# STEERING SYSTEM

# SECTION ST



# CONTENTS

## Supplemental Restraint System (SRS) “AIR BAG” and “SEAT BELT PRE-TENSIONER”

The Supplemental Restraint System “AIR BAG” and “SEAT BELT PRE-TENSIONER”, used along with a seat belt, help to reduce the risk or severity of injury to the driver and front passenger in a frontal collision. The Supplemental Restraint System consists of air bag modules (located in the center of the steering wheel and on the instrument panel on the passenger side), seat belt pre-tensioners, a diagnosis sensor unit, warning lamp, wiring harness and spiral cable.

In addition to the supplemental air bag modules for a frontal collision, the supplemental side air bag used along with the seat belt helps to reduce the risk or severity of injury to the driver and front passenger in a side collision. The supplemental side air bag consists of air bag modules (located in the outer side of front seats), satellite sensor, diagnosis sensor unit (one of components of supplemental air bags for a frontal collision), wiring harness, warning lamp (one of components of supplemental air bags for a frontal collision). Information necessary to service the system safely is included in the **RS section** of this Service Manual.

**WARNING:**

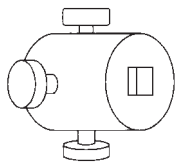
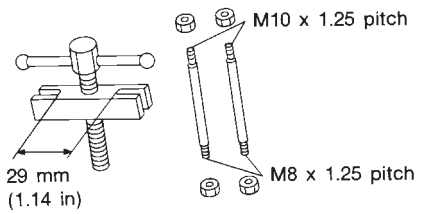
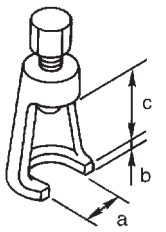
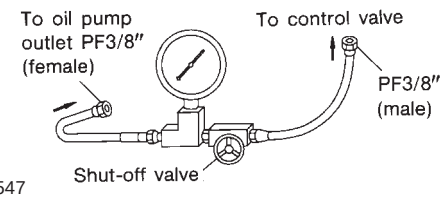
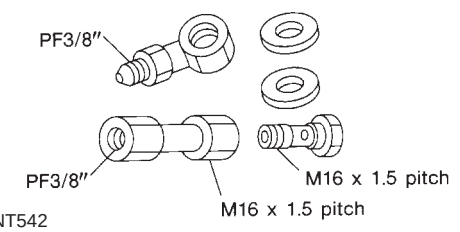
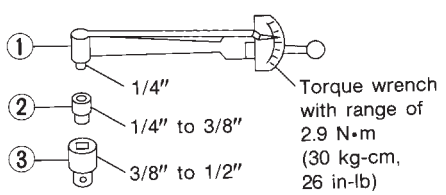
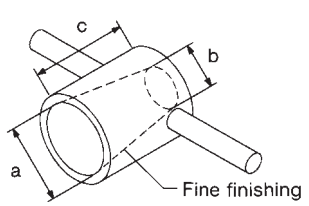
- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized INFINITI dealer.**
- **Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system.**
- **Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses (except “SEAT BELT PRE-TENSIONER” connector) can be identified with yellow harness connector (and with yellow harness protector or yellow insulation tape before the harness connectors).**

## Precautions for Steering System

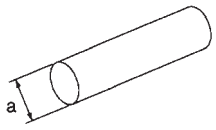
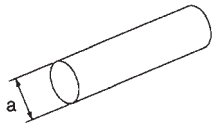
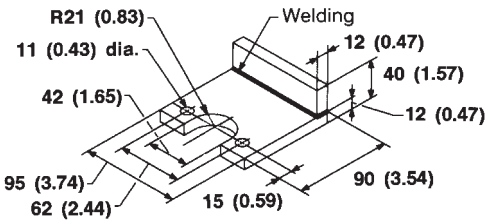
- **Before disassembly, thoroughly clean the outside of the unit.**
- **Disassembly should be done in a clean work area. It is important to prevent the internal parts from becoming contaminated by dirt or other foreign matter.**
- **Place disassembled parts in order, on a parts rack, for easier and proper assembly.**
- **Use nylon cloths or paper towels to clean the parts; common shop rags can leave lint that might interfere with their operation.**
- **Before inspection or reassembly, carefully clean all parts with a general purpose, non-flammable solvent.**
- **Before assembly, apply a coat of recommended Genuine Nissan PSF II or equivalent to hydraulic parts. Vaseline may be applied to O-rings and seals. Do not use any grease.**
- **Replace all gaskets, seals and O-rings. Avoid damaging O-rings, seals and gaskets during installation. Perform functional tests whenever designated.**

