

Avoiding Truck Fires



Truck and bus fires occur infrequently but more often than they should. At every mechanical service, a few sensible inspections may help to identify developing problems that could lead to fire. The most common causes of truck fires are listed below in order of importance, along with what can be done to reduce the risks.

1. Arcs on electrical cables, particularly on the starter (or battery cables), the alternator cable or the positive battery feed cable into the cabin.

Arcs result from rubs that damage the cable insulation. Starter motor cables are never protected by a circuit breaker. Other cables could be protected but often are not. The mechanical coverings are all that can stop a fire occurring. Triple layer insulation is advisable on electrical cables that are not circuit-breaker protected. Inspect these cables for rubs. Never ignore intermittent disruptions on electrical circuits and never ignore reports of 'electrical' burning smells.

2. Insulation breakdown at switches, relays or connectors resulting from hot terminals.

Hot terminals occur on heavily loaded circuits. High current levels, continuous operation, dust and vibration are usually

factors. Before fire occurs, the connector or switch insulation becomes scorched. Look for discoloured relays and connectors.

3. Flammable material resting against the turbo charger or the exhaust.

Flammable insulation could include sound-deadening foam sheets that have come away from the cabin floor, plastic parts, grain dust, timber bark, rags, etc. Check for flammable material that has or could build-up against the exhaust pipe or the turbo charger. Blow out debris.

4. Leakage of hot gases from the exhaust.

If the exhaust pipe develops a hole because of a crack or loose joint, hot gases will escape and may blow on flammable materials. Trace the exhaust pipe and check for gaps, cracks and holes.

5. Fuel-line or oil-line rubs or failures that result in leaks or sprays of fuel or oil onto the exhaust.

If hydrocarbon liquids get onto a hot exhaust a fire can occur. Flexible hoses that run close to exhausts get brittle over time and can crack. Check fuel lines and oil lines.

6. Turbo-charger failures that cause an internal fire that spreads to the air-intake side.

Turbo-chargers are common. Occasionally internal oil seals fail and lubrication oil gets sprayed into the exhaust side of the air-intake. If a fire occurs in the exhaust side it probably won't cause a fire. If it starts in the air-intake side, it can burn through the tubes and cause an engine fire. Schedule a turbocharger change-out according to the engine manufacturer's guidelines.

7. Over-tightened or poorly lubricated wheel bearings.

Very occasionally, hot wheel bearings cause the hub to get so hot that a tyre catches fire. Poor bearing lubrication occurs because the bearings 'get forgotten' or because a drive axle has not been 'tilted during service' to get oil to flow from the hub to the bearings.

8. Rubbing tyres.

Under inflated tyres, particularly on the inside of a dual wheel can cause spreading and rubbing. Rubs due to sagging wheel guards or draping hoses can heat up a tyre. A burning tyre cannot be put out with an extinguisher – copious quantities of water are needed. Check tyres before each journey.

9. Dragging or overheated brakes can cause excessive hub temperature.

Tyres might catch fire or bearing grease might ignite. If the brake balance on a combination is very poor some brakes can overheat. Sometimes this occurs when disc and drum brakes are mixed and there is a poor threshold pressure balance. Excessive brake wear can be an indicator of excessive brake temperature.

10. Run-over road debris being dragged by the differential hubs.

Occasionally trucks run over road debris that lodges under front or rear axles. If the debris has metal in it and is combustible, sparks can cause the debris to ignite. Tree branches with dead leaves attached can also catch fire under a truck. Drivers should stop and check when road debris is driven over.

11. Battery explosions.

Batteries produce hydrogen gas during normal operation. If there is a make-break contact inside the battery, then a spark may occur and the battery can explode. Check that metal parts cannot short-out batteries. Suitable ventilation of batteries is necessary. Regular battery inspection is advisable.

The prevalence of fires in heavy vehicles should be reduced if these simple checks are followed. Draw up an inspection checklist and have it actioned at each major service. Also consider specifying a battery isolation switch and putting a decent sized (2kg+) dry-chemical fire extinguisher on board.

By Peter Hart
 Chairman, ARTSA



A distressing sight. Loss of a road train prime mover due to an engine compartment fire.



An engine compartment fire due to a rub between the alternator cable and the battery stud.



The result of a rub between a battery cable and the bolt that it was hooked over.