Navigation systems in vehicles

Today‘s traffic is characterized by a constantly rising traffic density. In many regions the road system is not developed at the same tempo as the traffic increases. This leads to increasing demands on the driver. He must concentrate at all times on the traffic, in order to react fast and correctly in each traffic condition. Unforeseeable events, such as accidents or road blocks additionally compel the driver to use alternative routes. The orientation up to the desired destination becomes thereby frequently the primary activity of the driver. He is thereby distracted from his actual task of driving.

The technology of today for the navigation equipment of vehicles enables the driver to be guided to the desired destination. The method of the satellite navigation, which was originally developed for military purposes, is used increasingly in many fields of the civilian sector due to its technical progress. Today we find these systems in many large series of manufactured vehicles. Depending on the version, the navigation systems indicate to the driver the optimal route to the desired destination but also transmit information about the traffic condition and react to unforeseen events and thus contribute to the improvement of the driving convenience and to the increase of the road safety.

Contents

You will find instructions for installation and removal, repairs, diagnostics and a detailed Owner‘s Manual in the repair manuals, in the diagnostic unit VAS 5052/5051 and in the on-board literature.
Time of going to press was on the 10/05.
This brochure is not subject to the update.

* SNS = Satellite Navigation System

GPS satellite navigation system

What is GPS

GPS (Global Positioning System), global locating system is a world-wide radio navigation system supported by satellites for the real-time determination of the location of a random number of objects at each point of the earth.

SP61_01

History of the GPS

The system was originally developed since the 70‘s in the USA for accurately locating military objects and for the navigation of rockets.
The use for civilian or private purposes was not feasible until 1993 due to strategic, technological and financial reasons. Even after the release, the data sent by the satellites were still manipulated out of strategic reasons by means of a special procedure. Until May 2000, an interference signal and at the same time a correction signal were added to the use signal by means of a random generator, which could not be decoded with all generally accessible means. Thus the accuracy of locating the non-military user and objects was limited to approximately 64 to 100 m.

GPS Today

Since the unrestricted release for civilian use, and due to the technological progress (miniaturization and price reduction of electronics, lowering of the power requirement), the satellite navigation systems (SNS) find even broader application within civilian sectors. The original development of the system for military purposes enables a locating accuracy of approx. 15 - 20 m. At present the GPS is the most efficient and most reliable system for world-wide locating.

Component parts of the GPS navigation system

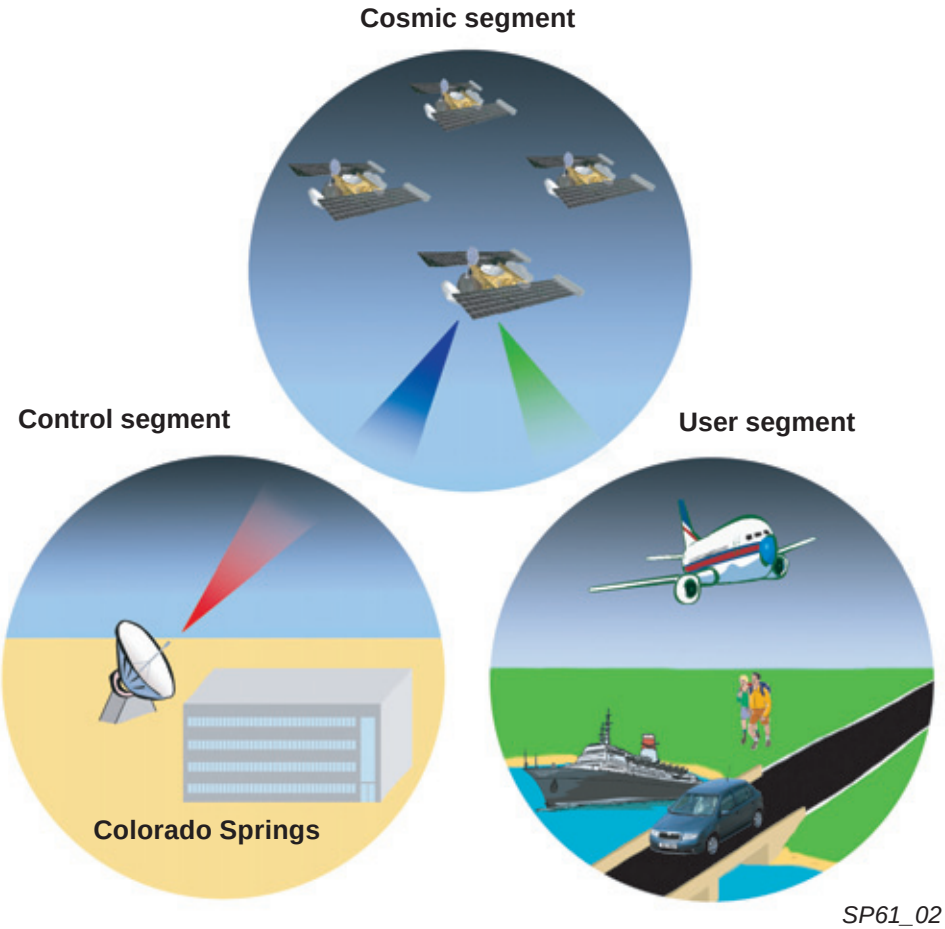
Main elements of the GPS navigation system

The GPS radio navigation system consists of three segments:

1. Cosmic segment

2. Control segment

3. User segment



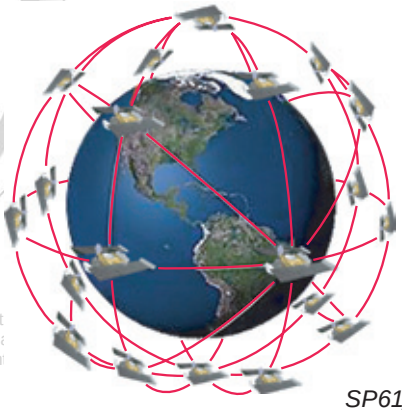
SP61_02

The cosmic segment comprises:

- 24 satellites
- in 6 earth orbits (4 satellites each per orbit)

The orbits are at an altitude of 20.200 km above the earth's surface with an inclination of 55 degrees to the equator and an orbital time of approximately 12 hours.

This positioning theoretically enables the connection to at least 4 satellites from each point of the earth.



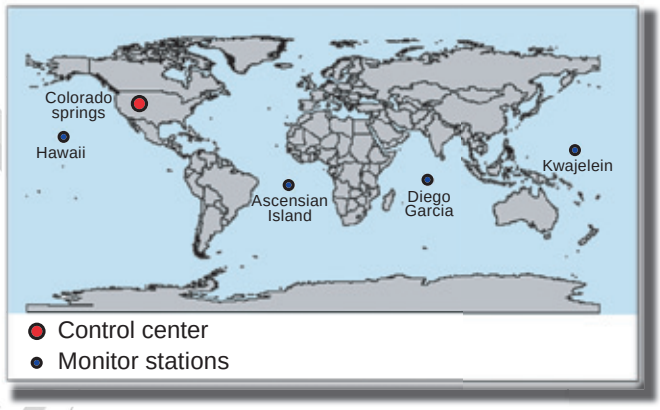
SP61_03

Component parts of the GPS navigation system

The control segment consists of:

- 10 monitor stations with terrestrial antennas, distributed over the whole world
- the control center in Colorado Springs

The monitor stations pick up constantly the data of the satellites in orbit and transmit this data to the control center in Colorado Springs. Here the data of the orbits is evaluated and corrections of the orbits and orbital times are carried out. These details are then sent via the monitor stations to the satellites in the orbits. Thus the data is constantly updated.



SP61_04

The user segment

There are two types of GPS receivers used in the user segment:

- Portable GPS receivers

- Fixed installed GPS receivers, (e.g. in vehicles)

Portable GPS receivers

Most of the modern portable GPS receivers can read memory cards and enter up to 50 destination points on the path. The memory covers a map of the world and a detailed European map. On the European map most of the roads, cities and towns with more than 500 inhabitants are registered. They are small, compact and accurate.
However most of them are not suitable for the optimization of travel routes on roads and motorways.

SP61_05

Fixed installed GPS receivers (e.g. in vehicles)

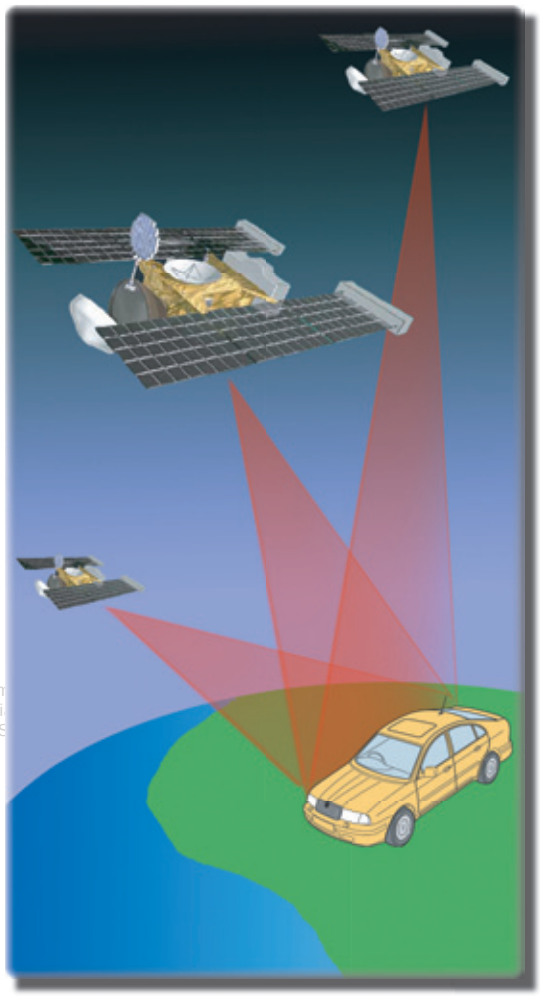
Vehicle fixed-GPS systems are designed exclusively for the determination (optimal) of the travel route to the selected destination. Their advantage is the ability to adapt to the current traffic conditions and if necessary to give constant route assistance to the driver.

SP61_06

Principles of the GPS navigation system

Satellite-assisted locating

Altogether 24 satellites of the GPS system rotate the earth at an altitude of approximately 20.000 km in 6 orbits. The orbital time is about 12 hours. These satellites are actually direction - finding transmitters on one orbit and send in milliseconds their identification code, information about their position and a very exact time signal. These signals go at the speed of light (300.000 km.s-1).
The GPS receiver on earth receives this data, decodes it and calculates the distance between the user and the satellites, and/or the location of the equipment by means of an efficient micro-computer. This method is based on the evaluation of the time difference between transmitting and receiving the signal.



SP61_07

The reception of the signals from at least three satellites is necessary for the locating on the earth surface.

If the distance to at least 3 satellites is known, the object (car) is located on the cross-section of 3 spherical surfaces with the satellites as its center point. Furthermore, the fourth surface is the earth‘s surface. The locating can be accurately calculated by determining the distance to other satellites.

