



THE SMART CHOICE FOR TODAY'S TECHNICIAN!

FORMULA ONE TECHNOLOGY STEERS THE WAY FOR MODERN LUBRICANTS

PETRONAS EXPLAINS WHY, SEE INSIDE.



ADVANCED F1 FLUID TECHNOLOGY NOW AVAILABLE FOR EVERY DAY CARS



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ON DEMAND COOLING TECH FROM DAYCO

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SHAFTEC CALIPERS - AS GOOD AS NEW!

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SMART CHOICE MAGAZINE

THE NEW SMART CHOICE MAGAZINE DIVES DEEPER INTO TECH

Welcome to the new and updated version of 'Smart Choice,' the magazine for automotive professionals. Whether you are a garage owner, technician, or parts specialist, Smart Choice provides the latest news, technical bulletins, and product information on a vast range of aftermarket parts, lubricants, and consumables.

As we headed towards the end of 2022, a year that most of us will want to forget, we decided it was time to refresh the Smart Choice publication. Following numerous conversations with workshop owners, feedback from technicians, and our parts specialists, the standout topic was the demand for QUALITY INFORMATION!

Why should I fit a particular brand? How do I know it's a quality product? How are parts tested before being released into the aftermarket? Does it match the OEM quality and specification? What's the warranty? Can I get technical information and support to assist with fitment and common technical issues? These are just a few of the questions raised during our recent research; the new magazine is intended to answer these and provide you with as much technical and product information as possible.

Working with leading and quality suppliers ensures we have access to much more detailed information and support; whether it's a question of fitment, best practice, known vehicle faults, or the correct tooling needed to carry out a specific job, we want to provide workshops with more than just the parts themselves. As a quality independent motor factor, we want to support our customers, and so do our suppliers.



NEW CAR REGISTRATIONS DOWN AGAIN IN 2022 - GOOD NEWS FOR INDEPENDENT WORKSHOPS?

With the effects of the pandemic on new car sales still rumbling on, the shortage of specific electronic components, and the current cost of living crisis, sales again struggled in 2022. It doesn't sound like much, only a 2.0% drop against 2021, but the market was still down a massive 30% compared to 2019, pre-pandemic.

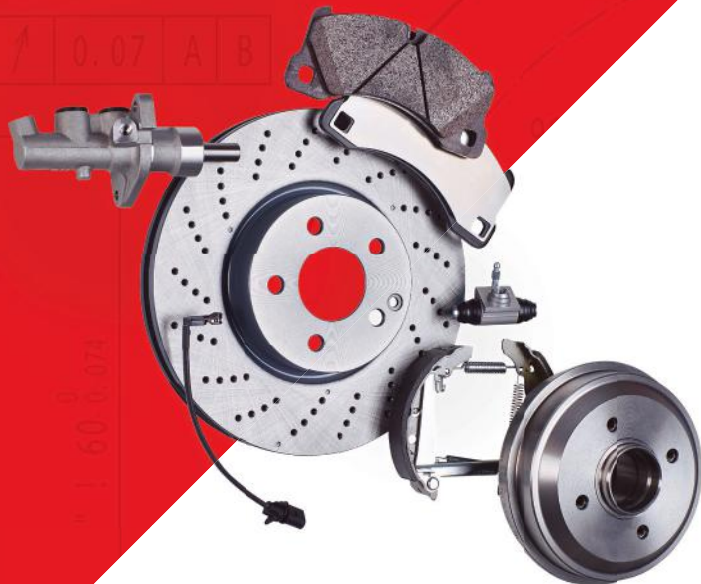
Sales of Alternative Fuel Vehicles (AFV) made up 50% of all new registrations, so 1 in 2 cars sold was some form of hybrid. Interestingly, 17% of vehicles sold were full electric or Battery Electric Vehicles (BEV). Perhaps the sales of BEVs would be greater still if it wasn't for the recent energy price hikes and the uncertainty on further increases. The bad press on access to public charge points and the low number available in certain areas will no doubt also be key factors on drivers switching to electric.

What does this mean for the independent workshop? Many drivers are hanging onto their current cars and putting off buying a new or later model. This means the average age of UK vehicles is getting older, now estimated to be pushing towards 9 years, in comparison the average age in 2005 was 6.7 years. Older vehicles require more maintenance as components start to fail and are also more likely to fail an MOT. Drivers of older vehicles are less likely to use the main dealer for service and repairs in an effort to get a better deal from their local garage. In most cases, keeping their current vehicle on the road is still much cheaper than replacing it. Newer vehicle owners are also looking for alternatives to the dealer to reduce running costs, with both fleet and private owners tightening their budgets.

This can only be good news for garages, as demand for quality servicing and repairs at a fair price continues to increase. Independent workshops should look to invest in diagnostics and equipment to ensure they are able to cater for a more varied range of customers and vehicles.

For Quiet, Effective Brakes.

Noise, Vibration and Harshness
(NVH) in Braking



The phenomena of noise, vibration and harshness can affect the pleasant driving experience of any vehicle.

Brake noise is created by a high pitch vibration which you can hear. Imagine tracing the rim of a wine glass containing water with a wet finger. The glass resonates and a sound is generated. The vibration is created by the friction caused by your finger tracing around the rim of the wine glass. This, in turn, resonates within the glass containing the water, therefore producing a sound.

This is the same principle that is applied to the noises and vibrations that are generated by the friction between brake pads and discs. These are transmitted to the brake calipers. As a result, the entire brake system resonates to produce unpleasant noise.

Noise Suppression

There are many factors that must be considered to suppress brake noise and vibrations. These include the quality of materials, the shape and torsion of the components, the driving environment, vehicle speed and brake temperature.

Noise is often caused by the vibration of the pad against the disc where full contact is not being made. It can also be caused by failing or faulty parts such as shims and pins that have lost their tension, therefore creating sound waves. These sound waves can either be the high pitched vibrations you are able to hear or a low pitch vibration which you can feel.

Minimising Vibrations and Noise

During the development of a new febi/Blue Print brake pad, many technologies are used in order to improve the comfort for both the driver and passengers by minimising these unpleasant vibrations and noises.

febi/Blue Print matches or exceeds the specifications of the OE brake pad, therefore retaining the original manufacturer's benefits and features – such as chamfering and/or the addition of slots to 'tune' the pad so it makes less noise. The chamfers and slots change the natural frequency at which the brake pad oscillates so it runs quieter than a brake pad without these features.

There are also various types of shims which may be fitted to the steel backing plate to dampen vibrations between the pad and caliper. These shims act like a cushion; they absorb noise-producing vibrations. Some shims may have a half moon cut-out present, which allows the piston to push the brake pad at a desired angle, thus reducing noise and creating a more unified and even pad wear. These are generally fitted to directional brake pads which can only be installed in one direction. Brake pads may also come supplied with anti-rattle clips or springs that

minimise play between the pads and caliper to further dampen vibrations during the initial engagement of the pad. There are also pads with additional weights; these are added during the development phase to minimise vibrations and noise.

Servicing the Brake System

When servicing and replacing friction components of a brake system, there are several important parts that need to be checked to both ensure for correct functionality and to minimise unwanted brake noise. These include the condition of the brake calipers and carriers, plus any other hardware, to see if they are worn, seized, or corroded. When fitting new brake pads, make sure all corrosion is removed from the pad and caliper abutment points and fit the new brake hardware. Lubricate the abutment points to ensure free movement and efficient braking by using febi/Blue Print anti-seize ceramic paste. Avoid the use of copper grease as this can potentially affect ABS signals and encourages galvanic corrosion. It also prevents the brake pad from moving freely, which can also be a source of noise.

If the brake discs are heavily scored or lipped, they too will need replacing as the rough surfaces cause noise. Also, make sure the hubs are clean and check for lateral runout by using a dial test indicator. Then, check the tolerances with the vehicle manufacturer's data before fitting the new discs. It is important to clean the hub surfaces before replacing the brake discs, otherwise brake judder could occur.

For information on the febi/Blue Print Braking range, including Discs, Pads, Cables, Calipers, Hoses and more, go to:

**www.febi.com/en/car/braking
or www.blue-print.com/products/braking**



www.febi.com



www.blue-print.com

bilsteingroup

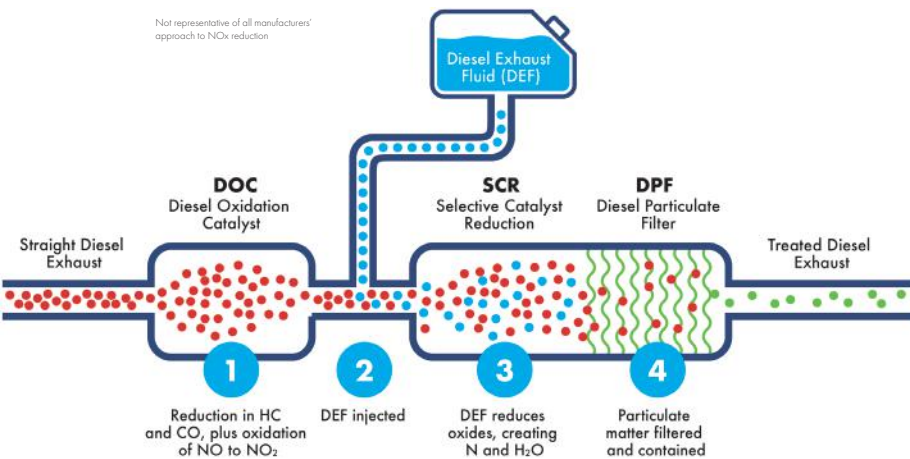
NEW! FROM BM CATALYSTS: SELECTIVE CATALYST REDUCTION (SCR)

BM Catalysts has expanded its product offering by adding Selective Catalyst Reduction (SCR) references to its range, alongside its established range of catalytic converters, DPFs and front pipes.

