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2.1 General Informations

The electronic speedometer has been designed for land-bound vehicles only (with the exception of motorcycles).

The instrument has an analog speed display, and a liquid crystal display for the distance (displaying total distance or partial distance alternatively).

Hall sensors, inductive sensors or blocking oscillator sensors can be used as speed sensors.

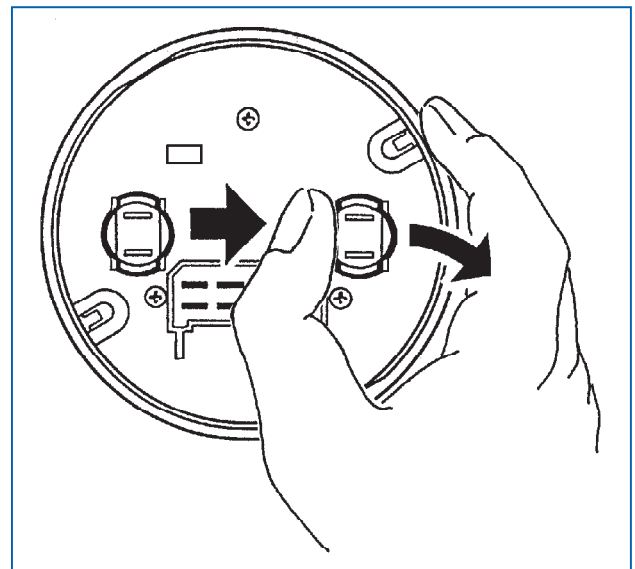
A pushbutton in the front lens is provided for setting and operation of the instrument.



The electronic speedometer should be installed by a Mannesmann VDO Kienzle workshop or an authorized specialised workshop.



The lamp sockets are clipped in. To replace the light bulb, carefully, with the thumb, push the lamp holder out to the side.



2.1 General Informations

Designation of function

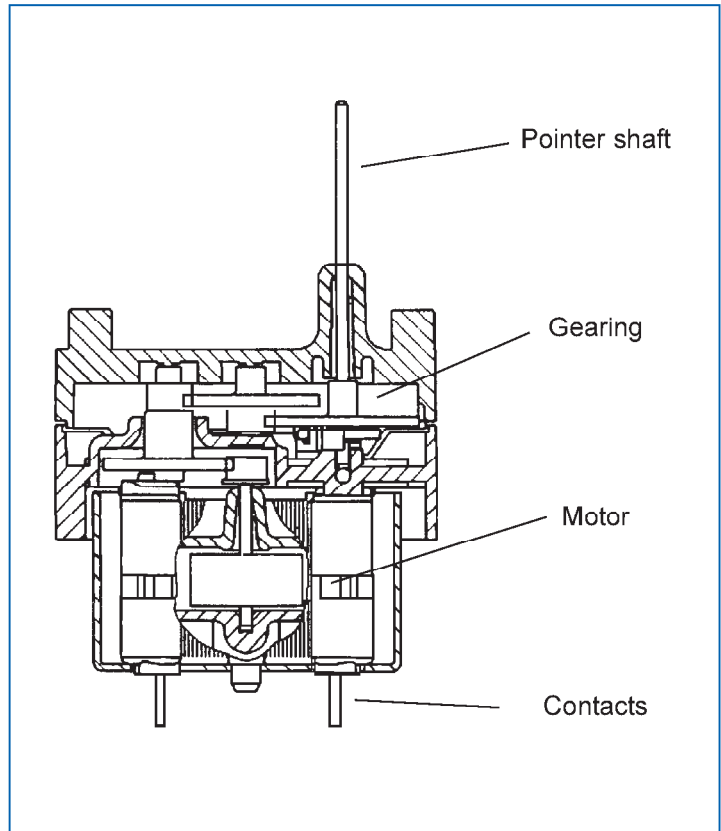
Stepper motor movement

The drive for this display system is a stepper motor, comprising a permanent magnet rotor within a crossed winding arrangement. A zero backlash gearbox at the output ensures a high drive torque and fine resolution. The gearbox has a reduction ratio of 43.2 : 1 and an internal mechanical stop. The stepper motor drive was developed specially by VDO for this product.

The drive produces a bipolar sinusoidal variable voltage using digital pulse width modulation. There is a 90° phase difference (sine-cosine) between the voltages on the two motor coils. This rotates the electromagnetic field through equidistant angular steps with a constant length resultant vector ($\sin^2\theta + \cos^2\theta = 1$).

The motor torque is therefore constant at each step with zero cogging. At the pointer one motor step equals 0.065°.

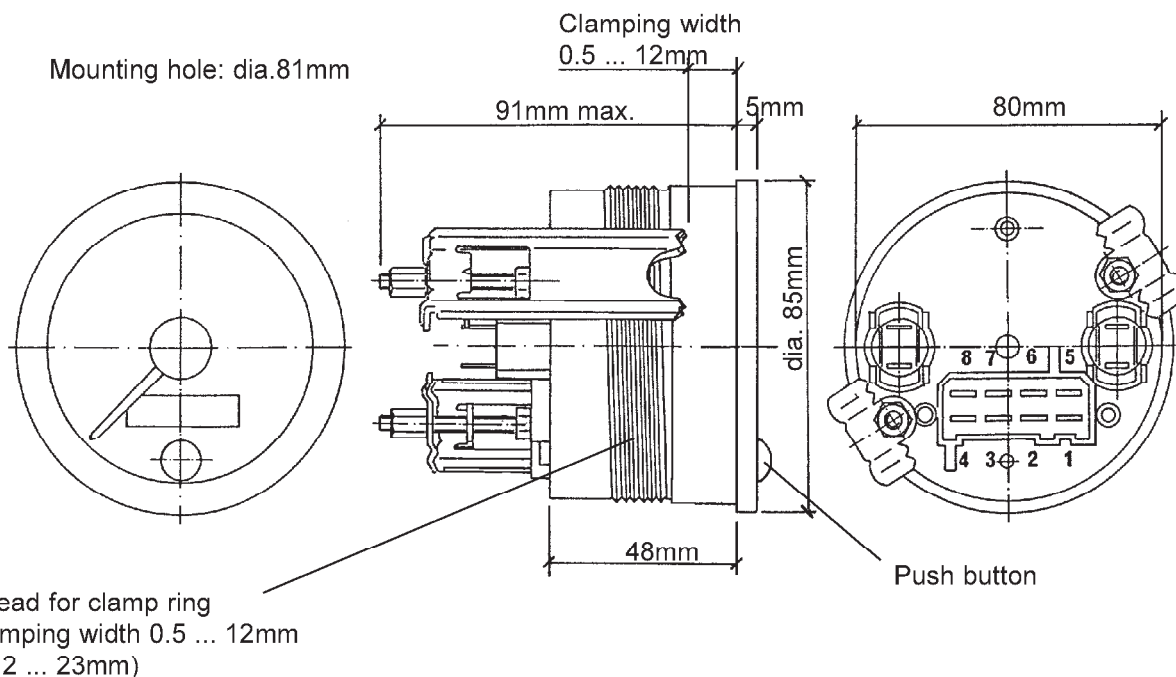
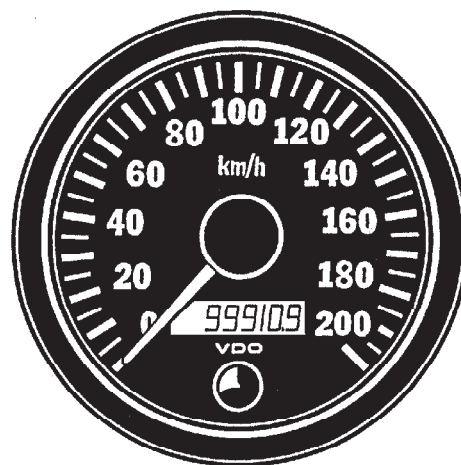
The stepper motor parameters and the design of VDO control-driver electronics are carefully matched to ensure reliable operation of the system under all conditions. Optimised control algorithms ensure a visually smooth pointer motion.



