

Service.



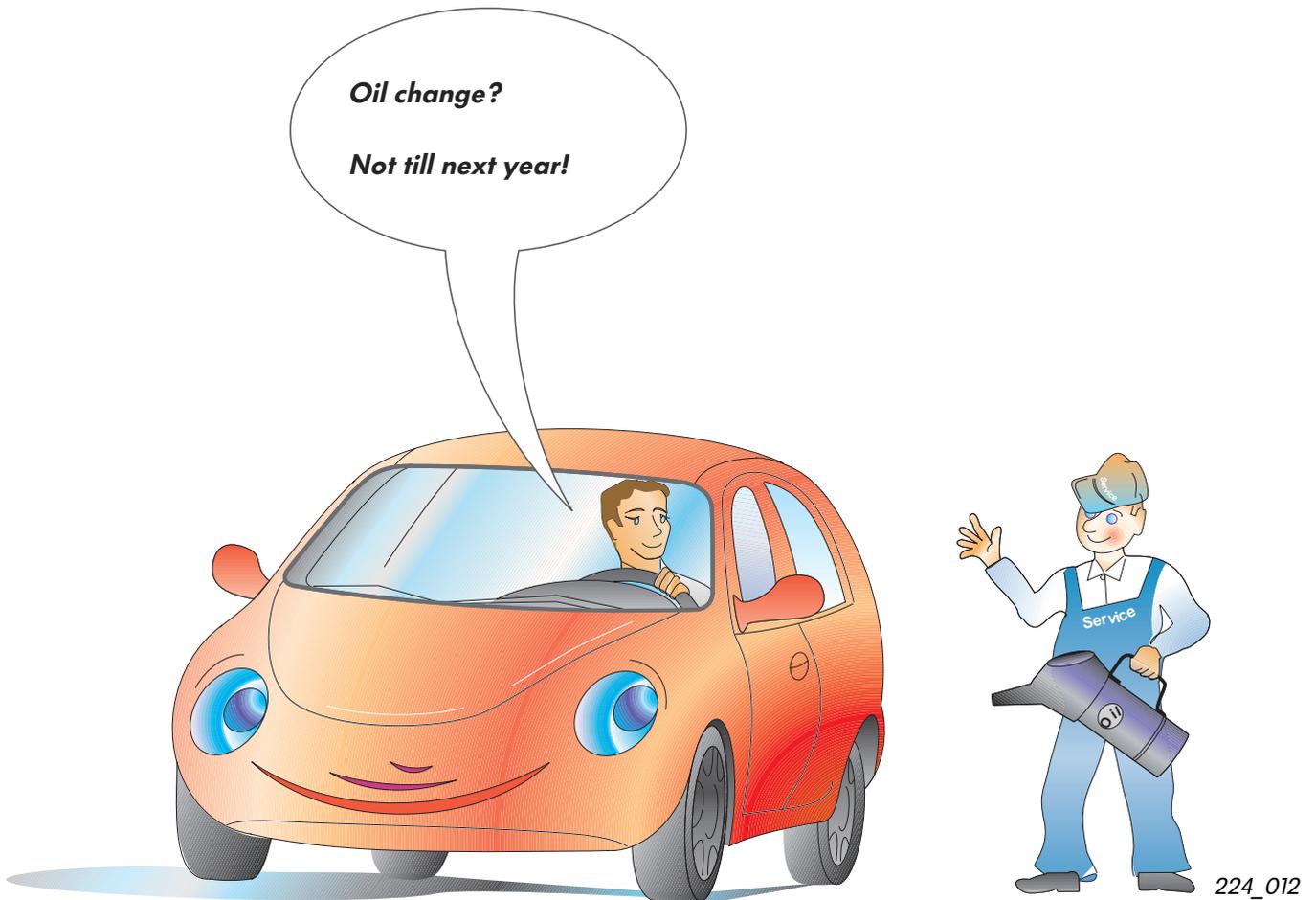
## Self-Study Programme 224

# Service Interval Extension

Basics for LongLife Service



## Extension of Maintenance Interval



Since Model Year 2000 Audi and Volkswagen have been fitting most models with service interval extension.

Depending on model and engine variants, service intervals of up to 2 years or max. 30,000 km are possible for petrol engines and 50,000 km for certain diesel engines.

This meets customer wishes to reduce the servicing requirements and also improves our competitiveness.

Technical requirements form the advanced developments to engines, the Service Interval Display and new wear-resistant engine oils.

Every service on cars with service interval extension always involves an oil change.



**Service interval extension has first been launched in Germany. For all other countries, please refer to the vehicle identification.**

**NEW**



**Important Note**



**The Self-Study Programme is not a Workshop Manual.**

Please always refer to the relevant Service Literature for all inspection, adjustment and repair instructions.

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# Introduction

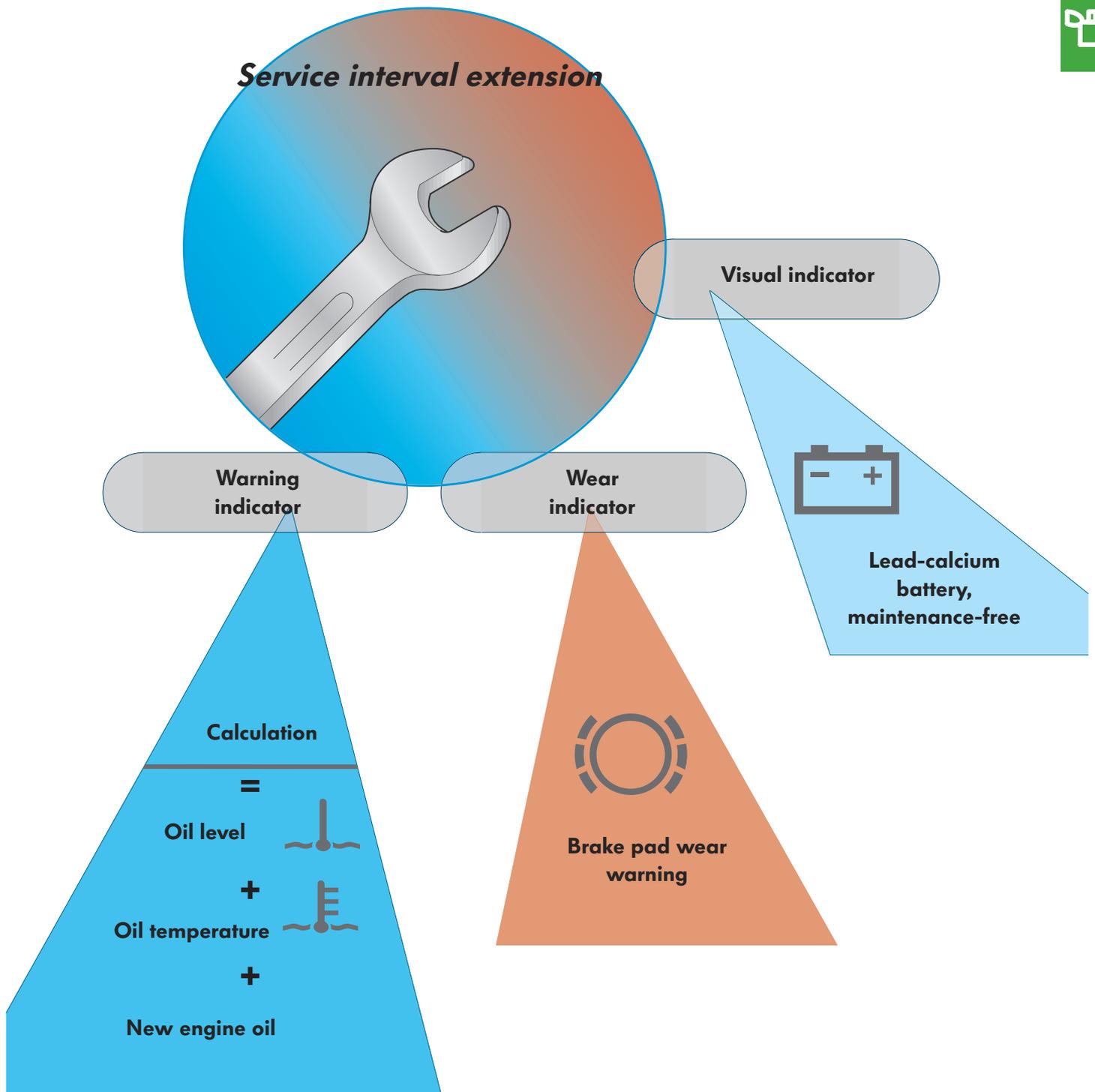


## Service interval extension ... in a nutshell

<b>What is service interval extension?</b>	Service interval extension is an advanced development of the existing flexible Service Interval Display. It permits a significant prolongation of service intervals and informs the driver in good time of the distance remaining to the next due service.
<b>What is special about service interval extension?</b>	No fixed service intervals  Service intervals result from the vehicle's conditions of use and the driver's style of driving.
<b>How does the driver know a service is due?</b>	The display in the dash panel insert indicates the distance remaining to the next service.
<b>What displays are provided for the service interval extension?</b>	Warning for minimum oil level  Warning for minimum brake pad thickness  Distance remaining to the next service
<b>What effects are obtained from the service interval extension?</b>	As a result of longer service intervals the engine oil requirement is significantly reduced over the vehicle's total life through fewer oil changes,  there is less waste oil to dispose of and this reduces the burden on our environment,  running costs are lower.
<b>Does special attention have to be paid to oil type and oil changes?</b>	Yes, of course! A service interval extension is only possible if the engine oils used comply with certain VW standards. If oils complying with different VW standards are used, dash panel insert has to be reprogrammed. Then only fixed service intervals of 15,000 km or annual service intervals are possible.