What is SCR?

SCR technology was first introduced by the Japanese in the 1970s and is often found in power plants, marine vessels and heavy duty vehicles, as it is one of the most cost and fuel effective ways of reducing nitrogen oxide (NO) and nitrogen dioxide (NO_x) emissions.

The technology has since become more commonplace to treat emissions from diesel engines over 1.5L, following the introduction of Euro 6 emissions standards in 2015, which cut permitted NO_x emissions by more than 50%. SCR technology can reduce a vehicle's NO_x emissions by up to **90%**, whilst also reducing hydrocarbons, carbon monoxide and particulate matter emissions.



How does SCR work?

SCR technology works by injecting a liquid-reductant agent through a special catalyst into the exhaust stream of the vehicle. This reductant is an automotive grade urea solution comprised of approximately 1/3 ammonia and 2/3 water. It is more commonly referred to as a **diesel exhaust fluid (DEF)** and it triggers a chemical reaction that converts NO_x into nitrogen, carbon dioxide and water vapour.

Ammonia is highly reactive with NO_x in the oxidising atmosphere of the vehicle exhaust. This is where the 'selective' part of the name comes from. The chemical reaction itself is known as 'reduction', hence the name Selective Catalyst Reduction.

What is it made from?

SCR catalyst substrates are typically made from the same ceramic honeycomb material as standard automotive catalysts. They are generally coated with either oxides of base metals, such as vanadium, or zeolites of copper or iron.

Early SCR systems tended to place the urea/DEF injector SCR catalyst downstream of other emissions control devices. It is now becoming increasingly common to see parts containing both SCR and DPF substrates, or even in some cases a single DPF substrate coated as an SCR catalyst. It is also quite common to see a final catalyst installed after the SCR catalyst in the exhaust system to remove any remaining ammonia.

Download your [free SCR technical poster](https://www.bmcatalysts.com/downloads) today from [bmcatalysts.com/downloads](https://www.bmcatalysts.com/downloads)

Product Support Helpline: **01623 663802**

Product Support Email: Support@bmcatalysts.com



YUASA TAKE CHARGE WITH DEVELOPMENT AND LAUNCH OF YCX SMART BATTERY CHARGERS AND MAINTAINERS

Yuasa, the world's leading battery manufacturer, have recently launched a brand-new range of fully automatic YCX smart battery chargers and maintainers. The four-tiered range has been developed by GS Yuasa engineers for high performance charging of motorcycle, car, commercial and leisure vehicle batteries.



Developed using GS Yuasa's leading battery expertise, which spans over 125 years, the YCX1.5, YCX6, YCX12 and YCX12 have been designed to extend battery life, maintain performance and provide the ultimate reliability for which the Japanese battery manufacturer is renowned.

Yuasa are the number one choice for vehicle and industrial batteries around the globe. Their unrivalled knowledge and experience means the YCX chargers have bespoke 9 or 7 stage charging profiles and are the perfect match for all vehicle battery brands. They also have higher power settings than most other comparable models on the market so batteries can be charged faster and more reliably on or off the vehicle.

Furthermore, the YCX6, YCX12 and YCX12 models are actively cooled, ensuring that they maintain a stable power output, resulting in longer charger service life when in use for extended periods of time.

Peter Whitaker, General Manager – Automotive and Motorcycle Engineering at GS Yuasa Battery Europe Ltd said: *"We are incredibly excited to unveil our new range of bespoke YCX smart battery chargers and maintainers. It has been an extensive process to develop our own ground-breaking range, from benchmarking every charger on the market to refining our own charging parameters, modes and settings in*

order to optimise their performance and get the very best from the batteries they charge, whether GS Yuasa or another battery manufacturer.

They are trade-rated with features such as robust construction and active cooling. This keeps components cool for stability and reduces degradation, meaning that they are built to last and perform throughout their long life."

Each charger has an automatic maintenance mode that sustains optimum state of charge during battery storage. Enhanced safety features, including short circuit, overcharging and reverse polarity protection guarantee ultimate peace of mind for all users.

James Douglas, European Group Marketing Manager for GS Yuasa Battery Europe added: *"The YCX range features our world-renowned industry leading technology to ensure optimum charging performance for lead acid conventional, Start-Stop, EFB, AGM, lithium and gel batteries."*

The same pioneering development and knowledge that we have used to advance battery technology for over 125 years has gone in to developing these chargers."

The chargers also feature simple navigation buttons and clear LED indicators for complete ease of use. In the larger models, durable splashproof construction with integrated clamp and eyelet connectors and built-in power supply modes makes the Yuasa YCX range the most advanced and user-friendly battery chargers on the market.

For more information visit www.yuasa.com/YCX.



	YCX1.5	YCX6	YCX12	YCX12
Intended uses:	Motorcycle & Powersport	Automotive & Motorcycle	Automotive & LCV	Leisure
Voltage:	6 & 12	12	12	12
Amps:	1.5	6, 4 & 1	12, 8 & 2	12, 8 & 2
Charging stages:	7	9	9	9



Steering & Suspension

Built to Last



Have you ever wondered why some of FAI's link rods have a red securing clip? The red clip signifies a stronger construction of ball joint providing a reassuring repair solution throughout the supply chain. The FAI design is perfect for potholed UK roads as the ball pin pull-out force has been improved by 25kgf over the original design, making for a long-lasting replacement.

Why doesn't FAI use this technology on all our parts? Really and truly, the process isn't required across the range. As one of the best established suppliers of Steering & Suspension parts, our partnered factories analyse which applications would benefit from the technology; applied now to over 60 FAI parts.

Honda Civic X

Demand for quality Steering & Suspension components for the Honda Civic X has increased over the last couple of years, as more vehicles head out of the hands of the dealerships. FAI have a comprehensive selection of parts already in stock.

Full listing: faiauto.com/ecat

Range Highlights:

Description	FAI Ref.
TIE ROD END LEFT	SS9540
TIE ROD END RIGHT	SS9541
RACK END	SS9831
BALL JOINT FRONT LOWER	SS9591
CONTROL ARM REAR UPPER	SS9704
CONTROL ARM REAR LOWER	SS9705
WISHBONE LOWER LEFT	SS9972
WISHBONE LOWER RIGHT	SS9973
LINK ROD FRONT	SS9486



Mercedes EQC

Electric vehicles are on the rise but, as with anything led by technology, the battle for being the superior 'Green' car is being fought at the top of the tree. The big German brands all have their answer to the Tesla Model X, with Mercedes opting for its usual combination of comfort and understated style with the EQC.

Range Highlights:

Description	FAI Ref.
CONTROL ARM REAR LWR. RWD. LEFT	SS7378
CONTROL ARM REAR LWR. RWD. RIGHT	SS7379
CONTROL ARM REAR UPPER FWD. LEFT	SS7380
CONTROL ARM REAR UPPER FWD. RIGHT	SS7381
CONTROL ARM REAR UPPER RWD. LEFT	SS7382
CONTROL ARM REAR UPPER RWD. RIGHT	SS7383
CONTROL ARM FRONT LWR. FWD. LEFT	SS10647
CONTROL ARM FRONT LWR. FWD. RIGHT	SS10648
CONTROL ARM REAR LWR. FWD. LH & RH	SS7377





CAMSHAFT ADJUSTMENT CONTROL VALVES

The camshaft adjustment valve (also known as an oil control valve) is an integral part of the variable valve timing (VVT) system in modern engines. Each manufacturer has different technology and terminology for the system, some of the most recognisable names include VVT, VVTi, VTEC and VTi. There will also be some differences between manufacturers as to how the systems operate and the terminology (see table below) but fundamentally the concept remains the same...

WHAT IS VARIABLE VALVE TIMING?

To understand how camshaft adjustment valves operate, it is important to first understand the concept of variable valve timing. In simple terms, variable valve timing or camshaft adjustment advances or retards the opening times of valves in the engine to adapt to a range of operating conditions and desired results. As a result, the operating efficiency of intake and exhaust valves is greatly increased, which in turn results in:

- Reduced fuel consumption
- Increased torque at lower revs
- Improved horsepower at higher revs
- Internal exhaust gas recirculation
- Reduced harmful exhaust emissions

HOW DO THEY WORK?

Generally variable valve timing is controlled by oil pressure. The engine's ECU/PCM uses a host of sensors, including the camshaft sensor and mass airflow sensor, to calculate the required valve timing based on the current driving conditions. This is communicated as a pulse width signal to the camshaft adjustment valve which then controls the flow of oil. The valve is able to direct the flow of oil to the VVT hub by using an integrated solenoid and spool valve to advance or retard valve timing.



WHY DO THEY FAIL?

