

Introduction

B50 calculations are done to estimate the expected life before required overhaul or replacement of engines and other rotating equipment. They are typically described in terms of “miles of operation” in the trucking community.

B50 is the estimate of when 50% of the engines of a certain type will require major repair (repairs requiring dropping of the oil pan or removal of cylinder heads – it does not refer to rotating components attached to the engine) and is often referred to as “average life to overhaul”. These values are indicators of the robustness of a design. They are good comparison figures when evaluating the purchase of several different power units.

As calculated figures, you need to be careful not to require too much of these figures – they are estimates generated using a set of assumptions about operating conditions. As such, B50 values should be seen as indicators rather than guarantees or actual test results.

You will notice in the comparison chart shown in Figure 1 that B50 estimates are typically rounded figures like 400,000 and 500,000 miles --- that makes sense when you consider that these estimates are comprised of half a dozen assumptions.

As shown in Figure 1, the B50 figures for both the J05D and J08E engines from Hino compete favorably with other engine brands.

It should be noted that the J05D-TA 4 cylinder engine rated here typically applies to Class 4 and 5 trucks that are short- run units operating in urban or small town environments. They typically travel 30,000 to 35,000 miles per year. The B50 rating of 400,000 miles, therefore, suggests that 50% of these Hino units would run at least 11 to 13 years before requiring major engine work. On the J08E-TA/B engines used in class 6 and 7 trucks that may travel 35,000 to 50,000 miles per year, the B50 rating is 100,000 miles higher, which suggests a 10 to 14+ year life to overhaul.

Estimated B50 Life Expectations	
Engine/Brand	B50
Caterpillar C7	500,000
Cummins ISB	400,000
Hino J05D -TA 4 Cyl	400,000
Hino J08E-TA/TB 6 Cyl	500,000
International DT 466	500,000
International VT 365	300,000
Mercedes Benz 900	500,000

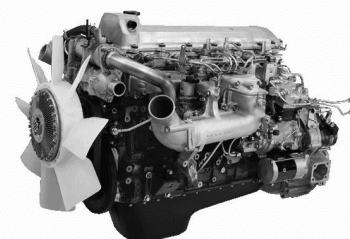
Figure 1 (sources – OEM published data and/or Web search)

A key issue in the whole area of life expectancy is the effect that the EPA’s 2007 Emission Regulations will have on engine life. To meet the stringent requirements, cylinder pressures and internal temperatures will increase in all of these engines.

The EPA 2007 Effect

Here’s the good news on Hino designs for the future:

- 1) To meet 2007 regulations, Hino is adding a DPR particulate trap system and expanding the size of the EGR system. Testing on these changes has shown no decline in reliability.
- 2) Some key components currently running in Hino’s other engines will be used in the J-Series engines to assure B50 levels remain the same as today’s figures.
- 3) Hino has significant experience running J-Series engines with DPR in the tough Japan 2005 Emission Regulation environment – real world experience has shown no degradation of engine longevity.



Hino J08E-TA/B Engine