# SECTION RSU
# REAR SUSPENSION



## CONTENTS

# PRECAUTIONS

PFP:00001

## Cautions

EES000U6

- 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.

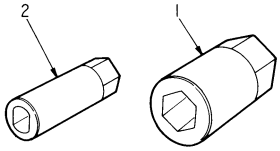
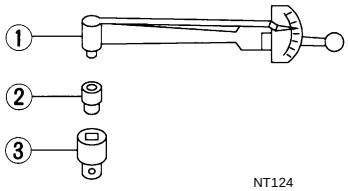
# PREPARATION

PFP:00002

## Special Service Tools (SST)

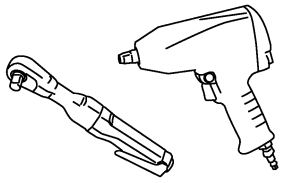
EES000U7

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

| Tool number<br>(Kent-Moore No.)<br>Tool name | Description |
|---|---|
| KV40106400<br>( — )<br>Socket wrench<br>  <br>ZZA1102D | Removing actuator plate fixing nut |
| ST3127S000<br>(See J25765-A)<br>Preload gauge<br>1. GG91030000<br>Torque wrench (J25765)<br>2. HT62940000 ( — )<br>Socket adapter (1/2″)<br>3. HT62900000 ( — )<br>Socket adapter (3/8″)<br>  <br>NT124 | Measuring rotating torque of ball joint |

## Commercial Service Tools

EES000U8

| Tool name | Description |
|---|---|
| Power tool<br>  <br>PBIC0190E | ● Removing wheel nuts<br>● Removing brake caliper<br>● 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

EES000U9

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-16 | 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

EES000UB

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

EES000UC

### DESCRIPTION

Measure wheel alignment under unladen conditions.

### PRELIMINARY INSPECTION

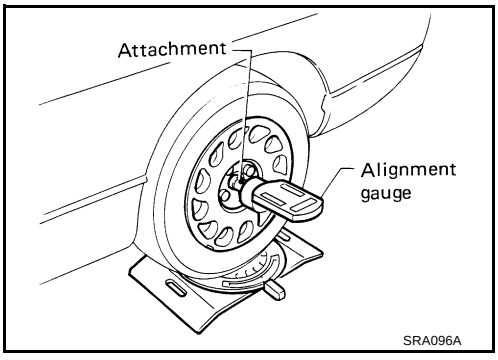
Check the followings

1. Tires for improper air pressure and wear.
2. Road wheels for runout.
3. Wheel bearing axial end play.
4. Suspension arm ball joint axial end play.
5. Shock absorber operation.
6. Each mounting part of axle and suspension for looseness and deformation.
7. Each of front lower link, rear lower link, suspension arm and suspension member for cracks, deformation, and other damage.
8. Vehicle posture.

### CAMBER INSPECTION

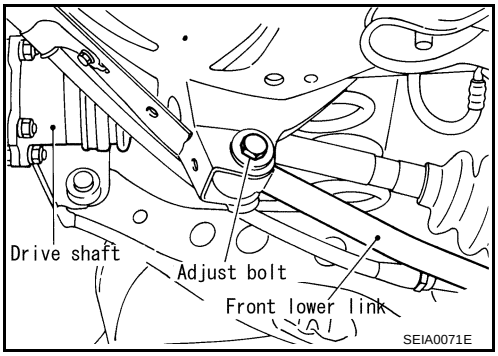
Measure camber of both right and left wheels with a suitable alignment gauge and adjust in accordance with the following procedures.

**Camber : Refer to RSU-18, "SERVICE DATA" .**




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

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



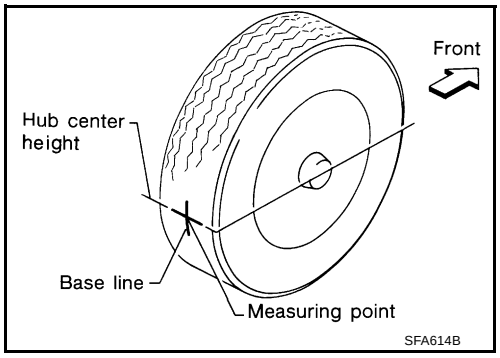
## TOE-IN

Measure toe-in using the following procedure. If out of the specification, inspect and replace any damaged or worn rear suspension parts.