2.2 Technical Data

Operating voltage:	10 ... 31 V
Input voltage:	U_{low} : 0 V U_{high} : min. 1 V
Movement:	stepper motor
Pickup:	hall sensor or inductive sensor or blocking oscillator sensor or speed signal from electronics
Current consumption:	< 100 mA (120 mA with illumination)
Operating temp.:	-20°C ... +70°C
Storage temperature:	-30°C ... +85°C
Illumination:	2 light bulbs 12 V, 2 W 4 colour caps (2 green and 2 red)
Protection:	IP64 DIN 40050 from the front, housing "ozon"-proof, "UV"-proof, CE approved, reverse-polarity protection
Vibration resistance:	max. 1g eff., 25 ... 500 Hz, duration 8h, f. 1 octave/min.
Nominal position:	NL 0 to NL 90, DIN 16257

VDO cockpit vision
Ø 80 mm Backlight



Ratio
500 ... 399990 pulses/revolution
(adjustable)

Pin assignment:
Pin 2: + 12 V for sensor
Pin 3: Ground (terminal 31)
Pin 4: + 10 ... + 31 V (terminal 15)
Pin 6: + 12 V for open collector sensor
Pin 7: Ground for 2-pole sensor wire
Pin 8: Input sensor signal

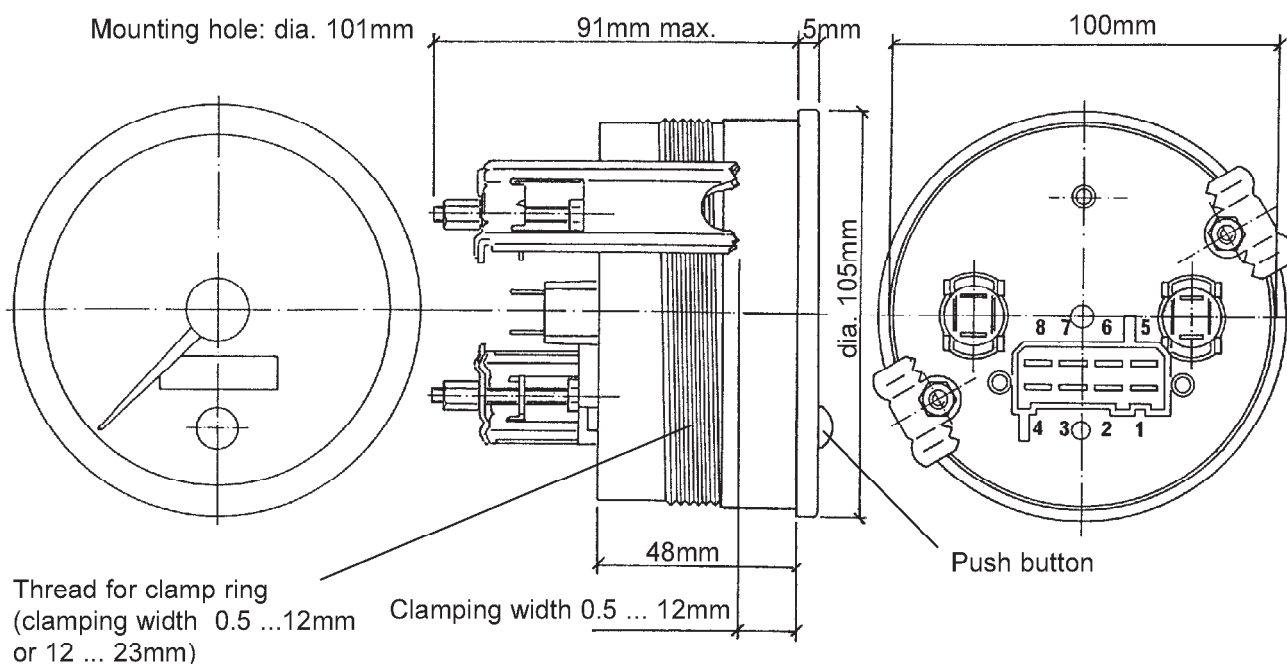
VDO cockpit vision VDO cockpit international

2. Electronic Speedometer (dia. 80 mm/dia. 100 mm)

2.2 Technical Data

Operating voltage:	10 ... 31 V
Input voltage:	U_{low} : 0 V U_{high} : min. 1 V
Movement:	stepper motor
Pickup:	hall sensor or inductive sensor or blocking oscillator sensor or speed signal from electronics
Current consumption:	< 100 mA (120 mA with illumination)
Operating temp.:	-20°C ... +70°C
Storage temperature:	-30°C ... +85°C
Illumination:	2 light bulbs 12 V, 2 W 4 colour caps, 2 green and 2 red
Protection:	IP64 DIN 40050 from the front, housing "ozon"-proof, "UV"-proof, CE approved, reverse-polarity protection
Vibration resistance:	max. 1g eff., 25 ... 500 Hz, duration 8h, f. 1 octave/min.
Nominal position:	NL 0 to NL 90, DIN 16257

VDO cockpit vision
Ø 100 mm Backlight



Ratio
500 ... 399990 pulses/revolution
(adjustable)

Pin assignment:
Pin 2: + 12 V for sensor
Pin 3: Ground (terminal 31)
Pin 4: + 10 ... + 31 V (terminal 15)
Pin 6: + 12 V for open collector sensor
Pin 7: Ground for 2-pole sensor wire
Pin 8: Input sensor signal

VDO cockpit vision VDO cockpit international

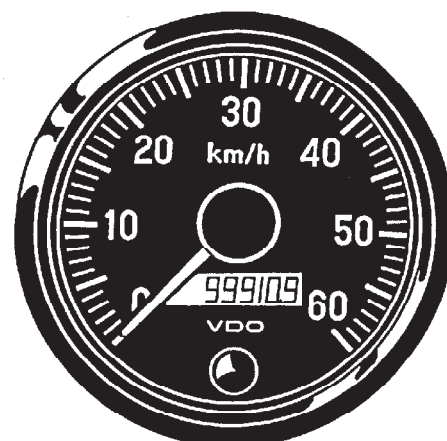
2. Electronic Speedometer (dia. 80 mm/dia. 100 mm)

2.2 Technical Data

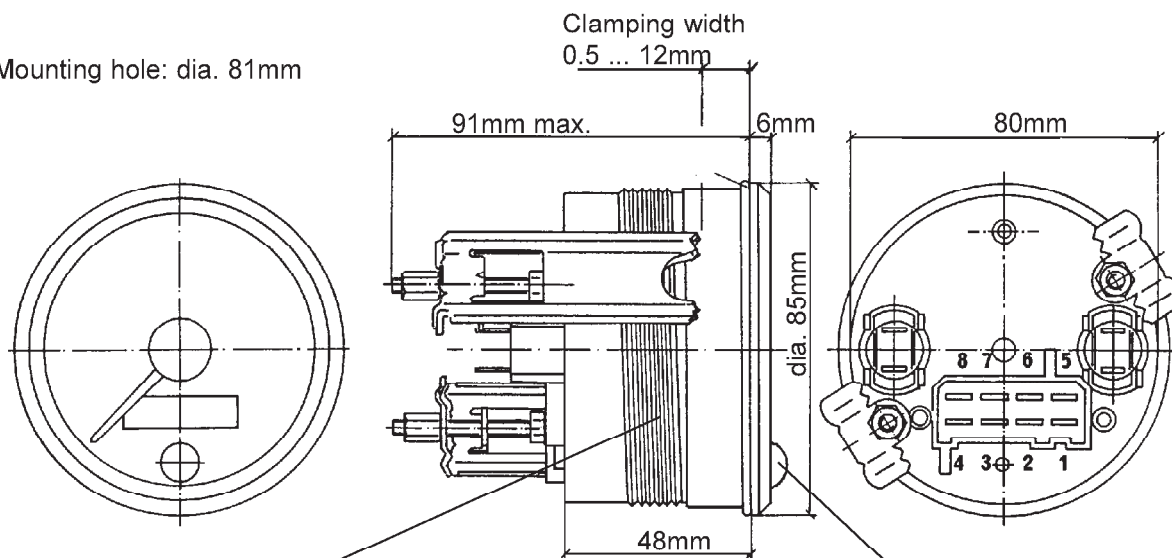
Operating voltage:	10 ... 31 V
Input voltage:	U _{low} : 0 V U _{high} : min. 1 V
Movement:	stepper motor
Pickup:	hall sensor or inductive sensor or blocking oscillator sensor or speed signal from electronics
Current consumption:	< 100 mA (120 mA with illumination)
Operating temp.:	-20°C ... +70°C
Storage temperature:	-30°C ... +85°C
Illumination:	2 light bulbs 12 V, 2 W
Protection:	IP64 DIN 40050 from the front, housing "ozon"-proof, "UV"-proof, CE approved, reverse-polarity protection
Vibration resistance:	max. 1g eff., 25 ... 500 Hz, duration 8h, f: 1 octave/min.
Nominal position:	NL 0 to NL 90, DIN 16257

