

SECTION **FSU**  
FRONT SUSPENSION

A  
B  
C  
D

FSU

CONTENTS

<b>PRECAUTIONS</b> .....	<b>2</b>	<b>UPPER LINK</b> .....	<b>13</b>	F
Precautions .....	2	Removal and Installation .....	13	
<b>PREPARATION</b> .....	<b>3</b>	REMOVAL .....	13	G
Special Service Tools .....	3	INSPECTION AFTER REMOVAL .....	13	
Commercial Service Tools .....	4	INSTALLATION .....	13	H
<b>NOISE, VIBRATION, AND HARSHNESS (NVH)</b>		<b>LOWER LINK</b> .....	<b>14</b>	I
<b>TROUBLESHOOTING</b> .....	<b>5</b>	Removal and Installation .....	14	J
NVH Troubleshooting Chart .....	5	REMOVAL .....	14	
<b>FRONT SUSPENSION ASSEMBLY</b> .....	<b>6</b>	INSPECTION AFTER REMOVAL .....	14	K
Components .....	6	INSTALLATION .....	14	L
<b>ON-VEHICLE SERVICE</b> .....	<b>7</b>	<b>UPPER BALL JOINT AND LOWER BALL JOINT...</b>	<b>15</b>	M
Front Suspension Parts .....	7	Removal and Installation .....	15	
Front Wheel Alignment .....	7	Inspection .....	15	
PRELIMINARY INSPECTION .....	7	SWINGING FORCE .....	15	
CAMBER AND CASTER .....	8	TURNING FORCE .....	15	
TOE-IN .....	8	VERTICAL END PLAY .....	15	
FRONT WHEEL TURNING ANGLE .....	9	<b>KNUCKLE</b> .....	<b>16</b>	
<b>COIL SPRING AND SHOCK ABSORBER</b> .....	<b>10</b>	On-Vehicle Inspection and Service .....	16	
Removal and Installation .....	10	Removal and Installation .....	16	
REMOVAL .....	10	REMOVAL .....	16	
INSTALLATION .....	10	INSPECTION AFTER REMOVAL .....	17	
Disassembly and Assembly .....	10	INSTALLATION .....	18	
DISASSEMBLY .....	10	<b>SERVICE DATA AND SPECIFICATIONS (SDS) .....</b>	<b>19</b>	
INSPECTION AFTER DISASSEMBLY .....	11	General Specifications (Front) .....	19	
ASSEMBLY .....	11	Wheel Alignment (Unladen*1) .....	19	
<b>STABILIZER BAR</b> .....	<b>12</b>	Ball Joint .....	20	
Removal and Installation .....	12	Wheelarch Height (Unladen*1) .....	21	
REMOVAL .....	12			
INSPECTION AFTER REMOVAL .....	12			
INSTALLATION .....	12			

# PRECAUTIONS

---

## PRECAUTIONS

PFP:00001

### Precautions

EES002KG

- 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.

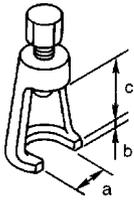
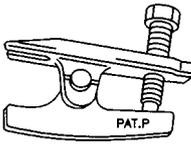
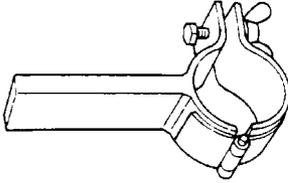
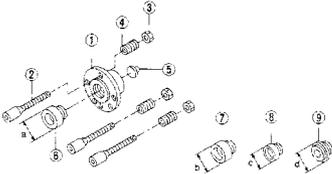
# PREPARATION

## PREPARATION

PFP:00002

### Special Service Tools

EES002K1

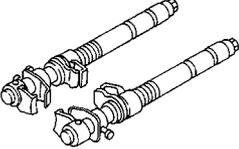
Tool number Tool name	Description
ST29020001 Gear arm puller	 <p style="text-align: center;">NT694</p> Removing ball joint for knuckle <b>a: 34 mm (1.34 in)</b> <b>b: 6.5 mm (0.256 in)</b> <b>c: 61.5 mm (2.421 in)</b>
HT72520000 Ball joint remover	 <p style="text-align: center;">NT146</p> Removing tie-rod outer end
ST35652000 Strut attachment	 <p style="text-align: center;">ZZA0807D</p> Disassembling and assembling strut
KV991040S0 CCK gauge attachment <ol style="list-style-type: none"> <li>1. Plate</li> <li>2. Guide bolts</li> <li>3. Nuts</li> <li>4. Springs</li> <li>5. Center plate</li> <li>6. KV9910 4020 Adapter A a: 72 mm (2.83 in) dia.</li> <li>7. KV9910 4030 Adapter B b: 65 mm (2.56 in) dia.</li> <li>8. KV9910 4040 Adapter C c: 57 mm (2.24 in) dia.</li> <li>9. KV9910 4050 Adapter D d: 53.4 mm (2.102 in) dia.</li> </ol>	 <p style="text-align: center;">S-NT498</p> Measuring wheel alignment

A  
B  
C  
D  
**FSU**  
F  
G  
H  
I  
J  
K  
L  
M

# PREPARATION

## Commercial Service Tools

EES002KJ

Tool name	Description
<p data-bbox="140 257 336 289">Spring compressor</p>  <p data-bbox="836 463 879 480">NT717</p>	<p data-bbox="999 257 1350 289">Removing and installing coil spring</p>

# NOISE, VIBRATION, AND HARSHNESS (NVH) TROUBLESHOOTING

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

PFP:00003

### NVH Troubleshooting Chart

EES002KK

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

Symptom		Possible Cause and SUSPECTED PARTS											Reference page				
		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	DRIVE SHAFT	DIFFERENTIAL	WHEEL HUB AND BEARING		TIRES	ROAD WHEEL	BRAKES	STEERING
Noise	Noise	x	x	x	x	x	x			x	x	x	x	x	x	x	<a href="#">FSU-6</a>
	Shake	x	x	x	x		x			x		x	x	x	x		<a href="#">FSU-10</a>
	Vibration	x	x	x	x	x				x		x	x				<a href="#">FSU-6</a>
	Shimmy	x	x	x	x			x				x	x	x	x		<a href="#">FSU-6</a>
	Shudder	x	x	x							x		x	x	x		<a href="#">FSU-21</a>
	Poor quality ride or handling	x	x	x	x	x		x	x			x	x	x			<a href="#">FSU-7</a>
																	<a href="#">FAX-4, "NVH Troubleshooting Chart"</a>
																	<a href="#">FFD-6, "NVH Troubleshooting Chart"</a>
																	<a href="#">FAX-4, "NVH Troubleshooting Chart"</a>
																	<a href="#">WT-2, "NVH Troubleshooting Chart"</a>
																	<a href="#">WT-2, "NVH Troubleshooting Chart"</a>
																	<a href="#">BR-5, "NVH Troubleshooting Chart"</a>
																	<a href="#">PS-5, "NVH Troubleshooting Chart"</a>

