



**150A Alternator  
Installation Manual  
Issue 1.1**




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## Introduction

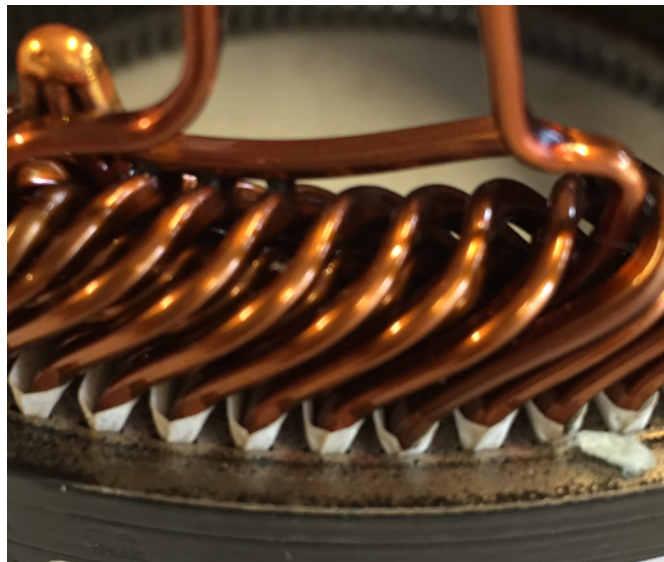
This is the installation guide for our 150A six phase alternator.

	<p><b>PERSONAL INJURY, DEATH AND / OR PROPERTY DAMAGE HAZARD</b></p> <p>Failure to follow this warning could result in personal injury, death or property damage.</p> <p>Improper installation, adjustment, alteration, service, maintenance, or use can cause explosion, fire, electrical shock, or other conditions which may cause personal injury or property damage.</p> <p>Consult a qualified auto electrician, service agency, or Classic Retrofit Ltd for assistance.</p> <p>Read and follow all instructions and warnings.</p> <p>Please consider your and other people's safety before testing.</p>
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## About the Alternator

The 150A alternator is a joint development between Classic Retrofit and WOSPerformance. It is the only unit available for the classic 911 that can offer continuous high current levels without failure due to heat.

The alternator contains modern Denso internals with the patented 'hairpin' windings. This is a 6 phase alternator which is more efficient therefore produces less heat. Units of this design are fitted to millions of modern production vehicles with high continuous load requirements.



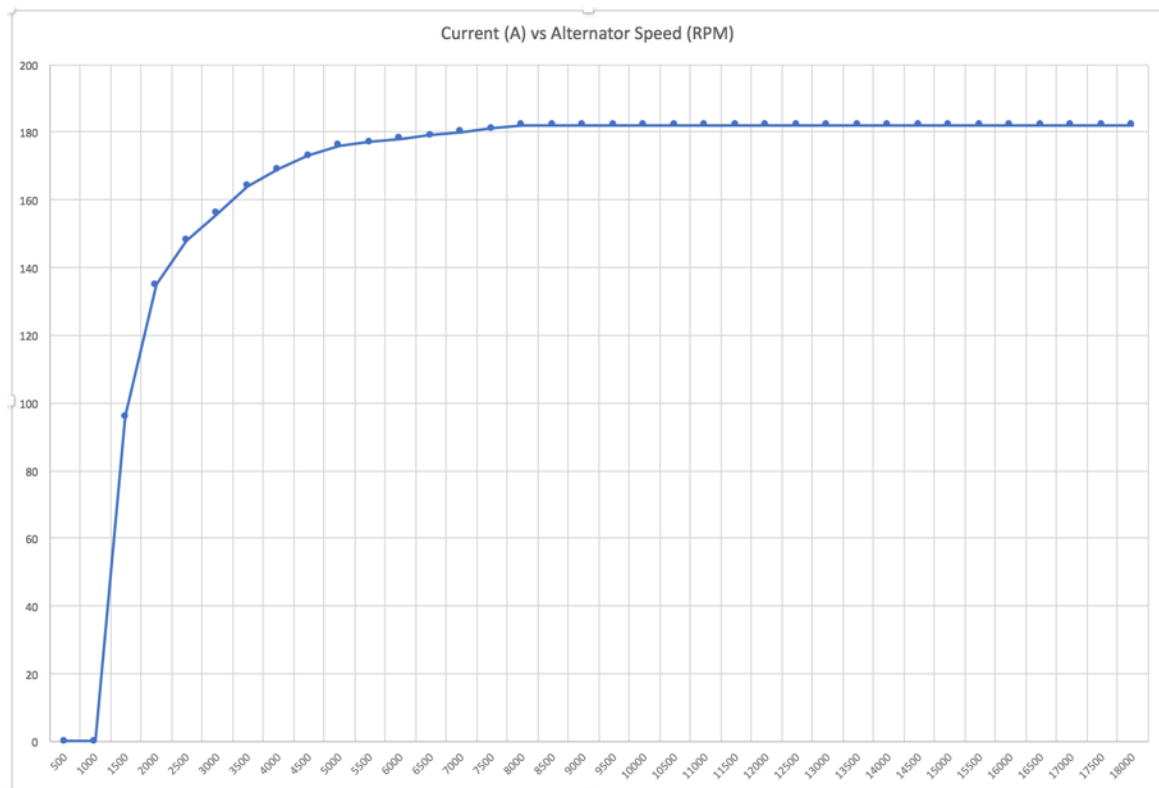
Close-up of the patented 'hairpin' windings.