# Service interval extension

## Overview of service interval extension



224\_003

# Service interval extension

## Overview of vehicle range



224\_026

### Service interval extension = LongLife Service

#### Launch dates

Week 25 1999 for cars  
Week 18 1999 for commercial vehicles

#### Models

Golf, Bora, Passat, New Beetle, T4 TDI

#### Engines

All petrol engines with highest available exhaust emission standard\*

All diesel engines which comply with EU III/D3 exhaust emission standard using corresponding oils, with the exception of engines fitted with pump injectors.

#### At launch without service interval extension

Cabriolet, Sharan, LT, T4 with petrol engine, Caddy, all swirl chamber diesel engines



\* Please refer to vehicle data carrier.



224\_034

**Service interval extension = LongLife Service**

**Launch date**

Week 27 1999 for model year 2000 vehicles listed below.

**Models**

Audi A3, Audi A4, Audi A6, Audi A8, Audi S3

**Service interval extension later**

Audi TT Coupé  
Audi TT Roadster

**No service interval extension**

Audi Cabriolet

**Engine oils**

Oil as per VW standard 50301	Audi S3	154 kW
	Audi TT	165 kW
50300	all other	petrol engines
50600		diesel engines



Please always refer to the country-specific launch as service interval extension.

# Service Interval Extension

## Identification of vehicles with service interval extension



The service interval extension will be launched as of model year 2000.

However, not all models and engine versions will be converted immediately to service interval extension.

### VW

VW vehicles with service interval extension can be identified by the PR number "QG1". The PR number is on the vehicle data carrier.

### Audi

The service interval extension will be added to the Audi vehicles affected as of model year 2000.

### "Next service" sticker

The service interval extension also introduces a new sticker: "Next service".

The service interval extension is crossed in the appropriate box.

wwwzzz 3B zYE072322  
 3B 2 3B 5  
 PASSAT LiM. BASIS  
 88 KW D4 5G

ASU EMV  
 LB7Z GP

X9X	BOA	C6K	GOC	H6T	J1P	MJ4	Q2J
-	1AC	1G2	2ZA		5RQ	5SL	T10
-	380	8TC	QG1		8AR	8GL	
8RM		1LB	OJE	OYB	1BE		

224\_032

**Nächster Service**

**LongLife Service**

nach variabler Service-Intervall-Anzeige  
 (jedoch spätestens nach 24 Monaten)

---

**Zeit- oder laufleistungsabhängiger Service**

Monat ..... Jahr .....  
 oder bei ..... km  
 Je nachdem, was zuerst eintritt

---

**Bremsflüssigkeits Service**

Monat ..... Jahr .....  
 Nur mit Original Volkswagen Bremsflüssigkeit

224\_017

Service Anzeige beachten!

**Nächster Service Termin**

nach Anzeige   
 oder

Monat: ..... Jahr: .....

bei: ..... km  
 je nachdem, was zuerst eintritt.

**Nächster Bremsflüssigkeits Service**

Monat: ..... Jahr: .....

Hilfe rund um die Uhr  
 0800-283 44 45 33

224\_018



**Important**

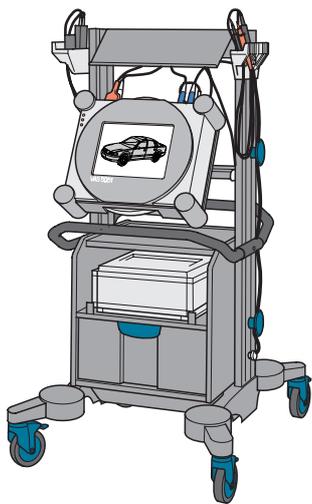
### Maintenance booklet

The work instructions for service interval extension are described in detail in the type-specific "Maintenance" booklet

You must also use the workshop form intended for each model.

## Flexible service intervals

The processor for the Service Interval Display is located in the dash panel insert. It calculates the distance to the next service due using specific input information.



224\_008

Address word 17  
Function 10 adaption

## Fixed service intervals 1 year/ 15,000 km

When the Service Interval Display is reset, you can also set or encode a fixed interval of 1 year/15,000 km. This is necessary if engine oil is not used according to the LongLife specification.

**You can also reset the Service Interval Display on the dash panel insert. This automatically sets a fixed interval of 1 year/15,000 km.**

This procedure is also described in the manual.

The extended service intervals are only possible if the dash panel insert is encoded accordingly and the specified engine oil is used.

A flexible interval can only be calculated for the next service if the Service Interval Display is reset using VAS 5051 or VAG 1551/52.



The Service Interval Display must be reset (adapted) during the delivery inspection and at every service. Please keep to the procedures specified in the "Maintenance" booklet.



224\_021

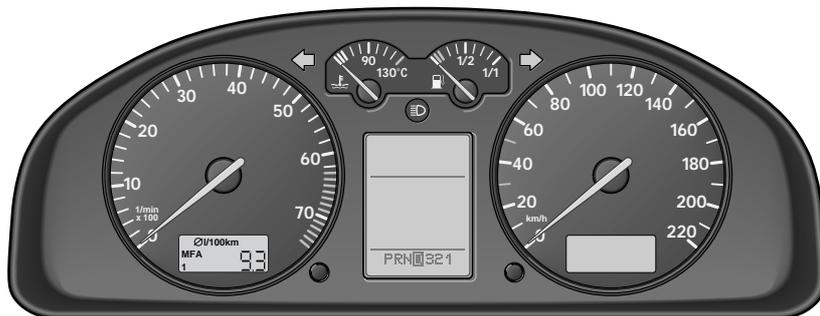


# Service Interval Extension

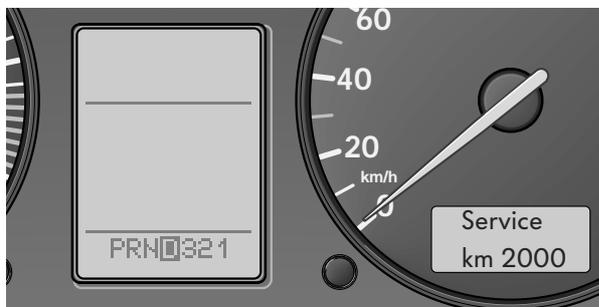
## Display

### The Service Interval Display

The driver is informed about the remaining distance to the next service from displays in the dash panel insert.

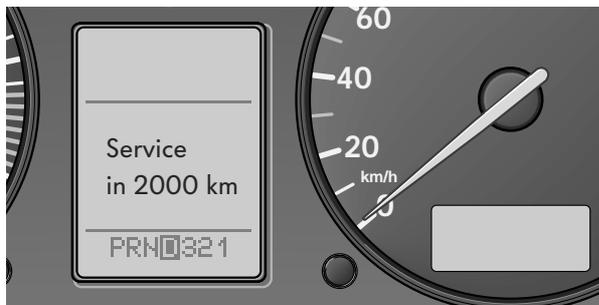


224\_021



224\_024

In the standard variant of the dash panel insert, the service information appears in the speedometer counter.



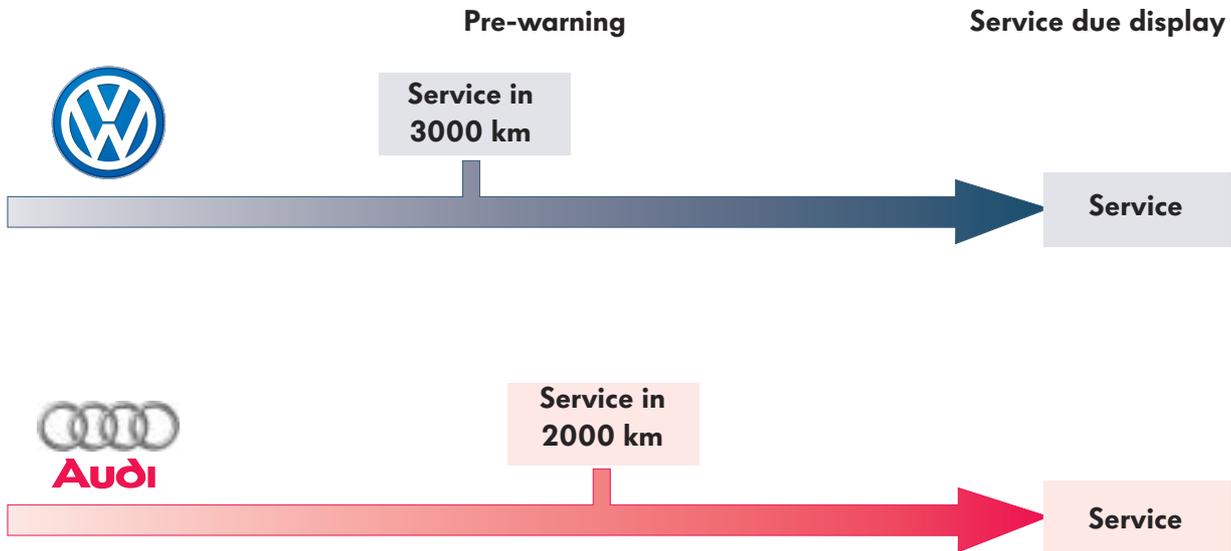
224\_024

On vehicles with on-board computer or navigation system, the next-service information appears in the central display.

