

FRONT & REAR SUSPENSION

SECTION SU

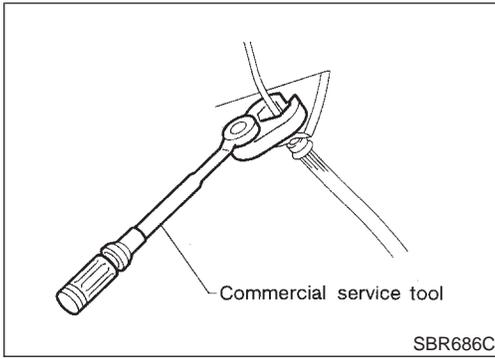
GI
MA
EM
LC
EC
FE
AT
AX
SU
BR
ST
RS
BT
HA
SC
EL
IDX

CONTENTS

FRONT SUSPENSION	2	WHEELARCH HEIGHT (UNLADEN*)	17
Precautions	2	WHEEL RUNOUT	17
PRECAUTIONS	2	REAR SUSPENSION	18
Preparation	2	Precautions	18
SPECIAL SERVICE TOOLS	2	PRECAUTIONS	18
COMMERCIAL SERVICE TOOLS	2	Preparation	18
Noise, Vibration and Harshness (NVH)		COMMERCIAL SERVICE TOOLS	18
Troubleshooting	4	Noise, Vibration and Harshness (NVH)	
NVH TROUBLESHOOTING CHART	4	Troubleshooting	18
Components	5	Components	19
On-vehicle Service	6	On-vehicle Service	20
FRONT SUSPENSION PARTS	6	REAR SUSPENSION PARTS	20
FRONT WHEEL ALIGNMENT	6	REAR WHEEL ALIGNMENT	20
Coil Spring and Shock Absorber	10	Removal and Installation	23
COMPONENTS	10	REMOVAL	24
REMOVAL AND INSTALLATION	11	INSTALLATION	24
DISASSEMBLY	11	Coil Spring and Shock Absorber	25
INSPECTION	11	REMOVAL AND INSTALLATION	25
ASSEMBLY	12	DISASSEMBLY	25
Stabilizer Bar	12	INSPECTION	25
REMOVAL AND INSTALLATION	12	ASSEMBLY	26
Transverse Link and Lower Ball Joint	13	Torsion Beam, Lateral Link and Control Rod	26
REMOVAL AND INSTALLATION	13	DISASSEMBLY	26
INSPECTION	14	INSPECTION	26
Service Data and Specifications (SDS)	15	ASSEMBLY	27
GENERAL SPECIFICATIONS (FRONT)	15	Service Data and Specifications (SDS)	28
FRONT WHEEL ALIGNMENT (UNLADEN*1)	16	GENERAL SPECIFICATIONS (REAR)	28
LOWER BALL JOINT	16	REAR WHEEL ALIGNMENT (UNLADEN*)	28

FRONT SUSPENSION

Precautions



Precautions

PRECAUTIONS

- When installing rubber parts, final tightening must be carried out under unladen condition* with tires on ground. Oil will shorten the life of rubber bushes. Be sure to wipe off any spilled oil.
*: Fuel, radiator coolant and engine oil full. Spare tire, jack, hand tools and mats in designated positions.
- After installing removed suspension parts, check wheel alignment and adjust if necessary.
- Use flare nut wrench when removing or installing brake tubes.
- Always torque brake lines when installing.
- Lock nuts are un reusable parts; always use new ones. When replacing, do not wipe the oil off the new lock nut before tightening.

NHSU0001

Preparation

SPECIAL SERVICE TOOLS

The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

NHSU0002

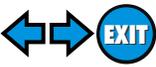
Tool number (Kent-Moore No.) Tool name	Description
HT72520000 (J25730-A) Ball joint remover	<p>Removing tie-rod outer end and lower ball joint</p> <p>NT146</p>

COMMERCIAL SERVICE TOOLS

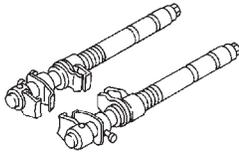
NHSU0003

Tool name	Description
Attachment Wheel alignment	<p>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)</p> <p>NT148</p>
1 Flare nut crowfoot 2 Torque wrench	<p>Removing and installing each brake piping a: 10 mm (0.39 in)</p> <p>NT360</p>

FRONT SUSPENSION



Preparation (Cont'd)

Tool name	Description
Spring compressor	 <p>Removing and installing coil spring</p> <p>NT717</p>

GI

MA

EM

LC

EC

FE

AT

AX

SU

BR

ST

RS

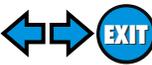
BT

HA

SC

EL

IDX



FRONT SUSPENSION

Noise, Vibration and Harshness (NVH) Troubleshooting

Noise, Vibration and Harshness (NVH) Troubleshooting

=NHSU0004

NVH TROUBLESHOOTING CHART

NHSU0004S01

Use the chart below to help you find the cause of the symptom. If necessary, repair or replace these parts.

		Reference page	Improper installation, looseness	Shock absorber deformation, damage or deflection	Bushings or mounting deterioration	Parts interference	Spring fatigue	Suspension looseness	Incorrect wheel alignment	Stabilizer bar fatigue	Out-of-round	Imbalance	Incorrect air pressure	Uneven tire wear	Deformation or damage	Non-uniformity	Incorrect tire size	DRIVE SHAFT	AXLE	SUSPENSION	TIRES	ROAD WHEEL	BRAKES	STEERING	
																									SU-5, 19
Possible Cause and SUSPECTED PARTS																									
Symptom	SUSPENSION	Noise	x	x	x	x	x	x										x	x		x	x	x	x	
		Shake	x	x	x	x		x											x	x		x	x	x	x
		Vibration	x	x	x	x	x												x	x		x			x
		Shimmy	x	x	x	x				x										x		x	x	x	x
		Judder	x	x	x															x		x	x	x	x
		Poor quality ride or handling	x	x	x	x	x			x	x									x		x	x		
	TIRES	Noise	x									x	x	x	x	x	x		x	x	x		x	x	x
		Shake	x									x	x	x	x	x		x	x	x	x		x	x	x
		Vibration												x				x	x	x	x				x
		Shimmy	x									x	x	x	x	x	x		x	x	x		x	x	x
		Judder	x									x	x	x	x	x		x		x	x		x	x	x
		Poor quality ride or handling	x										x	x	x	x	x		x		x		x		
ROAD WHEEL	Noise	x									x	x			x			x	x	x	x		x	x	
	Shake	x									x	x			x			x	x	x	x		x	x	
	Shimmy, Judder	x									x	x			x			x	x	x	x		x	x	
	Poor quality ride or handling	x									x	x			x			x	x	x	x				

x: Applicable

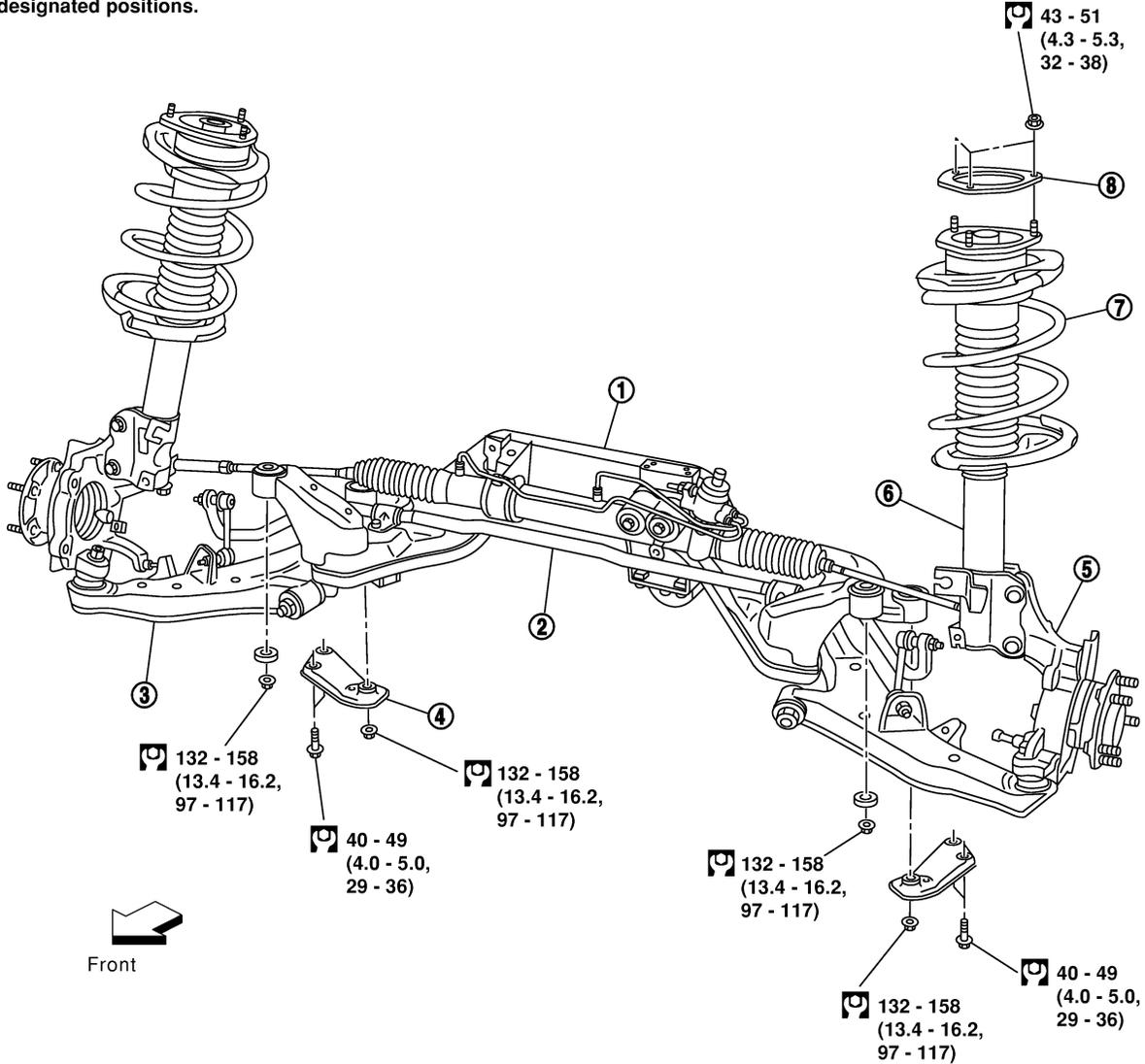
Components

NHSU0005

SEC. 391•400•401

When installing rubber parts, final tightening must be carried out under unladen condition* with tires on ground.

