SECTION RSU
REAR SUSPENSION

CONTENTS

PRECAUTIONS

PFP:00001

Cautions

NES0006G

- When installing rubber bushings, the final tightening must be carried out under unladen conditions with tires on level ground. Oil will shorten the life of rubber bushings. Be sure to wipe off any spilled oil.
- Unladen conditions means that fuel, engine coolant and lubricant are full. A spare tire, a jack, hand tools and mats are in designated positions.
- After servicing suspension parts, be sure to check wheel alignment.
- Self-lock nuts are not reusable. Always use new ones when installing. Since new self-lock nuts are pre-oiled, tighten as they are.

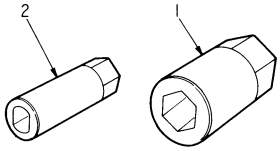
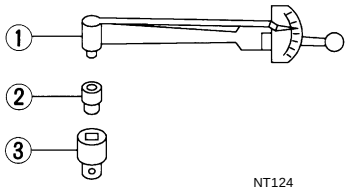
PREPARATION

PFP:00002

Special Service Tools (SST)

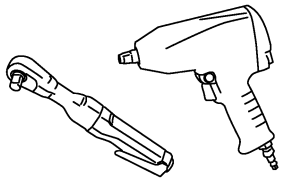
NES0006H

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
KV40106400 (—) Socket wrench  ZZA1102D	Removing actuator plate fixing nut (with active damper suspension)
ST3127S000 (See J–25765-A) Preload gauge 1. GG91030000 Torque wrench (J–25765) 2. HT62940000 (—) Socket adapter (1/2″) 3. HT62900000 (—) Socket adapter (3/8″)  NT124	Measuring rotating torque of ball joint

Commercial Service Tools

NES0006I

Tool name	Description
Power tool  PBIC0190E	● Removing wheel nuts ● Removing brake caliper ● Removing suspension component parts

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

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

PFP:00003

NVH Troubleshooting Chart

NES0006J

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

Reference page			RSU-7	RSU-9	—	—	—	RSU-7	RSU-5	RSU-17	NVH in PR section.	NVH in RFD section.	NVH in RAX and RSU sections.	NVH in WT section.	NVH in WT section.	NVH in RAX section.	NVH in BR section.	NVH in PS section.
Possible cause and SUSPECTED PARTS			Improper installation, looseness	Shock absorber defamation, damage or deflection	Bushing or mounting deterioration	Parts interference	Spring fatigue	Suspension looseness	Incorrect wheel alignment	Stabilizer bar fatigue	PROPELLER SHAFT	DIFFERENTIAL	REAR AXLE AND REAR SUSPENSION	TIRES	ROAD WHEELS	DRIVE SHAFT	BRAKES	STEERING
Symptom	REAR SUSPENSION	Noise	×	×	×	×	×	×			×	×	×	×	×	×	×	×
		Shake	×	×	×	×		×			×		×	×	×	×	×	×
		Vibration	×	×	×	×	×				×		×	×		×		×
		Shimmy	×	×	×	×			×				×	×	×		×	×
		Judder	×	×	×								×	×	×		×	×
		Poor quality ride or handling	×	×	×	×	×		×	×			×	×	×			

×: Applicable

REAR SUSPENSION ASSEMBLY

PFP:55020

On-Vehicle Inspection and Service

NES0006K

Make sure the mounting conditions (looseness, back lash) of each of the component and component conditions (wear, damage) are normal.

INSPECTION OF SUSPENSION ARM BALL JOINT END PLAY

Measure axial end play by installing and moving up/down between suspension arm and axle with an iron pry bar or something similar.

Axial end play : 0 mm (0 in)

CAUTION:
Be careful not to damage ball joint boot.

SHOCK ABSORBER INSPECTION

Check shock absorber for oil leakage, damage and replace if there are.

Wheel Alignment Inspection

NES000HN

DESCRIPTION

- Measure wheel alignment under unladen conditions. “Unladen conditions” mean that fuel, engine coolant, and lubricant are full. Spare tire, jack, hand tools and mats are in designated positions.

PRELIMINARY CHECK

- Check tires for improper air pressure and wear.
- Check road wheels for runout.
- Check wheel bearing axial end play.
- Check suspension arm ball joint axial end play.
- Check shock absorber operation.
- Check each mounting point of axle and suspension for looseness and deformation.
- Check each link, arm and member for cracks, deformation, and other damage.
- Check vehicle posture.

GENERAL INFORMATION AND RECOMMENDATIONS

- A four-wheel thrust alignment should be performed.
  - This type of alignment is recommended for any NISSAN/INFINITI vehicle.
  - The four-wheel “thrust” process helps ensure that the vehicle is properly aligned and the steering wheel is centered.
  - The alignment rack itself should be capable of accepting any NISSAN/INFINITI vehicle.
  - The rack should be checked to ensure that it is level.
- Make sure the machine is properly calibrated.
  - Your alignment equipment should be regularly calibrated in order to give correct information.
  - Check with the manufacturer of your specific equipment for their recommended Service/Calibration Schedule.

