

Self Study Program 891203

The 2020 Atlas Cross Sport

Design and Function - Tablet Format



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Introduction

The Atlas Cross Sport

The all-new Atlas Cross Sport is the latest addition to the VW SUV family. This 5-seater SUV has a raked roof-line, newly designed front grille, bold interior color combinations, sharp LED lighting, and an available sporty R-Line trim. This helps it to achieve a modern but rugged style offering all the versatility and performance of the Atlas and more.

The Atlas Cross Sport is for the everyday hard-worker that wants to live a bolder life.



Introduction

Product Features

- 
- LED Headlamps with Integrated All Weather Lights and LED Daytime Running Lights
 - Adaptive Headlamps
 - Park Distance Control with Available Park Assist and Area View
 - Front Assist with Pedestrian Detection
 - Adaptive Cruise Control
 - Traffic Jam Assist
 - Area View Camera
 - Large Panoramic Sunroof
 - 8-speed Automatic Transmission
 - Dynamic Road Sign Display
 - Blind Spot Monitoring with Rear Traffic Alert
 - Easy Open
 - LED Taillamps
 - Remote Start
 - Wireless Charging
 - 12-Speaker Fender Premium Audio
 - 8-inch Infotainment System
 - Digital Cockpit
 - 5 USB Ports Available
 - Advanced Lane Assist

Introduction

Distinctive Features



Spacious Interior



Aggressive Sportback Design



LED Taillamps



Chrome Exhaust Accents



Radiator Grill with New Logo

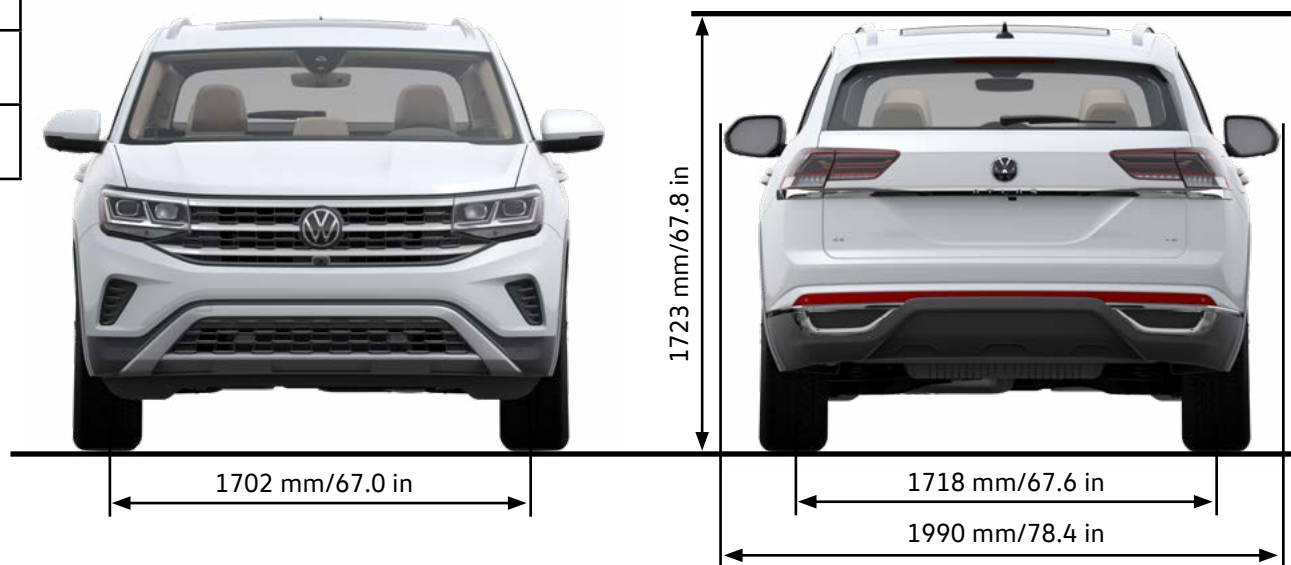
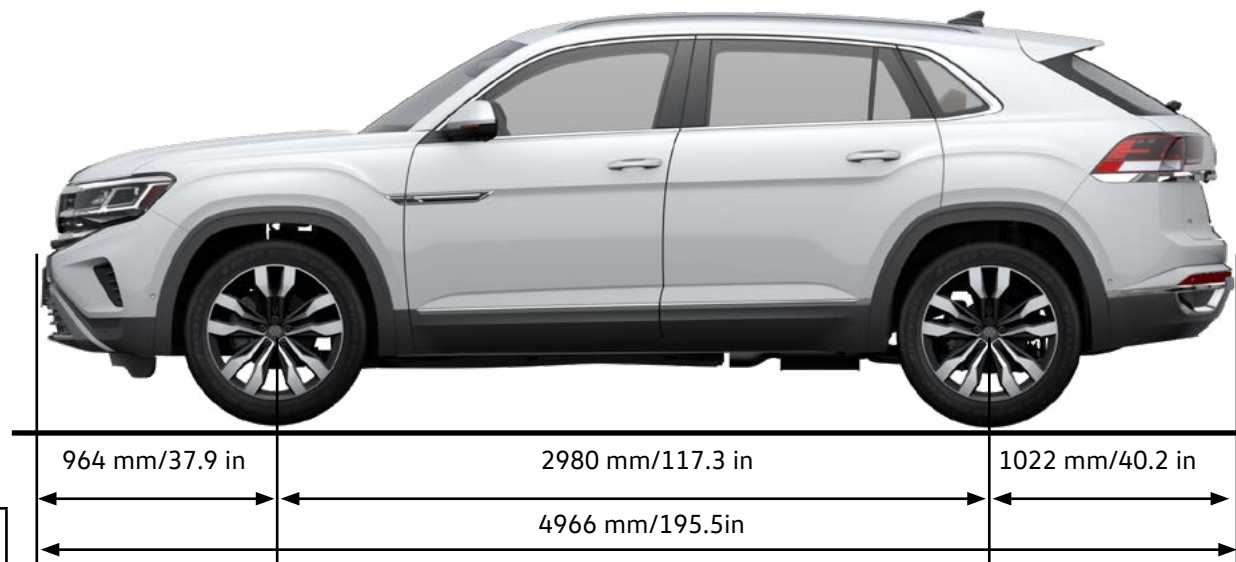


LED Headlamps

Introduction

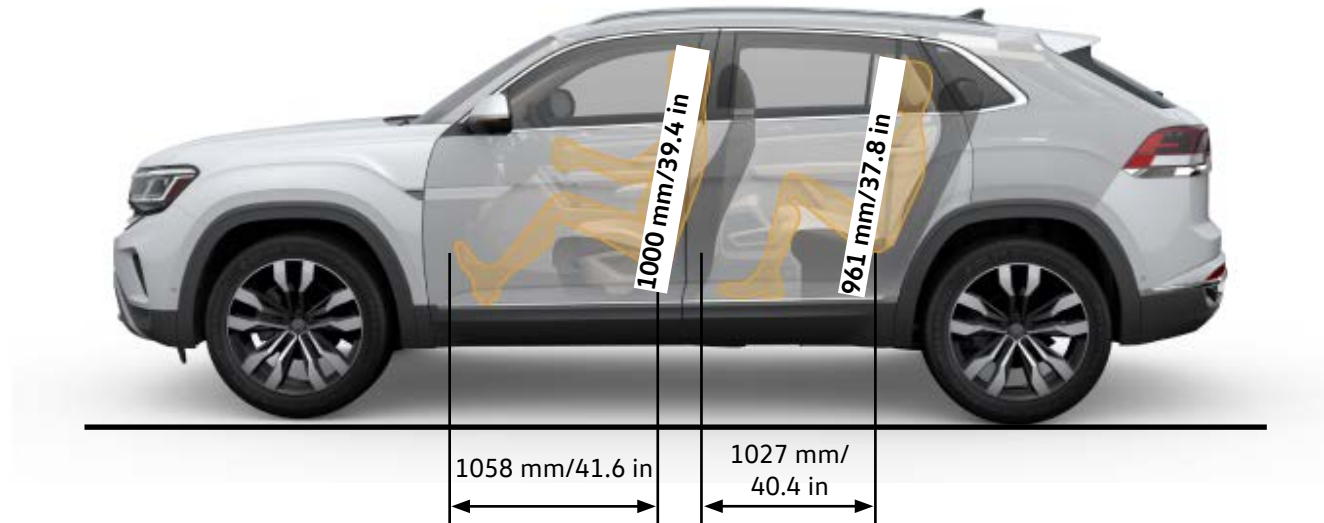
Technical Data

Turning Diameter	12.4 m	40.5 ft
Maximum Vehicle Weight	2480 - 2640 kg	5467 - 5820 lb
Curb Weight	1918 - 2060 kg	4228 - 4542 lb
Maximum Roof Load	90 kg	200 lb
Drag Coefficient	0.34 _{cd}	



Introduction

Interior Dimensions and Volumes



Interior Dimensions and Volumes

Trunk Volume	40.3 Cubic Feet	
Trunk Volume with Rear Seat Backrest Folded Forward	77.8 Cubic Feet	
Fuel Tank Capacity	70.4 Liters	18.8 Gallons
Back Seat Legroom	1027 mm	40.4 in
Front Seat Legroom	1058 mm	41.6 in

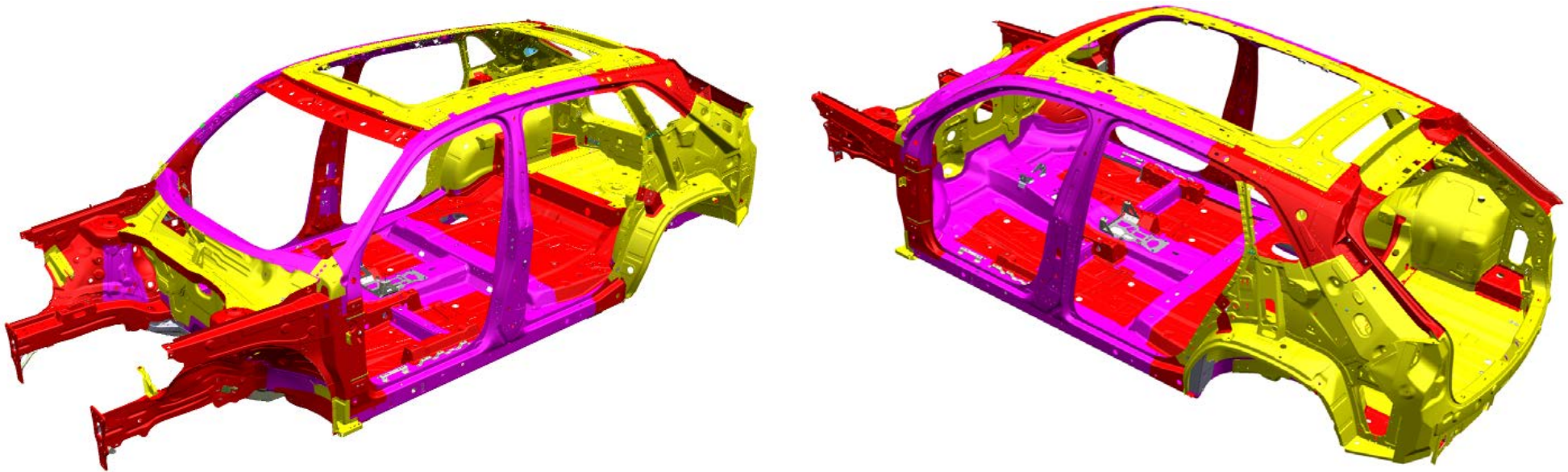


Trunk Volume
40.3 Cubic Feet

Body

Body Structure

The Atlas Cross Sport uses the Modular Transverse Matrix (MQB) design. This gives plenty of interior space while increasing crash safety and torsional stiffness.



Strengths of Steel Sheets

-  <160 MPa mild steel
-  <420 MPa extra high-strength steel
-  <1000 MPa ultra high-strength steel
-  >1000 MPa ultra high-strength hot-formed steel

Body

Seat Configuration

The Atlas Cross Sport has two rows of seating. All configurations will have a second row bench seat that is a 60/40 split. A center armrest in the rear seat is available.



Front Row Seating

- 6-way manual adjustment
- 10-way power adjustment
- 10-way power adjustment with memory



Center Row Seating



Center Row Seating 40% Folded



Center Row Seating 60% Folded

Body

Cargo Compartment

The Atlas Cross Sport has ample space in the cargo area. With the second row of seats in the raised position, it has 40.4 cubic feet of capacity. With the center row folded, it has 77.8 cubic feet of capacity.



