# FRONT SUSPENSION

#### FSU

F

Н

L

M

D

# **CONTENTS**

PRECAUTIONS	. 2
Precautions	2
PREPARATION	. 3
Special Service Tools	
Commercial Service Tools	3
NOISE, VIBRATION, AND HARSHNESS (NVH)	
TROUBLESHOOTING	4
NVH Troubleshooting Chart	
FRONT SUSPENSION ASSEMBLY	5
Components	
ON-VEHICLE SERVICE	
Front Suspension Parts	6
Front Wheel Alignment	
PRELIMINARY INSPECTION	6
GENERAL INFORMATION AND RECOMMEN-	
DATIONS	
THE ALIGNMENT PROCESS	
CAMBER AND CASTER	
TOE-IN	
FRONT WHEEL TURNING ANGLE	
COIL SPRING AND SHOCK ABSORBER	
Removal and Installation	
REMOVAL	
INSTALLATION	
Disassembly and Assembly	
DISASSEMBLY	
INSPECTION AFTER DISASSEMBLY	11
ASSEMBLY	11

STABILIZER BAR	. 12
Removal and Installation	. 12
REMOVAL	. 12
INSPECTION AFTER REMOVAL	. 12
INSTALLATION	. 12
UPPER LINK	
Removal and Installation	. 13
REMOVAL	
INSPECTION AFTER REMOVAL	. 13
INSTALLATION	. 13
LOWER LINK	
Removal and Installation	. 14
REMOVAL	. 14
INSPECTION AFTER REMOVAL	. 14
INSTALLATION	
UPPER BALL JOINT AND LOWER BALL JOINT	
Removal and Installation	
Inspection	. 15
SWINGING FORCE	
TURNING FORCE	
VERTICAL END PLAY	
KNUCKLE	
On-Vehicle Inspection and Service	
Removal and Installation	. 17
REMOVAL	
INSPECTION AFTER REMOVAL	. 18
INSTALLATION	
SERVICE DATA AND SPECIFICATIONS (SDS)	. 19
General Specifications (Front)	. 19
Wheel Alignment (Unladen*1)	. 19
Ball Joint	
Wheelarch Height (Unladen*1)	. 20

#### **PRECAUTIONS**

PRECAUTIONS PFP:00001

Precautions

 When installing the rubber bushings, the final tightening must be done under unladen condition and with the tires on level ground. Oil will shorten the life of the rubber bushings, so wipe off any spilled oil immediately.

- Unladen condition means the fuel tank, engine coolant and lubricants are at the full specification. The spare tire, jack, hand tools, and mats are in their designated positions.
- After installing suspension components, check the wheel alignment.
- Lock nuts are not reusable. Always use new lock nuts for installation. New lock nuts are pre-oiled, do not apply any additional lubrication.

#### **PREPARATION**

REPARATION		PFP:00002
pecial Service Tools		EES001C
e actual shapes of Kent-Moore tools	may differ from those of special service too	ols illustrated here.
Tool number (Kent-Moore No.) Tool name		Description
ST29020001 (J-24319-01) Gear arm puller	c a NT694	Removing ball joint for steering knuckle a: 34 mm (1.34 in) b: 6.5 mm (0.256 in) c: 61.5 mm (2.421 in)
HT72520000 (J-25730-A) Ball joint remover	a b PAT,P	Removing tie-rod outer end a: 33 mm (1.30 in) b: 50 mm (1.97 in) r: 11.5 mm (0.453 in)
	NT546	
ommercial Service To	NT546	Description EES001C
		Description  Measure wheel alignment a: Screw M24 x 1.5 pitch b: 35 mm (1.38 in) dia. c: 65 mm (2.56 in) dia. d: 56 mm (2.20 in) e: 12 mm (0.47 in)
Tool name	ols	Description  Measure wheel alignment a: Screw M24 x 1.5 pitch b: 35 mm (1.38 in) dia. c: 65 mm (2.56 in) dia. d: 56 mm (2.20 in)

PBIC0190E

#### NOISE, VIBRATION, AND HARSHNESS (NVH) TROUBLESHOOTING

# NOISE, VIBRATION, AND HARSHNESS (NVH) TROUBLESHOOTING NVH Troubleshooting Chart

PFP:00003

EES001CC

Use the chart below to help you find the cause of the symptom. Repair or replace parts as necessary.