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



: N·m (kg-m, ft-lb)

- 1. Front suspension member
- 2. Stabilizer bar
- 3. Transverse link

- 4. Rebound stopper
- 5. Knuckle
- 6. Strut assembly

- 7. Coil spring
- 8. Strut mount plate

GI

MA

EM

LC

EC

FE

AT

AX

SU

BR

ST

RS

BT

HA

SC

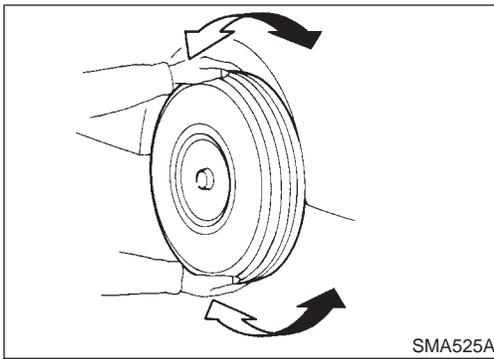
SSU009

EL

IDX

FRONT SUSPENSION

On-vehicle Service



On-vehicle Service FRONT SUSPENSION PARTS

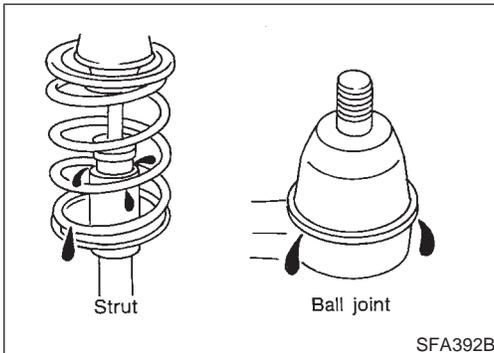
NHSU0006

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

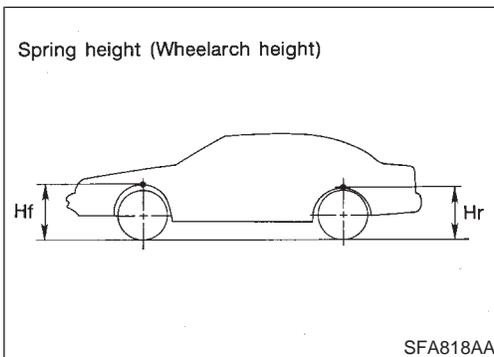
- Shake each front wheel to check for excessive play.
- Make sure that cotter pin is inserted.
- Retighten all axle and suspension nuts and bolts to the specified torque.

Tightening torque:

Refer to “FRONT SUSPENSION”, SU-5.

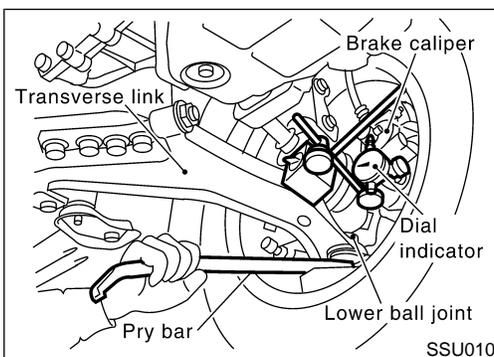


- Check strut (shock absorber) for oil leakage or other damage.
- Check suspension ball joint for grease leakage and ball joint dust cover for cracks or other damage. If ball joint dust cover is cracked or damaged, replace transverse link.



- Check spring height from top of wheelarch to the ground.
 - a) Vehicle must be unladen*, parked on a level surface, and tires checked for proper inflation and wear (tread wear indicator must not be showing).

*: Fuel, radiator coolant and engine oil full. Spare tire, jack, hand tools and mats in designated positions.
 - b) Bounce vehicle up and down several times before measuring. **Standard height: Refer to SDS (SU-17).**
 - c) Spring height is not adjustable. If out of specification, check for worn springs or suspension parts.



- Check suspension ball joint end play.
 - a) Jack up front of vehicle and set the stands.
 - b) Clamp dial indicator onto transverse link and place indicator tip on lower edge of brake caliper.
 - c) Make sure front wheels are straight and brake pedal is depressed.
 - d) Place a pry bar between transverse link and inner rim of road wheel.
 - e) While raising and releasing pry bar, observe maximum dial indicator value.

Vertical end play: 0 mm (0 in)

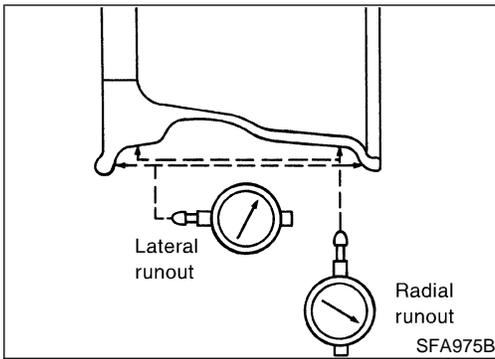
- f) If ball joint movement is beyond specifications, remove and replace it.

FRONT WHEEL ALIGNMENT

NHSU0007

Before checking front wheel alignment, be sure to make a preliminary inspection (Unladen*).

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



Preliminary Inspection

Aluminum wheel

NHSU0007S01

NHSU0007S0103

1. Check tires for wear and improper inflation.
2. Check wheels for deformation, cracks and other damage.
 - a. Remove tire from aluminum wheel and mount on a tire balance machine.
 - b. Set dial indicator as shown in the illustration.

Wheel runout (Dial indicator value):

Refer to SDS, SU-17.

3. Check front wheel bearings for looseness.
4. Check front suspension for looseness.
5. Check steering linkage for looseness.
6. Check that front shock absorbers work properly.
7. Check vehicle posture (Unladen).

GI

MA

EM

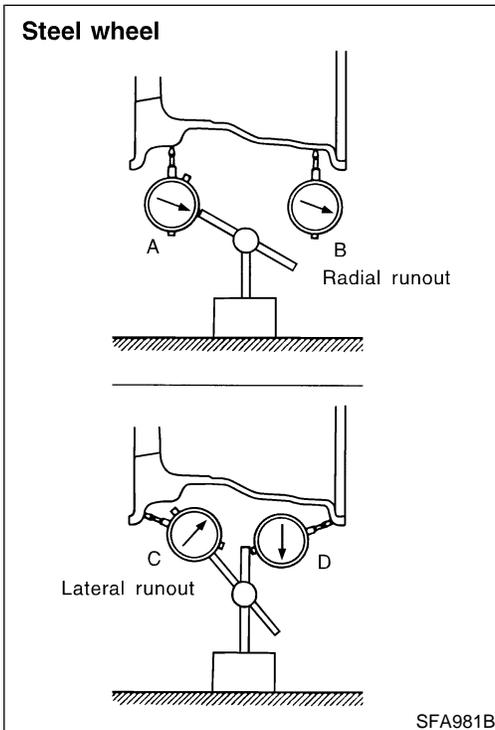
LC

EC

FE

AT

AX



Steel wheel

NHSU0007S0104

1. Check tires for wear and improper inflation.
2. Check wheels for deformation, cracks and other damage.
 - a. Remove tire from steel wheel and mount wheel on a tire balance machine.
 - b. Set two dial indicators as shown in the illustration.
 - c. Set each dial indicator to 0.
 - d. Rotate wheel and check dial indicators at several points around the circumference of the wheel.
 - e. Calculate runout at each point as shown below.

$$\text{Radial runout} = (A + B)/2$$

$$\text{Lateral runout} = (C + D)/2$$
 - f. Select maximum positive runout value and the maximum negative value. Add the two values to determine total runout. In case a positive or negative value is not available, use the maximum value (negative or positive) for total runout. If the total runout value exceeds the limit, replace steel wheel.

Wheel runout:

Refer to SDS, SU-17.

3. Check front wheel bearings for looseness.
4. Check front suspension for looseness.
5. Check steering linkage for looseness.
6. Check that front shock absorbers work properly.
7. Check vehicle posture (Unladen).

SU

BR

ST

RS

BT

HA

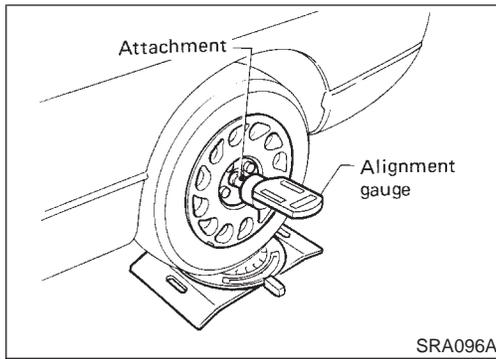
SC

EL

IDX

FRONT SUSPENSION

On-vehicle Service (Cont'd)



Camber, Caster and Kingpin Inclination

NHSU0007S02

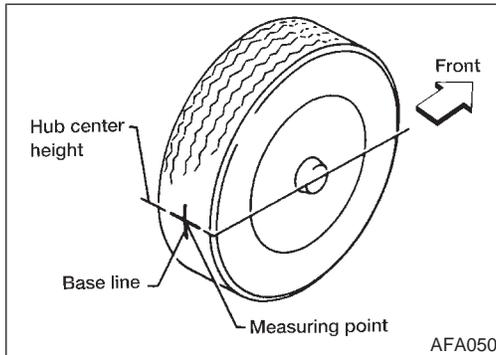
Camber, caster and kingpin inclination are preset at factory and cannot be adjusted.

