

TORC SERIES

COMPETITION RULES FOR

SPORTSMAN 1600 LIGHT BUGGY

DEFINED AS- A one-person, limited 4-wheel car using Volkswagen type 1 stock components with a 1585 cc engine. All parts are to be stock type "1". No parts may be replaced or modified unless it is stated in this document. Division rules supersede CCR. Race Numbers are 100 to 199

1. CHASSIS

Minimum wheelbase is 92 inches

2. FRONT SUSPENSION

Allowed:

- A. Type "1" Volkswagen suspension only. Stock beam width only--34 3/16 inches.
- B. Front axle tubes may be cut, rotated and re-welded to change the ground clearance, and may be reinforced by adding material.
- C. Link pin or ball joint front end.
- D. The front spindles may be reinforced but the diameter on the outside bearing must remain stock the inside bearings may be enlarged. The speedometer hole may be welded and/or filled.
- E. Stock torsion bars must be used.
- F. Front stop snubbers of any manufacture allowed, but stock dimensions, location and mounting must be maintained.
- G. Limiter and limit straps.
- H. Stock arm must be used but may be reinforced using additional material.

Not Allowed:

Torsion adjusters.

3. REAR SUSPENSION

Allowed:

- A. Type "1" IRS or swing axle only. The torsion tubes, bars and drive axles must be stock. Track width is 51 inches maximum, measured from the backing plate to backing plate at ride height.
- B. IRS swing arms may be strengthened as long as the stock measurements are kept. The stock dimensions are measured from the center of the rear torsion tube to the center of the rear stub axle-16.25 inches.
- C. Rear torsion tubes may be strengthened, but must maintain the stock width of 40.5 inches.
- D. A support member of the roll cage may additionally support rear torsion bar tubes.
- E. The trailing arm bumper may be removed.
- F. E. Rear spring plates must be stock.
- G. Rear torsion snubbers may be of any manufacture but must be of stock dimensions.

Not allowed:

- A. Any type of secondary suspension.
- B. Rear torsion adjusters.

4. SHOCK ABSORBERS

Allowed:

- A. One shock per wheel.
- B. Front shock towers may be re-welded and reinforced but can not be replaced with other material. Stock appearance and dimensions must be maintained.
- C. Rear shock length and location open.

- D. Cooling fins.
- E. Maximum mounting bolt diameter ½ inch.

Not Allowed:

- A. Air and/or coil over shocks.
- B. Any type of reservoir shock, external by-pass tubes or shocks larger than 3 inches.

5. *STEERING*

Allowed:

- A. Rack and pinion steering only.
- B. Chromemoly or any metal material tie rods
- C. Tie rods, one piece only.
- D. Tie rod ends, any ball and socket type.

Not Allowed:

Stock tie rods modified in any way.

6. *BRAKES*

Any combination of pedal assembly, master cylinder and clutch slave.

Allowed:

- A. Volkswagen type 1 drum brakes only.
- B. Mechanical steering brakes.
- C. Brake bias adjusters.

Not Allowed:

Hydraulic steering brakes.

7. *WEIGHTS*

Allowed:

- A. Minimum weight 1,550 pounds at race end with driver. Cleaning vehicle may be required.
- B. Ballasts allowed with 3/8 minimum bolt to secure ballast to the frame.

8. *ROOF*

- A. .075 Aluminum or 16 gauge (.063) steel sheeting only.
- B. Opening roof must have a heavy-duty hinge with a secure latching system.
- C. Positive latch system must be TORC Series approved.

9. *FUEL CELLS*

MANDATORY - CCR RULES APPLY - Paragraph 28

10. *ENGINE*

Allowed:

- A. Must be Volkswagen type "1", 1500/1600, US specification as received from the factory.
- B. Maximum engine displacement will be 1585 cc; 85.5mm bore diameter x .69 mm stroke.

Not Allowed:

Titanium, composite or ceramic materials or coatings allowed.

11. *ENGINE 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 units.
- D. Machined or push in crank pulley seal.
- E. Case savers.
- F. Seating surfaces for the piston cylinders may be machined, but the cylinders must be shimmed back to original stock deck height of .039 or 1 mm minimum.

