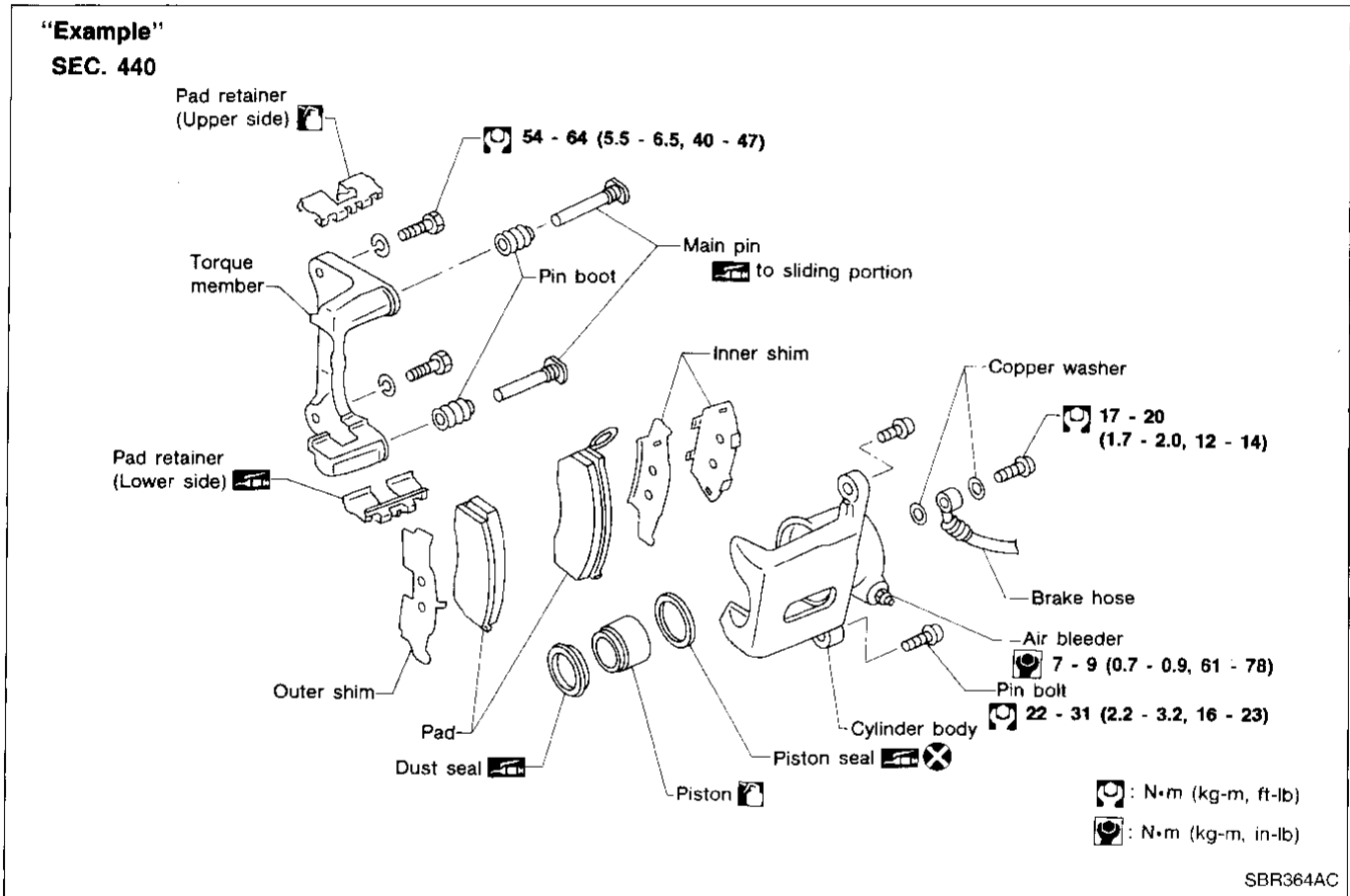


## HOW TO USE THIS MANUAL

- **AN ALPHABETICAL INDEX** is provided at the end of this manual so that you can rapidly find the item and page you are searching for.
  - **A QUICK REFERENCE INDEX**, a black tab (e.g., **BR**) is provided on the first page. You can quickly find the first page of each section by mating it to the section's black tab.
  - **THE CONTENTS** are listed on the first page of each section.
  - **THE TITLE** is indicated on the upper portion of each page and shows the part or system.
  - **THE PAGE NUMBER** of each section consists of two letters which designate the particular section and a number (e.g., "BR-5").
  - **THE LARGE ILLUSTRATIONS** are exploded views (see below) and contain tightening torques, lubrication points, section number of the **PARTS CATALOG** (e.g., SEC.440) and other information necessary to perform repairs.
- The illustrations should be used in reference to service matters only. When ordering parts, refer to the appropriate **PARTS CATALOG**.



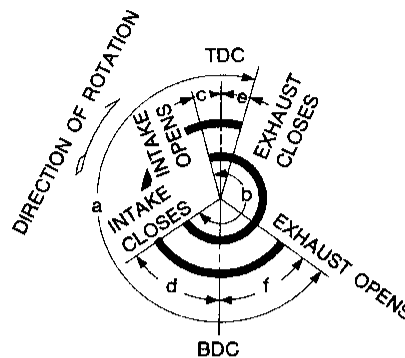
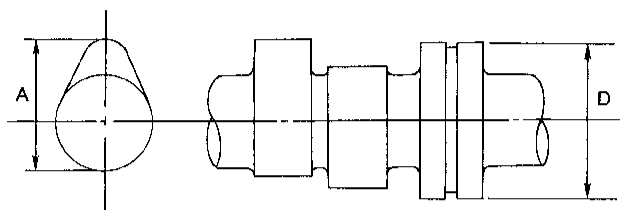
- **THE SMALL ILLUSTRATIONS** show the important steps such as inspection, use of special tools, knacks of work and hidden or tricky steps which are not shown in the previous large illustrations. Assembly, inspection and adjustment procedures for the complicated units such as the automatic transaxle or transmission, etc. are presented in a step-by-step format where necessary.

# SERVICE DATA AND SPECIFICATIONS (SDS)

## Inspection and Adjustment (Cont'd)

### CAMSHAFT AND CAMSHAFT BEARING

GI  
MA  
EM  
LC  
EC  
FE  
CL  
MT  
AT  
TF  
PD  
FA  
RA  
BT  
HA  
EL  
IDX



SEM568A

EM120

Unit: mm (in)

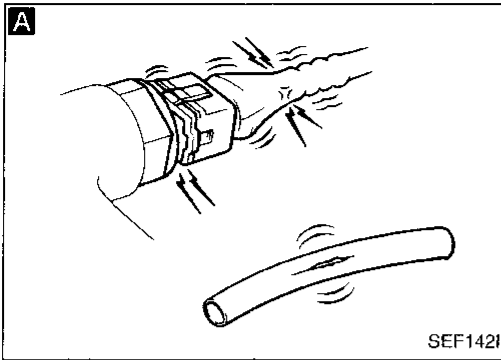
	Standard	Limit
Cam height (A)	44.43 - 44.58 (1.7492 - 1.7551)	—
Valve lift (h)	9.7 (0.382)	—
Wear limit of cam height	—	0.2 (0.008)
Camshaft journal to bearing clearance	0.045 - 0.090 (0.0018 - 0.0035)	0.12 (0.0047)
Inner diameter of camshaft bearing	33.000 - 33.025 (1.2992 - 1.3002)	—
Outer diameter of camshaft journal (D)	32.935 - 32.955 (1.2967 - 1.2974)	—
Camshaft runout	0 - 0.02 (0 - 0.0008)	—
Camshaft end play	0.07 - 0.15 (0.0028 - 0.0059)	0.2 (0.008)
Valve timing (Degree on crankshaft)	a	232
	b	232
	c	-5
	d	57
	e	11
	f	41

### ROCKER ARM AND ROCKER SHAFT

Unit: mm (in)

Rocker arm to shaft clearance	0.012 - 0.050 (0.0005 - 0.0020)
Rocker shaft diameter	21.979 - 22.000 (0.8653 - 0.8661)
Rocker arm rocker shaft hole diameter	22.012 - 22.029 (0.8666 - 0.8673)

