SECTION FSU
FRONT SUSPENSION

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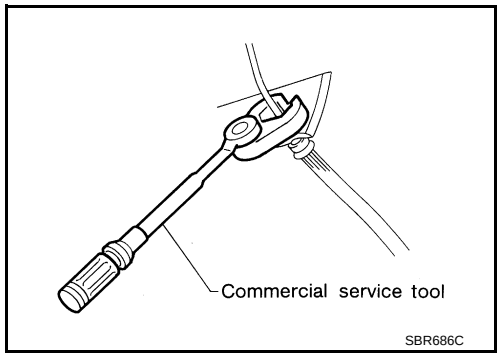
SERVICE INFORMATION

PRECAUTIONS

Precaution

INFOID:0000000004276949

- **When installing rubber parts, final tightening must be carried out under unladen condition* with tires on ground.**
  Oil will shorten the life of rubber bushings. Be sure to wipe off any spilled oil.
  ***: Fuel, engine 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 unreusable parts; always use new ones.**
  When replacing, do not wipe the oil off the new lock nut before tightening.

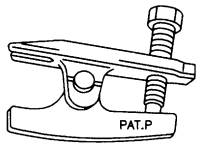
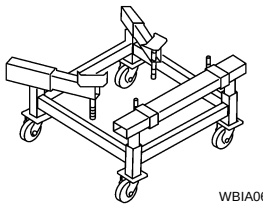


PREPARATION

Special Service Tool

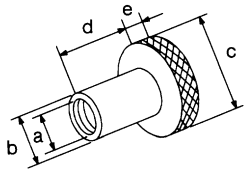
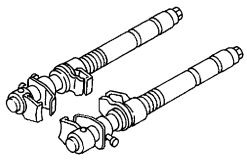
INFOID:0000000004276950

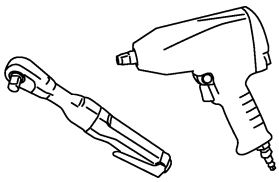
The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

Tool number (Kent-Moore No.) Tool name		Description
HT72520000 (J25730-A) Ball joint remover	 NT146	Removing outer tie-rod end and lower ball joint
KV101J0010 (J-47242) Engine support table	 WBIA0658E	Front suspension member removal

Commercial Service Tool

INFOID:0000000004276951

Tool name		Description
Attachment wheel alignment	 NT148	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)**
Spring compressor	 NT717	Removing and installing coil spring

Tool name	Description
Engine lifting bracket LEIA0062E	Removing and installing suspension member
Power tool  PBIC0190E	Loosening bolts and nuts

NOISE, VIBRATION, AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

INFOID:0000000004276952

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

Reference page		FSU-6	FSU-10	FSU-10	—	FSU-10	FSU-6	FSU-7	FSU-12	FAX-4, "NVH Troubleshooting Chart"	FAX-4, "NVH Troubleshooting Chart"	WT-4, "NVH Troubleshooting Chart"	WT-4, "NVH Troubleshooting Chart"	BR-4, "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	DRIVE SHAFT	AXLE	TIRES	ROAD WHEEL	BRAKES	STEERING
Symptom	Noise	×	×	×	×	×	×			×	×	×	×	×	×
	Shake	×	×	×	×		×			×	×	×	×	×	×
	Vibration	×	×	×	×	×				×	×	×			×
	Shimmy	×	×	×	×			×			×	×	×	×	×
	Shudder	×	×	×							×	×	×	×	×
	Poor quality ride or handling	×	×	×	×	×		×	×		×	×	×		

