PRI QPL
QUALIFIED PRODUCTS LISTING

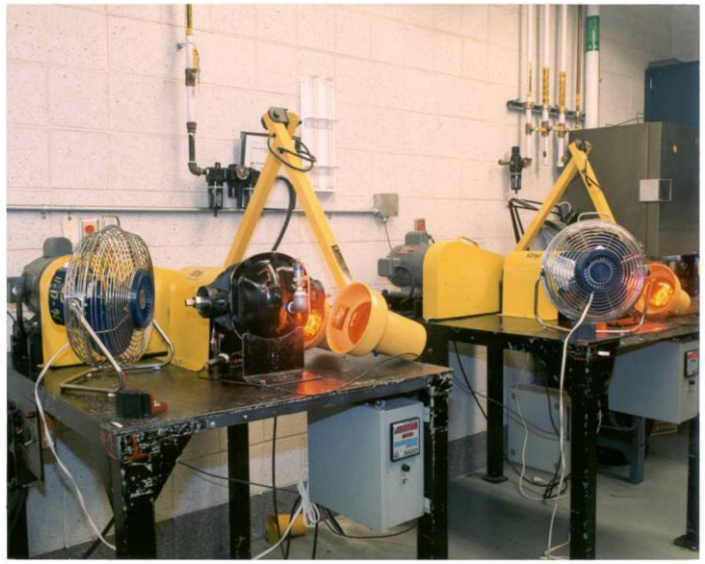
L-33-1
ASTM D7038

TEST DEVELOPMENT

- Early in the Korean Conflict, Soldiers Found a Problem with the Stored Equipment from WW II
- Jeeps, Tanks, etc. were Stored out in the Desert Southwest
- Axles were “Frozen” Due to Rust
- Initial Test Still Used a WW II Jeep Carrier Dana Model 30
  - Current Test Uses AAM K2XX Hardware

L-33-1 TEST

- This test evaluates the rust and corrosion inhibiting properties of a gear lubricant when subjected to water contamination and elevated temperatures.
- A hypoid gear is cleaned and filled with 1200 ml of oil and 30 ml of purified water and warmed up for ~ 1 hour to 180°C, then motored @ 2500 rpm for 4 hours at 180°F.
- Complete differential is then stored at 125°F for 162 hours.
- At end of storage, the unit is disassembled and rated for corrosion, sludge and deposits.



L-33-1 RATED AREAS

		Weighting Factor
Area 1	Differential Case Pinion Spherical Thrust Surface	8.7
Area 2	Differential Case Side Gear Thrust Surface and Hub I.D.	19.3
Area 3	Side Gear Thrust Surface and Hub O.D.	9.4
Area 4	Rating Area inside edge of Axle Cover Rating Template	16.9
Area 5	Ring Gear Tooth Surface	7.9
Area 6	Pinion Tooth Surface	7.9
Area 7	Pinion Bearing Cone Roller Surfaces	5.1
Area 8	Pinion Bearing Cup Surfaces	8.3
Area 9	Differential Case Bearing Cone Roller Surfaces	7.1
Area 10	Differential Case Bearing Cup Contact Surfaces	9.4
		100.0

L-33-1 PASSING VS FAILING AXLE COVER

Passes J2360 and API GL-5

Fails J2360 and API GL-5

LEVELS OF DISTRESS

- If the gear oil has insufficient antirust chemistry, typically in the form of long chain carboxylic acids or amides, then distress on the gears can occur.
- Certified raters will rate and document the distress on all 10 areas for rust:
  - 10 = None
  - 9 = Trace, not more than six spots, each less than 1mm in diameter
  - 8 = Light, seven or more spots <1mm in diameter or, one or more spots greater or equal to 1mm in diameter with a combined area of all spots no greater than 1% of the total rated component surface.
  - 5 = Moderate, in excess of above and up to 5% of surface
  - 0 = Severe, covering more than 5% of surface

L-33-1 / LRI REQUIREMENTS

- For SAE J2360 the L33 result must be equal to or greater than 9.0, but also:
  - shall not have a rating of 5.0 or less on any individual rating area and;
  - shall not have more than 4 areas rated as an 8.0 or less.

L-33-1 RIG CALIBRATION

- Test labs must complete a calibration run every ten test starts or every 5 months, whichever comes first.
  - Reference oil obtained from Test Monitoring Center (TMC)
  - Test reports are submitted to TMC to ensure they are consistent with industry standards before rig is deemed calibrated.
- L-33-1 can be conducted at Southwest Research Institute or Intertek AR