Tech talk ...

Fitting an air horn

■ Words & photos: James Saunders, Club Captain - Motor Sport

We all love our little cars, but let's face it, they are not the easiest thing to spot on the road.

The MX-5 sits very low, and is tiny compared to many of the other vehicles that we share the roads with. My car has been reversed into, TWICE, by large four-wheel drives ... both times my car was stationary in a car park. The problem is that the top of an MX-5 is lower than their rear window, so when they look in their mirror they simply don't see us.

I guess I was "lucky" that my two incidents occurred at low (no) speed, in a car park, and thus nobody was injured. But imagine if this had occurred on a highway ... well you don't have to look too far to find stories of this occurring. One of our Club members was the victim of an inattentive truckie a couple of years ago, who merged into his lane. Said Club member had nowhere to go, and despite furiously leaning on his horn, the truckie simply did not hear him. I guess the roar of a massive diesel engine with 70 kajillion kilowatts, and the Jimmy Barnes "Working Class Man" CD blaring out of the truckie's stereo simply drowned out the wimpy "beep beep" of the standard MX-5 horn.

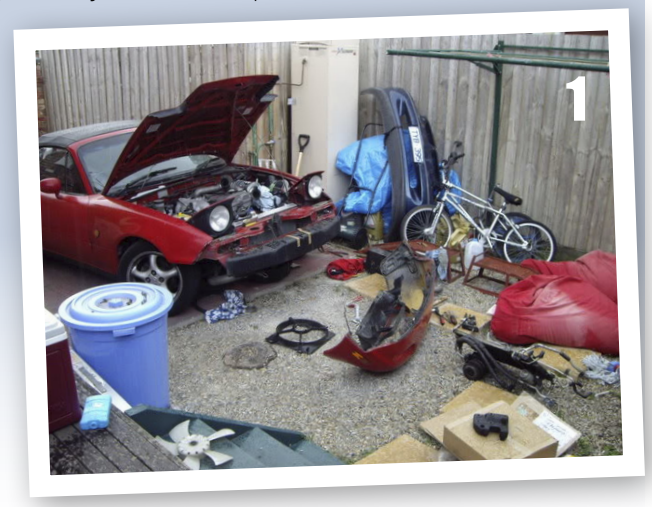
Needless to say the MX-5 came off second-best and the repair bill was nothing to be sneezed at, and the Club member was very lucky to walk away unscathed.

So after that lengthy preamble, I suppose I should get to the point of this article. There is not much we can do to be "seen" on the road (headlights on during the day is a good start), but there is plenty we can do to be "heard". So I present... the Stebel Nautilus Compact Dual-Tone 12 volt airhorn!

The Stebel is made in Italy, however it is widely available and a quick Google search will find many local suppliers. For those readers without internet access, "let your fingers do the walking" or just visit your local auto parts store.

Fitting the horn is fairly simple. These instructions are specific to my 1989 1.6 litre NA (NA6) however I know that this same horn has been successfully fitted to later models including SEs, SPs and NCs.

On the NA6, the first step is to remove the nose off the car, completely dismantle and remove the air conditioning system, and remove the fans from the radiator, as in the picture at right:



OK so many of you have probably just had a heart attack. But never fear, I'm only joking. The horn can be easily fitted without resorting to such drastic measures. The removal of these parts was only necessary as I chose to remove the aircon at the same time as fitting the horn, as the aircon was no longer functional. However, it made the job of photographing the horn installation a lot easier so my loss is your gain. At most, you may have to remove a cover that sits on the metal in front of the radiator. Some cars have this cover, others don't. Or you can reach in through the "mouth", or reach up from under the car (never get under a car that is only supported by a jack, though).

So why would I remove the aircon? At this time, my car was fitted with an AVO turbo kit (which has since been removed). This meant that before any air entered the radiator, it had to flow through an intercooler, and then the aircon condenser. I was suffering from overheating at the track, so it just made sense to remove the aircon as it didn't work anyway. Removing the aircon solved the problem and the car hasn't overheated since.

So now that I've explained why the nose is off the car, I suppose I should actually return to the point of the article, which is fitting an air horn. No more diversions or tangents, I promise!

The horn comes with fitting instructions. These are generic instructions that contain a lot of general information relating to various cars. This article is

to be used in addition to the supplied instructions as it contains more specific details relating to the MX-5, however I strongly recommend that you read and understand the supplied instructions before commencing this project!

In fitting the horn, you have at least three options that I am aware of. The first, and easiest option is to just unplug the standard horn and plug in the Stebel in its place. I know of people that have done this, however the Stebel draws A LOT more current than the standard horn, so it's likely to eventually result in a blown fuse, or worse.

The second option is to wire in a completely new circuit for the horn. This is probably the safest and best option. The Stebel kit comes with a relay, and a wiring diagram explaining how to hook up the relay to be triggered from the standard horn wire. There is a constant 12V source in the engine bay, in the main fuse block next to the brake master cylinder, as in ***picture #2***:

Running a wire from here, with an inline fuse of an appropriate rating (as described in the Stebel literature) would be your best bet.

