be steel. Mounting bolt should be minimum of 3/8 thread and use an over size washer on the inside wall of the seat. NO modifications with there intent deemed as lightening shall be allowed. Seats and the mounting of them are subject to Tech Official approval.

#### 1.19 STEERING SPECIFICATIONS

The steering system shall consist of a steering wheel suitable for automobile racing and mounted with a quick release hub, and a rack and pinion style steering box. All bolts used to mount any part of the steering systems shall be grade 8 and use lock nuts and/or safety wire.

#### 1.20 WHEEL SPECIFICATIONS

Wheels shall be 8 inches max diameter and 7 inches max width and constructed of aluminum and/or steel. Wheel rim width shall be measured at the base of the rim seat. 6 bolt or 4 bolt wheel patterns permitted. All wheels must agree in measurements. Pressure relief valves not allowed.

#### 1.21 TIRE SPECIFICATIONS

American Racer Slicks - 15.0 X 7.00 X 8S are mandatory. **Tires MUST be stamped M-32.** No other tires will be permitted. Tire softeners/treatments are prohibited. Tires will be subject to but not limited to durometer testing. Tires will be available at the track.

#### 1.22 BRAKING SYSTEM REQUIREMENTS

The braking system shall consist of one foot-operated pedal, located on the left side of the car, that operates a hydraulic style master cylinder. The braking system shall brake the entire rear axle and both front wheels this is Mandatory. Brake rotors must be unaltered from stock and made from magnetic steel. A front to rear only brake proportioning valve is permitted within driver's compartment. Brakes must ALWAYS be in proper working order. Steel branded brake lines highly recommended. NO BAND STYLE BRAKES.

#### 1.23 THROTTLE LINKAGE SPECIFICATION

The throttle of the engine shall be controlled by one foot-operated pedal located on the right of the vehicle. Throttle return springs are mandatory.

#### 1.24 REAR AXLE REQUIREMENTS

The rear axle shall be made of magnetic steel at least 1.25" in diameter. The axle shall not protrude outside the wheels. Both rear hubs shall be securely mounted to the axle. The hubs shall never spin independent to the other wheel or axle. Axles shall have a groove cut into the end. This groove shall have an external lock ring installed with wire lock. Self-oiling carrier bearings are prohibited. Only steel "sealed" bearings permitted. No coatings allowed.

#### 1.25 ENGINE LOCATION AND COOLING REQUIREMENTS

The engine must be located in the rear of the chassis towards center. Engine cooling shall be limited to shrouds and ducts. NO RADIATORS. The oil capacity shall remain unaltered from stock specifications.

#### 1.26 AIR DUCT SPECIFICATIONS

NACA style ducts shall be located in the rear side windows only except for one duct located in either (not both) side window area. The duct located in the side window area near front windshield shall not close off more than 1/3 of the windows open area - this includes the mounting structure. Only ducts located in the rear side windows may be used for the engine. All hoses leading to the engine compartment must not extend more than 1 inch past the inside edge of the engine firewall.

#### 1.27 MIRROR SPECIFICATIONS

ALL vehicles are required to have mirrors that give the driver a rear view of both sides of the car. Mirrors shall not protrude outside a vertical line drawn from the ground up tangent past the body.

#### 1.28 CLUTCH SPECIFICATIONS

Only dry centrifugal clutches are allowed. No transmissions, belt driven torque converters, oil bath, axle, carbon fiber or disc clutches. Manufacturer is open. Magnetic steel parts only.

#### 1.29 ENGINE STARTER SPECIFICATIONS

ALL vehicles are required to run an on board engine starter operated by a switch on the dash. The starter shall be in good working order

#### 1.30 GEARING SPECIFICATIONS

Seekonk Speedway reserves the right to specify a "SPEC" gear ratio. Only magnetic steel #35 chain permitted. Chain guards permitted. No chain oilers.

#### 1.31 CHASSIS RIDE HEIGHT

No portion of the body, chassis, ballast, engine or suspension shall be lower than 1 3/4 inches. No devices permitted for adjusting ride height within driver's cockpit. Ride height will be checked with driver race ready.

#### 1.32 SHOCKS & SPRINGS

Shocks and springs may be of any manufacturer. Springs shall be 1- 7/16" diameter and of magnetic steel - rates are open. Shocks must be magnetic steel. Adjustable types permitted.