×: Applicable

FRONT SUSPENSION ASSEMBLY

Component

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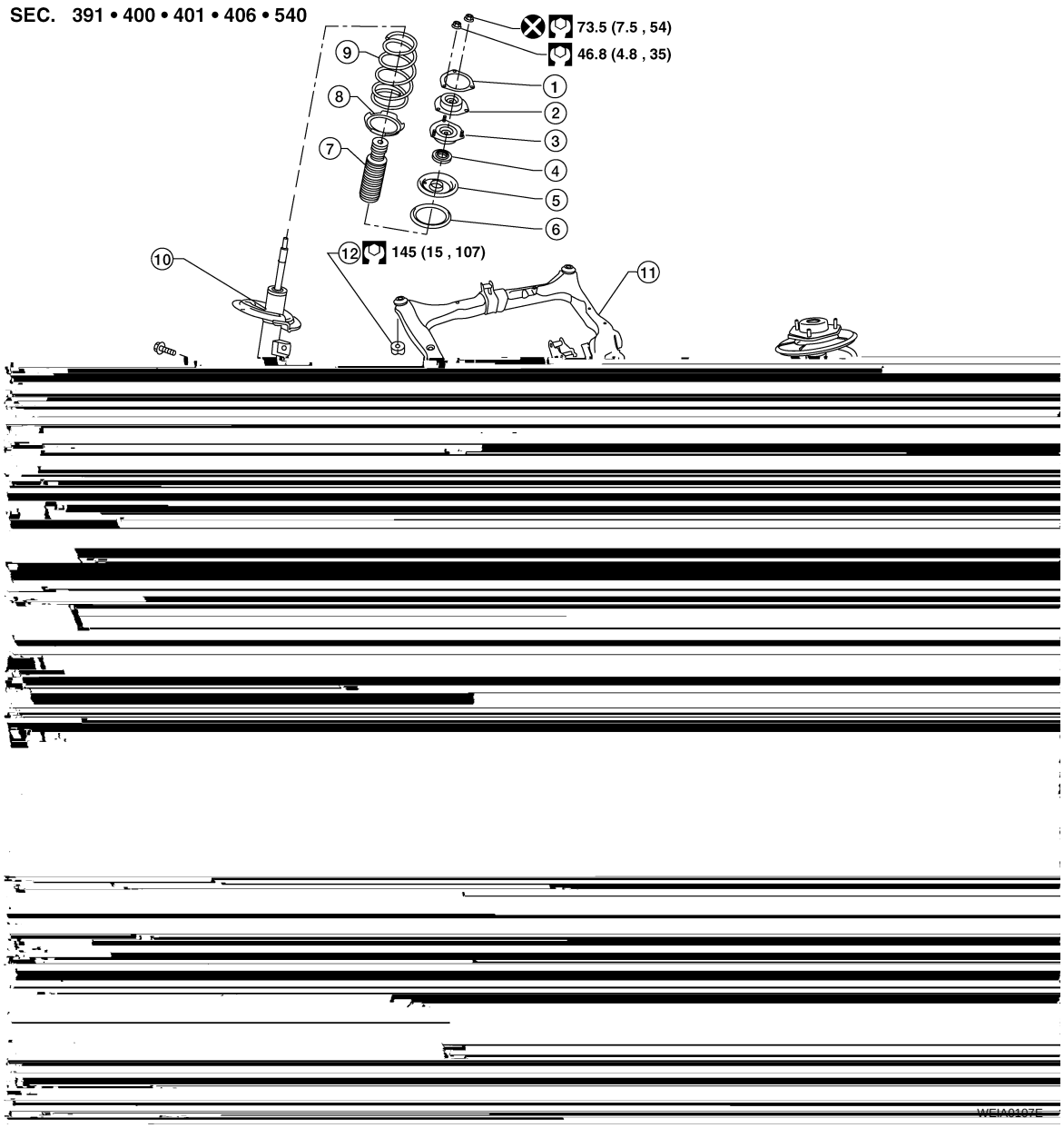


1. Strut spacer
2. Strut mount insulator
3. Mounting insulator bracket
4. Thrust bearing
5. Upper spring seat
6. Upper rubber seat
7. Dust cover
8. Lower rubber seat
9. Coil spring
10. Shock absorber (Strut)
11. Front suspension member
12. Cup
13. Member pin stay
14. Wheel hub and steering knuckle assembly
15. Cotter pin
16. Transverse link
17. Connecting rod
18. Stabilizer bar
19. Drive shaft
20. Stabilizer clamp
21. Stabilizer bushing

