

IMPULSE

MAHLE

Mobility magazine for the workshop

02 // 2021
EURO 4.50



PREMIUM OR GOOD STANDARD?

More than 9,000 high-quality items in around 25 product groups

CALIBRATION AT THE TOUCH OF A BUTTON

TechPRO® Digital ADAS 2.0—now with added AI

MADE BY MAHLE

160 locations in more than 30 countries—one quality standard

SUCCESSFUL, INNOVATIVE, INDEPENDENT

Four Motors' strategy for sustainability

SMUDO



From professional to professional,

Trade fairs are usually the ideal opportunity for us to talk to our trade and workshop customers. What interests us most is your unfiltered and honest feedback on our products and services. We're already looking forward to being able to chat with you in person again. Until then, we're putting lots of energy into our online presence. This includes online trade fairs as well as our social media channels, our website, and MPULSE Online. Don't forget to stop by!

To help you do your job even better and more effectively, we're continuing to drive developments forward, especially in thermal management and service solutions. In this issue, for example, we introduce you to two new units for automatic transmission servicing and to the new Digital ADAS generation.

"Made by MAHLE" is a mark of quality and our promise to offer you products of the highest quality. This applies to all MAHLE products, wherever they're manufactured, because our Group-wide quality management is based on the same standards at all locations around the globe.

We hope you enjoy reading our latest issue!

Olaf Henning
Corporate Executive Vice President and
General Manager MAHLE Aftermarket

CONTENTS

MAHLE INSIDE

- 04** MADE BY MAHLE
160 locations in more than 30 countries— one quality standard
- 10** PERFECT—RIGHT DOWN THE LINE
New products, background knowledge, and support in all aspects of thermal management
- 16** CONNECTED AND AUTOMATED
A future-oriented end-to-end solution for diagnostics and workshop equipment
- 26** EVERYTHING AT A GLANCE
The remodeled MPULSE Online now offers even more news, knowledge, and entertainment
- 28** MOBILITY FOR REAL HEROES
Keeping ambulances, police cars, and fire trucks on the road, ready for emergencies

SWEAT & GASOLINE

- 22** SUCCESSFUL, INNOVATIVE, INDEPENDENT
Four Motors' strategy for sustainability
- 24** FROM THE BOTTOM TO THE TOP
The DS TECHEETAH Formula E team

DO IT & GET IT

- 30** COOLING CIRCUIT MAINTENANCE
Some points to bear in mind—with help from MAHLE

NEW ON THE MARKET

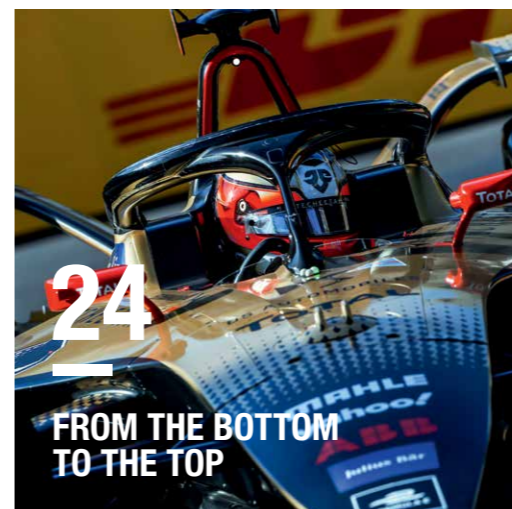
- 32** NEW ON THE MARKET
More selection, more quality, more efficiency
- 34** AFTERBURNER
Hot topics and latest news



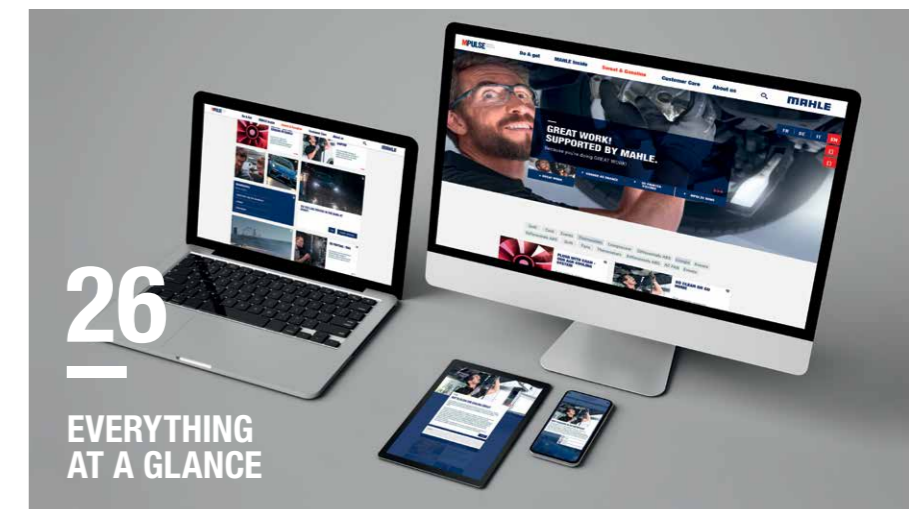
08
—
EXPERTISE
USED WISELY



10
—
PERFECT—RIGHT
DOWN THE LINE



24
—
FROM THE BOTTOM
TO THE TOP



26
—
EVERYTHING
AT A GLANCE

automechanika
FRANKFURT **DIGITAL PLUS**

SEPTEMBER 14–16, 2021

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look forward to your visit:
mahle-aftermarket.com/automechanika



Register now at mpulse.mahle.com, and get your subscription delivered to your door free of charge.



MADE BY MAHLE

160 locations in more than 30 countries—one quality standard: When you buy and install products from MAHLE, you can be sure you're holding a piece of German engineering excellence in your hands. It doesn't matter whether the packaging says Made in Turkey, Made in China, Made in Brazil, or Made in Germany. We produce our products for original equipment or the aftermarket around the globe according to the same processes and quality measures. So the result is always 100 percent MAHLE brand quality.





»MADE BY MAHLE

TRUST IN THE BRAND

Quality is probably the most important criterion when it comes to replacement parts. With MAHLE, you can be sure that you've always got a quality item in your hands, because we apply the same standards to all our products—wherever they're made.

