BM91535H
FITTING ADVICE

EXCEEDING EXPECTATIONS

BM CATALYSTS

CYLINDER HEAD STUDS

Studs in the cylinder head can unwind during removal of the existing unit and cause problems when fitting a replacement unit.

The front flange and manifold assembly of the BM part is designed to be the same as the OEM equivalent. This improves consistency/uniformity along the length of the flange and reduces the risk of a mild steel flange warping when exposed to heat during manufacture.

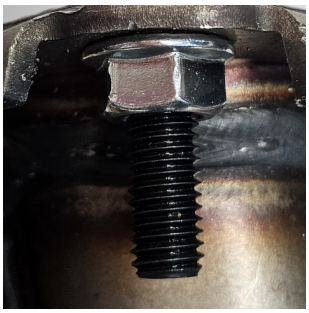
The studs in the cylinder head have a threaded section at each end with a blank section (shank) in between. The length of the shank should be approximately equivalent to the thickness of the flange + the gasket. This then allows maximum use of the threads that are not inserted into the block for installing and tightening the nuts that hold the part securely in place.

If the thickness of the flange + gasket is greater than the length of the shank of the studs, then that reduces the number of threads that can be used to install the correct nuts. This is particularly an issue if there are any damaged/corroded threads (especially on the end), which will mean nuts cannot be properly tightened. The BM part has been designed as per the OEM to mitigate this risk.

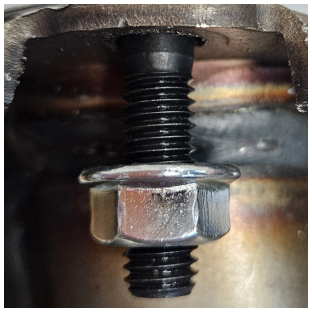
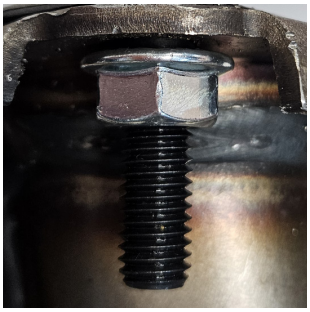
The studs in the cylinder head should be fully tightened, up to the shank and not unwound. If the studs are unwound this will be indicated by visible threads between the shank and the cylinder head. This unwinding can happen during removal of the previous/original catalytic converter. If this has occurred and it is not possible to re-tighten the studs, then it may be necessary to use a washer between the flange and the nut to ensure there are sufficient threads available to tighten that specific nut. The use of washers does have an additional advantage of spreading the load of the nut over a larger surface area of the flange.

The correct tightening sequence is also important when fitting any manifold catalytic converter. Start at the middle and work outwards in a spiral pattern moving from top to bottom. Gradually increase the tightness of the nuts in the same order until fully tightened.

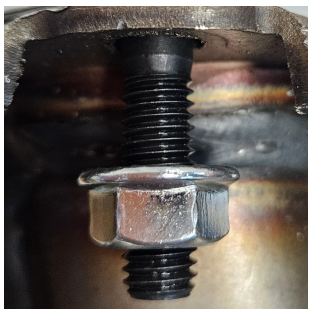
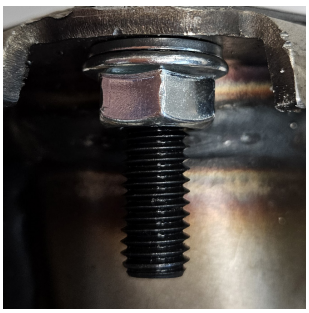
Scenario 1
Stud showing minimal blank section; the nut will sit flush/ tight to the flange

Scenario 2
Stud showing large blank section; the nut will not sit flush/ tight to the flange

