

Edition: July 2009

Revision: July 2009

Publication No. SM0E-1R51U0

NISSAN PATHFINDER MODEL R51 SERIES

All rights reserved. No part of this Service Manual may be reproduced or stored in a retrieval system, or transmitted in any form, or by any means, electronic, mechanical, photo-copying, recording or otherwise, without the prior written permission of Nissan North America, Inc.

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
	STR Starting System
C HYBRID	ACC Accelerator Control System
	HBC Hybrid Control System
	HBB Hybrid Battery System
	HBR Hybrid Brake System
D TRANSMISSION & DRIVE-LINE	TM Transaxle & Transmission
	DLN Driveline
	FAX Front Axle
	RAX Rear Axle
	FSU Front Suspension
E SUSPENSION	RSU Rear Suspension
	SCS Suspension Control System
	WT Road Wheels & Tires
	BR Brake System
F BRAKES	PB Parking Brake System
	BRC Brake Control System
	ST Steering System
	STC Steering Control System
G STEERING	SB Seat Belt
	SBC Seat Belt Control System
	SR SRS Airbag
	SRC SRS Airbag Control System
	VTL Ventilation System
H RESTRAINTS	HA Heater & Air Conditioning System
	HAC Heater & Air Conditioning Control System
	INT Interior
	IP Instrument Panel
I VENTILATION, HEATER & AIR CONDITIONER	SE Seat
	ADP Automatic Drive Postioner
	AP Adjustable Pedal
	DLK Door & Lock
	SEC Security Control System
J BODY INTERIOR	GW Glass & Window System
	PWC Power Window Control System
	RF Roof
	EXT Exterior
	BRM Body Repair Manual
K BODY EXTERIOR, DOORS, ROOF & VEHICLE SECURITY	MIR Mirrors
	EXL Exterior Lighting System
	INL Interior Lighting System
	WW Wiper & Washer
	DEF Defogger
L DRIVER CONTROLS	HRN Horn
	PWO Power Outlet
	BCS Body Control System
	LAN LAN System
	PCS Power Control System
M ELECTRICAL & POWER CONTROL	CHG Charging System
	PG Power Supply, Ground & Circuit Elements
	MWI Meter, Warning Lamp & Indicator
	WCS Warning Chime System
	SN Sonar System
N DRIVER INFORMATION & MULTIMEDIA	AV Audio, Visual & Navigation System
	CCS Cruise Control System
	MA Maintenance
O CRUISE CONTROL	
P MAINTENANCE	

A

B

C

D

E

F

G

H

I

J

K

L

M

N

O

P

FOREWORD

This manual contains maintenance and repair procedure for the 2009 NISSAN PATHFINDER.

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



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.*

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: _____

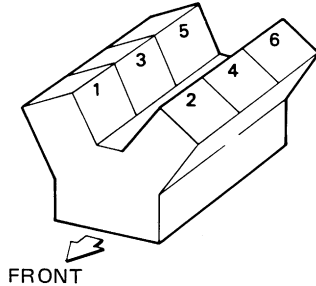
QUICK REFERENCE CHART: PATHFINDER

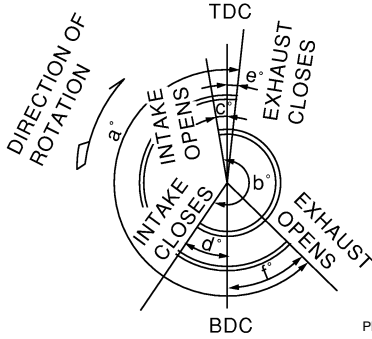
Engine Tune-up Data: VQ40DE

INFOID:000000005612245

GENERAL SPECIFICATIONS

Cylinder arrangement		V-6
Displacement $\text{cm}^3(\text{cu in})$		3,954 (241.30)
Bore and stroke mm (in)		95.5 $\times$ 92.0 (3.76 $\times$ 3.622)
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		9.7
Compression pressure $\text{kPa (kg/cm}^2, \text{psi)/300 rpm}$	Standard	1,275 (13.0, 185)
	Minimum	981 (10.0, 142)
	Differential limit between cylinders	98 (1.0, 14)

