ECS TUNING™

Do-It-Yourself

2000-2005 Porsche 996 Major Maintenance 30,000 Mile Interval

This tutorial is provided as a courtesy by ECS Tuning.

Proper service and repair procedures are vital to the safe, reliable operation of all motor vehicles as well as the personal safety of those performing the repairs. Standard safety procedures and precautions (including use of safety goggles and proper tools and equipment) should be followed at all times to eliminate the possibility of personal injury or improper service which could damage the vehicle or compromise its safety.

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Why Not?

You take pride in your car's appearance, why not take equal pride and satisfaction from knowing that you have maintained your Porsche to the same high standards—with your own two hands.

ECS Tuning offers packages for both minor and major maintenance services. Contents include everything recommended for each service interval, sourced from respected suppliers.

This pdf outlines the steps in a **major maintenance** for a Porsche 996 Turbo. Most steps are relatively low tech and, with minor exceptions, can be performed using standard hand tools found in most well-equipped pro-sumer garages.

If you are skilled DIYer, you will be pleasantly surprised at how easy it is to maintain your Porsche.

Porsche 996 Turbo (2000-2005) Major Maintenance Kit from ECS Tuning ES2550860

The ECS Tuning major maintenance kit includes:

- engine air filter element
- cabin air filter element
- oil filter element
- oil filter sealing ring
- drain plug washer
- tank reservoir drain plug seal
- turbo tank sealing washers
- 6 spark plugs
- 9-quarts Mobil 1 - 0W40 engine oil

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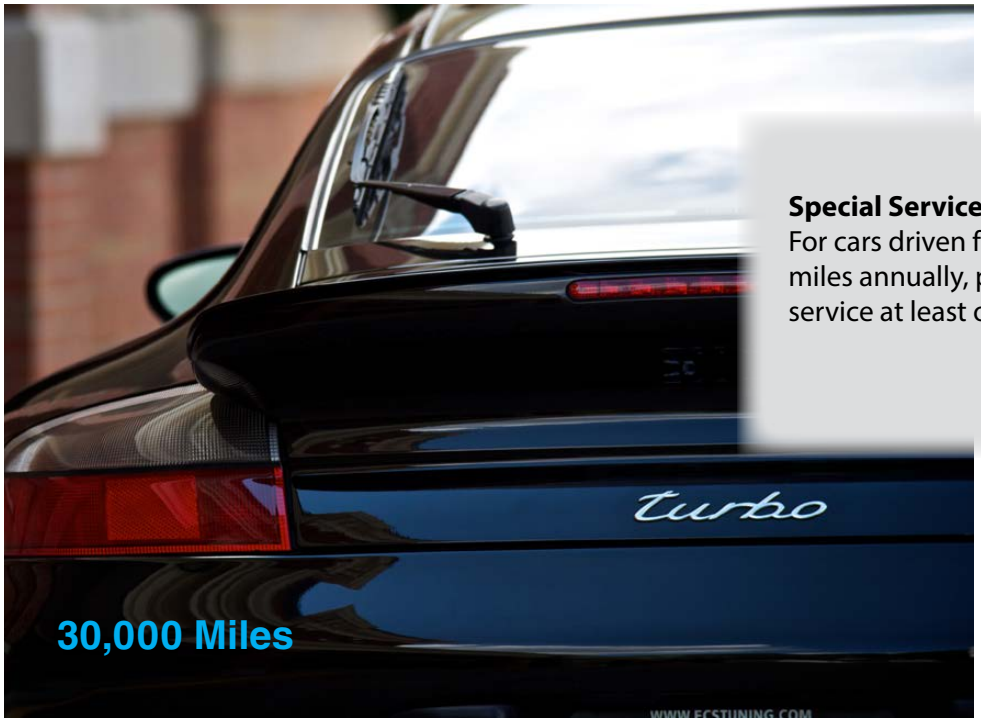
Porsche 996 (2000-2005) Turbo Major Maintenance



Special Service Intervals:
For cars driven fewer than 9000 miles annually, perform a minor service at least once a year.

Perform a **major maintenance** at 30,000 mile intervals.

Fluids and Filters:

- Perform an oil change service.
- Replace spark plugs.
- Replace the cabin filter element.
- Check and replace the air filter element as needed (varies by driving conditions and mileage).

For your convenience, we have included service check lists on the next two pages. We suggest you print out copies and record all maintenence services.

The Porsche Service Procedure includes tests conducted with a proprietary scan test interface not readily available to pro-sumers or repair aftermarket repair professionals.

That does not mean that you are locked out of all diagnostic data. A generic, OBD II compatible scan tool can access a large amount of engine performance and emissions data through the OBD II data link connector located at the lower left edge of the driver side dashboard.

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Service and Inspection

Maintenance Date_____
Mileage_____

All component inspections should include checks for damage, abrasion, looseness, leaks, alignment, tightness, and overall condition.

Procedure	√	Problems noted?	Corrective Action
Replace spark plugs			
Change engine oil and filter			
Change engine air filter			
Change cabin (particle) filter			
Inspect polyrib belt			
Inspect undercarriage			
Inspect powertrain for leaks			
Inspect engine compartment			
Inspect coolant hoses			
Inspect coolant level			
Check antifreeze concentration			
Inspect radiators			
Fuel system: Check for leaks			
Power steering: Check fluid			
Brakes: Check rotor and pad wear			
Brakes: Inspect all lines and hardware			
Clutch: Check play and pedal position			
Throttle: Test operation			
Steering: Inspect bellows for leaks/tears			
Tie rods: Check play and dust covers			
Axle joints: Check play; dust bellows			
Drive shafts: Check play; boots			
Exhaust system; leaks, looseness, hangers			
Tires: Condition; inflation pressure			
Locks & latches; check tightness/function			
Seat belts; tightness & function			
Lighting; Check operation			
Wipers & Washers: Wipers blades & fluid			
Electrical including warning lights			

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Test Drive

Maintenance Date_____
Mileage_____

Test	√	Problems noted?	Corrective Action
Remote control			
Seat controls and operation			
Foot and parking brake			
Engine performance			
Clutch travel and operation			
Steering			
Park Assist			
Speed control			
PSM switch operation			
Heating system and controls			
AC system and controls			
All instruments and warning lights			
After test drive			
Check all fluid levels			
Check for fluid leaks			
Make final adjustments to all fluid levels			

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Safety

- Work safely.
- Wear protective clothing and wrap around eye protection designed and approved for shop use.
- Never work alone.