THE ALIGNMENT PROCESS

IMPORTANT:

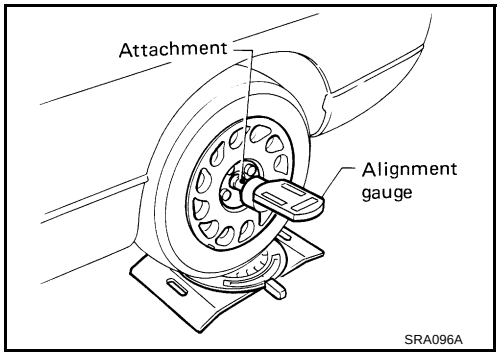
Use only the alignment specifications listed in this Service Manual.

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

CAMBER INSPECTION

- Measure camber of both right and left wheels with a suitable alignment gauge and adjust in accordance with the following procedures.

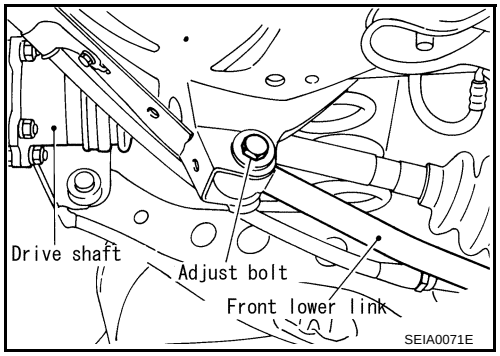
Camber **: Refer to RSU-19, "SERVICE DATA AND SPECIFICATIONS (SDS)" .**



If outside the standard value, adjust with adjusting bolt on front lower link.

NOTE:

After adjusting camber, be sure to check toe-in.



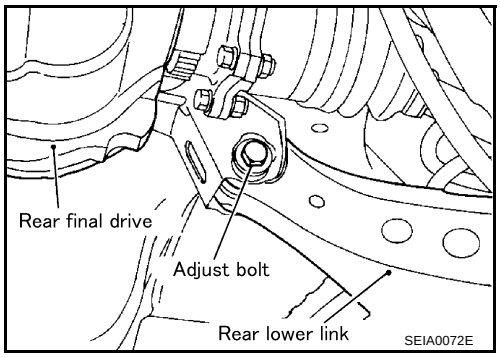
TOE-IN

If toe-in is not within the specification, adjust with adjusting bolt in rear lower link.

CAUTION:

Be sure to adjust equally on RH and LH side with adjusting bolt.

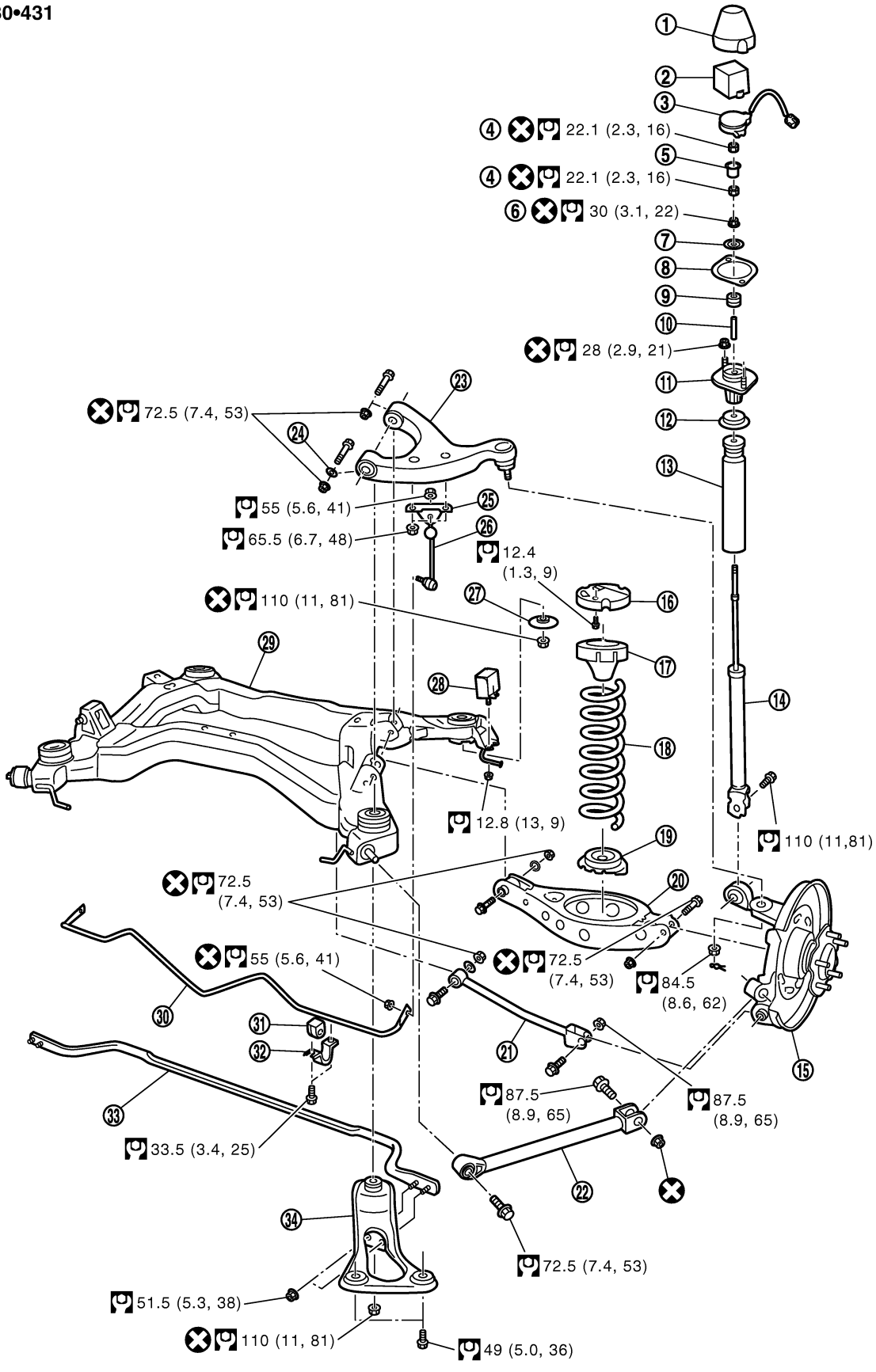
If toe-in is not still within the specification, inspect and replace any damaged or worn rear suspension parts.



