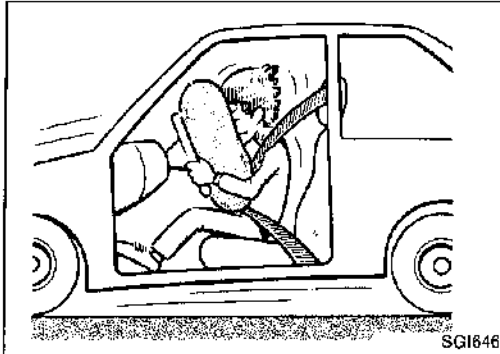


PRECAUTIONS

Observe the following precautions to ensure safe and proper servicing.



Precautions for Supplemental Restraint System (SRS) "AIR BAG"

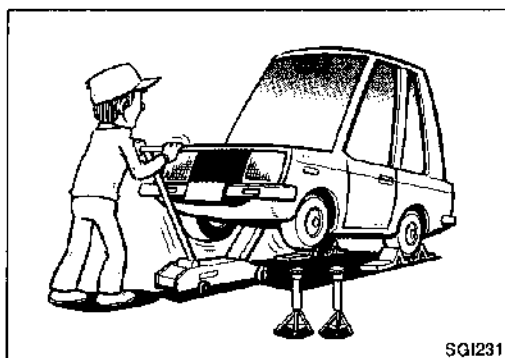
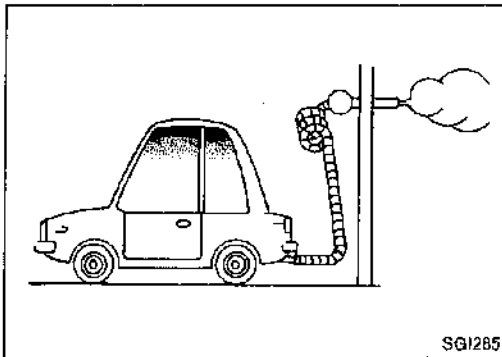
The Supplemental Restraint System "Air Bag", used along with a seat belt, helps to reduce the risk or severity of injury to the driver and front passenger in a frontal collision. The Supplemental Restraint System consists of air bag modules (located in the center of the steering wheel and on the instrument panel on the passenger side), a diagnosis sensor unit, warning lamp, wiring harness and spiral cable. Information necessary to service the system safely is included in the **RS** section of this Service Manual.

WARNING:

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system.
- All SRS electrical connectors are covered with yellow outer insulation. Do not use electrical test equipment on any circuit related to the SRS.

General Precautions

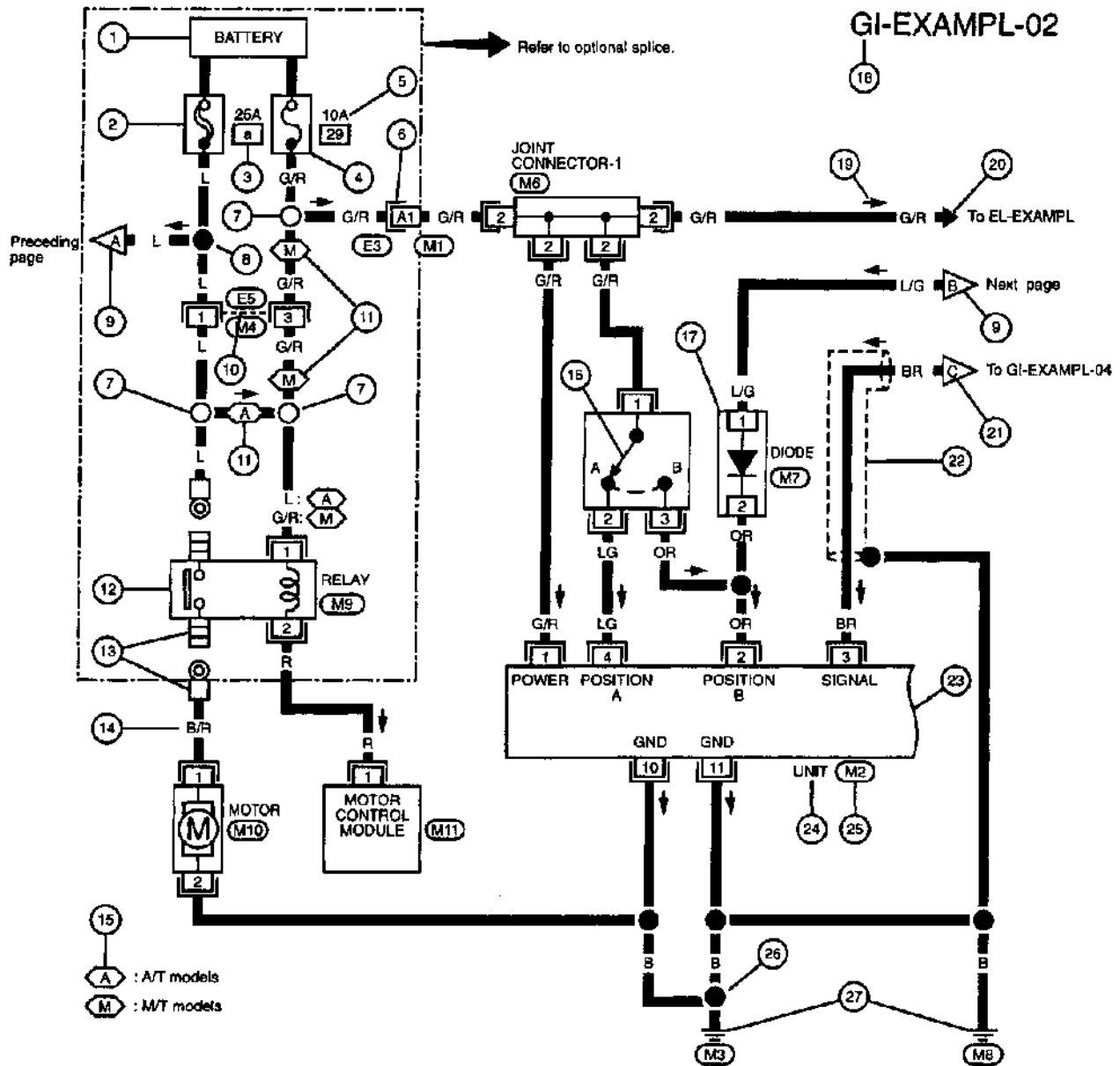
1. Do not operate the engine for an extended period of time without proper exhaust ventilation. Keep the work area well ventilated and free of any flammable materials. Special care should be taken when handling any flammable or poisonous materials, such as gasoline, refrigerant gas, etc. When working in a pit or other enclosed area, be sure to properly ventilate the area before working with hazardous materials. Do not smoke while working on the vehicle.
2. Before jacking up the vehicle, apply wheel chocks or other tire blocks to the wheels to prevent the vehicle from moving. After jacking up the vehicle, support the vehicle weight with safety stands at the points designated for proper lifting before working on the vehicle. These operations should be done on a level surface.
3. When removing a heavy component such as the engine or transaxle/transmission, be careful not to lose your balance and drop them. Also, do not allow them to strike adjacent parts, especially the brake tubes and master cylinder.



