

Future Workshop

Spring 2009

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BOSCH
Invented for life

Breathe Easy with Bosch Cabin Filters

Spring is in the Air: So Too are Pollens

Research has shown that unfiltered pollutants entering the inside of a vehicle can be up to ten times more concentrated than in the air outside. These pollutants can trigger asthma and allergies and, with more than 2.2 million Australians diagnosed with asthma and more than double that number suffering from allergies, breathing filtered air in the car is essential.

Bosch cabin filters can prevent these pollens and other harmful pollutants from entering the vehicle interior through its heating, ventilation and air conditioning system (HVAC).

But pollens are not the only impurities to enter our cars; dust, dirt, smoke and exhaust fumes all enter through a car's HVAC system and can be dangerous for drivers. Driving in suburban areas in heavy traffic, on free-ways and in tunnels, where air pollution is at its worst, can cause drivers to experience headaches, fatigue and a lack of concentration. Country driving can also be hazardous, especially in the current climate, with air quality adversely affected by frequent drought related dust storms and, in the summer months, by bushfires.

However, many motorists are still not aware of the existence of cabin filters in their vehicles. This fact gives workshops the opportunity to increase business and profits by pulling customers back into their workshops for annual cabin filter changes. This will not only benefit your busi-

ness, but also your customers as it's also a chance to educate them on the harmful effects of a dirty or clogged cabin filter, which can not only

Today, more than 90% of all European vehicles are equipped with cabin filters. Australian manufacturers are following these trends, with cabin filters fitted in most new cars,

Japanese and European passenger vehicles.

Bosch is aware of the importance of filters. Bosch cabin filters are made of special micro-fibre paper which absorbs up to 99% of all pollen, dust particles and other harmful substances, resulting in a remarkable improvement of the air quality inside the vehicle. They also assist in keeping your HVAC system, instrument panel and windscreen clean, by significantly reducing dirt and dust deposits.

All Bosch filters meet or exceed vehicle manufacturers' specifications. So benefit your customers while benefiting your business: fit Bosch cabin filters.

For a copy of the new Bosch Filter catalogue contact your local distributor or call 1300 30 70 40.



including models such as the Ford Falcon FG, BA and BF models, the Holden VE Commodore, Toyota Corollas from 2000 onwards and all

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Qik Tips - Replacing Cabin Filters



Regular cabin filter replacement ensures optimum air flow through the blower and prevents the damage that overheating can cause. It is the only way to guarantee optimum filter performance. The cabin filter is usually easily accessible in the engine compartment, at the point where it meets the passenger compartment. Basic instructions on the side of the packaging show step-by-step drawings, making it easy to remove and replace filters.

Simple Replacement: Step-by-step we show you how

- ▶ 1. Locate cabin filter. Undo any catches and remove the plastic cover
- ▶ 2. Take out old filter and dispose as household waste
- ▶ 3. Insert new filter into plastic cover (note air flow direction; see the instructions on the filter)
- ▶ 4. Insert cabin filter back into housing

Important!

Cabin filters cannot be "flushed out" with compressed air or shaken out! These actions destroy the microfibre layer and neutralise the filtering effect.



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Editorial



Welcome to the Spring edition of Future Workshop. Spring is the perfect time to focus on cabin filters. Many workshops underestimate the importance of cabin filters and the potential profit they can bring in to a business. Our handy tips on cabin filter replacement may help if you are new to this area.

We have included more practical tech tips, hints and troubleshooting suggestions, along with potential profit opportunities. We explore the ease of servicing fuel pumps with the new universal fuel pump kits and the benefits an oscilloscope can bring to your workshop.

Peter Rowe returns again with a piece on the importance of good customer relationship management. He includes some valuable tips and ideas on dealing with customers, which we hope you'll find helpful in your own day to day dealings.

Once again, we encourage you all to give us any feedback you have on Future Workshop. We want to make this publication as informative and interesting as we can for you. Please feel free to email any feedback to futureworkshop@au.bosch.com.

Happy Reading!

Rolf Schillinger
Marketing Manager
Automotive Aftermarket

The next issue of Future Workshop will be published in Summer 2009.

For any enquiries or feedback email us at:
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Customer Service: 1300 30 70 40

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Bosch Spark Plugs

Meet the Tech Guy

Bob Tait, Service Engineer Supervisor, has just celebrated 25 years with Bosch and reminds us here about the importance of torque when replacing spark plugs.

"It's important to remember that correct torque settings are crucial to spark plug installation. So many spark plug failures can be attributed to incorrect torque settings. A spark plug needs to be able to transfer heat to the cylinder head. This heat transfer will be slower than required if a spark plug is under-torqued, allowing plug temperatures to rise, resulting in pre-ignition. Insulators and earth electrodes can also break and crack due to under-torqued spark plugs resulting in knocking. All these issues can inevitably end up causing engine damage. So save yourself the headache of serious engine damage and make sure you tighten spark plugs to the correct torque."

For torque specifications refer to the Bosch Spark Plug catalogue.



The History of the Spark Plug

Bosch produces more than 300 million spark plugs per year in factories around the world. The plant in Bamberg, Germany, founded in 1939, is the primary factory for Australia's spark plug production and sets the manufacturing standards for all other Bosch spark plug plants.

More than 105 years ago, Bosch unveiled its first spark plug built with a high-voltage magneto, and patented the innovative system in January 1902. Bosch spark plugs finally solved the problem of reliable ignition in early automotive engineering - what Carl

Benz described as the "problem of all problems", opening the way for the surge in vehicle production during the following decades. The result was affordable vehicles for everyone.

Developments Today

Today, constant developments in Bosch spark plugs as integral engine system components have enabled cleaner and more efficient fuel combustion, as well as more reliable engines and catalytic converters. Despite the huge increases in performance, the service life for normal spark plugs is today around 20-30,000kms, roughly 20-30

times higher than the spark plugs of a hundred years ago.

In recent years, Bosch has demonstrated the ongoing potential of its flagship product, adapting it to the ever-changing developments in engine technology such as 4-valve engines, lean-burn

"Bosch invented the spark plug in 1902"

engines, or ultra-efficient direct fuel injection. The versatility of Bosch spark plugs is the result of well researched design modifications and the use of special metals such as platinum and irid-

ium, or yttrium. By varying the number, design and structure of the electrodes, many adaptations are possible. All of these allow engines to comply with ever stricter emissions targets, while at the same time increasing performance and efficiency.

With a long history of expertise in the field and intensive spark plug development projects in close collaboration with almost all vehicle manufacturers, Bosch is one of the world's leading suppliers for the original equipment market and aftermarket, and is the market leader in Europe.