Components

NES000HO

SEC. 430•431



REAR SUSPENSION ASSEMBLY

1.	Cap (Without active damper suspension)	2.	Cap (With active damper suspension)	3.	Actuator assembly (With active damper suspension)
4.	Nut (With active damper suspension)	5.	Actuator plate (With active damper suspension)	6.	Nut (Without active damper suspension)
7.	Washer	8.	Shock absorber mounting seal	9.	Bushing
10.	Distance tube	11.	Shock absorber mounting bracket	12.	Bound bumper cover
13.	Bound bumper	14.	Shock absorber	15.	Axle housing assembly
16.	Bracket	17.	Upper seat	18.	Coil spring
19.	Rubber seat	20.	Rear lower link	21.	Front lower link
22.	Radius rod	23.	Suspension arm	24.	Stopper rubber
25.	Stabilizer connecting rod mounting bracket	26.	Stabilizer connecting rod	27.	Mounting stopper
28.	Dynamic damper	29.	Rear suspension member	30.	Stabilizer bar
31.	Stabilizer bushing	32.	Stabilizer clamp	33.	Cross bar
34.	Member stay				

Refer to GI-9, "Components" , for the symbols in the figure.

SHOCK ABSORBER

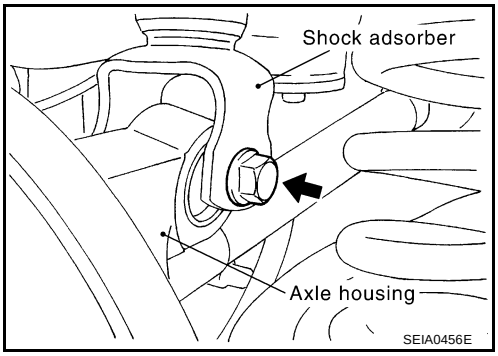
PFP:56210

Removal and Installation

NES0006N

REMOVAL

1. Remove tires with power tool.
2. Set jack under rear lower link to relieve the coil spring tension.
3. Remove fixing bolt in axle housing side of shock absorber assembly with power tool.
4. Gradually lower the jack remove in from rear lower link.
5. Remove rear seat cushion, rear seat back and rear parcel shelf finisher. Refer to SE-191, "REAR SEAT" , EI-48, "REAR PARCEL SHELF FINISHER" .
6. Remove cap and actuator assembly. (with active damper suspension)
7. Remove fixing nuts of shock absorber.
8. Remove shock absorber assembly from vehicle



INSPECTION AFTER REMOVAL

Check the followings

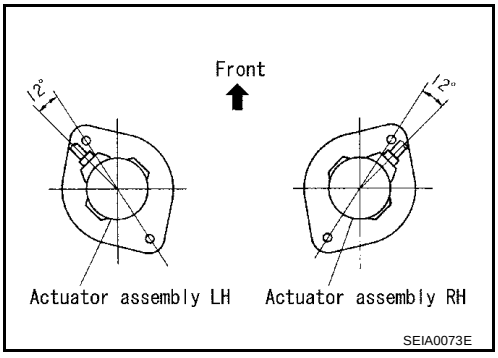
- Shock absorber for deformation, cracks, damage, and replace if there are.
- Piston rod for damage, uneven wear, or distortion, and replace if there are.
- Welded and sealed areas for oil leakage, and replace if there are.

INSTALLATION

- Refer to GI-9, "Components" for tightening torque. Install in the reverse order of the removal.