Cylinder number	 FRONT SEM713A
-----------------	---

Valve timing (Intake valve timing control - "OFF")	 PBIC0187E
---	---

Unit: degree

a	b	c	d	e	f
244	240	-4	64	6	58

DRIVE BELT

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

SPARK PLUG

QUICK REFERENCE CHART: PATHFINDER

2010

Application	United States and Canada	Mexico
Make	NGK	
Standard type*	DILFR5A-11	PLFR5A-11
Gap (nominal)	1.1 mm (0.043 in)	

*: Always check with the Parts Department for the latest parts information

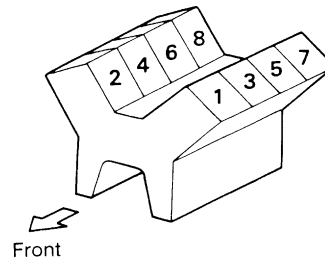
Engine Tune-up Data: VK56DE

INFOID:000000005612244

GENERAL SPECIFICATIONS

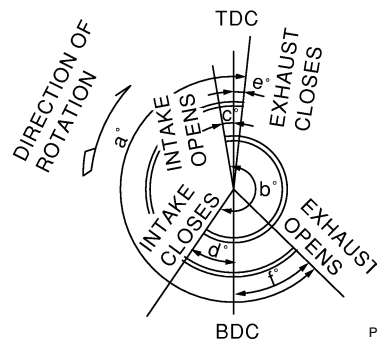
Cylinder arrangement		V-8
Displacement cm^3 (in ³)		5,552 (338.80)
Bore and stroke mm (in)		98 x 92 (3.86 x 3.62)
Valve arrangement		DOHC
Firing order		1-8-7-3-6-5-4-2
Number of piston rings	Compression	2
	Oil	1
Number of main bearings		5
Compression ratio		9.8:1
Compression pressure kPa (kg/cm ² , psi)/rpm	Standard	1,520 (15.5, 220)/200
	Minimum	1,324 (13.5, 192)/200
	Differential limit between cylinders	98 (1.0, 14)/200

Cylinder number



SEM957C

Valve timing



PBIC0187E

Unit: degree

a	b	c	d	e	f
244°	232°	8°	60°	10°	54°

DRIVE BELTS

QUICK REFERENCE CHART: PATHFINDER

2010

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

SPARK PLUG

Unit: mm (in)

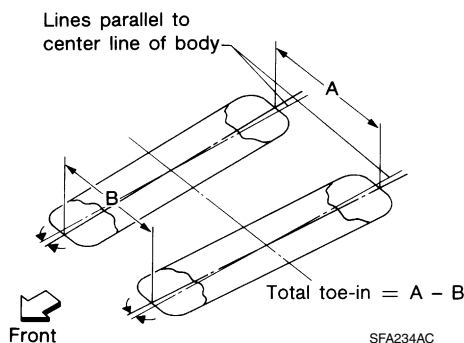
Make	NGK
Standard type*	DILFR5A-11
Gap (nominal)	1.1 (0.043)

*: Always check with the Parts Department for the latest parts information

Front Wheel Alignment (Unladen*1)

INFOID:000000005612223

Drive type		2WD	4WD
Camber Degree minute (decimal degree)	Minimum	-0° 30' (-0.50°)	-0° 15' (-0.25°)
	Nominal	0° 15' (0.25°)	0° 30' (0.50°)
	Maximum	1° 00' (1.00°)	1° 15' (1.25°)
	Cross camber	0° 45' (0.75°) or less	0° 45' (0.75°) or less
Caster Degree minute (decimal degree)	Minimum	2° 15' (2.25°)	2° 00' (2.00°)
	Nominal	3° 0' (3.00°)	2° 45' (2.75°)
	Maximum	3° 45' (3.75°)	3° 30' (3.50°)
	Cross caster	0° 45' (0.75°) or less	0° 45' (0.75°) or less
Kingpin inclination Degree minute (decimal degree)	Nominal	13° 0' (13.00°)	12° 45' (12.75°)



