

# Off-Road Compression-Ignition (Diesel) Engine Standards (NMHC+NO<sub>x</sub>/CO/PM in g/kW-hr)

Maximum Power	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015+
< 8 kW	Regulated under the Small Off-Road Engines (SORE) rule					A 10.5 / 8.0 / 1.0			B 7.5 / 8.0 / 0.80			E 7.5 / 8.0 / 0.40 <sup>a</sup>									
8 ≤ kW < 19						A 9.5 / 6.6 / 0.80			B 7.5 / 6.6 / 0.80			E 7.5 / 6.6 / 0.40									
19 ≤ kW < 37	-	-				A 9.5 / 5.5 / 0.80			B 7.5 / 5.5 / 0.60			D 7.5 / 5.5 / 0.30			E 4.7 / 5.5 / 0.03						
37 ≤ kW < 56	-					A 7.5 / 5.0 / 0.40			B 7.5 / 5.0 / 0.40			D 4.7 / 5.0 / 0.30 <sup>c</sup>			E 4.7 / 5.0 / 0.03 <sup>c</sup>						
56 ≤ kW < 75	-					- / 9.2 / - / - <sup>b</sup>			-			C 4.7 / 5.0 / 0.40			D 0.19 / 3.4 / 5.0 / 0.02 <sup>b,d</sup>		0.19 0.40				
75 ≤ kW < 130	-					-			B 6.6 / 5.0 / 0.30			C 4.0 / 5.0 / 0.30			-		5.0 0.02 <sup>b</sup>				
130 ≤ kW < 225	A 1.3 / 9.2 / 11.4 / 0.54 <sup>b</sup>				-			B 6.6 / 3.5 / 0.20			C 4.0 / 3.5 / 0.20 <sup>e</sup>			D 0.19 / 2.0 / 3.5 / 0.02 <sup>b,d</sup>		E 0.19 0.40 3.5 0.02 <sup>b</sup>					
225 ≤ kW < 450	-					A 1.3 / 9.2 / 11.4 / 0.54 <sup>b</sup>			B 6.4 / 3.5 / 0.20			C 4.0 / 3.5 / 0.20 <sup>e</sup>			D 0.19 / 2.0 / 3.5 / 0.02 <sup>b,d</sup>		-				
450 ≤ kW ≤ 560	-					A 1.3 / 9.2 / 11.4 / 0.54 <sup>b</sup>			B 6.4 / 3.5 / 0.20			C 4.0 / 3.5 / 0.20 <sup>e</sup>			D 0.19 / 2.0 / 3.5 / 0.02 <sup>b,d</sup>		-				
Mobile Machines > 560 kW	-					A 1.3 / 9.2 / 11.4 / 0.54 <sup>b</sup>			B 6.4 / 3.5 / 0.20			C 4.0 / 3.5 / 0.20 <sup>e</sup>			D 0.40 / 3.5 / 3.5 / 0.10 <sup>b</sup>		0.19 3.5 0.04 <sup>b</sup>				
560 kW < GEN ≤ 900 kW	-					A 1.3 / 9.2 / 11.4 / 0.54 <sup>b</sup>			B 6.4 / 3.5 / 0.20			C 4.0 / 3.5 / 0.20 <sup>e</sup>			D 0.40 / 3.5 / 3.5 / 0.10 <sup>b</sup>		0.19 0.67 3.5				
GEN > 900 kW	-					A 1.3 / 9.2 / 11.4 / 0.54 <sup>b</sup>			B 6.4 / 3.5 / 0.20			C 4.0 / 3.5 / 0.20 <sup>e</sup>			D 0.40 / 0.67 / 3.5 / 0.10 <sup>b</sup>		0.03 <sup>b</sup>				

a) The PM standard for hand-start, air cooled, direct injection engines below 8 kW may be delayed until 2010 and be set at 0.60 g/kW-hr.

b) Standards given are NMHC/NO<sub>x</sub>/CO/PM in g/kW-hr.

c) Engine families in this power category may alternately meet Tier 3 PM standards (0.40 g/kW-hr) from 2008-2011 in exchange for introducing final PM standards in 2012.

d) The implementation schedule shown is the three-year alternate NO<sub>x</sub> approach. Other schedules are available.

e) Certain manufacturers have agreed to comply with these standards by 2005.



: Tier 1 Federal



: Tier 1



: Tier 2



: Tier 3



: Tier 4 Interim / Final