  NOTE:
  Refer to component parts location and do not reuse non-reusable parts.
- Perform the final tightening of shock absorber assembly lower side (rubber bushing) under unladen conditions with tires on level ground. Check wheel alignment. Refer to FSU-5, "Wheel Alignment Inspection" .
- After adjusting wheel alignment, adjust neutral of steering angle sensor. Refer to BRC-6, "Adjustment of Steering Angle Sensor Neutral Position" .
- Be sure to install actuator assembly correctly as shown in the figures.(with active damper suspension)

  CAUTION:
  If a strong shock has been given to actuator assembly or if it has been dropped, replace it with a new one.



Disassembly and Assembly

NES0006O

DISASSEMBLY

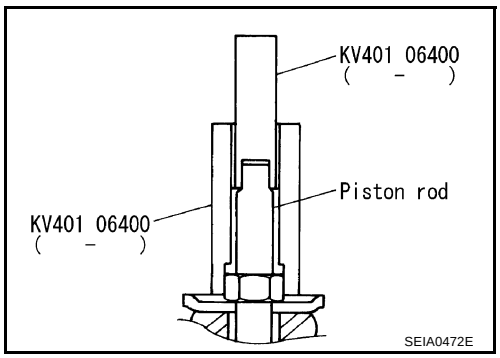
CAUTION:

Do not damage piston rod on shock absorber when removing components from shock absorber.

1. Remove shock absorber mounting seal from shock absorber mounting bracket.
2. Wrap a shop cloth around the lower side of shock absorber and it in a vice.

   CAUTION:

   Do not clamp the cylindrical part of shock absorber in a vice.
3. Fix piston rod using the socket wrench (SST), and remove actuator plate fixing nut with the socket wrench (SST). Then remove actuator plate.(with active damper suspension)
4. Secure the piston rod tip so that piston rod does not turn, and remove piston rod lock nut.
5. Remove washer, bushing, distance tube, shock absorber mounting bracket, bound bumper cover and bound bumper from shock absorber.



INSPECTION AFTER DISASSEMBLY

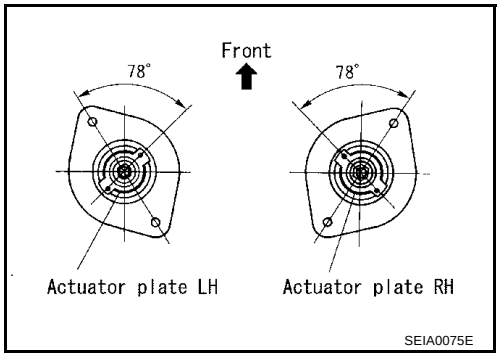
Bound Bumper and Bushing

Check bound bumper and bushing for cracks, deformation or other damage. Replace if there are.

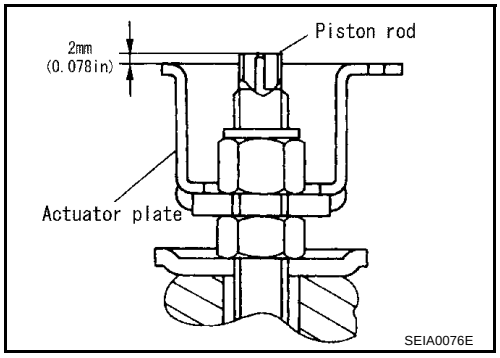
ASSEMBLY

- Refer to GI-9, "Components" for tightening torque. Install in the reverse order of the removal.

  NOTE:
  - Refer to component parts location and do not reuse non-reusable parts.
  - Make sure piston rod on shock absorber is not damaged when attaching components to shock absorber.
- Be sure to install actuator prate correctly as shown in illustration.(with active damper suspension)



- Confirm that the piston rod end is higher than actuator plate as specified in the figure.(with active damper suspension)



SUSPENSION ARM

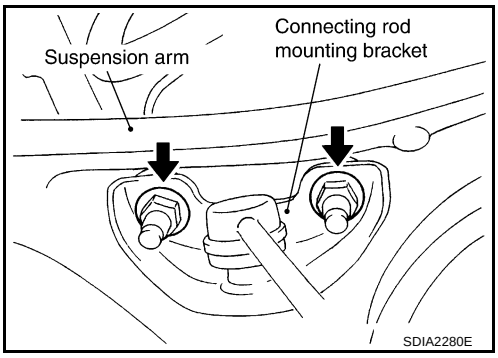
PFP:55501

Removal and Installation

NES0006P

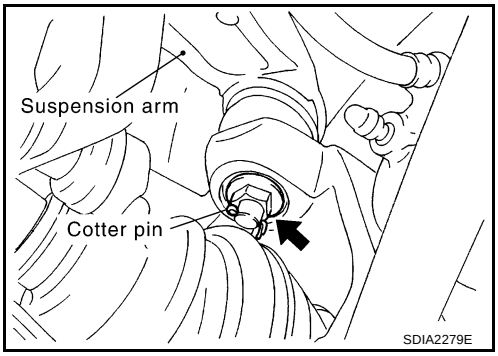
REMOVAL

1. Remove tires with power tool.
2. Remove nuts, and then remove connecting rod mounting bracket from suspension arm with power tool.RSU-17, "STABILIZER BAR"



3. Set jack under rear lower link to relive the coil spring tension.
4. Remove suspension arm ball joint cotter pin, and then loosen nut.
5. Remove suspension arm from axle housing so as not to damage ball joint boot using ball (suitable tool).