VDO cockpit international

Ø 80 mm Floodlight



Mounting hole: dia. 81mm



Thread for clamp ring
(clamping width 0.5 ... 12mm
or 12 ... 23mm)

Ratio
500 ... 399990 pulses/revolution
(adjustable)

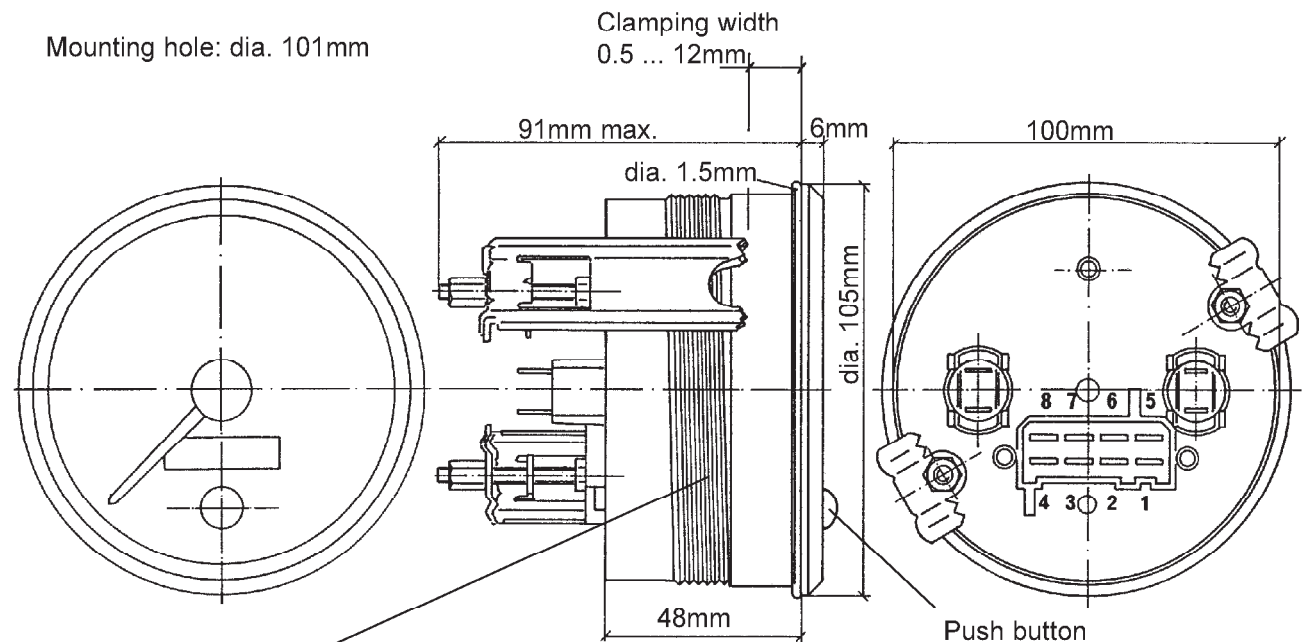
Pin assignment:
Pin 2: + 12 V for sensor
Pin 3: Ground (terminal 31)
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Pin 6: + 12 V for open collector sensor
Pin 7: Ground for 2-pole sensor wire
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2.2 Technical Data

Operating voltage:	10 ... 31 V
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VDO cockpit international

Ø 100 mm Floodlight



Thread for clamp ring
(clamping width 0.5 ... 12mm
or 12 ... 23mm)

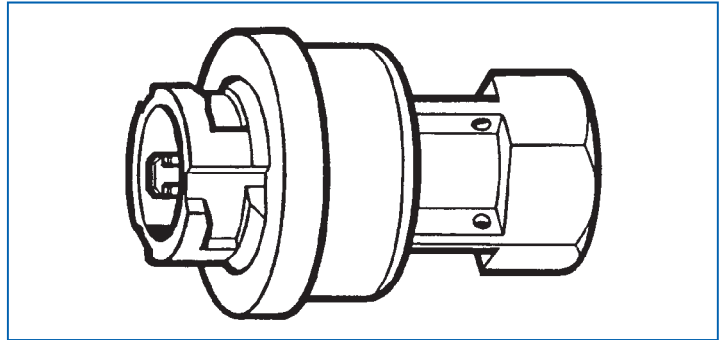
Ratio
500 ... 399990 pulses/revolution
(adjustable)

Pin assignment:
Pin 2: + 12 V for sensor
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Pin 8: Input sensor signal

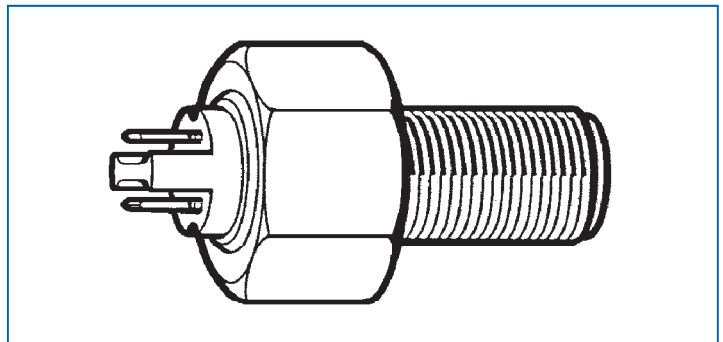
2.3 Speed Sensor

The speed sensor needed to operate the instrument is not included with the speedometer.
The following speed sensors (see data sheets for sensors) can be used:

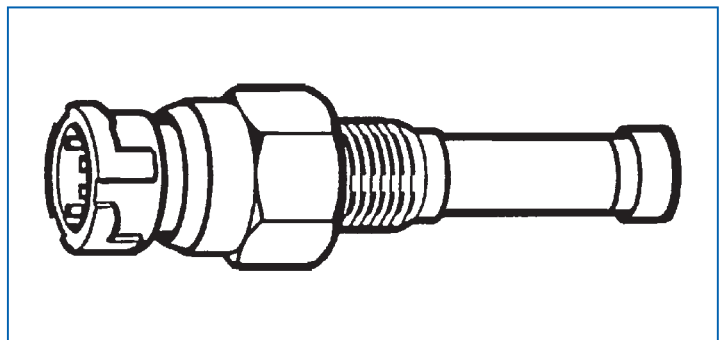
- **Hall sensor**



- **Inductive sensor**



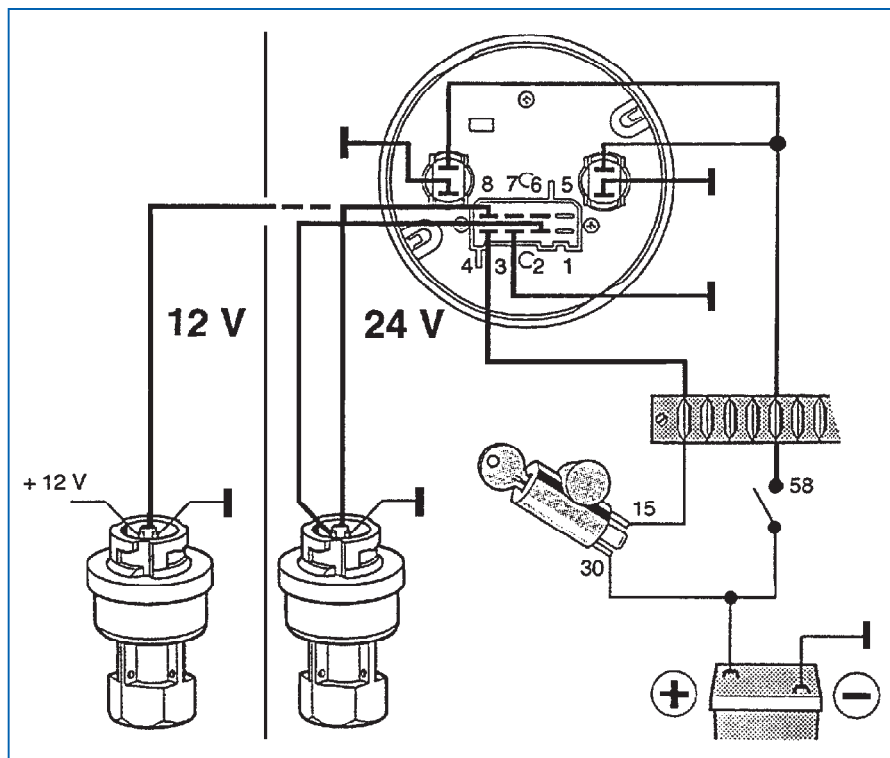
- **Blocking oscillator sensor**



If the vehicle is already equipped with a speed sensor. Request a data sheet of this sensor. Ask your vehicle manufacturer or VDO Kienzle whether the speed sensor can be used.

