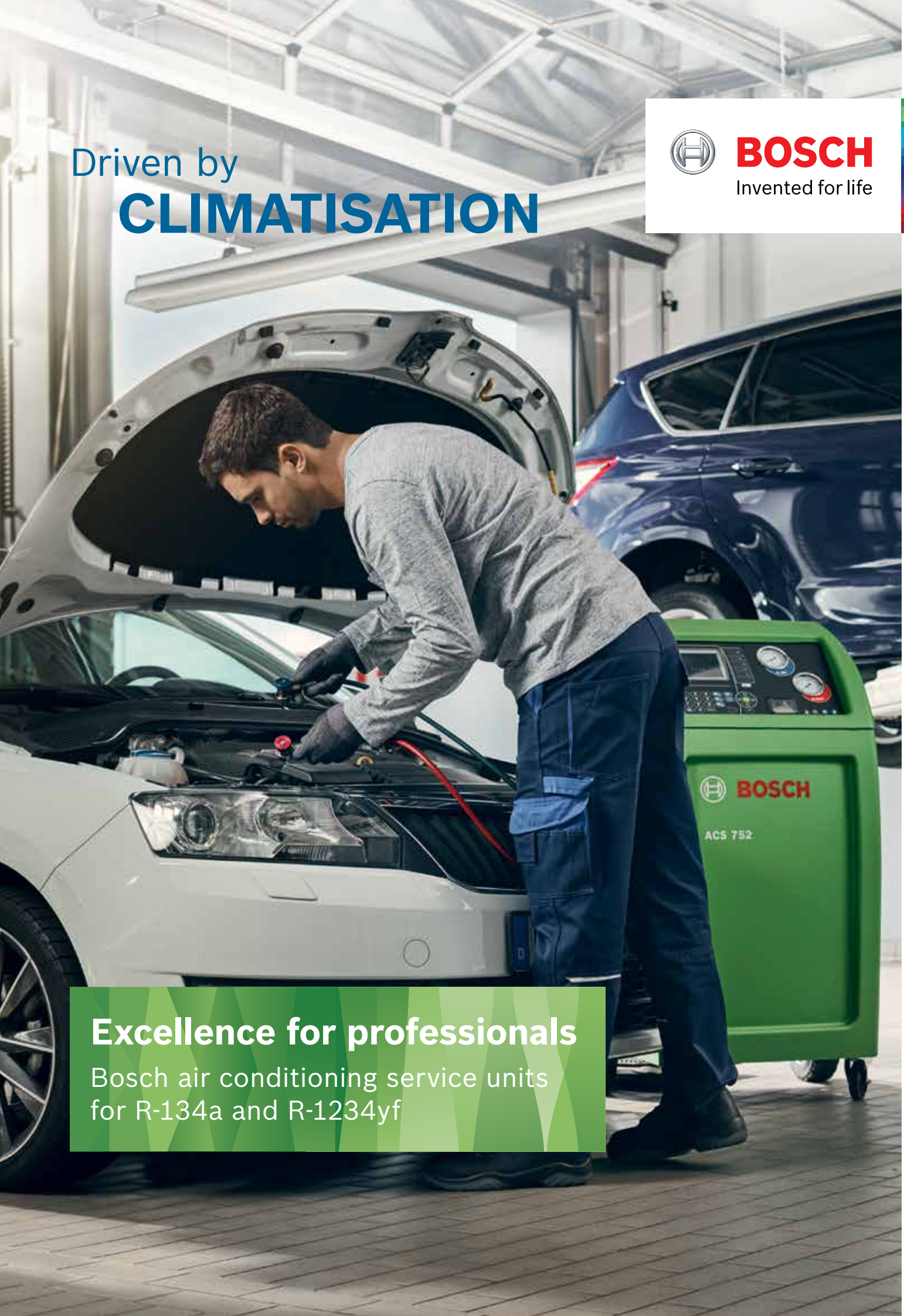


Driven by
CLIMATISATION

BOSCH
Invented for life

Excellence for professionals

Bosch air conditioning service units
for R-134a and R-1234yf

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.

Driving comfort and safety with air conditioners

Air conditioners are standard vehicle equipment: nowadays, over 60 per cent of small cars and over 90 per cent 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: seven 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 units for vehicles equipped with R-1234yf refrigerant
- **ACS 561:** Fully automatic entry level units for vehicles equipped with R-1234yf refrigerant

ACS 752:
New standard in air conditioning service

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 fulfils 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.