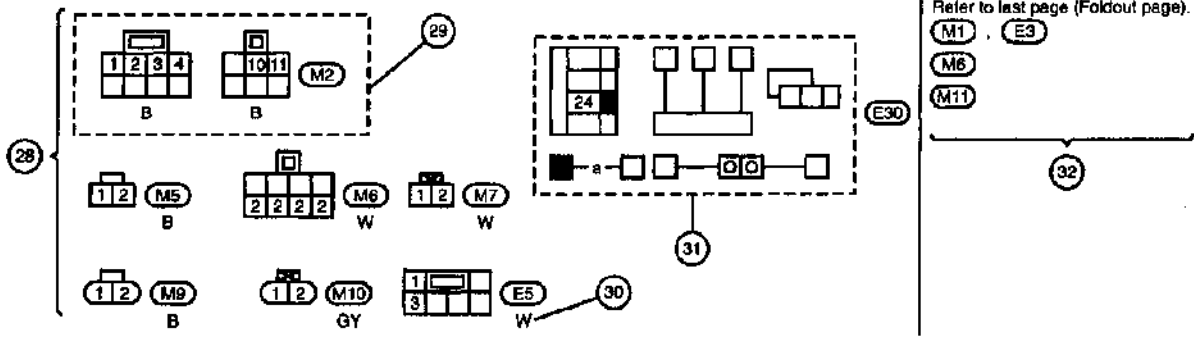
HOW TO READ WIRING DIAGRAMS

Sample/Wiring Diagram — EXAMPL —

- For Description, refer to GI-10.



(A) : A/T models
 (M) : M/T models



TROUBLE DIAGNOSIS — General Description

Diagnostic Trouble Code (DTC) Chart (Cont'd)

—: Not applicable

Check Items (Possible Cause)	"DTC CONFIRMATION PROCEDURE" Quick Ref.	"OVERALL FUNCTION CHECK" Quick Ref.	Fail Safe System	MIL Illumination	Reference Page
<ul style="list-style-type: none"> ● Harness or connectors (The heater circuit is open or shorted.) ● Front heated oxygen sensor's heater (right bank) 	RUNNING	—	—	2 trip	EC-289
<ul style="list-style-type: none"> ● Harness or connectors (EVAP canister vent control valve circuit is open or shorted.) 	RUNNING		—	2 trip	EC-292
<ul style="list-style-type: none"> ● EVAP canister vent control valve ● EVAP control system pressure sensor ● Obstructed rubber tube to EVAP canister vent control valve 		IGN: OFF			
<ul style="list-style-type: none"> ● Harness or connectors ● Crankshaft position sensor (POS) ● Signal plate (Flywheel) 	RUNNING	—	—	2 trip	EC-297
<ul style="list-style-type: none"> ● Harness or connectors (High resistance in the sensor circuit) ● Engine coolant temperature sensor ● Thermostat 	—	RUNNING	—	2 trip	EC-302
<ul style="list-style-type: none"> ● Harness or connectors (The heater circuit is open or shorted.) ● Front heated oxygen sensor's heater (left bank) 	RUNNING	—	—	2 trip	EC-307
<ul style="list-style-type: none"> ● Harness or connectors (The switch circuit is open or shorted.) ● Neutral position switch ● Inhibitor switch 	—	IGN: ON	—	2 trip	EC-310
<ul style="list-style-type: none"> ● Harness or connectors (The valve circuit is open or shorted.) ● EGRC-solenoid valve* 	—	IGN: ON	—	2 trip	EC-314
<ul style="list-style-type: none"> ● Harness or connectors (The valve circuit is open or shorted.) ● EVAP canister purge volume control valve 	RUNNING				
<ul style="list-style-type: none"> ● EVAP control system pressure sensor ● EVAP canister purge volume control valve (The valve is stuck open.) ● EVAP canister purge control valve ● Hoses (Hoses are connected incorrectly.) 	LIFTING	—	—	2 trip	EC-319

*4: ● The "OVERALL FUNCTION CHECK" is a simplified and effective way to inspect a component or circuit. In some cases, the "OVERALL FUNCTION CHECK" is used rather than a "DIAGNOSTIC TROUBLE CODE CONFIRMATION PROCEDURE".

When no DTC CONFIRMATION PROCEDURE is available, the "NG" result of the OVERALL FUNCTION CHECK can be considered to mean the same as a DTC detection.

● During an "NG" OVERALL FUNCTION CHECK, the DTC might not be confirmed.

*4: This is Quick Reference of "OVERALL FUNCTION CHECK".

Details are described in each TROUBLE DIAGNOSIS FOR DTC XXX.

Abbreviations are as follows:

IGN: ON : Turning the ignition switch ON is required for checking the function of the sensor, switch, solenoid and circuit.

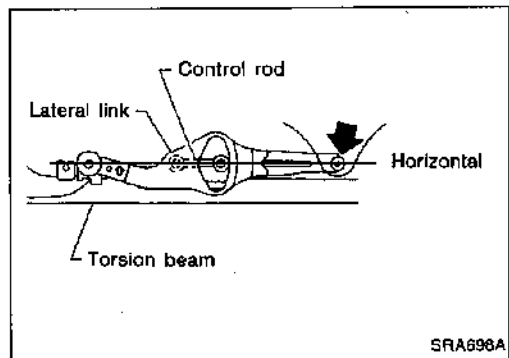
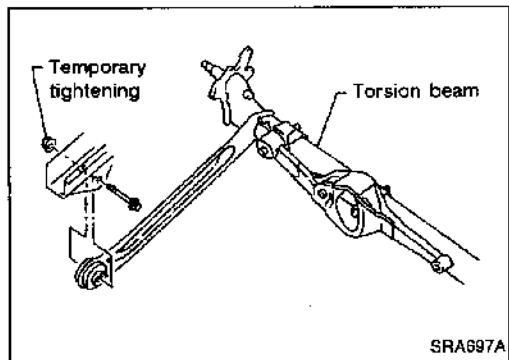
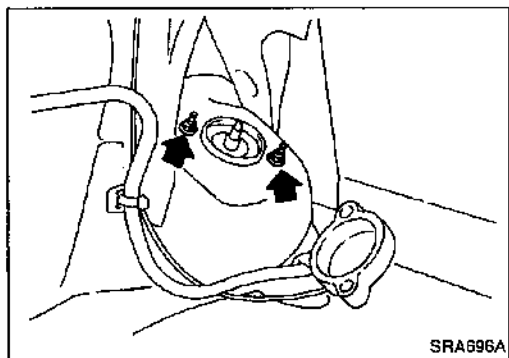
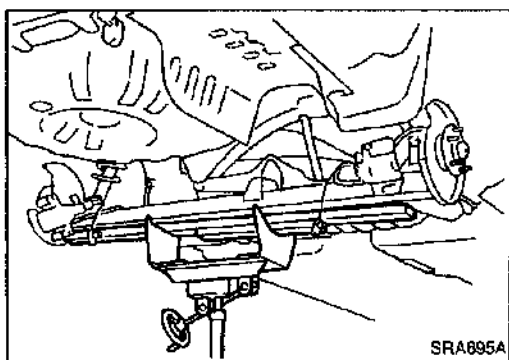
RUNNING : Running engine is required for checking the function of the sensor, switch, solenoid and circuit.

LIFTING : Lifting up the vehicle, running engine and spinning wheels are required.

DRIVING : Driving the vehicle in the specified pattern is required.

*: Only for California models. For non-California models, this means EGR valve & canister control solenoid valve.

REAR SUSPENSION



Removal and Installation

CAUTION:

- Before removing the rear suspension assembly, disconnect the ABS wheel sensor from the assembly. Failure to do so may result in damage to the sensor wires and the sensor becoming inoperative.

- Remove suspension assembly.

1. Remove brake caliper assembly and rotor.

Suspend caliper assembly with wire so as not to stretch brake hose.

