

Revo **sps3** and **select plus** USER GUIDE. V0506.

The following guide will show you not only how to use your **sps3** or **select plus** switch, but how to set you car up most efficiently with them...

sps3 Operation

There are two input selectors on the SPS3. The selector on the left [a] is for mode selection, the selector on the right [b] is for range selection [vario]. The mode selector can work alone or in tandem with the vario selector.

Vario allows you to make incremental changes* to boost, fueling and ignition timing with regard to desired performance or fuel octane being used.

To make adjustments follow the steps outlined below.

- 1] Select the desired mode to be changed on input selector [a]
- 2] Set range selector knob [b] to the desired boost or ignition level.
- 3] Locate the OBD2 port on the car
- 4] Turn the key on.
- 5] Insert the SPS3 into OBD2 port.
- 6] Wait for a single beep to sound [beep is repeated while SPS is in port].
- 7] Remove the SPS3 from the port.
- 8] Repeat as necessary to make multiple changes.
- 9] Start the car.

Quick reference guide

Mode 0: Off, SPS3 is inactive

Mode1: Stock program enabled

Mode2: Performance mode enabled

Mode3: Boost vario

0=Minimum boost

6=Default performance boost setting

9=Maximum boost settings

Mode4: Air/Fuel vario*

0=Minimum performance setting

9=Maximum performance settin

Mode5: Timing vario

0=Stock timing

3-5=recommended for 95ron fuel

5-7=recommended for 97/98ron fuel

7-9=Premium fuel with octane booster or Unleaded race fuel

Mode8: Anti theft on

Engne will not run

Mode9: Anti theft off

Engine will run as normal

Troubleshooting

SPS 3 does not beep:

Make sure the the ignition is on and that the SPS3 is fully seated in the OBD2 port.

select plus Operation

The Revo Select Plus device is supplied with two default performance settings that **cannot** be modified. The two default settings are as follows:

Performance 1	91/95(MON+RON)
Performance 2	93/98(MON+RON)

In addition there is also three user performance options (A, B & C) which one can pre-load with predetermined values.

Right out of the box the SPS select can be connected to any MED9 ECU sporting Revo Performance software*.

*When using the Revo Select Plus device as a stand alone unit, it is not recommended to select presets A, B or C until their values have been verified using the SPS Select software supplied with the product

Part 1.

Changing the ECU Settings using the Select Plus device and associated software with Direct PC Connection (OBDII to PC):

A direct connection to the ECU can be achieved for the purpose of altering the ECU settings manually by connecting the Revo Select Plus device to a Laptop or desktop PC via the USB cable.

1. When using a laptop, ensure the PC has been fully charged.
2. Switch on the PC, enter the windows operating system.
3. Set the rotary switch on the Revo Select device to position 0. (This allows direct switching from the PC and also setting up the Revo Select device for stand alone switching).
4. Connect the Revo Select device to the PC using the supplied USB cable.
5. Start the 'Revo Select Plus' application.
6. Turn 'on' the vehicle ignition.
7. Connect the Revo Select device to the OBDII port.
8. On the 'Revo Select Plus' application 'welcome' screen (Fig1.) select **"Adjust Revo Software"**. This will take a few seconds and then the **'ECU Settings Control'** window appears (Fig 2.)



Fig 1.

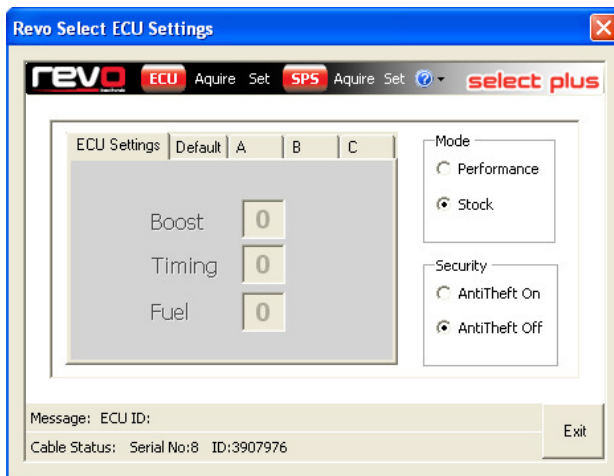
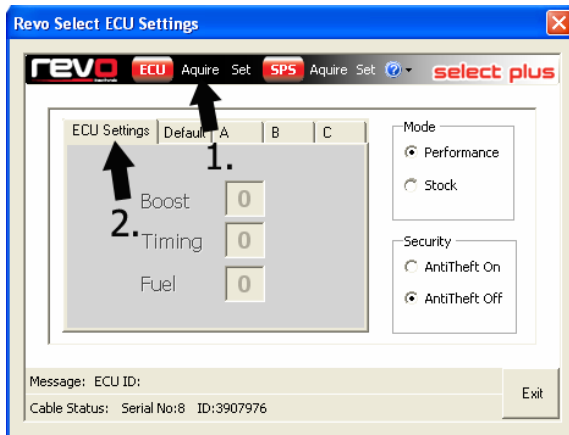


