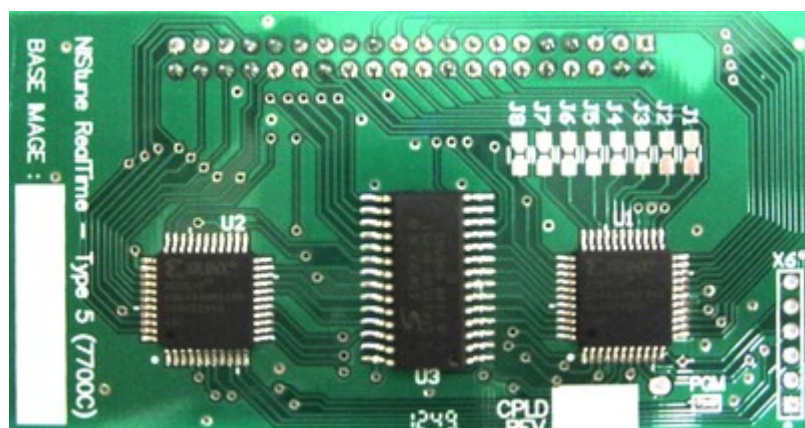




TYPE #5



Hardware Installation – Nistune Type 5 boards Version 1.0

<i>Model</i>	<i>Name</i>	<i>Engine</i>	<i>ECU Series</i>
S14	Silvia	SR20DE	65F00 (MT only)
K11	Micra	CG10DE/CG13DE	0U0xx, 44Bxx, 71Bxx, 72Bxx, 74Bxx, 99Bxx
B14	Sentra	GA16DE	0M2xx
N14	Pulsar	GA16DE	65Cxx
Z10	Cube	CG13DE	N/A Contact Nistune

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.

Nistune also provides data logging and playback facilities using the Nissan Consult Port. Consult interfaces are purchased separately. Nistune software also provides a user friendly responsive graphical interface to perform modifications.

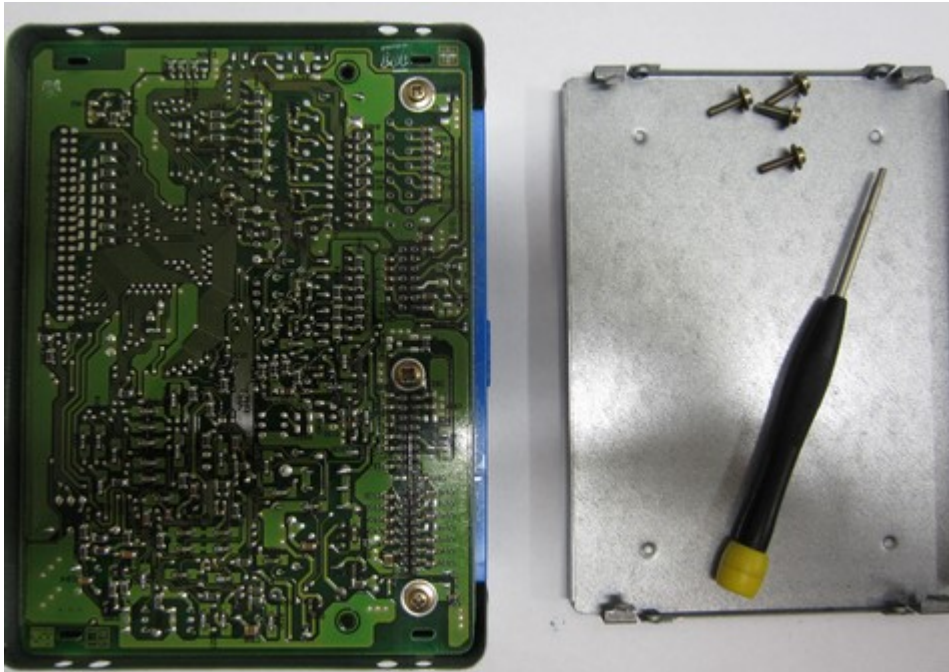
Contained in this manual are the instructions for installing a Nistune board into the Mitsubishi 7700 series consult enabled series of ECUs.

