

**SECTION MA**  
**MAINTENANCE**

A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
K  
MA  
M

**CONTENTS**

<b>PREPARATION</b> .....	<b>3</b>	INSPECTION AFTER REMOVAL .....	20
Special Service Tools .....	3	INSTALLATION .....	21
Commercial Service Tools .....	3	Checking EVAP Vapor Lines .....	21
<b>GENERAL MAINTENANCE</b> .....	<b>4</b>	<b>ENGINE MAINTENANCE (VK45DE ENGINE)</b> .....	<b>22</b>
Explanation of General Maintenance .....	4	Checking Drive Belts .....	22
<b>PERIODIC MAINTENANCE</b> .....	<b>7</b>	Tension Adjustment .....	22
Introduction of Periodic Maintenance .....	7	Changing Engine Coolant .....	22
Schedule 1 .....	8	DRAINING ENGINE COOLANT .....	22
EMISSION CONTROL SYSTEM MAINTENANCE .....	8	REFILLING ENGINE COOLANT .....	23
CHASSIS AND BODY MAINTENANCE .....	9	FLUSHING COOLING SYSTEM .....	24
Schedule 2 .....	10	Checking Fuel Lines .....	25
EMISSION CONTROL SYSTEM MAINTENANCE .....	10	Changing Air Cleaner Filter .....	25
CHASSIS AND BODY MAINTENANCE .....	11	VISCIOUS PAPER TYPE .....	25
<b>RECOMMENDED FLUIDS AND LUBRICANTS</b> .....	<b>12</b>	Changing Engine Oil .....	26
Fluids and Lubricants .....	12	Changing Oil Filter .....	26
SAE Viscosity Number .....	13	REMOVAL .....	26
GASOLINE ENGINE OIL .....	13	INSTALLATION .....	26
Anti-Freeze Coolant Mixture Ratio .....	13	INSPECTION AFTER INSTALLATION .....	27
<b>ENGINE MAINTENANCE (VQ35DE ENGINE)</b> .....	<b>14</b>	Changing Spark Plugs (Platinum-Tipped Type) .....	27
Checking Drive Belts .....	14	REMOVAL .....	27
Tension Adjustment .....	14	INSPECTION AFTER REMOVAL .....	27
ALTERNATOR AND POWER STEERING OIL PUMP BELT .....	15	INSTALLATION .....	28
AIR CONDITIONER COMPRESSOR BELT .....	15	Checking EVAP Vapor Lines .....	28
Changing Engine Coolant .....	15	<b>CHASSIS AND BODY MAINTENANCE</b> .....	<b>29</b>
DRAINING ENGINE COOLANT .....	15	Checking Exhaust System .....	29
REFILLING ENGINE COOLANT .....	16	Checking A/T Fluid .....	29
FLUSHING COOLING SYSTEM .....	17	Changing A/T Fluid .....	31
Checking Fuel Lines .....	17	Checking Transfer Fluid .....	31
Changing Air Cleaner Filter .....	17	Changing Transfer Fluid .....	32
VISCIOUS PAPER TYPE .....	17	Checking Propeller Shaft .....	32
Changing Engine Oil .....	18	Checking Differential Gear Oil .....	32
Changing Oil Filter .....	19	Changing Differential Gear Oil .....	33
REMOVAL .....	19	Balancing Wheels (Bonding Weight Type) .....	33
INSTALLATION .....	19	REMOVAL .....	33
INSPECTION AFTER INSTALLATION .....	19	WHEEL BALANCE ADJUSTMENT .....	33
Changing Spark Plugs (Platinum-Tipped Type) .....	20	Tire Rotation .....	34
REMOVAL .....	20	Checking Brake Fluid Level and Leaks .....	35
		Checking Brake Lines and Cables .....	35
		Changing Brake Fluid .....	35
		Checking Disc Brake .....	35

ROTOR .....	35	MATE) (VQ35DE) .....	39
CALIPER .....	36	ENGINE COOLANT CAPACITY (APPROXI-	
PAD .....	36	MATE) (VK45DE) .....	39
Checking Steering Gear and Linkage .....	36	RADIATOR .....	39
STEERING GEAR .....	36	ENGINE OIL CAPACITY (APPROXIMATE)	
STEERING LINKAGE .....	36	(VQ35DE) .....	39
Checking Power Steering Fluid and Lines .....	36	ENGINE OIL CAPACITY (APPROXIMATE)	
Axle and Suspension Parts .....	37	(VK45DE) .....	40
Drive Shaft .....	37	SPARK PLUG (PLATINUM-TIPPED TYPE)	
Lubricating Locks, Hinges and Hood Latch .....	38	(VQ35DE) .....	40
Checking Seat Belt, Buckles, Retractors, Anchors		SPARK PLUG (PLATINUM-TIPPED TYPE)	
and Adjusters .....	38	(VK45DE) .....	40
<b>SERVICE DATA AND SPECIFICATIONS (SDS) .....</b>	<b>39</b>	WHEEL BALANCE .....	40
Standard and Limit .....	39		
BELT DEFLECTION AND TENSION (VQ35DE)..	39		
BELT DEFLECTION AND TENSION (VK45DE)..	39		
ENGINE COOLANT CAPACITY (APPROXI-			

# PREPARATION

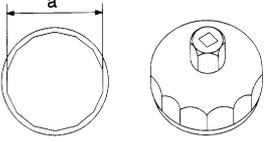
## PREPARATION

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### Special Service Tools

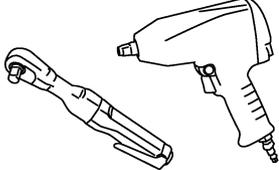
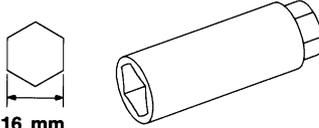
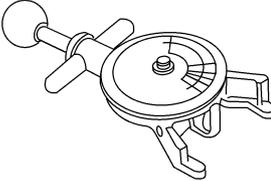
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The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

Tool number (Kent-Moore No.) Tool name	Description
KV10115801 (J38956) Oil filter wrench <div style="text-align: center;">  <p>S-NT375</p> </div>	Removing and installing oil filter <b>a: 64.3 mm (2.531 in)</b>

### Commercial Service Tools

ALS000G3

Tool name (Kent-Moore No.)	Description
Power tool <div style="text-align: center;">  <p>PBIC0190E</p> </div>	Loosening bolts and nuts
Spark plug wrench <div style="text-align: center;">  <p>16 mm (0.63 in)</p> <p>S-NT047</p> </div>	Removing and installing spark plug
Belt tension gauge (BT3373-F) <div style="text-align: center;">  <p>AMA126</p> </div>	Checking drive belt tension (VQ35DE)

A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
K  
M

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# GENERAL MAINTENANCE

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## GENERAL MAINTENANCE

PFP:00000

### Explanation of General Maintenance

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General maintenance includes those items which should be checked during the normal day-to-day operation of the vehicle. They are essential if the vehicle is to continue operating properly. The owners can perform checks and inspections themselves or have their **INFINITI** dealers do them.

# GENERAL MAINTENANCE

## OUTSIDE THE VEHICLE

The maintenance items listed here should be performed from time to time, unless otherwise specified.

Item		Reference page
<b>Tires</b>	Check the pressure with a gauge, including the spare, at least once a month and always prior to a long distance trips. Adjust to the specified pressure if necessary. Check carefully for damage, cuts or excessive wear.	—
<b>Wheel nuts</b>	When checking the tires, make sure no nuts are missing, and check for any loose nuts. Tighten if necessary.	—
<b>Windshield</b>	Clean the windshield on a regular basis. Check the windshield at least every six months for cracks or other damage. Repair as necessary.	—
<b>Tire rotation</b>	Tires should be rotated every 12,000 km (7,500 miles).	<a href="#">MA-34</a>
<b>Wheel alignment and balance</b>	If the vehicle pulls to either side while driving on a straight and level road, or if you detect uneven or abnormal tire wear, there may be a need for wheel alignment. If the steering wheel or seat vibrates at normal highway speeds, wheel balancing may be needed.	<a href="#">MA-33</a> , <a href="#">FSU-6</a>
<b>Windshield wiper blades</b>	Check for cracks or wear if they do not wipe properly.	—
<b>Doors and engine hood</b>	Check that all doors and the engine hood operate smoothly as well as the trunk lid and back hatch. Also make sure that all latches lock securely. Lubricate if necessary. Make sure that the secondary latch keeps the hood from opening when the primary latch is released. When driving in areas using road salt or other corrosive materials, check lubrication frequently.	<a href="#">MA-38</a>
<b>Lamps</b>	Make sure that the headlamps, stop lamps, tail lamps, turn signal lamps, and other lamps are all operating properly and installed securely. Also check headlamp aim. Clean the headlamps on a regular basis.	—

## INSIDE THE VEHICLE

The maintenance items listed here should be checked on a regular basis, such as when performing periodic maintenance, cleaning the vehicle, etc.

Item		Reference page
<b>Warning lamps and chimes</b>	Make sure that all warning lamps and chimes are operating properly.	—
<b>Windshield wiper and washer</b>	Check that the wipers and washer operate properly and that the wipers do not streak.	—
<b>Windshield defroster</b>	Check that the air comes out of the defroster outlets properly and in sufficient quantity when operating the heater or air conditioner.	—
<b>Steering wheel</b>	Check that it has the specified play. Be sure to check for changes in the steering condition, such as excessive play, hard steering or strange noises. <b>Free play: Less than 35 mm (1.38 in)</b>	—
<b>Seats</b>	Check seat position controls such as seat adjusters, seatback recliner, etc. to make sure they operate smoothly and that all latches lock securely in every position. Check that the head restraints move up and down smoothly and that the locks (if equipped) hold securely in all latched positions. Check that the latches lock securely for folding-down rear seatbacks.	—
<b>Seat belts</b>	Check that all parts of the seat belt system (e.g. buckles, anchors, adjusters and retractors) operate properly and smoothly, and are installed securely. Check the belt webbing for cuts, fraying, wear or damage.	<a href="#">MA-38</a>
<b>Accelerator pedal</b>	Check the pedal for smooth operation and make sure the pedal does not catch or require uneven effort. Keep the floor mats away from the pedal.	—
<b>Brakes</b>	Check that the brake does not pull the vehicle to one side when applied.	—
<b>Brake pedal and booster</b>	Check the pedal for smooth operation and make sure it has the proper distance under it when depressed fully. Check the brake booster function. Be sure to keep the floor mats away from the pedal.	<a href="#">BR-6</a> , <a href="#">BR-15</a>

## GENERAL MAINTENANCE

Item		Reference page
<b>Parking brake</b>	Check that the lever has the proper travel and make sure that the vehicle is held securely on a fairly steep hill when only the parking brake is applied.	<a href="#">PB-2</a>
<b>Automatic transmission "Park" mechanism</b>	Check that the lock release button on the selector lever operates properly and smoothly. On a fairly steep hill check that the vehicle is held securely with the selector lever in the P (Park) position without applying any brakes.	—

### UNDER THE HOOD AND VEHICLE

The maintenance items listed here should be checked periodically (e.g. each time you check the engine oil or refuel).

Item		Reference page
<b>Windshield washer fluid</b>	Check that there is adequate fluid in the tank.	—
<b>Engine coolant level</b>	Check the coolant level when the engine is cold.	<a href="#">MA-15, MA-22</a>
<b>Radiator and hoses</b>	Check the front of the radiator and clean off any dirt, insects, leaves, etc., that may have accumulated. Make sure the hoses have no cracks, deformation, deterioration or loose connections.	—
<b>Brake fluid level</b>	Make sure that the brake fluid level is between the "MAX" and "MIN" lines on the reservoir.	<a href="#">MA-35</a>
<b>Battery</b>	Check the fluid level in each cell. It should be between the "MAX" and "MIN" lines. Vehicles operated in high temperatures or under severe conditions require frequent checks of the battery fluid level.	<a href="#">SC-5. "CHECKING ELECTROLYTE LEVEL"</a>
<b>Engine drive belts</b>	Make sure that no belt is frayed, worn, cracked or oily.	<a href="#">MA-14, MA-22</a>
<b>Engine oil level</b>	Check the level on the dipstick after parking the vehicle on a level spot and turning off the engine.	<a href="#">LU-7, LU-25</a>
<b>Power steering fluid level and lines</b>	Check the level on the dipstick with the engine off. Check the lines for improper attachment, leaks, cracks, etc.	<a href="#">MA-36</a>
<b>Exhaust system</b>	Make sure there are no loose supports, cracks or holes. If the sound of the exhaust seems unusual or there is a smell of exhaust fumes, immediately locate the trouble and correct it.	<a href="#">MA-29</a>
<b>Underbody</b>	The underbody is frequently exposed to corrosive substances such as those used on icy roads or to control dust. It is very important to remove these substances, otherwise rust will form on the floor pan, frame, fuel lines and around the exhaust system. At the end of winter, the underbody should be thoroughly flushed with plain water, being careful to clean those areas where mud and dirt can easily accumulate.	—
<b>Fluid leaks</b>	Check under the vehicle for fuel, oil, water or other fluid leaks after the vehicle has been parked for a while. Water dripping from the air conditioner after use is normal. If you should notice any leaks or gasoline fumes are evident, check for the cause and correct it immediately.	—

# PERIODIC MAINTENANCE

## PERIODIC MAINTENANCE

PFP:00026

### Introduction of Periodic Maintenance

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Two different maintenance schedules are provided, and should be used, depending upon the conditions in which the vehicle is mainly operated. **After 60,000 miles (96,000 km) or 48 months, continue the periodic maintenance at the same mileage/time intervals.**

Schedule 1	Follow Periodic Maintenance Schedule 1 if the driving habits frequently include one or more of the following driving conditions: <ul style="list-style-type: none"><li>● Repeated short trips of less than 5 miles (8 km).</li><li>● Repeated short trips of less than 10 miles (16 km) with outside temperatures remaining below freezing.</li><li>● Operating in hot weather in stop-and-go “rush hour” traffic.</li><li>● Extensive idling and/or low speed driving for long distances, such as police, taxi or door-to-door delivery use.</li><li>● Driving in dusty conditions.</li><li>● Driving on rough, muddy, or salt spread roads.</li><li>● Towing a trailer, using a camper or a car-top carrier.</li></ul>	Emission Control System Maintenance	<a href="#">MA-8</a>
		Chassis and Body Maintenance	<a href="#">MA-9</a>
Schedule 2	Follow Periodic Maintenance Schedule 2 if none of driving conditions shown in Schedule 1 apply to the driving habits.	Emission Control System Maintenance	<a href="#">MA-10</a>
		Chassis and Body Maintenance	<a href="#">MA-11</a>

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# PERIODIC MAINTENANCE

## Schedule 1 EMISSION CONTROL SYSTEM MAINTENANCE

ALS000G6

Abbreviations: R = Replace. I = Inspect. Correct or replace if necessary. [ ]: At the mileage intervals only