1. Measure camber, caster and kingpin inclination of both right and left wheels with a suitable alignment gauge.

Camber, caster and kingpin inclination:

Refer to SDS, SU-16.

2. If camber, caster or kingpin inclination is not within specification, inspect front suspension parts. Replace damaged or worn out parts.



Toe-in

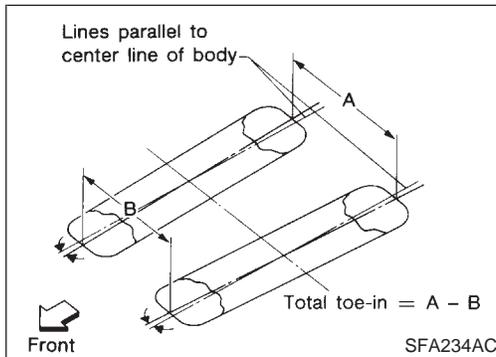
NHSU0007S03

Measure toe-in using the following procedure.

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



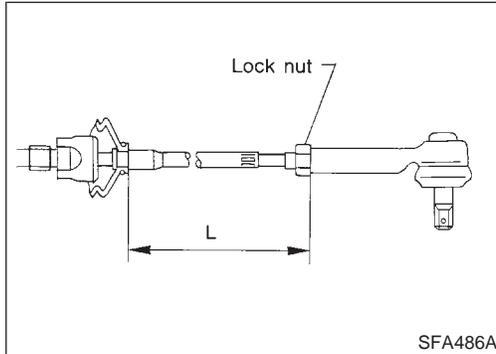
4. Measure distance "A" (rear side).
5. Push the vehicle slowly ahead to rotate the wheels 180 degrees (1/2 turn).

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

6. Measure distance "B" (front side).

Total toe-in:

Refer to SDS, SU-16.



7. Adjust toe-in by varying the length of steering tie-rods.
 - a. Loosen lock nuts.
 - b. Adjust toe-in by screwing tie-rods in and out.

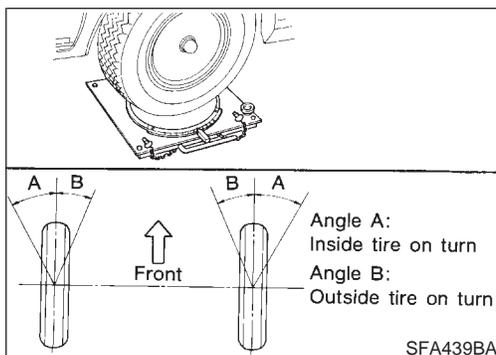
Standard length "L":

Refer to ST-30, "SDS".

- c. Tighten lock nuts to specified torque.

Lock nut tightening torque:

Refer to ST-15, "POWER STEERING GEAR AND LINK-AGE".



Front Wheel Turning Angle

NHSU0007S04

1. Set wheels in straight-ahead position. Then move vehicle forward until front wheels rest on turning radius gauge properly.
2. Rotate steering wheel all the way right and left; measure turning angle.

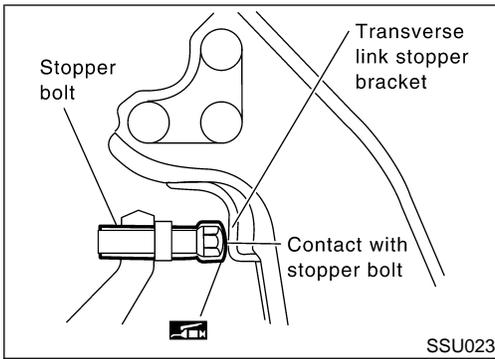
Do not hold the steering wheel on full lock for more than 15 seconds.

Wheel turning angle (Full turn):

Refer to SDS, SU-16.

FRONT SUSPENSION

On-vehicle Service (Cont'd)



3. Check stopper bolt head to see whether it contacts stopper bracket at specified outside wheel angle. If not, adjust stopper bolt to contact stopper bracket at the correct angle. Adjust protrusion of stopper bolt before placing stopper bolt cap. Apply grease to face of stopper bracket that bolt touches.

Tighten stopper bolt lock nut.

: 54 - 72 N·m (5.5 - 7.3 kg·m, 40 - 53 ft·lb)

GI

MA

EM

LC

EC

FE

AT

AX

SU

BR

ST

RS

BT

HA

SC

EL

IDX

FRONT SUSPENSION

Coil Spring and Shock Absorber

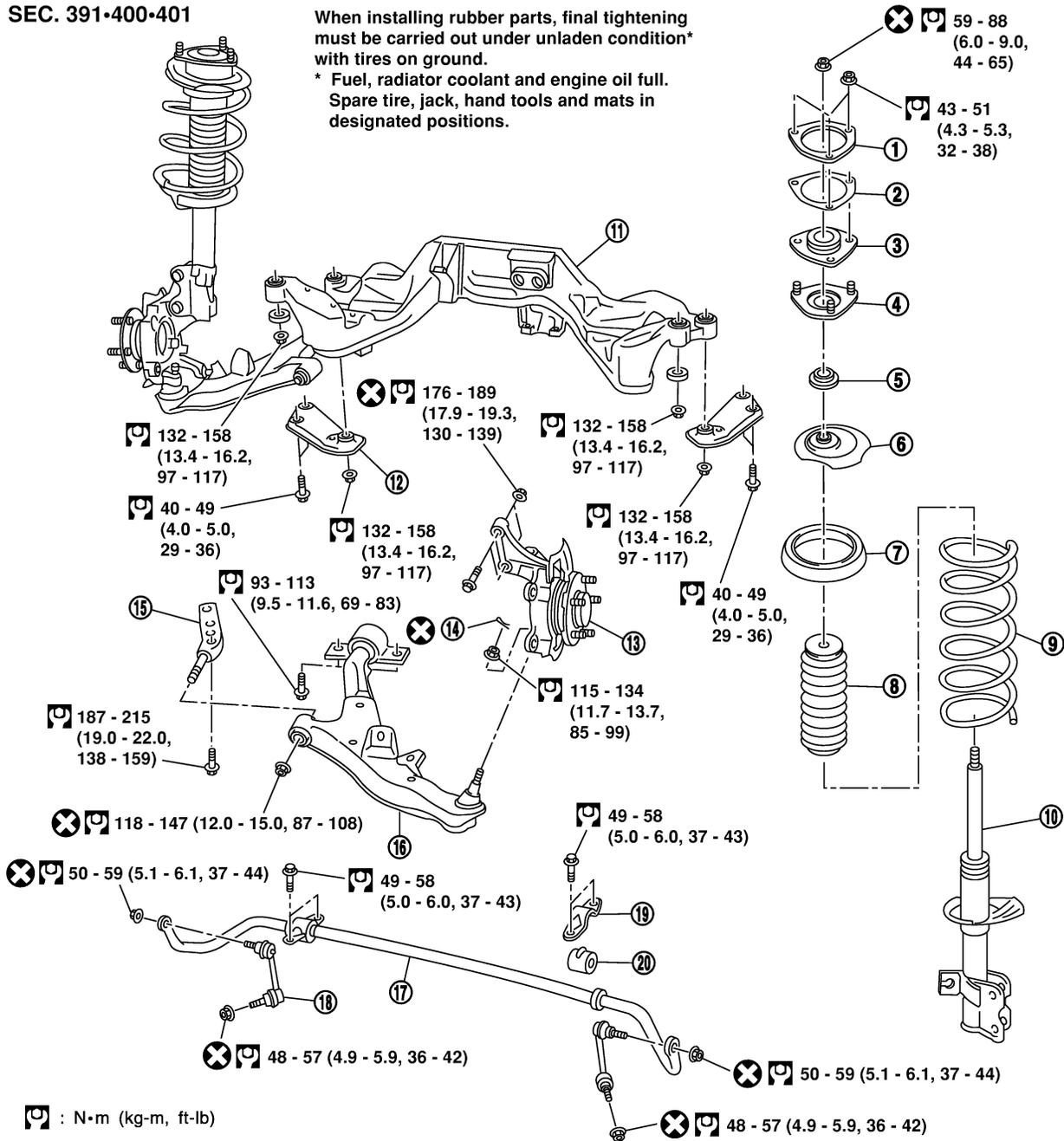
Coil Spring and Shock Absorber COMPONENTS

=NHSU0008

SEC. 391-400-401

When installing rubber parts, final tightening must be carried out under unladen condition* with tires on ground.

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

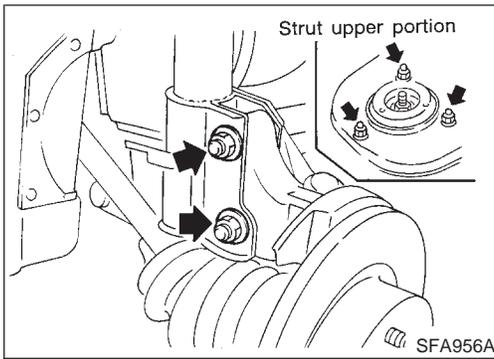


SSU011

- | | | |
|----------------------------|------------------------------------|----------------------|
| 1. Strut mount upper plate | 8. Bound bumper rubber | 15. Bush link pin |
| 2. Strut spacer | 9. Coil spring | 16. Transverse link |
| 3. Strut mount insulator | 10. Shock absorber | 17. Stabilizer |
| 4. Strut mount bracket | 11. Suspension member | 18. Connecting rod |
| 5. Strut mount bearing | 12. Rebound stopper | 19. Stabilizer clamp |
| 6. Spring upper seat | 13. Wheel hub and steering knuckle | 20. Bushing |
| 7. Spring rubber seat | 14. Cotter pin | |

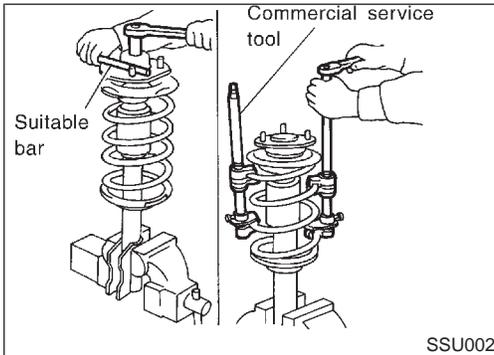
FRONT SUSPENSION

Coil Spring and Shock Absorber (Cont'd)



REMOVAL AND INSTALLATION

- Remove shock absorber fixing bolt and nut (to hoodledge). =NHSU0009
- Do not remove piston rod lock nut on vehicle.