TABLE OF CONTENTS

1.	FITTING HEADER TO ECU.....	3
•	Remove front and rear covers from the ECU	3
•	Remove conformal coating from areas to be soldered.....	4
•	Remove solder from the pads.....	5
•	Check that holes are clear	5
•	Fit the 20+20 header	6
2.	CHANGE ECU JUMPER SETTINGS	7
•	K11 Micra CG10/CG13 ECU	8
•	S14 SR20DE Silvia / N15 GA16DE Pulsar / B14 Sentra GA16DE ECU.....	9
•	N14 GA16DE Pulsar ECU.....	10
4.	FIT BOARD TO ECU.....	11
5.	FIT PACKING	11
	Revision History.....	12

1. FITTING HEADER TO ECU

- Remove front and rear covers from the ECU



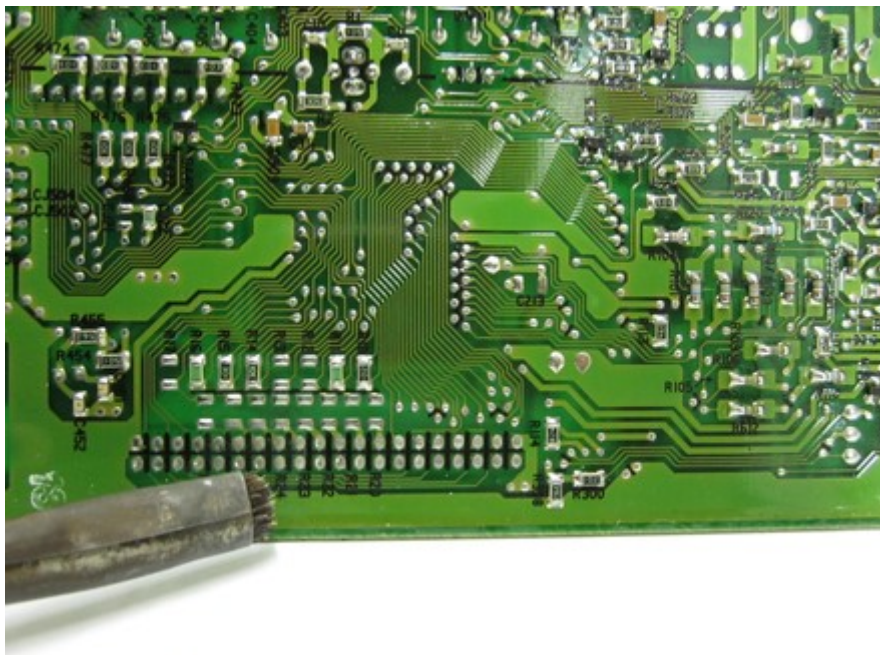
There are four screws on the sides which need removal in order to dislodge the back plate.

Tip : The screws that secure the covers will have thread locking compound applied from factory. This stuff really hangs on so make sure you use a driver with a tip which fits the screw head properly. Some Bosch ECUs will use star shaped screws which will require the appropriate tool such as pictured in order to remove the screws. These screw drivers are available in specialist electronics shops.



Once the rear cover is removed, unscrew the top screw to remove the top cover.

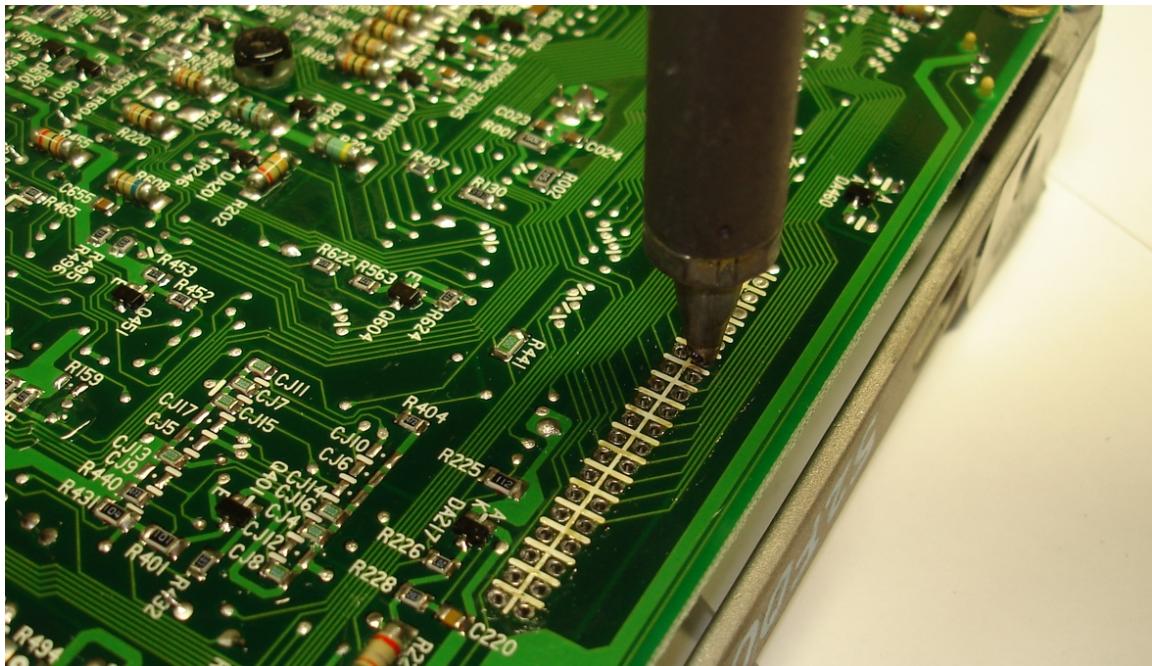
- **Remove conformal coating from areas to be soldered**



Using solvent or contact cleaner remove the coating around the 20+20 header area on both sides of the board and around the SMD jumpers.