Reference page		FSU-5	<u>FSU-10</u>	FSU-5	FSU-5	<u>FSU-11</u>	FSU-5	ESU-6, "Front Wheel Alignment"	FSU-12, "INSPECTION AFTER REMOVAL"	PR-3, "NVH Troubleshooting Chart"	FFD-6, "NVH Troubleshooting Chart"	FAX-4, "NVH Troubleshooting Chart"	FAX-4, "NVH Troubleshooting Chart"	WT-4, "NVH Troubleshooting Chart"	WT-4, "NVH Troubleshooting Chart"	BR-5, "NVH Troubleshooting Chart"	PS-5, "NVH Troubleshooting Chart"
Possible Cause and SUSPECTED PARTS		Improper installation, looseness	Shock absorber deformation, damage or deflection	Bushing or mounting deterioration	Parts interference	Spring fatigue	Suspension looseness	Incorrect wheel alignment	Stabilizer bar fatigue	PROPELLER SHAFT	FRONT FINAL DRIVE	DRIVE SHAFT	WHEEL HUB	TIRES	ROAD WHEEL	BRAKES	STEERING
Noise		×	×	×	×	×	×			×	×	×	×	×	×	×	×
	Shake	×	×	×	×		×			×		×	×	×	×	×	×
Symptom	Vibration	×	×	×	×	×				×		×	×	×			×
Cympioni	Shimmy	×	×	×	×			×					×	×	×	×	×
	Shudder	×	×	×									×	×	×	×	×
	Poor quality ride or handling	×	×	×	×	×		×	×				×	×	×		

x: Applicable

#### FRONT SUSPENSION ASSEMBLY PFP:54010 Α **Components** EES001CD SEC. 391 • 400 • 401 53.9 (5.5, 40) В (1)29.5 (3.0, 22) D (2) (17) (16) FSU 134 (14, 99) 3 145 (15, 107) (4) 78.5 (8.0, 58) Н **5** 83.5 (8.5, 62) 132.5 (14, 98) 95 (9.7, 70) 128 (13, 94) M 18.5 (1.9, 14) 11) (12) WEIA0156E 1. Dust cover 2. Shock absorber 3. Upper link 4. Steering knuckle 5. Cotter pin 6. Cam bolt 7. Jounce bumper Cam washer 9. Lower link 8. 10. Stabilizer bar Stabilizer bar bushing 11. 12. Stabilizer bar mounting bracket 13. Connecting rod Coil spring 15. Upper seat 16. Upper spring seat 17. Shock absorber bushing 18. Shock absorber mounting insulator 19. Spacer 20. Washer Front

#### ON-VEHICLE SERVICE

#### **ON-VEHICLE SERVICE**

PFP:00000

FFS001CF

#### **Front Suspension Parts**

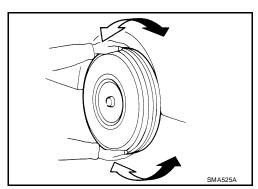
Check front suspension parts for excessive play, cracks, wear and other damage.

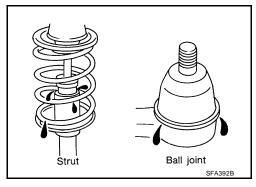
- Shake each front wheel to check for excessive play.
   If looseness is noted, inspect wheel bearing end play, then check ball joint end play. Refer to <u>FAX-5</u>, "WHEEL BEARING <u>INSPECTION</u>" and <u>FSU-15</u>, "Inspection".
- Make sure that the cotter pin is inserted (4WD only).
- Retighten all nuts and bolts to the specified torque.

Suspension component torque

: Refer to <u>FSU-5</u>, <u>"Components"</u>.

- Check shock absorber for oil leakage and other damage.
- Check suspension ball joint for grease leakage and ball joint dust cover for cracks and other damage.





# Front Wheel Alignment PRELIMINARY INSPECTION

EES0025R

#### WARNING

Always adjust the alignment with the vehicle on a flat surface.

#### NOTF:

If alignment is out of specification, inspect and replace any damaged or worn suspension parts before making any adjustments.