Cooling System Cautions:

Never open the cooing system when it is hot.

Before adding coolant, test specific gravity. For temperate climates, a 50/50 mix of pure antifreeze and demineralized or distilled water is ideal, and provides freeze protection to -34 degrees F.

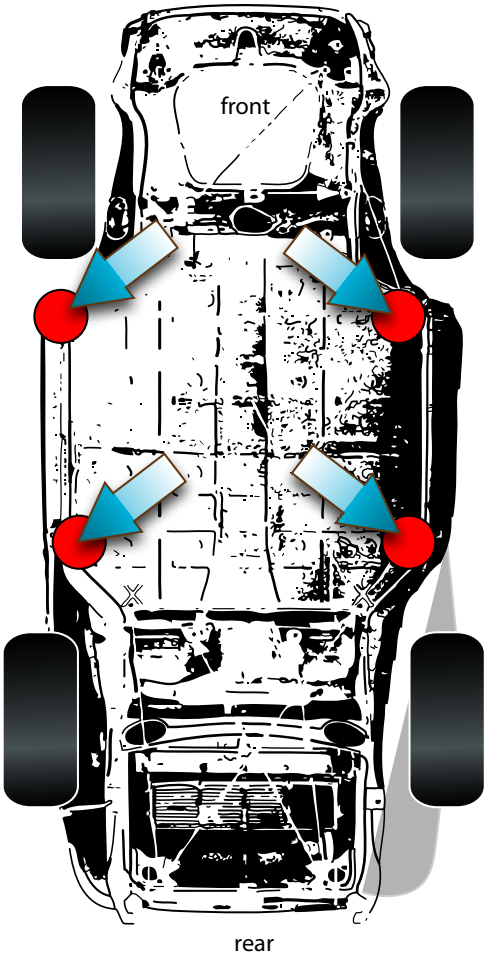
Antifreeze concentrations above 60 percent reduce heat transfer efficiency and can cause assorted cooling system problems.

Lifting the Vehicle

never work beneath any vehicle while alone

main chassis mount lift points

always support the vehicle with approved jack stands



Improperly lifting the vehicle can result in personal injury and vehicle damage.

Position your jack head, jack stands, or vehicle lift pads ONLY at the factory approved lift points.

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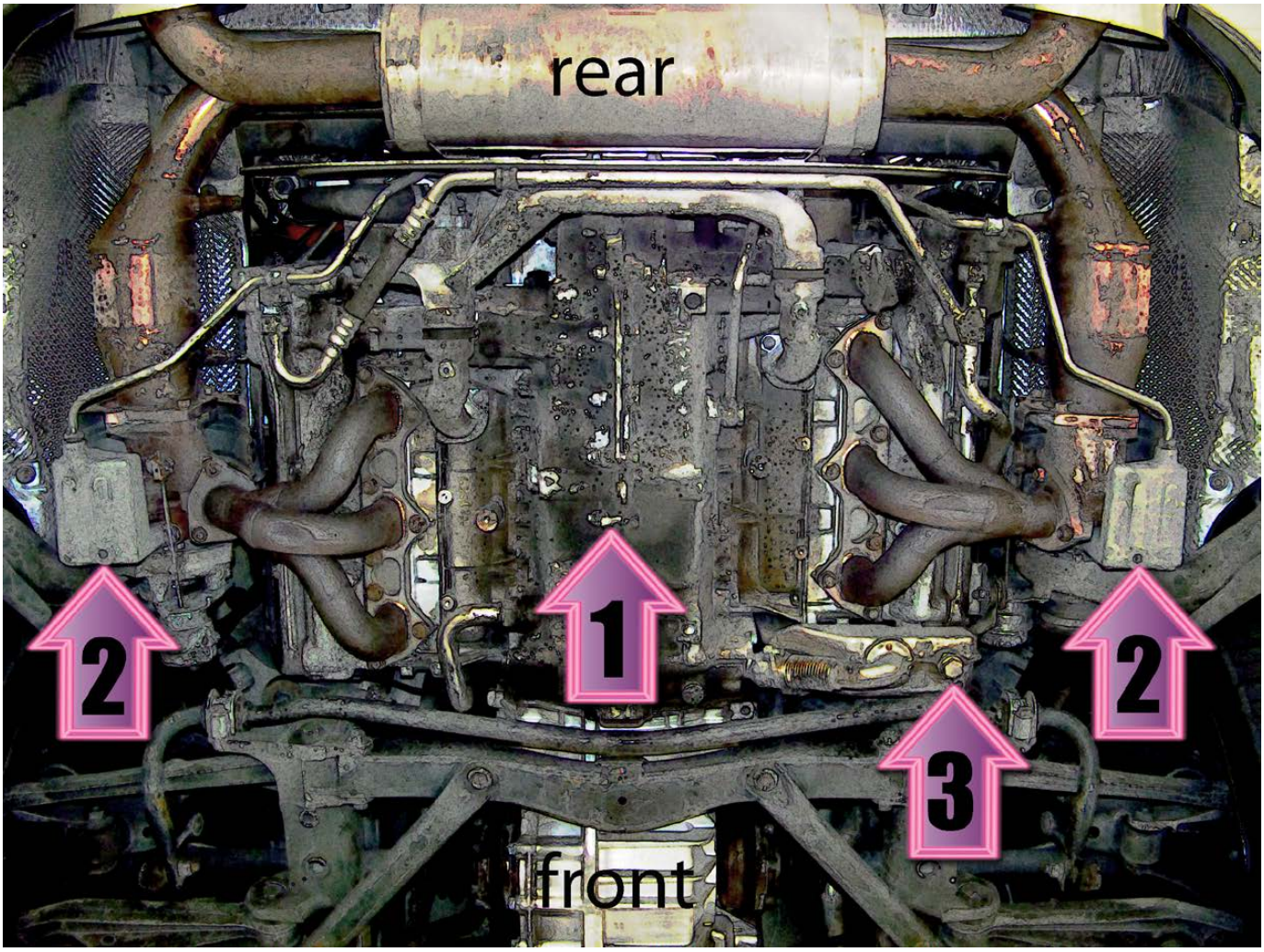

