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On-Road heavy duty Europe

EU emissions standards for heavy-duty CI (diesel) engines: Steady-state testing								
Stage	Date	Test	CO	HC	NOx	PM	PN	Smoke
			g/kWh					1/kWh
Euro I	1992 ≤ 85kW	ECE R-49	4.5	1.1	8.0	0.612	-	-
	1992 > 85kW		4.5	1.1	8.0	0.36	-	-
Euro II	1996. 10		4.0	1.1	7.0	0.25	-	-
	1998. 10		4.0	1.1	7.0	0.15	-	-
Euro III	1999. 10 EEV only	ESC & ELR	1.5	0.25	2.0	0.02	-	0.15
	2000. 10		2.1	0.66	5.0	0.10 ^a	-	0.8
Euro IV	2005. 10		1.5	0.46	3.5	0.02	-	0.5
Euro V	2008. 10		1.5	0.46	2.0	0.02	-	0.5
Euro VI	2013. 01		WHSC	1.5	0.13	0.40	0.01	8.0 x 10 ¹¹

a. PM = 0.13 g/kWh for engines <0.75 dm³ swept volume per cylinder and a rated power speed > 3000 min⁻¹

EU emissions standards for heavy-duty CI (diesel) and PI engines: Transient testing								
Stage	Date	Test	CO	NMHC	CH ₄ ^a	NOx	PM ^b	PN
			g/kWh					
Euro III	1999. 10 EEV only	ETC	3.0	0.40	0.65	2.0	0.02	-
	2000. 10		5.45	0.78	1.6	5.0	0.16 ^c	-
Euro IV	2005. 10		4.0	0.55	1.1	3.5	0.03	-
Euro V	2008. 10		4.0	0.55	1.1	2.0	0.03	-
Euro VI	2013. 10	WHTC	4.0	0.16 ^d	0.5	0.46	0.01	6.0x10 ^{11e}

a for gas engines only (Euro III-V: NG only; Euro VI: NG + LPG) | b not applicable for gas fueled engines at the Euro III-IV stages
c PM = 0.21 g/kWh for engines < 0.75 dm³ swept volume per cylinder and a rated power speed > 3000 min⁻¹ | d THC for diesel (CI) engines | e PN limit for PI engines applies for Euro VI-B and late

On-Road heavy duty China

Emission standards implementation dates							
Stage		Beijing	Shanghai	Guangzhou	Nationwide		Initially Scheduled
					Type Approval	All Vehicles	
China I	-	-	-	-	2000.09	2001.09	-
China II	-	-	-	-	2003.09	2004.01	-
China III	PI	2010.07	2010.08	2009.07	2009.07	2010.07	2007.07
	CI	2006.01	2007.01	2007.07	2007.01	2008.01	2007.01
China IV	PI	2011.01			2012.07	2013.07	2010.01
	CI	2011.01	2009.11	2010.08	2010.01	2015.01	2010.01
China V	-	2013.02 ^{a,c} 2015.06 ^b	2014.01 ^a	2016.01 ^a	-	2016.04 ^{d,e} 2017.01 ^e 2017.07 ^b	2012.01
China VI-a	Gas	-	-	-	-	2019.07	-
	All	-	-	-	-	2021.07 ^f	-
China VI-b	Gas	-	-	-	-	2021.07	-
	All	-	-	-	-	2023.07	-

^a Public buses and municipal service vehicles | ^b All vehicles | ^c Starting 2016.01, DPFs are also required on new public HDDVs (buses and municipal service vehicles) | ^d Beijing, Shanghai, Tianjin, Hebei, Liaoning, Jiangsu, Zhejiang, Fujian, Shandong and Guangzhou | ^e Public transportation buses, sanitary and postal vehicles | ^f 2020.07 for urban HDVs

China III-V emission standards for heavy-duty engines								
Stage	Test Cycle	CO	HC	NMHC	NOx	PM	NH ₃	Smoke
		g/kWh					ppm	1/m
China III	ESC + ELR	2.1	0.66	-	5.0	0.10 ^a		0.8
	ETC	5.45	-	0.78	5.0	0.16 ^a		-
China IV	ESC + ELR	1.5	0.46	-	3.5	0.02		0.5
	ETC	4.0	-	0.55	3.5	0.03		-
China V	ESC + ELR	1.5	0.46	-	2.0	0.02	10 ^b	0.5
	ETC	4.0	-	0.55	2.0	0.03	10 ^b	-

