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NISSAN FRONTIER

MODEL D40 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
	HBC Hybrid Control System
	HBB Hybrid Battery System
C HYBRID	CL Clutch
	TM Transaxle & Transmission
	DLN Driveline
	FAX Front Axle
	RAX Rear Axle
D TRANSMISSION & DRIVE-LINE	FSU Front Suspension
	RSU Rear Suspension
	SCS Suspension Control System
	WT Road Wheels & Tires
	BR Brake System
	PB Parking Brake System
E SUSPENSION	BRC Brake Control System
	ST Steering System
	STC Steering Control System
F BRAKES	SB Seat Belt
	SBC Seat Belt Control System
G STEERING	SR SRS Airbag
	SRC SRS Airbag Control System
	VTL Ventilation System
	HA Heater & Air Conditioning System
H RESTRAINTS	HAC Heater & Air Conditioning Control System
	INT Interior
I VENTILATION, HEATER & AIR CONDITIONER	IP Instrument Panel
	SE Seat
	ADP Autodrive Positioner System
	AP Adjustable Pedals
	DLK Door & Lock
	SEC Security Control System
	GW Glass & Window System
J BODY INTERIOR	PWC Power Window Control System
	RF Roof
	EXT Exterior
	BRM Body Repair Manual
	MIR Mirrors
	EXL Exterior Lighting System
	INL Interior Lighting System
	WW Wiper & Washer
	DEF Defogger
	HRN Horn
K BODY EXTERIOR, DOORS, ROOF & VEHICLE SECURITY	PWO Power Outlet
	BCS Body Control System
	LAN LAN System
	PCS Power Control System
	CHG Charging System
	PG Power Supply, Ground & Circuit Elements
	MWI Meter, Warning Lamp & Indicator
L DRIVER CONTROLS	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

D

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FOREWORD

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

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 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?

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DEALER: _____ DEALER NO.: _____ ADDRESS: _____

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

QUICK REFERENCE CHART - FRONTIER

Engine Tune-up Data - QR25DE

INFOID:000000004553658

GENERAL SPECIFICATIONS

Cylinder arrangement		In-line 4
Displacement	cm ³ (cu in)	2,488 (151.82)
Bore and stroke	mm (in)	89.0 x 100.0 (3.504 x 3.937)
Valve arrangement		DOHC
Firing order		1-3-4-2
Number of piston rings	Compression	2
	Oil	1
Compression ratio		9.5
Compression pressure kPa (kg/cm ² , psi) / 250 rpm	Standard	1,304 (13.3, 189)
	Minimum	1,108 (11.3, 161)
	Differential limit between cylinders	100 (1.0, 14)

DRIVE BELT

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

Make	NGK
Standard type	PLZKAR6A-11
Gap (nominal)	1.1 mm (0.043 in)

