

SECTION **CL**  
CLUTCH

A  
B  
C

CL

CONTENTS

E

<b>PRECAUTION</b> .....	2	<b>SYMPTOM DIAGNOSIS</b> .....	6	F
<b>PRECAUTIONS</b> .....	2	<b>NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING</b> .....	6	G
Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER" .....	2	NVH Troubleshooting Chart .....	6	
Precaution Necessary for Steering Wheel Rotation after 12V Battery Disconnect .....	2	<b>UNIT REMOVAL AND INSTALLATION</b> .....	7	H
Precaution for Procedure without Cowl Top Cover.....	3	<b>CLUTCH 1</b> .....	7	
Service Notice or Precautions for Clutch .....	3	Exploded View .....	7	I
<b>PREPARATION</b> .....	4	Removal and Installation .....	7	
<b>PREPARATION</b> .....	4	Inspection .....	8	
Commercial Service Tools .....	4	<b>SERVICE DATA AND SPECIFICATIONS (SDS)</b> .....	10	J
<b>SYSTEM DESCRIPTION</b> .....	5	<b>SERVICE DATA AND SPECIFICATIONS (SDS)</b> .....	10	K
<b>STRUCTURE AND OPERATION</b> .....	5	Clutch Control System .....	10	
Description .....	5	Clutch Disc .....	10	
		Clutch Cover .....	10	L

M

N

O

P

# PRECAUTIONS

< PRECAUTION >

## PRECAUTION

### PRECAUTIONS

#### Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

INFOID:000000008143703

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the "SRS AIR BAG" and "SEAT BELT" of this Service Manual.

#### **WARNING:**

Always observe the following items for preventing accidental activation.

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision that would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see "SRS AIR BAG".
- Never use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

#### PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

#### **WARNING:**

Always observe the following items for preventing accidental activation.

- When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, never use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.
- When using air or electric power tools or hammers, always switch the ignition OFF, disconnect the 12V battery, and wait at least 3 minutes before performing any service.

#### Precaution Necessary for Steering Wheel Rotation after 12V Battery Disconnect

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For vehicle with steering lock unit, if the 12V battery is disconnected or discharged, the steering wheel will lock and cannot be turned.

If turning the steering wheel is required with the 12V battery disconnected or discharged, follow the operation procedure below before starting the repair operation.

#### OPERATION PROCEDURE

1. Connect both 12V battery cables.

#### **NOTE:**

Supply power using jumper cables if 12V battery is discharged.

2. Turn the ignition switch to ACC position.  
(At this time, the steering lock will be released.)
3. Disconnect both 12V battery cables. The steering lock will remain released with both 12V battery cables disconnected and the steering wheel can be turned.
4. Perform the necessary repair operation.
5. When the repair work is completed, re-connect both 12V battery cables. With the brake pedal released, turn the ignition switch from ACC position to ON position, then to LOCK position. (The steering wheel will lock when the ignition switch is turned to LOCK position.)
6. Perform All DTC Reading using CONSULT and delete DTC.

#### **NOTE:**

Multiple DTCs are detected when 12V battery cable is disconnected while ignition switch is in ACC position.

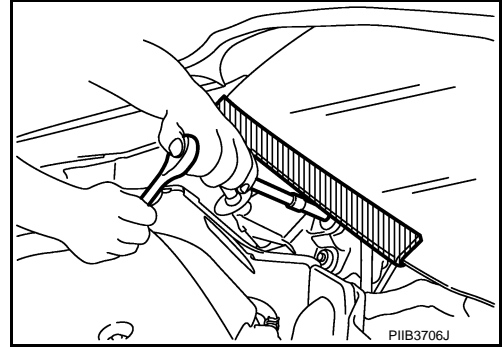
# PRECAUTIONS

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## Precaution for Procedure without Cowl Top Cover

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When performing the procedure after removing cowl top cover, cover the lower end of windshield with urethane, etc to prevent damage to windshield.



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## Service Notice or Precautions for Clutch

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### **WARNING:**

Since dust covering the clutch disc has an affect on human body, the dust must be removed with a dust collector. Never splatter the dust with an air blow gun.