Be careful not to depress brake pedal, or piston will pop out. Make sure brake hose is not twisted.

2. Using a transmission jack, raise torsion beam a little, and remove suspension fixing nuts and bolts.

3. Lower transmission jack, and remove suspension.

4. Remove luggage compartment trim. Refer to BT section.

5. Remove strut securing nuts (upper side). Then pull out strut assembly.

- Install suspension assembly.

1. Temporarily attach torsion beam to vehicle.

2. Place lateral link and control rod horizontally against torsion beam. Tighten up lateral link on vehicle.

3. Attach shock absorber to vehicle. Then tighten up the lower side of shock absorber.

4. Tighten torsion beam in full rebound condition at the place indicated in step 1.

Coil Spring and Shock Absorber

REMOVAL

Remove shock absorber upper and lower fixing nuts.

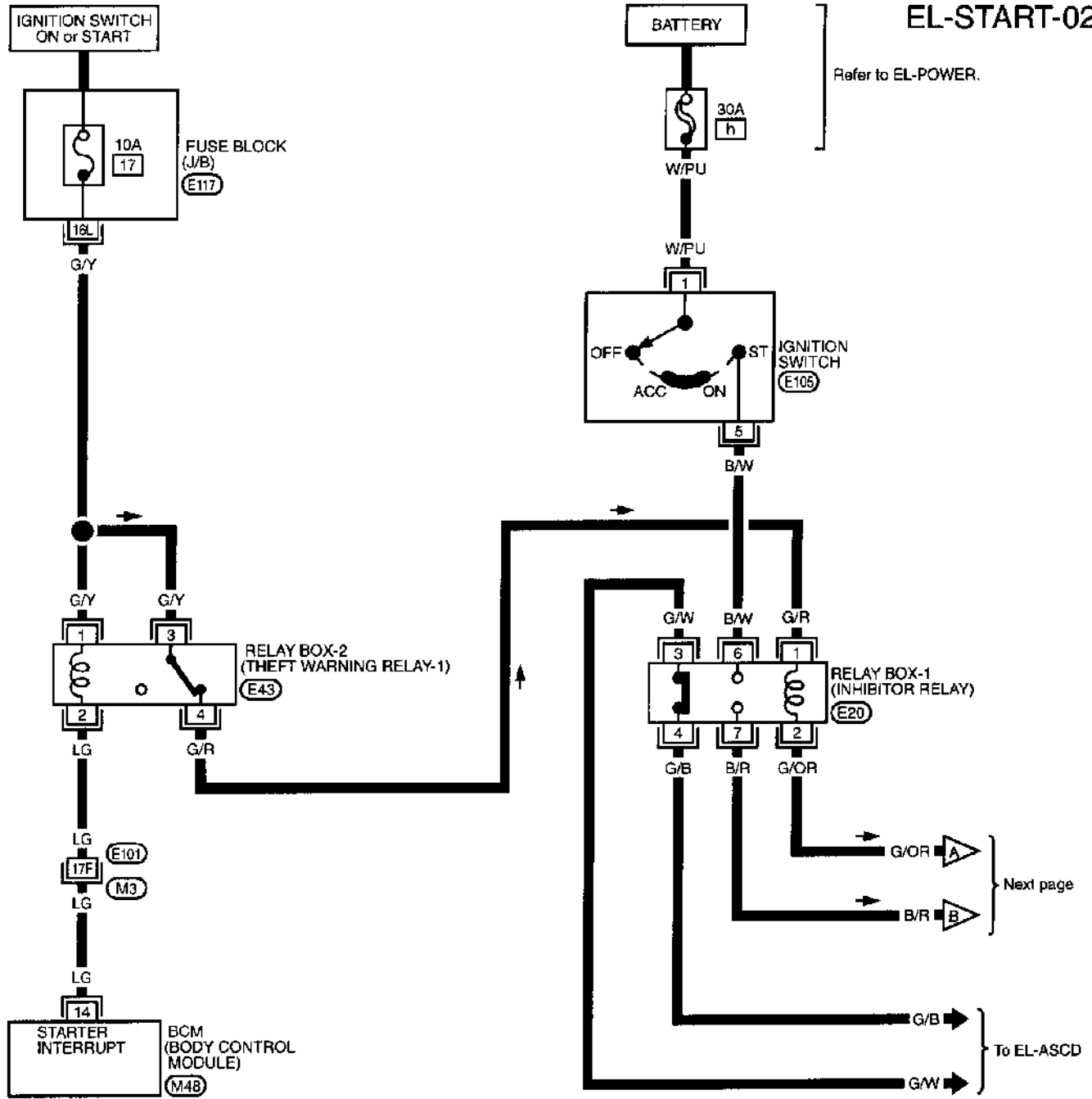
Do not remove piston rod lock nut on vehicle.

STARTING SYSTEM

Wiring Diagram — START — (Cont'd)

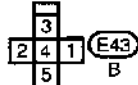
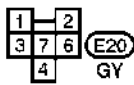
A/T MODEL

EL-START-02



Refer to EL-POWER.

Refer to last page (Foldout page).



M3, E101

E117

M48

GI

MA

EM

LC

EC

FE

CL

MT

AT

FA

RA

BR

ST

RS

BT

HA

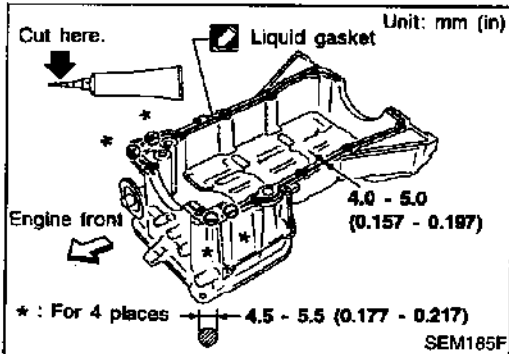
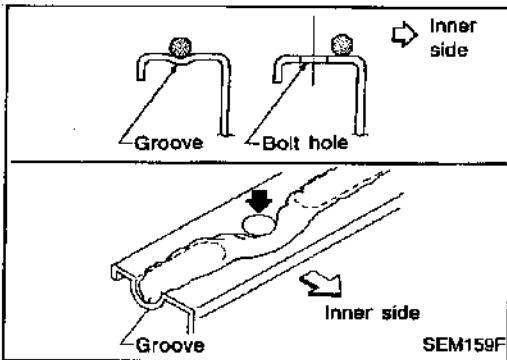
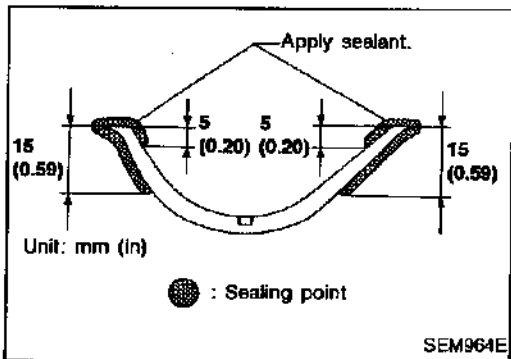
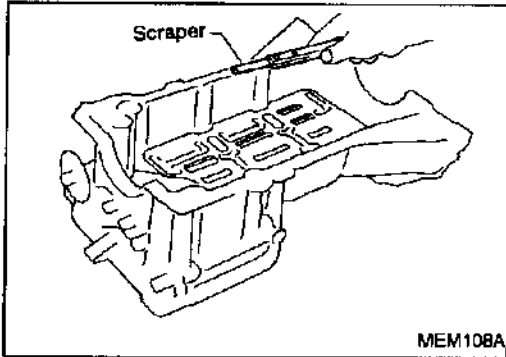
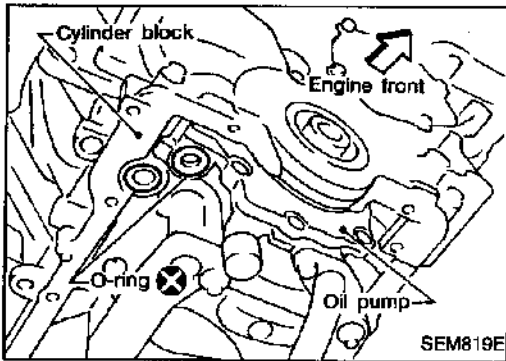
EL

