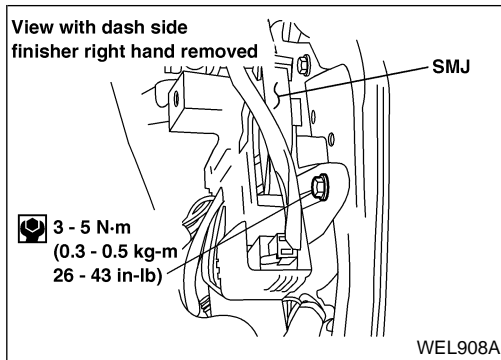


# SUPER MULTIPLE JUNCTION (SMJ)

## Installation



## Installation

Securely fit and lock SMJ connectors. Tighten harness bracket bolt to specified torque. NEEL0146

 : 3 - 5 N-m (0.3 - 0.5 kg-m, 26 - 43 in-lb)

# SUPER MULTIPLE JUNCTION (SMJ)

Terminal Arrangement

## Terminal Arrangement

NEEL0147

GI

MA

EM

LC

EC

FE

CL

MT

AT

TF

PD

AX

SU

BR

ST

RS

BT

HA

SC

EL

IDX

### MAIN HARNESS

(M65)

24B	23B	22B	21B	20B	19B	18B	17B	16B	15B	14B	13B	12B	11B	10B	9B	8B	7B	6B	5B	4B	3B	2B	1B
24A	23A	22A	21A	20A	19A	18A	17A	16A	15A	14A	13A	12A	11A	10A	9A	8A	7A	6A	5A	4A	3A	2A	1A



24A	23A	22A	21A	20A	19A	18A	17A	16A	15A	14A	13A	12A	11A	10A	9A	8A	7A	6A	5A	4A	3A	2A	1A
24B	23B	22B	21B	20B	19B	18B	17B	16B	15B	14B	13B	12B	11B	10B	9B	8B	7B	6B	5B	4B	3B	2B	1B

(E43)

### ENGINE ROOM HARNESS

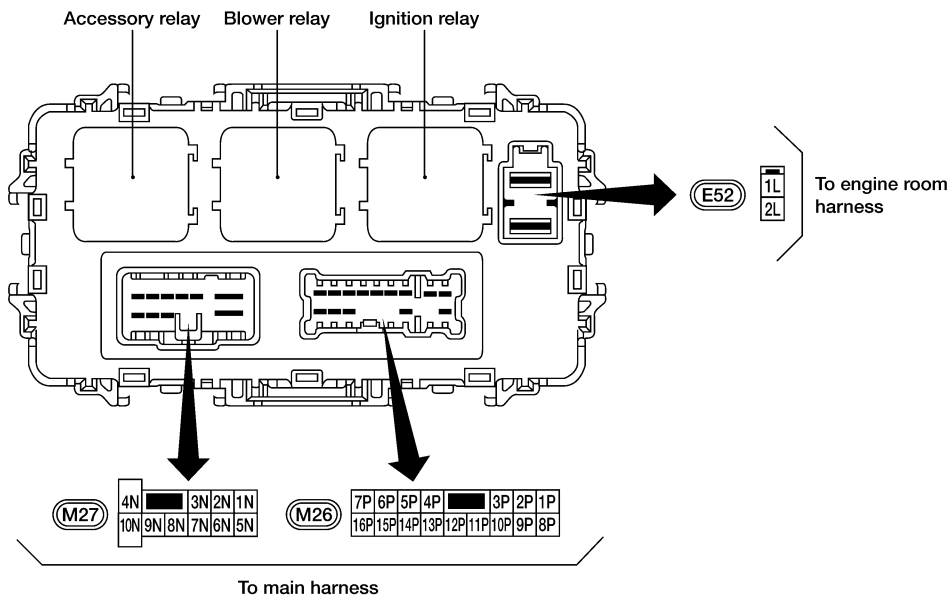
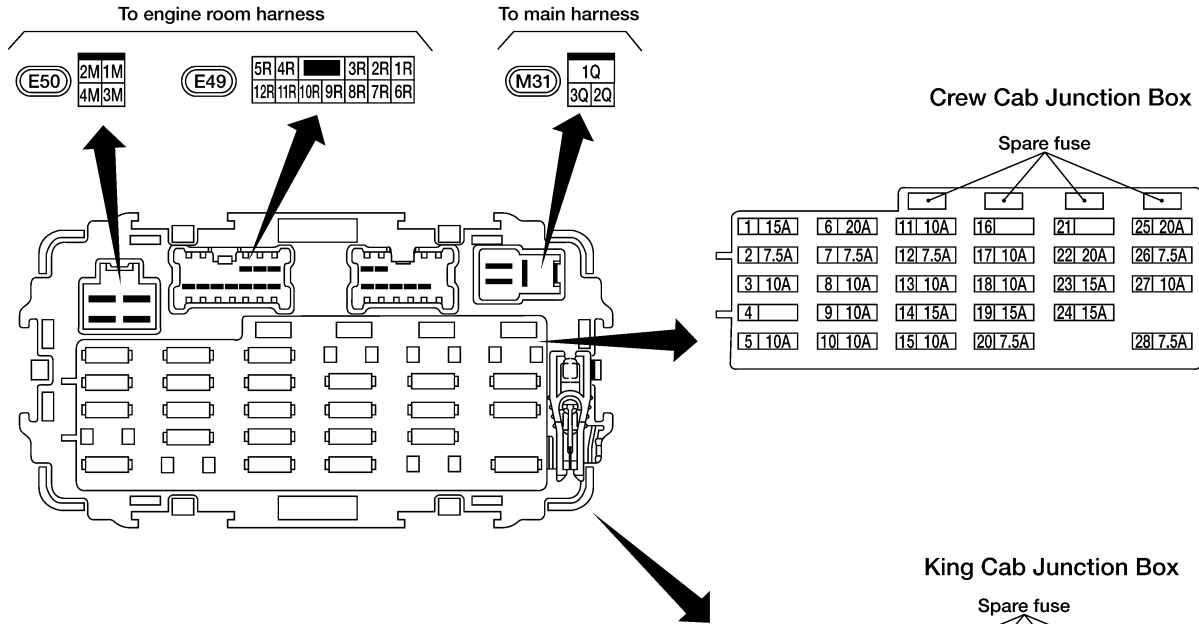
AEL646B

