

STARTUNED®

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Mercedes-Benz

TO OUR READERS:

Welcome to StarTuned, the magazine for independent service technicians working on Mercedes-Benz vehicles. Your Mercedes-Benz dealer sponsors StarTuned and provides the information coming your way in each issue.

Mercedes-Benz wants to present the information you need to know to diagnose and repair Mercedes-Benz vehicles accurately, quickly and the first time; text, graphics, on-line and other technical sources combine to make this possible.

Feature articles, derived from approved company sources, focus on being useful and interesting.

Our digest of technical information can help you solve unanticipated problems quickly and expertly.

We want StarTuned to be both helpful and informative, so please let us know just what kinds of features and other diagnostic services you'd like to see in it. We'll continue to bring you selected service bulletins from Mercedes-Benz and articles covering the different systems on these vehicles.

Send your suggestions, questions or comments to us at: StarTuned

One Mercedes Drive

Montvale, New Jersey 07645

Phone: 1 800 225 6262, ext. 7112

e-mail: andrew.webb@mbusa.com

Group Publisher

Christopher M. Ayers, Jr.
cayers@automotivedatamedia.com

Editorial Director

Bob Freudenberger
bfreud@automotivedatamedia.com

Contributing Editor

Chip Keen
ckeen@automotivedatamedia.com

Contributing Editor

Kerry Jonsson
kjonsson@automotivedatamedia.com

Contributing Editor

Tom Nash
tnash@automotivedatamedia.com

MBUSA Technical Content Advisor

Donald Rotolo
Donald.Rotolo@mbusa.com

MBUSA Project Manager

Adam Green
adam.green@mbusa.com

Art Director & Circulation Mgr.

Christopher M. Ayers III
ayersc3@automotivedatamedia.com

Visit us at our website

www.MBWholesaleParts.com to view this issue and all past issues of StarTuned, along with a wealth of information on Genuine Mercedes-Benz Parts.

To locate a Mercedes-Benz dealer near you, go to **www.mbusa.com**.

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Mercedes-Benz Star-Marked Glass: Clearly the Best

There are many compelling reasons to perform glass replacement for your customers – and to use Genuine Mercedes-Benz Star-Marked replacement glass.

—If you haven't ventured into the world of glass replacement, now may be the time to branch out into a new way of producing profit for your shop and keeping your customers satisfied. It makes sense to maintain control in your relationships with your customers, rather than sending them down the road to a local glass shop, or

farming out the work and realizing a smaller profit.

—Turning customers away because you don't offer glass replacement may make them think twice about returning to your shop, or give the impression that your services are limited. Customers want and expect full-

range service to save them time and money.

—Farming out the work lays some of the responsibility for any problems squarely on your shoulders. If there are leaks, cracks from improper installation, or incomplete cleanup, customers may return to you angry and with

less trust in you and your shop. After all, you're the one they expected to do the repair, and they will assume you did so.

- One of the things you should always do is use Genuine Mercedes-Benz Star-Marked replacement glass for so many reasons. First, Genuine Mercedes-Benz replacement glass is made to the highest specifications at the same factory as the glass that goes into every new Mercedes-Benz vehicle. It is the right product, correctly made – it is Mercedes-Benz glass.
- Additionally, all of the electrical connections and components for heating grids, antennas and rain sensors are of the highest quality, made to the same standards as the original glass – which it is.
- While some metal, plastic or other replacement parts may meet most product specifications, glass is another story. It is literally in front of the customer's eyes, rather than hidden under the hood. Any defects, such as less-than-perfect heater, antenna, or rain sensor grids, glass impurity, or variations in tinting will be easily spotted. Also, a piece of glass with improper curvature may result in leakage.

Genuine Mercedes-Benz Star-Marked Glass vs. Aftermarket

- If you're looking for important reasons to use Genuine Mercedes-Benz Star-Marked replacement glass over

aftermarket, consider the following:

⌚ Automotive glass is an important part of a vehicle's structural integrity. Up to 30% of the torsional stiffness of a vehicle is a result of the strength of the windows. Mercedes-Benz uses continual testing procedures of glass components to ensure rigidity. Using Genuine Mercedes-Benz Star-Marked replacement glass, built with advanced glass technology, assures that the safety and quality designed into the vehicle is maintained. This advanced structural unity maintains roof rigidity to help protect occupants from unexpected dangers.