Body

Panoramic Sunroof

The optional Panoramic Tilting/Sliding Sunroof is a two-piece large glass opening system that is 4.46 ft. (1360 mm) long and 2.85 ft (870 mm) wide. The front glass element will tilt and open, and the rear glass is stationary.

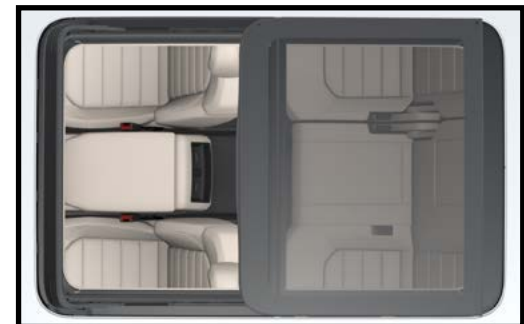
An electronically-controlled sunshade helps to control light and heat from the sun.

Operation:

- Pressing up on the sunroof switch once moves the sunroof to the vent position (raised 1.2 in (31 mm))
- Pressing the sunroof switch back once moves the glass element almost to the fully-open position (anti-buffeting position)
- Pressing the button again moves the front glass to the completely open position
- The glass can be moved to any distance between fully opened and fully closed using the sunroof switch
- When the roof panel is opened, an integrated wind deflector rises from the front edge to minimize wind noise



Closed



Open

Body

Equipment

The illustration shows the body and interior equipment features of the Atlas Cross Sport. These systems may vary according to country and equipment level.



Occupant Protection

Passenger Protection

The following occupant protection systems are used:

- Driver airbag
- Front passenger airbag with occupant detection
- Front side airbags
- Left and right curtain airbags
- Three-point seat belt with front belt tensioner
- Three-point seat belts on all seats
- Belt force limiters on front and outer rear seats
- Top tether system



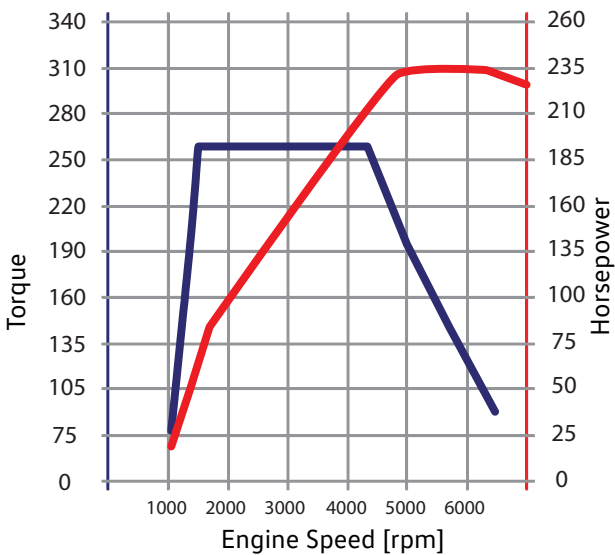
Powertrain

2.0L TSI Engine

The 2.0L TSI engine is an EA888 engine design.

Technical Features

- Cylinder head with integrated exhaust manifold
- Roller bearing balance shafts
- Smaller crankshaft main bearings with only four counterweights
- Turbocharger with electrical wastegate flap actuation
- Reduced oil pressure
- Sump with upper aluminum section and lower plastic section
- Accessory bracket with integrated oil filter and oil cooler



Displacement	1984 cm3
Bore	82.5 mm
Stroke	92.8 mm
Valves Per Cylinder	4
Compression Ratio	9.6:1
Horsepower	175 kW (235 hp) from 4,500 to 6,200 rpm
Torque	349 Nm (258 lb/ft) from 1,600 to 4,400 rpm
Engine Management	SIMOS 18.1
Fuel	87 Octane
Emission Treatment	Three-way catalytic converter, one upstream broadband lambda probe of the turbocharger and one step-type lambda probe downstream of the catalytic converter
Emission Standard	LEV 3

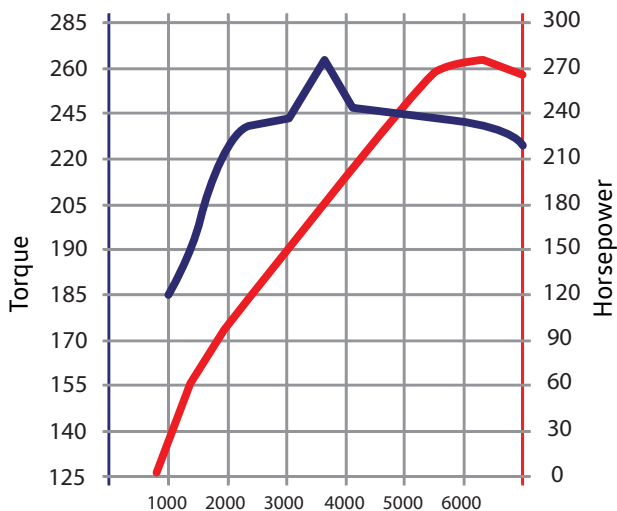
Powertrain

3.6L FSI Engine

The 3.6L FSI engine with 4-valves per cylinder is based on the VR engine series.

Technical features

- Optimized for lower oil pressures
- Non-engaged chain tensioner
- One-part oil pump chain sprocket
- Exhaust camshaft adjuster with 32° setting range
- Vibration damper secured with 7 bolts



Type	6-cylinder in-line engine
Displacement	219.5 in3 (3597 cm3)
Bore	3.5 in (89 mm)
Stroke	3.8 in (96.4 mm)
Valves Per Cylinder	4
Compression Ratio	11.4:1
Maximum Output	276 hp (206kW) at 6200 rpm
Maximum Torque	266 lb/ft (360Nm) at 2750 rpm
Engine Management	Bosch Motronic MED 17.1.62
Fuel	87 Octane
Exhaust Gas Treatment	Three-way catalytic converter with lambda control
Emissions Standard	LEV 3

Powertrain

The 09P AQ450 8-speed Automatic Transmission

The 09P (AQ450) 8-speed automatic transmission is the only transmission used in the Atlas Cross Sport. It is available as both a front and all-wheel drive configuration. This transmission is based on the Aisin 09G transmission, but incorporates a different design and components.

Technical features

- Additional planetary gearsets
- Additional hold and drive components
- A different valve body
- An Electro-Magnetic Oil Pump (EMOP) solenoid to keep the 1st gear C1 clutch engaged during Start-Stop operation, ensuring a smooth transition from a stopped engine to takeoff

This transmission has the same final drive ratio as the 09G/M transmission.



8-Speed Automatic
Transmission 09P



Powertrain

All-Wheel Drive System

The Atlas Cross Sport has available all-wheel drive on some models. This system has a different version of the 09P automatic transmission that provides output to the rear wheels.



Driving Modes

The driving mode selection capability is only available on All-Wheel Drive vehicles. This allows the customer to switch between:

- Snow
- On-Road
- Off-Road
- Custom Off-Road

Each of these modes has different engine, transmission, steering, and ACC settings.



Heating and Air Conditioning

Air Conditioning

The Atlas Cross Sport climate control systems are similar in operation to other Volkswagen vehicles:

- A manually/electrically controlled air conditioning system is offered as basic equipment
- A Climatronic system is available as an option



Manual

The manual system allows for single zone temperature in the vehicle. Regulation is controlled manually.



Climatronic

The two-zone Climatronic system allows the driver and front passenger to independently set their own preferred temperature. Regulation is fully automatic.

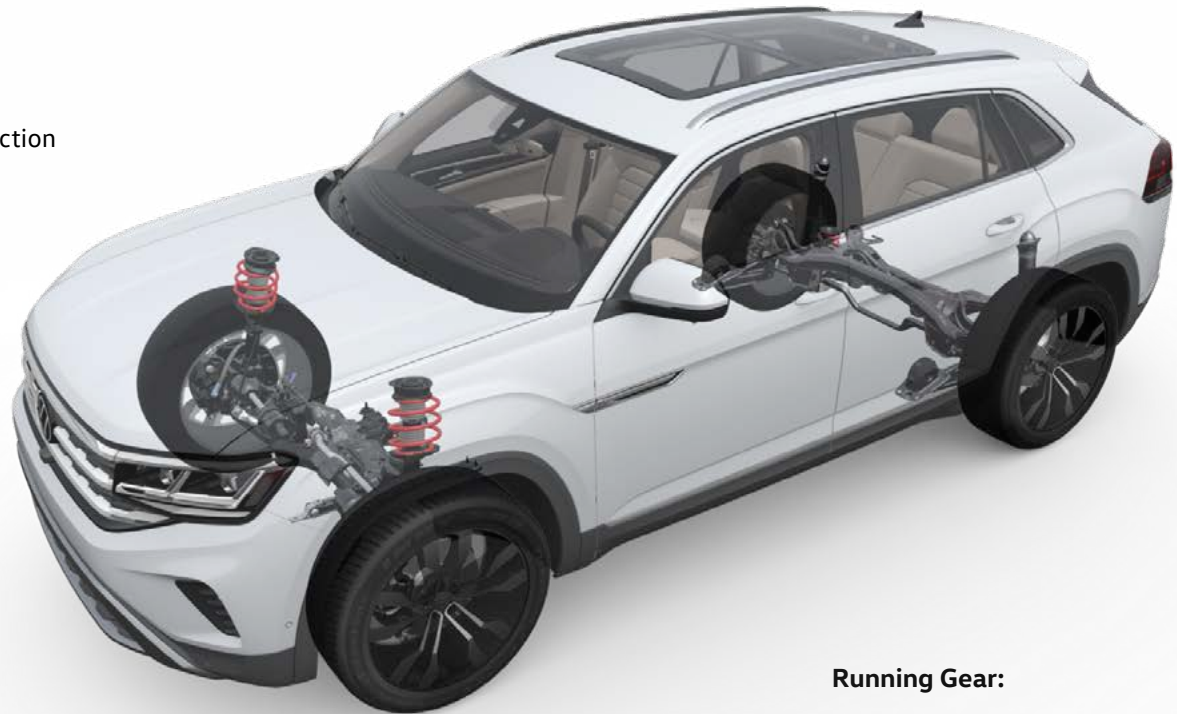


Running Gear

Running Gear and Driver Assist Systems at a Glance

Driver Assist Systems:

- Adaptive Cruise Control (ACC)
 - Adaptive Cruise Control Stop and Go
- Traffic Jam Assist
- Dynamic Road Sign Display - Traffic Sign Detection
- Area Monitoring System – Front Assist
 - Pedestrian Monitoring
- Active Blind Spot Monitor
- Lane Assist - Lane Keeping System
- Park Distance Control
 - Maneuver Braking, Front and Rear
- Park Steering Assistant
- Tire Pressure Monitoring System (TPMS)
- Automatic Post Collision Braking
- Adaptive Front Lighting System
- Light Assist - High Beam Control
- Area View
- Rearview Camera



Running Gear:

- McPherson strut front suspension
- Four-link rear axle
- Electromechanical parking brake
- Electromechanical power steering
- ABS/ESC

Running Gear

Adaptive Cruise Control (ACC)

The Adaptive Cruise Control system (ACC) regulates the vehicle's speed and its distance from the traffic in front to a value previously set by the driver. The driver remains in charge of the vehicle in all driving situations. The driver can override the system at any time by switching off the system or by depressing the brake pedal or accelerator. Depending on the profile, ACC will accelerate up to the (set) desired speed if the road is clear. If there is a slower vehicle ahead in the same lane, the system brakes and follows that vehicle at a safe distance.



Stop & Go function

The vehicle is braked until it comes to a stop when following a vehicle. If the preceding vehicle moves off again within the first three seconds, the Atlas Cross Sport will follow it automatically.



Running Gear

Traffic Jam Assist

Traffic Jam Assist is an enhancement to Lane Assist for vehicles with an automatic transmission and uses those functions combined with the ACC functions. Traffic Jam Assist can maintain the preselected (time-based) distance to a vehicle driving ahead and helps the driver to stay within the lane. The system controls the accelerator pedal, brakes, and steering, decelerates to a stop when approaching a stopped vehicle, and starts driving again automatically.

Traffic Jam Assist should only be used on expressways and well-developed roads, and should not be used in city traffic.

