

Lightweight Carrera Confusion, Third Edition

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This article is a revision of my article “Lightweight Carrera Confusion” which appeared in the May 1993 edition of *Porsche Panorama*, the monthly magazine of the Porsche Club of America.

This article will discuss the history of and differences between the 1992/93 Carrera 2, the 1992 Carrera RS, the 1993 RS America, and the Carrera Cup racing cars built between 1990 and 1993.

The European Carrera RS

Porsche has a long history of developing and selling special modified versions of their 911 product line for both street and racing use. Of these cars, the 911 Carrera RS models are perhaps the most famous.

The first of these cars was the Carrera RS 2.7 introduced in 1972 as a homologation basis the Carrera RSR 2.8 FIA GT racing car. These cars were extremely successful both on the sales room floor and at the racetrack and ultimately evolved into the 1974 Carrera RS 3.0 road car and the Carrera RSR 3.0 racing car. Porsche did not import the Carrera RS 2.7 and RS 3.0 road cars to the USA. Porsche ceasing production of the Carrera RS model in 1975 and excepting a limited production run of 20 type 954 SC/RS cars for model year 1984 did not build an RS model 1992 as the FIA homologation basis for the the Carrera RSR 3.8 and the production basis for the Carrera Cup racing cars.

In the early 90's Porsche instituted a very successful racing series in Europe called the Porsche Carrera Cup. The Carrera Cup at the time was a racing series featuring factory modified 911 Carrera 2 coupes running a support race during Formula 1 race weekends, just as the Porsche Supercup series does today.

These first Carrera Cup racing cars, built at Weissach under the direction of Roland Kussmaul, have essentially every component of the normal Carrera 2 modified for racing performance. These modifications, plus some others to make the car suitable for street use, were carried forward to create the 1992 Carrera RS. All 964 chassis based

Carrera Cup vehicles after 1991 were based on the new 1992 Carrera RS. The 1992 Carrera RS is homologated into FIA racing class Group N/GT, Grand Turismo racing.

Unfortunately, as before with Carrera RS vehicles, the 1992 Carrera RS was not available for sale in the USA or Canada.

The 1992 Carrera RS was available in a total of four versions, a base version plus three “M” option variants. The four variants are called the:

- 1) Carrera RS “Basic”, “N/GT” or “Lightweight”
- 2) Carrera Cup Racing version (Option M001).
- 3) Touring version (Option M002).
- 4) Competition version (Option M003).

The RS Basic, Touring and Competition types were approved for road use around the world, excepting the USA. The Carrera Cup Racing version was not approved for road use.

RS Basic and Touring VIN and production numbers

The 2282 Carrera RS Basic and M002 Touring cars are in the 1992 “N” series VIN number group with a “9” as the thirteenth digit to designate a Carrera RS in the range: WPOZZZ96ZNS49 0001 to 2282. These 2282 cars were distributed thus:

- 1916 Basic version cars (including 72 right hand drive).
- 76 Touring version M002 cars (including 11 right hand drive).

Competition VIN and production numbers

The 290 1992 M003 Competition versions have VIN numbers with the Carrera RS **9** as the thirteenth and also a “**9**” as the fourteenth digit beginning the serial number to designate an M003 variant in the range:
WPOZZZ96ZNS4**9** 9001 to **9**290

Carrera 2 and Carrera RS based Carrera Cup VIN and production numbers

The first two years production of Carrera Cup cars was based on the normal Carrera 2 as there was no Carrera RS basis car in production. Hence, these modified Carrera 2 racers are VIN numbered as normal European Carrera 2 coupes with a **0** as the thirteenth digit which designates a ROW (Rest of World, non USA) Coupe but with a “**9**” as the fourteenth digit beginning the last four digits or the serial number portion of the VIN.

The 1990 racing cars were “**L**” series cars in the range WPOZZZ96ZLS4**0** 9001 to **9**050. The 1991 racing cars were “**M**” series cars in the range WPOZZZ96MS4**0** 9001 to **9**120. Total production for 1990 and 1991 was 170 Carrera Cup racing cars.

After the introduction of the Carrera RS, the Carrera Cup was option code M001 for the Carrera RS. These were built for racing customers in model years 1992 and 1993, Note that no Carrera RS Basic, M002 or M003 road cars were built in 1993.

In 1992, 112 M001 Carrera Cup racing cars were built which have “**N**” series VIN numbers with the Carrera RS “**9**” as thirteenth digit but with an “**8**” as the fourteenth digit to begin the serial number in the range:
WPOZZZ96ZNS4**9** 8001 to **8**112.

In 1993, 15 M001 Carrera Cup racing cars were built and these are in the “**P**” series VIN range:
WPOZZZ96ZPS4**9** 8001 to **8**015. The 1993 Carrera Cup cars were equipped with 18” 3 piece Speedline wheels styled like the 3.6 Turbo wheels.

To summarize, all 1992 Carrera RS variant cars have a “9” as the thirteenth digit to designate a Carrera RS chassis, Carrera Cup M001 cars have a serial number beginning with an “8” and Competition M003 cars have a serial number beginning with a “9”. The only RS variant built in 1993 was the Carrera Cup vehicle.