Spark Plug Production 1923



Advertising Poster 1955



Spark Plug Production Today

Did You Know? - Bosch Spark Plugs

- **Bosch invented the spark plug in 1902**
- **Total number of Bosch spark plugs manufactured since 1902:** More than 10 billion
- **Annual Bosch spark plug production:** Well over 300 million (1902: approx 300)
- **Material required for daily production (600,000 units) at Bamberg plant:** 28t of steel, 1.2t of nickel, 0.6t copper, 15km nickel wire, 2kg of platinum and 20t of aluminium oxide
- **Working conditions of Bosch spark plugs:** Voltage up to 30,000V, temperatures up to 1000°C, pressures up to 100 bar; extremely aggressive mixture of petrol vapour, combustion products, fuel and oil residues
- **Vehicle manufacturers using Bosch spark plugs in series product:** Alfa Romeo, Audi, BMW, Citroen, Daewoo, Daimler-Chrysler, Fiat, Ford, GM, Lancia, Mitsubishi, Peugeot, Porsche, Renault, Saab, Seat, Skoda, Ssangyong, Suzuki, Toyota, Volvo and Volkswagen.
- **Applications of Bosch spark plugs:** Cars, motorcycles and scooters, commercial vehicles, engines for boats and jet-skis, gardening and forestry equipment, stationary gas engines, emergency generators, water pumps and small engines.

Tech Tips and Tricks

Working with Steering Angle Sensors

With so many sensors now fitted to new vehicles (in some cases up to 150), it is easy to create problems for yourself by impacting the performance of a sensor, without realising it, during some service activities.



ESP Components

In this example we look at steering angle sensors and what to watch out for. But first, let's understand the basics of how steering angle sensors function.

The steering angle sensor is used with ESP® to measure the steering angle relative to the vehicle's direction of travel as determined by the yaw sensor. This enables

the ESP® to detect a potential skid situation. In the event that the vehicle is approaching a skid condition, the ESP® will interact with the ABS, TCS and engine management system to help return the vehicle to its intended course.

The functional principle of steering angle sensors relies on two resistance bridges positioned at 90 degrees to each other, the bridge parts consisting of GMR (Giant Magneto Resistance) elements.

In simple terms, when the steering wheel is turned, a measurement cog wheel rotates over a GMR element. An integrated microcontroller uses the change in the bridge voltage to accurately calculate a steering angle. Therefore it becomes possible to cover a measurement range of several steering wheel rotations without the need to use a revolution counter.

The steering angle sensors is fitted as standard with a CAN interface and individually pro-

grammed by the microcontroller.

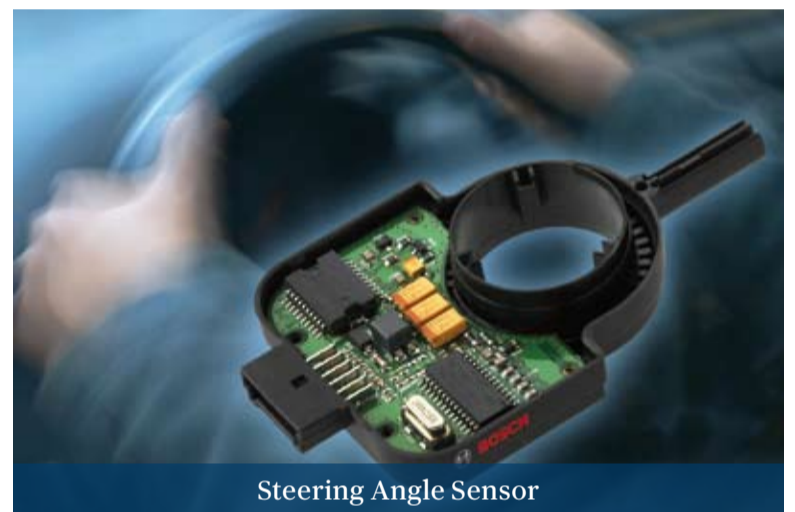
The steering angle sensor is programmed to read the straight ahead position of the steering column. If the steering column is rotated too far from "straight ahead" when it is removed from the vehicle, then the steering angle sensor must be recalibrated.

After performing any work on the steering system, including wheel alignment, make sure the steering angle sensor is in the "straight ahead" position when the wheels are in a "straight ahead" direction. Failure to do this can cause ESP® errors or incorrect ESP® operation.

Performing a steering angle sensor calibration is possible with a diagnostic scan tool such as the Bosch KTS range. This process programs the steering wheel's straight ahead position to the ABS/ESP® modulator's ECU which ensures the vehicle's ESP® system is working to the original specifications.



Calibrating the Steering Angle Sensor with a KTS 200



Steering Angle Sensor

Meeting Your Customers' Service Expectations

By Peter Rowe



These days, every car owner is looking for "a friendly expert" whom they can trust and, with the service bar being continually raised by dealerships and good independent repairers like you, customers have higher expectations and a wider choice of providers than ever before.

Developing and then maintaining good relationships with customers takes time, planning and focus but the rewards are

invariably huge! And Customer Relationship Maintenance (CRM) has always been more about personal relationship skills than about computerized relationship systems.

Why is it that the people who are exceptionally good with machinery and can fix anything, are often exceptionally bad with people and can upset just about anyone? Let's face it, if your customers encounter rudeness,

indifference, incompetence or poor communications from the people in your business then no matter how technically gifted you are, the best CRM software in the world is unlikely to encourage them to repeat that experience.

If, on the other hand they experience respect, care, professionalism and open and honest communications then not only are they likely to keep dealing with you, but they are also likely to be out there singing your praises to others. And if that is your habitual way of dealing with your existing customers, it is going to shine through when you are being "interviewed" by each prospective, new customer and will probably win you their work, too.

So, as a quick boost to your already good Customer Relationship Maintenance, here is "The World's Shortest CRM Course".

1. Make it easy for them to like you - by liking them first. That means taking a moment to appreciate them as fellow

human beings, and finding things about them to which you can relate. It also means showing you care with a welcoming reception area, a professional standard of presentation, courtesy and good manners to all.

2. Make it easy for them to trust you - by deciding to be scrupulously honest in all of your dealings. You may do this already in an unconscious way but if you adopt honesty and integrity as conscious values within your business, and walk and talk them with your team every day, they will permeate your business. This does make a difference. Try it.

3. Make the time to understand them - develop your listening skills. Investing 5-10 minutes in exploring and fully understanding what your customer wants and expects also enables them to become aware of your genuine interest in them, and that usually leads to discussion of a wider range of work. Failing to make time for this (yes, I know, you're busy,

everyone's trying to book in, etc) is failing to make time for business!

