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**QUICK REFERENCE INDEX**

**NISSAN  
ALTIMA  
MODEL L31 SERIES**

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# FOREWORD

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This manual contains maintenance and repair procedures for the 2004 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.

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## 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. (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?**

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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)

2004

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

PFP:00000

### Engine Tune-Up Data

ELS0016N

Cylinder arrangement		In-line 4
Displacement cm <sup>3</sup> (in <sup>3</sup> )		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 <sup>2</sup> , 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)
Idle speed rpm No-load *1 (in "P" or "N" position)		700 ± 50
Ignition timing (BTDC at idle speed in "P" or "N" position)		15° ± 5°
CO% at idle		0.3 – 9.5% and engine runs smoothly
Radiator cap relief pressure kPa (kg/cm <sup>2</sup> , psi)	Standard	79 – 98 (0.8 – 1.0, 11 – 14)
	Limit	59 (0.6, 9)
Cooling system leakage testing pressure kPa (kg/cm <sup>2</sup> , psi)		157 (1.6, 23)

\*1: Under the following conditions:

- Air conditioner switch: OFF
- Electric load: OFF (lights, heater fan, and rear window defogger)
- Steering wheel: keep in straight-ahead position

### Drive Belt Deflection and Tension

Tension of drive belts	Auto adjustment by auto-tensioner
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### 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)

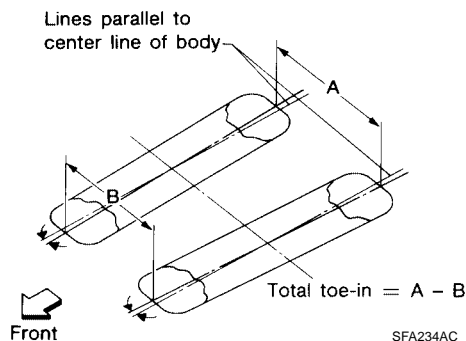
ELS0016O

Tire size		205/65R16
Camber Degree minute (Decimal degree)	Minimum	-1°00' (-1.00°)
	Nominal	-0°15' (-0.25°)
	Maximum	0°30' (0.50°)
	Left and right difference	0°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	0°45' (0.75°) or less

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

2004

Tire size	205/65R16	
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	-0°4' (-0.07°)
		Nominal	0°2' (0.03°)
		Maximum	0°8' (0.13°)
Wheel turning angle Full turn*2	Inside Degree minute (Decimal degree)	Minimum	34°30' (34.5°)
		Nominal	38°00' (38.0°)
		Maximum	39°00' (39.0°)
	Outside Degree minute (Decimal degree)	Nominal	30°30' (30.5°)

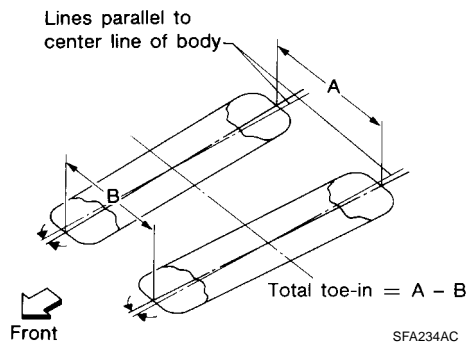
\*1: Fuel, radiator coolant and engine oil full. Spare tire, jack, hand tools and mats in designated positions.

\*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\*)

ELS0016P

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	0°6' (0.1°)
		Nominal	0°10' (0.167°)
		Maximum	0°14' (0.233°)

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

2004

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

## Brake

ELS0016Q

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			Genuine NISSAN Super Heavy Duty Brake Fluid or equivalent DOT 3 (US FMVSS No. 116)

## 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)
	Maximum runout	0.07 (0.0028)	0.07 (0.0028)
Rotor repair limit	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

ELS0016R

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 1/2 qt	3 3/4 qt	4.2
	Without oil filter change	4 1/4 qt	3 1/2 qt	4.0
Dry engine (engine overhaul)	4 7/8 qt	4 qt	4.6	
Cooling system	Without reservoir	7 1/4 qt	6 1/8 qt	6.9
	Reservoir	3/4 qt	5/8 qt	0.7
Manual transaxle fluid (MTF)	2 3/8 qt	2 qt	2.3	
Automatic transaxle fluid (ATF)	9 3/4 qt	8 1/8 qt	9.2	
Power steering fluid (PSF)	2 1/8 pt	1 3/4 pt	1.0	
Air conditioning system refrigerant	1.045 - 1.155 lb	1.045 - 1.155 lb	0.475 - 0.525 kg	
Air conditioning system lubricant	5.01 fl oz	5.03 fl oz	150 mℓ	