Oil Change Service - Step 1

The engine has four engine oil drain plugs. This undercar view shows the locations of:

1) The main engine drain
2) Two turbocharger oil collector drains
3) The oil container drain plug

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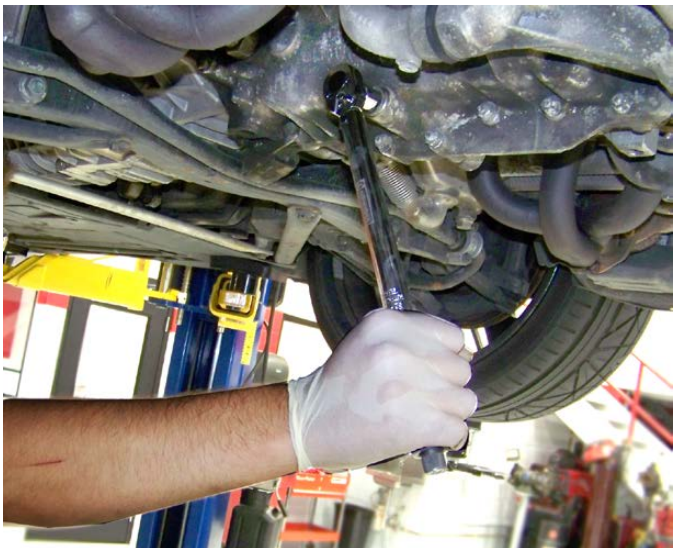
Oil Change Service - Step 2

Using a 15mm wrench, loosen and remove the **main engine drain** plug (see map page 6 for location).

Oil Change Service - Step 3

Discard the old drain plug washer and install the new drain plug washer from the service kit on the drain plug. After the oil has drained completely, reinstall the drain plug and torque it to 70Nm (52 ft-lb).



Oil Change Service - Step 4

Using an 8mm hex, loosen and remove the two drain plugs located in the turbo oil collectors (see map page 6 for location).

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Oil Change Service - Step 5

If the drain plug sealing washer does not come off with the drain plug, take a pick or other sharp tool and dig out the old washer. Look carefully at the hole; the washer may be jammed in so tightly that it looks like part of the housing.

Repeat this process at both turbo oil collectors (see map page 6 for location).

Oil Change Service - Step 6

Install a fresh washer on each of the two turbo container drain plugs. After all the oil has drained, reinstall the drain plugs and torque them to 30 Nm (22 ft-lb).

Oil Change Service - Step 7

Remove the drain plug from the oil container (see map on page 6 for location).

Hold the 27 mm hex on the container with a backing wrench as you loosen the drain plug with a 19 mm wrench.

Replace the copper sealing ring on the drain plug. After the oil has drained, reinstall the plug and torque it to 60 Nm (44 ft-lb).

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Oil Change Service - Step 8

Move to the engine compartment.

Remove the oil filter housing cover using a suitable oil filter wrench.

Lift the cover and filter out and away from the filter housing in the engine.

Oil Change Service - Step 9

Use a fluid tool to suction the remaining dirty oil from the filter cavity.

Oil Change Service - Step 10

Clean the oil filter cap assembly and install a new green sealing ring.

Slide the filter onto the filter cap stalk. The filter is symmetrical; there is no top or bottom orientation.

Make sure the small o-ring at the base of the stalk is in place and that it is not damaged or torn. Lube it lightly with a few drops of fresh engine oil.

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Oil Change Service - Step 11

Insert the filter cap/cartridge assembly into the engine filter housing. Screw it down by hand until you are sure the threads are properly aligned.

Oil Change Service - Step 12

Using the correct oil filter tool (ES1355436), tighten the filter cap and torque it to 25 Nm (19 ft-lb).

Oil Change Service - Step 13

Slowly add 7.8 liters (8.25 quarts) of engine oil at the fill neck. Do not add the oil too quickly.

We've hung the funnel (ES1899403) from a simple wire hanger for convenience. You may want to improvise a similar setup so you don't have to hold the funnel as all 8 quarts are added.

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Oil Change Service - Step 14

Start the engine and let it warm. Check for leaks.

There is no dipstick. Oil level is measured by a sensor, and displayed on the driver information panel in the dash, below the speedometer.

To properly check the engine oil level, the car must be on a level surface with the engine warm and idling.

Use the stalk on the left side of the steering column to navigate to the “oil” display, and select it.

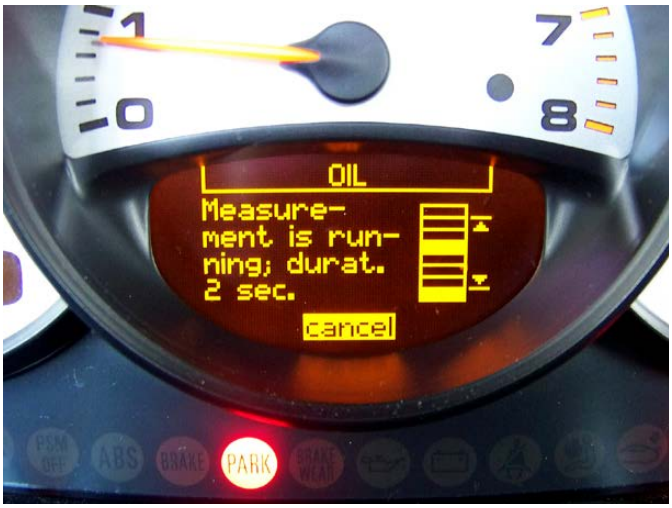
Then select “Start Measurement” from the display.

Oil Change Service - Step 15

If the engine oil is too cold for an accurate measurement, you’ll be asked to run the engine until it gets warm.

Oil Change Service - Step 16

When the engine is warm enough, the measurement “in progress” display will count down as it detects the oil level.



