

## HEADLIGHT CLEANER SYSTEM

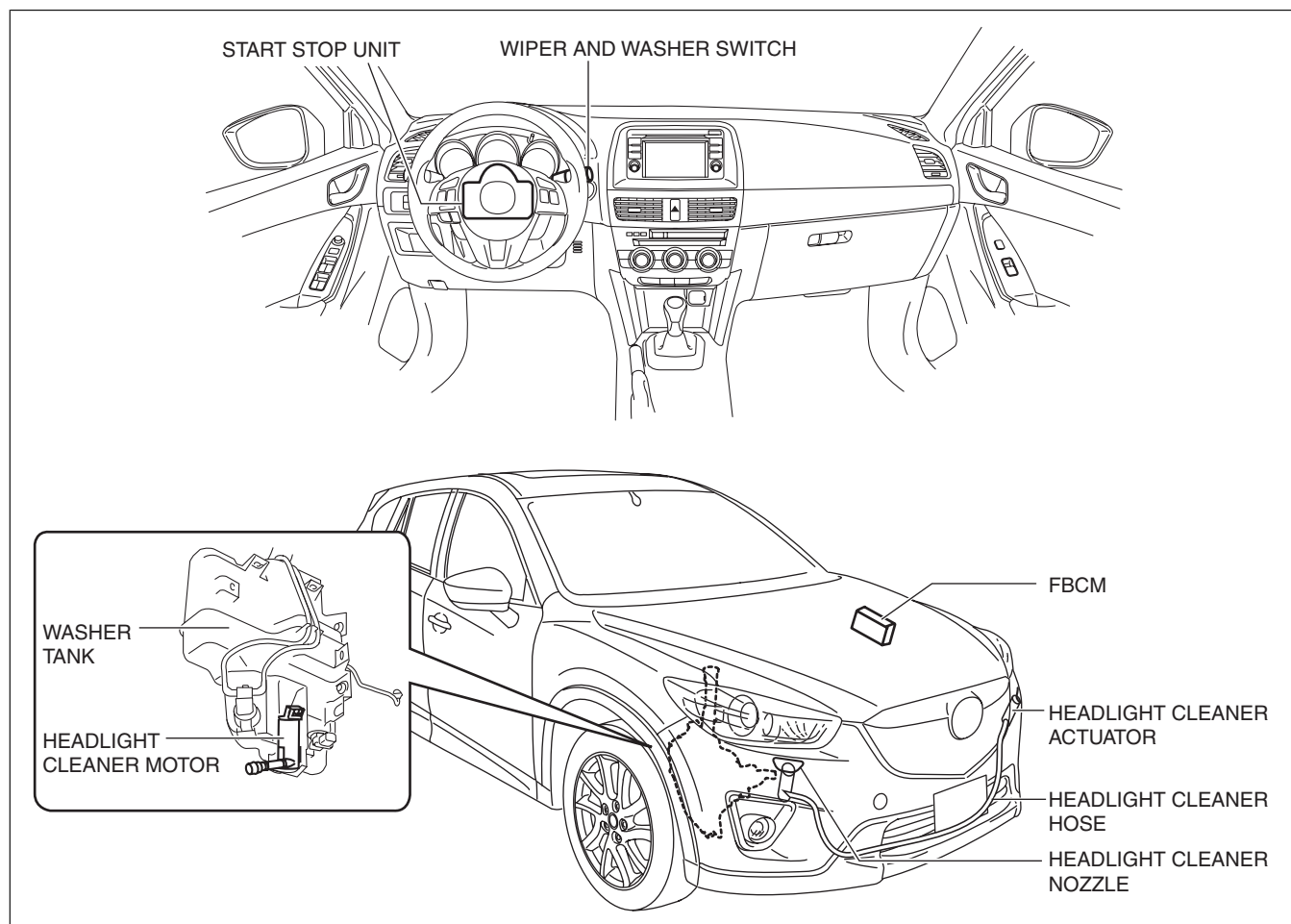
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### Outline

- The headlight cleaner system removes dirt from the headlights by spraying washer fluid from the headlight cleaner nozzles installed to the front bumper.
- A pop-up type headlight cleaner has been adopted.
- The front body control module (FBCM) performs headlight cleaner system fail-safe. (See FRONT BODY CONTROL MODULE (FBCM).)