^a 0.13/0.21 (ESC/ETC) for engines < 0.75 L per cylinder and rated speed > 3000 rpm
^b Cycle average; 25 ppm maximum

On-Road heavy duty India

Emission standards for heavy-duty engines									
Stage	Year	Test	CO	HC	CH ₄	NOx	PM	PN	NH ₃
			g/kWh						kWh ⁻¹
	1992	<u>ECE R49</u>	17.3	2.7	-	-	-		
	1996	<u>ECE R49</u>	11.2	2.4	-	14.4	-		
India 2000	2000	<u>ECE R49</u>	4.5	1.1	-	8.0	0.36 ^a		
BS II	2005 [†]	<u>ECE R49</u>	4.0	1.1	-	7.0	0.15		
BS III	2010 [†]	<u>ESC</u>	2.1	0.66	-	5.0	0.10		
		<u>ETC</u>	5.45	0.78	-	5.0	0.16		
BS IV	2010 [‡]	<u>ESC</u>	1.5	0.46	-	3.5	0.02		
		<u>ETC</u>	4.0	0.55	-	3.5	0.03		
BS V	n/a ^b	<u>ESC</u>	1.5	0.46	-	2.0	0.02		
		<u>ETC</u>	4.0	0.55	1.1 ^d	2.0	0.03		
BS VI	2020 ^c	<u>WHSC (CI)</u>	1.5	0.13	-	0.40	0.01	8.0×10 ¹¹	10
		<u>WHTC (CI)</u>	4.0	0.16	-	0.46	0.01	6.0×10 ^{11e}	10
		<u>WHTC (PI)</u>	4.0	0.16 ^f	0.50	0.46	0.01	6.0×10 ^{11e}	10

[†] earlier introduction in selected regions, see [India: Table 1](#) | [‡] only in selected regions, see [India: Table 1](#) | ^a 0.612 for engines below 85 kW | ^b Initially proposed in 2015.11 [3297][3298] but removed from a 2016.02 proposal [3349] | ^c Proposed schedule and limits | ^d For CNG engines only | ^e Applicable from April 1, 2025 for new models and April 1, 2026 for existing models | ^f NMHC

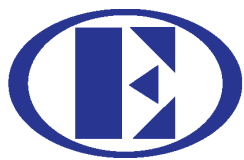
Singapore

Emission requirements for new light-duty vehicles	
Date	Requirement
Petrol Vehicles	
1994.07	Euro 1 (Directive 91/441/EEC) or Japan standards
2001.01	Euro 2 (Directive 96/69/EC)
2014.04	Euro 4 (Directive 98/69/EC-B(2005))
2017.09	Euro 6 (Regulation (EC) 715/2007) or Japan 2009 plus Euro 6 PN limit for GDI vehicles
Diesel Vehicles	
1998.07	Euro 1 (Directive 93/59/EEC)
2001.01	Euro 2 (Directive 96/69/EC)
2014.01	Euro 5 (Regulation (EC) 715/2007) or Japan 2009 standards
2018.01	Euro 6 (Regulation (EC) 715/2007) or Japan 2009 plus Euro 6 PN limit

On-Road heavy duty Korea

Emission Standards for Heavy-Duty Diesel Engines							
Date	Test	CO	HC	NOx	PM	PN	Reference
		g/kWh					
1993.01	<u>6-mode</u>	980†	670†	350† IDI 750† DI	-	-	-
1996.01	<u>13-mode</u>	4.90	1.20	11.0	0.90	-	-
1998.01	<u>13-mode</u>	4.90	1.20	6.0 (9.0)*	0.25 (0.50)*	-	-
2000.01	<u>13-mode</u>	4.90	1.20	6.0	0.25 (0.10)*	-	-
2002.01	<u>13-mode</u>	4.90	1.20	6.0	0.15 (0.10)*	-	-
2003.01	<u>ESC</u>	2.1	0.66	5.0	0.10	-	Euro III
	<u>ETC</u>	5.45	0.78	5.0	0.16	-	
2006.01	<u>ESC</u>	1.5	0.46	3.5	0.02	-	Euro IV
	<u>ETC</u>	4.0	0.55	3.5	0.03	-	
2009.09	<u>ESC</u>	1.5	0.46	2.0	0.02	-	Euro V
	<u>ETC</u>	4.0	0.55	2.0	0.03	-	
2014.01	<u>WHSC</u>	1.5	0.13	0.40	0.01	8.0×10 ¹¹	Euro VI
	<u>WHTC</u>	4.0	0.16	0.46	0.01	6.0×10 ¹¹	

