Bulletin Number: Tech 01_09

Technical Bulletin – Shock Inspection

Misting vs. Leaking Commercial Vehicle Shock Absorber

Many technicians find it difficult to differentiate between a “misting” shock and a leaking shock that needs replacement.

Misting is a perfectly normal and necessary function of a commercial vehicle shock absorber. By design, the piston rod carries a film of oil through the rod seal to lubricate the seal lips, thereby reducing friction / wear at the seal contact area, and prolonging seal life. Misting occurs when the hot piston rod is drawn out of the shock body and the microscopic film of hot oil on the rod turns to vapor. This vapor, or mist, condenses when it reaches the cooler outside air, and forms a film on the outside of the shock body.
The film will attract road dust and debris, and will often coat the entire body of the shock

Rod seals may leak as a result of extreme wear, contamination, or defect. A leaking shock will show clear signs of oil leaking in streams from the upper seal down the shock body and may drip from the shock. Each twin-tube style shock has a reservoir that contains oil and air. The typical heavy vehicle shock can hold up to a liter of oil, and would have to lose more than 10% of its volume before damping performance would be affected.

NOTE: Some minor streaking of oil may appear on the shock body during initial stroking. This is the result of the seal “setting” and purging any oil (from assembly) from the seal. This is not to be mistaken as a failure, as it is temporary and totals only a few milliliters of oil.

Take the Heat Test
Shock absorbers function at temperatures ranging from ambient to 350 degrees Fahrenheit. A shock's role is to dampen the oscillation of the truck's springs. It does this by transforming the energy produced by the spring to heat and dissipating it. As a result the shock body should be slightly warm to hot after normal use.

If ride deterioration is experienced and there is suspicion that a shock has failed internally, which is visually undetectable, perform the following "Shock Heat Test" within a few minutes of operating the equipment.

1. Drive the vehicle at moderate speeds for at least 15 minutes.

2. Within a few minutes of driving the vehicle, check the temperature of the main shock absorber body below the dust tube after first establishing a reference temperature of the surrounding chassis frame. **WARNING**: DO NOT touch the shock as it may be hot and could cause a burn injury - an infrared thermometer gun or similar measuring device is recommended.

3. All shock absorbers should be warmer than the chassis. Suspect a failure in any shock absorber that is noticeably cooler than its mate on the other end of the axle. Different temperatures from axle to axle do not indicate failures, but a cooler temperature on any one axle does warrant removal and examination of the cooler shock absorber.

To inspect for an internal failure, remove and shake the suspected shock. Listen for the sound of metal components rattling inside which can indicate that the shock has an internal failure.

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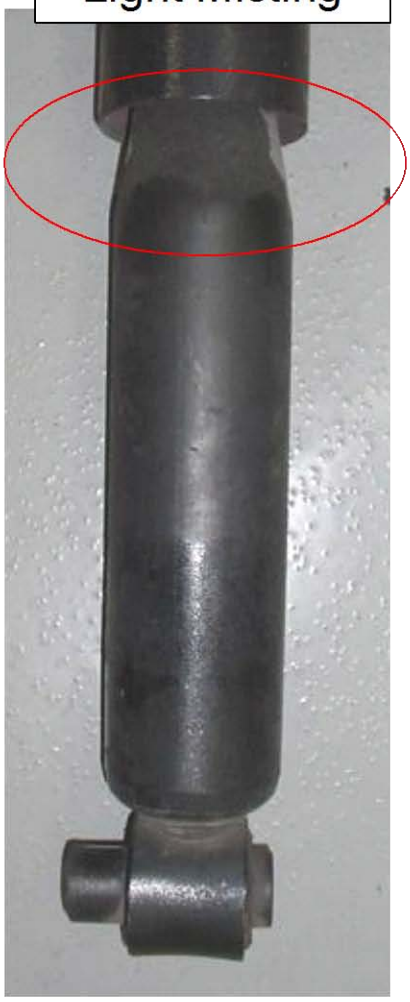
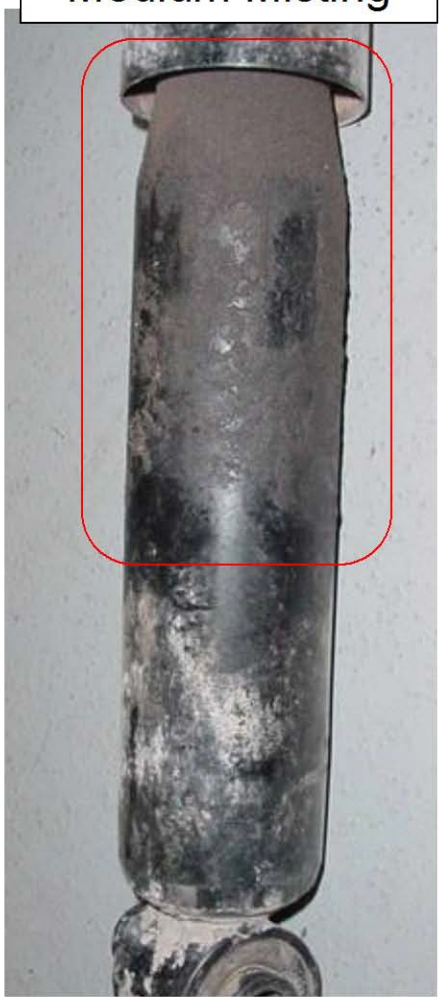
Examples

