



Excellence for Professionals:

Air Conditioner Service with Bosch ACS 752, 652, 611, 511, 810 and 661



A/C service from Bosch

Air conditioning systems in vehicles require regular maintenance. The market potential for intelligent air conditioning service is therefore constantly increasing. When it comes to these services, it is the workshops with expertise and the right equipment that have the upper hand.

- ► ACS 752 and ACS 652: Complete fully automatic air conditioning service unit without manual valves and compatible with Hybrid and Electrical vehicles
- ► ACS 611 and ACS 511: Fully Automatic air conditioning service unit
- ► ACS 810: Automatic ACS for Heavy Duty systems with large internal tank (35 kg) and liquid pump for fast refrigerant charge
- ► ACS 661: Fully Automatic air conditioning unit for R-1234yf A/C systems



Driving comfort and safety with air conditioners

Air conditioners are standard vehicle equipment: Nowadays, over 60 percent of small cars and over 90 percent of mid-range and premium range models are fitted with air conditioners and the share increases every day.

- ► For most small cars, an air conditioner can at least be ordered as an option.
- ► The trend is increasing, both for passenger cars and commercial vehicles.
- ► Sooner or later, there will be very few vehicles without an air conditioner.

The new Bosch ACS air conditioning service unit: 5 models for all workshop profiles

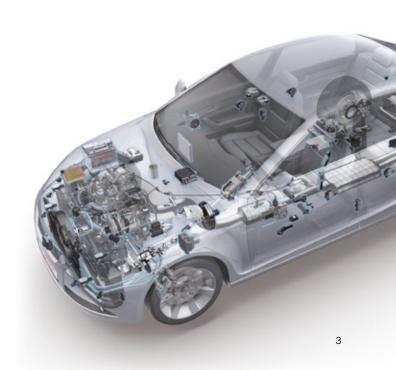
- ► ACS 752: Complete fully automatic unit that meets the highest requirements for air conditioning units for cars and commercial vehicles, compatible with Hybrid A/C system according to SAE J2788 standard.
- ► ACS 652: Complete fully automatic unit for passenger cars, commercial vehicles and trucks compatible with Hybrid A/C systems
- ► ACS 611: Fully automatic unit for passenger cars, commercial vehicles and trucks
- ► ACS 511: Fully Automatic unit with the fastest return of investment
- ► ACS 810: Heavy Duty Automatic A/C unit for buses, truck and commercial vehicles
- ► ACS 661: Fully automatic unit for vehicles equipped with R-1234yf refrigerant

Ready for summer! Scorching temperatures are easily handled with Bosch ACS



Service work on air conditioning systems with R-134a is an everyday workshop task that will continue for the next few years.

Despite the introduction of the new refrigerant R-1234yf, vehicle manufacturers are still permitted to supply new vehicles with R-134a refrigerant in their air conditioning systems until 2016. With an average vehicle service life of 20 years, R-134a air conditioning service units will generate a lot of revenue in workshop service.



ACS 752 new standard in air conditioning

service: Fully automatic



Precise, practical, powerful: Detailed-focused solutions for the highest standards

ACS 752: Safe and efficient, for professional and economical air conditioner service

Thanks to high-precision measuring technology and a fully automatic service process, the ACS 752 A/C service unit from Bosch ensures that service work on air conditioning systems in cars and commercial vehicles is environmentally friendly. The ACS 752 fulfills all the requirements of the demanding SAE J-2788 standard, the definitive US standard for A/C service units.

Fully automatic operations process

The unit performs all of the following tasks without the need for manual intervention: Refrigerant extraction, refrigerant recycling, used oil draining, evacuation with the associated leak testing, refilling of new oil (PAG/POE) with UV dye, and precise refrigerant filling.

Perfect air conditioner service for cars and commercial vehicles

The ACS 752 is suitable for fully automatic maintenance and repair work on all cars and commercial vehicle air conditioning systems.