The type M64/03 engine serial numbers for all 1992 RS variants are in the range starting: 62N 80001, 1993 Carrera Cup racing cars have engines in the range starting: 62P 80001.

Gearbox serial numbers for the type G50/10 gearbox for all types are in the sequence starting: G5010 2 000001.

The RS America

The RS America was introduced in 1992 as a performance oriented lower cost alternative to the regular Carrera 2. All RS America's are technically 1993 and 1994 cars, even though production of the cars actually began in January 1992. This was unusual since August is the usual month when Porsche does its new model change over and production of other 1993 Porsches began in August 1992.

The first series model year 1993 RS Americas built between January and August 1992 VIN numbers in the 1993 "P" series range, with a “1” as the thirteenth digit to designate a RS America and an “8” reserved for the RS America as the fourteenth digit to begin the serial number in the range: WPOAB296?PS41 8001 to 8294 (294 cars). The “?” in the USA VIN Number indicates a randomly generated number which can be the numbers 0 through 9 or the letter X in the United States only.

.Model year 1993 RS Americas built starting after August 1992 have VIN numbers with a “9” as the fourteenth digit to begin the serial number in the range: WPOAB296?PS41 9033 to 9368 (335 cars).

Model year 1994 RS Americas built starting after August 1993 have VIN numbers in the 1994 “R” series cars with serial numbers beginning with “9” in the range: WPOAB296?RS1 9067-9139 (72 cars).

To summarize all RS Americas have a “1” as the thirteenth digit unique to them. The 1993 or “P” series RS Americas have serial numbers beginning with an “8” if built before August 1992 and a “9” if built after August 1992. All “R” series 1994 RS Americas have serial numbers beginning with a “9”.

Total production was 701 RS America cars. The RS America was offered for sale in the USA and Canada only.

The type M64/01 engine serial numbers for the first 294 cars are in the 1992 "N" series range, starting 62N 00001. Engine Serial numbers for cars built after August 1992 are in the 1993 "P" series sequence starting: 62P 00001 and engines built after August 1993 are in the “R” series sequence starting: 62R 00001.

The serial numbers for the G50/05 type gearbox for all RS America cars are in the normal Carrera 2 sequence starting: G 5005 1 000001 without LSD or: G 5005 2 000001 with LSD option M220.

The Carrera Cup USA

In 1992 Porsche Cars North America (PCNA), hoping to emulate the success of the International Race of Champions (IROC) races of the early 1970's, sought to develop a Carrera Cup series in the USA. The plan was that teams would pay around \$100,000 for a car specially prepared for a USA Carrera Cup racing series that would support professional races here. As in Europe, no further modifications to the cars were to be allowed except for wheel alignment, wheel weighting and sway bar adjustment. The engines were to be sealed so that internal modifications were not possible. All teams were to use Toyo tires. The Motronic engine management brains for each race were to be handed out to the teams by the organizers before each race and then collected after each race. Now all that was needed for this plan to work were racing cars and teams that would buy the cars and race them.

Production of a suitable racing car for the series turned out to be a little tricky. The simple solution car would have been for Porsche to build a run of Carrera Cup cars for the series and import them as was done with the IROC Carrera RS 3.0 based series cars in the 1970's. I have been told that this was not feasible in 1992 because of some trouble Porsche found itself in during the 1980's with the US Federal Government. Al Holbert, then director of Porsche motorsport activities in the USA, imported some European Porsche 959 cars as “racing cars”. When the

Environmental Protection Agency and Department of Transportation reviewed these cars it was decided that the 959's were more likely to end up on the street than on a racing track they were impounded and sent back to Germany. Porsche was put on notice that any "racing car" that "looked like" a street-type car had to meet EPA and DOT laws. Therefore, PCNA was sensitive in 1992 to the fact that anything they import may be sent back to Germany by the US Federal Government if it didn't meet federal regulations.

In 1992 the European Carrera RS served as the basis car for the European Carrera Cup cars, just as the 996 GT3 serves as the basis car for the Supercup series today. Therefore, for the proposed USA Carrera Cup, PCNA asked Andial/PMNA to coordinate with Porsche AG a limited production run of USA legal cars similar to the European Carrera RS. Andial/PMNA would then be contracted to convert these road legal cars to Carrera Cup racing cars for the racing series. Forty-five "Carrera Cup USA Edition" cars were then specially produced and sent to the PCNA port at Charleston, W. Virginia.

Twenty-nine of these 45 cars were shipped from Charleston to Andial/PMNA in Anaheim California. Of these 29, 25 were converted to the full Carrera Cup racing specification. The remaining 4 had their engines sealed, checked on the dynamometer and their clutch plate changed to a racing 4 puck type. These 4 cars were to be used as parts cars and were otherwise unchanged from the way they were imported. These 29 cars were then shipped to Reno, Nevada for storage at Porsche Cars North America.

The cost of producing racing specification cars in this way was high and PCNA tried to pass on this cost to racing teams, so finding enough teams to buy and race the cars proved impossible. In addition the weak American economy in 1992 reduced the hoped for sponsorship support and the series was cancelled by PCNA before it began.

