



**HOW TO FIND OUT
WHAT TYPES OF BOLTS
YOU HAVE**

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INTRODUCTION

One of the problems in determining what decorative bolts you need for your project is determining what bolts you have already.

Now all you guys with an engineering or trade background will in most cases be able to tell what you have just by looking at it, because you are familiar with the sizes and terms. However for a lot of us hobbyists it can be confusing at first so a little basic knowledge provided here should get you going.

MOST IMPORTANT

In any sort of motor vehicle, be it a passenger car, sports car, hot rod, race car, motorcycle or truck, has different high strength bolts throughout the vehicle. This strength has a rating which is referred to as the 'grade' of the bolt. Strong bolts have their grade markings on them, if there are no markings then it is not a high strength bolt. It is extremely important that the right grade of bolt is used for the right application; otherwise a failure could lead to an accident, injury and death.

It is common for ordinary general purpose bolts to have no markings at all, so for us hobbyists we need to have a base knowledge of the different bolts types, so we can safely enjoy our hobby.

This is a practical guide to get you started; it is not intended to make you an expert, if you want to know more there are plenty of other books and technical papers floating around on the internet these days for you to chase up. And of course if you are unsure go and find an appropriate, experienced engineer and ask them.

Now for the disclaimer;

Indemnity: The reader shall indemnify Kustom Bitz, the author, its consultants, personnel and all others involved in providing our goods and services in respect of any claims, demands, damages, proceedings, costs, charges and other expenses caused by, arising out of or in any way connected with any special, consequential, direct or indirect loss, damage, harm or injury suffered by any person arising out of this document, publication, the sale or the goods and services supplied pursuant to it.

For those who fail to understand legal jargon; If you have been an idiot, made something that broke, generally stuffed up or what ever, don't go blaming us or others because it is your fault. Take responsibility, make it right, learn from your mistakes and move on.

Now lets have some fun with it.

Bolts Everywhere

Bolts, buckets of bolts, left over bolts, man I always seem to get back to a job and there is always a bolt missing or I think “now where did that bolt go again?” Usually I tackle more jobs at once than I probably should, sound familiar?

I tend to chuck bolts into various containers as I pull things apart, this is good because you know what container goes with what job but sometimes there can be 50 or so bolts in a container of all different sizes, threads and grades



A little knowledge in identifying different bolt types can help you remember or make a judgment as to where it probably went. Like wise a bolt may have loosened and fallen off your vehicle and you have a bucket of odd bolts around, so which bolt could you use safely in that application.

Now if you go to your hardware store you will see a whole isle of bolts, washers and nuts of all different shapes and sizes. These are all useless for any automotive application, so turn around and walk out. Typically the bolts that are stocked at your general home hardware store are only grade 4 bolts. They are used in construction of houses, fences, garages, pergolas, sundecks, etc. They are relatively soft and if you do them up too tight they will break in half. Rarely will they have any grade markings on them; apart from the metric ones they might have ‘4.8’ as a marking which represents a low strength rating.

For Automotive use you need at least a grade 5 and higher bolt for imperial sizes, or 8.8 and higher for metric bolts. For these high grade bolts you need to go to a specialty bolt supplier or a shop that supplies to the engineering and manufacturing businesses.

Some home handy men are the worst culprits in using low grade bolts from the general hardware store when they fix something on their vehicle. Their trailers are where I sometimes see low grade bolts that are holding some bracket or barrier onto the trailer that is also too large for the bolt and not enough of them.

I cannot stress it strongly enough, that if you make something yourself, oversize your bolts, put plenty of them in and use quality high grade bolts. For example if you are making something










similar to a professionally made item, look at the size and grade bolts they are using and oversize yours to be on the safe side.

Automotive Engineers love bolts as opposed to your back yard hot rodder come welder. Again they love to see large high grade bolts because the bolts have markings that indicate to the engineer how strong that structure is going to be, then he or she can then look at the size and thickness of the surrounding metal to ascertain it's mechanical properties.

Welding is a learned art with many hidden pitfalls for the amateur, even if you are a confident welder a well designed bracket or structure with bolts can give some piece of mind. For example if the bolt works loose the weld is still holding it together. If the weld cracks the bolts will stop it falling apart. In either of these cases it allows you to pick up the fault upon regular vehicle inspections before it become dangerous and you can rectify the problem, which may mean you need to re-engineer your bracket too.

Lets move on.

Bolt Markings

	AS/NZS 2451	Hexagon BSW Mild Steel
	AS/NZS 1111	Hexagon ISO Metric Commercial 4.6
	AS/NZS 1393	Hexagon ISO Metric Coach Screws 4.6
	AS/NZS 1110	Hexagon ISO Metric Precision 8.8
	AS/NZS 1110	Hexagon ISO Metric Precision 10.9
	AS/NZS 2465	Hexagon Unified High Tensile UNC/UNF SAE Grade 5
	AS/NZS 2465	Hexagon Unified High Tensile UNC/UNF SAE Grade 8

Example of a standard home hardware grade witworth bolt

Example of a standard home hardware grade metric bolt

High strength metric bolt 8.8 equivalent rating to a grade 5 imperial bolt.

High strength metric bolt 10.9 equivalent rating to a grade 8 imperial bolt.

Grade 5 bolts are available in course[UNC] and fine thread[UNF]. Typically used in holding panels on cars and engine accessories to the engine.

Grade 8 bolts are available in course[UNC] and fine thread[UNF]. Typically used in suspensions and brake components on cars and high stressed parts of the engine.

If you are unsure what bolt to use, it is advisable to seek the help of an engineer, however you can learn a lot by going to you local wrecker [car recycler] and have a look around at the various manufacturers of the cars there and take note of what bolts they use in what application. Take note of the size bolts they use for the varying weights and power differences of each of the cars.

However you will find some manufacturers of cars and the bolts that they use only have markings on them that mean something to the manufacturer. You will see some strange and wonderful stampings and raised symbols on bolts in applications that you now know should have a grade marking.

The difference being is that these bolts were made specifically for the manufacturer of the vehicle, and although they may be of the same grade as a properly marked bolt they are more valuable to the manufacturer if they have a marking that tells the production line worker this bolt goes in that hole. These bolts are not manufactured for general purchase distribution channels like a bolt shop.

Again engineers like you to buy nice new properly marked bolts for your project.