x: Applicable

A  
B  
C  
D  
FSU  
F  
G  
H  
I  
J  
K  
L  
M

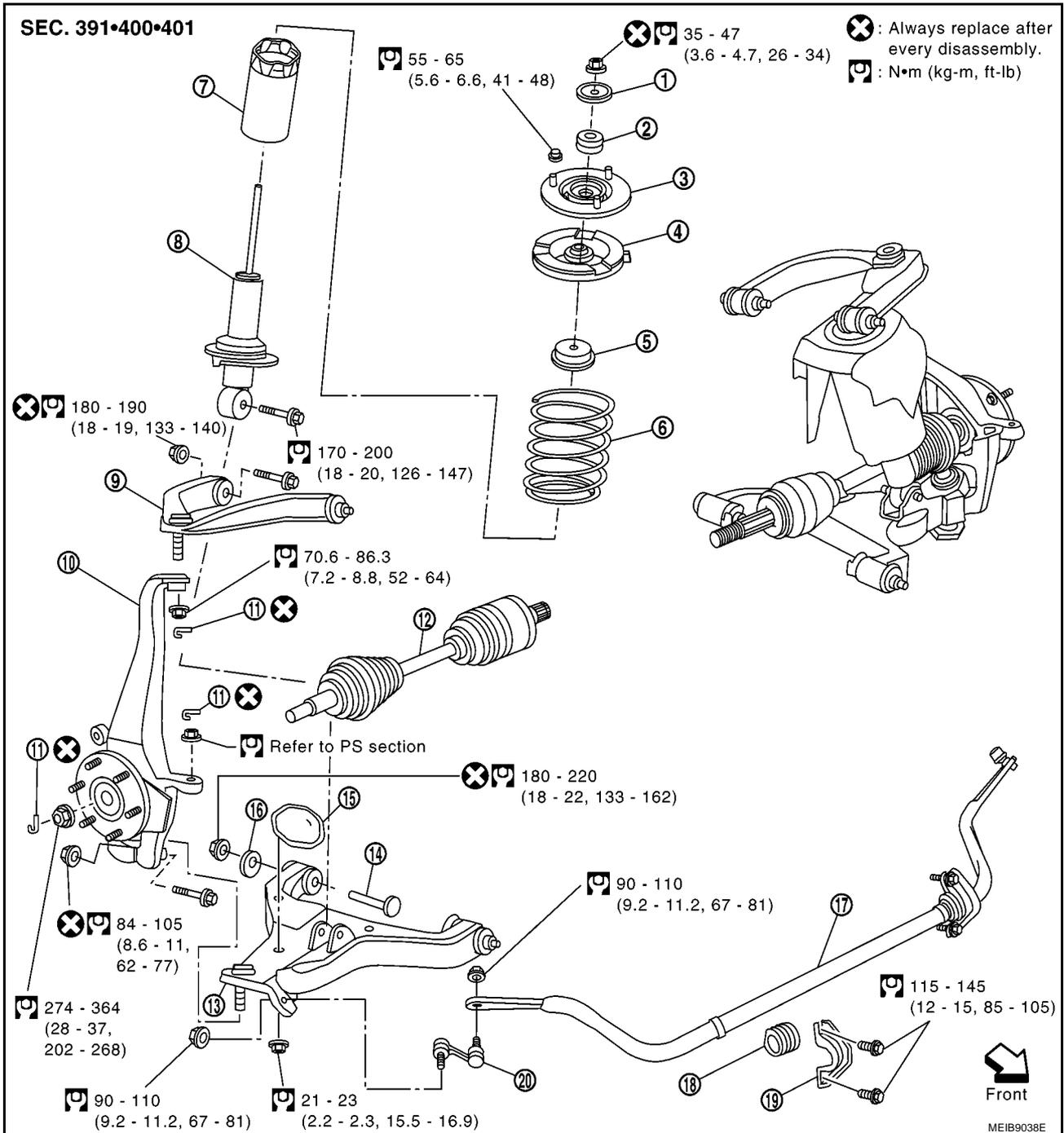
# FRONT SUSPENSION ASSEMBLY

PFP:54010

## FRONT SUSPENSION ASSEMBLY

### Components

EES002KL



- |                                     |                    |                                      |
|-------------------------------------|--------------------|--------------------------------------|
| 1. Washer                           | 2. Spacer          | 3. Shock absorber mounting insulator |
| 4. Upper spring seat                | 5. Dust cover cap  | 6. Coil spring                       |
| 7. Dust cover                       | 8. Shock absorber  | 9. Upper link                        |
| 10. Steering knuckle                | 11. Cotter pin     | 12. Drive shaft (4WD models only)    |
| 13. Lower link                      | 14. Cam bolt       | 15. Jounce bumper                    |
| 16. Cam washer                      | 17. Stabilizer bar | 18. Stabilizer bar bushing           |
| 19. Stabilizer bar mounting bracket | 20. Connecting rod |                                      |

# ON-VEHICLE SERVICE

## ON-VEHICLE SERVICE

PPF:00000

### Front Suspension Parts

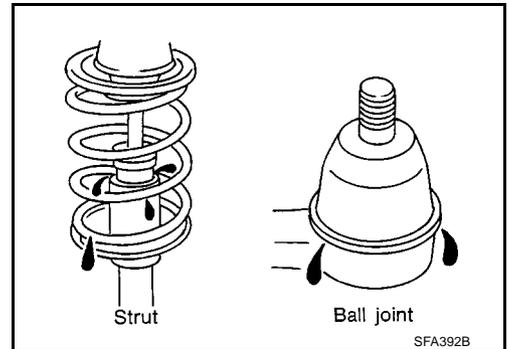
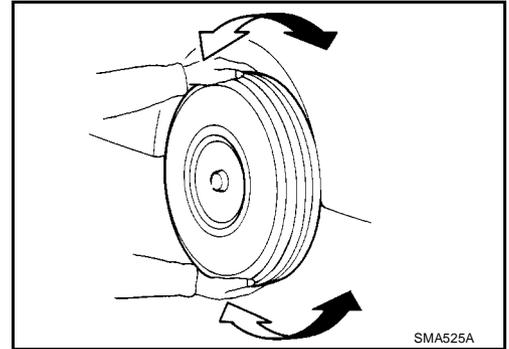
EES002KM

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 [FSU-15, "Inspection"](#).
- Make sure that the cotter pin is inserted in drive shaft end (4WD models only).
- Retighten all nuts and bolts to the specified torque.