- 1. Check and adjust the wheel alignment with the vehicle under unladen conditions. "Unladen conditions" means that the fuel, coolant, and lubricant are full; and that the spare tire, jack, hand tools and mats are in their designated positions.
- 2. Check the tires for incorrect air pressure and excessive wear.
- Check the wheels for run out and damage. Refer to <u>WT-5, "Inspection"</u>.
- 4. Check the wheel bearing axial end play. Refer to FAX-5, "WHEEL BEARING INSPECTION".
- 5. Check the shock absorbers for leaks or damage.
- 6. Check each mounting point of the suspension components for any excessive looseness or damage.
- 7. Check each link, arm, and the rear suspension member for any damage.
- 8. Check the vehicle height. Refer to FSU-20, "Wheelarch Height (Unladen\*1)".
  - Verify the level using Consult-II memory register 1103 and set to 0 ± 10 mm (0 ± 0.39 in) as necessary.

#### **GENERAL INFORMATION AND RECOMMENDATIONS**

- A Four-Wheel Thrust Alignment should be performed.
  - This type of alignment is recommended for any NISSAN vehicle.
  - The four-wheel "thrust" process helps ensure that the vehicle is properly aligned and the steering wheel
    is centered.
  - The alignment machine itself should be capable of accepting any NISSAN vehicle.
  - The alignment machine should be checked to ensure that it is level.
- 2. Make sure the alignment machine is properly calibrated.
  - Your alignment machine should be regularly calibrated in order to give correct information.

Check with the manufacturer of your specific alignment machine for their recommended Service/Calibration Schedule.

#### THE ALIGNMENT PROCESS

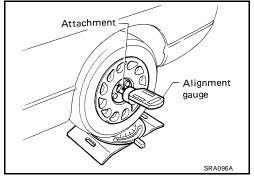
**IMPORTANT:** Use only the alignment specifications listed in this Service Manual. Refer to  $\underline{\mathsf{FSU-19}}$ , "Wheel Alignment (Unladen\*1)"

- 1. When displaying the alignment settings, many alignment machines use "indicators": (Green/red, plus or minus, Go/No Go). **Do NOT use these indicators.** 
  - The alignment specifications programmed into your alignment machine that operate these indicators may not be correct.
  - This may result in an ERROR.
- Some newer alignment machines are equipped with an optional "Rolling Compensation" method to "compensate" the sensors (alignment targets or head units). Do NOT use this "Rolling Compensation" method.
  - Use the "Jacking Compensation" method. After installing the alignment targets or head units, raise the vehicle and rotate the wheels 1/2 turn both ways.
  - See Instructions in the alignment machine you are using for more information.

#### **CAMBER AND CASTER**

1. Measure camber and caster of both the right and left wheels with a suitable alignment gauge and adjust as necessary to specification.

Camber : Refer to <u>FSU-19</u>, "Wheel Alignment and caster (Unladen\*1)" .



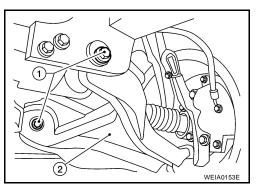
2. If outside of the specified value, adjust camber and caster using the cam bolts (1) in the front lower link (2).

#### CAUTION:

After adjusting the camber and caster check the toe-in.

#### NOTE:

Camber changes about 3' (0.05°) with each graduation of one cam bolt (1). Refer to table below for examples of lower link cam bolt (1) effect on camber and caster.



Rear cam bolt	1 In	1 Out	1 ln	1 Out	0	0	1 In	1 Out
Front cam bolt	1 Out	1 In	1 In	1 Out	1 ln	1 Out	0	0
Camber Degree minute (Decimal degree)	0 (0)	0 (0)	7' (0.12°)	- 7' (-0.12°)	3' (0.05°)	- 3' (-0.05°)	3' (0.05°)	- 3' (-0.05°)
Caster Degree minute (Decimal degree)	- 14' (-0.23°)	14' (0.23°)	0 (0)	0 (0)	7' (0.12°)	- 7' (-0.12°)	- 7' (-0.12°)	7' (0.12°)

3. Tighten the cam bolt nuts to specification. Refer to FSU-5, "Components" .

#### TOE-IN

#### **WARNING:**

Revision: August 2006

- Always perform the following procedure on a flat surface.
- Make sure that no person is in front of the vehicle before pushing it.

**FSU-7** 2007 Titan

FSU

D

Α

G

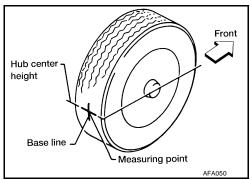
Н

K

L

#### ON-VEHICLE SERVICE

- 1. Bounce the front of vehicle up and down to stabilize the vehicle height (posture).
- 2. Push the vehicle straight ahead about 5 m (16 ft).
- Put a mark on base line of the tread (rear side) of both front tires at the same height as hub center as shown. These marks are measuring points.