# TROUBLE DIAGNOSIS — Basic Inspection

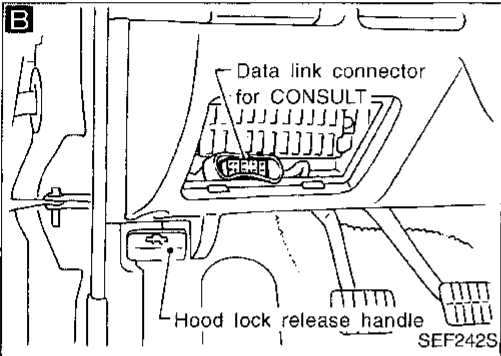


## Basic Inspection

### Precaution:

Perform Basic Inspection without electrical or mechanical loads applied;

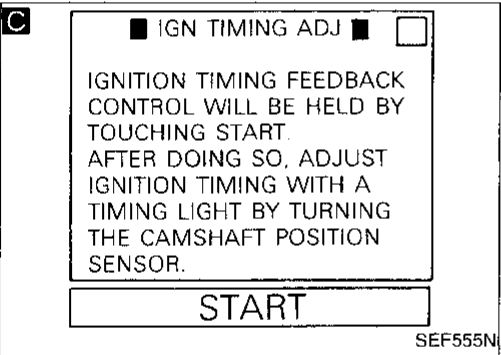
- Headlamp switch is OFF,
- Air conditioner switch is OFF,
- Rear defogger switch is OFF,
- Steering wheel is in the straight-ahead position, etc.



**A**

**BEFORE STARTING**

1. Check service records for any recent repairs that may indicate a related problem, or the current need for scheduled maintenance.
2. Open engine hood and check the following:
  - Harness connectors for improper connections
  - Vacuum hoses for splits, kinks, or improper connections
  - Wiring for improper connections, pinches, or cuts



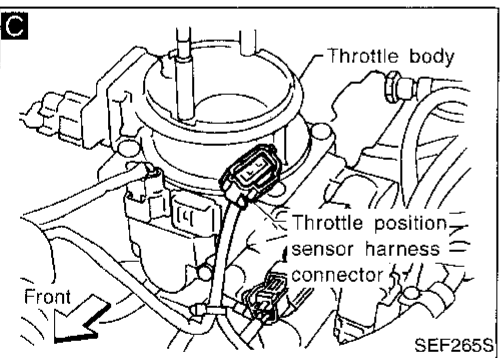
**B**

**CONNECT CONSULT TO THE VEHICLE.**  
Connect "CONSULT" to the data link connector for CONSULT and select "ENGINE" from the menu. (Refer to page EC-41.)

**DOES ENGINE START?**

No → Go to **E**.

Yes →



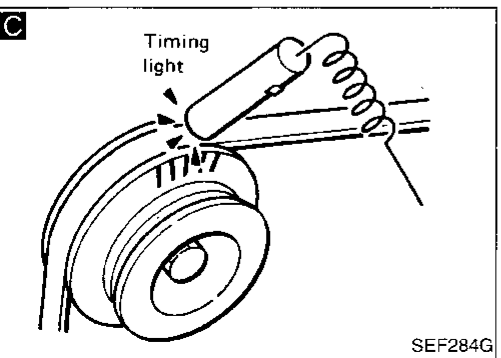
**C**

**CHECK IGNITION TIMING.**

1. Warm up engine sufficiently.
2. Select "IGN TIMING ADJ" in "WORK SUPPORT" mode.
3. Touch "START".
4. Check ignition timing at idle using timing light.

**Ignition timing:**  
M/T  $10^{\circ} \pm 2^{\circ}$  BTDC  
A/T  $10^{\circ} \pm 2^{\circ}$  BTDC (in "N" position)

NG → Adjust ignition timing by turning camshaft position sensor.



1. Warm up engine sufficiently.
2. Stop engine and disconnect throttle position sensor harness connector.
3. Start engine.
4. Check ignition timing at idle using timing light.

**Ignition timing:**  
M/T  $10^{\circ} \pm 2^{\circ}$  BTDC  
A/T  $10^{\circ} \pm 2^{\circ}$  BTDC (in "N" position)

OK

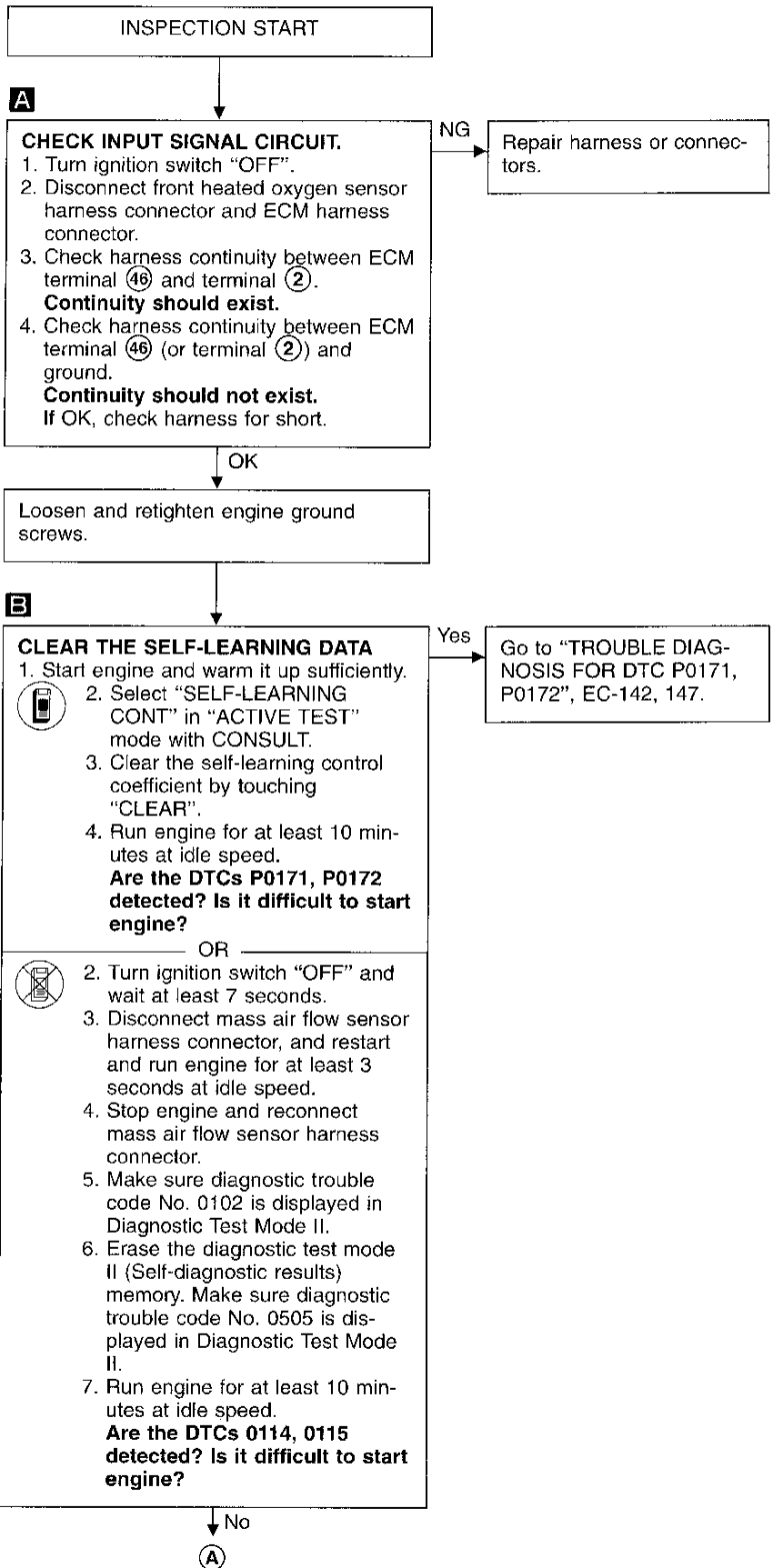
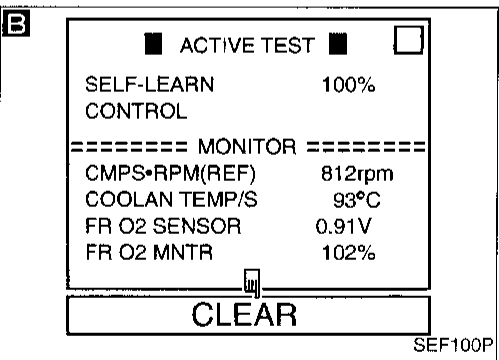
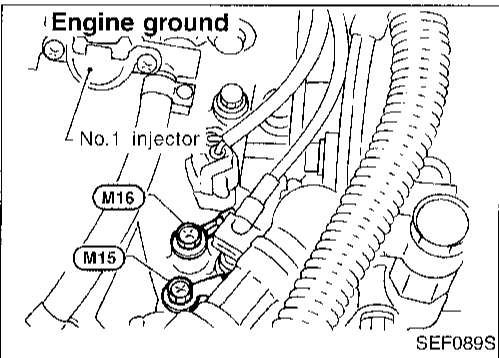
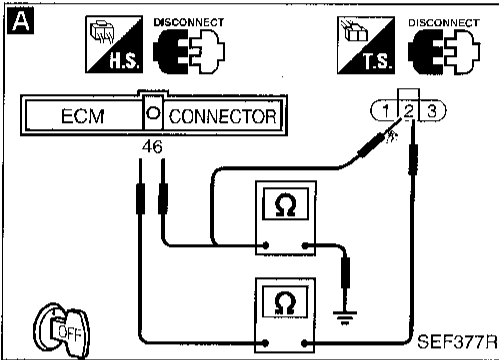
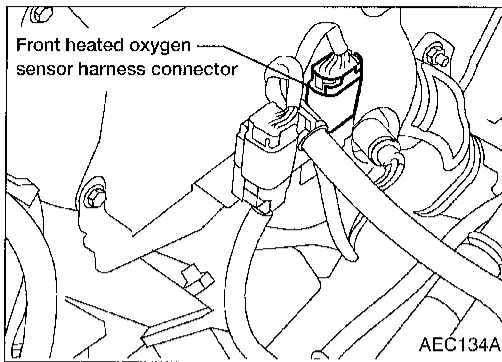
↓