IDX

OIL PAN

Removal (Cont'd)

17. Remove O-rings from cylinder block and oil pump body.



Installation

1. Install aluminum oil pan.
 - a. Use a scraper to remove all traces of liquid gasket from mating surfaces.
 - Also remove traces of liquid gasket from mating surface of cylinder block, front cover and steel oil pan.
 - **Remove old liquid gasket from the bolt hole and thread.**

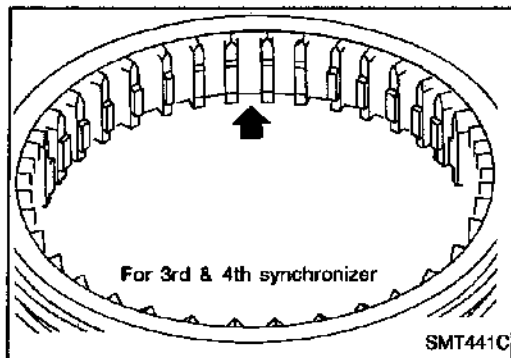
b. Apply sealant to front cover gasket and rear oil seal retainer gasket.

- c. Apply a continuous bead of liquid gasket to mating surface of aluminum oil pan.
 - **Use Genuine Liquid Gasket or equivalent.**

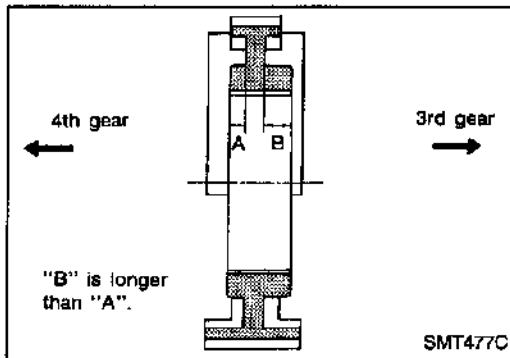
- d. Apply liquid gasket to inner sealing surface as shown in figure.
 - **Be sure liquid gasket is 4.0 to 5.0 mm (0.157 to 0.197 in) or 4.5 to 5.5 mm (0.177 to 0.217 in) wide.**
 - **Attaching should be done within 5 minutes after coating.**

REPAIR FOR COMPONENT PARTS

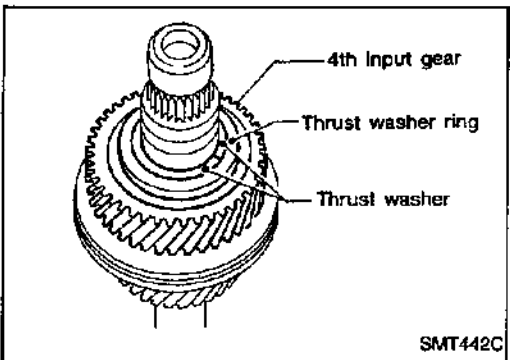
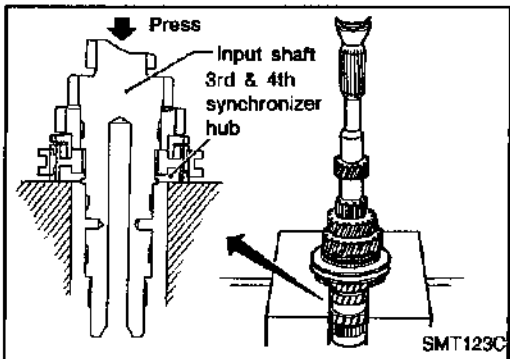
Input Shaft and Gears (Cont'd)



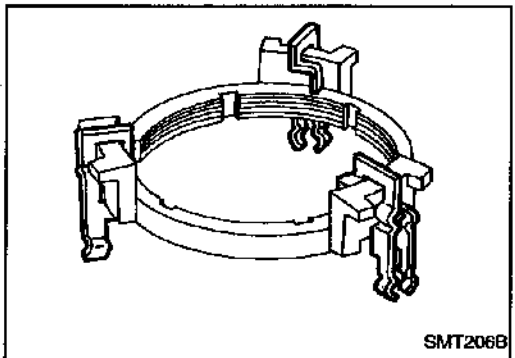
1. Place inserts in three grooves on coupling sleeve (3rd & 4th synchronizer).



2. Install 3rd input gear and 3rd baulk ring.
3. Press on 3rd & 4th synchronizer hub.
 - Pay attention to its direction.
4. Select proper snap ring of 3rd & 4th synchronizer hub to minimize clearance of groove, and then install it.
 - Allowable clearance of groove:**
0 - 0.1 mm (0 - 0.004 in)
 - Snap ring of 3rd & 4th synchronizer hub:**
Refer to SDS, MT-41.



5. Install 4th input gear.
6. Select proper thrust washers to minimize clearance of groove. Then install them and thrust washer ring.
 - Allowable clearance of groove:**
0 - 0.06 mm (0 - 0.0024 in)
 - 4th input gear thrust washer:**
Refer to SDS, MT-41.



7. Install 5th & reverse synchronizer assembly.
 - a. Hook insert springs on reverse baulk ring.

GI

MA

EM

LC

EC

FE

CL

MT

AT

FA

RA

BR

ST

RS

BT

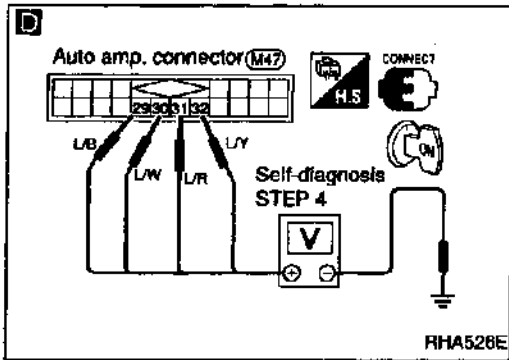
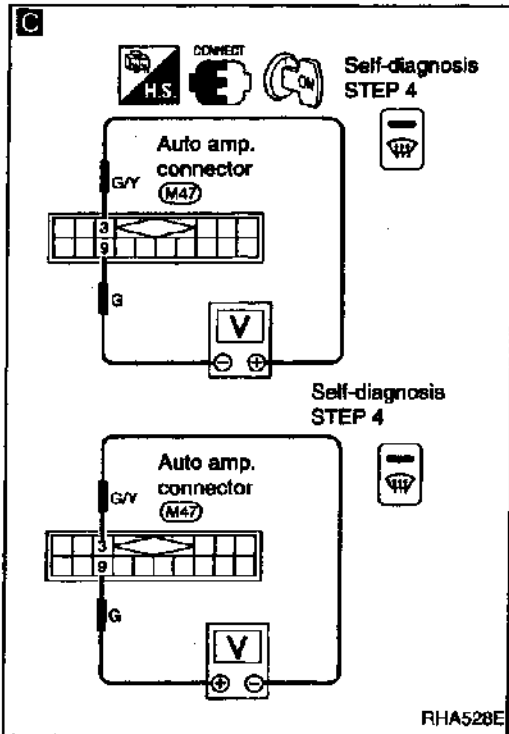
HA

EL

IDX

TROUBLE DIAGNOSES

Diagnostic Procedure 7 (Cont'd)



C

CHECK FOR OUTPUT OF AUTO AMP.
Do approx. 10.5 volts exist between auto amp. (BCM) harness terminals ③ and ④ when code No. is switched from "41" to "42" or when code No. is switched from "45" to "41"?

