

PORSCHE 928

PKT Installation



No air pump version



Air pump version

Tools

Torque wrench

10mm socket
12mm socket
13mm socket

5mm allen socket
6mm allen socket

8mm allen key

Caliper

Supplies

Blue Loctite
RTV silicone

Kit hardware

| | | |
|-----|-----------|-------------|
| (3) | 6 x 30 | flange head |
| (1) | 8 x 25 SS | flat head |
| (2) | 8 x 25 SS | flange head |

| | | |
|-----|---------|-------------|
| (1) | 8 x 16 | flange head |
| (1) | 8 x 100 | socket head |

Porsche parts

| | |
|----------------|------------------|
| 900 074 139 02 | 8 x 55 bolt |
| 928 105 611 05 | tensioner gasket |

Audi parts

Example: 2000 Audi A6 30V

| | |
|---------------|-----------|
| 078 109 479 E | tensioner |
| 078 109 487 A | lever |
| 078 109 243 R | pulley |

Conventions used in text

Left is cylinder bank 5-8, **right** is cylinder bank 1-4.

Author assumes that reader has access to workshop manuals and has the basic knowledge, tools, and skills to change a timing belt.

Notes are in italic font.

| | |
|-----|-------|
| TDC | 0 T |
| 20° | 2 0 |
| 45° | 4 5 |

| | |
|-----|------------------|
| CW | clockwise |
| CCW | counterclockwise |
| TDC | top dead center |

Warnings

For bolts into aluminum, use light oil, or anti-seize, not Loctite!

For bolts into the steel bracket, use Loctite.

Check for free movement of the lever and pulley after bolting to the bracket!

If the lever sticks at any point in its travel, check the bracket for any weld spatter or plating material, and use a Dremel to smooth the area.

If the pulley pin is rubbing, it may be pressed in too far. Support the back side of the pulley, and press or tap it in with a hammer, until it has clearance.

Tensioner

If it is necessary to retract tensioner piston off the car, place tensioner in vice, and slowly retract piston. It will push in a few mm, then stop. Wait a few seconds before continuing. It may take 5-10 mins to retract, longer when cold!

Insert pin when fully retracted.

1) Remove factory tensioner parts and water pump pulley.

Save upper tensioner bolt (8x55 – or use new 900 074 139 02).

Carefully clean mounting surface of all old gasket material. **Mounting surface must be clean and flat.**

Note bolt hole dripping oil, this bolt requires RTV to seal on installation.

Optional: remove crank gear idler pulley(s) and bracket.



Tip: to stop oil leakage until bracket is installed, and for a better seal, push a blob of grease into hole shown above. Screw a bolt ~8mm into hole to push grease in. Carefully clean exposed threads with towel soaked in brake cleaner.

2) '78-'86 coat 8mm set screw with RTV and plug water pump hole. *Install flush with outside face, as shown. With a new clean pump, red Loctite can be used instead of RTV. '87-up reuse post and bracket.*

Remove and discard o-ring on lever bolt , and clear plastic split tube on pulley bolt!

Verify pulley and lever have two washers each! One washer goes on each side of the pulley and lever!

Mount lever to bracket -17 ft.lbs. - Loctite

Mount pulley to bracket – 24 ft.lbs. – Loctite

Verify that pulley pin is on correct side of lever, and that lever and pulley move freely!

3) Coat 8mm flange head bolt with RTV, insert in hole shown. Place tensioner gasket, and install bracket on engine loosely.

Put a couple dabs of RTV on gasket to hold it to bracket, before installation.

Install second flange head bolt and counter sunk bolt (use light oil or anti-seize) carefully through gasket, loosely.

Loosely install original tensioner bolt.

Torque flange head bolts, counter sunk bolt – 15 ft.lbs.
(not 900 074 139 02 (8x55))

Remove 900 074 139 02 (8x55) again.



4) Mount tensioner to bracket – 7ft.lbs. – Loctite

Do not pull pin, yet!



5) Route belt, starting from crank gear, to oil gear, left cam gear. Use clamps to secure belt to gears.

Belt must be tight from gear to gear.

You may have to use a 17mm wrench on the cam bolt to rotate the gear CW slightly to engage the correct belt tooth. Rotate CCW to take the slack out of the belt.

Ensure that cam gear marks line up with rear cover.



6) Belt may be difficult to route over right cam gear. If this is the case, slide it over the gear as shown.

Ensure all slack has been taken up.

Timing belt will not fit over tensioner pulley unless the belt is correctly routed! Do not force or twist belt!

Center belt on all gears, and tensioner pulley.



7) Use a 8mm allen key inserted in tensioner pulley to rotate pulley CW and depress tensioner piston slightly.

Remove pin. Rotate pulley CCW lightly to pretension belt (11ft.lbs.)

Verify that belt is tight from gear to gear all the way around!

