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NISSAN PATHFINDER MODEL R51 SERIES

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

A

B

C

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M

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P

FOREWORD

This manual contains maintenance and repair procedure for the 2012 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.



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Technical Publications Department



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Technical Service Information
39001 Sunrise Drive, P.O. Box 9200
Farmington Hills, MI USA 48331
FAX: (248) 488-3880

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

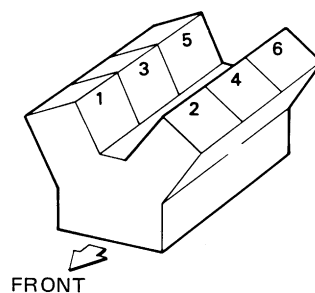
Engine Tune-up Data: VQ40DE

INFOID:000000007837584

GENERAL SPECIFICATIONS

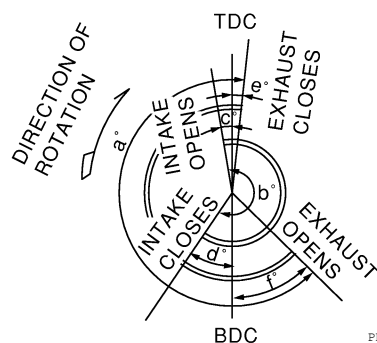
Cylinder arrangement		V-6
Displacement $\text{cm}^3(\text{cu in})$		3,954 (241.30)
Bore and stroke mm (in)		95.5 × 92.0 (3.76 × 3.622)
Valve arrangement		DOHC
Firing order		1-2-3-4-5-6
Number of piston rings	Compression	2
	Oil	1
Number of main bearings		4
Compression ratio		9.7
Compression pressure $\text{kPa (kg/cm}^2, \text{psi)/300 rpm}$	Standard	1,275 (13.0, 185)
	Minimum	981 (10.0, 142)
	Differential limit between cylinders	98 (1.0, 14)

Cylinder number



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

2012

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.

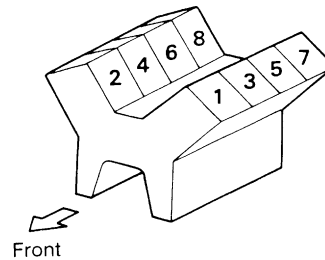
Engine Tune-up Data: VK56DE

INFOID:000000007837583

GENERAL SPECIFICATIONS

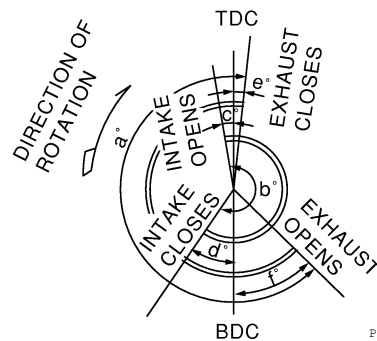
Cylinder arrangement		V-8
Displacement cm^3 (in^3)		5,552 (338.80)
Bore and stroke mm (in)		98 x 92 (3.86 x 3.62)
Valve arrangement		DOHC
Firing order		1-8-7-3-6-5-4-2
Number of piston rings	Compression	2
	Oil	1
Number of main bearings		5
Compression ratio		9.8:1
Compression pressure kPa (kg/cm^2 , psi)/rpm	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

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

Unit: mm (in)

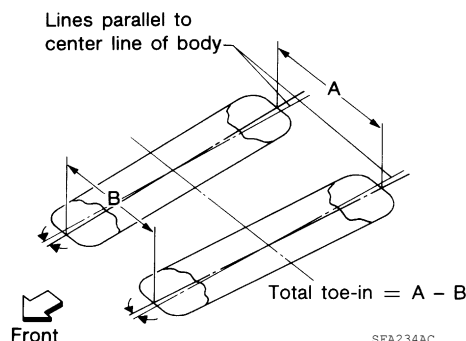
Make	NGK
Standard type*	DILFR5A-11
Gap (nominal)	1.1 (0.043)

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

Front Wheel Alignment (Unladen*1)

INFOID:000000007837582

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°)

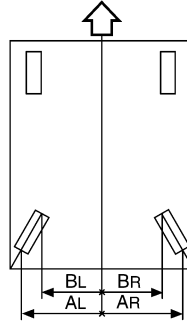
QUICK REFERENCE CHART: PATHFINDER

2012

Rear Wheel Alignment (Unladen*)

INFOID:000000007837580

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



ALEIA00592Z

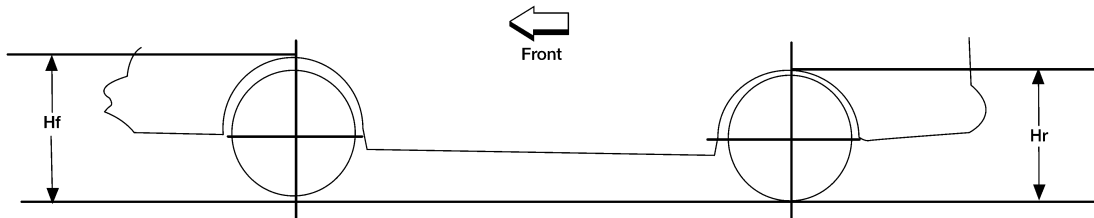
Toe-in	Distance difference between right and left side (AR-BR)-(AL-BL) ↩ :Front	Minimum	-2 mm (-0.08 in)
		Nominal	0 mm (0 in)
		Maximum	2 mm (0.08 in)
	Distance [left side (AL-BL) or right side (AR-BR)] from center line of body	Minimum	- 1.4 mm (- 0.055 in)
		Nominal	1.9 mm (0.075 in)
		Maximum	5.2 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:000000007837581