The mileage display to the next service decreases in steps of 100 kilometres and is redisplayed every time the engine is started.

## Functions in the combi-instrument

### Difference compared with pre-warning



224\_013

### Display variants

Display in the speedometer

SERVICE  
km 3000 \*

Service

Display in the central display

SERVICE  
in 3000 km \*

PRN 321

SERVICE  
Now

PRN 321

\* Audi: 2000 km

Optical feature

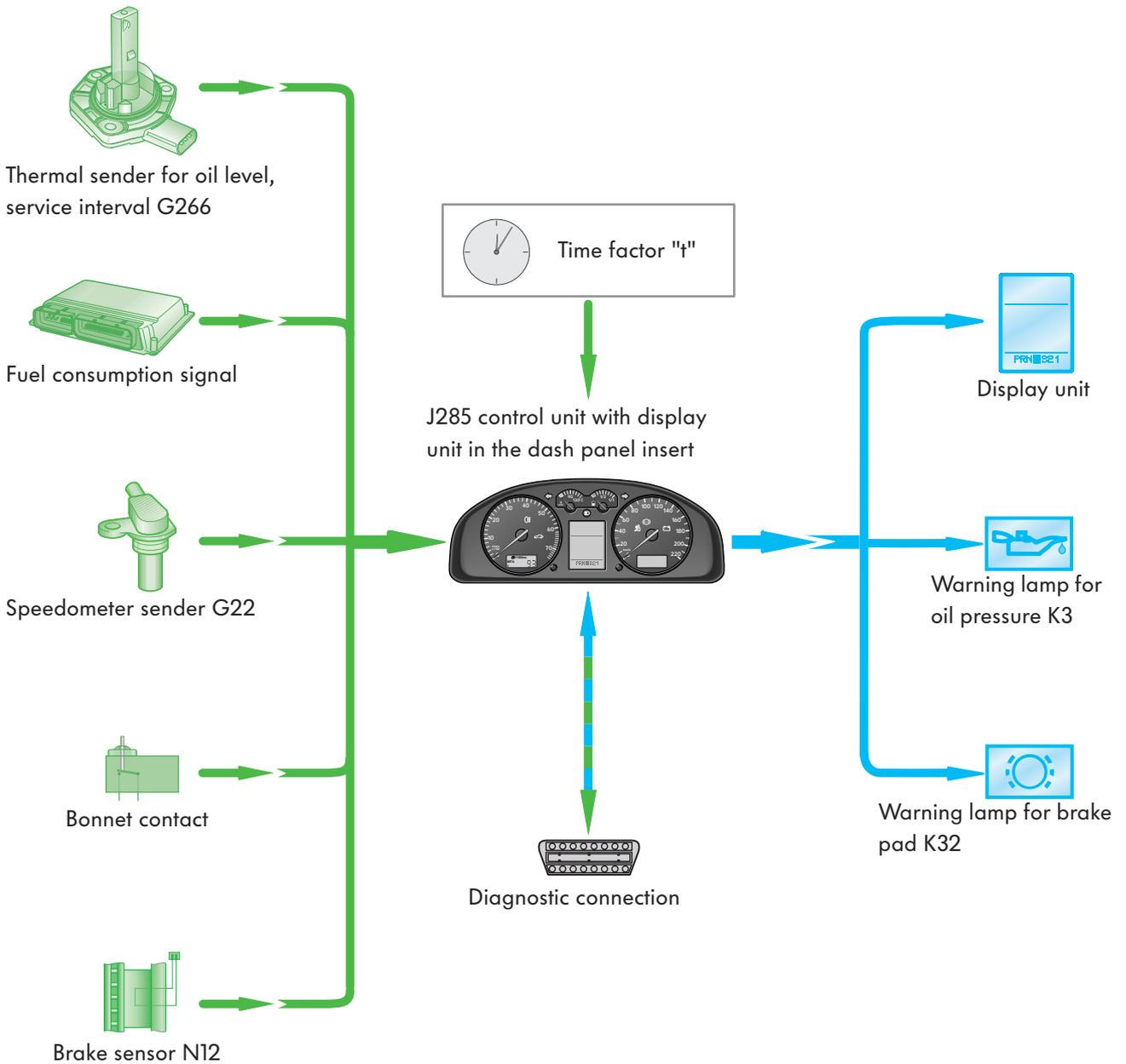
comes on for  
20 s on  
"Ignition ON"

flashes for 20 s  
on  
"Ignition ON"

# Service Interval Extension

## Petrol engines

### Service interval extension elements



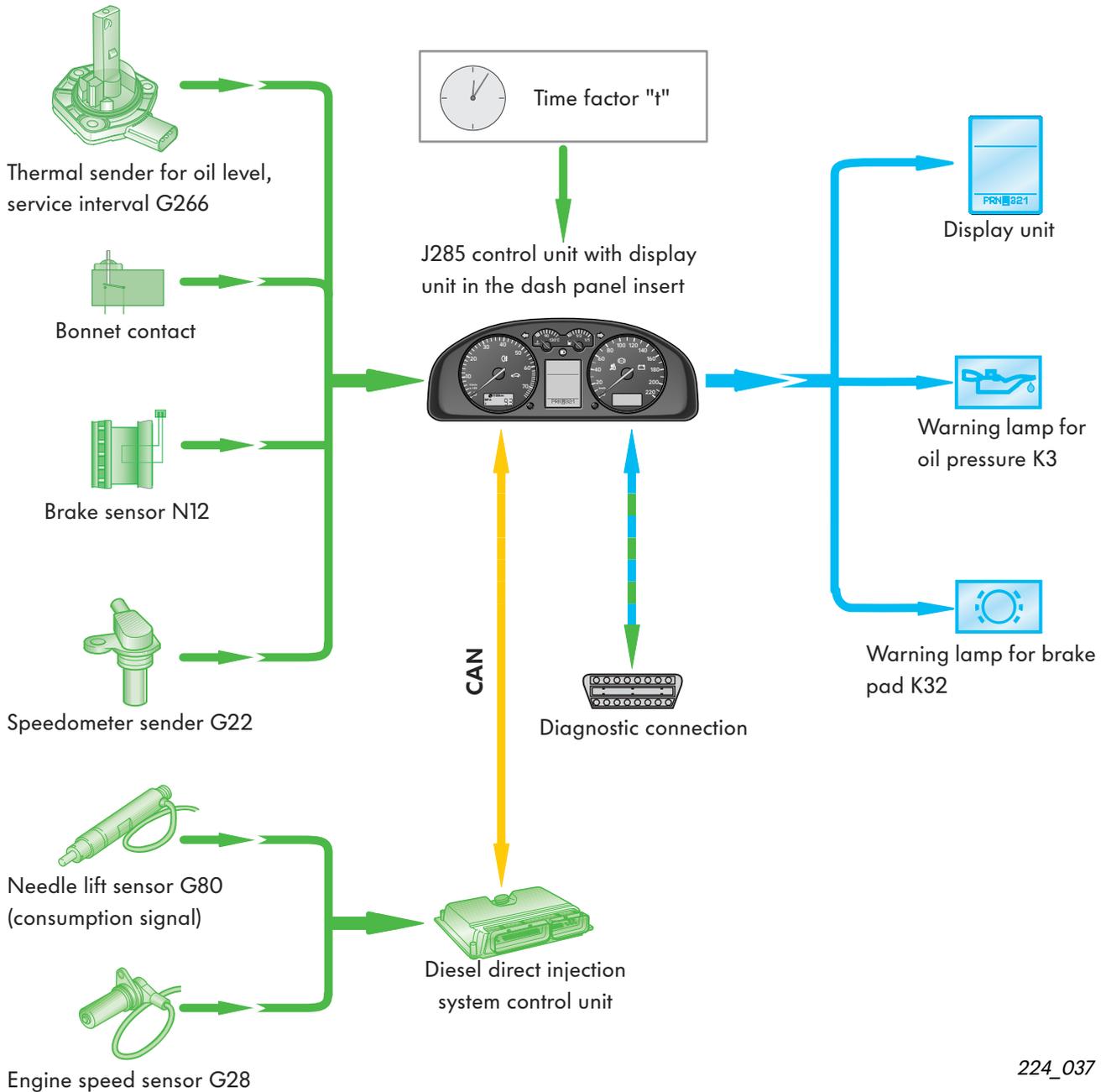
224\_036



The system overview shows in simplified form the interaction between individual vehicle components which are used for service interval extension.

# Diesel engines

## Service interval extension elements



224\_037



The system overview shows in simplified form the interaction between individual vehicle components which are used for service interval extension.