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

2004

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

PFP:00027

### Engine Tune-Up Data

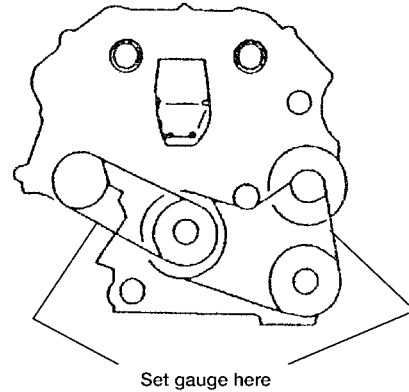
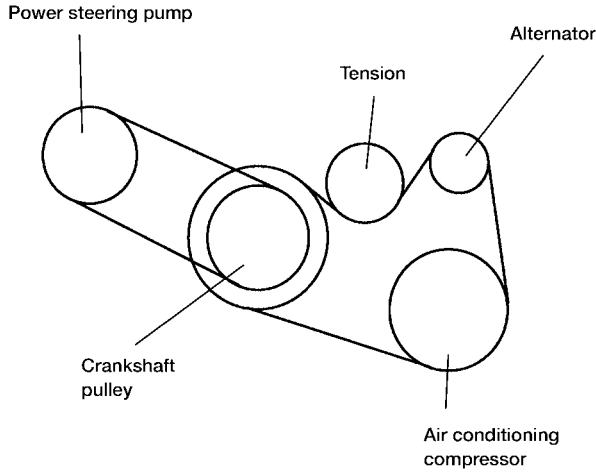
ELS0016S

Cylinder arrangement		V-6
Displacement cm <sup>3</sup> (in <sup>3</sup> )		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 <sup>2</sup> , 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 in "P" or "N" position)		15° ± 5°
CO% at idle		0.7 – 9.9% and engine runs smoothly
Radiator cap relief pressure kPa (kg/cm <sup>2</sup> , psi)	Standard	79 – 98 (0.8 – 1.0, 11 – 14)
	Limit	59 (0.6, 9)
Cooling system leakage testing pressure kPa (kg/cm <sup>2</sup> , 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

## Drive Belt Deflection and Tension



L8IA0076E

Description	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 and air conditioning compressor	7 (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 pump	11 (0.43)	7.3 - 8 (0.29 - 0.30)	6.5 - 7.2 (0.26 - 0.28)	196 (20, 44)	495 - 583 (50.5 - 59.5, 111 - 131)	603 - 691 (61.5 - 70.5, 135.6 - 155.4)
Applied pushing force	98 (10, 22)			—		

\*: If belt tension gauge cannot be installed at check points shown, check drive belt tension at different location on the belt.

## Spark Plugs (Double Platinum Tipped)

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



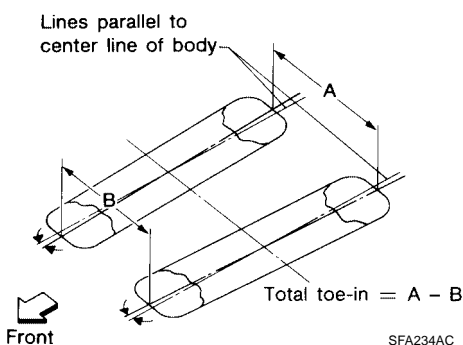
# QUICK REFERENCE CHART: ALTIMA (EQUIPPED WITH 3.5L, VQ ENGINE)

2004

## Front Wheel Alignment (Unladen\*1)

ELS0016T

Tire size		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	0°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	0°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	-0°4' (-0.07°)
		Nominal	0°2' (0.03°)
		Maximum	0°8' (0.13°)
Wheel turning angle Full turn*2	Inside Degree minute (Decimal degree)	Minimum	32°00' (32.0°)
		Nominal	35°30' (35.5°)
		Maximum	36°30' (36.5°)
	Outside Degree minute (Decimal degree)	Nominal	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.

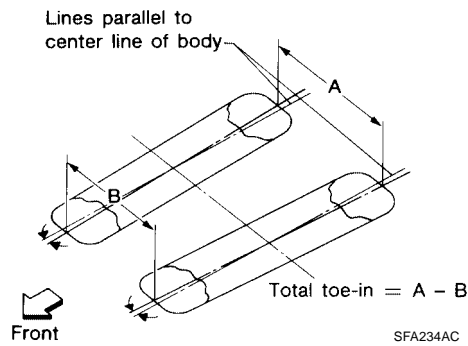
## Rear Wheel Alignment (Unladen\*)

ELS0016U

Camber Degree minute (Decimal degree)	Minimum	-0°10' (-0.17°)
	Nominal	-0°40' (-0.67°)
	Maximum	-0°70' (-1.17°)

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

2004



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	0°6' (0.1°)
		Nominal	0°10' (0.167°)
		Maximum	0°14' (0.233°)

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

## Brake

ELS0016V

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			Genuine NISSAN Super Heavy Duty Brake Fluid or equivalent DOT 3 (US FMVSS No. 116)

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Pad wear limit	Minimum thickness	2.0 (0.079)	1.5 (0.059)
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Rotor repair limit	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

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**2004**

## Refill Capacities

ELS0016W

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 1/4 qt	3 1/2 qt	4.0
	Without oil filter change	3 7/8 qt	3 1/4 qt	3.7
Dry engine (engine overhaul)		5 1/4 qt	4 3/8 qt	5.0
Cooling system	Without reservoir	7 7/8 qt	6 5/8 qt	7.5
	Reservoir	3/4 qt	5/8 qt	0.7
Manual transaxle fluid (MTF)		4 7/8 pt	4 pt	2.3
Automatic transaxle fluid (ATF)		9 3/4 qt	8 1/8 qt	9.2
Power steering fluid (PSF)		2 1/8 pt	1 3/4 pt	1.0
Air conditioning system refrigerant		1.045 - 1.155 lb	1.045 - 1.155 lb	0.475 - 0.525 kg
Air conditioning system lubricant		5.01 fl oz	5.03 fl oz	150 m ℓ