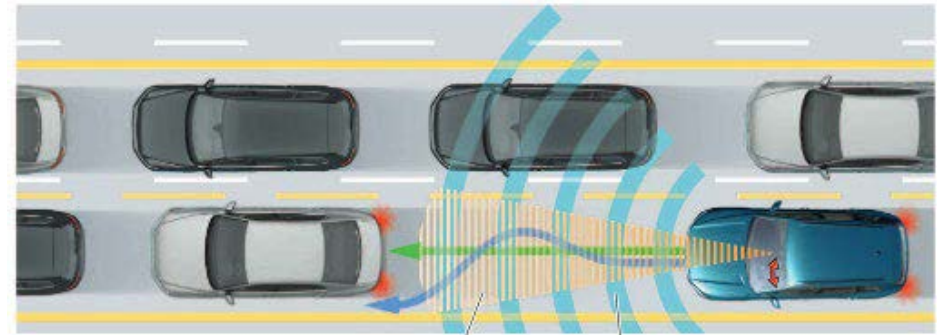
Traffic Jam Assist can also be turned off (along with Lane Assist) using the driver assistance systems button.

If the following requirements are met, Traffic Jam Assist is active:

- Lane Assist must be turned on along with Lane Assist and must be active
- Adaptive Cruise Control (ACC) must be turned on and active
- The selector lever must be in the D/S position or in the tiptronic shift gate
- The speed is less than around 35 mph (about 60 km/h)
- Seat belt fastened

Due to system limitations, Traffic Jam Assist should be turned off in the following situations

- When increased attention is needed from the driver
- When driving with a very sporty driving style
- In poor weather conditions, such as snow or heavy rain
- When driving on roads in poor conditions
- In construction zones
- When driving in a city



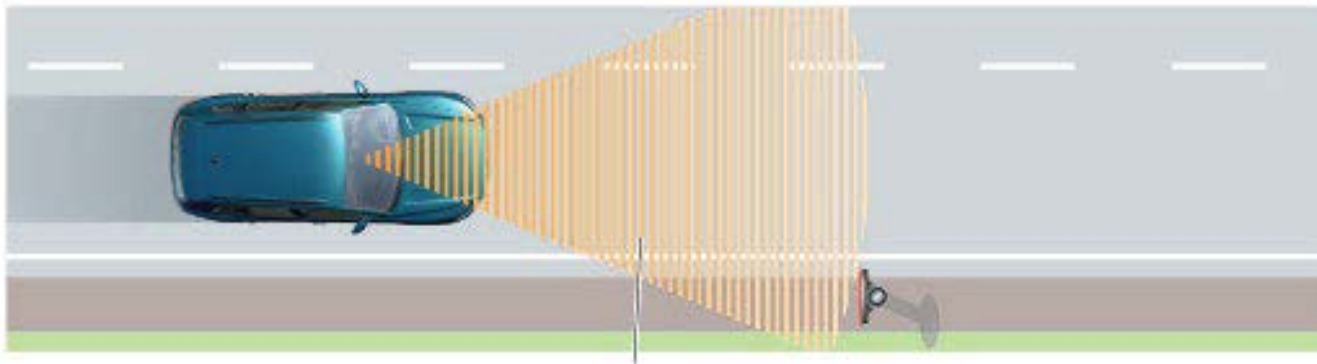
Running Gear

Dynamic Road Sign Display

The Dynamic Road Sign Display detects standard road signs using a camera in the rearview mirror base and informs the driver of detected speed limits and passing restrictions. Within the limits of the system, the system also displays additional symbols, such as time limits or restrictions when roads are wet. The system may also continue to display the valid speed limit on roads without signs.

The road signs detected by the Dynamic Road Sign Display may be displayed in the instrument cluster and in the Infotainment system, depending on the Infotainment system installed in the vehicle.

If the Dynamic Road Sign Display function detects that a valid speed limit is being exceeded, it may warn the driver audibly or visually with a message in the instrument cluster display. The speed warning can be set or completely deactivated in the vehicle settings in the Infotainment system



Dynamic Road Sign Display is subject to system limitations. The following conditions may cause the Dynamic Road Sign Display function to be limited or to not operate at all:

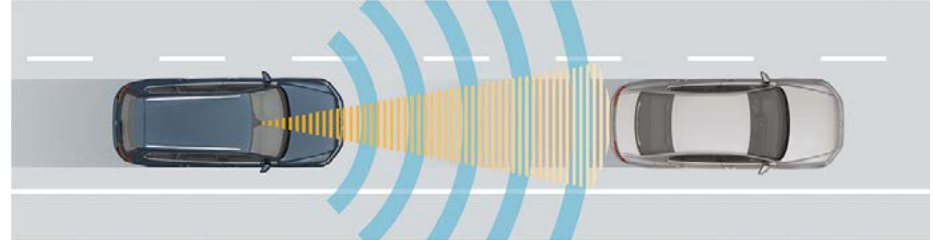
- Poor visibility, such as in snow, rain, fog, or heavy spray
- Glare, for example from oncoming traffic or the sun
- High speeds
- If the camera is obstructed or dirty
- If road signs are outside of the camera's visual field
- If road signs are partially or completely covered, for example by trees, snow, dirt, or other vehicles
- If road signs are not in the standard format
- If there are damaged or bent road signs
- If there are variable traffic signs on overhead signs (variable display of road signs by LEDs or other lighting)
- If there is outdated map material in the Infotainment system
- If there are stickers on vehicles that indicate road signs, such speed limits on commercial vehicles

Running Gear

Front Assist

Within the limits of the system, Front Assist can warn the driver of impending collisions, prepare the vehicle for an automatic braking maneuver, assist in braking, and initiate an automatic braking maneuver.

Warning times vary depending on the Traffic Situation and the driving behavior. The Front Assist system cannot replace the driver's attention.



Driving with Front Assist

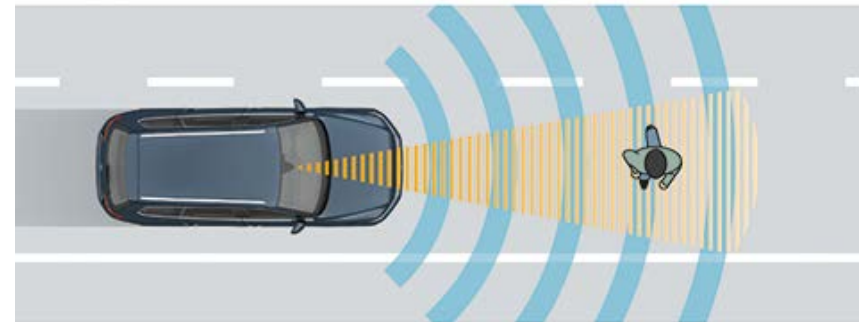
Front Assist interventions can be cancelled by moving the steering wheel or pressing the accelerator pedal.

Automatic braking

The Front Assist can brake to a stop. The vehicle will not be held at a stop after that. Press the brake pedal. The brake pedal feels more firm during an automatic braking maneuver.

Front Assist with Pedestrian Monitoring

The Autonomous Emergency Braking function and Pedestrian Monitoring (depending on the vehicle equipment) are components of the Front Assist system and are automatically activated when Front Assist is turned on.



Running Gear

Active Blind Spot Monitoring

Radar sensors monitor the area behind the vehicle. The rear radar measures the distance and difference in speed to other vehicles and informs the driver through visual signals in the exterior mirrors. The "Active" function uses the Lane Assist camera in conjunction with the rear radar to provide steering resistance if a vehicle is in the blind spot during a lane change.

System limitations

Only use the Blind Spot Monitor on paved roads. Among other possibilities, the Blind Spot Monitor may not interpret the traffic situation correctly in the following situations:

- In tight curves
- When driving in the center of two lanes
- When lanes have different widths
- When the road is raised
- In poor weather conditions
- When there is equipment installed on the side of the road, such as high or offset guard rails



Running Gear

Lane Assist

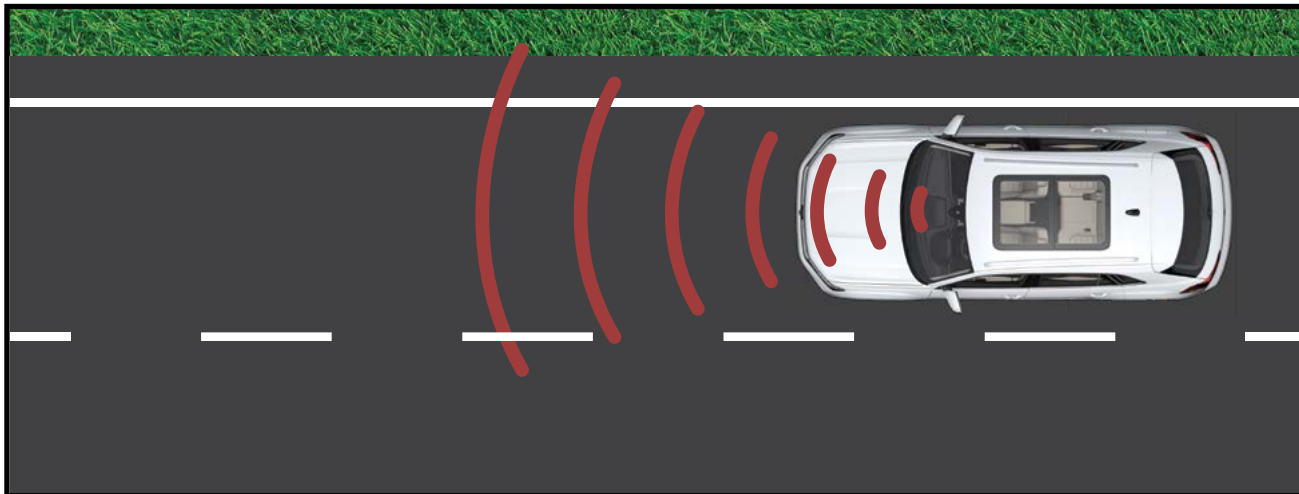
Lane Assist helps the driver to stay in a lane, within the system limitations. This function is not suitable for, and not designed for, autonomously keeping your vehicle in a lane.

Lane Assist detects the lane markers using a camera mounted to the windshield. If the system detects that the vehicle is coming too close to a lane marker, the system warns the driver with corrective steering. The driver can override the corrective steering at any time.

System limitations

Only use Lane Assist on expressways and well-developed roads. The system is not available under the following conditions:

- The vehicle speed is less than around 55 km/h (about 30 mph).
- Lane Assist has not detected a road lane marking
- In tight curves
- Temporarily, when the driving style is very dynamic



Running Gear

Park Distance Control

Park Distance Control (PDC) uses ultrasonic sensors to alert the driver of objects in front of and behind the vehicle when parking or backing up.

The 360° PDC monitors and displays the front, rear and sides of the vehicle.



Running Gear

Park Steering Assist

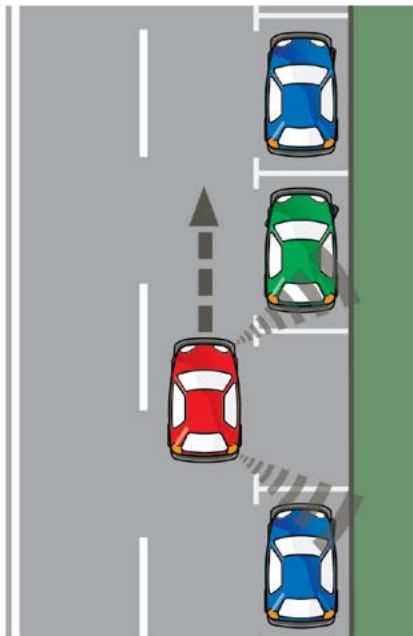
Park Assist helps the driver to park a vehicle in parallel or perpendicular parking spots. It controls the vehicle steering while the driver must control the accelerator and brake inputs.

This semi-automatic parking system allows for perpendicular parking (spaces 90° to the lane) and parallel parking on the right or left of the lane. It will not only park the vehicle, but can also be used to get the vehicle out of parking spots.

Park Distance Control (PDC) sensors sense the vehicle and open areas. This system has six sensors, just like the PDC 360° system. The side sensors are used to detect open spaces when the system is active.

The sensor information, vehicle speed from the ABS Control Module and the steering angle are used to calculate the location of an open spot relative to the vehicle. When a spot is detected, the system will automatically choose either parallel or perpendicular, depending on what it thinks is best. You can change this choice by pressing the Park Assist button.