Distance calculation

The distance between the user and the satellite is therefore calculated by multiplication of the speed of light (300.000 km.s-1) with the running time of the signal that means the time, which has elapsed between transmitting and receiving the signal. For this purpose very precise numerical details on both sides of the connection are necessary. Therefore a cesium or a rubidium oscillator, which serves as normal time, is located on each satellite. So that also the clock in the GPS receiver has the same accuracy, the so-called Clock offset is calculated from the received signal, which enables together with the exact timing sent by the satellite the determination of the time with an accuracy under 1 microseconds.

The efficient microcomputer in the GPS receiver then calculates based on the distance to several satellites its position on the earth‘s surface, which it can illustrate in different formats. First of all the receiver makes copies of the received signals and synchronizes them. Thus the so-called pseudo distance is determined by the receiving satellites. The GPS receiver calculates its exact location from their known positions.

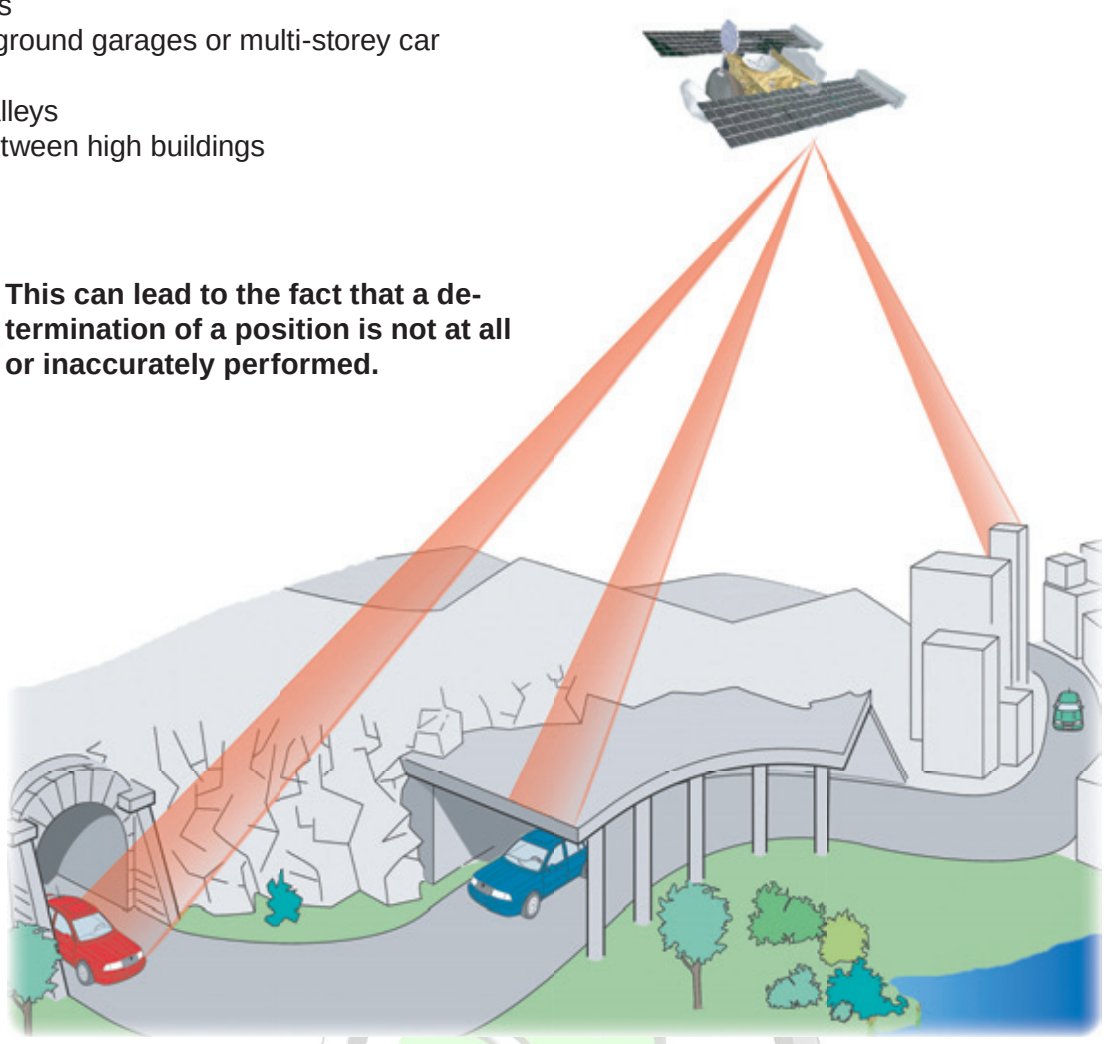
Malfunction of the satellite reception

Reception interferences of the satellite signals

Reception interferences occur when the transmitter of the satellite cannot „see“ the receiver of the radio navigation system or the satellite signal is deflected by buildings, mountains etc.In the following situations the radio communication with the satellites can be interrupted or hampered:

- in tunnels
- in underground garages or multi-storey car parks
- in low valleys
- partly between high buildings

This can lead to the fact that a determination of a position is not at all or inaccurately performed.



SP61_25

Although the satellite detection for the radio navigation system serves as a main information sender, the system can nevertheless compensate briefly for the reception interferences.
The driving direction and distance are calculated only via the turning angle sensor and the moment of momentum of the ABS speed sender.

A comparison with the GPS signals cannot be carried out and this leads to a higher inaccuracy during the positioning for the duration of the reception interference.

As soon as the GPS signals are received again, a correction of the previously calculated positioning is performed.

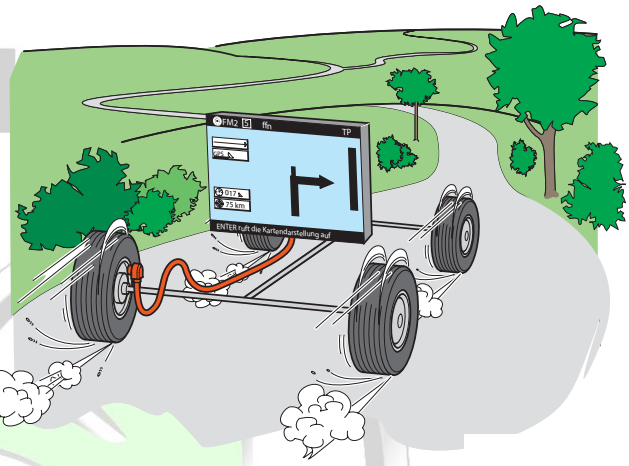
Supplementary functions in the vehicle

The locating by GPS is assisted through supplementary system components of the navigation system integrated in the vehicle.

System components of the vehicle

The control unit for the navigation of the vehicle calculates the profile of the distance and the distance driven by the vehicle from the signals, which it receives from the angle sender (left/right) and the speed senders of the ABS.
The combination of these two sensors and the control unit for navigation assures the supplementary function of the navigation system.

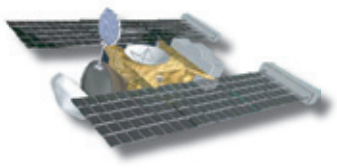
The distance driven by the vehicle is compared several times per second with the data of the road map, which is on the CD Rom, and/or in the memory of the navigation system („**Map Matching**“).
This comparison increases the accuracy of the locating.
Radio navigation systems built in **Škoda** vehicles can determine the location of the vehicle at approximately 10 m. The accuracy of the locating can however be influenced by different circumstances, e.g. extremely unfavorable weather.



SP61_08

The satellite and **the vehicle** navigation form **the complete navigation system**.

Satellite navigation



- Navigation control unit
- GPS receiver
- GPS antenna
- Satellites

+

Vehicle navigation

- ABS speed sender
- Angle sender
- Road map on CD-ROM
- Navigation control unit

=

Complete navigation system of the vehicle

* **Map-Matching** = Comparison of data with the map

Function description of SNS

Function description of SNS

1. The desired driving destination is entered via the control buttons

2. The position of the driving destination is determined on the basis of the road map on the CD-Rom.

3. Based on the received satellite data, the navigation control unit calculates the current vehicle position.

4. The position of the vehicle is determined by means of the additional navigation functions and the comparison with the road map (on CD-Rom).

5. The navigation control unit calculates the distance, the driving direction, the change in the driving direction etc.

6. The task of the driving recommendations starts with optical and acoustic notes.

7. While driving, the distance driven is determined by the moment of momentum of the ABS speed sender and the changes in direction by the angle sender.

8. The system continuously monitors that the driving recommendations are observed.

9. The driver is being informed if he is following a different road instead of the recommended route.

10. If the driver remains on this route, the distance driven to the destination is recalculated.

11. After reaching the given destination, it is indicated on the display as well as announced by an acoustic message.

SP61_09

Installation of the SNS in Škoda

The installation of the components of the satellite navigation system in Škoda vehicles (Škoda Fabia**, Škoda**Octavia**, Škoda**Superb**)**

Components of the SNS:

- The satellite navigation equipment:
  - Radio control unit
  - Navigation control unit
  - Operating panel + display
  - GPS receiver
  - CD-ROM drive
  - Angle sender
- GPS roof antenna
- ABS speed sender
- Reverse light switch
- Electrical installation
- Loudspeakers
- Data (digital map) on CD-ROM

SP61_10

The installation and the number of respective components (loudspeakers, ABS speed sender) can differ slightly in the respective models.

The components of the SNS

The satellite navigation system equipment

The satellite navigation equipment is the basis of the entire satellite navigation system. Both the signals received from the satellites as well as the data of the system components integrated in the vehicle (angle sender, ABS speed sender) are evaluated in this equipment.

All satellite navigation systems offered in Škoda vehicles are so-called 2-DIN installation devices.

The number and assignment of the connections and clamping strips can vary slightly on the individual types of equipment.

SP61_11

The satellite navigation equipment consists of two control units:

- **navigation control unit**

and

- **radio control unit.**

The satellite navigation equipment consists of the following parts:

Operating panel with display

Selection of the individual functions of the radio receiver, the navigation system and the CD player. Illustration of the respective functions and operations

Radio receiver

Receives radio programs on the FM (UKW = ultra short wave) and AM (AM = medium wave) band.

GPS receiver

Receives the signals of the visible (reachable) satellites by means of the GPS antenna

CD drive

Is used for reading the data from the CD-Rom. CD drives in newer SNS devices can also be used for playing music CDs.

Angle sender

Is used for accepting changes in the direction of movement of the vehicle. It replaces the magnetic sensor used in the previous SNS models.

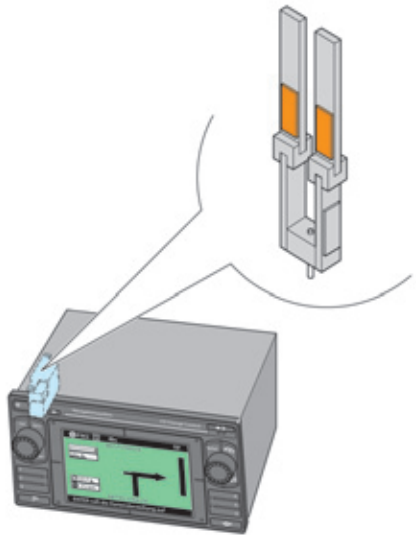
The angle sender

As already mentioned, the installed angle sender is a system component which is used for accurately determining the navigation.

