Edition: September 2001
Revision: November 2002
Publication No. SM2E-1L31U2

NISSAN ALTIMA

MODEL L31 SERIES

QUICK REFERENCE INDEX

FOREWORD

This manual contains maintenance and repair procedures for the 2002 NISSAN ALTIMA.

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
Gardena, California

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. (Please photocopy back cover): _____

VEHICLE INFORMATION VIN: _____ **Production Date:** _____

Please describe any 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

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: _____

_____

_____

_____

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

Please comment: _____

_____

_____

_____

_____

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 (EQUIPPED WITH 2.5L QR ENGINE)

PFP:00000

Engine Tune-Up Data

ELS000ME

Cylinder arrangement		In-line 4
Displacement cm^3 (cu in)		2,488 (151.82)
Bore and stroke mm (in)		89.0 x 100 (3.50 - 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, 182)
	Minimum	1,060 (10.8, 154)
	Differential limit between cylinders	98 (1.0, 14)
Idle speed rpm A/T (in neutral)		700 ± 50
Ignition timing (BTDC at idle speed)		15° ± 5°
CO% at idle		0.3 – 9.5% and engine runs smoothly
Radiator cap relief pressure kPa (kg/cm^2 , psi)	Standard	79 – 98 (0.8 – 1.0, 11 – 14)
	Limit	59 (0.6, 9)
Cooling system leakage testing pressure kPa (kg/cm^2 , psi)		157 (1.6, 23)

Drive Belt Deflection and Tension

Tension of drive belts	Auto adjustment by auto-tensioner

Spark Plugs (Double Platinum Tipped)

Type	Standard	PLFR5A-11
	Hot	PLFR4A-11
	Cold	PLFR6A-11
Plug gap		Nominal: 1.1 mm (0.043 in)

Front Wheel Alignment (Unladen*1)

ELS000MF

Tire size		205/65R16	215/55R17
Camber Degree minute (Decimal degree)	Minimum	–1°00′ (–1.00°)	
	Nominal	–0°15′ (–0.25°)	
	Maximum	0°30′ (0.50°)	
	Left and right difference	45′ (0.75°) or less	
Caster Degree minute (Decimal degree)	Minimum	2°05′ (2.08°)	
	Nominal	2°50′ (2.83°)	
	Maximum	3°35′ (3.58°)	
	Left and right difference	45′ (0.75°) or less	
Kingpin inclination Degree minute (Decimal degree)	Minimum	13°50′ (13.83°)	
	Nominal	14°35′ (14.58°)	
	Maximum	15°20′ (15.33°)	

QUICK REFERENCE CHART: ALTIMA (EQUIPPED WITH 2.5L QR ENGINE)

2002

Tire size			205/65R16	215/55R17
Total toe-in	Distance (A – B) mm (in)	Minimum	–0.5 (–0.02)	
		Nominal	0.5 (0.02)	
		Maximum	1.5 (0.06)	
	Angle (left plus right) Degree minute (Decimal degree)	Minimum	–4′ (–0.07°)	
		Nominal	2′ (0.03°)	
		Maximum	8′ (0.13°)	
Wheel turning angle Full turn*2	Inside Degree minute (Decimal degree)	Minimum	34°30′ (34.5°)	32°00′ (32.0°)
		Nominal	38°00′ (38.0°)	35°30′ (35.5°)
		Maximum	39°00′ (39.0°)	36°30′ (36.5°)
	Outside Degree minute (Decimal degree)	Nominal	30°30′ (30.5°)	29°00′ (29.0°)

*1: Fuel, radiator coolant and engine oil full. Spare tire, jack, hand tools and mats in designated positions.
*2: On power steering models, wheel turning force (at circumference of steering wheel) of 98 to 147 N (10 to 15 kg, 22 to 33 lb) with engine idle.

