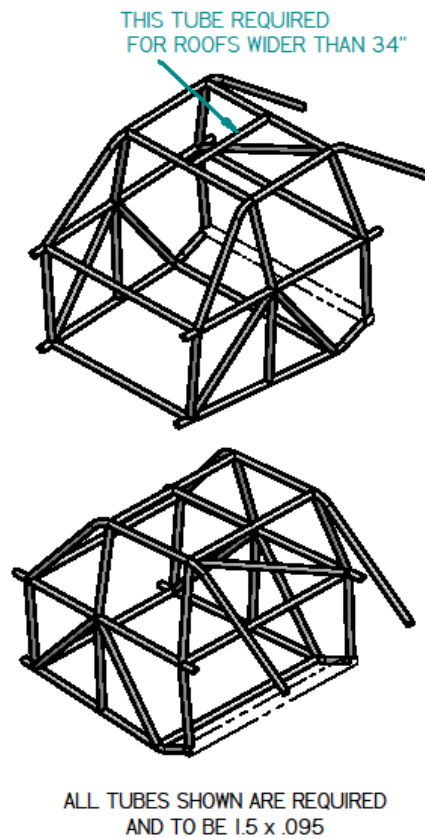


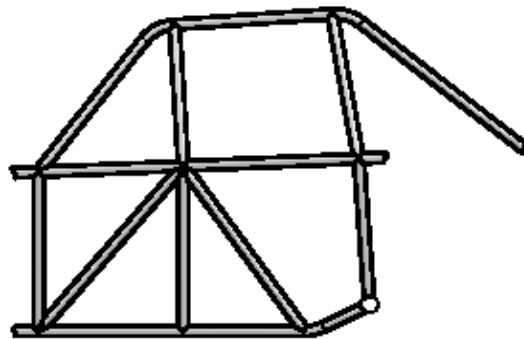
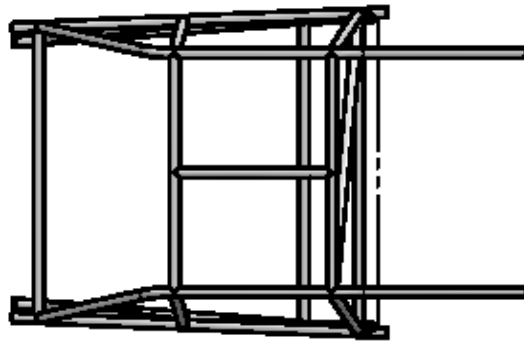
LUCAS OIL OFF ROAD RACING REGIONAL SERIES GENERAL BUGGY RULES
LIMITED BUGGY RULES START ON PAGE 10



*Suggested design for newly constructed buggies. Final design is up to individual builder, but all bars within the driver's compartment must be 1.5 inch by .095 round steel seamless or DOM tubing. All intersections must be gusseted. All designs are subject to LOORRS approval.

*Buggies constructed before 2002 must have a minimum of two 1.5 inch by .095 bars added to each side of the existing frame in such a way to protect the driver from side impact. All two-seat vehicles must have 1.5 inch by .095 tubing added to the center roof. All intersections within the driver's compartment must be gusseted. All designs are subject to LOORRS approval.

BUGGY LEFT SIDE AND TOP VIEW



ALL TUBES SHOWN ARE REQUIRED
AND TO BE 1.5 x .095

LUCAS OIL OFF ROAD RACING SERIES GENERAL BUGGY RULES

These are the general rules for the Pro Buggy Unlimited and Limited Buggy classes. Class specific rules begin on page 10.

GBR-1 MARKING AND IDENTIFICATION

- A. All vehicle numbering is subject to approval and is assigned by LOORRS.
- B. LOORRS officials may require a competitor to use a different number to avoid confusion or duplication at an event.
- C. In the event that a vehicle number is not visible from the timing and scoring area, the competitor will not be scored. It is the competitor's responsibility to make sure that the number is visible during all race conditions.
- D. Advertising on race vehicles must be in good taste.
- E. Foil or reflective numbers are not permitted.
- F. All LOORRS vehicles are required to have LOORRS stickers on each side of the front of the door area, 4 inches down from the window opening.
- G. LOORRS may require the use of specific sponsor decals.
- H. Team vehicles with the same paint and colors must have distinguishing markings of some kind.
- I. All numbers must be block style only with a minimum space of 1 inch between them.
- J. Numbers must be applied side by side. No slanted numbers.