**Suspension component torques** : Refer to [FSU-6, "Components"](#).

- 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

EES002KN

#### **WARNING:**

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

#### **NOTE:**

If alignment is out of specification, inspect and replace any damaged or worn rear 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.
3. Check the wheels for run out and damage. Refer to [WT-3, "Inspection"](#).
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-21, "Wheelarch Height \(Unladen\\*1\)"](#).

A  
B  
C  
D  
FSU  
F  
G  
H  
I  
J  
K  
L  
M

# ON-VEHICLE SERVICE

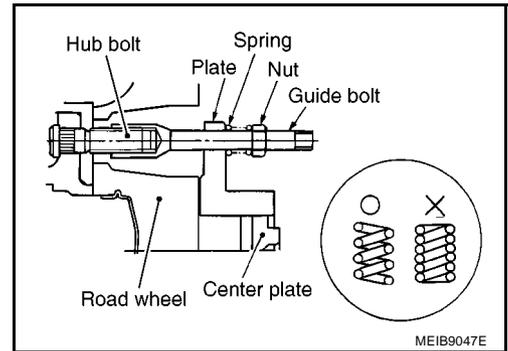
## CAMBER AND CASTER

1. Install CCK gauge attachment (SST: KV991040S0) as following procedure in wheel.

- a. Remove wheel nuts (2), and install a guide bolt to hub bolt.
- b. Screw center plate into plate.
- c. Insert plate on guide bolt. Put spring in, and then evenly screw both guide bolt nut. When fastening guide bolt nut, do not completely compress spring.

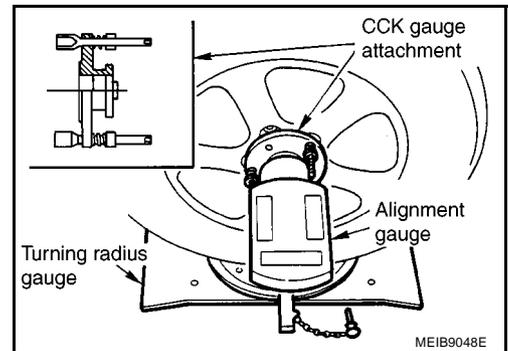
**CAUTION:**

**Do not use any adapter for attaching the attachment.**



- d. Place the dent of alignment gauge onto the projection of center plate and tightly contact them to measure.
2. Measure camber and caster of both the right and left wheels with a suitable alignment gauge and adjust as necessary to specifications.

**Camber, caster, kingpin inclination angles** : Refer to [FSU-7, "Front Wheel Alignment"](#) .



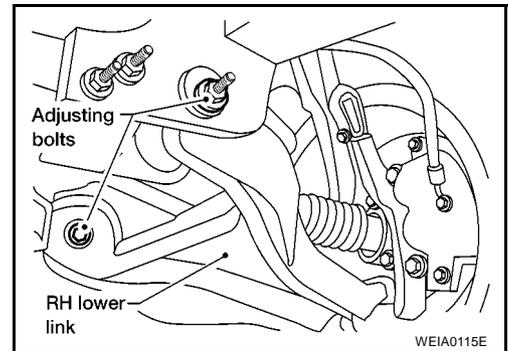
3. If outside of the specified value, adjust camber and caster using the adjusting bolts in the front lower link.

**CAUTION:**

**After adjusting the camber then check the toe-in.**

**NOTE:**

Camber changes about  $0^{\circ}7'$  ( $0.12^{\circ}$ ), and caster changes about  $0^{\circ}12'$  ( $0.20^{\circ}$ ) with each graduation of one adjusting bolt. Refer to table below for examples of lower link adjusting bolt effect on camber and caster.



Rear adjusting bolt	1 In	1 Out	1 In	1 Out	0	0	1 In	1 Out
Front adjusting bolt	1 Out	1 In	1 In	1 Out	1 In	1 Out	0	0
Camber Degree minute (Decimal degree)	0 (0)	0 (0)	$0^{\circ}14'$ ( $0.23^{\circ}$ )	$-0^{\circ}14'$ ( $-0.23^{\circ}$ )	$0^{\circ}7'$ ( $0.12^{\circ}$ )	$-0^{\circ}7'$ ( $-0.12^{\circ}$ )	$0^{\circ}7'$ ( $0.12^{\circ}$ )	$-0^{\circ}7'$ ( $-0.12^{\circ}$ )
Caster Degree minute (Decimal degree)	$-0^{\circ}23'$ ( $-0.38^{\circ}$ )	$0^{\circ}23'$ ( $0.38^{\circ}$ )	0 (0)	0 (0)	$0^{\circ}12'$ ( $0.20^{\circ}$ )	$-0^{\circ}12'$ ( $-0.20^{\circ}$ )	$-0^{\circ}12'$ ( $-0.20^{\circ}$ )	$0^{\circ}12'$ ( $0.20^{\circ}$ )

4. Tighten the adjusting bolt nuts to specification. Refer to [FSU-6, "Components"](#) .

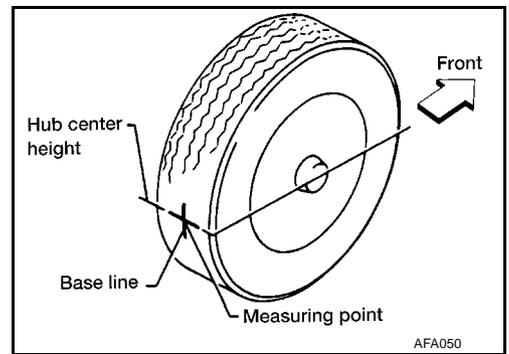
## TOE-IN

**WARNING:**

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

# ON-VEHICLE SERVICE

- 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.