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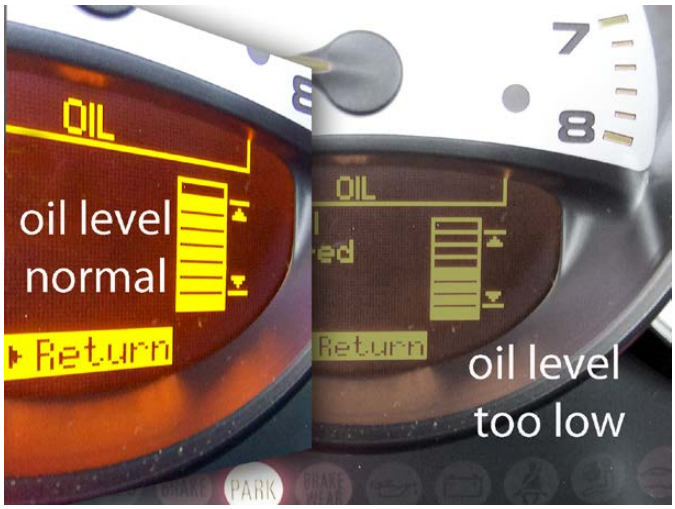
Oil Change Service - Step 17

When the oil level is correct, all bars between the MIN and MAX levels will be solid yellow (left image).

For comparison, the image on the right shows a low oil level.

The MIN and MAX levels represent a measurement range of 1.5 liters.

If the oil level is too low, add oil slowly until all bars are yellow.



changing the engine air filter

Air Filter Service - Step 1

The air filter should be replaced at 15,000 mile intervals, although more frequent filter changes are warranted when the vehicle is driven in conditions that may clog the filter more quickly.

Replacing the air filter is straightforward, requiring nothing more than simple hand tools.

Start by removing the filter housing bolt located next to the rear hatch lid latch mechanism (inset, arrow).

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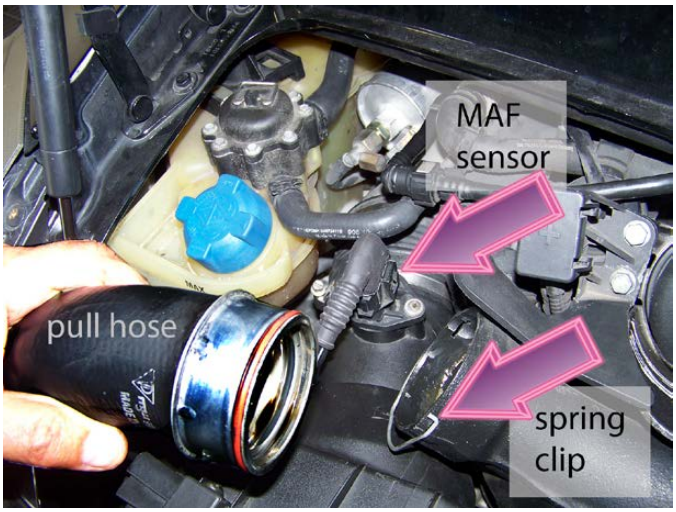
Air Filter Service - Step 2

- Release the large spring clip at the turbo hose located on the left side of the engine.

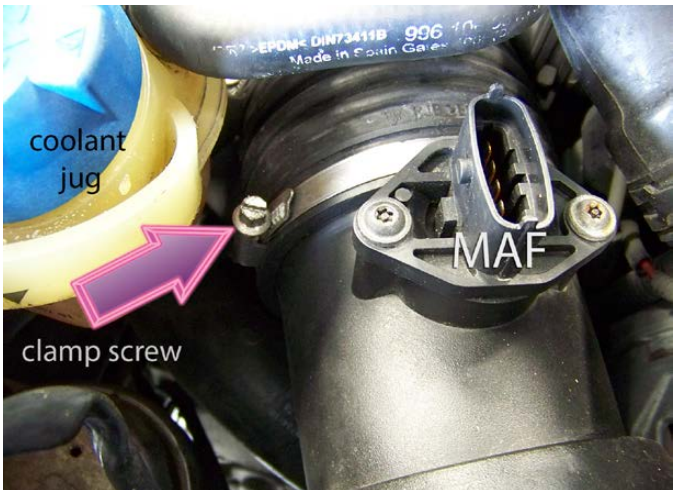
- Disconnect the hose and pull it to the left to provide access to the air filter housing hose clamp and Mass Air Flow sensor (MAF) electrical connector.



Air Filter Service - Step 3

Loosen the hose clamp connecting the air inlet hose to the filter housing (below the coolant bottle, arrow).

Disconnect the Mass Air Flow sensor (MAF) electrical connector and release the MAF wiring harness from the support clip located on the left side of the air filter housing.



Air Filter Service - Step 4

Rotate the right side of the air filter housing upward, and pull it from the air inlet hose.

Remove the filter housing from the car.

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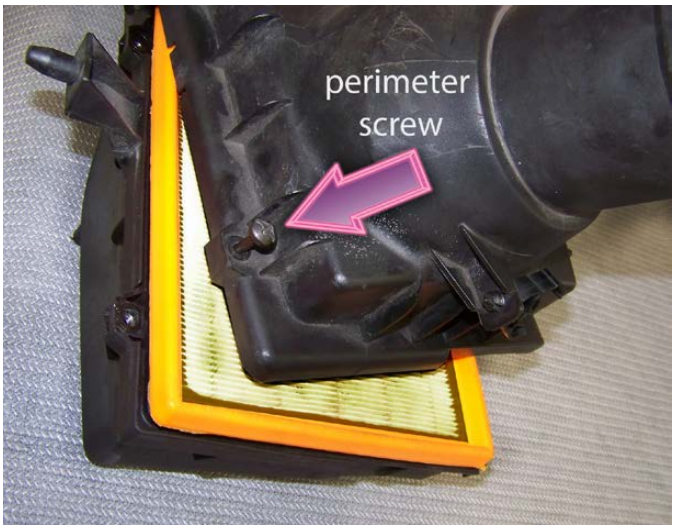
Air Filter Service - Step 5

- Remove the nine perimeter screws holding the air filter housing halves together, and open the housing.
- Remove the old filter.
- Clean the housing and insert the new filter element.
- Reassemble the housing halves and hand tighten the perimeter screws.