The camshaft adjustment valve is a mechanical, hydraulic and electronic component, so there are many causes of failure, including:

- **Contaminated, degraded, poor quality or incorrect engine oil can cause slow operation or seizure of the valve. This is one of the most common causes, usually as a result of missed or poor servicing**
- **Damage to the electrical circuits, wiring or connectors**
- **Natural wear to the valves internal gears and seals over time**

ALSO CHECK FOR:

- **Low engine oil pressure causing incorrect operation of the adjustment valves**
- **Wear or slack in the timing chain/belt causing incorrect valve timing**

SYMPTOMS OF A FAULTY CONTROL VALVE

- **Check Engine Lights** – In many cases, modern vehicles will recognise a fault, illuminate the check engine light and report the relevant error code. P0011 'Camshaft Position "A" – Timing Over-Advanced or System Performance (Bank 1)' is common.
- **Rough Idle** – A key role of the valve is to maintain a smooth engine when idling. If the valve is stuck in a retarded position the RPM will drop too low and may stall the engine.
- **Rough Acceleration and Misfires** – Again, the valve ensures smooth engine performance throughout the RPM range. If stuck, acceleration will feel rough and there may be misfires.
- **Increased Fuel Consumption** – If the valve is not functioning, fuel efficiency will suffer, resulting in lower average MPG.
- **Poor Performance** – The valve serves to improve performance by adjusting to suit driving conditions. Without it the driver will notice lower overall performance.

PERFORM

Beckermann camshaft adjustment control valves are engineered to deliver precise valve timing for optimal engine performance in all situations.

TECHNOLOGY BY MANUFACTURER

VVT	Chrysler	MultiAir	Fiat
	General Motors	N-VCT	Nissan
	Proton	S-VT	Mazda
	Suzuki	Ti-VCT	Ford
	Isuzu	VANOS	BMW
	Volkswagen Group	ValveTronic	BMW
VVTi	Toyota, Lexus	VarioCam	Porsche
AVCS	Subaru	VTEC	Honda
AVLS	Subaru	i-VTEC	Honda
CPS	Proton	VTi	Citroen
CVVT	Hyundai, KIA	VVC	MG, Rover
DCVCP	General Motors	ValveLift	Audi
DWVT	Daihatsu	VVEL	Nissan, Infinity
MIVEC	Mitsubishi	CamTronics	Mercedes



NEW PRODUCT RANGE Available now from Beckermann

NEW GENERATION ROTATING ELECTRICS THE STOP START REVOLUTION

The demand on vehicle manufacturers to meet ever stricter emissions levels has led to innovative advancements in vehicle starting and charging systems. The latest i-StARS Starter-Alternator combines the function of two units but built into one.

The i-StARS starter-alternator is installed in place of an alternator. The combustion engine is started immediately and silently thanks to the belt that permanently links the system to the crankshaft. The alternator mode features a new technology that improves the electrical efficiency of the system. In addition, the integrated control electronics make it easier to package the system on the combustion engine.

The i-StARS starter-alternator optimises the Stop-Start strategy required by the vehicle manufacturer, enabling the engine to be switched

off and restarted before the vehicle has reached a complete standstill. Restarting is almost instantaneous (400 msec), silent and without vibration. The system is compatible with all manual and automatic transmissions.

AA8388 Known as LIN controlled alternator, A LIN (Local Interconnect Network), is a serial network method for the connection of devices in automotive applications. Basically, the alternator is controlled externally, not by an internal regulator.

AA7669
i-StARS Alternator



Citroen C4, Dispatch, DS
DS4, DS4 Crossback
Peugeot 308, 3008,
Expert & Partner

AS3053
Starter Motor



Ford EcoSport
Eco Blue & Ford
Fiesta

AS3005
Starter Motor



Mercedes A Class,
B Class CLA, GLA & GLB
Models

AA8388 LIN/COM
Controlled Alternator



Citroen Berlingo, C3,
DS, DS3, DS3 Crossback
Vauxhall Combo &
Crossland X

KEY FACTS

- All our Rotating Electrics are quality new units.
- We are specialists in sourcing late model OEM units.
- With 280 + OEM units available, and 8285 catalogued references covering most brands, including Audi, BMW, Citroen, Ford, Jaguar, Land Rover, Peugeot, Seat, Skoda, Vauxhall and VW.
- Our catalogue is researched to Original Equipment listings, giving you confidence that the correct parts are supplied first time.
- All suppliers are ISO 9001 & BER 14001 quality certified.



STEERING THE WAY WITH SMART INVESTMENT

Drive. Steer. Stop. Expert, Shaftec, is reaping the rewards of the smart investment it's made over the past few years.

With Electrical Power Steering (EPS) its biggest growth area, no small part of this success is down to investment in state-of-the-art machinery which today allows for faster, more precise, and efficient remanufacturing & testing.

Over the past 25 years, the market for EPS systems has evolved. Traditional hydraulic pumps have been replaced by those containing electric motors and hydraulic pump designs have made way for electro-hydraulic power steering (EHPS) pumps. Advantages include: Less weight, less maintenance, a better response at different speeds, higher durability, and less fuel consumption. Shaftec continue to invest, in order to take advantage of the developments in hybrid, electric and ultimately autonomous vehicle technology.

Knowledge is always power

Mindful of 'living' these changes, Shaftec has adapted its business model accordingly and strongly advocates that 'knowledge is power'; believing the better you know your product, the better equipped you are to assist your customers. In line with this, Shaftec's dynamic new website features a 'Knowledge Hub' where technical information, product fact sheets and other resources can be downloaded free of charge.

Shaftec's latest additions

Mobile EPS diagnostic machine: This invaluable tool reads and clears fault codes on all electric steering components. It plugs into the terminals of the steering unit to power up the component and retrieve and clear any fault codes logged in the memory.

Full EPS testing rig for electric racks, electric pumps & electric column drives: The rig tests assistance, speed & angle sensors by real world simulation. Torque sensors and steering angles can be checked, fault codes can be cleared and it can also assess the assistance the rack is giving at different speeds (as they are speed variable); testing the unit's ability to react to real life situations.



GRANNING GROUP

WHY GRANNING SHOULD BE YOUR NUMBER ONE CHOICE FOR QUALITY REPLACEMENT LCV LEAF SPRINGS.

Granning springs are manufactured in a state-of-the-art production facility which is fully OEM accredited. All springs are subject to rigorous proof testing after production and assembly, ensuring that each spring is capable of a load capacity of at least 110% of the original design parameter. The process also ensures no material defects have occurred during manufacture, allowing Granning springs to enjoy an industry leading 3-year, fully manufacturer backed warranty.

To ensure the 3-year warranty can be upheld, Granning require new U-bolts/Straight bolts to be fitted when replacing any spring. U-bolt/Straight bolt threads are designed to stretch to achieve the correct preload

when 'torqued up', ensuring the correct clamping force is achieved. This improves the fatigue life of the bolts whilst under the high frequency load forces exerted on vehicle suspension when in service.

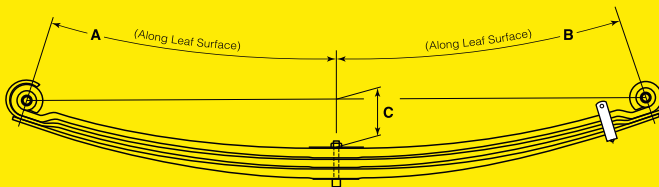
U Bolts/Straight bolts should not be used more than once, as each time they are 'torqued up' the threads will continue to stretch, meaning bolts used a second time will not achieve the same consistent clamping force as when originally fitted. This can potentially cause failure of the spring and invalidation of the warranty. New U-bolts/Straight bolts must be used every time a spring is removed & replaced.

Granning supply a comprehensive range of high-quality U-bolts/Straight bolts to suit all our spring applications.

HOW TO MEASURE LEAF SPRINGS

The correct way to measure leaf springs

You need to measure the spring as though the spring were flat. All you need is to follow the below diagram, use a measuring tape & a straight edge.



Divisional Length

- Follow the curve of the spring, measuring from the centre of the front eye down to the centre of the centre bolt
- Then, measure from the centre of the centre bolt up to the centre of the other eye.

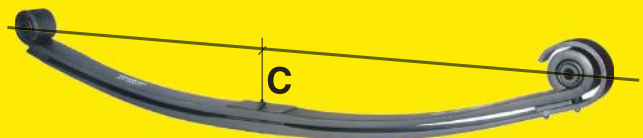
e.g - 900mm + 900mm or possibly 900mm + 700mm depending on your measurements and centre bolt location.

By measuring in this way, we also know the location of the centre bolt.


Camber (Spring Arch)


Camber is measured by splitting the centre of the spring eyes with a straight edge. (Place the straight edge across the spring through the centre of the eyes)


- Measure from the line created by the straight edge to the main plate where the centre bolt is positioned.





Don't try and flip your spring upside down and measure that way.

 facebook.com/ngksparkplugsuk

 NGK UK YouTube

 instagram.com/ngkntk_uk

 NGK Spark Plugs (UK) Ltd

 ngkntk.com/uk


OUR VIRTUAL ACADEMY

NGK
ACADEMY

ARE YOU READY FOR WHATEVER COMES THROUGH THE DOOR?

IT'S NEVER BEEN MORE IMPORTANT FOR AFTERMARKET PROFESSIONALS TO HAVE ACCESS TO MANUFACTURER LEVEL TECHNICAL TRAINING.

Automotive technology's on the move. As a result garage technicians face more complex challenges than ever before. That's why NGK has teamed up with market leaders OVA to bring to the Aftermarket what we believe is the most comprehensive and cost effective training platform available today. The NGK Academy.

Covering subjects as diverse as EVs and hybrids to ignition parts and vehicle electronics, the **270 plus** and growing training programmes have been created by technicians for technicians. They have been specifically designed to develop practical skills, expand knowledge of new technologies and improve workshop practices.