* applies to buses | † JP 6-mode test, limits expressed in ppm



Non-Road Europe - NRMM

EU Stage I/II emission standards for nonroad diesel engines						
Cat.	Net Power	Date*	CO	HC	NOx	PM
	<i>kW</i>		<i>g/kWh</i>			
Stage I						
A	130 ≤ P ≤ 560	1999.01	5.0	1.3	9.2	0.54
B	75 ≤ P < 130	1999.01	5.0	1.3	9.2	0.70
C	37 ≤ P < 75	1999.04	6.5	1.3	9.2	0.85
Stage II						
E	130 ≤ P ≤ 560	2002.01	3.5	1.0	6.0	0.2
F	75 ≤ P < 130	2003.01	5.0	1.0	6.0	0.3
G	37 ≤ P < 75	2004.01	5.0	1.3	7.0	0.4
D	18 ≤ P < 37	2001.01	5.5	1.5	8.0	0.8
* Stage II also applies to constant speed engines effective 2007.01						

Stage III A/B emission standards for nonroad diesel engines							
Cat.	Net Power	Date†	CO	HC	HC+NOx	NOx	PM
			<i>g/kWh</i>				
Stage III A							
H	130 ≤ P ≤ 560	2006.01	3.5	-	4.0	-	0.2
I	75 ≤ P < 130	2007.01	5.0	-	4.0	-	0.3
J	37 ≤ P < 75	2008.01	5.0	-	4.7	-	0.4
K	19 ≤ P < 37	2007.01	5.5	-	7.5	-	0.6
Stage III B							
L	130 ≤ P ≤ 560	2011.01	3.5	0.19	-	2.0	0.025
M	75 ≤ P < 130	2012.01	5.0	0.19	-	3.3	0.025
N	56 ≤ P < 75	2012.01	5.0	0.19	-	3.3	0.025
P	37 ≤ P < 56	2013.01	5.0	-	4.7	-	0.025
† Dates for constant speed engines are: 2011.01 for categories H, I and K; 2012.01 for category J.							

Non-Road

Stage V emission standards for nonroad engines (NRE)								
Category	Ign.	Net Power	Date	CO	HC	NOx	PM	PN
		kW						
NRE-v/c-1	CI	P < 8	2019	8.00	7.50 ^{a,c}		0.40 ^b	-
NRE-v/c-2	CI	8 ≤ P < 19	2019	6.60	7.50 ^{a,c}		0.40	-
NRE-v/c-3	CI	19 ≤ P < 37	2019	5.00	4.70 ^{a,c}		0.015	1×10 ¹²
NRE-v/c-4	CI	37 ≤ P < 56	2019	5.00	4.70 ^{a,c}		0.015	1×10 ¹²
NRE-v/c-5	All	56 ≤ P < 130	2020	5.00	0.19 ^c	0.40	0.015	1×10 ¹²
NRE-v/c-6	All	130 ≤ P ≤ 560	2019	3.50	0.19 ^c	0.40	0.015	1×10 ¹²
NRE-v/c-7	All	P > 560	2019	3.50	0.19 ^d	3.50	0.045	-

^a HC+Nox | ^b 0.60 for hand-startable, air-cooled direct injection engines | ^c A = 1.10 for gas engines | ^d A = 6.00 for gas engines

Europe - Rail

Stage III A/B emission standards for rail traction engines							
Category	Net Power	Date	CO	HC	HC+NOx	NOx	PM
	kW						
Stage III A							
RC A	P > 130	2006	3.5	-	4.0	-	0.2
RL A	130 ≤ P ≤ 560	2007	3.5	-	4.0	-	0.2
RH A	P > 560	2009	3.5	0.5*	-	6.0*	0.2
Stage III B							
RC B	P > 130	2012	3.5	0.19	-	2.0	0.025
R B	P > 130	2012	3.5	-	4.0	-	0.025

* HC = 0.4 g/kWh and NOx = 7.4 g/kWh for engines of P > 2000 kW and D > 5 litres/cylinder

Non-Road

Stage V emission standards for rail traction engines							
Category	Net Power	Date	CO	HC ^a	NO _x	PM	PN
	kW						
RLL-v/c-1 (Locomotives)	P > 0	2021	3.50	4.00 ^b		0.025	-
RLR-v/c-1 (Railcars)	P > 0	2021	3.50	0.19	2.00	0.015	1×10 ¹²