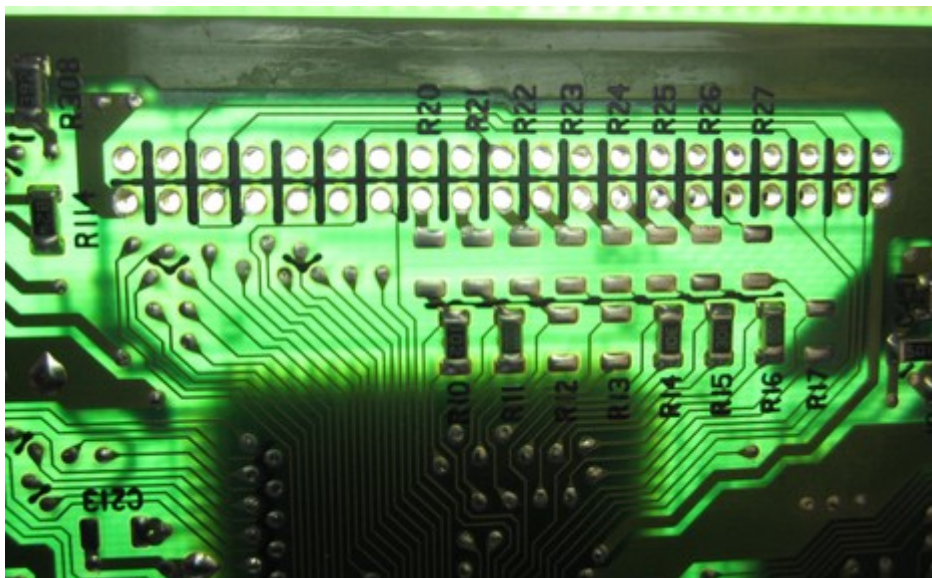
Jumpers which are to be cleaned are marked R10-R17 and R20-R27. Note that this only applies to some ECUs (see later in the document for details on the jumpers you will be moving).

- Remove solder from the pads



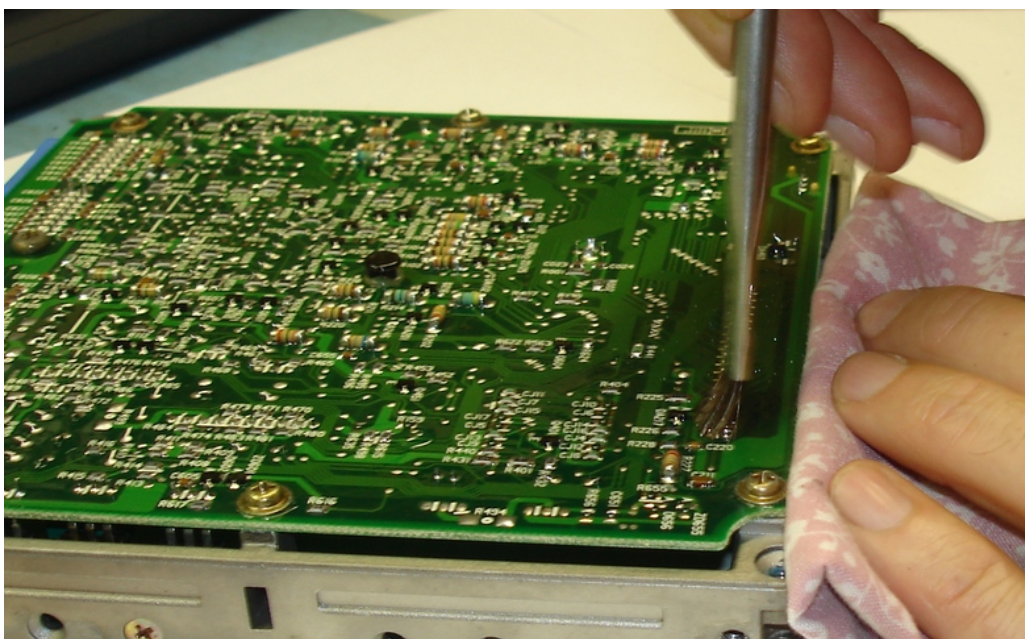
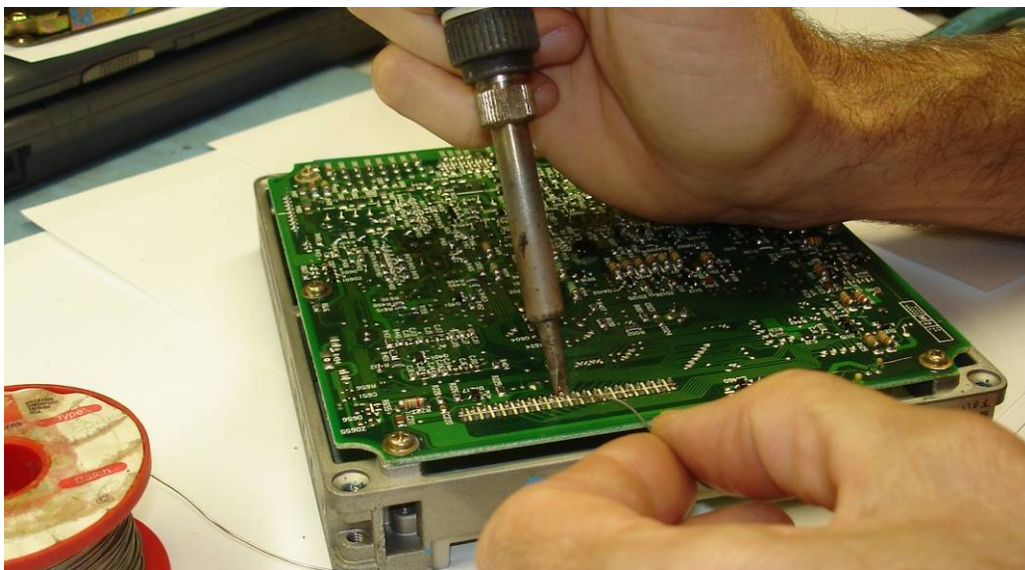
Tip : Be careful here. Don't attempt this unless you have the right equipment. It's quite easy to damage the board. Don't overheat the pads (about a second per pad is a safe maximum) or damage can easily result. If in doubt get somebody with the right equipment to do it for you. It's a 5 minute job so it shouldn't cost much.

