NISSAN
MURANO
MODEL Z50 SERIES

QUICK REFERENCE INDEX

Section		Code	Description
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**	CVT	CVT
D	**DRIVELINE/AXLE**	TF	Transfer
		PR	Propeller Shaft
		RFD	Rear Final Drive
		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
		AP	Adjustable Pedal
J	**AIR CONDITIONER**	ATC	Automatic Air Conditioner
K	**ELECTRICAL**	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, Navigation & Telephone System
		ACS	Auto Cruise Control System
		PG	Power Supply, Ground & Circuit Elements
L	**MAINTENANCE**	MA	Maintenance
M	**INDEX**	IDX	Alphabetical Index

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

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FOREWORD

This manual contains maintenance and repair procedure for the 2003 NISSAN MURANO.

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 MOTOR CO., LTD.

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

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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: _____

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

INCH TO METRIC CONVERSION TABLE
(Rounded-off for automotive use)

inches	mm	inches	mm
.100	2.54	.610	15.49
.110	2.79	.620	15.75
.120	3.05	.630	16.00
.130	3.30	.640	16.26
.140	3.56	.650	16.51
.150	3.81	.660	16.76
.160	4.06	.670	17.02
.170	4.32	.680	17.27
.180	4.57	.690	17.53
.190	4.83	.700	17.78
.200	5.08	.710	18.03
.210	5.33	.720	18.29
.220	5.59	.730	18.54
.230	5.84	.740	18.80
.240	6.10	.750	19.05
.250	6.35	.760	19.30
.260	6.60	.770	19.56
.270	6.86	.780	19.81
.280	7.11	.790	20.07
.290	7.37	.800	20.32
.300	7.62	.810	20.57
.310	7.87	.820	20.83
.320	8.13	.830	21.08
.330	8.38	.840	21.34
.340	8.64	.850	21.59
.350	8.89	.860	21.84
.360	9.14	.870	22.10
.370	9.40	.880	22.35
.380	9.65	.890	22.61
.390	9.91	.900	22.86
.400	10.16	.910	23.11
.410	10.41	.920	23.37
.420	10.67	.930	23.62
.430	10.92	.940	23.88
.440	11.18	.950	24.13
.450	11.43	.960	24.38
.460	11.68	.970	24.64
.470	11.94	.980	24.89
.480	12.19	.990	25.15
.490	12.45	1.000	25.40
.500	12.70	2.000	50.80
.510	12.95	3.000	76.20
.520	13.21	4.000	101.60
.530	13.46	5.000	127.00
.540	13.72	6.000	152.40
.550	13.97	7.000	177.80
.560	14.22	8.000	203.20
.570	14.48	9.000	228.60
.580	14.73	10.000	254.00
.590	14.99	20.000	508.00
.600	15.24		

METRIC TO INCH CONVERSION TABLE
(Rounded-off for automotive use)

mm	inches	mm	inches
1	.0394	51	2.008
2	.079	52	2.047
3	.118	53	2.087
4	.157	54	2.126
5	.197	55	2.165
6	.236	56	2.205
7	.276	57	2.244
8	.315	58	2.283
9	.354	59	2.323
10	.394	60	2.362
11	.433	61	2.402
12	.472	62	2.441
13	.512	63	2.480
14	.551	64	2.520
15	.591	65	2.559
16	.630	66	2.598
17	.669	67	2.638
18	.709	68	2.677
19	.748	69	2.717
20	.787	70	2.756
21	.827	71	2.795
22	.866	72	2.835
23	.906	73	2.874
24	.945	74	2.913
25	.984	75	2.953
26	1.024	76	2.992
27	1.063	77	3.031
28	1.102	78	3.071
29	1.142	79	3.110
30	1.181	80	3.150
31	1.220	81	3.189
32	1.260	82	3.228
33	1.299	83	3.268
34	1.339	84	3.307
35	1.378	85	3.346
36	1.417	86	3.386
37	1.457	87	3.425
38	1.496	88	3.465
39	1.535	89	3.504
40	1.575	90	3.543
41	1.614	91	3.583
42	1.654	92	3.622
43	1.693	93	3.661
44	1.732	94	3.701
45	1.772	95	3.740
46	1.811	96	3.780
47	1.850	97	3.819
48	1.890	98	3.858
49	1.929	99	3.898
50	1.969	100	3.937