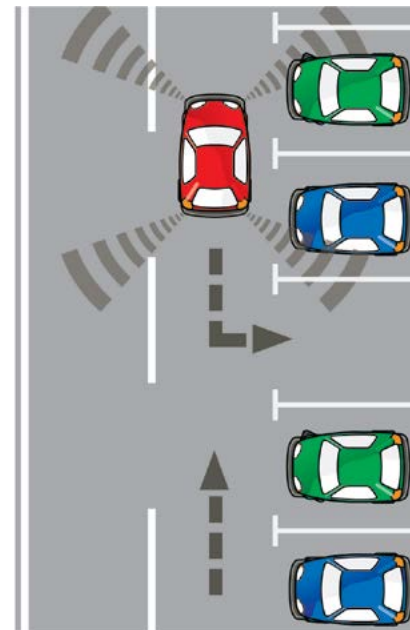
Parallel Parking



The Parallel Parking specifications are:

- Vehicle length plus,
- Extra space of at least 1.3 ft (0.4 m) at both the front and rear for maneuvering and safety
- Maximum speed of 25 mph (40 km/h)

Perpendicular Parking



The Perpendicular Parking specifications are:

- Vehicle width plus,
- Extra space of at least 1.1 ft (0.35 m) for maneuvering and safety
- Maximum speed of 25 mph (40 km/h)

Running Gear

Light Assist

The Atlas Cross Sport has the Light Assist function. This function is designed to automatically change the headlights from a low beam to a high beam in certain situations for better lighting.

The Driver Assistance Systems Front Camera R242 is used to detect oncoming headlights. When headlights are detected, the system will dim the headlights. When the camera detects that the headlights are gone, the headlamps will automatically be returned to high beam operation.

This system defaults to low beams in situations where a lot of external lighting is present.



Running Gear

Front Radar Sensor

The front radar sensor (Distance Regulation Control Module J428) is installed behind the radar-compatible VW badge on the Atlas Cross Sport. This sensor uses radar to detect vehicles and objects ahead.



Distance Regulation Control
Module J428

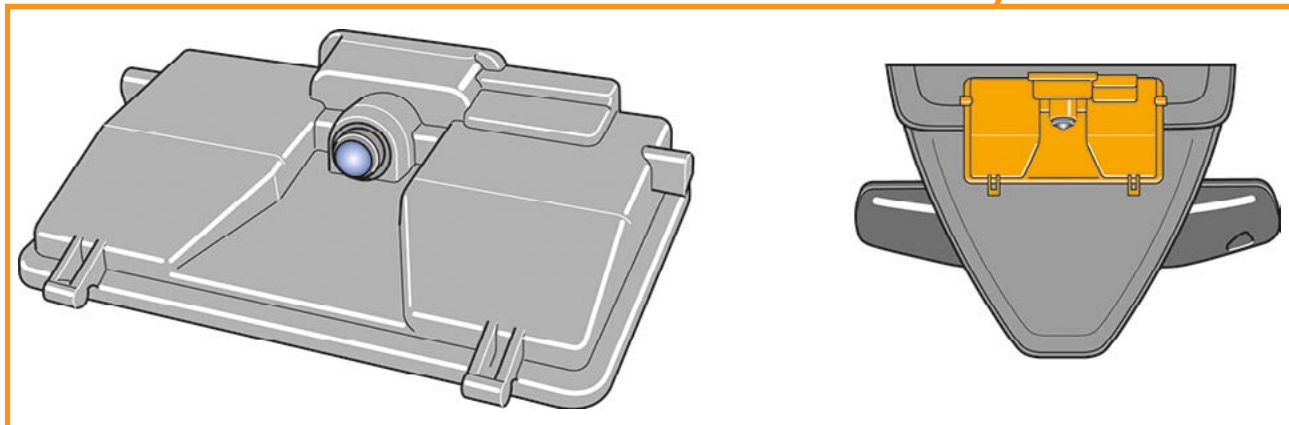
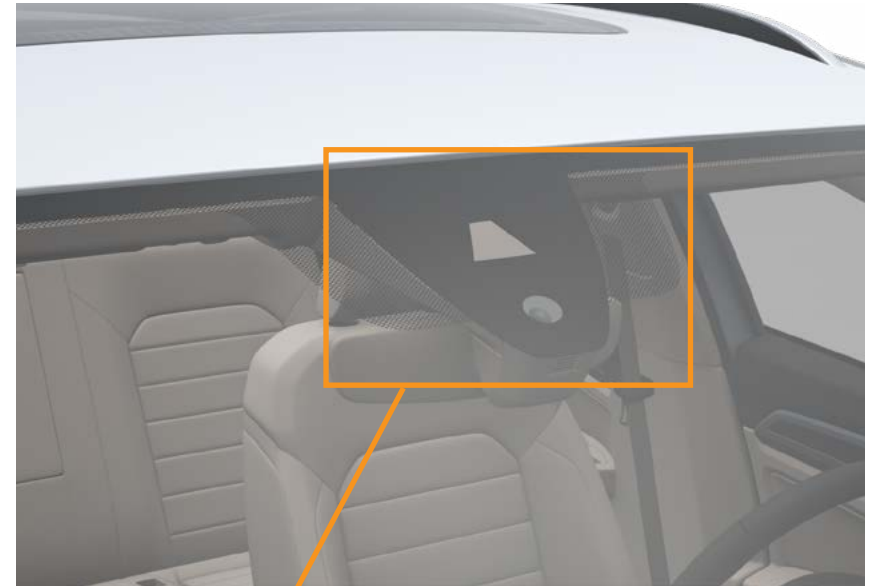
Running Gear

Driver Assistance Systems Front Camera R242

The front camera is mounted to the windshield above the interior mirror. It has its own heating unit. The Window Defogger for Front Sensor System Z113 prevents the part of the windshield directly in front of the camera from misting up or icing over.

The R242 supplies visual information to several driver assist systems. Detailed pictures of the area in front of the vehicle are generated by the front camera. This visual data is transferred on the CAN-Buses and evaluated by various systems.

The R242 is also a control module. The control module does not only supply signals for the other control units, but controls signals and information for the Light Assist and other functions.



Electrical System

Overview of Electrical and Infotainment Systems

These systems may vary according to country and equipment level.

- Start/Stop System

- Generation 5 Immobilizer and Component Protection

- Keyless Entry and Access, Optional

- LED Headlights



- Tail Lights using LED Technology, Standard

- MIB Generation 2

- Remote Start

- "Fender" Sound System

Electrical System

Electrical Components

Depending on the equipment level, the Atlas Cross Sport has an alternator with either a 150 A or 180 A output.

The 180 A alternator is installed with the factory-installed towing package. The alternator load is controlled by the Data Onboard Diagnostic Interface J533 using a LIN-Bus network.

The battery is located in the engine compartment for all models.

Electrical Boxes

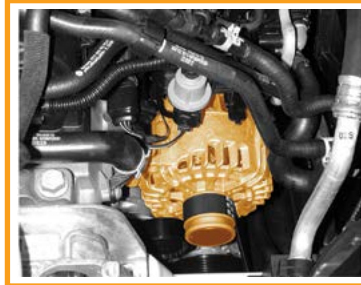
Three electrical boxes/fuse holders distribute electricity in the vehicle:

- SA - Located on top of the battery. Contains larger, higher voltage supply cables
- SB - Located on the left side of the engine compartment. Contains fuses and relays
- SC - Located at the bottom left of the instrument panel. Contains relays and fuses



To find out the precise location of various fuses and relays, please refer to the relevant wiring diagram in ElsaPro.

Alternator



SA Electrical Box



SB Electrical Box



Relay and Fuse Holder SC at the Bottom Left of the Instrument Panel



Electrical System

Headlights

Two types of headlight are available for the Atlas Cross Sport:

- Basic LED headlights
- Top Performance LED headlights

Basic LED Headlights

The 500 lumen Basic LED headlights have the light functions: low beam, high beam, side light, turn signal and daytime running light. Except for the turn signal, all light functions use LED technology. The daytime running light is a LED light tube. The "L" shape on the bottom edge of the headlight is created by a light conductor.



Electrical System

Top Performance LED Headlights

The 900 lumen Top Performance LED headlight has the following options in addition to the Basic headlight:

- Adaptive Front Lighting (AFS) system
- Light Assist

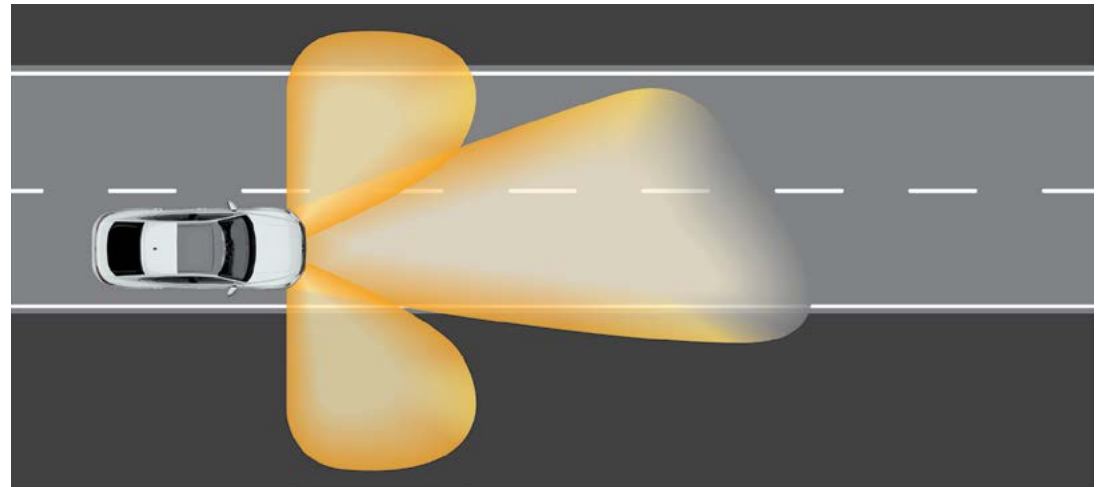


Electrical System

All-weather Lights

The All-weather Light function distributes the light in a special way to illuminate the road better in poor weather conditions like rain, fog and snowfall.

The All-weather Light is activated when you pull out the headlight switch. The static cornering light is switched on simultaneously in both headlights.



Lighting when Main Beam and All-weather Light are Activated

Electrical System

Tail Light Clusters

The tail light clusters on the Atlas Cross Sport are equipped exclusively with LED technology and are split into a fixed section on the body and a section on the rear lid.



Fixed Section of
Tail Light Cluster

Rear Lid Section
of Tail Light Cluster

Electrical System

Basic Instrument Cluster



Functions and characteristics

- 3.5" color screen with 240 X 320 resolution
- Analog gauges for tachometer, speed, coolant temperature and fuel
- Multifunction display showing the following information:
 - Time, total mileage, trip mileage
 - Vehicle warning messages in the form of symbols and text in multiple languages
 - Selected range, gear change display
 - Onboard computer with efficiency display
 - Outside temperature, ice warning
 - Cruise control system display
 - Speed warning
 - Date
 - Service interval
 - Additional driver assist systems
 - Navigation guidance
 - Telephone lists
 - Radio station list
 - Oil temperature display

Electrical System

Digital Cockpit

The Atlas Cross Sport has an optional instrument cluster that allows the driver to customize the cluster configuration.



The following safety-related warning lamps are still in the form of fixed indicators:

- Turn signals
- Coolant temperature
- Fuel level



Functions and characteristics

- 10" TFT display with a resolution of 1440 x 540 pixels
- Features all basic functions
- Different displays can be selected
- Automatically changing displays depending on the active function
- Display of 2D and 3D graphics
- Navigation and media display

This Cluster has the following primary views:

- Vehicle Status
- Driving Data
- Assistance Systems
- Navigation
- Audio
- Views

These screens are accessed using the steering wheel controls. Examples of these screens are provided in the Atlas SSP 980173

Electrical System

Virtual Pedal

The Virtual Pedal is a function of the KESY Keyless Access system. Its operation is similar to the Virtual Pedal on other Volkswagen vehicles. The Virtual pedal is only available on vehicles with an electric tailgate.

A person with a vehicle key stands in the center of the rear of the vehicle and sweeps a leg quickly to the bumper and back. The shin bone enters the area of the capacitive sensor.

The Virtual Pedal function is only active if:

- There is an authorized remote control key within 2.9 ft (1.5 m) of the rear of the vehicle
- The speed of the vehicle equals 0 mph
- The ignition (term. 15) is OFF
- The engine is OFF

Function:

The Rear Lid Opener Control Module Sensor J938 in the rear bumper recognizes movement and sends a signal to the Access Start System Interface Control Module J965. Using the Access/Start System Antenna in Rear Bumper R136 (LF signal with 125 kHz), J965 checks whether there is at least one remote control key in the rear area.

