

Edition: September 2009
Revision: September 2009
Publication No. SM0E-1H32U0

NISSAN ALTIMA HYBRID MODEL HL32 SERIES

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QUICK REFERENCE INDEX

A GENERAL INFORMATION	GI General Information
B ENGINE	EM Engine Mechanical
	LU Engine Lubrication System
	CO Engine Cooling System
	EC Engine Control System
	FL Fuel System
	EX Exhaust System
	STR Starting System
C HYBRID	ACC Accelerator Control System
	HBC Hybrid Control System
	HBB Hybrid Battery System
	HBR Hybrid Brake System
D TRANSMISSION & DRIVE-LINE	CL Clutch System
	TM Transaxle & Transmission
	DLN Driveline
	FAX Front Axle
	RAX Rear Axle
E SUSPENSION	FSU Front Suspension
	RSU Rear Suspension
	SCS Suspension Control System
	WT Road Wheels & Tires
F BRAKES	BR Brake System
	PB Parking Brake System
	BRC Brake Control System
G STEERING	ST Steering System
	STC Steering Control System
H RESTRAINTS	SB Seat Belt
	SBC Seat Belt Control System
	SR SRS Airbag
	SRC SRS Airbag Control System
	VTL Ventilation System
	HA Heater & Air Conditioning System
	HAC Heater & Air Conditioning Control System
I VENTILATION, HEATER & AIR CONDITIONER	INT Interior
	IP Instrument Panel
	SE Seat
	ADP Automatic Drive Positioner
J BODY INTERIOR	DLK Door & Lock
	SEC Security Control System
	GW Glass & Window System
	PWC Power Window Control System
	RF Roof
	EXT Exterior
	BRM Body Repair Manual
	MIR Mirrors
	EXL Exterior Lighting System
K BODY EXTERIOR, DOORS, ROOF & VEHICLE SECURITY	INL Interior Lighting System
	WW Wiper & Washer
	DEF Defogger
	HRN Horn
	PWO Power Outlet
	BCS Body Control System
	LAN LAN System
	PCS Power Control System
	CHG Charging System
L DRIVER CONTROLS	PG Power Supply, Ground & Circuit Elements
	MWI Meter, Warning Lamp & Indicator
	WCS Warning Chime System
	SN Sonar System
	AV Audio, Visual & Navigation System
	CCS Cruise Control System
	MA Maintenance
M ELECTRICAL & POWER CONTROL	
N DRIVER INFORMATION & MULTIMEDIA	
O CRUISE CONTROL	
P MAINTENANCE	

A

B

C

D

E

F

G

H

I

J

K

L

M

N

O

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FOREWORD

This manual contains maintenance and repair procedure for the 2010 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.



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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.*

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

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DATE: _____ YOUR NAME: _____ POSITION: _____

DEALER: _____ DEALER NO.: _____ ADDRESS: _____

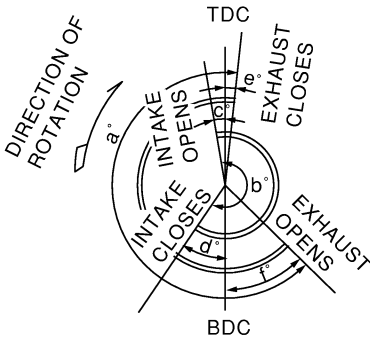
CITY: _____ STATE/PROV./COUNTRY: _____ ZIP/POSTAL CODE: _____

QUICK REFERENCE CHART: ALTIME HEV

Engine Tune-up Data

INFOID:000000005838951

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	900 (9.2, 130.5)			
	Minimum	710 (7.3, 103)			
	Differential limit be- tween cylinders	100 (1.0, 14)			
Valve timing					
Unit: degree					
a	b	c	d	e	f
220°	232°	-41°	93°	10°	30°

DRIVE BELTS

Tension of drive belts	Auto adjustment by auto tensioner
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SPARK PLUG

Unit: mm (in)

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

*: Always check with the Parts Department for the latest parts information

QUICK REFERENCE CHART: ALTIME HEV

2010

Front Wheel Alignment (Unladen*)

INFOID:000000005838950

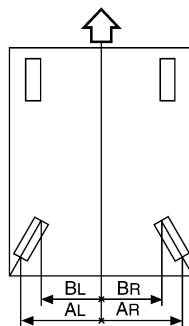
Camber* Degree minute (decimal degree)	LH	Minimum	-1° 09' (-1.15°)
		Nominal	-0° 24' (-0.40°)
		Maximum	0° 21' (0.35°)
	RH	Minimum	-1° 24' (-1.40°)
		Nominal	-0° 39' (-0.65°)
		Maximum	0° 06' (0.10°)
Right and left difference		-0° 15' ± 0° 33' (-0.25° ± 0.55°)	
Caster* Degree minute (decimal degree)		Nominal	5° 00' (5.00°)
		Right and left difference	0° 33' (0.55°)
Kingpin offset* Degree minute (decimal degree)		Minimum	11° 48' (11.80°)
		Nominal	12° 33' (12.55°)
		Maximum	13° 18' (13.30°)
Total toe-in* Degree minute (decimal degree)	Distance	Minimum	0 mm (0 in)
		Nominal	1 mm (0.04 in)
		Maximum	2 mm (0.08 in)
	Angle (right side or left side)	Minimum	0° 01' (0.017°)
		Nominal	0° 03' (0.050°)
		Maximum	0° 05' (0.083°)