Service for hybrid and electric vehicles

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

Order number ACS 752: S P00 000 069

The advantages of the ACS 752 at a glance

- Fully automatic service process or single service process selectable
- High performance: fast recovery (US patent) and deep vacuum functions (170 l/min.)
- Premium accuracy: 15 grams charge accuracy, 30 grams in recovery
- Suitable for vehicles with combustion engines and hybrid vehicles (PAG/POE)
- Large refrigerant tank (20 kg)
- Integrated database for both car and commercial vehicle set values
- Flushing programme with optional kit
- SAE J-2788 design guarantees professional and environmentally friendly handling of refrigerant
- Temperature probe for A/C system performance checks
- Automatic purge of non-condensable gas with electronic control
- No manual valves
- PC A/C remote desktop function (optional)
- Asanetwork SW connection (optional)
- Printer integrated
- LAN connection

ACS 652: First-class equipment for cars and commercial vehicles

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.

Service for hybrid and electric vehicles

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

Order number ACS 652: S P00 000 070

The advantages of the ACS 652 at a glance

- Fully automatic service process or single service process selectable
- Powerful dual stage vacuum pump (170 l/min.)
- Large refrigerant tank (20 kg)
- Suitable for vehicles with combustion engines and hybrid vehicles (PAG/POE)
- Fully integrated vehicle database
- Charge with automatic compensation of service hoses
- LCD display (80 characters)
- Integrated, guided performance test for A/C system
- Quick start-up function
- Quick selection for the last ten vehicles serviced
- Multiphase refrigerant recycling during vacuum phase
- Integrated flushing programme with optional kit
- Automatic purge of non-condensable gas
- Serviceability: easy filter dryer and vacuum pump oil change
- No manual valves
- Printer

ACS 611 and **ACS 511:** Fully automatic air conditioning service units

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.

Order number ACS 611: S P00 000 002
ACS 511: S P00 000 001

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

- Fully automatic service process or single service process selectable
- Deep vacuum (vacuum pump 170 l/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 programme with optional kit
- Multiphase 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

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

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-metre service hoses make the connection easy in all AC systems.

The two-litre 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.

Order number ACS 810: S P00 000 003

The advantages of the ACS 810 at a glance

- Fully automatic service process or single service process selectable
- Fast and deep vacuum (Vacuum pump 283 l/min.)
- Large oil canister (2,000 ml)
- Large internal tank (35 kg)
- Long service hoses standard (5 m)
- Liquid pump for charge oil and refrigerant
- Integrated database for both trucks and commercial vehicles
- Integrated flushing programme with optional kit
- Multiphase 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

ACS 661 and **ACS 561:** Fully automatic air conditioning unit for R-1234yf A/C systems

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 and ACS 561 deliver reliable workshop service and support a healthy environment.

Technical competence allows safety, ease of operation and precision

The ASC 661 and ACS 561 ensure easy, time-saving and precise service on modern R-1234yf air conditioning systems. Bosch technology and attention to detail ensure equipment compliance with all applicable performance and safety standards including the R-1234yf refrigerant service equipment.

Order number ACS 661: S P00 000 071
ACS 561: S P00 000 100

The advantages of the ACS 661 and ACS 561 at a glance

- Fully automatic service process or single service process selectable
- Vacuum pump 170 l/min. (ACS 661); 72 l/m (ACS 561)
- Refrigerant tank 20 kg (ACS 661); 8 kg (ACS 561)
- Compressor 3/8 PS (ACS 661); 1/4 PS (ACS 561)
- Service hoses with flushing function for hybrid/electrical systems compatibility
- Separate OIL/UV dye injection bottles (ACS 661)
- High-performance deep vacuum function
- Integrated flushing programme with optional kit
- Electronic control of internal air exchange
- Automatic purge of non-condensable gas
- Easy internal filter maintenance
- Serviceability: easy filter dryer and vacuum pump oil change
- Printer

ACS 752, ACS 652 and **ACS 611**
Technical data

Characteristics	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 and 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	± 5 g	± 5 g	± 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	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	3 standard bottles + 1 UV dye bottle	2 standard bottles + 1 UV dye bottle
Vibration-resistant refrigerant scale	Yes	Yes	Yes
Recovery rate	> 98%	> 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 x 660 x 1,270 mm	690 x 660 x 1,270 mm	690 x 660 x 1,270 mm
Weight (with empty refrigerant tank)	120 kg	120 kg	120 kg
Power supply	230 V 50/60 Hz	230 V 50/60 Hz	230 V 50/60 Hz
Operating temperature	10°C to 50°C	10°C to 50°C	10°C to 50°C