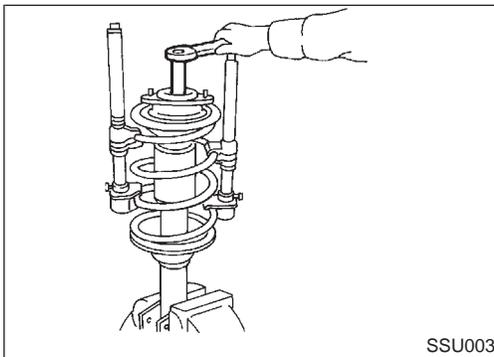


DISASSEMBLY

1. Set shock absorber on vise, then **loosen** piston rod lock nut. NHSU0010
- Do not remove piston rod lock nut at this time.
2. Compress spring with Tool so that 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 so as not to tilt the spring.



3. Remove piston rod lock nut.

INSPECTION

Shock Absorber Assembly

- Check for smooth operation through a full stroke, both compression and extension. NHSU0011
- Check for oil leakage on welded or gland packing portions. NHSU0011S01
- Check piston rod for cracks, deformation or other damage. Replace if necessary. HA

Mounting Insulator and Rubber Parts

- Check cemented rubber-to-metal portion for separation or cracks. Check rubber parts for deterioration. Replace if necessary. NHSU0011S02

Thrust Bearing

- Check thrust bearing parts for abnormal noise or excessive rattle in axial direction. NHSU0011S06
- Replace if necessary. IDX

Coil Spring

- Check for cracks, deformation or other damage. Replace if necessary. NHSU0011S03

GI

MA

EM

LC

EC

FE

AT

AX

SU

BR

ST

RS

BT

HA

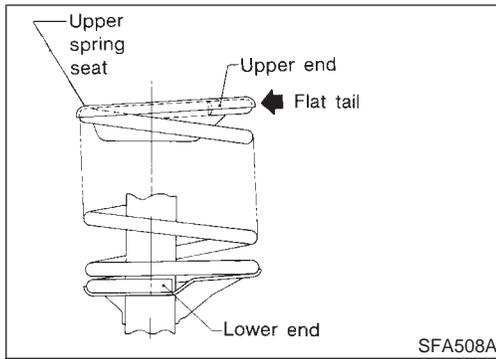
SC

EL

IDX

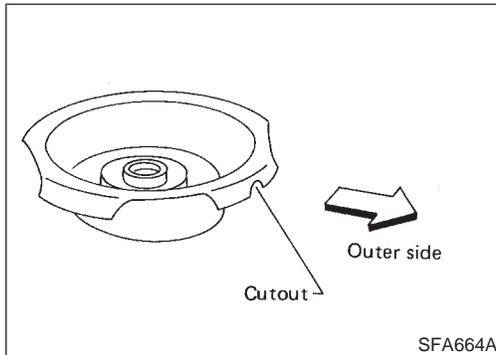
FRONT SUSPENSION

Coil Spring and Shock Absorber (Cont'd)

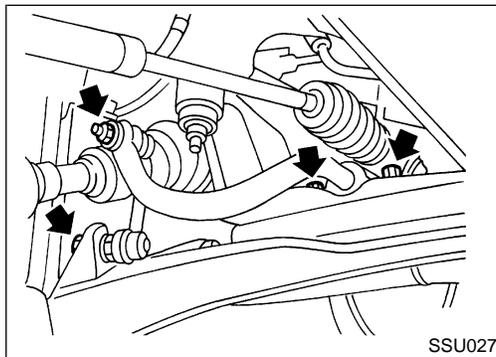


ASSEMBLY

- When installing coil spring on strut, it must be positioned as shown in the figure at left. NHSU0012

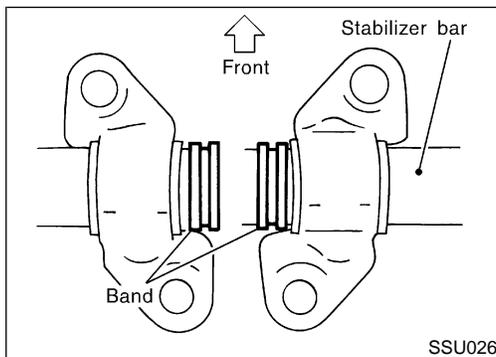


- Install upper spring seat with its cutout facing the outer side of vehicle.

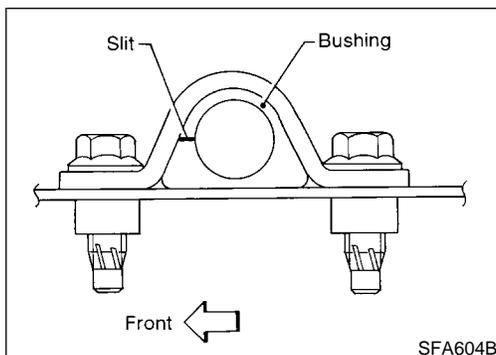


Stabilizer Bar REMOVAL AND INSTALLATION

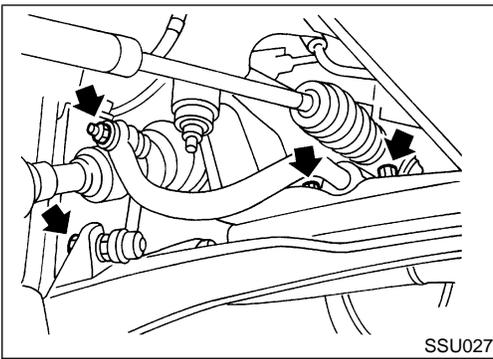
- Remove stabilizer bar. NHSU0017



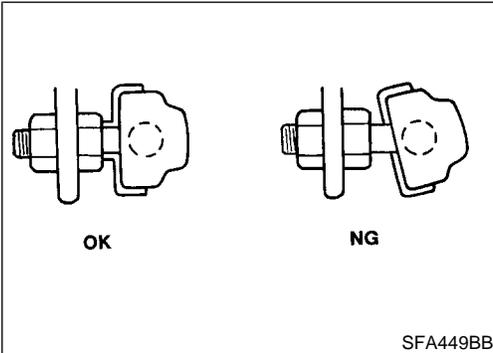
- When installing stabilizer, make sure that band and clamp face in their correct directions.



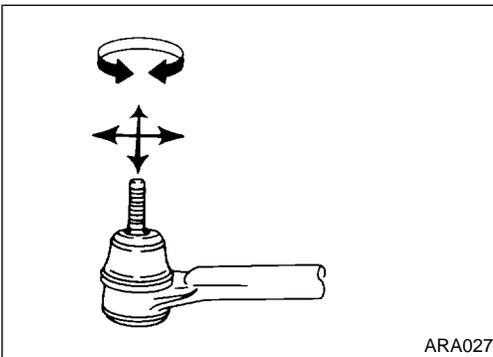
- Make sure that slit in bushing is in the position shown in the figure.



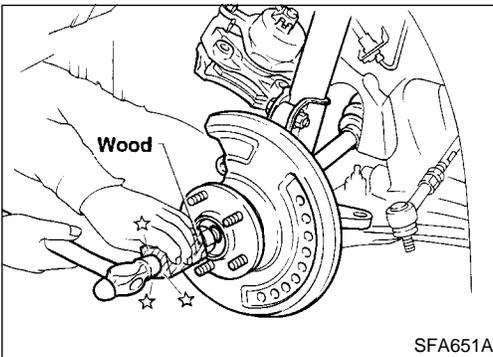
- When removing and installing stabilizer bar.



- Install stabilizer bar with ball joint socket properly placed.



- Check stabilizer for deformation or cracks. Replace if necessary.
- Check rubber bushings for deterioration or cracks. Replace if necessary.
- Check ball joint can rotate in all directions. If movement is not smooth and free, replace stabilizer bar connecting rod.

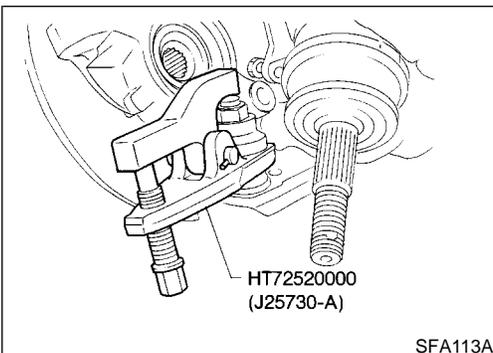


Transverse Link and Lower Ball Joint REMOVAL AND INSTALLATION

NHSU0018

- Remove wheel bearing lock nut.
- Remove tie-rod ball joint.
- Remove strut lower bracket fixing bolts and nuts.
- Separate drive shaft from knuckle by slightly tapping drive shaft end.

Cover boots with shop towel so as not to damage them when removing drive shaft.

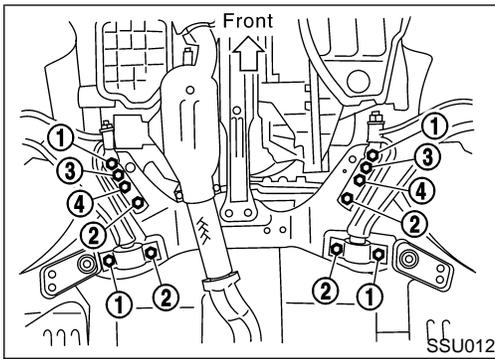


- Separate lower ball joint stud from knuckle with suitable tool. Refer to AX-5, "FRONT AXLE — Wheel Hub and Knuckle".