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

Rear Wheel Alignment (Unladen*)

INFOID:000000005838948

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



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Total toe-in	Distance difference between RH and LH side (AR - BR) - (AL - BL) ↔: Front mm (in)	Minimum	-2 (-0.08)
		Nominal	0 (0)
		Maximum	2 (0.08)
	Angle difference between RH and LH side Degree minute (decimal degree)	Minimum	-0° 5' (-0.08°)
		Nominal	0° 0' (0°)
		Maximum	0° 5' (0.08°)
	Angle (left or 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.

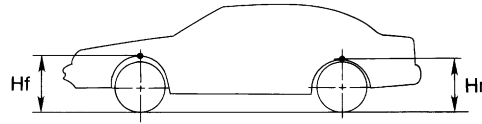
QUICK REFERENCE CHART: ALTIME HEV

2010

Wheelarch Height (Unladen*)

INFOID:0000000005838949

Unit: mm (in)



SFA818A

Destination	USA	Canada
Tire size	215/60R16	215/60R16
Front (Hf)*	727 (28.62)	728 (28.66)
Rear (Hr)*	719 (28.31)	719 (28.31)

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

Brake Specifications

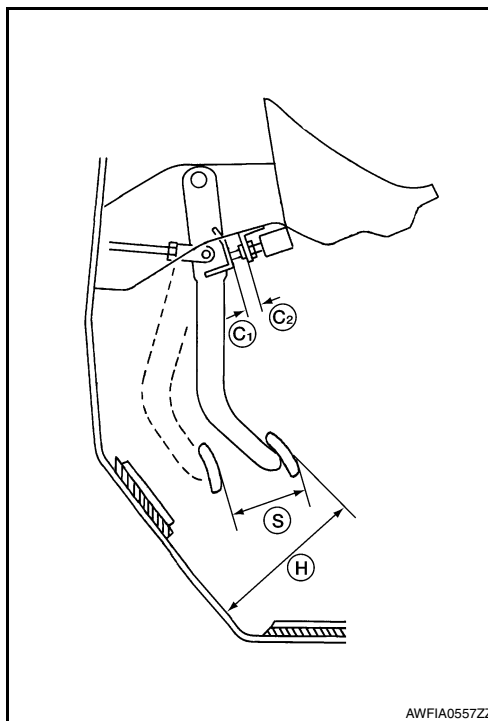
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Unit: mm (in)

Front brake	Cylinder bore diameter (each)	57.2 (2.25)
	Pad length × width × thickness	126.5 × 52 × 11 (4.98 × 2.047 × 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 × 33 × 8.5 (3.268 × 1.299 × 0.335)
	Rotor outer diameter × thickness	292 × 9 (11.50 × 0.354)
Recommended brake fluid		DOT 3

Brake Pedal

INFOID:000000005838945



H	Brake pedal height (from dash lower panel top surface)	191.7 - 205.7 mm (7.55 - 8.10 in)
S	Brake pedal full stroke	130 mm (5.12 in)
C1, C2	Clearance between bracket and threaded end of the stop lamp switch and ASCD cancel switch	0.74 - 1.96 mm (0.0291 - 0.0772 in)

Front Disc Brake

INFOID:000000005838946

Brake pad	Standard thickness (new)	11.0 mm (0.433 in)
	Wear limit thickness	2.0 mm (0.079 in)
Disc rotor	Standard thickness (new)	26.0 mm (1.024 in)
	Wear 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)	0.040 mm (0.0016 in)

Rear Disc Brake

INFOID:000000005838947

Brake pad	Standard thickness (new)	8.5 mm (0.335 in)
	Wear limit thickness	1.0 mm (0.039 in)
Disc rotor	Standard thickness (new)	9.0 mm (0.354 in)
	Wear 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 (0.0020 in)

QUICK REFERENCE CHART: ALTIME HEV

2010

Fluids and Lubricants

INFOID:000000005838943

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		8-1/8 qt	6-3/4 qt	7.7
Inverter coolant with reservoir tank		3-3/8 qt	2-7/8 qt	3.2
HEV transaxle fluid		4-3/8 qt	3-5/8 qt	4.1
Brake fluid		—	—	—
Brake grease		—	—	—
Brake pad plate 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		4.1 fl oz	4.2 fl oz	120 m ℓ