2.4 Wiring Diagrams

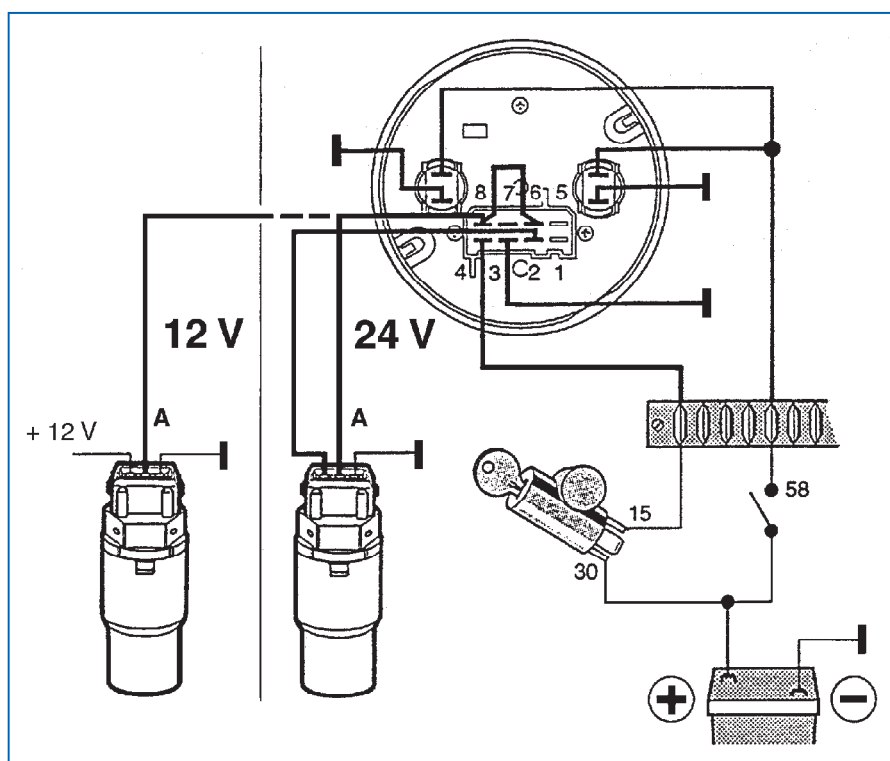
Hall sensor



Hall sensor

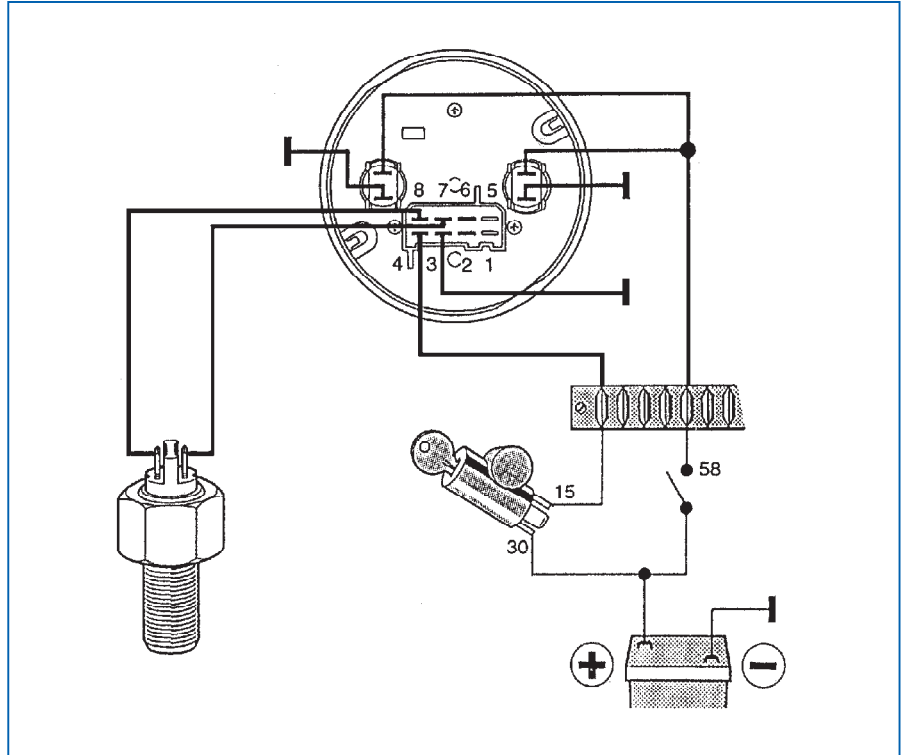
with 'open collector' output

Pins 6 and 8 must be bridged for hall sensors with open collector output.

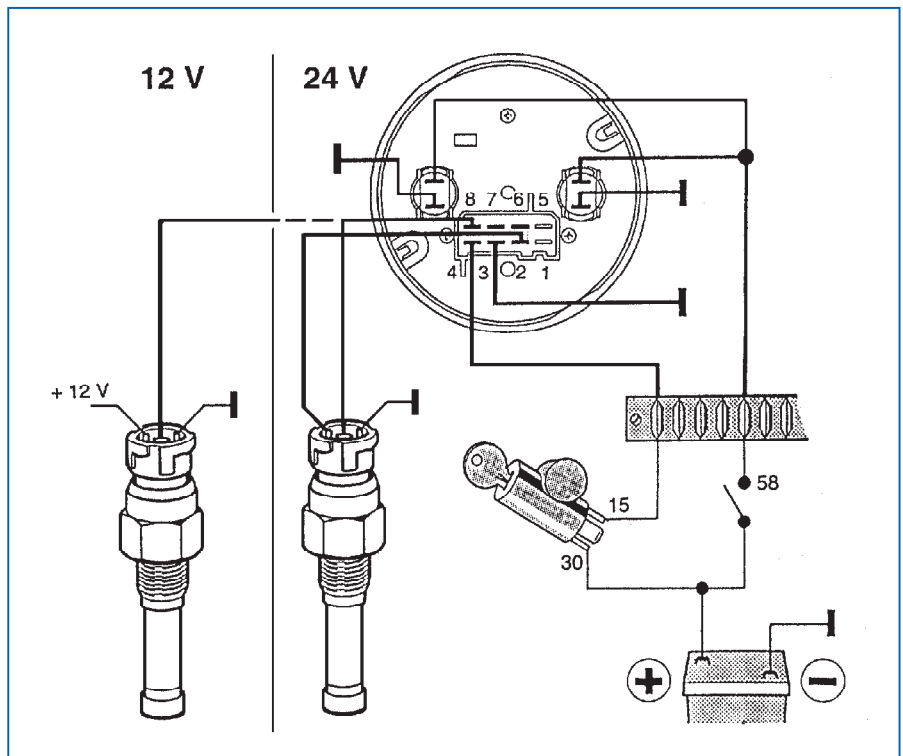


2.4 Wiring Diagrams

Inductive sensor



Blocking oscillator sensor



2.5 Setting

3 alternatives can be used for setting the instrument:

2 options for pulse/distance ratio setting:

Function "AUtOCL" - automatic calibration by driving a measured distance (1 km or 1 mile).

Function "PULSE" - enter a known pulse/distance ratio.

1 possibility for fine adjustment of the speed indication:

Function "AdJUSt" - Calibration using a reference speed indication (roller test bench).

Note: Respect the tolerances per directive 75/443/EEC when calibrating the speed indication.