## Special Service Tools

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 | |
|---|---|---|
| KV48103404<br>( — )<br>Torque adapter |  <br>NT236 | Measuring pinion rotating torque |
| ST27180001<br>(J25726-A)<br>Steering wheel puller |  <br>NT544 | Removing steering wheel |
| ST29020001<br>(J24319-01)<br>Pitman arm puller |  <br>NT694 | Removing ball joint<br>**a: 34 mm (1.34 in)**<br>**b: 6.5 mm (0.256 in)**<br>**c: 61.5 mm (2.421 in) radius** |
| KV48103500<br>(J26357 and J26357-10)<br>Pressure gauge |  <br>NT547 | Measuring oil pressure |
| KV48102500<br>(J33914)<br>Pressure gauge adapter |  <br>NT542 | Measuring oil pressure |
| ST3127S000<br>(See J25765-A)<br>① GG91030000<br>(J25765-A)<br>Torque wrench<br>② HT62940000<br>( — )<br>Socket adapter<br>③ HT62900000<br>( — )<br>Socket adapter |  <br>NT541 | Measuring turning torque |
| KV48104400<br>( — )<br>Rack seal ring reformer |  <br>NT550 | Reforming teflon ring<br>**a: 50 mm (1.97 in) dia.**<br>**b: 36 mm (1.42 in) dia.**<br>**c: 100 mm (3.94 in)** |

## Commercial Service Tools

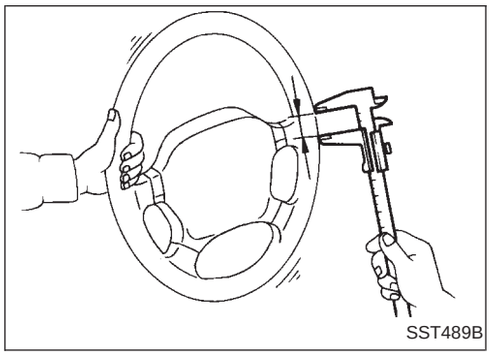
| Tool name | Description | |
|---|---|---|
| Rear oil seal drift |  NT063 | Installing rear oil seal<br>**a: 28 mm (1.10 in) dia.** |
| Pinion oil seal drift |  NT063 | Installing pinion oil seal<br>**a: 35 mm (1.38 in) dia.** |
| Oil pump attachment |  NT179 | Disassembling and assembling oil pump<br>Unit: mm (in) |

## NVH Troubleshooting Chart

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

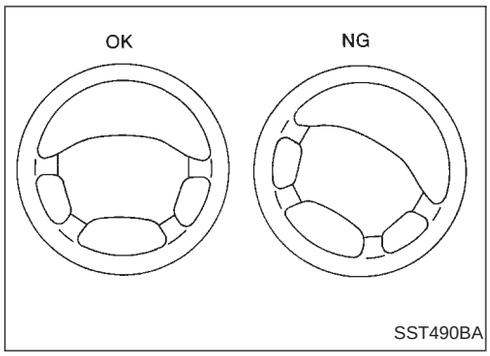
| Reference page | | | ST-7 | ST-8 | ST-19 | ST-19 | ST-19 | ST-8 | ST-6 | ST-9 | Refer to MA section. | — | ST-11 | ST-7 | ST-11 | ST-11 | ST-15 | Refer to PD section. | Refer to PD section. | Refer to FA and RA sections. | Refer to FA section. | Refer to FA section. | Refer to RA section. | Refer to BR section. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Possible cause and ED PARTS | | | Fluid level | Air in hydraulic system | Tie-rod ball joint swinging force | Tie-rod ball joint rotating torque | Tie-rod ball joint end play | Steering gear fluid leakage | Steering wheel play | Steering gear rack sliding force | Drive belt looseness | Improper steering wheel or damage | Improper installation or looseness of tilt lock lever | Mounting rubber deterioration | Steering column deformation | Improper installation or looseness of steering column | Steering linkage looseness | PROPELLER SHAFT | DIFFERENTIAL | AXLE AND SUSPENSION | TIRES | ROAD WHEEL | DRIVE SHAFT | BRAKES |
| Symptom | STEERING | Noi | X | X | X | X | X | X | X | X | | | | | | | | X | X | X | X | X | X | X |
| | | Shake | | | | | | | | | | 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 |
| | | Judder | | | | | | | | | | | | X | | | X | | | X | X | X | | X |