⌚ Windshield tolerances are an important part of any replacement glass and Mercedes-Benz glass is manufactured to maximum accuracy based on the original design. Because Mercedes-Benz glass is fabricated to tighter quality specifications to perfectly match the sheet metal, there is less chance of water leaks and wind noise. Aftermarket glass, on the other hand, can be reverse-engineered. Therefore, the flush fit to exterior sheet metal could be at risk when using an aftermarket windshield. Choosing Mercedes-Benz glass ensures proper fitment, visual clarity, windshield wiper performance, and the overall integrity of the vehicle.

⌚ Mercedes-Benz glass has integrated solar protection in the form of infrared reflective

Neat, Damage-Free Glass Removal

Given the precision with which Mercedes-Benz bodies are manufactured, you can be forgiven for fretting about the possibility of damaging the pinchwelds, which encircle windshield and rear window holes, during glass removal. Cold knives, long knives, and power tools all may bend or deform these welds, perhaps resulting in installation problems with the new glass, water and air leaks, creaking noises, and even cracks (now THAT would be a big comeback!). This has come to the attention of the insurance companies to the extent that they sometimes base their choice of a shop on the glass removal method used.

You can get relief from this anxiety and confidence that you're using the Mercedes-Benz-approved technique in the form of the Roll Out tool, available from Reliable Automotive Equipment, Inc. (www.raeservice.com). Manufactured by Wielander + Schill, this is more a system than a single tool. Its main components are two double suction cup and winch assemblies that are affixed to the inside of the windshield or window, a ratchet, cutting wire, insertion needles, and an interior protection kit. The basic concept is to use the winches to draw the wire through the seal all around the perimeter, which leaves a neat, clean cut with no debris. The kit is expensive, and other methods may be faster, but we think once you try it you'll be sold on the idea.



technology to provide UV protection and reduce heat load. This technology optimizes air conditioning performance and can improve fuel economy. Aftermarket variants often do not have the reflective technology.

☺ Mercedes-Benz glass and the attached moldings have been validated with exposure testing including UV (sun), chemical, temperature, tear and abrasion resistance (to survive events such as automatic car washes). Aftermarket windshields and moldings are often made with materials that do not meet Mercedes-Benz exposure tests.

☺ Mercedes-Benz glass has special acoustic-dampening technologies within the layering of the glass. Aftermarket products usually do not utilize this technology which may result in increased wind, road and engine noise in the vehicle's cabin.

☺ Mercedes-Benz glass often incorporates various electrical components including rain sensors, antennae, and heating elements. Aftermarket glass often does not account for these complex Mercedes-Benz electrical components and may interfere with the vehicle's electronic systems.

☺ Mercedes-Benz windshields ensure better wiper performance, while aftermarket glass may have a larger center contour.

☺ Mercedes-Benz ensures cleanly-ground edges, which not



Genuine Mercedes-Benz Star-Marked replacement glass is your best choice to keep your customer's vehicle original.

only increase worker safety during installation but also reduce the susceptibility to cracking.

The Correct Adhesives

— The importance of using Genuine Mercedes-Benz adhesives with Genuine Mercedes-Benz Star-Marked replacement windshields cannot be over emphasized. Genuine Mercedes-Benz adhesives are thoroughly tested to result in optimal bonding and strength, ease of use and shorter drying times that lead to lower waiting times and higher customer satisfaction. Additionally, these products are tested to avoid conductivity problems for electronic components such as heater grids, antennas or rain sensors.



Coating the glass with the correct primer will ensure a quality seal. Mercedes-Benz adhesives are designed to give the best results.



Mercedes-Benz offers the best urethane sealer to hold the glass in place and provide the best seal.

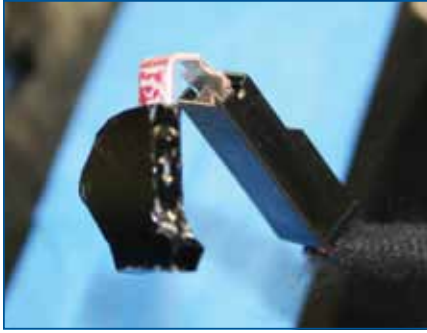
— These products are also available from your local Mercedes-Benz Wholesale Parts Dealer. For more information, or to locate a dealer, log onto www.MBWholesaleParts.com.

Electric Connectors

— Properly functioning electrical and electronic connectors for heater grids, rain sensors and antennae are of prime importance. If the connectors on the glass are not of optimum quality and properly placed, problems can occur in the operation of the sensors or grids.

— Genuine Mercedes-Benz Star-Marked replacement glass is always 100% correct in the quality of grids and sensors. Aftermarket glass, being reverse-engineered, may not be so.

