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Maintenance

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MAINTENANCE

M 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.





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SERVICE MANUA	L: Model:	Year:
PUBLICATION NO	<b>:</b>	
VEHICLE INFORMATION VIN:		Production Date:
Please describe an	y issues or problems in detail:	
Page number(s)	Note: Please in	oclude a copy of each page, marked with your comments.
If no, what page nu	mber(s)?Note: Please	easy to use? (circle your answer) YES NO include a copy of each page, marked with your comments.
Please describe the	e issue or problem in detail:	
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What information repairing custome		Service Manuals to better support you in servicing or
DATE:	YOUR NAME:	POSITION:
DEALER:	DEALER NO.:	ADDRESS:
CITY:	STATE/PROV./COUI	NTRY: 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 <sup>3</sup> (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
Number of pistori fings	Oil	1
Compression ratio		9.5:1
0 :	Standard	1,250 (12.8, 182)
Compression pressure kPa (kg/cm <sup>2</sup> , psi) / 250 rpm	Minimum	1,060 (10.8, 154)
Ki a (kg/oiii , poi// 200 ipiii	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	Standard	79 – 98 (0.8 – 1.0, 11 – 14)
kPa (kg/cm <sup>2</sup> , psi)	Limit	59 (0.6, 9)
Cooling system leakage testing pressure kPa (kg/cm <sup>2</sup> , psi)		157 (1.6, 23)

#### **Drive Belt Deflection and Tension**

Tension of drive belts

Plug gap

Spark Plugs (Double Platinum Tipped)		
	Standard	PLFR5A-11
Туре	Hot	PLFR4A-11
	Cold	PLFR6A-11

# Front Wheel Alignment (Unladen\*1)

ELS000MF

Auto adjustment by auto-tensioner

Nominal: 1.1 mm (0.043 in)

Tire size		205/65R16	215/55R17	
Camber	Minimum	-1°00′ (-1.00°)		
Degree minute (Decimal degree)	Nominal	-0°15′	-0°15′ (-0.25°)	
	Maximum	0°30′	(0.50°)	
	Left and right difference	45' (0.75°) or less		
Caster	Minimum 2°05′ (2.08°)		(2.08°)	
Degree minute (Decimal degree)	Nominal	2°50′ (2.83°)		
	Maximum	3°35′ (3.58°)		
	Left and right difference	45′ (0.75	5°) or less	
Kingpin inclination	Minimum	13°50′ (13.83°)		
Degree minute (Decimal degree)	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		Minimum	-0.5 (	-0.02)
	Distance (A – B) mm (in)	Nominal	0.5 (	0.02)
	()	Maximum	1.5 (	0.06)
		Minimum	-4' (-0.07°)	
	Angle (left plus right)  Degree minute (Decimal degree)	Nominal	2′ (0	.03°)
	Dogroo minuto (Doomiai dogroo)	Maximum	8′ (0	.13°)
Wheel turning angle		Minimum	34°30′ (34.5°)	32°00′ (32.0°)
Full turn*2	Inside Degree minute (Decimal degree)	Nominal	38°00′ (38.0°)	35°30′ (35.5°)
	Dogree minate (Decimal degree)	Maximum	39°00′ (39.0°)	36°30′ (36.5°)
Outside Degree minute (Decimal de	Outside Degree minute (Decimal degree)	Nominal	30°30′ (30.5°)	29°00′ (29.0°)

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

## Rear Wheel Alignment (Unladen\*)

ELS000MG

ELS000MH

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)	Minimum	2.4 (0.09)
	mm (in)	Nominal	3.9 (0.15)
		Maximum	5.4 (0.21)
	Angle (left plus right)	Minimum	6′ (0.1°)
	Degree minute (Decimal degree)	Nominal	10′ (0.167°)
		Maximum	14′ (0.233°)

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

**Brake** Unit: mm (in)

	Brake model		CLZ25VD disc brake
Front books	Cylinder bore diameter		57.2 (2.252)
Front brake	Pad Length × width × thic	ckness	125.6 × 46 × 11 (4.94 × 1.81 × 0.43)
	Rotor outer diameter × th	ickness	296 × 26 (11.65 × 1.02)
	Brake model		AD9V disc brake
Door broke	Cylinder bore diameter		34.9 (1.3740)
Rear brake	Pad Length × width × thic	ckness	89.1 × 39.5 × 10 (3.508 × 1.555 × 0.31)
	Rotor outer diameter × thic	nickness	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)
	Booster model		M215T
Brake booster	Dianhua ma diamatas	Primary	230 (9.06)
	Diaphragm diameter	Secondary	205 (8.07)
Recommended brake	fluid		DOT 3