4. Interpret, recommend - when you encounter work that your customer did not expect remind yourself of your role before you pick up the phone. It is their car; it is their problem (stop feeling responsible for finding it!) You are their honest, skilled technical advisor and you like them and empathize with them. Your role is to interpret their problem so that they can clearly understand its implications for reliability, economy and safety. Your role is to protect them from what they don't understand and to make a recommendation if they appear unsure of what to do next.

In the next section of this article we'll look at some persuasive techniques that will make decision making easier for your customers.

Continued on page 9.

Bosch Technology for the Future of Mobility: Protecting the Environment

The issue of what type of engine will power the cars of the future is currently a hot topic. It was the main focus of the recent 2009 International Automotive Press Briefing, hosted by Bosch, in Boxberg, Germany, and attended by more than 200 journalists from 30 countries.

The briefing was an opportunity for Bosch to discuss the future of the car and present an outline of the research and development work it is undertaking, to provide more environmentally friendly automotive technology in the future.

Making Electric Cars a Reality

With the increasing need to find more environmentally friendly transport options, there is no doubt that the electric car will come. The ability to travel two and a half times the distance of a car fitted with a combustion engine, whilst using the same amount of energy, makes an electric vehicle an extremely energy efficient option.

By 2015 Bosch expects to see a global sales volume of some 500,000 electric vehicles. However, to achieve these higher volumes in order to meet demand, a lot of work needs to be done

to considerably improve the performance of these vehicles.

Bosch is vastly stepping up its development activities to get the electric vehicle ready for large-scale series production, in three ways:

1. Gathering experience with the hybrid drive, which Bosch sees as a bridge to the electric vehicle. Bosch technology is set to go into series production at the start of 2010. In itself, hybridization can reduce fuel consumption in petrol engines by 39% and diesel engines by 40%.
2. A dedicated business unit working on power-train electrification.
3. In cooperation with Samsung SDI, developing the lithium-ion battery. Developers are currently working to reduce the weight and price of the lithium-ion battery that powers the electric vehicle. The aim is to launch this new battery technology in 2011.

So, given the current state of this technology and the developments that are still needed, realistically for the next 20 years, the internal combustion engine will remain the drive of choice. Given this, Bosch will continue to further improve internal combustion engines, whilst working on electric technology.



Both petrol and diesel engines will be subject to extreme downsizing, resulting in three cylinder, 1.1 or 1.2lt engines that still offer the same 100kw power and performance of the standard engine. They will also be equipped with several additional technologies which will improve the overall efficiency of the drive train:

- a start-stop system that automatically starts and stops the engine when the car is not in motion, e.g. at a red light or in a traffic jam.
- a thermal management system that quickly gets the engine up to optimum operating temperature, and keeps it there.
- a highly efficient generator with a control unit that uses additional braking energy to charge the battery.

Further developing gasoline and diesel engines is the fastest way to effectively reduce fuel consumption and CO₂ emissions.

Changes in Engine Technology

Bosch's efforts to advance internal combustion engines are resulting in new engine concepts that will be ready for market by 2015.

“Bosch will continue to further improve internal combustion engines, whilst working on electric technology.”

Top Prize for Apprentice

At the recent Box Hill Institute Centre for Automotive Transport and Engineering Automotive Awards night, Christian Gunawan was presented the award for the top 3rd year automotive apprentice, in recognition of his achievements at TAFE in 2008.

Christian has been undertaking his apprenticeship at Topshift Automatic in Abbotsford, Victoria, while completing automotive mechanic studies at Box Hill Institute of TAFE.

Bosch was a proud sponsor of the awards nights, held annually by the Institute's Centre for Automotive, Transport and Engineering, which is highly regarded by industry and statutory bodies as a training leader in the automotive field.

Bosch would like to congratulate Christian and wish him all the very best in the future.



Charles Sibberas (Vic/Tas State Sales Manager) presents Christian Gunawan with a Bosch Shop Gift Voucher for his achievements.

World First Bosch ABS Catalogue Now Available!

The 2009/2010 Bosch ABS catalogue is now available. This catalogue is a world first for the aftermarket, containing listings for hydraulic units, electronic control units and wheel-speed sensors.

Practical application and product technical information is a key feature of the new Bosch ABS catalogue. Product technical information, such as design types and functions, and fault diagnosis and repair, including step-by-step ECU and wheel-speed sensor replacement guides, are all included to provide additional valuable information.



Bosch ABS components are now available through aftermarket distributors. So, with the right diagnostic tools, ABS repairs can now be part of any independent workshop's service offering.

The Bosch ABS program offers a comprehensive range coverage and all components are manufactured according to Original Equipment specifications, ensuring quality and reliability.

For a copy of the new catalogue please contact your local Bosch distributor or call the Bosch Customer Service Centre on 1300 30 70 40.

Complete Engine System Testing

The Bosch FSA Range

The increasing share of electronics in motor vehicles is making ECU diagnostics standard practice in today's workshop. Even simple maintenance work or resetting the service interval display on modern cars requires a workshop to have access to diagnostic tools.

Some vehicles have up to 150 sensors linked to as many as 80 ECU systems and often share information via the CAN (Control Area Network). This can make fault diagnosis extremely difficult. For example, a rain sensor not only operates the windscreen wipers in wet weather, but may also communicate with the ABS system to lightly apply the brakes to maintain maximum dry braking efficiency. The replacement of a windscreen with its rain sensor may bring on a fault light if it is not introduced to the ABS system with an ECU scanner.

Information is the workshop's most important diagnostic tool. A scanner, such as the Bosch KTS module, can offer extensive ECU communication functions which are supported by Bosch ESI[tronic] software. This program has an encyclopaedia of information which offers a guided repair analysis from error code to replacement part.

However, scan tools are often misused. Taking a "quick fix" approach by reading the error and replacing the part can often lead to trouble. Sometimes the identified fault can be caused by a loose connection or bad earth.

The reality is a scan tool will point you in the right direction, however the only way to correctly verify a faulty sensor's waveform is with an oscilloscope, such as the Bosch FSA range of vehicle systems analysers.

The Bosch FSA in its standard oscilloscope configuration can be combined with a KTS scanner module. The information program from the KTS with its guided repair analysis is combined with the FSA measurement data into one integrated package.

The modular structure of the Bosch FSA makes it an extremely flexible diagnostic platform with measuring modules that may be purchased separately or

as a complete trolley based workshop testing system.



Bosch FSA system testers also features a signal generator that allows for the testing of sensors, including signal lines and connectors. This, in conjunction with the powerful measuring technology of a 50 megahertz oscilloscope and a multimeter, can reduce the time consuming and often unnecessary exchange of incorrectly diagnosed, faulty components.

An important feature of the FSA is the ability to save comparative oscilloscope patterns and to superimpose them over a live pattern when testing components on a vehicle. Technicians can, for example, save well-defined patterns for later use and build-up their own data base.