— Of course, the care in removal, handling and reattachment of the vehicle-mounted connectors can have a great bearing on the success of component operation, so always follow the specific repair information instructions for the vehicle you are servicing.



Be certain to protect delicate connectors during glass replacement procedures.

Glass Service Tips

— Here are some handy tips for glass replacement service:

☺ Take note of the windshield when a vehicle arrives in your shop for any service. Look for chips or emerging cracks that will only spread as the vehicle is driven. Mention to the customer that you can replace the glass with Genuine Mercedes-Benz Star-Marked glass so the vehicle stays as originally designed. This will enhance the vehicle's resale or trade-in value.

☺ Always use the correct adhesive for the sealing area. The specified products may be



Thoroughly clean and prep the metal frame area of the vehicle before applying the primer.

different for the replacement glass surface and the metal mounting area.

☺ Always use the required urethane sealing product. Using other than the correct product can result in leaks, cracks or loss of structural integrity.

☺ When replacing rear glass, be sure to carefully remove the wiper arm to avoid damage.

☺ Install glass with sealer in the correct location quickly. Once installed, it should not be moved. Affix with tape in a few spots to secure until sealer is set.

☺ Nothing irks customers more than getting their vehicle back and finding pieces of glass left from the replacement service. Always clean all glass shards from the vehicle to maintain your relationship with your customers.

☺ Always refer to the specific service information for the vehicle you are servicing. This information is available at www.startekinfo.com.

☺ Training information is available on the Mercedes-Benz USA Technical Training website at www.mercedestechstore.com.

☺ On the site, you can download electronic files, or print sheets of service information.

☺ More information about Genuine Mercedes-Benz parts, plus why you and your customer should use them, is available at



To avoid costly damage, take care when removing the wiper arm.



Set the glass properly the first time. Today's quick-curing sealers don't allow much forgiveness.



Be sure to remove all glass shards and particles from the vehicle to avoid angering the customer.

www.mbusa.com/mercedes/service_and_parts/genuine_parts.

— Contact your local Mercedes-Benz Wholesale Parts Dealer for information on any Genuine Mercedes-Benz Star-Marked replacement glass or adhesive products. |

Head Games

Mercedes-Benz vehicles hold their value better than any other marque. This means customers are likely to invest in major repairs, such as those that involve cylinder head R&R.



—Thanks to superior engineering and the very best materials and assembly procedures, Mercedes-Benz engines last a long, long time. It's not at all unusual for them to go 200,000 to 300,000 miles and still have plenty of life left. This is a sharp contrast to other market segments where a "life expectancy" is built in at the factory. Since these cars and SUVs are basically rock-solid machines, their owners are typically willing to spend the money to replace major components such as engines and transmissions.

—Mercedes-Benz has a remanufacturing program that extends to these components and offers exceptional warranties. Cylinder head replacement is a relatively common service procedure in high-mileage engines, so knowing how to do this job correctly will ensure that both the service life of the vehicle and your relationship with your customers will be extended.

—Since you will very rarely have to remove the heads of late-model Mercedes-Benz vehicles, we've chosen an older engine for our example here: The powerful 137 V12. There are also some unusual aspects to this service on this particular engine, so we think it's a good choice as a subject to cover in StarTuned.