Unlike 'rewinds' based on the standard Valeo/Bosch casing, these units have an internal fan that can draw air over the internal windings. The 'hairpin' windings also allows air to flow in between them, unlike the bundled wires in older units.

## Performance

We have tested the unit up to 150A continuous with the single pulley. The unit is capable of producing 180A but a toothed belt is almost certainly necessary at these levels.

The idle performance is exceptional, typically producing 75A on a 1.8 ratio pulley. As a comparison, the 90A 911 alternator only produces 40A at idle.



Note that RPM quoted is for the alternator. Typical 911 pulley ratios are around 1.8. So for example engine idle at 950 RPM would be 1710 RPM at the alternator.

## Applications

Producing 75A at idle, this alternator is ideal for your 911 if you want to fit:

- Heated Screens and Seats
- Driving or Rally Lamps
- High Power Stereo Equipment
- Electric A/C or Heating.



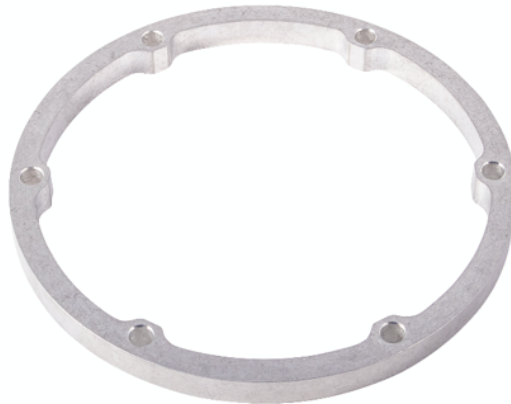
## Fitment

The alternator mounts inside the fan housing. As the cars evolved, Porsche increased the standard alternator length and the fan housing was machined accordingly. There are three different fan housing machining depths but unfortunately you cannot tell from the casting number alone.

The 150A unit is the same length as the early 1965 to 1973 alternators and is a direct fitment for these fan housings.

Mid year (1974 to 1983) cars with the 70A/75A alternator require the use of an 10mm adapter ring sold separately.

Late year cars (1984 – 1989) with 90A units require the use of **two** spacers (10mm and 11mm) to make up the 21mm offset.



10mm spacer for a mid-year car (74 – 83).

## Installation

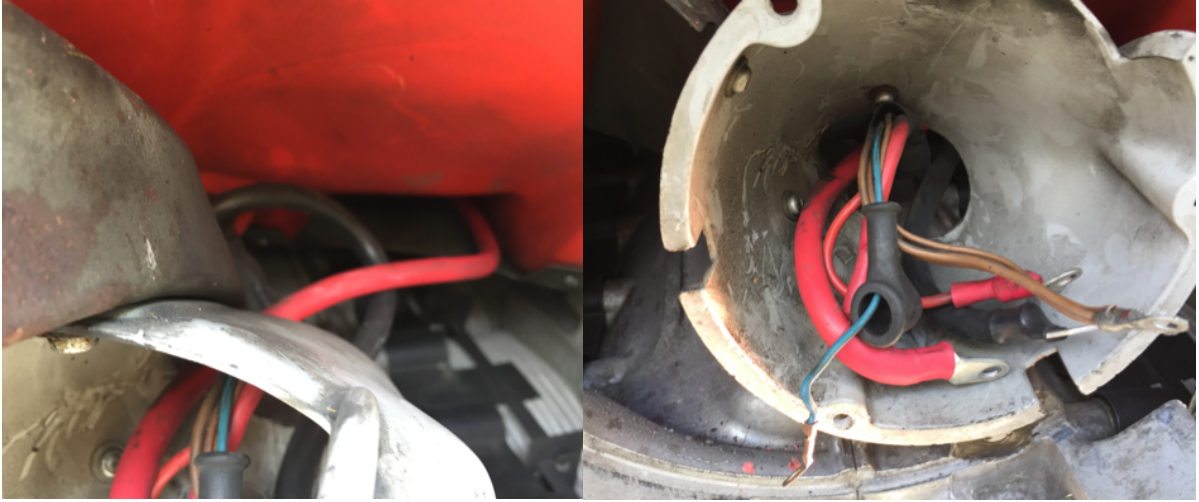
Note When installing this alternator, the following wiring MUST be updated:

- Alternator GND(-) to engine case
- Alternator Battery+ to Starter Solenoid+

We provide the cable set with the alternator.



- 1) Remove the existing fan housing, fan and alternator from the car. If the existing alternator uses an external regulator follow the Porsche Technical Bullet (reproduced at the end of this manual) prior to installation.
- 2) Replace the engine GND strap with the heavy duty black cable. Replace the main alternator cable with the heavy duty red cable. This needs to be routed to the starter solenoid. Easier to do this on a ramp. Some cars may need a hole drilling in the engine tin above the oil cooler but be VERY carefully. The engine tin in this area can often be removed with the engine in place.



- 3) Compare the old alternator length with the new unit. Use the adapter(s) if necessary to make the unit match in length. Either no adapter (early), 10mm adapter (mid) or 21mm (late). Tap the adapter(s) on to the alternator with a rubber mallet until fully seated.
  
- 4) Position the alternator in the fan housing as shown in the photo:

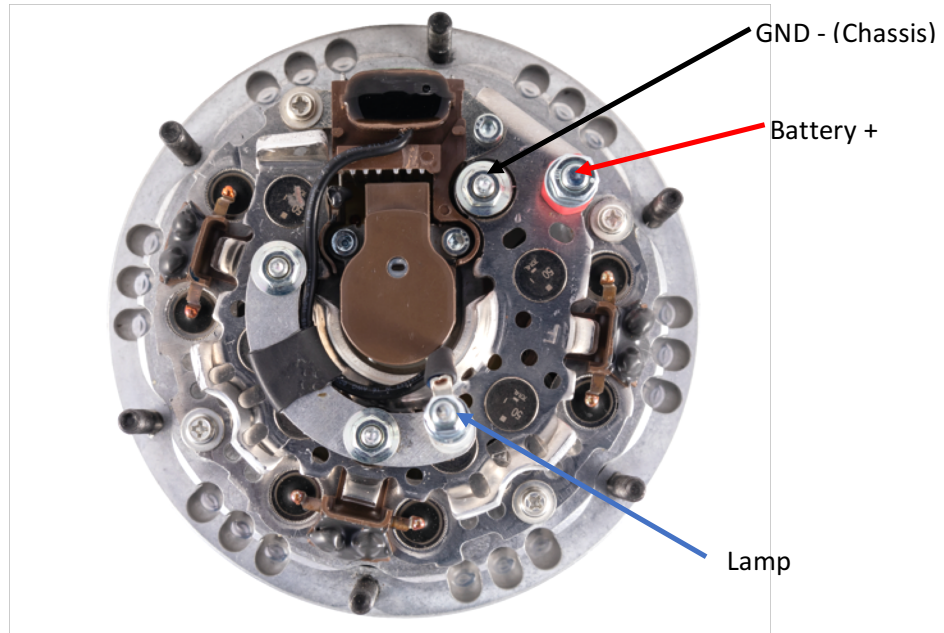


The longer lamp terminal should be at the bottom so it fits in the 'nose' of the air deflector.