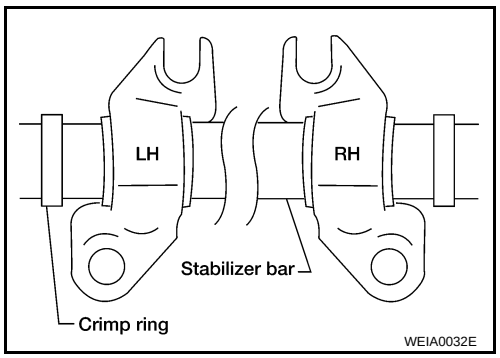
⇦ Front

On-vehicle Service

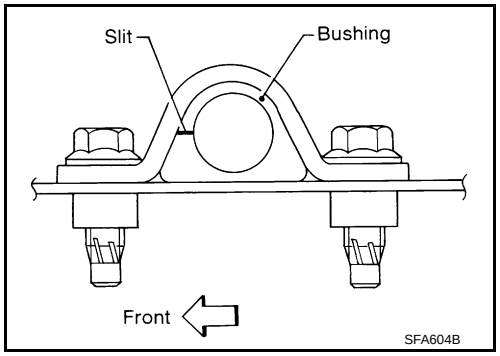
INFOID:0000000004276954

FRONT SUSPENSION PARTS

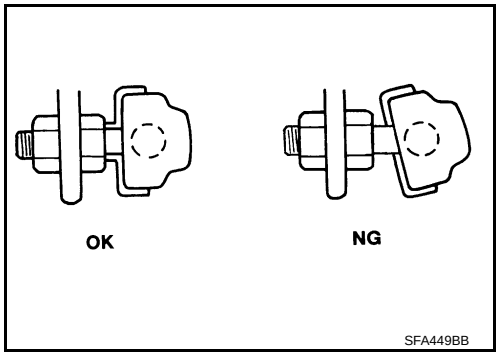
- When installing stabilizer bar, make sure that the stabilizer clamps are facing in the correct direction as shown.



- Make sure that slit in stabilizer bushing is in the position as shown.
- Lubricate the inner and outer surfaces of the stabilizer bushing using a silicone lubricant.



- Install stabilizer bar with ball joint socket properly placed as shown.
- When installing wheel and tire, refer to WT-6, "Conventional Tire and Wheel".



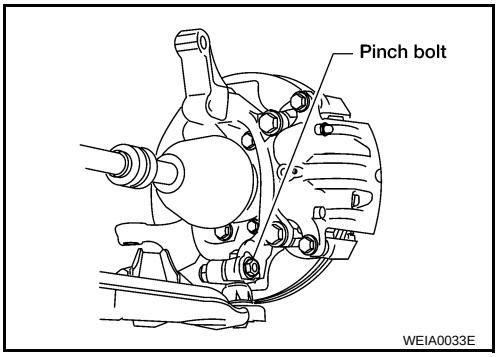
TRANSVERSE LINK

Removal and Installation

INFOID:0000000004276959

REMOVAL

1. Remove the wheel and tire using power tool.
2. Remove lower ball joint pinch bolt and nut using power tool, then separate transverse link from the wheel hub and steering knuckle assembly.



