Weekly Carbon Monoxide (CO) Checks – Repeatable Engine Load Test (Torque Converter Transmission)

Best Practice Series BP-76

The following best practice tips are recommended to conduct accurate, reliable, and safe repeatable engine load tests on torque converter transmissions.

Prepare the Machine for Test

• Warm up the engine (Emissions change for cold and warm engines).
• Park the machine into an intake entry with machine facing the mine rib.
• Set brakes and chock the wheels.
• Sample undiluted exhaust emissions before they pass through any after treatment devices, such as catalytic converter, particulate trap, fume diluters, and water scrubber.

Conduct the Engine Load Test

• Make sure no personnel are in front or behind the machine.
• Set transmission gear.
• Apply full throttle for about 60 seconds to induce converter stall.
• Sample, allowing reading to stabilize, and record measurement(s).
• Release throttle and shift transmission out of gear.
• Allow torque converter to cool to prevent damage.
• Repeat the test using the same method every week for comparable results.
• Sample with CO measurement device at idle, prior to torque stall, to allow for quicker sampling and shorter stall tests.
• Use a tachometer to verify the engine speed at load which will help ensure weekly repeatability.

Evaluate and Interpret Findings
• Check for changes in CO concentration against the baseline you have established for the engine.
  » Increases in CO concentration level above the established baseline indicate problems.
• Contact MSHA Technical Support for guidance on engine CO information.
• Maintain records to track engine performance for easy weekly comparison. For example:
  » A chart of individual equipment emissions plotted over time (weekly); or
  » A logbook to track each piece of equipment; or
  » A logbook to track similar types of engines.

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