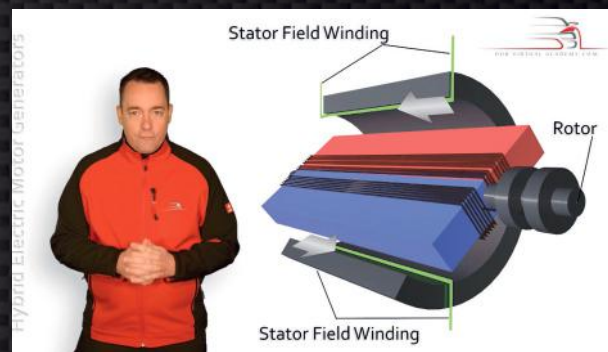
ngkacademy.com

More accessible, fully flexible

Streamed via PCs, iPads and mobile phones, NGK Academy interactive video-based courses can be accessed whenever and wherever, so there's no need for formalised training away from the workshop.

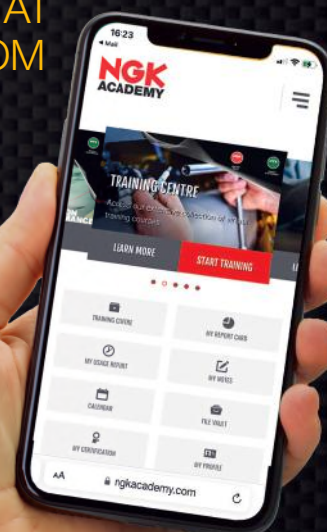
Absolutely no obligation - try it for FREE

Pound for Pound full access to the NGK Academy offers exceptional value for money costing as little as **£1.00 A DAY**. And you can try it for free with absolutely no obligation to buy when you sign up for a FREE test drive. Doing that gives you access to a selection of the 270 plus available training courses. They say seeing is believing and we're confident that once you've experienced our unique approach to training the benefits will be plain to see.



ENGAGING, INTERACTIVE VIDEO - BASED TRAINING DESIGNED NOT BY ACADEMICS BUT BY TECHNICIANS FOR TECHNICIANS

**SIGN UP TODAY FOR
YOUR NO OBLIGATION
FREE TEST DRIVE AT
NGKACADEMY.COM**





SILENCIO™ THE ORIGINAL

TRUST THE N°1 WIPER

As the **N°1 Wiper system specialist**, Valeo innovates and introduces to the aftermarket the latest O.E innovations on its premium brand.

SILENCIO™, the Original for customers looking for the exact same blade as the original...save time, fit Silencio™



Conventional	Hybrid	Flat Blade	AquaBlade™	Rear
V24-V65 VM11-VM222	VH142 -VH156	VF301-VF997	VA301-VA325	VR1-VR565
60 References	10 References	+170 References	12 References	+70 References



VISIORUBBER™

Synthetic rubber for tearing resistance

Natural Rubber for best in class wiping quality

New micro precision edge cutting

Perfect Fit

Valeo best performance over time

SILENCIO™ Flat Blades

ensure perfect initial wiping quality and improved wiping efficiency over time thanks to its VisioRubber™

SILENCIO™ Hybrid

is a mix of conventional and flat blade technology developed for Asian car manufacturers

SILENCIO™ Rear Blades

provide the driver with perfect visibility at the rear of their vehicle Improve safety by also replacing the rear blade with Silencio™ exact fit.



AQUABLADE™



Valeo Aquablade O.E. Innovation is now available in the aftermarket. This latest wiper technology is improving driving safety as the screen wash is distributed along the entire length of the blade and immediately wiped away.

How to spot the Valeo Aquablade

Look at the bonnet - there will be no spray nozzles for the screen wash

Look at the wiper blades, if you can see tiny holes along the blades, this is Valeo Aquablade

Aquablades heated version are only available through the main dealer or from Valeo!

SMART TECHNOLOGY FOR SMARTER MOBILITY

Gear up with the Valeo clutch range!

Flywheels

Advanced filtration technology for optimum driving comfort

Currently 297 flywheels in the range including the two OE Valeo "Flexible flywheels" found on Renault applications.

Conversion Kits

A higher performing and cost effective alternative

Convert wearing dual mass flywheel set ups into reliable solid flywheel designs. With vibration filtration and increased thermal resistance to improve the lifetime of the clutch.

Valeo currently have circa 165 conversion kits in range.

1 million KM warranty on all solid flywheels!

Standard Clutch Kit

Outstanding clutch performance!

With over 1600 standard clutch kits in the range, covering the majority of vehicle manufacturers, choose the most reliable clutch manufacturer on the market.

Dual Clutches

The latest in clutch technology

Featuring the newest clutch technology in both dual dry and dual wet clutches.

44 parts available from Valeo, included in the range:

- Dual Dry Clutches
- Dual Wet Clutches
- Flywheels
- Actuators
- Torque Couplings
- Tool Kits

DMF Full Pack

Everything you need in one box!

Containing the DMF, clutch cover, friction plate, and bearing.

The complete offer for clutch suppliers.

3 Piece Clutch (inc CSC)

The all in one clutch solution!

The clutch cover, friction plate and concentric slave cylinder packed into one complete offer.

Over 300 kits available to make supplying a clutch an easier task.

Figures as of July 2022

A brand you can trust! An expert in clutch systems since 1923 with 1 out of every 3 vehicles in Europe equipped with a Valeo clutch.



ELECTRIC WATER PUMPS FROM DAYCO

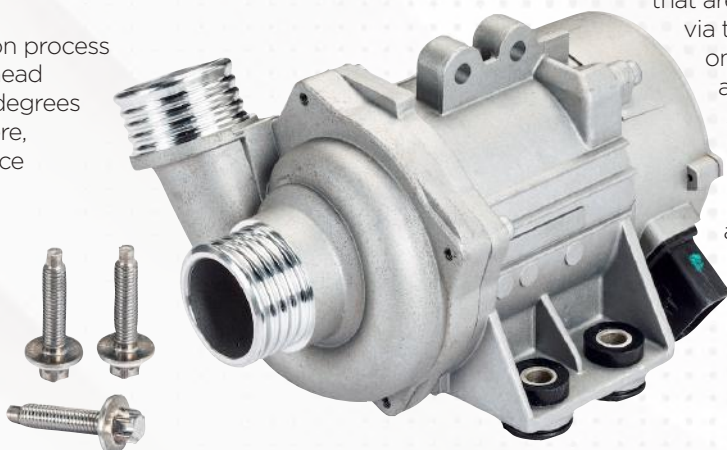
Dayco is an original equipment (OE) power transmission specialist that has been consistently growing its aftermarket programme to allow it to provide workshops with an ever wider range of high quality components that they and their customers can rely on.



Thermal management is one of the product groups that Dayco has put a particular focus on, as there is a natural association with its core belt drive systems strengths, and water pumps are central to this category. Although this initially began with mechanically driven pumps, which feature in more than 300 of its water pump kits, (belt, tensioners, idlers and pump), reflecting the developments in automotive design and the huge growth in, first hybrid and now pure electric drivetrains, electric water pumps (e-pumps) have become a growing presence in the aftermarket, as these vehicles are now entering the independent workshop.

For electric vehicles and many hybrid applications, e-pumps are the only solution able to effectively ensure the correct temperature management of the vehicle's inverters and battery packs, for example. However, vehicle manufacturers globally are under huge pressure to reduce emissions and maximise the efficiencies of their combustion engine powered models and with these, reaching and maintaining different operating temperatures around the engine is a necessity.

To optimise the combustion process for example, the cylinder head area needs to run several degrees hotter than the block, where, to enhance the performance characteristics of the oil, it needs to run cooler. These differences would not be possible without split, or dual cooling systems and the use of additional, electrically operated 'on demand' e-pumps to



supplement, and in some applications, replace the system's mechanical pump.

So, to provide workshops with the service and repair solutions they need, Dayco introduced a wide range of e-pumps, which are manufactured to OE equivalent standards, and reflect the requirements of an ever-changing market.

In addition to primary e-pumps, and reflecting the fact that some modern applications can have up to four e-pumps undertaking individual and collective operations, the Dayco range also includes auxiliary e-pumps and cooling system support e-pumps.

To further underpin the offering, Dayco also provides technical advice and fitting tips - For more information, go to www.dayco.com for more information.



Whatever the pump used in the cooling system, effective thermal control is still governed by engine thermostats, and, with even stricter future emissions regulations that will require engines to operate at 10% higher temperatures

and increased pressure to fall within the limits, as well as to minimise fuel combustion, these often-overlooked components are growing in number and complexity.

So, although the traditional naked version, which was introduced in the 1920s, remained almost unchanged for the rest of the century, today it's a different story with integrated thermostat housings and MAP thermostats

that are controlled and activated via the vehicle's ECU. Therefore, only OE quality products, such as those supplied by Dayco, should be used when they are replaced, as inaccuracies of more than plus or minus two degrees centigrade will have a considerable effect on the level of emissions emitted.

For Dayco, ring your local branch today!

WHEEL BEARINGS AND HUB UNITS WITH INTEGRATED ABS-SENSORS

SKF has pioneered every major advancement in wheel and hub bearing technology since the invention of the automobile. We are the trusted engineering partner and OE component supplier to major vehicle manufacturers, and today more than 90 million cars worldwide run on bearings made by SKF.

Discover the SKF wheel end range...

First Generation (Gen 1) Wheel Bearing Kits

Greased and sealed for life, the first-generation wheel bearing cuts installation time and virtually eliminates problems caused by improper seal handling and bearing clearances.

Flange Bearings (Gen 2)

The second-generation wheel bearing replaces the function of a separate bearing unit by combining a double-row ball bearing unit and an integral mounting flange.

Flange Bearings (Gen 3)

The third-generation wheel bearing features two flanges – one for installing to the wheel and brake rotor assembly, one for fixing to the suspension – the third-generation wheel bearing provides a significant simplification in corner design.