<sup>\*2:</sup> 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

# 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)
Rotor repair limit	Minimum thickness	22.0 (0.866)	8.0 (0.31)

#### **Brake Pedal**

Unit: mm (in)

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

<sup>\*:</sup> Measured from surface of dash reinforcement panel to surface of pedal pad

## **Refill Capacities**

**Engine Coolant Capacity (Approximate)** 

ELS000MI

Unit:	$\ell$	(US qt)

6.9 (7 1/4)

0.7 (3/4)

### **Engine Oil Capacity (Approximate)**

Drain and refill (without reservoir)

Reservoir tank (at MAX level)

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
All conditioning system	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 <sup>3</sup> (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
Number of pistori lings	Oil	1
Number of main bearings		4
Compression ratio		10.0:1
	Standard	1,275 (13.0, 185)
Compression pressure kPa (kg/cm <sup>2</sup> , psi) / 250 rpm	Minimum	981 (10.0, 142)
Ki a (kg/Giii , psi// 250 ipiii	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	Standard	79 – 98 (0.8 – 1.0, 11 – 14)
kPa (kg/cm <sup>2</sup> , psi)	Limit	59 (0.6, 9)
Cooling system leakage testing pressur kPa (kg/cm², psi)	ire	157 (1.6, 23)

<sup>\*1:</sup> 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**

	Deflection adjust	ment	Unit: mm (in)	Tension adjustme	ent	Unit: N (kg, lb)
	Used belt		New belt	Used belt		New belt
	Limit	After adjustment	New Delt	Limit	After adjustment	New Deit
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)**

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

## Front Wheel Alignment (Unladen\*1)

ELS000MK

	<u> </u>			ELSOUON
Tire size			205/65R16	215/55R17
Camber		Minimum	-1°00′	(-1.00°)
Degree minute (Decima	I degree)	Nominal	-0°15′	(-0.25°)
		Maximum	0°30′ (0.50°)	
		Left and right difference	45' (0.75°) or less	
Caster		Minimum	2°05′	(2.08°)
Degree minute (Decima	I degree)	Nominal	2°50′	(2.83°)
		Maximum	3°35′	(3.58°)
		Left and right difference	45′ (0.75	5°) or less
Kingpin inclination		Minimum	13°50′ (13.83°)	
Degree minute (Decima	I degree)	Nominal	14°35′ (14.58°)	
		Maximum	15°20′	(15.33°)
Total toe-in			-0.5 (-0.02)	
	Distance (A – B) mm (in)	Maximum	0.5 (0.02)	
		Maximum	1.5 (	(0.06)
		Minimum	-4' (-0.07°)	
	Angle (left plus right)  Degree minute (Decimal degree)	Nominal	2′ (0.03°)	
	2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Maximum	8′ (0	).13°)
Wheel turning angle		Minimum	34°30′ (34.5°)	32°00′ (32.0°)
Full turn*2	Inside Degree minute (Decimal degree)	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°)

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

<sup>\*2:</sup> 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		Minimum	-0°10′ (-0.17°)
Degree minute (De	ecimal degree)	Nominal	-0°40′ (-0.67°)
	Maximum	-0°70′ (-1.17°)	
Total toe-in	Distance (A – B)	Minimum	2.5 (0.10)
	mm (in)	Nominal	4.0 (0.16)
		Maximum	5.5 (0.22)
	Angle (left plus right)	Minimum	6′ (0.1°)
	Degree minute (Decimal degree)	Nominal	10′ (0.167°)
		Maximum	14′ (0.233°)

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

Brake

Unit: mm (in)