Air Filter Service - Step 6

Before reinstalling the air filter housing, perform a thorough accessory belt inspection while the belts are exposed.

Check the belts for signs of damage, side abrasion, glazing, excessive cracking, pilling, and looseness.

Air Filter Service - Step 7

Reverse the previous steps to reinstall the air filter housing.

Reconnect the air hose to the filter housing; plug in the MAF electrical connector and secure its wiring in the air filter bracket.

You should hear an audible click when the MAF connector (arrow) locking tab snaps in place.

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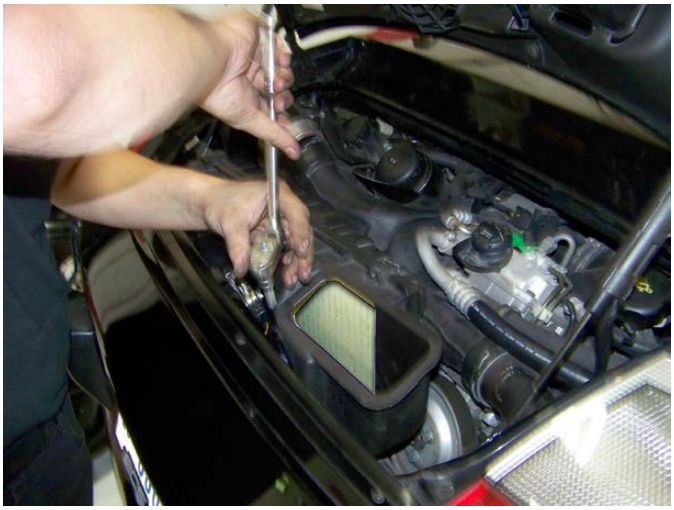
Air Filter Service - Step 8

Align the two locator pins at the base of the air filter housing with the body holes beneath them.

When the filter housing is properly installed, replace the filter retaining bolt and tightening it to (10 Nm/7.5 ft-lb).

With the filter housing in place, tighten the filter housing hose clamp loosened in Step 3.



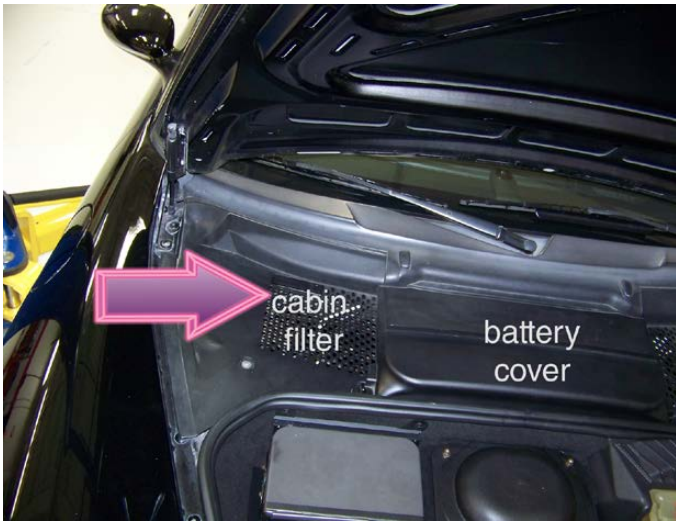
changing the cabin air filter

Cabin Filter Service - Step 1

The cabin filter cleans outside air before it enters the heating and air conditioning system. A severely clogged cabin filter can reduce HVAC performance by limiting system air flow.

The cabin filter is located in the right cowl area, just ahead of the windshield.

- To replace it, start by raising the trunk lid.
- Remove the plastic battery cover.



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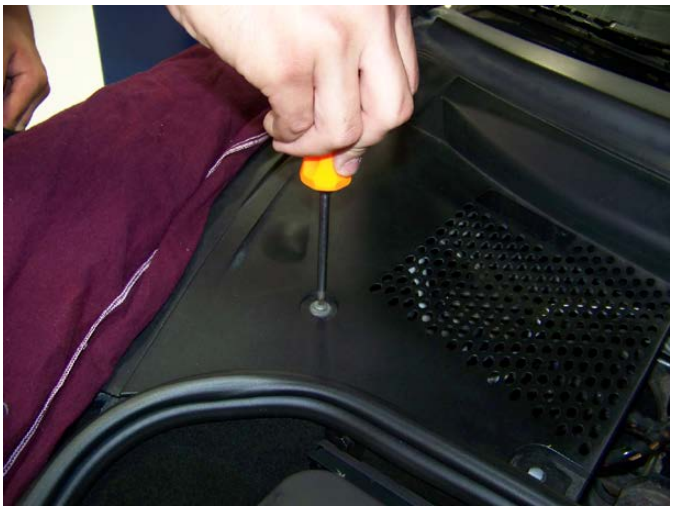
Cabin Filter Service - Step 2

Using a Philips screwdriver, remove the access panel retainer screw.



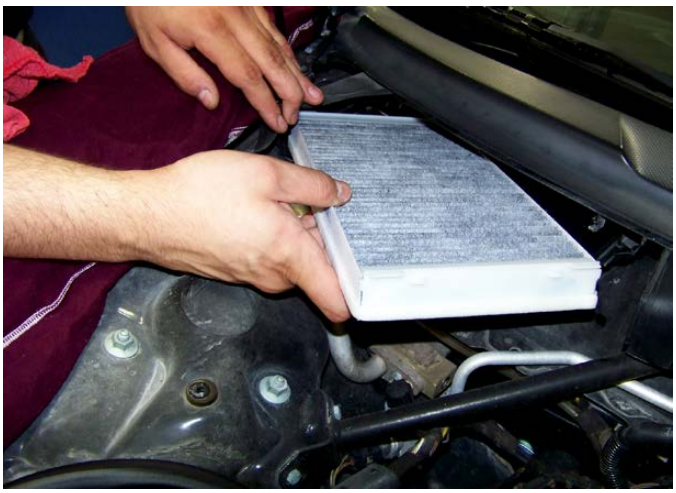
Cabin Filter Service - Step 3

Lift up on the old filter and remove it. Try not to let loose debris or dust fall into the air inlet as you remove the old filter.