QUICK REFERENCE CHART MURANO
PFP:00000

ENGINE TUNE-UP DATA (VQ35DE)
ELS0003W

Engine model	VQ35DE
Firing order	1-2-3-4-5-6
Idle speed rpm CVT (In "P" or "N" position)	650±50
Ignition timing (BTDC at idle speed) CVT (In "P" or "N" position)	15°± 5°
CO% at idle	0.7 - 9.9 % and engine runs smoothly

Drive Belt	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 conditioner compressor belt	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 oil pump belt	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	98N (10kg, 22lb)			—		

Radiater cap relief pressure	$kPa (kg/cm^2 , psi)$	
	Standard	78 - 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)
Compression pressure	$kPa (kg/cm^2 , psi)/rpm$	
	Standard	1,275 (13.0, 185) /300
	Minimum	981 (10.0, 142)/300
Spark plug	Make	NGK
	Standard type	PLFR5A - 11
	Hot type	PLFR4A - 11
	Cold type	PLFR6A - 11
	Gap (Nominal) mm(in)	1.1 (0.043)

FRONT WHEEL ALIGNMENT (Unladen*)

ELS0003X

Camber	Degree minute (Decimal degree)	Minimum	− 1° 05′ (− 1.08°)
		Nominal	− 0° 20′ (− 0.33°)
		Maximum	0° 25′ (0.41°)
		Left and right difference	45′ (0.75°) or less
Caster	Degree minute (Decimal degree)	Minimum	1° 50′ (1.83°)
		Nominal	2° 35′ (2.58°)
		Maximum	3° 20′ (3.33°)
		Left and right difference	45′ (0.75°) or less
Kingpin inclination	Degree minute (Decimal degree)	Minimum	13° 35′ (13.58°)
		Nominal	14° 20′ (14.33°)
		Maximum	15° 05′ (15.08°)
Total toe-in	Distance (A − B)	Minimum	− 0.5 mm (− 0.02 in)
		Nominal	0.5 mm (0.02 in)
		Maximum	1.5 mm (0.06 in)
	Angle (left plus right) Degree minute (Degree)	Minimum	− 1′ (− 0.02°)
		Nominal	1′ (0.02°)
		Maximum	3′ (0.05°)
Wheel turning angle (Full turn)	Inside Degree minute (Decimal degree)	MInimum	35° 00′ (35.0°)
		Nominal	38° 00′ (38.0°)
		Maximum	39° 00′ (39.0°)
	Outside Degree minute (Decimal degree)	Nominal	31° 30′ (31.5°)

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

REAR WHEEL ALIGNMENT (Unladen*)

ELS0003Y

Grade			Except SE	SE
Camber Degree minute (Decimal degree)		Minimum	− 1° 16′ (− 1.27°)	− 1° 18′ (− 1.30°)
		Nominal	− 0° 46′ (− 0.77°)	− 0° 48′ (− 0.80°)
		Maximum	− 0° 16′ (− 0.27°)	− 0° 18′ (− 0.30°)
Total toe-in	Distance (A − B)	Minimum	1.4 mm (0.055 in)	1.7 mm (0.067 in)
		Nominal	3.2 mm (0.126 in)	3.5 mm (0.138 in)
		Maximum	5.0 mm (0.197 in)	5.3 mm (0.209 in)
	Angle (left plus right) Degree minute (Degree)	Minimum	3′ (0.05°)	4′ (0.07°)
		Nominal	7′ (0.12°)	8′ (0.13°)
		Maximum	11′ (0.18°)	12′ (0.20°)