The FSA motor test function includes leads and probes that analyse ignition faults on all types of modern ignition systems including the "pencil" type coils prevalent on late model Commodores and Falcons.

The FSA system can also be extended to include emission testing with the BEA gas analyser and the RTM diesel opacimeter (smoke) modules. A gas analyser offers the simplest diagnostic connection to a motor vehicle, but it is often overlooked as a

"...any electronic diagnosis must be confirmed with an oscilloscope."

diagnostic tool. Depending on the combination of gas emission readings it can be very useful in assisting to diagnose common ignition, injection or even oxygen sensor faults.

Bosch offers a complete range of specialised workshop equipment, from a comprehensive series of diagnostic scanners, through to vehicle systems analysers, exhaust gas analysers and battery service equipment. Importantly these products are supported by comprehensive training packages direct from the manufacturer.

For more information contact the Bosch Diagnostics Customer Service Line on 1300 783 031.

Wheel Alignment Made Easy!

BEISSBARTH®
German Precision Engineering

The new Beissbarth Easy 3D is the easiest solution for wheel alignment.

Providing precise and instantaneous measurement, the Easy 3D guarantees rapid performance, with high repeatability of measurement results, easy runout compensation and real time displayed values plus it's mobile and compact!

The Beissbarth Easy 3D is simple and fast to operate, even without special knowledge of wheel alignment. The entire measurement process, including runout compensation takes just seven minutes from driving onto the lift, to producing the results printout.

With the Beissbarth universal wheel clamps, runout compensation can be carried out simply by driving the car. As motor vibration does not affect results,

it is no longer necessary for mechanics to push the vehicle back and forth by hand. It is also not necessary to exit the vehicle during the runout compensation process.

So how does it work?

The Easy 3D offers 3D wheel alignment for each wheel by using the principle of triangulation. Two cameras are used to sight a single measuring plate. The angle and spacing of the two cameras are known, so triangulation can be applied to determine the angle and therefore the distance to the points on the plate. One camera handles toe measurement to the other sensor and two pendulums determine the centre of gravity enabling the position of the sensors to be determined. The stereo cameras serve to determine the wheels axis of rotation.

The integrated reference system

in each sensor head ensures reliable, reproducible, virtually real-time measurement results without complicated or potentially error-prone calibration. This technical solution comprising high-tech state of the art cameras, (which are lightweight and impact resistant), and an integrated reference system is the first of its kind and patented.

The slimline Easy 3D is completely mobile and compact, fitting perfectly in even the smallest workshops. And thanks to the Beissbarth patented reference system the Easy 3D sensors are portable, making fixed attachment and calibration a thing of the past, leaving the lifting platform freed up for other work as required. Easy 3D is also ideal for operation on wheel alignment pits and four post hoists. The Easy 3D wheel aligner is suitable for aligning all types of



cars, through to vans and light commercial vehicles.

With the federal government's 50% tax rebate now passed as legislation it's never been a better time to invest in 3D technology.

As part of the Bosch organisation Beissbarth offers a range of high quality solutions for wheel servicing.

For further information phone 1300 783 031 or visit our website at www.beissbarth.com.au

The Shape of Things to Come

Bosch AeroTwin Wiper Blades

We all know market trends are changing towards blade replacement over refills, but did you also know that blade technology is changing?

Basic wiper blade design has remained virtually unchanged for more than 80 years. The familiar steel or plastic bracket with multiple joints and pressure points has been the automotive industry standard. But that's all beginning to change.

OE wiper blade technology is taking a new bracket-less shape, with more and more vehicle manufacturers specifying bracket-less blades. This new technology conforms more precisely to the curvature of today's vehicle windscreens, for better wiping quality than conventional blades.

But you don't have to buy a new car to get this latest technology. Bosch has accelerated access by providing this next generation wiper blade technology to your aftermarket customers, with Bosch AeroTwin blades.

Bracket-less Design

AeroTwin bracket-less wiper blades are designed without metal or plastic brackets, joints or hinges, offering design and performance improvements over conventional wiper blades.

The brackets and joints of conventional wiper blades are replaced by dual precision-tensioned Evodium steel springs, which are curved at a precise radius along each millimetre of length, creating infinite pressure points for a perfect fit to the curvature of the windscreen. These





springs are enclosed under an aerodynamic integrated wind spoiler, protecting them from corrosion and ultra-violet rays. The spoiler creates down-force, preventing blade lift-off at high-way speeds or in severe winds.

This innovative design distributes more uniform pressure along the entire length of the blade for the perfect wipe.

Innovative FX Dual Rubber Technology

The Bosch AeroTwin features innovative FX dual rubber technology. A soft, flexible rubber element reduces chatter and squeak, whilst the precision-cut wiping edge, specially coated with Quiet-Glide™ micro-finish for smooth and quiet operation, resists wear and removes even the smallest droplets of mois-

Quick Clip Installation Guide

	Open top bracket lock by pressing side of clip
	Insert wiper arm through top bracket in direction shown
	Lock hook on wiper arm into Quick-Clip connector by sliding back until it clicks into place
	Close top bracket



ture for the cleanest wipe over a longer performance life.

Installation is quick and easy, with the patented Quick-Clip connector system.

At Bosch, safety is our main concern and considering around 90% of driving decisions depend on good vision, the performance of wiper blades is essential to ensure a clean windscreen and unimpeded vision. This is why

all Bosch wiper blades are tested to the limits of weather conditions and speeds to guarantee ultimate safety, the best possible performance and durability.

But the real opportunity lies with workshops. Most drivers trust their local mechanic, so take the time to invest in their safety and make sure you're offering them the latest in wiper blade technology, with Bosch AeroTwin wiper blades.

Protect Your Workshop's Future

The Complete Software Solution with Bosch ESI[tronic]

The car is increasingly becoming a "computer on wheels". In this regard, time-saving software with troubleshooting instructions suitable for practical application is just as important as high-performance test equipment, making it simple for workshops to offer complete and thorough diagnostic service to customers.

Bosch ESI[tronic] is a complete software solution which provides workshops with comprehensive, easy to use technical information.




ESI[tronic] is a system of DVD-based technical information modules, which individually provide a range of information on topics such as catalogue and parts information, diagnosis, troubleshooting and repairs for both vehicles and products, for an extensive range of petrol and diesel passenger vehicles in the Australian market.

Being a modular system, the extensive range of ESI[tronic] application modules allow workshops to tailor the information they need to their individual business requirements. The ESI[tronic] software can be used as is on your PC, or alternatively can be combined with Bosch KTS test equipment. Data is updated quarterly, so you can service even the newest of vehicles with no problems.

ESI[tronic] is a complete, unique solution in the workshop market, which you can adapt to meet the individual requirements of your workshop.

