



**UNIVERSITI KUALA LUMPUR**  
**Malaysia France Institute**

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**FINAL EXAMINATION**  
**JANUARY 2011 SESSION**

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**SUBJECT CODE** : FVD 30302  
**SUBJECT TITLE** : COMFORT SAFETY AND INFORMATION SYSTEM  
**LEVEL** : DIPLOMA  
**TIME / DURATION** : 12.30pm - 2.30pm  
( 2 HOURS )  
**DATE** : 12 MAY 2011

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**INSTRUCTIONS TO CANDIDATES**

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1. Please read the instructions given in the question paper CAREFULLY.
2. This question paper is printed on ONE side of the paper.
3. Please write your answers on the answer booklet provided.
4. Answer should be written in blue or black ink except for sketching, graphic and illustration.
5. This question paper consists of TWO (2) sections. Section A and B. Answer all questions in Section A. For Section B, answer TWO (2) questions only.
6. Answer all questions in English.

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THERE ARE 10 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

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**SECTION A (Total: 40 marks)**

**INSTRUCTION: Answer ALL questions.**

**Question 1**

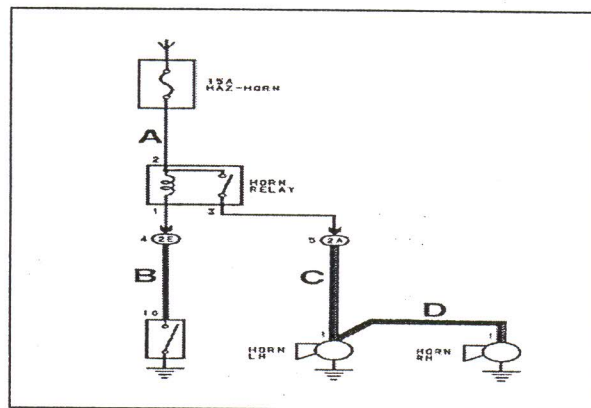
Draw the symbol and explain the function of each component below:-

- i) electrical DC motor, (4 marks)
- ii) power window sub switch, (4 marks)
- ii) normally open relay (4 marks)

**Question 2**

Referring to the circuit diagram **figure 1**:

- i) State the most likely cause all horns in the system to be malfunctioning? (2 marks)
- ii) When the horns do not work, using a voltmeter, pin #1 of the relay indicates 12 volts, pin #3 of the relay indicates 0 volts when the horn switch is pressed (closed). Explain what is the most probable cause to this problem and **WHY**. (4 marks)
- iii) When the horn switch is pressed, the horns on the **Right Hand Side do not work**. Using a voltmeter, pin #1 of the relay indicates 0 volts; pin #3 of the relay indicates 12 volts. Locate the problem either at **A, B, C or D** and explain why this happened. (4 marks)



**Figure 1**

**Question 3**

1. What is the type of speaker used for each of the frequency stated below:

- a) 500-5000 Hz
- b) 100 -1000 Hz
- c) 10-20 KHz

(3 marks)

2. Ahmad decides to buy a BASIC audio system such as Head Unit, Speaker and amplifier unit from the accessories shop. Please explain the **THREE** criteria for each system before he buys the components for the system.

(5 marks)

3. Sketch the schematic diagram for the Basic Audio System above.

(10 marks)

**SECTION B (Total: 60 marks)**

**INSTRUCTION:** Answer TWO (2) questions only.

**Question 1**

The following case study is for a typical devices and circuit problem that technicians are often required to diagnose. Knowledge of the circuit and test procedures can help you to diagnose the circuit safely and efficiently.

**Customer Complaint**

A customer complaint that the power window on rear right side is not working but the rest are working.

**Known Information**

- Vehicle operating voltage = 14 volts
- Power window relay is OK.
- Other devices except front-left hand side power window operate properly.
- All switches at power window main switch are OK.

**Circuit Analysis**

Answer the following questions by referring to Power Window Wiring diagrams in **figure 2.1** and **figure 2.2**.