**WARNING:**

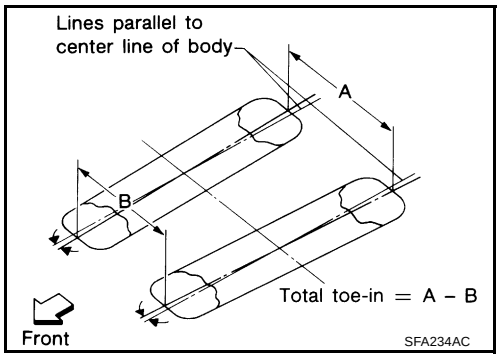
- **Always perform the following procedure on a flat surface.**
- **Make sure that no person is in front of vehicle before pushing it.**

1. Bounce the rear of vehicle up and down to stabilize the posture.
2. Push 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. These are measuring point.
4. Measure the distance “A” (rear side).




5. Push vehicle slowly ahead to rotate wheels 180 degrees (1/2 turn).
   If wheels have rotated more than 180 degrees (1/2 turn), try the above procedure again from the beginning. Never push vehicle backward.
6. Measure the distance “B” (front side).

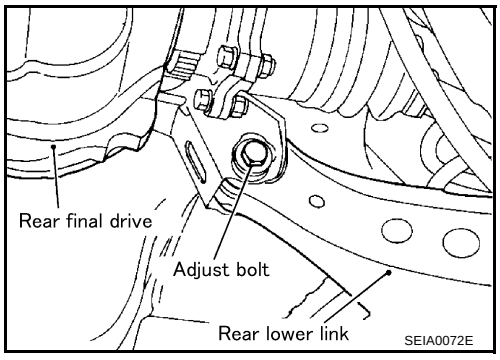
   **Total toe-in : Refer to RSU-18, "SERVICE DATA" .**




7. If outside the standard value, adjust with adjusting bolt in rear lower link.

   **CAUTION:**

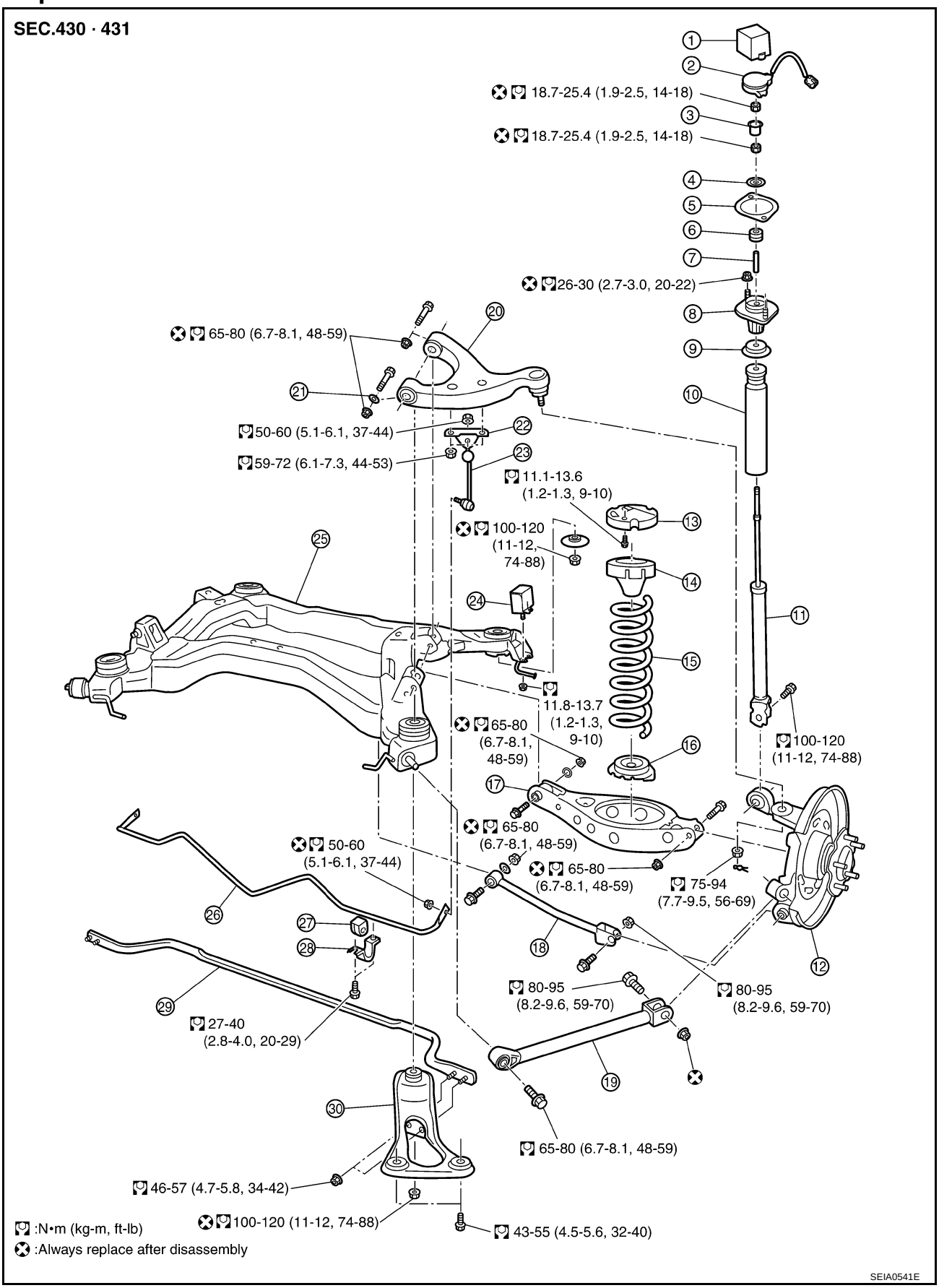
   **Be sure to adjust equally on RH and LH side with adjusting bolt.**