Service for hybrid and electric vehicles

Two oil injection bottles for PAG and POE lubricant and the automatic service hoses flushing function make the unit compatible for hybrid and electric vehicles A/C systems.

Fully equipped for the ultimate service

The top-of-the-line ACS 752 has all the equipment you need for service work, even on large air-conditioning systems:

- ► No manual valves
- ▶ Deep Recovery function (US patent) > 95%
- ▶ Powerful Dual Stage Vacuum pump (170 l/min)
- ▶ PAG and POE oil injection
- ► Large refrigerant tank (20 kg)
- ► Automatic purge of Non condensable gas with electronic control
- ▶ Flushing program with optional kit
- ▶ Printer integrated
- ► Temperature probe for A/C system performance checks
- ► LAN connection

Order number

ACS 752

S P00 000 069

The advantages of the ACS 752 at a glance

Professional and comfortable

- Fully automatic service process or single service process selectable
- ► High performance: Fast recovery (US patent) and deep vacuum functions
- Premium accuracy: 15 grams charge accuracy, 30 grams in recovery
- Suitable for vehicles with combustion engines and hybrid vehicles (PAG/POE)
- ► SAE J-2788 design guarantees professional and environmentally-friendly handling of refrigerant
- ► Innovative user interface (1/4 color VGA display)
- ► Integrated database for both car and commercial vehicle set values
- ► PC A/C remote desktop function (optional)
- ► Asanetwork SW connection (optional)
- ▶ Printer

Clear and precise!

Navigation made easy

- ► Large Color display (5,7", ¼ VGA)
- Clear menu structure and intelligent operation

Speaks your language

▶ Menu navigation in 21 languages

A reliable vehicle database

- ► Fully-integrated vehicle database
- ▶ Regular updates for all new possible models
- ► Truck, passenger and commercial vehicle data
- ► Refrigerant quantity, oil specification

The ACS 652 has what you need: First-class equipment for cars and commercial vehicles



ACS 652: First-class equipment for professional air conditioning service

The ACS 652 is well-suited for workshops with a medium to high workload in air conditioning service. High-precision measuring technology and the fully automatic process enable environmentally-friendly service work on car and commercial vehicle air conditioning systems.

Fully automatic operation process

The elite ACS 652 unit performs all the following tasks without the need for manual intervention: Refrigerant extraction, refrigerant recycling, used oil draining, evacuation with the associated leak testing, refilling of new oil with UV dye, and precise refrigerant filling.

Service for hybrid and electric vehicles

Two oil injection bottles for PAG and POE lubricant. Service hoses flushing function make the unit compatible for hybrid and electric vehicles A/C systems.

Fully equipped for the ultimate service

The top-of-the-line ACS 652 has all the equipment you need for service work, even on large air-conditioning systems:

- ► No manual valves
- ▶ Powerful Dual Stage Vacuum pump (170 l/min)
- ▶ PAG and POE oil injection system automatic
- ▶ UV dye injection system automatic
- ► Large refrigerant tank (20 kg)
- ▶ Automatic purge of Non condensable gas
- ► Charge with automatic compensation of service hoses
- ► Multi-phase refrigerant recycling during vacuum phase
- ▶ Accessible vacuum pump for easy oil change

Order number

ACS 652

S P00 000 070

The advantages of the ACS 652 at a glance

Professional equipment as standard

- ► Fully automatic service process or single service process selectable
- ▶ High performance deep vacuum function
- ► Suitable for vehicles with combustion engines and hybrid vehicles (PAG/POE)
- ► Integrated database for car, truck and commercial vehicles
- Messages on display guide the operators step by step
- ► Integrated, guided performance test for A/C system
- ▶ Integrated flushing program with optional kit
- ► Automatic purge of non condensable gas
- ► Serviceability: easy Filter dryer and vacuum pump oil change
- ► Printer

Clear and precise!