- Check that holes are clear



Hold the ECU up to the light and check that all the holes are clear. If any holes still have solder in them do not try to clear them out using a drill bit! The boards are multi-layer and it is quite likely that an internal connection will be damaged.

- Fit the 20+20 header



Clean off flux with acetone or similar solvent. Inspect solder joints.

2. CHANGE ECU JUMPER SETTINGS

Jumpers are used on the ECU to tell the microcontroller to read from either factory code (located in a memory chip on the ECU main board) or from the Nistune daughterboard. You will need to move the jumper on the ECU so that it will read from the Nistune board

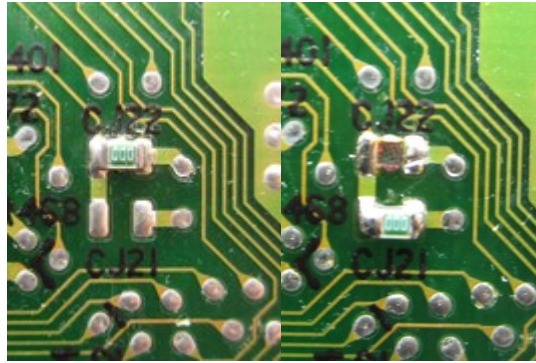
The easiest way to move the jumper is to melt the solder on both ends at once by using the desoldering iron one end and soldering iron the other. Use tweezers to remove the jumper and reposition to where required as per instructions below.



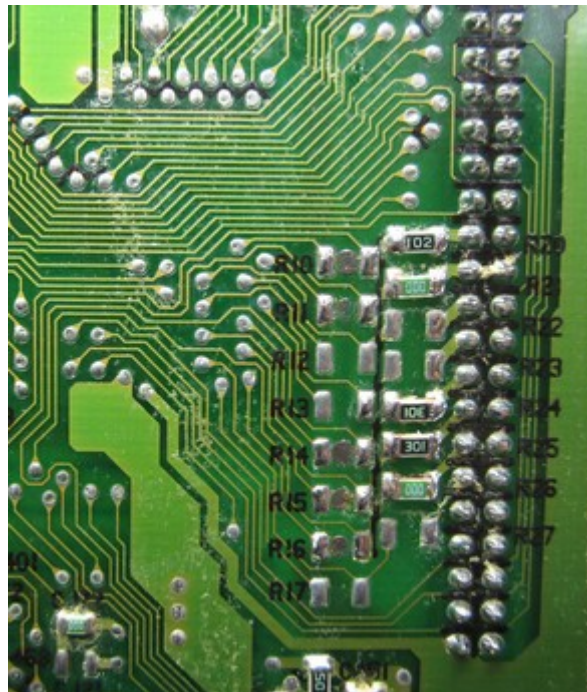
Jumper positions will vary depending which ECU you are fitting the Nistune Type 5 board to. The following sections indicate which jumpers to fit according to ECU type.