1. The vehicle is tested at the following speeds: 40 km/h, 80 km/h and 120 km/h or 80 % of the maximum speed specified by the manufacturer if it is lower than 150 km/h.
2. The error limit of the instrument used for the measurement of the effective vehicle speed shall not exceed $\pm 1 \%$.
3. If a measuring track is used, it shall be level and dry, and have a sufficiently non-skid surface.
4. The displayed speed shall never be lower than the effective speed. At the speed specified under 4. and at the intermediate values the difference of speed V1 displayed by the speedometer and effective speed V2 shall have the following equation:

$$0 \leq V_1 - V_2 \leq \frac{V_2}{10} + 4 \text{ km/h.}$$

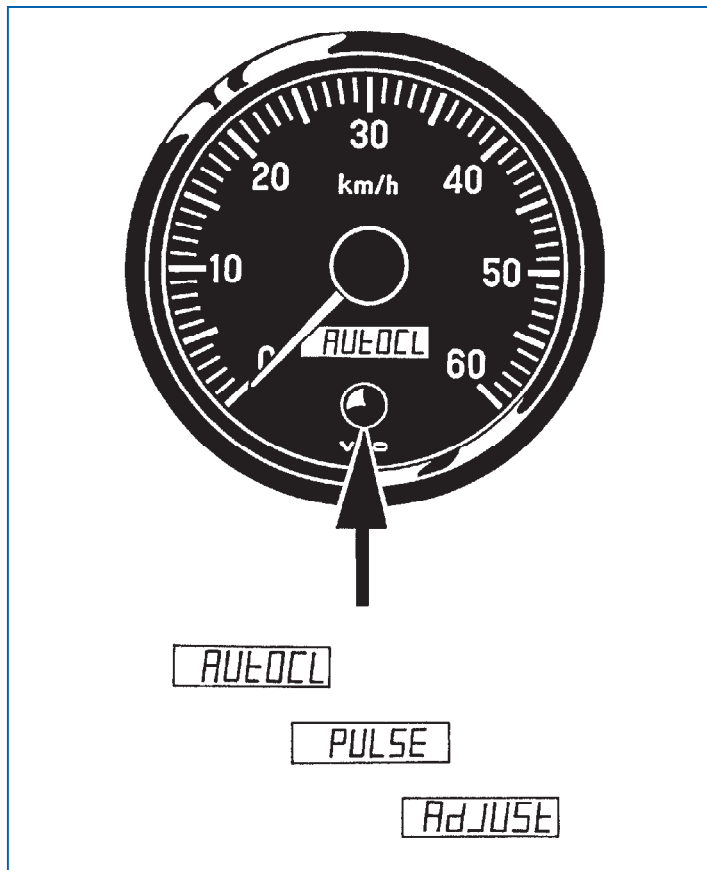
Or see your national laws (directives).

2.5 Setting

Selection of the functions

Push button in front lens and hold in. Switch the ignition (operating voltage) on.

The display alternates between 'AUtOCL', 'PULSE' and 'AdJUSt' at 2 seconds interval. Select a function by releasing the pushbutton when this function is displayed.



2.5 Setting

Function 'AUtOCL'

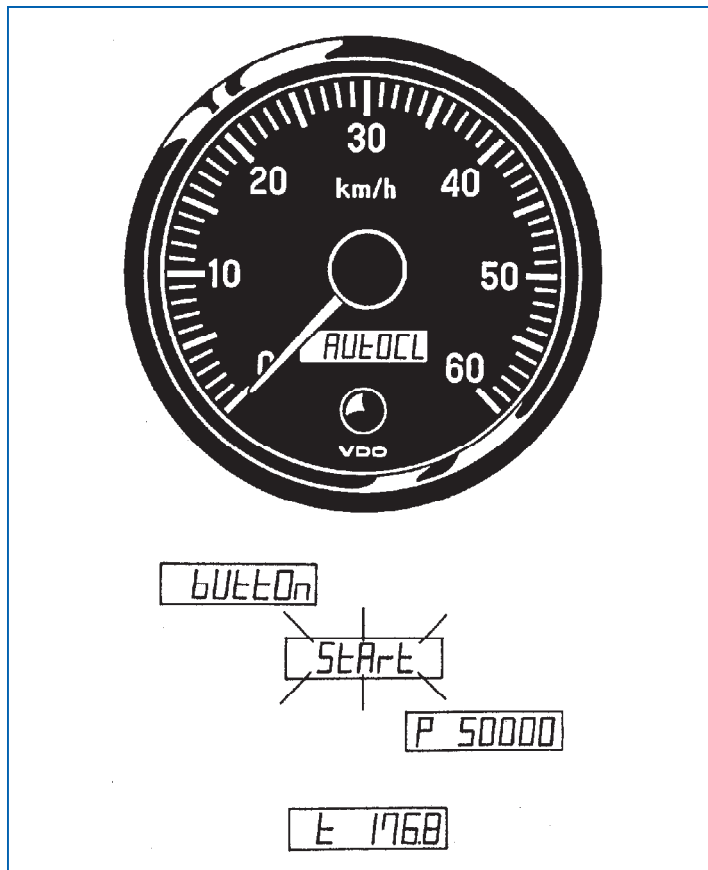
After selection of the function 'AUtOCL' the display changes to 'bUttOn' after 3 seconds:



Ask a passenger to assist with the calibration!
No speed is displayed during the measuring drive!

During the drive exactly at the beginning of the measuring track (1km or 1mile) push the button briefly, the display flashes 'StArt'. Drive the test track with as constant a speed as possible. Exactly at the end of the measuring track again briefly push the button. The determined pulse/distance ratio is displayed if it is between 500 and 399990 pulses (e.g. 'P 50000', which corresponds to pulse/distance ratio 50000). The calibration is completed if the display changes to total or partial distance display.

Repeat the calibration if the display flashes 'F00' (no pulses). The sequence is the same as described above.



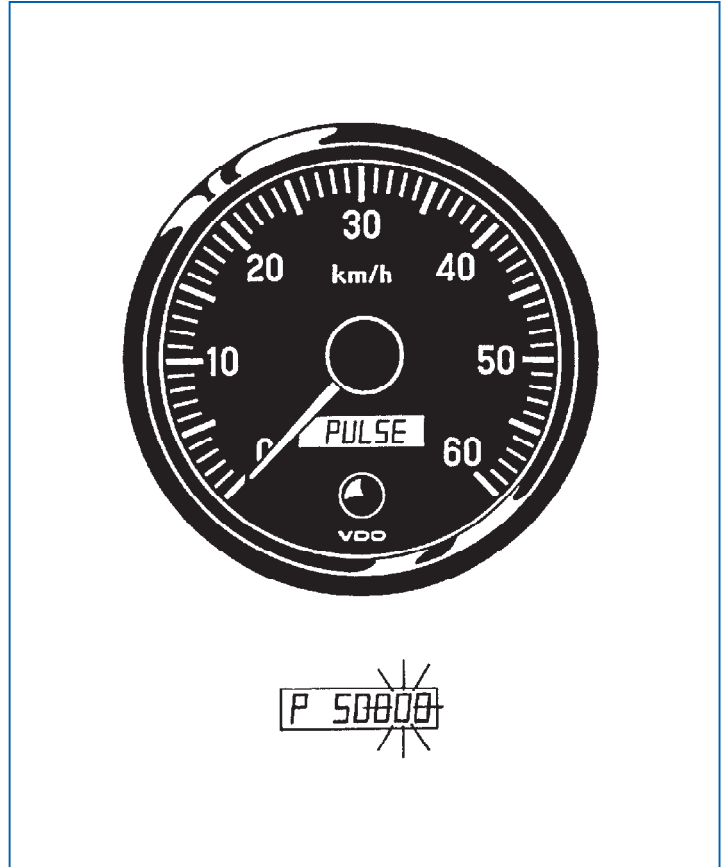
2.5 Setting

Function 'PULSE'

After selection of the function 'PULSE' the display shows 'P 50000', for instance, after 3 seconds, with the digit before the last one flashing start entering the pulse/distance ratio immediately. The flashing digit is changed by pushing the button (adjustable pulse/distance ratio 500 to 399990). After entry of the pulse/distance ratio the display changes to total or partial distance display, the calibration is completed.

A new setting is required if the digit before the last one is flashing in the display after pulse/distance ratio setting. The sequence is the same as described above.

The function 'PULSE' can be used to check the pulse/distance ratio stored by automatic calibration (function 'AUtOCL'). The stored pulse/distance ratio is displayed (e.g. 'P 50000'), and the digits start flashing, beginning with the digit before the last one.



2.5 Setting

Function 'AdJUST'

After selection of the function 'AdJUST' the display alternates between 'UP' and 'dn' (down) after 3 seconds.