The sensor is installed directly in the SNS device.

The advantages are:

- insensitivity to magnetic noise influences
- small dimensions
- high sensitivity
- no calibration necessary



SP61_13

Depending on the type of the SNS device, the angle sender is fitted at different points.

If the vehicle changes its driving direction, it rotates around the vertical axle.
The turning angle sender detects this rotation and transmits it onto the navigation control unit. It then calculates the angle of the change of direction.

To distinguish the forward from the reverse movement, the control unit receives a signal from the reverse light switch.

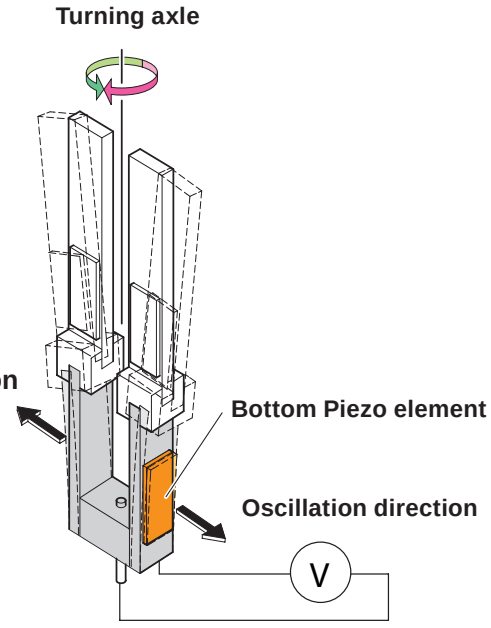
Now the distance driven is required in order to calculate the cornering radius.
This is detected with the aid of the moment of momentum of an ABS speed sender.

SP61_12

The components of the SNS

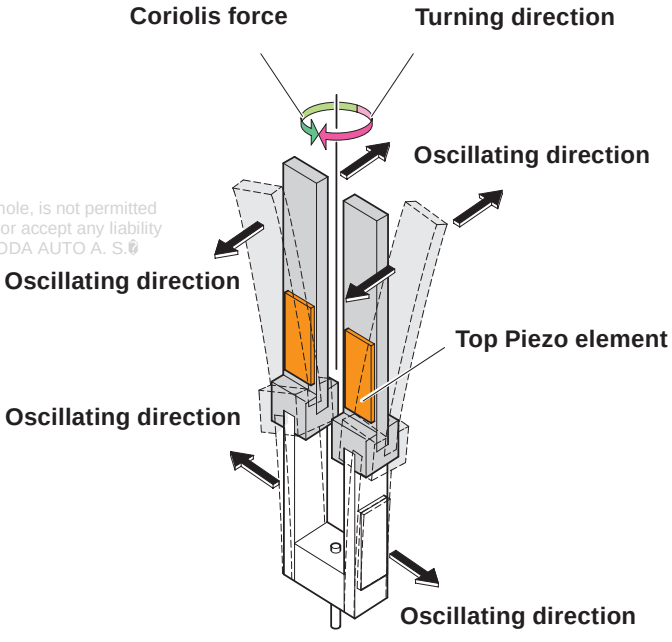
Function of the angle sender

The shape of an angle sender is that of a tuning fork.
Both legs of this element are designed as oscillating bodies. When the ignition is switched on, voltage is distributed to the bottom Piezo elements.
As soon as the voltage reaches the Piezo elements, they begin to oscillate.
These oscillations are transfered to both legs.



SP61_14

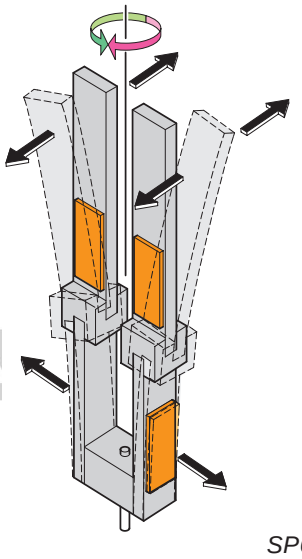
In case of changes in direction (when cornering) of the vehicle, the so-called Coriolis force is applied to the oscillating leg of the sensor.
The Coriolis force acts in the opposite direction of rotation, in which the vehicle turns around its high axle.
Thus the upper parts of the already laterally oscillating legs are bent.
The bending of the legs is transferred to the upper Piezo elements, whereby a voltage in the Piezo element is generated. The voltage serves the navigation control unit for the calculation of the change in driving direction.



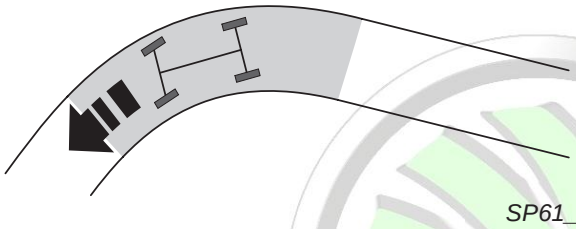
SP61_15

Driving curves

If the vehicle drives a curve, the upper parts of the legs are bent by the Coriolis force for as long as the cornering lasts.
A voltage is generated in the upper Piezo elements of the angle sender.
The voltage depends on the change in direction of travel.
In case of cornering from e.g. left to right, the voltage changes.



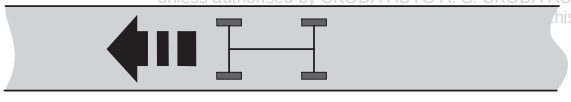
SP61_17



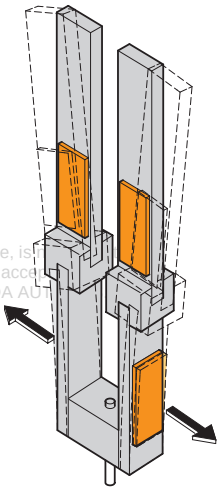
SP61_16

Driving straight ahead

If the vehicle drives straight ahead, there is no Coriolis force.
The upper parts of the legs are not bent and no voltage is generated in the Piezo elements.



SP61_18



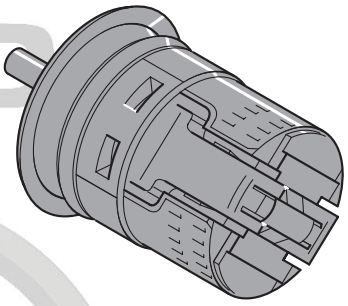
SP61_19

The angle sender detects only the change in driving direction. In order to calculate a cornering radius, the vehicle must move.
Then the navigation control unit can calculate from the data of the angle sender and the ABS angle sender the cornering radius and accomplish the comparison with the map data („Map-Matching“).

The components of the SNS

ABS speed sender

The ABS speed sender is used to accurately determine the satellite navigation and the distance driven by the vehicle. The senders are fitted onto the wheels of the vehicle and record the number of revolutions of the respective wheel. The recorded data is sent to the control unit of the ABS system.
The ABS control unit transmits the corresponding data to the control unit of the navigation system, which evaluates it and calculates the distance driven by the vehicle.



SP61_20

The number of the ABS speed senders, whose signals are assigned for calculating the distance driven, depends on the type of the navigation system in use.

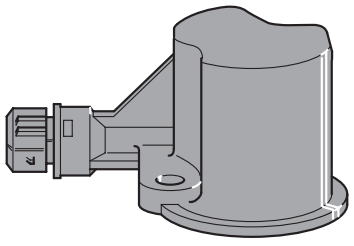
In case of different model types, the shape of the respective senders can be different, however the function principle is the same.

Effects of signal failure:

- In case of failure of the ABS signal, the navigation cannot be started.

Reverse light switch

When switching to the reverse gear, the control unit of the navigation system receives a signal from the reverse light switch.
The control unit detects if the vehicle drives forwards or backwards.



SP61_21

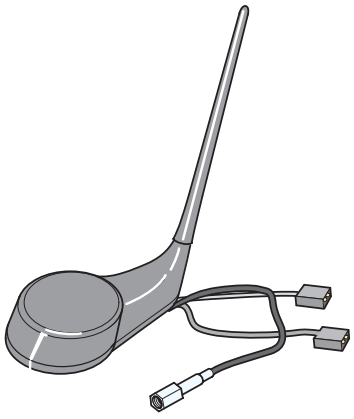
Effects of signal failure:

- In case of signal failure, the control unit cannot detect that the vehicle moves backwards. Thus the navigation to the destination is inaccurate.

GPS roof antenna

The antenna of the GPS system is fitted on the roof of the vehicle in the so-called Triplex antenna. The antenna for the GPS as well as the antenna for the radio reception and the telephone is located in it.

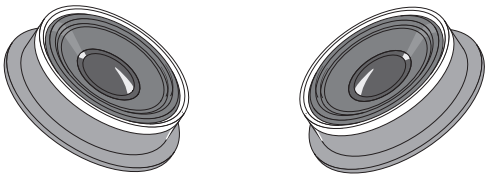
Only in the model series Škoda Fabia Sedan **is the GPS antenna in the passenger cabin. The antenna for the radio and the telephone is on the roof as in all the other models**



SP61_22

Loudspeakers

The acoustic instructions for navigation are given via the loudspeakers of the audio system.



SP61_23

Route map on CD Rom

The program software of the system as well as the road map with the motorways and roads are stored on the CD-ROM.

The road map includes the complete road system (also roads of 2nd and 3rd category), as well as city plans with street names.

The road map e.g. of the Czech republic is updated twice a year.It can be purchased in the dealership of the company Škoda.

Service
The properties of the operating program and the operation of the navigation system can be adapted to the individual wishes of the user. For example: the colors of the map, the contents of the respective screen displays, the operating menu.

SP61_24

SNS in Škoda vehicles

The satellite navigation systems offered for Škoda vehicles

In order to satisfy all of the customers‘ wishes, the company **Škoda**Auto a.s. offers for the individual model series **Škoda** (**Škoda**Fabia, **Škoda**Octavia, **Škoda**Superb) different variants of the satellite navigation systems and equipment.

The respective variants can differ in the number and possibilities of the assisted functions and applications.
The characteristical selection criterion, which makes orientation between the individual variants and their equipment possible, is the size of the display, the output display (black/white or colored) and the type of visualization.

The navigation systems are categorized depending on these properties in the basic and upper class.

Types of the satellite navigation systems in the model series of Škoda vehicles

The present offer of satellite navigation systems in Škoda vehicles include two systems of the upper class and two systems of the basic class.

The customer can be offered for each Škoda model series both variants, whereby the equipment of the satellite system corresponds to the equipment of the respective vehicle.

The design of the equipment for the models **Škoda**Fabia and **Škoda**Superb is alike; the design of the equipment for the vehicles **Škoda**Octavia of the second generation is slightly modified, because of the new design of the instrument panel.

Satellite navigation systems for the vehicles **Škoda**Fabia and **Škoda**Superb:

- **Satellite navigation system MFD** (upper class)
- **Satellite navigation system MCD „SatCompass“** (basic class)

SNS system for the vehicles **Škoda**Octavia of the second generation:

- **Satellite navigation system MFD 2 „Nexus“** (upper class)
- **Satellite navigation system Low line „Cruise“** (basic class)

The functional principle of all satellite systems used in the Škoda vehicles is the same.