Total toe-in	Distance (A – B)		Minimum	2.1 mm (0.08 in)	2.1 mm (0.08 in)
			Nominal	3.1 mm (0.12 in)	3.1 mm (0.12 in)
			Maximum	4.1 mm (0.16 in)	4.1 mm (0.16 in)
	Angle (left wheel or right wheel) Degree minute (decimal degree)		Minimum	0° 5' (0.08°)	0° 5' (0.08°)
			Nominal	0° 7' (0.12°)	0° 7' (0.12°)
			Maximum	0° 9' (0.15°)	0° 9' (0.15°)
Wheel turning angle (full turn)		Inside Degree minute (Decimal degree)	33° 26' – 35° 26' *2 (33.43° – 35.43°)	33° 33' – 35° 33' *4 (33.55° – 35.55°)	
		Outside Degree minute (Decimal degree)	29° 22' – 31° 22' *3 (29.37° – 31.37°)	29° 38' – 31° 38' *5 (29.63° – 31.63°)	

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

*2: Target value 35° 26' (35.43°)

*3: Target value 31° 22' (31.37°)

*4: Target value 35° 33' (35.55°)

*5: Target value 31° 38' (31.63°)

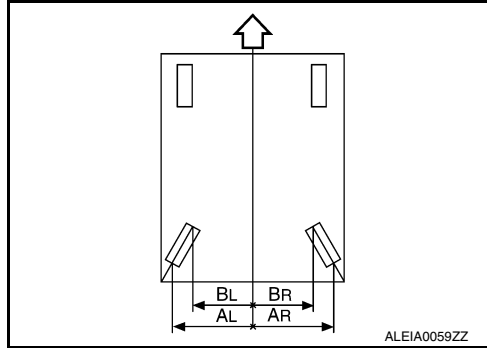
QUICK REFERENCE CHART: PATHFINDER

2010

Rear Wheel Alignment (Unladen*)

INFOID:000000005612221

Camber Degree minute (decimal degree)	Minimum	- 0° 32' (- 0.53°)
	Nominal	- 0° 2' (- 0.03°)
	Maximum	0° 28' (0.47°)



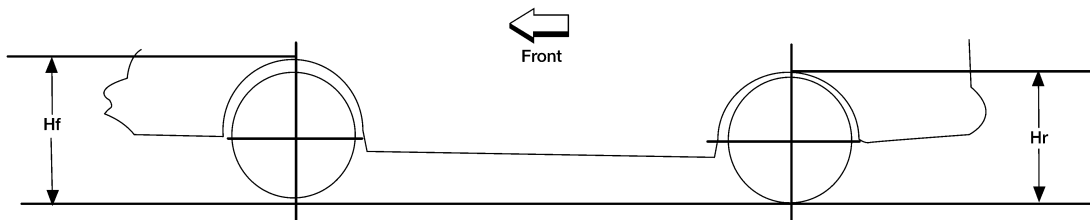
Total toe-in	Distance difference between right and left side (AR-BR)-(AL-BL) ↩:Front	Minimum	-2 mm (-0.08 in)
		Nominal	0 mm (0 in)
		Maximum	2 mm (0.08 in)
	Distance [left side (AL-BL) or right side (AR-BR)] from center line of body	Minimum	- 1.4 mm (- 0.055 in)
		Nominal	1.9 mm (0.075 in)
		Maximum	5.2 mm (0.205 in)
	Angle (left side or right side) Degree minute (decimal degree)	Minimum	- 0° 3' (-0.05°)
		Nominal	0° 4' (0.07°)
		Maximum	0° 11' (0.18°)

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

Wheelarch Height (Unladen*¹)

INFOID:000000005612222

Unit: mm (in)



LEIA0085E

Engine	VQ40DE						VK56DE
Drive type	2WD			4WD			4WD
Tire size	P245/75R16	P265/65R17	P265/60R18	P245/75R16	P265/65R17	P265/60R18	P265/60R18
Front wheelarch height (Hf)	867 (34.13)	865 (34.06)	—	875 (34.45)	874 (34.41)	—	876 (34.49)
Rear wheelarch height (Hr)	875 (34.45)	873 (34.37)	—	884 (34.80)	883 (34.76)	—	886 (34.88)

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

QUICK REFERENCE CHART: PATHFINDER

2010

Brake Specification

INFOID:000000005612218

Unit: mm (in)

