



## NISTune Soldering Guide - Draft C

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# INTRODUCTION

Welcome to NIStune.

The NIStune hardware and software solution provides a means for the car enthusiast to retune their vehicle whilst retaining their factory ECU and its default programming.

This solution provides many advantages over aftermarket ECUs in that the

- Factory default tuning is maintained once the NIStune board is installed. Upon installation of the board, vehicle will be operational as usual.
- Additional tuning can then be made against the factory maps for modifications made to the vehicle. There is no need to tune the car to get it running from scratch, reducing time and costs of tuning required on dyno.
- There is no need for wiring loom modifications.

NIStune provides realtime tuning and maptracing. It provides the ability to make changes on the fly to the factory ECU and then the desired results are achieved, save these permanently in non-volatile memory on the programmable board.

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## **Soldering/De-soldering equipment**

If you are going to be modifying ECU's on a regular basis then there's no way around this. You will need to invest some decent money in quality equipment. You can get away with the cheap stuff for a while. But once you use some quality equipment you will realise what I'm on about.

Remember that the reliability of your car (or even worse, somebody else's) is relying on the quality of your work. If you are not prepared to buy decent equipment then get the job done by somebody who is.

I've been fortunate enough to use the good gear at work for years. I started modifying ECU's at work. But after awhile I realised that I'd have to bight the bullet and buy some decent solder/desolder equipment for home. So if you've started looking at buying some professional equipment and nearly died when you saw the prices - I feel your pain!

## Soldering irons

You can now get quality stuff at reasonable prices. As a minimum you want a temperature controlled solder station. Forget the "stick irons" that just plug into the mains and only come in one tip size. My favourite "real iron" is the Hakko 936. Hakko make good stuff. The 936 has various handpieces and a plethora of different tips available. The tips are excellent quality - you can leave the iron on for extended periods without fear of damaging the tinning. And they heat up REALLY fast. Last time I checked they were around the \$AU150 mark. Money well spent.



However there are cheaper temperature controlled irons also available, but generally take longer to heat up and tips are not as fine. We have listed below some of the other irons also available.

[www.dicksmithelectronics.com.au](http://www.dicksmithelectronics.com.au)

T-2000 \$49.99 / T-2200 \$69.99

This is the model Matt initially used but he prefers his Hakko for the majority of his work.



Similarly there is the Micron available from Altronics which comes with three tips

[www.altronics.com.au](http://www.altronics.com.au)

T-2443 \$130.35 (Special currently \$99)



## ***De-soldering irons***

This is where the wallet-hemorrhage happens. Forget the plastic spring-loaded things you can buy. They will cost you ECU's in the long run. Once again, you need something with proper temperature control. Most of them are basically a soldering iron with a hole up the middle and some sort of vacuum source to suck the solder up. The Hakko units that I like so much work great - the 470/474 is a great unit. But costs \$AU800 - \$AU1000.

Another option is an all-in-one handheld unit from Denon called the SC7000. I finished up with one of these and it has served me well. They are around the \$AU400 - \$AU500 mark. These are both professional quality units so they have good spares backup. This also means that you may pick up a used unit for heaps less money and know that it can be repaired if necessary.



**Hakko 470/474**



**Denon SC7000**

Another cheaper option which Matt uses is the Micron T1260 available from Altronics. This is capable of working even Type 4 capable ECUs desoldering the smaller 1.78mm pitch pads.

[www.altronics.com.au](http://www.altronics.com.au)

Micron T-1260 \$379AUD



## ***Maintenance***

Desoldering irons are a high maintenance item. If you don't look after them they will no perform properly/at all and you'll often damage an ECU if you try to continue.

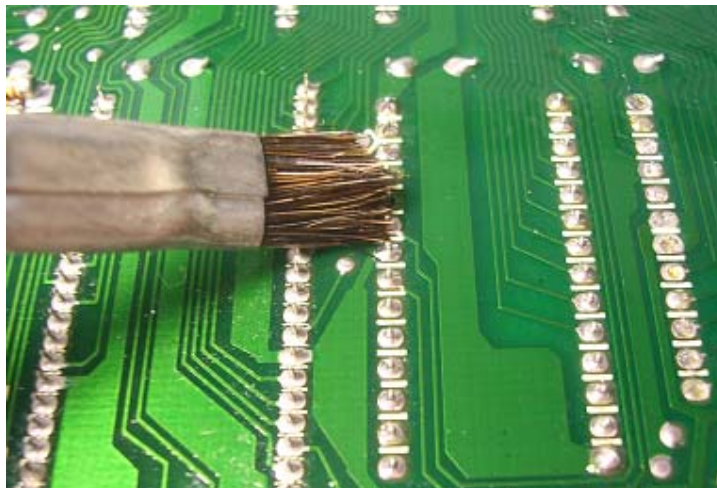
- Clean the solder chamber regularly
- Run a cleaning rod through the main solder tube as necessary
- Keep the tip tinned - before turning off make sure you apply solder to the tip
- ALWAYS clean the tip on a damp sponge just before you de-solder anything

## **Installation**

### ***Conformal coating***

ALWAYS remove conformal coating before doing any solder work. On through-hole chips remove coating on both sides of the board - use a small bristle brush and acetone.

This is important because it will stop your desoldering gun from getting clogged up with the coating, and will enable the solder to flow properly through the throughhole.





## De-soldering



Always clean the tip using a damp sponge. This may need to be done several times during the job. Feed solder in when using a de-solder gun to form a heat bridge - just like when soldering. This will help transfer heat into the joint effectively.

<pic>

Only just touch the solder pad with the tip - don't push down on the pad!  
Stir in a circular motion once solder is melted - moving the pin around to loosen it.  
Around 3 seconds of heat max - extra heat on GND/power pins.  
Check that all solder is being removed

<pic>

When removing ROM chips, give pins a push with small blade screwdriver each side to make sure they are loose.

<pic>

May need to heat Power/GND from both sides at once.

<pic>

Gently lever the chip out - don't lever it out if some pins are still soldered. You'll get the chip out no problem but you may pull the barrel out of the hole. If it's a multilayer board (most are) then you'll have an open circuit and the ECU will not operate correctly. Or at all.

Clean pads both sides with acetone and cotton bud once chip is out.



## ***Soldering***

Clean tip with wet sponge. Like the de-soldering iron, you may need to do this several times during the job.

Use 375 to 400 degrees C tip temp. No more.

Each joint should take around 1/2 a second. 2 seconds max. Extra heat on power/GND pins.

Clean joints with bristle brush and acetone.

Inspect joints.

# REVISION HISTORY

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