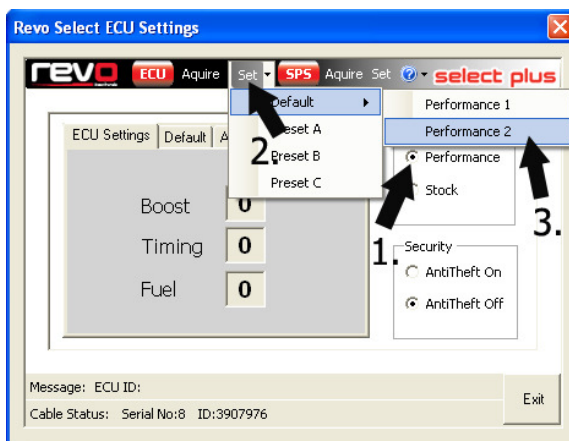
Fig 2.

9.0 To determine the current ECU settings: click **'Acquire'** (1) in the ECU area on the menu bar. The current ECU settings will be displayed on the ECU Settings Tab (2).

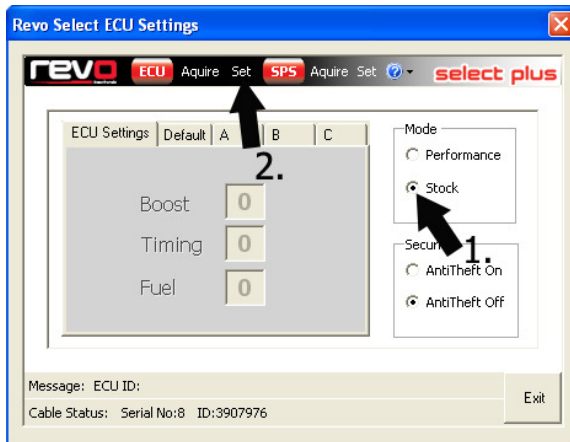


9.1 To change the Performance Settings: Make sure the mode is set to ‘Performance’ (1). Click on the ‘Set’ button in the ECU area of the menu bar (2) and a dropdown menu will appear giving you the option for either one of the two defaults or three presets (, A, B or C). Example here shows the ECU being set to the default Performance program 2 for premium quality fuel. By clicking the setting (3), the change request will be sent to the ECU, followed by a dialog box acknowledging the change has been made.

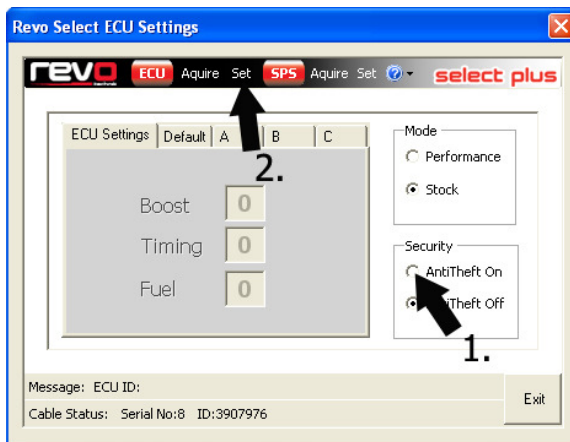
NOTE: To make a direct custom setting, click on Tab A, set the required values in the boxes for Boost, Timing & Fuel and proceed with point 9.1 clicking on Preset A.



9.2 To switch back to Stock: Make sure the mode is set to ‘Stock’ (1) then simply click ‘Set’ (2) in the ECU area on the menu bar. In order to switch back to performance, follow step 9.1



9.3 Activating Antitheft: In the Security box, make sure that the ‘**Anti Theft On**’ button (1) has been ticked and then simply press ‘**Set**’ in the ECU area (2) on the menu bar. To de-activate the Anti-Theft, tick ‘**Anti Theft off**’ in the Security box and then click on the ‘**Set**’ button in the ECU area of the menu bar. **Note:** When switching the Antitheft off and clicking on the ‘**Set**’ button, you will be requested to opt for one of the five performance settings to complete the operation as per 9.1.



10 When you have completed making any changes, exit the current screen, close the application and disconnect the SPS Select unit from the OBDII port.

11 That's it your done! Simple and painless the REVO software on your ECU has now been updated to your preferences. You can now start the engine and drive the vehicle.

Part 2.

Programming the Preset Channels in the Device.

1. Connect the device to your PC via the USB cable (You do not need to connect the device to the car as the USB will power the device allowing you to program the presets A, B & C.

2. Set the rotary switch on the Revo Select device to position 0. (Communication channel)
3. Open up the Revo select application.
4. On the 'Revo Select Plus' application 'welcome' screen (**Fig1.**) select '**Adjust Revo Software**'. This will take a few seconds and then the '**ECU Settings Control**' window appears (**Fig 2.**)



Fig 1.