- i. What is the most likely cause for power window **front-left hand side** not functioning?  
(10 marks)
- ii. What diagnostic steps are helpful when troubleshooting this system? You may explain by using a chart diagram.  
(12 marks)
- iii. What would happen to the power window system if the power window main switch is totally damaged?  
(4 marks)
- iv. What is your observation if window lock switch button is depressed?  
(4 marks)

### POWER WINDOW Sedan and Hatchback

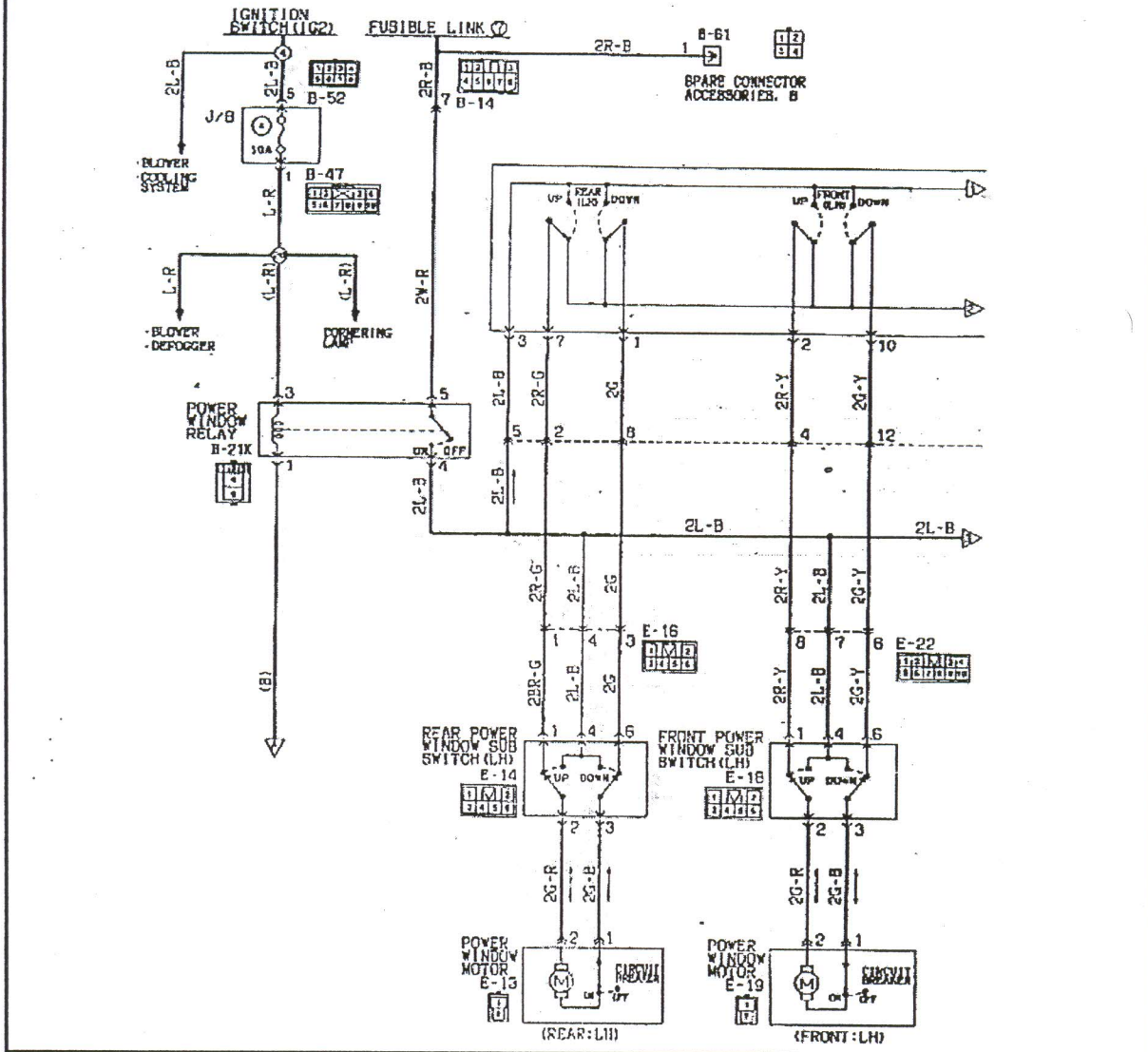


Figure 2.1

**POWER WINDOW (CONTINUED)**

**Sedan and Hatchback**

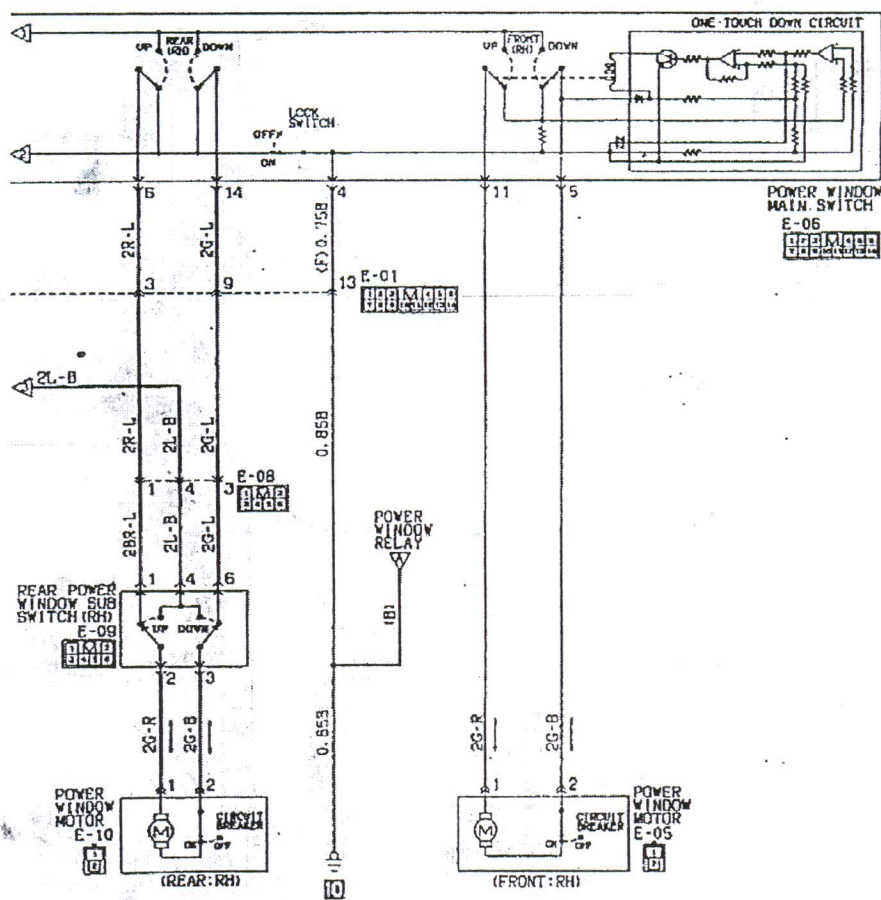


Figure 2.2

**Question 2**

The following case study is typical of the alarm system problem that technicians often need to diagnose. Knowledge of basic alarm circuit and simple test procedures will help you perform the diagnosis quickly and efficiently. Please refer to the wiring diagram 4G9 vehicle attached in **figure 3.1** and **figure 3.2**.

**Customer Complaint**

A customer towed her vehicle into the workshop with **an alarm system problem**. The customer complaint that:

- i) She cannot start the engine
- ii) The siren always triggers.

**Known Information**

- Vehicle operating voltage = 14 volt
- All circuit fuses are OK
- New alarm control unit is in good condition
- The H.F ( High Frequency ) remote control unit is OK

**Answer the following question.**

1. With the known information above, what is the most likely cause of the problem in (i) and (ii).  

(10 marks)
2. What diagnostic steps would you use to find the suspected problem above in this alarm circuit? Explain by drawing a chart diagram for problem in (i) and (ii).  