- G. Oil galleries on the early cases may be enlarged to 10mm the same as a universal case.
- H. All oil gallery plugs may be removed and threaded.
- I. Oil by pass piston and springs-open.
- J. Oil sump windage trays.

Not Allowed:

Any other modifications

12. *CRANKSHAFT*

Allowed:

- A. Stock Volkswagen type "1" 1600 (69mm stroke only).
- B. Power pulley.
- C. Sand seals.
- D. Undersized .030.
- E. Balancing.
- F. Any brand bearings as long as stock dimensions are maintained.

Not Allowed:

- A. Lightening.
- B. Polishing, knifing and/or lighting counterweights.

13. *CONNECTING RODS*

Allowed:

- A. Volkswagen #311 "b" rods only. 5.395 length plus or minus .010. Measured C/L to C/L.
- B. Minimum weight must be 570 grams.
- C. When balancing-one connecting rod must be left untouched.

Not Allowed:

- A. Bolts rather than the pressed studs and nuts will identify Volkswagen "a" rods.
- B. Polishing and profiling.

14. *OIL PUMPS*

Allowed:

- A. Any manufacturer wet sump pump.

Not Allowed:

- A. Deep, and/or dry sumps.
- B. Any sump alterations or modifications.

15. *PISTON AND CYLINDER ASSEMBLY*

Allowed:

- A. Any manufacturer, stock specifications cylinder (85.5 mm diameter maximum).
- B. Three ring pistons only. Ring groove sizes are to be 2mm, and 5mm wide, above the piston pin.
- C. Wrist pin retainers may be of any type. Pin size 22mm/.687. Pin height 1.5495 plus or minus .002 from the top of the piston to the center of the hole.
- D. Pistons may be balanced to a minimum weight of 390 grams (piston only).

Not Allowed:

- A. Machining top of the piston.
- B. Slipper skirts.
- C. Notched pistons.
- D. Domed pistons.

16. *CAMSHAFT AND CAM GEAR*

Allowed:

- A. Bolt on cam gear. Must use stock design gear.
- B. Cams to these specifications: Lift measured off push rod.

Intake-	Open	Close	Lift
	15 degrees btcd	52 degrees abdc	.020
	2 degrees btcd	32 degrees abdc	.050
	14 degrees atdc	16 degrees abdc	.100
		Maximum lift	.304

Exhaust-	Open	Close	Lift
	55 degrees bbdc	16 degrees atdc	.020
	38 degrees bbdc	1 degree btcd	.050
	21 degrees bbdc	17 degrees btcd	.100
		Maximum lift	.289

17. CYLINDER HEADS

Allowed:

- A. U.S. sedan stock single port design.
- B. Fly cutting OK to clean, seating surfaces but must retain 44cc combustion chamber.
- C. Three angle valve seats only- (15-45-75 degrees).

Not Allowed:

- A. Any kind of back cutting, polishing and/or porting.
- B. Combustion chamber area shape must not be changed or touched.

18. VALVES

Allowed:

- A. Valve sizes must be: Intake 35.5mm. Exhaust 32.0mm.
- B. Stock one or two-piece valve with stock profile.
- C. One 45-degree angle.
- D. Valve guide may be bronze, cast iron or steel of any, manufacture and length
- E. Any manufacturer of valve springs, spring retainers and lifters, stock dimensions inside and out.

Not Allowed:

- A. Grinding, polishing and porting in any area of the head, no back cutting valves.
- B. Titanium valves.
- C. Swirl polished valves.

19. ROCKER SHAFTS AND ARMS

Allowed:

- A. Any shaft that permits the use of stock Volkswagen type "1" 1600cc 1.1 to 1 rocker arms only.
- B. Stock Volkswagen type-1, 1600 cc rocker arms only.
- C. Resurfacing of rocker arms to accept swivel adjusters.
- D. Any manufacturer valve covers and gaskets.