Using a caliper, measure the extension of the tensioner piston at the middle of the piston from the tensioner body to the lever. **Piston extension must be >2mm and <9mm!**



8) Install balancer and pulleys. Rotate engine by hand and verify balancer and cam gear marks are aligned.

If belt needs to be rerouted, insert 8mm allen key, and **slowly** rotate pulley CW to push in tensioner piston in until pin can be re-inserted.



9) Remove fuel pump fuse, check that nothing can get caught in belt, and crank engine for a few seconds.

Wait 5 minutes and check tensioner piston extension again.

With a new belt, extension must be >2mm, and <7mm. A used belt must be >2mm and <9mm.

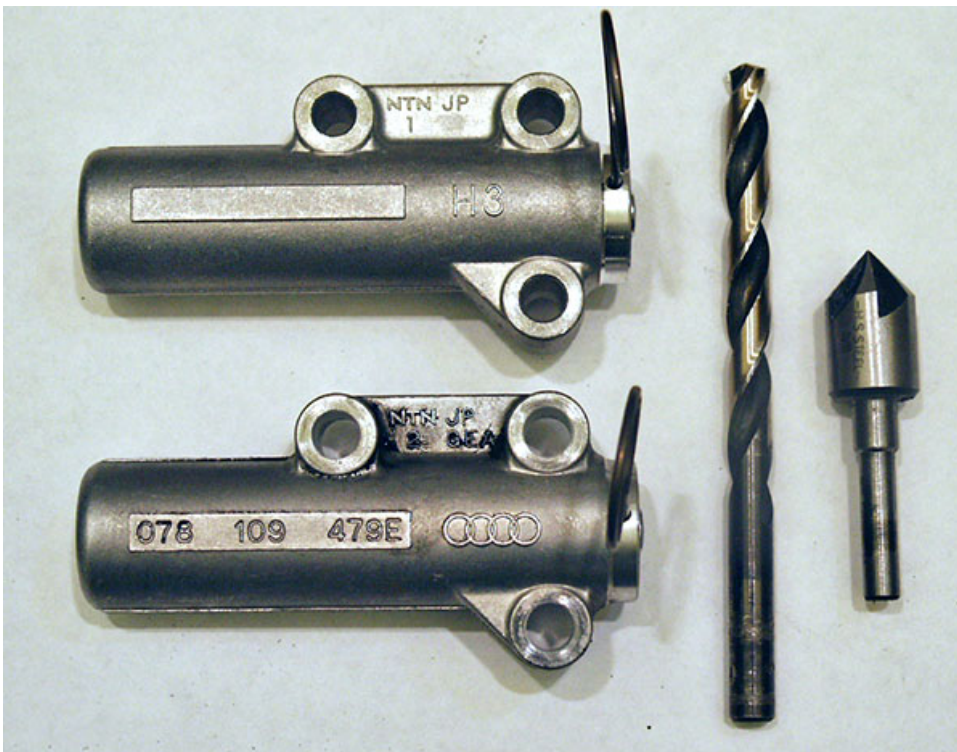
Maximum extension is 11mm. An engine with machined heads may be close to 9mm. With a used belt on a cold engine, on a cold day, extension must never be more than 11mm! Porsche/Gates belts are said to stretch less, and my help reduce extension.

10) If extension exceeds 9mm then proceed as follows (engine with machined heads)

The tensioner/damper bolt holes are cast in a cone shape, larger at the rear. Drill out (and rechamfer) the holes to the largest size (8mm drill bit). This will allow around ± 2 mm of movement.

Take the retracted tensioner/damper and loosely mount it on the bracket. Before tightening the bolts push the tensioner towards the lever. Tighten bolts to 7ft.lbs. – Loctite.

Pull the pin as described earlier and crank the engine for a few seconds. Re-check the extension of the tensioner piston, it should be below 9mm now. This precautionary measure will insure that the maximum extension of 11mm cannot be reached on a very cold day with a used/stretched TB.



11) Install belt tension light defeat bolt and terminal. Plug sensor wire onto terminal. Route ground wire from 6mm stud to 8mm bolt hole in cover over tensioner after dipstick tube is installed.



12) Install cover. (Dipstick tube is shown installed, but it may be easier to install the cam gear cover with the dipstick tube out of the way.)

Install original tensioner bolt – 15ft.lbs. *Use separate spacer on non-airpump version.*

Later visual checks of the tensioner extension can be made using a mirror where the tensioner passes through the cover.



13) *(Early versions)* Install air pump and outer bracket, airpump version.

Tighten outer bracket bolt to 15ft.lbs., tension air pump belt and tighten main bolt to 15ft.lbs.



14) Reassemble and start engine.

Looking through the cover breather holes, verify that timing belt is tracking straight and does not vary in position. It may be anywhere from 2 - 4mm from the front of the gear, and may not be in the same spot as where the factory tensioner put it.