# FUSE BLOCK — JUNCTION BOX (J/B)

Terminal Arrangement

## Terminal Arrangement

NEEL0148



WEL854A

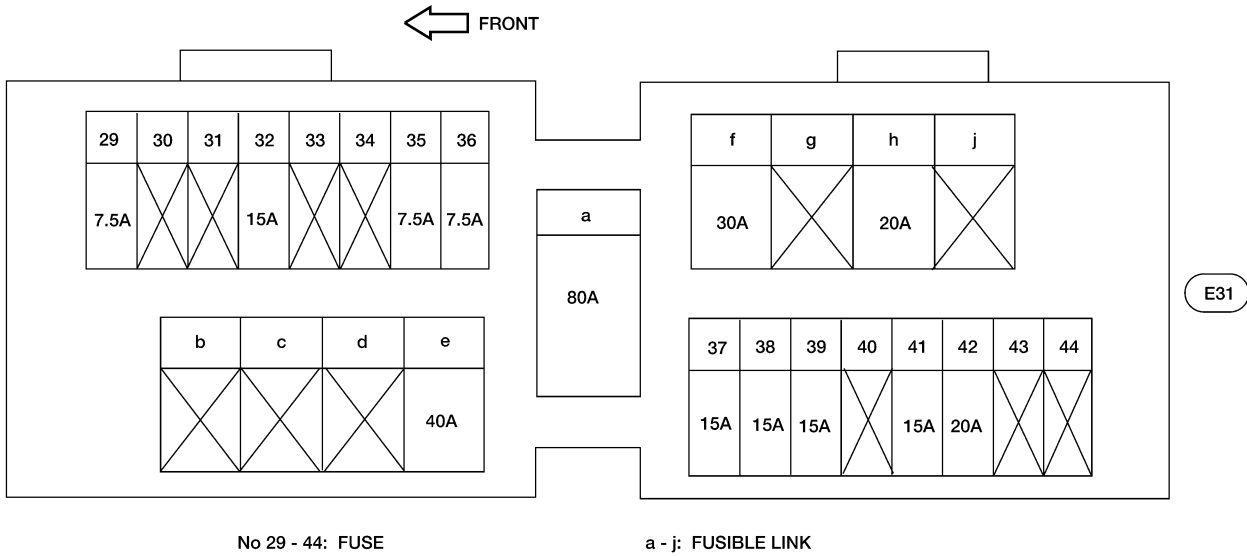
# FUSE AND FUSIBLE LINK BOX

Terminal Arrangement

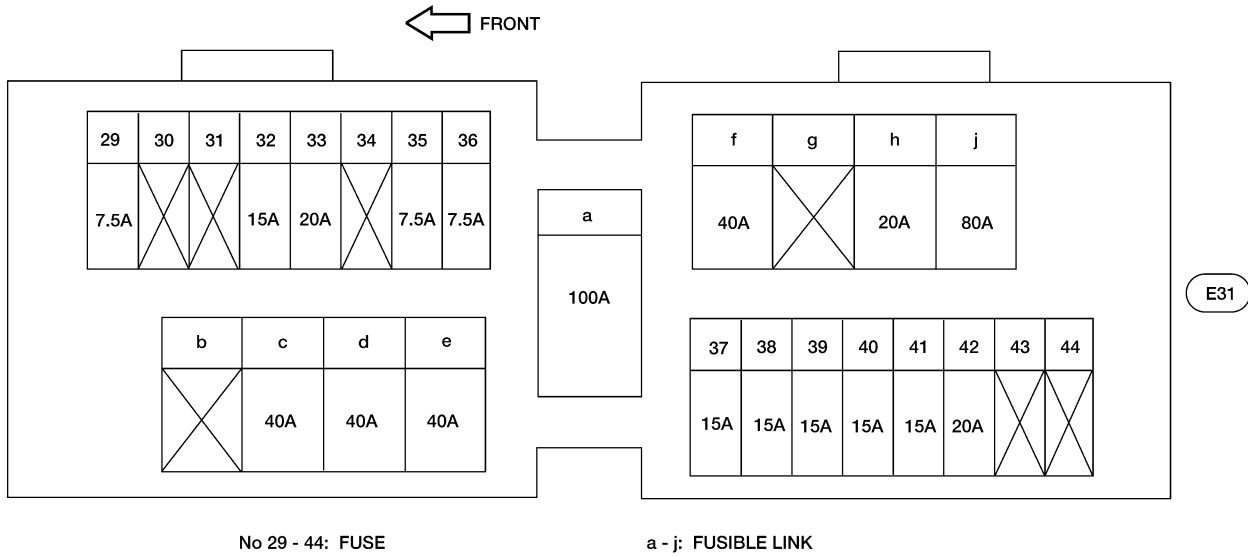
NEEL0149

## Terminal Arrangement

For KA24DE ENGINE



For VG33E and VG33ER ENGINES



GI

MA

EM

LC

EC

FE

CL

MT

AT

TF

PD

AX

SU

BR

ST

RS

BT

HA

SC

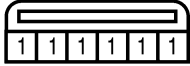
# JOINT CONNECTOR

Terminal Arrangement

## Terminal Arrangement

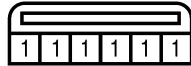
NEEL0205

JOINT CONNECTOR - 1 (F31)



(GRAY)

JOINT CONNECTOR - 2 (F32)



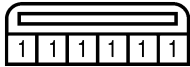
(GRAY)

JOINT CONNECTOR - 3 (F33)



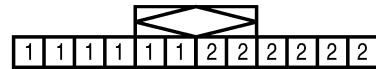
(GRAY)

JOINT CONNECTOR - 4 (F34)



(GRAY)

JOINT CONNECTOR - 6 (M85)



(BLUE)