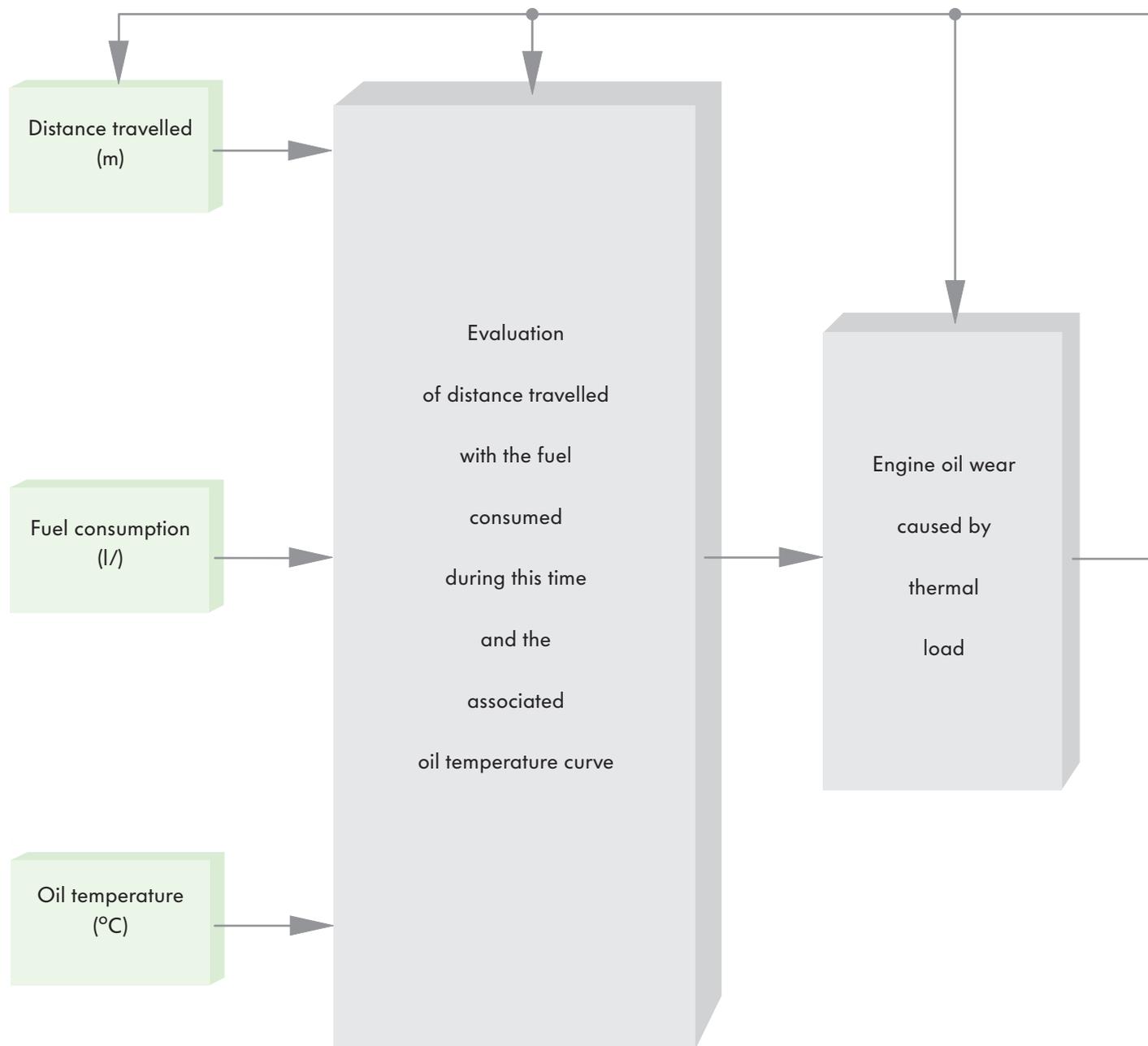
# Service Interval Extension

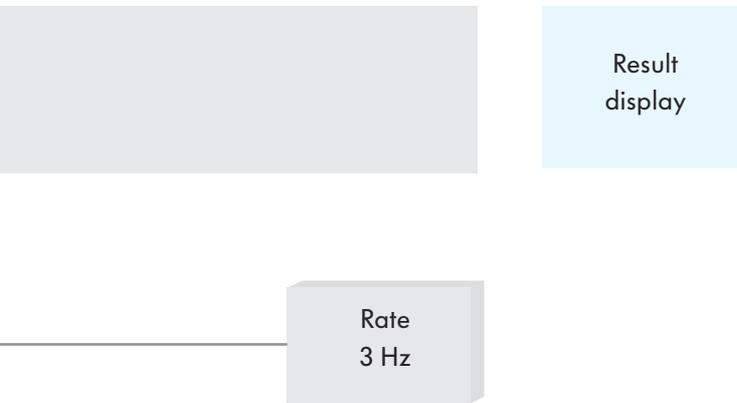
## Petrol engines

Determining the service intervals

Input parameters

Calculation/evaluation



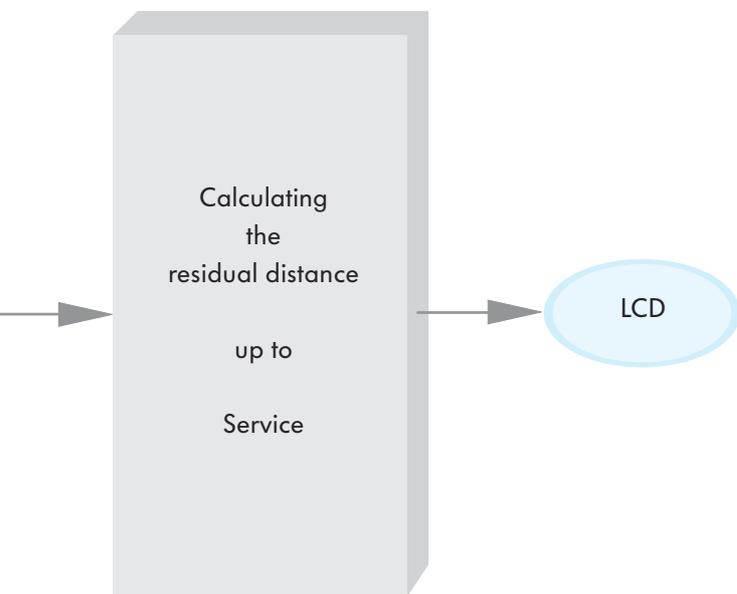


To calculate the service interval (distance travelled up to oil change/service), the distance travelled in 3 seconds for every “Ignition ON” phase is evaluated with the fuel consumed during the same time and the associated temperature curve.

The result is a measure of engine oil wear caused by thermal load.

This value is used to calculate the residual distance to the next service.

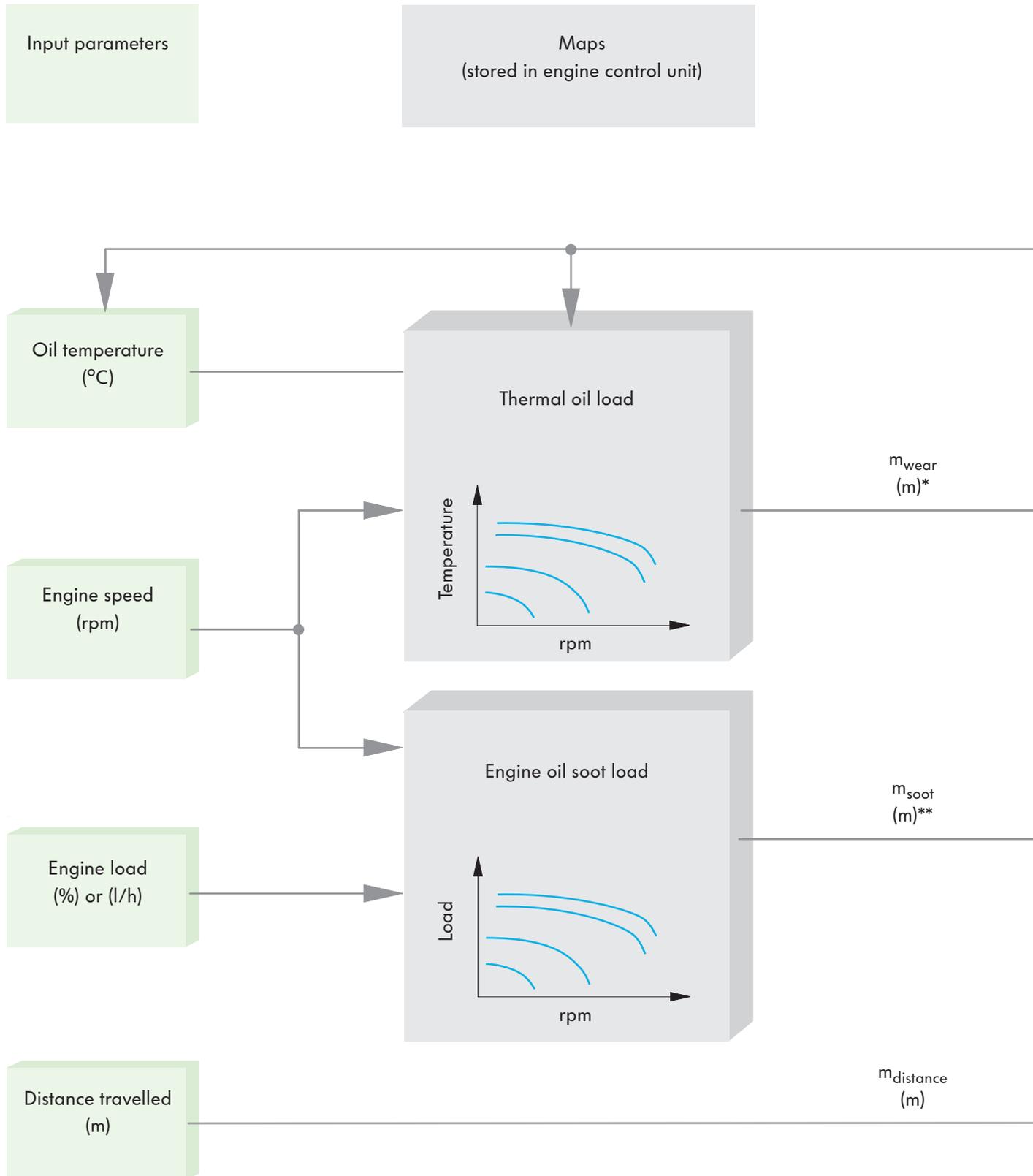
If the conditions for service pre-warning or service are met, the display is activated.