GBR-2 NUMBERS

- A. Limited Buggy numbers are 300-399.
- B. Pro Buggy Unlimited numbers are 900-999.
- C. Numbers must be located in the following positions:
 - 1. One number on each side, high and close to the back of the roof.
 - 2. The back of the vehicle facing the rear.
 - 3. Windshield number and division must be on the upper left hand corner of the windshield area and must be a minimum height of 4 inches with a minimum width of 1 inch.
- D. All vehicle numbers must be solid black on a white number plate with a minimum size of 12" by 14".
- E. Numbers must be a minimum height of 10 inches and a minimum width of 2 inches.

GBR-3 ROLL BARS

- A. All tubing, welds, gussets, and roll cage construction must be approved by LOORRS.
- B. Round steel seamless or D.O.M. tubing is compulsory for the basic roll cage construction and must be LOORRS approved. Aluminum and/or other composite soft metals are not allowed.
- C. Minimum tubing diameter and thickness for all buggies is 1 ½ inch by .095.
- D. Roll bar construction must be welded.

- E. Gussets are required on all intersections in driving compartments within 3 inches of intersection.
- F. All plate gussets must be of the same material and thickness as the roll cage, measuring 3 inches by 3 inches.
- G. Tube gussets and wrap gussets must be a minimum of .065.
- H. All race vehicles must have 3 door bars per side.
- I. All roll bars that may come in contact with driver must be covered with high density flame proof roll bar padding certified to SFI Spec 45.1 or better.
- J. All race vehicles are required to have a steering wheel pad.
- K. There must be a minimum of 2 inches of clearance between the driver's helmet and the cage.

GBR-4 EXOTIC MATERIALS

- A. No titanium or any other exotic materials or fasteners may be used anywhere in the vehicle with the exception of the following:
 - 1) Limited buggies may use titanium in the engine valve retainers.
 - 2) 2. Pro Unlimited Buggies may use titanium for engine components.

GBR-5 BODY

- A. Complete bodies must be attached at the start of competition, practice or any other on track activities. Bodies must be attached in such a fashion as to not create a pointed or sharp extrusion when panels are removed. A loop body mounting construction is mandatory.
- B. Driver's compartment floors must be a minimum of 1/8 inch for all classes.
- C. All vehicles must have a roof that is properly attached to the roll cage.

GBR-6 BUMPERS

- A. Vehicles must have front and rear bumpers.
- B. Rookie driver rear bumper must be painted or taped yellow.
- C. Use of angle iron on rear bumpers is allowed.

GBR-7 STEERING COMPONENTS

- A. LOORRS officials must approve universal joints in steering shaft.
- B. Hydraulic power steering is permitted.
- C. Quick release metal coupling is mandatory and must be approved by LOORRS officials.

GBR-8 SHOCKS

- A. All vehicles must have at least one working shock on each wheel.
- B. Shocks cannot be adjusted while vehicle is in motion.
- C. Heating or cooling liquids or chemicals in shocks is not permitted.
- D. Shocks may have external bypass tubes and reservoir cans.

- E. Remote mounted shocks are not allowed unless approved by LOORRS officials.
- F. Shocks cannot be linked together in any way. This includes but is not limited to hydraulic, electric, manual, or mechanical links.

GBR-9 BRAKES & BRAKE COOLING

- A. Brakes must be operational on all four wheels at all times. All brake operation must be LOORRS approved.
- B. Only disc brakes with steel (magnetic) rotors using standard metal mounting hats are permitted.
- C. Electronic wheel speed sensors or brake actuators will not be permitted.