MAINTENANCE OPERATION		MAINTENANCE INTERVAL								Reference Section - Page or - Content Title
Perform at number of miles, kilometers or months, whichever comes first.	Miles x 1,000 (km x 1,000) Months	3.75 (6) 3	7.50 (12) 6	11.25 (18) 9	15 (24) 12	18.75 (30) 15	22.5 (36) 18	26.25 (42) 21	30 (48) 24	
Drive belts	NOTE (1)									<a href="#">MA-14</a> , <a href="#">MA-22</a>
Air cleaner filter	NOTE (2)								[R]	<a href="#">MA-17</a> , <a href="#">MA-25</a>
EVAP vapor lines									I*	<a href="#">MA-21</a> , <a href="#">MA-28</a>
Fuel lines									I*	<a href="#">MA-17</a> , <a href="#">MA-25</a>
Fuel filter	NOTE (3)									-
Engine coolant	NOTE (4)									<a href="#">MA-15</a> , <a href="#">MA-22</a>
Engine oil		R	R	R	R	R	R	R	R	<a href="#">MA-18</a> , <a href="#">MA-26</a>
Engine oil filter [Use part No. 15208 31U00 (for VK45DE), 15208 65F00 (for VQ35DE) or equivalent.]		R	R	R	R	R	R	R	R	<a href="#">MA-19</a> , <a href="#">MA-26</a>
Spark plugs (PLATINUM-TIPPED type)		Replace every 105,000 miles (169,000 km).								<a href="#">MA-20</a> , <a href="#">MA-27</a>
Intake & exhaust valve clearance*	NOTE (5)									<a href="#">EM-87</a> , "Valve Clearance", <a href="#">EM-208</a> , "Valve Clearance"

MAINTENANCE OPERATION		MAINTENANCE INTERVAL								Reference Section - Page or - Content Title
Perform at number of miles, kilometers or months, whichever comes first.	Miles x 1,000 (km x 1,000) Months	33.75 (54) 27	37.5 (60) 30	41.25 (66) 33	45 (72) 36	48.75 (78) 39	52.5 (84) 42	56.25 (90) 45	60 (96) 48	
Drive belts	NOTE (1)								I*	<a href="#">MA-14</a> , <a href="#">MA-22</a>
Air cleaner filter	NOTE (2)								[R]	<a href="#">MA-17</a> , <a href="#">MA-25</a>
EVAP vapor lines									I*	<a href="#">MA-21</a> , <a href="#">MA-28</a>
Fuel lines									I*	<a href="#">MA-17</a> , <a href="#">MA-25</a>
Fuel filter	NOTE (3)									-
Engine coolant	NOTE (4)								R*	<a href="#">MA-15</a> , <a href="#">MA-22</a>
Engine oil		R	R	R	R	R	R	R	R	<a href="#">MA-18</a> , <a href="#">MA-26</a>
Engine oil filter [Use part No. 15208 31U00 (for VK45DE), 15208 65F00 (for VQ35DE) or equivalent.]		R	R	R	R	R	R	R	R	<a href="#">MA-19</a> , <a href="#">MA-26</a>

# PERIODIC MAINTENANCE

MAINTENANCE OPERATION		MAINTENANCE INTERVAL								Reference Section - Page or - Content Title
Perform at number of miles, kilometers or months, whichever comes first.	Miles x 1,000 (km x 1,000) Months	33.75 (54) 27	37.5 (60) 30	41.25 (66) 33	45 (72) 36	48.75 (78) 39	52.5 (84) 42	56.25 (90) 45	60 (96) 48	
Spark plugs (PLATINUM-TIPPED type)		Replace every 105,000 miles (169,000 km).								<a href="#">MA-20</a> , <a href="#">MA-27</a>
Intake & exhaust valve clearance*	NOTE (5)									<a href="#">EM-87</a> , "Valve Clearance", <a href="#">EM-208</a> , "Valve Clearance"

**NOTE:**

- (1) After 60,000 miles (96,000 km) or 48 months, inspect every 15,000 miles (24,000 km) or 12 months. Replace the drive belts if found damaged or if the auto belt tensioner reading (only for VK45DE engine) reaches the maximum limit.
- (2) If operating mainly in dusty conditions, more frequent maintenance may be required.
- (3) Maintenance-free item. For service procedures, refer to FL section.
- (4) After 60,000 miles (96,000 km) or 48 months, replace every 30,000 miles (48,000 km) or 24 months.
- (5) If valve noise increases, inspect valve clearance.

\* Maintenance items and intervals with "\*" are recommended by INFINITI for reliable vehicle operation. The owner need not perform such maintenance in order to maintain the emission warranty or manufacturer recall liability. Other maintenance items and intervals are required.

## CHASSIS AND BODY MAINTENANCE

Abbreviations: R = Replace. I = Inspect. Correct or replace if necessary.

MAINTENANCE OPERATION		MAINTENANCE INTERVAL								Reference Section - Page or - Content Title
Perform at number of miles, kilometers or months, whichever comes first.	Miles x 1,000 (km x 1,000) Months	3.75 (6) 3	7.50 (12) 6	11.25 (18) 9	15 (24) 12	18.75 (30) 15	22.5 (36) 18	26.25 (42) 21	30 (48) 24	
Brake lines & cables					I				I	<a href="#">MA-35</a>
Brake pads & rotors			I		I		I		I	<a href="#">MA-35</a>
Automatic transmission & transfer fluid & differential gear oil	NOTE (1)				I				I	<a href="#">MA-29</a> , <a href="#">MA-31</a> , <a href="#">MA-32</a>
Steering gear, linkage & transfer gear, axle & suspension parts			I		I		I		I	<a href="#">MA-36</a> , <a href="#">MA-37</a>
Tire rotation	NOTE (2)									<a href="#">MA-4</a> , <a href="#">MA-34</a>
Drive shaft boots and propeller shaft (AWD models)			I		I		I		I	<a href="#">MA-37</a> , <a href="#">MA-32</a>
Exhaust system			I		I		I		I	<a href="#">MA-29</a>

MAINTENANCE OPERATION		MAINTENANCE INTERVAL								Reference Section - Page or - Content Title
Perform at number of miles, kilometers or months, whichever comes first.	Miles x 1,000 (km x 1,000) Months	33.75 (54) 27	37.5 (60) 30	41.25 (66) 33	45 (72) 36	48.75 (78) 39	52.5 (84) 42	56.25 (90) 45	60 (96) 48	
Brake lines & cables					I				I	<a href="#">MA-35</a>
Brake pads & rotors			I		I		I		I	<a href="#">MA-35</a>
Automatic transmission & transfer fluid & differential gear oil	NOTE (1)				I				I	<a href="#">MA-29</a> , <a href="#">MA-31</a> , <a href="#">MA-31</a> , <a href="#">MA-32</a>

# PERIODIC MAINTENANCE

MAINTENANCE OPERATION		MAINTENANCE INTERVAL								Reference Section - Page or - Content Title
Perform at number of miles, kilometers or months, whichever comes first.	Miles x 1,000 (km x 1,000) Months	33.75 (54) 27	37.5 (60) 30	41.25 (66) 33	45 (72) 36	48.75 (78) 39	52.5 (84) 42	56.25 (90) 45	60 (96) 48	
Steering gear, linkage & transfer gear, axle & suspension parts			I		I		I		I	<a href="#">MA-36</a> , <a href="#">MA-37</a>
Tire rotation	NOTE (2)									<a href="#">MA-4</a> , <a href="#">MA-34</a>
Drive shaft boots and propeller shaft (AWD models)			I		I		I		I	<a href="#">MA-37</a> , <a href="#">MA-32</a>
Exhaust system			I		I		I		I	<a href="#">MA-29</a>

**NOTE:**

(1) If towing a trailer, using a camper or a car-top carrier, or driving on rough or muddy roads, change (not just inspect) fluid (A/T, transfer) oil at every 30,000 miles (48,000 km) or 24 months. **Using automatic transmission fluid other than Genuine Nissan Matic J ATF will cause deterioration in driveability and automatic transmission durability, and may damage the automatic transmission, which is not covered by the INFINITI new vehicle limited warranty.**

(2) Refer to "Tire rotation" under the "General maintenance" heading earlier in this section.

## Schedule 2 EMISSION CONTROL SYSTEM MAINTENANCE

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Abbreviations: R = Replace. I = Inspect. Correct or replace if necessary. [ ]: At the mileage intervals only

MAINTENANCE OPERATION		MAINTENANCE INTERVAL								Reference Section - Page or - Content Title
Perform at number of miles, kilometers or months, whichever comes first.	Miles x 1,000 (km x 1,000) Months	7.5 (12) 6	15 (24) 12	22.5 (36) 18	30 (48) 24	37.5 (60) 30	45 (72) 36	52.5 (84) 42	60 (96) 48	
Drive belts	NOTE (1)								I*	<a href="#">MA-14</a> , <a href="#">MA-22</a>
Air cleaner filter					[R]				[R]	<a href="#">MA-17</a> , <a href="#">MA-25</a>
EVAP vapor lines					I*				I*	<a href="#">MA-21</a> , <a href="#">MA-28</a>
Fuel lines					I*				I*	<a href="#">MA-17</a> , <a href="#">MA-25</a>
Fuel filter	NOTE (2)									-
Engine coolant	NOTE (3)								R*	<a href="#">MA-15</a> , <a href="#">MA-22</a>
Engine oil		R	R	R	R	R	R	R	R	<a href="#">MA-18</a> , <a href="#">MA-26</a>
Engine oil filter [Use part No. 15208 31U00 (for VK45DE), 15208 65F00 (for VQ35DE) or equivalent.]		R	R	R	R	R	R	R	R	<a href="#">MA-19</a> , <a href="#">MA-26</a>
Spark plugs (PLATINUM-TIPPED type)		Replace every 105,000 miles (169,000 km).								<a href="#">MA-20</a> , <a href="#">MA-27</a>
Intake & exhaust valve clearance*	NOTE (4)									<a href="#">EM-87</a> , "Valve Clearance", <a href="#">EM-208</a> , "Valve Clearance"

**NOTE:**

(1) After 60,000 miles (96,000 km) or 48 months, inspect every 15,000 miles (24,000 km) or 12 months. Replace the drive belts if found damaged or if the auto belt tensioner reading (only for VK45DE engine) reaches the maximum limit.

(2) Maintenance-free item. For service procedures, refer to FL section.

(3) After 60,000 miles (96,000 km) or 48 months, replace every 30,000 miles (48,000 km) or 24 months.

(4) If valve noise increases, inspect valve clearance.

\* Maintenance items and intervals with "\*" are recommended by INFINITI for reliable vehicle operation. The owner need not perform such maintenance in order to maintain the emission warranty or manufacturer recall liability. Other maintenance items and intervals are required

# PERIODIC MAINTENANCE

## CHASSIS AND BODY MAINTENANCE

Abbreviations: R = Replace. I = Inspect. Correct or replace if necessary.

MAINTENANCE OPERATION		MAINTENANCE INTERVAL								Reference Section - Page or - Content Title
		Miles x 1,000 (12)	Miles x 1,000 (24)	Miles x 1,000 (36)	Miles x 1,000 (48)	Miles x 1,000 (60)	Miles x 1,000 (72)	Miles x 1,000 (84)	Miles x 1,000 (96)	
Perform at number of miles, kilometers or months, whichever comes first.	Miles x 1,000 (km x 1,000) Months	7.5 (12)	15 (24)	22.5 (36)	30 (48)	37.5 (60)	45 (72)	52.5 (84)	60 (96)	
Brake lines & cables			I		I		I		I	<a href="#">MA-35</a>
Brake pads & rotors			I		I		I		I	<a href="#">MA-35</a>
Automatic transmission & transfer fluid & differential gear oil			I		I		I		I	<a href="#">MA-29</a> , <a href="#">MA-31</a> , <a href="#">MA-32</a>
Steering gear, linkage & transfer gear, axle & suspension parts					I				I	<a href="#">MA-36</a> , <a href="#">MA-37</a>
Tire rotation	NOTE (1)									<a href="#">MA-4</a> , <a href="#">MA-34</a>
Drive shaft boots and propeller shaft (AWD models)			I		I		I		I	<a href="#">MA-37</a> , <a href="#">PR-7</a> , <a href="#">"REAR PROPELLER SHAFT"</a>
Exhaust system					I				I	<a href="#">MA-29</a>

**NOTE:**

(1) Refer to "Tire rotation" under the "General maintenance" heading earlier in this section.

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# RECOMMENDED FLUIDS AND LUBRICANTS

## RECOMMENDED FLUIDS AND LUBRICANTS

PF0:00000

### Fluids and Lubricants

ALS000G8

			Capacity (Approximate)			Recommended Fluids/Lubricants
			US measure	Imp measure	Liter	
Engine oil Drain and refill	With oil filter change	VK45DE	6-3/4 qt	5-5/8 qt	6.4	For VK45DE engine ● API Certification Mark*1 ● API grade SJ or SL, Energy Conserving*1 ● ILSAC grade GF-II & GF-III*1 For VQ35DE engine ● API Certification Mark*1 ● API grade SG/SH, Energy Conserving I & II or API grade SJ or SL, Energy Conserving*1 ● ILSAC grade GF-I, GF-II & GF-III *1
		VQ35DE	5 qt	4 - 1/8 qt	4.7	
	Without oil filter change	VK45DE	6-1/8 qt	5-1/8 qt	5.8	
		VQ35DE	4-5/8 qt	3-7/8 qt	4.4	
Dry engine (Overhaul)		VK45DE	7-5/8 qt	6-3/8 qt	7.2	● API Certification Mark*1 ● API grade SG/SH, Energy Conserving I & II or API grade SJ or SL, Energy Conserving*1 ● ILSAC grade GF-I, GF-II & GF-III *1
		VQ35DE	5-3/4 qt	4-3/4 qt	5.4	
Cooling system	With res- ervoir tank	VK45DE	10-5/8 qt	8-3/4 qt	10.0	Genuine Nissan Anti-freeze Coolant or equivalent
		VQ35DE	9-1/8 qt	7-5/8 qt	8.6	
	Reservoir tank	VK45DE	7/8 qt	3/4 qt	0.8	
		VQ35DE	7/8 qt	3/4 qt	0.8	
Automatic transmission fluid			10-7/8 qt	9-1/8 qt	10.3	Genuine Nissan Matic J ATF *2
Differential gear oil		Front	1-3/8 pt	1-1/8 pt	0.65	API GL-5, Viscosity SAE 80 W-90 *3
		Rear	3 pt	2-1/2 pt	1.40	
Transfer fluid			2-5/8 pt	2-1/4 pt	1.25	Genuine Nissan Matic "D" (Continental U.S. and Alaska) or Canada NISSAN Automatic Transmission Fluid*4
Power steering fluid (PSF)			1-1/8 qt	7/8 qt	1.0	Genuine Nissan PSF or equivalent*5
Brake fluid			—	—	—	Genuine Nissan Super Heavy Duty Brake Fluid*6 or equivalent DOT 3 (US FMVSS No. 116)
Multi-purpose grease			—	—	—	NLGI No. 2 (Lithium soap base)

\*1: For further details, see "SAE Viscosity Number".