Code No.	Mode door motor operation	Terminal No.		Voltage V
		③	④	
41 → 42	VENT → B/L	⊕	⊖	Approx. 10.5
45 → 41	DEF → VENT	⊖	⊕	
-	Stop	-	-	0

No → Replace auto amp. (BCM).

D

CHECK MODE DOOR MOTOR POSITION SWITCH.
Set up Self-diagnosis STEP 4. Measure voltage across auto amp. (BCM) harness terminals and body ground.

Code No.	Condition	Terminal No.				⊖
		①	②	③	④	
41	VENT.	5V	0V	5V	0V	Body ground
42 or 43	B/L	5V	5V	0V	0V	
44	FOOT	5V	0V	0V	5V	
45	D/F	0V	0V	5V	5V	
46	DEF	0V	5V	0V	5V	

0V: Approx. 0V
5V: Approx. 5V

NG → Replace mode door motor.

OK

INSPECTION END

GI
MA
EM
LC
EC
FE
CL
MT
AT
FA
RA
BR
ST
RS
BT
HA
EL
IDX

ON BOARD DIAGNOSTIC SYSTEM DESCRIPTION

OBD System Operation Chart (Cont'd)

EXPLANATION FOR DRIVING PATTERNS FOR "MISFIRE <EXHAUST QUALITY DETERIORATION>", "FUEL INJECTION SYSTEM"

<Driving pattern B>

Driving pattern B means the vehicle operation as follows:

All components and systems should be monitored at least once by the OBD system.

- The B counter will be cleared when the malfunction is detected once regardless of the driving pattern.
- The B counter will be counted up when driving pattern B is satisfied without any malfunction.
- The MIL will go off when the B counter reaches 3. (*2 in "OBD SYSTEM OPERATION CHART")

<Driving pattern C>

Driving pattern C means the vehicle operation as follows:

(1) The following conditions should be satisfied at the same time:

Engine speed: (Engine speed in the freeze frame data) ± 375 rpm

Calculated load value: (Calculated load value in the freeze frame data) $\times (1 \pm 0.1)$ [%]

Engine coolant temperature (T) condition:

- When the freeze frame data shows lower than 70°C (158°F), "T" should be lower than 70°C (158°F).
- When the freeze frame data shows higher than or equal to 70°C (158°F), "T" should be higher than or equal to 70°C (158°F).

Example:

If the stored freeze frame data is as follows:

Engine speed: 850 rpm, Calculated load value: 30%, Engine coolant temperature: 80°C (176°F)

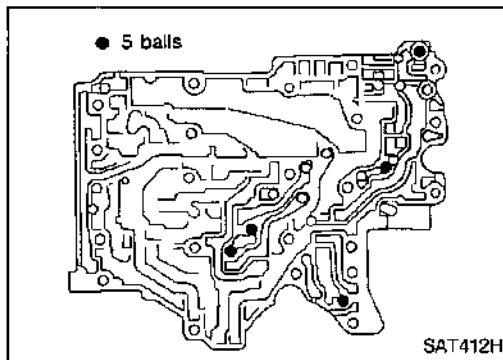
To be satisfied with driving pattern C, the vehicle should run under the following conditions:

Engine speed: 475 - 1,225 rpm, Calculated load value: 27 - 33%, Engine coolant temperature: more than $\geq 70^\circ\text{C}$ (158°F)

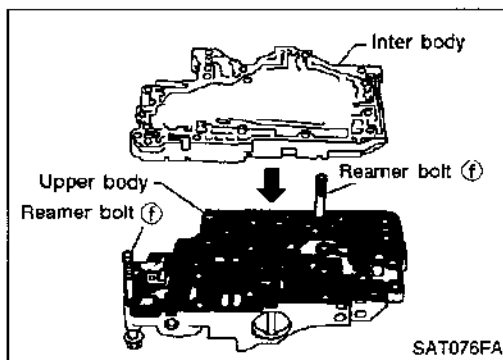
- The C counter will be cleared when the malfunction is detected regardless of (1).
- The C counter will be counted up when (1) is satisfied without the same malfunction.
- The DTC will not be displayed after C counter reaches 80.
- The 1st trip DTC will be cleared when C counter is counted a time without the same malfunction after DTC is stored in ECM.

REPAIR FOR COMPONENT PARTS

Control Valve Assembly (Cont'd)

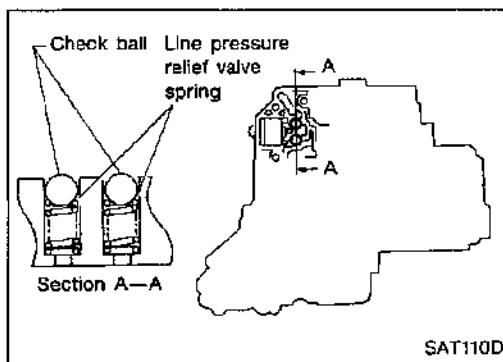


- e. Place lower body as shown in illustration (side of inter body face up). Install steel balls in their proper positions.

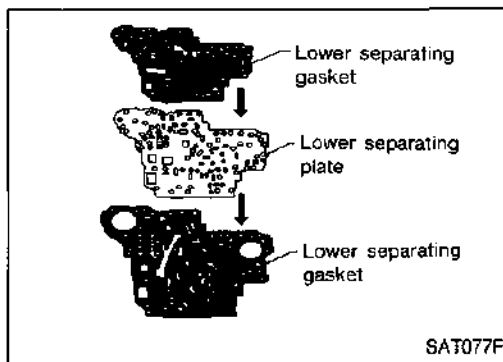


- f. Install inter body on upper body using reamer bolts ① as guides.

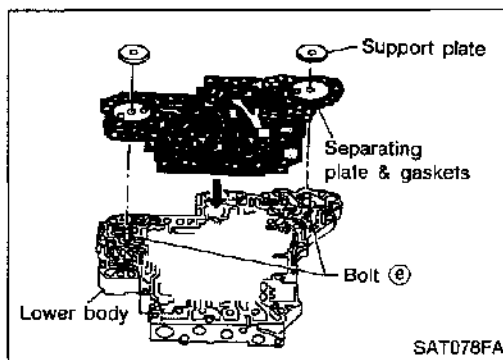
- Be careful not to dislocate or drop steel balls.



- g. Install steel balls and relief valve springs in their proper positions in lower body.



- h. Install lower separating gasket, inter separating gasket and lower separating plate in order shown in illustration.



- i. Install bolts ② from bottom of lower body. Using bolts ② as guides, install separating plate and gaskets as a set.
- j. Temporarily install support plates on lower body.