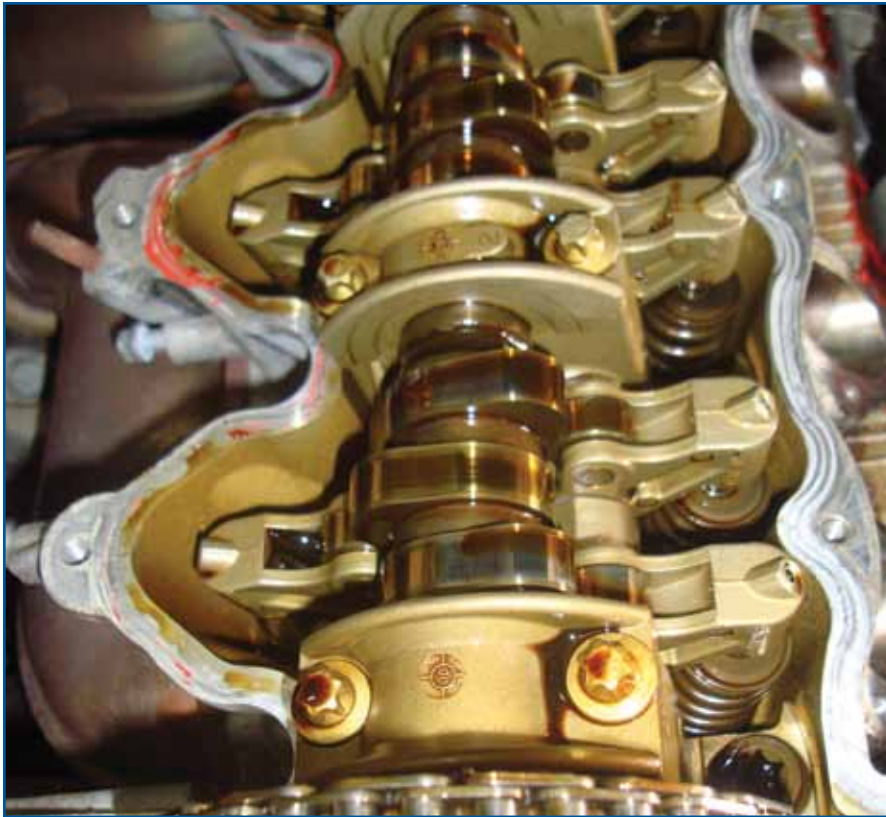
Disassembly

—The specimen we used for our photography had a leaking oil cooler at the back of the block. The oil cooler also houses a crankcase breather system, and the whole assembly had to be removed in order to repair the oil leak. It is mounted in the "V" of the block and requires that the cylinder heads be removed to gain access. You might think that this would be a difficult task on a large V12, but Mercedes-Benz engineering made this engine relatively serviceable with no seemingly impossible steps. Still, this operation, which carries the

(Above) After draining the coolant, but before starting any disassembly of the 137 V12, rotate the crankshaft to TDC using the "OT1,6" mark on the crank pulley. This will allow you to inspect and set cam timing marks to make reassembly easier.

label "01-5795 R & R Engine Cylinder Heads (includes cooler r&r)," is rated at 16.1 hours, so you must follow the instructions in WIS to the letter to avoid having to do it over (WIS document number AR18.30-P-3482L Engine 137 (V12) models 220 & 215).

—The first steps should be to remove the electric cooling fan and drain the coolant. At this early stage, you should crank the engine manually and set the #1 piston to TDC using the "OT 1,6" mark on the crankshaft pulley. There are no special tools or conventional timing/alignment marks for the 137 V12 engine. Timing is set by checking the intake and exhaust valve degrees of rotation for opening and closing time with a degree wheel.



All gasket surfaces need to be scraped clean and be free of oil or grease. Avoid using abrasive discs with air tools since abrasive dust can get into the engine and cylinder walls and cause premature wear. Use nylon pads and elbow grease to remove deposits. Vacuum or blow out any material that may fall into the engine.

Make note of the cam position with the engine at TDC. This will help with reassembly. These particular engines do not have conventional timing marks, but use degrees of rotation when the camshafts open and close the valves.

—So, make very careful note of the cam position with the engine at TDC – you can make your own timing marks to simplify this step, which will help with reassembly. Continue by removing the timing chain tensioner and timing cover. This includes the cam sprocket covers for both banks. Note that bank #2 has an additional CSO (Cylinder Shut Off) system that uses oil pressure to activate and deactivate camshaft operation. With tension off the chain, you can remove the cam sprockets and support the chains so they do not come off the crankshaft sprocket and alter your timing marks. Also, do a close inspection of the chain and sprockets while you're there.

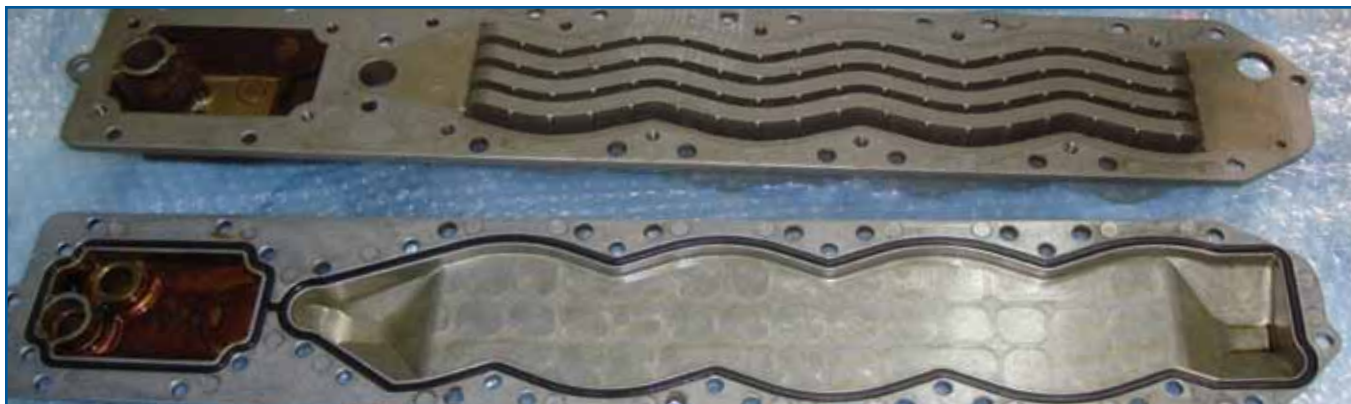
—After removing the fuel injection system, wiring and hoses, the upper intake must be taken off. The intake bolts directly to the cylinder heads and removing the throttle body makes it easier to unscrew the bolts at the rear of the manifold. Putting the car on a lift will give you easy access to the six bolts that hold the two exhaust downpipes to their manifolds. With the intake and exhaust manifolds off, you now only have to remove the cylinder head bolts and timing chain guide pins to lift off the heads.

