

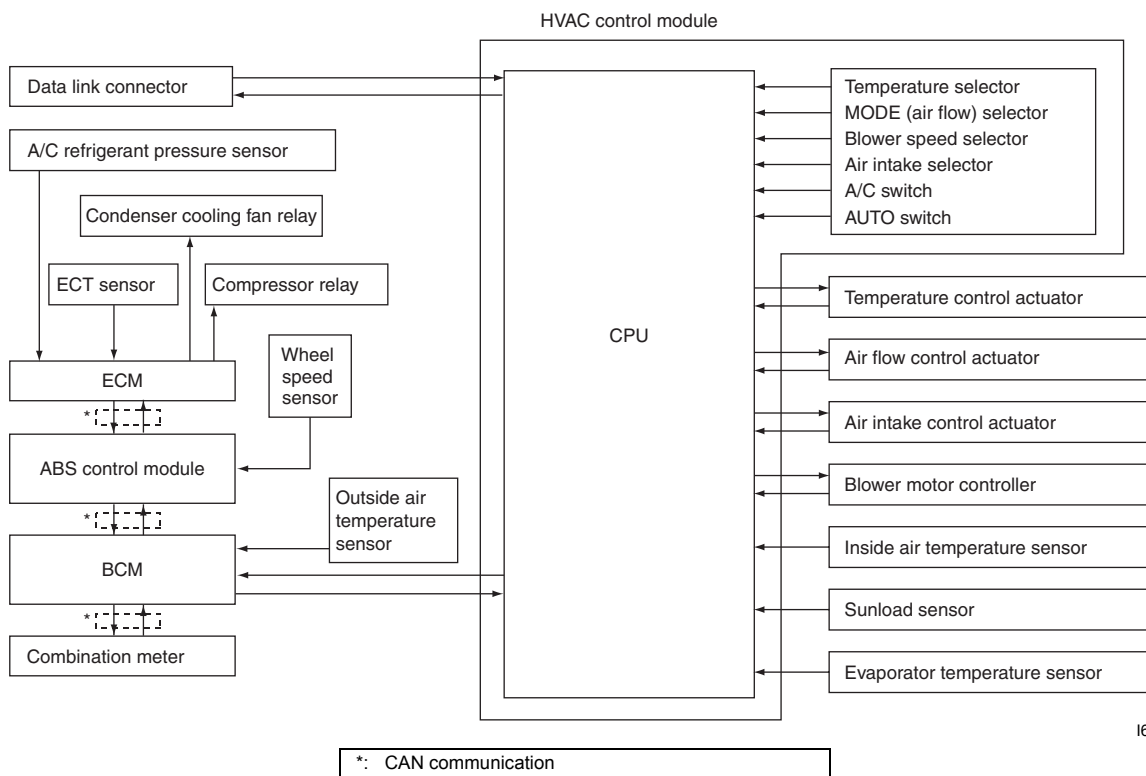
## General Description

### Auto A/C System Description

S6RW0C7221001

The automatic type air conditioning system (auto A/C) is provided with the function to automatically control the inside air temperature, fan speed, air flow outlet direction and air intake position by HVAC control module in addition to functions of the manual type air conditioning system (manual A/C). Once the inside air temperature is set using the temperature selector, HVAC control module automatically controls the inside air temperature at the constant level at all times based on the inside air temperature, outside air temperature, amount of sunlight and engine coolant temperature detected respectively by the inside air temperature sensor, outside air temperature sensor, sunload sensor and ECT sensor. For the electronic control system components location, refer to "Electronic Control System Components Location". For the A/C system components location, refer to "A/C System Major Components Location".

### Auto A/C Electronic Control Input / Output Table



**HVAC Control Description**

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**Temperature Control**

HVAC control module calculates the target temperature control door position based on signals from the temperature selector, inside air temperature sensor, outside air temperature sensor and sunload sensor and controls the temperature control actuator so that the current position of the temperature control door matches its target position.

**Fan Speed Control**

HVAC control module calculates the target blower fan speed based on signals from the temperature selector, inside air temperature sensor, outside air temperature sensor, ECT sensor and sunload sensor, compares it with the current blower fan speed inputted from the blower motor controller to control the current blower fan speed to the target level.

**Air Flow Outlet Control**

HVAC control module calculates the target temperature control door position based on signals from the temperature selector, inside air temperature sensor, outside air temperature sensor, ECT sensor and sunload sensor. Using thus obtained target temperature control door position, it further calculates the target air flow control door position and controls the air flow control actuator so that the current air flow control door position becomes the target position.