ŠkodaFabia

SP61_30

Satellite navigation system MFD

SP61_31

Satellite navigation system MCD

SP61_32

ŠkodaSuperb

SP61_36

Satellite navigation system MFD

SP61_31

Satellite navigation system MCD

SP61_32

ŠkodaOctavia
of the second generation

SP61_33

Satellite navigation system MFD 2 „Nexus“

SP61_34

Satellite navigation system Low line „Cruise“

SP61_35

SNS in Škoda vehicles

Satellite navigation system DX

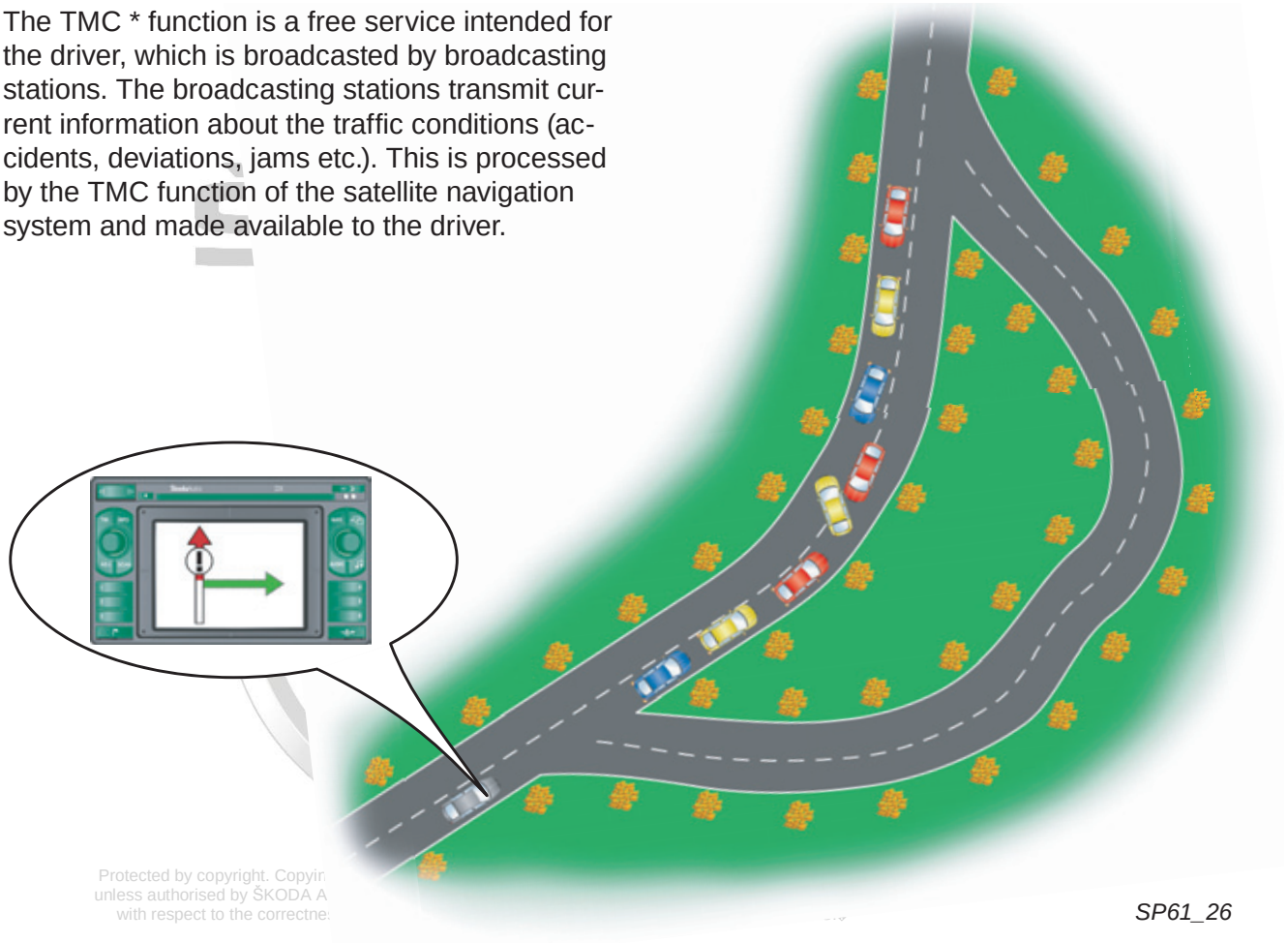
All presently built-in satellite navigation systems in **Škoda** vehicles (**Škoda**Fabia, **Škoda**Octavia, **Škoda**Superb) carry the designation DX.

The designation DX means that these satellite navigation systems enable the processing of traffic information of broadcasting stations and react to this information. The corresponding information is transmitted as data with the usual spoken information. This system is called „*dynamic navigation*“.

For the dynamic navigation to the destination it is necessary that all described satellite navigation systems assist the function TMC and include the TMC module.

Function of the TMC

The TMC * function is a free service intended for the driver, which is broadcasted by broadcasting stations. The broadcasting stations transmit current information about the traffic conditions (accidents, deviations, jams etc.). This is processed by the TMC function of the satellite navigation system and made available to the driver.



SP61_26

* **TMC** = **T**raffic **M**essage **C**hannel = broadcasting station broadcasts the traffic information.

The TMC module

The TMC module is integrated in all satellite navigation systems, which the company **Škoda** installs in its vehicles and integrates in the control unit. The only exception is the satellite navigation system MFD with its TMC module built into the instrument panel.

Description of the TMC module

The signal, which the antenna receives from the broadcasting station, is first of all processed in the TMC module. Here the information about the traffic condition is decoded in the form of digital data and transmitted to the navigation equipment. In the navigation equipment the information is evaluated and in the case that this information is important for the planned route, a correction of the route is carried out and/or the route is calculated again.This function is called „dynamic navigation“.

If the satellite navigation system does not include a TMC module, the guidance to the destination is performed as usual. The information about the traffic condition is however evaluated and is not considered for the guidance to the destination.

Navigation CD

Only CD Roms intended for the respective types must be used for navigation equipment of the series DX .

The navigation CDs for the DX variants are designated as „TravelPilot DX“ or all types of vehicles and equipment are mentioned for which these can be used. The use of other/older CD Roms is not permitted.

SP61_27

Function overview

Satellite navigation system MFD - basic functions

The satellite navigation equipment MFD ranks among the upper class and it is offered in the models **Škoda**Fabia and **Škoda**Superb.

The equipment has several navigation, reception and audio functions.The available functions are called up via buttons and menus.

Navigation mode

CD ROM eject button

Rocker switch
- Selection and repetition of the recorded traffic reports

Taste-INFO
- Task of the complete information about the current destination:
  - current position of the vehicle
  - entered destination address
  - estimated driving time
- Repetition of the last announcement if the route guidance function is active.

Left rotary knob
- Press - Switching on/off the device
- Turning - Setting the volume

Button for storing the current position of the vehicle
- The position of the vehicle can be stored as so-called „destination flag“. If the driver while driving registers a destination, to which he would like to return later, he can store it as „destination flag“ by pressing this button. Then the destination can be called up later without re-entering.
- By pressing the button only one destination flag can be stored. When pressing the button again the old address is overwritten by the new one.
- Destination flags can be entered permanently into the destination memory via the main menu.

Multi-function display
- Colored illustration of the map with indicated route, junctions, distance to the destination etc.
- Different scales of the map display possible
- Vertically and horizontally turnable
- 5-inch display

CD-ROM drive
- Case for the CD

Button NAVI
- Calls up the main menu:
  - Entry of the destination
  - Selection of the possible routes and their calculation
  - Activation of the route guidance (selection of the display mode, the symbols and the type of map)
  - Destination memory
  - Driving companion (additional information about accommodation, route information etc.). If these are not on the CD Rom, this function cannot be activated.
  - System settings (type of route representation)
  - Information mode (display of the current location on the map or by means of symbols without activated route guidance)

SP61_29

Button (back symbol)
- Selection of the predecessor menus or the main menu and interruption of the accomplished operations

Right rotary knob
- Turning - opening the relevant menu points, adjusting the basic volume.
- Confirmation of the relevant settings.

Selection button for the evaluation of traffic messages and for the calculation of alternative routes.

Function overview

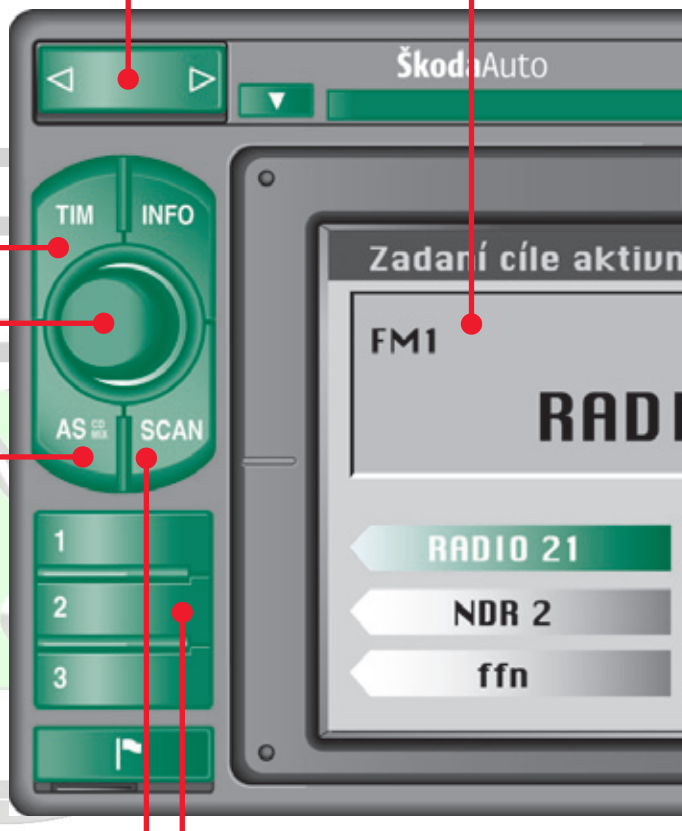
Mode of operation for radio/audio

Rocker switch
Mode of operation for radio:
- switch for the automatic or manual station selection FM/AM
- selection and repetition of recorded traffic messages

Mode of operation for audio:
- selection of the titles of the CD (up/down)

Multi-function display
- Vertically and horizontally turnable
- Coloured display

TIM button (Traffic Information Memory)
- This function serves for calling up from up to 9 traffic messages of the TP (Traffic Program) stored automatically in the memory. The overall length of the recordings is 4 minutes.
- Activation of the recording and interruption of the recording of the traffic message. If the equipment is switched on, each traffic message of the set transmitter is recorded). If the equipment is switched off when pressing the TIM button (about 2 seconds), the recording for the duration of 24 hours is activated. In both cases the messages are called up by pressing the TIM button. By pressing the rocker switch the messages can be called up in random order. By pressing the TIM button again the message is terminated.