^a A = 6.00 for gas engines | ^b HC + NO_x

China

Stage IV emission limits						
Power	CO	HC	NO _x	HC+NO _x	PM	PN
kW	g/kWh					#/kWh
P>560*	3.5	0.40	3.5, 0.67 ^a	-	0.10	-
130≤P≤560	3.5	0.19	2.0	-	0.025	5×10 ¹²
75≤P<130	5.0	0.19	3.3	-	0.025	5×10 ¹²
56≤P<75	5.0	0.19	3.3	-	0.025	5×10 ¹²
37≤P<56	5.0	-	-	4.7	0.025	5×10 ¹²
P<37	5.5	-	-	7.5	0.60	-

* Proposed limits | ^a Applicable to mobile generator sets with P_{max} > 900 kW diesel engines

Non-Road India - Construction

Bharat (CEV) Stage II - III emission standards for diesel construction machinery						
Engine Power	Date	CO	HC	HC+NO _x	NO _x	PM
<i>kW</i>		<i>g/kWh</i>				
Bharat (CEV) Stage II						
P < 8	2008.10	8.0	1.3	-	9.2	1.00
8 ≤ P < 19	2008.10	6.6	1.3	-	9.2	0.85
19 ≤ P < 37	2007.10	6.5	1.3	-	9.2	0.85
37 ≤ P < 75	2007.10	6.5	1.3	-	9.2	0.85
75 ≤ P < 130	2007.10	5.0	1.3	-	9.2	0.70
130 ≤ P < 560	2007.10	5.0	1.3	-	9.2	0.54
Bharat (CEV) Stage III						
P < 8	2011.04	8.0	-	7.5	-	0.80
8 ≤ P < 19	2011.04	6.6	-	7.5	-	0.80
19 ≤ P < 37	2011.04	5.5	-	7.5	-	0.60
37 ≤ P < 75	2011.04	5.0	-	4.7	-	0.40
75 ≤ P < 130	2011.04	5.0	-	4.0	-	0.30
130 ≤ P < 560	2011.04	3.5	-	4.0	-	0.20

Bharat (CEV) Stage III Useful Life Periods		
Power Rating	Useful Life Period	
	<i>hours</i>	
< 19 kW	3000	
19-37 kW	constant speed	3000
	variable speed	5000
> 37 kW	8000	

Non-Road India - Power Generators

Emission standards for diesel engines ≤ 800 kW for generator sets (2004/2005)						
Engine Power (P)	Date	CO	HC	NOx	PM	Smoke
		g/kWh				
P ≤ 19 kW	2004.01	5.0	1.3	9.2	0.6	0.7
	2005.07	3.5	1.3	9.2	0.3	0.7
19 kW < P ≤ 50 kW	2004.01	5.0	1.3	9.2	0.5	0.7
	2004.07	3.5	1.3	9.2	0.3	0.7
50 kW < P ≤ 176 kW	2004.01	3.5	1.3	9.2	0.3	0.7
176 kW < P ≤ 800 kW	2004.11	3.5	1.3	9.2	0.3	0.7

Emission limits for diesel engines > 800 kW for generator sets				
Date	CO	NMHC	NOx	PM
	mg/Nm ³	mg C/Nm ³	ppm(v)	mg/Nm ³
Until 2003.06	150	150	1100	75 ^b
2003.07 - 2005.06	150	100	970 (710 ^a)	75 ^c
2005.07	150	100	710 (360 ^a)	75 ^c

^a For engines in plants of total power rating above 75/150 MW located in urban/rural areas, respectively. | ^b 150 mg/Nm³ for engines fueled with furnace oil. | ^c 100 mg/Nm³ for engines fueled with furnace oil.

Emission standards for diesel engines ≤ 800 kW for generator sets (2014)					
Engine Power (P)	Date	CO	NOx+HC	PM	Smoke
		g/kWh			1/m
P ≤ 19 kW	2014.04	3.5	7.5	0.3	0.7
19 kW < P ≤ 75 kW	2014.04	3.5	4.7	0.3	0.7
75 kW < P ≤ 800 kW	2014.04	3.5	4.0	0.2	0.7