Navigation made easy

- ► Clear menu structure and intelligent operation
- ► Messages on display guide the operators step by step

Speaks your language

▶ Menu navigation in 21 languages

A reliable vehicle database

- ► Fully-integrated vehicle database
- ► Regular updates for all new possible models
- ▶ Quick selection for the last 10 vehicles serviced
- ► Own vehicle database (e.g. regular customers)
- ► Quick-start function

Fully automatic air conditioning service units:

ACS 611 and ACS 511

The ACS 611 is one of the most advanced air conditioning service units for cars and trucks. Like all fully-automated Bosch units, it is designed to carry out the maintenance of R-134a-based air conditioning systems with a minimum of manual intervention. The unit automatically controls every phase of maintenance, including oil and refrigerant recovery, recycling and refilling without needing direct intervention from a technician. However, the manual mode allows the user to control all aspects individually if so desired. The powerful, two-phase

vacuum pump of the ACS 611 assures quick and effective evacuation of the system and, as with all Bosch units, it comes equipped with a database to provide the necessary oil and refrigerant quantities for the vehicle's air conditioner. The ACS 611 also has an integrated printer to create detailed reports. As an alternative for garages with low service levels, we offer our ACS 511 model, which has a less powerful compressor yet still meets the requirements for a professional A/C service and without any compromise to the high quality one expects from Bosch units.

The advantages of the ACS 611 and ACS 511 at a glance

- ► Fully automatic service process
- ► Single service process selectable
- ▶ Deep vacuum (Vacuum pump 170 I/min for ACS 611)
- ► OIL/UV dye injection bottles
- ► Large internal tank (20 kg for ACS 611)
- Messages on display guide the operators step by step
- Integrated database for car, truck and commercial vehicle
- ► Charge with automatic compensation of service hoses
- ▶ Integrated flushing program with optional kit
- Multi-phase refrigerant recycling during vacuum phase
- ► Integrated, guided performance test for A/C system
- ► Automatic purge of non condensable gas
- ► Easy internal filter maintenance
- ► Accessible vacuum pump for easy oil change
- ▶ Printer



Order number

ACS 611 ACS 511 S P00 000 002 S P00 000 001

Automatic air conditioning service unit for heavy duty systems: **ACS 810**

The ACS 810 is an air conditioning service unit, which is specifically designed to meet bus and truck requirements and is focused on high-capacity, R-134a-based air conditioners. The unit automatically checks refrigerant recovery, recycling and refilling. Five-meter service hoses make the connection easy in all AC systems. The two-liter bottle for oil injection and recovery permits management of large quantities of compressor lubricant. The double fan assures excellent

temperature control and constant refrigerant pressure during the recovery phase. At the same time, it prevents the internal components from overheating. The high-performance filling pump allows the quick and complete filling of refrigerant and oil. The unit has an integrated printer to create a detailed report and makes it possible to provide professional air conditioner servicing for heavy commercial vehicles and buses.

The advantages of the ACS 810 at a glance

- ► Automatic service process
- ▶ Single service process selectable
- ► Fast and Deep vacuum (Vacuum pump 283 I/min)
- ► Large oil canister (2000 ml)
- ► Large internal tank (35 kg)
- ► Long service hoses standard (5 mt)
- ▶ Liquid pump for charge oil and refrigerant
- Integrated database for both trucks and commercial vehicles
- ▶ Integrated flushing program with optional kit
- Multi-phase refrigerant recycling during vacuum phase
- Integrated, guided performance test for A/C system
- ► Automatic purge of non condensable gas
- ► Easy internal filter maintenance
- ► Accessible vacuum pump for easy oil change
- Printer



Order number ACS 810

S P00 000 003



Bosch ACS 810: The specialist for large air conditioning systems

Fully Automatic air conditioning unit for R-1234yf A/C systems: **ACS 661**

ACS 661: The diagnostics innovation from Bosch for R-1234yf

After the market launch of the first vehicle models with the new R-1234yf air conditioning systems in 2011, Bosch collaborated closely with the automobile industry to develop the new air conditioning service machine. The technologically advanced ACS 661 delivers reliable workshop service and supports a healthy environment.