3. Remove the two transverse link pivot bolts and transverse link bolt using power tool.
4. Remove the transverse link.

INSPECTION AFTER REMOVAL

Visual Check

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

Lower Ball Joint

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

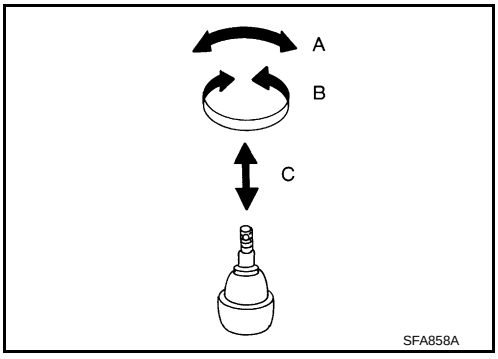
Swinging Force

Check ball joint 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” (measuring at groove of ball stud)	**: 7.8 - 54.9 N (0.8 - 5.6 kg-f, 1.8 - 12.3 lb-f)**



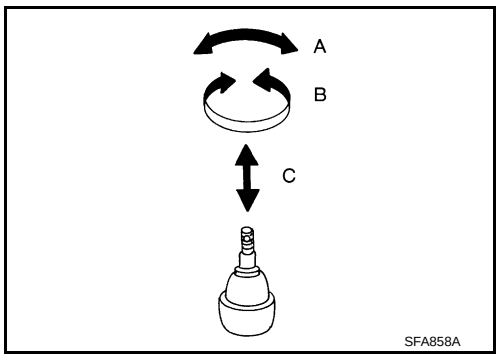
Turning Force

Check ball joint 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 (5.0 - 35.0 kg-cm, 4.3 - 30.4 in-lb)



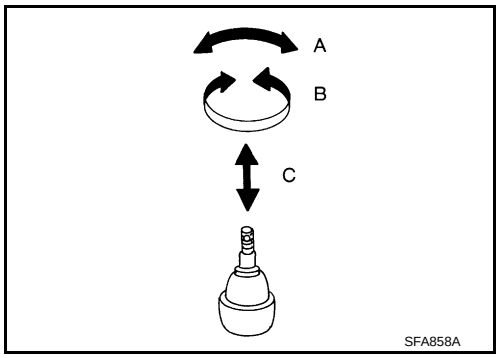
Vertical End Play

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)



INSTALLATION

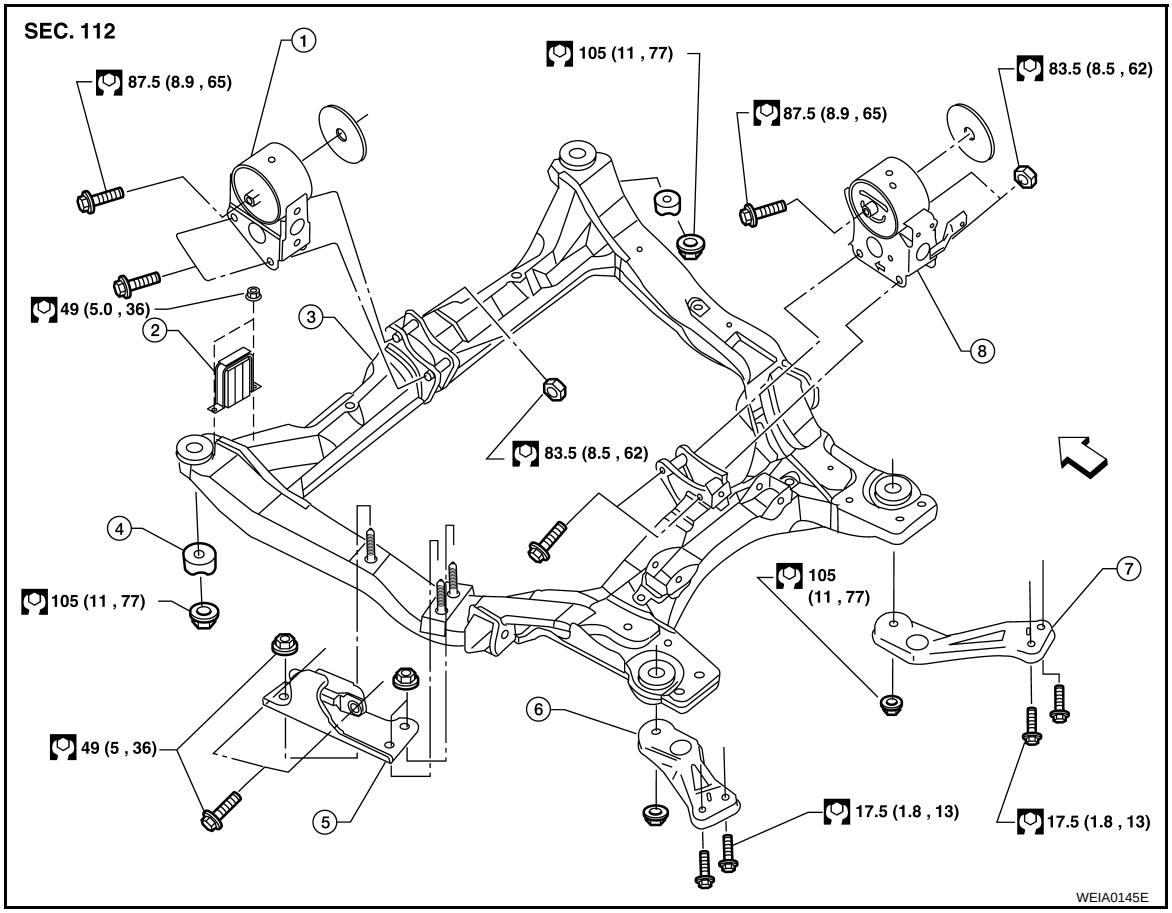
Installation is in the reverse order of removal.