Non-Road India - Agriculture

Bharat (Trem) Stage I - III A emission standards for diesel agricultural tractors						
Engine Power	Date	CO	HC	HC+NOx	NOx	PM
kW		g/kWh				
Bharat (Trem) Stage I						
All	1999.10	14.0	3.5	-	18.0	-
Bharat (Trem) Stage II						
All	2003.06	9.0	-	15.0	-	1.00
Bharat (Trem) Stage III						
All	2005.10	5.5	-	9.5	-	0.80
Bharat (Trem) Stage III A						
P < 8	2010.04	5.5	-	8.5	-	0.80
8 ≤ P < 19	2010.04	5.5	-	8.5	-	0.80
19 ≤ P < 37	2010.04	5.5	-	7.5	-	0.60
37 ≤ P < 75	2011.04	5.0	-	4.7	-	0.40
75 ≤ P < 130	2011.04	5.0	-	4.0	-	0.30
130 ≤ P < 560	2011.04	3.5	-	4.0	-	0.20

Bharat (CEV/Trem) Stage IV - V emission standards							
Engine Power	Date	CO	HC	NOx	PM	PN	Test Cycle
kW		g/kWh					
Bharat (CEV/Trem) Stage IV							
37 ≤ P < 56	2020.10	5.0	4.7*		0.025	-	NRSC and NR IC
56 ≤ P < 130		5.0	0.19	0.4	0.025	-	
130 ≤ P < 560		3.5	0.19	0.4	0.025	-	
Bharat (CEV/Trem) Stage V							
P < 8	2024.04	8.0	7.5*		0.4	-	NRSC
8 ≤ P < 19		6.6	7.5*		0.4	-	
19 ≤ P < 37		5.0	4.7*		0.015	1×10 ⁻¹²	NRSC and NR IC
37 ≤ P < 56		5.0	4.7*		0.015	1×10 ⁻¹²	
56 ≤ P < 130		5.0	0.19	0.4	0.015	1×10 ⁻¹²	
130 ≤ P < 560		3.5	0.19	0.4	0.015	1×10 ⁻¹²	
P ≥ 560		3.5	0.19	3.5	0.045	-	NRSC

* NOx + HC

Bharat (CEV/Trem) Stage IV - V Useful Life Periods		
Power Rating	Useful Life Period	
	hours	
≤ 37 kW	constant speed	3000
	variable speed	5000
> 37 kW		8000

Marine IMO

MARPOL Annex NOx emissions limit				
Tier	Date	NOx Limit, g/kWh		
		N<130	130 ≤ n < 2000	n ≥ 2000
Tier I	2000	17.0	$45 \cdot n^{-0.2}$	9.8
Tier II	2011	14.4	$44 \cdot n^{-0.23}$	7.7
Tier III	2016*	3.4	$9 \cdot n^{-0.2}$	1.96

* In NOx Emissions Control Areas (Tier II standards apply outside of ECAs).

Emissions Control Areas



Marine EPA Tier 3 & 4

Tier 3 Standards for Marine Diesel Category 1 Commercial Standard Power Density (≤ 35 kW/dm ³) Engines				
Power (P)	Displacement (D)	NOx + HC†	PM	Date
kW	dm ³ per cylinder	g/kWh	g/kWh	
P < 19	D < 0.9	7.5	0.40	2009
19 ≤ P < 75	D < 0.9 ^a	7.5	0.30	2009
		4.7 ^b	0.30 ^b	2014
75 ≤ P < 3700	D < 0.9	5.4	0.14	2012
	0.9 ≤ D < 1.2	5.4	0.12	2013
	1.2 ≤ D < 2.5	5.6	0.11 ^c	2014
	2.5 ≤ D < 3.5	5.6	0.11 ^c	2013
	3.5 ≤ D < 7	5.8	0.11 ^c	2012
Tier 3 Standards for Marine Diesel Category 2 Engines‡				
P < 3700	7 ≤ D < 15	6.2	0.14	2013
	15 ≤ D < 20	7.0	0.27 ^d	2014
	20 ≤ D < 25	9.8	0.27	2014
	25 ≤ D < 30	11.0	0.27	2014

† Tier 3 NOx+HC standards do not apply to 2000-3700 kW engines. | a - < 75 kW engines ≥ 0.9 dm³/cylinder are subject to the corresponding 75-3700 kW standards.
b - Option: 0.20 g/kWh PM & 5.8 g/kWh NOx+HC in 2014. | c - This standard level drops to 0.10 g/kWh in 2018 for < 600 kW engines.
‡ Option: Tier 3 PM/NOx+HC at 0.14/7.8 g/kWh in 2012, and Tier 4 in 2015. | d - 0.34 g/kWh for engines below 3300 kW.