SKF X-Tracker®

Delivering car-like handling, comfort, and safety to light-duty trucks, this patented hub unit solution increases bearing capacity and improves hub stiffness by 50% compared to traditional tapered roller bearing units, without increasing bearing width.



Want to know more? Simply scan the QR code and head over to the dedicated SKF YouTube channel, where you will find product overviews, tutorials, technical installation videos and interviews on a wide range of SKF products and innovations.



Air Filters

Strength and capacity for outstanding performance



Air – Millions of Litres to Filter

Internal combustion engines consume a vast amount of air, the average petrol engine consumes air at the rate of 10,000 litres for every litre of fuel used. Or to put this into context... the manufacturer recommended service interval for the air filter in a 2012 Nissan Qashqai 1.6i is 2 years or 36,000 miles. In that time the engine will have consumed in the region of 4,000 litres of petrol and 40,000,000 litres of air!

A diesel engine will consume even more air to the quantity of fuel used, and with the adoption of engine cubic capacity downsizing combined with turbo charging, engine air consumption and filtration has become even more important for an efficient combustion.

The Nitty-gritty

These airborne contaminants can vary from visible highly abrasive granules of grit and sand, to microscopic soot particles, tyre rubber, silica, brake dust, pollen and moisture. In hard surface road conditions the average dust content in the air is 1mg/m³, so an air filter will have trapped around 10 grams of contaminants during its service life. In dusty road conditions it would increase significantly, by as much as 40 times. If contaminants were able to bypass an air filter, it would result in increased wear of pistons, rings, cylinder walls and valves. Additionally, any dirt particles that enter the combustion chamber can work their way into the crankcase, contaminating the oil and reducing the service-life of the oil filter.

Two Sides to Every Filter

During normal use the air filter media becomes loaded with contaminants. As it increases, so does the difference in pressure between the two sides of the air filter, dramatically so on engines with forced-air induction, and this creates an extremely strong suction on the clean side of the filter. The pressure differential, allied to the powerful pressure pulse waves produced by an engine, can become so great that a sub-standard air filter may collapse. The consequences of a collapsed filter can vary from an air leak that allows dirt to bypass the filter, to immediate and serious engine damage from ingesting pieces of contaminated filter.

Regular Servicing

An air filter should be replaced regularly as part of scheduled routine maintenance, as per each vehicle manufacturer's recommendations. In high dust conditions this should be more frequent. Driving with a heavily loaded filter can cause issues such as excessive fuel consumption, reduced power and



restricted performance. It will also cause incorrect air-fuel mixture, resulting in increased emissions and soot particles, (diesels), which will lead to further problems on diesel particulate filter (DPF) equipped vehicles.

The air intake system of an internal combustion engine has evolved a lot over time; from being a simple housing for the air filter, to an integral part of the vehicle's emissions system and noise, vibration and harshness strategy (NVH). A poorly constructed or ill-fitting filter can not only increase the risk of accelerated wear to an engine, but also cause extra induction noise, resonance and vibrations.

Blue Print and febi bilstein air filters are manufactured with high quality filter media to give the necessary protection and durability required for a long service life, with exceptional contaminant separation and resistance to moisture and humidity. Regular quality control checks guarantee a precision construction for 100% reliability and perfect fit, preventing unfiltered air from entering the air intake system and causing engine or component damage. The latest high-tech construction methods give Blue Print and febi bilstein filters the strength and rigidity required to withstand the pressures demanded from modern turbo and supercharged engines. Fitting matching OE quality filters ensures that the engine's performance, fuel economy and emissions remain as originally designed.

For more information on the Blue Print and febi bilstein filtration range, go to:

www.blue-print.com/products/filtration
or www.febi.com/en/car/filtration

 Right First Time®
www.blue-print.com

 SOLUTIONS
DRIVEN BY YOU
www.febi.com

bilsteingroup®



THE SMARTFIT® WAY

Be SMART with Blue Print for a professional and cost-effective clutch replacement solution for Self-Adjusting Clutches!

A vehicle's clutch is the primary system that transfers the engine output to the gearbox, which must be optimally synchronised in all driving conditions. The clutch separates and connects the vehicles engine to and from the transmission. When the clutch pedal is depressed, the vehicles powertrain is interrupted and a different gear can be selected. The clutch also enables the vehicle to accelerate away smoothly and efficiently.

Vehicle development has evolved and adapted in a variety of ways, this has directly influenced how all the working components of the vehicle have developed. This includes a vehicle's clutch components, which must satisfy a host of requirements and have a direct affect on the drivers comfort and the behaviour of the vehicle. These include an increased engine torque, stop-start, demand for smooth and quick gear selection and reduction of noise, vibration and harshness characteristics, including damping and noise reduction. A clutch must have good resistance to rotational speed, low overall height, low engagement forces and provide a long service life, to give high transmission reliability. The main clutch components are the clutch cover, friction disc and release bearing. Together they form a friction system with the flywheel.

Clutch Cover

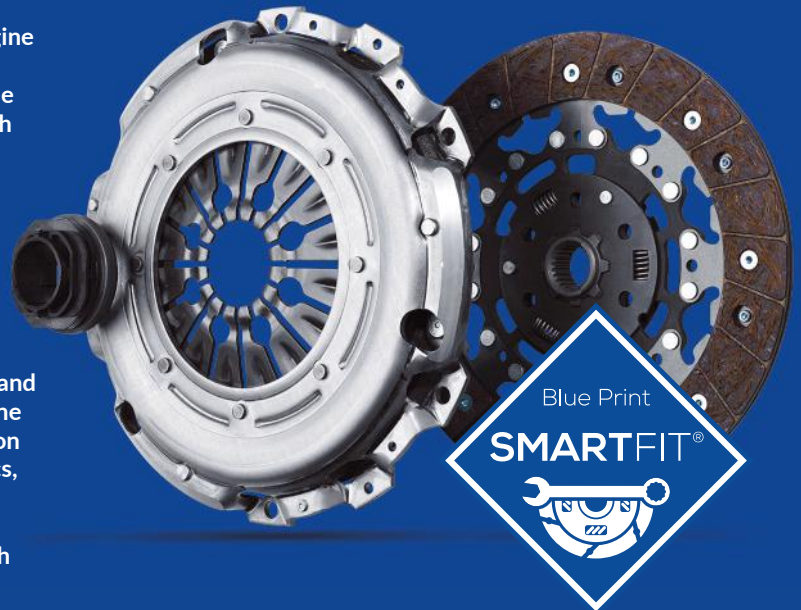
The clutch cover ensures that the engine torque is transferred smoothly via the friction disc to the transmission intake shaft. Slotted diaphragm springs are used in the pressure plate to increase driver comfort, because it requires less effort to apply pressure on the pedal, due to the lower engaging force. Depending on clutch design, structure and actuation, these are either a push or pull type pressure plate, to compress the diaphragm spring.

Friction disc

The friction disc is the clutch kits central connection component in combination with the clutch cover, it both separates and connects the engine and transmission. Each clutch disc lining is selected to the particular vehicle application, to enable smooth torque build up when pulling away. They also reduce the speed and torque fluctuations, generated by the internal combustion processes of the engine. The clutch disc must also provide the damping function, in order to reduce noise and stress in the gearbox. This can be provided by a clutch disc fitted with a torsion damper, which is a solution for overcoming torsion fluctuation problems in the powertrain and guarantees a precise damping function, even when the engine is idling.

Clutch release bearing

The clutch release bearing forms the link between the rotating diaphragm spring in the clutch cover on the engine side, and the release mechanism on the transmission side which slides on the guide sleeve mounted in the gearbox bell housing as it is



operated. This gives the bearing a central position in relation to the diaphragm spring tips of the clutch, which is achieved at all times. Self-aligning reduces the wear on the diaphragm spring fingers, and thereby counterbalances a possible misalignment between engine and transmission. Release bearings are either mechanically or hydraulically operated via the clutch fork, or are of a concentric slave cylinder type, which consists of a ringshaped hydraulic cylinder with a built-in release bearing.

When replacing this important vehicle component, which transmits the engines power to the transmission and absorbs the stress and vibration of constant operation, it is crucial that high quality components are used.

Blue Print offers tailor-made solutions for a professional and cost-effective repair under one name: SMARTFIT. The advantages of these SMARTFIT kits include quick and easy fitment, because conventional clutch covers are used and no special tools are required to install them. Therefore, there is no need to secure the clutch pressure plate without applying a counterforce. This not only significantly reduces the time required, but also the risk of incorrect installation. Special clutch linings ensure that the SMARTFIT kits enjoy a long service life, whilst meeting the customers' demands for comfort.



Receive the latest news, technical information, hot tips & more by scanning the QR code and signing up to the Blue Print newsletter.





QUALITY AND PERFORMANCE FROM NAP

All NAP brake pads have ECE R90 aftermarket type approval - E Mark - meaning pads have been tested to meet certain OE standards and also match within 15% the original equipment cold braking performance.