The third option is to use an existing power source, along with the relay which will be triggered from the existing horn wiring. This is the option I chose, however if you choose the superior method described in the previous paragraph, most of the following will still apply. The existing power source is shown in photo #3. To find this power source, look for a square blue plug in the middle of the photo. It is located just behind the passenger side headlight. In their infinite wisdom, the gurus at Mazda put this auxiliary 12V source in the engine bay to allow you to power test equipment, such as a timing light. *Thanks Mazda.*

Please ignore the non-standard wiring in ***photo #3*** ... my car is somewhat of a science project and certain things won't look the same as your car. Actually it's pretty neat here, some of the following photos are a lot worse and can only be described as a "dog's breakfast"!

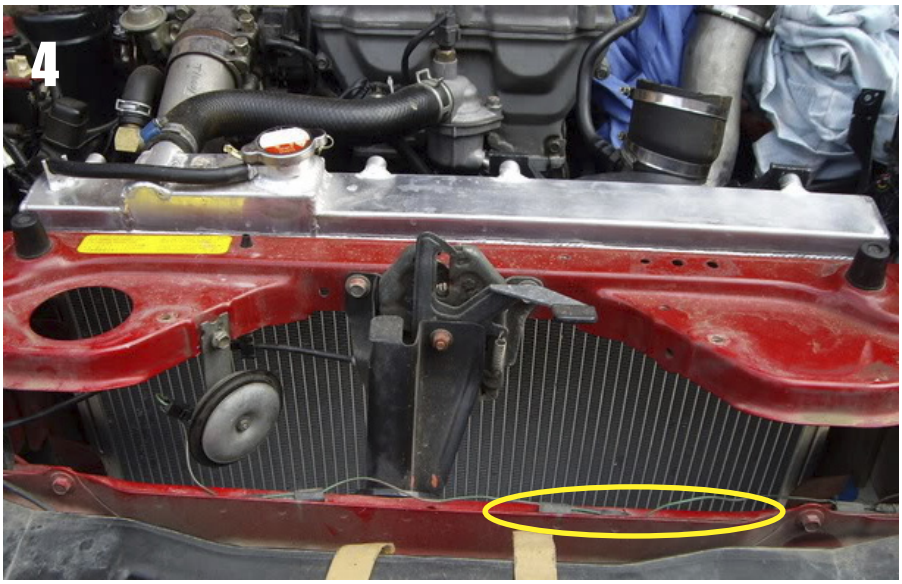
It is important to note that this power source is only active when the ignition is on, so if you use this power source, your horn will not work unless you have your keys in the car, switched on. There is also some conjecture as to what circuit this plug is connected to, but the consensus on the internet seems to be that it's part of the heater circuit. The heater circuit has a 30 amp capacity, plenty enough for our purposes. However, I suppose if you were driving along on a freezing winters night with your heater on full blast, and decide to blast the horn for an extended period of time ... you could trip the circuit breaker on the heater. I've yet to hear of this happening but if you're concerned about it, I refer you back to option two.

Okay, so with the power options covered, let's have a look at fitting the horn. First up, the following picture (#4) is the standard horn, before I have touched anything. The horn is the round thing on the left, in front of the radiator. It's possible that some cars may have two horns as there is an unused horn plug on the right hand side of my car ... *maybe that is why my standard horn sounds so weak!*

In ***photo #4*** you can see the green/red horn wire (circled) attached to the horn, which then runs across the front of the car, held in place by a few plastic clips. Pull the plug off the horn, unclip the wire across the front of the car, and unbolt and remove the old horn.

Feed all the wire back through the opening under the headlight. Just follow it back from where it came and pull all the wire back into the engine bay just behind the passenger side headlight.

Now, the lucky thing for us is that the clip on the end of the wire that you have

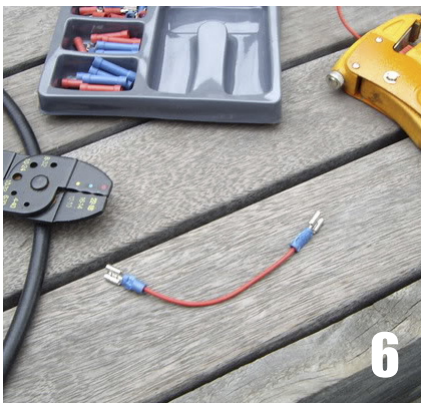


Tech Talk ... fitting an air horn (continued)

just removed from the standard horn, matches up perfectly with the supplied relay. There are four terminals on the relay, and each terminal is numbered. Clip the wire on to terminal 86, as shown in photo #5. You will also notice that the blue plug power source is located very close to where the wire comes back into the engine bay ... how convenient!