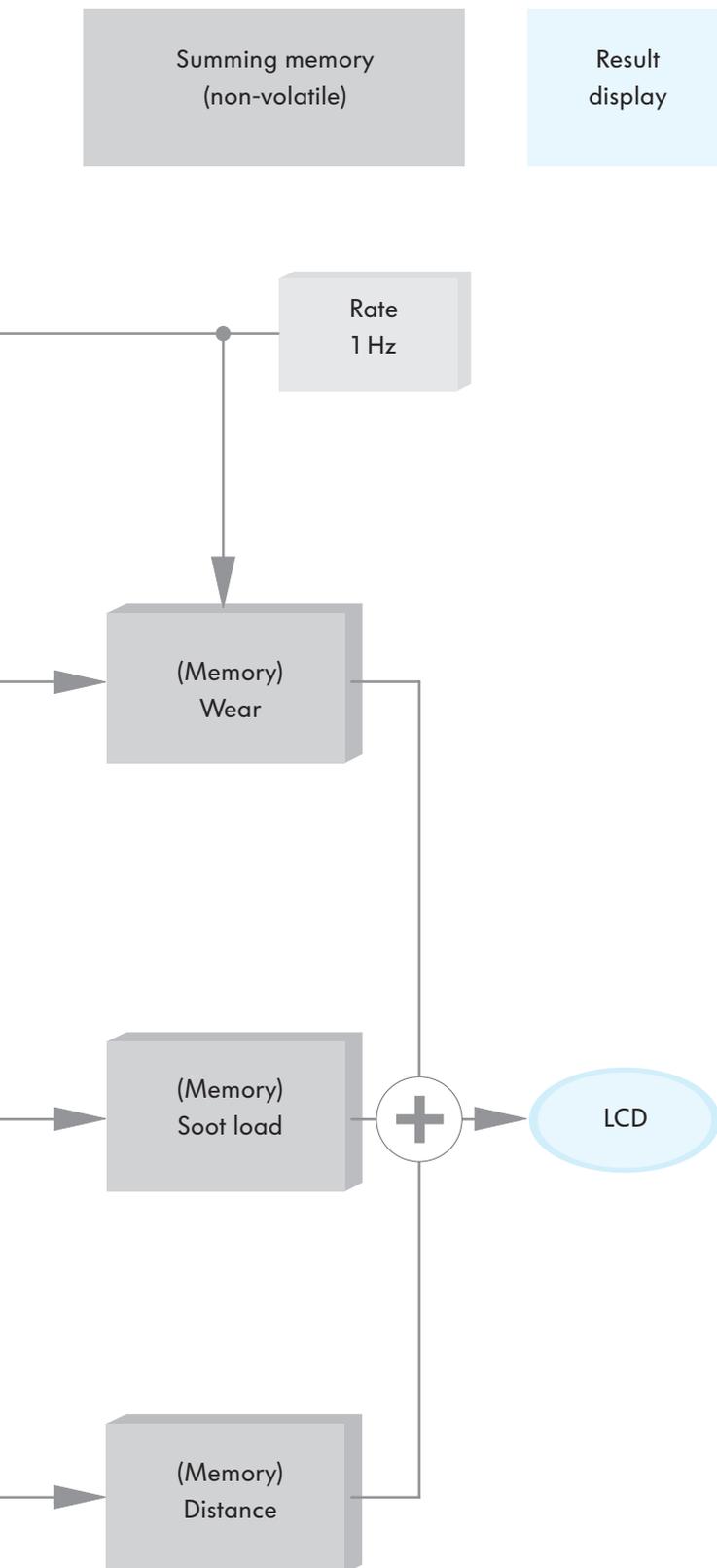


# Service Interval Extension

## Diesel engines

Determining the service intervals





A “Thermal load” distance comparison value\* in metres is obtained by comparing the input parameters oil temperature and engine speed with the “Thermal oil load” map.

Similarly, the input parameters “Engine speed” and engine load are compared with the “Soot load” map. This obtains a distance comparison value\*\* of “Soot load” in metres.

The two distance comparison values and the direct distance travelled parameter are added in 3 separate memories (non-volatile).

From these three values and the rate, the control unit calculates the residual distance to the next service.

If the conditions for service pre-warning or service are met, the display is activated.

# Service Interval Extension

## Engine oil

### Engine oil as per VW standard

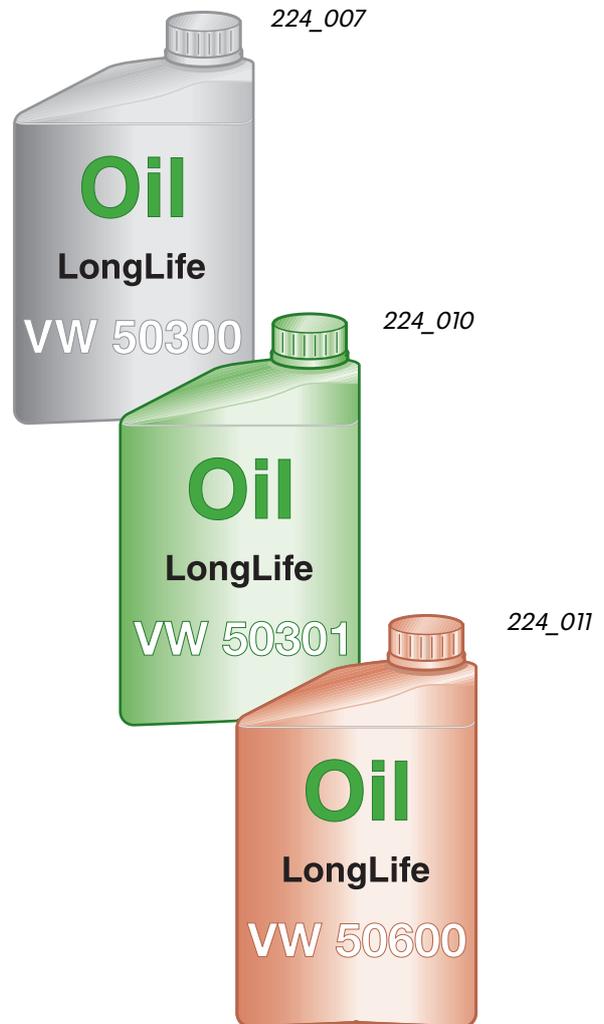
Engine oil plays a key component in engine design. Audi and Volkswagen engines have long had to be filled with oils released to VW standards. Oils according to the specified standard also have to be used for topping up.

### New oil standard for service interval extension

A number of mineral oil companies were commissioned by Audi and VW to develop synthetic engine oils according to the new standards for service interval extension. Long life service intervals can only be achieved without any damage to the engine mechanicals using these special oils.

Engine type	Oil standard
Petrol engines	VW 503 00
1.8 litre turbocharged engine 165 kW in the Audi TT and Audi S3 145 kW	VW 503 01
TDI diesel engines (except for pump injectors)	VW 506 00

The new engine oils guarantee more stable engine protection for longer periods of use. The special high lubricity properties help to reduce fuel consumption.



### Using LongLife standard engine oils in other engines

Engines as from model year 2000 which are not affected by service interval extension should not be filled with LongLife oils. Please refer to the specified oil standards.

## Topping up with engine oils

Even when topping up with engine oil, you must keep to the LongLife standard specified.



... only in exceptions

... Advise the customer

### Topping up with non-LongLife engine oil

It can happen that a customer is forced to top up with oil, for example, if the oil level warning lamp comes on at minimum oil level between services.

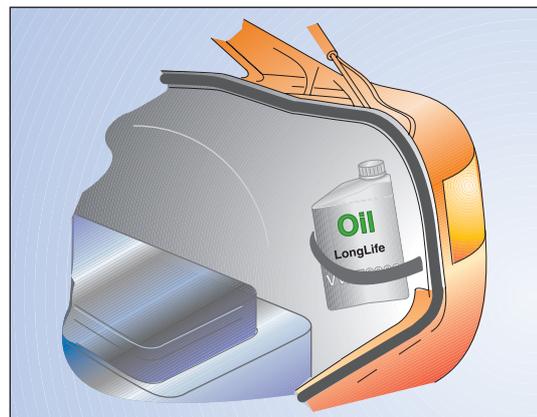
If a petrol station has no LongLife oil available, a maximum of 0.5 litre of standard 502 00 can be topped up on petrol engines and 505 00 for diesel engines.

This should only be done in exceptions to maintain mobility.

... recoding the Service Interval Display is not necessary.

### ... for longer trips

Advise the customer to take a spare can of LongLife engine oil on longer trips. So the right oil is always available for topping up.