GBR-10 WEIGHT

- A. Driver will be included in race vehicle's minimum weight.
- B. Vehicles can be courtesy weighed prior to competition.
- C. LOORRS officials must approve all weight material.
- D. Added weight must be in block form.
- E. Blocks must weigh no less than 5 pounds each and cannot be made of liquid of any type, pellets, or other granulated weight.
- F. Added weight must be securely bolted in place on the race vehicle.
- G. Dislodged weight cannot be returned to the vehicle for weighing at the end of the race.
- H. All block ballast must be painted white and identified with vehicle number.
- I. Weight can be sealed at the discretion of LOORRS officials.
- J. No weight shifting devices of any kind are allowed. This includes, but is not limited to hydraulic or electronic devices.
- K. All vehicles will weigh in before and/or after competition at the discretion of LOORRS officials. Failure to do so will result in disqualification.
- L. All weight loss on track will result in a \$5.00 per pound fee.

GBR-11 ENGINE BLOCKS

- A. Engines are subject to inspection by LOORRS officials at any time.
- B. LOORRS's method of measuring the weight to displacement ratio is the only valid method of cubic P&G testing.
- C. At LOORRS officials' discretion engines will be prepared for mechanical cubic inch certification and measurement.

GBR-12 ELECTRICAL ACCESSORIES

- A. At the request of television, certain vehicles may compete with telemetry systems, as so installed by the series production television network requesting such information.
- B. Race vehicles cannot carry onboard computers, micro-controllers, processors, recording devices, electronic memory chips, traction control devices.

GBR-13 ENGINE & RACE VEHICLE ELECTRICAL SYSTEMS

- A. All ignition systems must be approved by LOORRS.
- B. No computerized systems are permitted unless LOORRS approved.
- C. Any make or brand of spark plug may be used.
- D. All vehicles must have a working alternator/generator system.
- E. All vehicles must have a self-starter in working condition and must be capable of starting on their own power.
- F. All electrical switches must be located on the dash panel.
- G. All vehicles must have a master on/off switch wired to the battery in a manner that will cut off all electrical power and the engine.
- H. Master switch must be labeled as such, have a red circle around it, be located on the left side of the dash panel, and must be accessible from the outside of the race vehicle. Red circle must be at least 1 inch wide.

GBR-14 ENGINE COOLING SYSTEMS

- A. Installation, location, and type of electrical cooling fan must be acceptable to LOORRS.
- B. No icing refrigerant chemicals may be used in or near the engine compartment or in any place on the truck.
- C. Electrical engine cooling fans are optional.

GBR-15 ENGINE EXHAUST SYSTEMS

- A. Muffler must meet a maximum decibel of 100 as measured 50 feet from track side.
- B. Exhaust pipes must be attached to headers in a secure manner.
- C. Exhaust pipes must extend past driver compartment to the outer edge of the vehicle and to the rear of the driver.
- D. All exhaust must discharge downward and outward to either side of vehicle.
- E. Exhaust heat shields are permitted.

GBR-16 CARBURETOR RESTRICTOR PLATES

- A. No devices between the carburetor and the intake manifold, designed to increase or redirect airflow will be allowed.

GBR-17 AIR AND INTAKE CLEANERS

- A. Intake air or filtered air cannot be blended with alcohols, ether, or other oxygenates, nor blended with aniline or its derivatives, nitrous compounds, or any other nitrogen containing compounds.

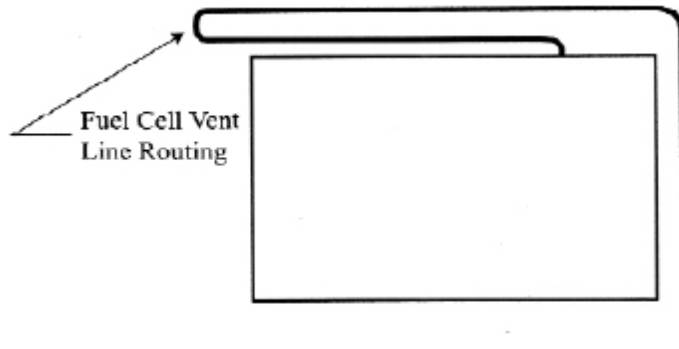
GBR-18 FUEL INJECTION

- A. Fuel injection is not allowed.

