SMITHS
DIGITAL INSTRUMENTS

Instructions for
VW T2
Electronic
Programmable Speedometers

Independently tested and approved to 95/54/EC

Designed and manufactured under ISO9001:2008 quality standard.

Technical help
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Caution
Disconnect the negative battery cable prior to any installation

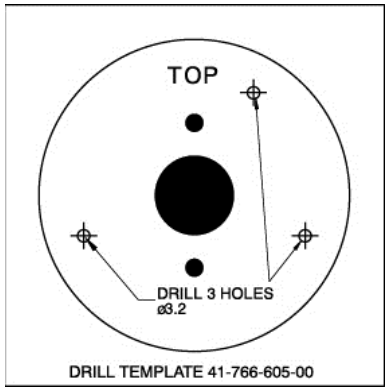
Application Notes
The operating voltage is nominally 12 volts. The range of operation is 10 to 16 volts, negative earth only.
The speedometer must be calibrated to match the number of pulses per mile (or kilometre) generated by the speed sensor – this is achieved via the remote trip reset button. This must be completed with the speedometer powered and installed in the vehicle.
The calibration range is from 1,000 to 120,000 pulses per mile.

Removing the Mechanical Speedometer
Disconnect the mechanical drive cable. Remove spade connectors. Twist and remove the illumination lamps.

To free the back-plate assembly, remove five 6mm bolts from the rear of the panel.

Two slotted screws, one directly above and one directly below the mechanical speedo drive should be removed. This frees the old mechanical speedometer.

Peel the backing from the '*drill template*' included in the kit.. The sticky-backed template should be aligned with the large black circle over the drive aperture and the two smaller black circles over the fixing holes. The drill template shows where you should drill three holes using a 3.2mm drill. The template is now redundant and should be removed.

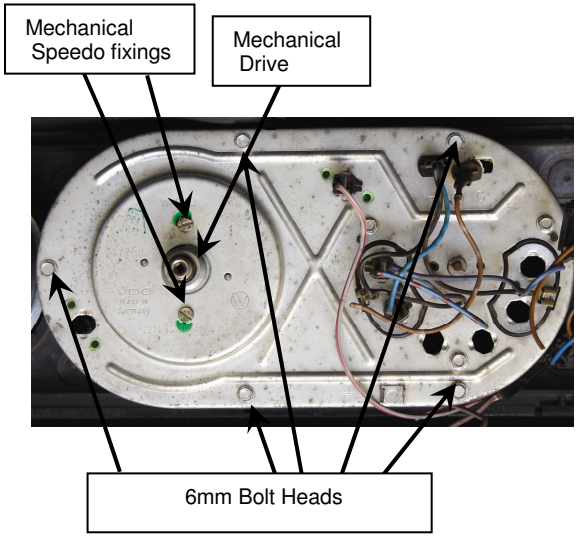


DRILL TEMPLATE 41-766-605-00

All of the wiring from the electronic speedo should be passed through the drive aperture.
The three black plastic spacers supplied should be located over the split pillars protruding through the circuit board. The split pillars with their spacers should be aligned with the 3.2mm holes drilled previously. Three fixing screws are supplied, they should be located through the 3.2mm holes and spacers and tightened into the split pillars.

NOTE: Make sure the speedo is orientated correctly before tightening the screws.

The electronic speedo is now fixed to the back-plate. The back-plate assembly should *now be fixed to the panel with the 5 M6 bolts.*



Wiring/sender connections
The speedo kit contains a sender cable which is designed to fit onto the end of the original mechanical speedo drive cable. The other end of the sender cable has a 3-way electrical connector which should be mated with its counterpart on the electrical harness.
The three wires in the electrical harness should be connected as shown in the table below.

Harness connections	
Wire Colour	***Connect to***
Green	Switched ignition positive12volt supply (via 3A fuse)
Red/white	Instrument illumination 12volt supply (side light feed)
Black	Chassis or battery negative

Calculating The Calibration Number

You need to know the number of times your wheels revolve per mile (or kilometre). Stand the vehicle on a flat surface and mark the tyre at the closest point to the ground, mark the ground at the same point. Move the vehicle forward by one complete wheel revolution and measure the distance travelled.

Wheel revs per mile = 63360 divided by the distance travelled in inches.

Wheel revs per km. = 1000 divided by the distance travelled in metres.

To Calculate the Calibration Number (pulses per mile/km)

Calibration number = number of wheel turns per mile/km multiplied by 6

Setting The Calibration – Inputting The Calibration Number / Pulses Per Unit Distance.

There are two methods to setting the calibration:

(i) Manually inputting the calibration number (PPU).

(ii) Using 'drive to set' facility.

The calibration mode is selected by switching on the ignition while simultaneously pressing the trip reset button. The pointer will travel to full scale and return to zero.

If the button is released before the pointer returns to zero, the manual setting procedure will be selected and the LCD (odo.) will read 'SET PPU'

If the button is released after the pointer returns to zero the 'drive to set' mode is selected and the LCD will show 'DTS PPU.'

At this point, pressing the reset button momentarily will toggle between 'SET PPU' and DTS PPU'

Manually Inputting The PPU Number

Set the LCD to display 'SET PPU' as described above.

Press the reset button for 2-3 seconds, the LCD will show the calibration number currently set. Each digit within the calibration number will flash in turn for approximately 2 seconds. When a digit is flashing, each depression of the reset button will increment the digit by one. Once the last (right-most) digit has been set/reset, the whole number will flash. Press the reset button and the LCD will display 'DONE.' After 3 seconds the LCD will display 'SET PPU,' the setting is now complete. Switch off the ignition.

Drive To Set PPU

Set the LCD to display 'DTS PPU' as described above.

Press the reset button for 2-3 seconds, the LCD will display '∗00000.' Drive exactly one mile (while driving the odometer will count the number of pulses generated by the sender). Press the reset button for 2-3 seconds, the LCD will display 'DONE.' Within a few seconds the LCD will return to the 'DTS PPU' ,display. The setting is now complete. Switch off the ignition.

IMPORTANT – When driving in 'drive to set' mode the speedometer will register but not accurately. The speedometer cannot be used on a public highway in this mode.