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# PREPARATION

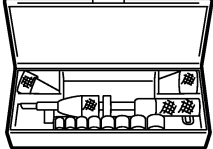
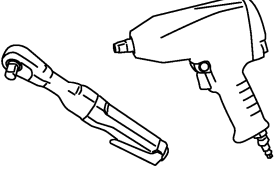
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## PREPARATION

### PREPARATION

#### Commercial Service Tools

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Tool name	Description
<p>Clutch aligner</p>  <p>MCIB0404E</p>	<p>Installing clutch disc</p>
<p>Power tool</p>  <p>PBIC0190E</p>	<p>Loosening bolts and nuts</p>

# STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

## SYSTEM DESCRIPTION

### STRUCTURE AND OPERATION

#### Description

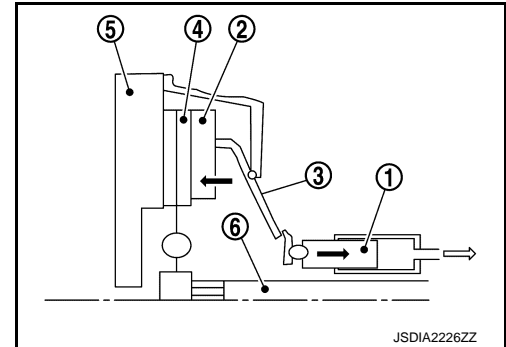
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#### CLUTCH 1 ENGAGE/DISENGAGE

##### Clutch 1 Engage

When fluid pressure is not applied to the transmission assembly CSC (Concentric Slave Cylinder) (1), the force of the diaphragm spring (3) causes the pressure plate (2) to press the clutch disc (4) against the flywheel (5). This causes the clutch disc to rotate together with the flywheel, transmitting the drive force from the engine to the transmission via the main shaft (6).

← : Fluid pressure

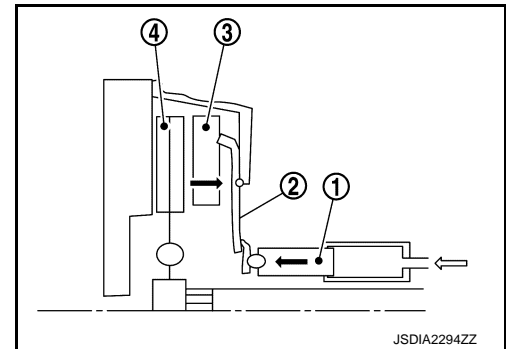


##### Clutch 1 Disengage

When fluid pressure is applied to the transmission assembly CSC (1), the CSC presses the diaphragm spring (2), causing the pressure plate (3) to release the clutch disc (4). This terminates transmission of drive force from the engine to the transmission.

← : Fluid pressure

For clutch 1 control, refer to [HBC-20, "HYBRID CONTROL SYSTEM : System Description"](#).



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B  
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G  
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J  
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# NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

< SYMPTOM DIAGNOSIS >

## SYMPTOM DIAGNOSIS

### NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

#### NVH Troubleshooting Chart

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Use the chart below to find the cause of the symptom. The numbers indicate the order of the inspection. If necessary, repair or replace these parts.

SUSPECTED PARTS (Possible cause)		ENGINE MOUNTING (Loose)	CSC (Concentric Slave Cylinder) (Worn, dirty or damaged)	CLUTCH DISC (Out of true)	CLUTCH DISC (Runout is excessive)	CLUTCH DISC (Lining broken)	CLUTCH DISC (Oily)	CLUTCH DISC (Worn out)	CLUTCH DISC (Hardened)	CLUTCH DISC (Lack of spline grease)	DIAPHRAGM SPRING (Damaged)	DIAPHRAGM SPRING (Out of tip alignment)	FLYWHEEL (Damaged)
		EM-78	TM-190	CL-7									EM-118
Reference													
Symptom	Clutch grabs/chatters	1			2		2	2	2			2	
	Clutch noisy		1	3		3		3		3	2		2