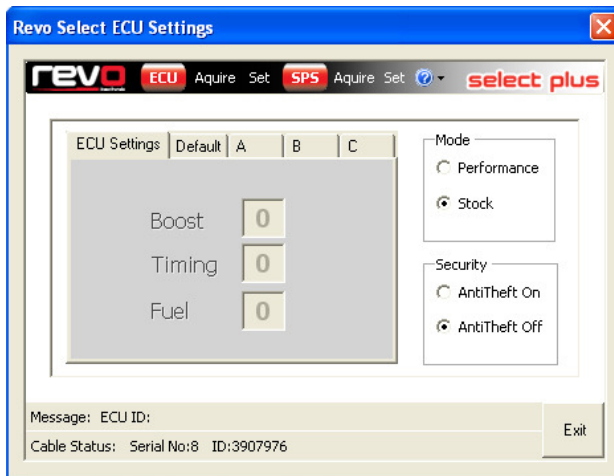
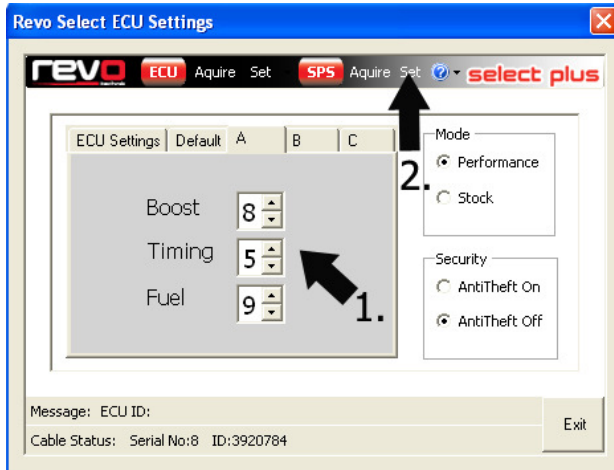


Fig 2.

5. Clicking on the '**Performance**' button in the '**Mode**' section (1) will automatically collect the Preset values previously programmed to the device. Click on the individual tabs, A, B & C to view the preset values.
6. To change the values in the preset channels of the switch, simply click on the individual tabs (A, B, & C) and adjust the values to the required settings. (Example below shows Preset A being programmed for Boost 8, Timing 5 and fuel 9).

7. With the values changed (1), click on the 'Set' button (2) in the SPS area on the menu bar. The values are now programmed to the device. You can then repeat the same for channels B & C.



If required you can click on the 'Acquire' button* in the SPS area on the task bar to verify the switch setting in Channels A, B & C. *Performance Mode must be selected to carryout this function.

Part 3.

Changing the ECU Settings using the Select Plus device as stand alone:

Note* Before selecting presets A, B or C, please verify their values using the SPS Select software supplied with the product.

2. Prior to plugging the device into the OBDII port the rotary switch should be moved to the desired setting. i.e. stock, performance 1, 2, Antitheft On or off or any of the three presets.
3. Switch the Vehicle Ignition on.
4. Insert the Revo Select device into the OBDII port. The unit once connected, will derive power from the OBDII port.
5. The Revo Select device will write the new values to the Revo software installed on the ECU and will give off an audible bleep indicating it has completed the operation.
6. The Revo Select device can now be removed from the ECU.
7. Cycle the ignition off and on and then start the engine.
8. You are now ready to drive the vehicle.

Vario Range Guidelines.

Boost:

Range 0	Valet Mode
Range 1	Stock Boost
Range 6	Performance Boost
Range 9	Aggressive Boost

Timing Adjustment:

Range 0-3	91(US)/95(Euro) Octane Fuel
Range 4-6	93(US)/98(Euro) Octane Fuel
Range 7-9	Unleaded Race Fuel over 100 Octane

Fuel Adjustment:

Range 0	Stock Air-Fuel Ratio (AFR)
Range 9	Performance Air-Fuel Ratio (AFR)

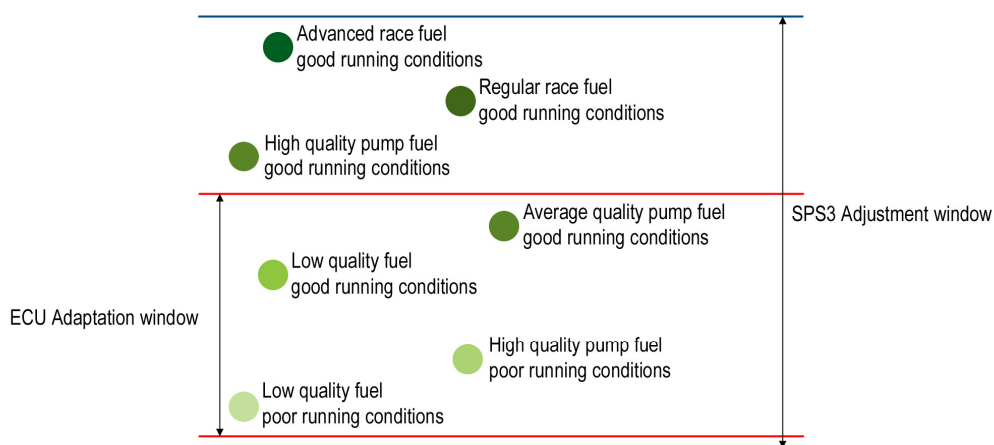
Disclaimer:

By using the advanced user settings on the Revo Select Plus, the user is responsible for having intimate knowledge of the vehicle being tuned and the principles of tuning. Certain situations can lead to conditions that are outside of the safe operating range tested by Revo engineers. The user acknowledges that Revo cannot be held responsible for the Performance and reliability of tuning that has been altered via the Revo Select Plus advanced user program.

For further help please refer to the technical help and FAQ sections on www.revotechnik.com, or see your local revo dealer.

Tuning guidelines (using the variable settings)

The **sps3** and **select plus** allows you to cater for differing environmental conditions and fuel quality. The Engine Control Unit caters for these differences to a certain point, utilising the built in adaptation and knock control. However there are limits to the amount of adjustment in an ECU. Standard programs and adaptation cannot cater for such a vast array of markets from higher altitude, lower air density areas with poor quality fuel to high air density areas with premium quality fuel. The SPS3 lets you work outside of these parameters to set the car to its optimum levels. The following diagram shows this in more detail:



The above depicts areas within adaptation levels and the SPS3 adjustment levels where a car would be running in different conditions with different quality fuels. Due to the need to cater for those markets with poorer running conditions that aren't privileged with high quality fuel, stock programs aren't always as advanced as they could be... standard adaptation doesn't cater for the better conditions and fuel at optimum levels.

The **sps3** and **select plus** give the user a large degree of control over the amount of boost and ignition timing advance requested by the engine ECU. The fact that these amounts of boost and timing are requested does not necessarily mean they are actually achieved. Only if the specified tolerances of a series of sensors are met will the engine produce the requested values.

Some of these sensors are listed below.

- **MAF** – (mass air flow aka air mass meter) provides the ECU with the amount of air being ingested into the engine.
- **Boost sensor** – provides the ECU with the actual boost pressure in the intake track.
- **AIT** – (air intake temperature) provides the ECU with the temperature of the air after the intercooler. Needed for calculation of air density.

- **Lambda sensor** – calculates the air/fuel ratio by measuring the unburned portion of the exhaust. Also used to calculate EGT (exhaust gas temperature).
- **Knock sensor** – Senses certain harmonic frequencies that occur when approaching and reaching pre-detonation in the combustion process.

These sensors and their ability to override the requested boost and timing levels, are essential to the safety and longevity of your engine. If one or more of these sensors starts reading a value outside of it's specified window the ECU will limit the amount of boost and/or timing (Pull Back).

When making changes to the boost and timing settings of your engine there is no one setting that will give you the best performance in every situation. Many external factors influence the way your engine performs. In particular the ambient temperature will have a noticeable effect. Put simply, the warmer the weather, the lower the power. This is because warmer air has a lower density and so burns less efficiently than cooler air. Other factors that play a major part in power production include the quality of the fuel being used, engine intake temperature and to a lesser extent altitude.

Knowing the values that engine sensors are 'seeing' and knowing something about what they mean will enable you to make calculated and worthwhile changes to boost and timing. Setting the boost and timing to their maximum requested settings and expecting the engine to deliver these levels when the external conditions are less than perfect is unrealistic.

For example: On a hot summer day the air being ingested by your engine will be less dense than on a winter day. This being the case the engine will not be able to mix and burn the 'thin' air and fuel mixture efficiently at high levels of boost. The ECU will calculate, by way of the AIT, that the air is of a low density and limit the boost pressure to a safe level. Not only will the boost be limited but the ECU will adapt or 'remember' that the air is 'thin' and continue to limit the boost pressure until it is told otherwise.

Data Logging

The control over boost, airfuel ratio and timing that the **sps3** and **select plus** switches allow can make huge differences to the performance of your engine. These changes can often be felt when driving the car but the only way to be sure that the changes you make are beneficial is to record and interpret the values that the engine sensors read. Diagnostic software such as VAG COM (www.ross-tech.com) gives you the ability not only to read these sensor values but to record the changing values under normal driving conditions, commonly known as 'data logging'.

The most efficient datalogs are those taken over longer 'pull' durations through the rev range. For example; a 4th gear pull from 2000rpm to 6500rpm will give more information than a 3rd or 2nd gear pull through the same rpm range as it will take longer so more information is recorded. The only problem with this is it also takes

under load for optimum running. Higher values will be seen on slight throttle overrun. Values in the range of 6-9° may be seen on occasion (mainly on over-run) but should not be sustained.

