

AUTOMOTIVE CONSULTING ENGINEERS LTD



CONFIDENTIAL TECHNICAL REPORT

Client			
Your File Ref		Your Contact	
Date of Sale		Del Miles	
Failure Date		Failure Miles	
Policy No		Operator Name	
Vehicle		Engine cc	
VIN No		Reg No	
Odometer		Report No	

Inspected At			
Telephone Contact Name		Tel Number	
Opening Times	8.30am – 5.00pm	Visit Time	12.30pm
Visit Date	22/02/11	Vat Registered	

REPAIRERS REPAIR COSTS QUOTED AS (ALL + VAT)	
LABOUR QUOTED AS	£532.00
PARTS QUOTED AS	£2354.92
COMPONENTS REQ'D	Exchange engine.

REPORTED CONDITION	Vehicle taken to the dealer for major engine damage. Dealer has advised the vehicles auxiliary belts have snapped but the driver has continued driving ignoring warning lights resulting in a warped engine.
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CONDITION OF VEHICLE
The timing cover and cylinder head had been removed, the engine block was still in situ.

REPORT	
R1	We can confirm that prior to our visit, we contacted ***** at the repairers on the ***** at 2.17pm and were informed that the vehicle was ready for inspection. We informed the repairers that the following would be required to facilitate an inspection on the reported condition: cylinder head removed
R2	The detail of the inspection and investigation possible reflects the condition of the vehicle as detailed above.
R3	We carried out inspection to the engine in its partially dismantled state the engine being of a 3 cylinder, 12 valve, petrol type.
R4	Initial examination of the engine block revealed all three cylinders showed signs of water ingress consistent with cylinder head lift and coolant depletion into the engine.



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R5	The cylinder bores showed signs of water staining and discolouration patches and also surface corrosion which had developed as a result of the engine standing with coolant present within the cylinder bores, this had not had a detrimental affect as the engine was showing signs of severe internal engine high core temperatures, dark areas were also apparent around each combustion sealing ring area consistent with the gasket breaching allowing combustion gas to leak out.
R6	The head gasket was intact and due to its construction showed no positive evidence of failure in any specific area although the head gasket showed signs of cylinder head lift on all cylinders.
R7	The thermostat housing was found to have melted consistent with very high internal core temperatures.
R8	The water pump appeared to be intact and serviceable as did the water pumps plastic impellor.
R9	The head had been sent for specialist testing and this had revealed 0.15mm of distortion which is outside the manufactures tolerance apart from this the head did not show signs of burning, cracking or erosion.
R10	The valves appeared to be seating correctly within the head and showed no evidence of any burning or damage.
R11	The cylinder bore surfaces showed signs of marking which may indicate the early stages of piston ring seizure.
R12	The auxiliary belt tensioner had collapsed and the repairers indicated the auxiliary belt was missing prior to dismantling and was most likely lost at the scene of the incident.
R13	Examination of an idler wheel which forms part of the tensioner assembly, revealed it had collapsed and disintegrated, closer examination of the tensioner revealed that the back showed signs of chatter marks and wear had also developed to the support boss which would result in excessive movement within the tensioner assembly and would either suggest insecurity in the assemble or wear and deterioration had been the initiating cause of the failure of the tensioner assembly.

OPINION

O1	In our opinion based on the visible evidence we would conclude that the engine was showing signs of extensive overheating damage.
O2	The cylinder head has been tested and is distorted beyond the manufacturers tolerance and is in need of replacement.
O3	We can also confirm that the cylinder bores were showing signs of overheating discolouration patches and the early stages of piston ring partial seizure as such we would conclude that the engine was uneconomical to repair.
O4	The engine had suffered very high internal core temperatures and cylinder head lift leading to the consequential damage apparent.



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O5	We would consider based on the condition of the components that the initiating cause of the fault was that the auxiliary belt tensioner had collapsed in service due to wear and deterioration, clearly this condition will need to be referred to the manufacturer for consideration, this has resulted in displacement of the auxiliary drive belt which drives the alternator, water pump and air conditioning following displacement of the belt, clearly these components would be inoperative and the alternator warning light would illuminate, the air conditioning system would be inoperative and the water pump would not be driven, this would prevent coolant circulation within the engine leading to very high engine core temperatures which should have been apparent on the manufacturers warning device, we would therefore conclude that the initiating cause would be unavoidable from the operators perspective but the extent of the consequential damage would clearly indicate the vehicle had remained in service whilst a defect of a catastrophic type had developed and leading to consequential damage which could have been avoided by a more prompt response, with the illumination of the alternator warning light, failure of the air conditioning system to be operative and in the form of very high operating temperatures and on the manufacturers warning device the vehicle should have been taken out of service which would have prevented the now apparent consequential damage to the engine necessitating in its replacement.
O6	The high engine internal core temperatures have led to distortion to the cylinder head, discolouration to the cylinder bores, head lift which would further contribute to the overheating and the form of marking to the cylinder bores which would indicate that the piston rings had started to seize.
O7	Clearly finally the fault would be evident in the form of loss of engine power and possibly failure of the engine to start. The engine may also have been pinking prior to the condition reaching this stage of damage.