After the Carrera Cup USA series cancellation, the 29 racing and modified cars were returned to Andial and reconverted back to their original street legal specification as originally imported. The only remaining elements of the conversion are 2 tubes left from the roll cage on each side of the engine compartment, remnants of the roll cage weld pads inside the car and the stiffer steering coupler links were also left in the cars. The cars were then shipped

from Andial back to the Porsche port in Charleston, South Carolina for final carpeting and paintwork before shipment to dealers.

Sixteen of the original 45 cars were never shipped from South Carolina to Andial in the first place and were sold as they were imported.

Probably since PCNA was sensitive about the cancellation of the racing series there was no national advertising program about the cars availability other than a letter to Porsche dealers. All 45 cars were sold quietly through the regular dealer network as a model officially called the Carrera Cup USA Edition. The Carrera Cup Edition option cost \$13,740 over the standard Carrera 2 price of \$63,900. Total list price, with \$700 shipping charge, was \$78,340.

Carrera Cup USA cars and have standard USA Carrera 2 VIN numbers with a 2 as thirteenth digit which designates a USA Coupe in the range: WPOAB296?NS42 0392 to 0602.

The wide range of the serial numbers for the Carrera Cup USA cars is because they were built non-consecutively on the production line and thus have serial numbers ranging between 0392 and 0602, inclusively. Serial number 0392 was a pre-production car and production really began in earnest with serial number 0509 so, during the actual period of production, approximately every other car on the production line between 0509 and 0602 was a Carrera Cup USA car.

It's a little surprising to me that Porsche, a company that seems to have a VIN fetish when it comes to numbering special versions, did not chose to give the Carrera Cup USA cars a unique VIN sequence. It would have been consistent with the early 90's Carrera 2 based Cup cars to give them a VIN with a 9 as the fourteenth digit, serial numbering them 9001 to 9045, but Porsche chose not to do this

The Carrera Cup USA's G50/10 type gearbox and M64/03 type engine serial numbers are in the identical range as for the European Carrera RS listed above.

The cars were delivered with a dash plaque indicating each cars VIN number and their Carrera Cup USA status. The 25 cars that were converted by Andial/PMNA to full race specification also have a separate sub-serial number engraved on their dash plaques numbering them from 92-01 to 92-25 (92 for the year 1992, 1-25 for the cars conversion sequence).

Comparing the Cars Mechanically

Comparing the Bodywork

Bodywork Comparision

Table 1

	92/93 Carrera 2	93 RS America	92 Carrera RS Touring	92 Carrera RS Basic	92 Carrera Cup USA
Spoiler	Retractable	Fixed	Retractable	Retractable	Retractable
Side Mirror	Electric Adj.	Manual	Electric Adj.	Manual	Manual
Front Hood	Steel	Steel	Aluminum	Aluminum	Aluminum
Glass Type	Standard	Standard	Thin	Thin	Thin****
Rear Bumper	Euro or USA Standard	USA Type	Euro RS	Euro RS	USA Type
Door Beams	Yes	Yes	No	No	Yes

**NGT Racing
Seamwelds
Etc.***

No See Text See Text Yes Yes

**Rolled FINDER
Lips**

No See Text
Yes Early,
No Later
cars Yes Yes Yes

**Interior SOUND
Dampening**

Yes Reduced Yes No No

Undersealing

Yes Yes Yes No No

Rust Warranty

10 Years 10 Years 10 Years 3 Years 3 Years

**DIN 720020
Weight**

Kilograms **KG** 1 1377 USA
111325 Euro 1343 1320 1220 No Spec.

Pounds 3031 USA
2970 Euro 2954 2904 2684 2835*

LBS

Fog lights Yes Yes False Lights False Lights Yes

Windows Electric Electric Electric Manual Electric

Cruise Control	Yes	No	No	No	No
Central Locking & Alarm	Yes	Yes	Yes	No	Yes
Wiring Harness Battery	Standard 75 AH	Standard 75 AH	Standard 72 AH	Simplified 36 AH	Standard 36 AH
Master Electrical Switch in Trunk	No	No	No	Yes	Yes
Interior Lighting	Yes	Yes	Yes	No	Yes
Heated Window Rear	Yes	Yes	Yes	No	No
Windshield Cleaner Capacity	7.4 ltr.	7.4 ltr.	7.4 ltr.	1.0 ltr.	7.4 ltr.
Airbags	Yes (USA only)	Yes	No	No	Yes
Front Seat	Basic	Sport	Sport	Bucket	Basic
Rear Seat	Folding	Pkg. Tray W/2	Carpet only	Carpet Only	Pkg. Tray W/O Doors

		doors***			
Carpet type	Standard	Lightweight	Lightweight	Lightweight	Lightweight
Door Panel	Standard W/Pocket	Lightened Pull Strap type	Standard W/ Pocket	Lightened Pull Strap type	Lightened Pull Strap type
Front Trunk Carpet	Complete	Complete	Complete	Shortened	Shortened
Fuel Tank Capacity**	77 liter	77 liter	92 liter	92 liter	77 liter

* See text

**The larger fuel tank holds approximately 25 pounds more fuel, which is included in the vehicle weight indicated.

*** The RS America had standard rear seats in model year 1994

****The Carrera Cup USA car had standard rear glass due to the center high mounted stop light installation. Door glass was of the thin type.