GBR-19 FUEL CELL

- A. All fuel cells must be LOORRS approved.
- B. LOORRS will reject any previously approved fuel cell, which appears to be defective, damaged, or not in proper condition.
- C. No pressure systems will be allowed. Any concealed or not concealed pressure type containers, feed lines or actuating mechanisms will not be permitted, even if inoperable.
- D. Icing, Freon type chemicals, or refrigerants may not be used in or near the fuel system.
- E. Electric fuel pumps must have oil pressure shut-off. Loss of oil pressure will automatically shut off fuel pump. A momentary on bypass may be installed. The momentary on by pass may be like a push button, 2-pole starter button, which can be mounted in a position best suited to the driver. The oil pressure-sending unit is AC Delco part number 25036938. The sending unit receives power from the ground.
- F. The use of a commercially manufactured fuel cell is mandatory.
- G. No material other than standard foam as provided by the fuel cell manufacturer is permitted.
- H. Rear mounted fuel cell must have a chassis or body cross member of substance between the fuel cell and driver and be protected from ground obstacles.
- I. Fuel cells must be dated by manufacturer. Fuel cells will become obsolete 5 years after date of manufacture and must be replaced.
- J. All fuel cell fillers and vents must have check valves installed.
- K. A splash shield must be in place to direct any spill away from the driver, motor, and motor exhaust. A body panel is considered sufficient splash shield.
- L. Fuel cell cannot be vented into the driver's compartment of any vehicle.

FUEL VENT ROUTING



ALL FUEL CELL LINES AND VENTS MUST COME OUT OF THE TOP OF THE FUEL CELL (PICTURED).

GBR-20 FUEL

- A. Fuel shall be automotive gasoline only.
- B. Gasoline shall not be blended with alcohols, ethers, or other oxygenates, and it shall not be blended with aniline or its derivatives, nitrous compounds, or their nitrogen containing compounds.
- C. Cooling of any type is not permitted during competition.
- D. In the Event an "Official Fuel" is named, LOORRS will sample the actual fuel provided at the track by the fuel supplier and that sample will become the benchmark from which all competitors samples will be judged.
- E. LOORRS has the right to sample a competitor's fuel at anytime the vehicle is entered in an LOORRS Event. All samples will be impounded for observation and/or testing by LOORRS or outside laboratories at LOORRS discretion.
- F. No nitrous oxide.
- G. If LOORRS officials suspects maskers in fuel, chemical testing will be conducted at possible expense to the competitor.
- H. Penalties for use of hazardous chemicals will be severe including fine, and/or reduction of points, and/or suspension.

GBR-21 OIL COOLERS

- A. All oil coolers and their installation must be approved by LOORRS.
- B. Engine and transmission oil to air or oil to water heat exchangers are permitted.
- C. Cooling fans are permitted. No coolers are allowed in the driver's compartment.

GBR-22 TRANSMISSION

- A. Transmissions must be standard production, catalogued, and available through regular dealer channels.
- B. All forward and reverse gears must be in working order.
- C. Motor crankshaft must be connected to transmission input shaft via a conventional clutch assembly or vane type torque converter.

GBR-23 DIP STICKS

- A. All dipsticks must be secured in dipstick tube with a positive locking or securing method.

GBR-24 WHEELS

- A. All wheels must be in good repair and free from cracks or defects that could cause wheel failure.
- B. Lug nut must be open ended, and of proper size.
- C. Studs must extend a minimum of 2 full threads past the end of the lug nut.
- D. Wheel studs may be no closer than ½ inch from the outer most face of the bead lock ring opening or wheel. Stud ends must be rounded.