(20 marks)

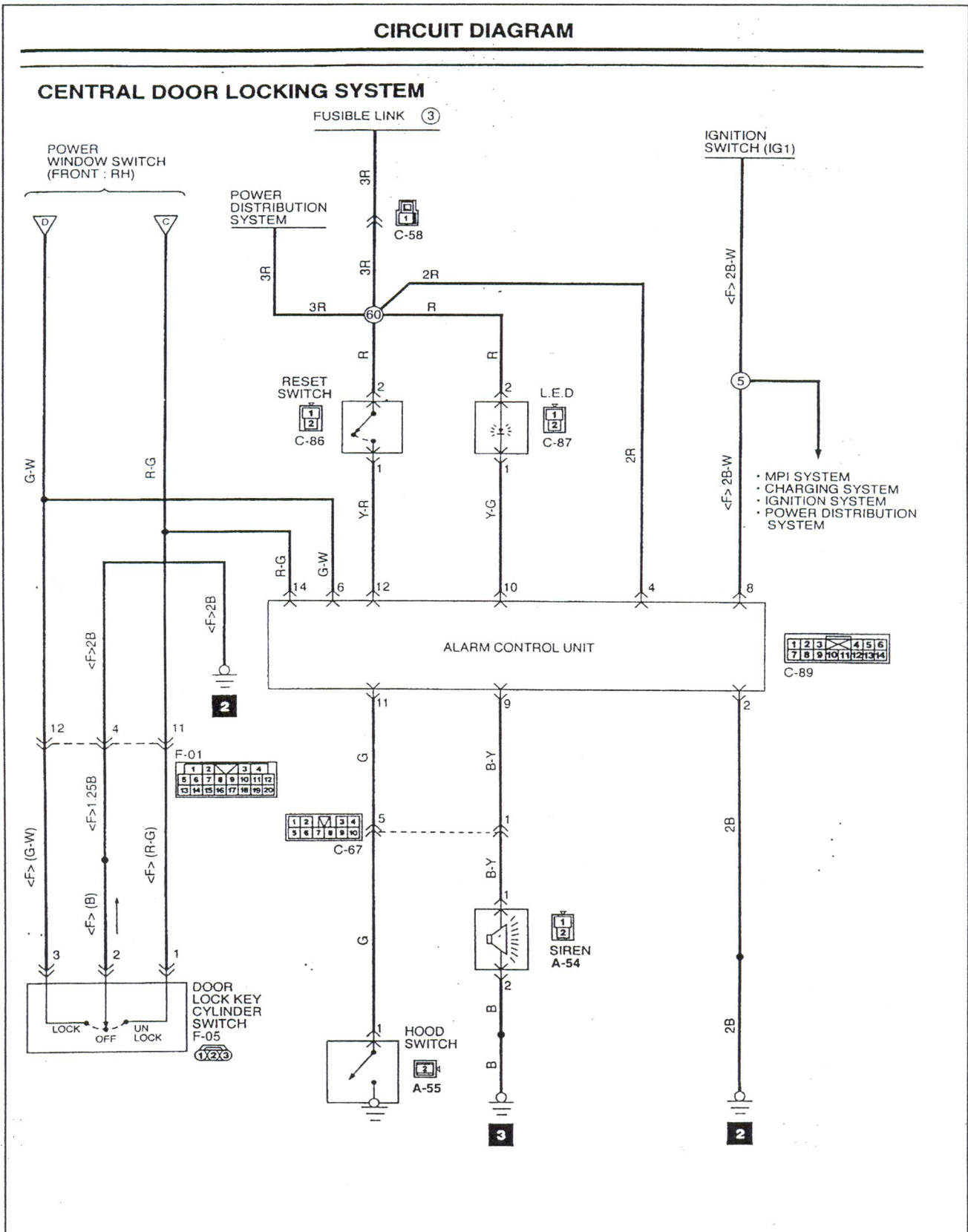


Figure 3.1



# CIRCUIT DIAGRAM

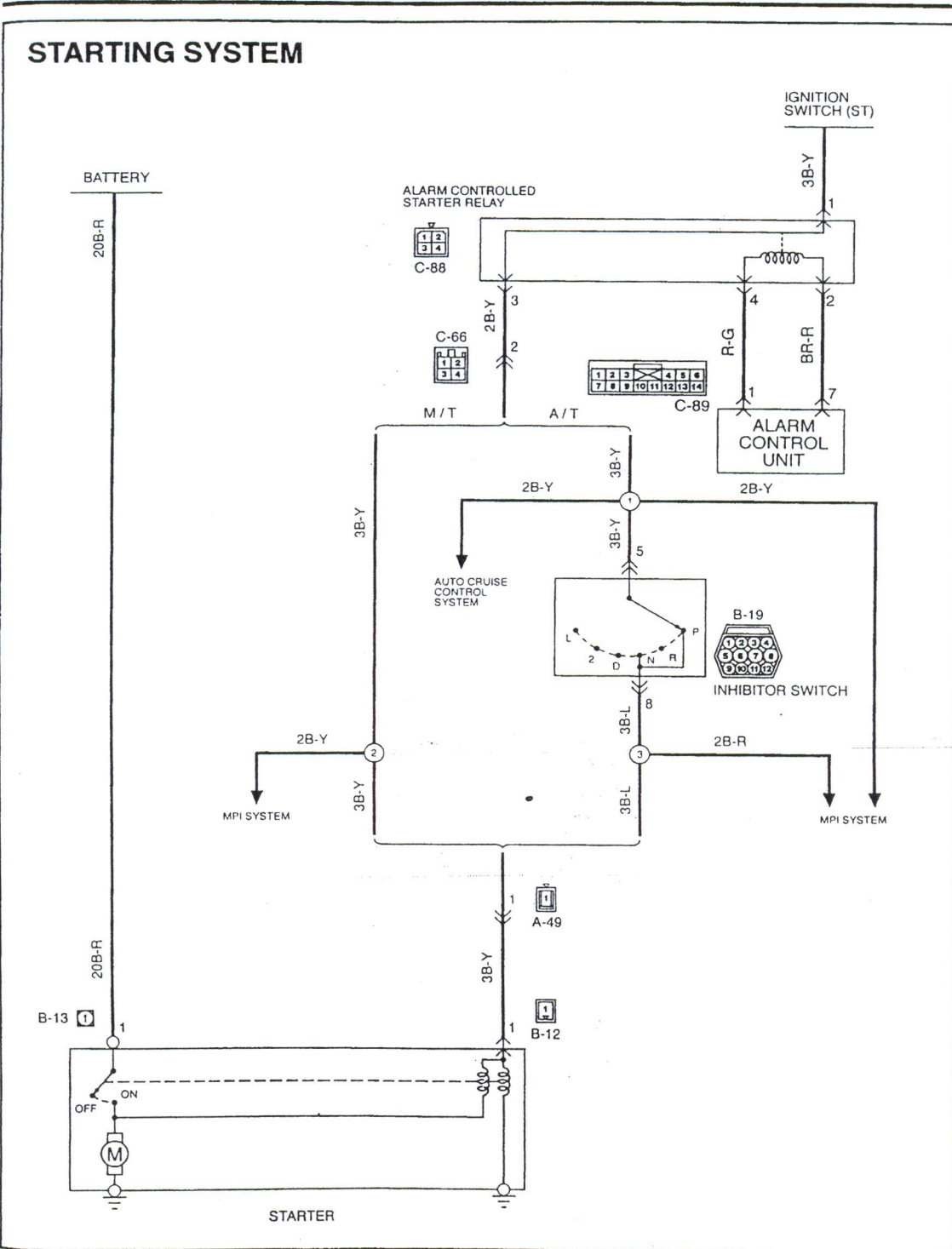


Figure 3.2

**Question 3**

This case study is typical sun roof system circuit problem that technicians often need to diagnose. (Refer to the circuit diagram of sun roof **C5 in figure 4**).

Knowledge of sun roof circuit component and wiring diagrams will help you perform the diagnosis quickly and efficiently.

**Customer Complaint**

The sun roof cannot operate on automatic mode only.