For more information on ESI[tronic] please contact Bosch Diagnostics Customer Service on 1300 783 031.

Software Module Overview

Application	Module	Contents
	A	Vehicle equipment
	D	Diesel spare parts
	E	Electrical spare parts
	ZD	Diesel spare parts from Zexel
	C	Vehicle diagnosis
	TSB	Technical service bulletins
	M	Vehicle mechanics
	P	Convenience vehicle wiring diagrams
	K1	Diesel pump and injector repair instructions
	K2	Electrical repair instructions
	K3	Diesel and electrical repair instructions

Universal In-tank Fuel Pump Kits

Introducing the NEW BFP038



Since the early 1990's, various Asian vehicles have used a variety of 38mm diameter in-tank electric fuel pumps for high pressure fuel supply. Many of the variations in application are due to differing fuel pump flow rates and strainer designs.

To simplify servicing in many of these applications, Bosch has released a new "universal" 38mm fuel pump kit, containing two different aftermarket grade strainers, an electrical adaptor and associated hardware. The choice of two common strainer designs provides broad applica-

tion coverage and the inclusion of the electrical adaptor means this unit can also be used to replace pumps that use a small "pin-type" or post style electrical connection.

The new Bosch "BFP038" universal in-tank fuel pump kit comprises -

- An OE quality, Bosch manufactured, 38mm "turbine" design electric fuel pump
- Flow rate of 105 l/hour at 3.0 bar pressure
- Ethanol compatible (E10 only)
- High quality internal materials for superior performance and reliability
- Two common pump strainers, 70mm and 100mm, with retaining clip, for broad application coverage
- Pre-wired electrical adaptor with bullet style terminals to replace pumps that use a small "pin type" or post style electrical connection

The BFP038 is essential for any business repairing Asian vehicles and generously covers over 40 part numbers in the market including BFP473; BFP474 and 0 580 453 477. Pre ordering a few in advance would definitely save time on your next applicable Asian vehicle repair job.

Contact Bosch Customer Service on 1300 30 70 40 to locate your nearest Bosch distributor.

Bosch Ignition Leads: Your choice for LPG



Bosch Super Sports Ignition Leads: The superior choice for LPG. LPG fuelled vehicles place a significant demand on ignition system performance. Bosch Super Sports ignition leads, with "Inductive Core" technology, meet these demands to provide maximum energy transfer for better ignition operation.

For further information on the Bosch Ignition Lead range please contact your Bosch Representative or call Bosch Customer Service on 1300 30 70 40. www.bosch.com.au



BOSCH

Invented for life

Testing Electric Fuel Pumps in the Vehicle - Fault Symptoms and General Hints

Fault Symptoms

The following fault symptoms can indicate a faulty electric fuel pump:

- ▶ Drop in engine power
- ▶ Engine misfiring
- ▶ Starting problems
- ▶ Increased fuel consumption
- ▶ Fault memories in the engine management ECU in connection with air/fuel mixture control or fuel-supply system

General Hints

- ▶ Strict cleanliness must be observed: Before installing a new fuel pump, it is imperative that the fuel system is cleaned and flushed – particles of dirt could damage the new fuel pump
- ▶ Avoid having the fuel tank open too long: If the tank remains open for a long time it can deform
- ▶ Replace all seals and gaskets when carrying out repairs: When not subjected to pressure, seals and gaskets can expand and swell
- ▶ After having replaced the pump, it may in some cases be necessary to perform a learning function: Depending upon the vehicle manufacturer, the diagnostics unit must be used to carry out a learning function for the electric fuel pump/fuel-level sensor

Demand-controlled electric fuel pumps

- ▶ These fuel pumps only deliver the amount of fuel actually required by the engine
- ▶ They are controlled by means of a pulse-width modulated signal (PWM) from the engine ECU
- ▶ A return line is unnecessary, although there can be a leakage line installed from the pressure-limiting valve for instance



Bosch – The Global Trainer

The automotive servicing trade has seen, and will continue to see, more changes and innovations than almost any other industry. Having the knowledge and ability to diagnose and service modern vehicle systems is crucial in order to safeguard the future of your business. Investing in your own training and that of your staff is therefore an imperative element to running a successful workshop.

Bosch Automotive Service Training is conducted worldwide, with 43 service training centres in 35 countries. Last year global participants numbered nearly 64,000. As a leading provider of complete automotive system technology for more than 100 years, Bosch has the extensive expertise of being able to provide training in all areas of automotive technology.

All Bosch training courses are designed in close collaboration with the Bosch research and development units to guarantee the latest automotive technology is translated into practical training courses. With continuous investment in both time and

money, Bosch ensures that only the very highest level of training is provided, using the very latest in test equipment technology, on current vehicle systems.



Bosch Australia is a recognised training provider. Our involvement with training is well established and our training methods are based and built on over

30 years of automotive training experience. Our trainers have numerous years of industry and training experience, as well as important backing and support

from our Bosch research, development and engineering departments, worldwide.

Bosch technical service training

courses are developed by the expert; the systems designer. Our courses cover body electronics, gasoline engine management, diesel systems, braking systems

and vehicle diagnostics.

All Bosch training courses are run with the philosophy of hands-on learning: theoretical

instruction combined with trouble-shooting and practical exercises in order to provide 'real-world' scenarios for our participants. Our class sizes are always limited to encourage student interaction and involvement.

All course participants are issued with a globally recognised Bosch Training Certificate.

A well trained technician is an asset to your business. A technician that has the ability to diagnose problems quickly and accurately increases the efficiency of your workshop, leading to greater customer satisfaction and improved profits.

The remaining training sessions for 2009 are limited to members of the Bosch Car Service network however a new program for independent workshop training is currently being planned for 2010.

For any further information on training courses call 03 9541 5553.

Are you a workshop looking for a strong business partner?

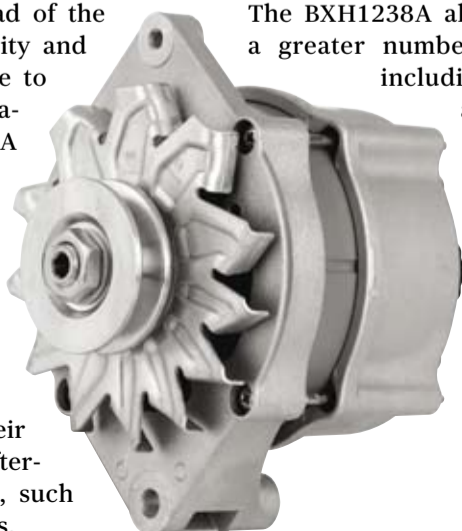
To receive your copy of the **Bosch Car Service "Road to Success"** brochure email futureworkshop@au.bosch.com or phone 03 9541 7317



More Amps for Alternators

Bosch continues to stay ahead of the competition in terms of quality and performance with an upgrade to its popular BXH1236A alternator. The new Bosch BXH1238A is a 70 amp alternator that can be used in place of the older 55 amp model, in vehicles that require a higher current output.