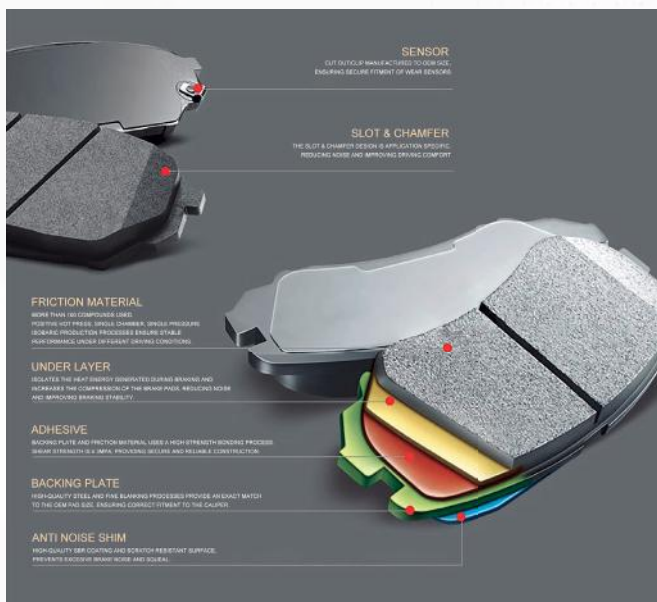
National Auto Parts brake pads are supplied under the category of “Spare parts of matching quality” As defined by the EEC Commission Regulation (EU) No 461/2010 issued on the 27th May 2010.

Pads are also tested to levels in excess of R90 requirements to check high temperature performance, wear characteristics and noise levels. All pads are tested throughout production to maintain conformity of production - that means the pads will give same excellent performance now and in the future.

Regular benchmarking (comparison testing) by the manufacturer guarantees that our pads match or exceed the performance of our competitors.

KEY FEATURES:

- RMR (Rubber-Metal-Rubber) shims are used across our range to prevent noise and reduce vibration. Shims are manufactured by the factory in a purpose-built rubber coating facility, not sub-contracted.
- Application-specific friction materials using low-metallic and ceramic formulations. Low noise, low dust, and low wear material formulations.
- Chamfers and slots are machined as per OE specification or to improve NVH performance.
- OE Positive moulding technology, providing more even wear and performance characteristics.
- Steel backplates are coated to prevent corrosion.



FACTORY QUALITY HIGHLIGHTS:

- The factory's laboratory houses two Link and one Horiba dyno - available for approval processes, NVH (noise, vibration, harshness), and braking efficiency analysis.
- The factory uses an Advanced IAG production line which includes hot pressing, grinding, powder coating and assembly.
- Computer controlled friction material mixing is centrally controlled and monitored by QC staff.
- Final inspection includes an automatic weighing process to ensure strict adherence to the specification.

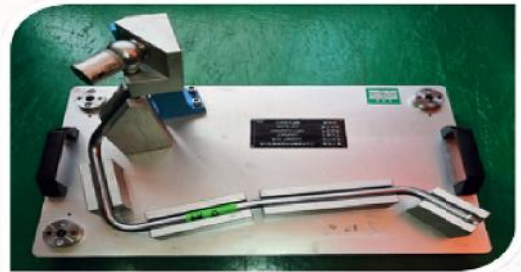


A LOT MORE TO BRAKE HOSES THAN MEETS THE EYE

SAE J1401 - This SAE standard specifies the performance tests and requirements for hydraulic brake hose assemblies used in the hydraulic braking system of a road vehicle. Our brake hoses exceed the SAE J1401 standard and meet the OE specification. Our hoses are supplied, where required, with brackets, grommets, moulded plastic guards, wire clips and protective sleeves.

National Auto Parts brake hoses are supplied under the category of “Spare parts of matching quality” As defined by the EEC Commission Regulation (EU) No 461/2010 issued on the 27th May 2010.

Item	SAE J1401		Test Result
Volumetric Expansion	6.9 MPa 10.4 MPa	≤1.08ml/m ≤1.38ml/m	<0.38ml/m <0.46ml/m
Burst Test	≥49MPa		>96.5MPa
Tensile Strength Test	≥1446N		>2500N
Proof Pressure Test	Required		100%



Markings: Each hydraulic brake hose has at least two clearly identifiable stripes of at least 1/16 of an inch in width, placed on opposite sides of the brake hose parallel to its longitudinal axis. These are called ‘torque stripes’. One stripe may be interrupted by the information printed on the hose. These are to prevent twisting during assembly and installation.

Burst Pressures: The hydraulic brake hose assembly must withstand water pressure of 4,000 psi for two minutes without rupture. Hoses 1/8 inch (3mm) or smaller in diameter must be tested at 7,000 psi.

Whip Testing: Brake hoses are continuously bent on a flexing machine for 35 hours at pressure.

Tensile Strength: A hydraulic brake hose assembly must withstand a pull of 325 pounds without separation of the hose from its end fittings during a slow pull test, and a pull of 370 pounds without separation of the hose from its end fittings during a fast pull test.

Cold Resistance: A brake hose is chilled to a temperature below minus 49° F for 70 hours, it then should not show cracks visible without magnification when bent around a cylinder.

Chemical Resistance: In order to test the hose’s chemical resistance to brake fluid, the hose is subjected to a temperature of 248 degrees Fahrenheit for 70 hours while filled with SAE ‘Compatibility Fluid’. After this, the hose is subjected to a 4,000 psi burst test.

Ozone Resistance: A brake hose assembly is exposed to ozone for 70 hours at 104° F. Any cracks seen at a specific magnification is ground for failure.

Fitting Corrosion Resistance: After 24 hours of exposure to salt spray, a hydraulic brake hose end fitting must show no base metal corrosion on the end fitting surface, except where crimping or the application of labelling information has caused displacement of the protective coating.



BRAKE CALIPERS ON A WHOLE NEW LEVEL.

Given the current cost of living crisis, remanufacturing has never been more important, or more topical.

Drive. Steer. Stop. Expert, Shaftec, strongly believes that where possible, automotive parts should be remanufactured, as it's a more sustainable alternative to new and costs the end user less.

With this attitude and more than 25 years experience, Shaftec is now firmly recognised as the UK market leader in the remanufacturing sector. Here, we take a look at the processes, testing and quality standards involved when remanufacturing brake calipers.

The Process.

The only parts of a brake caliper that are remanufactured are the casting, and sometimes the levers, everything else is brand new. Electric Parking Brake (EPB) calipers are all fitted with new motors. Furthermore, we only remanufacture old units if they pass stringent inspection and quality tests, for example there are no cracks or weak points in the casting.

All calipers are disassembled by hand to avoid damage to delicate parts, such as levers and threads. Units are then shotblasted and thoroughly inspected, with some hand finishing where required, ready for painting.

New Parts.

Each caliper is reassembled by hand. All accessories, such as pistons, seals and motors for EPB units are brand new. In fact, the seals are often better quality due to improvements being made since the original caliper was released.

Following the remanufacturing process, each caliper is tested beyond the OE specification. It is important to understand that we do not carry out batch testing, every single component is tested individually – including pressure testing past normal working conditions.

That's why with confidence, we supply a 24 Month, 24,000 Mile warranty. In some cases, the caliper supplied will be a new unit.

For further information, please visit: www.shaftec.com



KYB TAKES TO THE TEST TRACK

KYB
Our Precision, Your Advantage

In a recent video series, KYB takes to the test track, revealing the stark differences between new and worn shock absorbers.

THE VEHICLES

A pair of independent, third party, professional test drivers from the tyre industry drove two matching 2015 Chevrolet Equinoxes, with each having driven over 150,000km. To guarantee reliable results, each vehicle was fitted with new brake pads, discs, and stabiliser links prior to testing, alongside a full fourwheel alignment. Before every individual test, each car was also fitted with four brand new tyres and a full tank of fuel added. The only difference between the vehicles? The shock absorbers.



THE COMPETITORS

Over the course of two days, KYB compared and tested four different manufacturers. These included: the OEM shock absorbers; a low-cost competitor; a premium competitor and KYB's Excel-G range.

THE TRACK

Designed to allow the test drivers to experience each of the products, the test included:



Wet track: A sprinkler system evenly soaked the road to emulate wet driving conditions, so traction, handling and braking could be tested.



Slalom: To evaluate control and body roll.



Braking: To measure stopping distances from 80-0kph in both wet and dry conditions.



Real Roads: 11km loop on real roads to evaluate performance in the real world.

THE RESULTS

Using data gathered from electronic data acquisition equipment installed within both vehicles, results showed that KYB outperformed all alternatives; both

in the real world and on the test track.

Braking Test: To understand the impact shock absorbers have upon stopping distances, KYB conducted braking tests in both wet and dry conditions. When comparing worn shock absorbers with a low-cost competitor, KYB found that low-cost shock absorbers fared worse when it came to stopping safely in both conditions. In contrast, stopping distances were drastically improved when testing both KYB and its premium competitor in dry conditions. However, in wet conditions where traction was reduced, the vehicle equipped with KYB product stopped 6 foot shorter than the premium competitor – the width of an entire car.

ABS Activity: ABS activity was also monitored to demonstrate the direct impact shock absorbers have on the performance of crash avoidance systems. The ABS system was activated multiple times when monitoring worn shock absorbers – every time this happens, the ABS releases the brakes, adding time and distance to the stopping process. KYB, by contrast, showed far less activation – allowing the car to stop quickly and smoothly. These tests clearly indicate the importance of replacing worn shock absorbers, as undermaintained vehicles and worn parts affect a crash avoidance system's ability to perform as originally intended.

Road Test: Both drivers concluded that whilst driving, there was a noticeable difference between KYB shock absorbers and worn OEM shock absorbers. Admitting that they did not initially believe there would be discernible differences between the two, they concluded that the difference between the two was "night and day" and that the KYB product makes the vehicle feel more "locked down", "following the movements of the road" more effectively.



