

SPEC 944

A. PURPOSE

Improved Touring classes are intended to provide the membership with the opportunity to compete in low cost cars with limited modifications, suitable for racing competition. To that end, cars will be models, as offered for sale in the United States. They will be prepared to manufacturer's specifications except for modifications permitted by these rules.

In addition to the rules in this section, the stock safety/crash/crush integrity as designed by manufacturer must be maintained. Suspension attachment points must remain factory stock while allowing the use of spherical bearings or composite/plastic materials. Aero changes that are non-factory stock are not allowed. No lightening of body panels or parts other than that necessary for safety is allowed. No limited production (e.g., 944 Carrera GTS) or 944 Turbo body panels are allowed. Cars must be as delivered in United States 1983 – 1988. Carbon fiber parts are specifically not allowed. Eligible cars are 1983 – 1988 Porsche 944 (2V) and 1986 – 1988 Porsche 924S (2V). Updates to early model cars with late model parts are allowed. Turbocharged cars are not eligible for Spec 944 competition. Cars need not be eligible for state license or registration.

B. INTENT

It is the intent of these rules to restrict modifications to those useful and necessary to construct a safe race car. Competition adjustments, other than as outlined in section 9.1.3.A, 9.1.3.C, and 9.1.3.D are not allowed. Other than those specifically allowed by these rules, no component or part normally found on a stock example of a given vehicle may be disabled, altered, or removed for the purpose of obtaining any competitive advantage.

C. SPECIFICATIONS

Updating and backdating of components 1983-1988 Porsche 944 (2V) or 1986-1988 Porsche 924S (2V) is allowed to maintain competitiveness of cars.

Stock updated/backdated components may be substituted as a complete assembly (engine long block, transmission/transaxle, induction system, fuel injection system, differential/axle housing). Due to the lack of availability/cost of OEM parts, after market stock or stock equivalent parts may be used for parts interchange (e.g., late model fifth (5) gear, limited slip units, pistons, induction/ fuel system, etc.): however, all parts of an assembly shall be as originally produced for that assembly. Parts or assemblies which the manufacturer lists in factory service manuals or parts guides for a particular model which supersede or

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replace original parts or assemblies are permitted. Documentation of the superseding parts is the responsibility of the driver.

Stock replacement parts may be obtained from sources other than the manufacturer provided they are the exact equivalent of the original parts. The intent of this rule is to allow the competitor to obtain replacement parts from standard industry outlets, e.g., auto-parts distributors, rather than the manufacturer. It is not intended to allow parts that do not meet all dimensional and material specifications of new parts from the manufacturer.

A Shop Manual or its equivalent for the specific make, model, and year of automobile is required to be in the possession of each entrant.

Factory Shop/Service Manuals may come in the form of printed material, microfiche, CDs, DVDs and/or Internet access of the manufacturer sponsored web-based databases. It is the responsibility of the competitor to provide the electronic device capable of accessing the data for compliance verification. The proof of legality shall rest upon the protestor and/or protestee.

The Vehicle Identification Number (VIN) shall correspond with the automobile classified, and will determine the model and type for competition purposes. A minimum of two (2) VIN plates and/or stampings is required.

The minimum weight for Spec 944 as qualified or raced, with driver, is 2625 (twenty six hundred and twenty five) pounds. Spec 944 identification markings are S944.

Engine definitions:

Engine: 100.00 mm bore/78.9 stroke (2479cc) 4 Cylinder SOHC

Valve Sizes: 45.00 mm (I) and 40.00 mm (E)

Throttle Body: 56 mm which is stock/OEM

Vacuum: 30-40 cm Hg or 11.9 – 15.9 in Hg (Measured at 840 +/- 20-30 rpm with a T in the fuel regulator hose from the first port after the throttle body)

Compression Ratio: 10.2

Wheel Base: 94.5 inches

Wheel Diameter: 15 inches

Wheel Width: 6, 7 or 8 inches

Gear Ratio: 3.60, 2.13, 1.46, 1.07, 0.73 or 3.60, 2.13, 1.46, 1.07, 0.83

Final Drive: 3.89

Brakes: 283 mm Disc (F) 289 mm Disc (R)

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D. AUTHORIZED MODIFICATIONS

The following modifications are authorized on all Improved Touring Spec 944 cars. Modifications shall not be made unless authorized herein. No permitted component/modification shall additionally perform a prohibited function.