Table 1 offers a comparison of variations in the bodywork, Interior trim, and electrical equipment.

Note that the USA Carrera 2 is heavier than the European Carrera 2 due to the addition of the 5-mph bumper system, airbags and air-conditioning that are standard for the USA.

The RS Basic

The Carrera RS Basic utilizes the standard European Carrera 2 body form with a retractable spoiler. Weight is saved by deleting Carrera 2 standard equipment such as, radio (the windshield antenna and basic wiring are retained so a radio could be fitted if required), cruise control, electric window lifts, central locking and alarm,

interior lighting, electric mirror adjusters, fog lights (replaced with dummy lights), rear window defroster wiring and relays are all deleted to save weight (the rear window does have heating elements on the glass but they are not activated since the battery is only 36 AH).

The Carrera RS Basic interior is lightened by the use of lightweight carpeting which also replaces the seats in the rear, lightweight door panels, fiberglass bucket seats, simplified trunk carpeting (which only covers the spare tire) and a simplified plastic cover for the forward trunk bulkhead. Further weight is saved by use of a simplified wiring harness, an aluminum hood, and a small 36 AH battery, thinner (3 mm versus 4.7 mm) glass and a 1 liter windshield washer tank. Interior sound dampening in what would be the rear seating area is deleted. A larger 92 Liter gas tank is fitted. The rear bumper all the European Carrera RS variants is a unique 11 pound lighter design.

Many changes are made to the body shell of the Carrera RS Basic to make it suitable for N/GT and Carrera Cup racing. For those of you interested in the complete scope of the changes, refer to the Carrera 2/4 Workshop Manual, Body Volume V, pages 50-101 to 53-104.

Briefly, these modifications include:

1) Installation of mounts for:

- Master electrical switch above the battery
- 1-liter windshield bottle in trunk
- Electro-hydraulic brake system
- Alternate mounting bracket for the ABS brain above the original location.
- Front tow hook
- Smaller 36-AH battery
- Fire extinguisher
- Inertial reel covers for the front seat belts
- Six-point harness restraints

- 2) Seam welding and plating of the rear suspension mounting points, rear floor area, transmission and stabilizer mounts,
- 3) Removal of rear seat brackets, seat belt mounts, and trim brackets. .
- 4) Fender lips rolled for tire clearance front and rear.

Undercoating is deleted on the RS Basic so it only has only a 3-year rust warranty.

The RS Basic weighs 2684 pounds (including approximately 25 pounds more fuel in the 92 liter fuel tank compared to the normal 77 liter tank).

The Carrera RS Touring M002

The M002 Carrera RS Touring's bodywork and equipment is much different than the RS Basic. The interior is largely the same as the standard Carrera 2 with the usual Carrera 2 door panels that include radio speakers and pockets. Sound dampening is used in the rear seating area but seating is replaced with carpet as on the RS Basic. Sport seats, usually optional on the Carrera 2, are standard and replace the fiberglass buckets of the RS Basic. Front trunk carpeting and trim are as a standard Carrera 2. Other equipment is included such as alarm and central locking systems, interior lighting, 72 AH battery, 7.4 liter windshield washer tank, power windows, antenna amplifier, 92 liter fuel tank and an operable heated rear window.

The extent of the bodywork modifications cited in the factory manual for the Basic car is limited in the M002 Touring car. Certain operations such as removal of some interior brackets, installation of 6-point harness mounts, alternate location of the ABS brain, provision for a smaller battery and installation of the trunk mounted battery switch and smaller windshield washer bottle were not performed on the Touring RS car. The Touring RS also has undercoating and a 10 year rust warrantee.

The RS Touring weighs 2904 pounds (including approximately 25 pounds more fuel in the 92 liter fuel tank compared to the normal 77 liter tank).

The Carrera RS Competition M003

The M003 Competition option included the following modifications to the RS Basic to produce a car as close to the Carrera Cup as possible and still be road legal:

1. Deletion of interior carpeting, headliner and A/B pillar covering.
2. Painting of interior to match exterior color.
3. Shortened knee padding on lower dashboard to clear roll bar installation if ordered.
4. Driver's side sun visor only.
5. Provision to unlock trunk and fuel door from driver's seat
6. Engine compartment insulation deleted.
7. Six point seat belt for driver and passenger.
8. DME Brain box moved behind driver's seat (standard location under seats in way of crotch belts mounts).
9. Hand held fire extinguisher mounted on passenger floor.
10. Cable activated master switch from inside of car.
11. Recaro SPG bucket seats for passenger and driver.

All the European RS cars have a "Carrera RS" emblem on the deck lid, which is also optionally available on the side of the car as script along the door bottoms.

The RS America

The RS America deletes the usually standard, in the USA, Carrera 2's air conditioning, radio, sunroof, electrically adjustable mirrors and cruise control to reduce weight and cost. The rear spoiler is a fixed, non-retractable "tray" type as on the earlier 3.2 911 Carrera.