Left rotary knob
- Press - Switching on/off the device
- Turning - Setting the volume

AS/ CD button - Mix
Radio:
- Automatic storage of the 6 strongest transmitters within the ranges of FM + TP or AM. The transmitters are stored in the memory levels FM2, TP2 and AM2

Audio:
- CD Mix button - Playing the titles in random order

SCAN button
Radio:
- Brief selection (10 seconds) of all stored transmitters (FM, TP, AM)

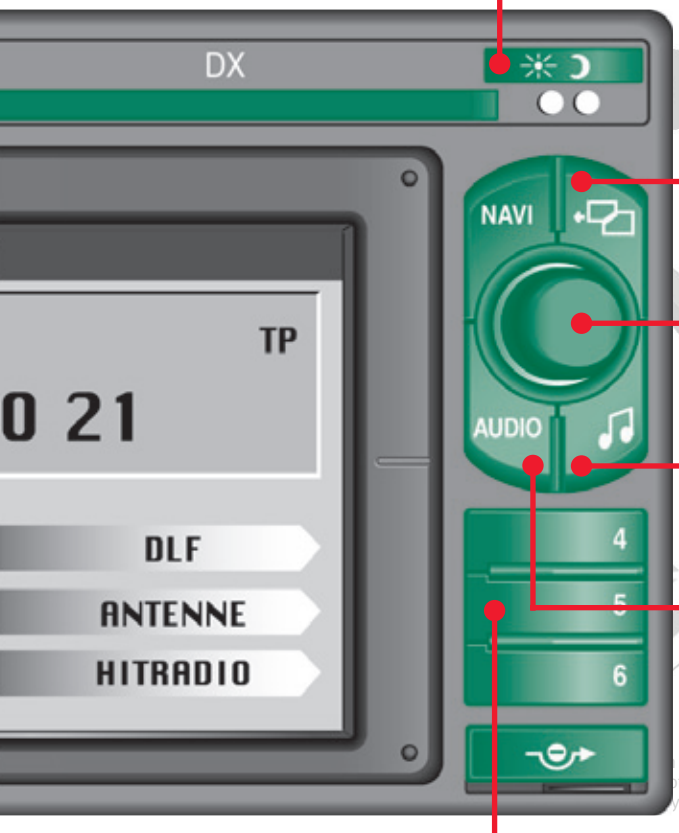
Audio:
- Brief playing of all titles of the CD

Day/night button
- The display switches automatically to night/day mode depending upon switching on/off the main lighting
- With this button the mode of operation can be switched over to day or night mode independent of the lights.

Button
- Selection of the predecessor menus or the main menu and interruption of the accomplished operations

Right rotary knob
- Turning - Opening the relevant menu, selecting the volume, basic setting of the volume.
- Press - confirmation of the respective selection.

Tone control button
- Setting of the tone control (bass, pitch and balance), setting of the volume Setup, volume of the telephone, volume of the navigation instructions and GALA = setting the volume in line with the driving speed.
- The button for setting the sound range is used for systems with DSP (Digital Sound Packet)



SP61_28

Audio button
- Menu „Selection of sound source“:
  - Audio CD (CD changer)
  - Frequency range FM + TP or AM
  - Other audio signals AUX
  - Radio muting

Pre-set buttons 1 - 6
Radio:
- Storing 12 transmitters within the ranges FM and AM in two memory levels

Audio:
- Selecting CD in changer

Function overview

Satellite navigation system MCD - basic functions

The satellite navigation equipment MFD ranks among the basis class and is offered in the models **Škoda**Fabia and **Škoda**Superb.

The MCD equipment has only a black/white display with simpler representation and green background lighting in comparison to the equipment of the MFD class.

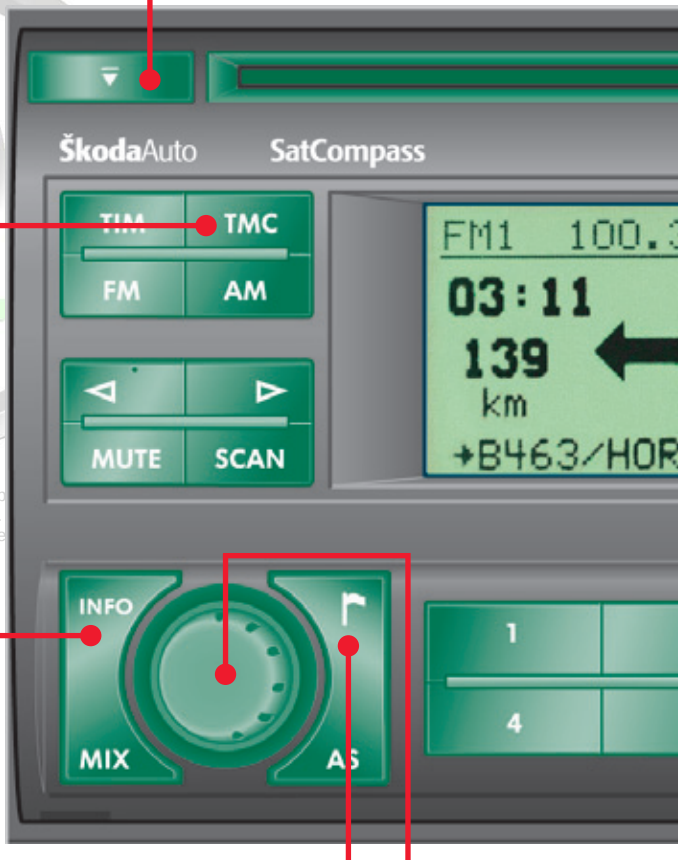
The navigation, reception and audio functions, which the equipment offers to the driver, are comparable with the equipment of the higher class.

Mode of operation for navigation

CD-ROM eject button

TMC button
- Activates the mode of operation TMC, with which the SNS reacts automatically to announced complications (queues, accidents etc.), evaluates information and adapts the distance if necessary.
- Transmitters, which make this information available, can be stored in the memory of the equipment in two memory levels (TC1 and TC2).

INFO button
- Task of the complete information about the current selected destination:
  - current position of the vehicle
  - entered destination address
  - estimated driving time, etc.
- Entries in the list where there are points correspond to the continuations of the text.



Button for storing the current position of the vehicle
- The position of the vehicle can be entered as so called „destination flag“. If the driver while driving registers a destination, to which he would like to return to later on, he can store the position of this destination as destination flag by pressing this button in the memory.
- This can be used later as destination. The destination can be called up simply from the memory without having to make a new entry.

Left rotary knob
- Press - Switching on/off the device
- Turning - Setting the volume

Monochromatic display
- Route guidance is shown by means of direction arrows and guidance markings.
- Green background lighting

SP61_40

NAVI button
- Calls up the main menu:
  - Entry of the destination
  - Selection of the possible routes and their calculation
  - Activation of the route guidance (selection of the display mode, the symbols and the type of map)
  - Destination memory
  - Driving companion (additional information about accommodation, route information etc.). If these are not on the CD Rom, this function cannot be activated.
  - System settings (type of route representation)
  - Information mode (display of the current location on the map or by means of symbols without activated route guidance)
  - GPS status (indicates the number of the presently visible satellites)

TELE button
- Display of the traffic messages received by the TMC, which the system uses for the dynamic route guidance

Button for selecting the evaluation of traffic messages and for the calculation of alternative routes.

Right rotary knob
- Turning - Selecting the relevant menu points
- Press - Confirmation of the relevant selection

Delete button - deletes entries in the text

Function overview

Mode of operation for radio/audio

TIM button (Traffic Information Memory)
- This function serves for calling up from up to 9 traffic messages of the **TP** (**T**raffic **P**rogram) stored automatically in the memory; the overall length of the recordings is 4 minutes.
- Activation of the recording and interruption of the recording of the traffic message. If the equipment is switched on, each traffic message of the set transmitter is recorded). If the equipment is switched off when pressing the TIM button (about 2 seconds), the recording for the duration of 24 hours is activated. In both cases the messages are called up by pressing the TIM button.

FM / AM button
- Switch-over of the reception range for FM / AM in the memory levels FM1/FM2 and AM1/AM2.

Tuning buttons
Radio:
- manual transmitter setting FM/AM
- delection and repetition of the traffic messages recorded with TIM

Audio:
- Selection of the titles

MUTE button
- For muting

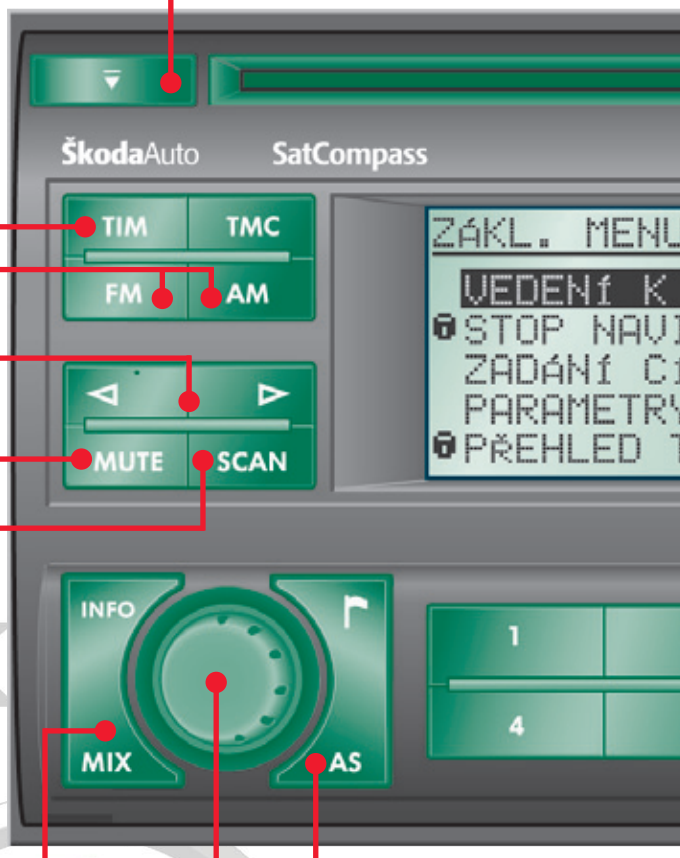
SCAN button
Radio:
- Brief selection (10 s) of all stored transmitters (FM, TP and AM)

Audio:
- Brief playing of all titles of the CD

MIX button
- Playing the titles in random order

Left rotary knob
- Press - Switching on/off the device
- Turning - Setting the volume

CD eject button



AS/CD button - Mix
- Automatic storage of the 6 strongest transmitters within the ranges of FM + TP or AM. The transmitters are stored in the memory levels FM2, TP2 and AM2

Day/night selection button
- The display switches automatically to night/day mode depending upon switching on/off the main lighting.
- With this button the mode of operation can be switched over to day or night mode independent of the lights.

CD drive
- Case for the audio CD

CD button
- Activates the CD and CD changer

DSP button
- Contrast setting of the display

Tuning buttons
Radio:
- automatic transmitter setting
- selecting the stored transmitter
- fast playing of the TIM messages

Audio:
- fast playing of the titles on the CD

SP61_39

Macro button
- Programmable function button

SET button
- Selecting the basic setting - SETUP

Button
- Aborting the set operation

Right rotary knob
- Turning - Selecting the menu points
- Press - Confirmation of the relevant selection

Pre-set button 1 - 6
Radio:
- Storing the transmitters in the ranges FM + TP and AM

Audio:
- Selecting the CD in the changer

Tone control button
- Setting of the tone control (depth, bass and balance)
- Setting the volume for navigation, traffic messages and telephone

Function overview

Satellite navigation system MFD2 - basic functions

The satellite navigation equipment MFD2 („NEXUS“) is an advanced development of the navigation equipment MFD and therefore belongs to the upper class. Some improvements and smaller modifications were carried out in the equipment.