Rear Wheel Alignment (Unladen*)

ELS000MG

Camber Degree minute (Decimal degree)		Minimum	–0°04′ (–0.07°)
		Nominal	–0°34′ (–0.57°)
		Maximum	0°64′ (-1.07°)
Total toe-in	Distance (A – B) mm (in)	Minimum	2.4 (0.09)
		Nominal	3.9 (0.15)
		Maximum	5.4 (0.21)
	Angle (left plus right) Degree minute (Decimal degree)	Minimum	6′ (0.1°)
		Nominal	10′ (0.167°)
		Maximum	14′ (0.233°)

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

Brake

ELS000MH

Unit: mm (in)

Front brake	Brake model		CLZ25VD disc brake
	Cylinder bore diameter		57.2 (2.252)
	Pad Length × width × thickness		125.6 × 46 × 11 (4.94 × 1.81 × 0.43)
	Rotor outer diameter × thickness		296 × 26 (11.65 × 1.02)
Rear brake	Brake model		AD9V disc brake
	Cylinder bore diameter		34.9 (1.3740)
	Pad Length × width × thickness		89.1 × 39.5 × 10 (3.508 × 1.555 × 0.31)
	Rotor outer diameter × thickness		292 × 9 (11.50 × 0.35)
Master cylinder	Cylinder bore diameter		23.81 (15/16)
Control valve	Screw in type		30 × 0.4 (1.18 × 0.02)
Brake booster	Booster model		M215T
	Diaphragm diameter	Primary	230 (9.06)
		Secondary	205 (8.07)
Recommended brake fluid			DOT 3

QUICK REFERENCE CHART: ALTIMA (EQUIPPED WITH 2.5L QR ENGINE)

2002

Disc Brake - Repair Limits

Unit: mm (in)

Brake model		CLZ25VD (Front)	AD9V (Rear)
Pad wear limit	Minimum thickness	2.0 (0.079)	1.5 (0.059)
Rotor repair limit	Maximum runout	0.07 (0.0028)	0.07 (0.0028)
	Minimum thickness	22.0 (0.866)	8.0 (0.31)

Brake Pedal

Unit: mm (in)

Free height “H”*	M/T	164.1 - 174.1 (6.46 - 6.85)
	A/T	173.1 - 183.1 (6.81 - 7.21)
Clearance “C” between pedal stopper and threaded end of stop lamp switch or ASCD switch		0.74 - 1.96 (0.0291 - 0.0772)

*: Measured from surface of dash reinforcement panel to surface of pedal pad

Refill Capacities

ELS000MI

Engine Coolant Capacity (Approximate)

Unit: ℓ (US qt)

Drain and refill (without reservoir)	6.9 (7 1/4)
Reservoir tank (at MAX level)	0.7 (3/4)

Engine Oil Capacity (Approximate)

Unit: ℓ (US qt)

Drain and refill	With oil filter change	4.2 (4 1/2)
	Without oil filter change	4.0 (4 1/4)
Dry engine (engine overhaul)		4.6 (4 7/8)

Miscellaneous Capacity (Approximate)

System description		Metric measurement	US measurement
Fuel tank		75.5 ℓ	20 gal
Power steering system		1.0 ℓ	2 1/8 pt
Transaxle	M/T (RS5F51A)	2.3 ℓ	2 3/8 qt
	A/T (RE4F04B)	9.2 ℓ	9 3/4 qt
Air conditioning system	Refrigerant	0.475 - 0.525 kg	1.045 - 1.155 lb
	Compressor oil	150 ml	5.03 fl oz

QUICK REFERENCE CHART: ALTIMA (EQUIPPED WITH 3.5L, VQ ENGINE)

PFP:00027

Engine Tune-Up Data

ELS000MJ

Cylinder arrangement		V-6
Displacement cm^3 (cu in)		3,498 (213.45)
Bore and stroke mm (in)		95.5 x 81.4 (3.76 - 3.205)
Valve arrangement		DOHC
Firing order		1-2-3-4-5-6
Number of piston rings	Compression	2
	Oil	1
Number of main bearings		4
Compression ratio		10.0:1
Compression pressure kPa (kg/cm^2 , psi) / 250 rpm	Standard	1,275 (13.0, 185)
	Minimum	981 (10.0, 142)
	Differential limit between cylinders	98 (1.0, 14)
Idle speed rpm No-load*1 (in “P” or N” position)		700 ± 50
Ignition timing (BTDC at idle speed)		15° ± 5°
CO% at idle		0.7 – 9.9% and engine runs smoothly
Radiator cap relief pressure kPa (kg/cm^2 , psi)	Standard	79 – 98 (0.8 – 1.0, 11 – 14)
	Limit	59 (0.6, 9)
Cooling system leakage testing pressure kPa (kg/cm^2 , psi)		157 (1.6, 23)

*1: Under the following conditions:

- Air conditioner switch: OFF
- Electric load: OFF (Lights, heater fan & rear window defogger)
- Steering wheel: Kept in straight-ahead position