You can find MAHLE products almost anywhere in the world. We operate globally in order to be close to our original equipment, trade, and workshop customers. Today, we produce MAHLE quality at 160 locations in over 30 countries—and each of our locations manufactures according to “Made in Germany” standards, with German engineering and know-how.

Thorough quality inspection

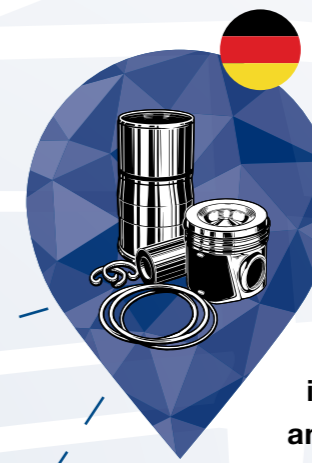
“Good quality is crucial—we can always do everything a little better” was Ernst Mahle’s guiding principle. And it still holds true today. Quality forms an integral part of the product development process, from the initial inquiry from the vehicle manufacturer to the start of production. In the manufacturing process itself, we rely on multistage quality controls and quality assurance according to OE standards. The product is checked after each production step. That’s quite a challenge, because some products go through as many as 64 production steps. MAHLE employees also take random samples of parts from production to be measured and examined in detail in the lab. At the end of the process, a 100 percent final inspection is carried out. What’s more, all MAHLE production plants are certified according to IATF 16949, and the vehicle manufacturers have audited and approved the production lines.

Developed to meet the vehicle manufacturer’s requirements

Production with integrated quality assurance and 100% final inspection

Incoming goods inspection, assembly, and outgoing inspection

Customer delivery



Once manufactured, most products for the aftermarket find their way to our regional central warehouses. In the goods receiving area, all products undergo a manual visual inspection to identify any transport damage and screen out defective items. We also use technology to carry out spot checks on certain products, such as when measuring the ovality and gap clearance of piston rings. After that, any products that are also assembled, grouped into sets, or packed are subjected to another final quality inspection. Only then are our products ready to be shipped to the retailer and installed in your workshop.

“Every day, we endeavor to provide our customers with top-quality products at the best price. With our Vision of best-in-class quality and our zero-defect policy, which we implement consistently worldwide, we promise our customers that ‘Made by MAHLE’ always represents the same quality, no matter where in the world our product was manufactured.”

Patrick Wedewardt, Head of Quality Management, MAHLE Aftermarket GmbH



Bauart geprüft

- ▶ Produktsicherheit
- ▶ Fertigung überwacht

www.dekra-siegel.de



Made by MAHLE // MAHLE INSIDE // 09

PRODUCTION IN FIGURES

- ▶ Masks produced to date: 3.1 million
- ▶ Filter **media** (nonwoven) processed to date: 260,000 m²
- ▶ Compliant with EU standard EN 149 and CE marking through DEKRA in Germany
- ▶ Designed for a single use over several hours
- ▶ Available in cartons containing ten individually and hygienically packed masks
- ▶ Easy to fit thanks to the 3D design and individually adjustable nose bridge
- ▶ Two practical ear strap extensions included in each pack for extra comfort



»MADE BY MAHLE

EXPERTISE USED WISELY

MAHLE knows all about filters. This competence benefited the company during the coronavirus crisis. When FFP2 masks became scarce, MAHLE quickly started production itself.

As a manufacturer of vehicle filters in original equipment quality, we're a global partner to the automotive industry. In view of the global SARS-CoV-2 pandemic, MAHLE converted part of its production in St. Michael/Austria to the manufacture of high-quality FFP2 masks. We saw this as our contribution to ensuring everyone's health. When worn properly, the FFP2 face masks from MAHLE filter out at least 94 percent of viruses, bacteria, and other particles from the air, effectively reducing the risk of infection for the wearer and others.

Similar process

Our plant in St. Michael has many years of experience in processing filter media. The production of air filter systems, as well as oil filters, is part of its core business. So, it was only natural to put this know-how to use in the production of masks to help tackle the pandemic. The processes and production equipment for masks are similar to those used for filter elements.

Fully automated

MAHLE obtains the filter **media** (nonwoven) for the FFP2 masks from a German manufacturer with whom it has a long-standing business relationship. It is delivered on rollers and stretched on the production line at the St. Michael plant. The carrier material comes on another roller. It gives the mask rigidity and fits comfortably against the skin. The two layers are combined and welded together on the production line. Between the layers, the system incorporates the individually adjustable nose bridge, which ensures an optimal fit. In a further step, the ear straps are welded on, the masks are punched out, and finally individually wrapped in plastic film. Thanks to the state-of-the-art production facility, all process steps are fully automated.

In short, MAHLE in Austria makes use of its core competence to manufacture protective masks to the highest quality standards using breathable, skin-friendly materials from Germany. Like all MAHLE plants, St. Michael also has experience in quality and process documentation, which is required for CE marking.

For all the information about the FFP2 masks from MAHLE and where you can buy them, visit mahle-aftermarket.com/eu/en/products/ffp2-masks.

A long-exposure photograph of a highway at night, showing light trails from cars. The trails are primarily white and blue, curving through the frame. The background is dark, and the overall mood is dynamic and futuristic.

— PERFECT— RIGHT DOWN THE LINE —

You need solutions that make your day-to-day work easier. And that's exactly what MAHLE gives you. With our product and service portfolio for automotive air conditioning and engine cooling, you have a real advantage. Because MAHLE provides you not only with the right product for each of your customers, but also with a wealth of background knowledge and support in all aspects of thermal management. Perfect for you, perfect for your customers.



» THERMAL MANAGEMENT

PREMIUM OR GOOD STANDARD?

PREMIUM
LINE

PRODUCT FIGURES

- › More than 9,000 high-quality items in approximately 25 product groups
- › For passenger cars, vans, commercial vehicles, and agricultural and construction machinery
- › PREMIUM LINE with approximately 4,700 products in OE quality
- › 3,500 standard products in OE-matching quality
- › 2,400 product pairings in PREMIUM LINE and without PREMIUM LINE labeling

MAHLE has the most extensive premium range for automotive air conditioning and engine cooling in the independent spare parts market. But even the products without PREMIUM LINE labeling stand out in quality and performance.