**Air Intake Position Control**

HVAC control module determines the position of the air intake control door based on signals from the temperature selector, inside air temperature sensor, outside air temperature sensor and sunload sensor and selects any of the following positions by controlling the position of the air intake control door.

- FRESH position (FRE)
- RECIRCULATION position (REC)
- MIX position (MIX)

**A/C Compressor Relay Control**

HVAC control module outputs A/C switch ON signal to ECM via BCM when the vehicle state satisfy conditions described below.

- A/C switch is ON
- Evaporator temperature is higher than specified value
- Evaporator temperature sensor malfunction is not detected

Communication of ECM and BCM is established by CAN (Controller Area Network). (For more detail of CAN communication, refer to "CAN Communication System Description in Section 1A").

ECM turns ON the A/C compressor relay when the vehicle state satisfy conditions described below.

- A/C switch ON signal is inputted
- A/C refrigerant pressure is within specified range
- Engine speed is within specified range
- Engine coolant temperature is lower than specified value
- Throttle opening is lower than specified value
- Vehicle is not in either state of starting or quick acceleration
- ECT sensor malfunction is not detected
- A/C refrigerant pressure sensor malfunction is not detected

**Condenser Cooling Fan Relay Control**

ECM turn ON the condenser cooling fan relay at the same time when ECM turn ON the A/C compressor relay.

**Sub-Cool A/C System Description**

S6RW0C7221003

Refer to "Sub-Cool A/C System Description".

## On-Board Diagnostic System Description

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### NOTE

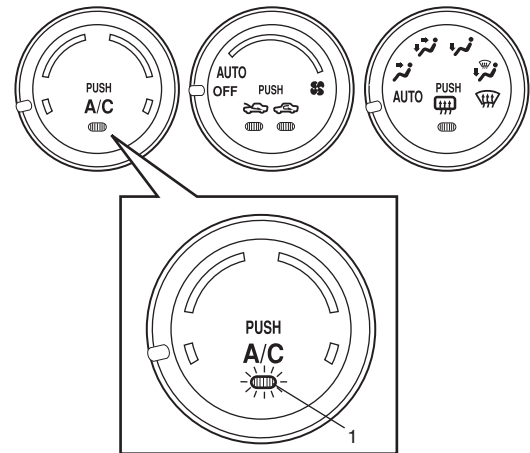
The diagnostic information as diagnostic trouble code (DTC) can be known by using SUZUKI scan tool. For further details, refer to “DTC Check”.

HVAC control module detects malfunctions, which may occur in the following area.

- Inside air temperature sensor
- Evaporator temperature sensor
- Sunload sensor
- Temperature control actuator
- Air flow control actuator
- Temperature selector of HVAC control module
- Air flow selector of HVAC control module
- Blower speed selector of HVAC control module
- Back-up power supply circuit of HVAC control module
- Serial communication line between BCM and HVAC control module

- Received data from BCM as follows
  - Outside air temperature sensor signal
  - ECT sensor signal
  - A/C refrigerant pressure sensor signal
  - VSS signal
  - Engine type signal
  - Combination meter spec signal
  - CAN communication circuit failure signal

When HVAC control module detects malfunction, the “A/C” indicator light (1) flashes to warn and the diagnostic trouble code (DTC) is stored in the memory of the module. When diagnosing trouble, the DTC can be checked according to “DTC Check”.



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## Schematic and Routing Diagram