1. Reciprocating engines

a. Only the original/stock/OEM fuel injection is permitted.

1. External throttle linkage to the standard throttle body may be modified or changed. Choke/cold start mechanisms, plates, rods, and actuating cables, wires or hoses may be removed. Spring tension on the mass air flow meter maybe adjusted.

2. The original, standard intake manifold shall be maintained. No porting or polishing of the manifold or head is permitted.

3. All air entering the intake tract shall pass through the fuel injection throttle body and Mass Air Flow Sensor (MAF). Air intake source shall be within the confines of the engine compartment or stock location. Ram air intakes of any kind are prohibited.

4. The engine management chip within the ECU may be stock or aftermarket (chip choice is free). No other changes to the ECU are permitted. The allowance to modify the ECU in no way permits the addition of wiring, sensors, resistors or any piggyback outside of the OEM ECU housing.

5. The stock (unmodified) wiring harness between the engine and ECU must be used.

b. Air cleaner assemblies may be modified, removed or replaced. Velocity stacks, ram air or cowl induction are not permitted. Air intake source shall be within the confines of the engine compartment or stock location. Air intake hoses, tubes, pipes, resonators, intake mufflers,

housing, etc., located ahead of the throttle body may be removed or substituted. The Mass Air Flow Sensor must be stock and

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- shall not be modified except spring tension may be adjusted.
- c. EGR devices may be removed but if not removed shall not be modified in any way
1. Catalytic converter may be removed.
 2. Fuel must meet the requirements of GCR Section 9.3.26. for ITCS. .
- d. An MSD 6A or 6AL with MSD coil is permitted. Any spark plugs and ignition wires may be used. Ignition timing is unrestricted. Batteries may be replaced with those of alternate manufacture provided they are of similar amp-hour capacity and are fitted in the standard location. Additional battery hold-down devices may be used, and are strongly recommended.
- e. Offset key or re-keyed crank/cam gears may be used.
- f. Any exhaust header and exhaust system may be used. Exhaust shall exit in stock location. Original exhaust heat shields may be removed. A suitable muffler may be necessary to meet sound control requirements GCR 5.7.2..
- g. Oil pans, pan baffles, scrapers, windage trays, oil pickups, and lines must remain stock. Type of oil filter is unrestricted. Oil and power steering hoses may be replaced with metal braided hose (i.e. Aeroquip). The location of the filter and accumulator are unrestricted, but they shall be securely mounted within the bodywork. All oil lines that pass through the driver/passenger compartment shall be metal or braided hose. Dry sump systems are prohibited. Engine oil and oil additives are unrestricted.
- h. Engines shall not be bored oversize. Engines may be updated using pistons from the following manufacturer groups: 944-103-088-01, 944-103-088-11, 944-103-088-21 or 944-103-088-52. However, if these pistons are used, then the block face of the cylinder head may not be machined less than factory/OEM specifications.
- i. Manifold and cylinder head port matching is not permitted.

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Valve guide material is unrestricted

Any combination of block, pistons and cylinders form 1983-1988 Porsche 944 (2V) or 1986-1987 924S (2V) may be used. Upper end of block shall not be machined, block face of head maybe be machined, but compression ratio shall not exceed 10.2.1 Combustion chambers shall not be modified.

- j. Any clutch disc and pressure plate of stock diameter may be used, provided that they shall be bolted directly to an unmodified stock flywheel. Balancing of the flywheel/clutch/pressure plate assembly is permitted. Lightening of the flywheel is permitted. Aluminum flywheels are not allowed.
- k. Any stock/OEM equivalent water pump, alternator, or power steering pump may be used. Crankshaft pulleys must be stock or OEM equivalent. Type of accessory drive belts shall remain as stock.
- l. Hardware items (nuts, bolts, etc.) may be replaced with similar items performing the same fastening function(s). Cylinder head gasket(s) may be replaced with any gasket(s) having the same compressed thickness as stock. Use of 944 Turbo head gasket is allowed. Other engine gaskets are unrestricted. Engine drive belts may be replaced with others of equivalent OEM specifications.
- m. All engine components not otherwise listed in these rules shall meet factory specifications for stock parts. Engine compartment cosmetic trim pieces may be removed.
- n. The application and/or use of any painting, coating, plating, or impregnating substance (i.e. anti-friction, thermal barrier, oil shedding coatings, chrome, anodizing, etc.) to any internal engine surface, including intake manifold internal surface, is prohibited.