(Go to **A** on next page.)

# TROUBLE DIAGNOSIS FOR DTC P0130

## Front Heated Oxygen Sensor (Front HO2S) (DTC: 0303) (Cont'd)

### DIAGNOSTIC PROCEDURE



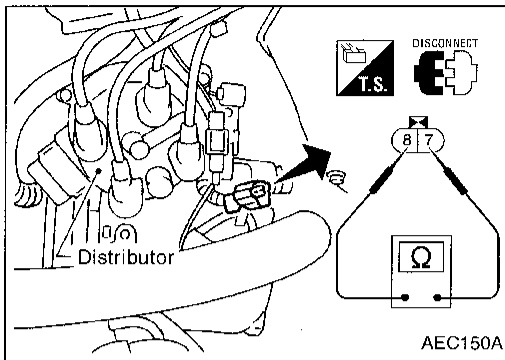
## TROUBLE DIAGNOSIS FOR DTC P1320

### Ignition Signal (DTC: 0201) (Cont'd)

#### COMPONENT INSPECTION

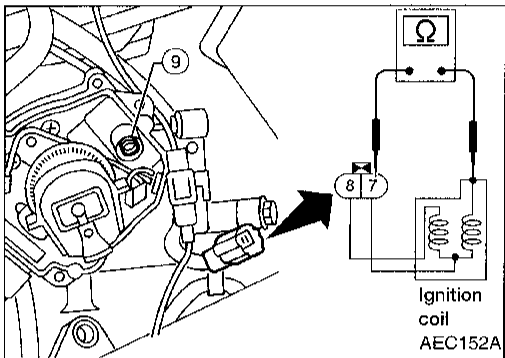
##### Ignition coil

1. Disconnect ignition coil harness connector.
2. Remove distributor cap.
3. Check resistance as shown in the figure.



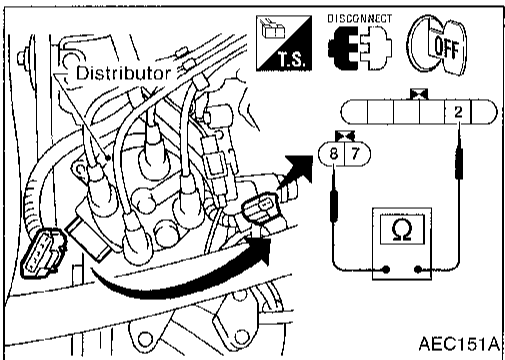
Terminal	Resistance [at 25°C (77°F)]
⑦ - ⑧	Less than 1Ω
⑦ - ⑨	7 - 13 kΩ

If NG, replace distributor assembly.



##### Power transistor

1. Disconnect camshaft position sensor & power transistor harness connector and ignition coil harness connector.
2. Check power transistor resistance between terminals ② and ⑧.



Terminals	Resistance	Result
② and ⑧	Except 0Ω	OK
	0Ω	NG

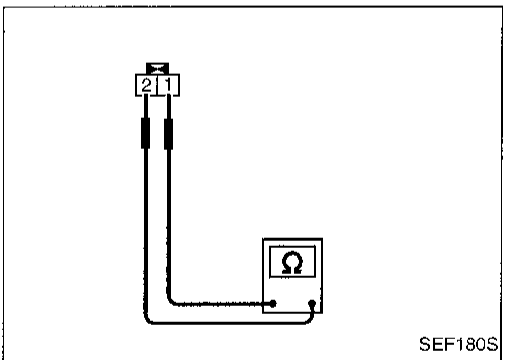
If NG, replace distributor assembly.

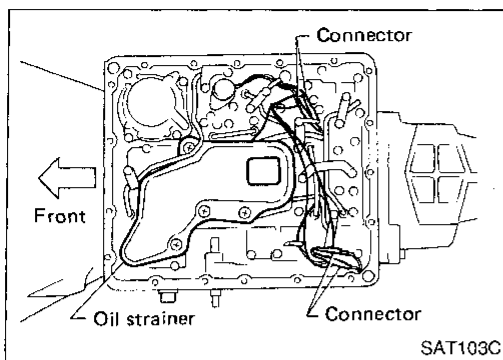
##### Resistor

1. Disconnect resistor harness connector.
2. Check resistance between terminals ① and ②.

**Resistance: Approximately 2.2 kΩ**

If NG, replace resistor.





## Control Valve Assembly and Accumulators Inspection

1. Drain ATF from drain plug.
2. Remove oil pan and gasket.
3. Remove oil strainer.
4. Disconnect harness connector.

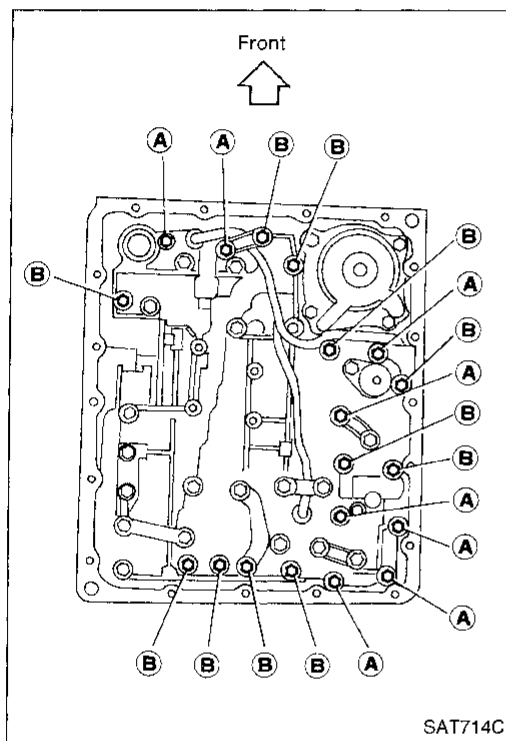
5. Remove control valve assembly by removing fixing bolts.