If an authorized key is detected, the 3rd brake light lights up (in the upper area of the rear window) and the rear lid latch releases. This will take place even if the vehicle is locked.



Electrical System

Wireless Charging

The Atlas Cross Sport has an optional wireless charging system. The wireless charging pad is located in the storage area directly in front of the shifter.



Alternating voltage is applied to a coil in the charging unit (in the coupling aerial) for wireless charging. A constantly changing magnetic field is produced. The mobile telephone also includes a coil in which a voltage is induced by the changing magnetic field. The electronics in the receiver, including a rectifier, then transmit the charging voltage to the battery in the mobile telephone.



Volkswagen uses the Qi standard, which was developed by the Wireless Power Consortium. The Qi standard dictates the communication between the charging unit and mobile telephone required during the charging phase.

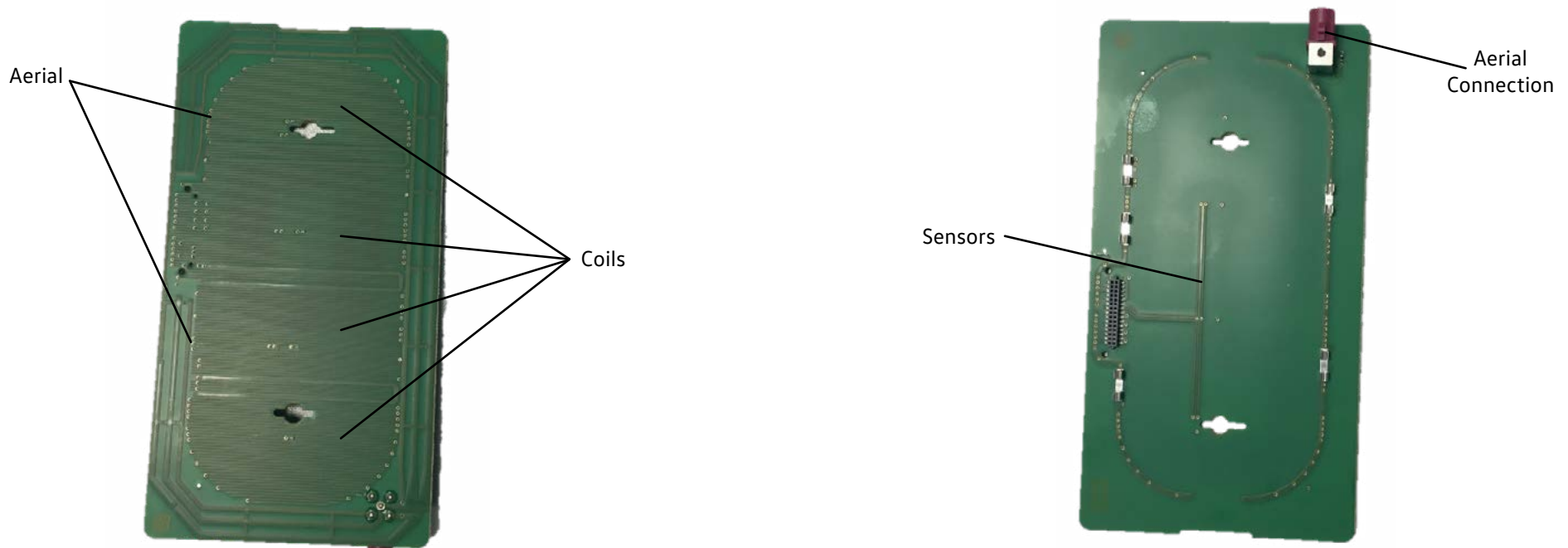
The maximum power that can be transmitted is 5 watts. Because smartphones usually operate at 5 volts, this means there is a maximum charging current of 1 amp.

Electrical System

The printed circuit for the aerial has 4 separate coils for the charging function. The aerial for mobile telephone reception runs around the outside of the coils.

If the radio/navigation system (MIB) is ON, the charging electronics are active for a telephone connected via Bluetooth. The sensors on the printed circuit (inductive and capacitive) are used by the charging electronics to check whether an object is on the unit. If a mobile telephone that supports wireless charging is detected, a higher current flow starts and the charging process starts. In the event that a charging process is not needed, the power consumption is reduced to a minimum.

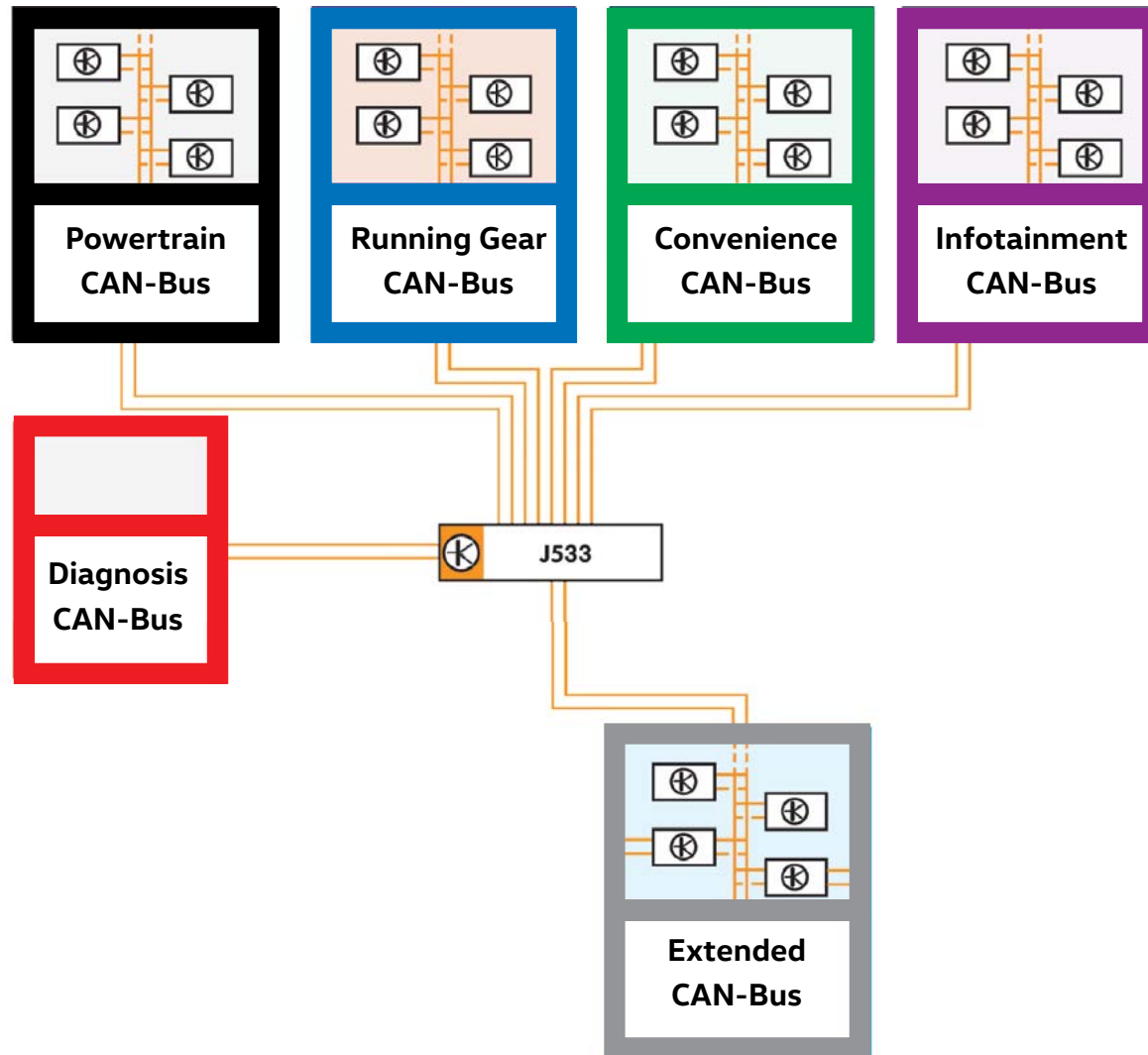
Only one coil is used at a time for a charging process. The charging electronics determine the optimal coil to be used. The coil that can transmit the most charging current is the optimal one. To use the optimal coil, the mobile telephone transmits information via Bluetooth to the charging electronics via the MIB. The charging electronics then increase the power of the specific coil, or switch to a different coil in the event of changes (position, mobile telephone).



Electrical System

Networking

The Atlas Cross Sport CAN-Bus system is based on the MQB CAN-Bus systems. All CAN-Busses communicate at 500K.

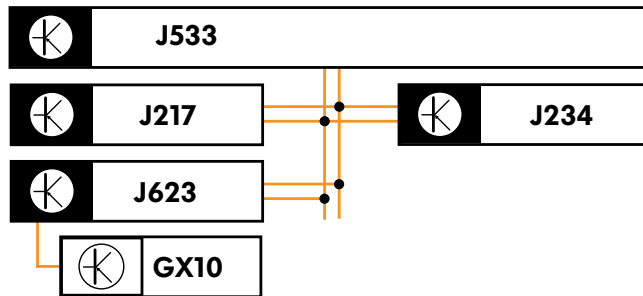


Electrical System

The CAN-Buses

Powertrain CAN-Bus

The Powertrain CAN-Bus has changed slightly when compared to other Volkswagen vehicles. The Power Steering Control Module J500 has moved from the Powertrain CAN-Bus to the Running Gear CAN-Bus. There are also two NOx sensors connected to the J623 Engine Control Module.

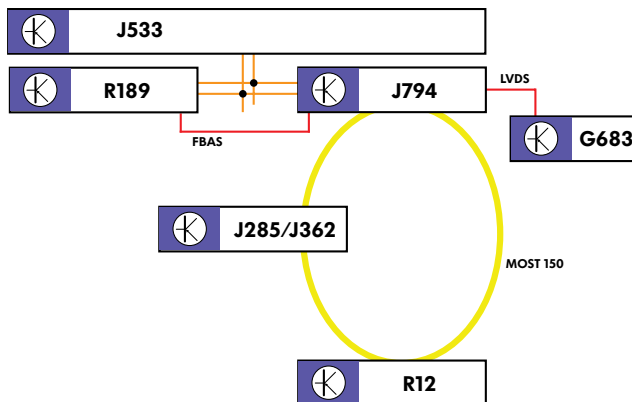


Key

- J217 Transmission Control Module
- J234 Airbag Control Module
- J533 Data Bus Onboard Diagnostic Interface
- J623 Engine Control Module
- GX10 Oxygen Sensor Before Catalytic Converter

Infotainment CAN-Bus

The Infotainment CAN-Bus is very similar to other Volkswagen MQB CAN-Busses. However, there is a MOST-Bus that connects some control modules for video display transfer.



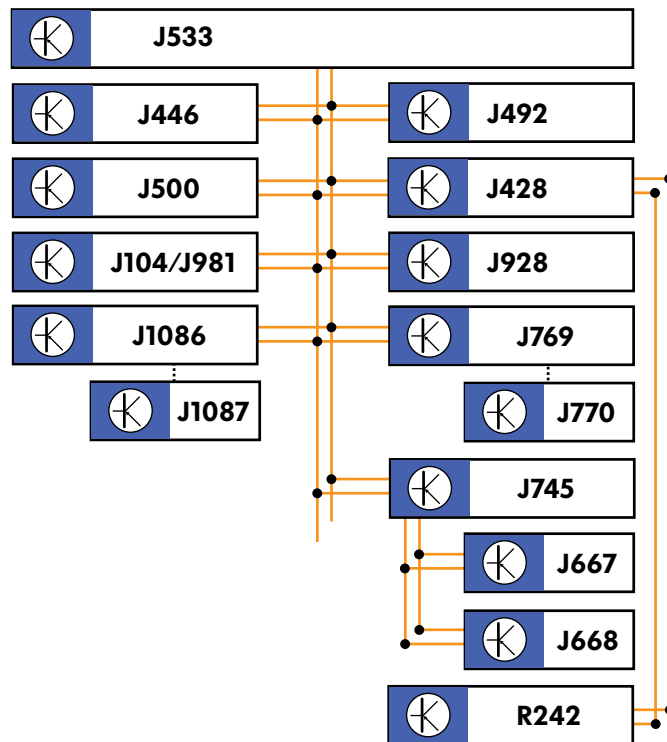
Key

- G683 Front Information Display Control Head
- J285 Instrument Cluster Control Module
- J362 Anti-Theft Immobilizer Control Module
- J794 Information Electronics Control Module
- J533 Data Bus Inboard Diagnostic Interface
- R12 Amplifier
- R189 Rearview Camera
- FBAS Color Video Blanking Signal
- LVDS Low Voltage Differential Signaling

Electrical System

Running Gear CAN-Bus

Volkswagen's Running Gear CAN-Busses continue to grow as more driver's assistance modules are added to the vehicles. In addition, this CAN-Bus has some influence over the headlamps and cornering lamps. J745 is connected to both the Running Gear CAN-Bus and the Comfort and Convenience CAN-Bus for different functions.