N/A Applications If the ignition settings are correct for the fuel quality and conditions the car is subjected to, then the knock values should only see up to 8-10° under load for optimum running. Higher values may be seen on slight throttle overrun. Values in the range of 10-12° may be seen on occasion (mainly on over-run) but should not be sustained.

Using a higher RON fuel is the best way to avoid knock and enables you to run higher timing values.

Specified and Actual Load : Vag Com block 114

Each column is useful to look at on this datablock:

Column 1	-	Specified Engine Load
Column 2	-	Corrected Specified Engine Load
Column 3	-	Actual Engine Load
Column 4	-	Wastegate Duty Cycle

This datablock is useful to check if you think your car is running either optimistic settings or has an issue. Values in the first three columns should all be very similar give or take

Air Intake Temperature : Vag Com block 004 Column 4

The air intake temperature will change daily according to ambient temperature and driving style. It is impossible state what the AIT should be, only that cooler is better. It is useful to monitor the AIT and get a feel for what is expected on any given day. This allows you to if nothing else account for rises and falls in performance. The higher the AIT the less timing you will be able to run.

Using SPS3 with Data Logging

Setting Timing Levels

Using VAG COM block 020 you can monitor the effects of changing timing settings in the software to better suit the fuel and conditions at any given time. Revo recommend the following settings as a guideline, but to set the car up in the most efficient setting please use the following instructions.

Revo Timing Guidelines

Timing Range (Non US)

0 = stock timing
 3-5 = 95ron fuel
 5-7 = 97/98ron fuel
 7-9 = premium fuel with octane booster
 unleaded race fuel

Timing Range (US)

0 = stock timing
 1-2 = 91 octane fuel
 3-5 = 93 octane fuel
 6-9 = premium fuel with octane or
 booster or unleaded race fuel

Using VAG-COM to Data log.

The best way to set any car up is to start at lower settings and build up to the potentially best levels.



Step 1 : Over Vag Com and select control module in the main screen.

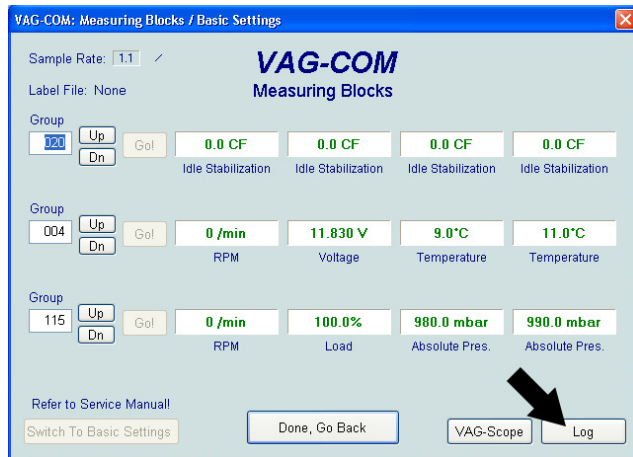
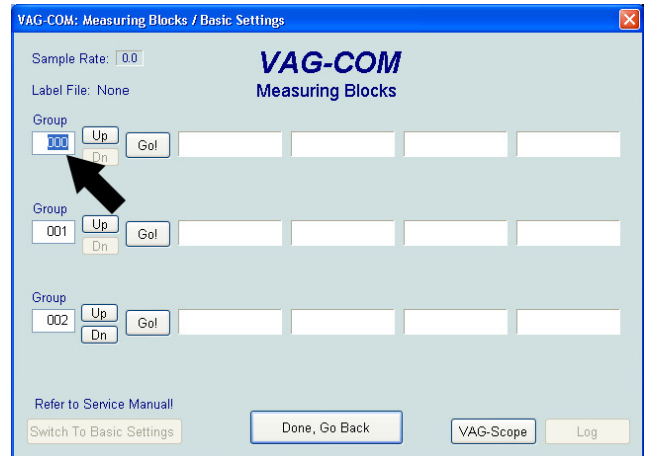


Step 2 : In the Select control module page, select 01 – Engine.



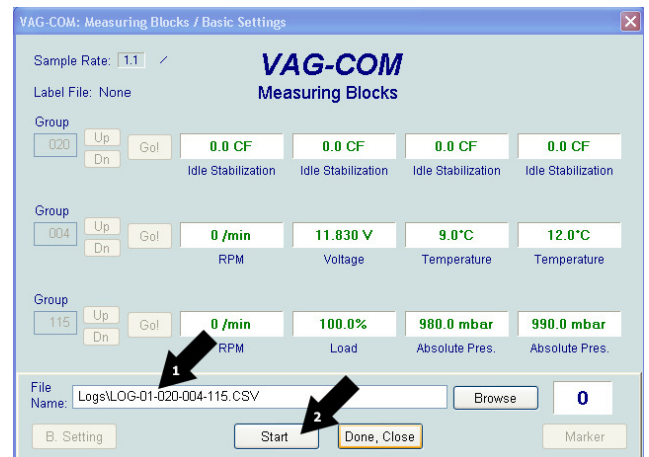
Step 3 : When Vag-Com has communicated with the ECU and displays all the relevant DATA, select 08 – Measuring Blocks.

