

# #100 TO #199 SPORTSMAN 1600 LIGHT BUGGY TECHNICAL SPECIFICATIONS

## DEFINITION

- 1600 Light Buggy is 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
- Technical specifications for this class supersedes CCR

## CHASSIS

- Minimum wheelbase is 92"

## FRONT SUSPENSION

- Must be type "1" Volkswagen suspension only. Stock beam width must be 34 3/16"
- Front axle tubes may be cut, rotated and re-welded to change the ground clearance, and may be reinforced by adding material
- Link pin or ball joint front ends are allowed
- 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
- Stock torsion bars must be used
- Front stop snubber removal is allowed
- Limiter and limit straps are allowed
- Stock arm must be used but may be reinforced using additional material
- Torsion adjusters are not allowed

## REAR SUSPENSION

- Type "1" IRS or swing axle only | The torsion tubes, bars and drive axles must be stock
- Track width is 51" maximum, measured from the backing plate to backing plate at ride height
- 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"
- Rear torsion tubes may be strengthened, but must maintain the stock width of 40.5"
- A support member of the roll cage may additionally support rear torsion bar tubes
- The trailing arm bumper may be removed. Rear spring plates must be stock. Rear torsion snubbers may be of any manufacture but must be of stock dimensions.
- No type of secondary suspension is allowed
- Rear torsion adjusters are not allowed

## SHOCKS

- Only one shock per wheel is allowed
- Front shock towers may be re-welded and reinforced but cannot be replaced with other material. Stock appearance and dimensions must be maintained.
- Rear shock length and location is open
- Air and/or coil over shocks are not allowed
- Any type of reservoir shock, external by-pass tubes or shocks larger than 3" is not allowed
- Internal floating piston shocks are not considered reservoir shocks and are allowed

## STEERING

- Rack and pinion steering only is allowed
- Chrome moly or any other metal material tie rods are allowed
- Tie rods must be one piece only
- Tie rod ends may be any ball and socket type
- Stock tie rods may not be modified in any way.

## **BRAKES**

- Any combination of pedal assembly, master cylinder and clutch slave is allowed
- Volkswagen type 1 drum brakes only
- Mechanical steering brakes are allowed
- Brake bias adjusters are allowed
- Hydraulic steering brakes are not allowed

## **WEIGHT**

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

## **ROOF**

- Must be of .075" Aluminum or 16 gauge (.063") steel sheeting only
- Opening in roof must have a heavy-duty hinge with a secure latching system
- Positive latch system must be Sportsman Series approved

## **BODY**

- Unrestricted

## **ENGINE CASE**

- Any type 1, 2, 3 or universal case
- Align boring is allowed
- Drilled and/or tapped for oil pressure and/or temperature sending units
- Machined or push-in crank pulley seals are allowed
- Case savers are allowed
- 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
- Oil galleries on the early cases may be enlarged to 10mm to fit the universal case
- All oil gallery plugs may be removed and threaded
- Oil by-pass piston and springs are unrestricted 34.11.10 Oil sump wind age trays are allowed No other modifications are allowed

## **CRANKSHAFT**

- Must be Stock Volkswagen type "1" 1600 (69mm stroke only)
- Power pulleys are allowed
- Sand seals are allowed
- May be undersized up to .030"
- Balancing is allowed
- Any brand bearings may be used as long as the stock dimensions are maintained
- Crank lightening or the removal of any material other than for balancing is not allowed
- Polishing, knifing and/or lighting of the counterweights is not allowed

## **CONNECTING RODS**

- Volkswagen must be #311 "b" rods only. 5.395" length plus or minus .010" measured C/L to C/L
- Minimum weight must be 570 grams
- When balancing, one small end and one large end must be left untouched
- Bolts other than the pressed studs are not allowed and nuts will identify Volkswagen "a" rods
- Polishing and profiling is not allowed

## **OIL PUMPS**

- Any manufacturer wet sump pump is allowed

- Any other sump alterations or modifications are not allowed

### PISTONS & CYLINDER ASSEMBLY

- Any manufacturer, stock specifications cylinder are allowed (85.5 mm diameter maximum)
- Three ring pistons only. Ring groove sizes are to be 2mm, and 5mm wide, above the piston pin
- 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.
- Pistons may be balanced to a minimum weight of 360 grams (piston only)
- Machining the top of the piston is not allowed
- Slipper skirts are not allowed
- Notched and/or domed pistons were not allowed

### CAMSHAFT & CAM GEAR

- Cam gear must be bolt-on type only and must use stock design gear
- Cams must be to these specifications: (Lift is 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"         |
|                 |                 | Max Lift .304 |

#### 34.16.4 Exhaust

| OPEN            | CLOSE           | LIFT          |
|-----------------|-----------------|---------------|
| 55 degrees btcd | 16 degrees abdc | .020"         |
| 38 degrees btcd | 1 degrees abdc  | .050"         |
| 21 degrees atdc | 17 degrees abdc | .100"         |
|                 |                 | Max Lift .289 |