## Components

EES000UA

SEC.430 · 431



# REAR SUSPENSION ASSEMBLY

| | | | | | |
|---|---|---|---|---|---|
| 1. | Cap | 2. | Actuator assembly | 3. | Actuator plate |
| 4. | Washer | 5. | Shock absorber mounting seal | 6. | Bushing |
| 7. | Distance tube | 8. | Shock absorber mounting bracket | 9. | Bound bumper cover |
| 10. | Bound bumper | 11. | Shock absorber | 12. | Axle |
| 13. | Bracket | 14. | Upper seat | 15. | Coil spring |
| 16. | Rubber seat | 17. | Rear lower link | 18. | Front lower link |
| 19. | Radius rod | 20. | Suspension arm | 21. | Stopper rubber |
| 22. | Stabilizer connecting rod mounting bracket | 23. | Stabilizer connecting rod | 24. | Dynamic damper |
| 25. | Rear suspension member | 26. | Stabilizer bar | 27. | Stabilizer bushing |
| 28. | Stabilizer clamp | 29. | Cross bar | 30. | Member stay |

# SHOCK ABSORBER

PFP:56210

## Removal and Installation

EES000UD

### REMOVAL

1. Remove tire with a power tool.
2. Set jack under rear lower link to remove fixing bolt in the lower side of shock absorber.
3. Remove jack from rear lower link.
4. Remove rear seat cushion, rear seat back and rear parcel shelf finisher. Refer to SE-195, "REAR SEAT" , EI-47, "REAR PARCEL SHELF FINISHER" .
5. Remove cap and actuator assembly.
6. Remove fixing nut in the upper side of shock absorber.

### INSPECTION AFTER REMOVAL

Check the followings

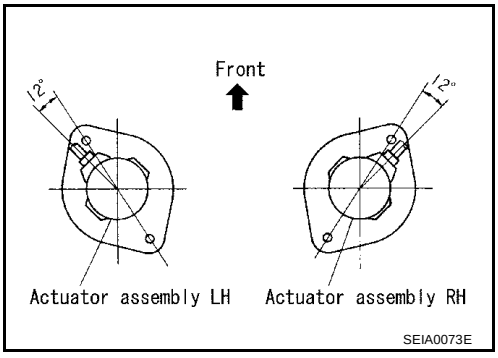
- Shock absorber for deformation, cracks, damage, and replace if there are.
- Piston rod for damage, uneven wear, or distortion, and replace if there are.
- Welded and sealed areas for oil leakage, and replace if there are.

### INSTALLATION

- Refer to RSU-7, "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 RSU-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.