Cabin Filter Service - Step 4

Slide the new filter element in place. Make sure it fits securely inside the filter retainer on all sides.

Replace the filter and battery covers to complete the cabin filter replacement.



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Replacing the spark plugs in your 996 Turbo is easier than it is on some minivans.

Since you'll be working around the exhaust, we suggest you wait until the engine has fully cooled.

See page 22 for an overview of all components and their locations; refer to it as needed during the tutorial.

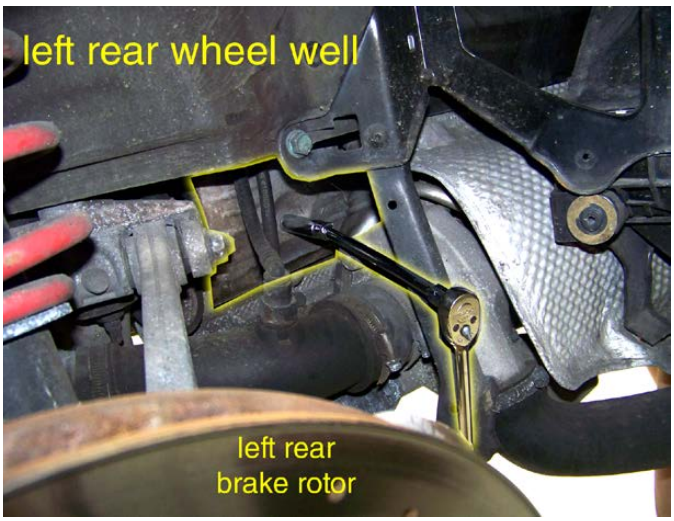
Change Spark Plugs - Step 1

Raise the car and remove the rear wheels. This makes extra working room.

Change Spark Plugs - Step 2

The 996 has a coil-over-plug ignition system with one pencil coil per spark plug. The coils and plugs on both banks are protected by metal heat shields.

Reach in with a 10mm socket and extension and remove the two bolts at each shield.



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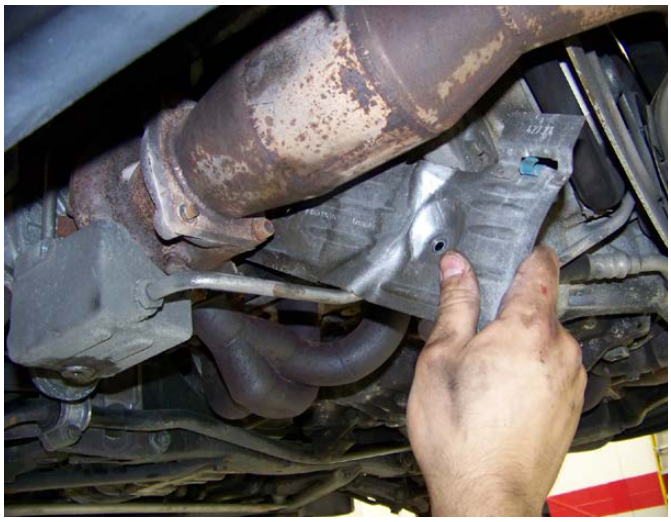
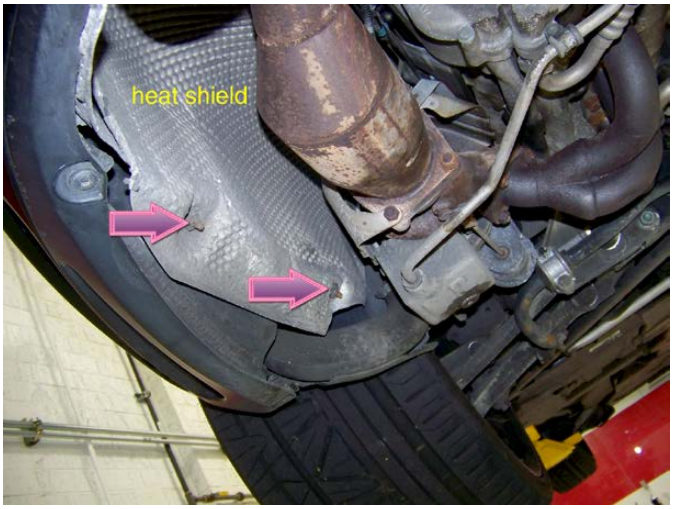
Change Spark Plugs - Step 3

With the heat shield unbolted, slide it rearward and down remove it. This takes some wiggling, but the shield will come out.



Change Spark Plugs - Step 4

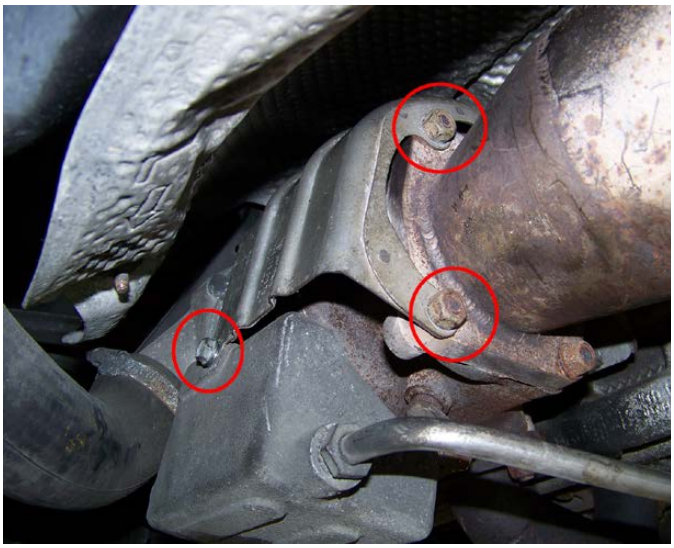
Remove the four retaining nuts at the molded body heat shields. Our arrows show the lower nuts on the shield; there are two more on top, off camera.



Change Spark Plugs - Step 5

Timesaver tip: Remove the fasteners from the left side turbo heat shield. Then slide the shield rearward and rotate it slightly to improve access to the two top body heat shield fasteners.