Light Misting



Light oil film on upper damper body
No action required (Do Not Remove)

Medium Misting



Medium oil film on upper half of damper body
No action required (Do Not Remove)

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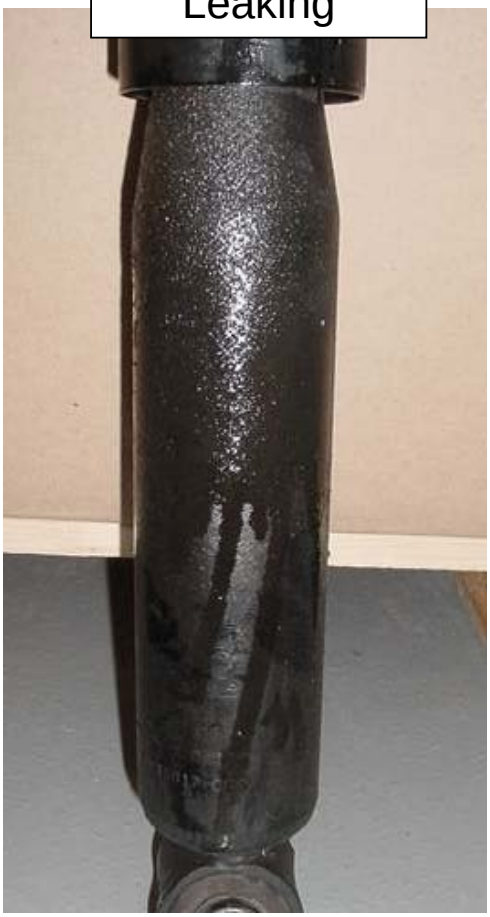
Examples

Heavy Misting

Heavy oil/dirt film extending to the bottom of the damper
(Do Not Remove)

Leaking



Oil leak path lines visible on damper
(Remove and Replace)

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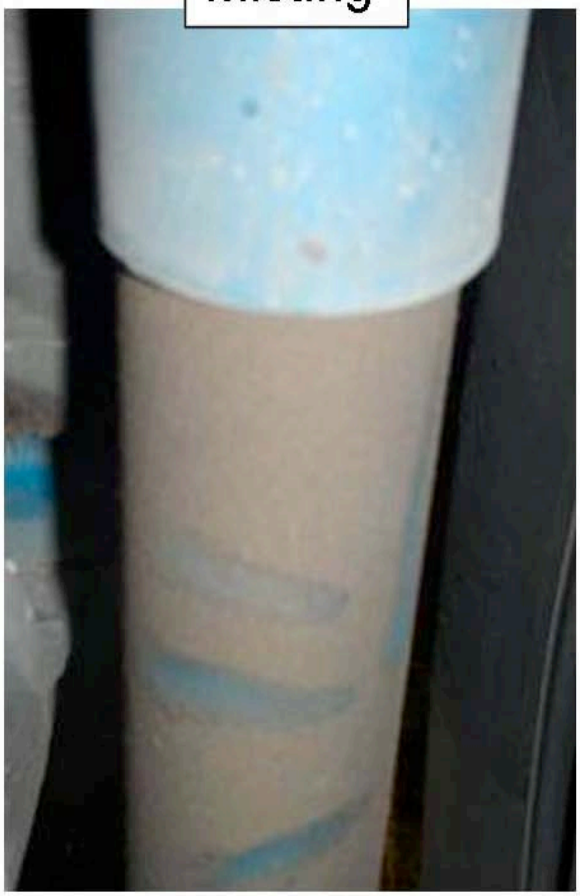
Examples