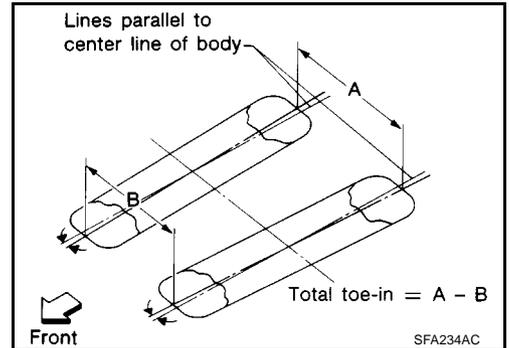
- Measure the distance "A" on the rear side of the front tires as shown.
- Push the vehicle slowly ahead to rotate the wheels 180° degrees (1/2 a turn).

**CAUTION:**

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

- 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 [FSU-19, "Wheel Alignment \(Unladen\\*1\)"](#) .

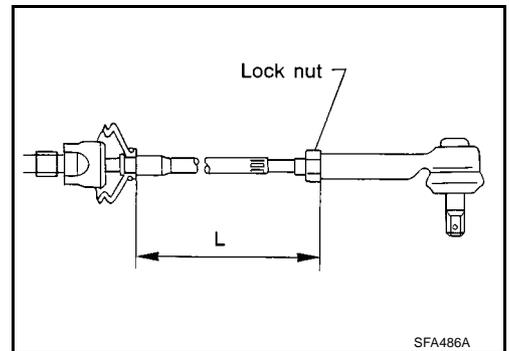


- Adjust the toe-in by varying the length of the steering outer tie-rods.
  - Loosen the outer tie-rod lock nuts.
  - Adjust the toe-in by screwing the outer tie-rods in or out.

**Standard length "L"** : Refer to [PS-14, "POWER STEERING GEAR AND LINK-AGE"](#) .

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

**Lock nut** : Refer to [PS-14, "Removal and Installation"](#) .



## FRONT WHEEL TURNING ANGLE

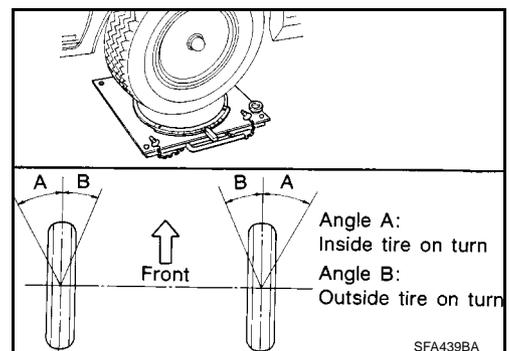
**NOTE:**

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



# COIL SPRING AND SHOCK ABSORBER

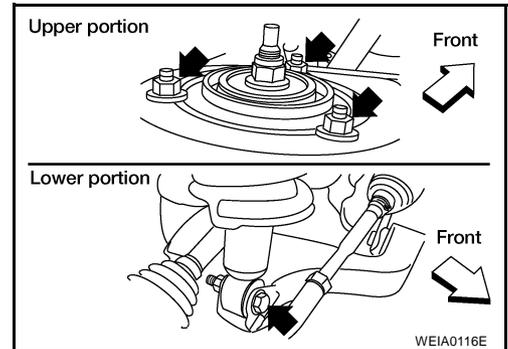
## COIL SPRING AND SHOCK ABSORBER

PFP:56210

### Removal and Installation REMOVAL

EES002KO

1. Remove the wheel.
2. Support the lower link using a suitable jack.
3. Remove connecting rod upper joints from stabilizer bar. Refer to [FSU-6, "Components"](#).
  - Swing stabilizer bar down, repositioning it out of the way to access shock absorber lower mount.
4. Remove the shock absorber lower bolt and nut.
5. Remove the three shock absorber upper mounting nuts.
6. 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 step in the strut assembly lower seat faces outside of vehicle.
- Tighten all nuts and bolts to specification. Refer to [FSU-6, "Components"](#).
- When installing wheel and tire, refer to [WT-5, "Rotation"](#).

### Disassembly and Assembly DISASSEMBLY

EES002KP

1. Install strut attachment to strut and fix it in a vise.

#### **CAUTION:**

**When installing strut attachment, wrap a shop cloth around strut to protect it from damage.**

2. Slightly loosen piston rod lock nut.

#### **WARNING:**

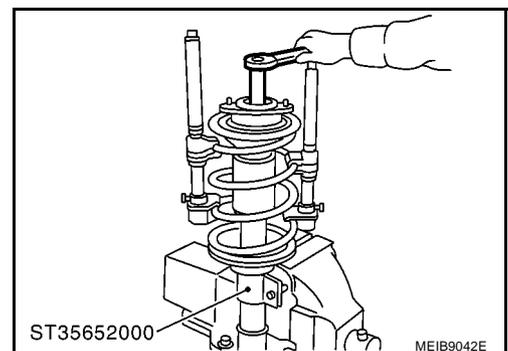
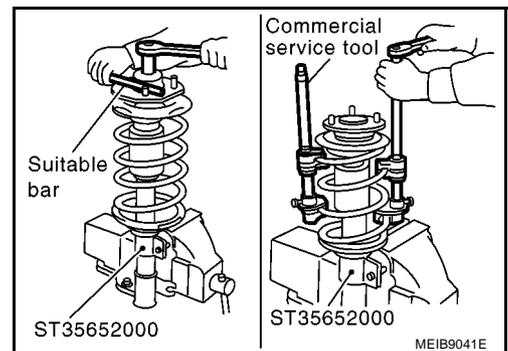
**Do not remove piston rod lock nut completely. If it is removed completely, coil spring jumps out and may cause serious damage or injury.**

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

#### **WARNING:**

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

4. Remove the piston rod lock nut.
  - Discard the piston rod lock nut, use a new nut for assembly.
5. Remove the components from the shock absorber.
  - Keep the spring compressed in the commercial service tool if reusing it 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

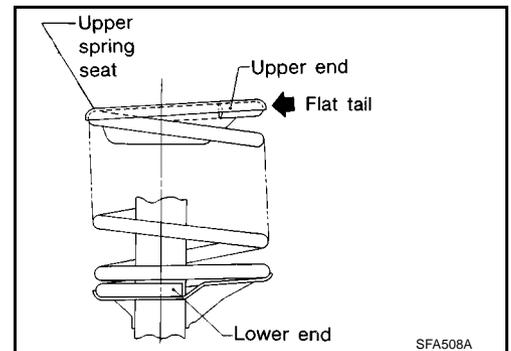
Check cemented rubber-to-metal portion for separation or cracks. Check rubber parts for deterioration and replace if necessary.