The most remarkable modification is the shape of the equipment, which was adapted to the instrument panel of the vehicle **Škoda**Octavia II. Another modification is the possibility of the audio CDs being played directly in the drive of the equipment.

Operating principle of the navigation

Colour display
- Display of the map with indicated route, junctions, distance to the destination etc.
- Simultaneous display of the map and the navigation symbols is possible
- 6.5-inch colour display

CD - Drive
- Case for the navigation - CD ROM

Function buttons
- The buttons are assigned in the respective menus to different functions. If for example in the top part of the screen the text „memory“ is indicated, the non-descriptive button at this level corresponds to this text and the displayed function is called up by pressing.

Left rotary knob
- Press - Switching on/off the device
- Turning - Setting the volume
- Setting the volume for installed hands-free telephone system

INFO button
- For calling up detailed information:
  - for setting the system
  - call up traffic messages
  - current position of the vehicle
  - entered destination address
  - estimated driving time to the destination etc.

CD-ROM eject button

Button for storing the current position of the vehicle

- The position of the vehicle can be stored as so-called „destination flag“. If the driver while driving registers a destination, to which he would like to return later, he can store it as „destination flag“ by pressing this button. Then the destination can be called up later without re-entering.
- By pressing the button only one destination flag can be stored. When pressing the button again the old address is overwritten by the new one.
- Destination flags can be entered permanently into the destination memory via the main menu.

SP61_41

Button for traffic obstacles

- To manually call up the menu for the entry of blocked sections
- To manually enter details about traffic obstacles

Rotary knob (right)

- Entry of values per screen
- Turning - Selecting the respective functions
- Press - Confirmation of the selected function or detail.

MAP button

- Display of the map from the CD
- Switch-over to display by means of symbols

NAVI button

- Switch-over to the operating mode of the navigation
- Calling up the main menu:
  - route guidance
  - driving destination
  - details for routes

Function overview

Mode of operation for radio/audio

Day/night button
- The display switches automatically to night/ day mode depending upon switching on/off the main lighting.
- With this button the mode of operation can be switched over to day or night mode independent of the lights.
- Setting the display contrast for day / night mode

Selection buttons
- Fast switch-over foward/reverse
- Control of the active tone source

Radio:
- Briefly pressing - switch-over to stored transmitters FM / AM
- Press and hold - Transmitter change FM/ AM in the transmitter list

Audio:
- Briefly pressing - Change title forward / reverse
- Press and hold - faster forward or reverse of the title

Pre-set buttons (left)

Radio:
- Storing the relevant transmitter in the ranges FM / AM

Audio:
- Selecting the desired CD in the changer

Tone control button
- Setting the tone control (bass, pitch and balance)
- Setting the volume for navigation, traffic messages and telephone

Rotary knob (left)
- Press - Switching on/off the device
- Turning - Setting the volume
- If a hands-free system is installed, the volume can be adjusted

RADIO button
- Selection and control of the radio menu

CD button
- Activates the CD and the CD changer

CD drive
• Case for the audio CD

CD eject button

SP61_41

Pre-set buttons (right)
Radio:
• Button for storing the transmitters in the ranges FM / AM
Audio:
• Selecting the desired CD in the changer

ESC button
• Leaving the respective menu

Rotary knob (right)
• Entry of the values in the menu illustrated on the screen
• Turning - Selecting the relevant functions or points of the offer
• Press - Confirmation of the selected functions or points

AUX button
• Activation of additionally connected external tone sources

TELE button
• For subsequent additional functions

Function overview

Satellite navigation system Lowline - basic functions

The satellite navigation equipment Lowline („CRUISE“) belongs to the basic class and is intended for the installation into the vehicles **Škoda**Octavia of the second generation.

Similar to the type MCD the equipment Lowline shows all information on a monochromatic display with green background lightings.

The shape of the equipment Lowline was adapted to the instrument panel of the vehicle **Škoda**Octavia of the second generation.
The equipment Lowline can play audio CDs in the MP3 format.

The respective functions are selected and switched by means of buttons and menus.

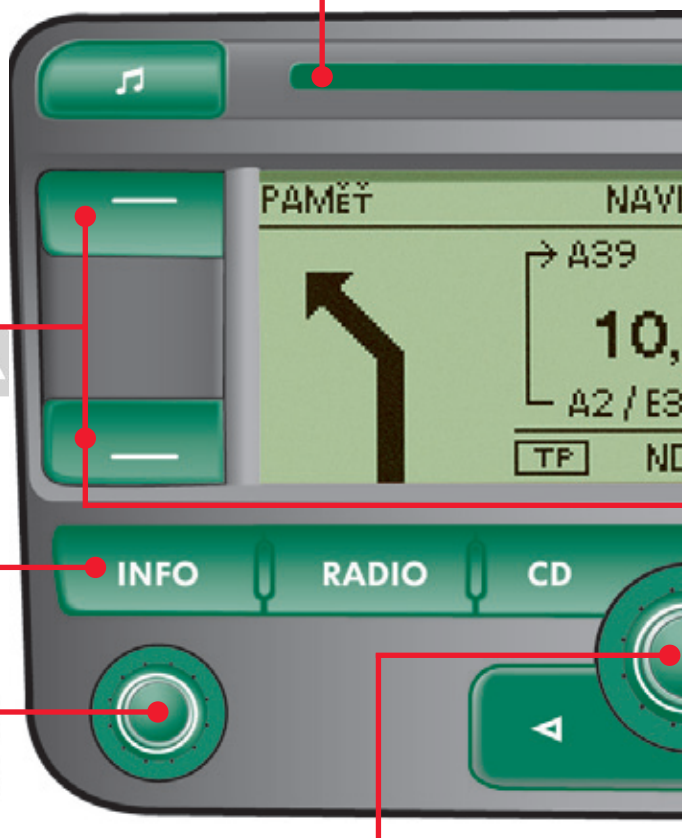
Operating mode for navigation

CD drive
- Case for the navigation - CD ROM

Function buttons
- The buttons in the relevant menu are assigned to the different functions. If for example: in the top part of the screen the text „memory“ is indicated, the non-descriptive button at this level corresponds to this text and the displayed function is called up by pressing.

INFO button
- While driving the last instruction is repeated and the following is displayed:
  - the current destination address
  - traffic messages
  - current position of the vehicle
  - the geographic coordinates

Rotary knob (left)
- Press: Switching on/ off the device
- Turning - Setting the volume
- If a hands-free device is available, the volume of the conversation can also be adjusted.



Rotary knob (centre)
- Entry of values in the respective menu
- Turning: Selecting the functions or points
- Press: Confirmation of the respective selection or points

Monochromatic display
- Route guidance is shown by means of direction arrows and guidance markings
- Green background lighting

CD-ROM eject button

Button for storing the current position of the vehicle
- The position of the vehicle can be stored as so-called „destination flag“. If the driver while driving registers a destination, to which he would like to return later, he can store it as „destination flag“ by pressing this button. Then the destination can be called up later without re-entering.
- Destination flags can be entered permanently into the destination memory via the main menu.

SP61_42

TRAFFIC button
- Illustrates traffic messages of the current TMC transmitter.
- Activation of the mode of operation TMC, with which the navigation system evaluates automatically transmitted data concerning traffic obstacles (jams, accidents etc.), reacts to and if possible determines an alternative route.

Button
- Leaving the current menu and returning to the previous

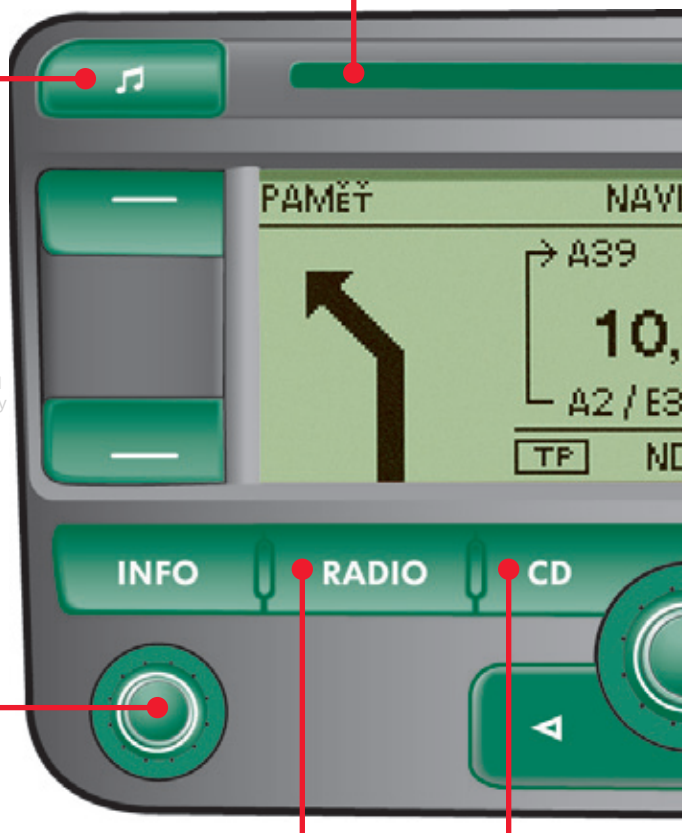
NAV button
- Switch-over to mode of operation for the navigation
- Calling up the main menu:
  - route guidance
  - driving destination
  - details for routes

Function overview

Mode of operation for radio/audio

CD drive
• Case for the audio CD

Tone control button
• Setting the tone control (bass, pitch and balance)
• Setting the volume for navigation, traffic messages and telephone



Rotary knob (left)
• Press - Switching on/off the device
• Turning - Setting the volume
- Transmitter selection in the ranges FM/AM
• Setting the volume for installed hands-free telephone system

RADIO button
• Selection and control of the radio menu

CD button
• Activates the CD and the CD changer

CD eject button

SP61_42

SETUP button
- Setting the properties:
  - of the system (time, language, volume. etc.)
  - of the screen (brightness)

Selection button
- Fast forward/reverse switching
- Control of the current tone source

Radio:
- Briefly pressing - switch-over to stored transmitters FM / AM
- Press and hold - Switchover of transmitters in the list FM/AM

Audio:
- Briefly press - Change song forward / reverse
- Press and hold - fast forward or reverse of the song

Button
- Leaving the current menu, back to previous

Rotary knob (centre)
- Entry of the values in the menu illustrated on the screen
- Turning - selecting the relevant functions or points of the offer
- Press - confirmation of the selected functions or points

Technical specification

Radio navigation system MFD

SP61_31

Technical Data

Mode of operation for navigation:

- Schematic representation of information for route guidance on the Maxi-DOT display of the instrument cluster
- linguistic and visual route guidance (representation of the map and the symbols on the display)
- Option shortest/fastest route to the destination
- Route guidance by means of road map or navigation symbols (arrows)
- Indicates the distance to the announced change of direction (only if navigation is activated by means of symbols, or at Maxi DOT in the instrument cluster)
- Indicates the driven road, if possible the next road (only if navigation is activated by means of symbols, or at Maxi DOT in the instrument cluster)
- Indicates the arrival time at the destination and the remaining travel duration
- Indicates the remaining distance (km) up to the specified destination
- Number of the reachable/visible satellites
- Possibility of excluding road sections (e.g. motorways, train ferries, toll roads etc.)
- Warnings about traffic obstacles (TM announcements) + dynamic destination navigation (DX navigation)
- Memory for 100 destinations (text data) and 10 top destinations (specified by the user)

Mode of operation for radio:

- Waveband ranges FM + TP and AM
- 12 memory spaces per waveband range
- RDS-EON-PTY (expanded RDS functions)
- Traffic messages (TIM)
- 8 loudspeakers
- Power output 4 x 25 W
- Function GALA (adaptation to the volume in line with the driving speed)
- Setting the tone control (depth, pitch, balance and settings for a digital sound system if available)

General data:

- 5-inch colour display horizontally and vertically turnable
- Connection to Maxi-DOT display in the instrument cluster
- Day / night mode
- Muting for the telephone „MUTE“
- controllable also via the multi-function steering wheel

Supplementary equipment:

- CD changer for 6 CDs
- TV tuner (only for **Škoda**Superb)
- Digital Sound System + amplifier (only for **Škoda**Superb)

Satellite navigation system MCD

SP61_32

Technical Data

Mode of operation for navigation:

- Schematic representation of the direction information for route guidance on the Maxi-DOT display of the instrument cluster
- Linguistic and visual route guidance (representation of the map and the symbols on the display)
- Route guidance by means of navigation symbols (arrows)
- Indicates the distance to the announced change of direction (also on Maxi DOT in the instrument cluster)
- Indicates the driven road, if possible the next road (also on Maxi DOT in the instrument cluster)
- Indicates the arrival time at the destination and the remaining travel duration
- Indicates the remaining distance (km) up to the specified destination
- Number of the reachable/visible satellites
- Possibility of excluding road sections (e.g. motorways, train ferries, toll roads etc.)
- Warnings about traffic obstacles (TM announcements) + dynamic destination navigation (DX navigation)
- Memory for 100 destinations (text data) and 10 top destinations (specified by the user)

Mode of operation for radio:

- Waveband ranges FM + TP and AM
- 12 memory spaces per waveband range
- RDS-EON-PTY (expanded RDS functions)
- Traffic messages (TIM)
- Power output 4 x 25 W
- Function GALA (adaptation to the volume in line with the driving speed)
- Setting the tone control (depth, pitch and balance)
- Playing audio CDs in the drive of the equipment (not for insertable navigation CD)

General data:

- Monochromatic display with green background lighting
- Connection to Maxi-DOT display in the instrument cluster
- Day / night mode
- Muting for the telephone „MUTE“
- controllable also via the multi-function steering wheel

Supplementary equipment:

- CD changer for 6 CDs

Technical specification

Satellite navigation system MFD2

SP61_34

Technical Data

Mode of operation for navigation:

- Schematic representation of information for route guidance on the Maxi-DOT display of the instrument cluster
- Linguistic and visual route guidance (representation of the map and the symbols on the display)
- Representation of the coloured map with changes in direction, junctions, distance to the destination etc.
- Linguistic and visual route guidance (representation of the map and the symbols on the display)
- Indicates the arrival time at the destination and the remaining travel duration
- Indicates the remaining distance (km) up to the specified destination
- Option shortest/fastest route to the destination
- Number of the reachable/visible satellites
- Possibility to enter the destination by means of geographic coordinates
- Warnings about traffic obstacles (TM announcements) + dynamic destination navigation (DX navigation)
- Possibility of excluding road sections (e.g. motorways, train ferries, toll roads etc.)

Mode of operation for radio:

- Waveband ranges FM + TP and AM
- 12 memory spaces per waveband range
- RDS-EON-PTY (expanded RDS functions)
- Traffic messages (TIM)
- 8 loudspeakers
- Power output 4 x 20 W
- Function GALA (adaptation to the volume in line with the driving speed)
- setting the tone control (depth, pitch and balance)
- Playing audio CDs in the drive of the equipment (not for insertable navigation CD)

General data:

- 6.5 inch colour display
- Connection to Maxi-DOT display in the instrument cluster
- Day / night mode (different contrast can be set)
- Muting for the telephone „MUTE“
- Controllable also via the multi-function steering wheel

Supplementary equipment:

- CD changer for 6 CDs
- Input for hands-free telephone system

Satellite navigation system Lowline

SP61_35

Technical Data

Mode of operation for navigation:

- Schematic representation of information for route guidance on the Maxi-DOT display of the instrument cluster
- Linguistic and visual route guidance (representation of the map and the symbols on the display)
- Route guidance by means of navigation symbols (arrows)
- Indicates the arrival time at the destination and the remaining travel duration
- Indicates to the driven road, if possible the next road (also on Maxi DOT in the instrument cluster)
- Indicates the remaining distance (km) up to the specified destination
- Indicates the distance to the announced change of direction (also on Maxi DOT in the instrument cluster)
- Warnings about traffic obstacles (TM announcements) + dynamic destination navigation (DX navigation) function CORRIDOR*

Mode of operation for radio:

- Waveband ranges FM + TP and AM
- 18 memory spaces per waveband range FM and 12 memory spaces per waveband range AM
- RDS-EON-PTY (expanded RDS functions)
- Traffic messages (TIM)
- Function GALA (adaptation to the volume in line with the driving speed)
- Setting the tone control (depth, pitch and balance)
- Playing audio CDs in the drive of the equipment
- Integrated CD playing device enables the playing of CDs in the MP3 format and assists ID3 tags (information about the album, the interpreter etc.)

General data:

- Monochromatic display with green background lighting
- Connection to Maxi-DOT display in the instrument cluster
- Controllable also via the multi-function steering wheel

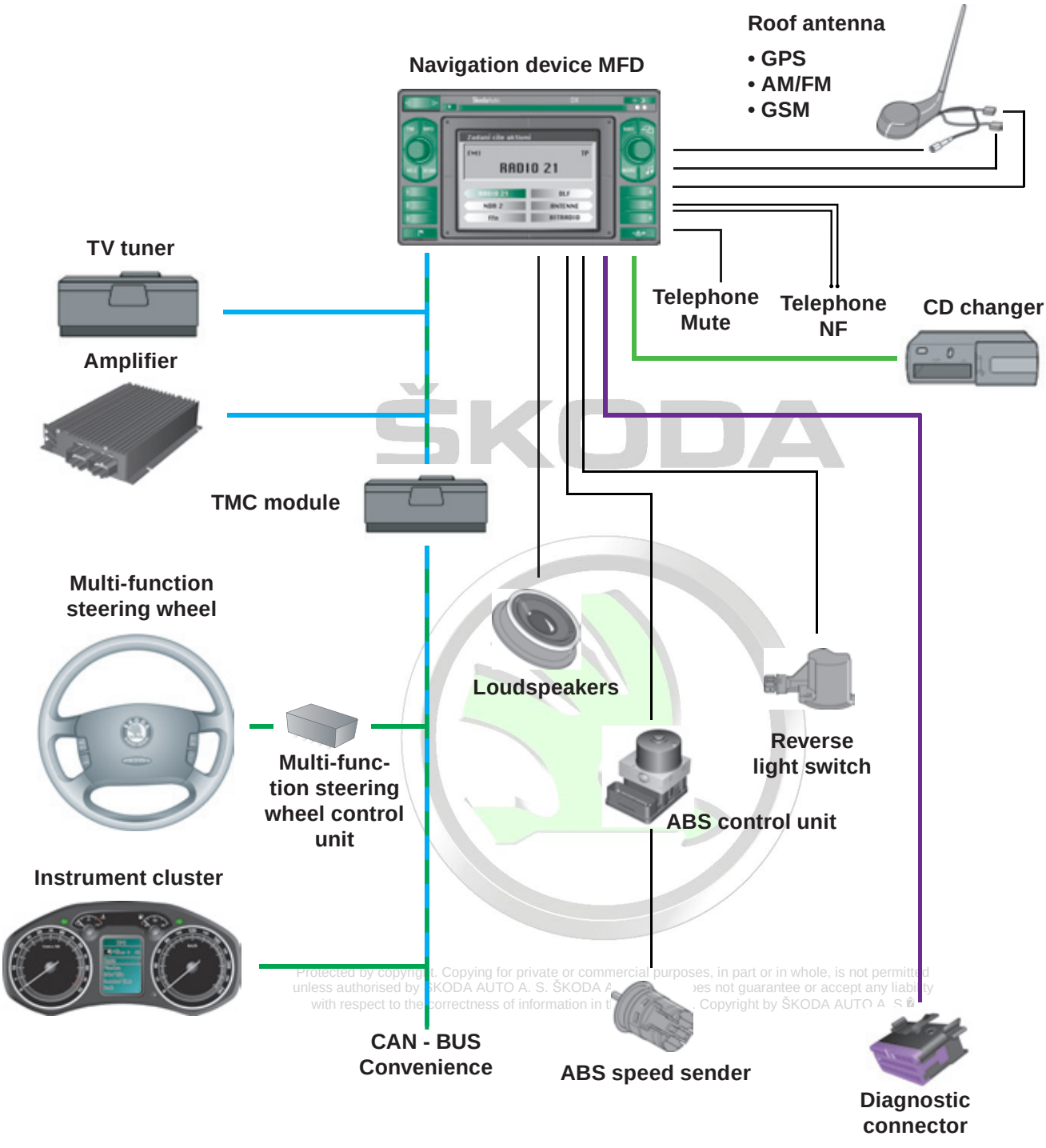
Supplementary equipment:

- CD changer for 6 CDs
- Input for hands-free telephone system

*** CORRIDOR is a function, which enables the equipment to transfer the data after calculation of the route to the internal memory and to keep the vehicle on the selected route, without the navigation CD being in the drive. If the vehicle leaves the fixed corridor, the driver is requested to insert the navigation CD in order to calculate again the changes of the route and the route guidance.This function enables a playing of audio or MP3 CDs directly in the drive of the equipment while driving.**