### Structural View

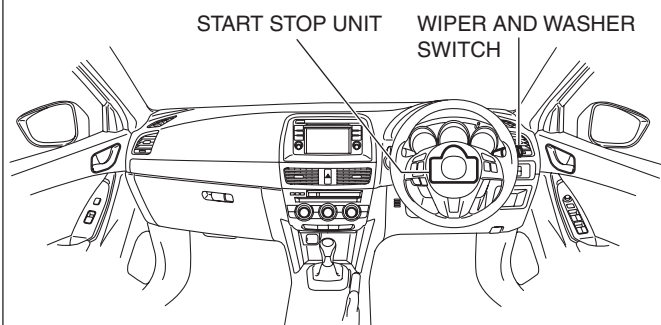
L.H.D.



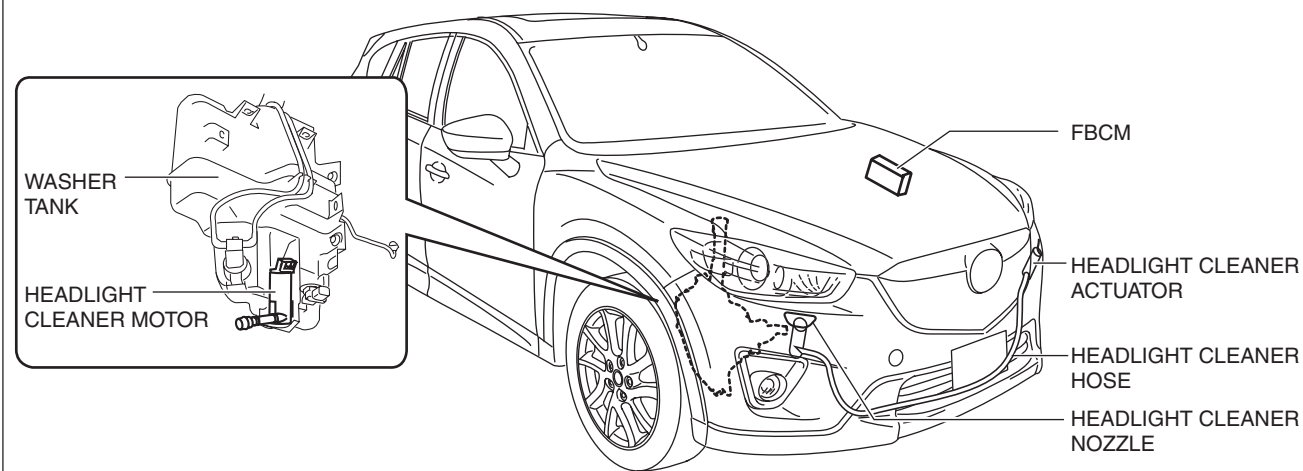
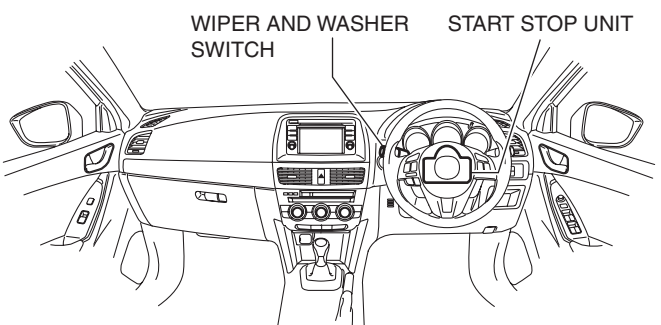
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R.H.D.