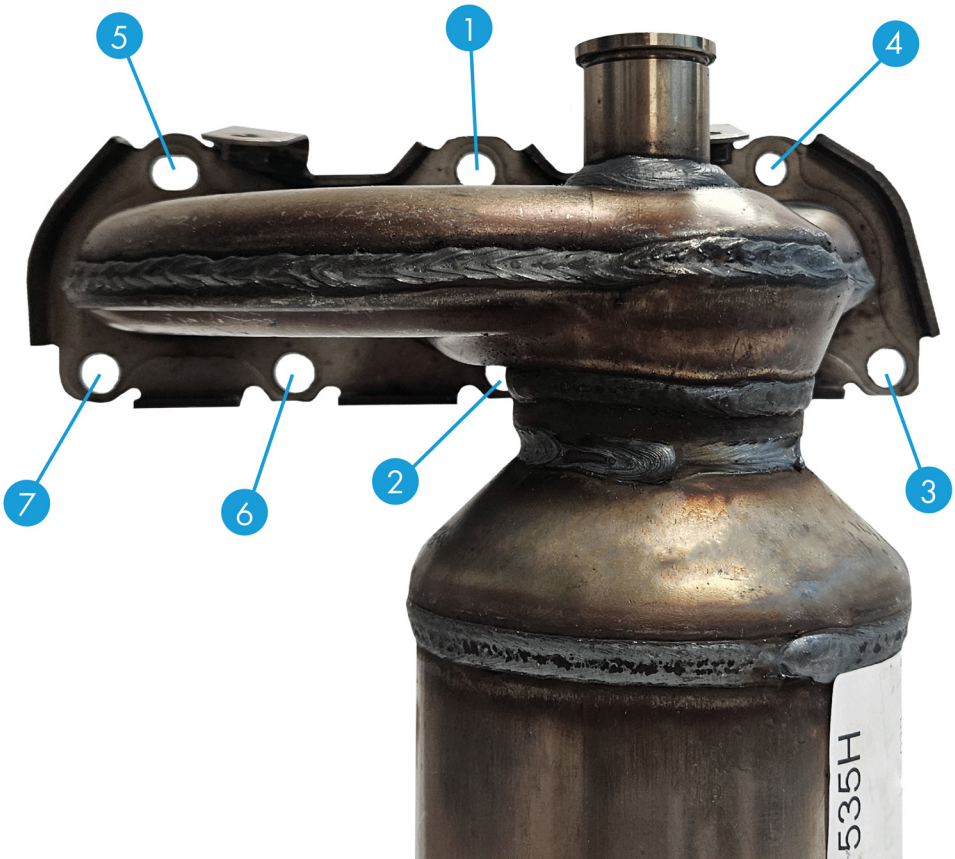



Scenario 3
Stud showing large blank section; the addition of a washer will enable the nut to sit flush/tight to the flange

TIGHTENING SEQUENCE

To avoid warping the flange when fitting the replacement unit, bolts should be incrementally tightened to the cylinder head in the following sequence:



- When removing the old unit, sometimes the studs holding it to the cylinder head wind out slightly; ensure that they are screwed back in fully to create an airtight seal with the new unit.
- Once the old unit has been removed, ensure that all contacting surfaces are clean and that all traces of the old gasket are removed from the cylinder head. Failure to do so could result in an exhaust leak.
- Fit the replacement unit (loosely to begin with) to the engine using a new gasket at the cylinder head.
- Make sure that the support bracket positioned above the three-bolt flange is loosely bolted to the engine. Failure to fit support brackets could result in the unit breaking at its weakest point due to stress caused by excess movement.
- Once it is lined up and correctly in position, proceed to tighten all nuts from the centre outwards; this should pull the unit to the cylinder head evenly, creating a tight seal.
- Ensure that the support bracket is tight.
- Once the unit has been securely fitted, the unit can be connected to the next part of the system (connecting pipe) using a new gasket.
- When refitting the lambda sensor, take care to ensure that the wires are not twisted.

FITTINGS

Included with the unit:
x3 studs

Optional (at cost):

FK91535A
x1 front gasket
x1 rear gasket

FK91535B
x1 front gasket
x1 rear gasket
x3 rear nuts
x9 front nuts

CATALYTIC CONVERTER WARRANTY & FITTING ADVICE

EXCEEDING EXPECTATIONS

BM CATALYSTS

INDEX

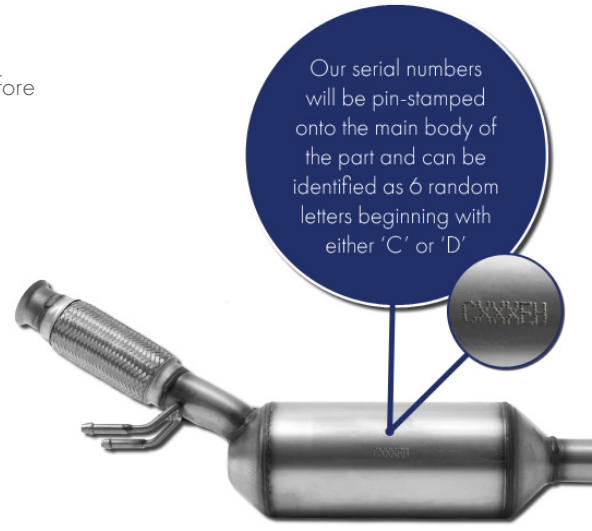
PLEASE NOTE:

This information is provided for informative purposes only and should not be intended as a technical repairing guide. BM Catalysts cannot and will not be held responsible for any damages caused as a result of misusing this document.

SERIAL NUMBERS:

We strongly recommend noting or recording the serial number of your replacement unit before it is fitted as the label and/or stamp may be obscured after fitting. The serial number will be required for any query related to the unit, including warranties.

The serial number can be identified as six random letters beginning with either 'C' or 'D' which will generally be pin-stamped onto the main body of the unit and printed on the accompanying paperwork.



INSTALLATION GUIDE

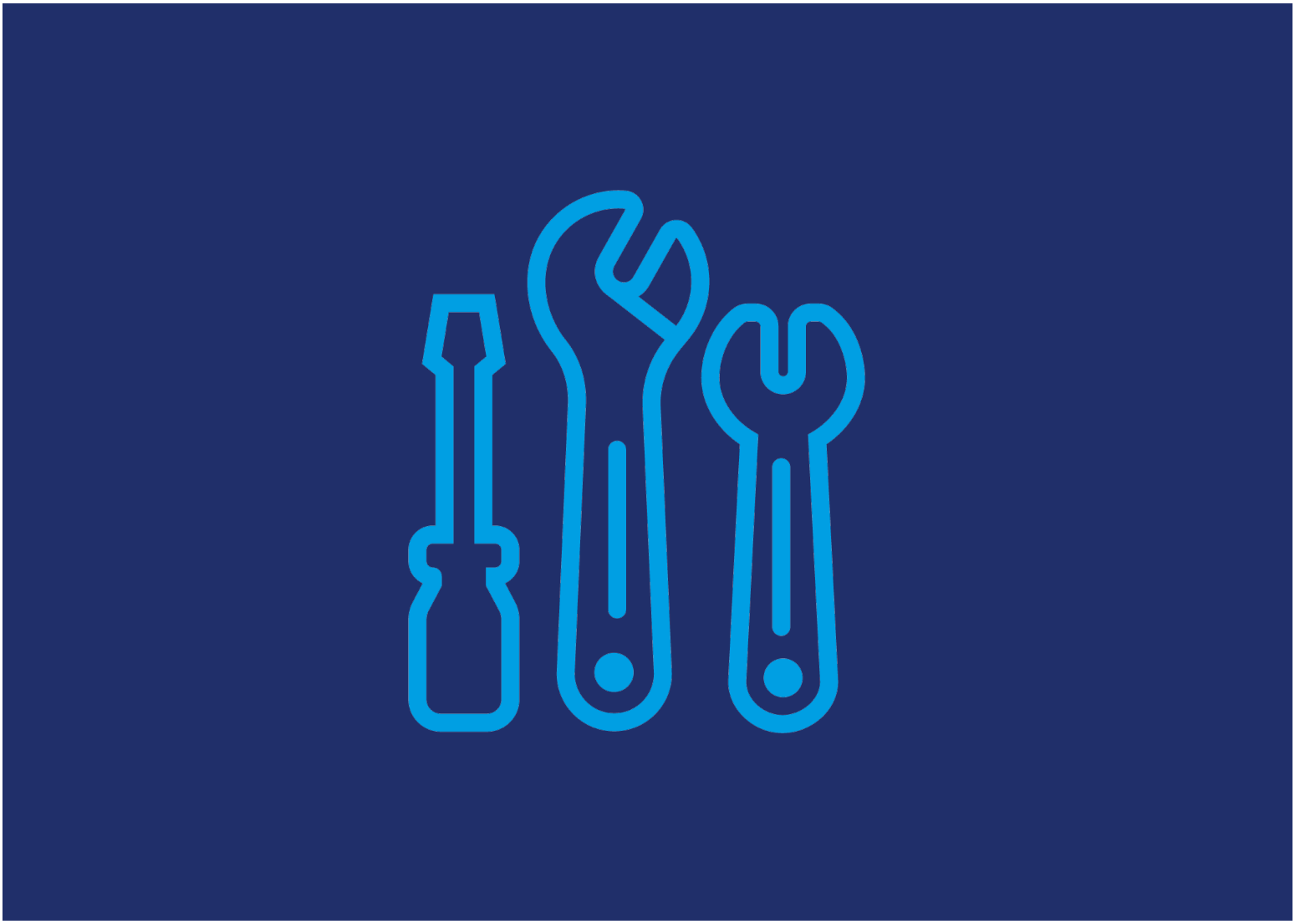
Before fitting a replacement catalytic converter, you must ensure that the root cause of the failure of the existing unit has been correctly diagnosed and rectified. Failure to resolve any faults or defective components may result in damage to the replacement catalytic converter and invalidate the unit's warranty.