ACS 511, ACS 810, ACS 661 and **ACS 561**
Technical data

ACS 511	ACS 810	ACS 661	ACS 561
R-134a	R-134a	R-1234yf	R-1234yf
Fully automatic	Automatic	Fully automatic	Fully automatic
Yes, 2 (LP and HP)	Yes, 2 (LP and HP)	Yes, 2 (LP and HP)	Yes, 2 (LP and HP)
Yes	Yes	Yes	Yes
Automatic	Automatic	Automatic	Automatic
Automatic with electronic scale	Automatic	Automatic	Automatic
Automatic	Automatic	Automatic	Automatic
Automatic	Automatic	Automatic	Automatic
Automatic with electronic scale	Manual with soleNoid control	Automatic, PAG and POE oil injection	Automatic, PAG and POE oil injection
Automatic	Not available	Automatic	Not available
Automatic with electronic scale	Automatic with electronic scale	Automatic with electronic scale	Automatic with electronic scale
Yes (flushing kit optional)	Yes (flushing kit optional)	Yes (flushing kit optional)	Yes (flushing kit optional)
No	No	Yes, hoses flush and POE/PAG oil injection	Yes, hoses flush and POE/PAG oil injection
Automatic	Automatic	Automatic with electronic control	Automatic
± 5 g	± 5 g	± 5 g	± 5 g
80 mm, class 1	80 mm, class 1	60 mm, class 1	60 mm, class 1
Tank gauge: 40 mm	Tank gauge: 40 mm	Digital	N.A.
Acoustic	Acoustic	Acoustic	Not available
80 digits LCD display (with background lighting)	80 digits LCD display (with background lighting)	MoNochrome graphical display (240 x 160)	MoNochrome graphical display (240 x 160)
21 languages	21 languages	15 languages	15 languages
Yes	Yes	Yes	Yes
Yes (cars, light commercial vehicles and trucks on the European market)	Yes (cars, light commercial vehicles and trucks on the European market)	Yes	Optional
PS2 connector	PS2 connector	USB, SD Memory Support	USB, SD Memory Support
2.44 m, SAE J2196	5.00 m, SAE J2196	2.44 m, SAE J2888	2.44 m, SAE J2888
Single-stage vacuum pump: 70 l/min.	Dual-stage vacuum pump: 283 l/min.	Dual-stage vacuum pump: 170 l/min.	72 l/min.
8 kg	35 kg, PED certified	23 kg, PED certified	8 kg
250 ml	2,000 ml	3 x 250 ml	3 x 250 ml
50 ml	No	250 ml	No
2 standard bottles + 1 UV dye bottle	2 standard bottles	3 standard bottles + 1 UV dye bottle	3 standard bottles
Yes	Yes	Yes	Yes
> 95%	> 95%	> 95%	> 95%
1/4 HP	5/8 HP	1/4 HP	1/4 HP
Yes	Yes	Yes	Yes
No	No	No	No
690 x 660 x 1,270 mm	690 x 660 x 1,270 mm	690 x 660 x 1,270 mm	690 x 660 x 1,270 mm
90 kg	130 kg	120 kg	100 kg
230 V 50/60 Hz	230 V 50/60 Hz	230 V 50/60 Hz	230 V 50/60 Hz
10°C to 50°C	10°C to 50°C	10°C to 50°C	10°C to 50°C

Accessory

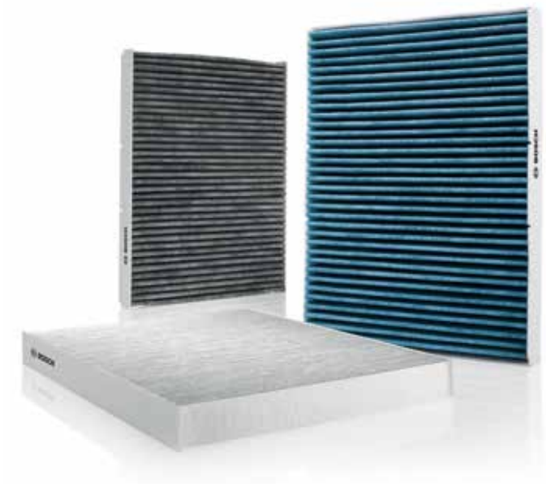
Accessory	Order number	Description
Electronic leak detector	**1 687 234 012**	The electronic leak detector indicates the refrigerant concentration with a loud audible signal. The brightness of the LED also visualises the size of the leak. Its features include simple handling and two sensitivity levels.
UV leak detector kit	**1 687 001 591**	Professional toolset for injection of UV dye. Contents: injector gun, 1x UV dye cartridge, UV lamp, hose, couplers R-134a
UV lamp (vehicle battery)	**F 002 DG1 430**	Powerful leak detection. 12 volt UV lamp and UV safety googles.
UV dye (refill) 10 x 7.5 ml cartridges	**1 689 916 001**	Replacement cartridges for refill (10 x 7.5 ml) UV leak detection. Cartridges for 1 687 001 591.
UV dye R-134a and R-1234yf	**1 689 916 000**	240 ml bottle. Dye for 32 applications in a squeezable dosing bottle.
Compressor oil (ISO 46) Compressor oil (ISO 100) Compressor oil (ISO 150)	**S P00 101 306** **S P00 101 034** **S P00 101 035**	250 ml PAG oil bottle ISO 46 250 ml PAG oil bottle ISO 100 250 ml PAG oil bottle ISO 150
Digital thermometer	**1 687 230 062**	Digital pocket thermometer with stainless steel probe and pocket clip. Range: -58°C to 302°C/-50°C to 150°C
Dust cover for ACS unit	**S P00 100 076**	Dust cover for ACS 511, ACS 611, ACS 652, ACS 752, ACS 810, ACS 661
R-134a HP and LP service hoses ACS extension (2.44 m)	**S P00 100 075**	Connection: 1/2 ACME – 1/2 ACME. Standard: SAE J2196
HP/LP service connections for Renault	**F 002 DG1 433**	R-134a low pressure side adapter for Renault A/C system. This adapter (HP/LP) converts the high-side pressure port to the low side.
HP service connections for BMW E60, Ford, Volvo	**F 002 DG1 432**	Special service coupling for connection in difficult-to-access area in certain BMW, Volvo, Ford A/C systems.
Paper reel for ACS printer	**S P00 100 087**	5 rolls
Oil for vacuum pump 0.6 l	**S P00 100 086**	Vacuum pump oil for ACS units: one bottle, 0.6 l