Cleanliness Is Next To Godliness

—The Torx-type head bolts may have stretched. Mercedes-Benz

provides length specifications to allow you to tell if the stretch is excessive and the bolts need to be replaced. Do not use a tap to clean the threads in the block as it will remove too much material from the threads and weaken them. Use a thread cleaner, rifle brush, or head bolt to loosen any contaminants and blow out the holes using a clean rag to collect the spray.

—With the cylinder heads, off you may want to clean the tops of the pistons, but do not use abrasive discs and air tools to do this. The material that comes off such discs is very abrasive, and these particles can make their way into the engine and accelerate wear. Clean all carbon deposits and gasket surfaces with a nylon pad or brush. The block and cylinder head are both made of aluminum and can easily be damaged with power tools.



The seal between the two parts of the oil cooler is not available separately. It was very difficult to determine if the leak was from this seal or the one underneath, so we decided to replace the whole assembly.

The Source Of The Problem

Under the cylinder heads in the valley of the block is the oil cooler/crankcase breather. It is a two-piece unit that directs engine oil through passages in the cooling system. It also directs crankcase gases through hoses to the upper intake manifold. The oil cooler sealing gasket is available for replacement, but the gasket between two pieces is not, so you'll need to replace the whole unit (part number A137 188 05 01). With clean gasket surfaces, the sealing rings will provide proper sealing if the assembly is properly torqued down. Especially with aluminum engine components, tightening bolts to their proper torque is critical for long-term problem-free operation. Purchasing a subscription to www.startekinfo.com will make all torque specs and service procedures available to you in WIS.

The oil cooler must be installed first since the mounting bolts are not accessible with the cylinder heads in place. With all gasket surfaces thoroughly cleaned, you can now install the heads.

Installation

This is a labor-intensive job and you will feel more at ease using Mercedes-Benz OEM gaskets in your repair. After fitting the head gaskets, be sure all contact surfaces are clear of oil, grease, and dirt on both the block deck and cylinder head surfaces. Bolt holes need to be clean and clear of debris. Place the cylinder head gasket on the dowels provided in the block and place the head on the block being sure not to slide it into position and damage the gasket. WIS instructs us to tighten the cylinder head bolts to 20 NM in a specific pattern. Tighten each bolt an additional 180 degrees in the same pattern in two stages of 90 degrees each. After reassembly, you should change the oil, flush out any old coolant and read/clear codes with your SDS or aftermarket equivalent.

Throughout this procedure, pay particular attention to installing the new oil seals properly — you certainly don't want to go back to fix a leak. Also, if you see any signs of corrosion in the water jackets or passages, Mercedes-Benz recommends using its

special antifreeze formula Part Number A000 989 16 25 14.

You can find all the steps in WIS before you turn a wrench and lay out a plan for getting the job done properly. A smooth-running engine without complications is your reward for doing the job according to Mercedes-Benz procedures and specifications. Your customer is rewarded with many more miles of trouble-free engine operation, and will most likely feel new confidence in your work and loyalty toward you. |



We don't want to have to do this large job twice. Using OEM Mercedes-Benz gaskets gave us an added measure of confidence that there would not be any problems down the road for the customer.

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For the kind of color matches that also match your customers' expectations, call your local BASF distributor at **1-800-825-3000** or visit **www.basrefinish.com**.