GI

MA

EM

LC

EC

FE

CL

MT

AT

FA

RA

BR

ST

RS

BT

HA

EL

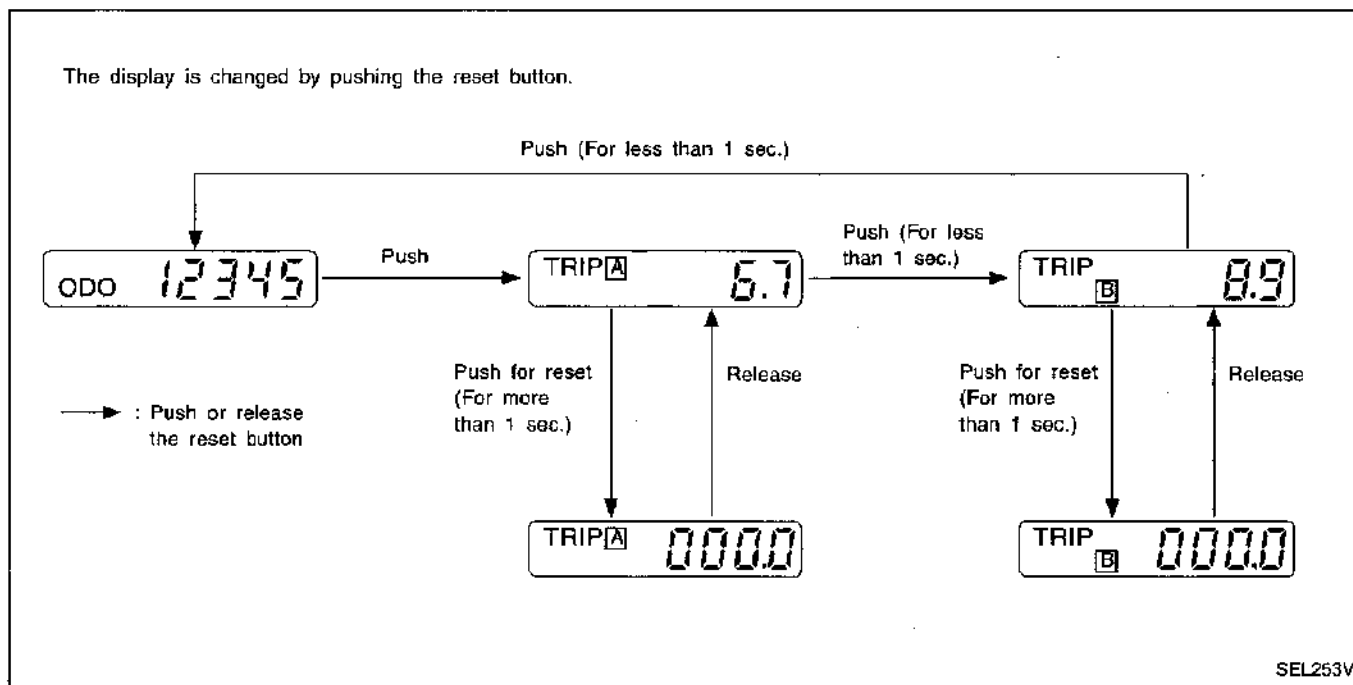
IDX

System Description

UNIFIED CONTROL METER

- Speedometer, odo/trip meter, tachometer, fuel gauge and water temperature gauge are controlled totally by control unit combined with speedometer.
- Digital meter is adopted for odo/trip meter.*
*The record of the odo meter is kept even if the battery cable is disconnected. The record of the trip meter is erased when the battery cable is disconnected.
- Odo/trip meter segment can be checked in diagnosis mode.
- Meter/gauge can be checked in diagnosis mode.

HOW TO CHANGE THE DISPLAY FOR ODO/TRIP METER



Note:

Turn ignition switch to the "ON" position to operate odo/trip meter.

POWER SUPPLY AND GROUND CIRCUIT

Power is supplied at all times

- through 7.5A fuse [No. 40], located in the fuse block (J/B)]
- to combination meter terminal 15 .

With the ignition switch in the ON or START position, power is supplied

- through 10A fuse [No. 13], located in the fuse block (J/B)]
- to combination meter terminal 37 .

Ground is supplied

- to combination meter terminal 16
- through body grounds (M13), (M73) and (M109) .

FUEL GAUGE

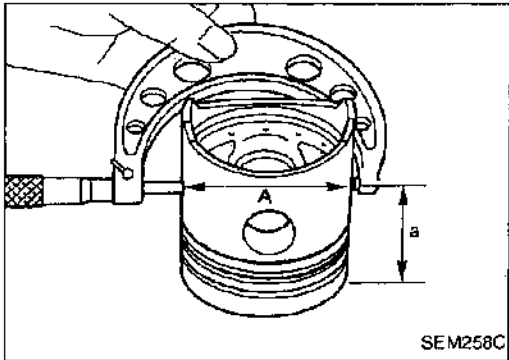
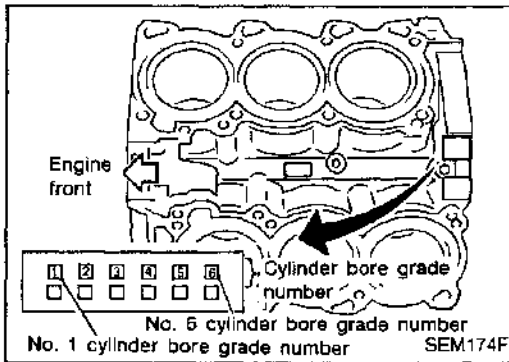
The fuel gauge indicates the approximate fuel level in the fuel tank.

The fuel gauge is regulated by a variable ground signal supplied

- to combination meter terminal 5 for the fuel gauge
- from terminal 3 of the fuel tank gauge unit
- through terminal 2 of the fuel tank gauge unit and
- through body grounds (B16) and (B19) .

CYLINDER BLOCK

Inspection (Cont'd)



- If both cylinder block and piston are replaced with new ones, select piston of the same grade number punched on cylinder block rear position. These numbers are punched in either Arabic or Roman numerals.

3. Measure piston skirt diameter.
**Piston diameter "A": Refer to SDS (EM-73).
Measuring point "a" (Distance from the top):
45.4 mm (1.787 in)**
4. Check that piston-to-bore clearance is within specification.
**Piston-to-bore clearance "B":
0.010 - 0.030 mm (0.0004 - 0.0012 in)**
5. Determine piston oversize according to amount of cylinder wear.

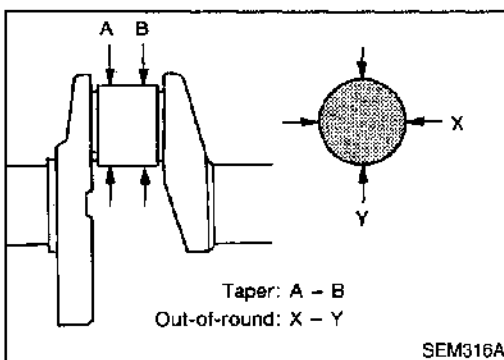
**Oversize pistons are available for service.
Refer to SDS (EM-73).**

6. Cylinder bore size is determined by adding piston-to-bore clearance to piston diameter "A".

**Rebored size calculation: $D = A + B - C$
where,**

**D: Bored diameter
A: Piston diameter as measured
B: Piston-to-bore clearance
C: Honing allowance 0.02 mm (0.0008 in)**

7. Install main bearing caps, and tighten to the specified torque. Otherwise, cylinder bores may be distorted in final assembly.
8. Cut cylinder bores.
 - When any cylinder needs boring, all other cylinders must also be bored.
 - Do not cut too much out of cylinder bore at a time. Cut only 0.05 mm (0.0020 in) or so in diameter at a time.
- 9.hone cylinders to obtain specified piston-to-bore clearance.
10. Measure finished cylinder bore for out-of-round and taper.
 - Measurement should be done after cylinder bore cools down.