PARTS NEEDING REPLACEMENT

P1	Exchange engine.
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SERVICE HISTORY.

Not presented at the time of our inspection.
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Report No	392688	Vehicle	Skoda Fabia SE 12V
Your Ref	900000315254	Reg No	FY60VSL

CONCLUSION

C1	We would conclude that the failure of the auxiliary drive belt tensioner would be outside of the control of the operator and appeared to have developed due to advanced wear and deterioration within the component and should be referred to the manufactures for consideration.
C2	The extent of the consequential damage however would clearly indicate the vehicle remained in service for a period of time which was unsafe and a more prompt response to the condition would have prevented the now apparent damage necessitating the replacement of the engine as such these costs will need to be referred to the operator for consideration.

DUTY and STATEMENT OF TRUTH

DUTY: It is the duty of an expert to help the Court on the matters within his expertise. This duty overrides any obligation to the person from whom he has received instructions or by whom he is paid. "I understand my duty to the Court and have complied and will continue to comply with it and I am aware of the requirements of Part 35 and Practice Direction 35, this protocol and the practice direction on pre-action conduct." **STATEMENT OF TRUTH:** " I confirm that I have made clear which facts and matters referred to in this report are within my own knowledge and which are not. Those that are within my own knowledge I confirm to be true. The opinions I have expressed represent my true and complete professional opinions on the matters to which they refer."

For and on behalf of Automotive Consulting Engineers Ltd

Engineer

BIOGRAPHY

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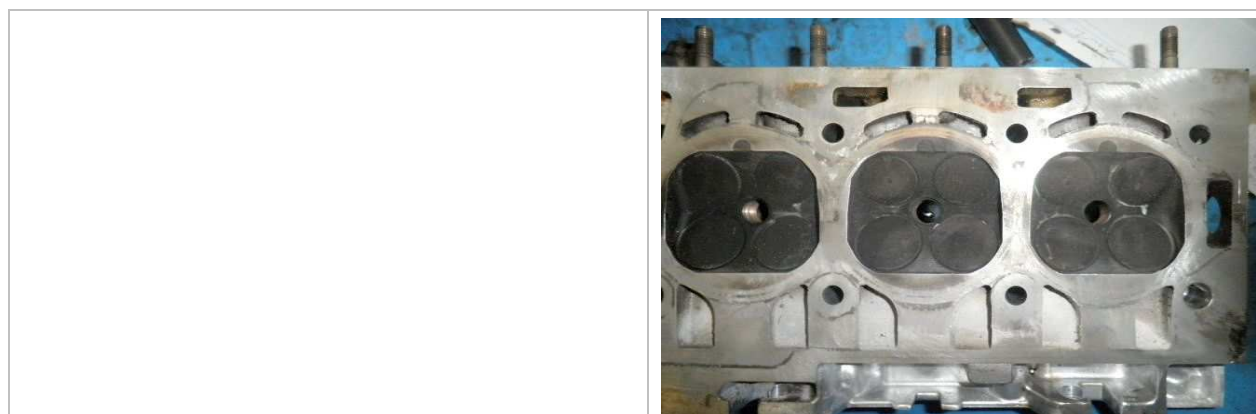
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Cylinder head



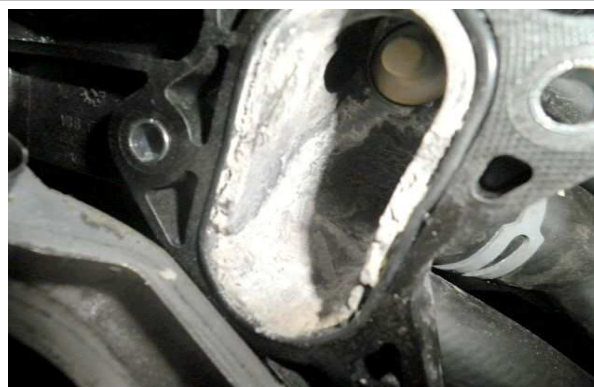
Head gasket



Cylinder bore



Cylinder bore



Thermostat housing

Please Note: We confirm that the photos embedded have not been touched or enhanced, other than to adjust the image size to fit the table and brightness on dark images. The raw images are available for comparison.

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Aux belt tensioner outer housing



Aux belt tensioner inner housing



New belt tensioner

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