   CAUTION:
   Tighten temporarily mounting nut to prevent damage to threads and to prevent ball joint remover (suitable tool) from coming off.
6. Remove nuts, bolts and washer of suspension arm and rear suspension member with power tool.
7. Remove suspension arm from vehicle.



INSPECTION AFTER REMOVAL

Visual Inspection

- Check suspension arm and bushing for deformation, cracks, or damage. If any non-standard condition is found, replace it.
- Check boot of ball joint for cracks, or damage, and also for grease leakage.

Ball Joint Inspection

Manually move ball stud to confirm it moves smoothly with no binding.

Swing Torque Inspection

NOTE:
Before measuring, move ball joint at least ten times by hand to check for smooth movement.

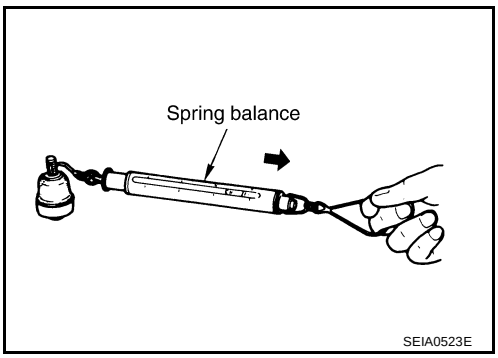
- Hook a spring balance at cotter pin mounting hole. Confirm spring balance measurement value is within the specifications when ball stud begins moving.

  Specified swing torque:

  0.50 - 3.43 N·m (0.06 - 0.34 kg-m, 5 - 30 in-lb)

  Specified value of spring balance:

  7.85 - 54.4 N (0.80 - 5.55 kg, 1.77 - 12.23 lb)
- Replace suspension arm assembly if value is out side standard.



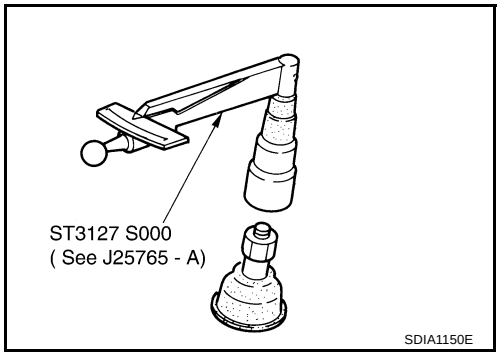
Rotating Torque Inspection

- Attach mounting nut to ball stud. make sure rotating torque is within the specifications with the preload gauge (SST).

  Specified rotating torque:

  0.50 - 3.43 N·m (0.06 - 0.34 kg-m, 5 - 30 in-lb)

- Replace suspension arm assembly if value is out side standard.



Axial End Play Inspection

- Move the tip of ball joint in the axial direction to check for looseness.

Specified axial end play : 0 mm (0 in)

- If it is outside the specified range, replace suspension arm assembly.

INSTALLATION

- Refer to GI-9, "Components" for tightening torque. Install in the reverse order of the removal.

NOTE:
Refer to component parts location and do not reuse non-reusable parts.

- Perform final tightening of rear suspension member installation position (rubber bushing) under unladen condition with tires on level ground. Check wheel alignment. Refer to RSU-5, "Wheel Alignment Inspection" .
- After adjusting wheel alignment, adjust neutral position of steering angle sensor. Refer to BRC-6, "Adjustment of Steering Angle Sensor Neutral Position" .

RADIUS ROD

PFP:55110

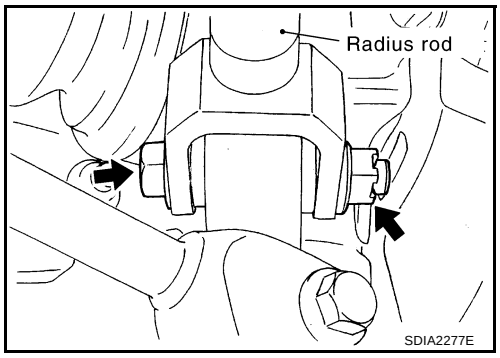
Removal and Installation

NES000HP

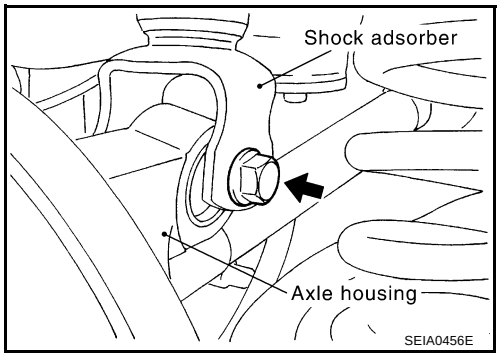
REMOVAL

1. Remove tires from vehicle with power tool.
2. Remove torque member fixing bolts with power tool. Hang it in a place where it will not interfere with work. Refer to BR-29, "REAR DISC BRAKE" .