2. Engine Cooling System

- a. Any stock radiator may be used, provided it is mounted in the original location, maintains the same plane as the

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original core and requires no body or structure modifications to install. No new openings created by fitting an alternative may be used for the purpose of ducting air to the engine.

- b. Oil cooler(s) may be added or substituted. Location within the bodywork is unrestricted, provided that it/they are not mounted within the driver/passenger compartment.
- c. Cooling fans may be removed or replaced. Electrically operated fans with manual or automatic actuation may be fitted
- d. Thermostats may be modified, removed, or replaced with blanking sleeves or restrictors.
- e. Air conditioning systems may be removed in whole or in part.
- f. Screens of one-fourth (1/4) inch minimum mesh may be mounted in front of the radiator and/or oil cooler(s) and contained within the body work.
- g. Engine coolant fluid, coolant/heater hoses and clamps may be substituted. Heater hoses may be plugged. Heater water control valve(s) may be added or substituted. Heater core, heater housing, heater controls and heater hoses may be removed.

3. Transmission/Final Drive

- a. Final drive ratio allowed is per 9.1.3.C.
- b. Any limited-slip or locked differential is permitted.
- c. Gear ratios per 9.1.3.C.
- d. Hardware items (nuts, bolts, etc.) may be replaced by similar items performing the same fastening function(s).
- e. Shift lever may be bent above tunnel or floor.

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4. Chassis

a. Ride Height

1. Minimum ride height is four and one half (4 ½) inches, without driver at the lowest point of the rocker panel. Location of measurement is at the front and rear door seams of the driver/passenger door and does not include welded seams or fasteners.

b. Springs and Shock Absorbers

1. Shock absorbers may be replaced provided that they attach to the original mounting points. The type and number (e.g., tube, lever, etc.) of shock absorbers shall be the same as stock. The interchange of gas and hydraulic shock absorbers is permitted. Remote reservoir shock absorbers are prohibited. No shock absorber may be capable of adjustment while the car is in motion.
2. MacPherson strut equipped cars may substitute struts, and/or may use alternate shock absorber inserts. Spring seat ride height location may be altered from stock. Remote reservoir struts and/or inserts are prohibited. External adjustments of shock control shall be limited to two (2).
3. Springs of any origin may be used, provided they are of the same number and type as originally fitted, i.e., coil, torsion bar, and that they shall be installed in the original location using the original system of attachment. The joining of two or more coil springs by any means is prohibited. The use of tender springs is permitted. Spacers, including threaded units with adjustable spring seats, may be used with front coil springs. The original rear torsion bar/trailing arm/shock configuration must be maintained. Coil over threaded body shock absorbers on the rear of the car are specifically prohibited.

Maximum diameter of rear torsion bars is 30 mm.

c. Suspension Control

1. Front and/or rear sway bar(s) may be replaced with any size stock or after market direct replacement sway bar. Hollow sway bars, adjustable sway bar links, and heim rod ends or links/joints may be fitted.

d. Suspension Mounting Points.

1. Cars equipped with MacPherson strut suspension may decamber wheels by the use of eccentric bushings at the control arm pivot points, by the use of eccentric bushings at the strut-to-bearing-carrier joint, and/or by use of slotted adjusting plates at the top mounting point. If slotted plates are used, they shall be located on existing chassis structure and mounting points and may not serve as a reinforcement for that structure.

2. Front caster may be adjusted at the upper strut mounting point plate.

3. One (1) front stay rod may be added between the upper strut towers.

4. Bushing material, including the material used to mount a suspension sub-frame to the chassis is unrestricted. This includes the use of spherical bearings and/or heim joints, so long as no suspension component is modified to facilitate their installation. Retention of spherical bearings by use of tack welds is allowed, as long as the welds serve no other purpose.

5. Rubber bump stops may be removed, modified or replaced but their chassis mounts, brackets, etc., may not be altered in any way.