Note: This extra step is not needed on the right side as there is ample room to access the two top body heat shield retaining nuts.



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Change Spark Plugs - Step 6

With the four nuts removed, slide the body heat shield down and out of the car.

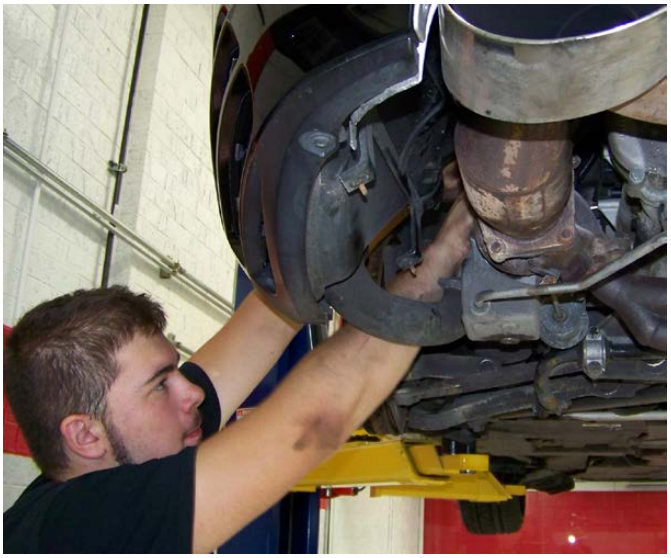
Repeat this process at the opposite side.

With all four heat shields out of the way, the ignition coils are exposed and can be removed.

Change Spark Plugs - Step 7

Removing the heat shields makes a surprising amount of elbow room. Now you can reach up over the exhaust and remove the coils and plugs.

You'll need an assortment of extension lengths and a ratchet, but coils are all now accessible.



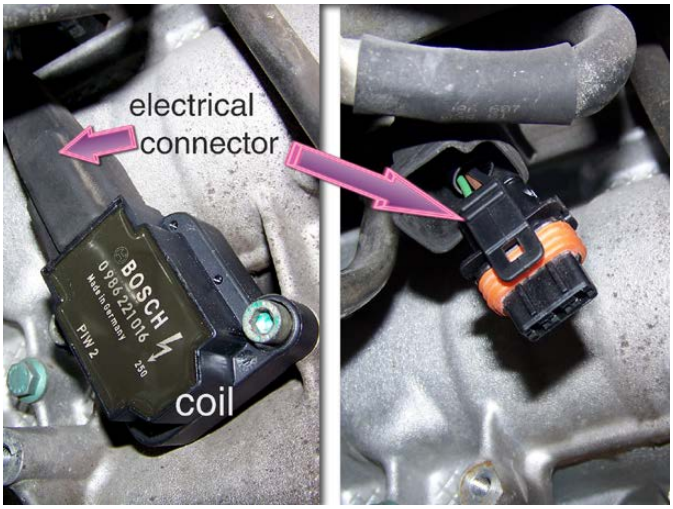
Change Spark Plugs - Step 8

The individual coils are bolted to the heads with two hex head screws, each.

To remove the coils:

- Squeeze the rubber boot covering the electrical connector to compress the release tab on the connector body (arrow right photo shows where to squeeze).

- When the tab releases, pull the connector from the coil.



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Change Spark Plugs - Step 9

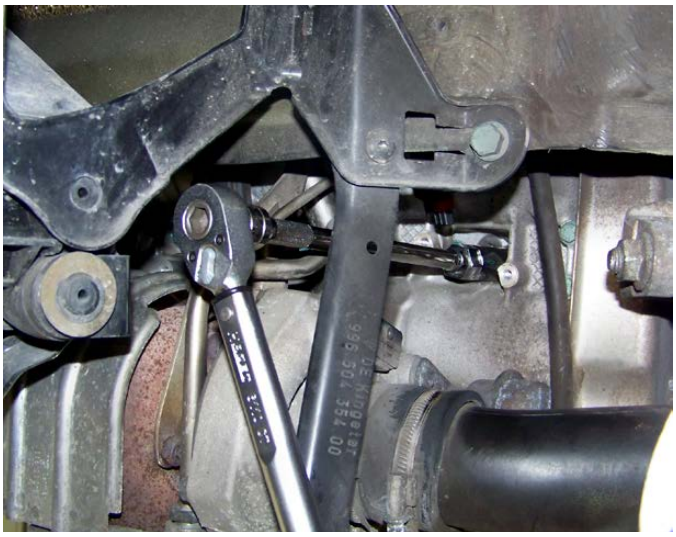
Loosen and remove the coil screws using a 5mm hex key, or a hex driver with a ratchet and the correct length extension.

Pull the coils straight out to remove them.

Change Spark Plugs - Step 10

Using a deep well 5/8-inch plug socket, Remove the old plugs. Screw the new plugs in by hand until you are sure they are properly threaded in the holes. Screw them all the way in and torque them to 30+3 Nm (22+2 ft-lb.)

Note: The Schwaben 5/8-inch deep well plug socket (ES9340) is the perfect length for the Porsche plugs. Its magnetic collar holds the plugs securely to prevent damage to the plug porcelain.



Change Spark Plugs - Step 11

- Insert the coils into the plug recesses.
- Center the coil tubes over the plug tips; push them in all the way until they are seated.
- Reinstall and torque the coil screws to 10 Nm (7.5 ft-lb).
- Plug in all coil electrical connectors.
- Replace all shields removed earlier.
- Reinstall the wheels; torque the wheel bolts to 130 Nm (96 ft-lb).