## 2.0 CHASSIS SPECIFICATIONS

### 2.1 CHASSIS MANUFACTURER

The listed chassis manufactures is approved by SYRA. No other chassis will be allowed. The list is compiled in alphabetical order and in no way favors any individual chassis. It is the responsibility of the competitor to choose the brand of chassis that meets their requirements in safety and performance. Chassis construction may not differ from any of the listed manufactures. All suspension components must be original manufactured products produced by approved manufacturers. No home made parts. The publication of this list does not guarantee against injury or death to participants, spectators or other. No express or implied warranties of safety or performance shall be intended or result from publication of this list. No ceramic parts permitted including bearings.

- 1) McSport Inc: Avenger Halfcup - Suspended
- 2) Mini-Cup Motorsports: Bullet - Suspended
- 3) Miniature Motorsports Inc: N C Chassis - Suspended

## 2.2 CHASSIS SPECIFICATIONS

The overall length width and height of the chassis shall fit within the dimensions set forth in section 2.0. The suspension settings shall be run within the following parameters at all SYRA sanctioned events:

Inches	MIN	MAX
Wheelbase	59	61
Front Track	43	45
Rear Track	43	45

The left and right wheelbase of the vehicle shall be no greater than 1/2 inch different from each other. No portion of the wheel or tire shall protrude outside the bodywork more than the maximum of 1 inch.

## 2.3 CHASSIS REPAIR

Chassis repair and modifications shall stay within the rules set forth by SYRA. Changes to the chassis structure are prohibited. It is highly recommended that competitors have their chassis regularly inspected by a professional for metal fatigue. No cracked or broken frames shall run in any SYRA events.

## 3.0 ENGINE

**Seekonk Speedway has a MANDATORY engine inspection program with the SRYA division. All registered cars must have their engines sealed before they start the season. Details on this are listed in the rules under SYRA ENGINE SEAL PROGRAM.**

### 3.1 ENGINE REQUIREMENTS

The engine shall fall within these specifications. Section 3.0 shall regulate the changes and/or modifications to the engine. No modifications, substitution and/or changes to any engine component unless specifically detailed in this section. Serial numbers cannot be removed from engine block. No coatings of any type permitted to any parts of the engine. No Titanium parts permitted unless noted in the rules.

### 3.2 HONDA GX340

Honda GX40 (11 HP) engines that make the following changes are allowed in competition. All shall be bored to accept and have installed a Honda GX390 piston and rings. These are the only differences in the 340 and 390 engines manufactured by Honda. A GX340 with these modifications will be known as a GX390 within this publication, and is subject to ALL rules within section 3.0.

### 3.3 ENGINE MANUFACTURER

Only Honda GX390 engines will be used in SYRA events. No interchanging of parts from different engine models allowed. Engines shall not be altered from stock Honda specifications unless otherwise noted here within.

### 3.4 ENGINE LEGALITY

All dimensions will be taken from a known stock Honda GX390K1 engine parts and also from Honda GX390K1 shop manuals. Both will be used to determine the legality of the engine.

### 3.5 GOVERNOR AND OIL ALERT SYSTEMS

Internal and external governing system shall be removed. The removal of the charging system is at the discretion of the driver/owner. The charging system if present shall not be modified and shall serve no other purpose. Oil alert system may be removed. All resulting holes shall be plugged.

### 3.6 CYLINDER HEAD SPECIFICATIONS

Cylinder head shall remain stock except for the following. Head may be machined to a minimum thickness of 3.730 checked anywhere across the heads surface. Worn valve guides may be replaced with Honda guides and/or bronze guide liners. Head gasket shall be Stock Honda GX390 with no modifications, minimum thickness of .043" No porting, polishing or sizing of any part of the head. Only listed valve angles permitted 30 degrees first & 45 degrees second. No blending of the valve cuts into the valve pocket allowed.

### 3.7 VALVE TRAIN SPECIFICATIONS

Push rods, lifters, valves and rocker arms shall remain stock. Slotting of Honda rocker arms is allowed. Valves shall be Honda GX390 only with no lightening and/or modifications. After market valve springs may be used that are identical to stock dimensions having (6) six full coils. A stock Honda shim may be used under both intake and exhaust springs.

### 3.8 PISTON, BLOCK AND RINGS SPECIFICATIONS

Piston shall be Honda GX390. No modifications to the piston are allowed. ZERO piston pop up allowed. Bore and/or piston clearance shall not exceed the maximum service limits. When the service limit has been exceeded it is permissible to oversize the bore by 10 thousandths (.010), 20 thousandths (.020) or 30 thousandths (.030), only when Honda replacement pistons are used. The use of an after market top ring is permissible. Block shall remain unaltered from stock.

### 3.9 CRANK SPECIFICATIONS

Crankshaft must remain stock stroke. No lightening, polishing or balancing of the crankshaft allowed. Service of the crank by welding and/or grinding to .010 under is permissible when the Honda .010 replacement rod is used. Crankshaft may be shortened by a maximum of 1.250 inches at the clutch end.