QUICK REFERENCE CHART: ALTIMA (EQUIPPED WITH 3.5L, VQ ENGINE)

2002

Drive Belt Deflection and Tension

	Deflection adjustment		Unit: mm (in)	Tension adjustment		Unit: N (kg, lb)
	Used belt		New belt	Used belt		New belt
	Limit	After adjustment		Limit	After adjustment	
Alternator, Air conditioner compressor	7.0 (0.28)	4.2 - 4.6 (0.17 - 0.18)	3.7 - 4.1 (0.15 - 0.16)	294 (30, 66)	730 - 818 (74.5 - 83.5, 164 - 184)	838 - 926 (85.5 - 94.5, 188 - 208)
Power steering oil pump	11.0 (0.43)	7.3 - 8.0 (0.29 - 0.32)	6.5 - 7.2 (0.26 - 0.28)	196 (20, 44)	495 - 583 (50.5 - 59.5, 111.3 - 131.1)	603 - 691 (61.5 - 70.5, 135.6 - 155.4)

Spark Plugs (Double Platinum Tipped)

Type	Standard	PLFR5A-11
	Hot	PLFR4A-11
	Cold	PLFR6A-11
Plug gap		Nominal: 1.1 mm (0.043 in)

Front Wheel Alignment (Unladen*1)

ELS000MK

Tire size			205/65R16	215/55R17
Camber Degree minute (Decimal degree)		Minimum	–1°00′ (–1.00°)	
		Nominal	–0°15′ (–0.25°)	
		Maximum	0°30′ (0.50°)	
		Left and right difference	45′ (0.75°) or less	
Caster Degree minute (Decimal degree)		Minimum	2°05′ (2.08°)	
		Nominal	2°50′ (2.83°)	
		Maximum	3°35′ (3.58°)	
		Left and right difference	45′ (0.75°) or less	
Kingpin inclination Degree minute (Decimal degree)		Minimum	13°50′ (13.83°)	
		Nominal	14°35′ (14.58°)	
		Maximum	15°20′ (15.33°)	
Total toe-in	Distance (A – B) mm (in)	Minimum	–0.5 (–0.02)	
		Nominal	0.5 (0.02)	
		Maximum	1.5 (0.06)	
	Angle (left plus right) Degree minute (Decimal degree)	Minimum	–4′ (–0.07°)	
		Nominal	2′ (0.03°)	
		Maximum	8′ (0.13°)	
Wheel turning angle Full turn*2	Inside Degree minute (Decimal degree)	Minimum	34°30′ (34.5°)	32°00′ (32.0°)
		Nominal	38°00′ (38.0°)	35°30′ (35.5°)
		Maximum	39°00′ (39.0°)	36°30′ (36.5°)
	Outside Degree minute (Decimal degree)	Nominal	30°30′ (30.5°)	29°00′ (29.0°)

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

*2: On power steering models, wheel turning force (at circumference of steering wheel) of 98 to 147 N (10 to 15 kg, 22 to 33 lb) with engine idle.

QUICK REFERENCE CHART: ALTIMA (EQUIPPED WITH 3.5L, VQ ENGINE)

2002

Rear Wheel Alignment (Unladen*)

ELS000ML

Camber Degree minute (Decimal degree)		Minimum	–0°10′ (–0.17°)
		Nominal	–0°40′ (–0.67°)
		Maximum	-0°70′ (-1.17°)
Total toe-in	Distance (A – B) mm (in)	Minimum	2.5 (0.10)
		Nominal	4.0 (0.16)
		Maximum	5.5 (0.22)
	Angle (left plus right) Degree minute (Decimal degree)	Minimum	6′ (0.1°)
		Nominal	10′ (0.167°)
		Maximum	14′ (0.233°)

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

Brake

ELS000MM

Unit: mm (in)

Front brake	Brake model		CLZ25VD disc brake
	Cylinder bore diameter		57.2 (2.252)
	Pad Length × width × thickness		125.6 × 46 × 11 (4.94 × 1.81 × 0.43)
	Rotor outer diameter × thickness		296 × 26 (11.65 × 1.02)
Rear brake	Brake model		AD9V disc brake
	Cylinder bore diameter		34.9 (1.3740)
	Pad Length × width × thickness		89.1 × 39.5 × 10 (3.508 × 1.555 × 0.31)
	Rotor outer diameter × thickness		292 × 9 (11.50 × 0.35)
Master cylinder	Cylinder bore diameter		23.81 (15/16)
Control valve	Screw in type		30 × 0.4 (1.18 × 0.02)
Brake booster	Booster model		M215T
	Diaphragm diameter	Primary	230 (9.06)
		Secondary	205 (8.07)
Recommended brake fluid			DOT 3