- 4. Measure the distance "A" on the rear side of the front tires as shown.
- 5. Push the vehicle slowly ahead to rotate the wheels 180° degrees (1/2 a turn).

#### **CAUTION:**

If the wheels have rotated more than 180° (1/2 turn), start this procedure again from the beginning. Never push the vehicle backward.

6. Measure the distance "B" on the front side of the front tires at the same marks as shown. Total toe-in is calculated as "A" – "B".

Total toe-in : Refer to <u>FSU-19</u>, <u>"Wheel Alignment</u> (<u>Unladen\*1)"</u> .

- Adjust the toe-in by varying the length of the steering outer socket.
- a. Loosen the outer tie-rod lock nuts.
- b. Adjust the toe-in by screwing the outer tie-rods in or out.

Standard length "L" : Refer to PS-28, "Steering Outer Socket and Inner Socket".

c. Tighten the outer tie-rod lock nuts to specification.

Lock nut : Refer to PS-18, "Disassembly and Assembly" .

# Inner socket Lock nut Outer socket SGIA0167E

#### FRONT WHEEL TURNING ANGLE

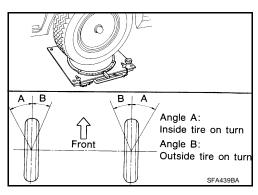
#### NOTE:

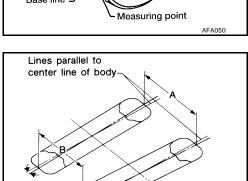
Check front wheel turning angle after the toe-in inspection.

- Place front wheels on turning radius gauges in straight ahead position and rear wheels on stands so that vehicle can be level. Check the maximum inner and outer wheel turning angles for LH and RH road wheels.
- 2. Start engine and run at idle, turn steering wheel all the way right and left, measure the turning angle.

Wheel turning angle (full turn) : Refer to FSU-19, "Wheel Alignment (Unladen\*1)" .

- Any turning angles are not adjustable. If any of steering angles are out of the specification, check if the following parts are worn or damaged.
- Steering gear
- Steering column
- Front suspension components





Total toe-in = A - B

SFA234AC

#### **ON-VEHICLE SERVICE**

Α

В

С

D

F

G

Н

M

If found that they are worn or damaged, replace them with new ones. FSU

#### **COIL SPRING AND SHOCK ABSORBER**

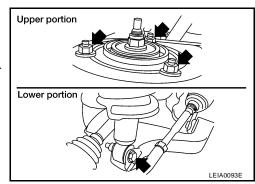
#### **COIL SPRING AND SHOCK ABSORBER**

PFP:56210

FFS0025S

# Removal and Installation REMOVAL

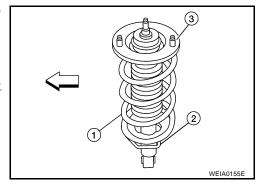
- 1. Remove the wheel and tire using power tool.
- 2. Remove the shock absorber lower bolt using power tool.
- 3. Remove the three shock absorber upper nuts using power tool.
- 4. Remove the coil spring and shock absorber assembly.
  - Turn steering knuckle out to gain enough clearance for removal.



#### **INSTALLATION**

Installation is in the reverse order of removal.

- The lower seat step (2) in the shock absorber assembly (1) faces outside of vehicle.
- Upper spring insulator (3)
- ⇐: Front
- Tighten all nuts and bolts to specification. Refer to <u>FSU-5</u>, "Components"
- When installing wheel and tire, refer to <u>WT-7</u>, "Rotation".



EES0025T

# Disassembly and Assembly DISASSEMBLY

1. Set the shock absorber in a vise, then loosen (without removing) the piston rod lock nut as shown.

#### **CAUTION:**

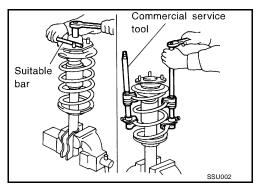
Do not remove piston rod lock nut at this time.

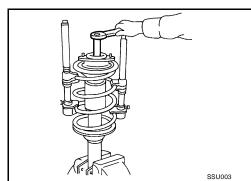
2. Compress the spring using tool until the shock absorber mounting insulator can be turned by hand.