### 3.10 CONNECTING ROD SPECIFICATIONS

Honda GX390 connecting rod shall remain stock except for the following. Oil lubrication holes are open. Replacement rod bolts permitted (titanium permitted) rod is not to be altered or modified.

### 3.11 BALANCER SPECIFICATIONS

Honda GX390 balancer shall be installed within the factory specifications and remain stock. No modifications.

### 3.12 FLYWHEEL SPECIFICATIONS

Flywheel shall be Honda GX390. The removal of the charging magnets is permissible. Flywheel may be balanced but shall not weight less than 11 pounds 10 oz. Weight must be removed from the outer edge of the flywheel any signs of machining on the inside area will be deemed illegal. The use of an offset flywheel key or any other means to advance the timing is not permitted.

### 3.13 IGNITION SPECIFICATIONS

Honda GX390 coil shall not be rewound. Spark plug, wire and boot are open. Altering the ignition timing from GX390 specifications is not permitted. Spark intensifiers are prohibited.

### 3.14 CAMSHAFT SPECIFICATIONS

Camshaft shall be Honda GX390. No Lightning is allowed. Welding and grinding of the cam is permissible. Cam is required to fall within these parameters:

<b>INTAKE</b>			
<b>LIFT</b>	<b>DEGREES</b>	<b>POSITION</b>	
0.050	<u>3BTDC</u>	<u>3</u>	ATDC
0.100	<u>14</u>	<u>20</u>	ATDC

0.150	<u>30</u>	<u>36</u>	ATDC
0.200	<u>50</u>	<u>56</u>	ATDC
0.250	<u>81</u>	<u>87</u>	ATDC
.265MAX	.265MAX	.265MAX	
0.250	<u>48</u>	<u>42</u>	BBDC
0.200	<u>19</u>	<u>13</u>	BBDC
0.150	<u>1</u>	<u>7</u>	ABDC
0.100	<u>17</u>	<u>23</u>	ABDC
0.050	<u>34</u>	<u>40</u>	ABDC

### EXHAUST

<u>LIFT</u>	<u>DEGREES</u>		<u>POSITION</u>
0.050	<u>37</u>	<u>31</u>	BBDC
0.100	<u>19</u>	<u>13</u>	BBDC
0.150	<u>2BBDC</u>	<u>4</u>	ABDC
0.200	<u>21</u>	<u>27</u>	ABDC
.245MAX	.245MAX	.245MAX	
0.200	<u>68</u>	<u>62</u>	BTDC
0.150	<u>46</u>	<u>40</u>	BTDC
0.100	<u>29</u>	<u>23</u>	BTDC
0.050	<u>12</u>	<u>6</u>	BTDC

### 3.15 RECOIL STARTER

The recoil starter shall be removed. The part referenced in the "Honda Shop Manual" as the "Starter Pulley" may be cut down to a minimum thickness of .315. In which case the resulting hole in the "Fan Cover" shall be covered with a mesh screen. The Flywheel Cooling Fan shall remain mounted and stock.

## 4.0 CARBURETOR AND INTAKE SPECIFICATIONS

### 4.1 CARBURETOR SPECIFICATIONS

The carburetor shall fall within listed specifications. Section 4.8 shall regulate the changes and/or modifications to the carburetor. No modifications, substitution and/or changes to any carburetor component unless specifically detailed in this section. Stock looking Carburetors (As advertised) are not permitted.

### 4.2 AIR FILTER

Air filter of any size and manufacturer is allowed. Air filter shall have no holes. All air passing through the intake port of the head shall pass through the air filter. Soaking of the air filter in any combustible substance is strictly PROHIBITED.

### 4.3 VELOCITY STACK

Velocity stack (AKA air filter adapter) is open.

### 4.4 CARBURETOR MOUNTING

The carburetor shall be mounted in the upright orientation. Stock insulator plate as supplied from Honda may not be changed or altered from original specifications. Gaskets are open.

### 4.5 CARBURETOR MODEL

The carburetor shall be the Honda GX390 adhering to section 4.8

### 4.6 RESTRICTOR PLATE

All competitors must use a carburetor restrictor plate. These will be given out by the Speedway at race events.

Any plate found to be altered or damaged by competitor will be fined by the Speedway \$25. Any tampering to enter more air into the engine around or through the restrictor plate will be deemed illegal. Loose mounted carburetors and cut gaskets are deemed illegal.

#### 4.7 NO INJECTION SYSTEMS

The only matter allowed to pass through the carburetor into the intake port shall be air. In other words, no injection systems are allowed. NO RAM AIR to the carburetor is allowed.