### Coil Spring

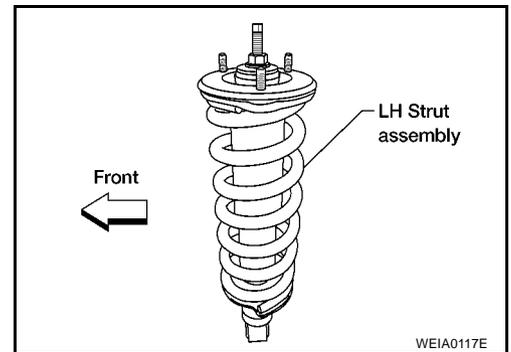
- Check for cracks, deformation or other damage and replace if necessary.

## ASSEMBLY

1. When installing coil spring on strut, it must be positioned as shown.



2. Install the shock absorber mounting insulator as shown in line with lower shock mount and step in lower seat.
  - The step in the strut assembly lower seat faces outside of vehicle.
3. Tighten the piston rod lock nut to specification. Refer to [FSU-6. "Components"](#).
  - Use a new piston rod lock nut for assembly.



# STABILIZER BAR

## STABILIZER BAR

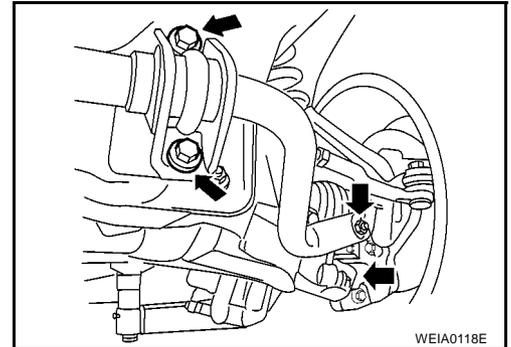
PFP:54611

### Removal and Installation

EES002KQ

#### REMOVAL

1. Remove the front valance center.
2. Remove engine undercover.
3. Remove connecting rod nuts, as shown.
4. Loosen top bolts for stabilizer bar mounting brackets, then remove lower bolts from mounting brackets and remove stabilizer bar.
5. 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 with vehicle under unladen conditions. Refer to [FSU-6, "Components"](#).

# UPPER LINK

## UPPER LINK

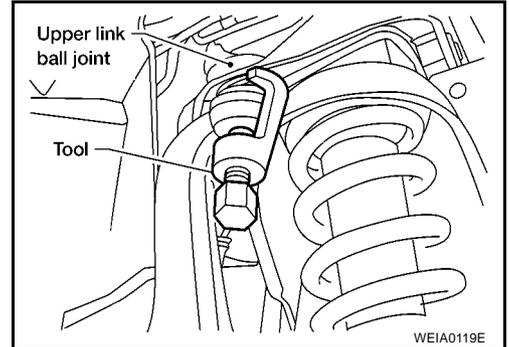
PFP:54524

### Removal and Installation

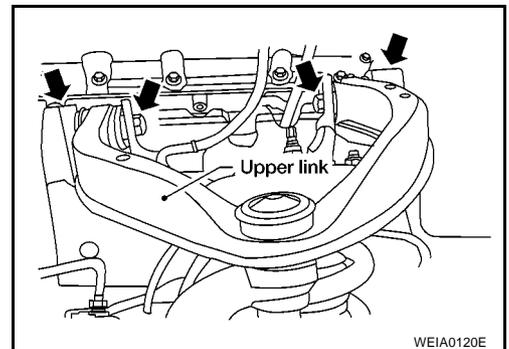
EES002KR

1. Remove the wheel.
2. Support the lower link using a suitable jack.
3. Remove cotter pin and nut from upper link ball joint.
4. Separate upper link ball joint stud from steering knuckle using Tool.

**Tool number : ST29020001**



5. Remove upper link mounting 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 with vehicle under unladen conditions. Refer to [FSU-6, "Components"](#).

#### **CAUTION:**

**Discard the old cotter pin; replace with a new one.**

- When installing wheel and tire, refer to [WT-5, "Rotation"](#).
- After installation, check that the front wheel alignment is within specification. Refer to [FSU-7, "Front Wheel Alignment"](#).

# LOWER LINK

PFP:55020

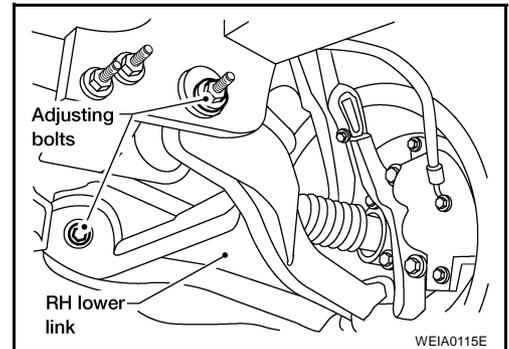
EES002KS

## LOWER LINK

### Removal and Installation

#### REMOVAL

1. Remove the wheel.
2. Remove stabilizer bar connecting rod. Refer to [FSU-12, "Removal and Installation"](#).
3. Remove lower shock absorber bolt.
4. Remove steering knuckle. Refer to [FSU-16, "Removal and Installation"](#).
5. Remove lower link adjusting bolts and nuts, then the lower link.



6. Remove the jounce bumper from the lower link.

#### INSPECTION AFTER REMOVAL

##### Lower Link

Check for deformation and cracks. Replace if necessary.

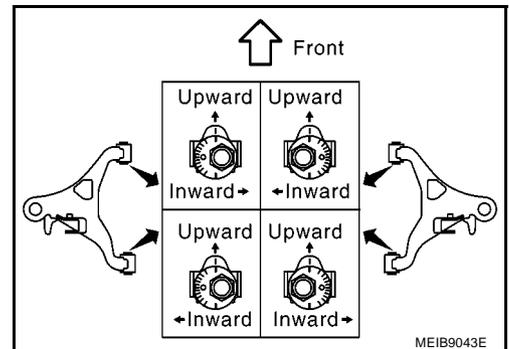
##### Lower Link Bushing

Check for distortion and damage. Replace if necessary.

#### INSTALLATION

Installation is in the reverse order of removal.

- Install cam bolts as shown.
- Tighten all nuts and bolts to specification with vehicle under unladen conditions. Refer to [FSU-6, "Components"](#).
- When installing wheel and tire, refer to [WT-5, "Rotation"](#).
- After installation, check that the front wheel alignment is within specification. Refer to [FSU-7, "Front Wheel Alignment"](#).