**\*2: Using automatic transmission fluid other than Genuine Nissan Matic J ATF will cause deterioration in driveability and automatic transmission durability, and may damage the automatic transmission, which is not covered by the INFINITI new vehicle limited warranty.**

\*3: For hot climates, viscosity SAE 90 is suitable for ambient temperatures above 0°C (32°F).

\*4: DEXRON™ III/MERCON™ or equivalent may also be used. Outside the continental United States and Alaska contact an INFINITI dealer for more information regarding suitable fluids, including recommended brand(s) of DEXRON™ III/MERCON™ automatic transmission fluid.

\*5: For Canada, NISSAN Automatic Transmission Fluid (ATF), DEXRON™ III/MERCON™, or equivalent ATF may also be used.

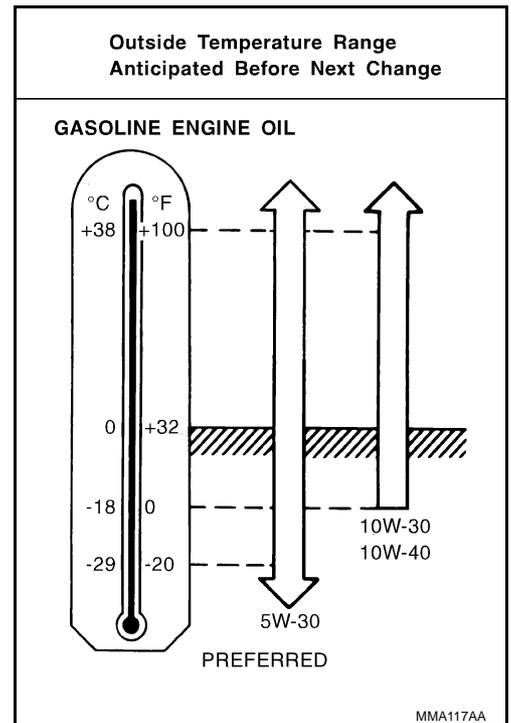
\*6: Available in mainland U.S.A. through your INFINITI dealer.

# RECOMMENDED FLUIDS AND LUBRICANTS

## SAE Viscosity Number GASOLINE ENGINE OIL

ALS000G9

SAE 5W-30 viscosity oil is preferred for all temperatures. SAE 10W-30 and 10W-40 viscosity oil may be used if the ambient temperature is above -18°C(0°F)



## Anti-Freeze Coolant Mixture Ratio

ALS000GA

The engine cooling system is filled at the factory with a high-quality, year-round, anti-freeze coolant solution. The anti-freeze solution contains rust and corrosion inhibitors. Therefore, additional cooling system additives are not necessary.

### CAUTION:

When adding or replacing coolant, be sure to use only Genuine Nissan anti-freeze coolant or equivalent with the proper mixture ratio of 50% anti-freeze and 50% demineralized water/distilled water.

Other types of coolant solutions may damage your cooling system.

Outside temperature down to		Anti-freeze	Demineralized water or distilled water
°C	°F		
-35	-30	50%	50%

SMA947CA

# ENGINE MAINTENANCE (VQ35DE ENGINE)

## ENGINE MAINTENANCE (VQ35DE ENGINE)

PF10001

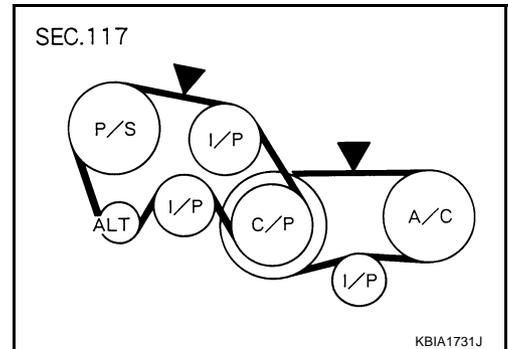
### Checking Drive Belts

ALS000H0

#### WARNING:

Be sure to perform when the engine is stopped.

1. Inspect belts for cracks, fraying, wear and oil. If necessary, replace.
2. Inspect drive belt deflection or tension at a point on the belt mid-way between pulleys.
  - Inspection should be done only when engine is cold, or over 30 minutes after engine is stopped.
  - Measure belt tension with belt tension gauge (Commercial Service Tool: BT3373-F or equivalent) at points marked ▼ shown in the figure.
  - When measuring deflection, apply 98 N (10 kg, 22 lb) at the ▼ marked point.
  - Adjust if belt deflection exceeds the limit or if belt tension is not within specifications.



#### CAUTION:

- When checking belt deflection or tension immediately after installation, first adjust it to the specified value. Then, after turning the crankshaft two turns or more, re-adjust to the specified value to avoid variation in deflection between pulleys.
- Tighten idler pulley lock nut by hand and measure deflection or tension without looseness.

### Belt Deflection and Tension

Items	Deflection adjustment		Unit: mm (in)	Tension adjustment*		Unit: N (kg, lb)
	Used belt		New belt	Used belt		New belt
	Limit	After adjustment		Limit	After adjustment	
Alternator and power steering oil pump belt	7 (0.28)	4 - 5 (0.16 - 0.20)	3.5 - 4.5 (0.138 - 0.177)	294 (30, 66)	730 - 818 (74.5 - 83.5, 164 - 184)	838 - 926 (85.5 - 94.5, 188 - 208)
Air conditioner compressor belt	12 (0.47)	9 - 10 (0.35 - 0.39)	8 - 9 (0.31 - 0.35)	196 (20, 44)	348 - 436 (35.5 - 44.5, 78 - 98)	470 - 559 (48 - 57, 106 - 126)
Applied pushing force	98 N (10 kg, 22 lb)			—		

\*: If belt tension gauge cannot be installed at check points shown, check drive belt tension at different location on the belt.

### Tension Adjustment

ALS000H1

Portion	Belt tightening method for adjustment
Alternator and power steering oil pump belt	Adjusting bolt on idler pulley
Air conditioner compressor belt	Adjusting bolt on idler pulley

#### CAUTION:

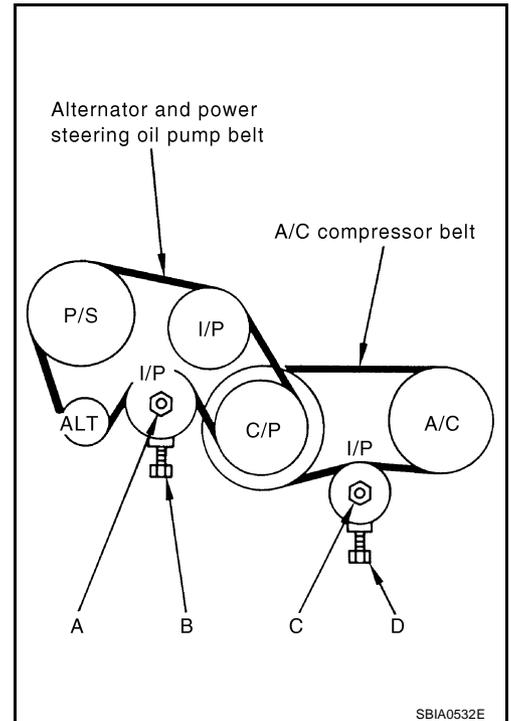
- When belt is replaced with a new one, adjust it to value for “New belt” to accommodate for insufficient adaptability with pulley grooves.
- When deflection or tension of belt being used exceeds “Limit”, adjust it to value for “After adjustment of used belt”.
- When checking belt deflection or tension immediately after installation, first adjust it to the specified value. Then, after turning the crankshaft two turns or more, re-adjust to the specified value to avoid variation in deflection between pulleys.
- When installing belt, make sure that it is correctly engaged with pulley grooves.
- Keep oil and water away from belt and pulley grooves.
- Do not twist or bend belt excessively.

# ENGINE MAINTENANCE (VQ35DE ENGINE)

## ALTERNATOR AND POWER STEERING OIL PUMP BELT

1. Remove front engine undercover with power tool.
2. Loosen idler pulley lock nut (A) and adjust tension by turning adjusting bolt (B).
  - For specified belt tension, refer to [MA-14, "Checking Drive Belts"](#).
3. Tighten nut (A).

 : 34.8 N·m (3.5 kg-m, 26 ft-lb)



## AIR CONDITIONER COMPRESSOR BELT

1. Remove front engine undercover with power tool.
2. Loosen idler pulley lock nut (C) and adjust tension by turning adjusting bolt (D).
  - For specified belt tension, refer to [MA-14, "Checking Drive Belts"](#).
3. Tighten nut (C).

 : 34.8 N·m (3.5 kg-m, 26 ft-lb)

## Changing Engine Coolant

ALS000H2

### WARNING:

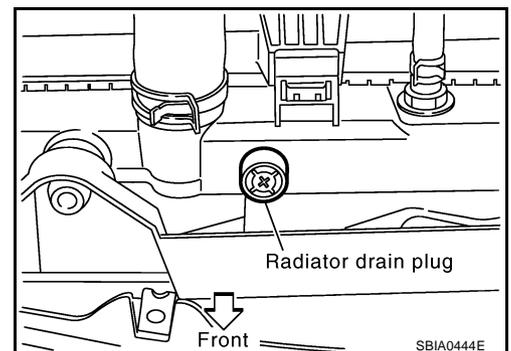
- To avoid being scalded, never change engine coolant when engine is hot.
- Wrap a thick cloth around cap and carefully remove the cap. First, turn the cap a quarter of a turn to release built-up pressure. Then turn the cap all the way.

## DRAINING ENGINE COOLANT

1. Remove front engine undercover with power tools.
2. Open radiator drain plug at the bottom of radiator, and remove radiator cap.

### CAUTION:

Be careful not to allow engine coolant to contact drive belts.



When drain all of engine coolant in the system, open water drain plugs on engine cylinder block. Refer to [EM-119, "DISASSEMBLY"](#).

3. Check drained engine coolant for contaminants such as rust, corrosion or discoloration. If contaminated, flush the engine cooling system. Refer to [MA-17, "FLUSHING COOLING SYSTEM"](#).

# ENGINE MAINTENANCE (VQ35DE ENGINE)

4. Remove reservoir tank, drain engine coolant and clean reservoir tank before installing.

## REFILLING ENGINE COOLANT

1. Install reservoir tank if removed, and radiator drain plug.

### CAUTION:

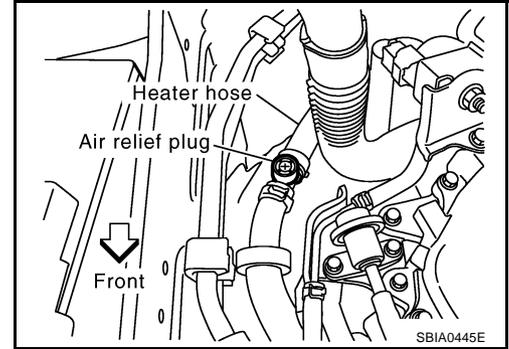
Be sure to clean drain plug and install with new O-ring.

#### Radiator drain plug:

 : 1.18 N·m (0.12 kg·m, 10 in·lb)

If water drain plugs are removed, close and tighten them. Refer to [EM-124, "ASSEMBLY"](#).

2. Remove air relief plug on heater hose.



3. Fill radiator and reservoir tank to specified level.

- Use **Genuine Nissan Long Life Antifreeze/ Coolant** or equivalent mixed with water (distilled or demineralized). Refer to [MA-12, "RECOMMENDED FLUIDS AND LUBRICANTS"](#).

**Engine coolant capacity**  
(with reservoir tank at "MAX" level)

: Approximately 8.6 ℓ (9-1/8 US qt, 7-5/8 Imp qt)

**Reservoir tank engine coolant capacity (at "MAX" level)**  
: 0.8 ℓ (7/8 US qt, 3/4 Imp qt)

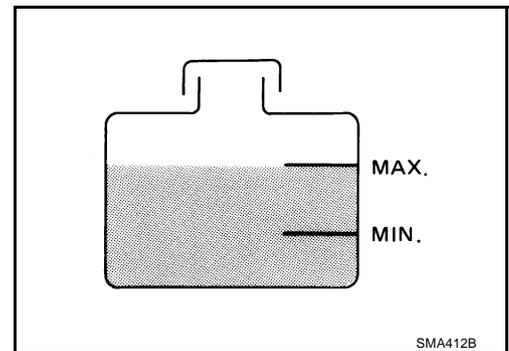
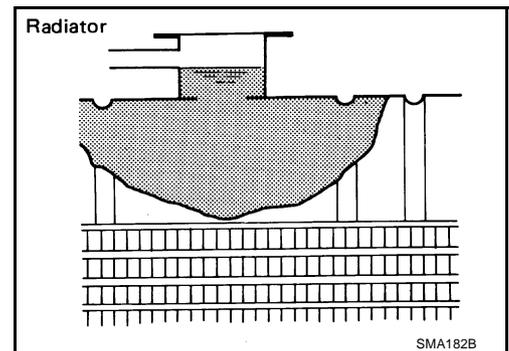
- Pour engine coolant through engine coolant filler neck slowly of less than 2 ℓ (2-1/8 US qt, 1-3/4 Imp qt) a minute to allow air in system to escape.
- When engine coolant overflows air relief hole on heater hose, install air relief plug with new O-ring.

#### Air relief plug:

 : 1.19 N·m (0.12 kg·m, 10 ft·lb)

4. Warm up engine to normal operating temperature with radiator cap installed.
5. Run engine at 3,000 rpm for 10 seconds and return to idle speed.
  - Repeat two or three times.

**Watch engine coolant temperature gauge so as not to overheat engine.**
6. Stop engine and cool down to less than approximately 50°C (122°F).
  - Cool down using a fan to reduce the time.
  - If necessary, refill radiator up to filler neck with engine coolant.
7. Refill reservoir tank to "MAX" level line with engine coolant.
8. Repeat steps 3 through 6 two or more times with radiator cap installed until engine coolant level no longer drops.
9. Check cooling system for leaks with engine running.