#### **WARNING:**

Make sure that the pawls of the two tools are firmly hooked on the spring. The spring compressors must be tightened alternately and evenly so as not to tilt the spring.

- 3. Remove the piston rod lock nut.
  - Discard the piston rod lock nut, use a new nut for assembly.





#### **COIL SPRING AND SHOCK ABSORBER**

#### **INSPECTION AFTER DISASSEMBLY**

#### **Shock Absorber Assembly**

- Check for smooth operation through a full stroke, both compression and extension.
- Check for oil leakage on welded or gland packing portions.
- Check piston rod for cracks, deformation or other damage and replace if necessary.

#### **Mounting Insulator and Rubber Parts**

Check cemented rubber-to-metal portion for separation or cracks. Check rubber parts for deterioration and replace if necessary.

#### **Coil Spring**

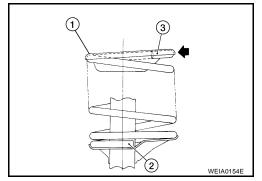
- Check for cracks, deformation or other damage and replace if necessary.
- Check the free spring height.

#### Front spring free height

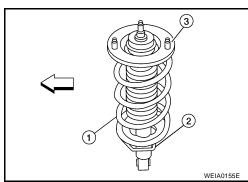
2WD :  $325.5 \pm 3$  mm (12.8  $\pm$  0.1 in) 4WD :  $335.0 \pm 3$  mm (13.2  $\pm$  0.1 in)

#### **ASSEMBLY**

- 1. When installing coil spring on shock absorber, the lower end (2) and upper end (3) must be positioned as shown.
  - Shock absorber mounting insulator (1)
  - ←: Flat tail



- 2. Install upper spring insulator (3) with studs located in line with lower shock mount and in lower seat step (2). The lower seat step (2) in the shock absorber assembly (1) faces outside of vehicle.
  - ⇐: Front
- 3. Tighten the piston rod lock nut to specification. Refer to <u>FSU-5</u>, <u>"Components"</u>.
  - Use a new piston rod lock nut for assembly.



FSU

D

Α

Н

.

K

L

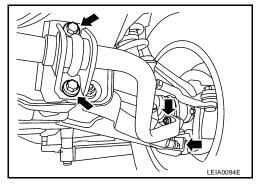
#### **STABILIZER BAR**

STABILIZER BAR PFP:54611

# Removal and Installation REMOVAL

EES001CI

- 1. Remove engine under cover using power tool.
- 2. Remove stabilizer bar mounting bracket bolts and connecting rod nuts using power tool, as shown.
- 3. Remove bushings from stabilizer bar.



#### **INSPECTION AFTER REMOVAL**

- Check stabilizer bar for twist and deformation. Replace if necessary.
- Check rubber bushing for cracks, wear and deterioration. Replace if necessary.

#### **INSTALLATION**

Installation is in the reverse order of removal.

Tighten all nuts and bolts to specification. Refer to <u>FSU-5</u>, "Components".

#### **UPPER LINK**

UPPER LINK
PFP:54524

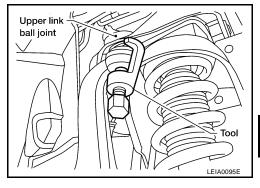
# Removal and Installation REMOVAL

EES001CJ

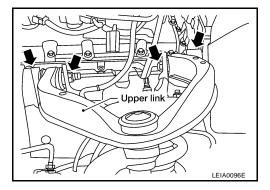
- 1. Remove the wheel and tire using power tool.
- 2. Remove cotter pin and nut from upper link ball joint.
- 3. Separate upper link ball joint stud from steering knuckle using Tool.
  - Support lower link with jack.

Tool number : ST29020001 (J-24319-01)

4. Remove fender protector.



5. Remove upper link bolts and nuts.



#### **INSPECTION AFTER REMOVAL**

#### **Upper Link**

Check for deformation and cracks. Replace if necessary.

#### **Upper Link Ball Joint**

Check for distortion and damage. Replace if necessary.

#### **INSTALLATION**

Installation is in the reverse order of removal.

Tighten all nuts and bolts to specification. Refer to FSU-5, "Components".

#### CAUTION:

Use a new cotter pin for installation of upper link ball joint nut.

- When installing wheel and tire, refer to <u>WT-7, "Rotation"</u>.
- After installation, check that the front wheel alignment is within specification. Refer to <u>FSU-6</u>, "<u>Front</u> Wheel Alignment".