Premium or standard MAHLE product? It isn't an easy decision, is it? Yes, it is! Because you're often able to choose and can make your decision according to the customer and vehicle. You're the professional, and you know which component in which version fits which specific vehicle. Choose premium products for younger and high-value vehicles with a high annual mileage—the ideal solution for customers who expect the best. For price-conscious customers who drive average distances, select products without the PREMIUM LINE labeling. The unique thing about MAHLE's air conditioning and cooling range is that with around 2,400 product pairings, you can choose whether to go for PREMIUM LINE in OE quality or OE-matching quality at an affordable price. No one else offers you this.

What's the difference? PREMIUM LINE products are particularly durable and deliver maximum output even under extreme conditions, as they have higher power reserves. They're designed to last throughout the life of the vehicle. The air conditioning and cooling range without PREMIUM LINE labeling is in no way inferior to products in OE quality used under normal conditions. They are the right choice if the vehicle is mainly used in usual everyday situations—a good-quality, economical solution. Best of all, no matter which product you choose, technical service, sales support, and availability are the same for all.



» THERMAL MANAGEMENT

AN INSIDE VIEW

The new TechTool from MAHLE offers a detailed insight into the technology of thermal management in passenger cars and commercial vehicles. Online 24/7, clearly presented, and easy to use.



TechTool
by MAHLE



Applying its high-level systems expertise, MAHLE develops holistic thermal management solutions for vehicle manufacturers worldwide. But how exactly do vehicle air conditioning and engine cooling systems work? In just a few clicks, the newly developed TechTool delivers important background knowledge for workshops.

MAHLE's TechTool offers detailed insights into the structure and function of all relevant components. It's optimized for all technical end devices, which is particularly convenient in the workshop as you don't need to interrupt your work to go to the computer in the office. You can use your smartphone to call up active help with troubleshooting or repair support while working on the vehicle.

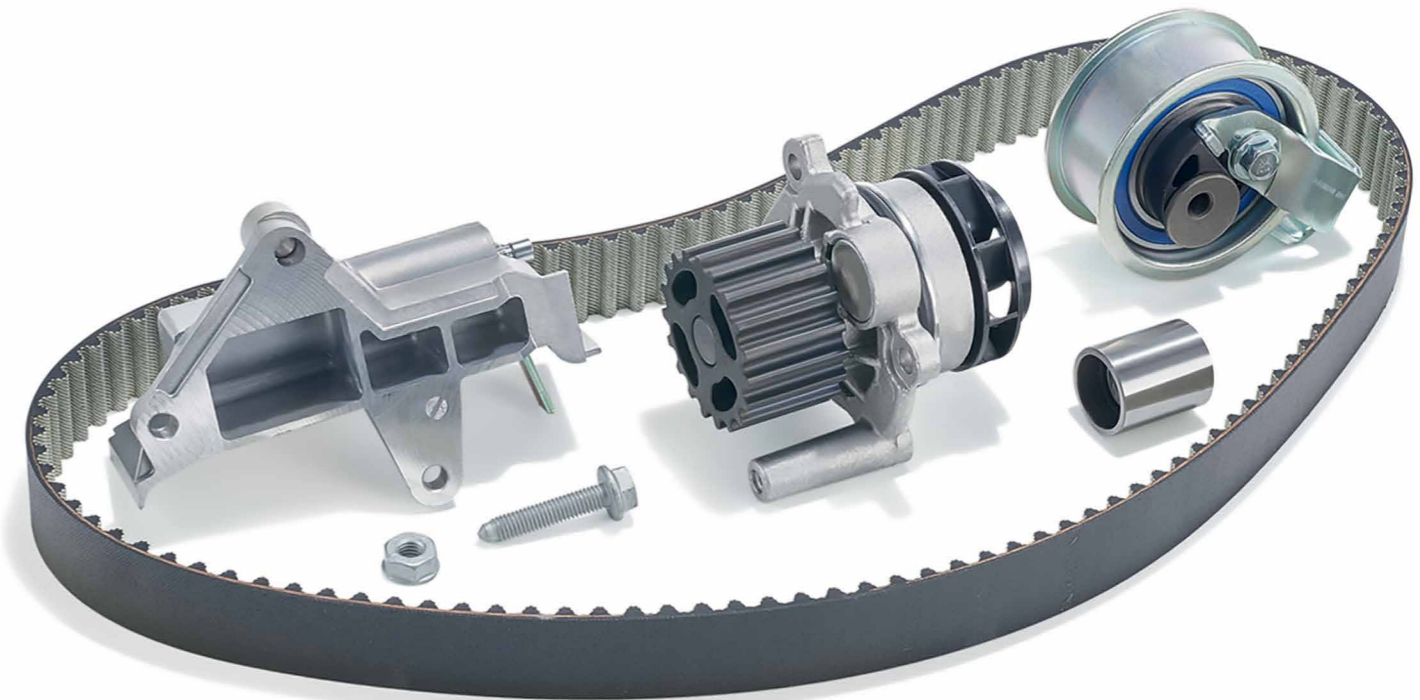
The information is clearly structured—relating either to passenger cars or commercial vehicles. The TechTool displays the various cooling, refrigerant, and charge air circuits and explains them in detail. Each component can be clicked individually to see a precise description of its function. Animated, photo-realistic illustrations show it in operation. Possible causes of failure are also listed. So, all in all, it makes life much easier for workshops.

See how easily and fast you can work with our TechTool: techtool.mahle.com.

» THERMAL MANAGEMENT

SIMPLE FIT

Two words—one important message: **SIMPLE FIT** identifies all thermal management products from MAHLE that already include installation accessories.