WITH WIPER AND WASHER SWITCH  
ON RIGHT SIDE



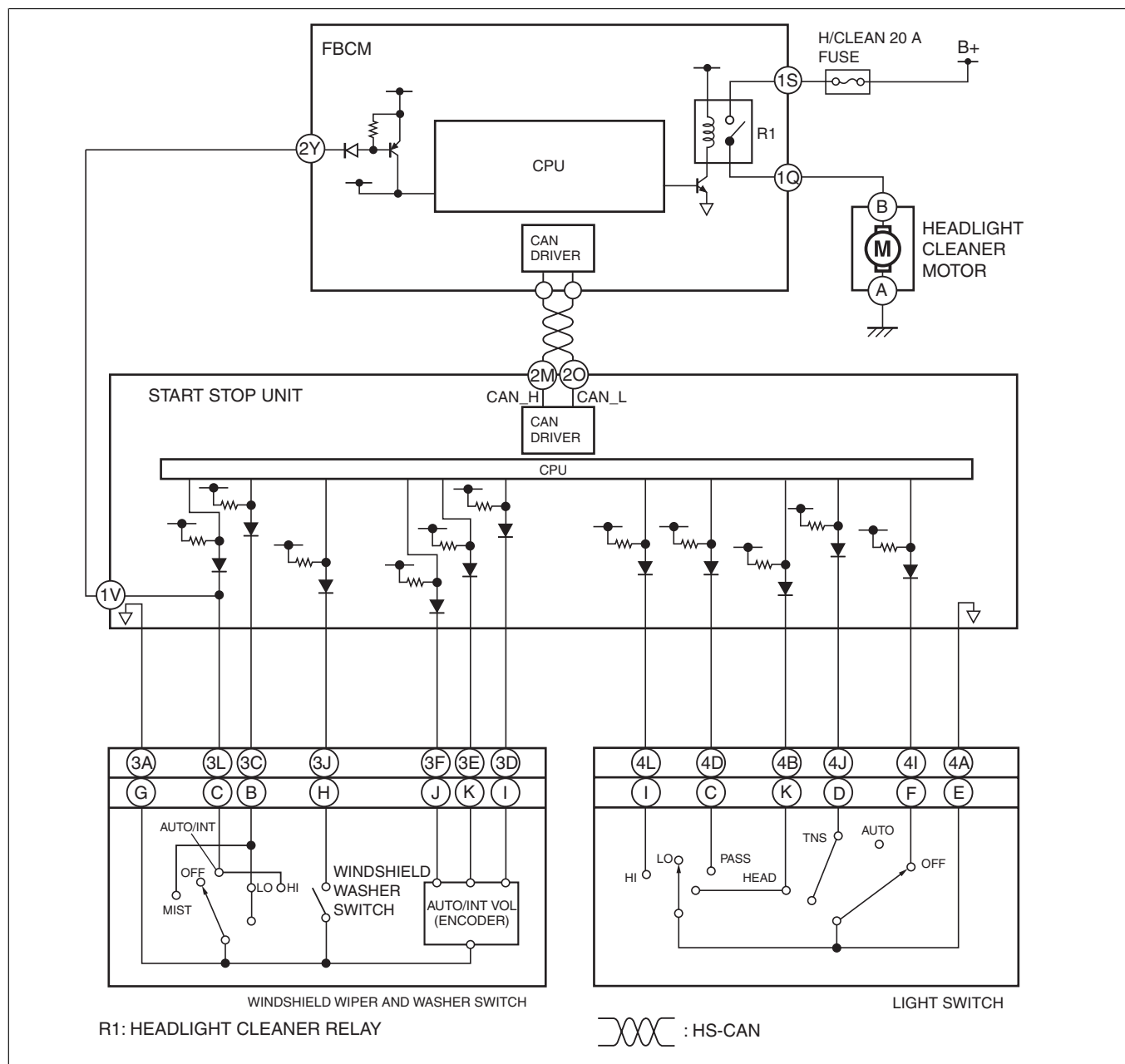
WITH WIPER AND WASHER SWITCH  
ON LEFT SIDE

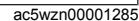


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System Wiring Diagram

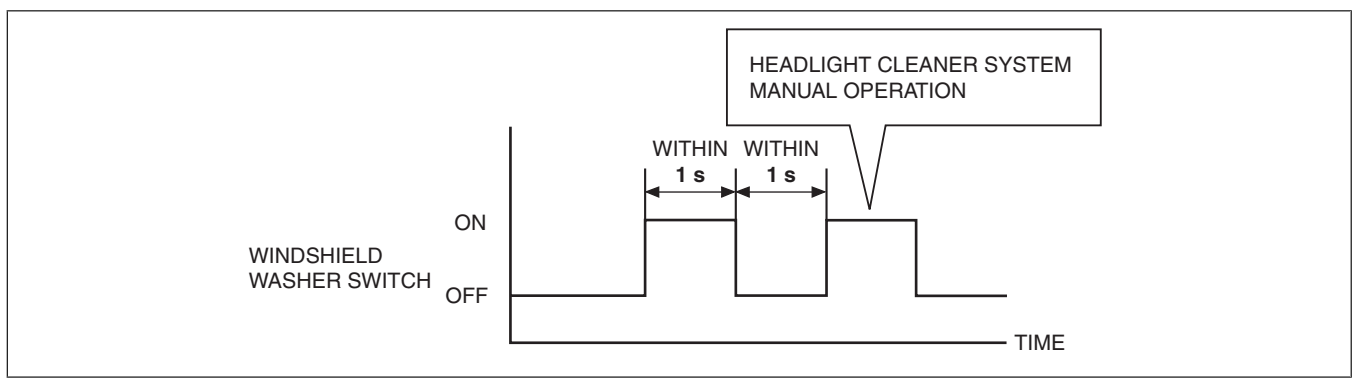
# With wiper and washer switch on right side