The new BXH1238A 70 amp alternator allows drivers to run higher electrical load in their vehicle, enabling them to fit after-market electrical accessories, such as amplifiers and driving lamps.



The BXH1238A alternator can now be used in a greater number of universal applications, including light stationary engines and agricultural machinery.

It is also ideal for upgrading early Commodore, Calais, Kingswood and Torana 6 and 8 cylinder models, without doing any modifications to the vehicle.

Both BXH1236A and BXH1238A will be available through Bosch distributors.

New Oxygen Sensor Catalogue

Have you got your copy of the new Bosch Oxygen Sensor catalogue?

- New easy to read format
- Comprehensive range coverage
- Expanded diesel range
- Practical application information
- Technical data included



For a copy of any of this catalogue contact your local Bosch distributor or call Bosch Customer Service on 1300 30 70 40.

Meeting Your Customers' Service Expectations

From page 3



5. Make it easy for them to decide about work they did not anticipate. Provide facts. Provide options where they exist (these give your customer power despite the situation not being of their choosing). Provide time to process any shock factor. Be aware that most of us do this in a well-defined sequence of:

- a. Denial - "No, that can't be right. You've made a mistake. Check it again!"
- b. Anger - "You've got to be

- kidding! You're ripping me off! Whose fault?"
- c. Bargaining - "Maybe it's not as bad as you thought. Can you just patch it up for now?"
- d. Depression - "What am I going to tell my husband/wife? Bloody heap of garbage! Why does this always happen to me? There goes my holiday."
- e. Acceptance - "I should have guessed from the noise it made last week. OK, fix it,

but go easy on the bill, can you please?"

Give them space to work through the sequence; don't take anything that is said in this phase as personal; consider yourself in a similar situation. Remain respectful - that will provide the bridge along which they will return to ask you to do the work. All of it.

6. Take responsibility for protecting them. We said it's not your role to decide what to do - unless it's a matter of safety, in which case you have a professional responsibility to guide them to the right decision - or to decline the work. Avoid being judgmental in this situation. Remain courteous, empathetic and professional but hold the line on what you know to be right. You may lose the job, but if you do all of the above, you won't lose their respect - or your own!

7. Take responsibility for clear agreements. Script your routine communications to protect misunderstandings. Once you've agreed on the scope of

work, tell them how things will proceed. Use clear and committed language and ask for confirmation of understanding. That may go, "Susan, we'll do the 10,000km service and replace the alternator that is causing your flat battery. Depending on the alternator pricing, you can expect a total between \$500 and \$600 including our labour. Will your budget stand up to \$600? . . . and I'm going to call your mobile if I find anything that needs immediate attention, alright? Otherwise I'll just note routine items to discuss with you this evening. Is that OK with you? Any questions?" As a very good technician once told me, "If you have to negotiate the bill at the end of the job, you have a problem!"

8. Take the relationship initiative afterwards. If your dentist's office can call you the day after a \$200 filling to check that you're OK, can you do the same for your customer who spent \$200 on a service? You could even text if time was tight; it's more the fact

that you thought to check than the actual contact. If you were to write your service recall letters to build your relationships as well as to generate on-going work, do you think they would read better and accomplish more? Could you enclose a service or economy or value tip of some sort to further demonstrate that you actually do care about them?

As we said at the beginning of this two-part article: If you're presently too busy to look after your customers at a level that they will appreciate, then someone else will be doing that for them shortly - and you'll have plenty of time to think about doing this!

Peter Rowe is Managing Director of ProfitTune Business whose sole purpose is to improve clients' overall business performance such that it can be measured at the bottom line. For information: peter.rowe@profitune.com or 1300 2 PROFIT

Range Update

Timing Belt Tensioner Kits



The inclusion of oil seals in timing tension kits can help avoid a few headaches in the workshop when replacing timing belts.

If the camshaft or crankshaft seal is removed during service there is a risk that sealing performance will be compromised if the old seal is refitted, not to mention the loss of time and the frustration of finding out later that it is required.

That's why Bosch is ensuring that all of its timing tensioner kits include whichever oil seals are required to guarantee the best possible service, including oil pump and balance shaft seals where necessary.

As part of upgrading their European applications Bosch has recently released another eight timing tensioner kits with the appropriate oil seals includ-

ed. These kits cover some of the more popular European based vehicles including the Holden Astra, Ford Fiesta, Volkswagen Golf, Audi A3 and the Holden Barina.

Over 90% of the Bosch timing tensioner kit range now has oil seals as part of the kit; including all of the Asian and local Australian manufactured vehicles in the range.

In addition to oil seals, Bosch timing tensioner kits include tensioners, idler pulleys and guide pulleys, along with all kit components, all of which are manufactured to original equipment specifications.

Bosch recommends that all timing belt components rather than just the belt are replaced at the time of servicing. This results in a much better service and fewer

comebacks. This way workshops can ensure the safety of their customer's engine whilst benefitting from the increased profit opportunity that fitting the entire kit provides.

Belts Trouble Shooting

Problem	Cause	Remedy
Belts breaking after fitting	1. Belt forced over pulley damaging tension member and cover fabric	Reduce drive centre distance to fit belt
	2. Shock load	Recheck design. Check belt tension
	3. Incorrect number of belts fitted	Recheck design and fit correct number of belts
	4. Foreign matter obstructions	Install effective guard
Excessive elongation	1. Worn or badly machined pulley grooves	Replace pulley
	2. Belts of different manufacturers on one drive	Use matching set from one manufacturer

Bosch Market Updates

Mazda 3

Service Tips



We've really struggled this time to come up with service tips for the Mazda 3: everyone keeps telling us what a great, reliable car it is!

But we know that nothing is perfect, so we've kept digging and managed to find a few issues from the field that we might be able to help with.

1. A number of workshops have reported customers complaining of a harsh or rough idle. This can often be caused by the failure of the right hand engine mount of the vehicle. This can be easily confirmed by checking under the vehicle for a visible fluid leak from the mount. The only way to correct this problem is to replace the mount.
2. Another problem that can occur is the vehicle's engine check light comes on due to misfire codes logged into the vehicle PCM (powertrain control module). A common cause of this has been found to be fuel contaminated with water. This problem is common in many vehicles, however in the Mazda 3 you need to be aware that water gets easily trapped in the large fuel injection rail. Removal and thorough cleaning of the rail is required in addition to standard tank and fuel line cleaning if you encounter this problem.
3. A final issue we've come across has been in the manual models. Occasionally an audible clicking sound can be heard coming from the centre of the dash/transmission tunnel area, when the driver is changing gear. If this is occurring, try adding a 6mm nut to the gear shift cable mount (located on the firewall). This will secure the mount and stop it from moving slightly during gear changes.