System overview

Schematic representation of the satellite navigation system MFD in the vehicle

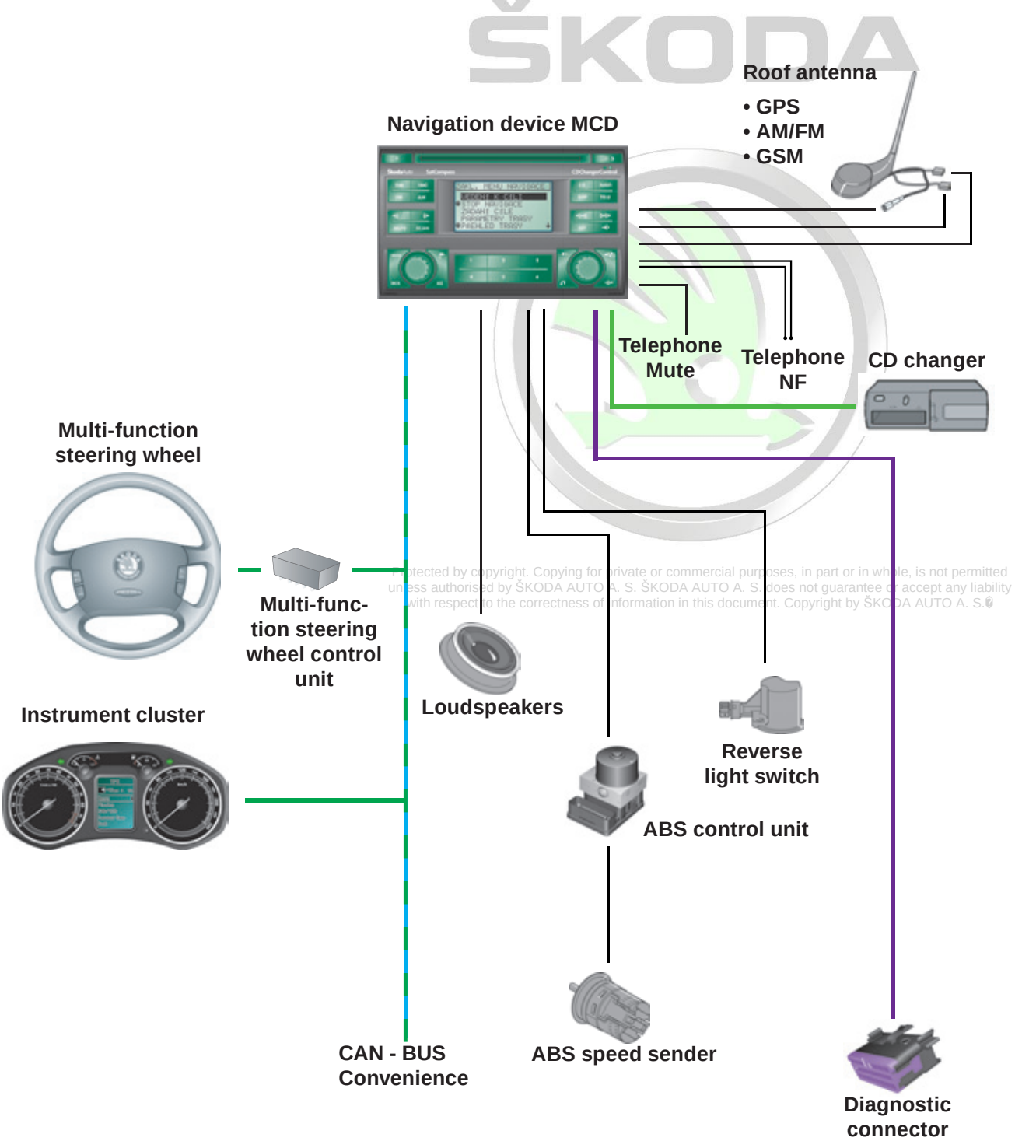


SP61_37

Self-diagnosis for all radio navigation equipment is carried out with the diagnosis unit VAS 5052/505.

TV tuner and amplifier are additional devices and intended only for the Škoda Superb**.**

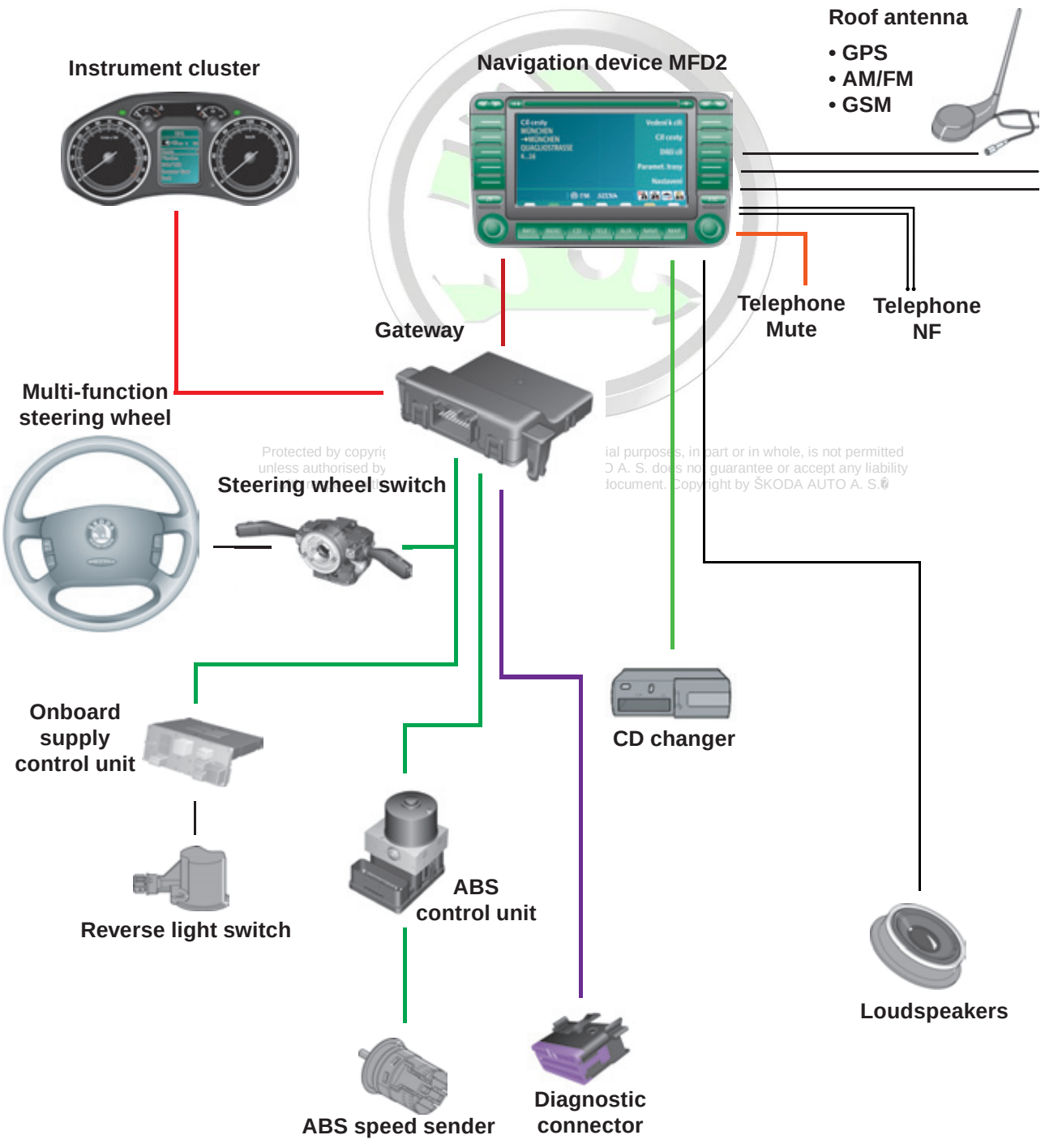
Schematic representation of the satellite navigation system MCD in the vehicle



SP61_38

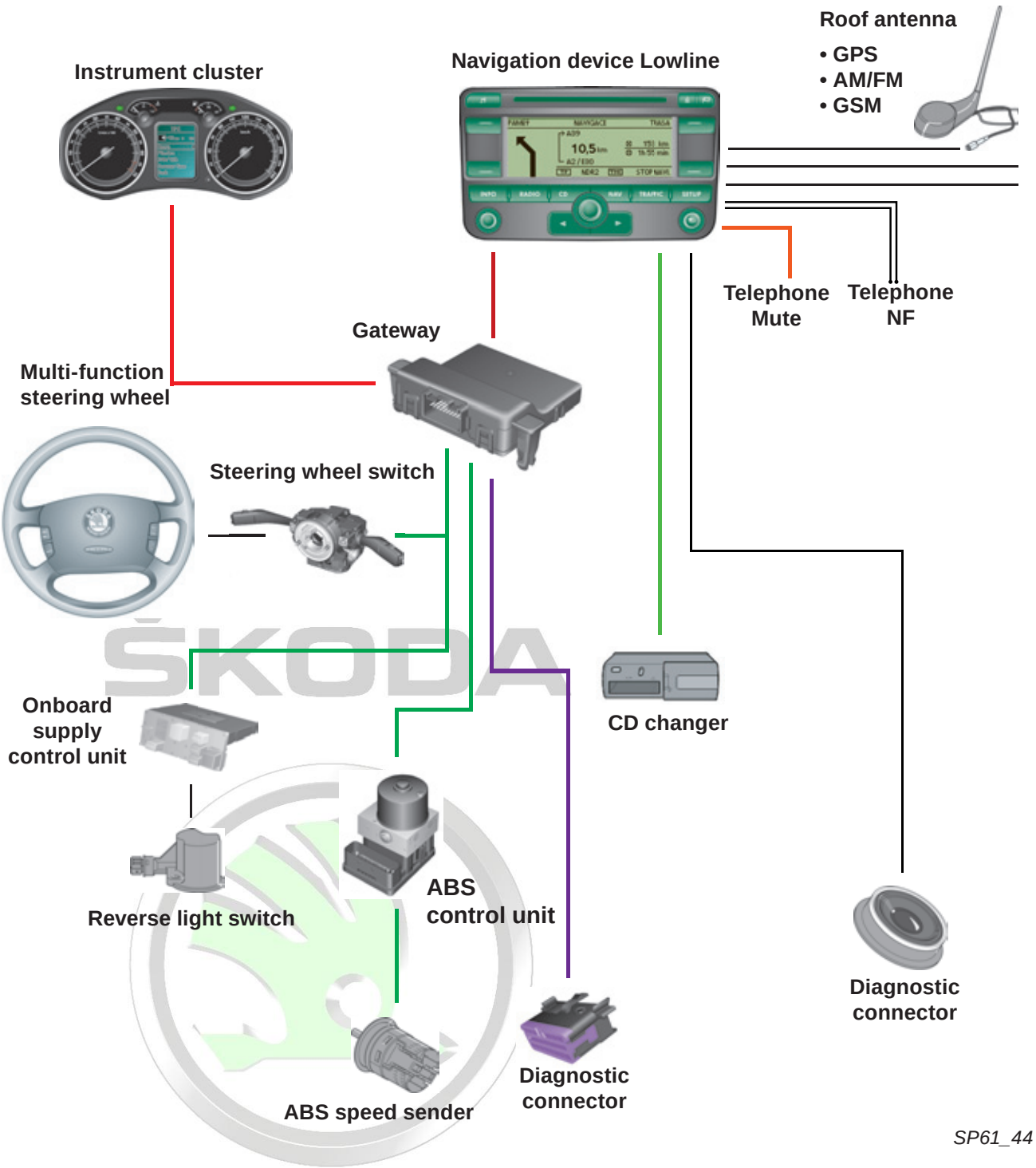
System overview

Schematic representation of the satellite navigation system MFD2 in the vehicle



SP61_43

Schematic representation of the satellite navigation system Lowline in the vehicle



Notes