  **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

EES000UE

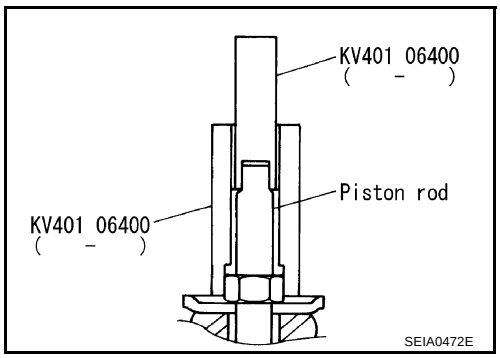
### DISASSEMBLY

**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.
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

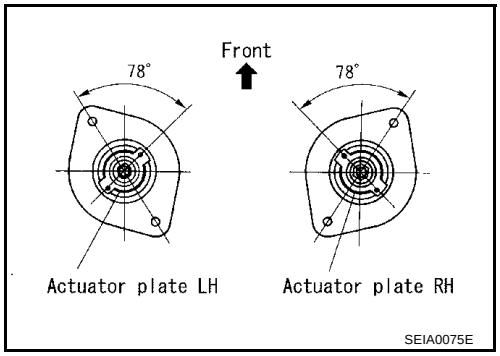
### Bound Bumper and Bushing

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

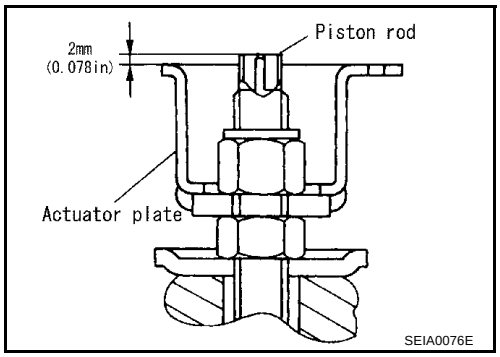
## ASSEMBLY

- Refer to RSU-7, "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.




- Confirm that the piston rod end is higher than actuator plate as specified in the figure.



# SUSPENSION ARM

PFP:55501

## Removal and Installation

EES000UF

### REMOVAL

1. Remove tire with a power tool.
2. Remove brake caliper with a power tool. Hang it in a place where it will not interfere with work. Refer to BR-30, "REAR DISC BRAKE" .

   **NOTE:**
   Avoid depressing brake pedal while brake caliper is removed.
3. Remove stabilizer connecting rod mounting bracket from suspension arm with a power tool.
4. Remove fixing bolts and nuts in the suspension member side of suspension arm with a power tool.
5. Remove cotter pin of suspension arm ball joint, then loosen mounting nut.
6. Use the ball joint remover (suitable tool) to remove suspension arm from axle. Be careful not to damage ball joint boot.

   **CAUTION:**
   **Tighten temporarily mounting nut to prevent damage to threads and to prevent ball joint remover (suitable tool) from coming off.**
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.

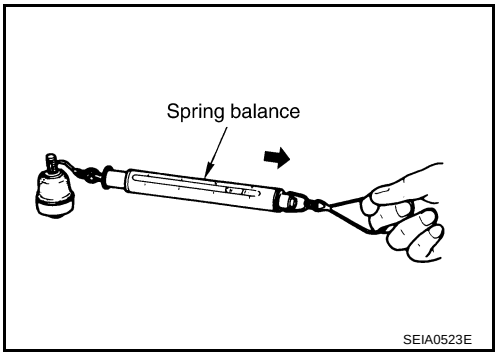
- Hook a spring balance at cotter pin mounting hole. Confirm spring balance measurement value is within the specifications when ball stud begins moving.

  **Specified swing torque:**

  **0.50 - 3.43 N·m (0.05 - 0.35 kg-m, 5 - 30 in-lb)**

  **Specified value of spring balance:**

  **7.85 - 54.4 N (0.80 - 5.55 kg, 1.77 - 12.27 lb)**



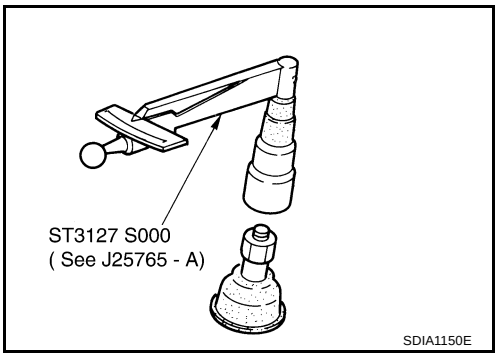

- If it is outside the specified range, replace suspension arm assembly.