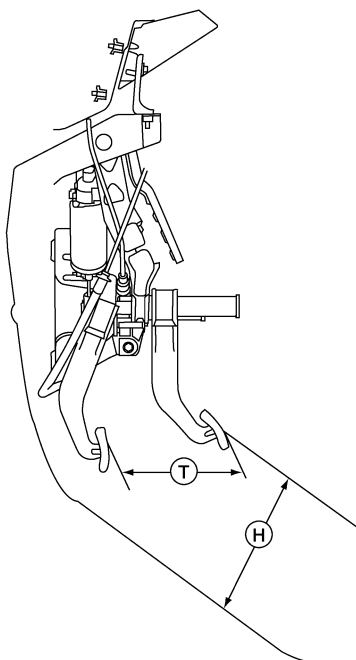
Application		VQ40	VK56
Front brake	Brake model	CLZ33VB	
	Rotor outer diameter × thickness	296 × 28 (11.654 × 1.102)	320 × 28 (12.598 × 1.102)
	Pad Length × width × thickness	140 × 51.5 × 10.0 (5.512 × 2.028 × 0.394)	130 × 52.3 × 11.0 (5.118 × 2.059 × 0.433)
	Cylinder bore diameter (each)	46.4 (1.827)	45.0 (1.772)
Rear brake	Brake model	CLZ14VB	
	Rotor outer diameter × thickness	308 × 18 (12.126 × 0.709)	
	Pad Length × width × thickness	87.6 × 37.0 × 11.0 (3.449 × 1.457 × 0.433)	
	Cylinder bore diameter	38.1 (1.500)	
Control valve	Valve model	Electric brake force distribution	
Brake booster	Booster model	C215T	
	Diaphragm diameter	215 (8.465)	

Brake Pedal

INFOID:000000005612219

ADJUSTABLE PEDAL

Unit: mm (in)



ALFIA0149ZZ

Pedal free height (H) with pedal in forward most position	182.1 (7.17)
Pedal travel (T) [Depressed under a force of 490 N (50 kg, 110 lb) with engine running]	153 (6.02)
Clearance between pedal stopper and threaded end of stop lamp switch and ASCD switch	0.74 - 1.96 (0.029 - 0.077)

CAUTION:

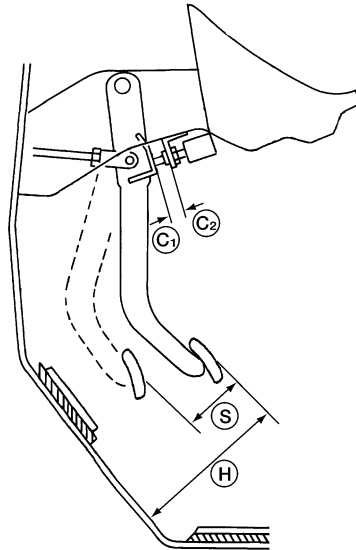
When equipped with adjustable pedal, the pedal must be in the forward most position (closest to the floor) for pedal height adjustment.

STANDARD PEDAL

QUICK REFERENCE CHART: PATHFINDER

2010

Unit: mm (in)



AWFIA0433ZZ

Pedal free height (H)	182.1 (7.17)
Pedal full stroke (S) [Depressed under a force of 490 N (50 kg, 110 lb) with engine running]	153 (6.02)
Clearance between pedal stopper and threaded end of stop lamp switch and ASCD switch (C1) or (C2)	0.74 - 1.96 (0.029 - 0.077)

Front Disc Brake

INFOID:000000005612216

Unit: mm (in)

Brake model		CLZ33VB	
Brake pad	Standard thickness (new)	10.0 (0.394)	11.0 (0.043)
	Repair limit thickness	2.0 (0.079)	
Disc rotor	Standard thickness (new)	28.0 (1.102)	
	Repair limit thickness	26.0 (1.024)	
	Maximum uneven wear (measured at 8 positions)	0.015 (0.0006)	
	Runout limit (with it attached to the vehicle)	0.05 (0.0020)	

Rear Disc Brake

INFOID:000000005612217

Unit: mm (in)