Step 3 : You can enter up to three groups of blocks. Enter the group or groups to monitor



Step 4 : once the datablocks are entered click 'log' to save the data.

Step 5 : the filename (1) will default to the datablocks being logged, it's worthwhile putting the current SPS3 settings at the end plus any other variables that're being tested. Click start (2) to capture the data.



Step 6 : the best way of getting efficient data is from datalogging in gear pulls. 3rd or 4th gear from low rpm to redline can give you a lot of useable data and is easily repeatable with different settings allowing easy comparison between logs. A fair amount of tarmac is required for this and at high rpm in 3rd or 4th gear speeds are likely to be in excess of National speed limits.

Step 7 : Once the driving is done the data-capture can be stopped by clicking on 'stop'.

Analysing Data:

Data is saved in .CSV format (comma separated value) in the VAG COM file under log's, usually "C:\Program Files\VAG-COM\Logs"

A '.CSV' file will automatically open in Microsoft Excell and each datablock will be split into separate columns. See below: **Fig 1.0**

This is an example of one Datablock (020 – correctional factor on cylinders 1-4), each block

Monday	20 Decembe	2004	16:04:59				
IMM DEF EAT	REVO TECHNIK©	0002					
Group A: '020							
	Idle Stabi	Idle Stabi	Idle Stabi	Idle Stabi	Idle Stabi	Stabilization	
TIME							
Marker	STAMP	CF	CF	CF	CF		
	0.7	0	0	0	0		
	1.61	0	0	0	0		
	2.51	0	0	0	0		
	3.41	0	0	0	0		
	4.32	0	0	0	0		
	5.22	3	3	3	3		
	6.13	3	3	3	3		
	7.04	2.3	2.3	2.3	2.3		

Fig 1.0

logged has a Time Stamp and then the aquired data in the following coloums. The Datablock (Group) is indicated at the top of the data – 'Group A: 020'

Setting Timing - The below examples show datalogging on a 1.8T K03S car The best way to set timing up is to start at a relatively low level and gradually advance the timing monitoring the effects, for example if using 98ron fuel we recommend running between T5 and T7 it would be advisable to leave the car in one boost setting and start off monitoring at T3, then build up gradually making sure the ECU isn't having to pull too much timing out.

Boost 6, Timing 3

Group A: '020					Group B: '004					Voltage	Temperat		
TIME	Idle	Stabil	Idle	Stabil	Idle	Stabil	Idle	Stabilization	RPM		Temperature	Temperature	
STAMP	CF	CF	CF	CF	CF	CF	CF	CF	STAMP	/min	V	°C	°C
5.43	0	0	0	0	0	0	0	0	5.73	2240	14	84	24
6.33	0	0	0	0	0	0	0	0	6.63	2400	14.14	84	27
7.24	3	3	0	3	3	0	3	3	7.54	2640	14.14	84	28
8.14	3	2.3	0	3	3	0	3	3	8.44	2920	14.14	84	30
9.05	2.3	2.3	0	2.3	2.3	0	2.3	2.3	9.35	3200	14.21	85	32
9.95	2.3	2.3	0	2.3	2.3	0	2.3	2.3	10.26	3520	14.21	85	34
10.86	1.5	0.8	0	1.5	1.5	0	1.5	1.5	11.16	3840	14.21	85	37
11.76	0.8	0	0	0.8	0.8	0	0.8	0.8	12.07	4080	14.07	85	40
12.67	0.8	0	0	0.8	0.8	0	0.8	0.8	12.97	4360	14.14	85	45
13.57	0	0	0	0	0	0	0	0	13.88	4600	14	85	48
14.48	0	0	0	0	0	0	0	0	14.78	4880	14.21	86	51
15.38	0	0	0	0	0	0	0	0	15.69	5080	14	86	54
16.29	0	0	0	0	0	0	0	0	16.59	5280	14.14	86	56
17.19	0	0	0	0	0	0	0	0	17.5	5480	14.14	86	58
18.11	0	0	0	0	0	0	0	0	18.41	5680	14.07	86	60
19.01	0	0	0	0	0	0	0	0	19.31	5840	14.07	86	62
19.92	0	0	0	0	0	0	0	0	20.22	5960	14.07	86	63
20.83	0	0	0	0	0	0	0	0	21.12	6120	14.14	86	64
21.73	0	0	0	0	0	0	0	0	22.03	6240	14.14	86	66
22.64	0	0	0	0	0	0	0	0	22.94	6360	14.14	86	66
23.54	0	0	0	0	0	0	0	0	23.84	6240	14.07	87	67

Fig 1.1

The graph in **Fig 1.1** is a 4th gear pull from 2200rpm through to 6300rpm (rpm is shown on column 1 of Group B). Block 004 has been logged in this instance to monitor intake temps, if these rise excessively (often due to inefficient cooling for the given settings) then the ECU will pull back timing and a higher correctional factor (CF) will be seen in block 020. Ideally the car will see a CF of less than 3 across the range (on each cylinder) under load. The above data shows minimal CF under high load (highlighted green), load tends to be higher at low rpm in high gears. From this data we can see the timing can be advanced further.