## Function

- The headlight cleaner motor operates when the windshield washer switch is operated with the ignition switched ON (engine off or on) and headlights turned on.
- When the headlight cleaner motor operates, the headlight cleaner actuator is operated by the hydraulic pressure of the washer fluid pumped from the headlight cleaner motor, and washer fluid is sprayed from the headlight cleaner nozzles.
  - Auto-operation Control
    - When the windshield washer switch is turned on the first time after the headlights are turned on, the headlight cleaner system operates automatically.
    - Afterwards, the headlight cleaner system operates automatically every 5th times the windshield washer switch is turned on.
  - Manual operation Control
    - The headlight cleaner system operates when the windshield washer switch is turned on twice quickly.
    - The windshield washer switch operation needs to be done within the period of time shown in the figure.



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## Operation

### Auto-operation

1. When the windshield washer switch is turned on with the ignition switched ON (engine off or on) and the headlights turned on (1), the start stop unit sends a windshield washer operation request signal to the front body control module (FBCM) as a CAN signal.(2)
2. When the front body control module (FBCM) receives the windshield washer operation request signal the first time after the headlights are turned on, it supplies the base current from the internal CPU to the transistor (3), and collector current flows from the internal power supply (4), turning the headlight cleaner relay on.(5)

### Note

- The front body control module (FBCM) monitors the headlight on/off condition by receiving CAN signals from the start stop unit.

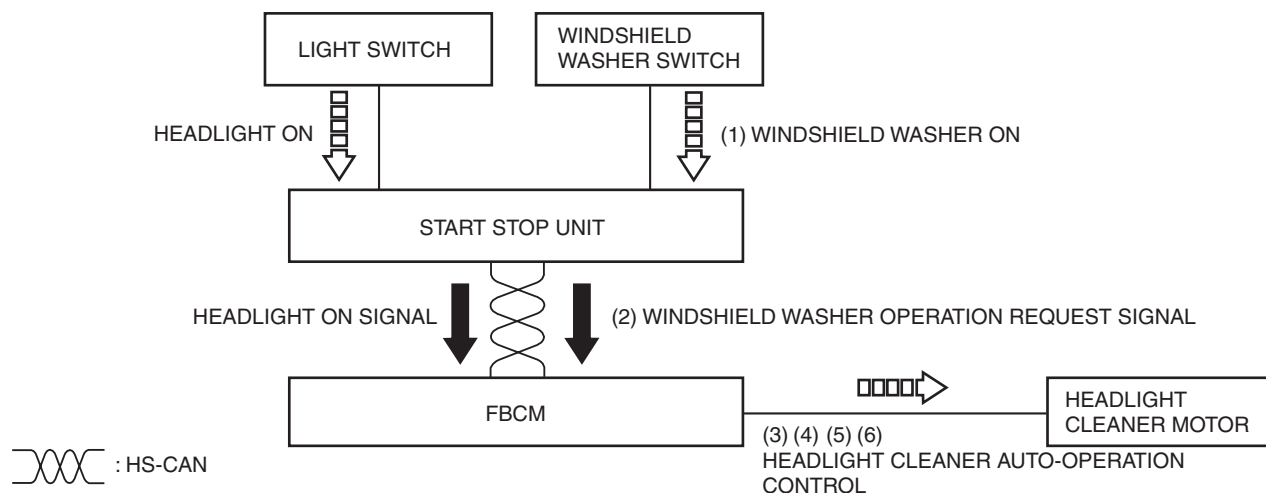
3. When the headlight cleaner relay is turned on, current flows from the power supply inside the front body control module (FBCM) to the headlight cleaner motor and the headlight cleaner motor operates, and washer fluid is sprayed from the headlight washer nozzles.(6)
4. The front body control module (FBCM) counts the number of times it receives a windshield washer operation signal from the start stop unit, and it operates the headlight cleaner each time the counted number of times reaches five.