Play It Again SAM

In an effort to reduce wiring clutter and streamline the diagnostic process, Mercedes-Benz has advanced the application of the CAN (Controller Area Network) concept. Let's look at the lay of the land and, more importantly, how to use CAN to find problems

— Mercedes-Benz vehicles are among the most technologically advanced in the world. Nowhere is this truer than in the company's use of Controller Area Network (CAN) systems. The goal of a CAN is to reduce complex and redundant wiring in the vehicle. This not only cuts weight and saves space, but also simplifies the diagnosis and repair process. Yes, you heard that right: It can simplify diagnostics. You do need to have the right tools and information to take advantage of what CAN has to offer. In order to diagnose and repair these systems, you should know how their components and operation. You also need a basic understanding of electricity. A light bulb needs a voltage supply and a ground, a switch changes an electrical signal from one wire to another, and solenoids and relays need to be sent a signal to complete a circuit.

— It's where voltage supply and ground come from, and where the switch inputs go to that's the difference. When using your remote to unlock a car there must be a control unit to receive whatever signal comes in. This control unit then has to either supply a power or ground to activate the door locks. There also have to be switches to indicate what position the locks are already in. The same goes with power windows. A switch from the master switch in the driver's door must be run to each door to control that window, plus you need additional wiring to control the window from its own switch. With a CAN

Above: SAM modules are usually attached to or located near fuse panels. On this I 64 chassis ML-Class, the rear SAM is mounted on the passenger's side inner fender under the fuse box. It controls the hatch lock and also powers up the power seats.

system, we can put all switch inputs to a control unit in the door and use a two-wire CAN system to communicate these inputs among control units.

— This is what a CAN system offers. These communicating control modules have evolved from the early '90s with the 140 chassis S-Class. Modules that distribute power and ground and receive inputs have gone by various names in the past. They were sometimes referred to as "Combination Modules," "All-Activity Modules," and finally as "SAMs," or Signal Acquisition Modules. SAMs are usually integrated with or connected to fuse/relay panels. For example, the 211 chassis has a driver's side SAM and a rear SAM. The driver's side SAM receives the power it distributes from the rear pre-fuse box. It both gives and receives power from the Electronic Ignition Switch (EIS) when the ignition key is turned to "On". The driver's side SAM can then directly control some components such as the fog lights and instrument cluster. It also communicates information on the CAN-B system with other control units such as the instrument cluster and Automatic Air Conditioning (AAC).

Vehicle	220.175	Control unit	
Current quick test:			
Filter status: All control units			
ECU	MB number	Result:	
ETC - Electronic transmission control	0225455032	- ✓ -	
ESM - Electronic selector module	2205450132	- ✓ -	
ME-SFI 2.0 - Motor electronics 2.0	0255458932	- ✓ -	
ESP - Electronic stability program	0245450732	- ✓ -	
AIRmatic	2205450032	- f -	
AB - Airbag	0018202226	- ✓ -	
OCP - Overhead control panel	2208201001	- F -	
EZS - Electronic ignition switch	2205450308	- ✓ -	
UCP - Upper control panel	2208205810	- ✓ -	
PSE - Pneumatic system equipment	2208000248	- ✓ -	
SAM-FL - Front left signal acquisition and actuation module	0205451732	- f -	
SAM-FR - Front right signal acquisition and actuation module	0275454532	- ✓ -	
REAR SAM - Rear signal acquisition and actuation module	0325458432	- ✓ -	
ICM - Instrument cluster with maintenance interval display	2205407447	- ✓ -	
SCM IMRM1 - Steering column module	2205450232	- ✓ -	

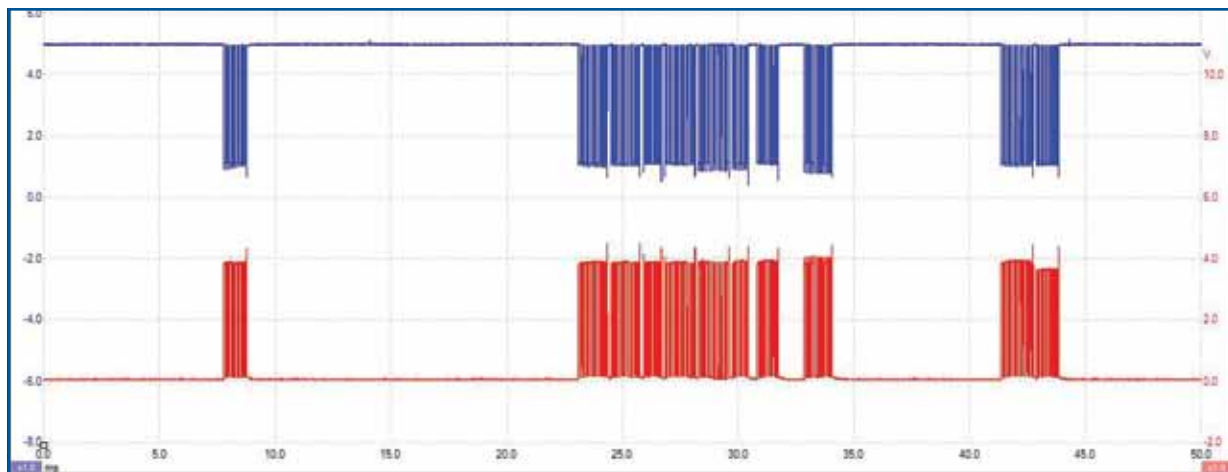
Using your SDS, you can perform a "Quick Test." The SDS communicates with every control unit in the vehicle. Looking at the results of this test you can see there is no communication with the driver's-side SAM. Verify that the EIS (EZS) has the SAM listed as present in the coding.