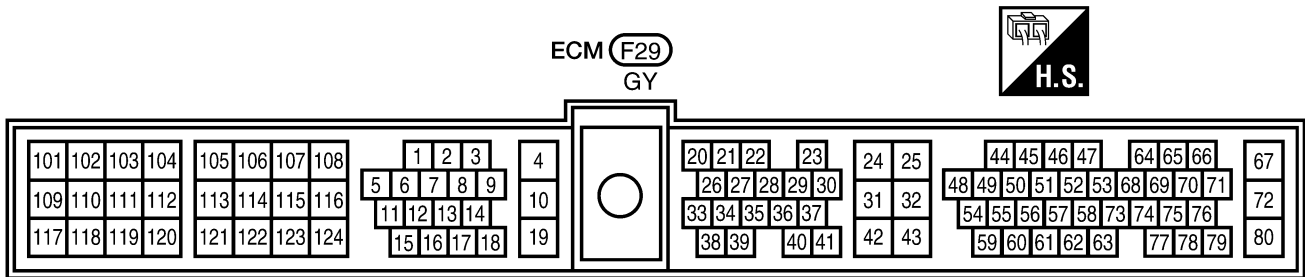
# ELECTRICAL UNITS

Terminal Arrangement

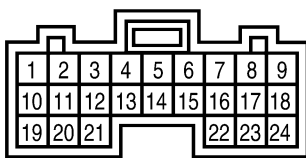
## Terminal Arrangement

NEEL0150

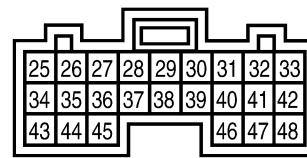
GI  
MA  
EM  
LC  
EC  
FE  
CL  
MT  
AT  
TF  
PD  
AX  
SU  
BR  
ST  
RS  
BT  
HA  
SC



### TCM (TRANSMISSION CONTROL MODULE)



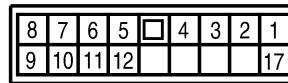
(M77)  
W



(M78)  
GY



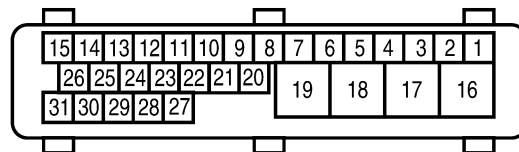
### ABS CONTROL UNIT (WITH KA24DE ENGINE)



(M23)  
B



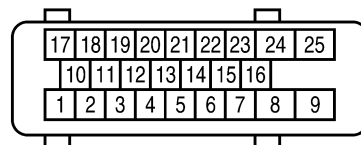
### ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)(2WD WITH VG33E AND VG33ER ENGINE)



(E39)  
B



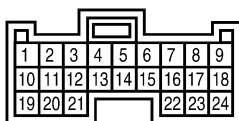
### ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)(4WD WITH VG33E AND VG33ER ENGINE)



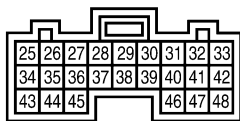
(E39)  
B



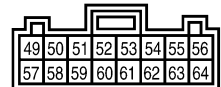
### SMART ENTRANCE CONTROL UNIT



(M110)  
W



(M111)  
GY



(M112)  
GY



# QUICK REFERENCE CHART: FRONTIER   2002

## EQUIPPED WITH KA24DE ENGINE

### ENGINE TUNE-UP DATA

Engine model	KA24DE		
Firing order	1-3-4-2		
Idle speed rpm	800 ± 50		
MT (in neutral)	20 ± 2°		
Ignition timing (degree B.T.D.C. at idle speed)	20 ± 2°		
CO% at idle	Idle mixture screw is preset and sealed at factory		
Spark plug	NGK (Double Platinum Tipped)		
Type	Standard	PFR5G-11	
	Cold	PFR6G-11	
Gap (nominal)	mm (in)	1.1 (0.043)	
Drive belt deflection (Cold)	mm (in)	Used belt	
		Limit	After adjustment
Generator	17 (0.67)	10-12	8-10
		(0.39-0.47)	(0.31-0.39)
Air conditioner compressor	16 (0.63)	10-12	8-10
		(0.39-0.47)	(0.31-0.39)
Power steering oil pump	17 (0.67)	10-13 (0.39 - 0.51)	8 - 10 (0.31 - 0.39)
Drive belt tension	N (kg, lb)	Used belt	
		Limit	Tension after adjustment
Generator	222.4 (22.7, 50)	355.8-444.8 (36.3-45.4, 80-100)	489.3-578.2 (49.9-59.0, 110-130)
		200.2 (20.4, 45)	355.8-444.8 (36.3-45.4, 80-100)
Air conditioner compressor	224.4 (22.7, 50)	355.8-444.8 (36.3-45.4, 80-100)	489.3-578.2 (49.9-59.0, 110-130)
Power steering oil pump			
Applied pushing force	N (kg, lb)	98 (10, 22)	
Radiator cap relief pressure	kPa (kg/cm <sup>2</sup> , psi)	78 - 98 (0.8 - 1.0, 11 - 14)	
Cooling system leakage testing pressure	kPa (kg/cm <sup>2</sup> , psi)	157 (1.6, 23)	
Compression pressure	Standard	1226 (12.5, 178)/300	
	Minimum	1030 (10.5, 149)/300	
Tightening torque	N-m	kg-m	ft-lb
		20 - 29	2.0 - 3.0
Spark plug			
Oil pan drain plug		29 - 39	3.0 - 4.0
			22 - 29