FSU

D

В

F

G

Н

J

Κ

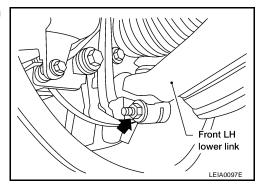
L

LOWER LINK PFP:55020

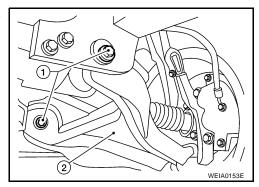
# Removal and Installation REMOVAL

EES001CK

- 1. Remove the wheel and tire using power tool.
- 2. Remove lower shock absorber bolt.
- 3. Remove stabilizer bar connecting rod lower nut using power tool, then separate connecting rod from lower link. Refer to FSU-12, "Removal and Installation".
- 4. Remove drive shaft, if equipped. Refer to FAX-7, "Removal and Installation".
- 5. Remove pinch bolt from steering knuckle using power tool, then separate lower link ball joint from steering knuckle.



6. Remove lower link cam bolts (1) and nuts, then the lower link (2).



#### **INSPECTION AFTER REMOVAL**

#### **Lower Link**

Check for deformation and cracks. Replace if necessary.

#### **Lower Link Bushing**

Check for distortion and damage. Replace if necessary.

#### INSTALLATION

Installation is in the reverse order of removal.

- Tighten all nuts and bolts to specification. Refer to FSU-5, "Components".
- When installing wheel and tire, refer to <u>WT-7</u>, "Rotation".
- After installation, check that the front wheel alignment is within specification. Refer to <u>FSU-6</u>, <u>"Front Wheel Alignment"</u>.

#### UPPER BALL JOINT AND LOWER BALL JOINT

#### UPPER BALL JOINT AND LOWER BALL JOINT

PFP:40110

#### Removal and Installation

FFS001CL

Α

The ball joints are part of the upper and lower links. Refer to FSU-13, "Removal and Installation" (upper link), FSU-14, "Removal and Installation" (lower link).

Inspection FFS001CM

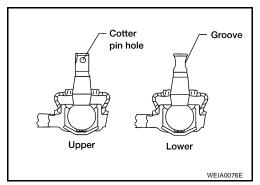
- Check the ball joint for excessive play. Replace the upper or lower link assembly if any of the following exists:
- Ball joint stud is worn.
- Ball joint is hard to swing.
- Ball joint play in axial directions or end play is excessive.

#### **SWINGING FORCE**

#### NOTE:

Before checking the axial forces and end play, turn the lower ball joint at least 10 revolutions so that the ball joint is properly broken in.

- Measure the ball joint swinging force using a suitable tool.
  - Measure at the cotter pin hole for upper ball joint as shown.
  - Measure at the groove for lower ball joint as shown.



2. Verify the ball joint swinging force is within specification.

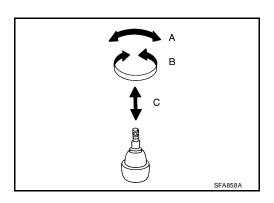
Swinging force "A"

Upper ball joint : 8.1-103.2 N (0.8-10.5 kg-f,

1.8-23.2 lb-f)

: 11.4-145.5 N (1.1-14.8 kg-f, Lower ball joint

2.5-32.7 lb-f)

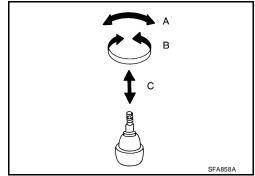


#### **TURNING FORCE**

#### NOTE:

Before checking the axial forces and end play, turn the lower ball joint at least 10 revolutions so that the ball joint is properly broken in.

Turning torque "B" : 0.5 - 6.4 N·m (0.05 - 0.65 kg-m, 4 - 57 in-lb)



FSU

D

F

Н

#### **UPPER BALL JOINT AND LOWER BALL JOINT**

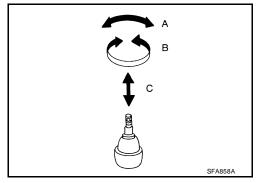
#### **VERTICAL END PLAY**

Check dust cover for damage. Replace it and the cover clamp if necessary.

#### NOTE:

Before checking the axial forces and end play, turn the lower ball joint at least 10 revolutions so that the ball joint is properly broken in.