# ENGINE MAINTENANCE (VQ35DE ENGINE)

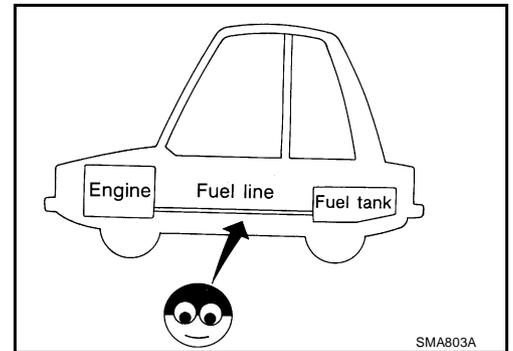
10. Warm up engine, and check for sound of engine coolant flow while running engine from idle up to 3,000 rpm with heater temperature controller set at several position between "COOL" and "WARM".
  - Sound may be noticeable at heater unit.
11. Repeat step 10 three times.
12. If sound is heard, bleed air from cooling system by repeating step 3 through 6 until engine coolant level no longer drops.
  - **Clean excess engine coolant from engine.**

## FLUSHING COOLING SYSTEM

1. Fill radiator with water until water spills from the air relief hole, then close air relief plug. Fill radiator and reservoir tank with water and reinstall radiator cap.
2. Run engine and warm it up to normal operating temperature.
3. Rev engine two or three times under no-load.
4. Stop engine and wait until it cools down.
5. Drain the water from the system. Refer to [MA-15, "DRAINING ENGINE COOLANT"](#).
6. Repeat steps 1 through 5 until clear water begins to drain from radiator.

## Checking Fuel Lines

Inspect fuel lines, filler cap and tank for improper attachment, leaks, cracks, damage, loose connections, chafing or deterioration. If necessary, repair or replace damaged parts.



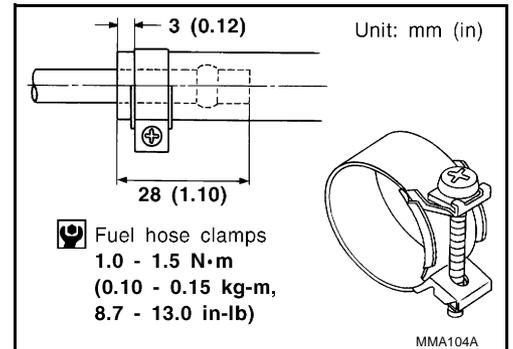
### Fuel Hose Clamp

#### CAUTION:

Tighten high-pressure rubber hose clamp so that clamp end is 3mm (0.12 in) from hose end.

Tightening torque specifications are the same for all rubber hose clamps.

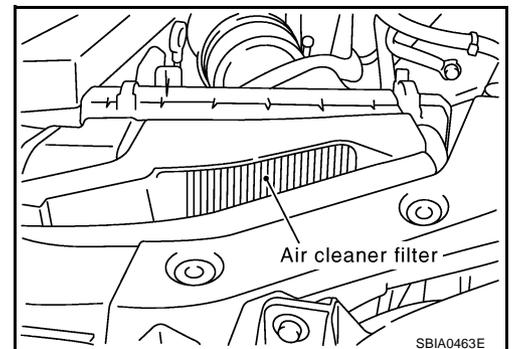
Ensure that screw does not contact adjacent parts.



## Changing Air Cleaner Filter

### VISCOUS PAPER TYPE

The viscous paper type filter does not need cleaning between replacement intervals. Refer to [MA-7, "PERIODIC MAINTENANCE"](#).



# ENGINE MAINTENANCE (VQ35DE ENGINE)

ALS000H3

## Changing Engine Oil

### WARNING:

- Be careful not to burn yourself, as engine oil may be hot.
  - Prolonged and repeated contact with used engine oil may cause skin cancer; try to avoid direct skin contact with used engine oil. If skin contact is made, wash thoroughly with soap or hand cleaner as soon as possible.
1. Remove front engine undercover with power tool.
  2. Warm up engine, and check for engine oil leakage from engine components.
  3. Stop engine and wait for 10 minutes.
  4. Remove drain plug and oil filler cap.
  5. Drain engine oil.
  6. Install drain plug with new washer. Refer to [EM-28, "OIL PAN AND OIL STRAINER"](#) .

### CAUTION:

Be sure to clean drain plug and install with new washer.

#### Oil pan drain plug:

 : 34.3 N·m (3.5 kg·m, 25 ft·lb)

7. Refill with new engine oil.

#### Engine oil specification and viscosity:

Refer to [MA-12, "RECOMMENDED FLUIDS AND LUBRICANTS"](#) .

#### Engine oil capacity (Approximate):

Unit: ℓ (US qt, Imp qt)

Drain and refill	With oil filter change	4.7 (5, 4-1/8)
	Without oil filter change	4.4 (4-5/8, 3-7/8)
Dry engine (Overhaul)		5.4 (5-3/4, 4-3/4)

### CAUTION:

- The refill capacity depends on the engine oil temperature and drain time. Use these specifications for reference only.
  - Always use oil level gauge to determine the proper amount of engine oil in the engine.
8. Warm up engine and check area around drain plug and oil filter for engine oil leakage.
  9. Stop engine and wait for 10 minutes.
  10. Check engine oil level. Refer to [LU-7, "ENGINE OIL LEVEL"](#) .

# ENGINE MAINTENANCE (VQ35DE ENGINE)

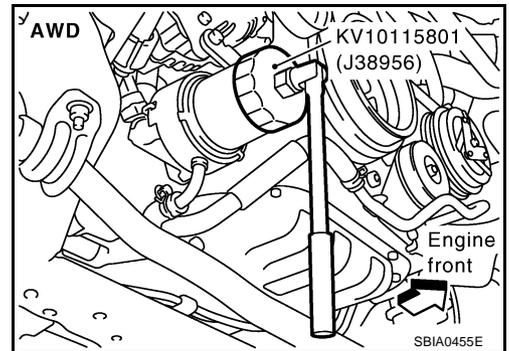
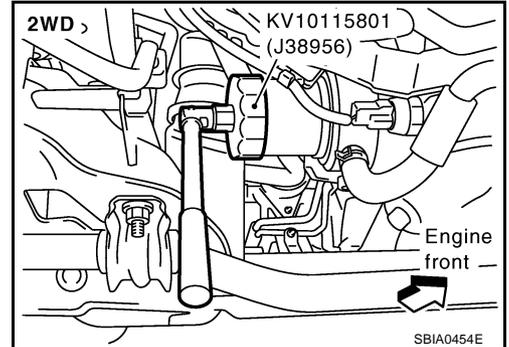
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## Changing Oil Filter REMOVAL

1. Remove front engine undercover with power tool.
2. Using oil filter wrench (SST), remove oil filter.

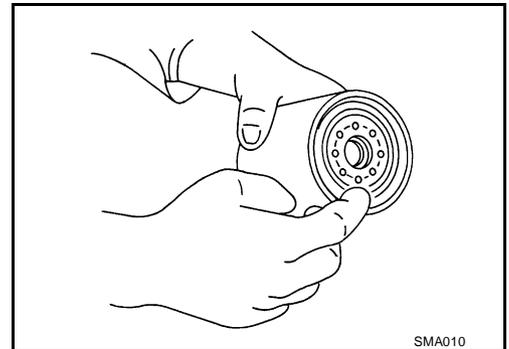
### CAUTION:

- Oil filter is provided with a relief valve.  
Use genuine NISSAN oil filter or equivalent.
- Be careful not to get burned when engine and engine oil are hot.
- When removing, prepare a shop cloth to absorb any engine oil leakage or spillage.
- Do not allow engine oil to adhere to the drive belts.
- Completely wipe off any engine oil that adhere to engine and the vehicle.



## INSTALLATION

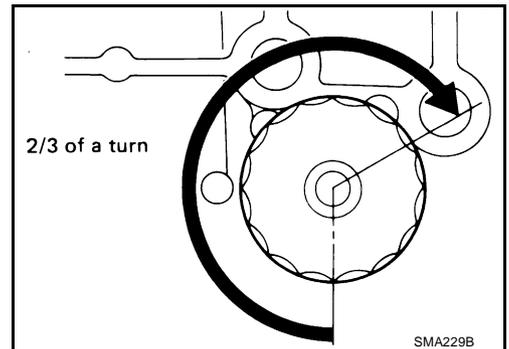
1. Remove foreign materials adhering to the oil filter installation surface.
2. Apply engine oil to the oil seal contact surface of the new oil filter.



3. Screw the oil filter manually until it touches the installation surface, then tighten it by 2/3 turn. Or tighten to specification.

### Oil filter:

 : 17.7 N·m (1.8 kg·m, 13 ft·lb)



## INSPECTION AFTER INSTALLATION

1. Start engine, and check there is no leak of engine oil.
2. Stop engine and wait for 10 minutes.
3. Check engine oil level and add engine oil. Refer to [LU-7, "ENGINE OIL"](#).

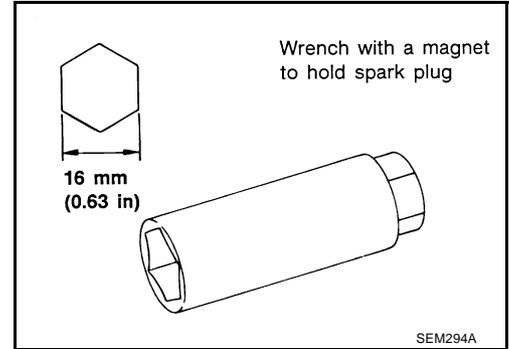
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# ENGINE MAINTENANCE (VQ35DE ENGINE)

ALS000GN

## Changing Spark Plugs (Platinum-Tipped Type) REMOVAL

1. Remove engine cover with power tool. Refer to [EM-19, "INTAKE MANIFOLD COLLECTOR"](#) .
2. Remove ignition coil. Refer to [EM-40, "IGNITION COIL"](#) .
3. Remove spark plug with spark plug wrench (commercial service tool).



## INSPECTION AFTER REMOVAL

**Use standard type spark plug for normal condition.**

The hot type spark plug is suitable when fouling occurs with the standard type spark plug under conditions such as:

- Frequent engine starts
- Low ambient temperatures

The cold type spark plug is suitable when spark knock occurs with the standard type spark plug under conditions such as:

- Extended highway driving
- Frequent high engine revolution

Make	NGK
Standard type	PLFR5A-11
Hot type	PLFR4A-11
Cold type	PLFR6A-11

**Gap (Nominal) : 1.1 mm (0.043 in)**

### CAUTION:

- Do not drop or shock spark plug.
- Do not use a wire brush for cleaning.
- If plug tip is covered with carbon, spark plug cleaner may be used.

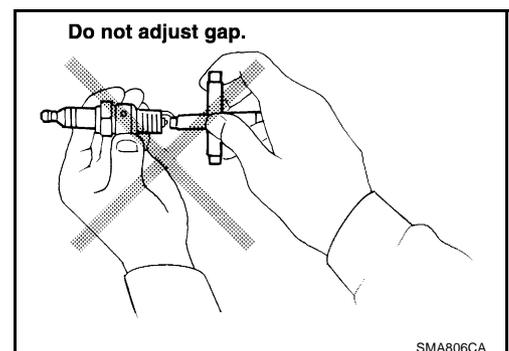
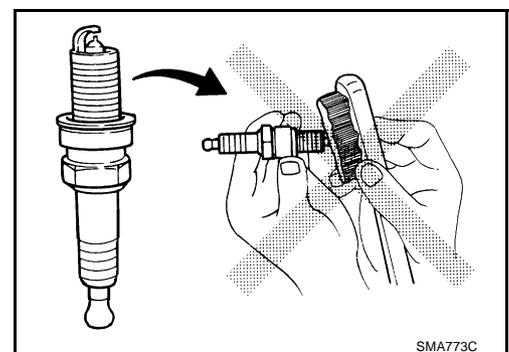
**Cleaner air pressure:**

**Less than 588 kPa (6 kg/cm<sup>2</sup> , 85 psi)**

**Cleaning time:**

**Less than 20 seconds**

- Checking and adjusting plug gap is not required between change intervals.



# ENGINE MAINTENANCE (VQ35DE ENGINE)

## INSTALLATION

Install in the reverse order of removal.

 : 24.5 N·m (2.5 kg-m, 18 ft-lb)

## Checking EVAP Vapor Lines

ALS000GO

1. Visually inspect EVAP vapor lines for improper attachment and for cracks, damage, loose connections, chafing and deterioration.
2. Inspect fuel tank filler cap vacuum relief valve for clogging, sticking, etc.

Refer to [EC-643, "EVAPORATIVE EMISSION SYSTEM"](#) .

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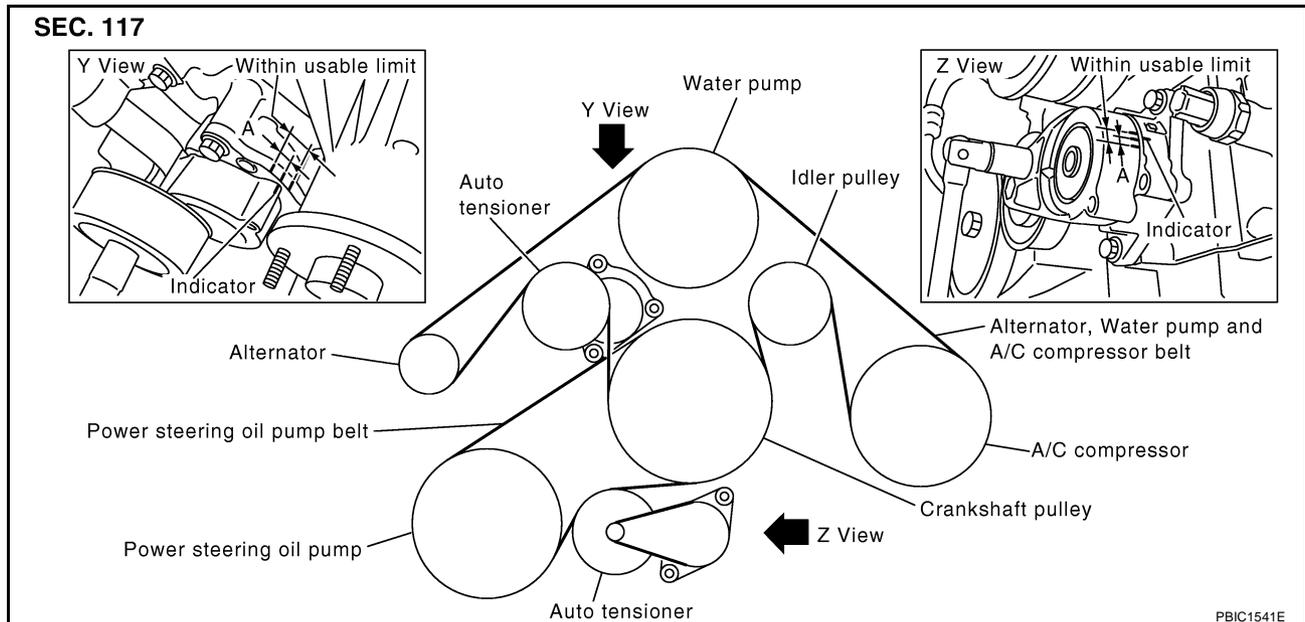
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## ENGINE MAINTENANCE (VK45DE ENGINE)

PFP:10001

### Checking Drive Belts

ALS000GP



#### **WARNING:**

**Be sure to perform when the engine is stopped.**

- Remove air duct (inlet) when inspecting drive belt for alternator, water pump and A/C compressor.
- Remove undercover (with power tool) when inspecting power steering oil pump belt.
- Make sure that indicator (single line notch) of each automatic tensioner is within the allowable working range (between three line notches).