### FRONT WHEEL BEARING

Lock nut tightening torque	N • m (kg•m, ft-lb)		
	34 - 39 (3.5 - 4.0, 25 - 29)		
Preload (At hub bolt)	N (kg, lb)	New seal	9.8 - 28.4 (1.0 - 2.9, 2.2 - 6.4)
		Used seal	9.8 - 23.5 (1.0 - 2.4, 2.2 - 5.3)

### BRAKE

		Unit: mm (in)
Disc brake	Pad minimum thickness	2.0 (0.079)
	Rotor repair limit	0.07 (0.0028)
	Runout	0.07 (0.0028)
Drum brake	Minimum thickness	24.0 (0.945), CL28VD
	Lining minimum thickness	1.5 (0.059)
	Drum repair limit	261.5 (10.30), LT26B
Parking brake	Maximum inner diameter	
	Number of notches*2	5 - 6

\*1 At pulling force: 196 N (20 kg, 44 lb)

### FRONT WHEEL ALIGNMENT (Unladen\*1)

Camber	Minimum	-0°05' (-0.08°)
	Nominal	0°25' (0.42°)
	Maximum	0°55' (0.92°)
Degree minute (Decimal degree)	Left and right difference	45° (0.75°) or less
Caster	Minimum	0°06' (0.10°)
	Nominal	0°36' (0.60°)
	Maximum	1°06' (1.10°)
Degree minute (Decimal degree)	Left and right difference	45° (0.75°) or less
Kingpin inclination	Minimum	8°35' (8.58°)
	Nominal	9°05' (9.08°)
	Maximum	9°35' (9.58°)
Degree minute (Decimal degree)		
Total toe-in	Minimum	2 (0.08)
	Nominal	3 (0.12)
	Maximum	4 (0.16)
Distance (A - B)	mm (in)	
Angle (left plus right)	Minimum	11' (0.18°)
	Nominal	16' (0.27°)
	Maximum	20' (0.33°)
Degree minute (Decimal degree)		
Wheel turning angle Inside	Minimum	35°00' (35.00°)
	Nominal	37°00' (37.00°)
	Maximum	37°00' (37.00°)
Degree minute (Decimal degree)		
Full turn *2	Minimum	31°36' (31.60°)
	Nominal	33°36' (33.60°)
	Maximum	33°36' (33.60°)
Degree minute (Decimal degree)		

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

\*2 Wheel turning force (at circumference of steering wheel) of 98 to 147 N (10 to 15 kg, 22 to 33 lb) with engine idle.

### REFILL CAPACITIES

		Unit	Metric measure	US measure
Fuel tank			60	15.9 gal
Coolant (with reservoir)		MT	7.3	7-3/4 qt
		AT	7.1	7-1/2 qt
Engine	Drain and refill	With oil filter	3.5	3-3/4 qt
		Without oil filter	3.3	3-1/2 qt
	Dry engine (engine overhaul)		4.1	4-1/2 qt
Manual Transmission (F5W71C)			2.0	4-1/4 pt
Final drive (C200)			1.3	2-3/8 pt
Power steering system			0.9-1.0	30.4-33.8 fl oz
Air conditioning system		Lubricant	200 ml	6.8 n fl oz
		Refrigerant*	0.6-0.7 kg	1.32-1.54 lb