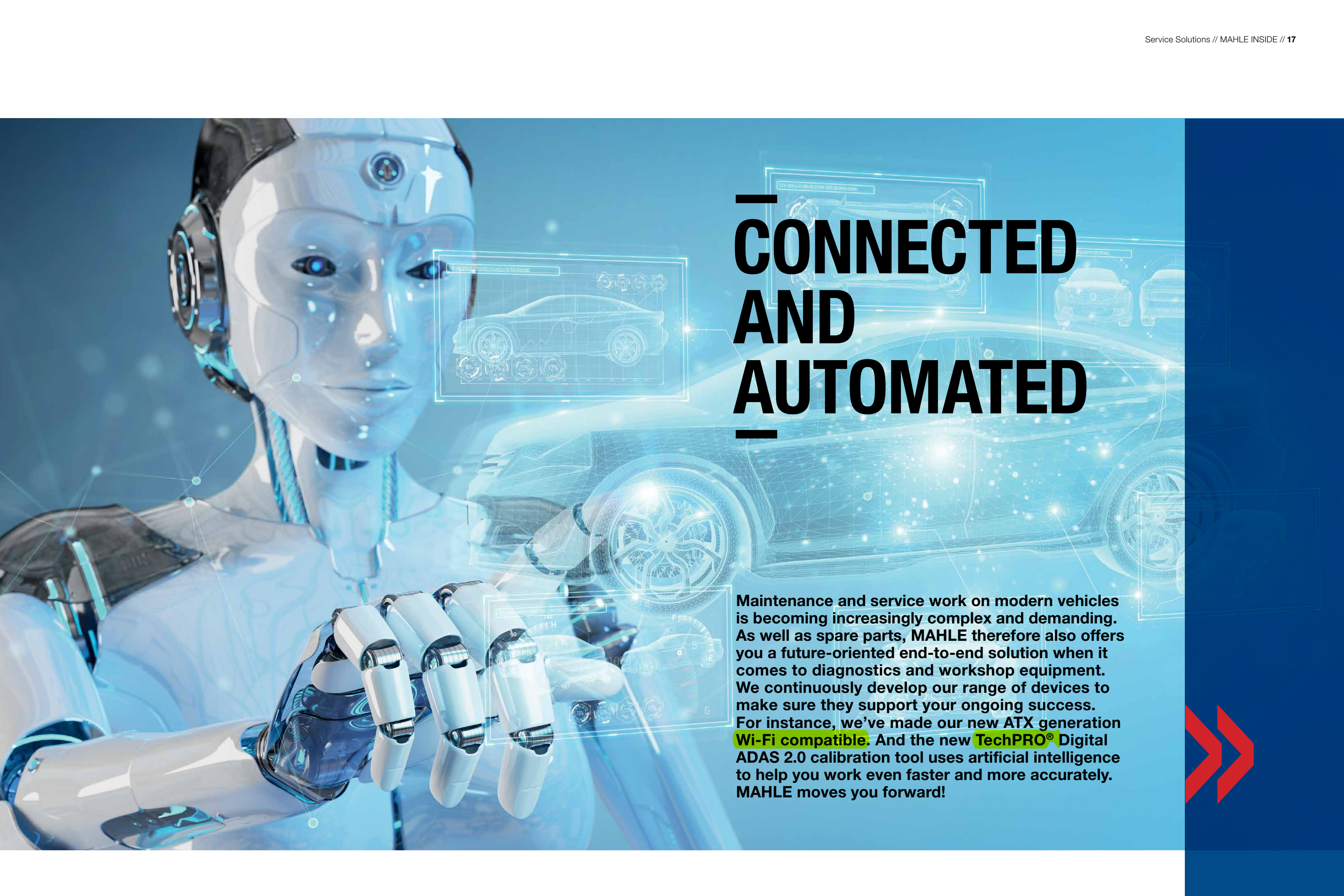


Which hose clip do I need for which radiator? MAHLE has a huge range of thermal management products. SIMPLE FIT makes it easier for you to find your way around. For items with this labeling, you don't need to order accessories such as O-rings, seals, or screws separately—they're already included. This avoids unpleasant surprises during installation, saving time, nerves, and—not least—money. The accessories are guaranteed to fit for easy, quick, and correct installation.

It's also easy to identify them. In TecDoc, items marked SIMPLE FIT display a list of included accessories, which are additionally summarized in a blue bar above the product image.

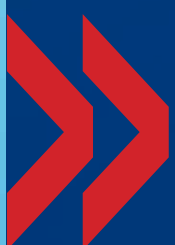


Around 1,350 products in MAHLE's thermal management portfolio are included in the SIMPLE FIT range.



CONNECTED AND AUTOMATED

Maintenance and service work on modern vehicles is becoming increasingly complex and demanding. As well as spare parts, MAHLE therefore also offers you a future-oriented end-to-end solution when it comes to diagnostics and workshop equipment. We continuously develop our range of devices to make sure they support your ongoing success. For instance, we've made our new ATX generation **Wi-Fi compatible**. And the new **TechPRO®** Digital ADAS 2.0 calibration tool uses artificial intelligence to help you work even faster and more accurately. MAHLE moves you forward!



»SERVICE SOLUTIONS

THE FAMILY EXPANDS

Our ATX series for automatic transmission servicing has grown. The new additions ATX 250 and 280 are the latest developments in the successful MAHLE FluidPRO® ATX 150/180 range. The units are a perfect fit with the family of ACX air conditioning service units in terms of their design and user interface, and introduce a host of new and innovative functions.

Automatic transmission servicing is a lucrative, future-oriented job for a workshop. A great reason for MAHLE to make its transmission flushing equipment even better. One feature of the ATX 280 unit is the connectivity that's now offered by all new workshop equipment from MAHLE Aftermarket. This allows you to bring the service unit up to speed quickly and easily with firmware and database updates delivered over Wi-Fi.

Keeping a close eye on your unit's status

The ability to control your automatic transmission flushing unit with an app is a real labor-saving feature. This means you can

take your smartphone or tablet with you into the vehicle, keep an eye on the status of the unit at all times, and receive instructions directly. That's a huge advantage if, for example, you have to shift through individual gears during the flushing process. Another advantage of connectivity is that, if a problem develops, a MAHLE technician can connect to the unit via Remote Service and provide technical assistance.

Using the USB connection and the stick, available separately, you can also make the ATX 250 unit Bluetooth-compatible and control it via the app.

Oil savings

With the new, wider 7-inch color display, all the data relating to the transmission service is displayed on your screen, which is easy to operate, even when you're wearing work gloves. We've improved the software and graphics so the device is now more intuitive and easier to use. The design of the oil tanks has also been optimized to make the best use of more than 99 percent of the oil. A 12-volt battery terminal for connection to a car battery is available as an option too. This gives you maximum flexibility and means you're not dependent on a power supply.

