

# What To Look For In A Donor Car When Doing Your Electric Car Conversion



compiled by Al Bunzel

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# What To Look For In A Donor Car When Doing Your Electric Car Conversion

## Introduction

When doing an [Electric Car Conversion](#), there are several things you need to watch out for. This document is a quick guide on what to look out for in a donor car when doing your [Electric Car Conversion](#). If you plan on registering your **Electric Car** and use it on public roads, you will need to find out the legal things you need to satisfy before you even start on your [Electric Car Conversion](#). You don't want to spend money and time doing an [Electric Car Conversion](#) only to find out you can't use it on the road due to some legal reasons. It is best to find out the legalities in advance to prevent heartache. Once, the legals are sorted, you need to know how you want to use your car and then select the appropriate car to look for. When inspecting cars you are looking as donor cars for your [Electric Car Conversion](#), there are several things you need to know which are listed later on. Although, this document is not a comprehensive list, it will be helpful.

# What To Look For In A Donor Car When Doing Your Electric Car Conversion

## Legals To Consider

Every jurisdiction has their own set of rules and laws on what can be used on their roads. It is impossible for this ebook / publication / document to cover every single legal situation you could face, but below is a list of some of the things people who I know in Australia who have done [Electric Car Conversions](#) or car modifications have faced.

- If you plan on registering your car, ensure your car can be registered. Let me give you an example why. Recently, an [Electric Car Conversion](#) was done to a GMC van in Australia. When the conversion was done and it was time to get the Electric Van registered, the registration authorities stated that the van had only conditional registration in the past as the van was supposed to be returned to USA or destroyed. The vehicle was supposedly not entitled to stay in Australia for ever and was only supposed to be in Australia for a limited time. This situation has created unnecessary hurdles for the person who did the [Electric Car Conversion](#) to this van. At the time of this document being written, I was told that the engineering certificates to ensure compliance has been granted, but due to this bureaucratic issue, the vehicle can't be registered.

**Lesson Learnt:** Check that the car you want to do your [electric car conversion](#) on can be registered if you want to register it and drive it legally on public roads.

- Ensure the car you select is not encumbered or a stolen vehicle. I had a neighbor who bought a second hand vehicle and spent a lot of money and time on it. When he went to get it registered, he found out that the vehicle had been a stolen vehicle ie. he had unknowingly bought a stolen vehicle. All the time and money spent on the vehicle was gone at that instant as the vehicle had to be handed over to the police. He was not even allowed to take the parts off he installed himself prior to handing it over to the police.

**Lesson learnt:** Before doing your [Electric Car Conversion](#), check that you have legal entitlement to the vehicle and that no one else or no other entity (eg. finance companies) have a legal right to your vehicle.

- Ensure that you can get adequate insurance for your vehicle once it has been converted. Find out which insurance companies will be willing to insure a car that has been modified. You also want to find out if you can get insurance for the type of donor car you want to do an [Electric Car Conversion](#) on and find out:
  - a price on premiums;
  - what do you need to tell the insurance company when they are trying to work out whether they are going to insure you or not;
  - what is covered and what is not covered;
  - what is the agreed value of the converted **Electric Car**;
  - the terms and conditions of insurance.

**Lesson learnt:** Find out what insurances are available and understand what you are covered for, what liabilities you are covered for and understand what you are not covered for.

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Understand any exclusions the insurance companies have and evaluate if you can live with the risks or not. Understand what information you have to provide the insurance company and what their terms and conditions are. Ensure you do not void your insurance policy. Understanding insurances can be difficult and it may be beneficial to seek the assistance of an Insurance Professional.

- Understand what compliance standards your car has to comply with. When you do an [Electric Car Conversion](#), you are modifying a car. You need to find out how vehicle or licencing authorities in your jurisdiction handle modified cars and what is required of you to get your car up to the required standard so that it can legally be registered, licenced and/or used in your jurisdiction or the jurisdictions you plan on driving your car. Ensure you know what paperwork, inspections, permits and/or approvals are required and what the process is to get a vehicle registered, licenced or permitted to use the roads in your jurisdictions or the jurisdiction the car will be driven on.

**Lesson learnt:** Find out if you can register or licence your **Electric Car** once it is converted. Find out what requirements need to be met by your registration, licencing, governing and/or legal authorities. Also, find out which authorities you need to satisfy so that you can legally drive your converted **Electric Car** on public roads.

# What To Look For In A Donor Car When Doing Your Electric Car Conversion

## Selecting Your Donor Car

When selecting your donor car, the 3 primary considerations that you need to consider are:

- **Range** - how far do you want to travel between recharges?
- **Top Speed** - What top speed do you want to travel at?
- **Cost** - How much do you want to spend on your [Electric Car Conversion?](#)

There are other secondary considerations you need to consider. The following is NOT a comprehensive list, but here some things you might want to consider:

- How many passengers do you want to carry?
- What loads are you looking to carry?
- What acceleration do you want?
- What size car do you want?
- What style of car do you want - wagon, coupe, sedan, sports car?
- How easy is it to get parts such as wheel bearings, steering components, suspension components, transmission components and interior components?
- How heavy is the car?
- Where are you going to fit all the batteries?
- Will the car be able to physically and legally be able to carry any extra weight which the **converted Electric Car** may inherit (usually if lead acid batteries are used)?
- Has an [Electric Car Conversion](#) been done to a car that you want to convert already? If so, you may be able to ask that person what was involved and perhaps leverage on their experiences. Have a look at [www.evalbum.com](http://www.evalbum.com) for examples of [Electric Car Conversions](#).