Technical competence allows safety, ease of operation, and precision.

The ASC 661 ensures easy, time-saving, and precise service on modern R-1234yf air conditioning systems. Bosch technology and attention to detail ensures equipment compliance with all applicable performance and safety standards including the R-1234yf refrigerant service equipment.

Simply perfect

Nowadays, everything is easier with Automation. With the ACS 661, air conditioning service is fully automatic.

The advantages of the ACS 661 at a glance

Professional equipment as standard

- ► Fully automatic service process
- ▶ Single service process selectable
- ► Service hoses flushing function for Hybrid/ electrical systems compatibility
- ► Separate OIL/UV dye injection bottles
- ▶ High performance deep vacuum function
- ▶ Electronic control of internal air exchange
- ▶ Integrated flushing program with optional kit
- ▶ Automatic purge of non condensable gas
- ► Easy internal filter maintenance
- ► Serviceability: easy Filter dryer and vacuum pump oil change
- ▶ Printer



Order number

ACS 661 S P00 000 071



Special accessories for your service

Designation	Order number	Description	
Electronic leak detector kit	1 687 234 012	The electronic leak detector indicates the refrigerant concentration with a loud audible signal. The brightness of the LED also visualizes the size of the leak. Its features include simple handling and two sensitivity levels.	
UV leak detector kit	1 687 001 591	Professional tool set for injection of a UV dye and identification of leakage in the refrigerant circuit. Equipment supply: Injector gun, 1 x UV cartridge, UV leak detection lamp, service hose, and rapid coupling.	
UV lamp (internal battery)	1 687 550 014	Powerful 1-Watt leak detection lamp with 3 integrated (AA) batteries.	
UV lamp (vehicle-battery)	F 002 DG1 430	12 volt UV leak detection lamp for automotive air conditioning systems.	
UV dye (refill) 10 x 7.5 ml	1 689 916 001	10 single-shot universal dye cartridges preventing dye from over-charging in vehicles. To use with UV Leak detector kit 1 687 001 591.	
UV dye (refill) 4 x 30 ml	F 002 DG1 426	4 dye cartridges. 30 ml for 5 applications. To use with UV Leak detector kit 1 687 001 591.	
UV contrast agent bottle	1 689 916 000	240 ml AC/dye. Dye for 32 applications in a squeezable dosing bottle.	
Compressor oil (ISO 46) Compressor oil (ISO 100) Compressor oil (ISO 150)	F 002 DG1 440 F 002 DG1 452 F 002 DG1 453	Compressor PAG oil bottle 250 ml ISO 46. Compressor PAG oil bottle 250 ml ISO 100. Compressor PAG oil bottle 250 ml ISO 150.	
Digital thermometer	1 687 230 062	Records temperature directly at the ventilation shaft – before and after air conditioning service. Temperature range from –50 °C to 150 °C.	
Dust cover for ACS unit	S P00 100 076	Dust cover to protect your ACS 611, 511 and 810 Bosch AC machines.	
Kit of 2.5 m extensions for service hoses	S P00 100 075	Kit of 2.5 m extensions for AC machine service hoses.	
Cylinder adapter	F 002 DG1 649	Necessary for filling the internal refrigerant bottle. Adaptable to all conventional R-134a refrigerant bottles.	
Service connections for Renault	F 002 DG1 433	Special coupling for connection to Renault vehicles	
Service connections for BMW E60, Ford, Volvo	F 002 DG1 432	Special coupling for connection in difficult-to-access areas in certain BMW 5 series models	
Paper reel for printer RCT58x30	S P00 100 087	Paper reel for printer: One roller	
Oil for vacuum pump 0.6 L	S P00 100 086	Vacuum pump oil: One bottle 0.6 liters	