### Bolt length and location

Bolt symbol	ℓ mm (in)
Ⓐ	33 (1.30)
Ⓑ	45 (1.77)

**Be careful not to drop manual valve out of valve body.**

6. Remove solenoids and valves from valve body if necessary.
7. Remove terminal cord assembly if necessary.

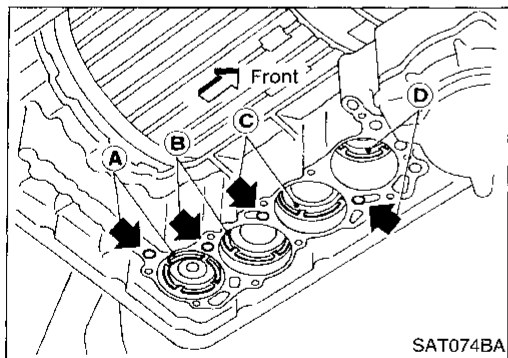


8. Remove accumulator Ⓐ, Ⓑ, Ⓒ and Ⓓ by applying compressed air if necessary.

**Hold each piston with rag.**

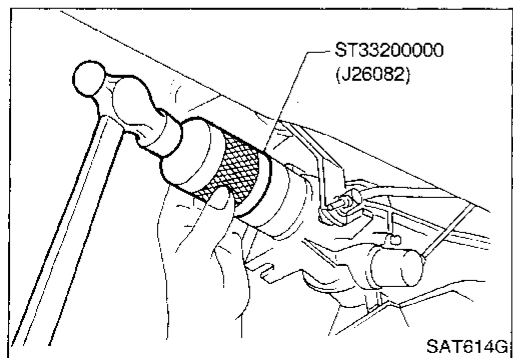
9. Reinstall any part removed.

**Always use new sealing parts.**

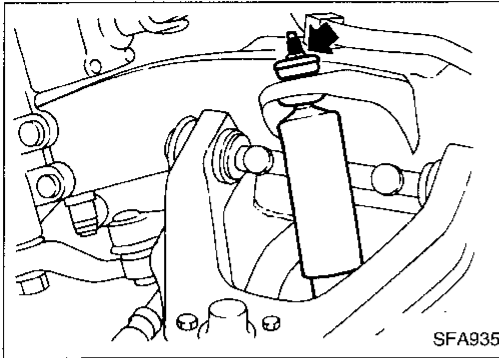


## Rear Oil Seal Replacement

1. Remove propeller shaft from vehicle. Refer to PD section ("Removal and Installation", "PROPELLER SHAFT").
  2. Remove rear oil seal.
  3. Install rear oil seal.
- **Apply ATF before installing.**
4. Reinstall any part removed.



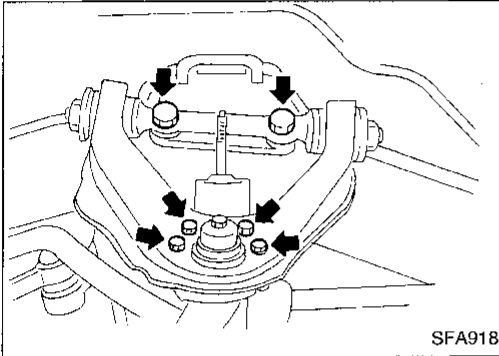
# FRONT SUSPENSION



## Upper Link

### REMOVAL

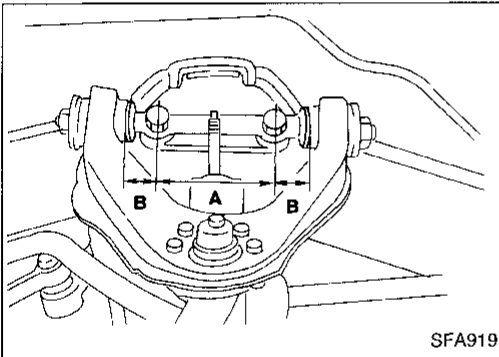
- Remove shock absorber upper fixing nut.



- Remove bolts fixing upper ball joint on upper link.

### Support lower link with jack.

- Remove upper link spindle fixing bolts.

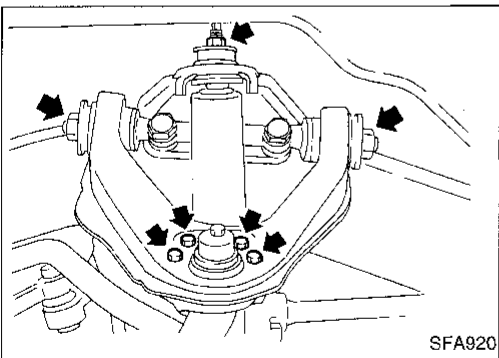


### INSTALLATION

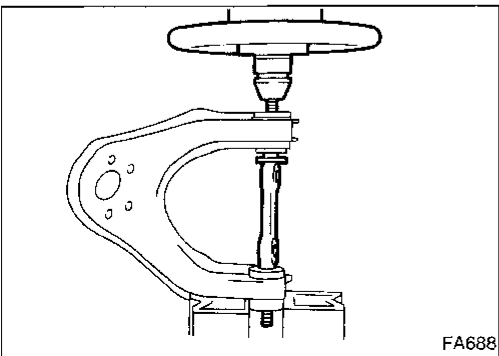
- Tighten upper link spindle with camber adjusting shims.
- After fitting, check dimensions "A" and "B".

**A: 110 mm (4.33 in)**

**B: 32 mm (1.26 in)**



- Install upper ball joint on upper link.
- Install shock absorber upper fixing nut.
- Tighten upper link spindle lock nuts under unladen condition with tires on ground.
- After installing, check wheel alignment. Adjust if necessary. Refer to FA-8.



### DISASSEMBLY

- Press out upper link spindle with bushings.

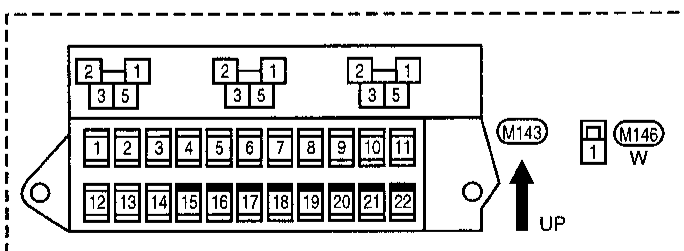
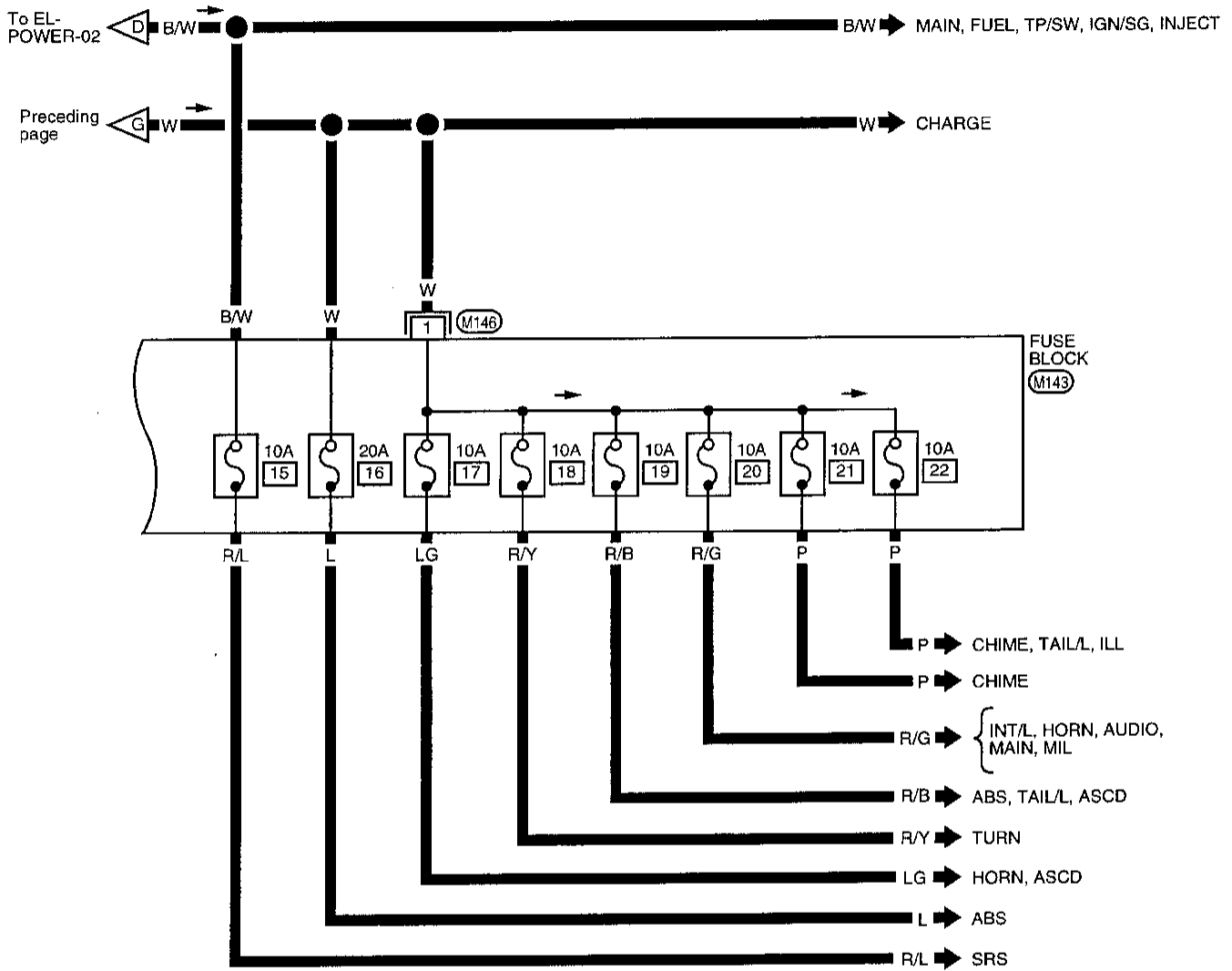
### INSPECTION