# CLUTCH 1

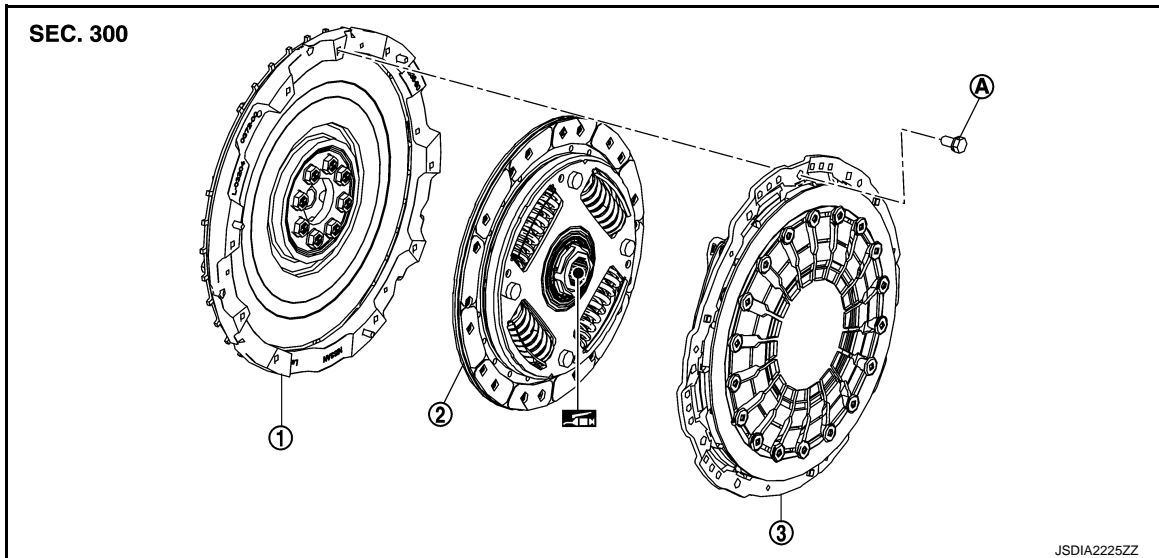
< UNIT REMOVAL AND INSTALLATION >

## UNIT REMOVAL AND INSTALLATION

### CLUTCH 1


Exploded View

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1. Flywheel
2. Clutch disc
3. Clutch cover

A. Tightening must be done following the installation procedure. Refer to [CL-7. "Removal and Installation"](#).

 : Apply lithium-based grease including molybdenum disulphide.

#### CAUTION:

When replacing the clutch disc or clutch cover, replace the clutch disc, clutch cover, and flywheel as a set.

### Removal and Installation

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#### CAUTION:

- Never apply any grease to the clutch disc facing, pressure plate surface and flywheel surface.
- When replacing the clutch cover or clutch disc, replace the clutch cover, clutch disc, and flywheel as a set.

If flywheel is removed, align dowel pin with the smallest hole of flywheel. Refer to [EM-109. "Disassembly and Assembly"](#).

#### REMOVAL

1. Remove transmission assembly from the engine. Refer to [TM-190. "Removal and Installation"](#).
2. Remove clutch cover mounting bolts, using a power tool.
3. Remove clutch cover and clutch disc.

#### CAUTION:

Never drop clutch disc.

#### INSTALLATION

1. Clean clutch disc and main drive gear splines to remove grease and powder arisen from abrasion.
2. Apply recommended grease to clutch disc spline.

#### CAUTION:

Be sure to apply grease to the points specified. Otherwise, noise, poor disengagement, or damage to the clutch may result. Excessive grease may cause slip or judder. If grease adheres to seal of CSC body, it may cause fluid leakage. Wipe out excess grease. Wipe out any grease oozing from the parts.

3. Install clutch disc, using a clutch aligner (Commercial service tool).
4. Install clutch cover and then temporarily tighten clutch cover mounting bolts.

# CLUTCH 1

## < UNIT REMOVAL AND INSTALLATION >

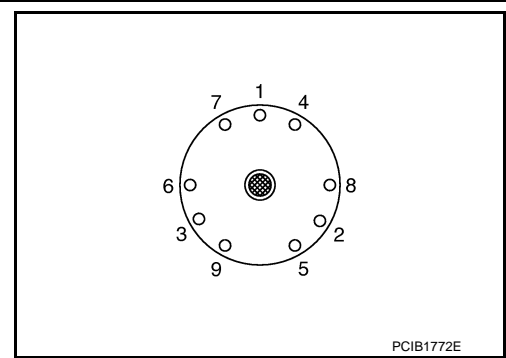
5. Tighten clutch cover mounting bolts to the specified torque evenly in two steps in the numerical order as shown in the figure.

### Tightening torque

**First step** : 15 N·m (1.5 kg·m, 11 ft·lb)

**Second step** : 29 N·m (3.0 kg·m, 21 ft·lb)

6. Install transmission assembly to the engine. Refer to [TM-190, "Removal and Installation"](#).



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## Inspection

### INSPECTION AFTER REMOVAL

#### Clutch Disc

- Measure circumferential runout relative to clutch disc center spline. If it is outside the specification, replace clutch disc, clutch cover and flywheel as a set.

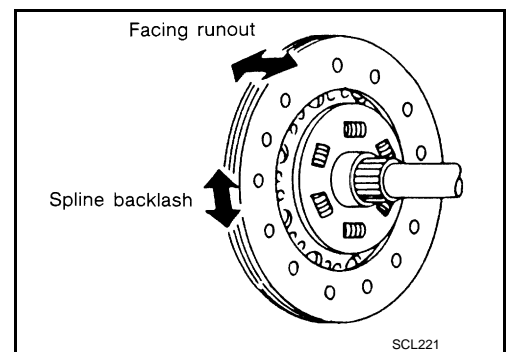
**Runout limit/diameter of the area to be measured** : Refer to [CL-10, "Clutch Disc"](#).