\*R-134a

# QUICK REFERENCE CHART: FRONTIER   2002

## EQUIPPED WITH VG33E ENGINE

### ENGINE TUNE-UP DATA

Engine model	VG33E		
Firing order	1-2-3-4-5-6		
Idle speed	rpm	750 <sup>±</sup> 50	
MT (in neutral)		750 <sup>±</sup> 50	
A/T (in "P" or "N" position)		750 <sup>±</sup> 50	
Ignition timing (degree B.T.D.C. at idle speed)	10 <sup>±</sup> 2°		
CO% at idle	Idle mixture screw is preset and sealed at factory		
Spark plug	NGK Double Tipped Platinum		
	Standard	PFR5G-11	
Type	Cold	PFR6G-11	
	Hot	PFR4G-11	
Gap (nominal)	mm (in)	1.1(0.043)	
Drive belt deflection (Cold)	mm (in)	Used belt	
		Limit	Deflection after adjustment
			Deflection of new belt
Generator	11 (0.43)	7 - 8 (0.24 - 0.31)	6 - 7 (0.24 - 0.28)
Air conditioner compressor	18 (0.71)	12 - 13 (0.47 - 0.51)	10.5 - 11.5 (0.413 - 0.453)
Power steering oil pump	15 (0.59)	9.5 - 10.5 (0.374 - 0.413)	8 - 9 (0.31 - 0.35)
Drive belt tension	N (kg, lb)	Used belt	
		Limit	Tension after adjustment
			Tension of new belt
Generator	226 (23, 51)	554.1-642.4(56.5-65.5, 124.6-144.4)	671.8-760.0(68.5-77.5, 151.0-170.9)
Air conditioner compressor	196 (20, 44)	495.3-583.5(50.5-59.5, 111.4-131.2)	603.1-691.4(61.5-70.5, 135.6-155.5)
Power steering oil pump	275 (28, 62)	554.1-642.4(56.5-65.5, 124.6-144.4)	671.8-760.0(68.5-77.5, 151.0-170.9)
Applied pushing force	N (kg, lb)	98 (10, 22)	
Radiator cap relief pressure	kPa (kg/cm <sup>2</sup> , psi)	78 - 98 (0.8 - 1.0, 11 - 14)	
Cooling system leakage testing pressure	kPa (kg/cm <sup>2</sup> , psi)	157 (1.6, 23)	
Compression pressure	Standard	1,196 (12.2, 173)/300	
	Minimum	883 (9.0, 128)/300	
Tightening torque		N·m	kg·m
			ft·lb
Spark plug		20 - 29	2.0 - 3.0
			14 - 22
Oil pan drain plug		29 - 39	3.0 - 4.0
			22 - 29

### BRAKE

Disc brake		
Pad minimum thickness	2.0 (0.079)	
Rotor repair limit Runout	0.07 (0.0028)	
Minimum thickness	24.0 (0.945), CL28VD	
Drum brake		
Lining minimum thickness	1.5 (0.059)	
Drum repair limit Maximum inner diameter	296.5 (11.67), LT30A	
Parking brake		
Number of notches*2	5 - 6	

\*1 At pulling force: 196 N (20 kg, 44 lb)

### FRONT WHEEL ALIGNMENT (Unladen\*1)

		2WD	4WD
Camber	Degree minute (Decimal degree)	Minimum	0°03' (0.05°)
		Nominal	0°33' (0.55°)
		Maximum	1°03' (1.05°)
		Left and right difference	45' (0.75°) or less
Caster	Degree minute (Decimal degree)	Minimum	2°04' (2.07°)
		Nominal	2°34' (2.57°)
		Maximum	3°04' (3.07°)
		Left and right difference	45' (0.75°) or less
Kingpin inclination	Degree minute (Decimal degree)	Minimum	10°23' (10.38°)
		Nominal	10°53' (10.88°)
		Maximum	11°23' (11.38°)
Total toe-in	Distance (A - B) mm (in)	Minimum	3 (0.12)
		Nominal	4 (0.16)
		Maximum	5 (0.20)
Angle (left plus right)	Degree minute (Decimal degree)	Minimum	15' (0.25°)
		Nominal	20' (0.33°)
		Maximum	25' (0.42°)
Wheel turning angle	Degree minute (Decimal degree)	Minimum	31°00' (31.00°)
		Nominal	33°00' (33.00°)
		Maximum	33°00' (33.00°)
		Full turn *2	
Full turn *2	Degree minute (Decimal degree)	Minimum	29°00' (29.00°)
		Nominal	31°00' (31.00°)
		Maximum	31°00' (31.00°)
		Maximum	1°00' (31.00°)

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

\*2 Wheel turning force (at circumference of steering wheel) of 98 to 147 N (10 to 15 kg, 22 to 33 lb) with engine idle.