In the RS America a simplified lightweight interior uses the RS Basic door panels but with radio speakers installed and a lightweight interior carpeting material used. Front seats are cloth covered sports seats. The rear seats, trim, rear radio speakers are eliminated and replaced with carpeting and, for the model year 1993 cars, a package tray that has doors to seal the storage areas below it. Model year 1994 RS America cars had the same rear seats as standard Carrera 2.

On the deck lid “RS America” script appears and "RS" is written on the sides of the car ahead of the rear wheels.

It is not clear how many of the body modifications of the European Carrera RS have been carried out on the RS America. The earliest cars may have had basically the same body modifications as a European RS Carrera Touring car with rolled fender lips for tire clearance that later cars do not have. I think this change probably happened after August 1992 when the factory stopped production of the European RS car.

The RS America weighs 2954 pounds.

The Carrera Cup USA Edition

The Carrera Cup USA Edition car is essentially the European Carrera RS Basic N/GT car equipped with the following added safety equipment to make the car USA legal. Some changes were also made to facilitate its ultimate conversion to a Carrera Cup racing car:

- 1) Airbags (legal requirement)
- 2) Center high mounted stop light with associated thicker rear window glass (legal requirement)
- 3) USA 5 mph bumpers (legal requirement)
- 4) A door-less rear package tray (Porsche apparently does not want the seat pockets remaining in the rear to potentially be used as seating without seatbelts, note that the current GT3 uses warning stickers instead)
- 5) Standard seats (to be replaced with a Recaro SPG racing seat)
- 6) Alarm and central locking system (legal requirement, Porsche chooses this rather than stamping numbers on body parts)

- 7) A 77 Liter gas tank (92 liter not approved for USA)
- 8) Power windows (manual windows winders won't clear the airbag dash padding)
- 9) Interior lighting (part of American wiring)
- 10) Fog lights (part of 5 mph bumper)
- 11) A 7.4-liter windshield washer tank (no support for 1 liter bottle in USA harness)
- 12) Standard USA wiring harness (required to support the added electrical equipment)
- 13) Deck lid and sides are free of any model designation.
- 14) Aluminum 7 and 8 X 17 inch wheels as on RS America (Aluminum 8 inch rear wheels were needed for the front in the Carrera Cup racing conversion)
- 15) Deletion of emblem script on deck lid.

The Carrera Cup USA body was created using a so-called “body in white” as for a USA airbag equipped car and performing the workshop manual operations listed above for the European Carrera RS Basic. Three of the operations listed in the workshop manual were not performed though: adding the bracket for the small water bottle, deleting the bracket for the large water bottle and removing the brackets for the rear seats.

Carrera Cup USA car serial number 0392, a pre production car, is slightly different from the 44 other cars in that it had the bracket for the small RS water windshield washer water tank installed and had the brackets for the rear seating removed. The carpeting was also tightly glued down. Subsequent cars did not have the water bottle bracket, the rear seat brackets were not removed and the carpeting was barely glued into the car to facilitate removal when the car was converted to a racing car. The cars were not sprayed with Cosmoline preservative underneath.

All Carrera Cup USA Edition cars were white excepting one India Red car, thought to be dedicated as the series pace car.

The Carrera Cup USA has no official weight quoted for it, although a letter to dealers claimed "approximately" 2760 pounds. My Carrera Cup USA with all fluids full weighed 2835 pounds on a certified truck scale. A tank of

fuel weighs around 125 pounds and perhaps PCNA weighed a car with less than a full tank, hence the: “approximately” in the letter?

Comparing the Cars Mechanically

The Suspension System Table 2

Front Suspension Component	92/93 Carrera 2	93 RS America	92 Carrera RS Basic, M002 and M003	92 Carrera Cup USA
Stabilizer Diameter	20mm	22mm	24mm, 5 way adjustable	24mm, 5 way adjustable
Spring Rate*	169 lbs/in	169 lbs/in	247 lbs/in	247 lbs/in
Damper Type	Base	Turbo	Bilstein Sport	Bilstein Sport
Hub Material	Steel	Steel	Aluminum	Aluminum
Upper spring strut mount	Rubber	Rubber	Ball Joint	Ball Joint
Lower Control Arm Bushings	Standard	Standard	Harder Rubber	Harder Rubber
Ride Height	Std. USA*	Std. USA	50mm Lower	50mm Lower

Camber Setting	0°±10'	0°±10'	-1°±10'	-1°±10'
Wheels	6"x16"	7"x17"	7.5"x17"	7"x17"
Offset	52mm	55mm	55mm	55mm
Material	Aluminum	Aluminum	Magnesium	Aluminum
Tire Size	205/55	205/50	205/50	205/50
Steering	Power	Manual	Manual**	Manual
Rear Suspension Component				
Stabilizer Diameter	20mm	20mm	18mm 3-way adjustable	18mm 3-way adjustable
Spring Rate	189 lbs/in	263 lbs/in	440 lbs/in	440 lbs/in
Damper Type	Boge	Boge HD	Bilstein Single Tube Sport	Bilstein Single Tube Sport
Upper Spring Mount Design	Rubber Standard	Rubber Standard	Ball Joint Modified	Ball Joint Modified
Strut				