S1 (Rotary light switch)			
No.	Name	Actual values	
075	Left parking lamp	OFF	
076	Right parking lamp	OFF	
077	Side lamp	OFF	
078	Driving lights	ON	
079	Side lamp, foglamp	OFF	
080	Side lamp, foglamp, rear foglamp	OFF	
081	Driving light, foglight	OFF	
082	Driving light, foglight, rear foglight	OFF	

Looking at the SAM data, you can see inputs and outputs while you operate the switches. Here, we see the inputs from the light switch to the driver's side SAM, and we can directly command outputs under the "Activations" tab.

Problems found in the electrical system of a vehicle can be diagnosed one of two ways. You can go to the offending input, such as a switch, and check the operation by monitoring signal voltage. You will need to know proper switch operation. You then can go directly to the problem output and verify that a sufficient power and ground supply are present with a DMM (Digital Multi-

Meter). If the switch input is working, but the output is not providing power or ground, how will you know which component has failed? With this 211 Chassis E-Class, let's say the fog lamps are not working. The light switch input uses Bus LWR communication to send the command to turn on the fog lights. The driver's side SAM then directly turns on the fog lights. Do we replace the light



Before replacing a SAM, you should verify power, ground, and that communication lines are open. An oscilloscope will display the computer communication with a high and low square-wave signal. These signals were taken at the driver's side SAM verifying that the problem was with the unit.

Initial startup

Initial startup with automatic takeover of settings of previous control unit
 Initial startup with manual settings input for new control unit
 (For example: The previous control unit can no longer be read.)

Once the SAM has been replaced, you will need to "Initialize" the new unit. If you can communicate with the old unit, pull the information out first, then replace the control unit and upload the configuration data. If you cannot communicate, you'll have to enter the data manually.

switch, SAM, or both bulbs? Of course, you should check both bulbs first, but investing in a Star Service Diagnostic System (SDS) will give you the information you need conveniently.

—With an SDS, which is available for purchase from your Mercedes-Benz dealer network, you can enter the driver's side SAM and look for Diagnostic Trouble Codes (DTCs) and monitor the data. You can watch switch inputs coming in on Bus and CAN communication lines on a software level. Depending on the control unit, you may also be able to see if the offending control unit is putting out power to the necessary circuits. With bi-directional control under "Activations," you can command outputs and see if they work without removing panels to access the output itself or check electrical signals with a meter or scope. If you do find that the driver's side SAM is not applying power to the circuit, you still should check powers and grounds to the SAM and verify that the wiring from the SAM to the bulbs is not damaged. If it is a communication issue, you

should use an oscilloscope and verify that the CAN communication is making it to the SAM.

—If you have to replace a SAM, there are some additional steps you will need to follow to complete the repair. Whichever SAM you replace (Front, Driver's, Passenger's, or Rear), you will have to tailor it to the rest of the vehicle. Once again the SDS will allow you to perform "Initial Startup" of a module. You are then basically given two choices, either pull the information out of the old control unit and install the data into the new SAM, or manually enter the SAM information if you cannot communicate with the offending SAM (or module). This second option will require that you know what options are on the vehicle and how the owner had those options configured. Keep in mind that the purpose of the SAM is to control multiple functions that are close by. When replacing these SAMs, be sure to check all of the functions the SAM is in charge of.

—With a paid subscription to Startekinfo.com you can look at "function charts" in the wiring diagrams. They lay out the control units that are involved in a particular function. You can then either use your SDS to look at data PIDs in each of these control units or perform electrical tests at the wiring. Either way, a more accurate diagnosis and complete repair will prevent a comeback and instill confidence in your customers that you can repair "the best engineered cars in the world." |

FIRE...