- Tighten the transverse link mounting bolts and nuts to specified torque, refer to FSU-6, "Component". During installation, the final tightening must be done with the vehicle at curb weight and the tires on the ground.
  CAUTION:
  Discard the old pinch nut and use a new pinch nut for installation of the lower ball joint pinch bolt.
- After installation, check the wheel alignment. Refer to FSU-7, "Front Wheel Alignment".
- Install the wheel and tire. Refer to WT-6, "Conventional Tire and Wheel".

FRONT SUSPENSION MEMBER

Removal and Installation

INFOID:0000000004276960



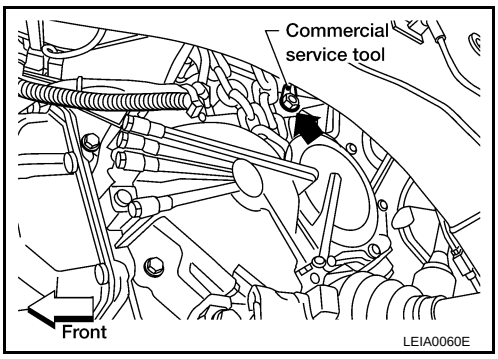
1. Front engine mount
2. Dynamic damper
3. Front suspension member
4. Cup
5. LH transaxle mounting insulator
6. Member pin stay, LH
7. Member pin stay, RH
8. Rear engine mount
⇦ Front

REMOVAL

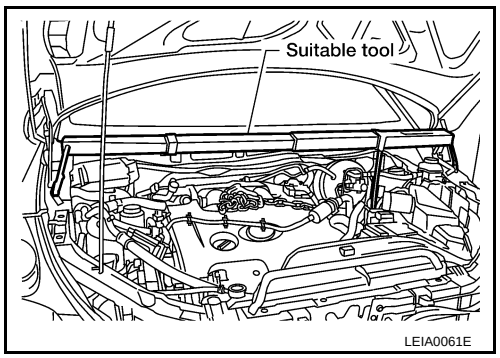
1. Remove the front wheels and tires using power tool. Refer to WT-6, "Conventional Tire and Wheel".
2. Remove the engine under cover.
3. Remove the splash shields.
4. Remove the LH transaxle mounting insulator nuts using power tool.

a. Remove cowl top and cowl top extension. Refer to EI-18, "Removal and Installation".