Trailing Arm Control Mount

Ride Height	Std.*	STD USA*	40mm Lower*	40mm Lower*
Camber Setting	-0.5'±10'	-0.5'±10'	-1°15'±10'	-1°15'±10'
Wheels	8"x16"	8"x17"	9"x17"	8"x17"
Offset	52mm	52mm	55mm	52mm
Material	Aluminum	Aluminum	Magnesium	Aluminum
Tire Size	225/50	255/40	255/40	255/40

*US ride height 10mm higher than European, so RS/Cup USA 50 mm lower than USA cars

** Power Steering Optional on RS Touring. Standard on all RHD RS cars.

Table 2 shows that the RS America suspension is the same as that optionally available, as option M030, on the standard Carrera 2. Changes consist of a larger front stabilizer bar increasing from 20mm to 22mm diameter, stiffer 911 Turbo progressive rear springs increasing spring rate from 189 to 263 pounds per inch and firmer 911 Turbo shock absorbers. Ride height, front springs and all other suspension components are as normal Carrera 2.

In the Carrera RS and Carrera Cup USA Porsche changes essentially every component of the standard Carrera 2 suspension. Firmer Shock absorbers and stiffer progressive rate springs are added at all four corners that are

considerably firmer than that of the RS America or normal Carrera 2. Spring rates go from 169 pounds per inch to 247 pounds per inch in the front and in the rear from the 263 pounds per inch of the RS America to 440 pounds per inch. These springs lower overall ride height to approximately 40 mm lower than a European Carrera 2 and 50 mm (~2") lower than a USA Carrera 2. Alignment is set with one degree more negative camber front and rear.

The front stabilizer is 2mm larger diameter than the RS America, and 4 mm larger than a normal Carrera 2 and is 5 position adjustable to tune handling to driver preference. Camber change in the front suspension during cornering, is reduced by harder suspension bushings used in the lower control arms pivots as well as the upper spring strut mount which is a ball joint design. To reduce weight, steel front hubs are replaced with aluminum hubs. Front suspension uprights are from the Turbo.

At the rear suspension, the stabilizer bar is also adjustable in 3 positions but 2 mm smaller in diameter. Spacers and harder rubber are added to the control mount (outer suspension bushing) to eliminate rear wheel toe in on trailing throttle during cornering, the so called: "Weissach Axle" effect. The rear control arm adjustment plates are modified and are different left and right and have harder rubber. They can be flipped side to side, allowing more negative camber for racing applications. The rear upper shock mount is also changed to a ball joint design, similar to that used at the front.

The Carrera RS Touring and Basic have genuine magnesium wheels that are 17" diameter and 7.5" and 9" wide front and rear respectively. These four magnesium wheels save a total of 10.6 kg (23.3 pounds) of weight, compared to aluminum wheels.

The RS America and Carrera Cup USA both are equipped with the 7x17 (front) and 8x17 (rear) aluminum wheels that are optional on the standard Carrera 2.

The standard Carrera 2 and right-hand drive Carrera RS models are the only cars with power steering; all other Carrera RS and RS America cars have manual steering.

Engine Comparison

Table 3

	92/93 Carrera 2	93 RS America	92 RS Carrera Touring M002	92 Carrera RS Basic, M001, M003 and Carrera Cup USA
Engine Type	M64/01	M64/01	M64/03	M64/03
Selected Pistons / Cylinders	No	No	Yes	Yes
Power steering Pump Drive	Yes	No	Optional	No
Flywheel	Dual Mass	Dual Mass	Dual Mass	Sports
Fan/Alt. Drive	2 Belts	2 Belts	1 Belt	1 Belt
Flattened Suction Oil Line*	No	No	Yes	Yes
Engine Mounts	Hydraulic	Hydraulic	Solid Rubber	Solid Rubber
DME Control	Standard	Standard	Sports	Sports
Displacement	3600 cc	3600 cc	3600 cc	3600 cc
Compression Ratio	11.3:1	11.3:1	11.3:1	11.3:1

Horsepower	250 DIN/247 SAE Net @ 6100 RPM	250 DIN/247 SAE Net @ 6100 RPM	260 DIN/256 SAE Net @ 6100 RPM	260 DIN/256 SAE Net @ 6100 RPM
Torque	310 NM @ 4800 RPM	310 NM @ 4800 RPM	325 NM @ 4800 RPM	325 NM @ 4800 RPM
Fuel Octane Req.	90 Octane	90 Octane	93 Octane	93 Octane

Table 3 compares the engines of the three cars.

The RS America and the Carrera 2 share basically the identical engine but the RS America engine deletes the power steering pump drive.