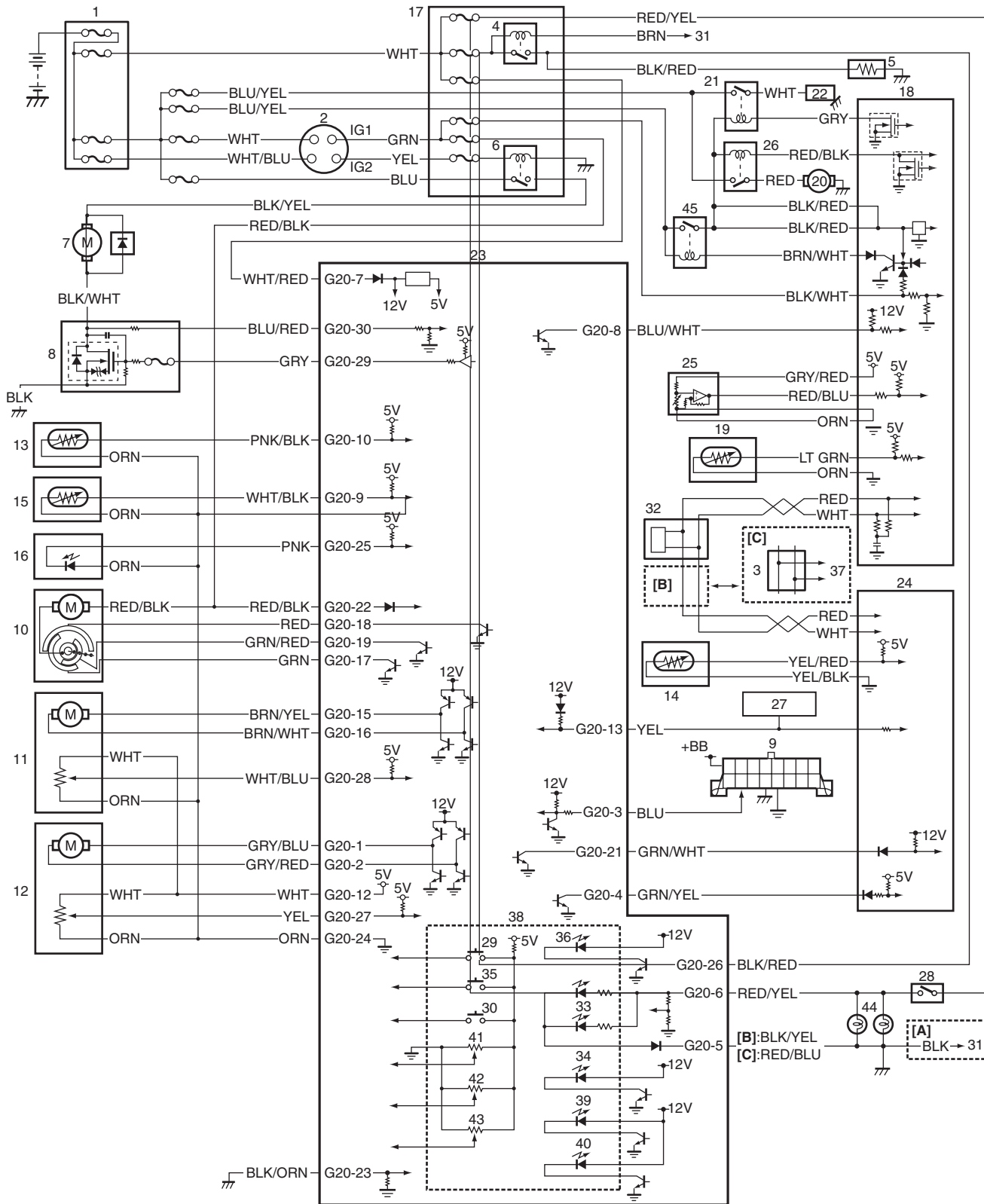
### A/C System Air Flow Diagram

Refer to “A/C System Air Flow Diagram”.

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A/C System Wiring Diagram

S6RW0C7222002



14	13	12	11	10	9	8	7	6	5	4	3	2	1		
30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15

[A]: Illumination control model	10. Air intake actuator	22. Compressor	34. "A/C" indicator light
[B]: Junction block with BCM	11. Air flow control actuator	23. HVAC control module	35. Rear defogger switch
[C]: Junction block without BCM	12. Temperature control actuator	24. BCM	36. Rear defogger indicator
1. Main fuse box	13. Inside air temperature sensor	25. A/C refrigerant pressure sensor	37. To other control module
2. Ignition switch	14. Outside air temperature sensor	26. Condenser cooling fan relay	38. Indicator light, switch, selector
3. CAN junction connector	15. Evaporator temperature sensor	27. Information display	39. "FRE" indicator light
4. Rear defogger relay	16. Sunload sensor	28. Lighting switch	40. "REC" indicator light
5. Rear defogger	17. Junction block assembly	29. A/C switch	41. Temperature selector
6. Blower motor relay	18. ECM	30. Air intake selector	42. Blower speed selector
7. Blower motor	19. ECT sensor	31. To BCM	43. MODE (air flow) selector
8. Blower motor controller	20. Condenser cooling fan motor	32. ABS control module	44. Tail light
9. DLC	21. Compressor relay	33. Illumination light	45. Main relay