- Check upper link spindle and rubber bushings for damage. Replace if necessary.
- Check upper link for deformation or cracks. Replace if necessary.

# POWER SUPPLY ROUTING

## Wiring Diagram -POWER- (Cont'd)

EL-POWER-04



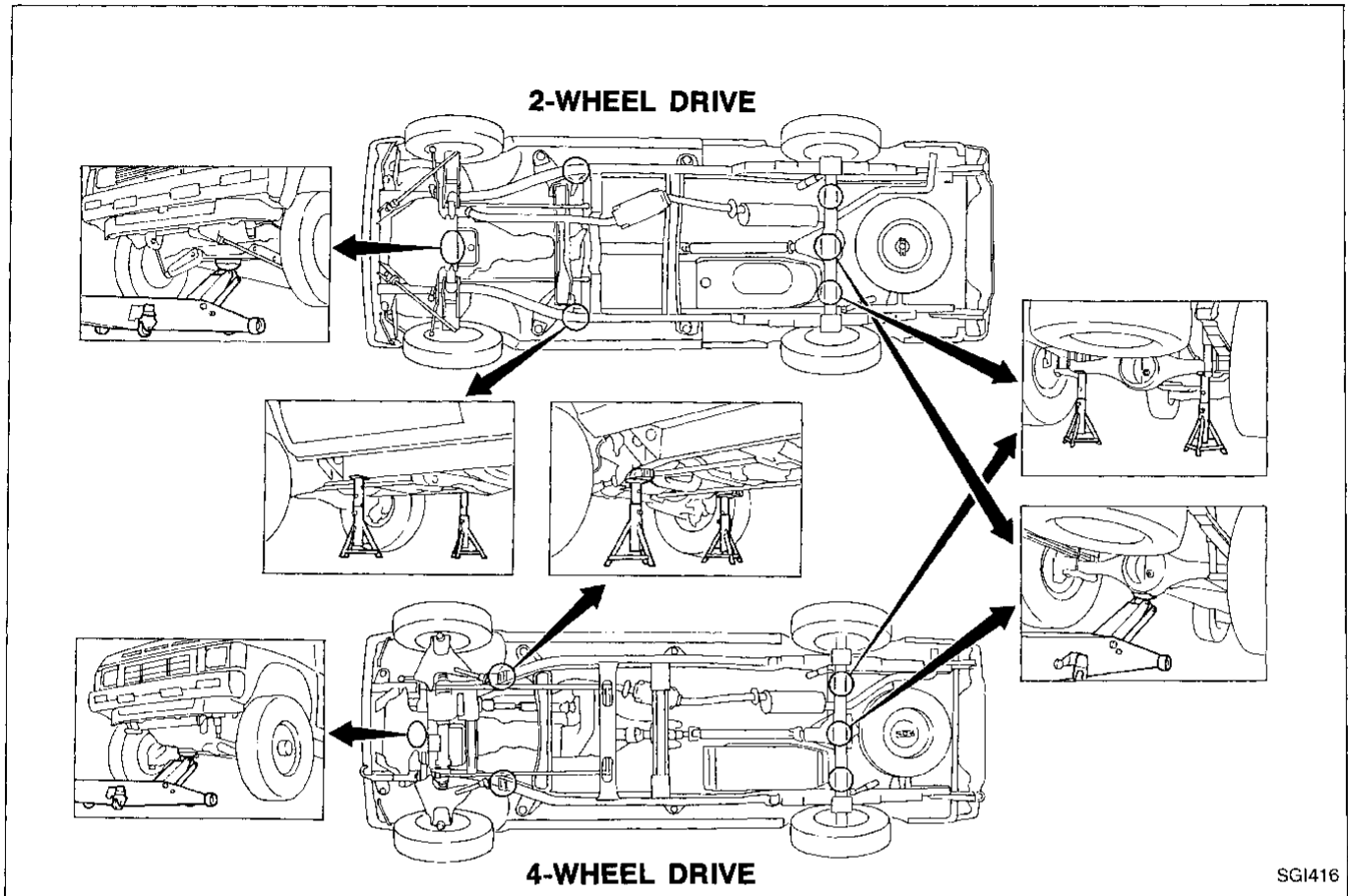


# LIFTING POINTS AND TOW TRUCK TOWING

## Garage Jack and Safety Stand

**CAUTION:**

Place a wooden or rubber block between safety stand and vehicle body when the supporting body is flat.



## Emission-related Diagnostic Information

CI

MA

EM

IG

EC

FE

OL

MT

AT

TF

PD

FA

EA

BR

ST

RS

BT

HA

EL

IDX

### DTC AND 1ST TRIP DTC

The 1st trip DTC (whose number is the same as the DTC number) is displayed for the latest self-diagnostic result obtained. If the ECM memory was cleared previously, and the 1st trip DTC did not reoccur, the 1st trip DTC will not be displayed. If a malfunction is detected during the 1st trip, the 1st trip DTC is stored in the ECM memory. The MIL will not light up (two trip detection logic). If the same malfunction is not detected in the 2nd trip (meeting the required driving pattern), the 1st trip DTC is cleared from the ECM memory. If the same malfunction is detected in the 2nd trip, both the 1st trip DTC and DTC are stored in the ECM memory and the MIL lights up. In other words, the DTC is stored in the ECM memory and the MIL lights up when the same malfunction occurs in two consecutive trips. If a 1st trip DTC is stored and a non-diagnostic operation is performed (for example, driving pattern A, refer to EC-52) between the 1st and 2nd trips, only the 1st trip DTC will continue to be stored. For malfunctions that blink or light up the MIL during the 1st trip, the DTC and 1st trip DTC are stored in the ECM memory.

Procedures for clearing the DTC and the 1st trip DTC from the ECM memory are described in "HOW TO ERASE EMISSION-RELATED DIAGNOSTIC INFORMATION". Refer to EC-43.



For malfunctions in which 1st trip DTCs are displayed, refer to EC-41. These items are required by legal regulation to continuously monitor the system/component. In addition, the items monitored non-continuously are also displayed on CONSULT.

1st trip DTC is specified in Mode 7 of SAE J1979. 1st trip DTC detection occurs without lighting up the MIL and therefore does not warn the driver of a problem. However, 1st trip DTC detection will not prevent the vehicle from being tested, for example during Inspection/Maintenance (I/M) tests.

