

Table 1. Off-Road Compression-Ignition (Diesel) Engine Standards [NMHC+NO_x/CO/PM in g/bhp-hr (g/kW-hr)]

HP (kW)	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015+
< 11 (8)	See Table 2 footnote (a)					7.8 / 6.0 / 0.75 (10.5 / 8.0 / 1.0)			5.6 / 6.0 / 0.60 (7.5 / 8.0 / 0.80)			5.6 / 6.0 / 0.30 ^a (7.5 / 8.0 / 0.40)									
≥ 11 (8) < 25 (19)						7.1 / 4.9 / 0.6 (9.5 / 6.6 / 0.80)			5.6 / 4.9 / 0.60 (7.5 / 6.6 / 0.80)			5.6 / 4.9 / 0.30 (7.5 / 6.6 / 0.40)									
≥ 25 (19) < 50 (37)					7.1 / 4.1 / 0.60 (9.5 / 5.5 / 0.80)			5.6 / 4.1 / 0.45 (7.5 / 5.5 / 0.60)			5.6 / 4.1 / 0.22 (7.5 / 5.5 / 0.30)			3.5 / 4.1 / 0.02 (4.7 / 5.5 / 0.03)							
≥ 50 (37) < 75 (56)									5.6 / 3.7 / 0.30 (7.5 / 5.0 / 0.40)			3.5 / 3.7 / 0.22 ^c (4.7 / 5.0 / 0.30)			3.5 / 3.7 / 0.02 ^c (4.7 / 5.0 / 0.03)						
≥ 75 (56) < 100 (75)					- / 6.9 / - / - ^b (- / 9.2 / - / -)						3.5 / 3.7 / 0.30 (4.7 / 5.0 / 0.40)			0.14 / 2.5 / 3.7 / 0.01 ^{b,d} (0.19 / 3.4 / 5.0 / 0.02)			0.14 (0.19) 0.30 (0.40)				
≥ 100 (75) < 175 (130)							4.9 / 3.7 / 0.22 (6.6 / 5.0 / 0.30)			3.0 / 3.7 / 0.22 (4.0 / 5.0 / 0.30)						3.7 (5.0) 0.01 ^b (0.02)					
≥ 175 (130) < 300 (225)									4.9 / 2.6 / 0.15 (6.6 / 3.5 / 0.20)									0.14 (0.19) 0.30 (0.40)			
≥ 300 (225) < 600 (450)	1.0 / 6.9 / 8.5 / 0.40 ^b (1.3 / 9.2 / 11.4 / 0.54)							4.8 / 2.6 / 0.15 (6.4 / 3.5 / 0.20)			3.0 / 2.6 / 0.15 ^c (4.0 / 3.5 / 0.20)			0.14 / 1.5 / 2.6 / 0.01 ^{b,d} (0.19 / 2.0 / 3.5 / 0.02)			0.30 (0.40) 2.6 (3.5) 0.01 ^b (0.02)				
≥ 600 (450) ≤ 750 (560)																		0.14 (0.19) 2.6 (3.5) 2.6 (3.5) 0.03 ^b (0.04)			
Mobile Machines > 750 (560)																		0.14 (0.19) 2.6 (3.5) 2.6 (3.5) 0.03 ^b (0.04)			
GEN >750 (560) ≤1207 (900)						1.0 / 6.9 / 8.5 / 0.40 ^b (1.3 / 9.2 / 11.4 / 0.54)						4.8 / 2.6 / 0.15 (6.4 / 3.5 / 0.20)			0.30 / 2.6 / 2.6 / 0.07 ^b (0.40 / 3.5 / 3.5 / 0.10)			0.14 (0.19) 0.50 (0.67) 2.6 (3.5) 0.02 ^b (0.03)			
GEN >1207 (900)															0.30 / 0.50 / 2.6 / 0.07 ^b (0.40 / 0.67 / 3.5 / 0.10)			0.14 (0.19) 0.50 (0.67) 2.6 (3.5) 0.02 ^b (0.03)			

a) The PM standard for hand-start, air cooled, direct injection engines below 11 hp (8 kW) may be delayed until 2010 and be set at 0.45 g/bhp-hr (0.60 g/kW-hr).

b) Standards given are NMHC/NO_x/CO/PM in g/bhp-hr (or g/kW-hr).

c) Engine families in this power category may alternately meet Tier 3 PM standards [0.30 g/bhp-hr (0.40 g/kW-hr)] in 2008-2011 in exchange for introducing final PM standards in 2012.

d) The implementation schedule shown is the three-year alternate NO_x approach. Other schedules are available.

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



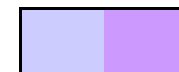
: Tier 1



: Tier 2



: Tier 3



: Tier 4 Interim / Final