### Note

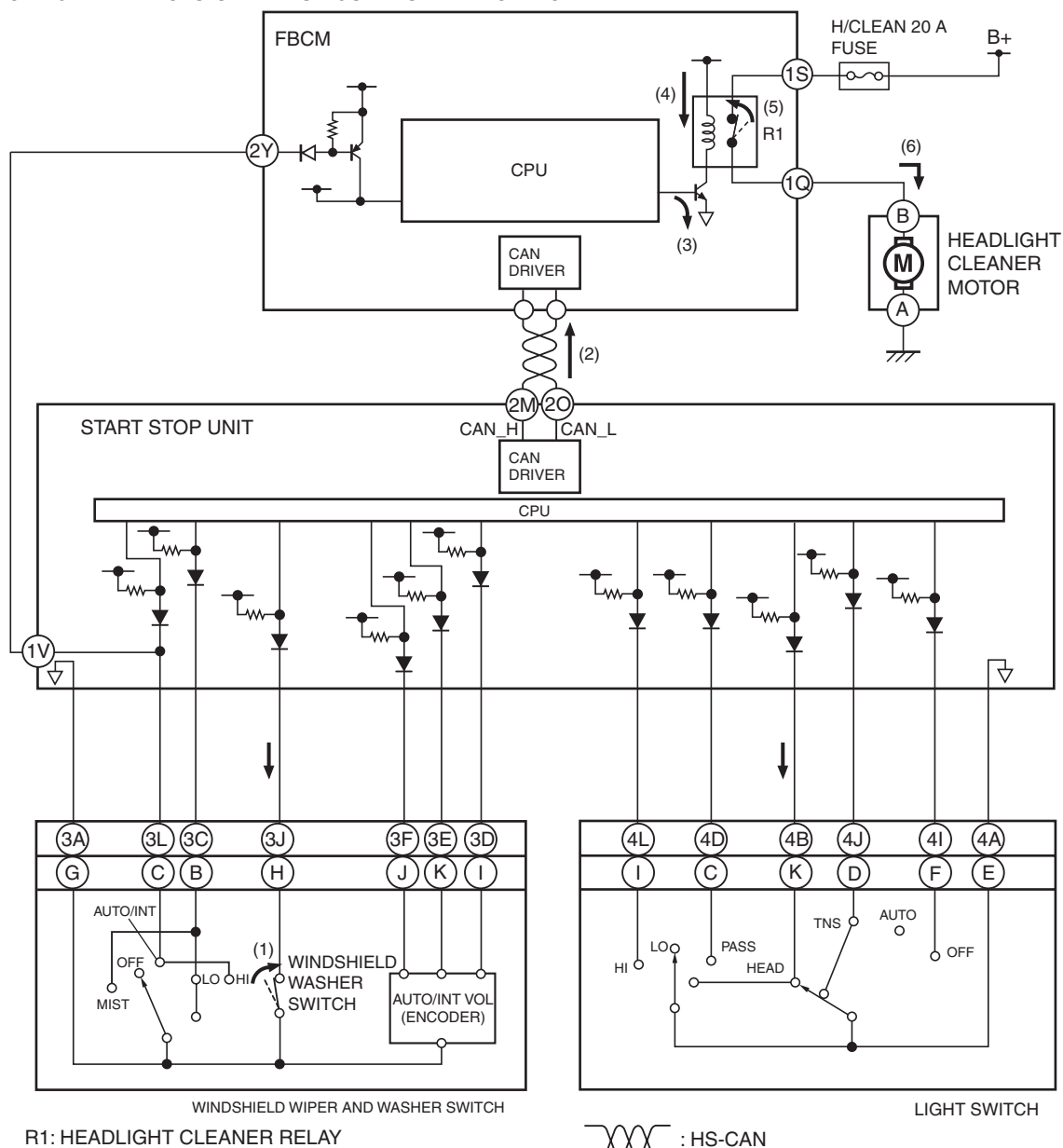
- The counted number of windshield washer operation request signals is reset to zero in the following cases:
  - When the counted number of windshield washer operation request signal reaches five.
  - When the headlights are turned off.