Misting

Light oil film on upper damper body
(No need to replace)

Misting



Medium to Heavy oil film on damper body
(No need to replace)

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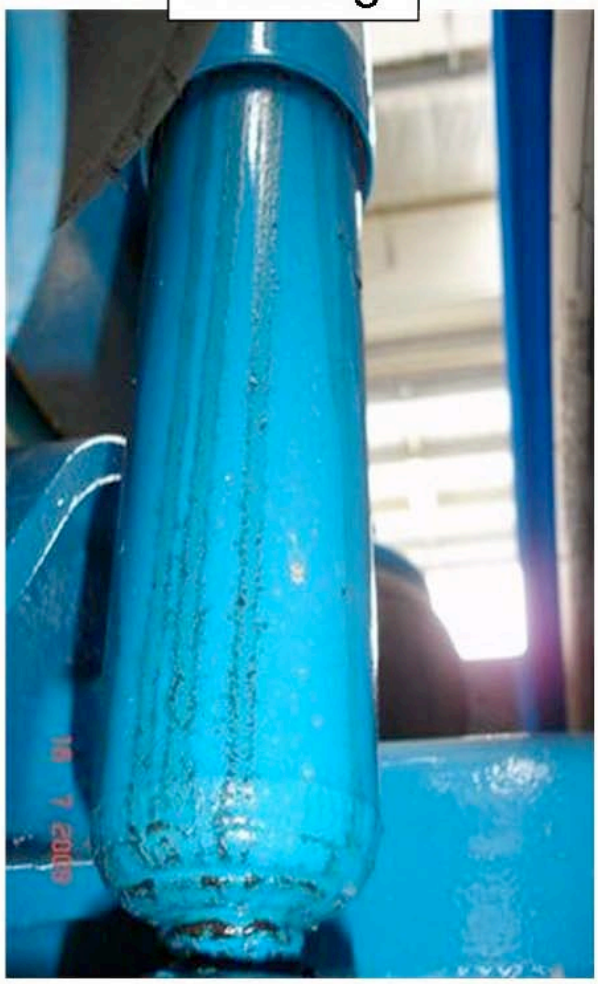
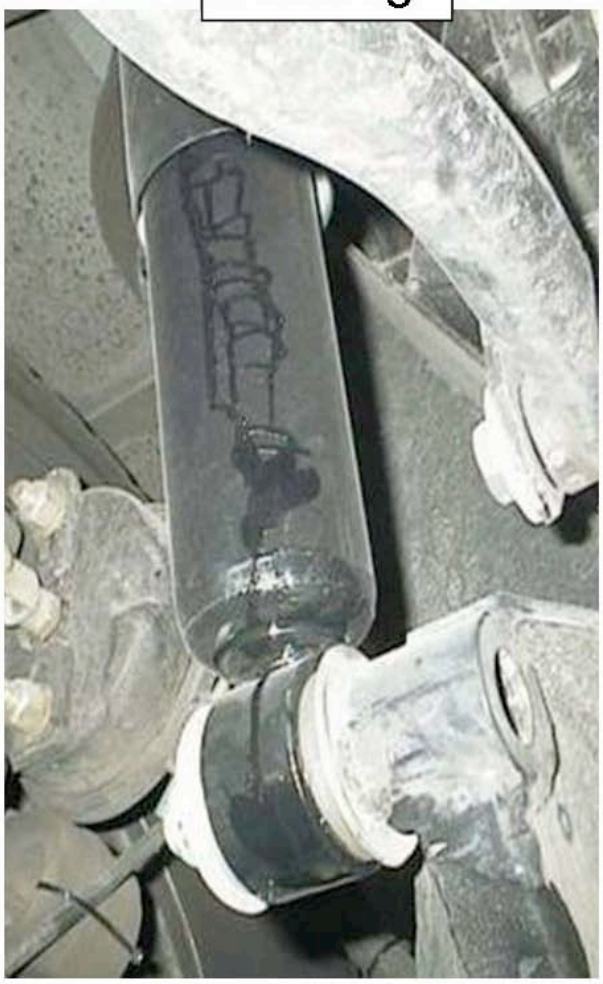
Examples

Leaking



Leaking
(Remove and Replace)

Leaking



Leaking
(Remove and Replace)

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How to photograph shock absorbers for misting vs. leaking evaluation