- **K11 Micra CG10/CG13 ECU**

Move jumper CJ22 to CJ21



Move SMD resistors R10-R17 across to R20-R27. Note that not all positions have resistors.
Notes: R20 = 102, R21 = 000, R22 = Open, R23 = Open, R24 = 301, R25 = 301, R26 = 000, R27 = Open

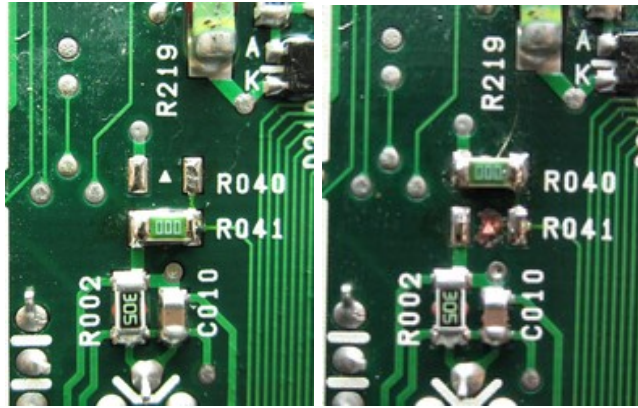


Note that the Type 5 board requires all resistor positions R1-R8 on the board to be connected using solder (blob each position)

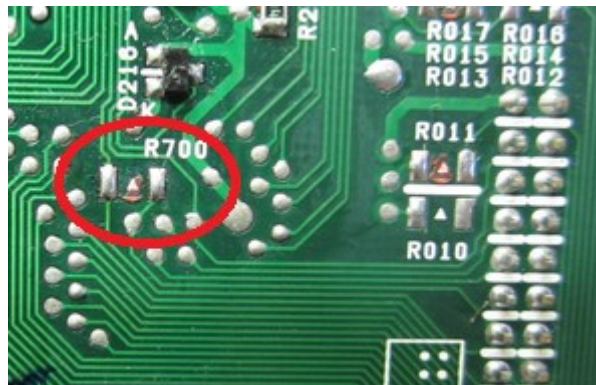


- **S14 SR20DE Silvia (65F00 MT only), N15 GA16DE Pulsar/Sunny, B14 Sentra GA16DE ECU**

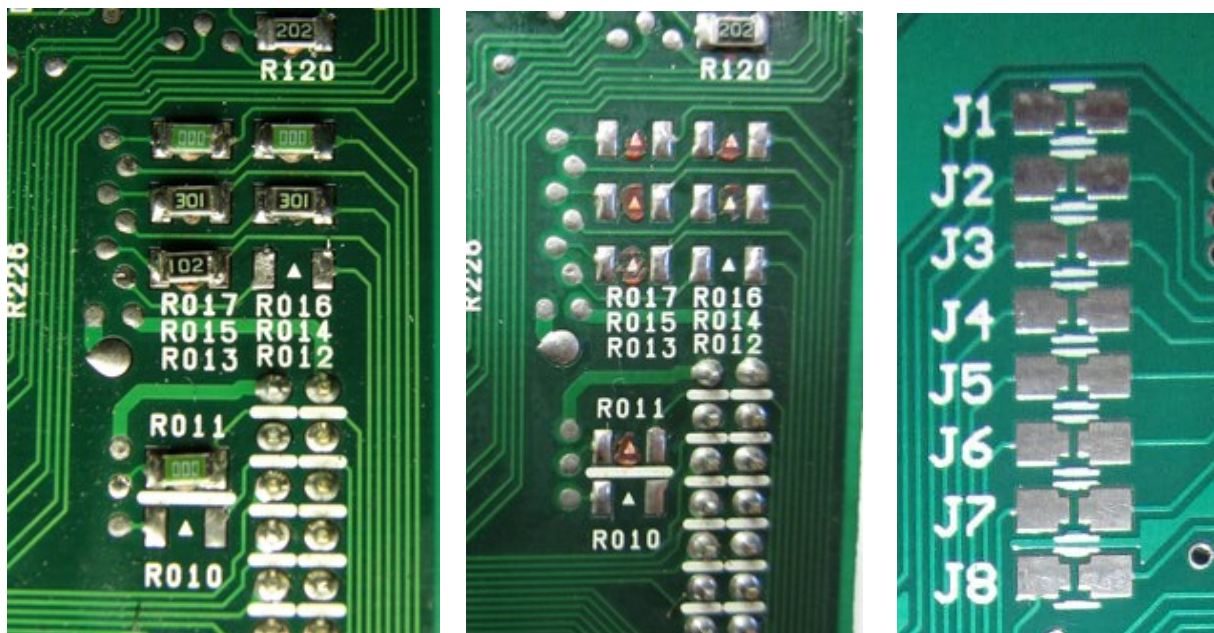
Move jumper R041 to R040



Remove jumper R700



Move resistors R010 - R017 from ECU to J1-J8 on the Nistune Type 5 board using a soldering iron and tweezers. Make sure both ends are soldered when putting on the Nistune board. Use flux to assist solder flow with the SMD resistors.