Vertical end play "C" : 0 mm (0 in)



KNUCKLE PFP:40014

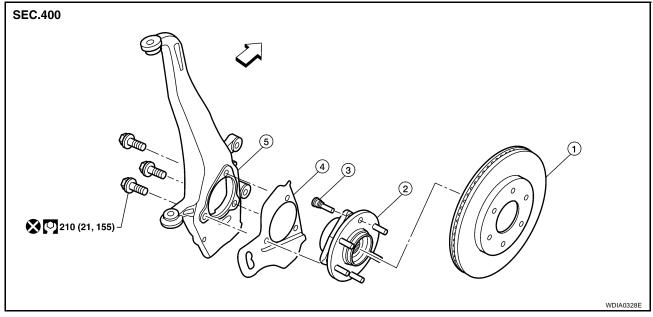
#### **On-Vehicle Inspection and Service**

FES001CN

Make sure the mounting conditions (looseness, backlash) of each component and component status (wear, damage) are within specifications. Refer to FSU-20, "Ball Joint" .

#### Removal and Installation

EES001CO



- 1. Disc rotor
- 4. Splash guard

- 2. Wheel hub and bearing assembly
- 5. Steering knuckle

- 3. Wheel stud
- ← Front

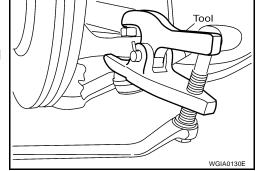
#### **REMOVAL**

- 1. Remove wheel hub and bearing assembly. Refer to FAX-5, "Removal and Installation".
  - Disconnect wheel sensor harness connector. Do not remove wheel sensor from wheel hub and bearing assembly for this procedure.
- 2. Remove steering outer socket from steering knuckle using Tool.

#### **CAUTION:**

- Be careful not to damage ball joint boot.
- Temporarily tighten nut to prevent damage to threads and to prevent Tool from coming off.

Tool number : HT72520000 (J-25730-A)



- 3. Remove the coil spring and shock absorber assembly using power tool. Refer to <u>FSU-10, "COIL SPRING</u> AND SHOCK ABSORBER" .
- 4. Support lower link using a suitable jack.
- 5. Remove cotter pin and nut from upper link ball joint and discard the cotter pin.

FSU

G

Н

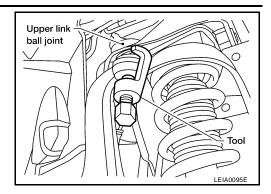
K

L

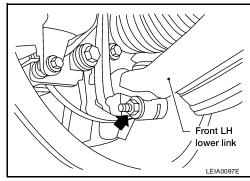
#### **KNUCKLE**

6. Separate upper link ball joint from steering knuckle using Tool.

Tool number : ST29020001 (J-24319-01)



7. Remove pinch bolt from steering knuckle using power tool, then separate lower link ball joint from steering knuckle.



8. Remove steering knuckle from vehicle.

#### **INSPECTION AFTER REMOVAL**

Check for deformity, cracks and damage on each part, replace if necessary.

Perform ball joint inspection. Refer to <u>FSU-15</u>, "<u>Inspection</u>".

#### **INSTALLATION**

Installation is in the reverse order of removal.

Refer to <u>FSU-5</u>, "<u>Components</u>" for tightening torques.

#### **CAUTION:**

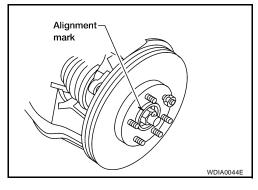
Use a new cotter pin for installation of lock nut.

 When installing disc rotor on wheel hub and bearing assembly, align the marks.

#### NOTE:

When not using the alignment mark, refer to  $\underline{\mathsf{BR-35}}$ , "Front Disc  $\underline{\mathsf{Brake}}$ ".

• When installing wheel and tire, refer to WT-7, "Rotation".