Not Allowed:

- A. Other grinding/resurfacing other than previously mentioned.
- B. Needle or roller bearings

20. INTAKE MANIFOLD

Allowed:

- A. Stock single port only.
- B. Heater tubes removed.

Not Allowed:

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

21. *RESTRICTOR PLATE*

Restrictor plates are available at TORC Series tech trailer.

Allowed:

- A. 21.0 mm TORC Series plate only.
- B. Must be the only piece between the carburetor and the intake manifold.

Not Allowed:

- A. Any modifications not conforming to TORC Series produced restrictor plates.
- B. Polishing or filing or chemical milling.

22. *CARBURETOR, FUEL PUMP, AIR FILTER*

Allowed:

- A. Stock Volkswagen 30 pic. 1, 2 and 3 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 bowl vent allowed.
- E. Stock fuel pump.
- F. Any manufacturer air/fuel filter and any location allowed. Any pressure regulator.
- G. Brosol PIC carburetor is allowed, no modifications to throttle shaft, throttle plate or venturi.

Not Allowed:

- A. Carburetor listed as pic 30.
- B. Bonding or welding of velocity stacks to carburetor.
- C. Internal modifications including polishing, filing or chemical milling.
- D. Removal of any parts from the throat area.

23. *EXHAUST*

Aftermarket exhaust allowed, mufflers are optional

24. *FLYWHEEL CLUTCH PRESSURE PLATE*

Allowed:

- A. Only stock diameter Volkswagen type 1 design with eight dowels and
- B. Lightening and balancing. Any gland nut and washer may be used.
- C. Hydraulic clutch slave.

Not Allowed:

Aluminum flywheels.

25. *FAN SHROUDS*

Only Stock fan shrouds allowed.

26. *IGNITION SYSTEMS*

Distributor must be used to send current to the spark plugs. Only one distributor allowed.

Allowed:

- A. Battery ignition 6 or 12 volt. Stock or direct replacement coil only.
- B. Any manufacturer distributor. Magnetic pick ups that directly replaces the points.
- C. Any Volkswagen alternator or generator in the stock location

Not Allowed

Magneto, multiple coil and direct fire ignition system.

27. TRANSMISSION

Allowed:

- A. Left side nut/stud of gear carrier must be drilled to allow for sealing once gear ratios are tested.
- B. Stock Volkswagen type 1 bug only model AH and AT.
- C. Ah-8:33 ring and pinion-4.125 ratio and stock gears must be retained.
- D. At-8:31 ring and pinion-3.75 ratio and stock gears must be retained.
- E. AA or AB swing axle-8:35 ring and pinion-4.375 ratio and stock gears must be retained.
- F. TORC Series Tech will check ratios.

	<u>AT</u>	<u>AH</u>	<u>AA/AB</u>
First gear ratio	3.780	3.780	3.800
Second gear ratio	2.059	2.059	2.060
Third gear ratio	1.260	1.260	1.320
Fourth gear ratio	0.890	0.930	0.890

- G. Rear transaxle mounts may be additionally supported.
- H. Any manufacturer shifter allowed.
- I. Ratio will be checked by lifting one tire in the air with the other remaining stationary on the ground.
- J. Beef-A-Diff allowed.

Not Allowed:

- A. Any modifications.
- B. Heavy-duty side plates.
- C. Axle overtubes.
- D. Close ratio gears.

28. OIL COOLERS

Allowed:

Any full flows system mounted in any safe location.

29. TIRES AND WHEELS

Allowed:

- Refer to COMBINED CLASS RULES (CCR), paragraph 33.
- A. Tire size is open but must be D.O.T. approved and available to the general public.
- B. Any stock type 1 wheel or/any manufactured 15 inch steel wheel may be used.
- C. Wheels may be reinforced by adding material.
- D. Studs may be used.

Not allowed:

- A. Wheel adapters.
- B. Bead locks.

30. RADIOS

Frequency must be registered with TORC Series.

Refer to COMBINED CLASS RULES (CCR), paragraph 36.

ALL CCR APPLY AS SET FORTH IN THIS TORC SERIES RULEBOOK.