The engine in the Carrera RS and the Carrera Cup USA is a "blueprinted" version of the Carrera 2 engine. Pistons and cylinders are selected to optimize power output and minimize variation in output between engines. A sports flywheel, seven kilograms (15.4 lbs.) lighter than the Dual Mass unit is fitted. The drive belt system is simplified from two belts to one belt and the fan belt monitor is eliminated, the alternator light now serving this purpose. Engine mounts of the Carrera RS and Cup USA are changed to a solid rubber design. The suction oil line from the oil tank to the engine is flattened to improve rear tire clearance. The power steering pump drive is eliminated as on the RS America. The Carrera RS and Cup USA have a remapped DME chip that has more aggressive timing advance characteristics and thus produces ten more horsepower. Because of this the RS requires a Research Octane Number (RON) + Motor Octane Number (MON) /2 fuel of: $98+88/2=93$ octane gas. The standard Carrera engine requires a $95+85/2=90$ octane fuel.

The 29 Carrera Cup USA engines that were dynamometer tested at Andial/PMNA did not vary more than 1.5 horsepower from 275 SAE in race trim with no mufflers and a modified air cleaner on 92-octane gas. Porsche reported on delivery to Andial/PMNA that seven of the Carrera Cup engines had cam timing within spec, but

settings not identical to the other 38 cars; these seven engines were corrected at Andial/PMNA. Andial/PMNA preformed no other engine modifications other than sealing them to make tampering impossible.

Gearbox and Shift Lever Comparison

Table 4

	92/93 Carrera 2 & RS America	92 Carrera RS All Versions & Carrera Cup USA
Gearbox Type	G50/05	G50/10
Gear Ratios		
1st Gear	3.500	3.154
2nd Gear	2.059	1.695
3rd Gear	1.407	1.407
4th Gear	1.086	1.086
5th Gear	0.868	0.868
Ring & Pinion Ratio	3.333	3.444
Limited Slip Diff.	Open or Optional (M220) 40% fixed lock	Standard 20-100% Variable lock

Trans. mount	Standard	Harder Rubber
Synchronizers	Brass syncromesh	Steel syncromesh modified for quicker shifts
Shift	4.0:1	3.4:1
Shift Lever Ratio		
Shift Lever Travel	± 62 mm	± 52 mm
Lever Cockpit Position	Standard	10 mm to Left, 28 mm Taller

Table 4 shows that the G50/05 gearbox of the Carrera 2 and RS America are identical and a 40% disc type limited slip differential was optional.

The G50/10 gearbox of the Carrera RS and Carrera Cup USA has a standard limited slip differential of the variable 20/100 percent type as on the Turbo. This limited slip provides a 20 percent locking factor on acceleration, but "locks up" to a 100 percent factor on trailing throttle to minimize drop throttle over-steer. The gear ratios of the G50/10 have been made closer by changing both first and second gear of the turbo. The ring and pinion are slightly higher numerically (i.e. lower).

The synchronizers of the G50/10 gearbox are made of steel and modified for quicker shifting for gears one through four and the transmission mount is made of firmer rubber.

The shift lever on the Carrera RS and Cup USA is modified to shorten the throws and move the lever closer to the driver.

Brake Comparison

Table 5

	92/93 Carrera 2 & RS America	92 Carrera RS All Versions & Carrera Cup USA
Booster Type	Vacuum	Hydraulic
Ratio	3:1	3.6:1
Master Cylinder Diameter	20.64 mm	25.4 mm
Proportioning Valve Switch Pressure	45 bar	55 bar
Front Brakes		
Caliper Body Piston Diameter	C2/C4 Size 40+36 mm	Turbo Size 44 + 36 mm
Disc Type Disc Diameter	Ventilated 298 mm	Ventilated & Cross Drilled 322 mm

Disc Thickness	28 mm	32 mm
Rear Brakes		
Caliper Body	C2/C4/Turbo Size	C2/C4/Turbo Size
Piston Diameter	30+28 mm	30+34 mm
Disc Type	Ventilated	Ventilated & Cross Drilled
Disc Diameter	299 mm	299 mm
Disc Thickness	24 mm	24 mm

Table 5 shows that the Carrera 2 and RS America share the identical vacuum boosted braking system.

The Carrera RS variants and Carrera Cup USA have a completely different braking system than the Carrera 2. On these cars, the larger diameter, thicker, cross-drilled front disc and larger caliper of the 964 Turbo are used. In the rear the caliper and disc designed for early Carrera 2 based Carrera Cup cars is used. This caliper body is the same size as the C2/Turbo rear caliper and has four pistons of the same size as the Turbo but it is made to accommodate the thinner, cross-drilled Carrera Cup disc (Turbo discs are 28 mm thick).

The RS/Carrera Cup USA boost system is of the hydraulic type as used in the Turbo and Carrera 4 but with a reduced booster factor of 3.6 versus 4.8:1 on Turbo. This, coupled with a larger 25.4 mm master cylinder versus 23.18 mm on Turbo, gives the Carrera RS and Carrera Cup USA cars a very firm pedal feel.