The new ATX generation is made up of two units: the entry-level ATX 250 unit and the professional ATX 280 unit. This way, you can choose the unit that's best for your service and your business. MAHLE also gives you everything you need for automatic transmission oil changes: flushing units for an efficient service, a wide range of transmission oil filters in original equipment quality, comprehensive training for service pros, and expertise from the experts.

Pro tip: You should always replace the transmission oil filter during an oil change as the filter removes abrasion particles from the transmission and provides effective protection against damage. MAHLE transmission oil filters are the ideal solution for many popular car brands and vehicle types. We're always adding to the range.

Available in the MAHLE and BRAIN BEE brands.



ADVANTAGES

- › Two units to choose from
- › Connectivity via Wi-Fi
- › App control
- › Remote Service
- › Large color display
- › Intuitive user experience
- › No oil loss thanks to optimized oil tanks
- › [Adapter tray on top](#)
- › Service record can be exported (PDF)

CALIBRATION AT THE TOUCH OF A BUTTON

Calibrating cameras and sensors is all about precision and speed. Now, MAHLE's setting new standards with **TechPRO® Digital ADAS 2.0**. The updated calibration tool uses artificial intelligence that automatically does a lot of the work for you.

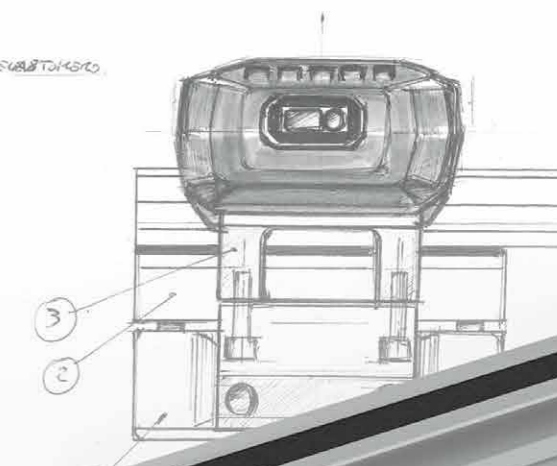
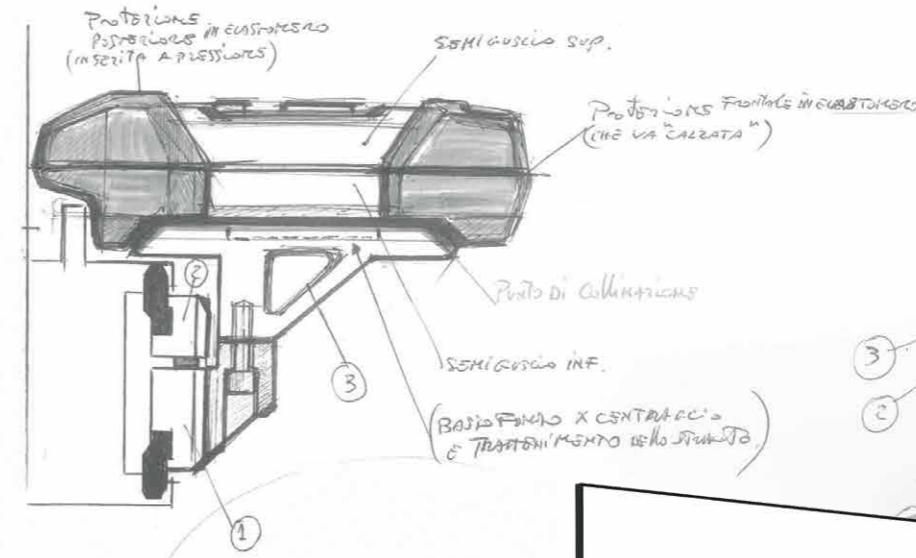
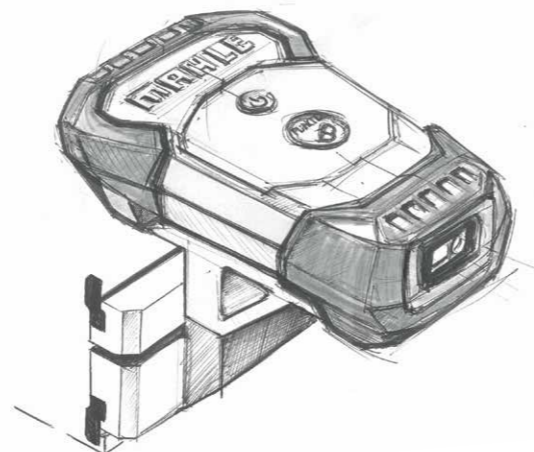
When calibrating driver assistance systems, preparation is what takes the most time: finding the right calibration panel, aligning the vehicle, and manually transferring the data to the diagnostic tool. Our TechPRO® Digital ADAS unit has already sped up the first two steps dramatically compared with our competitors—thanks to the digital calibration panels projected onto the screen and the vehicle alignment supported by our laser-based technology. This alone reduces the time spent on a job by up to 80 percent.

ADVANTAGES

- › MAHLE laser meter: transmits the distances to the vehicle to the diagnostic tool via Bluetooth
- › Fully automatic height adjustment at the touch of a button
- › Webcam: automatic vehicle recognition (only in countries with VIN lookup via license plate, such as France, Italy, the Netherlands, Spain, and the UK)
- › 3D animations of the setup process
- › Matte monitor: no reflection
- › Horizontal bar can be split: saves space

AUTOMATED LASER METERS

› The new **TechPRO® Digital ADAS 2.0** goes a few steps further and almost completely automates the setup process. All you have to do now is attach the wheel clamps, place the digital calibration panel in front of the vehicle, and move the laser range finders into position. One more click, and the **Digital ADAS 2.0** takes care of the rest. For this purpose, we've developed new MAHLE laser meters that measure the distances and transmit the measurement data to the diagnostic tool themselves via Bluetooth. This means you no longer have to read off figures and type them in, not only saving time but also making it nearly impossible to enter data incorrectly. But we can go one better: at the touch of a button, the calibration panel also moves into the correct position in front of the camera or sensor fully automatically thanks to artificial intelligence. Setup is complete in no time!