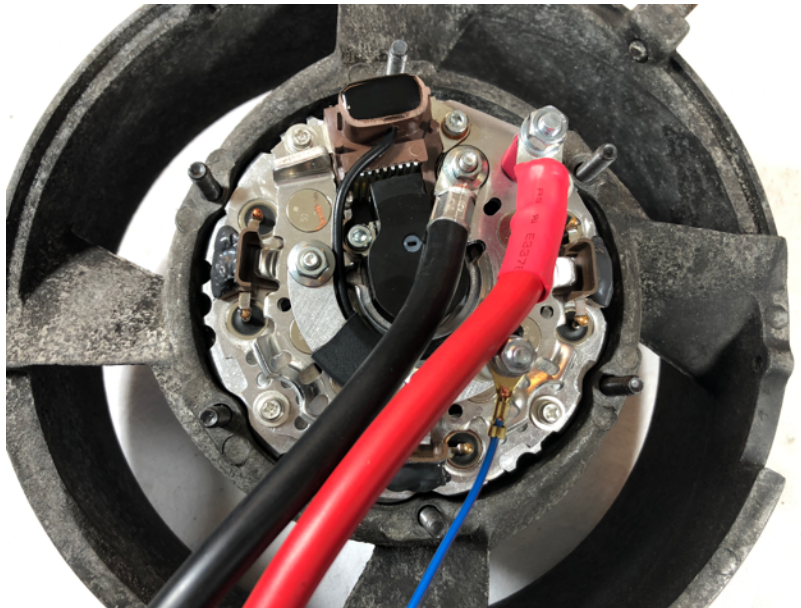


- 5) Identify the connections as shown in the following photo. The alternator has 3 primary connections, Battery+, GND (-) and Lamp.



Porsche use brown for earth so be sure to connect these to GND. Additional positive cables are red and the lamp cable is usually blue.

When the alternator is in the car, the cables should be attached as shown:



## Alternator Myths

Internet hearsay may lead you to believe that a high output alternator puts more load on the engine. This is true, but **only** when the load is demanded of the alternator. E.g. if the alternator is only being 'asked' for 30A, it will be no more load on the engine than a lower rated unit.

An alternator does load the engine proportional to output but the load is small when compared to other belt driven accessories. For example an engine belt driven AC compressor may consume 5HP when the clutch is engaged.

An alternator producing 100A @ 12V is 1200W. One HP = 746W. Accounting for some losses, the load on the engine would be less than 2HP.

### Other 'High Output' Alternators.

Prior to the development of this unit, Classic Retrofit undertook extensive testing of existing supposedly high output offerings. These units are typically based on the original Valeo or Bosch casing with a rewind stator. Even rewind for just 110A, the standard case CANNOT reject the heat.

The photos below are of two different 110A alternators after a couple of weeks of running with a continuous 80A load.

In the left-hand picture, the insulation on the windings is black and the alternator is very close to failure.

In the picture on the right, the insulation has completely broken down, resulting in shorting out, lots of smoke and a potential engine fire. Not something you want in a magnesium fan housing.



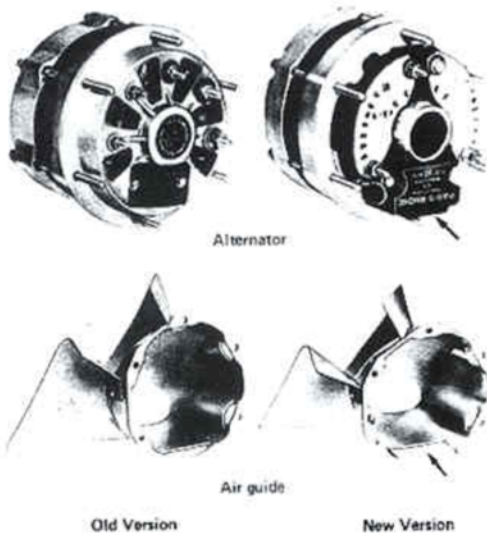
Although these units may be able to generate the current advertised for short periods, they **cannot** reject the heat long term which leads to breakdown in the insulation. This is due to the bundled winding arrangement and lack of an internal fan inside the case. Ironically, the 911's main engine cooling fan does very little to cool the alternator as the air flow goes around it, not through it.

<h1>Technical Bulletin 1</h1>	<b>Model</b> 1974-83 911/T
<b>Subject:</b> New Alternator has Integrated Regulator	<b>Page</b> 1 of 2

New-type alternator, part number 911 603 120 04 with integrated regulator, is now installed instead of former version, part number 911 603 120 02, which used a separate regulator. Regulator of the new version, part number 911 603 913 01 is located on the back of the alternator and can be replaced separately. Threads on the alternator shaft for installation of pulley have also been changed from M16 x 1 to M17 x 1.5.