Boost 6, Timing 5

Group A: '020					Group B: '004								
TIME	Idle	Stabi	Idle	Stabi	Idle	Stabi	Idle	Stabi	RPM	Voltage	Temperat	Temperature	
STAMP	CF	CF	CF	CF	CF	CF	CF	CF	/min	V	°C	°C	
15.38	0	0	0	0	0	0	0	0	14.78	2240	14.28	81	34
16.29	0	0	0	0	0	0	0	0	15.68	2280	14.28	81	33
17.19	3	3	3	3	3	3	3	3	16.59	2320	14.14	81	34
18.1	3	3	3	3	6	6	6	6	17.49	2520	14.14	81	35
19	2.3	2.3	2.3	2.3	6	6	6	6	18.4	2760	14.21	81	36
19.91	2.3	2.3	2.3	2.3	5.3	5.3	5.3	5.3	19.3	3040	14.07	81	36
20.81	1.5	1.5	1.5	1.5	5.3	5.3	5.3	5.3	20.21	3320	14.21	81	37
21.72	4.5	0.8	4.5	4.5	4.5	4.5	4.5	4.5	21.11	3600	14.21	81	39
22.62	4.5	0.8	4.5	4.5	4.5	4.5	4.5	4.5	22.02	3880	14.07	81	42
23.53	3.8	0	3.8	3.8	3.8	3.8	3.8	3.8	22.93	4120	14.07	81	45
24.43	3.8	0	3.8	3.8	3.8	3.8	3.8	3.8	23.83	4360	14.21	82	49
25.34	2.3	0	3	3	3	3	3	3	24.74	4600	14.21	82	51
26.24	0.8	0	1.5	1.5	1.5	1.5	1.5	1.5	25.64	4800	14.21	82	54
27.15	0	0	0.8	4.5	4.5	4.5	4.5	4.5	26.55	5000	14.21	82	57
28.05	3	0	0.8	4.5	4.5	4.5	4.5	4.5	27.45	5200	14.14	82	59
28.96	3	0	0	3.8	3.8	3.8	3.8	3.8	28.37	5400	14.21	83	61
29.86	2.3	0	0	3.8	3.8	3.8	3.8	3.8	29.27	5560	14.07	83	63
30.77	2.3	0	0	3	3	3	3	3	30.17	5680	14.14	83	63
31.69	1.5	0	0	3	3	3	3	3	31.07	5840	14.07	83	64
32.58	1.5	0	0	2.3	2.3	2.3	2.3	2.3	31.99	5960	14.21	84	66
33.5	0.8	0	0	2.3	2.3	2.3	2.3	2.3	32.89	6080	14.07	84	66
34.4	0.8	0	0	1.5	1.5	1.5	1.5	1.5	33.79	6200	14.21	84	67
35.31	0.8	0	0	1.5	1.5	1.5	1.5	1.5	34.69	6280	14.14	84	68
36.21	0	0	0	0.8	0.8	0.8	0.8	0.8	35.61	6400	14.21	84	68
37.11	0	0	0	0	0	0	0	0	36.5	6520	14.21	84	69

Fig 1.2

In example **Fig 1.2**, we can see the CF is somewhat more than it was with Timing two settings lower at T3 again under high load. The intake temps are similar to those that we saw with the lower timing setting, not excessively higher (bear in mind the more back to back runs that are done the higher the temps will get which can have a knock on effect on timing) so the car wasn't suffering from heatsoak. With the CF seeing 4.5° and over 5° at some points it would be advised not to advance the timing past the current setting, these figures are acceptable as they aren't excessively high but could increase if the car endured some spirited driving and the intake temps were to rise.

Lets see what happens when the timing is advanced past this level...

Boost 6, Timing 7

Group A: '020					Group B: '004					Voltage	Temperat	Temperature
TIME	Idle	Stabi	Idle	Stabi	Idle	Stabi	Idle	Stabilization	RPM			
STAMP	CF	CF	CF	CF	STAMP	CF	CF	CF	/min	V	°C	°C
6.03		3		3	5.3	5.42		2240	2240	14.14	85	34
6.94		3		3	5.3	6.33		2440	2440	14.07	85	34
7.84		2.3		2.3	4.5	7.24		2720	2720	14.14	85	35
8.75		5.3		2.3	4.5	8.14		3040	3040	14.14	85	36
9.65		5.3		1.5	5.3	9.05		3360	3360	14.14	86	38
10.56		4.5		4.5	5.3	9.95		3640	3640	14.07	86	39
11.46		4.5		4.5	5.3	10.86		3960	3960	14.14	86	43
12.37		4.5		3	4.5	11.76		4200	4200	14.14	86	46
13.27		3		1.5	3	12.67		4480	4480	14.07	86	50
14.18		4.5		0	6	13.58		4760	4760	14.07	86	52
15.08		4.5		3	6	14.48		4960	4960	14.07	86	55
15.99		3.8		3	5.3	15.38		5200	5200	14.14	86	57
16.89		3.8		2.3	5.3	16.29		5400	5400	13.93	86	60
17.8		3.8		2.3	4.5	17.21		5560	5560	14.07	86	62
18.7		3		1.5	4.5	18.1		5760	5760	14.07	86	63
19.61		0		0	0	19.02		5840	5840	14.07	87	64