Safety notice

Ensure all work is undertaken by a competent individual using only the appropriate tools and equipment. Don't attempt to fit a catalyst unless you have experience doing in so. Ensure that safety legislation relevant to your region and/or country is adhered to during the replacement of the catalytic converter.

Removal

- Disconnect the earth terminal from the vehicle battery
- Safely lift the vehicle and ensure that the vehicle is secure before commencing any work underneath it - always fit the catalyst when the vehicle is on a ramp, never on axel stands
- Take a moment to observe the exact positioning of the current unit and perhaps take photographs as a point of reference should you get stuck later on
- Your catalytic converter may be equipped with sensors. Identify any electrical connectors that link to any sensors on the catalytic converter.
- Proceed to disconnect any electical connectors and ensure all wires are completely free
- Carefully remove any sensors and keep them protected from damage until they are refitted
- Loosen all retaining nuts and bolts that secure the catalytic converter to the vehicle and any other exhaust components
- Any rusted or seized fittings may require application of penetrating oil or heat to aid removal. Ensure appropriate safety measures are undertaken when using naked flame heat sources.
- Remove all nuts and bolts and remove the catalytic converter (assistance may be required if the unit is large and/or heavy)



INSTALLATION GUIDE

Before fitting a replacement catalytic converter, you must ensure that the root cause of the failure of the existing unit has been correctly diagnosed and rectified. Failure to resolve any faults or defective components may result in damage to the replacement catalytic converter and invalidate the unit's warranty.

Fitting

- Ensure all mating surfaces are clean and free from contaminants
- Always use a new fitting kit wherever possible to ensure that any nuts and bolts used are new - rusty nuts and bolts sometimes lose threads, meaning they may not be long enough to fit the replacement unit
- Do not apply sealant or exhaust paste; doing so may damage your replacement catalytic converter and invalidate the warranty
- Do not hit the catalytic converter with a mallet or hammer etc. to try and force it into place; doing so may fracture the monolith and invalidate the warranty
- Install the replacement catalytic converter using the new fitting kit but do not fully tighten the nuts and bolts
- Re-install any sensors removed from the original unit but do not tighten fully
- Inspect the areas around the replacement catalytic converter and ensure there is no possibility of contact with the vehicle floor or other components
- Fully tighten all nuts, bolts and sensors but take care not to over-tighten
- Ensure all sensor cables are secure and are not in contact with the exhaust system
- Slowly lower the vehicle, reconnect the battery and then start the engine and inspect for any leakage - you may need to lift the vehicle again for inspection access
- Ensure any associated fault codes are cleared from the ECU

10 WAYS TO CARE FOR YOUR CATALYTIC CONVERTER

There are several things you can do to help ensure your catalytic converter has a long and healthy life:

- Never use exhaust paste in front of a catalyst when fitting. When the exhaust paste hardens, it can break off in chunks and damage the monolith. Paste dust can also break up the monolith.
- Always use the correct fuel and oil for your car
- Never use a fuel additive without first reading the instructions to find out if it is suitable for use with a catalytic converter. If in doubt, consult the manufacturer of the additive.
- Never attempt to bump or tow start your car. This causes unburned fuel to be injected into the catalytic converter which can make the monolith overheat and melt.
- Drive slowly over speed bumps or very bumpy roads to reduce the chance of the exhaust system being grounded. This could cause damage to the catalytic converter.
- Always investigate any warning lights on the dashboard as soon as they occur. Any delay could cause damage to the catalytic converter.
- Never tow anything that is too heavy for your vehicle to cope with. For example, an overloaded caravan will actually push a car along when it travels downhill. This sends unburned fuel into the exhaust system and can cause the monolith to overheat and melt.
- Have your car regularly serviced to the vehicle manufacturers' specifications. In particular, make sure the engine is running correctly. A poorly tuned engine can cause the monolith to break down or become covered in soot which stops it converting.
- Take care when driving through deep puddles, fords, or parking when there has been heavy snow. The catalytic converter operates at an extremely high temperature and when it comes into contact with water or snow it cools down rapidly. The steel shell cools more rapidly than the monolith and in extreme circumstances the monolith can be crushed as the steel shell contracts.
- Don't park your car over long grass or anything similar. As the catalytic converter operates at such a high temperature it can actually set fire to the grass!

CATALYST REPLACEMENT GUIDE

There is far more to replacing a catalyst than simply removing the old one and refitting a new one. Following the advice set out below will help reduce the likelihood of problems occuring with your replacement unit:

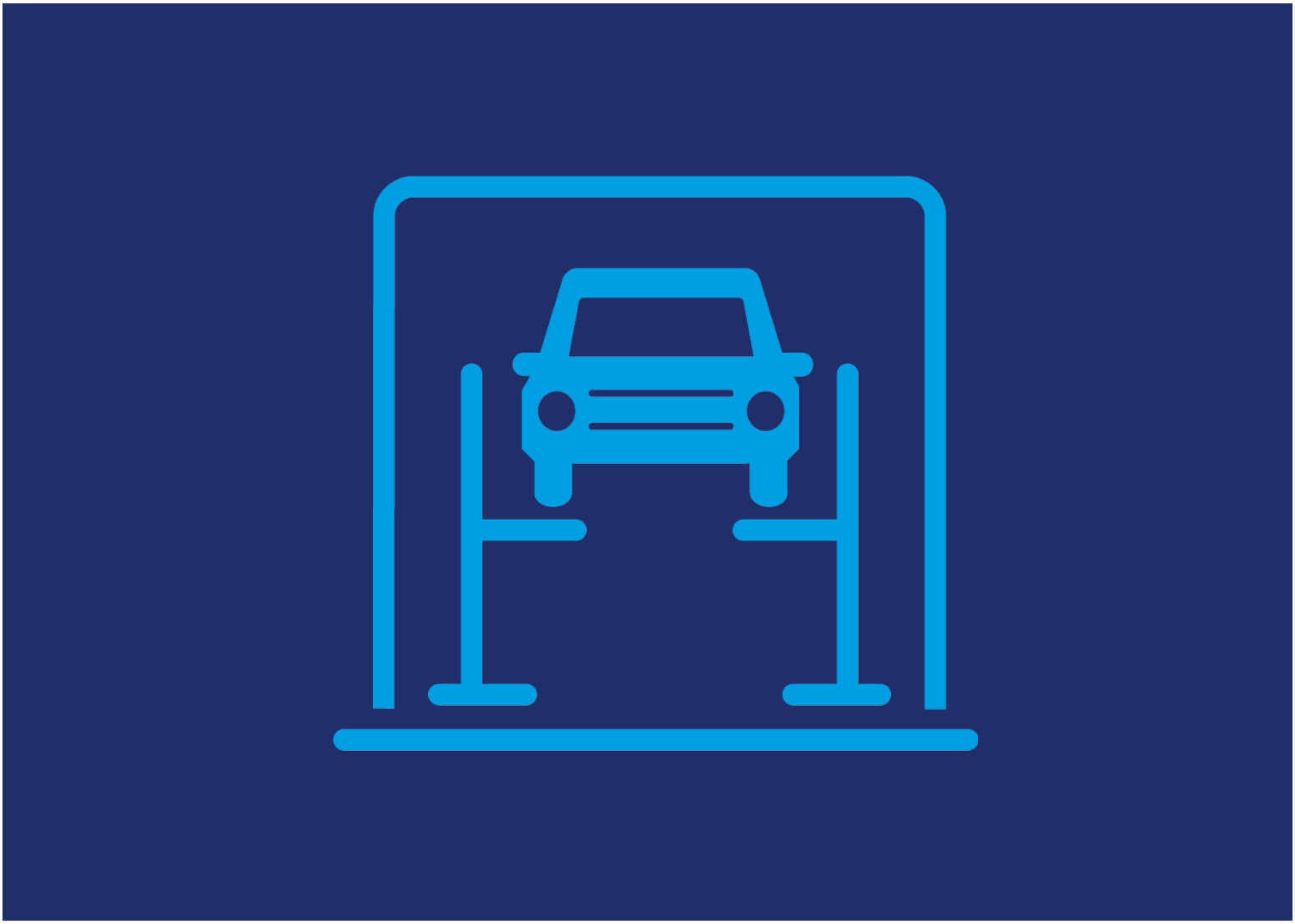
Structual failure?