# UPPER BALL JOINT AND LOWER BALL JOINT

## UPPER BALL JOINT AND LOWER BALL JOINT

PFP:40110

### Removal and Installation

EES002KT

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

EES002KU

- 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

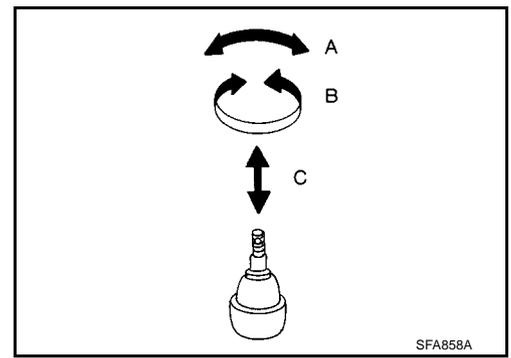
#### NOTE:

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.

**Swinging force "A" (Measurement point at either cotter pin hole or groove of ball stud)**

**Upper : 7.8 - 54.9 N (0.8 - 5.6 kg-f, 1.8 - 12.3 lb-f) at hole**

**Lower : 7.8 - 54.9 N (0.8 - 5.6 kg-f, 1.8 - 12.3 lb-f) at groove**



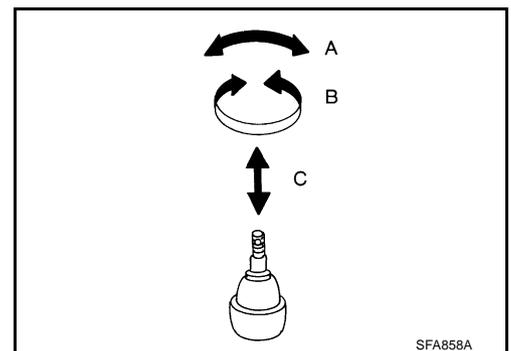
### TURNING FORCE

#### 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"**

**: 0.49 - 3.43 N·m (0.05 - 0.35 kg-m, 4 - 30 in-lb)**



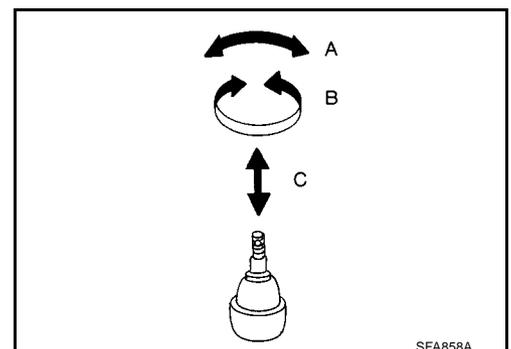
### VERTICAL END PLAY

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)**



A  
B  
C  
D

FSU

F  
G  
H  
I  
J  
K  
L  
M

# KNUCKLE

## KNUCKLE

PFP:40014

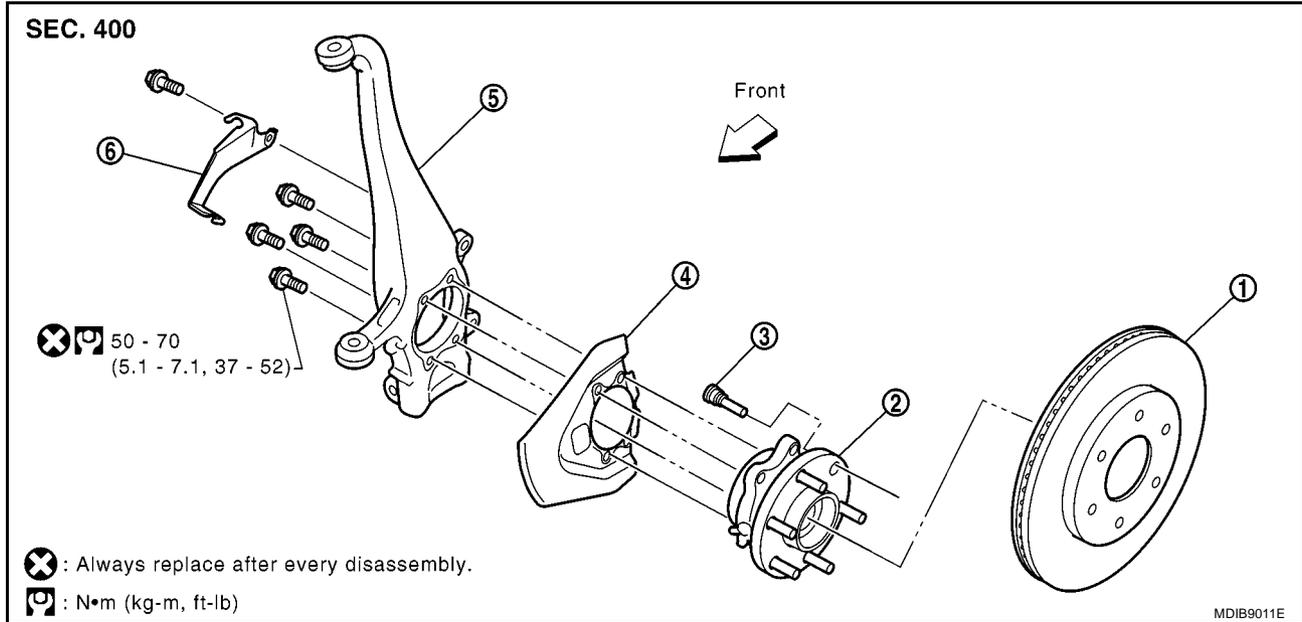
### On-Vehicle Inspection and Service

EES002KV

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

EES002KW



- |                 |                                   |                         |
|-----------------|-----------------------------------|-------------------------|
| 1. Disc rotor   | 2. Wheel hub and bearing assembly | 3. Wheel stud           |
| 4. Splash guard | 5. Steering knuckle               | 6. Wheel sensor bracket |

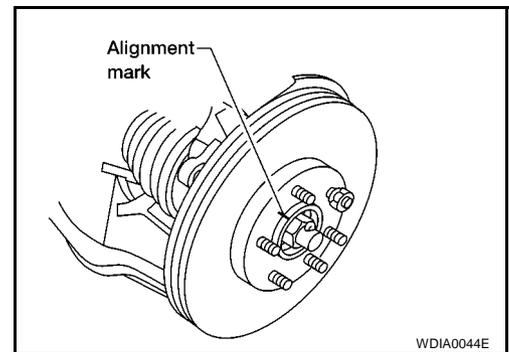
### REMOVAL

1. Remove wheel.
2. Without disassembling the hydraulic lines, remove brake caliper. Reposition it aside with wire. Refer to [BR-26, "Removal and Installation of Brake Caliper Assembly"](#).