6. No other relocation or reinforcement of any suspension component or mounting point is permitted.

7. Hardware items (nuts, bolts, etc.) may be replaced by similar items performing the same fastening function(s).

5. Brakes

- a. Brake pads and brake fluid are unrestricted.
- b. Backing plates and dirt shields may be modified or removed. The fog lights may be removed. The openings created by the removal of the fog lights may be used to duct air to the front brakes only with a maximum three (3) inch diameter hose.

OEM type/size/design/material brake rotors from manufacturer or after market parts supplier may be slotted or drilled.

- c. Brake lines may be replaced with steel lines or Teflon-lined metal braided hose. Lines/hoses may be relocated and may be given additional protection. Brake fittings, adaptors, and connectors are unrestricted. Brake system circuitry may be revised, but no modification or substitution of the original master cylinder, its location, or mounting is permitted.
- d. Brake proportioning valves may be used provided that they are of the in-line, pressure limiting type.
- e. Parking brakes, mechanisms, and actuating components may be removed.

6. Wheels/Tires

- a. Only 15 x 6 inch, 15x7 inch or 15 x 8 inch cookie cutter/ATS, phone dial or Fuchs wheels are allowed. Multiple piece modular wheels are prohibited. Wheels shall be made of metal.
- b. The only tire allowed is the Toyo RA1. Tire size is limited to 225/50/15. The only tire modification allowed is having treads “shaved” or “trued”.
- c. Maximum track width is sixty (60) inches/one thousand five hundred twenty for (1524) mm.

- d. Any steel wheel stud , bolt or lug nut is permitted.

7. Body/Structure

- a. Fenders and wheel openings shall remain unmodified.

It is permitted to roll under or flatten any interior lip on the wheel opening for tire clearance. Cars with plastic/composite fenders may remove any interior wheel opening lip, but the resulting material edge shall be no thinner than the basic fender material thickness. Non-metallic inner fender liners may be removed. Both front fenders and front valance may be replaced as a package on the 1986 - 1988 Porsche 924 S (2V) with stock 1983 – 1988 Porsche 944 (2V) parts. Rear fenders of 1986 – 1988 Porsche 924 S (2V) may be modified to 1983 – 1988 Porsche 944 (2V) specifications. Rear glass/spoiler unit may be 1983 – 1988 Porsche 944 (2V) or Porsche 1986 – 1988 Porsche 924 S (2V).

- b. No additional front spoiler, splitter, or air dam other than the factory/stock/OEM front valance is permitted. Due to limited availability/cost of OEM front valance, aftermarket front valance may be used, but after market front valance must conform to OEM shape/configuration/performance and provide no competitive advantage over OEM part..

The center horizontal crossbar below the bumper may be removed at the vertical attachment of the manufacturer/OEM front valance for additional radiator cooling only. The manufacturer/OEM composite/plastic center vertical support for the lowest portion of the front valance may be removed for radiator cooling only. The valance support may be replaced with a center metal bracket/rod to provide support of the front valance lower edge/lip.

The bottom engine tray cover and bottom radiator tray cover may be removed.

- c. No part of the car, except for the exhaust system and suspension components, shall be lower than the lowest part of the wheel rims.

- d. Windshield clips and rear window straps per the GRC Section 9.3.55. are permitted and recommended.
- e. Hood and trunk/rear deck lid pins, clips, or positive action external latches are permitted. Stock hood and trunk latches may be disabled or removed; if so, some positive action external fastening method must be used. Engine compartment insulation may be removed. Headlights, headlight lift mechanisms and brackets etc. may be removed, but headlight panels must be retained and secured. Headlight panels shall not be secured in such a manner as to provide air induction or performance advantage. Engine compartment headlight rubber seals may be removed. Windshield wiper blades, wiper operating mechanism and motor may be removed.
- f. Stock or OEM sunroofs may be retained and must be bolted, screwed or riveted in place. Replacement of sunroof by metal panel is allowed. All sunroof components (motors, cables, rails, etc.) may be removed.
- g. Any paint scheme and markings meeting GCR specifications are permitted.
- h. All chassis/structural/electrical repairs, if performed, shall be in concurrence with factory procedures, specifications, and dimensions. Unless specifically authorized by the manufacturer for repair or allowed by these rules, no reinforcement, i.e. seam welding, material addition, etc., is permitted.
- i. Body repair shall be performed using every reasonable effort to maintain stock body contours, lips, etc. Any body repair modification having as its purpose increased clearance or performance is prohibited. In those circumstances where stock/OEM trim/molding/body panels are unavailable

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through all normal replacement channels , proof of unavailability shall be provided by the competitor.