#### 4.8 HONDA CARBURETOR SPECIFICATIONS

Only the listed modifications can be performed to the STOCK Honda carburetor used on the GX390K1 engines as sold by Honda.

- A. Bore maybe opened to a maximum size of .883 No tolerance.
- B. Remote adjuster(s) are allowed as long as they serve no other purpose.
- C. Choke may be removed and the resulting holes shall be plugged.
- D. Jet shall be stock Honda and may be drilled.
- E. The Emulsion tube must remain stock and unaltered with only 12 holes of original size.
- F. Pick up hole can be drilled parallel to the existing hole of the same size.
- G. It is permissible to remove the tab on the low idle mixture pilot screw.
- H. Honda insulator plate can not be modified internally. If electric fuel pump is used the vacuum hole must be plugged on insulator plate.

**NO OTHER MODIFCATIONS CAN BE PERFORMED!**

#### 4.9 NOISE REGULATIONS

Local noise regulations may require the use of a muffler in which case the Tech Official will mandate the existence of one. Mufflers are a non-techable item except for the following specifications:

- 1) Exhaust system may not be heat coated and use of thermo wraps is not permitted.
- 2) Mufflers shall be securely mounted.

#### TECHNICAL PROCEDURES FOR HONDA GX390

Air Leak check (WD-40 or starting fluid around carb and insulator with engine running and listen for increase or decrease in idle)

Check carb bore with no-go gauge

Check fuel (take sample from line at carb)

Flame test oil

Check engine seals

Carburetor and Intake system:

Air leak check as above #3.

Check carb bore for polishing or material removal.

Check throttle shaft and plate measurements.

Check for stock gaskets.

Check carb insulator block for material removal (no polishing, grinding or sizing, check for cracks).

If choke removed hole must be plugged.

Test air filter by rolling in pan of water to see if water infiltrates uniformly around entire surface. Look for blockage.

Cylinder head and related parts:

C.C. cylinder head with volumetric meter.

Check for stock rocker arms.

Check for stock retainers.

Check valve springs: Must be 6 coil.

Wire dia. .110 min - .118 max

Spring free length 1.590 max

Outside spring dia 1.020 max

Inside spring dia. .785 min

Check for only 1 stock spring seat under each spring (max thickness.025).

Check for stock valves (only 45 degree angle).

Check compression chamber for weld.

Check valve ports for material removal, valve seat for match up with ports, valve seat one 45 degree and one 30 degree angle only, extra holes in intake port.

Check cylinder head for angle cut.

Check cylinder head thickness (min 3.730).

Check head gasket; measure at several places and inside compression ring (min thickness .043), metal or graphite stock gasket O.K...

Check push rod for stock and length; 6.535 + - .005.

Ignition system:

Flywheel key must be in place cannot be offset.

Coil mounting holes cannot be slotted to enable adjustment of timing.

Check coil mounts for bending or plugged and rethreading.

Flywheel:

Measure flywheel inner steel ring with hook gauge .335 +- .005.

Check flywheel for lightening.

O.K. to remove magnets.

O.K. to balance flywheel with no intent to lighten.

Min. flywheel weight is 11 pounds 10 ounces.

Block:

Check for piston pop-out (zero allowed).

Top of piston should appear to be a stock GX390 piston. Dish in top of piston  $.085 \pm .005$ .

Stroke: 2.52-2.54

Bore: 3.465-3.490 (may bore up to .30 over with clearance).

Profile cam must meet 2002 specifications.

Remove side cover and check to see if timing dots align. O.K. to remove oil alert system and governor.

Check wrist pin for stock Honda GX390 measurements:

Inside - .552

Length - 2.438

Check rod for stock Honda GX390:

No grinding, polishing, or sizing.

Enlarging of oil hole and slotting allowed.

Rod inserts O.K.

Approximate length 3.300

Check piston for stock Honda GX390:

Piston crown to bottom of skirt: 2.620

Dish in top of piston:  $.085 \pm .005$

Compression height (top of wrist pin to top of piston): .710

Check for lightening

No coatings

No tech on rings except for thickness and width

Check crankshaft for stock Honda GX390:

No grinding

No balancing

Crank journal may be reground to  $-.010$

Journal size: 1.416 standard

Journal size for  $-.010$ : 1.406

Weld and regrind for rod inserts O.K.

Check camshaft for stock Honda GX390:

Easy spin in working order

No lightening

May be welded and reground

Check balancer for stock Honda GX390:

NO lightening or balancing

NOTE: No equipment or car will be considered as having been approved by reason of having passed through inspection "unobserved".

2/08