Engine Tune-up Data - VQ40DE

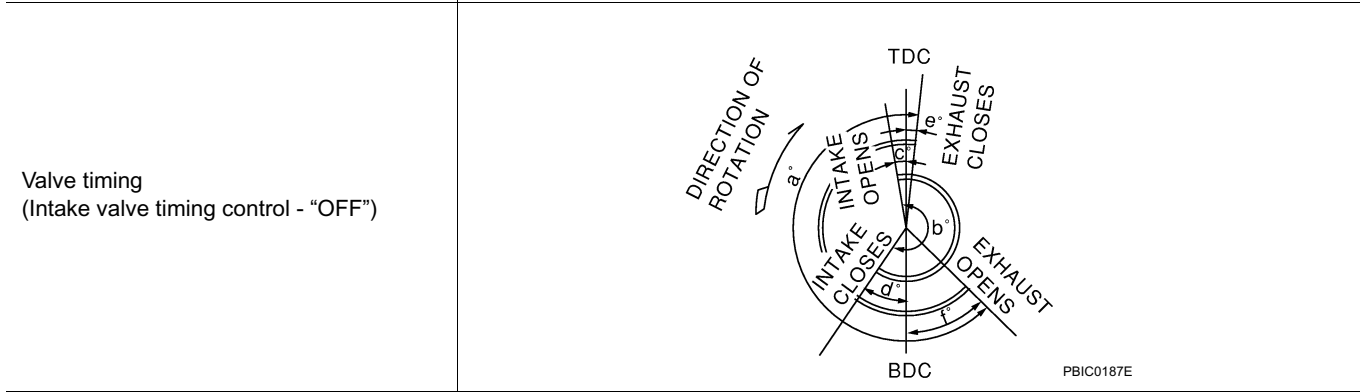
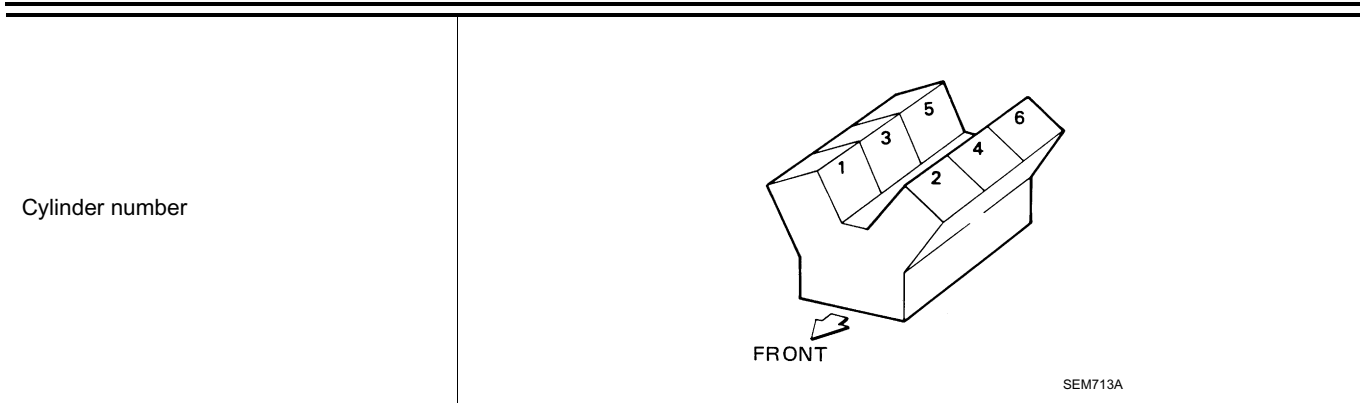
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GENERAL SPECIFICATIONS

Cylinder arrangement		V-6
Displacement	cm ³ (cu in)	3,954 (241.30)
Bore and stroke	mm (in)	95.5 x 92.0 (3.76 x 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 (kg/cm ² , psi)/300 rpm	kPa Standard	1,275 (13.0, 185)
	Minimum	981 (10.0, 142)
	Differential limit between cylinders	98 (1.0, 14)

QUICK REFERENCE CHART - FRONTIER

2009



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
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SPARK PLUG

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

Front Wheel Alignment (Unladen*1)*6

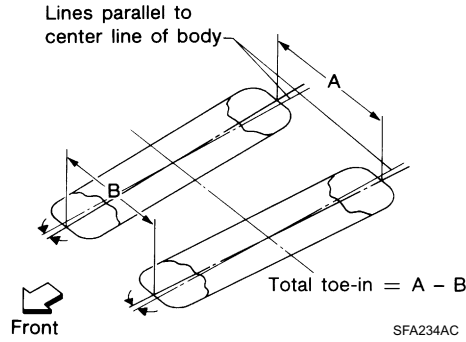
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Drive type		2WD	4WD
Camber Degree minute (decimal degree)	Minimum	-0° 30' (-0.50°)	-0° 15' (-0.25°)
	Nominal	0° 15' (0.25°)	0° 30' (0.50°)
	Maximum	1° 0' (1.00°)	1° 15' (1.25°)
	Cross camber	0° 45' (0.75°) or less	0° 45' (0.75°) or less
Caster Degree minute (decimal degree)	Minimum	2° 15' (2.25°)	2° 0' (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°)

QUICK REFERENCE CHART - FRONTIER

2009

Drive type	2WD	4WD
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Total toe-in	Distance (A - B)	2.1 mm (0.08 in)	2.1 mm (0.08 in)
		3.1 mm (0.12 in)	3.1 mm (0.12 in)
		4.1 mm (0.16 in)	4.1 mm (0.16 in)
	Angle (left wheel or right wheel) Degree minute (Decimal degree)	0° 5' (0.08°)	0° 5' (0.08°)
		0° 7' (0.12°)	0° 7' (0.12°)
		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° 36' - 35° 36' *4 (33.60° - 35.60°)
	Outside Degree minute (Decimal degree)	29° 22' - 31° 22' *3 (29.37° - 31.37°)	29° 44' - 31° 44' *5 (29.73° - 31.73°)

