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NISSAN ALTIMA

MODEL L31 SERIES

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 |
| | ACC Accelerator Control System |
| C TRANSMISSION/ TRANSAXLE | CL Clutch |
| | MT Manual Transaxle |
| | AT Automatic Transaxle |
| D DRIVELINE/AXLE | FAX Front Axle |
| | RAX Rear Axle |
| E SUSPENSION | FSU Front Suspension |
| | RSU Rear Suspension |
| | WT Road Wheels & Tires |
| F BRAKES | BR Brake System |
| | PB Parking Brake System |
| | BRC Brake Control System |
| G STEERING | PS Power Steering System |
| H RESTRAINTS | SB Seat Belts |
| | SRS Supplemental Restraint System (SRS) |
| I BODY | BL Body, Lock & Security System |
| | GW Glasses, Window System & Mirrors |
| | RF Roof |
| | EI Exterior & Interior |
| | IP Instrument Panel |
| | SE Seat |
| | ATC Automatic Air Conditioner |
| MTC Manual Air Conditioner | |
| J AIR CONDITIONER | SC Starting & Charging System |
| | LT Lighting System |
| | DI Driver Information System |
| | WW Wiper, Washer & Horn |
| | BCS Body Control System |
| | LAN LAN System |
| | AV Audio Visual & Telephone System |
| | ACS Auto Cruise Control System |
| | PG Power Supply, Ground & Circuit Elements |
| | MA Maintenance |
| K ELECTRICAL | IDX Alphabetical Index |
| | |
| L MAINTENANCE | |
| M INDEX | |

A
B
C
D
E
F
G
H
I
J
K
L
M

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



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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
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
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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: _____

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

2002

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) |
| | 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

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)

2002

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) |
| | 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

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

2002

ELS000MN

Refill Capacities

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 |
| | A/T (RE4F04B) | 9.2 ℓ |
| Air conditioning system | Refrigerant | 0.475 - 0.525 kg |
| | Compressor oil | 150 ml |