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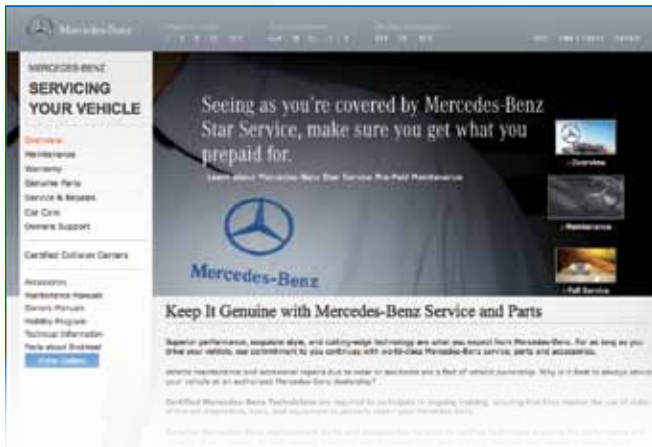


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Please visit us at

www.mbusa.com/mercedes/service_and_parts/genuine_parts

The ***New Wholesale Parts Website***

is up and running complete with the following enhancements:

- ***What's New*** : Accessories tab added for direct access to the items that enhance your Mercedes-Benz vehicle.

- Page with helpful ***parts*** information.

- ***Links*** to other informative sites like the ***Classic Center*** and ***Collision Program***.



- ***Direct link*** to the Electronic Parts Catalog (EPC) to look up parts.

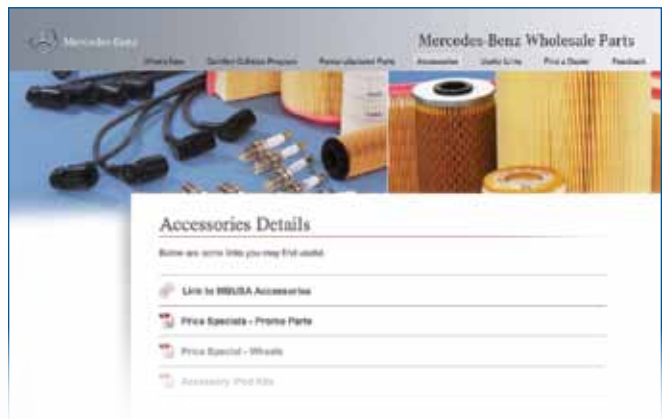
- ***Downloadable*** Remanufactured Parts Catalog and Reman Parts policies.

- User friendly links to tools such as ***STAR Tekinfo*** and ***WIS***.

- ***WebParts online ordering*** information and how-to video tutorial.

- ***Search*** feature to find archived StarTuned Magazine articles & information.

Please visit us at www.mbwholesaleparts.com



GENUINE MERCEDES-BENZ REMANUFACTURED A/C COMPRESSORS

WHY BUY GENUINE?

- R**EPLACE — We replace more parts than aftermarket brands.
- E**NGINEERED — Designed to meet original OEM drawings.
- M**ANUFACTURED — Made with same OE components as factory parts.
- A**SSEMBLED — Completely assembled from components and not just repaired.
- N**EW — Tested to new unit standards.

IT'S ALL IN THE PROCESS

Remanufacturing Process (Genuine Mercedes-Benz)

1. Dismantle core and clean all components.
2. Replace key components 100% with new OE part.
3. Test all other critical components.
4. Replace components that do not meet specs.
5. Assemble, test and box.

Rebuilt Process (Typical Aftermarket)

1. Identify damaged part or parts.
2. Replace damaged part with non-OE part and clean.
3. Re-assemble, test and box.



Remanufactured for Mercedes-Benz by
DENSO

Available through your local Mercedes-Benz Dealer



Mercedes-Benz



Don't gamble with your reputation. Keep it Genuine.



Your Mercedes-Benz customers expect the best without excuses or compromise. When a customer trusts you enough to give you their Mercedes-Benz to work on, there's one way to make sure it's still all Mercedes-Benz when you give it back: Use Genuine Mercedes-Benz Parts. For more information, contact your local Mercedes-Benz Wholesale Parts Dealer or visit us at www.mbwholesaleparts.com.

UNSURPASSED QUALITY | FACTORY BUILT & TESTED | COMPETITIVE PRICE | PROVEN RELIABILITY | PRECISION FIT | LIMITED WARRANTY



Mercedes-Benz