#### **NOTE:**

- Check the auto tensioner indication when the engine is cold.
- When the new drive belt is installed, the range should be A.
- The indicator notch is located on the moving side of the tensioner for alternator, water pump and A/C compressor belt, while it is found on the fixed side for power steering oil pump belt.
- Visually check entire belt for wear, damage or cracks.
- If the indicator is out of allowable working range or belt is damaged, replace the belt.

### Tension Adjustment

ALS000GQ

Belt tensioning is not necessary, as it is automatically adjusted by auto tensioner.

### Changing Engine Coolant

ALS000H6

#### **WARNING:**

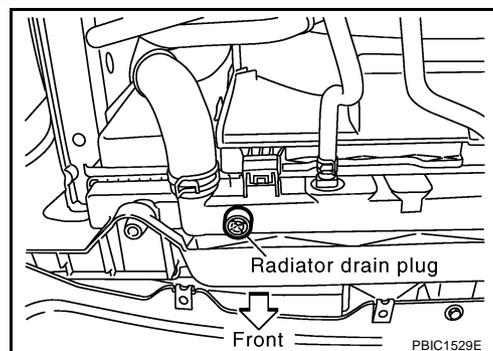
- To avoid being scalded, never change the engine coolant when the engine is hot.
- Wrap a thick cloth around cap and carefully remove the cap. First, turn the cap a quarter of a turn to release built-up pressure. Then turn the cap all the way.

### DRAINING ENGINE COOLANT

1. Remove engine front undercover with power tool.

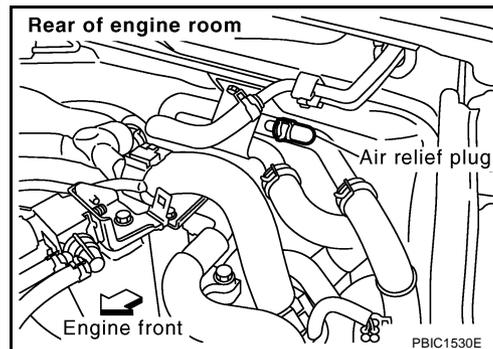
## ENGINE MAINTENANCE (VK45DE ENGINE)

2. Open radiator drain plug at the bottom of radiator, and remove radiator cap.
  - **Be careful not to allow engine coolant to contact drive belts.**

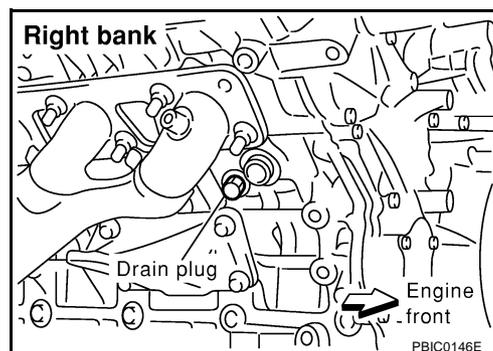
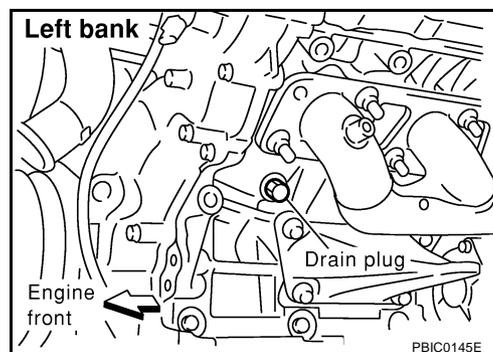


**When draining all the engine coolant in the system, also perform the following steps.**

3. Remove air relief plug on heater hose.



4. Drain engine coolant from both sides of cylinder block when draining all the engine coolant in the system.



5. Check drained engine coolant for contaminants such as rust, corrosion or discoloration. If contaminated, flush engine cooling system. Refer to [MA-24, "FLUSHING COOLING SYSTEM"](#).
6. Remove reservoir tank, drain engine coolant, then clean reservoir tank.

### REFILLING ENGINE COOLANT

1. Install reservoir tank if removed, and radiator drain plug.

**Radiator drain plug:**

 : **1.19 N·m (0.12 kg·m, 11 in·lb)**

2. Install cylinder block drain plugs if removed.

# ENGINE MAINTENANCE (VK45DE ENGINE)

- Apply thread sealant to the thread of cylinder block drain plugs.  
**Use Genuine Thread Sealant or equivalent. Refer to [GI-48, "RECOMMENDED CHEMICAL PRODUCTS AND SEALANTS"](#).**

**Cylinder block drain plug (RH, LH):**

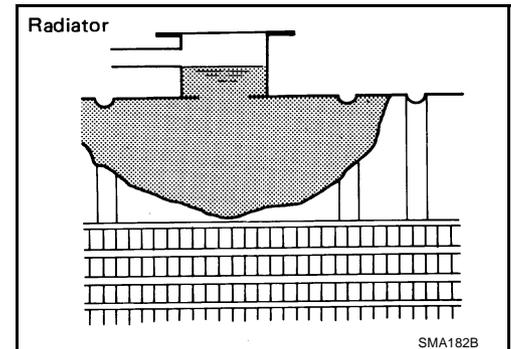
 : 19.6 N-m (2.0 kg-m , 15 ft-lb)

3. Fill radiator and reservoir tank to specified level.

- **Use genuine Nissan Anti-freeze Coolant or equivalent mixed with water (distilled or demineralized). Refer to [MA-12, "RECOMMENDED FLUIDS AND LUBRICANTS"](#) .**

**Engine coolant capacity (With reservoir tank):**

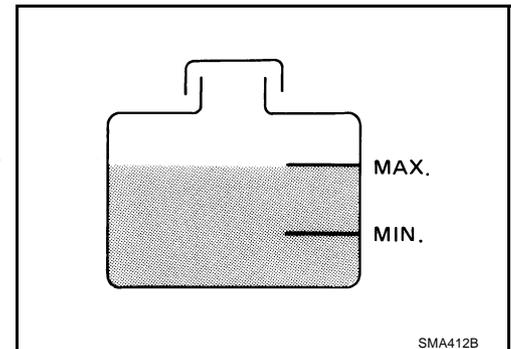
**Approximately 10.0 ℓ (10-5/8 US qt, 8-3/4 Imp qt)**



**Reservoir tank engine coolant capacity (at "MAX" level):**

**0.8 ℓ (7/8 US qt, 3/4 Imp qt)**

- **Pour engine coolant through engine coolant filler neck slowly of less than 2 ℓ (2-1/8 US qt, 1-3/4 Imp qt) a minute to allow air in system to escape.**
  - When engine coolant overflows air relief hole on heater hose, install air relief plug.
4. Warm up engine to normal operating temperature with radiator cap installed.
  5. Run engine at 3,000 rpm for 10 seconds and return to idle speed.
    - Repeat two or three times.



**Watch engine coolant temperature gauge so as not to overheat the engine.**

6. Stop engine and cool down to less than approximately 50°C (122°F).
  - Cool down using a fan to reduce the time.
  - If necessary, refill radiator up to filler neck with engine coolant.
7. Refill reservoir tank to MAX level line with engine coolant.
8. Repeat steps 3 through 6 two or more times with radiator cap installed until engine coolant level no longer drops.
9. Check cooling system for leaks with engine running.
10. Warm up engine, and check for sound of engine coolant flow while running engine from idle up to 3,000 rpm with heater temperature controller set at several position between COOL and WARM.
  - Sound may be noticeable at heater unit.
11. Repeat step 10 three times.
12. If sound is heard, bleed air from cooling system by repeating steps 3 through 6 until engine coolant level no longer drops.
  - **Clean excess engine coolant from engine.**

## FLUSHING COOLING SYSTEM

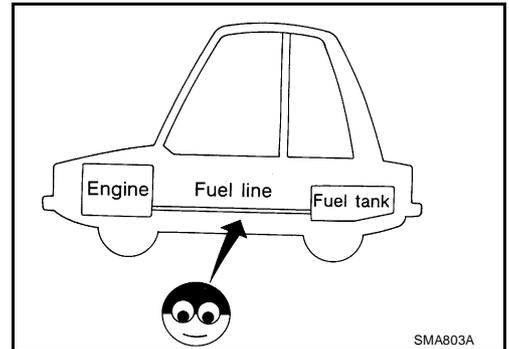
1. Fill radiator with water until water spills from the air relief hole, then close air relief plug. Fill radiator and reservoir tank with water and reinstall radiator cap.
2. Run engine and warm it up to normal operating temperature.
3. Rev engine two or three times under no-load.
4. Stop engine and wait until it cools down.
5. Drain water from the system. Refer to [MA-22, "DRAINING ENGINE COOLANT"](#) .

# ENGINE MAINTENANCE (VK45DE ENGINE)

6. Repeat steps 1 through 5 until clear water begins to drain from radiator.

## Checking Fuel Lines

Inspect fuel lines and tank for improper attachment, leaks, cracks, damage, loose connections, chafing or deterioration. If necessary, repair or replace damaged parts.



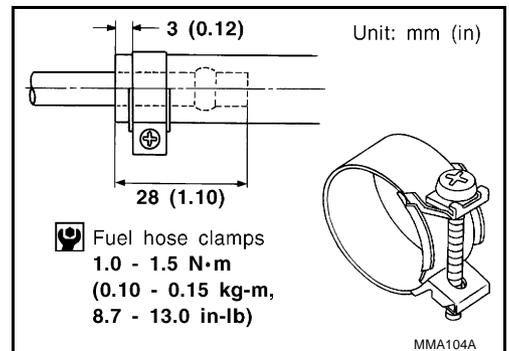
## Fuel Hose Clamp

### CAUTION:

Tighten high-pressure rubber hose clamp so that clamp end is 3 mm (0.12 in) from hose end.

Tightening torque specifications are the same for all rubber hose clamps.

Ensure that screw does not contact adjacent parts.



## Changing Air Cleaner Filter VISCIOUS PAPER TYPE

The viscous paper type filter does not need cleaning between replacement intervals. Refer to [MA-7, "PERIODIC MAINTENANCE"](#).

1. Remove air duct (inlet), air cleaner case and mass air flow sensor assembly. Refer to [EM-170, "AIR CLEANER AND AIR DUCT"](#).
2. Remove air cleaner filter from air cleaner case assembly.

# ENGINE MAINTENANCE (VK45DE ENGINE)

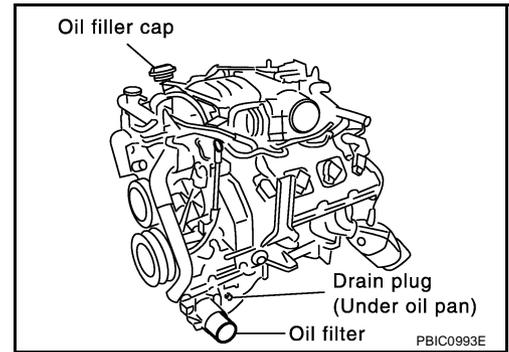
ALS000H7

## Changing Engine Oil

### WARNING:

- Be careful not to burn yourself, as the engine oil is hot.
- Prolonged and repeated contact with used engine oil may cause skin cancer; try to avoid direct skin contact with used engine oil. If skin contact is made, wash thoroughly with soap or hand cleaner as soon as possible.

1. Remove the engine front undercover with power tool.
2. Warm up engine, and check for oil leakage from engine components.
3. Stop engine and wait for 15 minutes.
4. Loosen oil filler cap, then remove drain plug.
5. Drain engine oil.
6. Install drain plug with new washer. Refer to [EM-180, "OIL PAN AND OIL STRAINER"](#)



### CAUTION:

Be sure to clean drain plug and install with new washer.

### Oil pan drain plug:

: 34.3 N·m (3.5 kg·m, 25 ft·lb)

7. Refill with new engine oil.  
**Engine oil specification and viscosity:**  
Refer to [MA-12, "RECOMMENDED FLUIDS AND LUBRICANTS"](#) .

### Engine oil capacity (Approximate):

Unit: ℓ (US qt, Imp qt)

Drain and refill	With oil filter change	6.4 (6-3/4, 5-5/8)
	without oil filter change	5.8 (6-1/8, 5-1/8)
Dry engine (engine overhaul)		7.2 (7-5/8, 6-3/8)

### CAUTION:

- The refill capacity depends on the engine oil temperature and drain time. Use these specifications for reference only.
  - Always use oil level gauge to determine the proper amount of engine oil in the engine.
8. Warm up engine and check area around drain plug and oil filter for oil leakage.
  9. Stop engine and wait for 15 minutes.
  10. Check engine oil level. Refer to [LU-25, "Inspection"](#) .

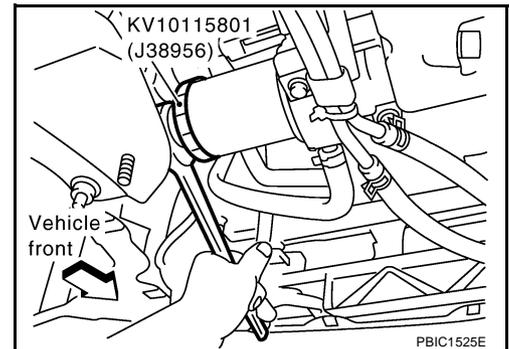
## Changing Oil Filter

### REMOVAL

1. Remove the engine front undercover with power tool.
2. Using the oil filter wrench (SST), remove the oil filter.

### CAUTION:

- The oil filter is provided with a relief valve. Use genuine NISSAN oil filter or equivalent.
- Be careful not to get burned when the engine and engine oil are hot.
- When removing, prepare a shop cloth to absorb any engine oil leakage or spillage.
- Do not allow engine oil to adhere to the drive belts.
- Completely wipe off any engine oil that adheres to the engine and the vehicle.



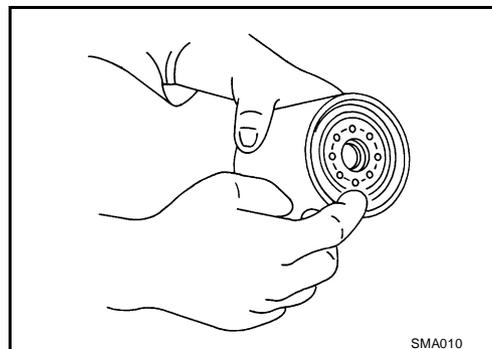
ALS000GV

### INSTALLATION

1. Remove foreign materials adhering to the oil filter installation surface.

## ENGINE MAINTENANCE (VK45DE ENGINE)

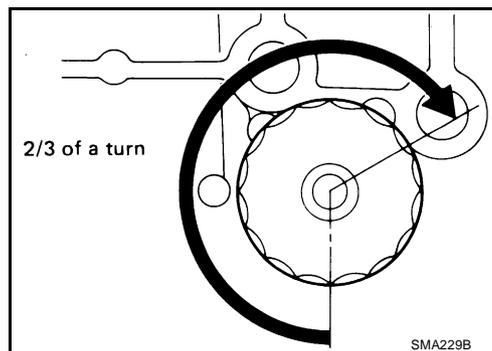
2. Apply engine oil to the oil seal circumference of the new oil filter.