## With wiper and washer switch on right side

HEADLIGHT CLEANER AUTO-OPERATION CONTROL BLOCK DIAGRAM

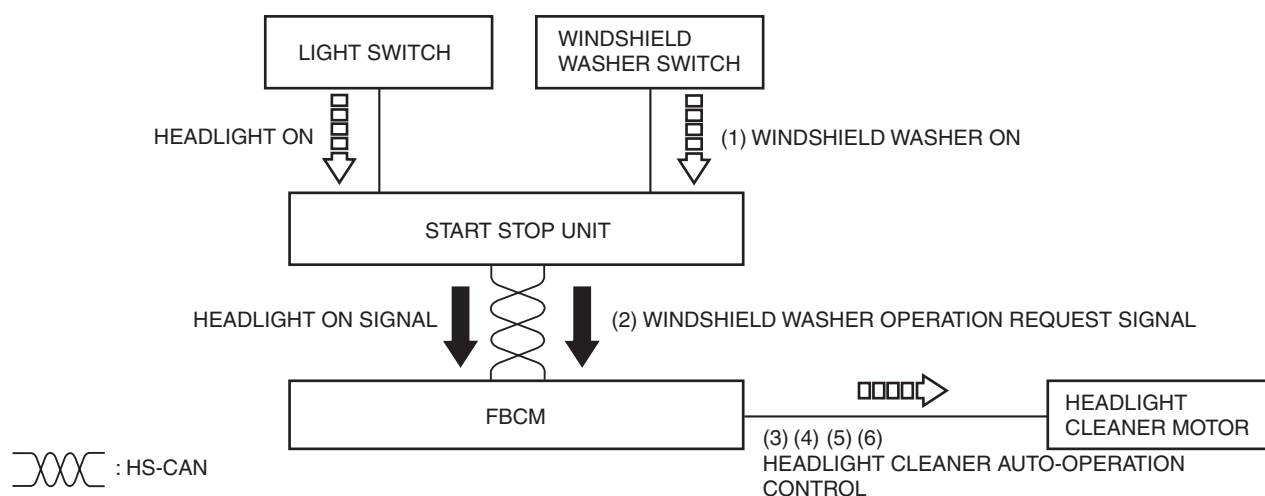


HEADLIGHT CLEANER AUTO-OPERATION CONTROL WIRING DIAGRAM

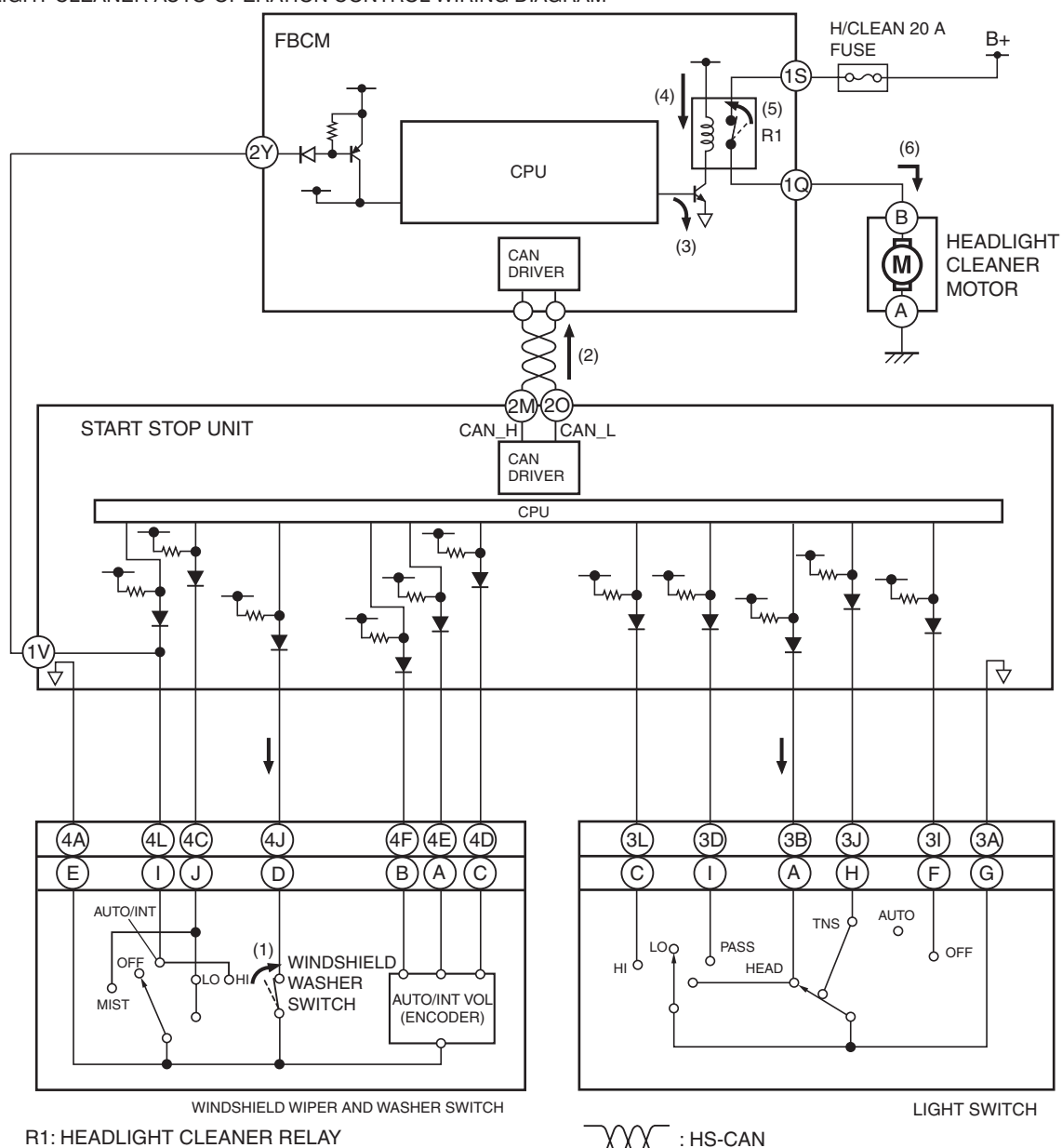


## With wiper and washer switch on left side

HEADLIGHT CLEANER AUTO-OPERATION CONTROL BLOCK DIAGRAM