ACS 752, ACS 652 and ACS 611

Technical data

	ACS 752	ACS 652	ACS 611
Refrigerant	R-134a	R-134a	R-134a
Operating modes	Fully automatic	Fully automatic	Fully automatic
Manual valves	no	no	yes, 2 (LP & HP)
Single processing mode selection(recovery, vaccum, charge functions)	yes	yes	yes
Recovery function	Automatic	Automatic	Automatic
Oil drain	Automatic with electronic scale	Automatic with electronic scale	Automatic with electronic scale
Vacuum function	Automatic	Automatic	Automatic
Leak test	Automatic	Automatic	Automatic
Oil injection	Automatic with electronic scale	Automatic with electronic scale	Automatic with electronic scale
UV dye injection	Automatic with electronic scale	Automatic	Automatic
Refrigerant charge	Automatic	Automatic	Automatic
Flushing function	yes (flushing kit optional)	yes (flushing kit optional)	yes (flushing kit optional)
Hybrid oil function	yes	yes	no
Air purging	Automatic with electronic control	Automatic	Automatic
Accuracy of scales	±5g	±5g	±5 g
Pressure gauge for HP/LP	80 mm, class 1	80 mm, class 1	80 mm, class 1
Tank pressure display	Digital	Tank gauge: 40 mm	Tank gauge: 40 mm
Status display	Acoustic	Acoustic	Acoustic
Display	5.7", ¼ VGA (320 x 240 pixel)	80 digits LCD display (with background lighting)	80 digits LCD display (with background lighting)
User interface	21 languages	21 languages	21 languages
Printer	yes	yes	yes
Vehicle database	yes (cars, light commercial vehicles and trucks on the European market)	yes (cars, light commercial vehicles and trucks on the European market)	yes (cars, light commercial vehicles and trucks on the European market)
Data exchange	USB, LAN, BT and Audio interface	PS2 connector	PS2 connector
Service hoses	2.44 m, SAE J2196	2.44 m, SAE J2196	2.44 m, SAE J2196
Vacuum pump	Dual-stage vacuum pump: 170 l/min	Dual-stage vacuum pump: 170 l/min	Dual-stage vacuum pump: 170 l/min
Refrigerant tank	20 kg, PED certified	20 kg, PED certified	20 kg, PED certified
Oil bottles	250 ml	250 ml	250 ml
UV dye bottle	250 ml	50 ml	50 ml
Oil/UV bottles (scope of delivery)	3 standard bottles + 1 UV dye bottle	2 standard bottles + 1 UV dye bottle	2 standard bottles + 1 UV dye bottle
Vibration-resistant refrigerant scale	yes	yes	yes
Recovery rate	> 95%	< 95%	< 95%
Compressor	3/8 HP	3/8 HP	3/8 HP
CE mark	yes	yes	yes
SAE standards	yes	no	no
Dimensions (L x W x H)	690 × 660 x 1270 mm	690 × 660 x 1270 mm	690 × 660 x 1270 mm
Weight	120 kg (with empty refrigerant tank)	120 kg (with empty refrigerant tank)	120 kg (with empty refrigerant tank)
Power supply	230 V 50/60 Hz	230 V 50/60 Hz	230 V 50/60 Hz
		·	