X: Applicable


SST489B

## Checking Steering Wheel Play

- With wheels in a straight-ahead position, check steering wheel play.
  **Steering wheel play:**
  **35 mm (1.38 in) or less**
- If it is not within specification, check the following for loose or worn components.
  **Steering gear assembly**
  **Steering column**
  **Front suspension and axle**



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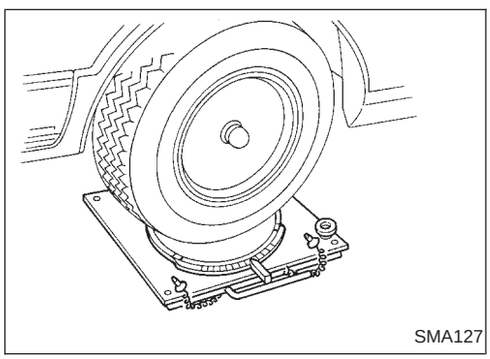
## Checking Neutral Position on Steering Wheel

### Pre-checking

- Make sure that wheel alignment is correct.
  **Wheel alignment:**
  **Refer to FA section, SDS.**
- Verify that the steering gear is centered before removing the steering wheel.

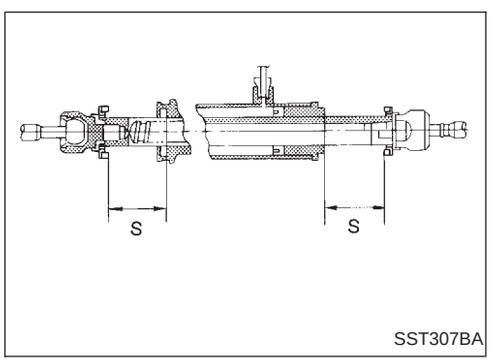
### Checking

1. Check that the steering wheel is in the neutral position when driving straight ahead.
2. If it is not in the neutral position, remove the steering wheel and reinstall it correctly.
3. If the neutral position is between two teeth, loosen tie-rods lock nuts. Turn the tie-rods by the same amount in opposite directions on both left and right sides.


SMA127

## Front Wheel Turning Angle

1. Rotate steering wheel all the way right and left; measure turning angle.
   **Turning angle of full turns:**
   **Refer to FA section, SDS.**



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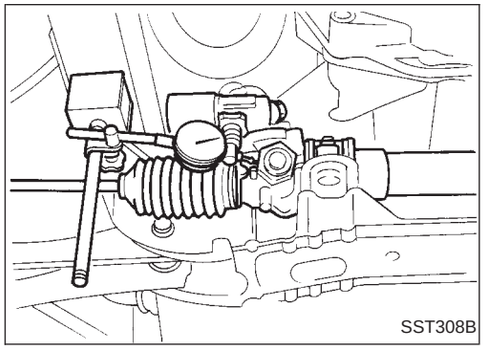
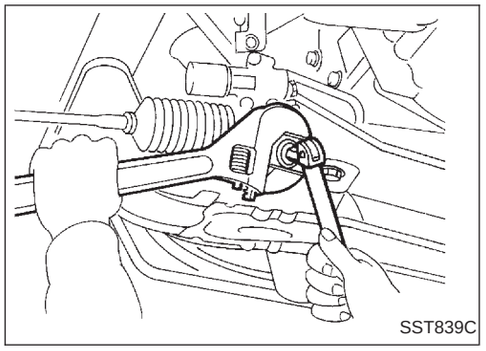
2. If it is not within specification, check rack stroke.
   **Rack stroke “S”:**
   **Refer to SDS (ST-38).**


SST308B

## Checking Gear Housing Movement

1. Check the movement of steering gear housing during stationary steering on a dry paved surface.
- Apply a force of 49 N (5 kg, 11 lb) to steering wheel to check the gear housing movement.
  Turn off ignition key while checking.
  **Movement of gear housing:**
  **±2 mm (±0.08 in) or less**
2. If movement exceeds the limit, replace mount insulator after confirming proper installation of gear housing clamps.