GI
MA
EM
LC
EC
FE
AT
AX
SU
BR
ST
RS
BT
HA
SC
EL
IDX

FRONT SUSPENSION

Transverse Link and Lower Ball Joint (Cont'd)



6. Remove fixing bolts.
7. Remove transverse link and lower ball joint.
8. Install fixing bolts in order of number.
Tightening torque:
Refer to "FRONT SUSPENSION", SU-6.
9. During installation, final tightening must be carried out at curb weight with tires on the ground.
10. After installation, check wheel alignment. Refer to "ON-VEHICLE SERVICE — Front Wheel Alignment", SU-6.

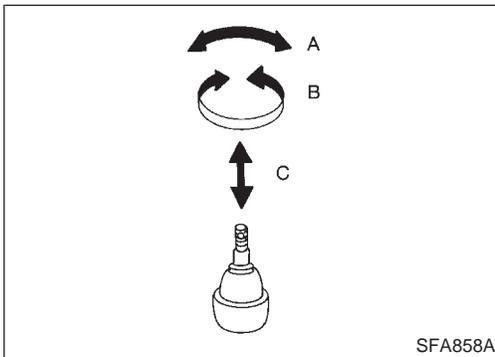
INSPECTION

Transverse Link

NHSU0019

NHSU0019S01

- Check transverse link for damage, cracks or deformation. Replace it if necessary.
- Check rubber bushing for damage, cracks and deformation. Replace transverse link if necessary.



Lower Ball Joint

NHSU0019S02

- Check ball joint for play. Replace transverse link assembly if any of the following cases occur. Ball stud is worn, play in axial direction is excessive or joint is hard to swing. Before checking, turn ball joint at least 10 revolutions so that ball joint is properly broken in.

Swinging force "A":

(measuring point: cotter pin hole of ball stud):

7.8 - 77.5 N (0.8 - 7.9 kg, 1.8 - 17.4 lb)

Turning torque "B":

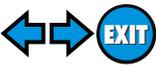
0.50 - 4.90 N-m (5.1 - 50 kg-cm, 4.4 - 43.4 in-lb)

Vertical end play "C":

0 mm (0 in)

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

FRONT SUSPENSION



Service Data and Specifications (SDS)

Service Data and Specifications (SDS)

GENERAL SPECIFICATIONS (FRONT)

=NHSU0020

Suspension type	Independent MacPherson strut	GI
Shock absorber type	Double-acting hydraulic	MA
Stabilizer bar	Standard equipment	EM

EM

LC

EC

FE

AT

AX

SU

BR

ST

RS

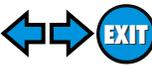
BT

HA

SC

EL

IDX



FRONT SUSPENSION

Service Data and Specifications (SDS) (Cont'd)

FRONT WHEEL ALIGNMENT (UNLADEN*1)

=NHSU0021

Tire size			225/50R17	215/55R16
Camber Degree minute (Decimal degree)	Minimum		-1°00' (-1.00°)	
	Nominal		-0°15' (-0.25°)	
	Maximum		0°30' (0.50°)	
	Left and right difference		45' (0.75°) or less	
Caster Degree minute (Decimal degree)	Minimum		2°00' (2.00°)	
	Nominal		2°45' (2.75°)	
	Maximum		3°30' (3.50°)	
	Left and right difference		45' (0.75°) or less	
Kingpin inclination Degree minute (Decimal degree)	Minimum		13°30' (13.50°)	
	Nominal		14°15' (14.25°)	
	Maximum		15°00' (15.00°)	
Total toe-in	Distance (A - B) mm (in)	Minimum	0 (0)	
		Nominal	1 (0.04)	
		Maximum	2 (0.08)	
	Angle (left plus right) Degree minute (Decimal degree)	Minimum	0' (0.00°)	
		Nominal	6' (0.10°)	
		Maximum	12' (0.20°)	
Wheel turning angle Full turn*2	Inside Degree minute (Decimal degree)	Minimum	29°30' (29.50°)	36°00' (36.0°)
		Nominal	33°00' (33.0°)	39°30' (39.50°)
		Maximum	34°00' (34.0°)	40°30' (40.50°)
	Outside Degree minute (Decimal degree)	Nominal	28°30' (28.50°)	32°00' (32.00°)

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

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

LOWER BALL JOINT

NHSU0022

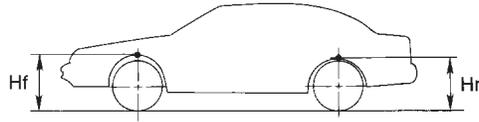
Swinging force "A" (Measuring point: cotter pin hole of ball stud) N (kg, lb)	7.8 - 77.5 (0.8 - 7.9, 1.8 - 17.4)
Turning torque "B" N·m (kg·cm, in·lb)	0.50 - 4.90 (5.1 - 50.0, 4.4 - 43.4)
Vertical end play "C" mm (in)	0 (0)

FRONT SUSPENSION

Service Data and Specifications (SDS) (Cont'd)

WHEELARCH HEIGHT (UNLADEN*)

=NHSU0041



SFA818A

Applied model	Models with 225/50R17 tire	Models with 215/55R16 tire
Front (Hf) mm (in)	706 (27.80)	698 (27.48)
Rear (Hr) mm (in)	694 (27.32)	683 (26.89)

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

WHEEL RUNOUT

NHSU0023

Wheel type	Aluminum	Steel wheel
Radial runout limit mm (in)	0.3 (0.012)	0.5 (0.020)
Lateral runout limit mm (in)	0.3 (0.012)	0.8 (0.031)

GI

MA

EM

LC

EC

FE

AT

AX

SU

BR

ST

RS

BT

HA

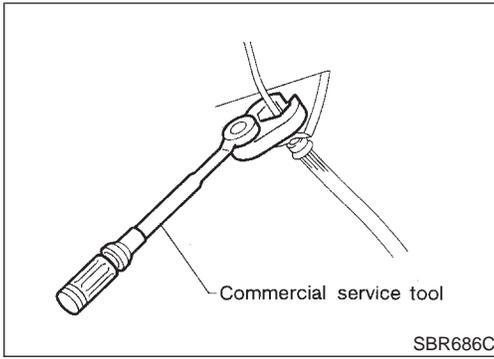
SC

EL

IDX

REAR SUSPENSION

Precautions



Precautions

PRECAUTIONS

NHSU0024

- When installing each rubber part, final tightening must be carried out under unladen condition* with tires on ground. Oil will shorten the life of rubber bushes. Be sure to wipe off any spilled oil.
*: Fuel, radiator coolant and engine oil full. Spare tire, jack, hand tools and mats in designated positions.
- Use flare nut wrench when removing or installing brake tubes.
- After installing removed suspension parts, check wheel alignment.
- Do not jack up at the trailing arm and lateral link.
- Always torque brake lines when installing.
- Lock nuts are un reusable parts; always use new ones. When replacing, do not wipe the oil off of the new lock nut before tightening.

Preparation

COMMERCIAL SERVICE TOOLS

NHSU0026

Tool name	Description
Equivalent to GG94310000 1 Flare nut crowfoot 2 Torque wrench	<p>Removing and installing brake piping a: 10 mm (0.39 in)</p> <p>NT360</p>
Spring compressor	<p>Removing and installing coil spring</p> <p>NT717</p>

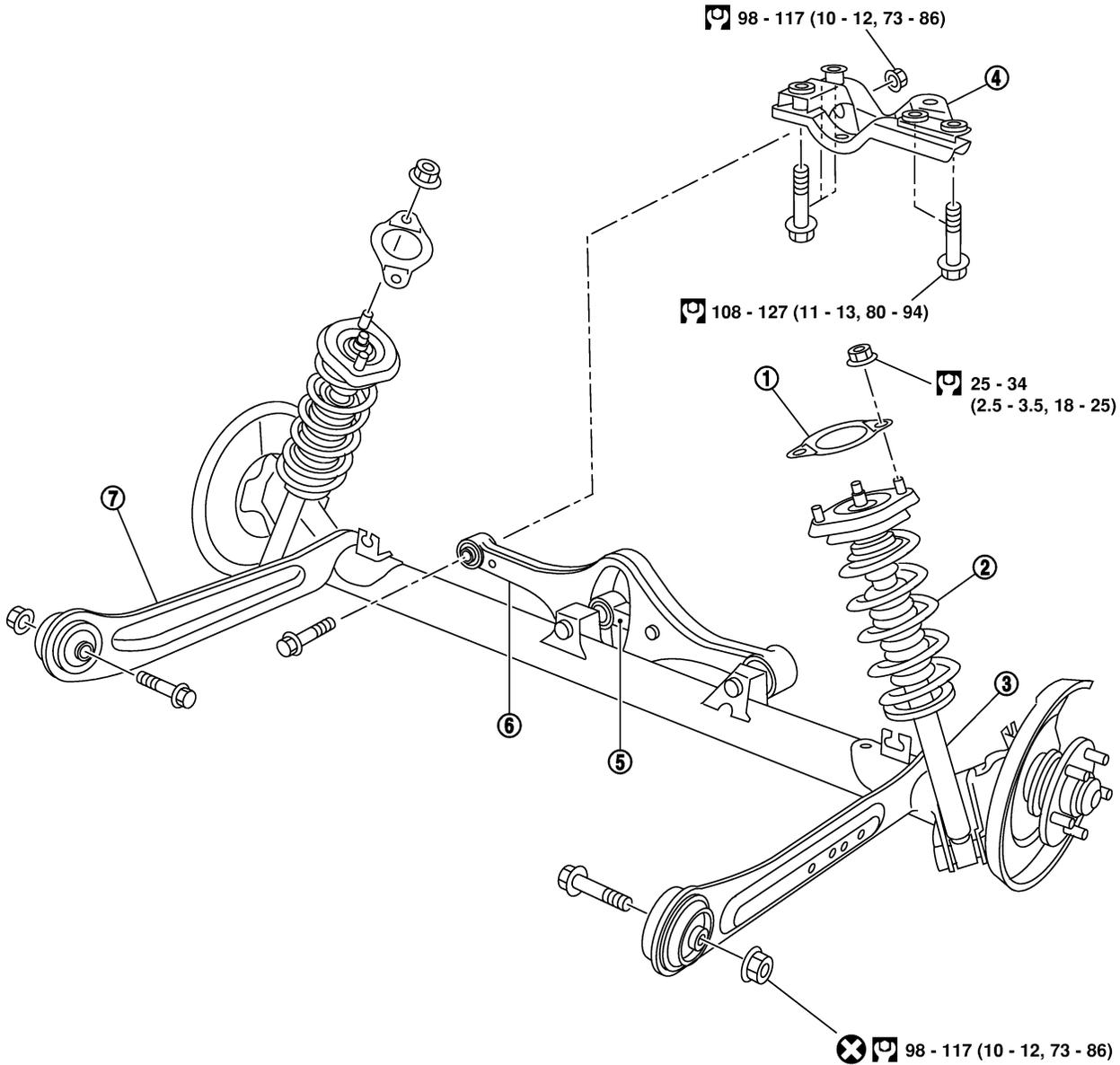
Noise, Vibration and Harshness (NVH) Troubleshooting

