

Preamble:

One feature missing from the Mk2 Galaxy that the Mk1 had is the “Range” function of the trip computer. Mk2 Sharan’s and Alhambra’s both have this option enabled and it’s a simple calculation that’s performed by the instrument cluster – The Galaxy instrument cluster is capable of doing it but the option is disabled from the factory.

Parts you need:

- VAG-Tacho Interface cable

Tools you need:

- VAG-Tacho Software
- HxD Software or similar HEX editing software

General Information:

The instrument cluster is manufactured by VDO, they use a software program to handle the functions and a memory map or EEPROM that holds data for the program to refer to. The EEPROM holds values such as mileage, engine type, gauge positions, service information and MFD configuration. The latter is what we are interested in as it’s an MFD (Multi Function Display) item that we want to enable.

Enabling the Range function is as simple as flicking a proverbial switch, this is done in within the EEPROM.

The process is to connect to the cluster, download the current EEPROM, edit it, and then upload it back to the cluster. The EEPROM is stored in hex code, so to edit it we need software that can read HEX – HxD is a great program for this although there are others about so use what you feel comfortable with.

If the EEPROM is invalid or corrupted then you could potentially render your cluster unusable so make sure you use a reliable laptop with good battery and only alter the values discussed.

Getting Started:

Install the relevant software on your laptop or PC, at the time of writing it was downloadable from:

VAG-Tacho:

<http://www.vagproduct.com/down/VAGTACHO22v.rar>

HxD:

<ftp://wa651f1:anonymous@mh-nexus.de/HxDSetupEN.zip>

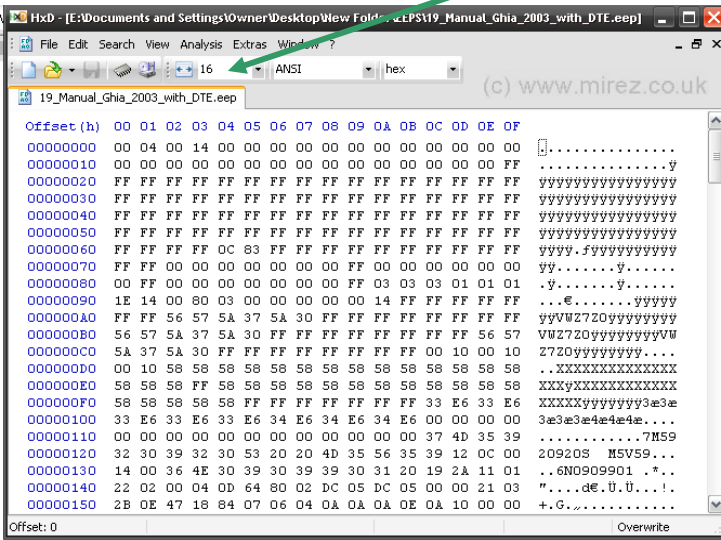
Stage 1 – Retrieving your current EEPROM:

Connect the cable to the car, turn the ignition on and start VAG-Tacho. Use the “Select ECU” option from the toolbar and pick “VDO New”. Next press the “Connect Selected ECU” button. VT will now connect to the cluster and you’ll see some information appear in the window as the software communicates with it, when its done click the “Read EEPROM” button and VT will go through the process of retrieving the current EEPROM which takes about a minute. When it’s done save the file and disconnect.

CREATE A COPY OF YOUR FILE AT THIS POINT

Stage 2 – Edit the EEPROM:

Open HxD and then load your current EEPROM. Changing the “Bytes per row” to 16 will display the EEPROM in lines which are easier to understand:

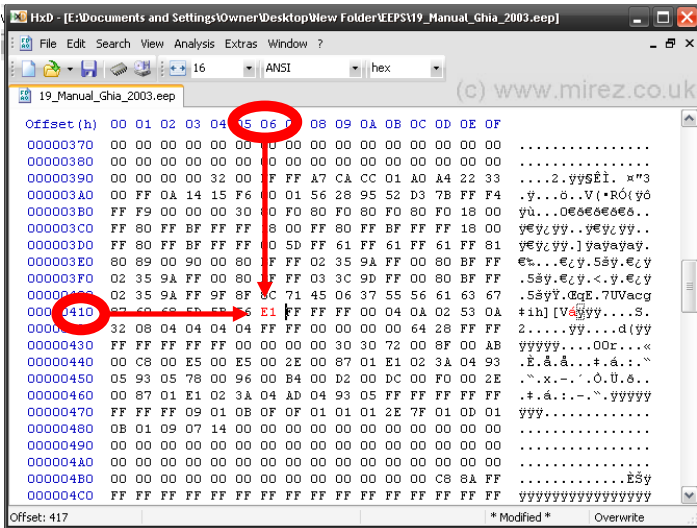


The MFD Configuration is stored in location 0416. To find this scroll down to offset 410 and then look across to 06 – You SHOULD have a value of C1 in there and we are going to change that to E1 to enable the distance to empty. For those that like to know exactly what and why we are changing we need to know that the MFD configuration is actually a binary value that’s stored in HEX. Converting it back to binary you’ll find:

C1: 11000001

E1: 11100001

And there is your proverbial switch, a simple binary change from OFF to ON.



Save the edited file, don’t overwrite the existing one.

Its important to only edit the value discussed, don’t change it if the existing value isn’t C1.

Stage 3 – Upload the edited EEPROM back to the cluster:

This is the final stage, re-open VT and connect back to the cluster as per Stage1. You now need to “File> Read File” and open your newly saved EEP file. If you want to confirm you are about to load the correct one then click the “View Memory Buffer” button, scroll down to 410 and look at the SEVENTH row across to confirm its E1. When you are happy hit “Write EEPROM” and let VT upload it to the cluster – when its complete disconnect and then remove the cable – turn the ignition back to off, wait a few seconds and then turn it back on. On some clusters you may need to physically power off the cluster, either by disconnecting the plugs on the back of it, disconnecting the battery or removing the relevant fuse but most will use the new EEPROM immediately.

Scroll through the options and you should find you now have a nice little fuel pump icon and the calculated distance to empty figure:



--- THIS MARKS THE END OF THE DISTANCE TO EMPTY FEATURE ---

Changing Lighting Configuration:

This is some additional information for those that would prefer a slightly more unique cluster. The VDO cluster in use on the Galaxy has a generic controller that they use in multiple vehicles; as a result they have different versions of the way the cluster is lit when the vehicle light switch is in the OFF position. The default is everything off however we can change another 'bit' in the EEPROM to effect this behaviour:



Default (x0)



Illuminated Needles (x9)



Illuminated Needles & Displays (xB)

So what do I need to do for this?

It's basically the same steps as you did for enabling the distance to empty feature but instead of looking for 0416 you need to look at 01ED instead, in HxD that's the 00001E0 row and the 0D column. Normal Galaxy cluster's seem to have 00 in this field, but its ONLY the second bit we want to change ie, x0 or 00 so therefore when we edit this field leave whatever is in the first byte and just change the second.

01ED

Illumination Setup

1ED = off = x0	All off
1ED = on = x3	Displays only without pointers or scales
1ED = on = x5	Scales only without displays or pointers
1ED = on = x7	Scales and displays without pointers
1ED = on = x9	Pointers without displays or scales
1ED = on = xB	Pointers and displays without scales
1ED = on = xD	Pointers and scales without displays
1ED = on = xF	All on

This seems to be a change that requires a power cycle to complete so you will probably need to either pull the cluster fuse or the main battery for 20/30 seconds.

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