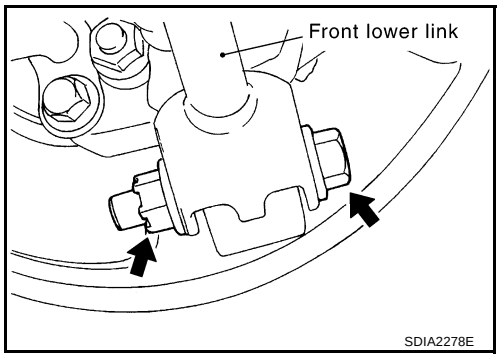
   NOTE:
   Avoid depressing brake pedal while brake caliper is removed.
3. Remove coil spring. Refer to RSU-16, "REAR LOWER LINK & COIL SPRING" .
4. Remove fixing bolt and nut in axle housing side of radius rod.



5. Remove fixing bolt in axle housing side of shock absorber assembly with power tool. Refer to RSU-9, "SHOCK ABSORBER" .



6. Remove fixing bolt and nut in axle housing side of front lower link with power tool. Refer to RSU-15, "FRONT LOWER LINK" .
7. Remove mounting bolt in rear suspension member side of radius rod, and then remove radius rod from vehicle.



INSPECTION AFTER REMOVAL

Check radius rod and bushing for deformation, cracks, and other damage. Replace if necessary.

INSTALLATION

- Install in the reverse order of removal. For tightening torque, refer to GI-9, "Components" .

  NOTE:
  Do not reuse non-reusable parts.
- Perform final tightening of nuts and bolts of rear suspension member and axle housing installation position (rubber bushing) under unladen conditions with tires on level ground. Check wheel alignment. Refer to RSU-5, "Wheel Alignment Inspection" .
- Adjust neutral position of steering angle sensor after wheel alignment inspection. Refer to BRC-6, "Adjustment of Steering Angle Sensor Neutral Position" .

FRONT LOWER LINK

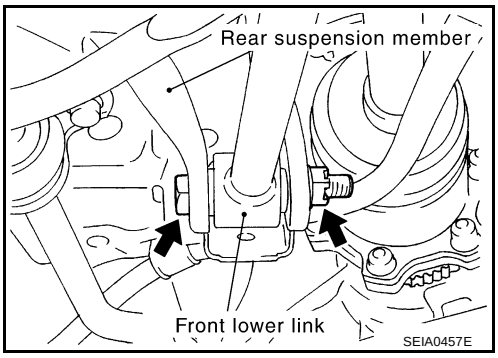
PFP:55110

Removal and Installation

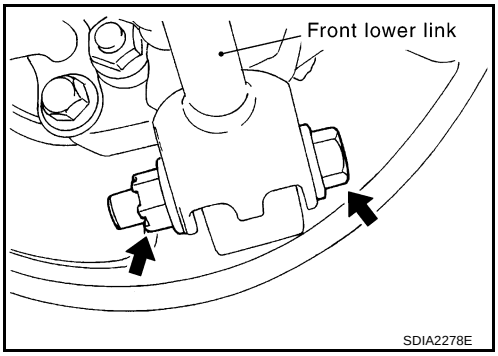
NES000HQ

REMOVAL

1. Remove tires from vehicle with power tool.
2. Remove mounting nut and bolt between front lower link and rear suspension member with power tool.



3. Remove fixing bolt and nut in axle housing side of front lower link with power tool.
4. Remove front lower link from vehicle.



INSPECTION AFTER REMOVAL

Check front lower link and bushing for deformation, cracks, and other damage. Replace if necessary.

INSTALLATION

- Install in the reverse order of removal. For tightening torque, refer to GI-9, "Components" .

  NOTE:
  Do not reuse non-reusable parts.
- Perform final tightening of nuts and bolts of rear suspension member and axle housing installation position (rubber bushing) under unladen conditions with tires on level ground. Check wheel alignment. Refer to RSU-5, "Wheel Alignment Inspection" .
- Adjust neutral position of steering angle sensor after wheel alignment inspection. Refer to BRC-6, "Adjustment of Steering Angle Sensor Neutral Position" .

REAR LOWER LINK & COIL SPRING

PFP:551B0

Removal and Installation

NES000HR

REMOVAL

1. Remove tires from vehicle with power tool.
2. Set a jack under rear lower link to relive the coil spring tension.
3. Loosen mounting bolt and nut in rear suspension member side of rear lower link, and then remove mounting nut and bolt in side of axle housing with power tool.
4. Gradually lower jack to remove upper seat, coil spring, and rubber seat from rear lower link.
5. Remove mounting bolt and nut in rear suspension member side of rear lower link, and then remove rear lower link from vehicle.
6. Remove mounting bolt of bracket and then remove bracket from vehicle.