#### NOTE:

Avoid depressing brake pedal while brake caliper is removed.

3. Put alignment marks on disc rotor and wheel hub and bearing assembly, then remove disc rotor.



4. Disconnect wheel sensor and remove bracket from steering knuckle.

#### CAUTION:

**Do not pull on wheel sensor harness.**

5. On 4WD models remove cotter pin, then using a hub lock nut wrench, remove lock nut from drive shaft.
6. Remove steering outer socket cotter pin at steering knuckle, then loosen mounting nut.

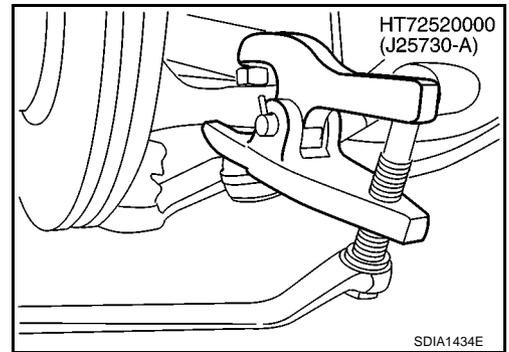
# KNUCKLE

7. Disconnect steering outer socket from steering knuckle using Tool. Be careful not to damage ball joint boot.

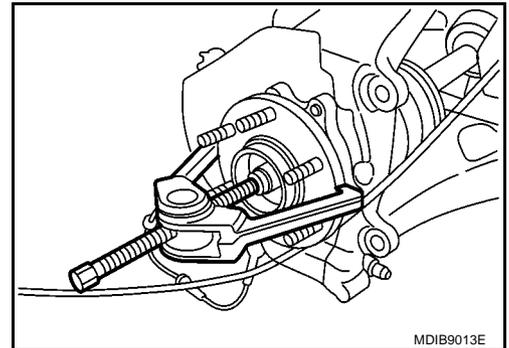
**Tool number** : HT72520000

**CAUTION:**

To prevent damage to threads and to prevent Tool from coming off suddenly, temporarily tighten mounting nut.

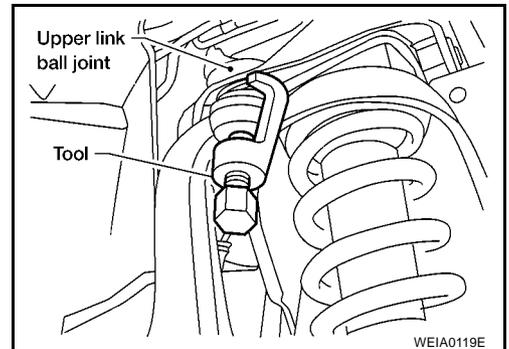


8. On 4WD models remove drive shaft from wheel hub and bearing assembly using a suitable extractor.

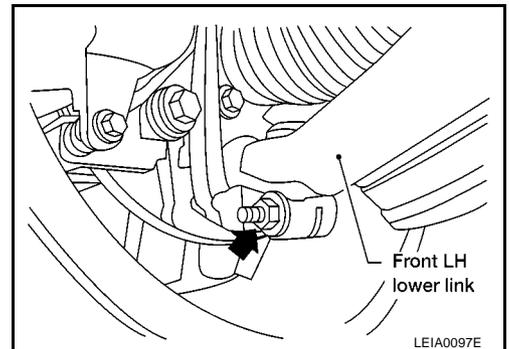


9. Remove cotter pin and nut from upper link ball joint.
10. Separate upper link ball joint from steering knuckle using Tool.

**Tool number** : ST29020001



11. Remove pinch bolt from steering knuckle, then separate lower link ball joint from steering knuckle.



12. Remove steering knuckle from vehicle.
13. Remove wheel hub and bearing assembly bolts.
14. Remove splash guard and wheel hub and bearing assembly from steering knuckle.

**CAUTION:**

Do not pull on wheel sensor harness.

## INSPECTION AFTER REMOVAL

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

- Perform ball joint inspection. Refer to [FSU-15, "Inspection"](#) .

A  
B  
C  
D  
FSU  
F  
G  
H  
I  
J  
K  
L  
M

# KNUCKLE

## INSTALLATION

Installation is in the reverse order of removal.

- Refer to [FSU-6, "Components"](#) for tightening torques.

**CAUTION:**

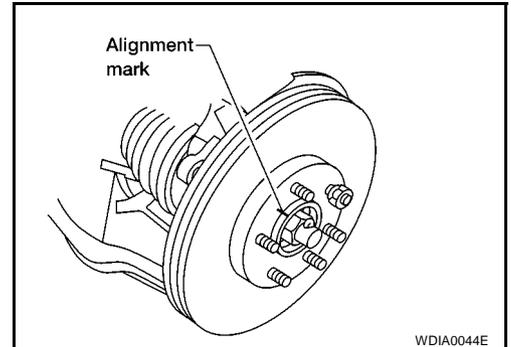
**Discard the old cotter pin; replace with a new one.**

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

**NOTE:**

When not using the alignment mark, refer to [BR-24, "FRONT DISC BRAKE"](#) .

- When installing wheel and tire, refer to [WT-5, "Rotation"](#) .
- Perform wheel alignment. Refer to [FSU-7, "Front Wheel Alignment"](#) .