224\_025

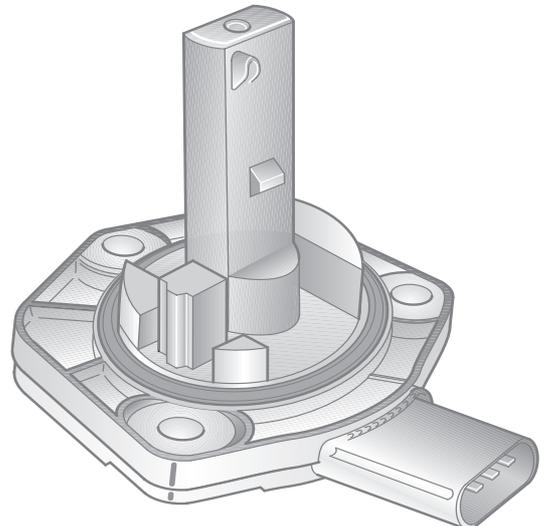
# Service Interval Extension

## Assessing the oil level and oil quality

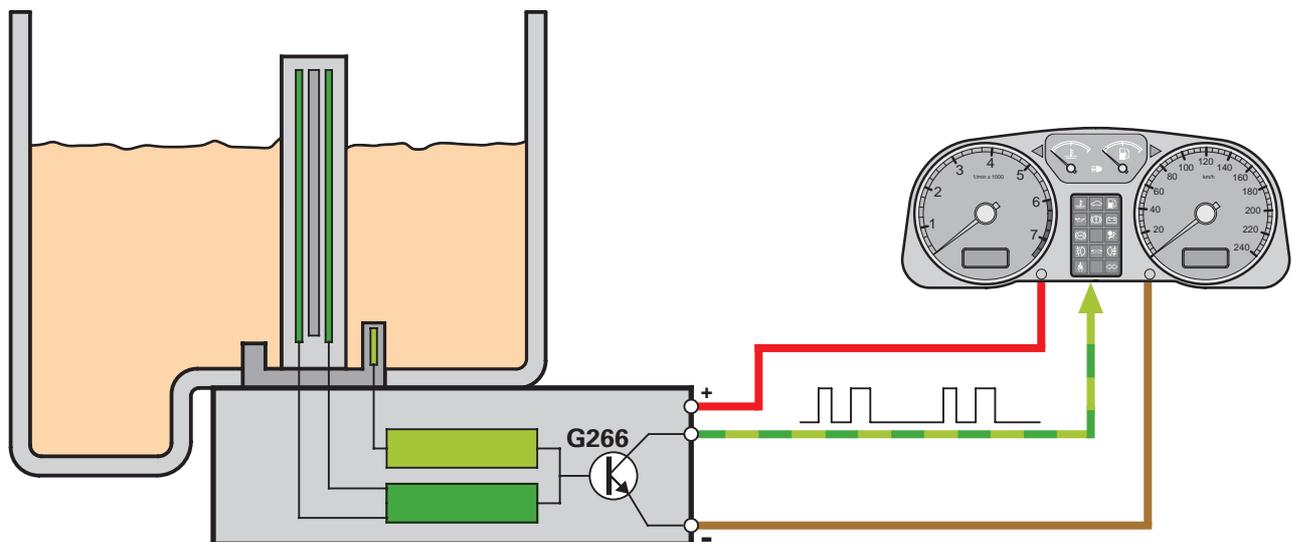


The Flexible Service Interval Display obtains information from the new oil level/oil temperature sender G266 in order to calculate oil level and oil quality.

On diesel engines, the oil quality calculation includes a parameter which indicates the average content of soot particles in the engine oil. This parameter was calculated in trials and is stored in a map.



224\_001



224\_002

The oil level/oil temperature sender G266 is a thermal oil level sensor. While the engine is running, the engine oil temperature is continuously measured and the engine oil level is calculated. Both parameters are sent via a common pulse-width modulated signal to the dash panel insert.



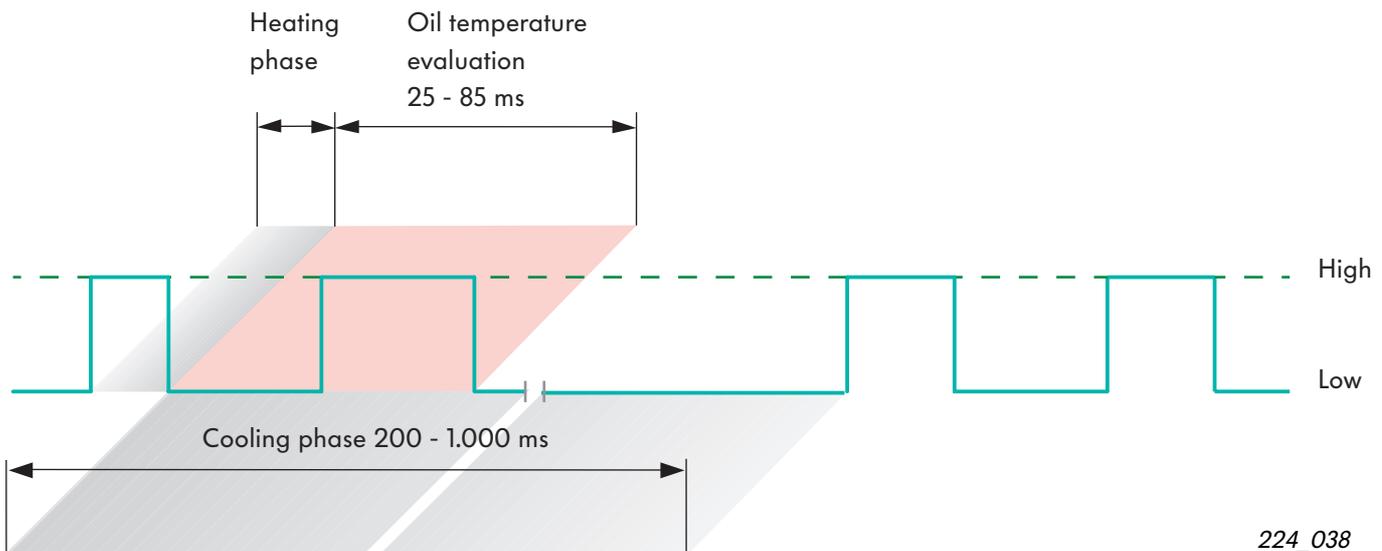
## Measuring oil temperature and oil level

The oil temperature is detected by a separate temperature sensor with integrated electronics.

The measuring element for oil level also works with temperature measurement. The electronics therefore heat it up quickly above the current oil temperature.

After the heater voltage is switched off, the measuring element is cooled down by the engine oil to the oil temperature level. The oil level is calculated from the length of time of the cooling phase.

long cooling phase	low oil level
short cooling phase	normal



224\_038

The signal indicates the heating phase as high voltage and the cooling phase as low voltage.

During the cooling phase, engine oil temperature information is transferred as a separate high signal.

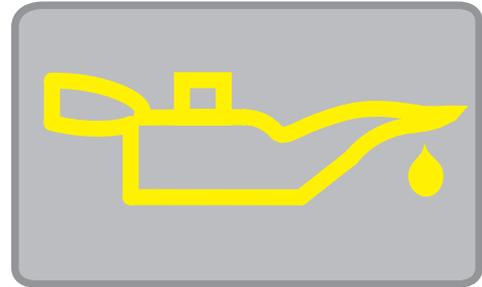
# Service Interval Extension

## Low oil level warning



The oil pressure warning lamp is used to warn the driver that the oil level is low.

It lights up yellow.



224\_009

If an oil level warning was active before ignition OFF, the warning re-appears immediately when the ignition is switched on again.

### Note:

The low oil level warning is cancelled when the bonnet contact is activated. You cannot reset the warning using the self-diagnosis.

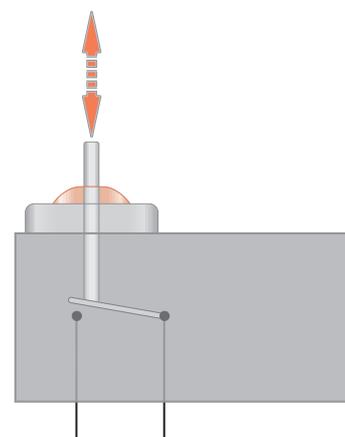
## Bonnet contact

The contact switch for the bonnet F120 is included in the calculations of the Service Interval Display.

The bonnet contact signal is evaluated as soon as the oil level warning is activated.

If the bonnet is opened after the oil level warning is activated, the electronics assumes that the oil has been topped up and cancels the low oil level warning.

However, if no oil was topped up, the electronics detects the low oil level within approx. 100 km and re-activates the low oil level warning.



224\_028

## Maintenance free lead-calcium battery

With the longer service intervals, the battery is also not checked by the workshop for longer periods of time. Despite this, the battery must still remain functional for this period of time.

For this reason, the LongLife Service includes a new maintenance-free battery.

### What's new with the new battery?

- lead-calcium
- optical status indicator

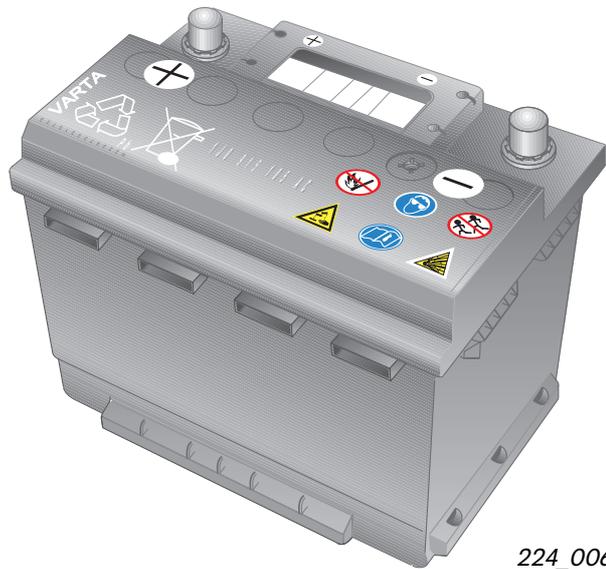
The battery has a round view window on its top. This is what we call a "magic eye". It changes its colour depending on the charge state and acid level in the battery.