- Measure backlash to clutch disc spline and main drive gear spline at the circumference of clutch disc. If it is outside the specification, replace clutch disc, clutch cover and flywheel as a set.

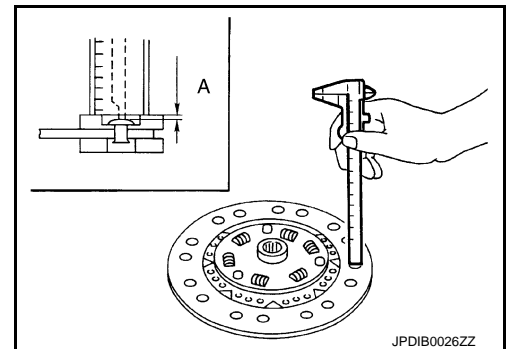
**Maximum allowable spline backlash (at outer edge of disc)** : Refer to [CL-10, "Clutch Disc"](#).

- Measure the depth "A" to clutch disc facing rivet heads, using calipers. If it exceeds the allowable wear limit, replace clutch disc, clutch cover and flywheel as a set.

**Facing wear limit (depth to the rivet head) "A"** : Refer to [CL-10, "Clutch Disc"](#).



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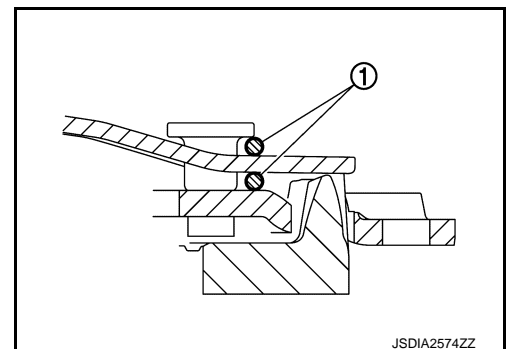
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#### Clutch Cover

- Check clutch cover thrust rings (1) for wear or breakage. If wear or breakage is found, replace clutch disc, clutch cover and flywheel as a set.

#### NOTE:

- A worn thrust ring causes beating noise when the rivet is tapped with a hammer.
- A broken thrust ring causes clinks when the cover is shaken vertically.
- If a trace of burn or discoloration is found on the clutch cover pressure plate to clutch disc contact surface, repair the surface with sandpaper. If surface is damaged or distorted, replace clutch disc, clutch cover and flywheel as a set.



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#### Flywheel

- Check the surface that engages with the clutch cover and the surface that slides on the clutch disc for dents and scratches. Replace if necessary, the clutch cover, clutch disc, and flywheel as a set.
- Check the flywheel runout. Replace if necessary, the clutch cover, clutch disc, and flywheel as a set. For details about checking the flywheel runout, refer to [EM-118, "Inspection"](#).



# CLUTCH 1

## < UNIT REMOVAL AND INSTALLATION >

### INSPECTION AFTER INSTALLATION

#### Clutch Cover

Check the diaphragm spring lever claws for unevenness while the lever is installed on the engine. If the result is not within the standard, reinstall the clutch cover and check the diaphragm spring lever claws for unevenness again. If the result is still not within the standard, follow the instructions below and replace the part.

- When the clutch cover is new:  
Replace only the clutch cover.
- When the clutch cover is not new:  
Replace the clutch cover, clutch disc, and flywheel as a set.

**Tolerance for diaphragm spring lever unevenness : Refer to [CL-10, "Clutch Cover"](#).**

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## SERVICE DATA AND SPECIFICATIONS (SDS)

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## SERVICE DATA AND SPECIFICATIONS (SDS)

### SERVICE DATA AND SPECIFICATIONS (SDS)

#### Clutch Control System

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Type of clutch control	Hydraulic
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#### Clutch Disc

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Unit: mm (in)

Facing size (Outer dia. × Inner dia. × Thickness)	260 × 215 × 3.2 (10.24 × 8.46 × 0.126)
Runout limit/diameter of the area to be measured	1.0 (0.039) / 250 (9.84) dia.
Maximum allowable spline backlash (at outer edge of disc)	1.0 (0.039)
Facing wear limit (depth to the rivet head) "A"	0.6 (0.024)

#### Clutch Cover

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Tolerance for diaphragm spring lever unevenness	0.8 mm (0.031 in) or less
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