This is the easiest sort of fault to identify and can be simply caused by wear and tear. Examples of this are a broken flange, snapped pipe work, blowing flex etc. If the part has snapped, check the engine mountings are not worn. This allows excessive movement through the engine into the exhaust which can contribute to this type of failure. If exhaust brackets are not replaced when they corrode, extra pressure is put on the catalyst and can lead to it snapping at the weakest point.

Rattling catalyst?

The first thing you should do is check if the catalyst is actually rattling! It may be a vibrating heat shield on the vehicle or a loose baffle in the exhaust causing the problem and it is being wrongly identified as a rattling catalyst. If it is established the cat is rattling, it should be checked for the following:

- **Impact damage:** check the catalyst for dents and road rash (scratches). If these are evident, it is likely the catalyst has impacted against a speed bump, causing a fracture in the ceramic monolith and it to break down and rattle.
- **Exhaust paste:** check the inlet side of the port for exhaust paste. If it is evident, it is likely the exhaust paste has broken up and impacted against the monolith, causing it to fracture and break down.
- **Blue can/melted monolith:** does the outside of the cat have a blue/purple shade? Does the ceramic monolith show signs of melting and warping? If so, this is a sign that the catalyst has superheated due to excessive levels of unburned fuel in the exhaust system. When this fuel enters the catalyst it ignites, superheating the monolith and causing it to breakdown. This is always a sign there is a fault with the running of the vehicle so a full diagnostic check and emissions check should be carried out to identify the fault before fitting a replacement catalyst.



CATALYST REPLACEMENT GUIDE

There is far more to replacing a catalyst than simply removing the old one and refitting a new one. Following the advice set out below will help reduce the likelihood of problems occuring with your replacement unit:

Operational failure?

Operational failure is failure with the working of the catalyst, such as an MOT emissions failure or Engine Management Light issues.

- **Emissions failure:** emissions failures should always be investigated carefully as failures normally occur due to a vehicle fault. If the vehicle has failed on the hydrocarbons (>200ppm) there is a definite fault with the vehicle over-fuelling which must be rectified before fitting a replacement catalyst. If the vehicle has failed on the 'λ' (lambda), there is a problem with the air:fuel mixture on the vehicle. It does not always mean the lambda sensor needs replacing! A CO failure means the catalyst is not able to convert all the gases that pass through it. However, if it has hydrocarbon levels greater than 60ppm, it is likely the catalyst has been contaminated with unburned fuel and is unable to convert to its full capacity.
- **Engine Management Light (EML):** EML issues can be tricky to resolve. The most common fault code that occurs in relation to a catalyst failure is P0420: "Cat Inefficient". There can be several reasons this code can be generated which are not a fault of the catalyst. For example, it can relate to a lambda fault, an air leak in the exhaust system causing false readings, or retarded spark timing. All possible faults should be thoroughly investigated before condemning the catalyst.

WARRANTY ADVICE

Although every effort is made to ensure our catalytic converters will not fail, sometimes an external problem or a fault with the vehicle can cause them to break down. Our warranty policy is in place for manufacturing defects only and the following problems are not covered under manufacturer's warranty:

Impact damage

This is external damage caused to the catalytic converter by hitting a solid object such as a speed bump. The damage can be seen by dents or scratches on the catalyst. The cat will usually rattle and break up.