FOR THE FULL VIDEO, SCAN HERE



Original
Equipment
Manufacturer

AVOID BEING LEFT OUT IN THE COLD: WINTER EXHAUST MAINTENANCE TIPS



Winter is challenging for everyone, but spare a thought for the humble exhaust. Hanging inches above the road in the firing line of salt, grit, water and wildly fluctuating temperatures can play havoc. According to Doug Bentley, Head of Product Development at Klarius Products, one of Europe's largest aftermarket exhaust manufacturers, now is the best time to help secure your customer's exhaust reliability.

THINGS TO LOOK OUT FOR

Many winter related exhaust issues can be diagnosed visually on the ramp. Salt causes corrosion to exposed parts of the exhaust, which can eventually result in failure. Cold water is a menace too, since devices such as diesel particulate filters (DPFs) or catalytic converters (CATs) operate at high temperatures, the shock of soaking them in cold water can shatter the internal monolith. Mountings are another winter weak point for exhausts, which will deteriorate faster in the cold conditions. Remember:

- Exhaust corrosion is much more common in winter
- Check the health of DPFs and CATs
- Assess the condition of mountings

SUPPORTING YOUR CUSTOMERS

As a garage technician, you want to do the job right, and only do it once. Therefore, you don't need us to tell you that corroded exhausts should be replaced, old mountings need to be swapped with new ones, and that any CAT or DPF failure needs sorting quickly. Spotting the problem early and recommending a quality solution goes a long way towards a happy customer.

- Spotting exhaust issues early can avoid a larger repair down the line
- Recommending a quality solution improves customer satisfaction
- Fixing a faulty exhaust reduces the risk of a failed MOT



ONLY THE BEST

With a 2-year standard warranty and a Fit First Time guarantee, Klarius exhausts are the best choice for any repair. The entire range is tested in-house on correct real-world vehicles, ensuring that parts match the performance of the OEM item. All applicable products are type-approved too. Exhausts are manufactured in a highly automated facility

from a special grade of aluminised steel – ideal for resisting the corrosion caused by winter roads.

- 2-Year warranty and Fit First Time guarantee as standard
- Proven OEM matching performance
- Robust, corrosion resistant construction

DELIVERING IN WINTER

Need to be sure that your winter exhaust won't arrive next summer? Next day UK delivery is available to distributors and stockists for over 11,000 Klarius product references. Furthermore, popular parts are held locally at your local branch for even faster dispatch. This means a quick and quality repair, which should help your customers beat the winter blues.

- Next day UK delivery to distributors and stockists
- Popular products held locally
- Keep your customers happy with quick, quality repairs

Should you have any questions or require technical support, Klarius' technical helpline is open. Simply call 01538 752 561 and speak to a member of our team.



MAHLE

MAHLE AFTERMARKET HIGHLIGHTS THE IMPORTANCE OF FILTER SERVICING

KNECHT is a European filtration specialist, a renowned brand with a strong customer commitment that has been part of the MAHLE brand family for decades.



MAHLE Aftermarket advises technicians and service centres to always ensure they follow the recommended service intervals for filters, to ensure an engine performs at its best.

Andy Lees, General Manager of MAHLE Aftermarket, explains: "Modern service intervals can be long, which means they require filtration that goes the distance. Recommended service intervals are set by manufacturers after extensive research in all operating conditions, to help to ensure maximum performance of the vehicle and reduce the chance of component failure, protecting drivers".

"This means replacing the filters at the recommended interval will result in a significant improvement in engine response, along with improved economy. This is a direct result of changing

filtration at the recommended interval."

CHANGING FACE OF THE VEHICLE ENGINE

As the drive for greater efficiency and less pollution from vehicle engines accelerates, it positively impacts vehicle filtration systems. Lees comments, "Many of the systems currently used in both petrol and diesel engines are dependent on high technology filters which work to maximise performance, economy, and reduce harmful emissions".

"Hybrid and electric vehicles have also changed the focus of where and what type of filtration is required. Electric vehicles create heat in the batteries, so complex cooling and filtration systems are required to deliver a safe, clean, reliable solution. Therefore the demand for filters will still be there."

The future for filtration is changing and becoming more complex as vehicles become more technology driven. The changing face of vehicle engines presents many opportunities for the filtration industry as a whole.

Lees adds, "All the filters fitted to an engine contribute to the overall performance and reliability of that engine, so ignoring the service schedule could result in expensive repairs and higher running costs to the user".

"In harsh operating conditions, it can be beneficial to change filters sooner than specified. For example, replacing the air filter more often in a dusty or urban environment."

REPLACEMENT AND WELLBEING

For cabin filtration, MAHLE highlights the importance of prompt replacement for the wellbeing of the driver, removing pollen or fine dust in the case of standard cabin filters, through to mould spore and airborne bacteria removal technology in advanced filters, such as MAHLE Caremetix.

The whole MAHLE and KNECHT filter product range can be found on the brand's easy-to-use eCatalogue. A virtual platform offering customers the option to look up parts for a specific vehicle, ensuring accuracy and correct fit.

Find out more at www.mahle-aftermarket.com



TRUPART OEM REPLACEMENT SIDE MOUNTED WIPER BLADES

Trupart introduce six brand new direct fit OEM replacement 'side mounted' hybrid blades for popular applications. Available for the following models



PART No: TGN65 65cm/26in Side Mounted Hybrid Blade				
Make	Model	Sub-Model	Year	Position
Honda	CR-V Mk.4		10/12-4/19	Driver
Nissan	Leaf Mk.1	(ZEOE)	10-6/18	Driver
Nissan	Qashqai Mk.2	(J11)	12/13-12/21	Driver
Nissan	X-Trail Mk.3	(T32)	6/14-	Driver
Renault	Kadjar		15-11/17	Driver
Renault	Kadjar		7/17-	Driver
Renault	Koleos Mk.2		17-21	Driver
PART No: TGN60 60cm/24in Side Mounted Hybrid Blade				
Make	Model	Sub-Model	Year	Position
Mercedes Benz	X Class	(470)	17-21	Driver
Nissan	Navara Mk.2	(NP300) D23	12/15-	Driver
Nissan	Note Mk.2	(E12)	8/13-18	Driver
Nissan	NP300 Navara Mk.2	(D23)	12/15-4/17	Driver
PART No: TGN48 48cm/19in Side Mounted Hybrid Blade				
Make	Model	Sub-Model	Year	Position
Renault	Kadjar		7/17-	Passenger
PART No: TGN43 43cm/17in Side Mounted Hybrid Blade				
Make	Model	Sub-Model	Year	Position
Mercedes Benz	X Class	(470)	17-21	Passenger
Nissan	Navara Mk.2	(NP300) D23	12/15-	Passenger
Nissan	NP300 Navara Mk.2	(D23)	12/15-4/17	Passenger
Nissan	Qashqai Mk.2	(J11)	12/13-12/21	Passenger
Nissan	X-Trail Mk.3	(T32)	6/14-	Passenger
Renault	Kadjar		15-11/17	Passenger
Renault	Koleos Mk.2		17-21	Passenger
PART No: TGN40 40cm/16in Side Mounted Hybrid Blade				
Make	Model	Sub-Model	Year	Position
Honda	CR-V Mk.4		10/12-4/19	Passenger
Nissan	Leaf Mk.1	(ZEOE)	10-6/18	Passenger
PART No: TGN35 35cm/14in Side Mounted Hybrid Blade				
Make	Model	Sub-Model	Year	Position
Nissan	Note Mk.2	(E12)	8/13-18	Passenger



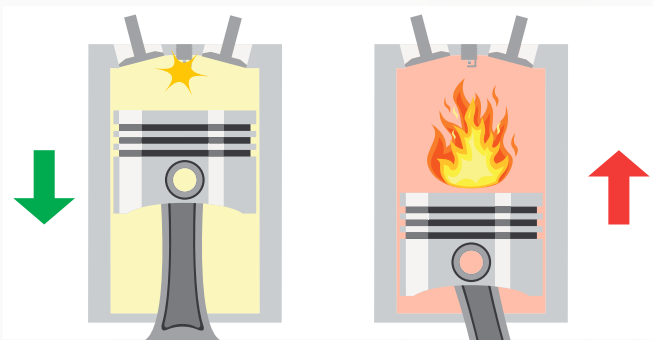
AD, THE RIGHT OIL FOR THE JOB!

Whilst much of the talk in the Automotive Industry concerns the move to all electric vehicles, for many this is not an option. Whether this is due to headlines of 3 hour queues for public chargers, a lack of at home charging capability or simply down to mileage patterns being unsuitable for electric vehicle driving many are looking for alternatives.

In many instances, plug-in hybrid vehicles provide this alternative. The attractiveness of benefit-in-kind rates, the ability to run in electric-only modes, and lower emissions combined with the ability to fill up at the pumps, quickly eliminate the range anxiety issues that many fear. But these, along with newer - smaller engine conventional petrol vehicles, come with a different set of issues.

As vehicle manufacturers continue to push the boundaries in terms of fuel economy and lowering emissions, they do so using smaller, lighter engines operating at lower speeds and higher pressures to deliver high torque output using direct injection technology. These combined factors can lead to a phenomenon known as low-speed pre-ignition (LSPI).

WHAT IS LSPI?



Low-speed pre-ignition typically occurs at lower speeds and at times of spontaneous acceleration, and is where the fuel and air mixture injected into the cylinder ignites before the spark plugs actually fire, essentially causing the expanding hot gasses rushing through the cylinder to ignite before the pistons are in position and aligned. LSPI causes holes in pistons, melted spark plugs, and ultimately, engine failure. Consider a typical 1.0L 3-cylinder engine in which two cylinders have ignited with the correct timing, turning the crankshaft in the correct direction with significant torque, whilst the third cylinder experiences an LSPI event, exerting significant counter torque on the shaft. These events can be catastrophic.