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)	867 (34.13)	875 (34.45)	874 (34.41)	891 (35.08)	876 (34.49)
Rear wheelarch height (Hr)	875 (34.45)	873 (34.37)	875 (34.45)	884 (34.80)	883 (34.76)	901 (35.47)	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

2012

Brake Specifications

INFOID:000000007837578

Unit: mm (in)

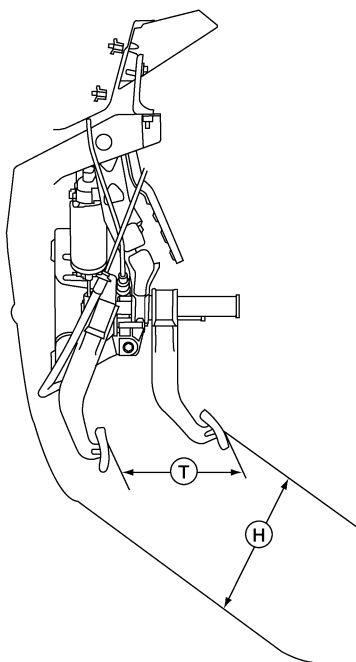
Application		VQ40DE	VK56DE
Front brake	Brake model	CLZ33VB	
	Rotor outer diameter × thickness	296 × 28 (11.654 × 1.102)	320 × 28 (12.598 × 1.102)
	Pad Length × width × thickness	140 × 50.5 × 10.0 (5.512 × 1.988 × 0.394)	130 × 52.3 × 11.0 (5.118 × 2.059 × 0.433)
	Cylinder bore diameter (each)	46.4 (1.827)	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:000000007837579

ADJUSTABLE PEDAL

Unit: mm (in)



ALFIA01492Z

Pedal free height (H) with pedal in forward most position	182.1 (7.17)
Pedal full stroke (T)	153 (6.02)
Clearance between brake pedal bracket and threaded end of stop lamp switch and ASCD cancel switch	0.74 - 1.96 (0.029 - 0.077)

CAUTION:

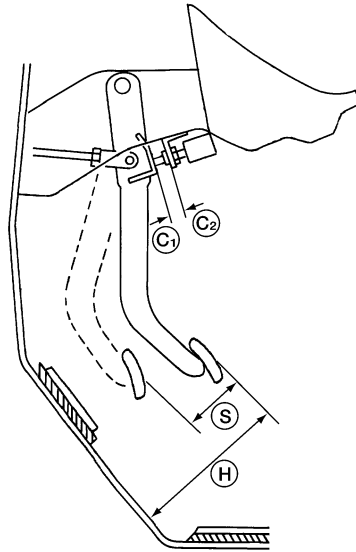
When equipped with adjustable pedal, the pedal must be in the forward most position (closest to the floor) for pedal height adjustment.

STANDARD PEDAL

QUICK REFERENCE CHART: PATHFINDER

2012

Unit: mm (in)



AWFIA0433Z2

Pedal free height (H)	182.1 (7.17)
Pedal full stroke (S)	153 (6.02)
Clearance between brake pedal bracket (C1) and threaded end of stop lamp switch and ASCD cancel switch (C2)	0.74 - 1.96 (0.029 - 0.077)

Front Disc Brake

INFOID:000000007837576

Unit: mm (in)

Brake model		CLZ33VB	
Application		VQ40DE	VQ56DE
Brake pad	Standard thickness (new)	10.0 (0.394)	11.0 (0.043)
	Minimum thickness	2.0 (0.079)	
Disc rotor	Standard thickness (new)	28.0 (1.102)	
	Minimum 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:000000007837577

Unit: mm (in)

Brake model		CLZ14VB
Brake pad	Standard thickness (new)	11.0 (0.433)
	Minimum thickness	2.0 (0.079)
Disc rotor	Standard thickness (new)	18.0 (0.709)
	Minimum 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)

QUICK REFERENCE CHART: PATHFINDER

2012

FOR USA AND CANADA : Fluids and Lubricants

INFOID:000000007837569

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 7/8 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	VQ40DE	10.2 ℓ	10 3/4 qt	9 qt
	With rear A/C	VQ40DE VK56DE	13.4 ℓ	14 1/8 qt	11 3/4 qt
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	Without rear A/C		0.70 ± 0.05 kg	1.54 ± 0.11 lb	1.54 ± 0.11 lb
	With rear A/C		0.85 ± 0.05 kg	1.87 ± 0.11 lb	1.87 ± 0.11 lb
A/C system oil	Without rear A/C		180 m ℓ	6.1 fl oz	6.3 fl oz
	With Rear A/C		210 m ℓ	7.1 fl oz	7.4 fl oz

FOR MEXICO

FOR MEXICO : Fluids and Lubricants

INFOID:0000000007837572

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)			13.4 ℓ	14 1/8 qt	11 3/4 qt

QUICK REFERENCE CHART: PATHFINDER

2012

Description		Capacity (Approximate)		
		Metric	US measure	Imp measure
Automatic transmission fluid (ATF)		10.3 ℓ	10 7/8 qt	9 1/8 qt
Rear final drive oil		1.4 ℓ	3 pt	2 1/2 pt
Transfer fluid	ATX14B	3.0 ℓ	3 1/8 qt	2 5/8 qt
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		—	—	—
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 mℓ	7.1 fl oz	7.4 fl oz