Notes:

S14 SR20DE (65F00 MT model only, 65F10 AT does not support this board)

J1 = Open, J2 = 000, J3 = Open, J4 = 102, J5 = 301, J6 = 301, J7 = 000, J8 = 000

N15 GA16DE, B14 SR20DE

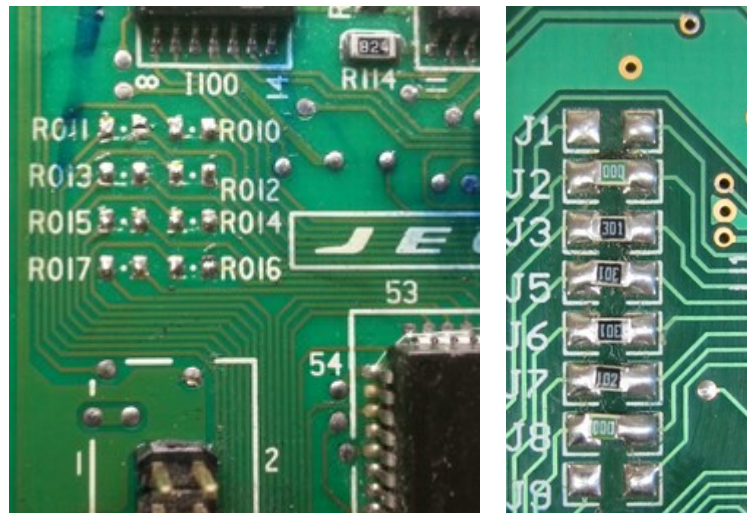
J1 = Open, J2 = 000, J3 = 301, J4 = 102, J5 = 301, J6 = Open, J7 = 000, J8 = 000

- **N14 GA16DE Pulsar/Sunny, B13 GA16DE Sentra ECU**

Move jumpers J023 to J020 and J022 to J021



Top side of the ECU move SMD resistors from R011 - R016 to J1 - J8 on the Nistune Type 5 board



N14 GA16DE

J1 = Open, J2 = 000, J3 = 301, J4 = 301, J5 = 301, J6 = 301, J7 = 000, J8 = Open

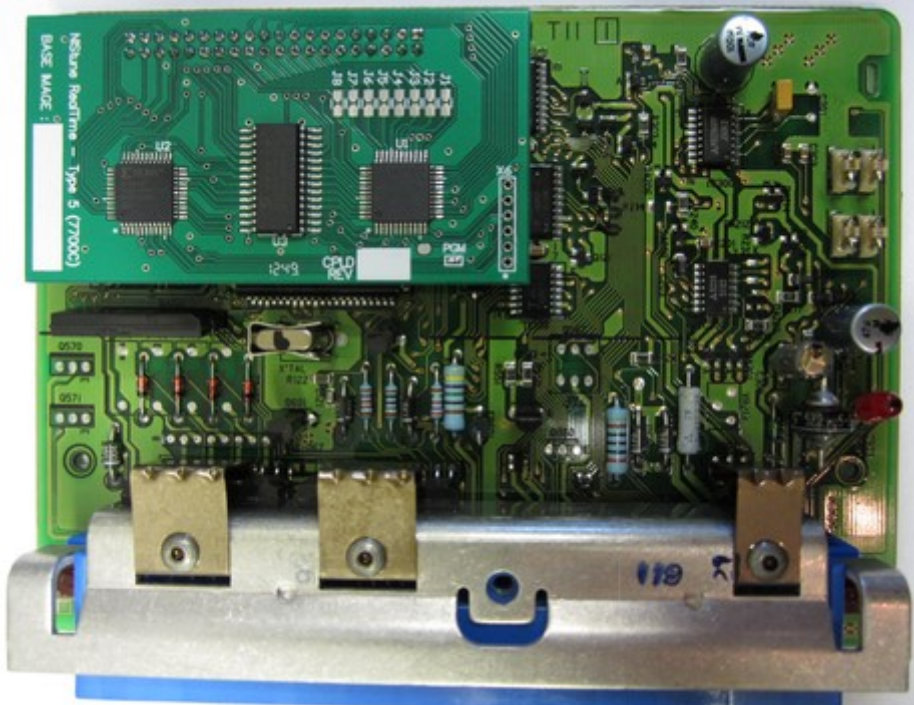
B13 GA16DE

J1 = 000, J2 = 000, J3 = 301, J4 = Open, J5 = Open, J6 = 102, J7 = 000, J8 = Open

4. FIT BOARD TO ECU

Make sure that the socket on the board lines up correctly with the header pins and insert the board.