CRANKSHAFT

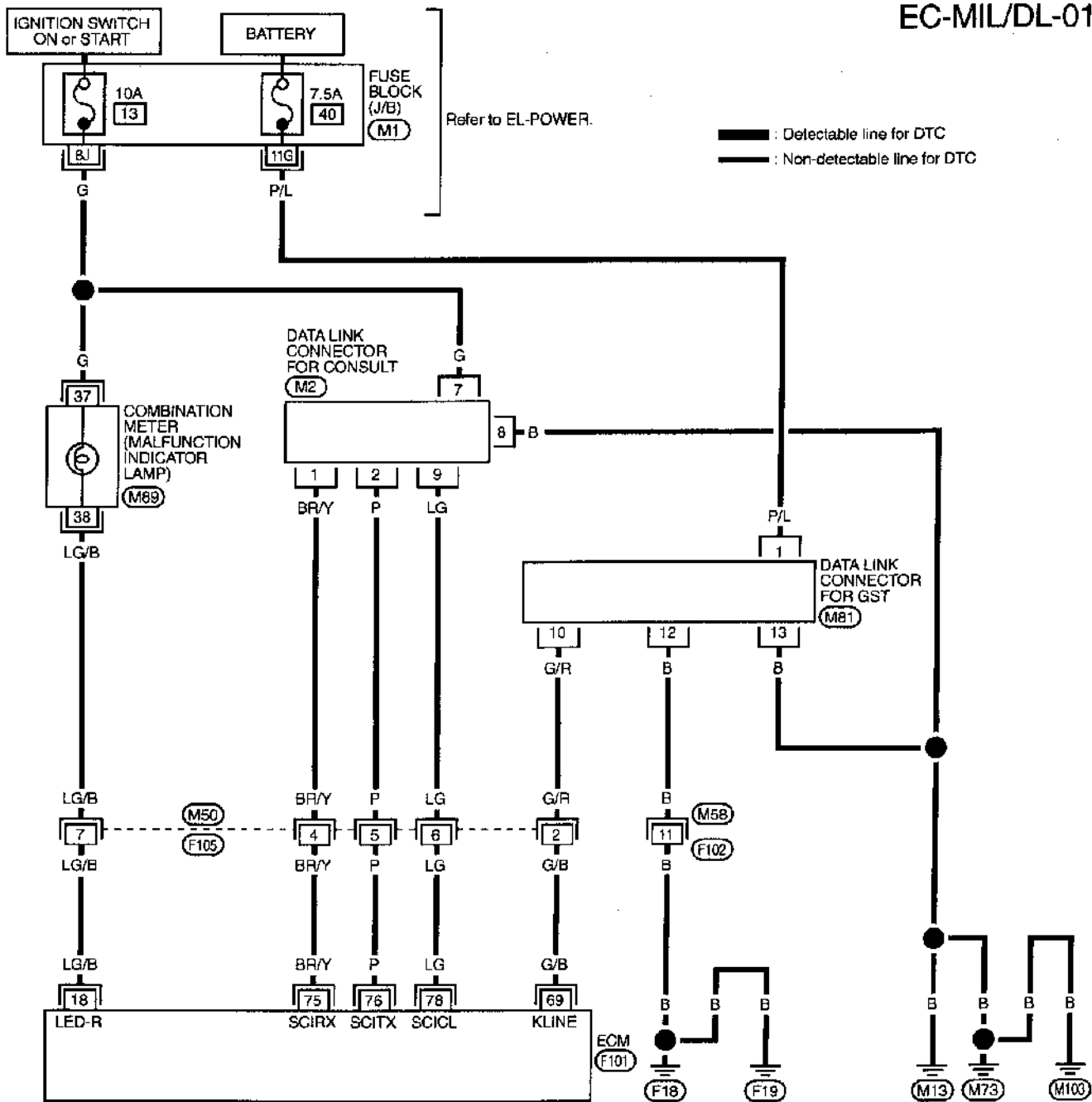
1. Check crankshaft main and pin journals for score, wear or cracks.
2. With a micrometer, measure journals for taper and out-of-round.

**Out-of-round (X - Y):
Standard
0.002 mm (0.0001 in)**

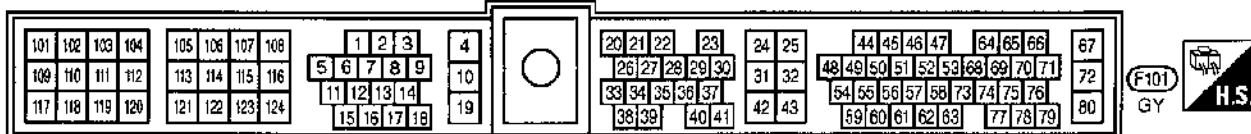
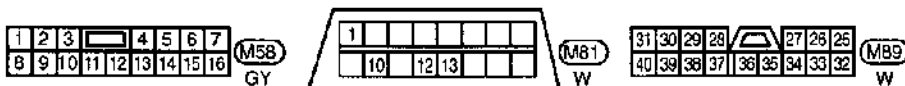
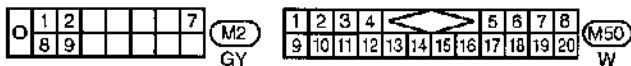
**Taper (A - B):
Standard
0.002 mm (0.0001 in)**