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

BRAKE

ELS0003Z

Front brake	Pad wear limit	2.0 (0.079)
	Rotor repair limit	26.0 mm (1.024 in)
Rear brake	Pad wear limit	2.0 mm (0.079 in)
	Rotor repair limit	14.0 mm (0.551 in)
Pedal free height		199.5 - 209.5 mm (7.85 - 8.25 in)
Pedal depressed height*		120 mm (4.72 in)

* : Under force of 490 N(50 kg, 110 lb) with engine running.

REFILL CAPACITIES

ELS00040

UNIT		Liter	US measure
Fuel tank		82	21 - 5/8 gal
Coolant (With reservoir tank)		9.2	9 - 3/4 qt
Engine	Drain and refill		
	With oil filter change	4.0	4 - 1/4 qt
	Without oil filter change	3.7	3 - 7/8 qt
	Dry engine (Overhaul)	5.0	5 - 1/4 qt
Transmission	CVT	10.2	10 - 6/8 qt
Transfer		0.310	5/8 pt
Differential carrier		0.55	1 - 1/8 pt
Power steering system		1.0	1 - 1/8 qt
Air conditioning system	Compressor oil	0.15	5.03 fl oz
	Refrigerant	0.55 kg	1.21 lb

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.

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.

SRT item	Self-diagnostic test item	DTC	Test value (GST display)		Test limit	Conversion
			TID	CID		
CATALYST	Three way catalyst function (Bank 1)	P0420	01H	01H	Max.	1/128
		P0420	02H	81H	Min.	1
	Three way catalyst function (Bank 2)	P0430	03H	02H	Max.	1/128
		P0430	04H	82H	Min.	1
EVAP SYSTEM	EVAP control system (Small leak)	P0442	05H	03H	Max.	$1/128mm^2$
	EVAP control system purge flow monitoring	P0441	06H	83H	Min.	20mV
	EVAP control system (Very small leak)	P0456	07H	03H	Max.	$1/128mm^2$
HO2S	Heated oxygen sensor 1 (Bank 1)	P0133	09H	04H	Max.	16ms
		P1143	0AH	84H	Min.	10mV
		P1144	0BH	04H	Max.	10mV
		P0132	0CH	04H	Max.	10mV
		P0134	0DH	04H	Max.	1s
	Heated oxygen sensor 1 (Bank 2)	P0153	11H	05H	Max.	16ms
		P1163	12H	85H	Min.	10mV
		P1164	13H	05H	Max.	10mV
		P0152	14H	05H	Max.	10mV
		P0154	15H	05H	Max.	1s
	Heated oxygen sensor 2 (Bank 1)	P0139	19H	86H	Min.	10mV/500ms
		P1147	1AH	86H	Min.	10mV
		P1146	1BH	06H	Max.	10mV
		P0138	1CH	06H	Max.	10mV
	Heated oxygen sensor 2 (Bank 2)	P0159	21H	87H	Min.	10mV/500ms
		P1167	22H	87H	Min.	10mV
		P1166	23H	07H	Max.	10mV
		P0158	24H	07H	Max.	10mV
HO2S HTR	Heated oxygen sensor 1 heater (Bank 1)	P0032	29H	08H	Max.	20mV
		P0031	2AH	88H	Min.	20mV
	Heated oxygen sensor 1 heater (Bank 2)	P0052	2BH	09H	Max.	20mV
		P0051	2CH	89H	Min.	20mV
	Heated oxygen sensor 2 heater (Bank 1)	P0038	2DH	0AH	Max.	20mV
		P0037	2EH	8AH	Min.	20mV
	Heated oxygen sensor 2 heater (Bank 2)	P0058	2FH	0BH	Max.	20mV
		P0057	30H	8BH	Min.	20mV