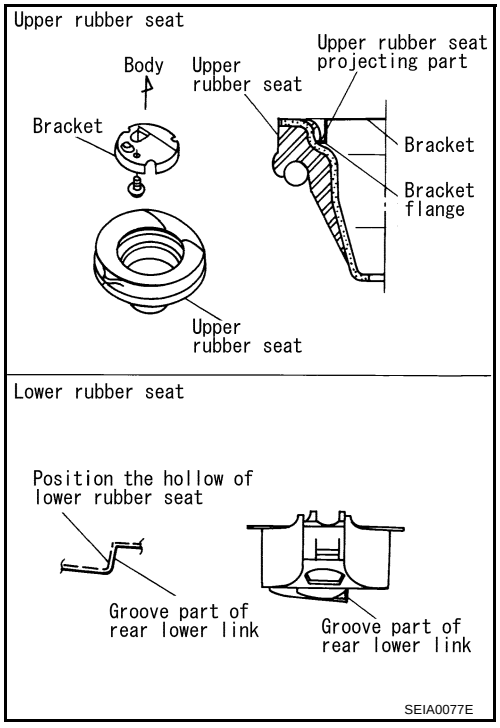
INSPECTION AFTER REMOVAL

Check rear lower link, bushing, and coil spring for deformation, cracks, and other damage. Replace if necessary.

INSTALLATION

- Install in the reverse order of removal. For tightening torque, refer to GI-9, "Components" .

  NOTE:
  Do not reuse non-reusable parts.
- Make sure that the projection part inside upper seat and the flange part of bracket are attached as shown in the figure.
- Make sure that the projection part outside upper seat directs to vehicle front.
- Position the hollow of rubber seat with the groove part of rear lower link to install.
- Install coil spring with the side of 2 paint markers directing to lower side.
- Perform final tightening of nuts and bolts of rear suspension member and axle housing installation position (rubber bushing) under unladen conditions with tires on level ground. Check wheel alignment. Refer to RSU-5, "Wheel Alignment Inspection" .
- Adjust neutral position of steering angle sensor after wheel alignment inspection. Refer to BRC-6, "Adjustment of Steering Angle Sensor Neutral Position" .



STABILIZER BAR

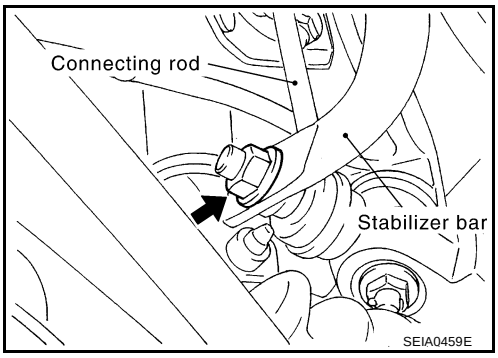
PFP:54611

Removal and Installation

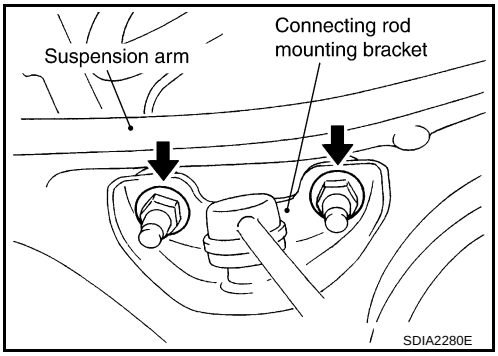
NES000HS

REMOVAL

1. Remove center muffler. Refer to EX-3, "Removal and Installation" .
2. Remove mounting nut on the lower side of connecting rod with power tool.
3. If necessary remove mounting nut on the upper side of connecting rod with power tool, and then remove connecting rod from connecting rod mounting bracket with power tool.
4. Remove bolts, and then remove stabilizer clamp and stabilizer bushing with power tool.



5. Remove nuts, and then remove connecting rod mounting bracket from suspension arm with power tool.



INSPECTION AFTER REMOVAL

Check stabilizer bar, stabilizer bushing, stabilizer clamp, connecting rod, and connecting rod mounting bracket for deformation, cracks, and damage. Replace if necessary.

INSTALLATION

- Install in the reverse order of removal. For tightening torque, refer to GI-9, "Components" .

  NOTE:
  Do not reuse non-reusable parts.
- When installing stabilizer connecting rod mount bracket, be careful with the installation direction.

REAR SUSPENSION MEMBER

PFP:55501

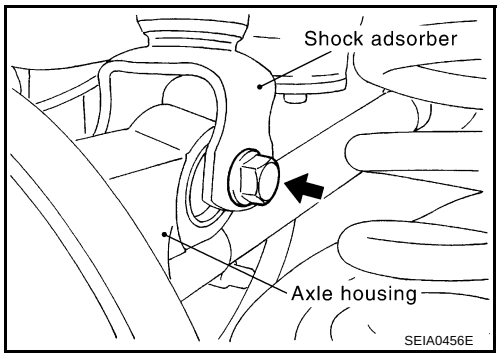
Removal and Installation

NES000HT

REMOVAL

1. Remove tires from vehicle with power tool.
2. Remove torque member fixing bolts with power tool. Hang it in a place where it will not interfere with work. Refer to BR-29, "REAR DISC BRAKE" .