Optional Equipment For Road Versions
Table 6

	92/93 Carrera 2	93 RS America	92 Carrera RSTouring	92 Carrera RS Basic	92 Carrera Cup USA
17" Wheels Sport (M030) Suspension	Optional	Standard	Standard	Standard	Standard
Limited Slip Dif.	Optional	Standard	N/A	N/A	N/A
Power Steering	Optional	Optional	Standard	Standard	Standard
	Standard	N/A	Optional*	N/A*	N/A
Model Designation Delete	Optional	N/A	Optional	Optional	Standard
Sun Roof	Optional	Optional	Optional	N/A	N/A
Air Conditioning Tinted Windshield	Standard**	Optional	Optional	N/A	N/A
	Standard	Standard	Optional	Optional	Standard
Heated Seats	Optional	N/A	Optional	N/A	N/A
Headlight Cleaners	Optional	N/A	Optional	N/A	N/A
Radio	Standard	Optional	Optional	N/A	N/A
Bumper Shocks	Standard**	Standard	Optional	N/A	Standard

Sport Seat		Optional	Standard	Standard	Optional	N/A
Steering	Hub					
Ext.		N/A	N/A	Optional	N/A	N/A
Roll Bar		N/A	N/A	N/A	Z option with M003	N/A

*Power steering standard on all RHD cars.

** Standard USA only

The Carrera Cup Vehicle M001

The M001 Carrera Cup racing car is not certified for road use and included all the M003 Competition modifications listed above plus the following:

The USA Carrera Cup Edition cars had all the M003 and M001 modifications performed by Andial/PMNA to become Carrera Cup racing cars, excepting as noted below.

1. Stiffer progressive rate springs (200-600 lbs./in. front and 240-800 lbs./in. rear) with stiffer shock absorbers are fitted. A different front upper spherical bearing mount allows more negative camber than the normal Carrera RS part.
2. Longer 66mm rear wheel studs with 21mm rear spacers for 68 mm offset wheels (not used in 1993 season).
3. Aluminum 9.5" X 17", 68mm offset wheels in rear. (9.5" X 18" 47 mm offset, 3 piece wheels for the 1993 season cars).
4. Aluminum 8" X 17", 52mm offset wheels in front (same as RS America and Carrera Cup USA rear wheel, changed to 8X18, 3 piece wheels for 1993 season)
5. Further lowering to just clear a 100mm block and changing of alignment to -2°30' negative camber front and -2°20' negative camber rear and corner weighting. The unique RS rear adjustment plates are flipped left to right to

achieve this setting.

6. Steel lug nuts

7. Size 235/45 front tires

8. Installation of ABS defeat switch on dash as well as an ABS high pressure defeat switch on the master cylinder, this modification allows the driver to turn off the ABS manually at the dashboard or with very high brake pedal pressure. The American Cup cars required a special wiring harness to do this since the wiring harness in these cars is the standard American harness. Carrera Cup cars in Europe use the connections in the European RS harness that are already provided.

9. Removal of brake backing plates and installation of protecting shields and boots to protect ABS wiring from heat

10. Removal of the brake-proportioning valve.

11. Pagid racing brake pads without wear sensors

12. ABS brain moved to the alternate mount above original to protect it in a crash.

13. Straight pipes replace mufflers (catalytic converter remains).

14. Modification of air cleaner to eliminate silencing and improve airflow.

15. Removal of engine mounted heater blower and replacement with bypass pipe.

16. Dynamometer test of engine.

17. Clutch plate replaced with racing style plate.

18. Matter Roll Cage installed (a "Z" option in Europe for M003 cars).

19. Removal of fog lights and replacement with red painted aluminum plates (not required on European car which uses the RS false fog lights).

20. Removal of both airbags and lower dash padding (not required on European car).

21. Removal of alarm and central locking system (not required on European car).

22. Towing hooks installed front and rear.

23. Removal of the front bumper alloy beam and hydraulic mounts.

24. Removal of clutch helper spring at clutch pedal.

25. Camber brace installed across front struts.

26. Driver's side window safety net installed.

27. Clear Vinyl helicopter tape covering of headlights.

28. Wooden driver's floorboard, removal of rubber floor padding.
29. Removal of oil cooler fan, installation of duct plate to guide air to cooler.
30. MOMO steering wheel with horn and turn signal contacts removed (USA cars only).
31. Hood pins installed (USA cars only).
32. Stiffer rubber front stabilizer bushings installed.
33. Stiffer rubber steering couplings installed.
34. Exterior activation of the kill switch with a cowl mounted knob.
35. A Recaro SPG bucket seat covered in cloth for driver only.
36. Solid magnesium engine mounts and a stiffer rubber transmission mount (European Cars only).
37. Spherical bearing drop links for rear stabilizer bar (European Cars only).
38. Rear trailing arm adjustment plates swapped side to side for more negative camber.
39. Removal of engine belly pan.

The M001 Carrera Cup cars do not have any "Carrera RS" labels on them.

The Carrera Cup racing cars weighed approximately 2520 to 2540 pounds.

Sources:

Autoweek, June 8, 1992, "Empty Cup", page 19

'90 to '93 Carrera C2/C4/RS/Turbo 911 Technical Specifications #WKD 423 920

Keith Verlaque at WWW.RSAmerica.net

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The Following *Porsche Service Information Technik* factory publications for the:

'92 Carrera RS #WKD 479 620

'92 911 RS America #WKD 497 921

'92 911 C2, C4, Turbo #WKD 497 521

'93 911 C2, C4 #WKD 498 121