*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° 36' (35.60°)

*5: Target value 31° 44' (31.73°)

*6: Some vehicles may be equipped with straight (non-adjustable) lower link bolts and washers. In order to adjust camber and caster on these vehicles, first replace the lower link bolts and washers with adjustable (cam) bolts and washers.

General Specification (Rear)

INFOID:000000004553654

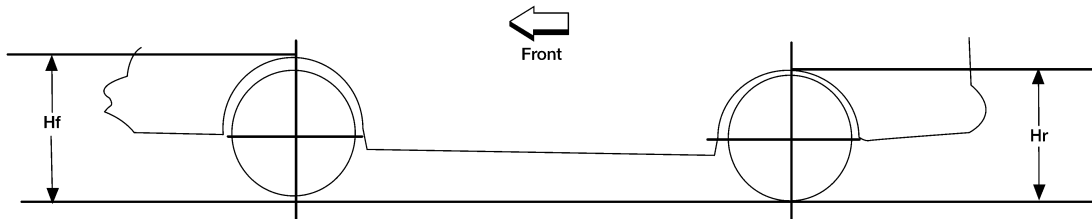
Suspension type	Rigid axle with semi-elliptic leaf springs
Shock absorber type	Double-acting hydraulic

Wheelarch Height (Unladen*1)

INFOID:000000004553655

King Cab

Unit: mm (in)



LEIA0085E

Engine type	QR25DE	VQ40DE
Drive type	2WD	4WD

QUICK REFERENCE CHART - FRONTIER

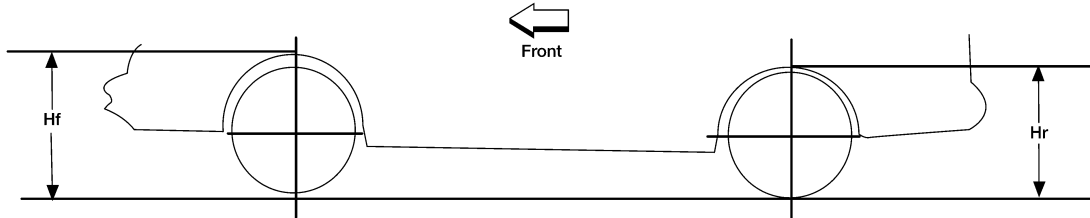
2009

Tire size	235/75R15	265/70R16		265/75R16	265/65R18	265/70R16	265/75R16	265/65R18
Front wheelarch height (Hf)	850 (33.46)	865 (34.06)	868 (34.17)	880 (34.65)	867 (34.13)	881 (34.68)	893 (35.16)	881 (34.68)
Rear wheelarch height (Hr)	878 (34.57)	887 (34.92)	895 (35.24)	907 (35.71)	893 (35.16)	904 (35.59)	917 (36.10)	903 (35.55)

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

Crew Cab

Unit: mm (in)



LEIA0085E

Engine type	VQ40DE					
Drive type	2WD			4WD		
Tire size	265/70R16	265/75R16	265/65R18	265/70R16	265/75R16	265/65R18
Front wheelarch height (Hf)	867 (34.13)	879 (34.61)	866 (34.09)	879 (34.61)	891 (35.08)	879 (34.61)
Rear wheelarch height (Hr)	892 (35.12)	904 (35.59)	892 (35.12)	905 (35.63)	918 (36.14)	905 (35.63)

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

Brake Specification

INFOID:000000004553652

Unit: mm (in)

Engine Type		QR25DE	VQ40DE
Front brake	Brake model	CLZ33VA	
	Rotor outer diameter × thickness	283 × 28 (11.142 × 1.102)	296 × 28 (11.654 × 1.102)
	Pad Length × width × thickness	140 × 49 × 10 (5.51 × 1.93 × 0.39)	
	Cylinder bore diameter (each)	46.4 (1.83)	
Rear brake	Brake model	CLZ14VA	
	Rotor outer diameter × thickness	286 × 18 (11.260 × 0.709)	
	Pad length × width × thickness	87.6 × 35.5 × 11.0 (3.449 × 1.398 × 0.433)	
	Cylinder bore diameter	38.1 (1.50)	
Control valve	Valve model	Electric brake force distribution	
Brake booster	Booster model	C215T	
	Diaphragm diameter	215 (8.465)	