### CYLINDER HEADS

- U.S. sedan stock single-port design only
- Fly cutting is OK to clean, seating surfaces but must retain with a 44cc combustion chamber.
- Only three angle valve seats -(15-45-75 degrees)
- No back cutting, polishing and/or porting is allowed
- Combustion chamber area shape must not be changed or touched

### VALVES

- Valve sizes must be: Intake: 35.5mm. Exhaust: 32.0mm
- Must be stock one or two-piece valve with stock profile
- Only one 45-degree angle is allowed
- Valve guide may be bronze, cast iron or steel of any, manufacture and length
- Any manufacturer of valve springs, spring retainers and lifters, stock dimensions inside and out is allowed
- Grinding, polishing and porting in any area of the head, or back cutting of the valves is not allowed
- Titanium valves are not allowed

- Swirl polished valves are not allowed

### **ROCKER ARMS & SHAFTS**

- Any shaft that permits the use of stock Volkswagen type “1” 1600cc 1.1 to 1 rocker arms is allowed
- Must be Stock Volkswagen type-1, 1600 cc rocker arms only
- Resurfacing of rocker arms to accept swivel adjusters is allowed
- Any manufacturer valve covers and gaskets are allowed
- Other grinding/resurfacing or any other modifications are not allowed
- Needle or roller bearings are not allowed

### **INTAKE MANIFOLD**

- Must be Stock single port only
- Heater tubes may be removed
- No other modifications are allowed
- Chemical milling is not allowed

### **RESTRICTOR PLATES**

- Restrictor plates are available at Sportsman Series tech trailer
- Must use the 21.0 mm Sportsman Series plate only
- Must be the only piece between the carburetor and the intake manifold
- No modifications are allowed
- Polishing or filing or chemical milling is not allowed

### **CARBURETOR**

- Must be Stock Volkswagen 30 pic. 1, 2 and 3 only
- Maximum Venturi size is 24.10 MM
- Removing of automatic choke housing, choke plate and shaft is allowed
- Stock float bowl vent may be removed and plugged
- External float bowl venting is allowed
- Stock fuel pump must be used
- Any manufacturer air/fuel filter and any location allowed
- Any pressure regulator may be used
- Brosol PIC carburetor is allowed with no modifications to throttle shaft, throttle plate or venturi
- Carburetor listed as pic 30 are not allowed
- Bonding or welding of velocity stacks to carburetor is not allowed
- Internal modifications including polishing, filing or chemical milling are not allowed
- Removal of any parts from the throat area is not allowed

### **HEADERS**

- Unrestricted

### **MUFFLERS**

- Unrestricted

### **IGNITION SYSTEMS**

- Distributor must be used to send current to the spark plugs
- Only one distributor is allowed
- Battery ignition may be 6 or 12 volt. Stock or direct replacement coil only may be used
- Any manufacturer distributor is allowed
- Magnetic pickups that directly replace the points may be used
- Any Volkswagen alternator or generator is allowed and must be mounted in the stock location
- Magneto, multiple coil and direct fire ignition systems are not allowed

## ENGINE COOLING

- Fan shroud must be stock

## DRIVE TRAIN

- Only stock diameter Volkswagen flywheel type 1 design with eight dowels and Lightening and balancing is allowed
- Any gland nut and washer may be used
- Hydraulic clutch slaves are allowed
- Aluminum flywheels may not be used

## TRANSMISSION

- Stock Volkswagen type 1 bug only model AH and AT
- AH-8:33 ring and pinion-4.125 ratio and stock gears must be retained
- AT-8:31 ring and pinion-3.875 ratio and stock gears must be retained
- AA or AB swing axle-8:35 ring and pinion-4.375 ratio and stock gears must be retained

### Ratios

|             | AT    | AH    | AA/AB |
|-------------|-------|-------|-------|
| First Gear  | 3.780 | 3.780 | 3.800 |
| Second gear | 2.059 | 2.059 | 2.060 |
| Third gear  | 1.260 | 1.260 | 1.320 |
| Fourth gear | 0.930 | 0.890 | 0.890 |

- Rear transaxle mounts may be additionally supported
- Any manufacturer shifter allowed
- Beef-A-Diff is allowed
- Welding of 3rd gear will be allowed 34.28.11
- Any modifications except as listed above are not allowed 34.28.12
- Heavy-duty side plates are not allowed 34.28.13
- Axle over-tubes are not allowed 34.28.14
- Close ratio gears are not allowed

## OIL COOLERS

- Any full flows system is allowed and mounted in a safe location

## TIRES

- D.O.T. approved

## WHEELS

- Any stock type 1 wheel or/any manufactured 15" steel wheel may be used.
- Wheels may be reinforced by adding material
- Studs may be used
- Wheel adapters and/or bead locks are not allowed.

## MUD FLAPS

- All buggy classes are exempt from using mud flaps