NHSU0027

Refer to "Noise, Vibration and Harshness (NVH) Troubleshooting", "FRONT SUSPENSION", SU-4.

Components

NHSU0028



: N•m (kg-m, ft-lb)

- 1. Shock absorber mounting seal
- 2. Coil spring
- 3. Shock absorber

- 4. Suspension member
- 5. Control rod

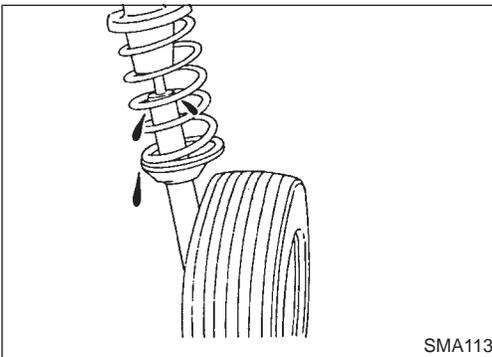
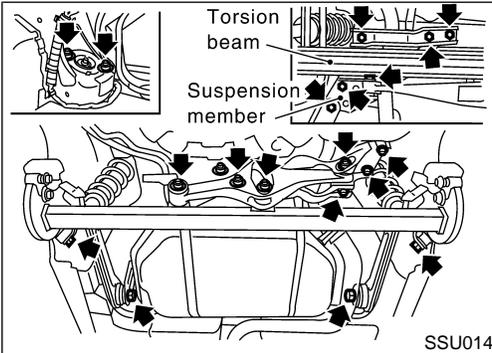
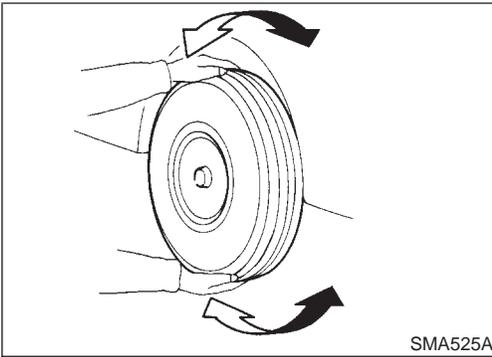
- 6. Lateral link
- 7. Torsion beam

SSU013

GI
MA
EM
LC
EC
FE
AT
AX
SU
BR
ST
RS
BT
HA
SC
EL
IDX

REAR SUSPENSION

On-vehicle Service



On-vehicle Service REAR SUSPENSION PARTS

NHSU0029

Check axle and suspension parts for excessive play, wear or damage.

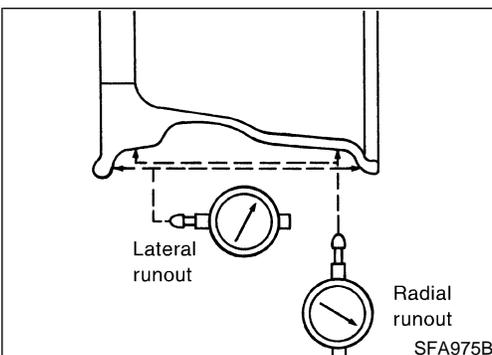
- Shake each rear wheel to check for excessive play.
- Retighten all nuts and bolts to the specified torque.
Tightening torque:
Refer to "REAR SUSPENSION", SU-19.
- Check shock absorber for oil leakage or other damage.
- Check wheelarch height. Refer to "On-vehicle Service", "FRONT SUSPENSION PARTS", SU-6.

REAR WHEEL ALIGNMENT

NHSU0030

Before checking rear wheel alignment, be sure to make a preliminary inspection (Unladen*).

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



Preliminary Inspection

NHSU0030S01

Aluminum wheel

NHSU0030S0101

1. Check tires for wear and improper inflation.
2. Check wheels for deformation, cracks and other damage. If deformed, remove wheel and check wheel runout.
 - a. Remove tire from aluminum wheel and mount on a tire balance machine.
 - b. Set dial indicator as shown in the illustration.

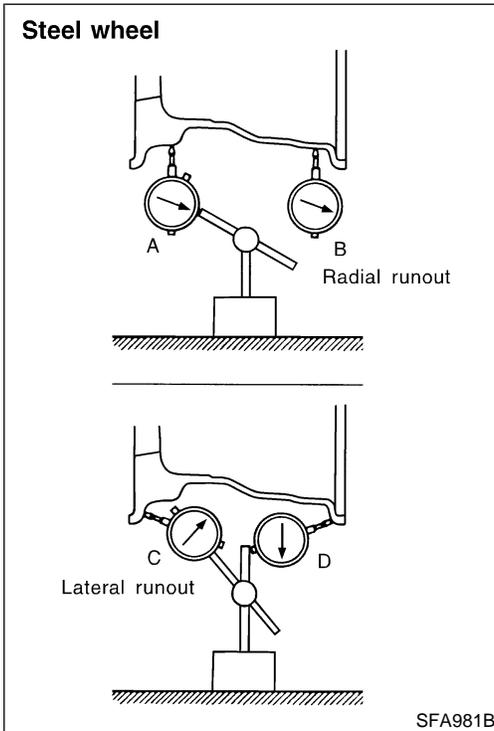
Wheel runout (Dial indicator value):
Refer to SDS, SU-17.

3. Check front wheel bearings for looseness.
4. Check front suspension for looseness.
5. Check steering linkage for looseness.
6. Check that front shock absorbers work properly.
7. Check vehicle posture (Unladen).

GI

MA

EM



Steel wheel

NHSU0030S0102

1. Check tires for wear and improper inflation.
2. Check wheels for deformation, cracks and other damage. If deformed, remove wheel and check wheel runout.
 - a. Remove tire from steel wheel and mount wheel on a tire balance machine.
 - b. Set two dial indicators as shown in the illustration.
 - c. Set each dial indicator to 0.
 - d. Rotate wheel and check dial indicators at several points around the circumference of the wheel.
 - e. Calculate runout at each point as shown below.

$$\text{Radial runout} = (A + B)/2$$

$$\text{Lateral runout} = (C + D)/2$$
 - f. Select maximum positive runout value and the maximum negative value. Add the two values to determine total runout. In case a positive or negative value is not available, use the maximum value (negative or positive) for total runout. If the total runout value exceeds the limit, replace steel wheel.

LC

EC

FE

AT

AX

SU

BR

ST

Wheel runout:

Refer to SDS, SU-17.

3. Check front wheel bearings for looseness.
4. Check front suspension for looseness.
5. Check steering linkage for looseness.
6. Check that front shock absorbers work properly.
7. Check vehicle posture (Unladen).

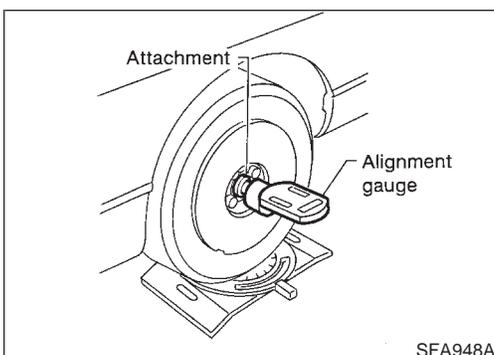
RS

BT

HA

SC

EL



Camber

Camber is preset at factory and cannot be adjusted.

NHSU0030S02

Camber:

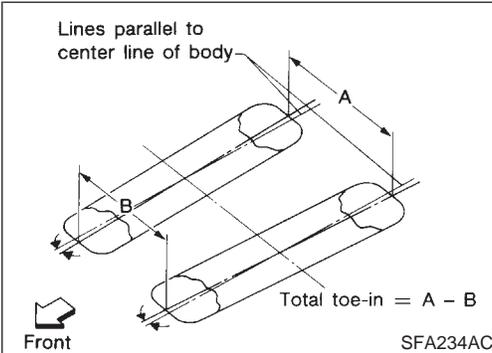
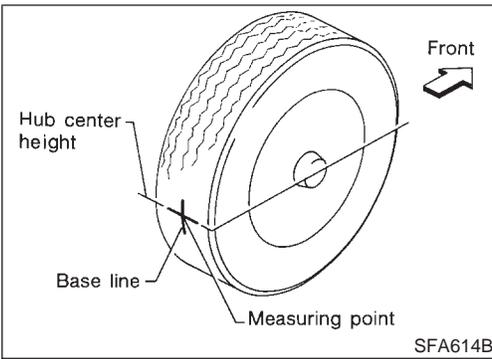
Refer to SDS, SU-28.

- If the camber is not within specification, inspect and replace any damaged or worn rear suspension parts.