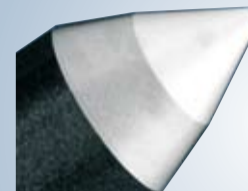
Bosch Aftermarket Part Numbers for Mazda 3 (BK) 07/03 → 2.0 LF

Product Description	Bosch Part Number
Intake manifold pressure sensor	0 261 230 180
Spark plug, Platinum Ir Fusion	F11-4
Spark plug, Double Platinum	HR6DPP33V
Spark plug, Double Platinum LPG	HR5KI3325 NEW
Ribbed V-belt - AC Compressor	5PK698
Ribbed V-belt - Alternator	6PK1300
Universal lambda control sensor	0 258 986 507
Universal lambda diagnostic sensor	0 258 986 602
Injector, gasoline	0 280 156 155
Oil filter	0 986 452 068
Air filter element, engine	0 986 AF2 156
Starter battery, S4	F005X04050 NEW
Wiper blade element + rail (metal), refill, left	BMN610
Wiper blade element + rail (metal), refill, right	BMN610
Wiper blade Aerotwin, left	BPA475
Wiper blade Aerotwin, right	BPA530
Wiper blade Micro Edge, left	BB480
Wiper blade Micro Edge, right	BB530
Wiper blade ECO, left	BBE480
Wiper blade ECO, right	BBE530
Wiper blade element + rail (metal), refill, rear	BMN610
Cabin filter	1 987 432 163
Brake pad set QikStop; front	0 986 AB4 183
Brake pad set QikStop; rear	0 986 AB4 180

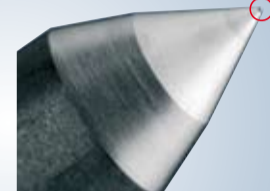
Bet on Quality, Bet on Bosch Nozzles

Knowing that you are fitting genuine Bosch diesel injection nozzles can save a lot of heartache and extra expense.

Bosch Nozzle

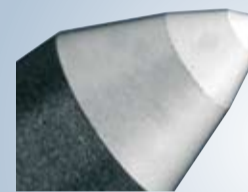


Fake Nozzle

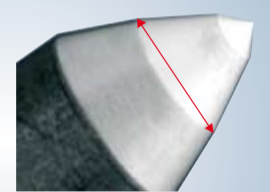


Characteristic: Excessively pointed nozzle pin of a fake nozzle. **Risk:** Tip of nozzle pin may break, engine damage

Bosch Nozzle



Fake Nozzle



Characteristic: Wrong nozzle-seat diameter of a fake nozzle. **Risk:** Incorrect opening pressure, wrong injection timing, weakened engine performance, increased fuel consumption and emissions

Bosch Nozzle



Fake Nozzle



Characteristic: Rough surface of a fake nozzle. **Risk:** Uncontrolled combustion due to sealing problems

Bosch Nozzle



Fake Nozzle



Characteristic: Sharp (cone-shaft) junction of a fake nozzle. **Risk:** Nozzle may break, engine damage

Bosch Nozzle



Fake Nozzle

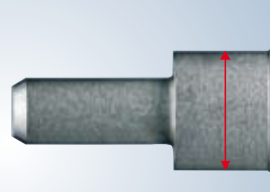


Characteristic: Over-sized sack hole of a fake nozzle. **Risk:** Incomplete combustion, increased emissions, failure to comply with emissions regulations

Bosch Nozzle



Fake Nozzle



Characteristic: Needle guide diameter of a fake nozzle is too small. **Risk:** Incorrect opening pressure, wrong injection timing, incomplete combustion, increasing emissions, weakened engine performance

In The Pits!

Calder Drive Day: Frosty Revisits Bosch Start

FPR V8 Supercar drivers Mark Winterbottom and Steve Richards were recently reunited with the category and the manufacturer that kicked off their respective car racing careers, when they got behind the wheel of some Spectrum Formula Fords at Calder Park Raceway.



For Frosty, the reunion was particularly special as he was reacquainted with his 2002 Bosch Batteries Spectrum 09, the car in which he won Rookie of the Year and was runner up in his first attempt at the Ford Racing Australian Formula Ford Championship. The car has just completed a pain staking ground up restoration at the Braeside factory of Borland Racing Developments.

“It was great to get back into the Bosch Batteries car. How good are the brakes in these things? That was probably the thing that surprised me the most; I’d love it if we could stop our V8 Supercars that well!”

Both drivers remain appreciative of the role that Formula Ford and Michael Borland have played in their motor racing careers.

“I had some support through winning the Ford KartStars program,” Winterbottom said. “But we were still struggling for budget and it was Mike that put the Bosch Batteries deal together and if it wasn’t for that, then I’m sure we wouldn’t have been able to achieve what we did. The further I have progressed in my career, the luckier I realise I was to be associated with Mike and his team when I started racing cars,” he added.

Thanks to Borland Racing for supplying information and images.

Bosch Shots Competition

WIN a Samsung Digital Camera



Send us your most creative photo of Bosch in your workshop (eg. signage, product etc) for a chance to win 1 of 5 Samsung Digital Cameras which will be awarded to the 5 best photos.

Name: _____

Company Name: _____

Address: _____

Please complete this form and return by 30th September with your photos to:

Robert Bosch Australia
Dept: AA/SAO-MKT3
Reply Paid 73196
Clayton South, Vic 3169

OR

Email your photos along with all contact details to:
futureworkshop@au.bosch.com

Do you want your photos returned? Yes No

Please tick if you don't want to receive another copy of *Future Workshop*, and we will take you off our database.

I would prefer to receive *Future Workshop* via email. Please send to:

Email Address: _____

2009 V8 Supercar Championship Calendar

Round 9	Sept 11 - 13	Phillip Island 500, VIC
Round 10	Oct 8 - 11	Bathurst 1000, NSW
Round 11	Oct 22 - 25	Surfers Paradise, QLD
Round 12	Nov 5 - 7	BIC, Bahrain
Round 13	Nov 20 - 22	Barbagallo, WA
Round 14	Dec 4 - 6	Homebush, NSW



BAT415 Battery Charger \$495 inc GST

Don't let your battery go flat while you're scanning your vehicle.

Low voltages can cause faults in your scanning communications. Bosch battery chargers let you perform in-car battery charging, ensuring constant communication during ECU diagnostics, while also preserving the data memory of car radios, ECUs and onboard computers.