#### 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 (0.05 - 0.35 kg-m, 5 - 30 in-lb)**




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

## 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 RSU-7, "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

EES000UG

### REMOVAL

1. Remove tire with a power tool.
2. Remove fixing bolt and nut in the axle side of radius rod.
3. Remove fixing bolt and nut in the rear suspension member side of radius rod, then remove radius rod from vehicle.

### INSPECTION AFTER REMOVAL

Check radius rod and bushing for any deformation, cracks, or damage. Replace if there are.

### INSTALLATION

- Refer to RSU-7, "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 and axle installation position (rubber bushing) under unladen conditions 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" .

# FRONT LOWER LINK

PFP:55110

## Removal and Installation

EES000UH

### REMOVAL

1. Remove tire from vehicle with a power tool.
2. Set a jack under rear lower link.
3. Remove fixing bolt and nut between front lower link and rear suspension member.
4. Remove fixing bolt and nut between front lower link and axle.
5. Remove front lower link from vehicle.

### INSPECTION AFTER REMOVAL

Check front lower link and bushing for any deformation, crack, or damage. Replace if there are.

### INSTALLATION

- Refer to RSU-7, "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 rear suspension member and axle 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" .

# REAR LOWER LINK & COIL SPRING

PFP:551B0

## Removal and Installation

EES000UI

### REMOVAL

1. Remove tire from vehicle with a power tool.
2. Set a jack under rear lower link.
3. Loosen fixing bolt and nut of rear lower link in the side of rear suspension member, and then remove fixing bolt and nut in the side of axle.
4. Slowly lower jack, then remove upper seat, coil spring and rubber seat from rear lower link.
5. Remove fixing bolt and nut in the side of rear suspension member to remove rear lower link.

### INSPECTION AFTER REMOVAL

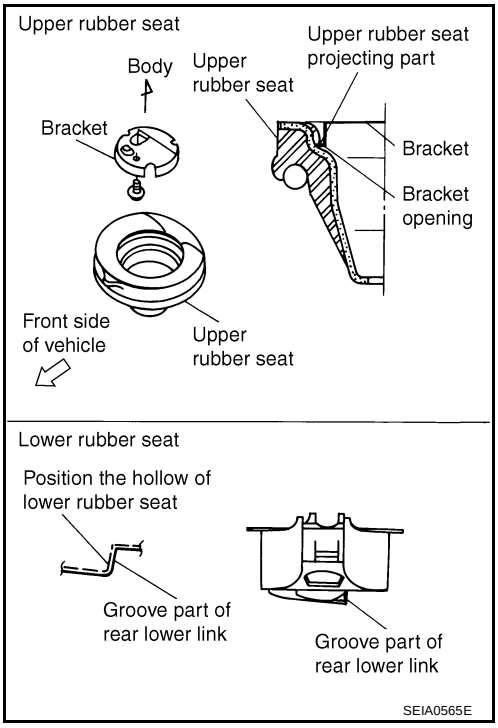
Check rear lower link, bushing and coil spring for deformation, cracks, and damage. Replace rear lower link and coil spring if there are.

### INSTALLATION

- Refer to RSU-7, "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.

- Check that the projecting part of the inside upper rubber seat and the openings of bracket are attached as shown in the figure.
- Check that the projection part of the 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 the final tightening of rear suspension member and axle installation position (rubber bushing) under unladen conditions 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" .



# STABILIZER BAR

PFP:54611

## Removal and Installation

EES000UJ

### REMOVAL

1. Remove center muffler. Refer to EX-3, "EXHAUST SYSTEM" .
2. Remove stabilizer connecting rod from stabilizer bar with a power tool.
3. Remove mounting bolts of stabilizer clamp and then remove stabilizer clamp and stabilizer bushing from stabilizer bar.
4. Remove stabilizer bar from vehicle behind.

### INSPECTION AFTER REMOVAL

Check stabilizer bar, stabilizer bushings, stabilizer clamp, stabilizer connecting rod, stabilizer connecting rod mounting bracket for any deformation, cracks or damage. Replace if there are.

### INSTALLATION

- Refer to RSU-7, "Components" for tightening torque. Install in the reverse order of removal.