**Known Information**

- vehicle operating voltage = 14 volts
- the BM 34 unit and BSI unit are OK
- the sun roof motor is OK
- the sun roof switch is OK
- all fuses are OK
- signal from high frequency remote control to BSI is OK

**Answer the following questions on a answer paper given.**

- a. With the above known information, what is the most likely cause for the inoperative sun roof system above?  
(8 marks)
- b. What would happen to the system if **9022C** wire at BSI is disconnected? Why?  
(4 marks)
- c. What would happen to the system if **MF4** at BM 34 is disconnected? Why?  
(8 marks)
- d. What are the diagnostic steps to find the suspected problem in this sun roof circuit?  
Draw a chart diagram.  
(10 marks)

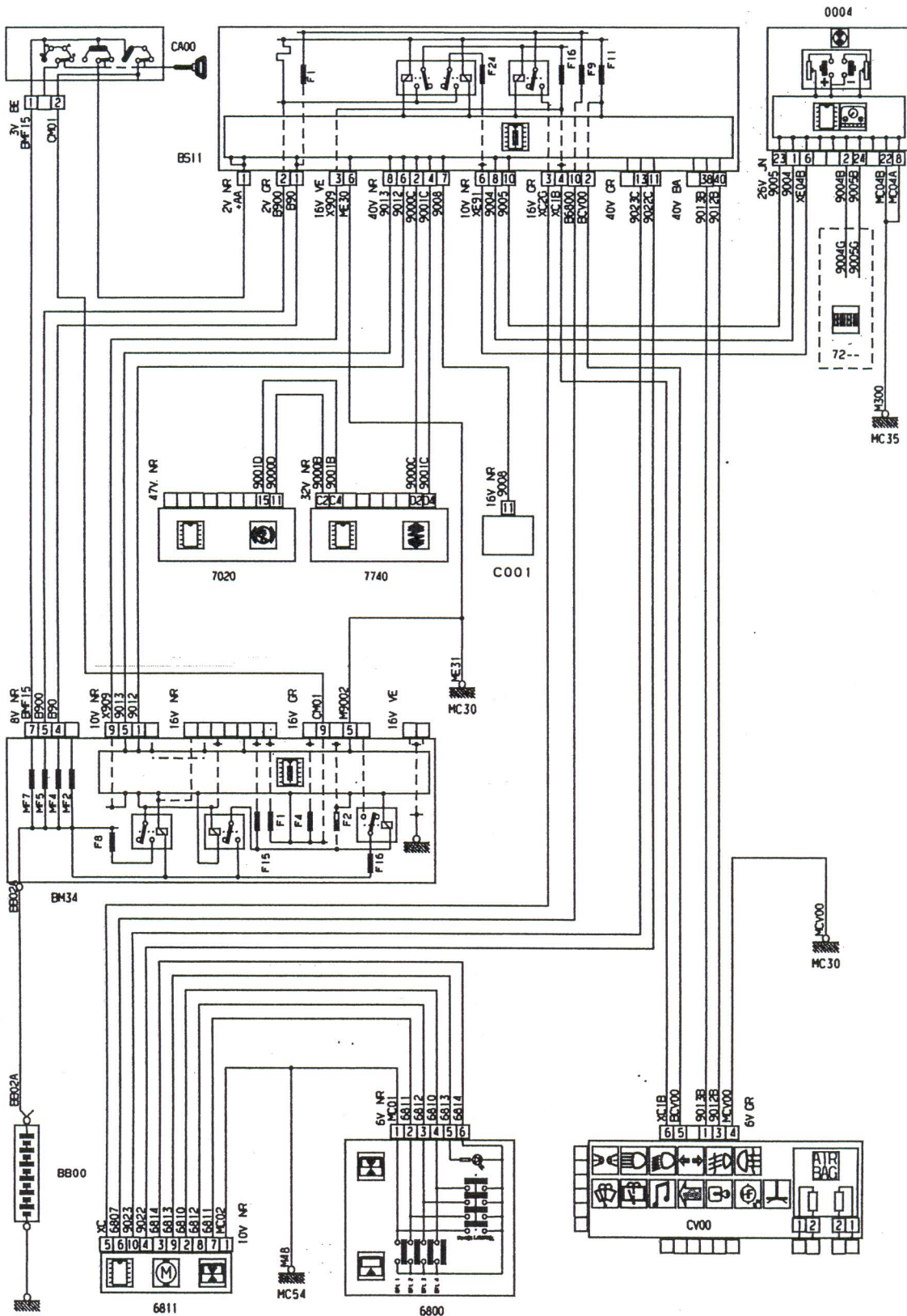


Figure 4

END OF QUESTION