California Environmental Protection Agency AIR RESOURCES BOARD	NISSAN MOTOR CO., LTD.	EXECUTIVE ORDER U-L-001-0045-1 New Off-Road Large Spark-Ignition Engines At & Above 19 Kilowatts

Pursuant to the authority vested in the Air Resources Board by the Health and Safety Code, Division 26, Part 5, Chapters 1 and 2; and

Pursuant to the authority vested in the undersigned by Health and Safety Code Sections 39515 and 39516 and Executive Order G-02-003;

IT IS ORDERED AND RESOLVED: That the following new large spark-ignition engines and emission control systems produced by the manufacturer are certified for use in off-road equipment as described below. Production engines shall be in all material respects the same as those for which certification is granted.

MODEL YEAR	ENGINE FAMILY NAME	ENGINE DISPLACEMENT (liters)	FUEL TYPE
2009	9NSXB04.546C	4.5	Dual Fuel, Gasoline or LPG

DURABILITY HOURS	SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT USAGE
5000	Multiport Fuel Injection (Gas and Dual Fuel), Throttle Body Injection (LPG), Three-Way Catalytic Converter, Heated Oxygen Sensor	Forklift

ENGINE MODELS (rated power in kilowatt, kW)	See Attached Model Pages

The following are the hydrocarbon plus oxides of nitrogen (HC+NOx) and carbon monoxide (CO) exhaust certification emission standards (Title 13, California Code of Regulations, (13 CCR) Section 2433(b)(1)) and certification emission levels for this engine family in grams per kilowatt-hour (g/kW-hr). Engines within this engine family shall have closed crankcases in conformance with 13 CCR Section 2433(b)(3) of "California Exhaust and Evaporative Emission Standards and Test Procedures for New 2007 through 2009 Off-Road Large Spark-ignition Engines (2007- 2009 Test Procedure 1048)" amended March 2, 2007.

(g/kW-hr)	HC+NOx	CO
Exhaust Standards	1.3	11.1
Certification Levels	0.9	9.7

The following is the evaporative hydrocarbon emission standard (13 CCR Section 2433(b)(3)) and certification emission level for this engine family in grams per gallon of fuel tank capacity (g/gallon).

Evaporative Certification Method	HC Certification Level (g/gallon)	HC Certification Standard (g/gallon)
Design Based	N/A	0.2

BE IT FURTHER RESOLVED: That for the listed engines for the aforementioned model-year, the manufacturer has submitted, and the Executive Officer hereby approves, the information and materials to demonstrate certification compliance with 13 CCR Section 2433(c) (certification and test procedures), 13 CCR Section 2434 (emission control labels), and 13 CCR Sections 2435 and 2436 (emission control system warranty).

BE IT FURTHER RESOLVED: That the listed engine models have been certified to the optional HC+NOx and CO emission standard(s) listed above pursuant to 13 CCR 2433 (b)(1).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

This Executive Order is only granted to the engine family and model-year listed above. Engines in this family that are produced for any other model-year are not covered by this Executive Order.

This Executive Order hereby supersedes Executive Order U-L-001-0045 dated September 24, 2008.

Executed at El Monte, California on this 2 day of October 2008.

Annette Hebert, Chief
Mobile Source Operations Division

Model Year: 2009
Manufacturer Name: NISSAN MOTOR CO., LTD
Engine Family: 9NSXB04.546C
OFF-ROAD LSI ENGINE SUPPLEMENTAL INFORMATION

Page:
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S12. MODEL SUMMARY (Use an asterisk (*) to identify worst-case engine model used for certification testing.)

S13. Engine Model	S14. Engine Code	S15. Sales Codes (Check ALL appropriate)			S16. Eng. Displ. (Liters)	S17. Rated Power (kW)	S18. Rated Speed (RPM)	S19. Peak Torque (Nm)	S20. Peak Torque Speed (RPM)
		Calif. Only	49-State	50-State					
TB45 MN-1				V	4.478	61.1	2450	271.7	1600
TB45 MN-2				V	4.478	62.6	2450	281.6	1470
TB45 MN-3	(Gasoline)			V	4.478	61.1	2450	271.7	1600
	(LPG)			V	4.478	62.6	2450	281.6	1470
TB45 K-1				V	4.478	60.9	2400	271.8	1600
TB45 K-2				V	4.478	62.4	2400	281.3	1440
TB45 K-3	(Gasoline)			V	4.478	60.9	2400	271.8	1600
	(LPG)			V	4.478	62.4	2400	281.3	1440
TB45 T-1				V	4.478	60.9	2450	272.4	1600
TB45 T-2				V	4.478	62.5	2450	282.3	1470
TB45 T-3	(Gasoline)			V	4.478	60.9	2450	272.4	1600
	(LPG)			V	4.478	62.5	2450	282.3	1470
TB45 K-4				V	4.478	61.4	2400	267.4	1600
TB45 K-5				V	4.478	66.1	2400	271.0	1440
TB45 K-6	(Gasoline)			V	4.478	61.4	2400	267.4	1600
	(LPG)			V	4.478	66.1	2400	271.0	1440
TB45 N-5				V	4.478	68.4	2450	278.4	1470
*TB45 N-6	(Gasoline)			V	4.478	60.9	2450	259.5	1600
	(LPG)			V	4.478	68.4	2450	278.4	1470

Model Year: 2009
Manufacturer Name: NISSAN MOTOR CO., LTD.
Engine Family: 9NSXB04.546C
OFF-ROAD LSI ENGINE SUPPLEMENTAL INFORMATION

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Part II - Evaporative Information

S25. EVAPORATIVE CERTIFICATION APPLICATION:

a) ☐ Performance Based Certification (Complete #S26, S27, S29)

b) ☒ Design Based Certification (Complete #S27, S28, S29)

S26. EVAPORATIVE HYDROCARBON EMISSIONS:

Test No.	HC Official Test Results, g/gal	HC DF	HC Certification Level, g/gal

S27. NONMETALLIC FUEL LINES:

Part Code	Model	# of Layers	Material	Meets SAE J2260, Cat.1
Gasoline Fuel Hose	Mark IV Automotive	5	Dayco SAE J30 R12	☒ YES ☐NO
Gasoline Fuel Hose	Avon Automotive GREENbar 1200 Series	5	SAE J30 R12	☒ YES ☐NO
				☐ YES ☐NO
				☐ YES ☐NO

S28. GAS CAP:

a) Does gas cap stay sealed up to a positive pressure of 24.5 kPa or a vacuum pressure of 0.7 kPa?
YES__V__ NO_____

b) (i) Tethered Gas Cap? YES__V__ NO_____

(ii) Self-Closing Gas Cap? YES_____ NO__V__

c) Demonstrate compliance.