  **NOTE:**
  Refer to component parts location and do not reuse non-reusable parts.
- Stabilizer bar uses pillow ball type connecting rod.

# REAR SUSPENSION MEMBER

PFP:55501

## Removal and Installation

EES000UK

### REMOVAL

1. Remove tire from vehicle with a power tool.
2. Remove brake caliper with a power tool. Hang it in a place where it will not interfere with work. Refer to BR-30, "REAR DISC BRAKE" .

   **NOTE:**
   Avoid depressing brake pedal while brake caliper is removed.
3. Remove disc rotor. Refer to BR-30, "REAR DISC BRAKE" .
4. Remove stabilizer bar with a power tool. Refer to RSU-16, "STABILIZER BAR" .
5. Remove rear final drive from vehicle. Refer to RFD-14, "REAR FINAL DRIVE ASSEMBLY" .
6. Remove parking brake cable from body and rear suspension member. Refer to PB-4, "PARKING BRAKE CONTROL" .
7. Set a jack under rear lower link.
8. Remove fixing bolt in the lower side of shock absorber.
9. Remove fixing nut in the axle side of suspension arm.
10. Remove rear lower link. Refer to RSU-15, "REAR LOWER LINK & COIL SPRING" .
11. Move a jack which has been set in rear lower link, to rear suspension member.
12. Remove fixing bolt in the body side of member stay.
13. Remove fixing nuts of rear suspension member.
14. Slowly jack to remove rear suspension member from vehicle.
15. Remove front lower link from rear suspension member.
16. Remove radius rod from rear suspension member.
17. Remove suspension arm from rear suspension member.

### INSPECTION AFTER REMOVAL

Check rear suspension member for deformation, cracks, and other damage and replace if there are.

### INSTALLATION

- Refer to RSU-7, "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 installation position of links (rubber bushing) under unladen conditions 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" .

# SERVICE DATA

PFP:00030

## Wheel Alignment

EES000UL

| Tire | | | 17 inch | 18 inch |
|---|---|---|---|---|
| Camber<br>Degree minute (Decimal degree) | | Minimum | – 0°55′ (– 0.92°) | – 1°05′ (– 1.08°) |
| | | Nominal | – 0°25′ (– 0.42°) | – 0°35′ (– 0.58°) |
| | | Maximum | 0°05′ (0.08°) | – 0°05′ (– 0.08°) |
| | | Left and right difference | 45′ (0.75°) | |
| Total toe-in | Distance (A – B) | Minimum | – 2.0 mm (– 0.079 in) | – 1.6 mm (– 0.063 in) |
| | | Nominal | 0.8 mm (0.031 in) | 1.2 mm (0.047 in) |
| | | Maximum | 3.6 mm (0.142 in) | 4.0 mm (0.157 in) |
| | Angle (left plus right)<br>Degree (Decimal degree) | Minimum | – 5′ (0.08°) | – 4′ (0.07°) |
| | | Nominal | 2′ (0.03°) | 3′ (0.05°) |
| | | Maximum | 9′ (0.15°) | 10′ (0.17°) |

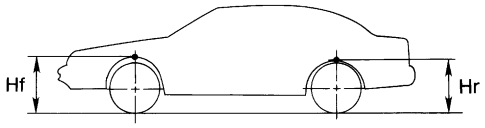
## Ball Joint

EES000UM

| | |
|---|---|
| Axial end play | 0 mm (0 in) |
| Swing torque | 0.50 - 3.43 N·m (0.05 - 0.35 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 - 12.27 lb) |
| Rotating torque | 0.50 - 3.43 N·m (0.05 - 0.35 kg-m, 5 - 30 in-lb) |

## Wheelarch Height (Unladen*)

EES000UN




SFA818A

| Tire | 225/55R17 | 225/55R17 (Runflat tire) | 245/45R18 |
|---|---|---|---|
| Front (Hf) | 730 mm (28.74 in) | 734 mm (28.90 in) | 726 mm (28.58 in) |
| Rear (Hr) | 704 mm (27.72 in) [USA model]<br>705 mm (27.76 in) [Canada model] | 707 mm (27.83 in) [USA model]<br>708 mm (27.87 in) [Canada model] | 700 mm (27.56 in) [USA model]<br>701 mm (27.60 in) [Canada model] |

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