ACS 511, ACS 810 and ACS 661

Technical data

	ACS 511	ACS 810	ACS 661
Refrigerant	R-134a	R-134a	R-1234yf
Operating modes	fully automatic	Automatic	fully automatic
Manual valves	yes, 2 (LP & HP)	yes, 2 (LP & HP)	yes, 2 (LP & HP)
Single processing mode selection(recovery, vaccum, charge functions)	yes	yes	yes
Recovery function	Automatic	Automatic	Automatic
Oil drain	Automatic with electronic scale	Automatic	Automatic
Vacuum function	Automatic	Automatic	Automatic
Leak test	Automatic	Automatic	Automatic
Oil injection	Automatic with electronic scale	Manual with solenoid control	Automatic
UV dye injection	Automatic	Not available	Automatic
Refrigerant charge	Automatic	Automatic	Automatic
Flushing function	yes (flushing kit optional)	yes (flushing kit optional)	yes (flushing kit optional)
Hybrid oil function	no	no	Service hoses flushing only
Air purging	Automatic	Automatic	Automatic with electronic control
Accuracy of scales	±5g	±5 g	±5g
Pressure gauge for HP/LP	80 mm, class 1	80 mm, class 1	60 mm, class 1
Tank pressure display	Tank gauge: 40 mm	Tank gauge: 40 mm	Digital
Status display	Acoustic	Acoustic	Acoustic
Display	80 digits LCD display (with background lighting)	80 digits LCD display (with background lighting)	Monochrome graphical display (240 x 160)
User interface	21 languages	21 languages	21 languages
Printer	yes	yes	yes
Vehicle database	yes (cars, light commercial vehicles and trucks on the European market)	yes (cars, light commercial vehicles and trucks on the European market)	yes (cars)
Data exchange	PS2 connector	PS2 connector	USB
Service hoses	2.44 m, SAE J2196	5.00 m, SAE J2196	2.44 m, SAE J2888
Vacuum pump	Single-stage vacuum pump: 70 l/min	Dual-stage vacuum pump: 283 l/min	Dual-stage vacuum pump: 170 l/min
Refrigerant tank	8 kg	35 kg, PED certified	20 kg, PED certified
Oil bottles	250 ml	2000 ml	250 ml
UV dye bottle	50 ml	no	50 ml
Oil/UV bottles (scope of delivery)	2 standard bottles + 1 UV dye bottle	2 standard bottles	3 standard bottles + 1 UV dye bottle
Vibration-resistant refrigerant scale	yes	yes	yes
Recovery rate	< 95%	< 95%	< 95%
Compressor	1/4 HP	5/8 HP	3/8 HP
CE mark	yes	yes	yes
SAE standards	no	no	no
Dimensions (L x W x H)	690 × 660 x 1270 mm	690 × 660 x 1270 mm	690 × 660 x 1270 mm
Weight	90 kg (with empty refrigerant tank)	130 kg (with empty refrigerant tank)	120 kg (with empty refrigerant tank)
Power supply	230 V 50/60 Hz	230 V 50 Hz	230 V 50/60 Hz
Operating temperature	10°C to 50°C	10°C to 50°C	10°C to 50°C

Air conditioning service:

Good reasons for your customers

Driving comfort and safety

Very high and low temperatures in the vehicle interior put a strain on the driver and negatively effect his reactions and ability to respond. With regular air conditioning checks, the temperature is always perfectly regulated and you are free to concentrate on your driving.

Protecting the environment

Through regular checks of the air conditioning system, faults can be detected early. Thus preventing the leakage of cooling agents which are harmful to the environment.

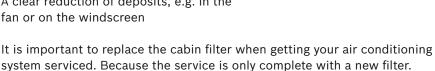
Saving costs

High repair costs for the air conditioning system are usually the result of irregular or non-existent maintenance. Regular air conditioning checks rule out the need for expensive repairs, saving you money.