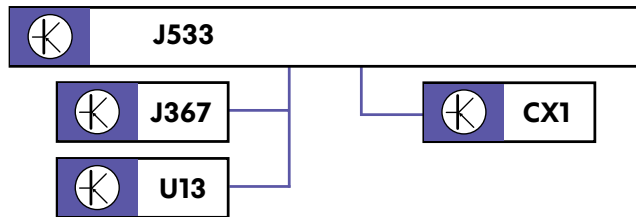
Key

- J104 ABS Control Module
- J428 Distance Regulation Control Module
- J446 Parking Aid Control Module
- J492 All Wheel Drive Control Module
- J500 Power Steering Control Module
- J533 Data Bus Onboard Diagnostic Interface
- J667 Left Headlamp Power Output Module
- J668 Right Headlamp Power Output Module
- J745 Cornering Lamp and Headlight Range Control Module
- J769 Lane Change Assistance Control Module
- J770 Lane Change Assistance Control Module 2
- J928 Peripheral Camera Control Module
- J981 ESC Control Module
- J1086 Blind Spot Detection Control Module
- J1087 Blind Spot Detection Control Module 2
- R242 Driver Assistance Systems Front Camera

Electrical System

J533 LIN-Bus

The Data Bus Onboard Diagnostic Interface (Gateway) has several components directly connected to it via LIN-Bus. J533 acts as the load management and controls the alternator charging.

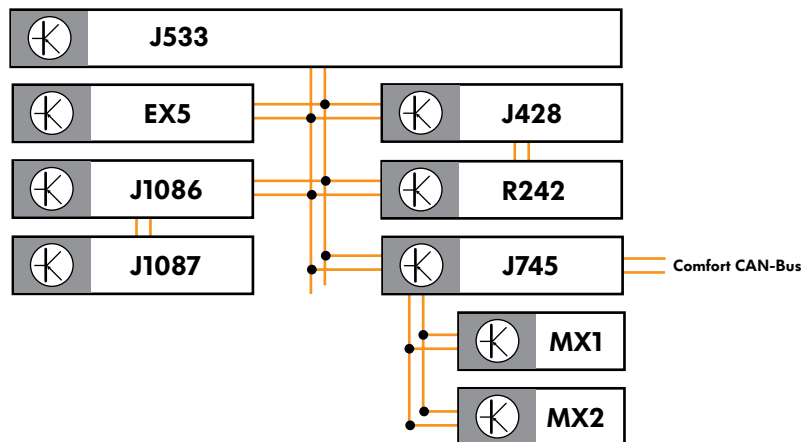


Key

- CX1 Generator
- J367 Battery Manager Control Module
- J533 Data Bus Onboard Diagnostic Interface
- U13 Converter with Socket

Extended CAN-Bus

The Extended CAN-Bus contains some lighting and driver assistance systems. In addition, some of these components have private communication CAN-Busses and are also connected to other CAN-Busses in the vehicle.



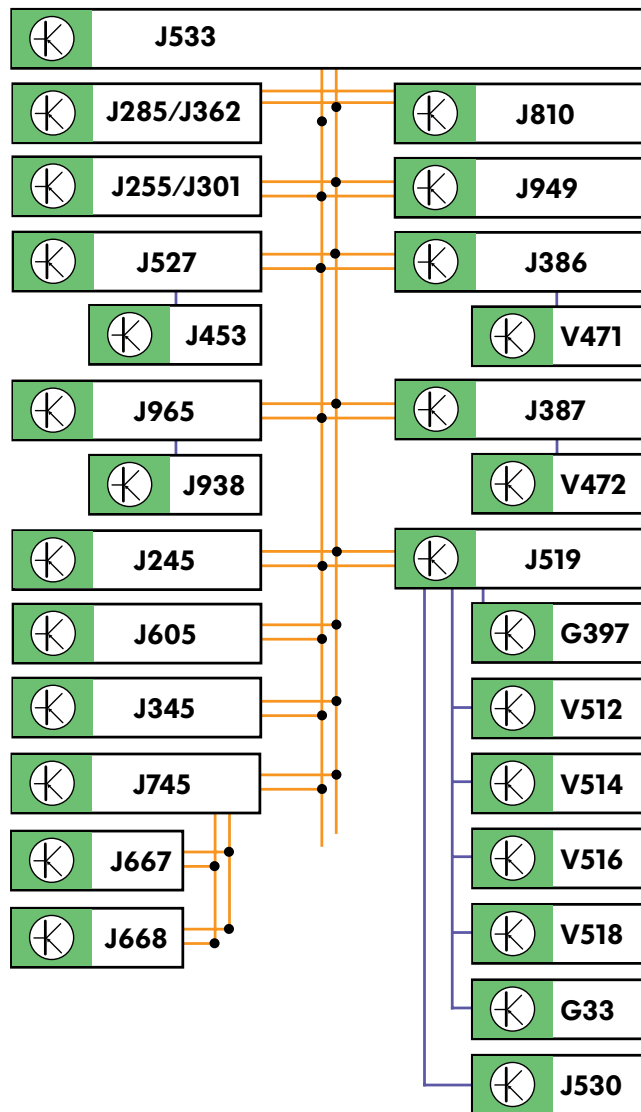
Key

- EX5 Interior Rearview Mirror
- J428 Distance Regulation Control Module
- J533 Data Bus Onboard Diagnostic Interface
- J745 Cornering Lamp and Headlamp Range Control Module
- J1086 Blind Spot Detection Control Module
- J1087 Blind Spot Detection Control Module 2
- MX1 Left Front Headlamp
- MX2 Right Front Headlamp
- R242 Driver Assistance Systems Front Camera

Electrical System

Convenience CAN-Bus

The Convenience CAN-Bus is the most extensive CAN-Bus on the Atlas Cross Sport.



Key

G33	Windshield Washer Fluid Level Sensor	J810	Driver's Seat Adjustment Control Module
G397	Rain/Light Recognition Sensor	J938	Rear Lid Opener Control Module (Virtual Pedal)
J245	Power Sunroof Control Module	J949	Control Module for Emergency Call Module and Communication Unit
J255	Climatronic Control Module	J965	Access/Start System Interface
J285	Instrument Cluster Control Module	V471	Driver Side Rear Window Regulator Motor
J301	A/C Control Module	V472	Passenger Side Rear Window Regulator Motor
J345	Towing Recognition Control Module	V512	Left Front Seat Backrest Fan 1
J362	Anti-Theft Immobilizer Control Module	V514	Left Front Seat Cushion Fan 1
J386	Driver Door Control Module	V516	Right Front Seat Backrest Fan 1
J387	Front Passenger Door Control Module	V518	Right Front Seat Cushion Fan 1
J453	Multifunction Steering Wheel Control Module		
J519	Vehicle Electrical System Control Module		
J527	Steering Column Electronics Control Module		
J530	Garage Door Opener Control Module		
J533	Data Bus Onboard Diagnostic Interface		
J605	Rear Lid Control Module		
J667	Left Headlamp Power Output Module		
J668	Right Headlamp Power Output Module		
J745	Cornering Lamp and Headlamp Range Control Module		

Electrical System

Steering Wheels

The Atlas Cross Sport has multiple steering wheel options. All steering wheels have speed, audio, telephone and multifunction display controls.



-  One step back (previous station, music track)
-  One step forward (next station, music track)
-  Accept telephone call/Open telephone menu
-  Go to previous entry
-  Go to next entry
-  Display previous menu
-  Display next menu
-  OK button (confirm selection)

-  Resume to the set speed
-  Set speed
-  Activate CCS
-  Activate ACC
-  ACC Distance
-  Reduce speed
-  Increase speed
-  Cancel/Esc (cancel selection/quit)
-  Increase volume
-  Decrease volume

Infotainment

Composition Color

Technical Features

- 6.5" 800X480 px color resistive touchscreen
- Single integrated unit
- Six side keys for functions
- Single-disc, MP3 compatible CD player
- Eight speakers (4 X 20 Watt output)
- SD card slot in the infotainment interface
- Front USB input that can control a phone and has charging capability
 - This port is backwards compatible and will charge and import media from iPods, MP3 devices, etc. using the device's USB cable. It operates like the MDI in previous vehicles
 - iPods and other media devices are not integrated into App-Connect and can be accessed through the Media hardkey
 - More USB ports may be available depending on model and trim
- Compatible with Car-Net App-Connect, Security and Service features
- Bluetooth with audio capability (HFP, A2DP, PBAP, AVRCP)
- Double tuner with phase diversity for radio signal reception



Infotainment

Composition Media

Technical Features

All functions of the Composition Color plus:

- 8.0" 800X480 px color resistive touchscreen
- Glass covered panel on infotainment interface
- Swipe and zoom gesture capability
- Eight side keys for functions
- Additional USB Ports (depending on options). These ports provide charging capability. Some ports can transfer audio data from the phone to the infotainment system. These ports do not provide smartphone control from the Infotainment system:
 - USB input in the center console jumbo box
 - Two USB inputs at the rear base of the center console for charging only
- (1) SD and (1) CD input in glove box



Infotainment

Discover Media

Technical Features

All functions of the Composition Color plus:

- Navigation functions
- Travel Link information through Sirius XM
- WiFi for Media Control



Infotainment

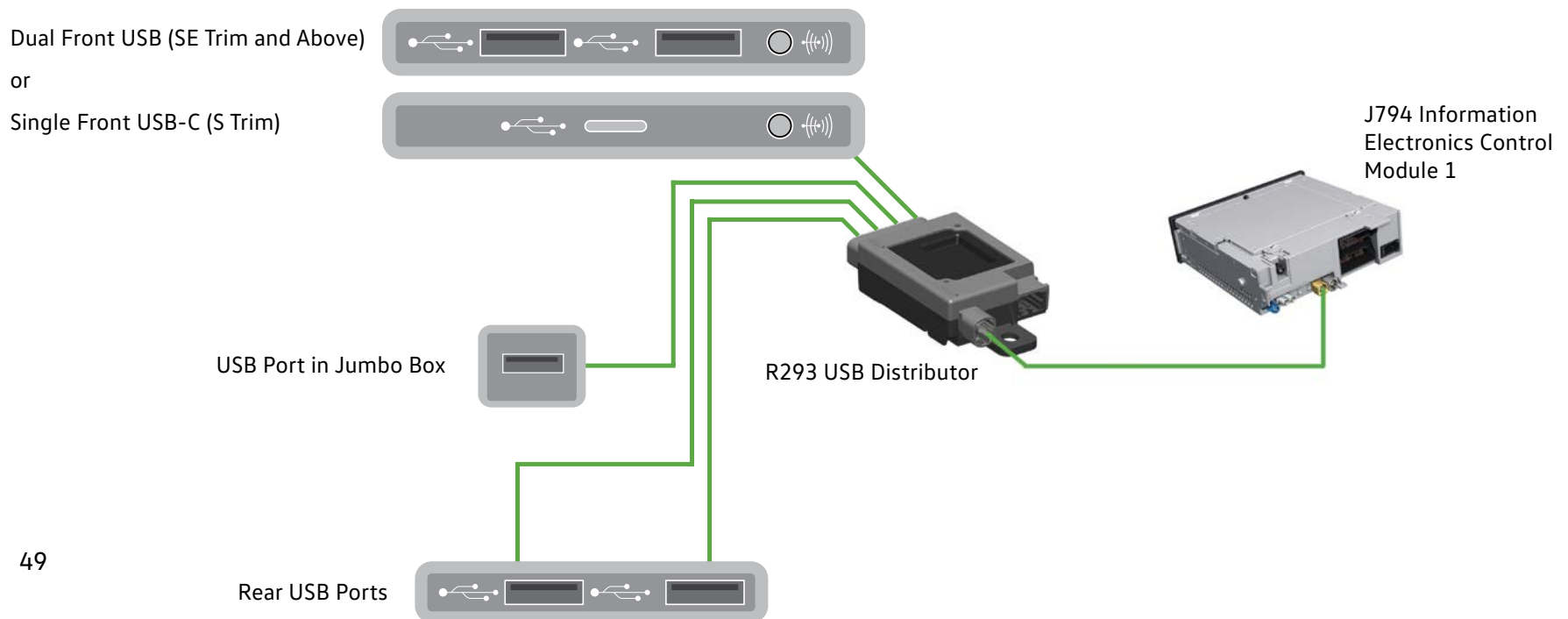
MIB II Media Inputs

The Atlas Cross Sport has up to five USB media inputs, depending on trim level and equipment: The two ports in front of the shifter provide both connectivity and charging. The remaining ports in the vehicle support charging only.