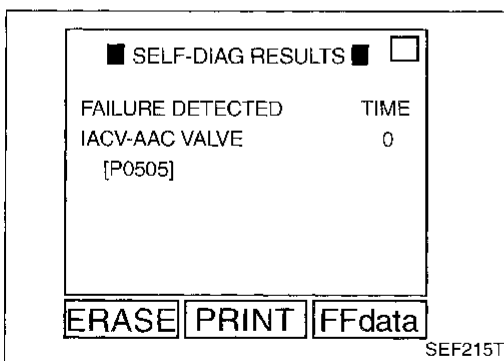
When a 1st trip DTC is detected, check, print out or write down and erase (1st trip) DTC and Freeze Frame data as specified in "Work Flow" procedure Step II, refer to page EC-70. Then perform "DTC confirmation procedure" or "Overall function check" to try to duplicate the problem. If the malfunction is duplicated, the item requires repair.

### How to read DTC and 1st trip DTC

DTC and 1st trip DTC can be read by the following methods.

-  1. The number of blinks of the malfunction indicator lamp in the Diagnostic Test Mode II (Self-Diagnostic Results) Examples: 0101, 0201, 1003, 1104, etc.  
 These DTCs are controlled by NISSAN.
-  2. CONSULT or GST (Generic Scan Tool) Examples: P0340, P1320, P0705, P0750, etc.  
 These DTCs are prescribed by SAE J2012.  
 (CONSULT also displays the malfunctioning component or system.)

- **1st trip DTC No. is the same as DTC No.**
- **Output of a DTC indicates a malfunction. However, Mode II and GST do not indicate whether the malfunction is still occurring or has occurred in the past and has returned to normal. CONSULT can identify malfunction status as shown below. Therefore, using CONSULT (if available) is recommended.**

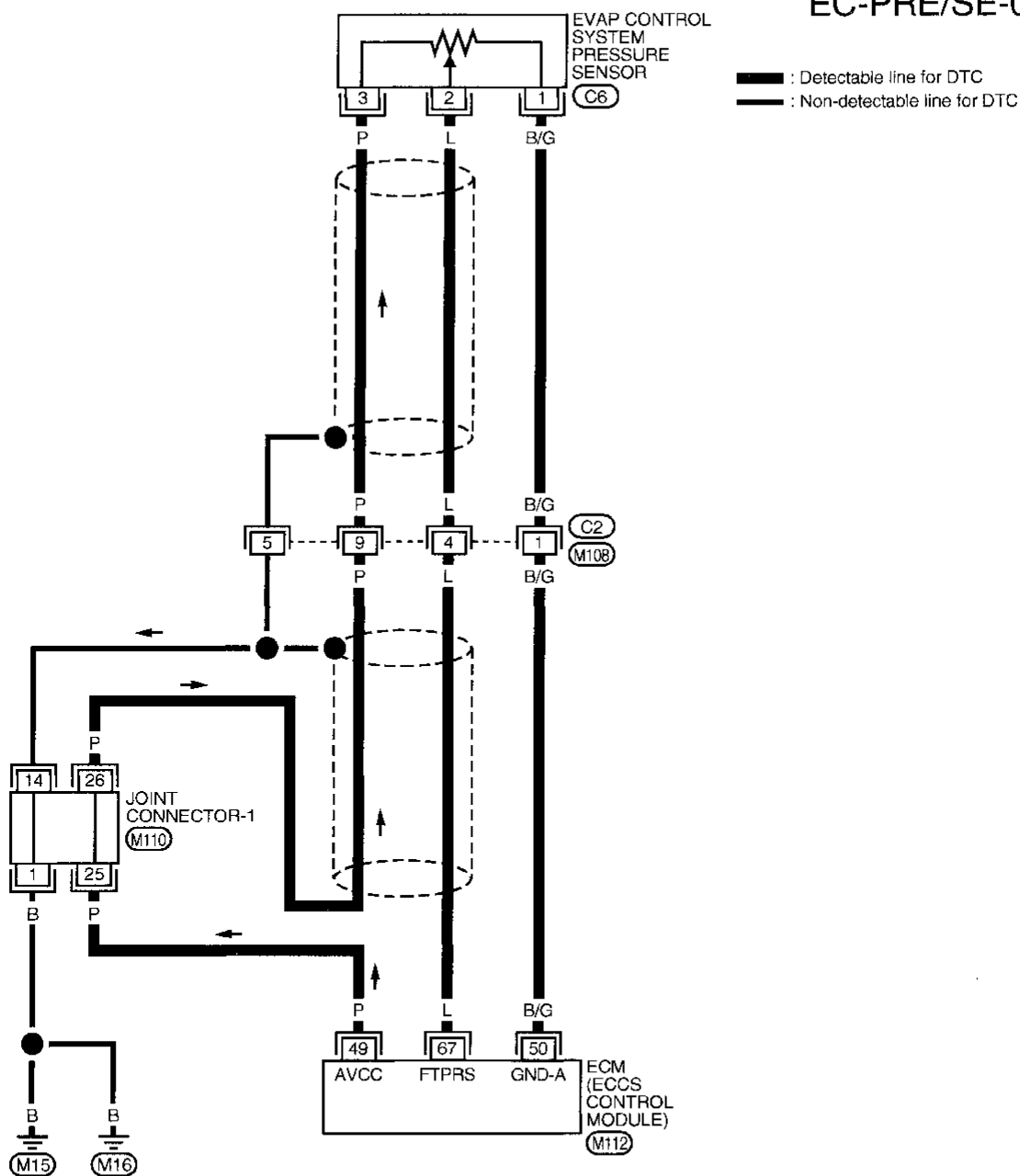


A sample of CONSULT display for DTC is shown at left. DTC or 1st trip DTC of a malfunction is displayed in SELF-DIAGNOSTIC RESULTS mode of CONSULT. Time data indicates how many times the vehicle was driven after the last detection of a DTC. If the DTC is being detected currently, the time data will be "0".

# TROUBLE DIAGNOSIS FOR DTC P0450

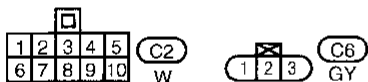
## Evaporative Emission (EVAP) Control System Pressure Sensor (Cont'd)

EC-PRE/SE-01

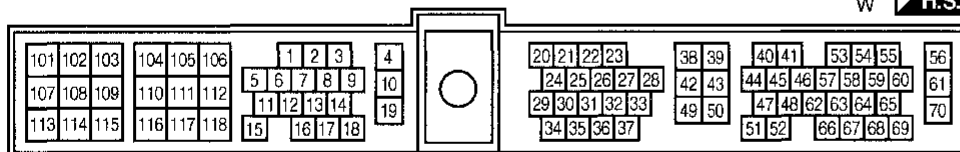


Refer to last page (Foldout page).

(M110)

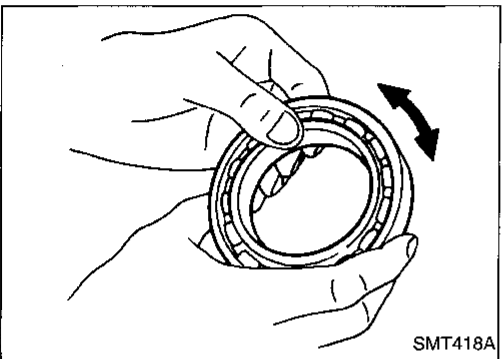
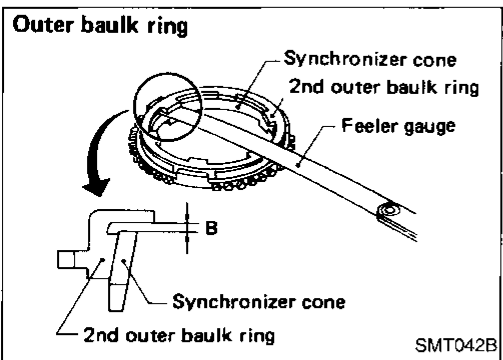
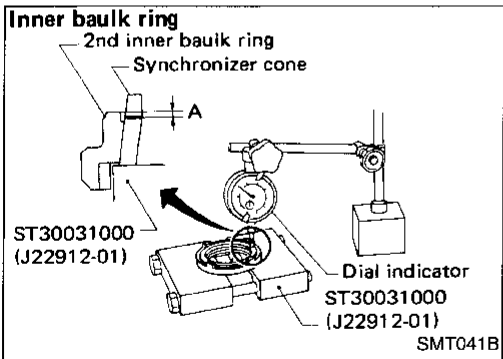
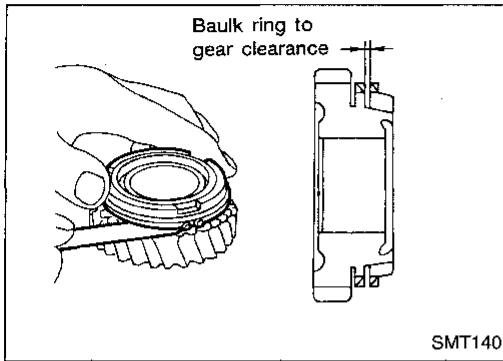


(M112) W H.S.