#### Important:

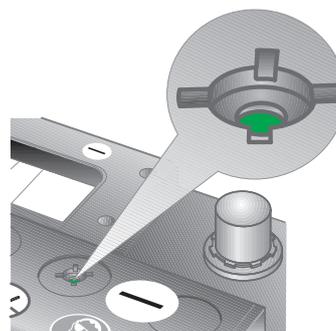
Air bubbles corrupt the colour display. Then just tap the magic eye carefully.

#### Note:

B platform vehicles, i.e. Audi A4/A6 and Passat, will be fitted with the maintenance free battery at a later date (status 08/99).

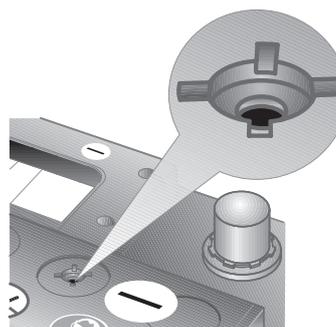


224\_006



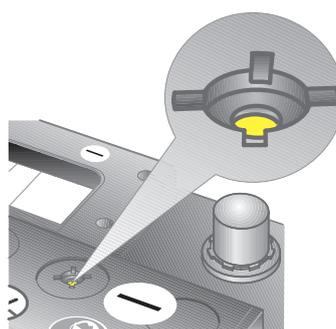
green ...  
the battery has  
sufficient charge

224\_014



black ...  
no charge or  
charge too low

224\_015



colourless/yellow ...  
critical acid level,  
you must top up  
with distilled water

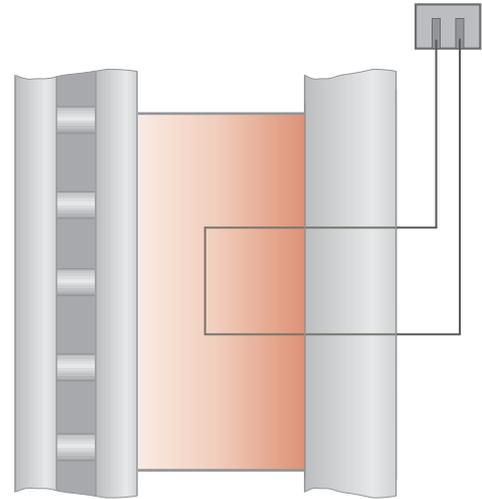
224\_016

# Service Interval Extension

## Brake pad wear indicator

Brake pad wear is measured electrically.

When the brake pad has reached its wear limit, the contact loop is broken and the alarm indication lights up in the dash panel insert.



224\_004

Depending on the model, the “Check brake pad” warning appears on the dash panel insert display or an acoustic warning sounds (Audi).



224\_005



The brake pad wear is checked on the inner pad of the front left wheel.

When the wear warning is activated, you must also check the pad thicknesses of the rear brakes, of course.

## Maintenance interval and driving style

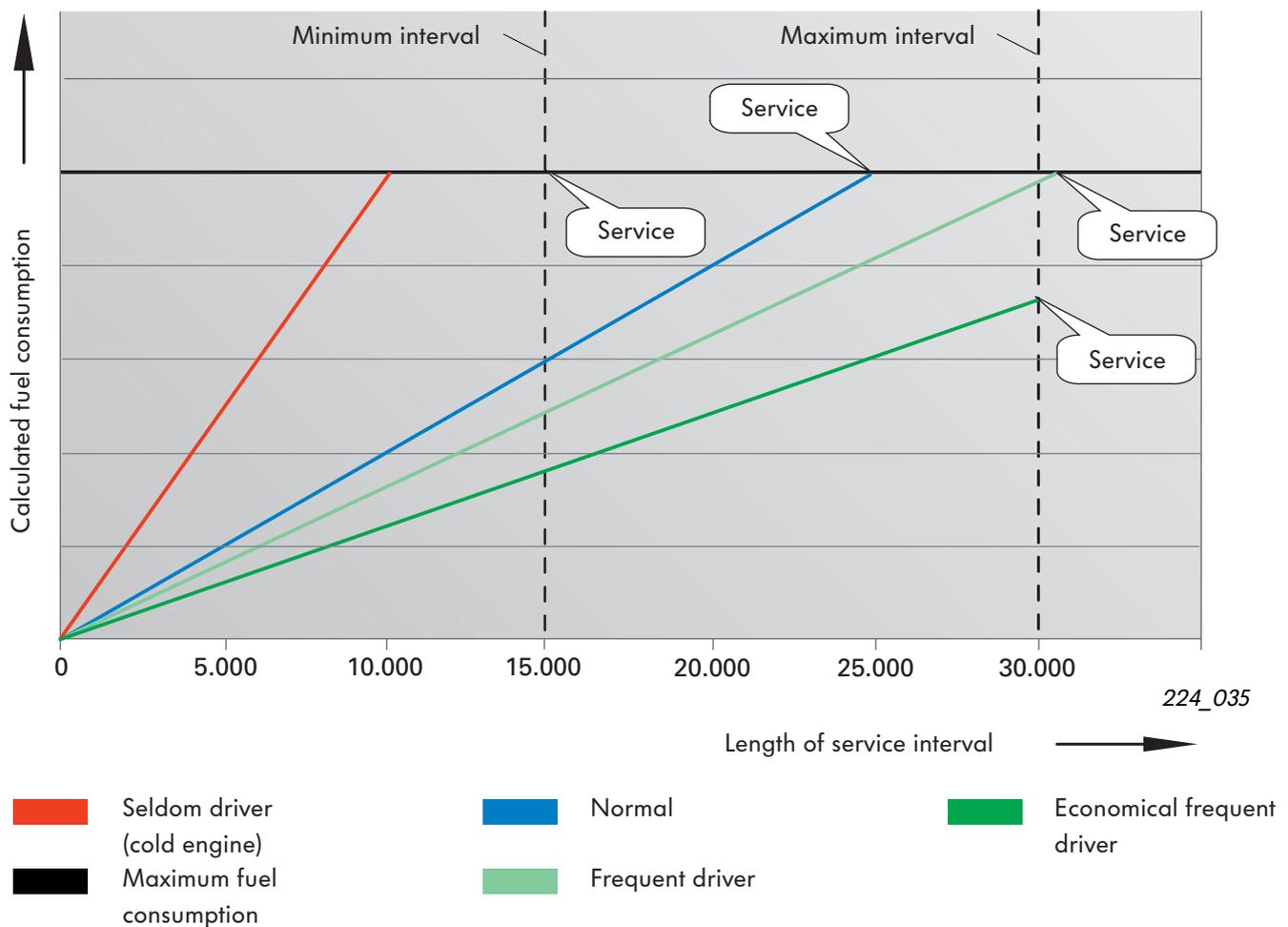
The service interval extension allows extremely long service intervals. The possible intervals are not always reached.

This has a lot to do with the conditions under which the vehicle is used.



<p>If the vehicle is driven economically and mainly on long trips, it can reach a maximum service interval of 30,000 km or 2 years for petrol engines or 50,000 km and 2 years for diesel engines.</p>	<p><b>Maximum service interval</b></p>
<p>If the vehicle is driven very uneconomically or under extreme conditions, e.g. short distances, the shortest service interval is 15,000 km or 1 year.</p>	<p><b>Minimum service interval</b></p>

### Possible service intervals using a petrol engine as an example



# Service Interval Extension

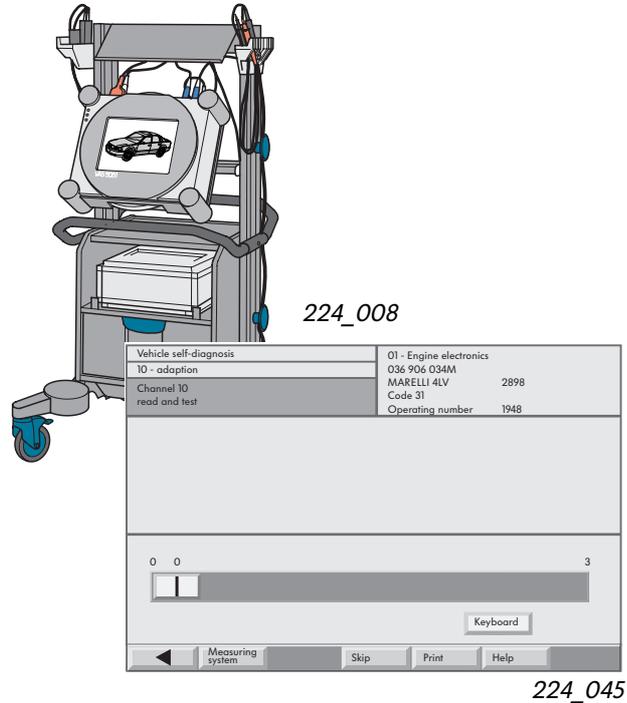
## Resetting

The Service Interval Display must be reset

- at every delivery inspection
- after each service (inspection service)

The Service Interval Display is reset together with the Vehicle diagnostic testing and information system VAS 5051.