To purchase the BAT415 at the special price of \$495 contact bosch Diagnostics on **1300 783 031**.

Offer ends 31st October 2009

Winners

Congratulations to the following winners of the SBR Watch Promotion in our last issue.

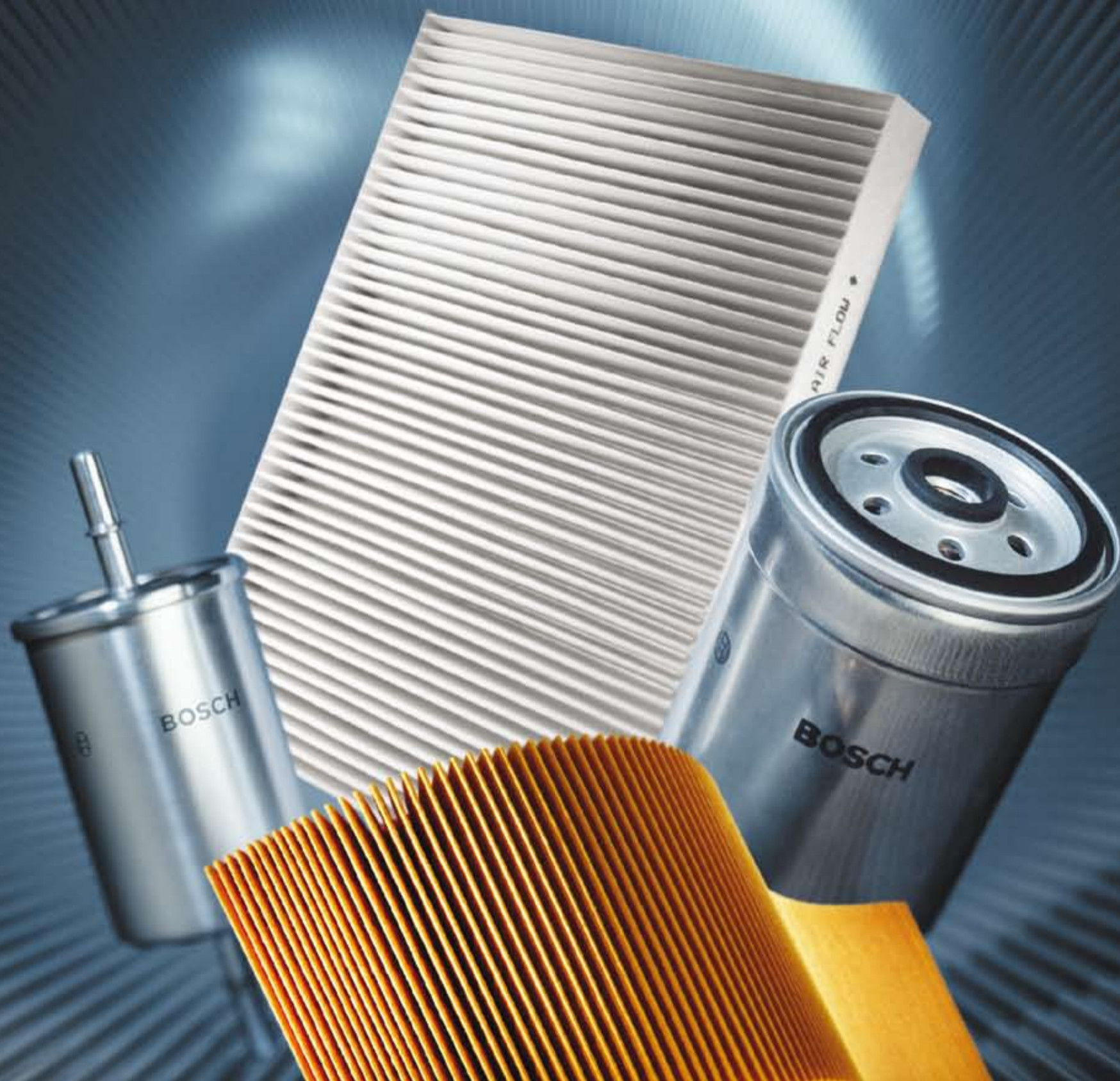
Colin Grech
Blaz Persich
Mark Nelson
Cheryl Coe
Andrew Ennis
Richard Johnson
Cameron Horder
Danny Maul & Dean Maul-Dunn
Paul & Kel

CG Automotive Repairs, Avondale Heights Vic
Oztech Automotive, Kealba VIC
Baker Motors, Wodonga VIC
Coe's Auto Electrical, Port Pirie SA
Ennis Automotive, Wodonga VIC
Gordon Institute of TAFE, Geelong VIC
Eclipse Automotive, Airport West VIC
D & D Mechanical & 4WD, Goolwa SA
Gibbos Auto Spares, Ballina NSW



The Bosch **filter** family

**Stockist
Details
Below**



An extensive range of Bosch Filters is now available to the Australian market. With more than 300 different filter types – oil, air, fuel and cabin filters, Bosch offers a competitive range for Australian, Asian and European vehicles.

For more than 75 years, vehicle manufacturers around the world have put their trust in Bosch Filters. As an OE system supplier, Bosch know how important filtration is in protecting your engine. With state-of-the-art production and testing facilities and the use of only the best manufacturing materials, when you buy Bosch you are guaranteed quality.

For further information on any filters in the Bosch range please contact your Bosch Representative or call Bosch Customer Service on 1300 30 70 40. www.bosch.com.au



BOSCH
Invented for life

Stockist Details:

- ▶Automotive Service Solutions, TAS (03) 6231 3499 ▶Automotive Service Solutions, WA (08) 9204 9888 ▶Fyshwick Auto Parts, ACT (02) 6211 3755
- ▶Imparts, VIC 1300 467 278 ▶Interpart Pty Ltd, NSW(02) 4627 2977 ▶Kensington Spare Parts, NSW(02) 9663 0455 ▶Blacktown Auto Spares, NSW (02) 9622 2322
- ▶Mikes Spare Parts, NSW (02) 6571 1337 ▶Scotts Spare Parts Pty Ltd, NSW (02) 4728 5555 ▶IBS, NSW (02) 9618 1774 ▶Lager, NSW (02) 9439 3910
- ▶Sydney Wide European, NSW (02) 9708 4848 ▶Cheapa Auto Spares, QLD (07) 4725 3088 ▶Brisco Butler, QLD (07) 3857 3011 ▶Hot Parts, QLD (07) 3208 1288
- ▶K & M Auto Parts, QLD (07) 3246 5111 ▶Mackay Auto Parts, QLD (07) 4957 6111 ▶Autobarn Cairns, QLD (07) 4054 1633 ▶All Carbitz Pty Ltd, QLD (07) 3277 8066