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NISSAN ALTIMA HYBRID

MODEL HL32 SERIES

QUICK REFERENCE INDEX

FOREWORD

This manual contains maintenance and repair procedure for the 2009 NISSAN ALTIMA HYBRID.

In order to assure your safety and the efficient functioning of the vehicle, this manual should be read thoroughly. It is especially important that the PRECAUTIONS in the GI section be completely understood before starting any repair task.

All information in this manual is based on the latest product information at the time of publication. The right is reserved to make changes in specifications and methods at any time without notice.

IMPORTANT SAFETY NOTICE

The proper performance of service is essential for both the safety of the technician and the efficient functioning of the vehicle.
The service methods in this Service Manual are described in such a manner that the service may be performed safely and accurately.
Service varies with the procedures used, the skills of the technician and the tools and parts available. Accordingly, anyone using service procedures, tools or parts which are not specifically recommended by NISSAN must first be completely satisfied that neither personal safety nor the vehicle's safety will be jeopardized by the service method selected.

NISSAN NORTH AMERICA, INC.
Technical Publications Department

PLEASE HELP MAKE THIS SERVICE MANUAL BETTER!

Your comments are important to NISSAN and will help us to improve our Service Manuals.

Use this form to report any issues or comments you may have regarding our Service Manuals.

Please print this form and type or write your comments below. Mail or fax to:

Nissan North America, Inc.
Technical Service Information
39001 Sunrise Drive, P.O. Box 9200
Farmington Hills, MI USA 48331
FAX: (248) 488-3910

SERVICE MANUAL: Model: _____ **Year:** _____

PUBLICATION NO. (Refer to Quick Reference Index): _____

Please describe any Service Manual issues or problems in detail:

Page number(s) _____ *Note: Please include a copy of each page, marked with your comments.*

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Are the trouble diagnosis procedures logical and easy to use? (circle your answer) YES NO

If no, what page number(s)?_____*Note: Please include a copy of each page, marked with your comments.*

Please describe the issue or problem in detail: _____

_____

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Is the organization of the manual clear and easy to follow? (circle your answer) YES NO

Please comment: _____

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What information should be included in NISSAN Service Manuals to better support you in servicing or repairing customer vehicles?

_____

_____

_____

_____

DATE: _____ YOUR NAME: _____ POSITION: _____

DEALER: _____ DEALER NO.: _____ ADDRESS: _____

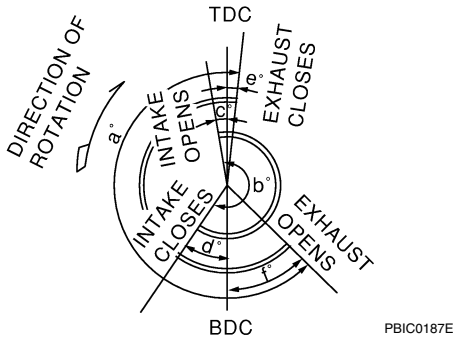
CITY:_____ STATE/PROV./COUNTRY: _____ ZIP/POSTAL CODE: _____

QUICK REFERENCE CHART: ALTIMA HYBRID

Engine Tune-up Data

INFOID:0000000003351824

GENERAL SPECIFICATIONS

Cylinder arrangement		In-line 4
Displacement cm^3 (in^3)		2,488 (151.82)
Bore and stroke mm (in)		89.0 x 100 (3.50 x 3.94)
Valve arrangement		DOHC
Firing order		1-3-4-2
Number of piston rings	Compression	2
	Oil	1
Compression ratio		9.5:1
Compression pressure kPa (kg/cm^2, psi) / 250 rpm	Standard	1,250 (12.8, 181.3)
	Minimum	1,060 (10.8, 153.7)
	Differential limit between cylinders	100 (1.0, 14)
Valve timing		

Unit: degree

a	b	c	d	e	f
220°	232°	-41°	93°	10°	30°

SPARK PLUG

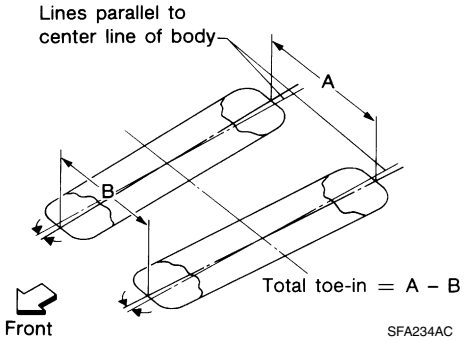
Unit: mm (in)

Make		NGK
Type	Standard	DILKAR6A-11
Gap (nominal)		1.1 (0.043)

Front Wheel Alignment

INFOID:0000000003351823

Camber ★ Decimal degree	LH	Minimum	– 1.15°
		Nominal	– 0.40°
		Maximum	0.35°
	RH	Minimum	– 1.40°
		Nominal	– 0.65°
		Maximum	0.10°
	Left and right difference		0.75°
Caster ★ Decimal degree		Minimum	4.25°
		Nominal	5.00°
		Maximum	5.75°
		Left and right difference	0.75°
Kingpin offset ★ Decimal degree		Minimum	11.80°
		Nominal	12.55°
		Maximum	13.30°



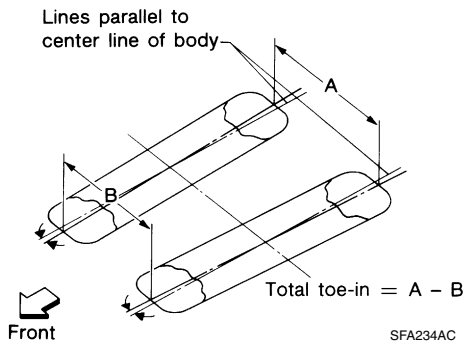
Total toe-in ★	Distance (A - B)	Minimum	0 mm (0 in)
		Nominal	1 mm (0.04 in)
		Maximum	2 mm (0.08 in)

★: Fuel, radiator coolant and engine oil full. Spare tire, jack, hand tools and mats in designated positions.