   NOTE:
   Avoid depressing brake pedal while brake caliper is removed.
3. Remove disc rotor.
4. Remove center muffler. Refer to EX-3, "EXHAUST SYSTEM" .
5. Remove stabilizer bar. Refer to RSU-17, "STABILIZER BAR" .
6. Remove wheel sensor and sensor harness from rear final drive and rear suspension member. Refer to BRC-63, "WHEEL SENSORS" .
7. Remove drive shaft. Refer to RAX-9, "REAR DRIVE SHAFT" .
8. Remove rear final drive. Refer to RFD-16, "REAR FINAL DRIVE ASSEMBLY" .
9. Remove parking brake cable (rear cables) from rear suspension member and axle housing. Refer to PB-3, "PARKING BRAKE SYSTEM" .
10. Remove coil spring. Refer to RSU-16, "REAR LOWER LINK & COIL SPRING" .
11. Remove fixing bolt in axle housing side of shock absorber assembly with power tool. Refer to RSU-9, "SHOCK ABSORBER" .
12. Set jack under rear suspension member.
13. Remove mounting nut and bolts with power tool, and then remove member stay.
14. Remove mounting nuts of rear suspension member (rear side), and then remove rebound stopper.
15. Gradually lower jack to remove rear suspension member, suspension arm, radius rod, axle housing and front lower link from vehicle as a unit.



16. Remove nuts and bolts, and remove suspension arm, radius rod, and front lower link from rear suspension member with power tool.

INSPECTION AFTER REMOVAL

Check rear suspension member for deformation, cracks, or other damage. Replace if there are.

INSTALLATION

- Install in the reverse order of removal. For tightening torque, refer to GI-9, "Components" .

  NOTE:
  Do not reuse non-reusable parts.
- Perform final tightening of nuts and bolts of each link installation position (rubber bushing) under unladen conditions with tires on level ground. Check wheel alignment. Refer to RSU-5, "Wheel Alignment Inspection" .
- Adjust neutral position of steering angle sensor after wheel alignment inspection. Refer to BRC-6, "Adjustment of Steering Angle Sensor Neutral Position" .
- Check for the following after finishing work.

– Parking brake operation (stroke) Refer to PB-3, "On-Vehicle Inspection" .
– Wheel sensor harness connecting condition. Refer to BRC-63, "WHEEL SENSORS" .

SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

Wheel Alignment (Unladen*)

NES0006V

Tire			17 inch	18 inch	19 inch
Camber Degree minute (Decimal degree)		Minimum	–0°55′ (–0.92°)	–1°05′ (–1.08°)	–1°10′(–1.17°)
		Nominal	–0°25′ (–0.42°)	–0°35′ (–0.58°)	–0°40′(–0.67°)
		Maximum	0°05′ (0.08°)	–0°05′ (–0.08°)	–0°10′(–0.17°)
Total toe-in	Distance (A – B)	Minimum	–2.0 mm (–0.079 in)	–1.6 mm (–0.063 in)	–1.2 mm (–0.047 in)
		Nominal	0.8 mm (0.031 in)	1.2 mm (0.047 in)	1.6 mm (0.063 in)
		Maximum	3.6 mm (0.142 in)	4.0 mm (0.157 in)	4.4 mm (0.173 in)
	Angle (left plus right) Degree (Decimal degree)	Minimum	–5′ (0.08°)	–4′ (0.07°)	–3′ (0.05°)
		Nominal	2′ (0.03°)	3′ (0.05°)	4′ (0.07°)
		Maximum	9′ (0.15°)	10′ (0.17°)	11′ (0.18°)

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

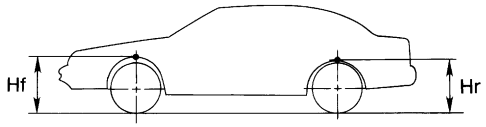
Ball Joint

NES0006W

Axial end play	0 mm (0 in)
Swing torque	0.50 – 3.43 N·m (0.06 – 0.34 kg-m, 5 – 30 in-lb)
Measurement on spring balance (cotter pinhole position)	7.85 – 54.4 N (0.80 – 5.55 kg, 1.77 – 12.23 lb)
Rotating torque	0.50 – 3.43 N·m (0.06 – 0.34 kg-m, 5 – 30 in-lb)

Wheelarch Height (Unladen*)

NES0006X



SFA818A

Tire	225/55R17	225/55R17 (Runflat tire)	245/45R18	245/40R19
Front (Hf)	730 mm (28.74 in)	734 mm (28.90 in)	726 mm (28.58 in)	729 mm (28.70 in)
Rear (Hr)	704 mm (27.72 in) [USA model] 705 mm (27.76 in) [Canada model]	707 mm (27.83 in) [USA model] 708 mm (27.87 in) [Canada model]	700 mm (27.56 in) [USA model] 701 mm (27.60 in) [Canada model]	703 mm (27.68 in)

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