GBR-25 RADIOS

- A. Radios must be of two-way voice communication type only. Each race team is responsible for meeting FCC requirements.
- B. Radio communication between drivers is not permitted.
- C. All radio frequencies must be approved and reported to LOORRS prior to their use.
- D. All race vehicle radio communication systems must be approved by LOORRS.
- E. See Section 5 of LOORRS General Rules for spotter requirements. F. Spotters are required for all race teams.

GBR-26 TRANSPONDERS/TIMING

- A. Remote score timing devices will not be permitted by teams, owners, or anyone associated with an entry, unless approved by LOORRS.
- B. All LOORRS teams are required to purchase remote timing transponders. Transponders can only be purchased through LOORRS and numbers must be recorded with LOORRS officials.
- C. Drivers are responsible for the charging and installation of all transponders. Any entry without a properly charged, properly installed, functioning transponder may not be scored and may be subject to further penalty.
- D. Transponders must be mounted just behind the front beam on a limited buggy.
- E. Transponders must be mounted 98 inches behind the front bumper on a Pro Buggy Unlimited.

LUCAS OIL OFF ROAD RACING SERIES LIMITED BUGGY RULES

-A limited 4 wheel vehicle utilizing a type-1, 1600 cc Volkswagen air-cooled engine with one person in the vehicle.

LB-1 RACE VEHICLE

- A. The front bumper must be a minimum of 32 inches with rounded ends.

LB-2 ROOF

Required:

- A. The roof should be comprised of .090 aluminum or 16 gauge steel sheeting.
- B. The opening in the roof must have a heavy-duty hinge with a secure latching system.
- C. Positive latching system must be LOORRS approved.

LB-3 WHEEL BASE

- A. Minimum 95 inches.

LB-4 FRONT SUSPENSION

Allowed:

- A. Type .1. Volkswagen suspension only. Stock beam width only--34 3/16 inches.
- B. Any manufacturer of parts as long as stock dimensions and measurements are maintained.
- C. Reinforcement of stock components.
- D. Front axle torsion tubes may be cut, rotated, torsion adjusters installed and re-welded.
- E. Ball joint or kingpins.
- F. Any manufacturer tie rods and tie rod ends.
- G. Shock towers may be strengthened, replaced, extended, but must be attached to the front beam.
- H. Trailing arms can be reinforced or replaced with after market arms. Stock dimension must be maintained.
- I. Lower shock mounting stud may be relocated and/or enlarged.
- J. Spindles may be reinforced or replaced.
- K. Any manufacturer torsion bars allowed.
- L. Sway bars can be removed.

Not Allowed:

- A. Any type of secondary suspension.
- B. Aluminum front axle beams.

LB-5 REAR SUSPENSION

Allowed:

- A. Volkswagen type 1 IRS or swing axle only. The rear track width must not exceed 51 inches from the backing plate flange to the backing plate flange, while at ride height.
- B. Strengthening or replacement of the IRS swing arms as long stock dimensions are retained plus or minus one 1 inch. Stock dimensions: from the center line of the rear torsion housing to the center of the rear stub axle-16.25 inches, plus or minus 1 inch. The maximum measurement will be 17.25 inches.
- C. Torsion adjusters.
- D. Any manufactured rear torsion bars, axles, spring plates and additional retainer straps as long as original type suspension is retained.
- E. Rear torsion tube may be strengthened or replaced stock/maximum width is 40.5 inches.
- F. Trailing arm bracket must be 13.50 inches plus or minus 1 inch, measured from the inside of the spring/flex plate to the inner most flange of the trailing arm pivot point.

Not Allowed:

- A. Any type of secondary suspension.

LB-6 STEERING

- A. Open.

LB-7 SHOCK ABSORBERS

Allowed:

- A. Any size or number.
- B. Cooling fins.

Not Allowed:

- A. Air or coil over shocks.

LB-8 BRAKES

- A. Any manufacturer drum or disk brakes allowed.
- B. Maximum front track width from wheel mounting surface to wheel mounting surface at ride height will be 56".
- C. Maximum rear wheel track width from wheel mounting surface to wheel mounting surface at ride height will be 58.75".
- D. Track width may be adjusted as more information becomes available.