WHAT CAUSES LSPI?

Whilst significant research has been performed into low-speed pre-ignition events, a single definitive underlying cause is yet to be identified. Instead, experts point to the engine oil, fuel, and engine components as all contributing toward LSPI events.

Research studies learned that engine oil droplets are the most common cause of low-speed pre-ignition, as microscopic droplets enter the combustion chamber, mixing with the fuel and air to alter the mixture's density and ignition point, causing LSPI.



AD Oils are formulated using high-quality virgin base oils in combination with top-tier additive packages, detergents, dispersant packages, and anti-foam additives that have been extensively tested to protect vehicles against pre-ignition events.

AD Oils partner with the leading additive and base oil providers to ensure that the additives being used within the formulations are designed to counter LSPI events.

Modern additive chemistry is changing to adapt to the 'LSPI phenomenon' by replacing calcium with magnesium, whilst maintaining the level of detergent required and adjusting the levels of Molybdenum within the additives; these all serve to help eliminate the LSPI effect, although this can differ depending on the engine manufacturer. Quality additive technology alone is not the answer; when formulated with quality virgin synthetic base oils, LSPI events can be significantly reduced, but this is not always the case when using low-quality additives formulated with inferior or re-cycled base oils. Our onsite laboratory rigorously tests all formulations to ensure the products either meet or exceed any requirements for the particular application.

We source quality additives and virgin base oil stocks to formulate a number of products for different manufacturers' specifications, and to provide a comprehensive product range that meets the objectives required from engine oil, so that the user can have total confidence in the product to be used.



WHEEL HUB AND BEARING KITS

An extensive range of the most popular wheel hub and bearing kits is now available. The range includes wheel bearings and wheel hubs, together with ABS sensors where appropriate. All necessary fitment accessories are included, such as screws, bolts, split pins and caps. The bearing material is GCr15 steel, hardened to 64 HRC, plastics are high quality PA66 nylon and are fully interchangeable with OE.

National Auto Parts wheel bearings are supplied under the category of "Spare parts of matching quality" As defined by the EEC Commission Regulation (EU) No 461/2010 issued on the 27th May 2010.

GEN1

- Bearings are integrated into a whole set of outer ring/ inner ring back-to-back combination.
- One-piece outer ring, and 2-piece inner ring, sealed and lubricated at the factory.
- Many include magnetic wheel speed / ABS sensors.
- Easy to install.



GEN2

- A combined double row bearing and hub flange, often included are mechanical or magnetic wheel speed / ABS sensors.
- In addition to all the advantages of the Gen 1 bearing, the integration of its outer ring and hub flange has a good rigidity, high reliability and light weight.

GEN3

- All product is tested against OE specification to ensure maximum performance.
- Inspection completed at the factory includes radial and axial runout detection, position, clearance, vibration and ABS signal detection.

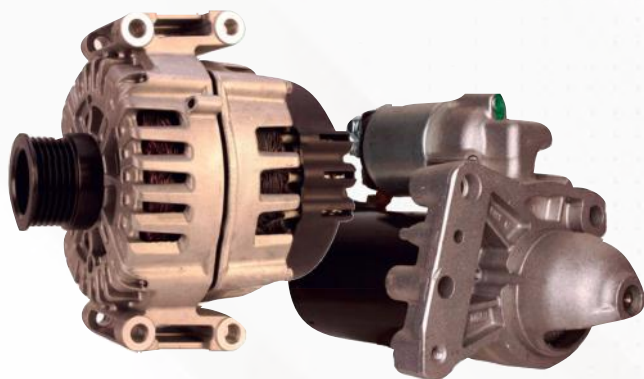




QUALITY ROTATING ELECTRICS



Rollco was established in 1979 as a quality rotating electrics specialist. We supply a comprehensive range of brand new starter motors and alternators, including Stop-Start units, manufactured to OEM standards and backed by a comprehensive 2 year warranty.



Competitively priced, even against many 'remanufactured' units, Rollco starters and alternators are fully tested throughout the manufacturing process, including;

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- Factory Stop-Start tests where applicable
- Material strength

Rollco also offer full technical support and training, ask for details.

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- Full 2 year warranty
- Manufactured to OEM standard

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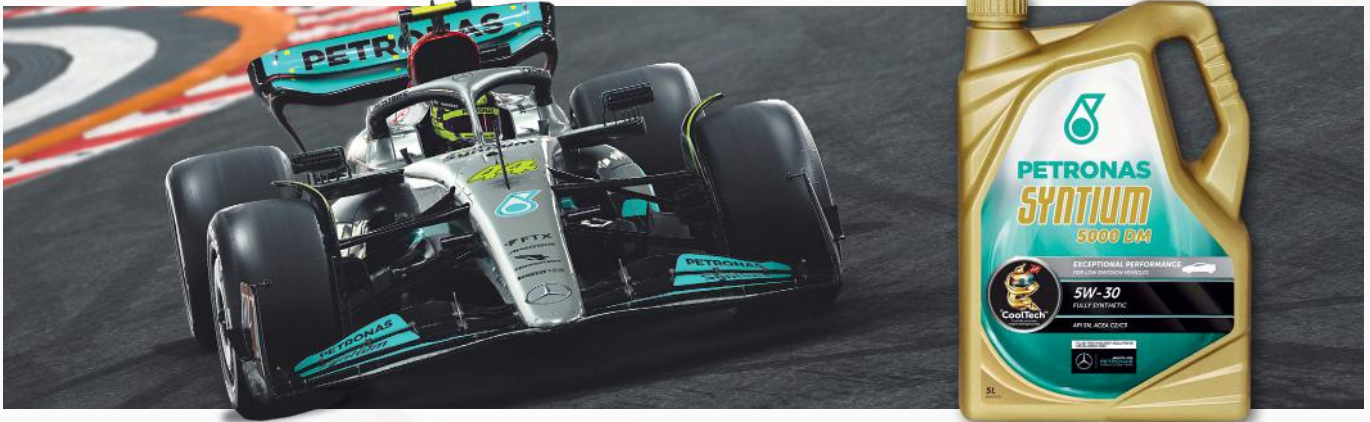
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ADVANCED F1 FLUID TECHNOLOGY NOW AVAILABLE FOR EVERYDAY CARS

Technological motorsport advancements are helping everyday drivers worldwide enjoy new levels of sustainability and engine performance



As the pinnacle of motoring technology, it's no surprise that numerous innovations first developed in Formula One have slowly trickled into the ordinary road vehicles we drive today. Take the carbon fibre chassis first pioneered by the McLaren team in the 1980s, or even our steering wheel radio controls that began life in F1 as engine switches.

However, one area of innovation in which F1 might appear to be lacking is sustainability. After all, the main aim within F1 is simply to build the fastest car, with other goals seemingly a secondary concern. But that all changed with new rules introduced by Formula One's governing body in 2014.

Ever since Formula One cars have been using hybrid components to minimise fuel consumption, harnessing their own energy produced by the car during a race and redeploying it as part of the power unit's output, it has been advising the development of everyday road cars. Recently, in 2022 the rules in F1 racing were tweaked further to mandate more efficiencies and will change again in 2026, by which time cars must use significantly less energy and produce net-zero exhaust CO2 emissions.

In response to these rule changes, the accessories that support F1 power units, such as engine lubricants, are seemingly more advanced than ever. One high-profile example of this is PETRONAS Syntium, the engine oil first used by the Mercedes-AMG PETRONAS F1 Team in each of their eight consecutive Constructors' Championship-winning seasons.

Most modern engines only convert around 33% of their potential fuel energy into power, meaning much of the useful energy produced by cars globally is sadly lost to engine inefficiency. Plus, excessive heat can also damage critical engine parts like turbochargers, pistons,

and bearings, causing costly breakdowns. Here's where PETRONAS Syntium saves the day.

Through a 2022 reformulation and the addition of new 'CoolTech+ Technology', the engine oil now offers 37.8% stronger protection against the wear of critical parts than previous formulas, preventing engine deposit build-up to extend parts life and lower maintenance costs.

It also provides up to 68% higher oxidation resistance, controlling sludge, delaying oil thickening, and maintaining a stable, protective film for maximum engine performance. And with its ability to control heat by reducing friction, PETRONAS Syntium contributes to cut fuel consumption by up to 3%, which ultimately means less emissions, thus saving motorists money and minimising the environmental impact of driving.

Fausto Lupone, Automotive Sector Expert, Technical Service EMEA at PETRONAS Lubricants International explains: "CoolTech+ technology means whatever the road throws at your engine, it now wastes less energy and maximises efficiency. With enhanced engine protection, PETRONAS Syntium protects critical parts to deliver optimal performance every time." Drivers can learn more about PETRONAS Syntium on the [explore-cool.com](https://www.explore-cool.com) content hub, which features exclusive tools, guidance, and updates on how to reduce the emissions and fuel costs of your vehicle.

With worldwide net-zero targets fast approaching, the race is on for F1 and citizens worldwide to take new steps towards more sustainable living. It's hard to say what the next planet-friendly transformation that F1 brings to everyday driving will be. But for now, this journey of a thousand miles begins with a single step: PETRONAS Syntium.

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Poppleton	Unit 13, Rose Avenue, The Rose Centre, Nether Poppleton, YO26 6RX	01904 917280
Scarborough	Unit 1, Stadium Works, Barrys Lane, Scarborough, YO12 4HA	01723 413104
Selby	Unit 11A, Selby Business Park, Selby, YO8 8LZ	01757 403300

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