AUTOMATIC VEHICLE IDENTIFICATION

› In France, Italy, the Netherlands, Spain, and the UK, license plates are directly linked to the VIN. We take advantage of this and make use of artificial intelligence. In these countries, the calibration tool is optionally equipped with a webcam for this purpose. All you have to do is place the vehicle in front of the calibration tool as usual. The camera takes a photo of the license plate and transfers it to the TechPRO® diagnostic tool. No more looking at the vehicle registration document, no typing, no need to confirm. This saves a lot of time and prevents data input errors as the vehicle selection process is completed in a single step! You can also include the photo of the license plate as proof in the calibration report.

SUPPORT DIRECTLY AT THE WORKPLACE

› Calibrating driver assistance systems is a complex process that needs to be carried out with care and precision at every step. We've developed short (5–10 seconds) step-by-step video instructions for each calibration phase to help you out if you're new to our tool, unsure of a procedure, or want to train an employee. You can play the clips directly on the new 65-inch matte monitor. Tip from MAHLE: You can also use the monitor as a multimedia center for presentations or advertising.

Available in the MAHLE and BRAIN BEE brands.

SUCCESSFUL, INNOVATIVE, INDEPENDENT

Independence is a great privilege, but also an equally great challenge. This is just as true for the independent workshop business as it is for motorsports. MAHLE supports two independent teams setting new benchmarks in their fields: Four Motors and DS TECHEETAH.

One is constantly pushing the boundaries of GT racing with its sustainable innovations, while the other holds three consecutive Drivers' Championship wins in Formula E, the world's first racing series for all-electric formula cars. Four Motors and DS TECHEETAH achieve all this despite being—or perhaps because they are— independent teams and are not part of a large automotive group. This makes them even more reliant on the support of their partners to turn their visions into reality. And one of these partners is MAHLE.

Goal: zero-emissions

“Without our partners, we'd never be able to realize our projects,” says Thomas von Löwis of Menar, Four Motors' team boss. Together with Smudo, the front man of German band Die Fantastischen Vier, he has been pushing sustainable drive concepts in GT race cars since 2003. The Bio-concept Cars racing at the Nürburgring use alternative drives—from combustion engines optimized for efficiency to biofuels with extremely low pollutant levels. The goal for the future is to conquer the legendary Nordschleife while keeping emissions as close to zero as possible.

“We've wanted to cooperate with MAHLE for a long time and are very pleased that this has now been the case since 2019,” says von Löwis of Menar. “The cooperation is primarily a technological partnership. For example, we're currently looking at using 3D printed parts on our Porsche vehicles.”

Making brave decisions, breaking new ground—that's what makes being an independent team so incredibly attractive. However, “fighting for money is always difficult, and you need strong arguments to succeed,” admits the Four Motors team boss. “Our strong arguments are now being recognized and even rewarded. But it's always a challenge.”



FOUR MOTORS

› The sustainability strategy pursued by Four Motors is based on three pillars: a re-refined high-performance oil used as a lubricant, E20 high-performance fuel produced from biological waste, and light-weight biocomponents made from renewable raw materials. The results speak for themselves: The re-refined lubricants cut CO₂ by 80 percent compared with lubricants made from crude oil. When it comes to the biofuel, CO₂ is reduced by 20 percent and particulate matter by 60 percent, while lightweight biocomponents deliver a 75 percent drop in carbon emissions.

www.fourmotors.com



FROM THE BOTTOM TO THE TOP

A prime example of an independent team that has made it to the top from lowly beginnings is the DS TECHEETAH Formula E team. It began as an underdog with a minimal budget, but in recent years it has taken pole position in the electric racing series, which is as fiercely competitive as it is forward-looking, chalking up three drivers' titles and two team titles in a row.

"We started out as a completely independent team, and compared with manufacturer-led teams like Jaguar or Porsche, we're still independent, but we now have the support of the manufacturer DS Automobiles," explains Chief Commercial Officer Keith Smout. "You could say we're a hybrid team these days."

From the start of the 2020/2021 season, MAHLE has contributed its many years of expertise in e-mobility to support DS TECHEETAH as a technical partner. The goal is to build on the successful run of the past few years—and to do so in the face of the increasingly strong and financially powerful competition from the wholly manufacturer-backed teams.

But Smout wouldn't switch for anything. "Both have their advantages and disadvantages, but we have an incredible amount of freedom to structure our processes the way we want. In larger corporations, there's always a risk of getting stuck in long rounds of consultation. That's not a problem for us. On the other hand, our marketing department has a much greater responsibility to bring partners on board to ensure the survival of the team."

MAHLE is a proud partner of both the Four Motors and DS TECHEETAH teams. With their independence and innovative approaches, they're a perfect fit for the company's philosophy.



DS TECHEETAH

There's probably no tougher test lab for e-components than Formula E. Excellence is demanded of both the powertrain and thermal management. The power of an electric racing car is truly impressive, with drivers able to draw on 52 kilowatt-hours of energy during a race. That's equivalent to the capacity of 8,000 smartphone batteries. The battery's temperature window is a maximum of 87 degrees Celsius. Continuous cooling is therefore a must. During a race, the airstream is sufficient for this, but during a pit stop or in the workshop, cooling fans or dry ice are used.

www.dstecheetah.com



EVERYTHING AT A GLANCE

Have you also seen our MPULSE Online magazine? It's your channel for interesting topics from the MAHLE world. We've remodeled MPULSE Online so it now offers even more news, knowledge, and entertainment at a glance. Explore it now at mpulse.mahle.com.

MPULSE Online is popular. Several thousand visitors come to the website each week to get updates on products, services, events, motorsports, promotions, tips and tricks, innovations, trends, and much more from MAHLE Aftermarket. We took this as our cue to make the online platform even better: more user-friendly, more interesting, more comprehensive. What you'll notice straightaway is the new page structure. All the information is right there on the home page, including the latest from our other channels like Instagram or YouTube. So you can keep up to date with just one click.

FILTER, PERSONALIZE, & SEARCH

> You can now personalize MPULSE Online by filtering the topics according to your interests. Another important highlight is the new search function. This will help you find what you're looking for more quickly, from specific topics to help solving a work problem.

COMMENT & LIKE

> Since your opinion is important to us, you can now also comment on and like the content. This will help us to tailor the online magazine even more effectively to the needs of workshops in the future.

Click to take a look:
mpulse.mahle.com.