For N14/B13 GA16DE ECUs you will need to reposition the crystal by extending the legs to the crystal and its shielding and fold it over. Insulate the crystal from other components by wrapping the shielding with electrical tape.



5. FIT PACKING

Remove the self adhesive backing from the foam rubber strip and fit it to the lid so that the board will be held firmly in position once the lid is fitted. This is best done by sitting the rubber strip (sticky side up) on top of the Simtek chip which is in the middle of the board, and then carefully fitting the lid.



Congratulations – you now have a fully tuneable ECU!

Revision History

DATE	VERSION	DESCRIPTION	AUTHOR
Feb13	1.0	Initial	MB
Mar14	1.1	Add B13 GA16DE, Fix N14 GA16DE	MB

TERMS AND CONDITIONS

Nistune Developments has performed necessary measures to ensure that the Nistune software and boards are built to high standards. By using this product you agree to the following terms:

IMPORTANT - READ CAREFULLY: This License Agreement (Agreement) is a legal agreement between you and Nistune Developments for the software product Nistune (Software) and any computer chips, circuit boards or any other physical carrier or medium on which the Software is loaded or programmed (Hardware). The Software includes computer software and programs, printed materials and electronic documentation. By installing the Software and Hardware, copying or any other use of the Software, you agree to the terms of this Agreement. If you do not agree to the terms of this Agreement, you are not allowed to use or copy the Software.

1. GRANT OF LICENSE

Individual User Licence:

If you purchase an Individual User Licence, you are granted a licence as a single user of the Software And are authorised to install and use it on up to five (5) vehicles, but you may not install the Software for any other person, and may only make a single backup copy of the Software.

Commercial User Licence:

If you purchase a Commercial User Licence, you are granted a licence as a commercial user of the Software And are authorised to install and use it on an unlimited number of vehicles, but you may not install the Software for any other person, unless you have a written Reseller Agreement with Nistune Developments, and may only make a single backup copy of the Software.

Use of the software by both Individual and Commercial Users:

The Software may be installed on multiple computers belonging to you for so long as those machines remain your property. Regardless of other rights, the author of the software product is allowed to terminate this license agreement if you offend against the terms and conditions of this agreement. If so, you will have to remove and destroy all copies of the Software and its components.

2. INTELLECTUAL PROPERTY RIGHTS

You may not copy, modify or distribute the Software except under the terms given in this Agreement. You may not sublicense the Software or in any way place it under any other licence than this one. The Software is protected by the intellectual property laws of Australia and international intellectual property treaties. You acknowledge that no intellectual property in the Software passes or accrues to or vests in you and that your rights in the software are limited to such use as is specified in this Agreement.

3. TITLE AND RISK

At all times, title in the Software remains with Nistune Developments. Risk in the Software and Hardware passes to you upon despatch to you.

4. TERM

Your licence is effective upon your acceptance of this agreement and installing the Software and Hardware. This agreement will continue indefinitely unless terminated by reason of your breach of this Agreement.

5. DECOMPILING

You agree not to reverse engineer or allow a third party to reverse engineer the Software, change, split, decompile, disassemble or translate the Software in part or in whole, without prior written consent from Nistune Developments, or except as permitted under applicable law.

6. RESALE

Resale by Individual Users:

A holder of an Individual User Licence may only sell that licence to a third party if:

- a. Nistune Developments consents to the sale in writing; and
- b. the third party agrees in writing to be bound by identical obligations to those in this Agreement.

If you sell your Individual User Licence, you are no longer authorised to use the Software. Resale of your Individual User Licence does not enable the Software to be used on more than five vehicles in total.

Resale by Commercial Users

If you hold a Commercial User Licence, the Software may only be resold by you if you have a current written Resellers Agreement with Nistune Developments. Only Commercial User Licence holders may obtain Resellers Agreements. In reselling the Software, you agree that:

- a. you will ensure that any person you sell the Software to (Your Clients) execute an agreement in favour of Nistune Developments in similar form to this Agreement, obliging Your Clients to observe like obligations to those of an Individual User under this Agreement; and
- b. You agree to indemnify us against all claims, losses, costs, liability and damages which we may incur, whether directly or indirectly, in connection with or arising from:
 - i. any claim whatsoever brought against us by Your Clients relating to their use of the Software;
 - ii. the use of the Software by you or Your Clients;
 - iii. the unauthorised replication of the Software or onsale of the Software by Your Clients;
 - iv. your installation of the Software on Your Client's computer;
- v. your breach, our Your Clients' breach, of this Agreement; or
- vi. any other action by Your Clients related to their purchase of the Software from you.

For the avoidance of doubt, this indemnity shall extend (without limitation) to any third party claims against us, any loss or damage to property, and any injury to, or death of, any person.