- One is located in the jumbo box under the center armrest
- Two are located at the base of the center console, in the rear. All USB inputs are connected to the USB hub located under the center console. This USB hub communicates with J794, the Information Electronics Control Module 1

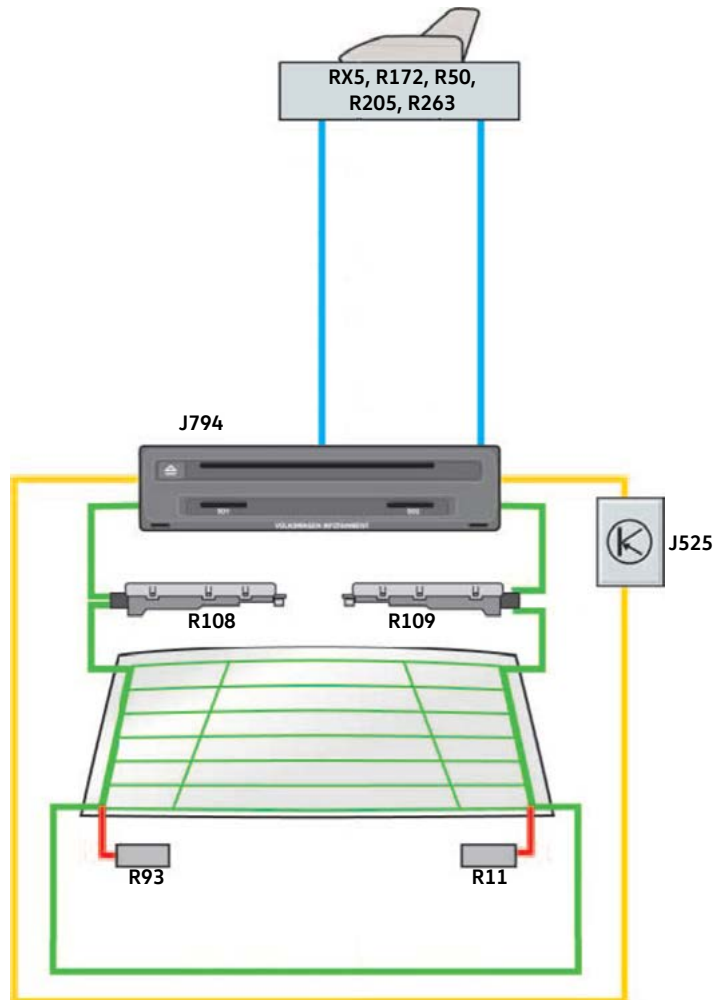
J794 is responsible for:

- Receiving USB information from the USB and AUX-IN ports
- Sending audio and image information through to the Infotainment display and the Digital Cockpit (if equipped)



Infotainment

Antenna Configuration



Key

- J525 Digital Sound System Control Module
- J794 Information Electronics Control Module 1
- R50 GPS Antenna
- R11 Antenna
- R93 Radio Antenna 2
- R108 Left Antenna Module
- R109 Right Antenna Module
- R172 Satellite Tuner Antenna
- R205 GSM Antenna
- R263 Emergency Call Module Antenna
- RX5 Roof Antenna

Infotainment

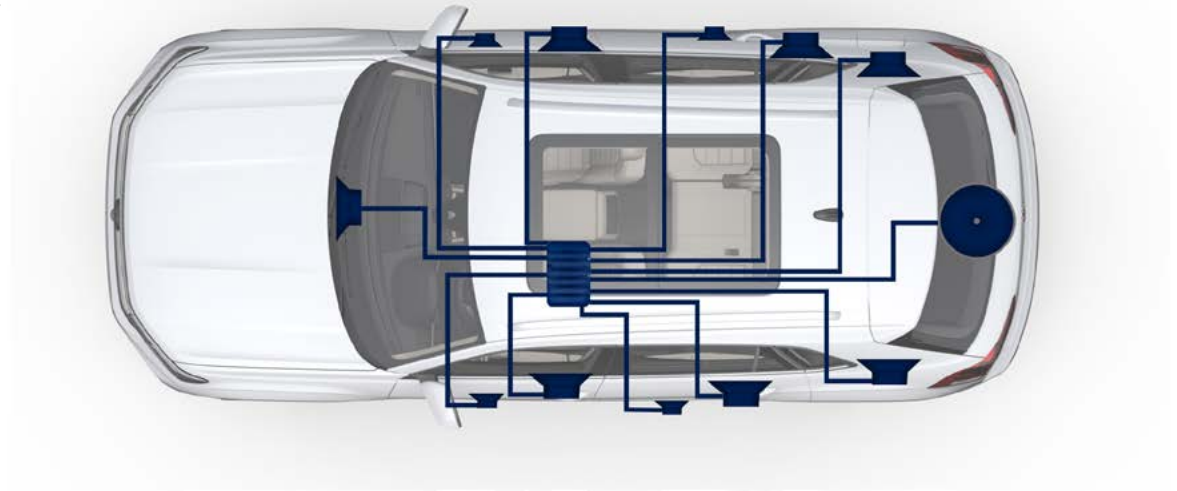
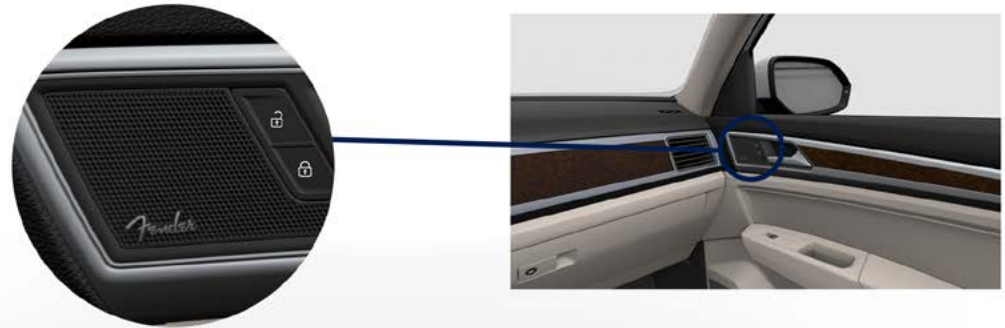
Fender Audio

The optional Fender audio system produces a classic Fender sound, best described as:

- Incredible sound clarity at any volume
- Strong bass
- Clear mid-range sound frequencies

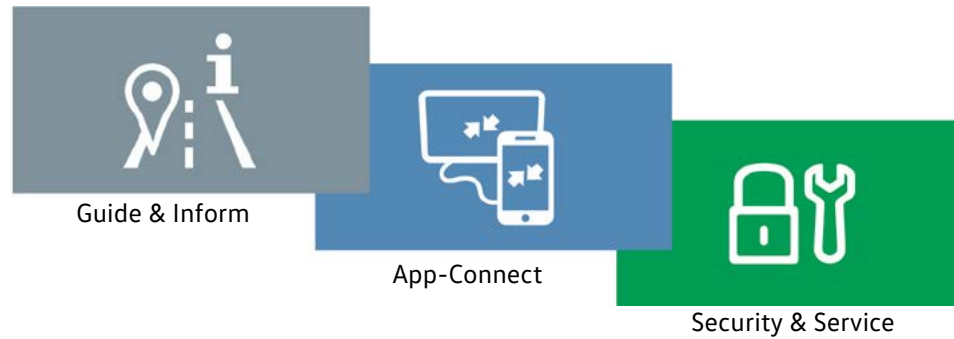
The components of the system are:

- Two speakers in each door
- One speaker per side for the third row
- A subwoofer mounted inside of the spare tire
- A center front speaker in the dash
- A 12-channel 400W amplifier under the driver's seat

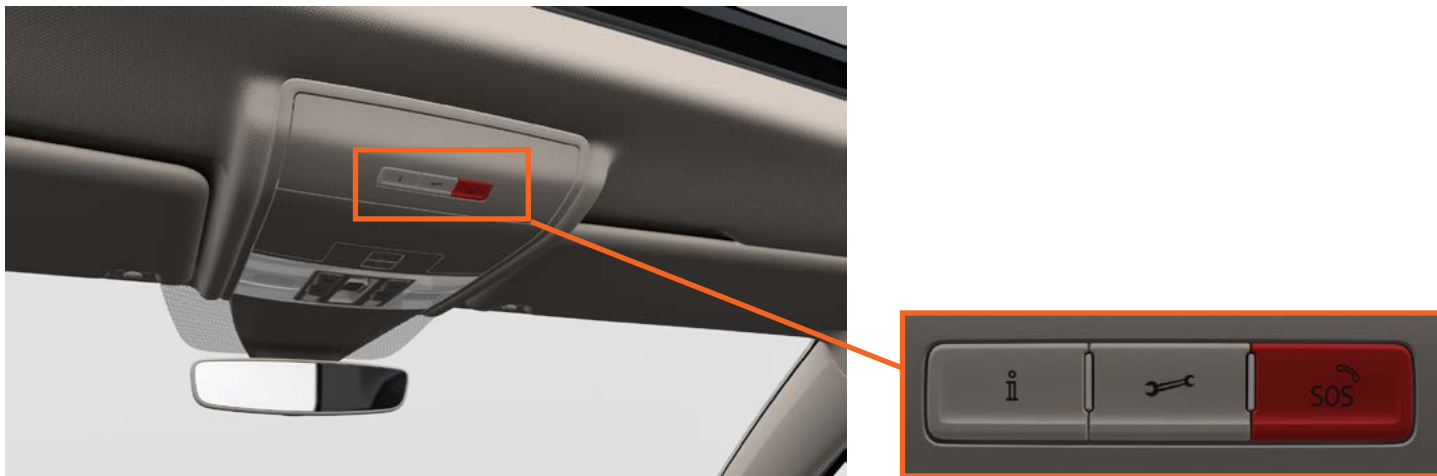


Car-Net

The Atlas Cross Sport has the following Car-Net services available:



The online applications and functions depend on the country and features included. All services are not available at vehicle launch. You may consult the Car-Net functions available in your market on the following information page: www.volkswagen-carnet.com.

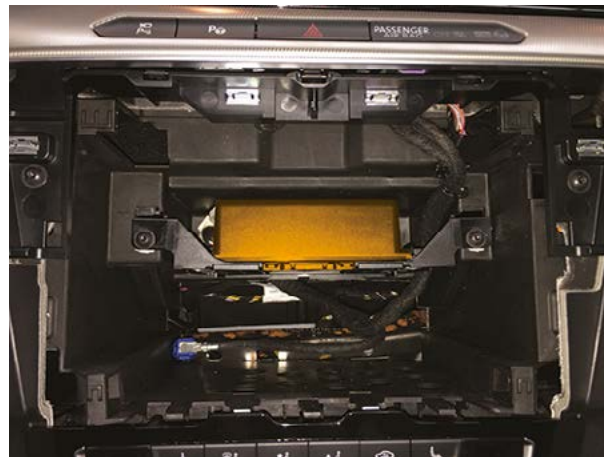


Control Module for Emergency Call Module and Communication Unit J949

The Control Module for Emergency Call Module and Communication Unit J949 is a data interface with subscriber identification. It transfers and receives data and commands for Car-Net Security & Service.

The J949 can establish an Internet connection through the mobile phone network. This allows receiving, processing and executing commands with the ignition switched on or off. Data exchange is direct and coded.

There is no direct data transmission between the customer terminal, the CP (Customer portal) or smartphone (application) and vehicle. The control module is located behind the infotainment screen.



J949 Location

Glossary

AAC - (Advanced Audio Coding)

AAC is an audio data compression method developed by the Moving Picture Experts Group that is used in the MP2 standard (MPEG layer 2).

ABS - (Anti-lock braking system)

Traction control system which prevents the wheels from locking when braking.

ACC - (Adaptive Cruise Control)

Abbreviation for the automatic adaptive cruise control system.