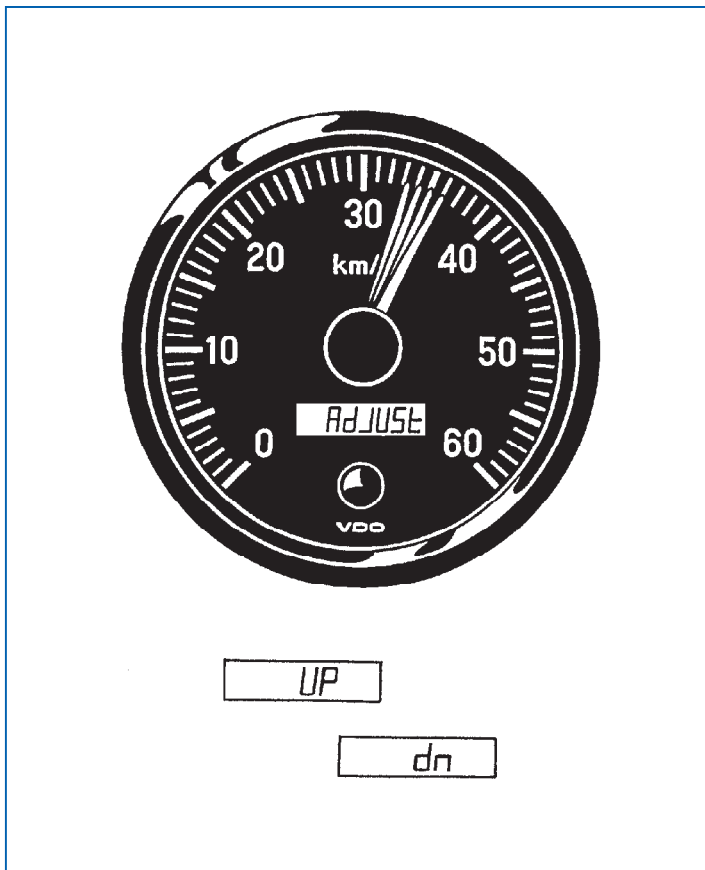
Only use this function on the roller test bench!

The fine adjustment is only possible between 30 % and 100 % of the indicating range. No pulse/distance ratio counting takes place during fine adjustment.

Pushing and holding the button when 'UP' is displayed increases the pointer indication ('dn' will lower it accordingly). Initially the change of the indication will be very slow for a very precise adjustment. Releasing the button for a short time repeats the cycle. The rate of pointer indication change increases when the button is held for a longer time. Release the button when the pointer indication corresponds to the reference speed. After 1 minute the display shows total or partial distance. Fine adjustment has been completed.

A wrong pulse/distance ratio entry (function 'PULSE') exists if the display starts flashing during fine adjustment. The pulse/distance ratio is either below 500 or above 399990.

Repeat the calibration with the function 'PULSE'.

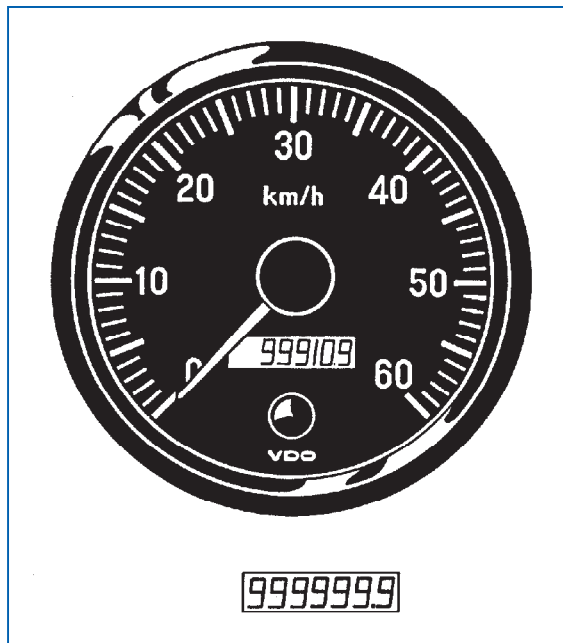


2.6 Operation

Only efficient when ignition is switched on.

Briefly pushing the button alternates the total distance display (e.g. '99910.9') with the partial distance display (e.g. 't 176.8').

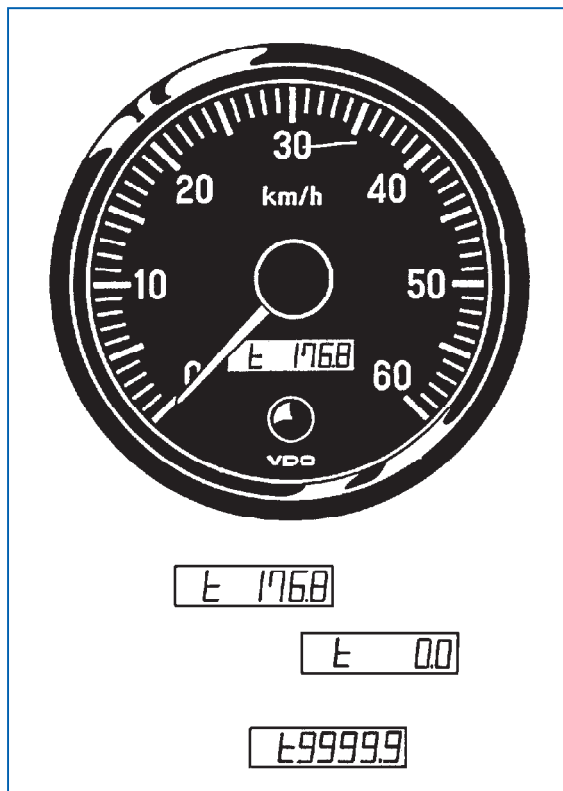
The total distance function counts the total mileage in kilometer or miles up to 999999.9 max..
This display cannot be reset.



The partial distance function counts the mileage in kilometer or miles up to 't9999.9'.

This display is reset to 't0.0' by pushing the button (for 2 seconds approximately).

Pushing the button for 2 seconds when total distance is displayed will also reset the partial distance to 't0.0'.



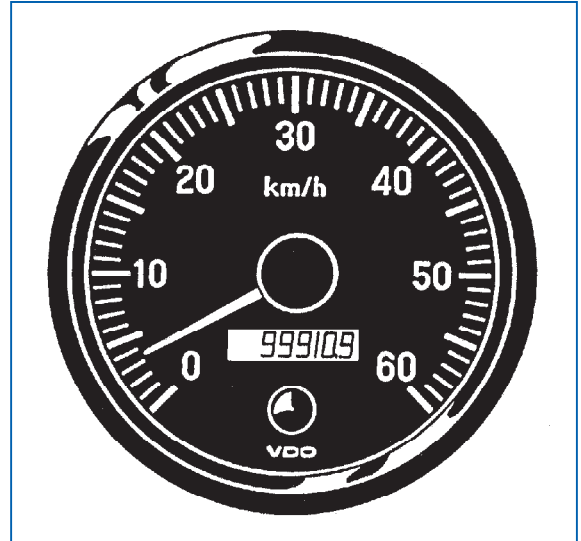
Trip and total distance remain stored after the operating voltage is switched off.

2.7 Speed Display

Note:



When ignition is switched off, the pointer remains at the last speed indicated, until the ignition is switched on again, without starting the engine, the pointer will then return to the zero position.