MIL & Data Link Connectors

EC-MIL/DL-01

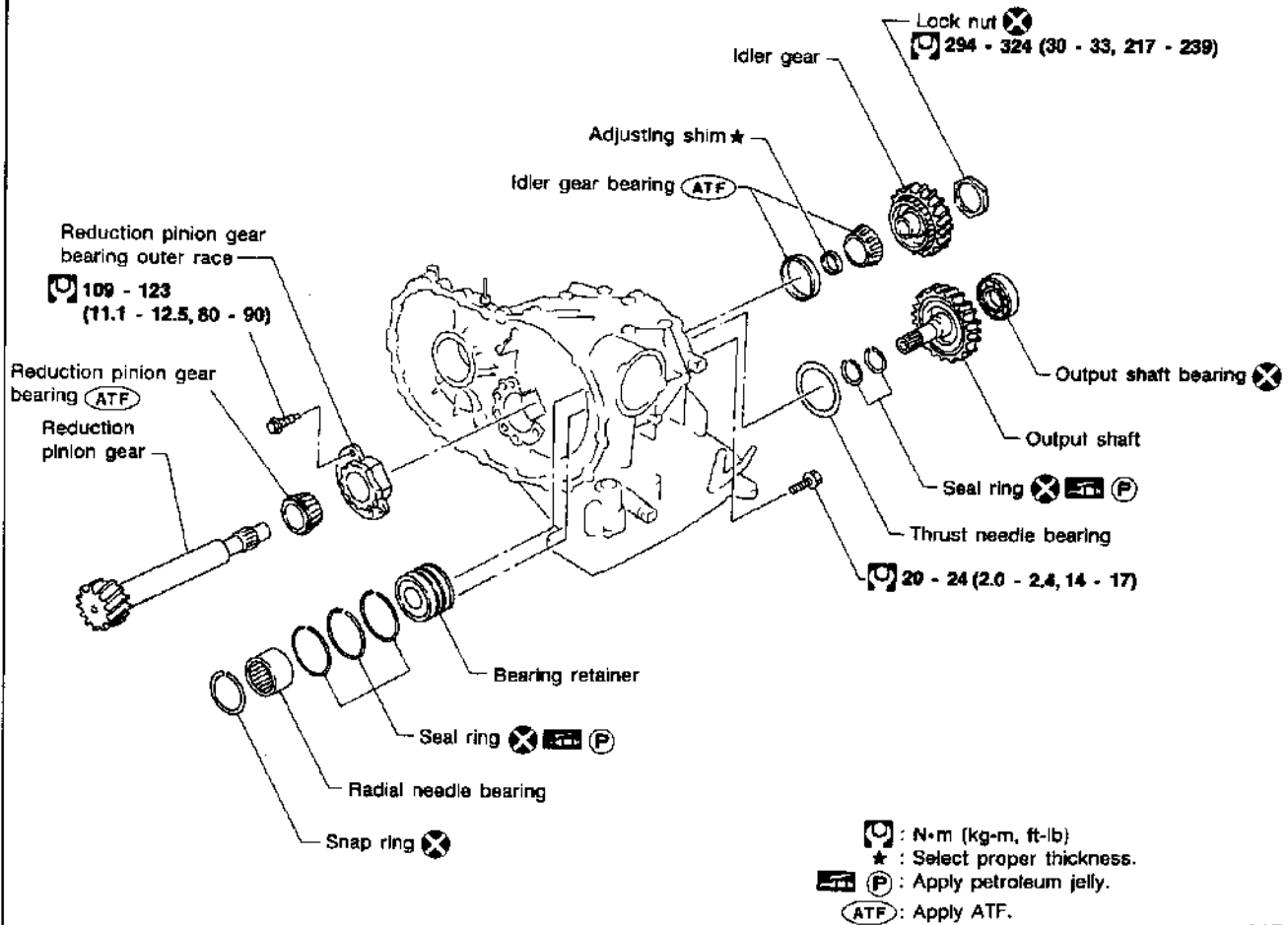


Refer to last page (Foldout page).

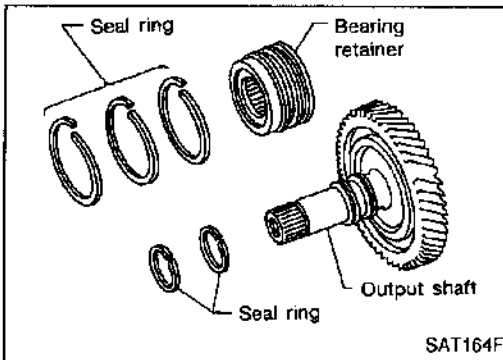


Output Shaft, Idler Gear, Reduction Pinion Gear and Bearing Retainer

SEC. 314



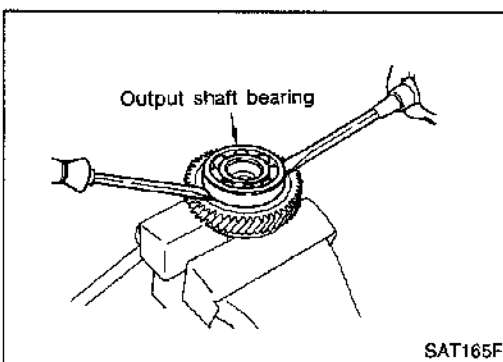
SAT557GB



SAT164F

DISASSEMBLY

1. Remove seal rings from output shaft and bearing retainer.



SAT165F

2. Remove output shaft bearing with screwdrivers.

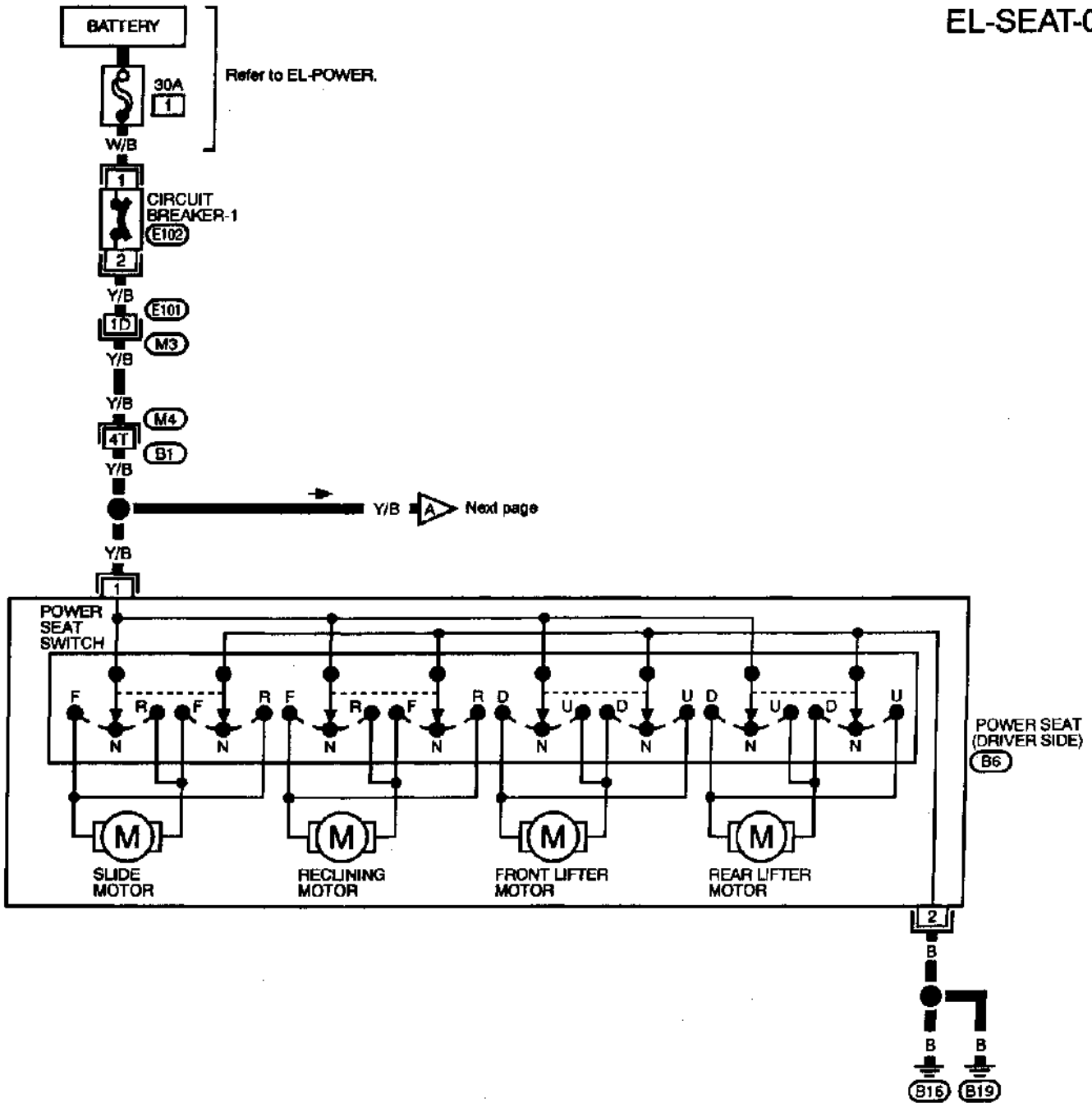
- Always replace bearing with a new one when removed.
- Do not damage output shaft.

GI
MA
EM
LC
EC
FE
CL
MT
AT
FA
RA
BR
ST
RS
BT
HA
EL
IDX

POWER SEAT

Wiring Diagram — SEAT —

EL-SEAT-01



Refer to last page (Foldout page).