Disc Brake - Repair Limits

Unit: mm (in)

Brake model		CLZ25VD (Front)	AD9V (Rear)
Pad wear limit	Minimum thickness	2.0 (0.079)	1.5 (0.059)
Rotor repair limit	Maximum runout	0.07 (0.0028)	0.07 (0.0028)
	Minimum thickness	22.0 (0.866)	8.0 (0.31)

Brake Pedal

Unit: mm (in)

Free height “H”*	M/T	164.1 - 174.1 (6.46 - 6.85)
	A/T	173.1 - 183.1 (6.81 - 7.21)
Clearance “C” between pedal stopper and threaded end of stop lamp switch or ASCD switch		0.74 - 1.96 (0.0291 - 0.0772)

*: Measured from surface of dash reinforcement panel to surface of pedal pad

QUICK REFERENCE CHART: ALTIMA (EQUIPPED WITH 3.5L, VQ ENGINE)

2002

Refill Capacities

ELS000MN

Engine Coolant Capacity (Approximate)

Unit: ℓ (US qt)

Drain and refill (without reservoir)	7.5 (7 7/8)
Reservoir tank (at MAX level)	0.7 (3/4)

Engine Oil Capacity (Approximate)

Unit: ℓ (US qt)

Drain and refill	With oil filter change	4.0 (4 1/4)
	Without oil filter change	3.7 (3 7/8)
Dry engine (engine overhaul)		5.0 (5 1/4)

Miscellaneous Capacity (Approximate)

System description		Metric measurement	US measurement
Fuel tank		75.5 ℓ	20 gal
Power steering system		1.0 ℓ	2 1/8 pt
Transaxle	M/T (RS5F51A)	2.3 ℓ	2 3/8 qt
	A/T (RE4F04B)	9.2 ℓ	9 3/4 qt
Air conditioning system	Refrigerant	0.475 - 0.525 kg	1.045 - 1.155 lb
	Compressor oil	150 ml	5.03 fl oz

TEST VALUE AND TEST LIMIT (GST ONLY — NOT APPLICABLE TO CONSULT-II)

The following is the information specified in Mode 6 of SAE J1979.
The test value is a parameter used to determine whether a system/circuit diagnostic test is “OK” or “NG” while being monitored by the ECM during self-diagnosis. The test limit is a reference value which is specified as the maximum or minimum value and is compared with the test value being monitored.
Items for which these data (test value and test limit) are displayed are the same as SRT code items.
These data (test value and test limit) are specified by Test ID (TID) and Component ID (CID) and can be displayed on the GST screen.

: Applicable ·: Not applicable

SRT item	Self-diagnostic test item	DTC	Test value (GST display)		Te s t limit	Application	Unit
			TID	CID			
CATALYST	Three way catalyst function (Bank 1)	P0420	01H	01H	Max.	X	–
		P0420	02H	81H	Min.	X	–
EVAP SYSTEM	EVAP control system (Small leak)	P0442	05H	03H	Max.	X	–
		P1442	05H	03H	Max.	X	–
	EVAP control system purge flow monitoring	P0441	06H	83H	Min.	X	mV
	EVAP control system (Very small leak)	P0456	07H	03H	Max.	X	–
		P1456	07H	03H	Max.	X	–
HO2S	Heated oxygen sensor 1	P0133	09H	04H	Max.	X	ms
		P1143	0AH	84H	Min.	X	mV
		P1144	0BH	04H	Max.	X	mV
		P0132	0CH	04H	Max.	X	mV
		P0134	0DH	04H	Max.	X	s
	Heated oxygen sensor 2	P0139	19H	86H	Min.	X	mV/500ms
		P1147	1AH	86H	Min.	X	mV
		P1146	1BH	06H	Max.	X	mV
		P0138	1CH	06H	Max.	X	mV
HO2S HTR	Heated oxygen sensor 1 heater	P0032	29H	08H	Max.	X	mV
		P0031	2AH	88H	Min.	X	mV
	Heated oxygen sensor 2 heater	P0038	2DH	0AH	Max.	X	mV
		P0037	2EH	8AH	Min.	X	mV
EGR SYSTEM*1	EGR function	P0400	31H	8CH	Min.	X	℃
		P0400	32H	8CH	Min.	X	℃
		P0400	33H	8CH	Min.	X	℃
		P0400	34H	8CH	Min.	X	℃
		P1402	35H	0CH	Max.	X	℃
	EGRC-BPT valve function	P0402	36H	0CH	Max.	X	–
		P0402	37H	8CH	Min.	X	–

*1 : Except models L31 QR25DE engine 2002MY and L31 QR25DE engine 2003MY.