3. Screw the oil filter manually until it touches the installation surface, then tighten it by 2/3 turn. Or tighten to specification.

### Oil filter:

 :17.7 N·m (1.8 kg·m, 13 ft·lb)



### INSPECTION AFTER INSTALLATION

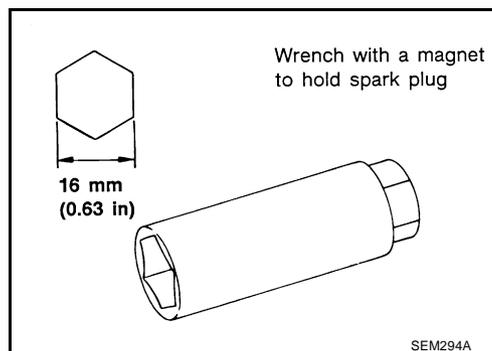
1. After warming up the engine, check for engine oil leakage.
2. Stop engine and wait for 15 minutes.
3. Check engine oil level and add engine oil. Refer to [LU-25, "ENGINE OIL"](#) .

### Changing Spark Plugs (Platinum-Tipped Type)

ALS000GW

#### REMOVAL

1. Remove engine cover with power tool. Refer to [EM-166, "ENGINE ROOM COVER"](#) .
2. Remove air duct (inlet), air cleaner case and mass air flow sensor assembly, air duct and resonator assembly. Refer to [EM-170, "AIR CLEANER AND AIR DUCT"](#) .
3. Disconnect harness connector from ignition coil.
4. Remove ignition coil. Refer to [EM-183, "Removal and Installation"](#) .
5. Remove spark plug with spark plug wrench (commercial service tool).



### INSPECTION AFTER REMOVAL

- Use standard type spark plug for normal condition.

The hot type spark plug is suitable when fouling occurs with the standard type spark plug under conditions such as:

- Frequent engine starts
- Low ambient temperatures

The cold type spark plug is suitable when spark knock occurs with the standard type spark plug under conditions such as:

- Extended highway driving

# ENGINE MAINTENANCE (VK45DE ENGINE)

- Frequent high engine revolution

Make	NGK
Standard type	PLFR5A-11
Hot type	PLFR4A-11
Cold type	PLFR6A-11

**Gap (Nominal) : 1.1 mm (0.043 in)**

## CAUTION:

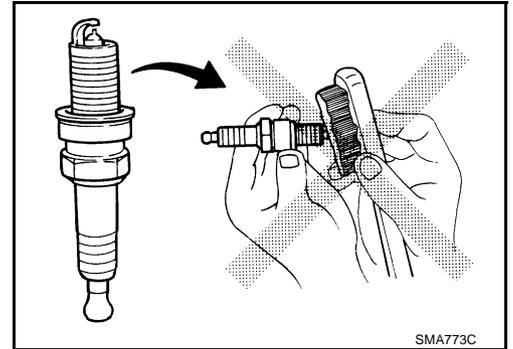
- Do not drop or shock spark plug.
- Do not use a wire brush for cleaning.
- If plug tip is covered with carbon, spark plug cleaner may be used.

**Cleaner air pressure:**

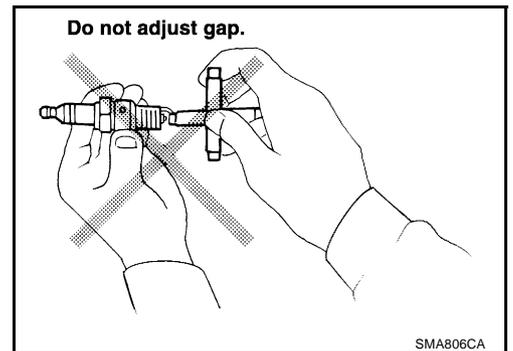
**Less than 588 kPa (5.9 bar, 6 kg/cm<sup>2</sup>, 85 psi)**

**Cleaning time:**

**Less than 20 seconds**



- Checking and adjusting plug gap is not required between change intervals.



## INSTALLATION

Install in the reverse order of removal.

**Spark plug :**

 : **24.6 N·m (2.5 kg-m, 18 ft-lb)**

## Checking EVAP Vapor Lines

ALS000GX

1. Visually inspect EVAP vapor lines for improper attachment and for cracks, damage, loose connections, chafing and deterioration.
2. Inspect fuel tank filler cap vacuum relief valve for clogging, sticking, etc.

Refer to **EC-1315, "EVAPORATIVE EMISSION SYSTEM"** .

# CHASSIS AND BODY MAINTENANCE

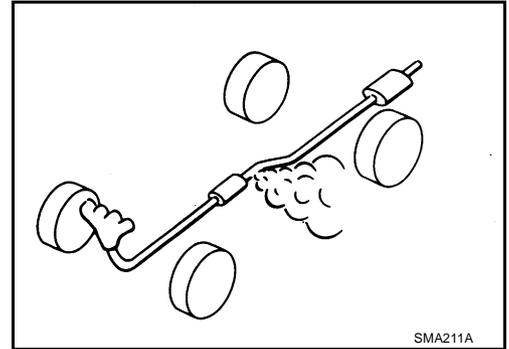
## CHASSIS AND BODY MAINTENANCE

PPF:00100

### Checking Exhaust System

ALS000FG

Check exhaust pipes, muffler and mounting for improper attachment, leaks, cracks, damage, chafing or deterioration.



### Checking A/T Fluid

ALS000GB

1. Warm up engine.
2. Check for fluid leakage.
3. Remove the tightening bolt for ATF level gauge.
4. Before driving, fluid level can be checked at fluid temperatures of 30 to 50°C (86 to 122°F) using “COLD” range on ATF level gauge as follows.
  - a. Park vehicle on level surface and set parking brake.
  - b. Start engine and move selector lever through each gear position. Leave selector lever in “P” position.
  - c. Check fluid level with engine idling.
  - d. Remove ATF level gauge and wipe clean with lint-free paper.

**CAUTION:**

**When wiping away the fluid level gauge, always use lint-free paper, not a cloth one.**

- e. Re-insert ATF level gauge into charging pipe as far as it will go.

**CAUTION:**

**To check fluid level, insert the ATF level gauge until the cap contacts the end of the charging pipe, with the gauge reversed from the normal attachment conditions.**

- f. Remove ATF level gauge and note reading. If reading is at low side of range, add fluid to the charging pipe.

**CAUTION:**

**Do not overfill.**

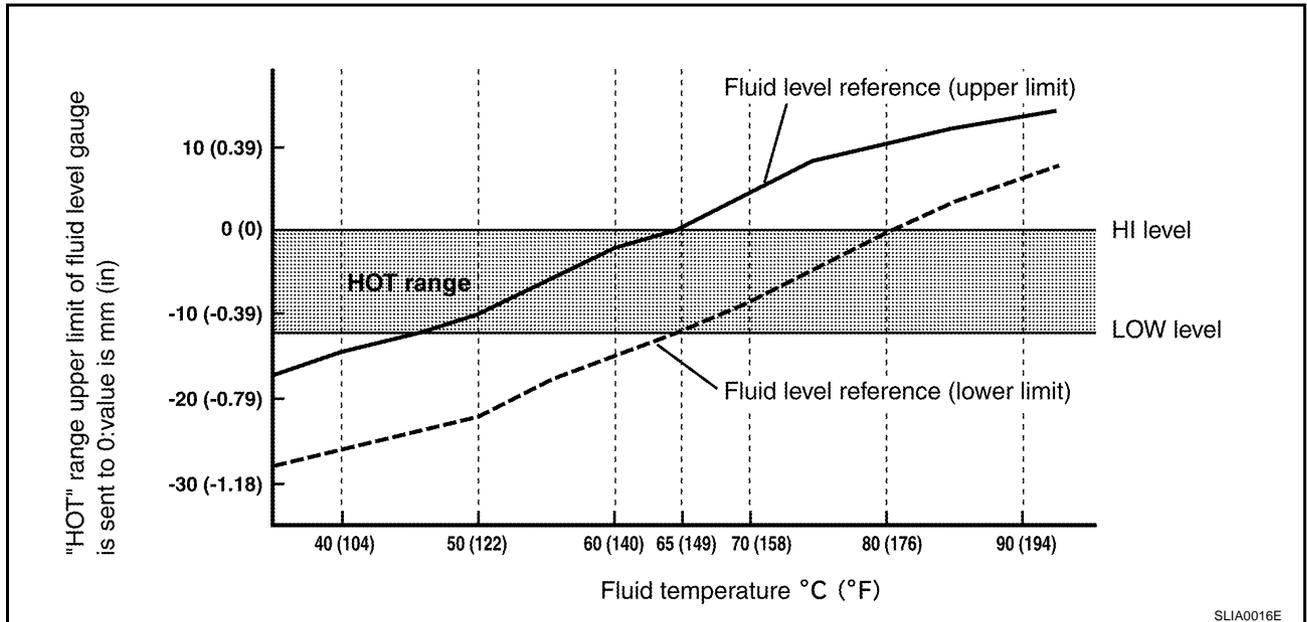
5. Drive vehicle for approximately 5 minutes in urban areas.
6. Make the fluid temperature approximately 65°C (149°F).

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## CHASSIS AND BODY MAINTENANCE

### NOTE:

Fluid level will be greatly affected by temperature as shown in figure. Therefore, be certain to perform operation while checking data with CONSULT-II.



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- Connect CONSULT-II to data link connector.
- Select "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
- Read out the value of "ATF TEMP 1".
- Re-check fluid level at fluid temperatures of approximately 65°C (149°F) using "HOT" range on A/T fluid level gauge.

### CAUTION:

- When wiping away the fluid level gauge, always use lint-free paper, not a cloth one.
- To check fluid level, insert the ATF level gauge until the cap contacts the end of the charging pipe, with the gauge reversed from the normal attachment conditions as shown.

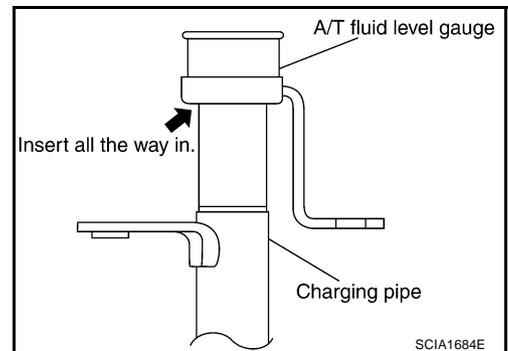
- Check fluid condition.

- If fluid is very dark or smells burned, refer to check operation of A/T. Flush cooling system after repair of A/T.
- If ATF contains frictional material (clutches, bands, etc.), replace radiator and flush cooler line using cleaning solvent and compressed air after repair of A/T. Refer to [CO-14, "RADIATOR"](#), [CO-38, "RADIATOR"](#).

- Install the removed ATF level gauge in the fluid charging pipe.

### Level gauge bolt:

 : 5.1 N·m (0.52 kg·m, 45 in·lb)



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# CHASSIS AND BODY MAINTENANCE

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## Changing A/T Fluid

1. Warm up ATF.
2. Stop engine.
3. Remove the tightening bolt for ATF level gauge.
4. Drain ATF from drain plug and refill with new ATF. Always refill same volume with drained fluid.
  - To replace the ATF, pour in new fluid at the charging pipe with the engine idling and at the same time drain the old fluid from the radiator cooler hose return side.
  - When the color of the fluid coming out is about the same as the color of the new fluid, the replacement is complete. The amount of new transmission fluid to use should be 30 to 50% of the stipulated amount.

**ATF: Genuine Nissan Matic J ATF**

**Fluid capacity: 10.3 ℓ (10-7/8 US qt, 9-1/8 Imp qt)**

### CAUTION:

- Use only Genuine Nissan Matic J ATF. Do not mix with other fluid.
- Using automatic transmission fluid other than Genuine Nissan Matic J ATF will cause deterioration in driveability and automatic transmission durability, and may damage the automatic transmission, which is not covered by the warranty.
- When filling ATF, take care not to scatter heat generating parts such as exhaust.

### Drain plug:

 : 34 N·m (3.5 kg-m, 25 ft-lb)

5. Run engine at idle speed for 5 minutes.
6. Check fluid level and condition. Refer to [MA-29, "Checking A/T Fluid"](#) . If fluid is still dirty, repeat step 2. through 5.
7. Install the removed ATF level gauge in the fluid charging pipe.

### Level gauge bolt:

 : 5.1 N·m (0.52 kg-m, 45 in-lb)

## Checking Transfer Fluid

ALS000GD

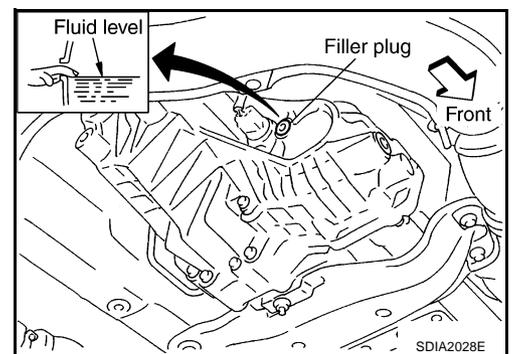
Check for fluid leakage and fluid level.

### CAUTION:

**Never start engine while checking fluid level.**

### Filler plug:

 : 34.5 N·m (3.5 kg-m, 25 ft-lb)



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# CHASSIS AND BODY MAINTENANCE

## Changing Transfer Fluid

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### CAUTION:

When draining fluid, protect exhaust tube flange with cover.

1. Drain fluid from drain plug and refill with new fluid.
2. Check fluid level.

### CAUTION:

Carefully fill the fluid. (Fill up for Approx. 3 minutes.)

#### Fluid grade:

Nissan Matic "D" (Continental U.S. and Alaska) or Canada NISSAN Automatic Transmission Fluid  
Refer to [MA-12](#), "[RECOMMENDED FLUIDS AND LUBRICANTS](#)".