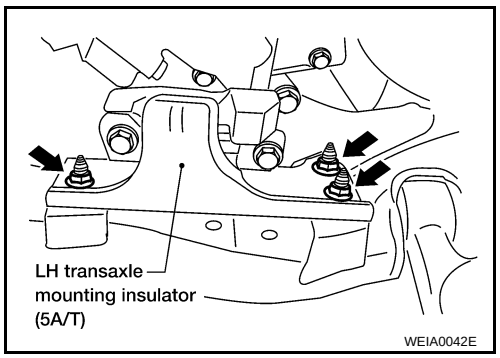
b. Install a commercially available engine lifting bracket onto the transaxle with bolt as shown.



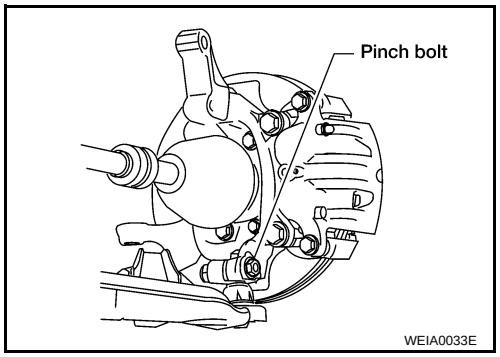
c. Support engine from engine lifting bracket using suitable tool as shown.
CAUTION:
Be sure suitable tool is securely resting on hoodledge as shown.



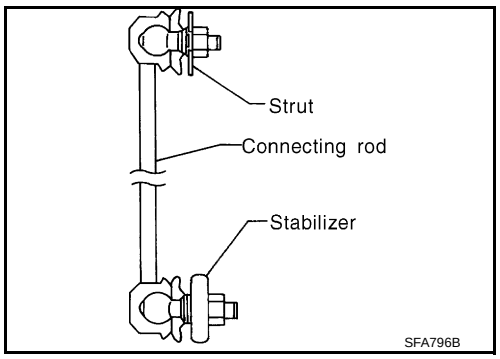
d. Remove the three LH transaxle mounting insulator nuts using power tool.



5. Remove the lower ball joint pinch bolt and nut using power tool, then separate the transverse link from the wheel hub and steering knuckle assembly. Refer to FSU-6, "Component".
6. Remove the front exhaust tube using power tool. Refer to EX-6, "Removal and Installation".
7. Remove the power steering line bracket from the front suspension member.
8. Remove the bolts on the lower side of the steering gear. Refer to PS-15, "Removal and Installation".
9. Disconnect the front engine mount electrical connector.



10. Disconnect the connecting rod from the front strut using power tool.
11. Set a transmission jack under the front suspension member, then remove the nuts from the front suspension member using power tool.
12. Remove the bolts from the member pin stay on the vehicle body side using power tool.
13. Remove the through bolts from the front and rear engine mounts.
14. Lower the transmission jack slowly to remove the front suspension member.
    - If necessary, remove the exhaust hanger bracket from the front suspension member.
    - If necessary, remove the front and rear engine mounts.
    - If necessary, remove the transverse link.
    - If necessary, remove dynamic damper.



INSPECTION AFTER REMOVAL

Check the front suspension member for deformation, cracks, or any other damage. Replace if necessary.

INSTALLATION

Installation is in the reverse order of removal noting the following:
- Install the stabilizer bar bushings and clamps in the specified orientation. Refer to FSU-12, "Removal and Installation".
- Tighten the stabilizer bar and connecting rod nuts and bolts to specification. Refer to FSU-6, "Component".

- Tighten the steering gear bolts to specification. Refer to PS-15, "Removal and Installation".
- Tighten the transverse link bolts and nuts to specification. Refer to FSU-14, "Removal and Installation".
- Check the wheel alignment. Refer to FSU-7, "Front Wheel Alignment".