LB-9 WEIGHT

Allowed:

- A. Minimum weight with driver, 1580 pounds at race end with driver, cleaning of vehicle may be required.
- B. Ballast allowed with $\frac{3}{8}$ minimum hole to secure to the frame.

LB-10 ENGINE

- A. Must be Volkswagen type 1, 1600 CC US spec. as received from the factory.
- B. Maximum engine displacement will be 1600 CC-85.5 MM bore diameter x 69 MM stroke, plus or minus .015 stroke.
- C. Maximum stroke allowed is 2.7465.
- D. No titanium composite parts or materials allowed in engine except valve spring retainers.

LB-11 CASE

Allowed:

- A. Any type 1, 2, 3 or universal case. B. Align bored.
- C. Drilled and/or tapped for oil pressure and/or temperature sending unit.
- D. Machined or push in crank pulley seal.
- E. Case savers.
- F. Seating surfaces for cylinders may be machined.
- G. Oil galleries on the early cases may be enlarged to 10 MM the same as a universal case.
- H. All oil gallery plugs may be removed and threaded.
- I. Oil by pass pistons and springs-open.
- J. Windage trays.
- K. Internal de-burring.

Not Allowed:

- A. Any other modifications.

LB-12 CRANKSHAFT

Allowed:

- A. Stock Volkswagen type .1. 1600 CC only.
- B. Any gears.
- C. Any size power pulley.
- D. Sand seals
- E. 030 undersize
- F. Balancing

Not Allowed:

- A. Polishing, knifing and/or lighting.
- B. Counterweights.

LB-13 FLYWHEEL

Allowed:

- A. Stock Volkswagen type 1 design only.
- B. Lightening and balancing.
- C. Stock diameter.
- D. Eight doweled.
- E. Any gland nut and washer.

Not Allowed:

- A. Aluminum.

LB-14 BEARINGS

- A. Any brand manufactured as long as stock dimensions are maintained.

LB-15 CAMSHAFT AND CAMSHAFT GEAR

- A. Any manufacturer.

LB-16 PISTON ASSEMBLIES AND CYLINDERS

Allowed:

- A. Any manufactured flat top pistons but stock dimensions must be retained 85.5 MM. Three ring pistons only.
- B. Wrist pin retainer may be of any style.
- C. Volkswagen # 311 B or any VW aftermarket rods . Minimum length 5.395 plus or minus .010.
- D. Balancing of rod and pistons allowed
- E. One rod must be left untouched.
- F. Minimum piston weight of 310 grams.
- G. Cylinders be machined for proper deck height.
- H. Piston skirts may be drilled. Three 1/8 inch diameter holes per side. A total of 6 holes.

Not Allowed:

- A. Slipper skirts.
- B. Volkswagen "a" rods. I.D. rod bolts.
- C. Polishing or profiling.
- D. Dished or domed pistons.
- E. Machined notching for valves.
- F. Cutting of the piston top other than 90 degrees.

LB-17 CYLINDER HEADS

Allowed:

- A. U.S. sedan stock single port or dual port design.
- VW Dual Port original equipment #'s:
 - 1. # 0401013752
 - 2. # 04010137513
 - 3. # 04010137519
 - 4. # OEM 311
- B. Fly cutting for compression.
- C. Combustion chamber volume open.
- D. Welding of the cylinder head-may not be welded 360 degrees in the cylinder seating surfaces.
- E. Welding for repairs only.

Not Allowed:

- A. Grinding, polishing or porting in any area of the head, no back cutting of the valves.
- B. Angle cutting of the head.

LB-18 VALVES

Allowed:

- A. One-piece valve of any manufacturer, stock sizes must be maintained. Intake 35.5 MM, exhaust 32.0 MM. Stainless steel.
- B. Single 45-degree angle.
- C. Valve guide may be bronze, cast iron or steel of any, manufacture and length.
- D. Valve guide seal.
- E. Any manufacture of valve springs, spring retainers and lifters.
- F. The valve spring seat diameter may be machined for dual springs.