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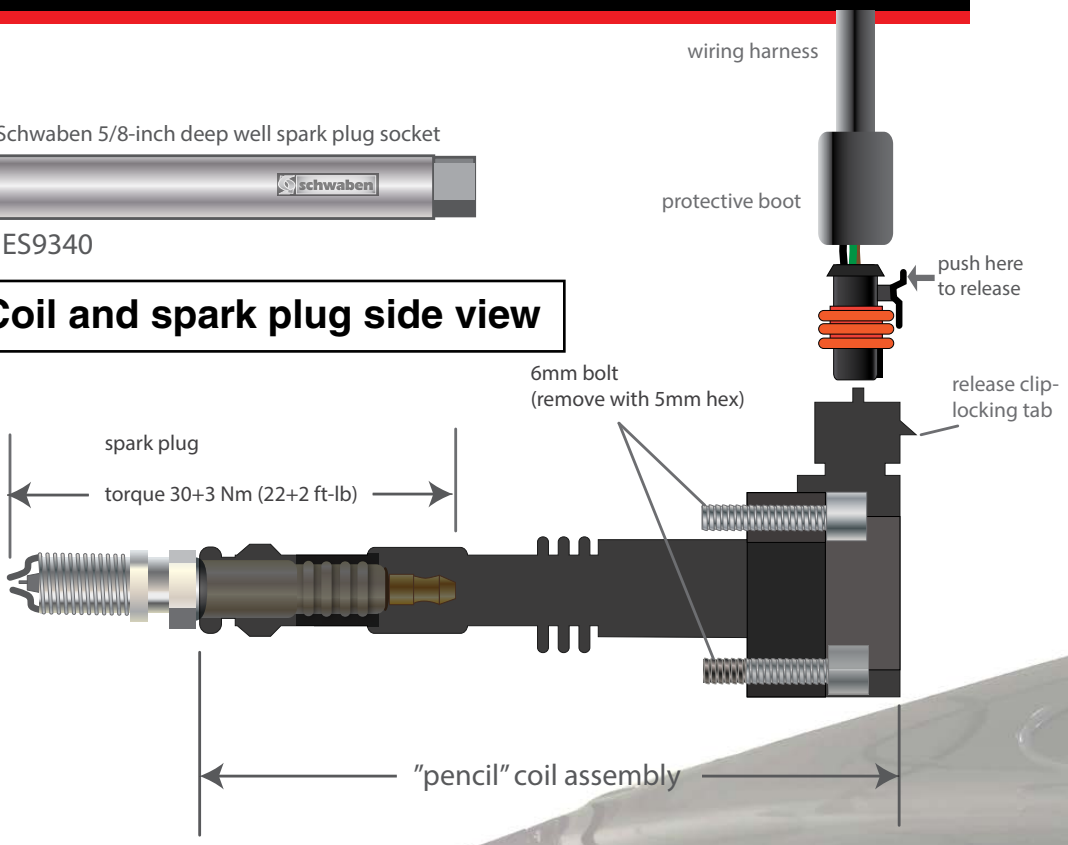
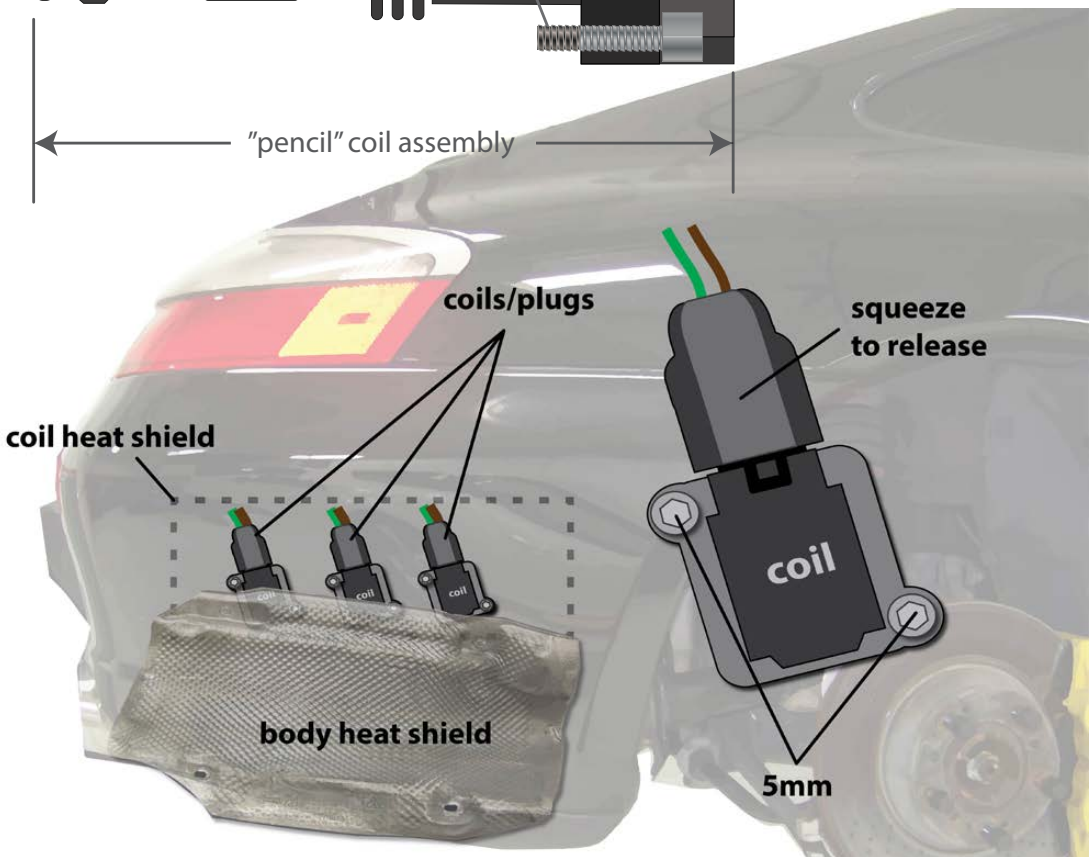
Porsche 996 - 911 Turbo Spark Plugs and Ignition Coils

Schwaben 5/8-inch deep well spark plug socket

ES9340

Coil and spark plug side view





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Useful Specs:

Engine Oil Capacity: with oil filter change 8 liters
without oil filter change: 7.8 liters
ECS Tuning Part Number: ES2499526

Cooing System Capacity: 7.53 U.S gallons (28.5 liters)
ECS Tuning Part Number: ES2166164

Power Steering Fluid: Pentosin Hydraulic fluid CHF 11 S®
ECS Tuning Part Number: ES1801

Brake fluid: Porsche Brake Fluid
ECS Tuning Part Number: ES1353219