## INSPECTION

### Gear Components (Cont'd)



- Measure baulk ring wear.
  - a. Measure clearance between baulk ring and gear.

**Clearance between baulk ring and gear:**  
**Refer to SDS, MT-28.**
- If the clearance is less than the wear limit, replace baulk ring.

- Measure 2nd baulk ring wear—4WD model.
  - a. Place baulk rings in position on synchronizer cone.
  - b. While holding baulk rings against synchronizer cone as far as possible, measure dimensions "A" and "B".

**Standard:**  
**Inner "A": 0.7 - 0.9 mm (0.028 - 0.035 in)**  
**Outer "B": 0.6 - 1.1 mm (0.024 - 0.043 in)**  
**Wear limit:**  
**0.2 mm (0.008 in)**
  - c. If dimension "A" or "B" is less than the wear limit, replace baulk ring.

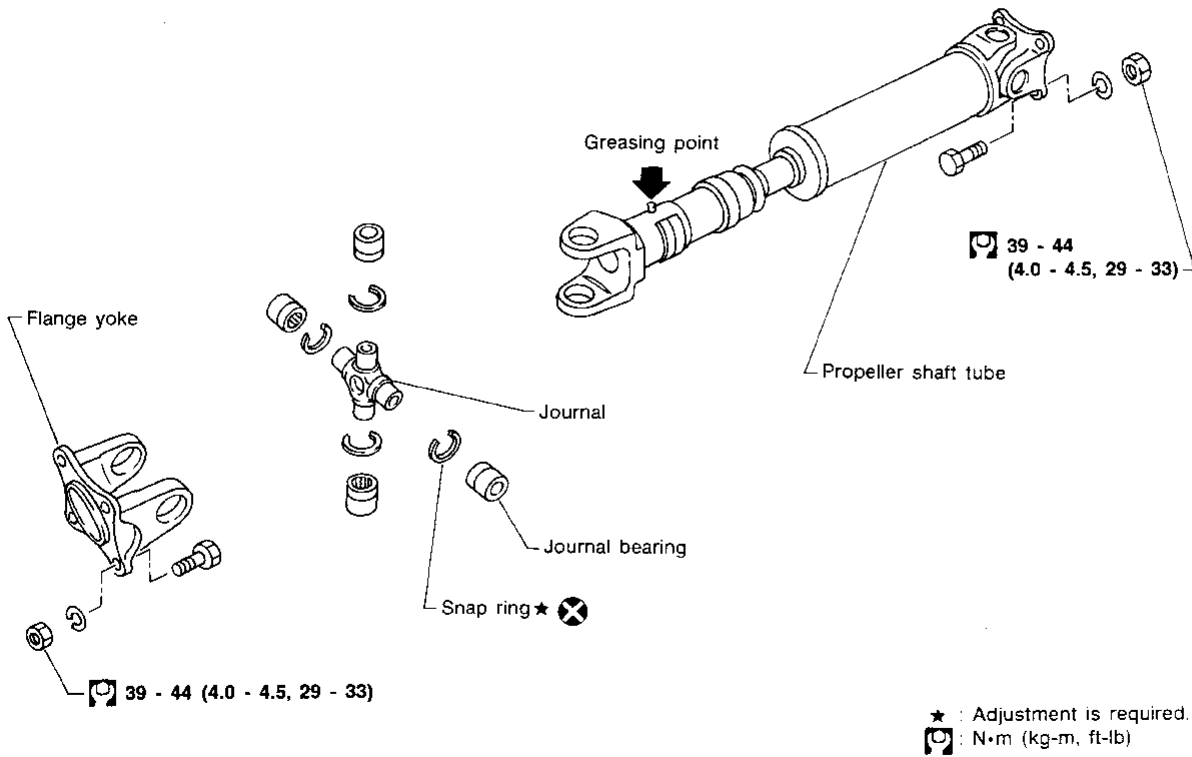
### BEARINGS

- Make sure all bearings roll freely and are free from noise, cracks, pitting or wear.