### FRONT WHEEL BEARING

Item	Model		
	2WD	4WD	
Lock nut tightening torque N · m (kg·m, ft·lb)	34 - 39 (3.5 - 4.0, 25 - 29)	—	
Preload (At hub bolt) N (kg, lb)	New seal (1.0 - 2.9, 2.2 - 6.4)	Wheel bearing Tightening torque N·m (kg·m, ft·lb)	78 - 98 (8-10, 58 - 72)
		Retightening torque after loosening wheel bearing lock nut N·m (kg·m, in·lb)	0.5 - 1.5 (0.05 - 0.15, 4.3 - 13.0)
	Used seal (1.0 - 2.4, 2.2 - 5.3)	Axial end play mm (in)	0 (0)
		Turning angle degree	15° - 30°
		Wheel bearing preload at wheel hub bolt N (kg, lb)	7.06 - 20.99 (0.72 - 2.14, 1.59 - 4.72)

### REFILL CAPACITIES

Unit	Metric measure	US measure		
Fuel tank	73.5	19.4 gal		
Coolant (with reservoir)	10.95	11-5/8 qt		
Engine	With oil filter	3.3	3-1/2 qt	
	Without oil filter	3.0	3-1/8 qt	
	Dry engine (engine overhaul)	3.8	4 qt	
Transmission	MT	2WD	2.8	5-7/8 pt
		4WD	5.1	10-3/4 pt
	AT	2WD	8.3	8-3/4 qt
		4WD	8.5	9 qt
Transfer	2.2	2-3/8 qt		
Final drive	Rear	H233B	2.8	5-7/8 pt
	Front	R200A	1.75	3-3/4 pt
Power steering system	1.0 - 1.1	33.8 - 37.2		
Air conditioning system	Lubricant	200 ml	6.8 fl oz	
	Refrigerant *	0.6 - 0.7 kg	1.32 - 1.54 lb	

\*R-134a



# QUICK REFERENCE CHART: FRONTIER   2002

## ENGINE TUNE-UP DATA

Engine model	VG33ER						
Firing order	1-2-3-4-5-6						
Idle speed	rpm	750 <sup>±</sup> 50					
MT (in neutral)		750 <sup>±</sup> 50					
A/T (in "P" or "N" position)		750 <sup>±</sup> 50					
Ignition timing (degree B.T.D.C. at idle speed)	10 <sup>±</sup> 1 <sup>°</sup>						
CO% at idle	Idle mixture screw is preset and sealed at factory						
Spark plug	NGK Double Tipped Platinum						
Type	Standard	PFR6G-11					
	Cold	PFR7G-11					
	Hot	PFR5G-11					
Gap (nominal)	mm (in)	1.1 (0.043)					
Drive belt deflection (Cold)	mm (in)	Used belt					
		Limit	Deflection after adjustment				
	Generator	11 (0.43)	7 - 8 (0.24 - 0.31)	6 - 7 (0.24 - 0.28)			
		Air conditioner compressor and Supercharger	16.5 (0.65)	9.5 - 10.5 (0.374 - 0.413)	8.5 - 9.5 (0.33 - 0.39)		
			Power steering oil pump	15 (0.59)	9.5 - 10.5 (0.374 - 0.413)	8.5 - 9.5 (0.33 - 0.39)	
Drive belt tension	N (kg, lb)	Used belt					
		Limit	Tension after adjustment				
	Generator	226 (23, 51)	554.1-642.4(56.5-65.5, 124.6-144.4)	671.8-760.0(68.5-77.5, 151.0-170.9)			
		Air conditioner compressor and Supercharger	294 (30.66)	730-818(75.5-83.5, 166.5-184.1)	838-926(85.5-94.5, 188.5-208.4)		
	Power steering oil pump		275 (28, 62)	554.1-642.4(56.5-65.5, 124.6-144.4)	671.8-760.0(68.5-77.5, 151.0-170.9)		
Applied pushing force		N (kg, lb)	98 (10, 22)				
Radiator cap relief pressure	kPa (kg/cm <sup>2</sup> , psi)	78 - 98 (0.8 - 1.0, 11 - 14)					
Cooling system leakage testing pressure	kPa (kg/cm <sup>2</sup> , psi)	157 (1.6, 23)					
Compression pressure	Standard	1,196 (12.2, 173)/300					
	Minimum	883 (9.0, 128)/300					
Tightening torque	N-m	kg-m	ft-lb				
				Spark plug	20 - 29	2.0 - 3.0	14 - 22
				Oil pan drain plug	29 - 39	3.0 - 4.0	22 - 29