At this point we need to start making our own wiring. If you visit your local Dick Smith, Jaycar, or even a $2 shop, you should be able to find a wire crimping / terminal kit, and some suitable automotive grade wire. You will notice in the photo below that I also have a fancy wire stripping tool, but this is not strictly necessary. A Stanley knife would suffice.

Using your terminal kit, make yourself a wire to run from the 12V source to terminal 30 on the relay. Your terminal kit will have different sized connectors; make sure you use the right sized ones (hint - they're usually blue). Your wire should look something like this ...

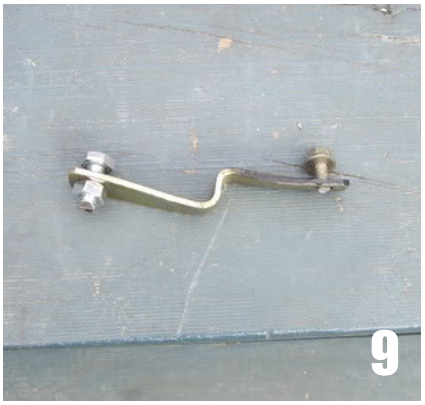


... and then when you connect it to the relay and the blue plug, it looks like this:

Then make another wire for the earth/ chassis connection at the relay.

You'll notice I've followed convention and used red wire for the 12V, so I'll use black for the earth (#8). Again, make a wire with a terminal clip and attach it to terminal 85 on the relay. The other end of the wire will have a spade connector from your terminal kit, and this can be attached to any old earth point (usually a screw or a bolt) on the chassis. The photo below shows where I've mounted this wire, but I'm using an old earth point from a defunct car alarm which you won't have. But just go ahead and use any old earth that's convenient, it really shouldn't matter.

Now you need to start thinking about where you are going to mount the horn ... again this is up to you. The horn is supplied with a long bolt, however most people seem to have trouble finding a suitable place to attach that bolt directly to the car, as the horn fouls on the surrounding metal, or is not in an ideal position. The solution is simple, once you've decided where to mount it, you just need to make a bracket of some sort, to attach the bolt to, and then attach the bracket to the car.



My bracket (#9) is just a piece of bent metal but it does the job. If you have a hammer, vice and drill you can knock something up in a couple of minutes. Obviously the length and shape of the bracket will vary, depending on where you've chosen to mount it. I also took an angle grinder to the bolt supplied with the horn, as I found it was too long.

The bracket attaches to the horn like so:

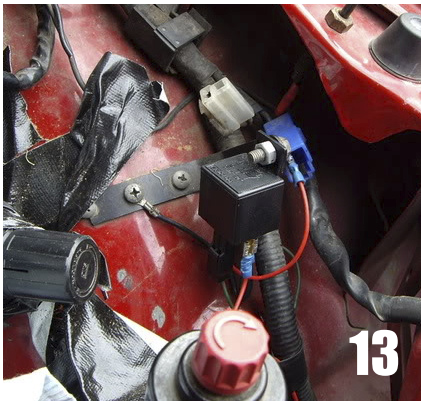
When mounting the horn, you might need to jiggle and manoeuvre the bracket and horn around a bit to get it into perfect position, so don't do any of the bolts up super tight just yet.

You'll notice (#10) that I have also attached the final two wires (power and earth) to the horn. Keep the wires nice and long and then you can neaten them up at the other end, once the horn is in place.

Now we're getting to the important part: it's time to mount the horn securely in place. You will see in photo #11 that the horn is tucked up under the radiator support panel, as I chose to secure it to one of the now unused mounting points, and bolts, for the aircon. The earth wire from the horn has now been cut to the right length and attached to the mounting point for the old horn (this acted as an earth for the old horn, so at least I know it is a reliable earth connection). Come to think of it, this probably would have been a good spot to mount the bracket, too. The red power wire needs to run back to the relay, and you can see how I have run it back using the same path as the original horn wire that we moved earlier. I even used the same plastic clips. Not strictly necessary but at least it looks neat.

And then, cut the red wire to length and add a terminal clip, attach it to the relay at terminal 87 (#12), and secure the relay to the car somewhere (#13).

You'll notice that again I've used a mounting point that you won't have on your car. But just find a suitable place for it. You may even decide to mount it on a small bracket.



All that's left to do now is cross your fingers and give it a test beep! Remember that the car ignition will need to be switched to the on position when you do this, as the blue plug is not constantly live. Hopefully when you hit the horn button you'll be greeted with a healthy blast of noise. It's not ear-splittingly loud, but it is certainly a vast improvement on the standard item.

So that's it. It really is fairly simple. If you're keen to perform this upgrade, but are too daunted to tackle the project on your own, I'm sure a local auto electrician or maybe one of our Club sponsors would be able to help for a small fee.

If you have a handy hint to pass on to your fellow MX-5ers, or are doing some modifications to your car that others might find interesting, please send your report and photographs to editor@mx5vic.org.au ***and share it with the rest of us through MX-TRA.***