

# Porsche 997 Carrera upgrade to 4.2 liter by Albert Motorsport

Beitrag von „Albert Motorsport“ vom 6. April 2022, 16:37

It's a long journey through wintry Germany until I finally stand in front of our new customer's house to receive his beautiful Porsche 997 Carrera in GT3 look.



Our new customer had [#researched](#) on the [#Internet](#) and then [#decided](#) on our [#company](#) as a [#repair](#) shop for his [#vehicle](#). During the telephone calls in advance, the core of the work to be done was discussed. Below I list the sequence of events [#precisely](#) and illustrated, so that our customer and you, dear reader, can find out about the current status of work on the vehicle at any time. If you have any questions about [#technical](#) [#matters](#), we are at your disposal.

## [Porsche 997 Carrera upgrade auf 4.2 liter](#)

<https://albertweb.de/forum/thread/290-porsche-997-carrera-upgrade-to-4-2-liter-by-albert-motorsport/?postID=292#post292>



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- [#Collection](#) of the vehicle at the customer's [#home](#)
- Delivery of the vehicle to [#Albert](#) [#Motorsport](#)
- Waiting time until the job can be executed
- [#Remove](#) all [#underbody](#) [#panels](#)
- Drain all liquids (oil - cooling water - air conditioning etc.)
- [#Engine](#) and [#transmission](#) removal
- [#Dismantle](#) the engine and mount it on an [#assembly](#) [#stand](#)
- Removal of the [#intake](#) [#system](#)
- Removal of the [#injection](#) system, the intake [#manifold](#) and [#surrounding](#) parts
- Removal of all [#cables](#) and [#lines](#), [#hoses](#) etc.
- Removing the [#cylinder](#) [#heads](#) with [#camshafts](#), [#chains](#), etc.
- Dismantling the [#engine](#) [#body](#) with dismantling of the [#pistons](#)
- Removal of the [#crankshaft](#), [#connecting](#) [#rods](#), [#intermediate](#) [#shaft](#)
- [#Inspection](#) of all [#parts](#) with [#identification](#) of acute [#defects](#)
- [#Inquiry](#) with the [#manufacturer](#) and [#supplier](#) about the [#ability](#) to deliver all components
- Contacting our [#Sattler](#) regarding the [#availability](#) of the [#Alcantara](#) equipment
- Contact our [#exhaust](#) [#manufacturer](#) to create a [#mid-exhaust](#) system

### **Current status:**

- [#Preparation](#) of a cost [#estimate](#) for all options requested by the customer
- [#Probing](#) the ability to deliver and delivery times for all relevant conversion parts
- [#Scheduling](#) with our [#machining](#) center to [#manufacture](#) the [#cylinders](#)
- Termination of the production of [#forged](#) [#pistons](#) for the 4.2 liter engine variant
- Termination of the [#production](#) of the piston [#rings](#) for the 4.2 liter engine variant
- Order placed on: 01/24/18 as follows:
- Conversion of the existing engine to an [#Albert](#) - [#Motorsport](#) upgrade 4.2 liter variant with forged pistons and standard compression while maintaining the electronic parameters of the engine via the broadband lambda probe.
- Installation of a [#large](#) [#intake](#) system with an [#equally](#) [#large](#) [#throttle](#) [#valve](#)
- Production and [#assembly](#) of a [#stainless](#) [#steel](#) [#sports](#) [#exhaust](#) [#system](#), analogous to the 997 GT3 RS with center exit.
- [#Attachment](#) and [#painting](#) of a Porsche 997 GT3 RS 3.8 - 4.0 liter rear spoiler
- Adhesion of a large PORSCHE lettering to the white painted spoiler leaf analogous to the Porsche 997 GT3 Cup
- Omitting the series [#lettering](#) on the [#tailgate](#).
- Installation of an [#LED](#) daytime running light (alternative accessories according to customer requirements)
- Solid assembly / reinforcement of the driver's seat, which is still wobbly at the moment

- Disassembly of the [#standard](#) [#rear](#) [#spoiler](#)
- Adaptation and assembly of the new Albert Motorsport 997 GT3 RS rear spoiler
- Dismantling the [#driver's](#) [#seat](#) - repairing the [#torn-out](#) threaded sleeve in the [#laminate](#) with [#epoxy](#)
- Checking and [#modifying](#) the [#seat](#) [#console](#)
- Forged [#piston](#) [#blanks](#) are now made for us, the [#announced](#) [#delivery](#) time is approx. 4 - 5 weeks
- [#High-strength](#) piston [#rings](#) for piston and cylinder gauge blocks for our [#graphite](#) cylinders are [#manufactured](#).
- The announced delivery time is approx. 4 - 5 weeks
- A [#center](#) [#exhaust](#) made of [#stainless](#) steel with pipes with a large cross-section analogous to the 997 GT3 RS is made.
- Received the order confirmation for the piston forging blanks
- Received the order confirmation for the piston rings and gudgeon pins
- Bringing the customized rear spoiler to our painter
- Production of graphite cylinder blanks for the planned engine conversion
- Free turning of the [#motor](#) [#housing](#)
- [#Milling](#) work on the inside of the motor housing
- Arrival of the first Porsche tuning parts - complete X 51 intake system
- Arrival of the graphite cylinder blanks
- Notification to the customer that the forging blanks have not yet been delivered.
- [#Commitment](#) to delivery of the piston - forged blanks by Thursday / Friday
- Commitment to delivery of the piston rings for the notified cylinder size by Monday
- Arrival of the pistons and piston rings
- Fine [#machining](#) of the pistons and piston rings to the future [#cylinder](#) - [#final](#) size
- Coating of the piston skirts with [#solid](#) - [#graphite](#)
- Drilling out and [#fine-tuning](#) of the [#connecting](#) rods to the final size of the gudgeon pin
- Free [#turning](#) and [#milling](#) of the [#cylinder](#) [#seats](#) in both halves of the [#engine](#) [#housing](#)
- Rough [#pre-turning](#) of the cylinder [#blanks](#)
- [#Precision](#) [#turning](#) of the cylinder blanks to fit and [#glue](#) [#dimensions](#) in the [#engine](#) block
- Pressing and gluing the cylinder blanks into the engine block halves
- Pre-bore the cylinders to a rough piston size
- Precision boring of the cylinders to 1/10 mm of the final piston size
- Fine grinding of the engine block halves in the area of the cylinder head gaskets
- Pre-honing of the inner cylinder [#surfaces](#)
- Fine [#honing](#) of the inner cylinder surfaces to an accuracy of 1/100 mm
- Coating of piston skirts with solid graphite
- Turning out the piston pin bearings in the connecting rods
- Production of new bearing bushes from high-strength bronze for connecting rod eyes
- Reaming the gudgeon pin bearings to 1/100 mm fitting accuracy to the gudgeon pins
- Previous angling of the connecting rods at 90° to the [#crankshaft](#)