## FRONT WHEEL BEARING

		Model		
Item		2WD	4WD	
Lock nut tightening torque	N • m (kg•m, ft-lb)	34 - 39 (3.5 - 4.0, 25 - 29)	—	
Preload (At hub bolt)	New seal	9.8 - 28.4 (1.0 - 2.9, 2.2 - 6.4)	Wheel bearing Tightening torque N•m (kg•m, ft-lb)	78 - 98 (8-10, 58 - 72)
			Retightening torque after loosening wheel bearing lock nut N•m (kg•m, in-lb)	0.5 - 1.5 (0.05 - 0.15, 4.3 - 13.0)
	Used seal	9.8 - 23.5 (1.0 - 2.4, 2.2 - 5.3)	Axial end play mm (in)	0 (0)
			Turning angle degree	15 <sup>°</sup> - 30 <sup>°</sup>
			Wheel bearing preload at wheel hub bolt N (kg, lb)	7.06 - 20.99 (0.72 - 2.14, 1.59 - 4.72)

## EQUIPPED WITH VG33ER ENGINE

## BRAKE

		Unit: mm (in)
Disc brake	Pad minimum thickness	2.0 (0.079)
	Rotor repair limit Runout	0.07 (0.0028)
	Minimum thickness	24.0 (0.945), CL28VD
Drum brake	Lining minimum thickness	1.5 (0.059)
	Drum repair limit Maximum inner diameter	296.5 (11.67), LT30A
	Parking brake	
	Number of notches*2	5 - 6

\*1 At pulling force: 196 N (20 kg, 44 lb)

## FRONT WHEEL ALIGNMENT (Unladen\*1)

		2WD	4WD
Camber	Degree minute (Decimal degree)	Minimum	0°03' (0.05 <sup>°</sup> )
		Nominal	0°33' (0.55 <sup>°</sup> )
		Maximum	1°03' (1.05 <sup>°</sup> )
		Left and right difference	45' (0.75 <sup>°</sup> ) or less
Caster	Degree minute (Decimal degree)	Minimum	2°04' (2.07 <sup>°</sup> )
		Nominal	2°34' (2.57 <sup>°</sup> )
		Maximum	3°04' (3.07 <sup>°</sup> )
		Left and right difference	45' (0.75 <sup>°</sup> ) or less
Kingpin inclination	Degree minute (Decimal degree)	Minimum	10°23' (10.38 <sup>°</sup> )
		Nominal	10°53' (10.88 <sup>°</sup> )
		Maximum	11°23' (11.38 <sup>°</sup> )
Total toe-in	Distance (A - B) mm (in)	Minimum	3 (0.12)
		Nominal	4 (0.16)
		Maximum	5 (0.20)
		Angle (left plus right)	Degree minute (Decimal degree)
Nominal	20' (0.33 <sup>°</sup> )		
Maximum	25' (0.42 <sup>°</sup> )		
Wheel turning angle	Degree minute (Decimal degree)	Minimum	30°48' (30.80 <sup>°</sup> )
		Nominal	32°48' (32.80 <sup>°</sup> )
		Maximum	32°48' (32.80 <sup>°</sup> )
		Full turn *2	Inside
Nominal	30°42' (30.70 <sup>°</sup> )		
Outside	Minimum		28°42' (28.70 <sup>°</sup> )
	Maximum		30°42' (30.70 <sup>°</sup> )

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

\*2 Wheel turning force (at circumference of steering wheel) of 98 to 147 N (10 to 15 kg, 22 to 33 lb) with engine idle.

## REFILL CAPACITIES

Unit		Metric measure	US measure	
Fuel tank		73.5	19.4 gal	
Coolant (with reservoir)		10.95	11-5/8 qt	
Engine	Drain and refill	With oil filter	3.3	3-1/2 qt
		Without oil filter	3.0	3-1/8 qt
	Dry engine (engine overhaul)		3.8	4 qt
Transmission	MT	2WD	2.8	5-7/8 pt
		4WD	5.1	10-3/4 pt
	AT	2WD	8.3	8-3/4 qt
		4WD	8.5	9 qt
Transfer		2.2	2-3/8 qt	
Final drive	Rear	H233B	2.8	5-7/8 pt
	Front	R200A	1.75	3-3/4 pt
Power steering system		1.0 - 1.1	33.8 - 37.2	
Air conditioning system	Lubricant	200 ml	6.8 fl oz	
	Refrigerant *	0.6 - 0.7 kg	1.32 - 1.54 lb	

\*R-134a