	Brake model		CLZ25VD disc brake
	Cylinder bore diameter		57.2 (2.252)
Front brake	Pad Length × width × thic	kness	125.6 × 46 × 11 (4.94 × 1.81 × 0.43)
	Rotor outer diameter × th	ickness	296 × 26 (11.65 × 1.02)
	Brake model		AD9V disc brake
Descharte	Cylinder bore diameter		34.9 (1.3740)
Rear brake	Pad Length × width × thic	kness	89.1 × 39.5 × 10 (3.508 × 1.555 × 0.31)
	Rotor outer diameter × th	ickness	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)
	Booster model		M215T
Brake booster	Disabas and disassets a	Primary	230 (9.06)
	Diaphragm diameter	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)
Rotor repair illilit	Minimum thickness	22.0 (0.866)	8.0 (0.31)

### **Brake Pedal**

Unit: mm (in)

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

<sup>\*:</sup> 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:  $\ell$  (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
All conditioning system	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

						: Applicable •	: Not applicable
			Test	value			
SRT item	Self-diagnostic test item	DTC	(GST display)		Te s t limit	Application	Unit
			TID	CID			
CATALYST	Three way catalyst function (Bank 1)	P0420	01H	01H	Max.	Χ	ı
		P0420	02H	81H	Min.	Χ	1
	EVAP control system (Small leak)	P0442	05H	03H	Max.	Χ	-
EVAP SYSTEM	LVAI COITE OF SYSTEM (SMATT TEAK)	P1442	05H	03H	Max.	Χ	-
	EVAP control system purge flow monitoring	P0441	06H	83H	Min.	Χ	mV
	EVAP control system (Very small leak)	P0456	07H	03H	Max.	Χ	-
		P1456	07H	03H	Max.	Χ	-
	Heated oxygen sensor 1	P0133	09H	04H	Max.	Χ	ms
		P1143	OAH	84H	Min.	Χ	mV
H02S		P1144	0BH	04H	Max.	Χ	mV
		P0132	0CH	04H	Max.	Χ	mV
		P0134	ODH	04H	Max.	Χ	s
	Heated oxygen sensor 2	P0139	19H	86H	Min.	Χ	mV/500ms
		P1147	1AH	86H	Min.	Χ	mV
		P1146	1BH	06H	Max.	Χ	mV
		P0138	1CH	06H	Max.	Χ	mV
HO2S HTR	Heated oxygen sensor 1 heater	P0032	29H	08H	Max.	Χ	mV
		P0031	2AH	88H	Min.	Χ	mV
	Heated oxygen sensor 2 heater	P0038	2DH	OAH	Max.	Χ	mV
		P0037	2EH	8AH	Min.	Χ	mV
		P0400	31H	8CH	Min.	Χ	ပ္စ
		P0400	32H 8CH	8CH	Min.	Χ	°C
EGR SYSTEM*1	EGR function	P0400	33H	8CH	Min.	Χ	°C
		P0400	34H	8CH	Min.	Χ	°C
		P1402	35H	0CH	Max.	Х	္ဇ
	EGRC-BPT valve function	P0402	36H	0CH	Max.	Х	ı
		P0402	37H	8CH	Min.	Χ	ı

<sup>\*1 :</sup> 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 applicat
SRT item	Self-diagnostic test item	DTC	Test value		Te s t limit		
			(GST display)			Application	Unit
			TID	CID	Ì		
CATALYST	Three way catalyst function (Bank 1)	P0420	01H	01H	Max.	Х	
		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.	Х	_
	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	-
	Heated oxygen sensor 1(Bank 1)	P0133	09H	04H	Max.	X	ms
		P1143	OAH	84H	Min.	X	mV
		P1144	OBH	04H	Max.	X	mV
		P0132	OCH	04H	Max.	X	mV
		P0134	ODH	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
HO2S		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.	Х	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	OAH	Max.	X	mV
		P0037	2EH	8AH	Min.	Х	mV
	Heated oxygen sensor 2 heater(Bank 2)	P0058	2FH	OBH	Max.	X	mV
		P0057	30H	8BH	Min.	X	mV
EGR SYSTEM*1		P0400	31H	8CH	Min.	X	°C
	EGR function	P0400	32H	8CH	Min.	X	<u>°C</u>
		P0400	33H	8CH	Min.	X	°C
		P0400	34H	8CH	Min.	X	°C
		P1402	35H	OCH	Max.	X	°C
	EGRC-BPT valve function	P0402	36H	OCH	Max.	X	
		P0402	37H	8CH	Min.	X	_

<sup>\*1 :</sup> Except models L31 VQ35DE engine, F50 VK45DE engine, Y34 VK45DE engine 2