#### **SERVICE DATA AND SPECIFICATIONS (SDS)**

### **SERVICE DATA AND SPECIFICATIONS (SDS)**

PFP:00030

#### **General Specifications (Front)**

Α

В

 $\mathsf{D}$ 

FSU

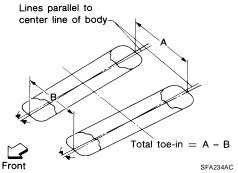
Suspension type	Independent double wishbone coil over shock		
Shock absorber type	Double-acting hydraulic		
Stabilizer	Standard equipment		

#### Wheel Alignment (Unladen\*1)

EES	00	1C(	þ

Drive type		2WD	4WD
	Minimum	-0° 57′ (-0.95°)	-0° 27′ (-0.45°)
Camber Degree minute (decimal degree)	Nominal	-0° 12′ (-0.20°)	0° 18′ (0.30°)
	Maximum	0° 33′ (0.55°)	1° 03′ (1.05°)
	Cross camber	0° 45′ (0.75°) or less	0° 45′ (0.75°) or less
	Minimum	2° 15′ (2.25°)	1° 27′ (1.45°)
Caster	Nominal	3° 0′ (3.00°)	2° 12′ (2.20°)
Degree minute (decimal degree)	Maximum	3° 45′ (3.75°)	2° 57′ (2.95°)
	Cross caster	0° 45′ (0.75°) or less	0° 45′ (0.75°) or less
Kingpin inclination (reference only) Degree minute (decimal degree)	·	13° 33′ (13.55°)	13° 0′ (13.00°)





Total toe-in		Minimum	1.8 mm (0.07 in)	1.8 mm (0.07 in)
	Distance (A – B)	Nominal	2.8 mm (0.11 in)	2.8 mm (0.11 in)
		Maximum	3.8 mm (0.15 in)	3.8 mm (0.15 in)
		Minimum	0° 3′ (0.05°)	0° 3′ (0.05°)
	Angle (left plus right)  Degree minute (decimal degree)	Nominal	0° 5′ (0.08°)	0° 5′ (0.08°)
	Dog. oc minute (documen dog. oc)	Maximum	0° 7′ (0.12°)	0° 7′ (0.12°)
Wheel turning angle	Inside Degree minute (decimal degree)		34° 30′ – 38° 30′ * <sup>2</sup> (34.50° – 38.50°)	34° 56′ – 38° 56′ * <sup>4</sup> (34.93° – 38.93°)
(full turn)	Outside Degree minute (decimal degree)		30° 58′ – 34° 58′ * <sup>3</sup> (30.97° – 34.97°)	31° 01′ – 35° 01′ * <sup>5</sup> (31.02° – 35.02°)

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

<sup>\*2:</sup> Target value 37° 30′ (37.50°)

<sup>\*3:</sup> Target value 33° 58′ (33.97°)

<sup>\*4:</sup> Target value 37° 56′ (37.93°)

<sup>\*5:</sup> Target value 34° 01′ (34.02°)

#### **SERVICE DATA AND SPECIFICATIONS (SDS)**

Ball Joint EESOULCE



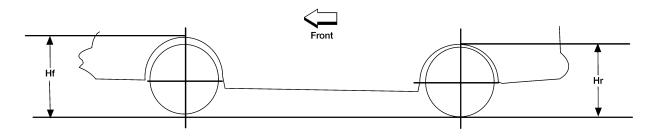
Swinging force "A"	Upper ball joint	8.1 – 103.2 N (0.8 – 10.5 kg-f, 1.8 – 23.2 lb-f) *1
Swinging loice A	Lower ball joint	11.4 – 145.5 N (1.1 – 14.8 kg-f, 2.5 – 32.7 lb-f) *2
Turning torque "B"		0.5 - 6.4 N·m (0.05 - 0.65 kg-m, 4 - 57 in-lb)
Vertical end play "C"	0 mm (0 in)	

<sup>\*1</sup> Measure at cotter pin hole

# Wheelarch Height (Unladen\*1)

EES001CS

Unit: mm (in)



LEIA0085E

Drive type		2WD		4V	VD
Body		King Cab	Crew Cab	King Cab	Crew Cab
	265/70R18	913 (35.9)	916 (36.1)	952 (37.5) *2	955 (37.6) *2
Front wheelarch height (Hf)	285/70R17	914 (36.0)	917 (36.1)	953 (37.5) *2	956 (37.6) *2
()	245/75R17	904 (35.6)	907 (35.7)	941 (37.0)	944 (37.2)
	265/70R18	955 (37.6)	956 (37.6)	995 (39.2) *2	996 (39.2) *2
Rear wheelarch height (Hr)	285/70R17	956 (37.6)	957 (37.7)	996 (39.2) *2	997 (39.3) *2
,	245/75R17	946 (37.2)	947 (37.3)	984 (38.7)	985 (38.8)

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

<sup>\*2</sup> Measure at groove

<sup>\*2:</sup> Includes when equipped with tow package.