2.8 Testing Instruction

Test accessories

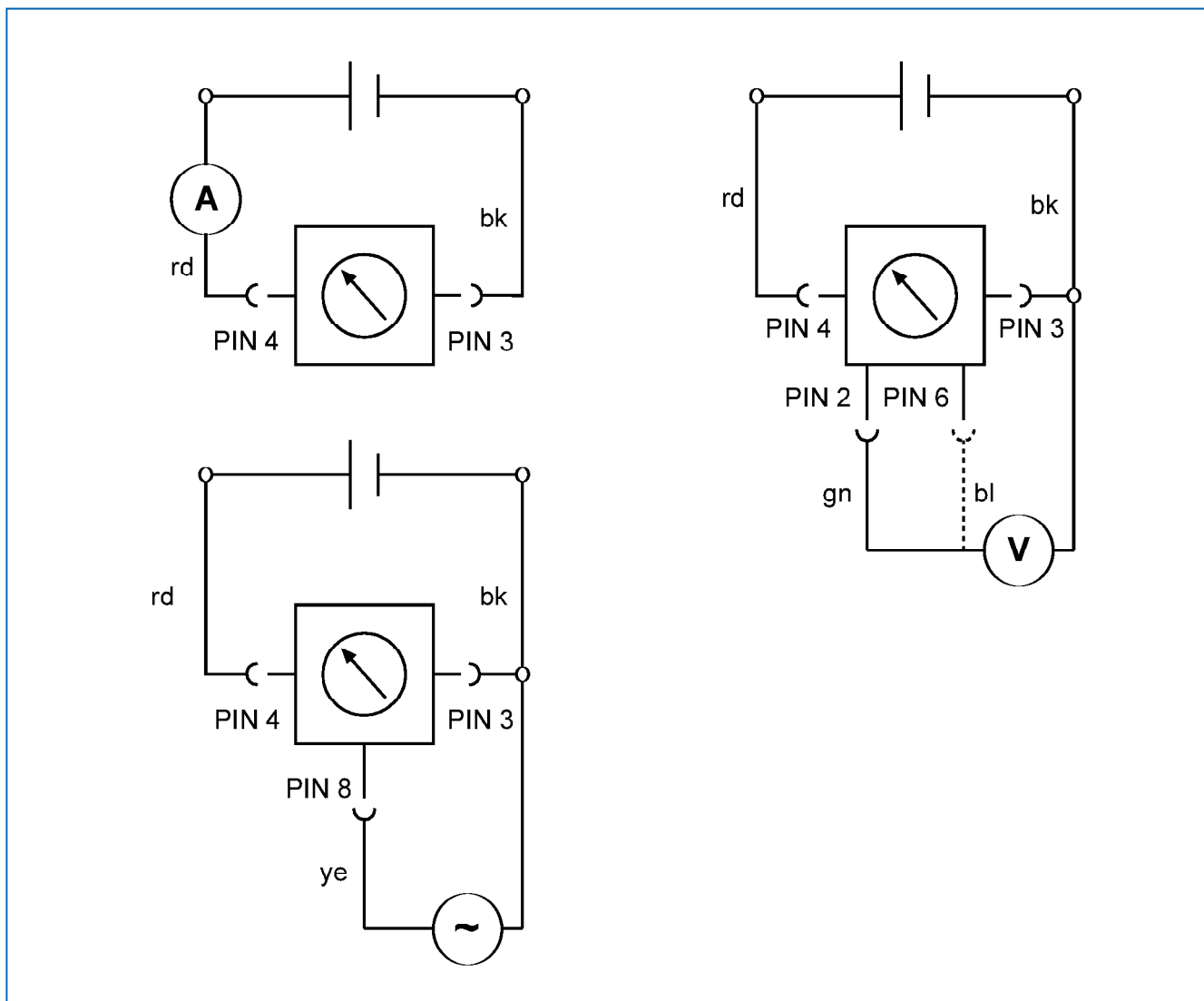
- 1x Power supply
- 1x Test cable No. 2 } contained in test cables kit
- 1x Measuring cable } X12.019/101/001
- 1x Frequency generator
- 1x Ammeter
- 1x Voltmeter

Connector pin allocation

1	2	3	4
5	6	7	8

Pin 2 + 12 V for sensor
 Pin 3 Ground
 Pin 4 + 10V to + 31V
 Pin 6 + 12 V for open collector sensor
 Pin 8 Sensor signal input

Test circuit diagram



2.8 Testing Instruction

Test method description

Basic setting: 12V to 24V instruments  $U = 18V \pm 2V$

Measurement of current consumption

Connect instrument with test cable No. 2 as shown in test circuit diagram I.

Range of values: 12V to 24V instruments  $I = 52 \pm 5.2 \text{ mA}$

Test of outputs pin 2 and pin 6

Connect instrument with test cable No. 2 as shown in test circuit diagram II.

Range of values: 12V to 24V instruments  $U = 14.5 \pm 2 \text{ V}$

Test of distance counter

Connect instrument with test cable No. 2 as shown in test circuit diagram III.

Connect a square wave signal to pin 8 of the connector. The frequency depends on the maximum speed and the pulse/distance ratio. Use the formula given under 'Pointer position test', section b, for the accurate calculation of the maximum square wave frequency. The amplitude is in the range 1 to 10 V.

After connection of the operating voltage the display will show the total or the partial distance. Set the frequency generator to 0 Hz, and slowly raise the frequency until the counter starts counting (e.g. at 60 km/h, 1 minute = 1 kilometer).



It is only possible to zero the total odometer reading with the testing software (see chapter 18.2.6).

2.8 Testing Instructions

Pointer position test

a) Zero point test

Connect instrument with test cable No.2 as shown in test circuit diagram III.
Connect the operating voltage and check pointer deviation. The allowed deviation is ± 1 degree of angle.

b) Full scale indication test

Connect instrument with test cable No.2 as shown in test circuit diagram III.

$$f_{\max} = \frac{\text{speed x pulse/distance ratio (K)}}{3600} [\text{Hz}]$$

c) Speed indication test

At 40 km/h, 80 km/h and 120 km/h or 80% of full scale if it is lower than 150 km/h.
Connect instrument with test cable No. 2 as shown in test circuit diagram III.

$$f_{\max} = \frac{\text{speed x pulse/distance ratio (K)}}{3600} [\text{Hz}]$$

Note:



Respect the tolerances per directive 75/443/EEC or your national laws (directives) when testing the speed indication.

The directive 75/443/EEC says that the following relation must exist between the displayed (per speedometer) and the effective speed (per test fixture):

v_1 = displayed speed v_2 = effective speed

$$0 \leq v_1 - v_2 \leq \frac{v_2}{10} + 4 \text{ km/h.}$$

Example:

Speedometer, full scale 300 km/h, pulse/distance ratio (K) = 6000 pulses/km

$$f_{\max} = \frac{\text{speed x pulse/distance (K)}}{3600} [\text{Hz}]$$

The maximum tolerance of this speedometer (at 500 Hz = full scale) is:

$$[v_1 - 300 \leq \frac{300}{10} + 4 \text{ km/h}] = [v_1 - 300 \leq + 34 \text{ km/h}]$$

2.9 Instruments Survey

VDO cockpit vision (Backlight) dia. 80 mm / dia. 100 mm

Part No. 437 015 . . .

Dial		Special feature	Part No.
Range	Imprint		
0 ... 200 km/h	km/h	dia. 80 mm, 12 - 24 V 12 V illumination	001 K
0 ... 300 km/h	km/h	dia. 80 mm, 12 - 24 V 12 V illumination	002 K
▲ 0 ... 140 mph / 220 km/h	MPH, km/h	dia. 80 mm, 12 - 24 V ● 12 V illumination, dual scale	016 C
0 ... 200 km/h	km/h	dia. 100 mm, 12 - 24 V 12 V illumination	007 G
0 ... 300 km/h	km/h	dia. 100 mm, 12 - 24 V 12 V illumination	008 G
▲ 0 ... 220 mph / 360 km/h	MPH, km/h	dia. 100 mm, 12 - 24 V 12 V illumination, dual scale	009 G
▲ 0 ... 140 mph / 220 km/h	MPH, km/h	dia. 100 mm, 12 - 24 V ● 12 V illumination, dual scale	017 C
▲ range stated first is outer range			
● with clamp ring instead of stud bolts and brackets			

2.9 Instruments Survey

VDO cockpit international (Floodlight) dia. 80 mm

Part No. 437 035 . . .

Dial		Special feature	Part No.
Range	Imprint		
0 ... 60 km/h	km/h	dia. 80 mm, 12 - 24 V 12 V illumination	001 C 001 G
0 ... 120 km/h	km/h	dia. 80 mm, 12 - 24 V 12 V illumination	002 C * 002 G
0 ... 200 km/h	km/h	dia. 80 mm, 12 - 24 V 12 V illumination	003 C * 003 G
0 ... 80 km/h	km/h	dia. 80 mm, 12 - 24 V 12 V illumination	012 C
▲ 0 ... 50 mph / 80 km/h	MPH, km/h	dia. 80 mm, 12 - 24 V ● 12 V illumination, dual scale	013 C *
▲ 0 ... 85 mph / 135 km/h	MPH, km/h	dia. 80 mm, 12 - 24 V ● 12 V illumination, dual scale	014 C
▲ 0 ... 120 mph / 190 km/h	MPH, km/h	dia. 80 mm, 12 - 24 V ● 12 V illumination, dual scale	015 C
▲ 0 ... 50 km/h / 30 mph	km/h, MPH	dia. 80 mm, 12 - 24 V ● 12 V illumination, dual scale	017 C
▲ range stated first is outer range			
● with clamp ring instead of stud bolts and brackets * phase-out			

2.9 Instruments Survey

VDO cockpit international (Floodlight) dia. 100 mm

Part No. 437 035 . . .

Dial		Special feature	Part No.
Range	Imprint		
0 ... 120 km/h	km/h	dia. 100 mm, 12 - 24 V 12 V illumination ▼	011 C

▼ with profile rubber ring instead of stud bolts and brackets

VDO cockpit international (Floodlight) dia. 100 mm

Part No. 437 055 . . .