# PROPELLER SHAFT

## Front propeller shaft (Model 2F71H)

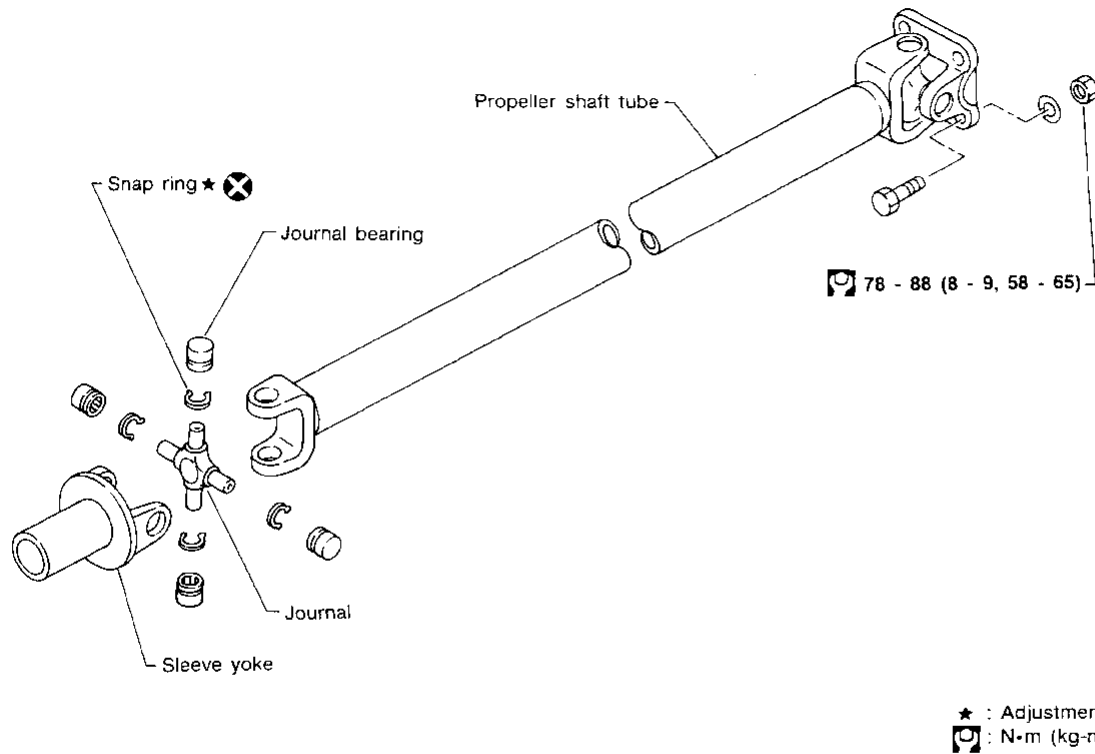
SEC. 370



SPD724-A

## Rear propeller shaft (Model 2S80B)

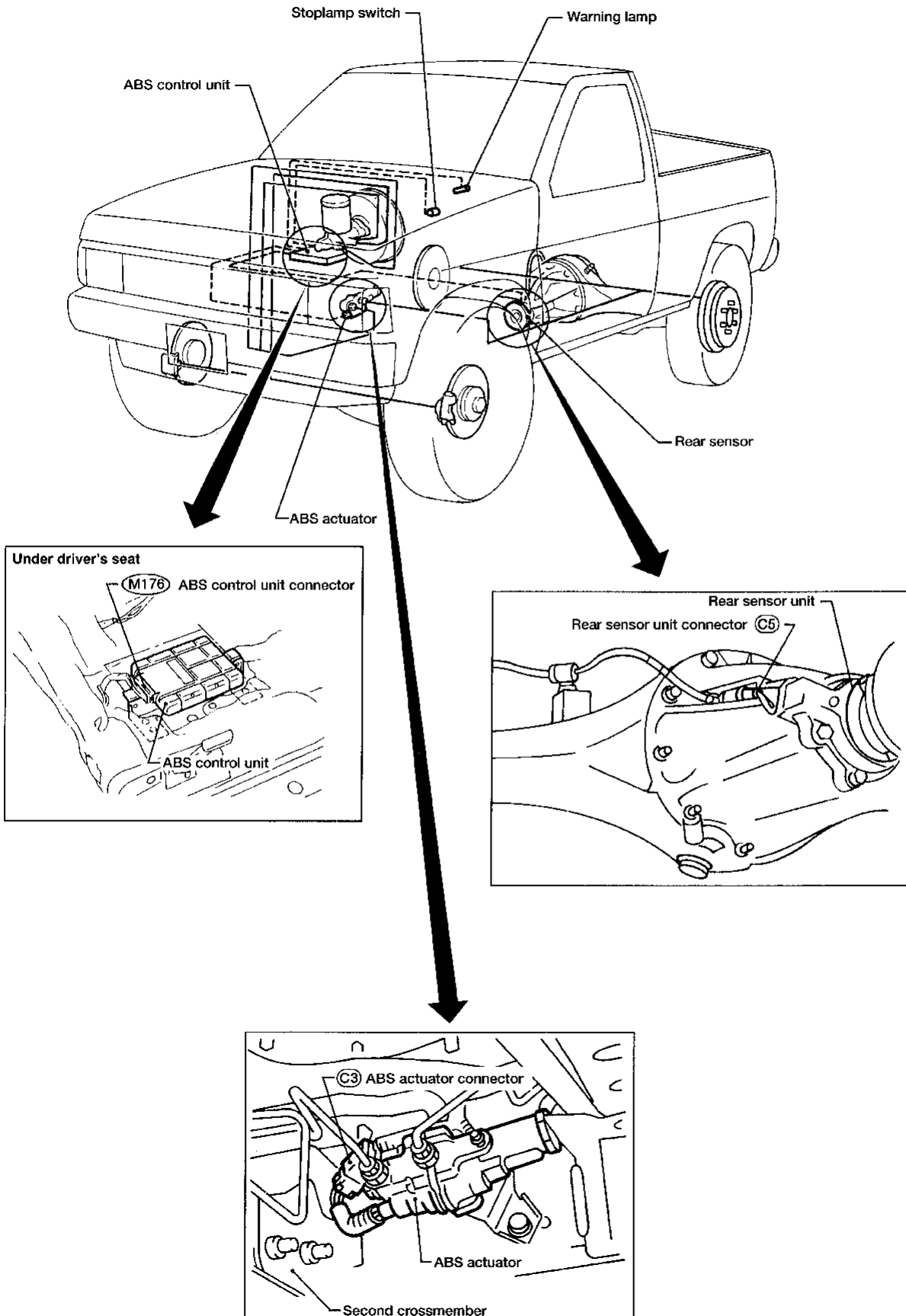
SEC. 370



SPD250AA

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

## Component Parts and Harness Connector Location



GI

MA

EM

LC

EC

FE

CL

MT

AT

TF

PD

FA

RA

**BR**

ST

RS

BT

HA

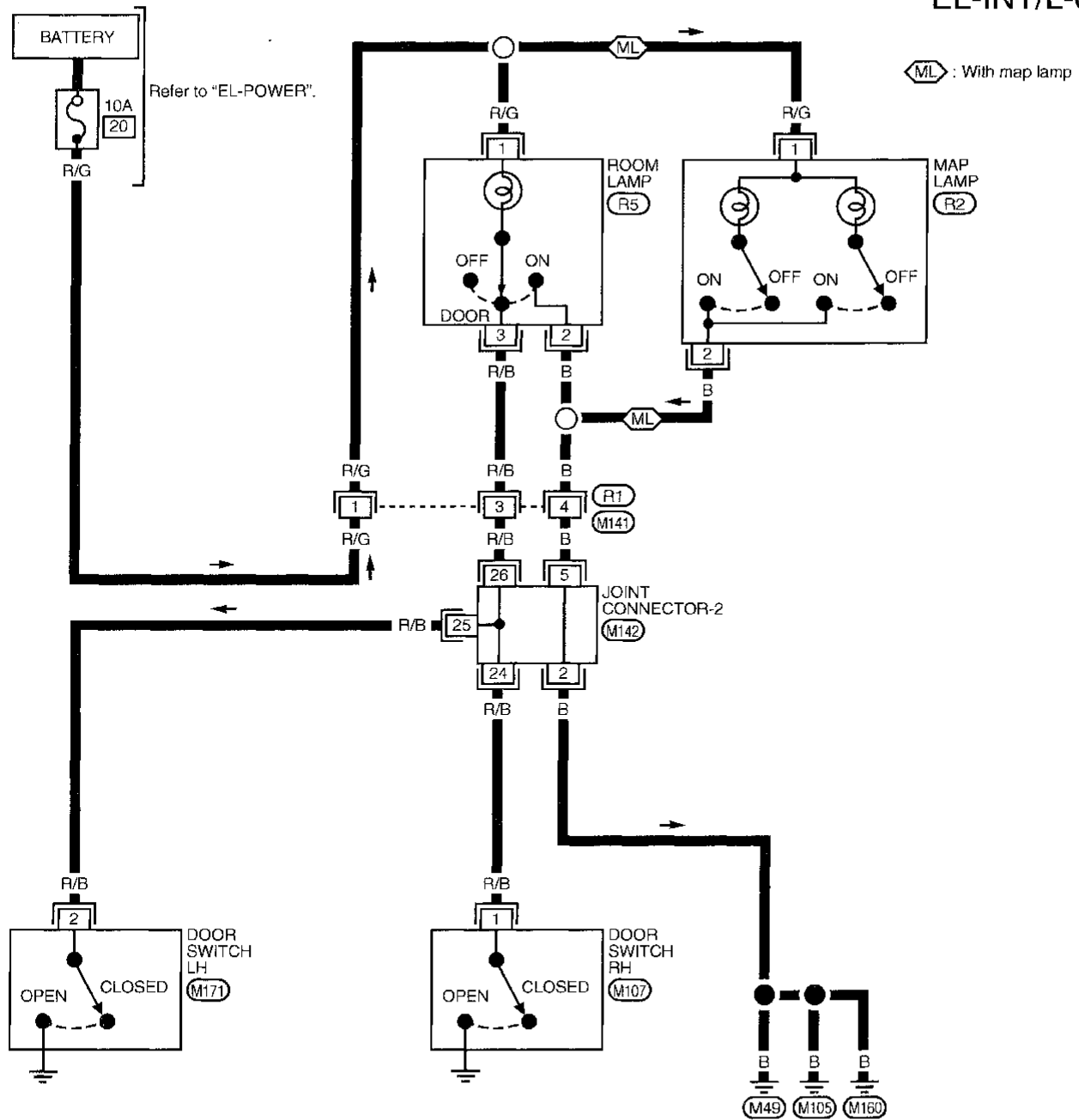
EL

IDX

# INTERIOR LAMP

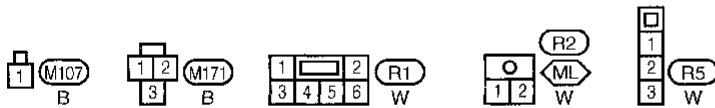
## Interior and Map Lamps/ Wiring Diagram -INT/L-

EL-INT/L-01



Refer to last page (Foldout page).

M142



GI  
MA  
EM  
LC  
EC  
FE  
CL  
MT  
AT  
TF  
PD  
FA  
RA  
BR  
ST  
RS

BT

HA

**EL**

IDX