MOBILITY FOR REAL HEROES

Action speaks louder than words. In the midst of the first wave of the coronavirus pandemic in spring 2020, automotive parts wholesaler Autonet launched the MOBILITY FOR HEROES initiative in Romania. MAHLE was a partner from the very beginning, helping to keep ambulances, police cars, and fire trucks on the road and able to respond to emergencies.

The COVID-19 pandemic has shown us who the true heroes in society are. They're the ones who put everyone else's safety ahead of their own and are working in hospitals and on the streets to make sure we get through this crisis in the best possible shape. From doctors, paramedics, and nurses to firefighters, they all deserve support. That's why Autonet Import launched the MOBILITY FOR HEROES campaign at the start of April 2020 together with its strategic suppliers and partners in six service networks.



MOBILITY FOR HEROES

> One less worry

A national fund was established for this purpose, with a basic endowment to support institutions actively engaged in combating the virus. Using this money, which grew steadily over the course of the campaign, emergency responders were able to have their vehicles maintained or repaired at partner workshops. Giving them one less thing to worry about in the daily fight against the pandemic.

> Overcoming the crisis together

MAHLE and Autonet have a 20-year working relationship built on loyalty and trust. Given this close bond, we were quick to support the campaign right from the beginning. Alongside other suppliers of parts, MAHLE contributed its share to the initial fund, demonstrating its solidarity with today's heroes. After all, MAHLE understands that we can only overcome the challenges posed by the coronavirus crisis by working together.



> Fantastic response

The organizers provided regular updates about the campaign on social media. A dedicated phone line was set up for the employees of the institutions to find out about the support services available. And the response was fantastic throughout the country—but especially in the capital, Bucharest, as well as in Satu Mare County, where Autonet has its headquarters. A total of 432 repair or maintenance jobs were performed on 284 emergency vehicles, trucks, and escort vehicles in 20 Romanian counties. Public authorities involved in minimizing the impact of the pandemic had decided to take advantage of MOBILITY FOR HEROES. For example, 33 percent of the repaired vehicles are ambulances, 24 percent belong to rescue services—such as the fire department—and 43 percent are used by the police and gendarmerie.

MAHLE and the other campaign partners are pleased that this initiative has been positively received throughout the country.



MAHLE **AUTONET**

Find out all about the MOBILITY FOR HEROES campaign at autonet.ro.

HELP FROM MAHLE

COOLING CIRCUIT MAINTENANCE

There are a number of things you should bear in mind when working on an engine cooling circuit, whether changing the coolant or replacing defective components or leaky hoses and connections. The most important thing is to work with care.

Work on cooling systems is not uncommon. Jobs include changing the coolant at regular intervals according to the manufacturer's specifications, installing a new water pump, replacing a thermostat, radiator, or hoses, and retrofitting an auxiliary heater. Various problems can occur in and with the cooling circuit, with many different causes.



Flushing is vital

When changing the coolant, simply draining and refilling is no longer enough. You should take a close look at the old coolant when changing it and check for contaminants. This is because foreign matter or foreign objects, such as oil, rust, limescale, and aluminum flakes, point to defective components or even parts outside the cooling system. If that's the case, flushing the cooling system is essential.

As a general rule, vehicle manufacturers specify the process and the flushing medium to be used, depending on the degree of contamination. The design of some modern cooling systems means that some parts need to be replaced as they can no longer be flushed.

Note: When replacing components after opening hose and plug connections, make sure you change all the seals. This job is often overlooked because, in many quick locks on thermostat housings, for example, these seals are located in the counterpart of the connecting hose and are not directly visible from the outside.

Our tip: Thermal management products from MAHLE with the SIMPLE FIT label come with accessory parts such as O-rings, seals, or screws included in the kit.



Vacuum, fill, all done!

The classic method of topping off via the expansion tank or radiator cap no longer works for purely physical reasons. That's because radiators or other components are often positioned at the same level as the engine or even below it. What's more, the cooling systems of modern cars are so winding and complex that the coolant can't find its way into every nook and cranny on its own. So, using the old technique, you're guaranteed to trap air in the system! Trapped air significantly reduces the coolant's ability to circulate, which can lead to overheating of the engine and result in major damage.

That's why the only professional and safe method is to vacuum fill the cooling system. An additional benefit of this is that you know something's wrong in the system if you can't create a strong enough vacuum in the cooling circuit. Vacuum purge and refill kits extract all the air from the cooling system using a venturi nozzle and the workshop's compressed air supply.

The new coolant approved by the vehicle manufacturer is then drawn into the cooling circuit by the vacuum, without creating any bubbles. Achieving the correct ratio of water and coolant is also important in this process. It's best to mix the coolant with 50 percent distilled water to provide sufficient antifreeze protection. Again, please observe the vehicle manufacturer's specifications and do not mix different coolants.

FYI: The vacuum only draws air, not coolant, out of the system. The cooling circuit can't be drained with negative pressure.

PROBLEMS

- > Excessively high or low engine temperature
- > Coolant boiling over
- > Radiator fan running continuously
- > Poor heating performance

CAUSES

- > Entrapped air due to inadequate bleeding
- > Coolant loss due to radiator damage, for example (stone chip, accident, corrosion)
- > Poor heat exchange due to external or internal contamination of the radiator (leaves, dirt, insects, limescale deposits)
- > Contaminated or stale coolant
- > Defective coolant pump
- > Jammed thermostat—due to a foreign object, for example
- > Defective valve in the expansion tank cap

How to carry out maintenance correctly! Check out our video at pulse.mahle.com under "Do it & get it" or on MAHLE's YouTube channel.

NEW ON THE MARKET

We're constantly expanding our extensive offering for workshops. Here we present a small selection of our new products. They're easy to order through the online catalogue at catalog.mahle-aftermarket.com.