Rear Wheel Alignment (Unladen*)

INFOID:0000000003351821

Camber Degree minute (Decimal degree)	Minimum	–0° 45′ (–0.749°)
	Nominal	–0° 15′ (–0.249°)
	Maximum	–0° 15′ (0.251°)



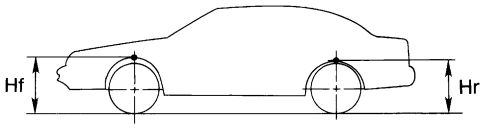
Total toe-in	Distance (A – B) mm (in)		2.4 (0.09)
	Distance difference between RH and LH side mm (in)	Minimum	–2 (–0.08)
		Nominal	0 (0)
		Maximum	2 (0.08)
	Angle (left plus right) Degree minute (decimal degree)		0° 6′ (0.109°)

*: Fuel, engine coolant and engine oil full. Spare tire, jack, hand tools and mats in designated positions.

Wheel Height

INFOID:0000000003351822

Unit: mm (in)



SFA818A

Destination	USA	Canada
Tire size	215/60R16	215/60R16
Front (Hf)*	727 (28.62)	727 (28.62)
Rear (Hr)*	718 (28.27)	719 (28.31)

*: Fuel, engine coolant and engine oil full. Spare tire, jack, hand tools and mats in designated positions.

Brake Specifications

INFOID:0000000003351817

Unit: mm (in)

Front brake	Cylinder bore diameter (each)	57.2 (2.25)
	Pad length × width × thickness	132 × 50 × 11 (5.20 × 1.969 × 0.433)
	Rotor outer diameter × thickness	296 × 26 (11.65 × 1.024)
Rear brake	Cylinder bore diameter	34.93 (1.375)
	Pad length × width × thickness	83.0 × 31.9 × 8.5 (3.268 × 1.256 × 0.335)
	Rotor outer diameter × thickness	292 × 9 (11.50 × 0.35)
Recommended brake fluid		DOT 3

Brake Pedal

INFOID:0000000003351818

Brake pedal height (from dash lower panel top surface)	190.7 - 202.7 mm (7.51 - 7.98 in)
Depressed pedal height [under a force of 490 N (50 kg-f, 110 lb-f) with engine running]	60.7 - 72.7 mm (2.39 - 2.86 in)
Clearance between stopper rubber and threaded end of the stop lamp switch and brake switch	0.74 - 1.96 mm (0.0291 - 0.0772 in)
Pedal play	3 - 11 mm (0.12 - 0.43 in)

Front Disc Brake

INFOID:0000000003351819

Brake pad	Standard thickness (new)	11.0 mm (0.433 in)
	Repair limit thickness	2.0 mm (0.079 in)
Disc rotor	Standard thickness (new)	26.0 mm (1.024 in)
	Repair limit thickness	24.0 mm (0.945 in)
	Thickness variation (measured at 8 positions)	0.015 mm (0.0006 in)
	Maximum runout (with it attached to the vehicle)	0.035 mm (0.0014 in)

Rear Disc Brake

INFOID:0000000003351820

Brake pad	Standard thickness (new)	8.5 mm (0.335 in)
	Repair limit thickness	1.0 mm (0.039 in)
Disc rotor	Standard thickness (new)	9.0 mm (0.354in)
	Repair limit thickness	8.0 mm (0.315 in)
	Thickness variation (measured at 8 positions)	0.015 mm (0.0006 in)
	Maximum runout (with it attached to the vehicle)	0.05 mm (0.002 in)

Fluids and Lubricants

INFOID:0000000003351816

Description		Capacity (Approximate)		
		US measure	Imp measure	Liter
Fuel		20 gal	16-5/8 gal	75.6
Engine oil Drain and refill	With oil filter change	4-7/8 qt	4 qt	4.6
	Without oil filter change	4-1/2 qt	3-3/4 qt	4.3
Dry engine (Overhaul)		5-3/4 qt	4-3/4 qt	5.4
Engine cooling system with reservoir tank		2 gal	1-3/4 gal	7.7
Inverter coolant with reservoir tank		3/4 gal	7/8 gal	3.2
HEV transaxle fluid		4-3/8 qt	3-5/8 qt	4.1
Brake fluid		—	—	—
Brake grease		—	—	—
Brake pad plate grease		—	—	—
HEV transaxle grease		—	—	—
Multi-purpose grease		—	—	—
Air conditioning system refrigerant		1.10 ± 0.055 lb	0.50 ± 0.025 kg	0.50 ± 0.025 kg
Air conditioning system oil		4.06 fl oz	4.22 fl oz	120 m ℓ