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specification (Front)

INFOID:0000000004276961

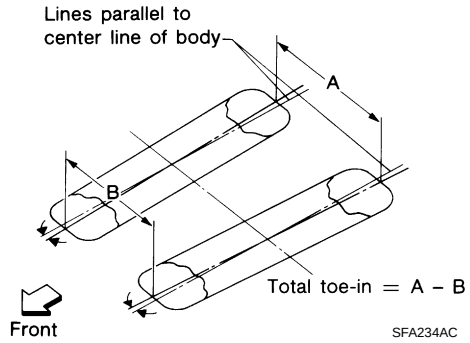
Unit: mm (in)

Model	SE	Base, S and SL
Suspension type	Independent strut with coil springs	
Shock absorber type	Double-acting hydraulic	
Stabilizer bar	Standard equipment	
Free spring height	340 (13.39)	350 (13.78)

Front Wheel Alignment (Unladen*1)

INFOID:0000000004276962

Market			United States and Canada	Mexico
Camber degree minute (decimal degree)		Minimum	–1° 15′ (–1.25°)	–0° 4′ (–0.07°)
		Nominal	–0° 30′ (–0.50°)	–0° 4′ (–0.07°)
		Maximum	0° 15′ (0.25°)	0° 41′ (0.68°)
		Left and right difference	0° 45′ (0.75°) or less	0° 45′ (0.75°) or less
Caster degree minute (decimal degree)		Minimum	1° 57′ (1.95°)	2° 27′ (2.45°)
		Nominal	2° 42′ (2.70°)	2° 27′ (2.45°)
		Maximum	3° 27′ (3.45°)	3° 12′ (3.20°)
		Left and right difference	0° 45′ (0.75°) or less	0° 45′ (0.75°) or less
Kingpin inclination degree minute (decimal degree)		Minimum	13° 39′ (13.65°)	13° 42′ (13.70°)
		Nominal	14° 24′ (14.40°)	13° 42′ (13.70°)
		Maximum	15° 09′ (15.15°)	14° 27′ (14.45°)



Total toe-in	Distance (A – B) mm (in)	Minimum	–0.75 (–0.0295)	–0.75 (–0.0295)
		Nominal	0.25 (0.0098)	0.25 (0.0098)
		Maximum	1.25 (0.0492)	1.25 (0.0492)
	Angle (left plus right) degree minute (decimal degree)	Minimum	-0° 1′ 54″ (-0.03°)	-0° 1′ 54″ (-0.03°)
		Nominal	0° 0′ 36″ (0.01°)	0° 0′ 36″ (0.01°)
		Maximum	0° 3′ 6″ (0.05°)	0° 3′ 6″ (0.05°)
Wheel turning angle full turn*2	Inside degree minute (decimal degree)	Minimum	35° 15′ (35.25°)	38° 00′ (38.00°)
		Nominal	38° 45′ (38.75°)	41° 30′ (41.50°)
		Maximum	39° 45′ (39.75°)	42° 30′ (42.50°)
	Outside degree minute (decimal degree)	Nominal	32° 30′ (32.5°)	33° 24′ (33.4°)

*1: Fuel, engine 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-f, 22 to 33 lb-f) with engine idle.

Lower Ball Joint

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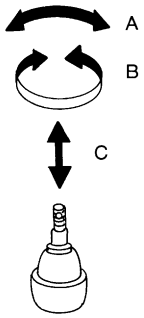


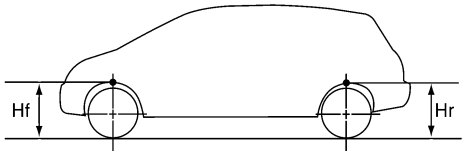
SFA858A

Swinging force “A” (Measuring point: groove of ball stud) N (kg-f, lb-f)	7.8 - 54.9 (0.8 - 5.6, 1.8 - 12.3)
Turning torque “B” N·m (kg-cm, in-lb)	0.49 - 3.43 (5.0 - 35.0, 4.3 - 30.4)
Vertical end play “C” mm (in)	0 (0)

Wheelarch Height (Unladen*)

INFOID:0000000004276964

Unit: mm (in)



WEIA0030E

Market	United States and Canada	Mexico
Front (Hf)	740 (29.13)	770 (30.31)
Rear (Hr)	749 (29.49)	779 (30.67)

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