Dial		Special feature	Part No.
Range	Imprint		
0 ... 60 km/h	km/h	dia.100 mm, 12 - 24 V 12 V illumination	001 C * 001 G
0 ... 120 km/h	km/h	dia.100 mm, 12 - 24 V 12 V illumination	002 C 002 G
▲ 0 ... 50 mph / 80 km/h	MPH, km/h	dia.100 mm, 12 - 24 V 12 V illumination, dual scale ●	004 C
▲ 2 ... 85 mph / 135 km/h	MPH, km/h	dia.100 mm, 12 - 24 V 12 V illumination, dual scale ●	005 C
▲ 0 ... 120 mph / 190 km/h	MPH, km/h	dia.100 mm, 12 - 24 V 12 V illumination, dual scale ●	006 C
0 ... 80 km/h	km/h	dia.100 mm, 12 - 24 V 12 V illumination	009 C
▲ range stated first is outer range			
● with clamp ring instead of stud bolts and brackets * phase-out			

2.10 Installation Instructions

999 165 001: VDO cockpit international

999 165 002: VDO cockpit vision

See file 'Installation Instructions'. ▼

▼ will follow

Product Manual

VDO cockpit vision VDO cockpit international

2. Electronic Speedometer (dia. 80 mm/dia. 100 mm)



2.11 Copy

Operating Instructions For Electronic Speedometer

See enclosures TU00.0777.00 105 02 page 1 and 2.

VDO cockpit vision, VDO cockpit international, VDO modulcockpit II Operating Instructions For Electronic Speedometer

1. Setting

3 alternatives can be used for setting the instrument:

2 options for pulse/distance ratio setting:

Function **'AUTOCL'**: automatic calibration by driving a measured distance (1 km or 1 mile)

Function **'PULSE'**: enter a known pulse/distance ratio

1 possibility for fine adjustment of the speed indication:

Function **'ADJUST'**: calibration using a reference speed indication (roller test bench)

Note: Respect the tolerances per directive 75/443/EEC when calibrating the speed indication. A reference to them is made in § 57 StVZO, chapter 4, requirements, states:

4.3.5 The vehicle is tested at the following speeds: 40 km/h, 80 km/h and 120 km/h or 80% of the maximum speed specified by the manufacturer if it is lower than 150 km/h.

4.3.6 The error limit of the instrument used for the measurement of the effective vehicle speed shall not exceed $\pm 1\%$.

4.3.6.1 If a measuring track is used, it shall be level and dry, and have a sufficiently non-skid surface.

4.4 The displayed speed shall never be lower than the effective speed. At the speed specified under 4.3.5, and at the intermediate values the difference of speed V_1 displayed by the speedometer and effective speed V_2 shall have the following equation:

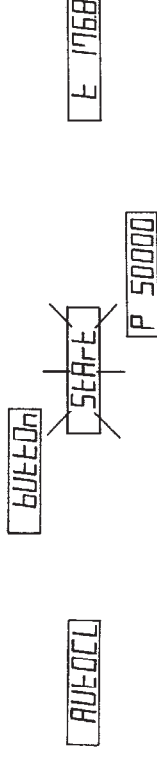
$$0 \leq V_1 - V_2 \leq 10 + \frac{V_2}{4} \leq 10 + 4 \text{ km/h}$$

1.1 Selection Of The Functions

Push button in front lens and hold in. Switch the ignition (operating voltage) on. The display alternates between 'AUTOCL', 'PULSE' and 'ADJUST' at 2 seconds interval. Select a function by releasing the push button when this function is displayed.



1.2 Function 'AUTOCL'



After selection of the function **'AUTOCL'** the display changes to 'bUtOn' after 3 seconds:



Ask a passenger to assist with the calibration!
No speed is displayed during the measuring drive!

During the drive exactly at the beginning of the measuring track (1 km or 1 mile) push the button briefly, the display flashes 'StArt'. Drive the test track with as constant a speed as possible. Exactly at the end of the measuring track again briefly push the button. The determined pulse/distance ratio is displayed if it is between 500 and 399990 pulses (e.g. 'P 50000', which corresponds to pulse/distance ratio 50000). The calibration is completed if the display changes to total or partial distance display.

Repeat the calibration if the display flashes 'F00' (no pulses). The sequence is the same as described above.

1.3 Function 'PULSE'



After selection of the function **'PULSE'** the display shows 'P 50000', for instance, after 3 seconds, with the digit before the last one flashing start entering the pulse/distance ratio immediately. The flashing digit is changed by pushing the button (adjustable pulse/distance ratio 500 to 399990). After entry of the pulse/distance ratio the display changes to total or partial distance display, the calibration is completed.

A new setting is required if the digit before the last one is flashing in the display after pulse/distance ratio setting. The sequence is the same as described above.

The function **'PULSE'** can be used to check the pulse/distance ratio stored by automatic calibration (function 'AUTOCL'). The stored pulse/distance ratio is displayed (e.g. 'P 50000'), and the digits start flashing, beginning with the digit before the last one.

VDO cockpit vision, VDO cockpit international, VDO modulcockpit II Operating Instructions For Electronic Speedometer

1.4 Function 'Adjust'



After selection of the function 'Adjust' the display alternates between 'UP' or 'dn' (up/down) after 3 seconds.

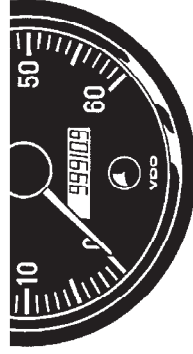


Only use this function on the roller test bench!
The fine adjustment is only possible between 30% and 100% of the indicating range. No pulse/distance ratio counting takes place during fine adjustment.

Pushing and holding the button when 'UP' is displayed increases the pointer indication ('dn' will lower it accordingly). Initially the change of the indication will be very slow for a very precise adjustment. Releasing the button for a short time repeats the cycle. The rate of pointer indication change increases when the button is held for a longer time. Release the button when the pointer indication corresponds to the reference speed. After 1 minute the display shows total or partial distance. Fine adjustment has been completed.

A wrong pulse/distance ratio entry (function 'PULSE') exists if the display starts flashing during fine adjustment. The pulse/distance ratio is either below 500 or above 399990. Repeat the calibration with the function 'PULSE'.

2. Operation



max. **9999999**

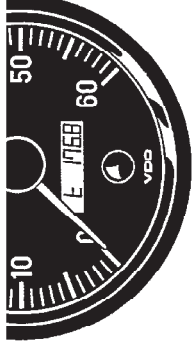
Briefly pushing the button alternates the total distance display (e.g. '99910.9') with the partial distance display (e.g. '176.8').

The total distance function counts the total mileage in kilometers or miles up to 999999.9 max.. This display cannot be reset.

The partial distance function counts the mileage in kilometers or miles up to "9999.9". This display is reset to '0.0' by pushing the button (for 2 seconds approximately).

Pushing the button for 2 seconds when total distance is displayed will also reset the partial distance to '0.0'.

max. **999999** **1768** **00**

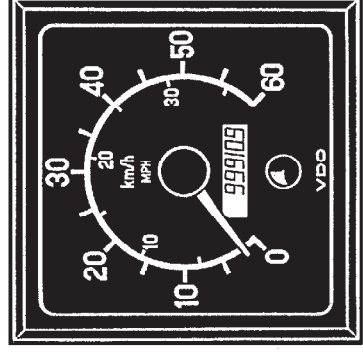
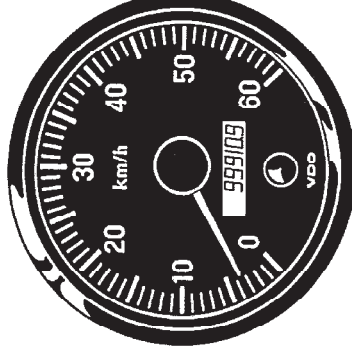


Trip and total distances remain stored after the operating voltage is switched off.

3. Speed Display

Note:

When ignition is switched off, the pointer remains at the last speed indicated, until the ignition is switched on again, without starting the engine, the pointer will then return to the zero position.



Calibration Instructions for VDO Electronic WWG Speedometer

- 1). Go to the start of a 1 km distance and turn the vehicle ignition off.
- 2). Press and hold the trip reset button.
- 3). Turn the ignition on and start the vehicle with the button still pressed.

The odometer window will scroll through AUtOCL, PULSE and AdJUSt
changing every three seconds.

- 4). When the AUtOCL appears in the window release the button and wait three seconds until the word bUttOn appears.
- 5). Press and immediately release the button so that the word StArt flashes on and off in the window.
- 6). Drive to the end of measured kilometre and stop.
- 7). The speedometer will not work during this process.
- 8). Press and immediately release the button.
- 9). The pulses per kilometre will flash up. Wait until the odometer returns to the display before moving off or turning the ignition off.
- 10). The calibration is complete.