- Fine - polishing of the crankshaft [#bearings](#)
- Measuring and adjusting the KW bearing fits with [#Plastilube](#)
- Assembly of the engine block half in the engine stand
- Start assembling the engine
- Assembling the crankcase
- Installation of the crankshaft and connecting rod
- Installation of the intermediate shaft
- Installation of the pistons and piston rings
- Written customer contact regarding completion and technical questions
- Assembling the crankcase and cylinder heads
- Takeover of the rear spoiler from the painter with subsequent assembly
- Installation of the timing chains and other internals of the engine
- Installation of the complete valve train and camshafts
- Precise timing adjustment
- Performing a Cylinder - Leakage Test. Result = 100% OK, so perfect!
- Installation of the surrounding motor and control components
- Installation of the new large intake system with adjustment of all surrounding components
- Assembly of the engine with preparation for installation
- Installation of the exhaust bracket and installation of the cat system and fan manifold system
- Production of further image material for the documentation
- First test run without rear silencers, which unfortunately are still behind schedule
- Notification from UPS that the mufflers were lost in transit
- Notification from the manufacturer that, according to UPS, the search query has not been successful to date
- Consultation with the exhaust manufacturer that if the dampers are not in our house by next Wednesday, March 28th, 2018, a new system and new dampers will be made for us.
- Installation of the painted rear spoiler
- Contacting the foil suppliers to obtain an identical foil for the spoiler lettering.
- Renewed correspondence with the exhaust manufacturer and UPS, the rear silencer has not yet been found
- UPS replaces the loss - damage at the earliest after a waiting period of 8 working days
- Consultation - contacting our manufacturer when the new system to be built is available for us
- Agreement with the manufacturer: "On Tuesday after Easter we will send back the parts of the system that have already been delivered, if the missing system cannot be found - a new rear silencer will then be made for the vehicle - as quickly as possible"
- E-mail - contact with the customer, answering his questions, informing that if the system is not with us by Tuesday after Easter, a completely new muffler system will be built at UPS expense.
- UPS - recall on 03/29/2018 - 16:15h, the exhaust system is found. It will now be sent to us by express so that it will be at our company on Tuesday. UPS wishes "Happy Easter"!

- 04/05/2018 Arrival of the exhaust system
- Immediate installation of the exhaust system - test run - leak test etc.
- Short test drive - result in slight jerking in the transition area (partial load) Electronic check of all sensors and electronic components: result camshaft sensor left engine bank stiff. Installed used part - result - jerking has disappeared. New part ordered for customer.
- Color fan from the foil - supplier received - suitable foil ordered - rest of the foil for the customer
- Driver's seat post-laminated with epoxy. Seat console re-attached - marginal slight play in the seat rail present but wobbling in the driver's seat eliminated.
- Test drive carried out with a used sensor - result: the car runs fantastic, like a GT3!
- Appointment made for the dynamometer - sensor from Porsche still in arrears
- Dynamometer - Perform test with used camshaft sensor. Appointment announced.
- Email - consultation with the customer - "preliminary fixed" delivery date notified.
- Premature bringing of the vehicle to the dynamometer wg. Failure of another customer
- Lashing down the vehicle on the dynamometer. Running off all parameters - control - adjustment - correction of the motor - parameters if necessary.
- Departing all parameters - performance test - result ... yesss!!
- Long test drive done, the car runs fantastic, pulls through like a GT3 and accelerates completely unleashed from lowest revs, high. A real fun machine with super sound!
- There is one defect we see, and in our opinion the "breakaway moment" of the starter is too low, the starter doesn't turn powerful enough. Let's take a closer look at that.
- Result: battery has undervoltage, when starting - the "volt range" pulls down to below 9 volts. The starter has too high a current consumption and too little power, so AT - built-in starter.
- The film has arrived, the rear spoiler is immediately pasted according to customer requirements.
- Final exam and final test drive, tue
- This test drive was passed perfectly and without any complaints
- We are happy to give our customer a very well running sports car
- to be able to deliver, with which he can go on a 997 GT3 hunt in the future!

Jurgen Albert

master mechanic

Team Albert Motorsport