## Component Location

### A/C System Major Components Location

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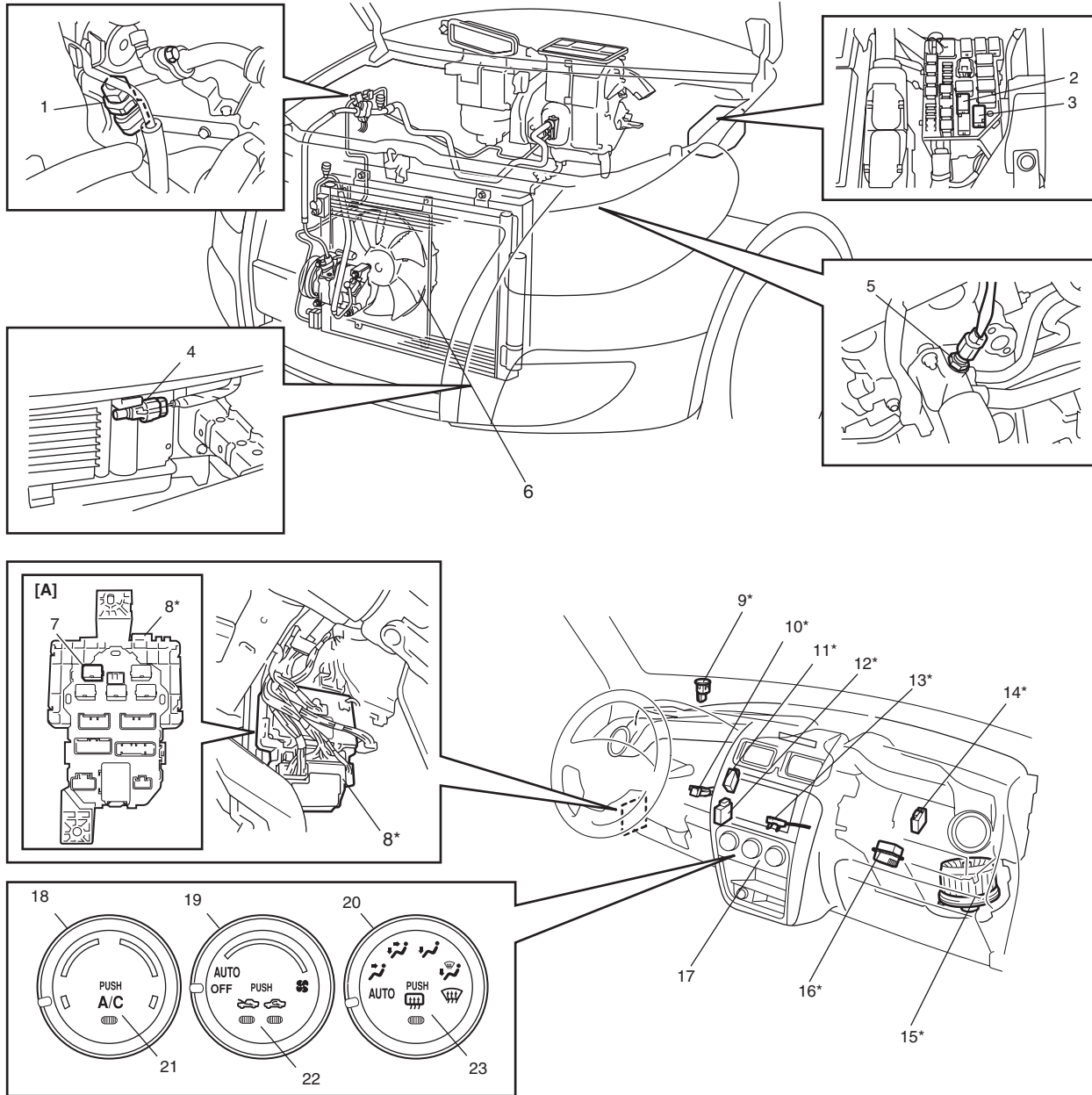
Refer to "A/C System Major Components Location".

### Electronic Control System Components Location

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**NOTE**

The figure shows left-hand steering vehicle. For right-hand steering vehicle, parts with (\*) are installed at the opposite side.



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[A]: Junction block assembly viewed from relay side	8. Junction block assembly	16. Blower motor controller
1. A/C refrigerant pressure sensor	9. Sunload sensor	17. HVAC control module
2. Compressor relay	10. Inside air temperature sensor	18. Temperature selector
3. Condenser cooling fan relay	11. Air flow control actuator	19. Blower speed selector
4. Outside air temperature sensor	12. Temperature control actuator	20. MODE (air flow) selector
5. ECT sensor	13. Evaporator temperature sensor	21. A/C switch
6. Condenser cooling fan	14. Air intake actuator	22. Air intake selector
7. Blower motor relay	15. Blower motor	23. Rear defogger switch