The use of exhaust paste

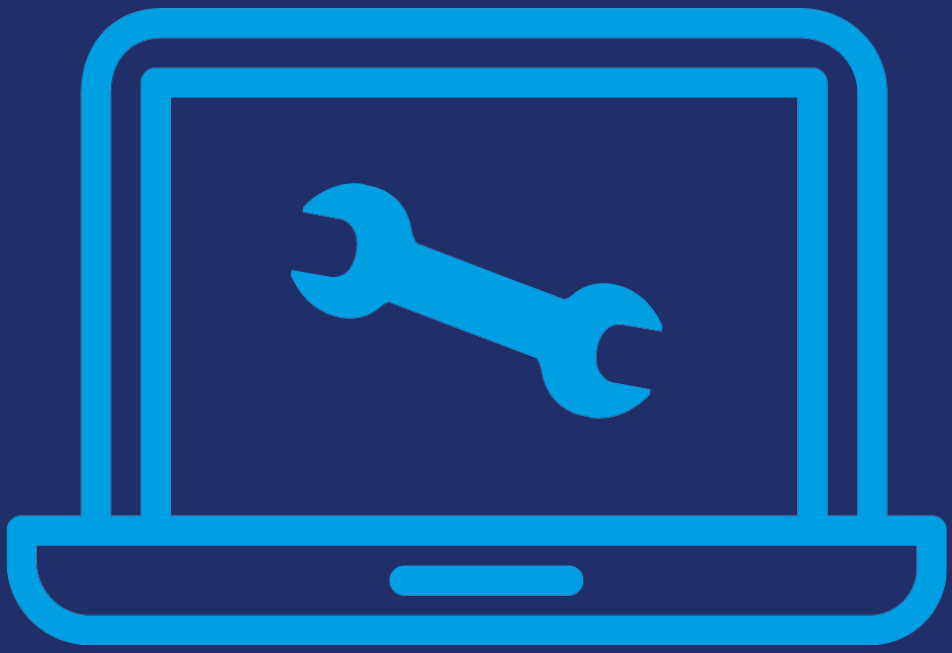
The use of exhaust paste in front of a catalytic converter is an automatic warranty failure. This is because as the paste dries, it becomes very hard and brittle and as it breaks up it can hit the monolith and cause it to break up and fracture. The use of silicon sealant is fine as this does not harden in the same way.

Oil fouled

This is caused by oil getting into the exhaust system and contaminating the catalytic converter. The cat will be unable to convert any gases passing through it and will eventually fail.

Plugged or contaminated

Plugged or contaminated catalytic converters can be caused by using the wrong fuel in your car, or if a vehicle has been running poorly for some time. A similar thing will happen if fuel additives are used that are not suitable for use with a catalytic converter. The cat will not be able to convert any gases and in the worst cases will block up completely.



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Overheating

There are many problems that can cause a catalytic converter to overheat or fail. The most common cause is unburned fuel entering the catalytic converter. This can be caused by faulty spark plugs or leads which cause the engine to misfire and ruin the catalytic converter. It will also be damaged if the distributor timing is out. Other factors that may cause the cat to overheat and fail are a faulty lambda sensor, fuel injection system or a map sensor. More information can be found in the "Catalyst Replacement Guide" section.

Melted/broken monolith

A monolith is usually broken when it is impacted by an object or when it suffers a sudden change in temperature. More information on this can be found in the "Catalyst Replacement Guide" section.

Emissions failure

We will not accept warranties for emissions failures with HC levels in excess of 60ppm, as anything above this level usually indicates a vehicle fault which has caused the cat to fail. No returns for emissions failures will be accepted until we have seen a copy of the failed emissions report and approved the return.

Noisy

A catalytic converter should not be considered to be a silencer, although it does have some silencing qualities. Noise can be caused by excessive fuel getting into the catalyst.

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IF YOU THINK YOUR CATALYTIC CONVERTER IS FAULTY

For further information of our warranty Terms and Conditions, please refer to section 11 of the full Terms and Conditions of Sale document via bmcatalysts.com.

If you have reason to believe your catalytic converter is faulty, the first thing to do is contact your point of purchase and explain the problems you are having with the unit. We also have a dedicated product support helpline that can be contacted to assist with any issues that may arise.

If after discussion with your point of purchase or the product support helpline the problem cannot be resolved, the catalytic converter may need to be returned to the manufacturer for a warranty inspection. The unit needs to be returned to us through the point of purchase to establish if it is faulty.

If you require any further information about catalytic converters, please contact your local stockist or point of purchase.

PRODUCT SUPPORT

Tel: +44 (0)1623 663802
Email: Support@bmcatalysts.com

EXCEEDING EXPECTATIONS

BM91535H_V01