#usethebestparts

» A/C ACTUATOR

Vehicle type:
Passenger cars
Manufacturer:
Mercedes-Benz
Vehicle models:
W124
Part no.:
AA 4 000P

PREMIUM
LINE



BEHR®

» CLASSIC LINE PISTON

Vehicle type:
Passenger cars
Engine:
M30 B30
Manufacturer:
BMW
Vehicle models:
530 I, 730 I, 730 IL
Characteristic features:
Returning to the range
Part no.:
082 75 02



MAHLE®

» ALTERNATOR

Vehicle type:
Trucks
Engine:
OM 470.906
Manufacturer:
Mercedes-Benz
Vehicle models:
Actros MP4
Part no.:
MG 1015



MAHLE®

» PISTON

Vehicle type:
Trucks
Engine:
OM 933, OM 934, OM 935, OM 936
Manufacturer:
Mercedes-Benz
Vehicle models:
Citaro, Atego 3, Actros MP4, Antos, Arocs, Econic 2
Part no.:
001 PI 00186 000
001 PI 00186 001 (on request)
001 PI 00186 002 (on request)



MAHLE®

» OIL FILTER

Vehicle type:
Passenger cars
Manufacturer:
Audi
Vehicle models:
A4, A5, A6, A7,
Q5 2.0 L TDI Mild Hybrid
Part no.:
OX 1266D



KNECHT
FILTER
MAHLE®

» CABIN FILTER

Vehicle type:
Trucks
Manufacturer:
Scania
Vehicle models:
L-, P-, G-, and R-series (new generation)
Part no.:
LA 1683



KNECHT
FILTER
MAHLE®

» CLASSIC LINE PISTON

Vehicle type:
Passenger cars
Engine:
22 E
Manufacturer:
Opel
Vehicle models:
Monza-A 2.2, Rekord 2.2 E,
Senator-A 2.2
Characteristic features:
Returning to the range
Part no.:
011 92 11



MAHLE®

» STARTER MOTOR

Vehicle type:
Trucks
Engine:
MX-13 303
Manufacturer:
DAF
Vehicle models:
CF-410
Part no.:
MS 998



MAHLE®

» THERMOSTAT

Vehicle type:
Passenger cars
Engine:
1.0-1.2 L
Manufacturer:
Citroën, Peugeot
Vehicle models:
C1, C3, C4,
108, 208, 301, 308, 2008
Part no.:
TI 285 83



BEHR®

» CABIN FILTER

Vehicle type:
Trucks
Engine:
MX 11 & MX 13
Manufacturer:
DAF
Vehicle models:
New XF (from 07/15)
Part no.:
LAK 1422



KNECHT
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Award for MAHLE

What an honor! The Armtek group of companies has named MAHLE Aftermarket "Best Supplier of the Year." Armtek is a leader in the aftermarket and has been active in Russia, Belarus, and Kazakhstan since 1995. The parts wholesaler has been a MAHLE customer since 1997. We received the award in recognition of strong results in 2020 as well as for our productive relationship and loyalty. We are the first supplier to receive this award twice. Thank you, Armtek!



High demand for MAHLE brand

The IT specialist Topmotive is a developer of online catalogs as well as information and inventory management systems for the independent aftermarket. For its Aftermarket Report, the company analyzed the input and processing data from its catalogs. In 2020, MAHLE was the second most requested brand in the independent repair market. And it gets better: MAHLE was number one in the most sought-after product group, oil filters, and is also among the leaders in engine cooling. Many thanks to our workshops!

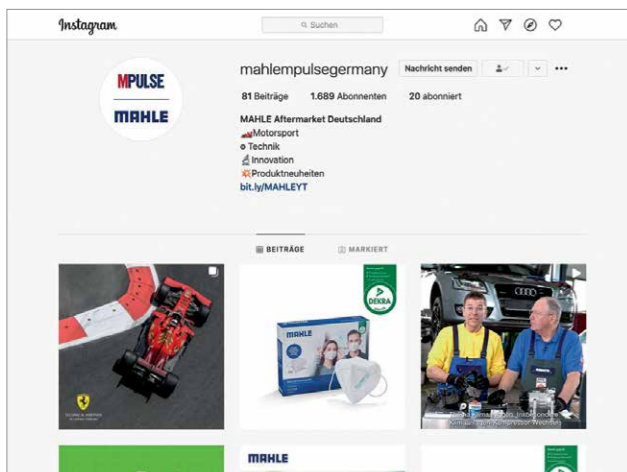
TOPMOTIVE

New Instagram channel

The new regional MPULSE Instagram channel for Germany, Austria, and Switzerland has been online since February. We want to use this to communicate even more closely and intensively with you, our workshops and mechanics in the region. The channel provides important and interesting information about MAHLE Aftermarket, such as Technical Messenger videos or updates on new products and services. You can also find motorsports topics and videos from the YouTubers "Die Autodoktoren" on our new channel.



[instagram.com/mahlempulsegermany](https://www.instagram.com/mahlempulsegermany)



MPULSE ONLINE:
MPULSE.MAHLE.COM

Creating prototypes faster

3D printed components? Sure! MAHLE is a pioneer in this innovative production process. We've already proven this in a joint project with Porsche, in which highly stressed parts such as pistons and charge air coolers were produced and tested. In the new 3D printing center at our Stuttgart location, MAHLE can now print prototypes, production aids, or very small series for drive systems, thermal management, and mechatronics. This is helping us to increase the pace of development for new electric vehicles, for example.



Workshop information all in one place

You're probably already familiar with our digital customer portal at [customercare.mahle-aftermarket.com](https://www.customercare.mahle-aftermarket.com).

We're now developing a special workshop area there too. Here, garages and mechanics will find a complete overview of all our services, including technical documentation, marketing support, installation videos, technical training, and much more. This means you'll have a one-stop shop for all the information and services that make your everyday work easier.



IMPRINT

PUBLISHED BY:
MAHLE Aftermarket GmbH
Pragstraße 26-46
70376 Stuttgart/Germany
[mahle-aftermarket.com](https://www.mahle-aftermarket.com)

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TEXT:
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DESIGN:
FACT GmbH advertising agency | www.fact.agency

FOREIGN LANGUAGE MANAGEMENT:
Target Languages GmbH

PHOTOGRAPHS:
MAHLE GmbH, Stuttgart/Germany;
MAHLE Aftermarket GmbH, Stuttgart/Germany;
MAHLE International GmbH, Stuttgart/Germany;
cover: © Markus Volk/stock.adobe.com,
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pp. 28/29 © AUTONET IMPORT SRL;
p. 34 © Armtek, © macrovector/stock.adobe.com

PRINT:
Kohlhammer Druck

FREQUENCY OF PUBLICATION:
Semiyearly in March and September

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