The hub extension (air guide) has been modified to provide an opening for the regulator. Battery charge indicator lamp is changed from 2 watt to 4 watt, and the DF wire was removed from engine wire harness.

Note: These changes were effective with 1982 model year production.



**Caution:** A ground wire, part number 911 612 233 00 was not installed between the crankcase and alternator on some early 1982 models. A poor ground connection can cause radio interference and a discharged battery.



Figure A

If the above problems develop, or if the alternator has to be removed for repairs, install missing ground wire as shown in figure A.

**Parts Information:** The following parts will be required when installing on cars built prior to model year 1982.

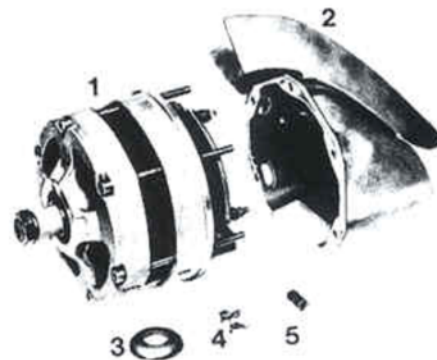


Figure	Description	Part Number
1	Alternator	911 603 120 04
2	Air Duct	911 106 033 05
3	Cover	911 603 428 01
4	Connector	111 971 511
5	Resistor	911 641 981 00

**IMPORTANT NOTE:** This technical bulletin is a copy of an original factory bulletin, some of the part numbers listed may have been superseded. Use the information from this bulletin for repair, for the latest part numbers, refer to our catalog.



# Technical Bulletin 1

Model  
1974-83 911/T

**Subject:** New Alternator has Integrated  
Regulator

Page  
2 of 2

### Work Procedure:

- disconnect battery
- remove old alternator
- remove old hub extension

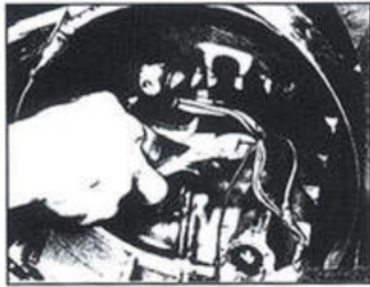


Figure B

- cut off DF wire (black) at wire branch (figure B)

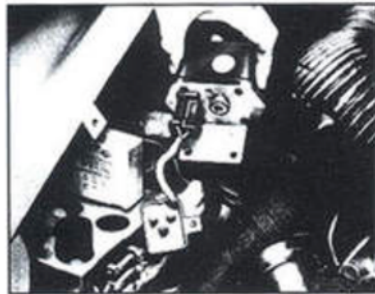


Figure C

- remove alternator regulator, see figure C
- fasten multiple-pin plug of removed regulator on wire harness
- install new alternator in blower housing

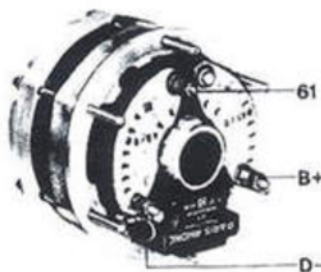


Figure D

- push new hub extension onto wire harness and connect alternator (figure C)  
B+ = red wire  
D- = brown wires (ground 2 required)  
61 = blue wire
- mount hub extension on alternator and install blower housing
- tighten drive belt as specified
- if applicable, install air conditioner compressor with drive belt
- reconnect battery

**Note:** If battery charge indicator lamp does not go out after starting engine, the exciter current is too weak because of 2 watt lamp. In this case, supplied resistor, part number 911 641 981 00 (91ohms, 5 watts) must be installed parallel to battery charge indicator lamp.



Figure E

### Installing Resistor:

- remove instrument cluster and take out battery charge indicator lamp socket (figure E)
- install both piggyback connectors, part number (111 971 511) on lamp socket and solder resistor on outer flat male terminals as shown.



Figure F

- connect lamp socket again and install instrument cluster
- recheck battery charge indicator lamp operation and after running engine briefly, tightness of drive belt

**Caution:** 1982 models cars have a 4 watt indicator lamp, however the larger socket cannot be inserted in the instrument clusters of older models.

**IMPORTANT NOTE:** This technical bulletin is a copy of an original factory bulletin, some of the part numbers listed may have been superseded. Use the information from this bulletin for repair, for the latest part numbers, refer to our catalog.