#### Fluid capacity:

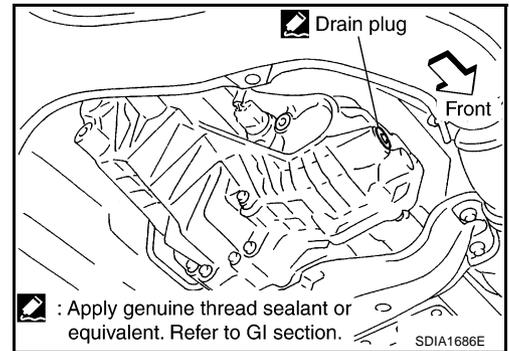
: Approx. 1.25 ℓ (2-5/8 US pt, 2-1/4 Imp pt)

#### Drain plug:

: 29.4 N-m (3.0 kg-m, 22 ft-lb)

#### Filler plug:

: 34.5 N-m (3.5 kg-m, 25 ft-lb)



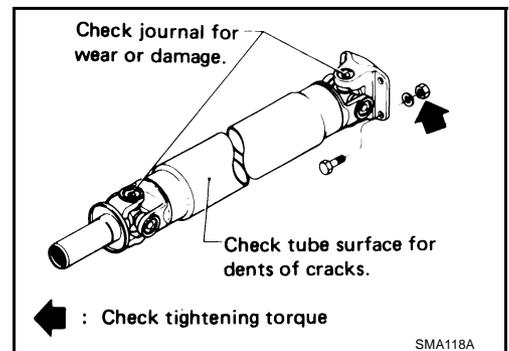
## Checking Propeller Shaft

Check propeller shaft for damage, looseness or grease leakage.

#### Tightening torque:

Refer to [PR-7](#), "[REAR PROPELLER SHAFT](#)".

ALS000FL



## Checking Differential Gear Oil

1. Check for oil leakage and oil level.

#### Filler plug:

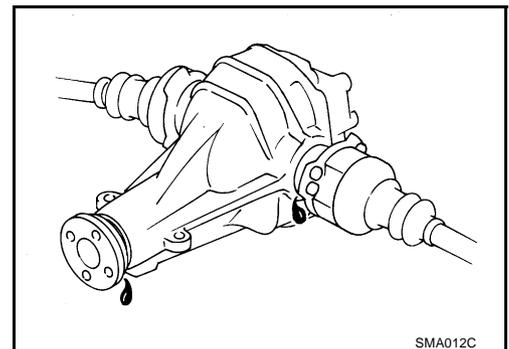
##### Front final drive

: 34.5 N-m (3.5 kg-m, 25 ft-lb)

##### Rear final drive

: 34.5 N-m (3.5 kg-m, 25 ft-lb)

ALS000FM



# CHASSIS AND BODY MAINTENANCE

## Changing Differential Gear Oil

ALSO00FN

1. Drain oil from drain plug and refill with new gear oil.
2. Check oil level.

### Oil grad and Viscosity:

Refer to [MA-12, "RECOMMENDED FLUIDS AND LUBRICANTS"](#) .

### Capacity:

#### Front final drive (F160A)

0.65 ℓ (1 - 3/8 US pt, 1 - 1/8 Imp pt)

#### Rear final drive (R200)

1.4 ℓ (3 US pt, 2 - 1/2 Imp pt)

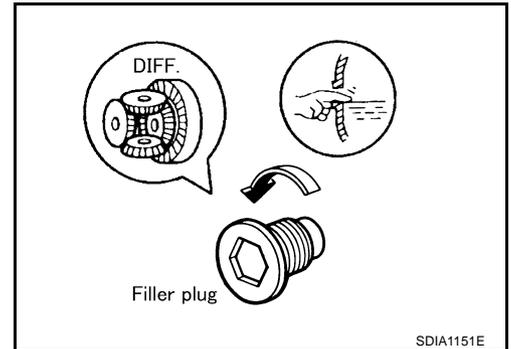
### Drain plug:

#### Front final drive

: 34.5 N-m (3.5 kg-m, 25 ft-lb)

#### Rear final drive

: 34.5 N-m (3.5 kg-m, 25 ft-lb)



## Balancing Wheels (Bonding Weight Type) REMOVAL

ALSO00FO

1. Remove inner and outer balance weights from the road wheel.  
**CAUTION:**  
**Be careful not to scratch the road wheel during removal.**
2. Using releasing agent, remove double-faced adhesive tape from the road wheel.  
**CAUTION:**
  - Be careful not to scratch the road wheel during removal.
  - After removing double-faced adhesive tape, wipe clean traces of releasing agent from the road wheel.

## WHEEL BALANCE ADJUSTMENT

- If a tire balance machine has adhesion balance weight mode settings and drive-in weight mode setting, select and adjust a drive-in weight mode suitable for road wheels.
1. Set road wheel on wheel balancer using the center hole as a guide. Start the tire balance machine.
  2. When inner and outer unbalance values are shown on the wheel balancer indicator, multiply outer unbalance value by 5/3 to determine balance weight that should be used. Select the outer balance weight with a value closest to the calculated value above and install it to the designated outer position of, or at the designated angle in relation to the road wheel.

### CAUTION:

- Do not install the inner balance weight before installing the outer balance weight.
- Before installing the balance weight, be sure to clean the mating surface of the road wheel.

Indicated unbalance value  $\times 5/3$  = balance weight to be installed

Calculation example:

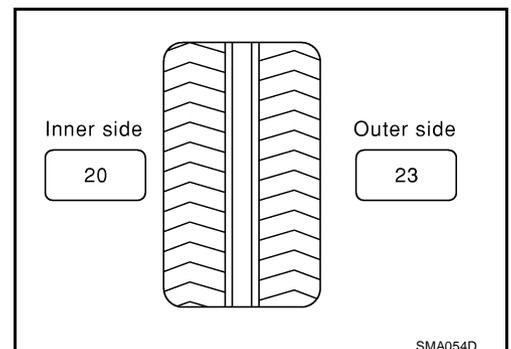
23 g (0.81 oz)  $\times 5/3$  = 38.33 g (1.35 oz) = 40 g (1.41 oz) balance weight (closer to calculated balance weight value)

Note that balance weight value must be closer to the calculated balance weight value.

Example:

37.4 = 35 g (1.23 oz)

37.5 = 40 g (1.41 oz)

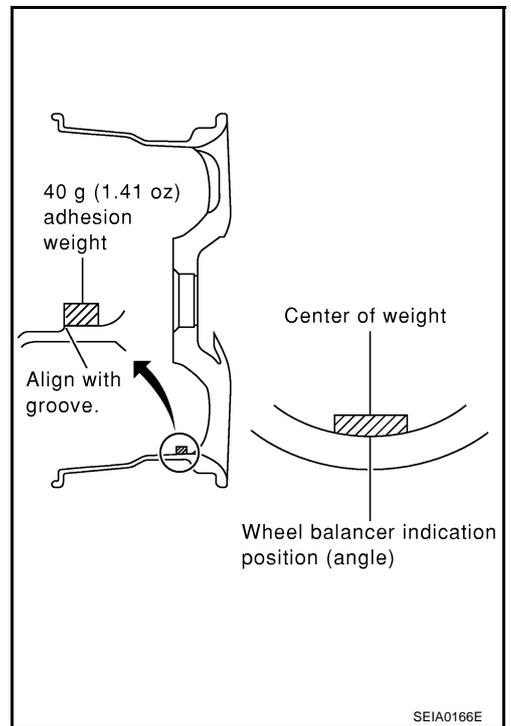


# CHASSIS AND BODY MAINTENANCE

- Install balance weight in the position shown in the figure at right.
- When installing balance weight to road wheels, set it into the grooved area on the inner wall of the road wheel as shown in the figure so that the balance weight center is aligned with the wheel balancer indication position (angle).

**CAUTION:**

- Always use genuine Nissan adhesion balance weights.
- Balance weights are un reusable; always replace with new ones.
- Do not install more than three sheets of balance weight.



- If calculated balance weight value exceeds 50 g (1.76 oz), install two balance weight sheets in line with each other (as shown in the figure).

**CAUTION:**

**Do not install one balance weight sheet on top of another.**

- Start wheel balancer again.
- Install drive-in balance weight on inner side of road wheel in the wheel balancer indication position (angle).

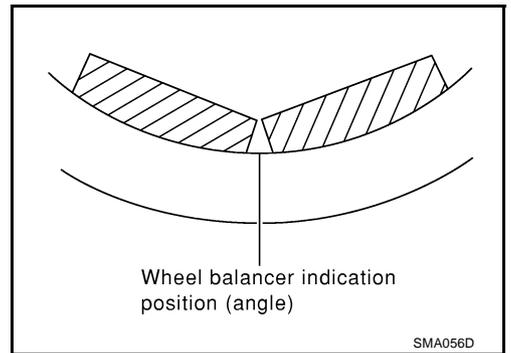
**CAUTION:**

**Do not install more than two balance weights.**

- Start wheel balancer. Make sure that inner and outer residual unbalance values are 7.5 g (0.26 oz) each or below.
  - If either residual unbalance value exceeds 7.5 g (0.26 oz), repeat installation procedures.

**Wheel balance (Maximum allowable unbalance):**

Maximum allowable unbalance	Dynamic (At rim flange)	Less than 7.5 g (0.26 oz) (one side)
	Static (At rim flange)	Less than 20 g (0.70 oz)



## Tire Rotation

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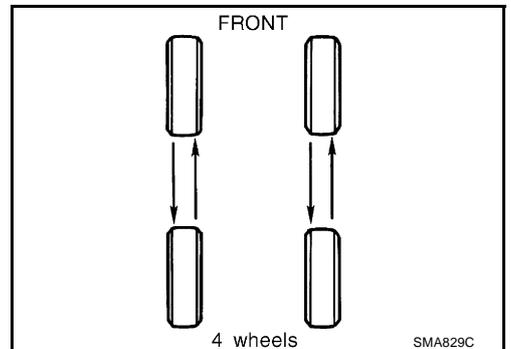
- After rotation the tires, adjust the tire pressure.
- Retighten the wheel nuts when the vehicle has been driven for 1,000 km (600 miles) (also in cases of a flat tire, etc.).

**CAUTION:**

- Do not include the T-type spare tire when rotating the tires.
- When installing wheels, tighten them diagonally by dividing the work two to three times in order to prevent the wheels from developing any distortion.

**Tightening torque of wheel nut**

 : 108 N·m (11 kg, 80 ft·lb)

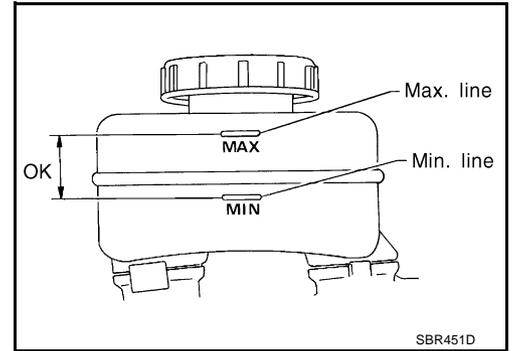


# CHASSIS AND BODY MAINTENANCE

## Checking Brake Fluid Level and Leaks

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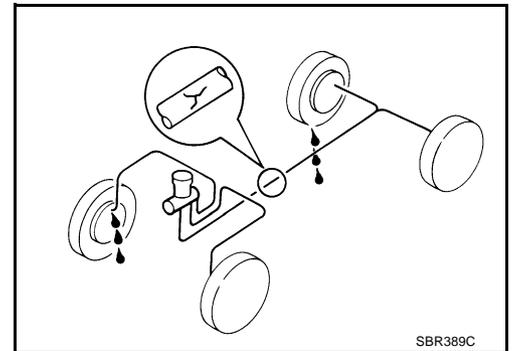
- If fluid level is extremely low, check brake system for leaks.



## Checking Brake Lines and Cables

ALS000FR

- Check brake fluid lines and parking brake cables for improper attachment, leaks, chafing, abrasions, deterioration, etc.



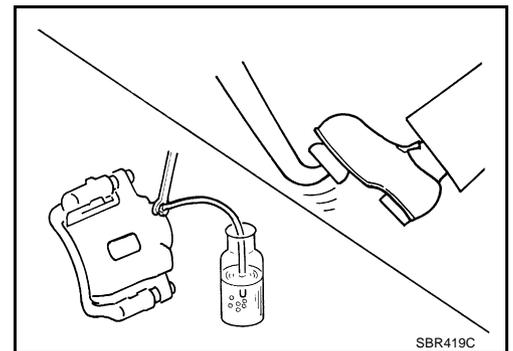
## Changing Brake Fluid

ALS000FS

1. Drain brake fluid from each bleed valve.
2. Refill until new brake fluid comes out from each bleed valve. Use same procedure as in bleeding hydraulic system to refill brake fluid.

Refer to [BR-10, "Bleeding Brake System"](#) .

- Refill with recommended Genuine Nissan Super Heavy Duty Brake Fluid or equivalent DOT 3 (US FMVSS No. 116). Refer to [MA-12, "RECOMMENDED FLUIDS AND LUBRICANTS"](#) .
- Never reuse drained brake fluid.
- Be careful not to splash brake fluid on painted areas.



## Checking Disc Brake ROTOR

ALS000FT

Check condition, wear, and damage.

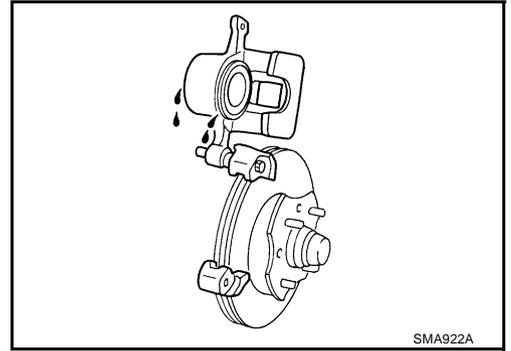
	Front	Rear
Brake model	CLZ31VC	AD14VE
Standard thickness	28.0 mm (1.102 in)	16.0 mm (0.630 in)
Maximum runout	0.04 mm (0.0016 in)	0.05mm (0.0020 in)
Minimum thickness (Wear limit)	26.0 mm (1.024 in)	14.0 mm (0.551 in)

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# CHASSIS AND BODY MAINTENANCE

## CALIPER

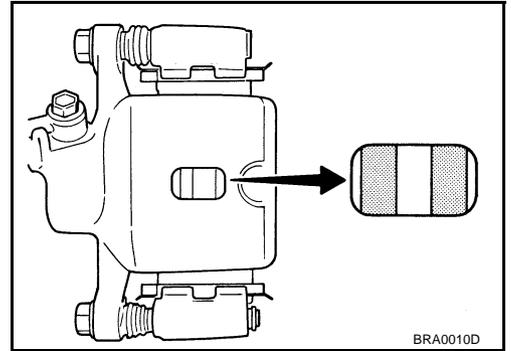
- Check for leakage.



## PAD

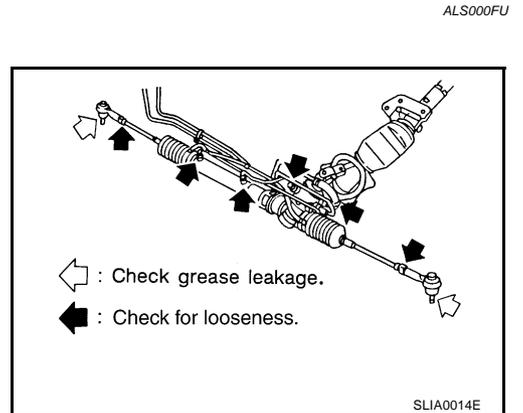
- Check for wear or damage.