Brake model		CLZ14VB	
Brake pad	Standard thickness (new)	11.0 (0.433)	
	Repair limit thickness	2.0 (0.079)	
Disc rotor	Standard thickness (new)	18.0 (0.709)	
	Repair limit thickness	16.0 (0.630)	
	Maximum uneven wear (measured at 8 positions)	0.015 (0.0006)	
	Runout limit (with it attached to the vehicle)	0.05 (0.0020)	

For North America: Fluids and Lubricants

INFOID:000000005612214

QUICK REFERENCE CHART: PATHFINDER

2010

Description			Capacity (Approximate)		
			Metric	US measure	Imp measure
Fuel			80 ℓ	21 1/8 gal	17 5/8 gal
Engine oil Drain and refill	With oil filter change	VQ40DE	5.1 ℓ	5 3/8 qt	4 1/2 qt
		VK56DE	6.5 ℓ	6 3/4 qt	5 3/4 qt
	Without oil filter change	VQ40DE	4.8 ℓ	5 1/8 qt	4 1/4 qt
		VK56DE	6.2 ℓ	6 1/2 qt	5 1/2 qt
Dry engine (engine overhaul)		VQ40DE	6.3 ℓ	6 5/8 qt	5 1/2 qt
		VK56DE	7.6 ℓ	8 qt	6 3/4 qt
Cooling system (with reservoir at “MAX” level)	Without rear A/C		10.2 ℓ	2 3/4 gal	2 1/4 gal
	With rear A/C		13.4 ℓ	3 1/2 gal	3 gal
Automatic transmission fluid (ATF)		VQ40DE	10.3 ℓ	10 7/8 qt	9 1/8 qt
		VK56DE	10.6 ℓ	11 1/4 qt	9 3/8 qt
Rear final drive oil		VQ40DE	1.4 ℓ	3 pt	2 1/2 pt
		VK56DE	1.75 ℓ	3 3/4 pt	3 1/8 pt
Transfer fluid	ATX14B		3.0 ℓ	3 1/8 qt	2 5/8 qt
	TX15B		2.0 ℓ	2 1/8 qt	1 3/4 qt
Front final drive oil		VQ40DE	0.85 ℓ	1 3/4 pt	1 1/2 pt
		VK56DE	1.6 ℓ	3 3/8 pt	2 7/8 pt
Power steering fluid (PSF)			1.0 ℓ	2 1/8 pt	1 3/4 pt
Brake fluid			—	—	—
Multi-purpose grease			—	—	—
Windshield washer fluid			4.5 ℓ	1 1/4 gal	1 gal
A/C system refrigerant			0.85 ± 0.05 kg	1.87 ± 0.11 lb	1.87 ± 0.11 lb
A/C system oil			210 m ℓ	7.4 fl oz	7.1 fl oz

For Mexico: Fluids and Lubricants

INFOID:0000000005612215

Description		Capacity (Approximate)		
		Metric	US measure	Imp measure
Fuel		80 ℓ	21 1/8 gal	17 5/8 gal
Engine oil Drain and refill	With oil filter change	5.1 ℓ	5 3/8 qt	4 1/2 qt
	Without oil filter change	4.8 ℓ	5 1/8 qt	4 1/4 qt
Dry engine (engine overhaul)		6.3 ℓ	6 5/8 qt	5 1/2 qt
Cooling system (with reservoir at “MAX” level)		10.2 ℓ	2 3/4 gal	2 1/4 gal
Automatic transmission fluid (ATF)		10.3 ℓ	10 7/8 qt	9 1/8 qt
Rear final drive oil		2.01 ℓ	4 1/4 pt	3 1/2 pt
Transfer fluid		2.0 ℓ	2 1/8 qt	1 3/4 qt

QUICK REFERENCE CHART: PATHFINDER

2010

Description	Capacity (Approximate)		
	Metric	US measure	Imp measure
Front final drive oil	0.85 ℓ	1 3/4 pt	1 1/2 pt
Power steering fluid (PSF)	1.0 ℓ	2 1/8 pt	1 3/4 pt
Brake fluid	—	—	—
Multi-purpose grease	—	—	—
Brake grease	—	—	—
A/C system refrigerant	0.85 ± 0.05 kg	1.87 ± 0.11 lb	1.87 ± 0.11 lb
A/C system oil	210 mℓ	7.1 fl oz	7.4 fl oz