Clean air

With the change of the cabin filter, the air conditioning check is complete. The driver and his passengers can now benefit from even more comfort and safety:

- ▶ The reliable filtration of soot, pollen, dirt particles and pollutants prevents damage to the health of the vehicle's occupants
- ▶ Activated carbon filters from Bosch filter the smallest of particles, such as damaging fumes and ozone
- ▶ A clear reduction of deposits, e.g. in the

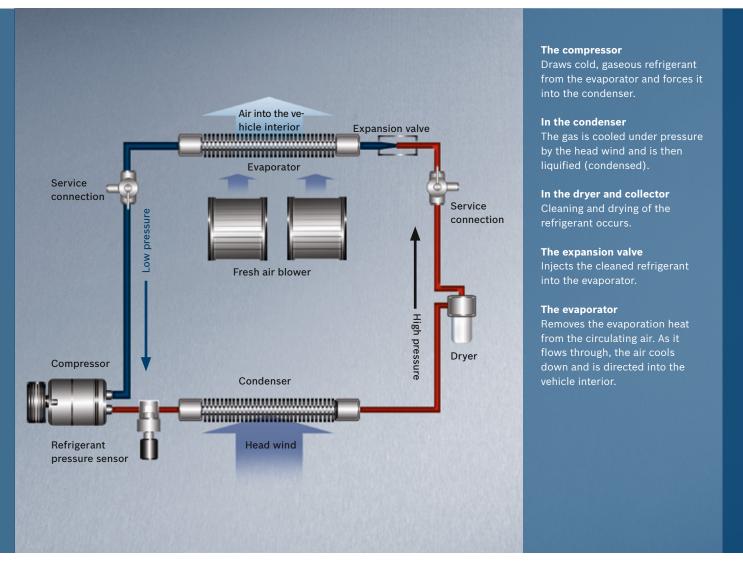






How the air conditioner works

Functions for comfort and safety



The air conditioner in the vehicle and its components

The air conditioner: The working principle

When the air conditioner is switched on with the engine running, the compressor draws cold, gaseous refrigerant out of the evaporator and forces it into the condenser. When compressed, the refrigerant heats up to approximately $60-100\,^{\circ}\text{C}$. The hot gas, which is now highly compressed, is cooled down in the condenser by the external air (head wind or additional blower) that flows past. When the pressure-dependent dew point is reached, the refrigerant condenses and liquifies.

Coming from the condenser, the completely liquified refrigerant enters the fluid tank where it is collected.

The refrigerant flows through the dryer where any existing moisture and contaminants are filtered out.

From the fluid tank, the refrigerant flows on to the expansion valve. Here, the highly pressurized, liquified refrigerant is injected into the evaporator. In the evaporator, the liquefied refrigerant pressure drops and it evaporates. The evaporation heat is drawn from the air flowing past the evaporator fins, causing it to cool. The refrigerant, which is now completely gaseous again, is drawn by the compressor and compressed.

Bosch: Bringing you the workshop of the future

For over 125 years, Bosch innovations keep vehicles on the road and get people to and from their destinations while assuring safety and peace of mind along the way.

Bosch Automotive Aftermarket offers workshops and retailers a comprehensive portfolio of products that is unmatched worldwide:

- ► Efficient diagnostics
- ► Innovative workshop equipment
- ► Quick, reliable delivery
- ▶ The world's most comprehensive range of spare parts including both new and remanufactured
- ▶ Workshop concepts to meet every requirement
- ► Comprehensive training
- ► Targeted sales and marketing support
- ► A competent service hotline
- ▶ 24-hour online workshop services
- ► Affordable leasing services for workshop equipment and software

From parts to scheduling, organization and results, our solutions are combined with additional services to ensure your needs will be perfectly met, helping you to maximize your potential.

Workshop tip:

When servicing an air conditioning system, think about changing the cabin filter, because the service is only complete - and noticeable to your customers - with a new filter.

Robert Bosch GmbH

Automotive Aftermarket **Business Unit Automotive Service Solutions**

73201 Plochingen Germany

www.bosch-diagnostics.com

Perfect: The Bosch cabin filter program for almost all vehicle types provides more comfort, safety and health protection:

- ► Reliable filtration of dirt particles, exhaust gases and ozone
- ▶ Fewer deposits in the fan or on the front windscreen





AA-AS/MKC 05.2014 XXXXXXXXXXXX