Fig 1.3

In Fig 1.3 you will see that rather than there only being a couple of points when the CF is slightly higher than desired (as with Boost 6, Timing 5) the CF is high all the way through the rpm range, with the car being relatively cool it is likely that the ECU would pull back more as the Intake Temps and Exhaust Gas Temps rise over increased driving time. This is unacceptable and it would be advisable to lower the timing setting to a more realistic level.

It is worth knowing that generally intake manifold's don't deliver the same flow to each cylinder. With certain cylinders being 'hotter' than others timing CF is unlikely to be linear across each monitored cylinder.

Boost Settings

The Boost level can be set higher or lower than the default setting (Boost 6), altering the driving characteristics of the car. As with Timing settings 'bigger is not always better'. You can potentially run at Boost 9 as long as certain components on the car do their job at that level. For example running increased Boost could show up weaknesses in hoses (hose collapse) or Intercooler inefficiency. Monitoring requested and actual boost pressures, Intake Air Temps, and Timing CF will help to set a usable level of Boost.

Revo software incorporates enough adjustability to make the most out of bolt-on engine upgrades.

Group C: '115

	RPM	Load	Absolute	Absolute Pres.	
TIME					
STAMP	/min	%	mbar	mbar	
	3.71	1680	26.3	990	1010
	4.63	1720	63.2	990	1060
	5.52	1840	84.2	1560	1160
	6.44	1960	97.7	1390	1340
	7.34	2160	112.8	2130	1510
	8.25	2360	129.3	2230	1740
	9.15	2600	153.4	2340	2130
	10.06	2920	179.7	2390	2520
	10.96	3240	174.4	2380	2400
	11.87	3560	175.2	2360	2360
	12.78	3840	174.4	2400	2320
	13.68	4120	179.7	2400	2420
	14.59	4400	172.2	2330	2360
	15.49	4640	169.2	2300	2280
	16.4	4920	167.7	2260	2230
	17.3	5120	162.4	2190	2200
	18.21	5320	157.1	2140	2140
	19.11	5520	156.4	2080	2110
	20.02	5680	150.4	2050	2010
	20.92	5880	148.9	2020	2060
	21.83	6000	145.9	2000	1960
	22.73	6160	143.6	1980	1980
	23.64	6280	139.8	1970	1980
	24.55	6440	137.6	1950	1900

Fig 1.4

In Fig 1.4, column's 3 and 4 show specified (requested) and actual boost.

Boost and Timing settings need to be set to compliment one another, for example an inefficient IC (intercooler) for a specified boost level will lead to excessively increased AIT's and the timing CF will increase.

Setting Incorrect Levels

One of the common problems that can occur when setting up a car with an SPS3 is setting optimistic levels... if you run at a timing level too high for the given conditions then you start to rely on the knock sensors and the ECU 'pulling back' to safe levels. This is often the case when using an **sps3** or **select plus** without monitoring the effects of different settings.

If the ECU pulls back due to over optimistic settings then the car won't run at it's optimum level, this being the case altering the settings with the SPS3 will have much less effect as the adaptation values will all be at low levels. Using VAG COM you can reset the adaptation values by doing a throttle body alignment (TBA). On drive-by-wire cars this is done by going into Engine – Basic Settings – Block 060. Once the adaptation values are reset more realistic SPS settings can be used following the above guidelines.

Please refer to www.ross-tech.com for detailed information about how to purchase and use VAG COM. In regards to measuring blocks the following links might be of use http://www.ross-tech.com/vag-com/m_blocks/index.html

***Fuel Settings:**

*One feature of the **sps3** and **select plus** units is the ability to adjust the requested air fuel mixture the engine will burn. It does not control fuel injector on time but rather sets a target air fuel mixture for a richer or leaner burn. Position 0 on the SPS3 is always stock and position 9 will typically yield a .91 Lambda for normally aspirated cars. If you are not familiar with AFR (air fuel ratio) we recommend leaving this setting at 9. This adjustment is only a target and will not force the ECU to comply; if the setting is outside of the safety parameters the computer will compensate for the error allowing the safe operation of the vehicle.

***Note.** This is only applicable to certain applications of vehicle. Check our website for your particular application. www.revotechnik.com

Disclaimer:

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