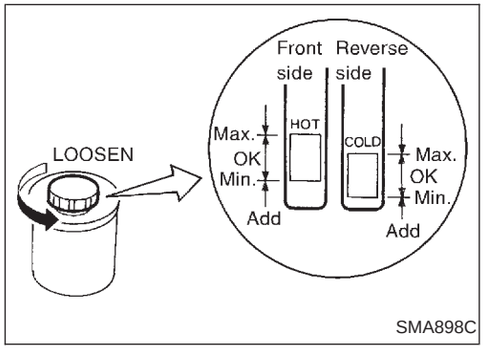

SST839C

## Adjusting Rack Retainer

- Perform this driving test on a flat road.
1. Check whether vehicle moves in a straight line when steering wheel is released.
2. Check whether steering wheel returns to neutral position when steering wheel is released from a slightly turned (approx. 20°) position.
- If any abnormality is found, correct it by resetting adjusting screw.

## Checking and Adjusting Drive Belts (For power steering)

Refer to MA section, “Checking Drive Belts”.



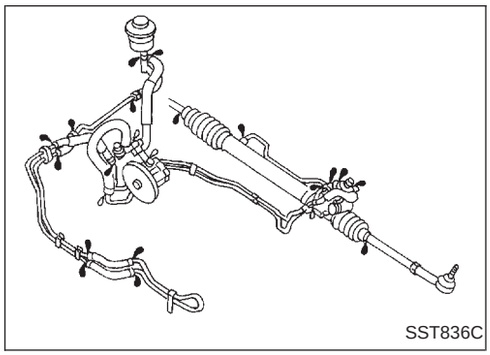
SMA898C

## Checking Fluid Level

Check fluid level with dipstick on reservoir cap. Use “HOT” range at fluid temperatures from 50 to 80°C (122 to 176°F). Use “COLD” range at fluid temperatures from 0 to 30°C (32 to 86°F).

**CAUTION:**

- **Do not overfill.**
- **Recommended fluid is Genuine Nissan PSF II or equivalent.**


SST836C

## Checking Fluid Leakage

Check the lines for improper attachment and for leaks, cracks, damage, loose connections, chafing or deterioration.

1. Run engine at idle speed or 1,000 rpm.
   **Make sure temperature of fluid in oil tank rises to 60 to 80°C (140 to 176°F).**
2. Turn steering wheel right-to-left several times.
3. Hold steering wheel at each “lock” position for five seconds and carefully check for fluid leakage.

**CAUTION:**

**Do not hold the steering wheel in a locked position for more than 15 seconds.**

4. If fluid leakage at connectors is noticed, loosen flare nut and then retighten.

**Do not overtighten connector as this can damage O-ring, washer and connector.**

5. If fluid leakage from power steering pump is noticed, check power steering pump. Refer to ST-27.
6. Check rack boots for accumulation of power steering fluid.

## Bleeding Hydraulic System

1. Raise front end of vehicle until wheels clear ground.
2. Add fluid into oil tank to specified level. Meanwhile, quickly turn steering wheel fully to right and left and lightly touch steering stoppers.
   Repeat steering wheel operation until fluid level no longer decreases.
3. Start engine.
   Repeat step 2 above.

- Incomplete air bleeding will cause the following to occur. When this happens, bleed air again.

a. Generation of air bubbles in reservoir tank
b. Generation of clicking noise in oil pump
c. Excessive buzzing in oil pump

Fluid noise may occur in the valve or oil pump. This is common when the vehicle is stationary or while turning the steering wheel slowly. This does not affect performance or durability of the system.