- j. Radio antennas may be removed. Antennas for two way radios may be added.
- k. Body side moldings, rocker panel molding and wheel opening trim pieces (not stock flares) may be removed. Resulting holes may be filled.

8. Driver/Passenger - Trunk

- a. The driver's seat shall be replaced with a one-piece bucket-type race seat. Factory seat tracks/brackets may be modified, reinforced, and/or removed to facilitate replacement mountings provided they perform no other function. All other seats may be removed. A second one (1) piece seat equivalent to driver seat may be installed.
- b. Any steering wheel except wood trimmed types may be used. Any shift knob may be used.
- c. The original instrument cluster and original driver's side dash must be maintained. The remainder (e.g., passenger side dash) may be removed. Additional gauges and instruments may be added. They may be installed using a mounting plate(s), or in any other location using a secure method of attachment.
- d. Any interior mirror(s) may be used. Stock/OEM Porsche 944 external mirrors shall be used on both driver and passenger sides.
- e. Front passenger seat, rear seat back, rear seat bottom cushion(s), sun visors, seat belts and their attaching hardware and brackets may be removed.
- f. Carpets, sound proofing, center console, floor mats, headliners, sun roof liner and frame, dome lights, grab handles, door interior trim panels and other insulating, attaching or operating mechanisms may be replaced or removed. Door interior trim panels may be replaced with 0.60" aluminum securely attached to the door. All other

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interior trim panels may be removed. Other than to provide for the installation of required safety equipment or other required modifications, no other driver/passenger compartment alterations or gutting are permitted. The driver and passenger window glass, window operating mechanism, window lift mechanism and inside door latch/lock operating mechanism may be removed. The stock side impact beams and the outside door latch/lock operating mechanism shall not be removed or modified.

- g. Any removable covers used to cover spare tires, tools, bins, etc., may be removed along with attaching hardware and brackets. Carpets, mats, and their insulating or attaching materials may be removed from the floor and recesses of the cargo/trunk/spare tire area.
- h. Ducting may be added to provide fresh air to the driver/passenger compartment. The ducting shall be located in the driver or passenger window areas, with no modifications to the bodywork. Alternatively, the driver rear quarter panel window may be replaced with a lexan window with a single NACA-type duct for driver/passenger compartment fresh air. Only one (1) cooling duct is permitted in the window area. It is not permitted to otherwise fill the window areas. Any and all cooling ducts may only provide driver/passenger compartment fresh air and may not be routed to cool any mechanical parts (e.g., transmission, rear brakes, etc.). In addition, no cooling ducts shall pass through any body structure.
- i. Audio systems may be removed in their entirety. Two-way radios are permitted.
- j. Modification may be made to the foot pedals to improve the comfort of and control accessibility to the driver.
- k. Ballast may be used. All ballast shall be located in the front passenger footwell/seating area, aft of the firewall and any footwell angle, and forward of the aft-edge of the forward most passenger door, unless otherwise specified on the vehicle's spec line.

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1. It shall be in segments no heavier than fifty (50) pounds, and shall be capable of being removed to be weighed apart from the car.
2. Each segment shall be fastened with a minimum of two (2) one-half (1/2) inch bolts and positive lock nuts of SAE Grade 5 or better, and shall utilize large-diameter, load distributing washers.
3. Holes may be drilled in the front passenger footwell/seating area floorpan for purposes of mounting ballast (only) and said floorpan may be reinforced as required for same purpose.

9. Safety

- a. Roll Cage shall be as specified GCR 9.4.1
- b. Steering lock mechanisms shall be removed.
- c. The stock fuel tank may be replaced with a fuel cell. The cell shall be located within twelve (12) inches of the original fuel tank location. Additional reinforcement may be added to support the fuel cell, but such reinforcement shall not attach to the roll cage. Floor pan may be modified for installation. See GCR Section 9.3.24., for requirements. Unleaded fuel filler trap door and restrictor plate in filler neck may be removed.
- d. Spare wheels and tires may be removed

E. MEASUREMENT STANDARDS

Measurement standards shall be as specified in Appendix C. with the following exceptions: Wheel base has a tolerance of +2 (2)/ -1 (1) inch.

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