Tier 4 Standards for Marine Diesel Category 1/2 Engines				
Power (P)	NOx	HC	PM	Date
kW	g/kWh	g/kWh	g/kWh	
P ≥ 3700	1.8	0.19	0.12 ^a	2014 ^c
	1.8	0.19	0.06	2016 ^{b,c}
2000 ≤ P < 3700	1.8	0.19	0.04	2014 ^{c,d}
1400 ≤ P < 2000	1.8	0.19	0.04	2016 ^c
600 ≤ P < 1400	1.8	0.19	0.04	2017 ^d

a - 0.25 g/kWh for engines with 15-30 dm³/cylinder displacement.
b - Optional compliance start dates can be used within these model years.
c - Option for Cat. 2: Tier 3 PM/NOx+HC at 0.14/7.8 g/kWh in 2012, and Tier 4 in 2015.
d - The Tier 3 PM standards continue to apply for these engines in model years 2014 and 2015 only.

Marine Inland waterways

Stage V emissions standards for engines inland waterways vessels (IWP & IWA)							
Category	Net Power	Date	CO	HC ^a	NOx	PM	PN
	kW						
IWP/IWA-v/c-1	19 ≤ P < 75	2019	5.00	4.70 ^b		0.30	-
IWP/IWA-v/c-2	75 ≤ P < 130	2019	5.00	5.40 ^b		0.14	-
IWP/IWA-v/c-3	130 ≤ P < 300	2019	3.50	1.00	2.10	0.10	-
IWP/IWA-v/c-4	P ≥ 300	2020	3.50	0.19	1.80	0.015	1 x 10 ¹²

^a A = 600 for gas engines | ^b HC + NOx

China

China I marine engine emission standards							
Cat.	Displ. (SV)	Power (P)	CO	HC+NOx	CH ₄ ¹	PM	Date
	dm ³ per cylinder	kW	g/kWh	g/kWh	g/kWh	g/kWh	
1	SV < 0.9	P ≥ 37	5.0	7.5	1.5	0.40	2018.7
	0.9 ≤ SV < 1.2		5.0	7.2	1.5	0.30	
	1.2 ≤ SV < 5		5.0	7.2	1.5	0.20	
2	5.0 ≤ SV < 15		5.0	7.8	1.5	0.27	2018.7
	15 ≤ SV < 20	P < 3300	5.0	8.7	1.6	0.50	
		P ≥ 3300	5.0	9.8	1.8	0.50	
	20 ≤ SV < 25		5.0	9.8	1.8	0.50	
	25 ≤ SV < 30		5.0	11.0	2.0	0.50	

¹ Applicable to natural gas (including dual fuel) engines only.

Marine China

China II marine engine emission standards							
Cat.	Displ. (SV)	Power (P)	CO	HC+Nox	CH ₄ ¹	PM	Date
	<i>dm³ per cylinder</i>	<i>kW</i>	<i>g/kWh</i>	<i>g/kWh</i>	<i>g/kWh</i>	<i>g/kWh</i>	
1	SV < 0.9	P ≥ 37	5.0	5.8	1.0	0.3	2021.07
	0.9 ≤ SV < 1.2		5.0	5.8	1.0	0.14	
	1.2 ≤ SV < 5		5.0	5.8	1.0	0.12	
2	5 ≤ SV < 15	P < 2000	5.0	6.2	1.2	0.14	2021.07
		2000 ≤ P < 3700	5.0	7.8	1.5	0.14	
		P ≥ 3700	5.0	7.8	1.5	0.27	
	15 ≤ SV < 20	P < 2000	5.0	7.0	1.5	0.34	
		2000 ≤ P < 3300	5.0	8.7	1.6	0.50	
		P ≥ 3300	5.0	9.8	1.8	0.50	
	20 ≤ SV < 25	P < 2000	5.0	9.8	1.8	0.27	
		P ≥ 2000	5.0	9.8	1.8	0.50	
	25 ≤ SV < 30	P < 2000	5.0	11.0	2.0	0.27	
		P ≥ 2000	5.0	11.0	2.0	0.50	

¹ Applicable to natural gas (including dual fuel) engines only.

Useful life and durability test periods			
Category	Useful Life		Min Durability Test
	<i>hours</i>	<i>years</i>	<i>hours</i>
Category 1 & Category 2	10,000	10	2,500
Category 1—Recreational	1,000	10	500

Note: The useful life is specified in hours and years, whichever occurs first.