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December
2015
Volume 63 . Number 12
PropertyCasualty360.com

COMBATTING CYBER RISK
PG 21

LEGAL DECISIONS & INSURANCE
PG 32

2015 SALARY SURVEY
PG 28

SELF-DRIVING CARS
PG 34

SHAME ON YOU

THE 2015 FRAUD HALL OF SHAME

PG 24

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Engine Damage: Impact or Mechanical Failure

Claims handlers are often charged with determining if an automotive engine failure is a result of an impact with an object or a result of an internal problem that caused the damage, typically called mechanical failure. Many policies are written to extend coverage when the vehicle impacts an object causing damage to the engine, while coverage is denied if an internal malfunction causes damage to the engine. **Figure 1** is a view of a penetration in an engine block that was claimed to be caused by an external object striking the engine.

Figure 2 is a view of a typical engine. Penetrations in the block area shown by the upper arrow are typically the result of an internal engine problem such as connecting rod or piston failure.

The engine block is higher up in the vehicle engine compartment and less vulnerable to penetration by an object found on the road. A penetration at the oil pan can be a result of impact with a road object as this is an area that is low and close to the road on a vehicle.

Figure 3 is a view of an engine mounted in longitudinal fashion — the crankshaft is parallel to the long axis of the vehicle. The lower arrow points to the oil pan which is more vulnerable to road object impact than the engine block as indicated by the upper arrow.

Figure 4 shows a transverse mounted engine — the engine crankshaft is perpendicular to the long axis of the vehicle. The lower arrow points to the oil pan which is vulnerable to road object impact, while the engine block is well protected as indicated by the upper, right arrow.

Going back to **Figure 1**, the penetration is at the engine block near a connecting rod in an area that would be difficult for a road object to penetrate without leaving any other evidence of impact, such as scraping. The shape of the penetration presents fracture surfaces that angle outward, which is characteristic of a penetration that came from within the engine.

Figure 5 is a view of an oil pan showing impact damage to the lower portion — a crease in the metal. This did not cause a leak or interfere with any engine components and did not cause the engine failure. Oil analysis showed high internal metallic contact, suggesting that the failure was a result of engine wear brought on by poor maintenance.

FIGURE 1

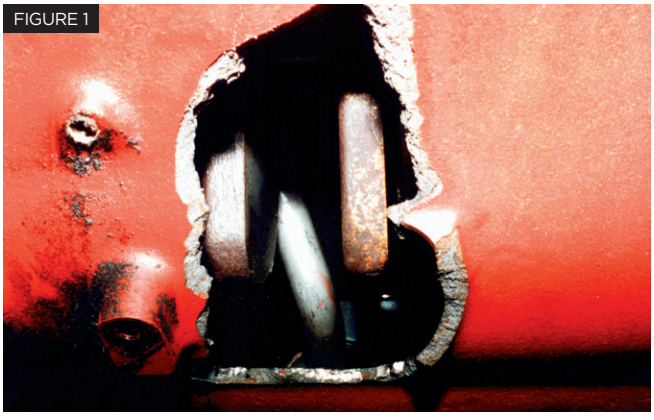

FIGURE 2

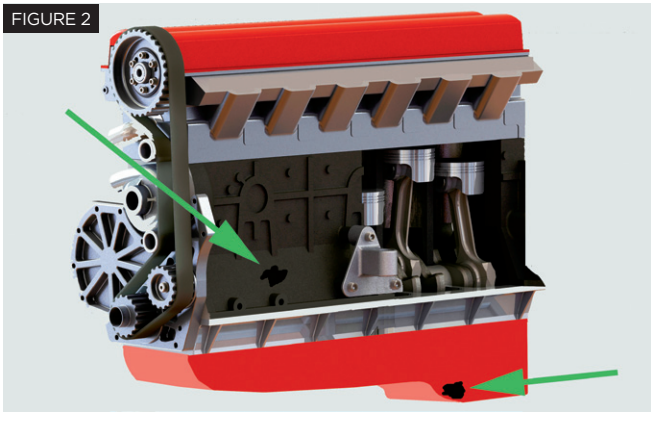

Figure 6 shows an oil pan that sustained an impact with an external object, causing a severe inward deformation of the front of the oil pan. The deformation interfered with the crankshaft, which wore an opening in the pan, expelling oil and causing loss of oil pressure in the engine, leading to a failure. Some oil pans on vehicles with low clearance are vulnerable to road object impact. When this occurs, engine oil is expelled, which can be detected when the low oil pressure warning occurs on the instrument panel. There are circumstances when the penetration or deformation occurs from a road object where there is relatively little damage to the engine, if it is shut off immediately. If the vehicle continues to be driven after such an event, severe damage to the engine from a lack of oil pressure may occur.

When a penetration to an engine occurs at the engine block, it is likely a result of an internal problem with the engine. When this occurs at the oil pan, there is a possibility that the penetration was caused by an object in the road. Analysis of the deformation to the oil pan will help determine if an external or internal object caused the failure. Fracture surface and oil analyses will also aid in the determination of a wear out or maintenance related failure.

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FIGURE 3

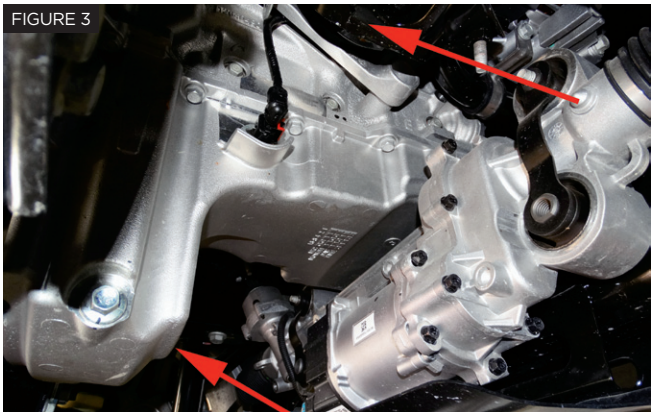

FIGURE 5

FIGURE 4

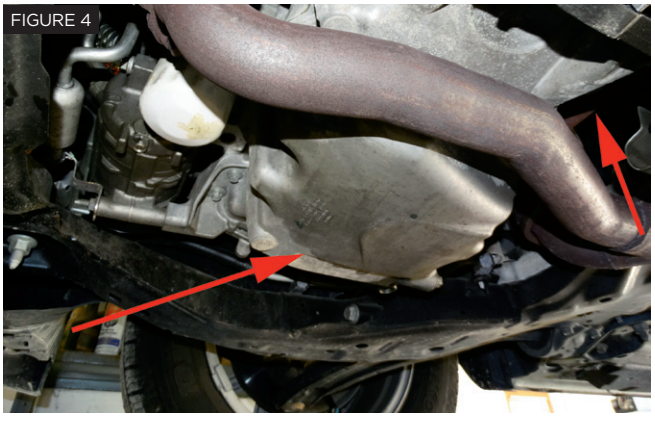

FIGURE 6