Not Allowed:

- A. Grinding, polishing, blending or porting of any kind.
- B. Titanium valves or any other exotic materials.
- C. No carbon fiber push rods or ceramic lifters allowed.

LB-19 ROCKER SHAFTS AND ARMS

Allowed:

- A. Any shaft that permits the use of stock Volkswagen type 1 1600 cc 1.1 to 1 rocker arms only.
- B. Any manufacturer push rods and tubes
- C. Resurfacing on the adjusting screw end to permit the use of swivel feet adjusters.
- D. Any manufacturer valve covers and gaskets

Not Allowed:

- A. Any other modifications.
- B. No needle or roller bearings permitted.

LB-20 OIL PUMP / SYSTEM

Allowed:

A. Any manufacturer.

Not Allowed:

A. Deep and/or dry sumps.

B. Sump alterations.

LB-21 IGNITION SYSTEMS

A. A distributor must be used to activate spark to the spark plugs.

B. One distributor only.

C. Stock or direct replacement coil only.

Allowed:

A. Battery 6 or 12 volt.

B. Any manufacturer distributor.

C. Any Volkswagen alternator or generator in the stock location.

D. Magnetic pick-ups that directly replaces the points.

Not Allowed:

A. Magneto, multiple coil and direct fire ignition system.

LB-22 STOCK FAN SHROUD

A. Any manufacturer.

LB-23 EXHAUST

A. After-market exhaust allowed; mufflers are optional.

LB-24 CARBURETOR

Allowed:

A. Stock Volkswagen 30 pic 1, 2, 3, and H-30 pic only.

B. Maximum Venturi size 24.10 MM.

C. Removing of automatic choke housing, choke plate and shaft.

D. Stock float bowl vent may be removed and plugged, external float vent allowed.

E. Any fuel pump stock or electrical, any fuel pressure regulator.

F. Any manufacturer air/fuel filter and any location allowed.

G. Velocity Stacks

H. Brosol PIC carburetor is allowed, no modifications to throttle shaft, throttle plate or venturi.

Not Allowed:

- A. No bonding or welding of velocity stack to the carburetor.
- B. No internal modifications.
- C. No polishing or filing.
- D. No chemical milling.
- E. Removal of any parts from the throat area.

LB-25 RESTRICTOR PLATE

Allowed:

- A. Restrictor plate may be removed.
- B. Existing restrictor plate may remain in place and be bored out if needed as a spacer.
- C. Must be the only piece between the carburetor and the intake manifold.
- D. Dual port manifolds must have 34mm to 30mm adapter. Part number EMPI 981293B.

LB-26 INTAKE MANIFOLD

Allowed:

- A. Stock single or dual port only.
- B. Heater tubes removed.
- C. May be shortened but not welded back together. Hose and clamps must be used to secured the manifold back together and allow inspection.
- D. Intake must have OEM dual port casting only with VW casting numbers.
- E. The sleeving of a dual port manifold center section ends to accept better hoses.
- F. Welding balancing slots closed.

Not Allowed:

- A. Any modifications.
- B. Chemical milling.

LB-27 FUEL CELLS

- A. Mandatory.
- B. Maximum size is 9 gallons.
- C. All fuel and vent lines must come out of the top of the cell.

LB-28 OIL COOLERS

Allowed:

A. Any full flows system.

Not Allowed:

A. Deep or dry sump.

LB-29 CLUTCH AND PRESSURE PLATE

Allowed:

A. Stock diameter only.

B. Balancing.

LB-30 TRANSMISSION

Allowed:

A. Stock Volkswagen type 1 or 2 transaxle housing.

B. Four forward gears only.

C. Internal modifications.

D. Any gear combinations.

E. Only Volkswagen style gears.

Not Allowed:

A. Gears other than Volkswagen.

LB-31 WHEELS AND TIRES

Allowed:

A. DOT tires only.

B. Tires must be available to the general public and must not exceed \$200 in price.

C. Wheels must have a Volkswagen 5 bolt pattern.