TEST VALUE AND TEST LIMIT (GST ONLY — NOT APPLICABLE TO CONSULT-II)

The following is the information specified in Mode 6 of SAE J1979.
The test value is a parameter used to determine whether a system/circuit diagnostic test is “OK” or “NG” while being monitored by the ECM during self-diagnosis. The test limit is a reference value which is specified as the maximum or minimum value and is compared with the test value being monitored.
Items for which these data (test value and test limit) are displayed are the same as SRT code items.
These data (test value and test limit) are specified by Test ID (TID) and Component ID (CID) and can be displayed on the GST screen.

: Applicable ·: Not applicable

SRT item	Self-diagnostic test item	DTC	Test value (GST display)		Te s t limit	Application	Unit
			TID	CID			
CATALYST	Three way catalyst function (Bank 1)	P0420	01H	01H	Max.	X	−
		P0420	02H	81H	Min.	X	−
	Three way catalyst function (Bank 2)	P0430	03H	02H	Max.	X	−
		P0430	04H	82H	Min.	X	−
EVAP SYSTEM	EVAP control system (Small leak)	P0442	05H	03H	Max.	X	−
		P1442	05H	03H	Max.	X	−
	EVAP control system purge flow monitoring	P0441	06H	83H	Min.	X	mV
	EVAP control system (Very small leak)	P0456	07H	03H	Max.	X	−
		P1456	07H	03H	Max.	X	−
HO2S	Heated oxygen sensor 1(Bank 1)	P0133	09H	04H	Max.	X	ms
		P1143	0AH	84H	Min.	X	mV
		P1144	0BH	04H	Max.	X	mV
		P0132	0CH	04H	Max.	X	mV
		P0134	0DH	04H	Max.	X	s
	Heated oxygen sensor 1(Bank 2)	P0153	11H	05H	Max.	X	ms
		P1163	12H	85H	Min.	X	mV
		P1164	13H	05H	Max.	X	mV
		P0152	14H	05H	Max.	X	mV
		P0154	15H	05H	Max.	X	s
	Heated oxygen sensor 2(Bank 1)	P0139	19H	86H	Min.	X	mV/500ms
		P1147	1AH	86H	Min.	X	mV
		P1146	1BH	06H	Max.	X	mV
		P0138	1CH	06H	Max.	X	mV
	Heated oxygen sensor 2(Bank 2)	P0159	21H	87H	Min.	X	mV/500ms
		P1167	22H	87H	Min.	X	mV
		P1166	23H	07H	Max.	X	mV
		P0158	24H	07H	Max.	X	mV
HO2S HTR	Heated oxygen sensor 1 heater(Bank 1)	P0032	29H	08H	Max.	X	mV
		P0031	2AH	88H	Min.	X	mV
	Heated oxygen sensor 2 heater(Bank 2)	P0052	2BH	09H	Max.	X	mV
		P0051	2CH	89H	Min.	X	mV
	Heated oxygen sensor 2 heater(Bank 1)	P0038	2DH	0AH	Max.	X	mV
		P0037	2EH	8AH	Min.	X	mV
	Heated oxygen sensor 2 heater(Bank 2)	P0058	2FH	0BH	Max.	X	mV
		P0057	30H	8BH	Min.	X	mV
EGR SYSTEM*1	EGR function	P0400	31H	8CH	Min.	X	℃
		P0400	32H	8CH	Min.	X	℃
		P0400	33H	8CH	Min.	X	℃
		P0400	34H	8CH	Min.	X	℃
		P1402	35H	0CH	Max.	X	℃
	EGRC-BPT valve function	P0402	36H	0CH	Max.	X	−
		P0402	37H	8CH	Min.	X	−

*1 : Except models L31 VQ35DE engine, F50 VK45DE engine, Y34 VK45DE engine 2