Brake model	CLZ31VC	AD14VE
Standard thickness	9.5 mm (0.374 in)	8.5 mm (0.335 in)
Minimum thickness (Wear limit)	2.0 mm (0.079 in)	2.0 mm (0.079 in)



## Checking Steering Gear and Linkage

- Check gear housing and boots for looseness, damage and grease leakage.
- Check connection with steering column for looseness.



## STEERING LINKAGE

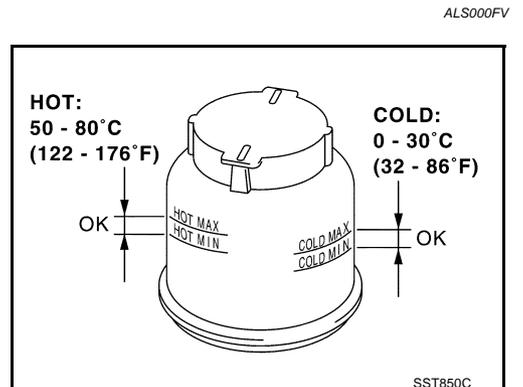
Check ball joint, dust cover and other component parts for looseness, wear, damage and grease leakage.

## Checking Power Steering Fluid and Lines

Check fluid level in reservoir tank with engine off.  
Use "HOT" range at fluid temperatures of 50 to 80°C (122 to 176°F)  
or "COLD" range at fluid temperatures of 0 to 30°C (32 to 86°F).

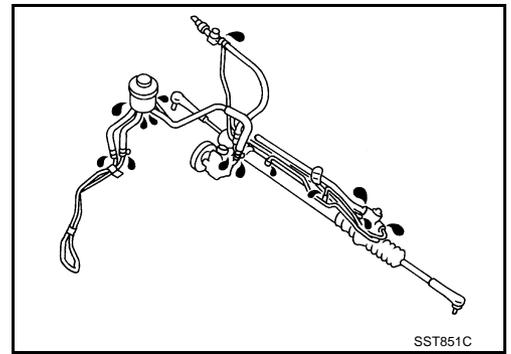
### CAUTION:

- Do not overfill.
- Recommended fluid is Genuine NISSAN PSF or equivalent. Refer to [MA-12, "RECOMMENDED FLUIDS AND LUBRICANTS"](#)



# CHASSIS AND BODY MAINTENANCE

- Check lines for improper attachment, leaks, cracks, damage, loose connections, chafing and deterioration.
- Check rack boots for accumulation of power steering fluid.

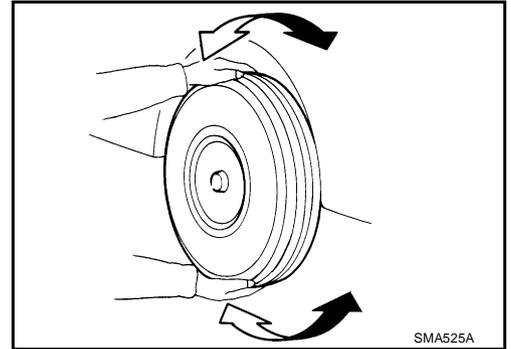


A  
B  
C  
D

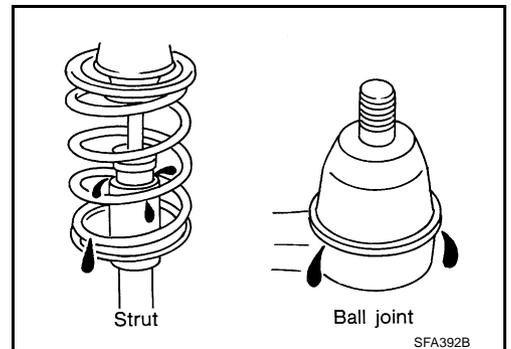
## Axle and Suspension Parts

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

- Shake each wheel to check for excessive play.
- Check wheel bearings for smooth operation.
- Check axle and suspension nuts and bolts for looseness.
- 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.



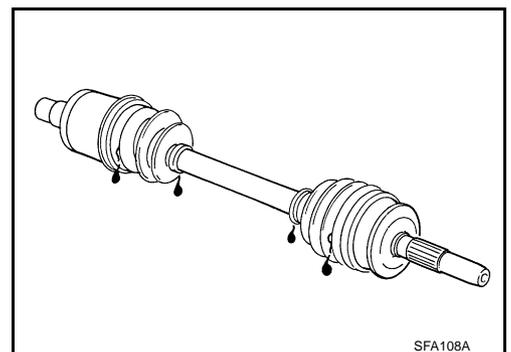
E  
F  
G  
H



I  
J  
K

## Drive Shaft

Check boot and drive shaft for cracks, wear, damage and grease leakage.

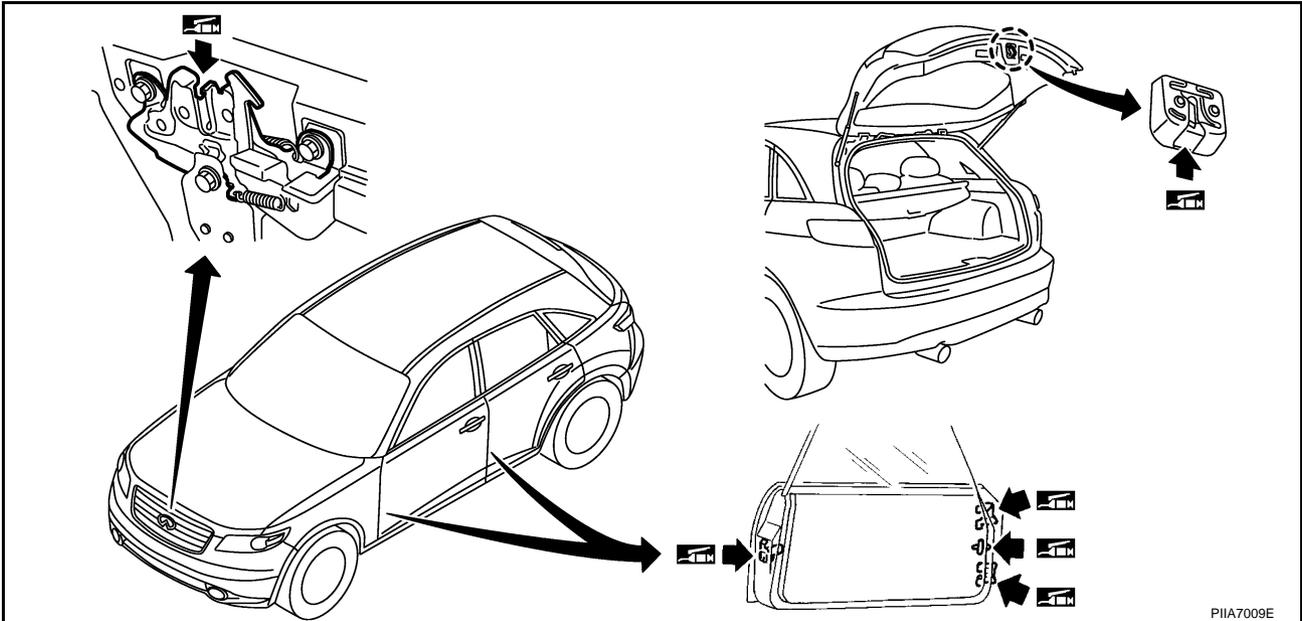


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M

# CHASSIS AND BODY MAINTENANCE

## Lubricating Locks, Hinges and Hood Latch

ALS000FY



PIIA7009E

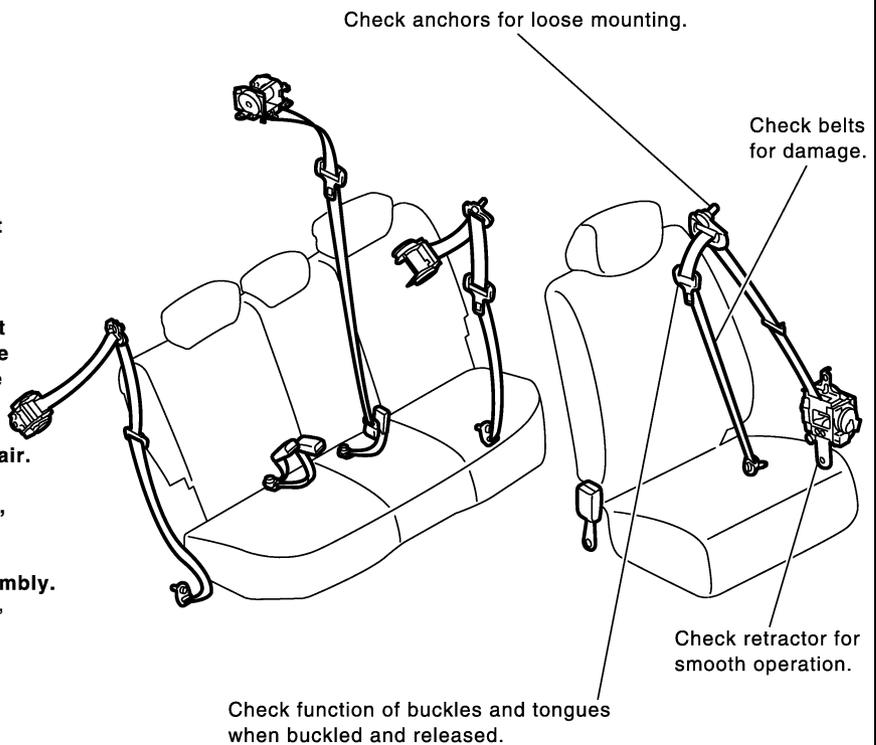
## Checking Seat Belt, Buckles, Retractors, Anchors and Adjusters

ALS000FZ

### CAUTION:

- After any collision, inspect all seat belt assemblies, including retractors and other attached hardware (i.e. anchor bolt, guide rail set). Nissan recommends to replace all seat belt assemblies in use during a collision, unless not damaged and properly operating after minor collision. Also inspect seat belt assemblies not in use during a collision, and replace if damaged or improperly operating. Seat belt pre-tensioner should be replaced even if the seat belts are not in use during a frontal collision where the driver and passenger air bags are deployed.
- If any component of seat belt assembly is questionable, do not repair. Replace as seat belt assembly.
- If webbing is cut, frayed, or damaged, replace belt assembly.
- Never oil tongue and buckle.
- Use a genuine NISSAN seat belt assembly.

For details, refer to "Seat Belt Inspection" in SB section.



Anchor bolt

43.1 - 54.9 (4.4 - 5.5, 32 - 40)

N•m (kg-m, ft-lb)

PIIA4251E

# SERVICE DATA AND SPECIFICATIONS (SDS)

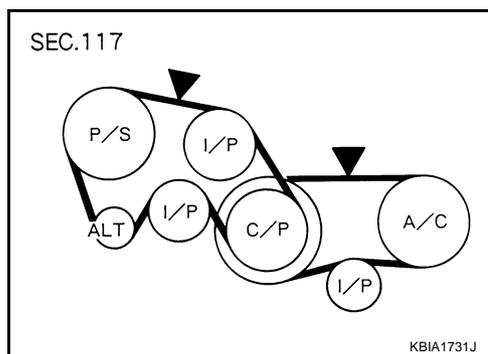
## SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

### Standard and Limit BELT DEFLECTION AND TENSION (VQ35DE)

ALS000G0

Items	Deflection adjustment		Unit: mm (in)	Tension adjustment*		Unit: N (kg, lb)
	Used belt		New belt	Used belt		New belt
	Limit	After adjustment		Limit	After adjustment	
Alternator and power steering oil pump belt	7 (0.28)	4 - 5 (0.16 - 0.20)	3.5 - 4.5 (0.138 - 0.177)	294 (30, 66)	730 - 818 (74.5 - 83.5, 164 - 184)	838 - 926 (85.5 - 94.5, 188 - 208)
Air conditioner compressor	12 (0.47)	9 - 10 (0.35 - 0.39)	8 - 9 (0.31 - 0.35)	196 (20, 44)	348 - 436 (35.5 - 44.5, 78 - 98)	470 - 559 (48 - 57, 106 - 126)
Applied pushing force	98 N (10 kg, 22 lb)			—		



\*: If belt tension gauge cannot be installed at check points shown, check drive belt tension at different location on the belt.

### BELT DEFLECTION AND TENSION (VK45DE)

Tension of drive belts	Auto-adjustment by auto tensioner
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### ENGINE COOLANT CAPACITY (APPROXIMATE) (VQ35DE)

Unit: ℓ (US qt, Imp qt)

Engine coolant capacity (With reservoir tank at MAX level)	8.6 (9-1/8, 7-5/8)
Reservoir tank engine coolant capacity (At MAX level)	0.8 (7/8, 3/4)

### ENGINE COOLANT CAPACITY (APPROXIMATE) (VK45DE)

Unit: ℓ (US qt, Imp qt)

Engine coolant capacity (With reservoir tank at MAX level)	10.0 (10-5/8, 8-3/4)
Reservoir tank	0.8 (7/8, 3/4)

### RADIATOR

Unit: kPa (kg/cm<sup>2</sup>, psi)

Cap relief pressure	Standard	78 - 98 (0.8 - 1.0, 11 - 14)
	Limit	59 (0.6, 9)
Leakage test pressure		157 (1.6, 23)

### ENGINE OIL CAPACITY (APPROXIMATE) (VQ35DE)

Unit: ℓ (US qt, Imp qt)

Drain and refill	With oil filter change	4.7 (5, 4-1/8)
	Without oil filter change	4.4 (4-5/8, 3-7/8)
Dry engine (Overhaul)		5.4 (5-3/4, 4-3/4)

# SERVICE DATA AND SPECIFICATIONS (SDS)

## ENGINE OIL CAPACITY (APPROXIMATE) (VK45DE)

Unit: ℓ (US qt, Imp qt)

Drain and refill	With oil filter change	6.4 (6 - 3/4, 5 - 5/8)
	Without oil filter change	5.8 (6 - 1/8, 5 - 1/8)
Dry engine (Overhaul)		7.2 (7 - 5/8, 6 - 3/8)

## SPARK PLUG (PLATINUM-TIPPED TYPE) (VQ35DE)

Make		NGK
Type	Standard	PLFR5A-11
	Hot	PLFR4A-11
	Cold	PLFR6A-11
Spark plug gap		Nominal: 1.1mm (0.043 in)

## SPARK PLUG (PLATINUM-TIPPED TYPE) (VK45DE)

Make		NGK
Type	Standard	PLFR5A-11
	Hot	PLFR4A-11
	Cold	PLFR6A-11
Spark plug gap		Nominal: 1.1mm (0.043 in)

## WHEEL BALANCE

Maximum allowable unbalance	Dynamic (At rim flange)	Less than 10 g (0.35 oz) (one side)
	Static (At rim flange)	Less than 20 g (0.71 oz)