# SERVICE DATA AND SPECIFICATIONS (SDS)

## SERVICE DATA AND SPECIFICATIONS (SDS)

PPF:00030

### General Specifications (Front)

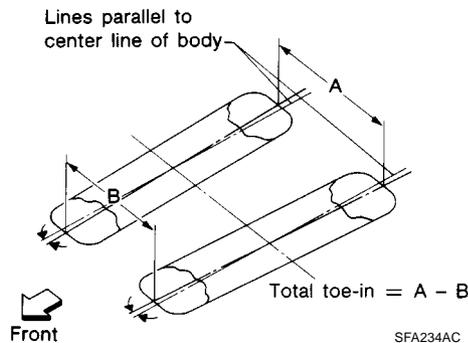
EES002KX

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

### Wheel Alignment (Unladen\*<sup>1</sup>)

EES002KY

Drive type		2WD	4WD
Camber Degree minute (decimal degree)	Minimum	-0° 45' (-0.75°)	-0° 10' (-0.17°)
	Nominal	0° 15' (0.25°)	0° 20' (0.33°)
	Maximum	0° 45' (0.75°)	0° 50' (0.83°)
	Left and right difference	0° 45' (0.75°) or less	
Caster Degree minute (decimal degree)	Minimum	2° 5' (2.08°)	-0° 56' (-0.93°)
	Nominal	2° 35' (2.58°)	2° 26' (2.43°)
	Maximum	3° 5' (3.08°)	2° 56' (2.93°)
	Left and right difference	0° 45' (0.75°) or less	
Kingpin inclination Degree minute (decimal degree)	Minimum	12° 31' (12.52°)	12° 10' (12.17°)
	Nominal	13° 1' (13.02°)	12° 40' (12.67°)
	Maximum	13° 31' (13.52°)	13° 10' (13.17°)



Drive type		2WD	4WD
Total toe-in	Distance (A - B)	Minimum	1.7 mm (0.07 in)
		Nominal	2.7 mm (0.11 in)
		Maximum	3.7 mm (0.15 in)
	Angle (left, right) Degree minute (Decimal degree)	Minimum	0° 4' (0.07°)
		Nominal	0° 6' (0.10°)
		Maximum	0° 8' (0.13°)
Wheel turning angle (full turn)	Inside Degree minute (Decimal degree)	33° 28' - 35° 28' * <sup>2</sup> (33.47° - 35.47°)	33° 46' - 35° 46' * <sup>4</sup> (33.77° - 35.77°)
	Outside Degree minute (Decimal degree)	29° 19' - 31° 19' * <sup>3</sup> (29.32° - 31.32°)	29° 37' - 31° 37' * <sup>5</sup> (29.62° - 31.62°)

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

\*2: Target value 35° 28' (35.47°)

\*3: Target value 31° 19' (31.32°)

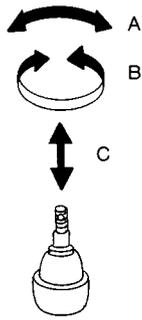
\*4: Target value 35° 46' (35.77°)

\*5: Target value 31° 37' (31.62°)

# SERVICE DATA AND SPECIFICATIONS (SDS)

## Ball Joint

EES002KZ



SFA858A

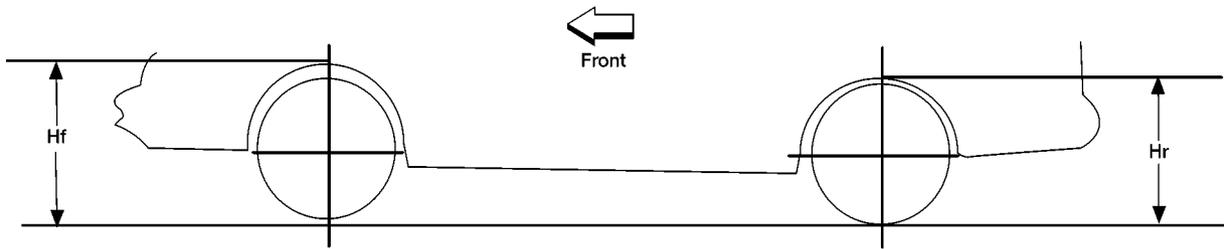
Swinging force "A"	7.8 - 54.9 N (0.8 - 5.6 kg-f, 1.8 - 12.3 lb-f)
Turning torque "B"	0.49 - 3.43 N·m (0.05 - 0.35 kg-m, 4 - 30 in-lb)
Vertical end play "C"	0 mm (0 in)

# SERVICE DATA AND SPECIFICATIONS (SDS)

## Wheelarch Height (Unladen\*<sup>1</sup>) King Cab

EES002L0

Unit: mm (in)



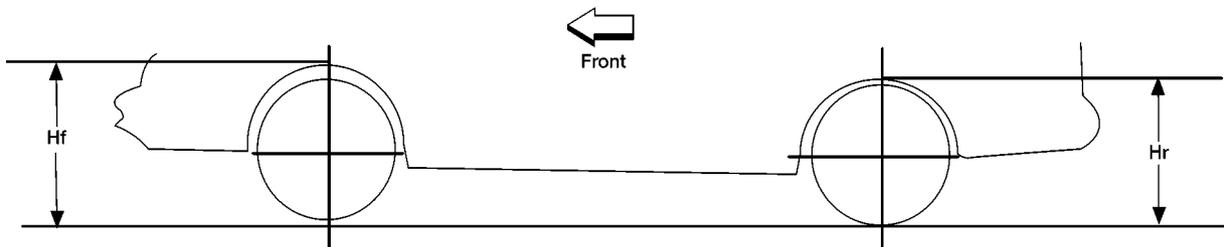
LEIA0085E

Engine type	YD25				
Drive type	2WD		4WD		
Applied model	XE		XE	XE, SE	SE
Tire size	235/70R16	255/70R16	235/70R16	255/70R16	255/65R17
Front wheelarch height (Hf)	833 - 863 (32.80 - 33.98)	845 - 875 (33.27 - 34.45)	846 - 876 (33.31 - 34.49)	858 - 888 (33.78 - 34.96)	861 - 891 (33.90 - 35.08)
Rear wheelarch height (Hr)	874 - 904 (34.41 - 35.59)	877 - 907 (34.53 - 35.71)	878 - 908 (34.57 - 35.75)	891 - 921 (35.08 - 36.26)	893 - 923 (35.16 - 36.34)

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

## Double Cab

Unit: mm (in)



LEIA0085E

Engine type	YD25				
Drive type	2WD		4WD		
Applied model	SE		XE	XE, SE	SE
Tire size	235/70R16	255/70R16	235/70R16	255/70R16	255/65R17
Front wheelarch height (Hf)	832 - 862 (32.76 - 33.94)	844 - 874 (33.23 - 34.41)	846 - 876 (33.31 - 34.49)	857 - 887 (33.74 - 34.92)	860 - 890 (33.86 - 35.04)
Rear wheelarch height (Hr)	872 - 902 (34.33 - 35.51)	885 - 915 (34.84 - 36.02)	877 - 907 (34.53 - 35.71)	889 - 919 (35.00 - 36.18)	891 - 921 (35.08 - 36.26)

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

# SERVICE DATA AND SPECIFICATIONS (SDS)

---