The fault reader V.A.G 1551 can also be used.



## Resetting the LongLife service interval

Address word: 17 - Dash panel insert

Function:	10 - Adaption
Adaption channel	02 - Reset display

Resetting is indicated in the display by "0".



You can even reset the Service Interval Display via the dash panel insert using the setting keys for mileage reading and time. This automatically sets a fixed interval of 1 year/15,000 km.



Please refer to the "Maintenance booklet" for details about resetting.

## Coding

### Coding for “non“ LongLife oil

When engine oils are used that do not comply with the VW standard for service interval extension, no flexible service intervals can be guaranteed.

The dash panel insert must then be encoded to “not flexible“, i.e. to a period of a distance. Then the known service intervals (15,000 km/1 year) apply.

The Service Interval Display is reset together with the Vehicle diagnostic testing and information system VAS 5051.

Address word: 17 - Dash panel insert

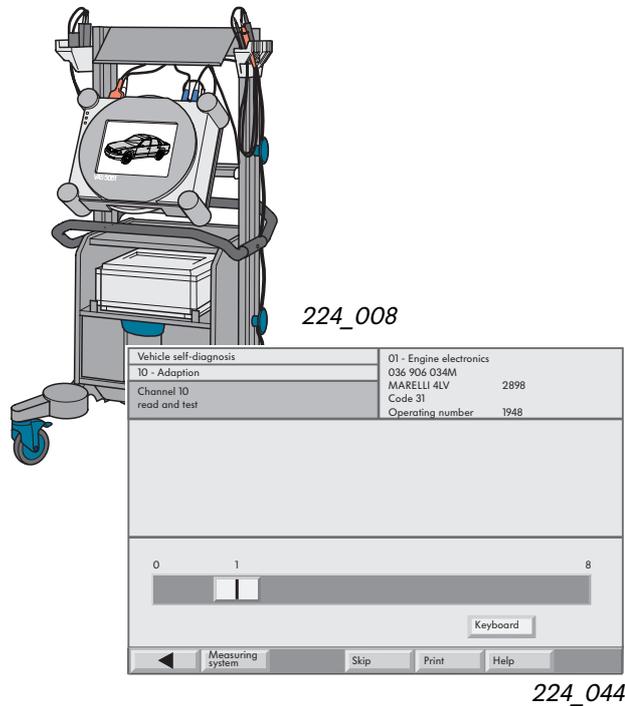
Function:	10 - Adaption
Adaption channel	45 - Adapt dash panel insert to oil grade
Adaption value	1 - No LongLife oil to VW standard

### Coding for LongLife oil

When you encode the dash panel insert for service interval extension, select “flexible“.

Address word 17 - Dash panel insert

Function:	10 - Adaption
Adaption channel	45 - Adapt dash panel insert to oil grade
Adaption value	2 - LongLife oil (petrol engines, VW - standard 503 00/503 01)
	3 - LongLife oil (diesel engines, special 6-cylinder engines, VW - standard 506 00)
	4 - LongLife oil (diesel engines, VW - standard 506 00)



The fault reader V.A.G 1551 can also be used.



On the display of the VAS 5051 you'll see the adaption value and the current status of the engine oil grade, i.e. 4, 3, 2 or 1.



Please refer to the “Maintenance booklet“ for details work steps.



# Service in dialogue

Customers will want to know a lot about service interval extension.

Here are the most asked questions and their answers.

## Customer's question:

How do I know whether service interval extension applies to my vehicle?

## The expert's reply:

There is no visible indication of the hardware required for service interval extension. For this reason, vehicles with service interval extension can be identified by the data specified in the service sticker. The sticker is located on the door post. We apply this sticker and fill it out.

Do I have to use the new LongLife oils?

No. The customer can choose. The extended service intervals can be driven with the new LongLife oils. The mileage is dependent on the driving style. With conventional oils you can drive the previous intervals: 15,000 km or 1 year.

Do I have to drive especially slowly to reach these service intervals?

What is important is a moderate driving style. If you drive frequently at full throttle and/or short distances, you must have a service more regularly than someone who drives on long motorway trips at constant speed.

If I drive with an extremely uneconomical driving style that a service is needed after 10,000 km?

No. With the new system and LongLife oil, you can achieve a mileage of at least 15,000 km.

Let's assume I'm standing at a petrol station and they don't have any LongLife oils. What oil can I top up with?

In exceptions, you can top up with max. 0.5 litre oil as per VW standards 50200/50500 once without impairing the special properties of LongLife oils.



---

**Customer's question:**

Can a workshop find out whether the right oil was used for topping up?

Can you change back to service interval extension after a service with conventional oil?

Can old vehicles run with extended service intervals if they use LongLife oils?

Can you modify old vehicles to run with service interval extension?

How often does the oil filter need to be changed?

**The expert's reply:**

No, unfortunately. In their own interests, customers should take special care to use the right oils. Extended service intervals are only possible with LongLife oils.

Yes. If the car is fitted with the new technology, you can obtain all the benefits of LongLife oils when you renew the oil.

No. The new oils don't help because the vehicle isn't fitted with the technology.

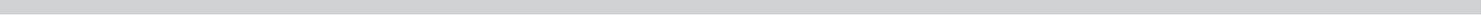
No. Not technically feasible.

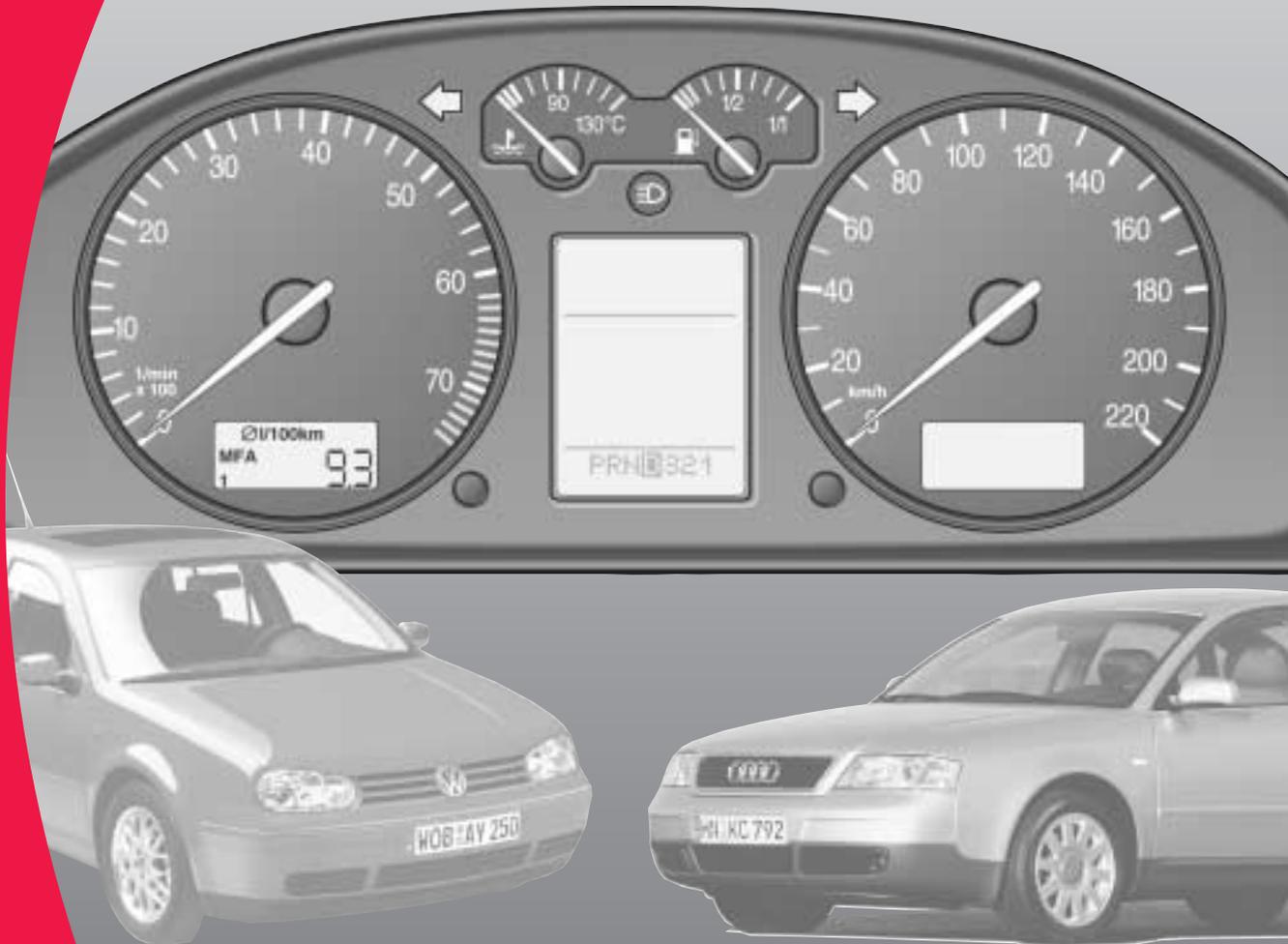
At every oil change – as usual.



# Notes

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940.2810.43.20 – Technical status: 08/99

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