Workshop tip

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

Perfect: The cabin filter programme from Bosch for almost all vehicle types increases passenger comfort, safety and health protection:

- Provides filtration of dirt particles, exhaust gases and ozone
- Helps to reduce front windshield deposits for improved visibility
- For even better health protection in the car: the new FILTER+ binds allergens permanently, eliminates bacteria and separates fine dust



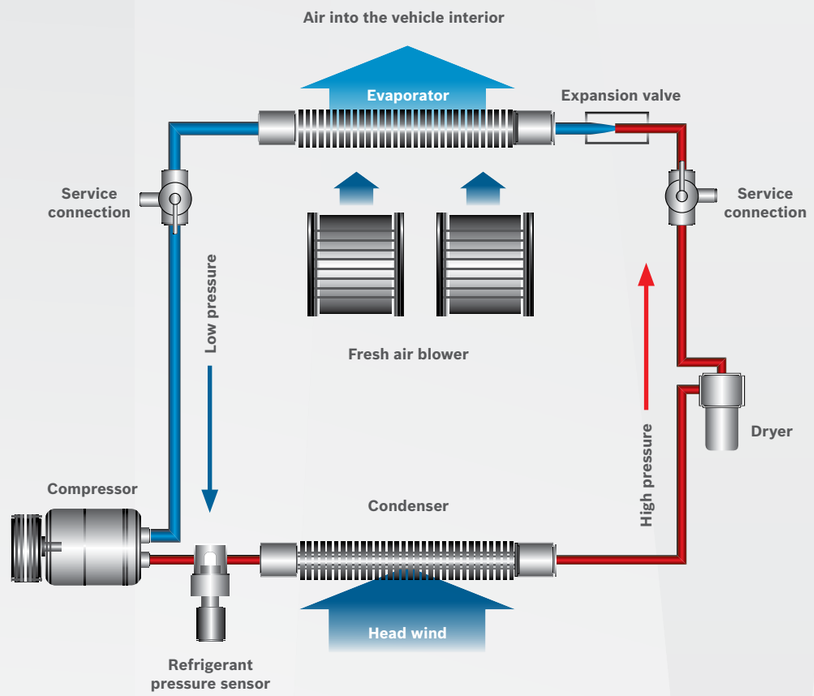
How the air conditioner works: Functions for comfort and safety

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°C to 100°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 pressurised, 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.

The air conditioner in the vehicle and its components



- **The compressor** draws cold, gaseous refrigerant from the evaporator and forces it into the condenser
- **In the condenser** the gas is cooled under pressure by the head wind and is then liquified (condensed)
- **In the dryer and collector** cleaning and drying of the refrigerant occurs
- **The expansion valve** injects the cleaned refrigerant into the evaporator
- **The evaporator** removes the evaporation heat from the circulating air. As it flows through, the air cools down and is directed into the vehicle interior

Driven by efficiency

Bosch technologies are used worldwide in almost all vehicles. People, and assuring their mobility, is what we are focused on.

Therefore, we have dedicated the last 125 years of pioneering spirit and expertise in research and manufacturing to achieving this.

We continue to work on our unique combination of solutions for spare parts, diagnostic devices, workshop equipment and services:

- Solutions for efficient vehicle repairs
- Innovative workshop equipment and software
- The world's most comprehensive range of new and replacement parts
- Large network of wholesale customers, for quick and reliable parts supply
- Competent hotline support
- Comprehensive educational and training offers
- Targeted sales and marketing support

Find out more at:
bosch-automotive-aftermarket.com

What drives you drives us

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