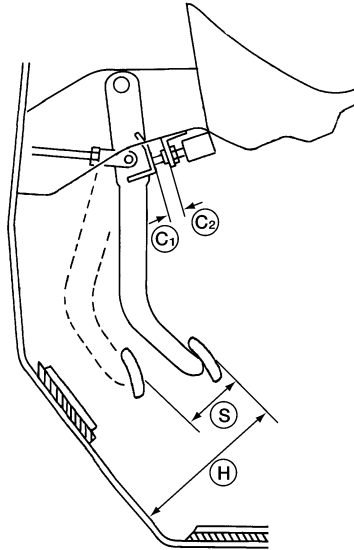
QUICK REFERENCE CHART - FRONTIER

2009

Brake Pedal

INFOID:000000004553653

Unit: mm (in)



AWFIA0433ZZ

Pedal free height (H)	M/T	174.7 (6.88)
	A/T	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:000000004553650

Unit: mm (in)

Engine type		QR25DE / VQ40DE
Brake model		CLZ33VA
Brake pad	Standard thickness (new)	10.0 (0.394)
	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:000000004553651

Unit: mm (in)

Engine type		QR25DE / VQ40DE
Brake model		CLZ14VA
Brake pad	Standard thickness (new)	11.0 (0.433)
	Repair limit thickness	2.0 (0.079)

QUICK REFERENCE CHART - FRONTIER

2009

Engine type		QR25DE / VQ40DE
Brake model		CLZ14VA
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)

Fluids and Lubricants

INFOID:000000004553649

QR25DE

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	4.6 ℓ	4 7/8 qt	4 qt
	Without oil filter change	4.3 ℓ	4-1/2 qt	3-3/4 qt
Dry engine (engine overhaul)		5.0 ℓ	5-1/4 qt	4-3/8 qt
Cooling system	With reservoir at MAX level	9.4 ℓ	10 qt	8-1/4 qt
Automatic transmission fluid (ATF)		10.3 ℓ	10-7/8 qt	9-1/8 qt
Manual transmission fluid (MTF) (5 M/T)		2.89 ℓ	6-1/8 pt	5-1/8 pt
Rear final drive oil	C200	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 and clutch fluids		—	—	—
Brake grease		—	—	—
Brake pad plate grease		—	—	—
Multi-purpose grease		—	—	—
Windshield washer fluid		4.5 ℓ	1-1/4 gal	1 gal
Air conditioning system refrigerant		0.70 ± 0.05 kg	1.54 ± 0.11 lb	1.54 ± 0.11 lb
Air conditioning system oil		180 m ℓ	6.1 fl oz	6.3 fl oz

VQ40DE

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	10-3/4 qt	9 qt
Automatic transmission fluid (ATF)		10.3 ℓ	10-7/8 qt	9-1/8 qt
Manual transmission fluid (MTF) (6 M/T)	2WD	3.98 ℓ	8-3/8 pt	7 pt
	4WD	4.18 ℓ	8-7/8 pt	7-3/8 pt

QUICK REFERENCE CHART - FRONTIER

2009

Description		Capacity (Approximate)		
		Metric	US measure	Imp measure
Rear final drive oil	C200	1.6 ℓ	3-3/8 pt	2-7/8 pt
	M226	2.01 ℓ	4-1/4 pt	3 1/2 pt
Transfer fluid	TX15B	2.0 ℓ	2 1/8 qt	1-3/4 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 and clutch fluid		—	—	—
Brake grease		—	—	—
Brake pad plate grease		—	—	—
Multi-purpose grease		—	—	—
Windshield washer fluid		4.5 ℓ	1-1/4 gal	1 gal
A/C system refrigerant		0.70 ± 0.05 kg	1.54 ± 0.11 lb	1.54 ± 0.11 lb
A/C system oil		180 m ℓ	6.1 fl oz	6.3 fl oz