AFS - (Advanced Frontlighting System)

Abbreviation for the cornering light CAN-Bus. This function improves illumination of the road considerably when the vehicle is cornering as the headlight light beam pattern is directed according to the position of the steering wheel.

AM

Amplitude modulation, electromagnetic wave used to transmit messages. In amplitude modulation, the amplitude of the high frequency is varied.

AUX-IN

Signal input for external audio devices.

A2DP - (Advanced Audio Distribution Profile)

A technology used by many manufacturers which allows wireless transmission of stereo audio signals to a corresponding receiver via Bluetooth.

Bluetooth

Bluetooth is an industry standard developed by the Bluetooth Special Interest Group (SIG) for wireless communications between devices over short distances.

CAN - (Controller Area Network)

Standardized digital twin-wire data network used in vehicle electronics.

DAB - (Digital Audio Broadcasting)

Radio channel broadcast digitally by radio stations. DAB+ is a further development of digital radio, which was introduced in 2011 in Germany.

DVD - Digital Versatile/Video Disc

A further development of optical storage media with a memory capacity of 4.7 GB, on one-sided, singlelayer DVDs (single-layer DVD, DVD±R, DVD±RW), and 8.5 GB, on one-sided, double-layer DVDs (dual-/double-layer, DVD±R-DL, DVD-RW±DL).

ESC - (Electronic Stability Control)

Electronic stabilization program, previously abbreviated to ESP.

FLAC - (Free Lossless Audio Codec)

Audiocodec for loss-free audio data compression.

Glossary

FM

Frequency modulation, electromagnetic wave used to transmit messages. In frequency modulation, the frequency of the carrier wave varies in step with the information signal. The amplitude remains constant.

GPS - (Global Positioning System)

Officially NAVSTAR GPS, this is a global satellite navigation system for position location and time measurement.

GSM - (Global System for Mobile communications)

Standard for digital mobile telecommunications networks that is also used for data transfer and text messages (SMS).

HFP - (Hands-free profile)

Bluetooth standard for hands-free system.

LED - (Light Emitting Diode)

Energy-saving lamp system in which one or more light-emitting diodes are connected to form a source of light.

LIN - (Local Interconnect Network)

Serial single-wire data network, which is used to connect electronic components to higher-level control units.

MIB - (Modular infotainment matrix)

Designation for a modular system used by many brands and models for the vehicle's infotainment components.

MOST - (Media Oriented Systems Transport)

This is a serial bus system for transmitting audio, video, speech and data signals. Volkswagen currently uses fibre optic cable for this bus system.

MP3

Abbreviation for MPEG Layer3 (Motion Picture Experts Group Layer 3); compression standard for audio data formats.

MQB - (Modular transverse matrix)

Designation for a modular system used by many brands and models in vehicle development and production.

PBAP - (Phonebook Access Profile)

Bluetooth profile for transfer of address data and telephone numbers to the Infotainment system.

Qi Standard

A standard for wireless charging created by the Wireless Power Consortium. It is a wireless interface standard that dictates inductive charging over distances of up to 4 cm.

Glossary

rSAP - (remote SIM Access Profile)

Profile that enables the SIM card to be read and its access data to be used by the universal mobile telephone preparation (UHV).

SD card - (Secure Digital card)

Small and robust memory cards, e.g. for digital cameras.

TPMS - (Tire Pressure Monitoring System)

Driver assist system that informs the driver about the current tire pressures. It is a direct measuring system. If the tire inflation pressure is too low or there is a rapid pressure loss, the driver is warned by optical and/or acoustic signals.

USB - (Universal Serial Bus)

A standardized interface between various electronic devices such as computers, printers, scanners and televisions etc.

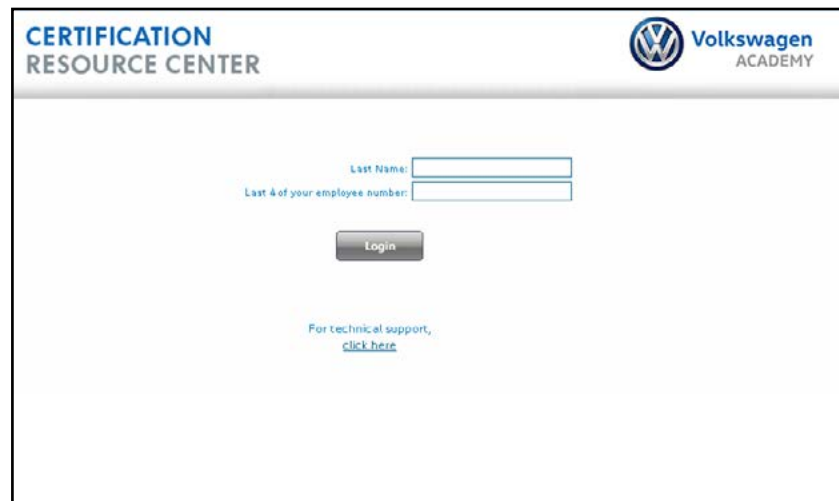
Knowledge Assessment

An on-line Knowledge Assessment (exam) is available for this Self-Study Program. The Knowledge Assessment may or may not be required for Certification.

You can find this Knowledge Assessment at: **www.vwwebservice.com**

For Assistance, please call: **Volkswagen Academy, Certification Program Headquarters 1-877-791-4838 (8:00 a.m. to 8:00 p.m. EST)**

Or, E-mail: **concierge@volkswagenacademy.com**



The screenshot shows the login interface for the Volkswagen Academy Certification Resource Center. At the top left, the text "CERTIFICATION RESOURCE CENTER" is displayed. At the top right is the Volkswagen logo followed by "Volkswagen ACADEMY". The main area contains two input fields: "Last Name:" and "Last 4 of your employee number:". Below these fields is a "Login" button. At the bottom, there is a link that says "For technical support, click here".



Volkswagen Group of America
2200 Ferdinand Porsche Drive
Herndon, VA 20171
2020



Cautions & Warnings

Please read these WARNINGS and CAUTIONS before proceeding with maintenance and repair work. You must answer that you have read and you understand these WARNINGS and CAUTIONS before you will be allowed to view this information.

- If you lack the skills, tools and equipment, or a suitable workshop for any procedure described in this manual, we suggest you leave such repairs to an authorized Volkswagen retailer or other qualified shop. We especially urge you to consult an authorized Volkswagen retailer before beginning repairs on any vehicle that may still be covered wholly or in part by any of the extensive warranties issued by Volkswagen.
- Disconnect the battery negative terminal (ground strap) whenever you work on the fuel system or the electrical system. Do not smoke or work near heaters or other fire hazards. Keep an approved fire extinguisher handy.
- Volkswagen is constantly improving its vehicles and sometimes these changes, both in parts and specifications, are made applicable to earlier models. Therefore, part numbers listed in this manual are for reference only. Always check with your authorized Volkswagen retailer parts department for the latest information.
- Any time the battery has been disconnected on an automatic transmission vehicle, it will be necessary to reestablish Transmission Control Module (TCM) basic settings using the Volkswagen Factory Approved Scan Tool (ST).
- Never work under a lifted vehicle unless it is solidly supported on stands designed for the purpose. Do not support a vehicle on cinder blocks, hollow tiles or other props that may crumble under continuous load. Never work under a vehicle that is supported solely by a jack. Never work under the vehicle while the engine is running.
- For vehicles equipped with an anti-theft radio, be sure of the correct radio activation code before disconnecting the battery or removing the radio. If the wrong code is entered when the power is restored, the radio may lock up and become inoperable, even if the correct code is used in a later attempt.
- If you are going to work under a vehicle on the ground, make sure that the ground is level. Block the wheels to keep the vehicle from rolling. Disconnect the battery negative terminal (ground strap) to prevent others from starting the vehicle while you are under it
- Do not attempt to work on your vehicle if you do not feel well. You increase the danger of injury to yourself and others if you are tired, upset or have taken medicine or any other substances that may impair you or keep you from being fully alert.
- Never run the engine unless the work area is well ventilated. Carbon monoxide (CO) kills.
- Always observe good workshop practices. Wear goggles when you operate machine tools or work with acid. Wear goggles, gloves and other protective clothing whenever the job requires working with harmful substances.
- Tie long hair behind your head. Do not wear a necktie, a scarf, loose clothing, or a necklace when you work near machine tools or running engines. If your hair, clothing, or jewelry were to get caught in the machinery, severe injury could result.
- Do not re-use any fasteners that are worn or deformed in normal use. Some fasteners are designed to be used only once and are unreliable and may fail if used a second time. This includes, but is not limited to, nuts, bolts, washers, circlips and cotter pins. Always follow the recommendations in this manual - replace these fasteners with new parts where indicated, and any other time it is deemed necessary by inspection.

Cautions & Warnings

- Illuminate the work area adequately but safely. Use a portable safety light for working inside or under the vehicle. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.
- Friction materials such as brake pads and clutch discs may contain asbestos fibers. Do not create dust by grinding, sanding, or by cleaning with compressed air. Avoid breathing asbestos fibers and asbestos dust. Breathing asbestos can cause serious diseases such as asbestosis or cancer, and may result in death.
- Finger rings should be removed so that they cannot cause electrical shorts, get caught in running machinery, or be crushed by heavy parts.
- Before starting a job, make certain that you have all the necessary tools and parts on hand. Read all the instructions thoroughly; do not attempt shortcuts. Use tools that are appropriate to the work and use only replacement parts meeting Volkswagen specifications. Makeshift tools, parts and procedures will not make good repairs.
- Catch draining fuel, oil or brake fluid in suitable containers. Do not use empty food or beverage containers that might mislead someone into drinking from them. Store flammable fluids away from fire hazards. Wipe up spills at once, but do not store the oily rags, which can ignite and burn spontaneously.
- Use pneumatic and electric tools only to loosen threaded parts and fasteners. Never use these tools to tighten fasteners, especially on light alloy parts. Always use a torque wrench to tighten fasteners to the tightening torque listed.
- Keep sparks, lighted matches, and open flame away from the top of the battery. If escaping hydrogen gas is ignited, it will ignite gas trapped in the cells and cause the battery to explode.
- Be mindful of the environment and ecology. Before you drain the crankcase, find out the proper way to dispose of the oil. Do not pour oil onto the ground, down a drain, or into a stream, pond, or lake. Consult local ordinances that govern the disposal of wastes.
- The air-conditioning (A/C) system is filled with a chemical refrigerant that is hazardous. The A/C system should be serviced only by trained automotive service technicians using approved refrigerant recovery/recycling equipment, trained in related safety precautions, and familiar with regulations governing the discharging and disposal of automotive chemical refrigerants.
- Before doing any electrical welding on vehicles equipped with anti-lock brakes (ABS), disconnect the battery negative terminal (ground strap) and the ABS control module connector.
- Do not expose any part of the A/C system to high temperatures such as open flame. Excessive heat will increase system pressure and may cause the system to burst.
- When boost-charging the battery, first remove the fuses for the Engine Control Module (ECM), the Transmission Control Module (TCM), the ABS control module, and the trip computer. In cases where one or more of these components is not separately fused, disconnect the control module connector(s).
- Some of the vehicles covered by this manual are equipped with a supplemental restraint system (SRS), that automatically deploys an airbag in the event of a frontal impact. The airbag is operated by an explosive device. Handled improperly or without adequate safeguards, it can be accidentally activated and cause serious personal injury. To guard against personal injury or airbag system failure, only trained Volkswagen Service technicians should test, disassemble or service the airbag system.

Cautions & Warnings

- Do not quick-charge the battery (for boost starting) for longer than one minute, and do not exceed 16.5 volts at the battery with the boosting cables attached. Wait at least one minute before boosting the battery a second time.
- Never use a test light to conduct electrical tests of the airbag system. The system must only be tested by trained Volkswagen Service technicians using the Volkswagen Factory Approved Scan Tool (ST) or an approved equivalent. The airbag unit must never be electrically tested while it is not installed in the vehicle.
- Some aerosol tire inflators are highly flammable. Be extremely cautious when repairing a tire that may have been inflated using an aerosol tire inflator. Keep sparks, open flame or other sources of ignition away from the tire repair area. Inflate and deflate the tire at least four times before breaking the bead from the rim. Completely remove the tire from the rim before attempting any repair.
- When driving or riding in an airbag-equipped vehicle, never hold test equipment in your hands or lap while the vehicle is in motion. Objects between you and the airbag can increase the risk of injury in an accident.

I have read and I understand these Cautions and Warnings.