**Lesson learnt:** You are likely to have to make compromises between **Range**, **Top Speed** and **Cost**. If you want a longer range or a higher top speed, then your cost is going to go up. For example, if you want a longer range, you may decide to install more batteries which will increase costs due to buying more batteries and also the extra work required in installing more batteries. If you decide to use batteries with a higher energy density like Lithium Iron Phosphate (LiFePO4) instead of Lead Acid batteries, then (at the time of publication of this document in December 2011) the price of getting the higher energy density batteries will increase.

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## Inspecting Your Potential Donor Car

Inspecting your potential donor car for your [Electric Car Conversion](#) is vital as a bad donor car where there needs to be a lot of work to be done to rectify problems can cost you a lot of money and time. This can demotivate you. You also want to ensure that your donor car is road worthy. If you have found a potential donor car you are seriously considering, then it is best to have the donor car thoroughly inspected by a competent (licenced and qualified) mechanic, panel beater and auto electrician. There are some several basic things to look out for prior to you getting a competent (licenced and qualified) mechanic, panel beater and auto electrician to check out the car. Doing these basic checks can quickly weed out cars that are rubbish.

- **Rust** - rust is the enemy of any car that has steel components. You need to check panels, body parts, car structure (especially around window frames and places where water channels can get blocked), suspension components (especially where the suspension bolts onto the car structure), steering components, brake lines etc for rust. If there is any rust, you then have to decide whether you can repair it or if the car is not worth pursuing. Remember, every time you have to do a repair to the car structure, panel or car body, it increases the time and cost of your [Electric Car Conversion](#) which can lead to demotivating you from completing your [Electric Car Conversion](#).
- **Accident car?** - you will want to check if the car has been involved in an accident. If so, how were the repairs done and is the car still safe? A car that has been involved in a heavy crash where there was structural damage can be a difficult car to deal with. This is more prevalent with modern cars where parts of the car are engineered to crumple in a certain way and even though the car appears to have been repaired, the strength of the structure may have been altered so in a future crash, it will not behave in a way that it was designed to behave. A competent (licenced and qualified) panel beater is able to see if a car has been involved in a crash and if the repairs are satisfactory or not.
- **Brakes** - check that the brakes still function. You will want to see how thick your disc rotors and brake pads are. Also, check that the brake calipers are not seized and are not leaking. Brake drums can be difficult to check unless pulled apart so factor the possibility of having to replace brake drums and brake shoes. If they don't meet the manufacturer's specification, you need to factor the cost and time in replacing them. You also want to ensure that the brake hydraulics don't leak so check brake lines, brake booster. Also, check the condition of the pedal box and the brake pedal. On some cars, they can wear out and be sloppy.
- **Steering** - check that the steering works and that it is not sloppy. You will need to check the steering mechanism to ensure that it is within manufacturer's specification. This includes ball joints, steering bushes, steering racks / boxes, steering column, steering lock etc. For example, one of my cars had a collapsed steering column and to replace it, it involved taking the dashboard out to get to it.
- **Suspension** - check that the suspension is not loose. You need to check that the bushes, ball joints and mechanisms are not worn and that all suspension components are within manufacturer's specifications.

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- **Wheel bearings** - these can be tricky to check so it is best to leave it to a qualified mechanic.
- **Transmission and differential** - check the transmission and differential for leaks, knocking noises. Also, if the car has a tail shaft, you will want to check the universal joints. Some cars may have constant velocity (CV) joints which will need to be checked for play. Also, check that the gearbox shifts nicely. You also want to check the condition of the clutch cable or clutch hydraulics. This can sometimes be difficult to check. For example, one of my cars had drove nicely. When it was time to replace the clutch (the clue to replace the clutch was that there was no more clearance left to adjust), it was horrific to find what happened. The clutch fork was broken, the thrust bearing was not in good shape and the clutch started to come apart. The only clue I had that something could be going wrong was a clinging noise that happened very occasionally on a hot day just prior to pulling the clutch out.
- **Electrics** - ensure that the head lights, indicator (blinkers), parking lights, stop lights, tail lights, reverse lights all work. Also, ensure that the horn works and that all other accessories work, like radio, in car entertainment system, central locking, power windows etc.

**Lesson learnt:** Ensure the potential donor car is checked for problems. Sometimes a cheap car with lots of problems can turn out to become an expensive car. It is best to get a car with minimal problems or faults so you can focus on doing your [\*Electric Car Conversion\*](#).

Ideally, it would be great if the car could be taken for a test drive as that can reveal other problems, but if you are buying a car with a blown motor or no motor, then this will not be possible.

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## Summary

There are several things to look for in a donor car when doing your [Electric Car Conversion](#). Finding out your legal obligations and responsibilities is vital. Getting appropriate, adequate insurance is vital as well.

Know what you want from your **Electric Car** and work out your requirements.

When checking out potential donor cars, ensure the donor car is road worthy. If there are problems or faults with it, you have to decide whether you have the time and resources to fix it.

A book I found very useful is [Electric Conversion Made Easy](#) by Gavin Shoebridge. This book helped me speed up my Electric Go Kart conversion as it cleared a lot of the clutter that is on the web.

Best of luck with your [Electric Car Conversion](#)  
Al Bunzel (aka Crazy Al) - Electric Car Enthusiast.