7. INDEMNITY

You indemnify us against all claims, losses, costs, liability and damages which we may incur, whether directly or indirectly, in connection with or arising from:

any negligent act, omission or wilful misconduct by you or your officers, employees, subcontractors or agents in the use of the Software or Hardware;

any defect in your installation of the Software or Hardware, or your use of the Software or Hardware; or

your breach of the Terms.

For the avoidance of doubt, this indemnity shall extend (without limitation) to any third party claims against us, any loss or damage to property, and any injury to, or death of, any person.

8. UPDATES

Nistune Developments may, from time to time, revise or update the Software or Hardware. In so doing, Nistune Developments incurs no obligation to furnish such revision or updates to you.

9. WARRANTY

The author of this Software has verified as best as possible that the main features and functions of the Software and Hardware work as described when used normally on compatible equipment. Due to the complexity of computer software, we can not guarantee that the software or documents do not contain errors or works without intermissions on any equipment and software configuration. To the extent permitted by law and except as set out in this Agreement, all express or implied warranties, guarantees and conditions relating to the Software and Hardware, however arising, are excluded.

10. DISCLAIMER OF LIABILITY

NO LIABILITY FOR CONSEQUENTIAL DAMAGES. IN NO EVENT SHALL NISTUNE DEVELOPMENTS BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT, OR CONSEQUENTIAL DAMAGES WHATSOEVER (INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF BUSINESS PROFITS, BUSINESS INTERRUPTION, LOSS OF BUSINESS INFORMATION, OR ANY OTHER PECUNIARY LOSS) ARISING OUT OF THE USE OF OR INABILITY TO USE THE SOFTWARE OR HARDWARE, EVEN IF NISTUNE DEVELOPMENTS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

IN NO EVENT WILL NISTUNE DEVELOPMENTS BE LIABLE FOR ANY COMPUTER DAMAGE, VEHICLE DAMAGE, PERSONAL INJURY, DEATH, FINES, LAWSUITS, PROSECUTION, LOST PROFITS, LOST DATA, INCORRECT DATA, ENVIRONMENTAL DAMAGE, GOVERNMENT, LAW AND REGULATORY VIOLATIONS OR ANY OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES THAT RESULT FROM USE OR INABILITY TO USE THE SOFTWARE OR HARDWARE

THE SOFTWARE AND HARDWARE IS NOT INTENDED FOR USE IN OPERATION OF MOTOR VEHICLES AND/OR MACHINES WHERE THE USE, FAILURE OR MISUSE OF THE SOFTWARE OR HARDWARE COULD LEAD TO DEATH, PERSONAL INJURY OR PHYSICAL OR ENVIRONMENTAL DAMAGE AND OR VIOLATE ANY ENVIRONMENTAL, SAFETY, TRANSPORTATION OR OTHER LAWS OR REGULATIONS.

IT IS THE USER'S RESPONSIBILITY TO OBTAIN ANY CERTIFICATION, RECERTIFICATION OR NEW CLASSIFICATIONS PERTAINING TO USE OF THE SOFTWARE AND HARDWARE. IF ANY WARRANTY OR CONDITION IS IMPLIED BY THE TRADE PRACTICES ACT 1974 (CTH) OR OTHER RELEVANT LEGISLATION WHICH MAY NOT BE EXCLUDED THEN OUR LIABILITY OF ANY BREACH OF SUCH AN IMPLIED WARRANTY IS LIMITED SOLELY TO THE RESUPPLY OF THE RELEVANT GOOD OR SERVICE OR PAYMENT TO YOU OF THE COST OF HAVING THE GOOD OR SERVICE PROVIDED AGAIN (AT OUR OPTION) . SOFTWARE AND HARDWARE INSTALLATION REMAINS THE SOLE RESPONSIBILITY OF THE VEHICLE OWNER.

11. GENERAL

This License is personal between you and Nistune Developments. It is not transferable except in accordance with this Agreement, and any attempt by you to rent, lease, sublicense, assign or transfer any of the rights, duties or obligations hereunder, is void. This Agreement and the conduct of the parties hereto shall be governed by the laws of South Australia.

YOU ACKNOWLEDGE THAT YOU HAVE READ THIS AGREEMENT, UNDERSTAND IT AND AGREE TO BE BOUND BY ITS TERMS AND CONDITIONS. YOU FURTHER AGREE THAT IT IS THE COMPLETE AND EXCLUSIVE STATEMENT OF THE AGREEMENT BETWEEN YOU AND NISTUNE DEVELOPMENTS WHICH SUPERSEDES ANY PROPOSAL OR PRIOR AGREEMENT, ORAL OR WRITTEN, AND ANY OTHER COMMUNICATIONS BETWEEN YOU AND NISTUNE DEVELOPMENTS RELATING TO THE SOFTWARE AND HARDWARE.