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NISSAN FRONTIER

MODEL D40 SERIES

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GI General Information

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

CL Clutch

TM Transaxle & Transmission

DLN Driveline

FAX Front Axle

RAX Rear Axle

FSU Front Suspension

RSU Rear Suspension

SCS Suspension Control System

WT Road Wheels & Tires

BR Brake System

PB Parking Brake System

BRC Brake Control System

ST Steering System

STC Steering Control System

SB Seat Belt

SBC Seat Belt Control System

SR SRS Airbag

SRC SRS Airbag Control System

VTL Ventilation System

HA Heater & Air Conditioning System

HAC Heater & Air Conditioning Control System

INT Interior

IP Instrument Panel

SE Seat

ADP Autodrive Positioner System

AP Adjustable Pedals

DLK Door & Lock

SEC Security Control System

GW Glass & Window System

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

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

WCS Warning Chime System

SN Sonar System

AV Audio, Visual & Navigation System

CCS Cruise Control System

MA Maintenance

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FOREWORD

This manual contains maintenance and repair procedure for the 2010 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.*

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QUICK REFERENCE CHART: FRONTIER

Engine Tune-up Data: QR25DE

INFOID:000000005612473

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)

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

Engine Tune-up Data: VQ40DE

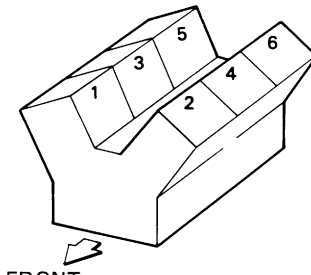
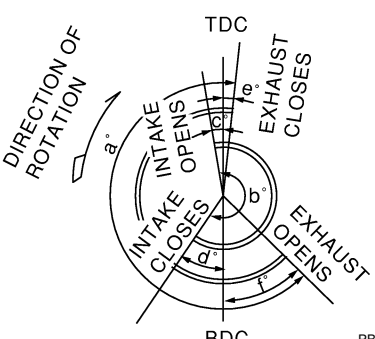
INFOID:000000005612472

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 kPa (kg/cm ² , psi)/300 rpm	Standard	1,275 (13.0, 185)
	Minimum	981 (10.0, 142)
	Differential limit between cylinders	98 (1.0, 14)

QUICK REFERENCE CHART: FRONTIER

2010

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
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SPARK PLUG

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

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

Front Wheel Alignment (Unladen*1)*6

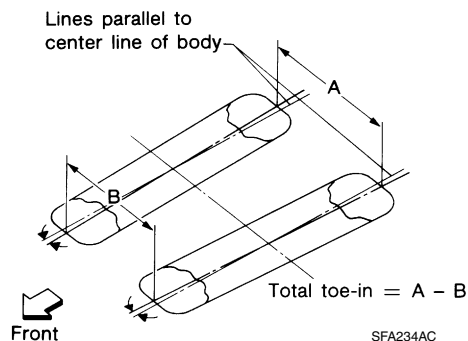
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Drive type		2WD	4WD
Camber Degree minute (decimal degree)	Minimum	-0° 30' (-0.50°)	-0° 15' (-0.25°)
	Nominal	0° 15' (0.25°)	0° 30' (0.50°)
	Maximum	1° 0' (1.00°)	1° 15' (1.25°)
	Cross camber	0° 45' (0.75°) or less	0° 45' (0.75°) or less
Caster Degree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

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2010

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.

Rear Suspension Specifications

INFOID:000000005612469

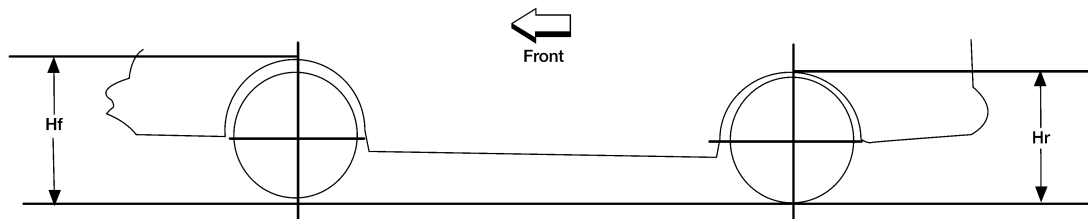
Suspension type	Rigid axle with semi-elliptic leaf springs
Shock absorber type	Double-acting hydraulic

Wheelarch Height (Unladen*1)

INFOID:000000005612470

King Cab

Unit: mm (in)



LEIA0085E

Engine type	QR25DE	VQ40DE
Drive type	2WD	4WD

QUICK REFERENCE CHART: FRONTIER

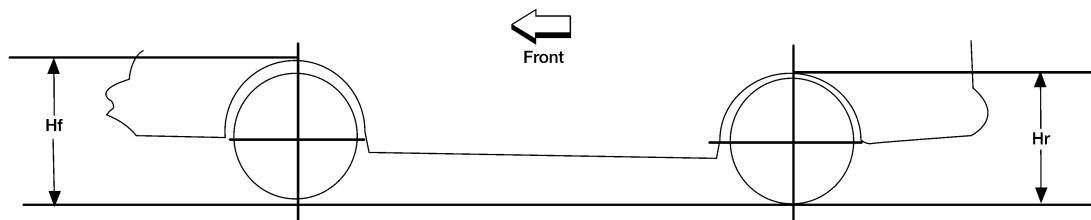
2010

Tire size	P235/75R15	P265/70R16		P265/75R16	P265/60R18	P265/70R16	P265/75R16	P265/60R18
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	P265/70R16	P265/75R16	P265/60R18	P265/70R16	P265/75R16	P265/60R18
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 Specifications

INFOID:0000000005612467

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)	

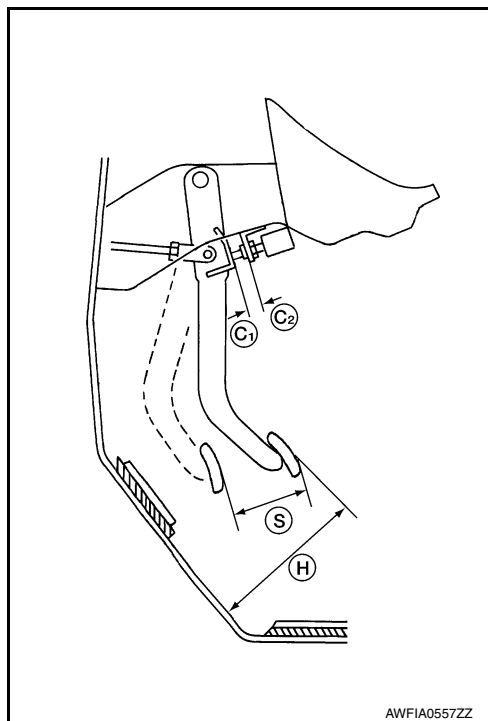
QUICK REFERENCE CHART: FRONTIER

2010

Brake Pedal

INFOID:000000005612468

Unit: mm (in)



Pedal free height (H)	M/T	174.7 (6.88)
	A/T	182.1 (7.17)
Pedal full stroke (S)		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:000000005612465

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:000000005612466

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

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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)

For North America: Fluids and Lubricants

INFOID:000000005612463

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

2010

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

For Mexico: Fluids and Lubricants

INFOID:000000005612464

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
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		0.70 ± 0.05 kg	1.54 ± 0.11 lb	1.54 ± 0.11 lb
A/C system oil		180 m ℓ	6.1 fl oz	6.34 fl oz