IDX

REAR SUSPENSION

On-vehicle Service (Cont'd)



Toe-in

NHSU0030S03

Toe-in is preset at factory and cannot be adjusted. Measure toe-in using following procedure. If out of specification, inspect and replace any damaged or worn rear suspension parts.

WARNING:

- Perform following procedure always on a flat surface.
 - Make sure that no person is in front of the vehicle before pushing it.
1. Bounce rear of vehicle up and down to stabilize the posture.
 2. Push the vehicle straight ahead about 5 m (16 ft).
 3. Put a mark on base line of the tread (rear side) of both tires at the same height of hub center. This mark is a measuring point.
 4. Measure distance "A" (rear side).
 5. Push the vehicle slowly ahead to rotate the wheels 180 degrees (1/2 turn).

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

6. Measure distance "B" (front side).

Total toe-in: A - B

Refer to SDS, SU-28.

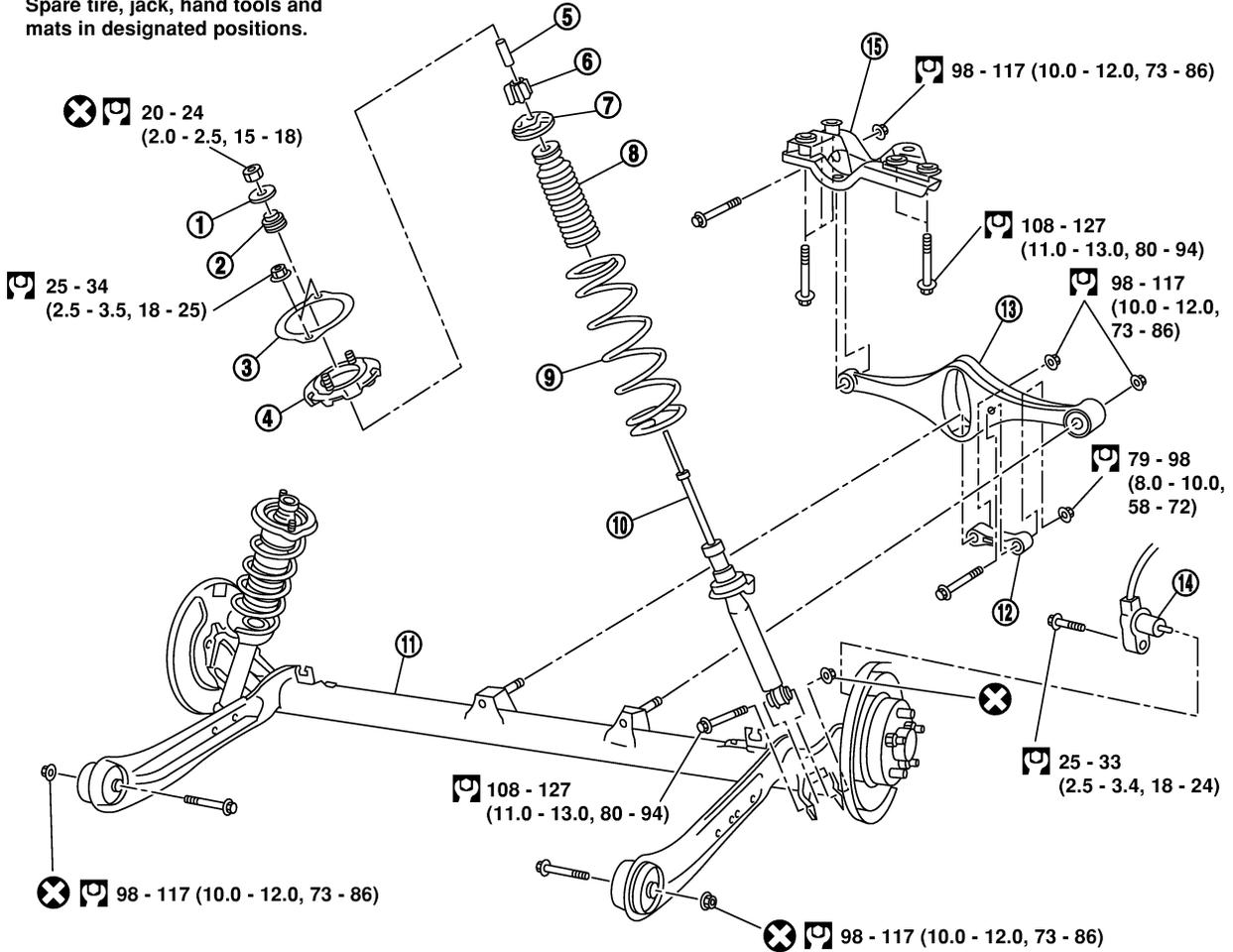
Removal and Installation

SEC. 431

When installing each rubber part, final tightening must be carried out under unladen condition* with tires on ground.

* Fuel, radiator coolant and engine oil full.

Spare tire, jack, hand tools and mats in designated positions.



: N·m (kg-m, ft-lb)

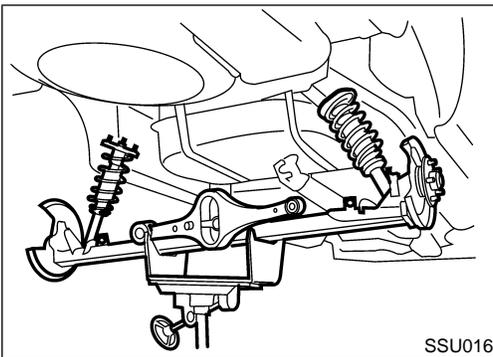
- | | | |
|------------------------------------|-----------------------|-----------------------|
| 1. Washer | 6. Bushing | 11. Torsion beam |
| 2. Bushing | 7. Bound bumper cover | 12. Control rod |
| 3. Shock absorber mounting seal | 8. Bound bumper | 13. Lateral link |
| 4. Shock absorber mounting bracket | 9. Coil spring | 14. ABS sensor |
| 5. Distance tube | 10. Shock absorber | 15. Suspension member |

SSU015

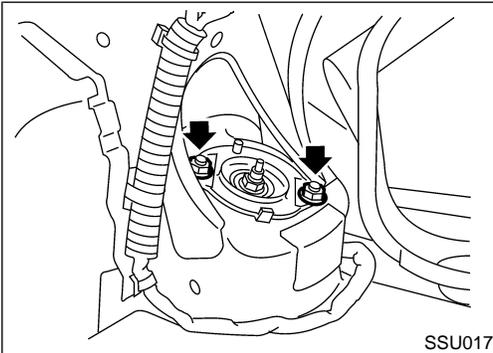
GI
MA
EM
LC
EC
FE
AT
AX
SU
BR
ST
RS
BT
HA
SC
EL
IDX

REAR SUSPENSION

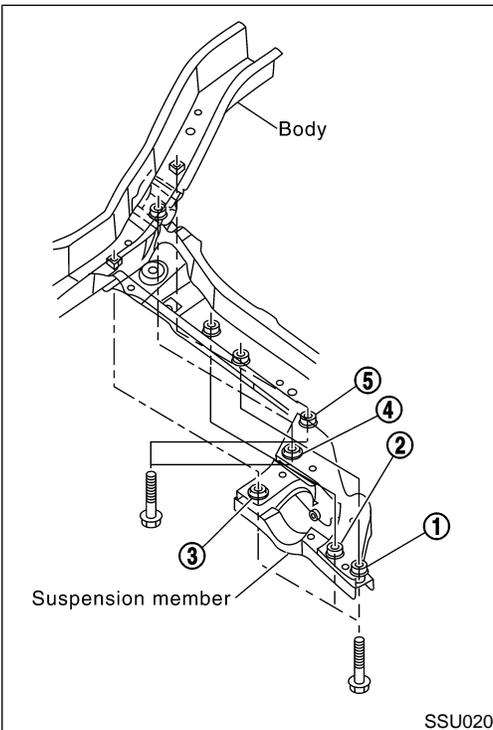
Removal and Installation (Cont'd)



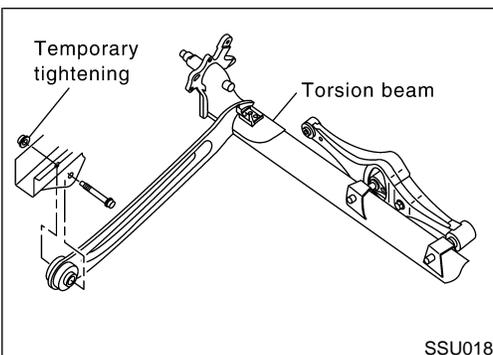
SSU016



SSU017



SSU020



SSU018

REMOVAL

NHSU0031S01

CAUTION:

- Before removing the rear suspension assembly, disconnect the ABS wheel sensor from the assembly. Failure to do so may result in damage to the sensor wires and the sensor becoming inoperative.

- Remove suspension assembly.

1. Remove tires, then remove brake hose lock plate.
2. Disconnect parking brake cable from caliper and remove brake caliper and rotor.

Suspend caliper assembly with wire so as not to stretch brake hose.

Be careful not to depress brake pedal, or piston will pop out. Make sure brake hose is not twisted.

3. Using a transmission jack, raise torsion beam a little, and remove nuts and bolts from the trailing arm, shock absorber assembly (lower side) and lateral link.
4. Lower transmission jack, and remove suspension.
5. Remove trunk room trim. Refer to BT-39, "Trunk Room Trim".
6. Remove strut securing nuts (upper side). Then pull out strut assembly.

INSTALLATION

NHSU0031S02

- Install suspension assembly.

CAUTION:

Refill with new brake fluid "DOT 3".

Never reuse drained brake fluid.

1. Install suspension member.
 - a. Temporarily tighten bolt 5.
 - b. Tighten all bolts in numerical order shown in the figure.

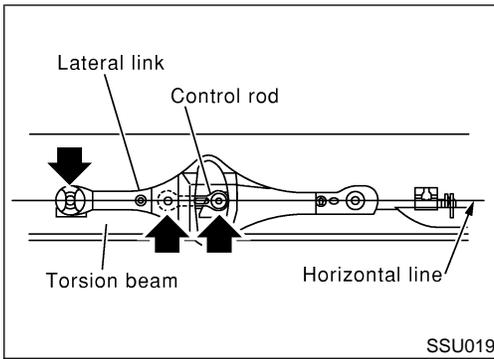
Tightening torque:

Refer to SU-23.

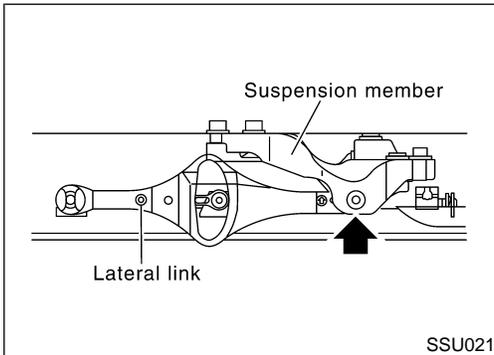
2. Attach control rod to lateral link. Do not tighten bolts at this time.
3. Attach lateral link, control rod and torsion beam to vehicle. Do not tighten bolts at this time.

REAR SUSPENSION

Removal and Installation (Cont'd)



- Using a transmission jack to lift the torsion beam, place lateral link and control rod horizontally against torsion beam. Tighten bolts and nuts to specified torque.

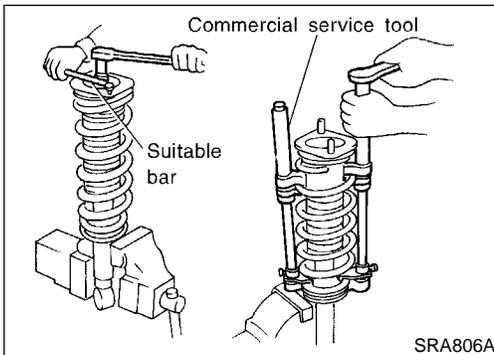


- Tighten lateral link at suspension member.
- Attach shock absorber assembly to vehicle. Then tighten the upper side of shock absorber assembly.
- Remove transmission jack and lower torsion beam so that the shock absorber assembly reaches full extension. Tighten torsion beam and lower side of shock absorber assembly to specified torque.

Coil Spring and Shock Absorber REMOVAL AND INSTALLATION

Remove shock absorber upper and lower fixing nuts.
Do not remove piston rod lock nut on vehicle.

NHSU0032



DISASSEMBLY

- Set shock absorber in vise, then **loosen** piston rod lock nut. **Do not remove piston rod lock nut at this time.**
- Compress spring with Tool so that the shock absorber upper spring seat can be turned by hand.

NHSU0033

WARNING:

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

- Remove piston rod lock nut.

INSPECTION

Shock Absorber Assembly

NHSU0034

- 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. Replace if necessary.

NHSU0034S01

Upper Rubber Seat and Bushing

Check rubber parts for deterioration or cracks.
Replace if necessary.

NHSU0034S02

GI

MA

EM

LC

EC

FE

AT

AX

SU

BR

ST

RS

BT

HA

SC

EL

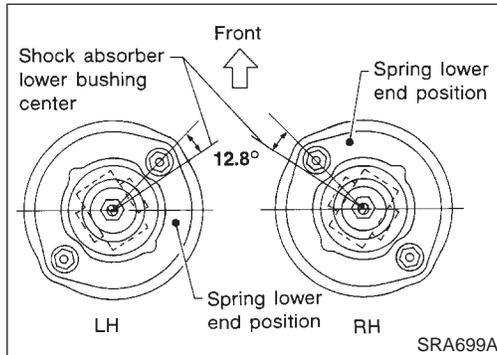
IDX

REAR SUSPENSION

Coil Spring and Shock Absorber (Cont'd)

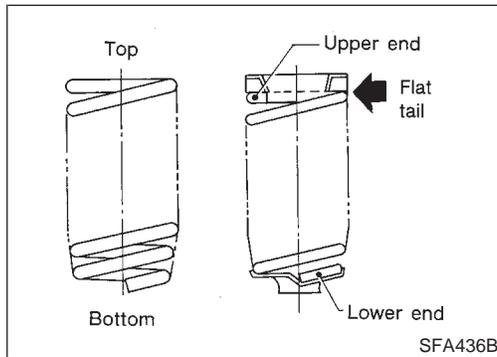
Coil Spring

Check for cracks, deformation or other damage. Replace if necessary. NHSU0034S03



ASSEMBLY

- Locate upper spring seat as shown. NHSU0035

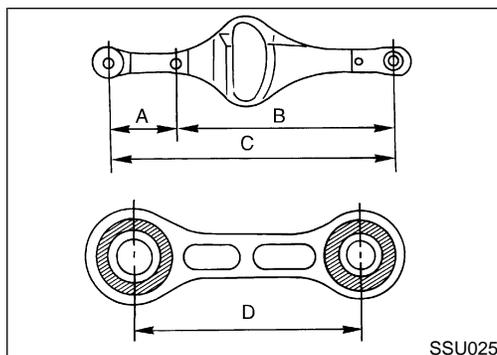


- When installing coil spring, be careful not to reverse top and bottom direction. (Top end is flat.)
- When installing coil spring on shock absorber, it must be positioned as shown in figure at left.

CAUTION:
Do not reuse piston rod lock nut.

Torsion Beam, Lateral Link and Control Rod DISASSEMBLY

- Remove torsion beam assembly. Refer to "Removal and Installation", "REAR SUSPENSION", SU-24. NHSU0036
- Remove lateral link and control rod from torsion beam.



INSPECTION

- Check for cracks, distortion or other damage. Replace if necessary. NHSU0037

Standard length:

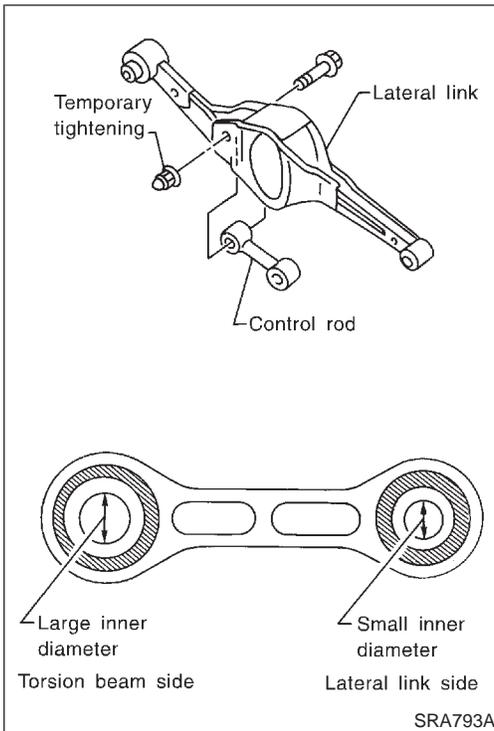
- A 206.5 - 208.5 mm (8.13 - 8.21 in)**
- B 393.5 - 395.5 mm (15.49 - 15.57 in)**
- C 600 - 604 mm (23.62 - 23.78 in)**
- D 106 - 108 mm (4.17 - 4.25 in)**

- Check all rubber parts for wear, cracks or deformation. Replace if necessary.

REAR SUSPENSION

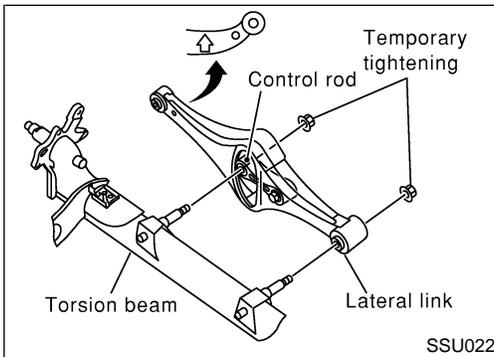
Torsion Beam, Lateral Link and Control Rod (Cont'd)

NHSU0038

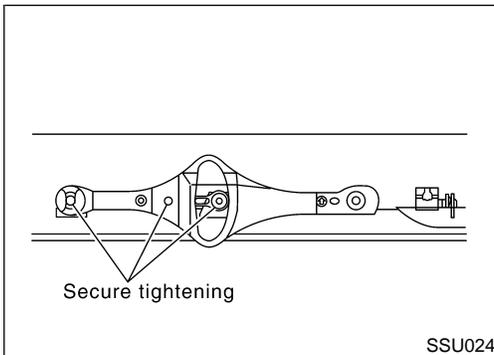


ASSEMBLY

1. Temporarily assemble lateral link and control rod.
 - When installing the control rod, connect the bush with the smaller inner diameter to the lateral link.



2. Temporarily install lateral link and control rod on torsion beam.
 - When installing, place lateral link with the arrow topside.



3. Place lateral link and control rod horizontally against torsion beam, and tighten to the specified torque.
4. Install torsion beam assembly. Refer to "Removal and Installation", "REAR SUSPENSION", SU-24.

GI

MA

EM

LC

EC

FE

AT

AX

SU

BR

ST

RS

BT

HA

SC

EL

IDX



REAR SUSPENSION

Service Data and Specifications (SDS)

Service Data and Specifications (SDS)

GENERAL SPECIFICATIONS (REAR)

=NHSU0039

Suspension type	Multi-link beam suspension
Shock absorber type	Double-acting hydraulic

REAR WHEEL ALIGNMENT (UNLADEN*)

NHSU0040

Camber Degree minute (Decimal degree)		Minimum	-1°45' (-1.75°)
		Nominal	-1°00' (-1.00°)
		Maximum	-0°15' (-0.25°)
Total toe-in	Distance (A - B) mm (in)	Minimum	-3 (-0.12)
		Nominal	1 (0.04)
		Maximum	5 (0.20)
	Angle (left plus right) Degree minute (Decimal degree)	Minimum	-16' (-0.27°)
		Nominal	5'30'' (0.09°)
		Maximum	26' (0.43°)

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