HEADLIGHT CLEANER AUTO-OPERATION CONTROL WIRING DIAGRAM



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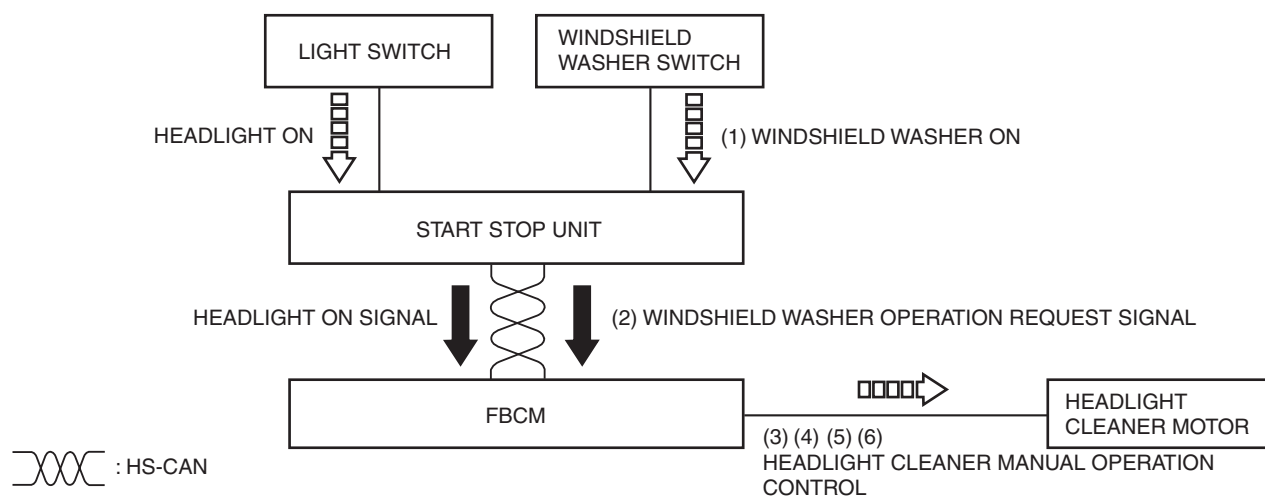
### **Manual operation**

1. When the windshield washer switch is turned on twice quickly with the ignition switched ON (engine off or on) and the headlights turned on (1), the start stop unit sends a windshield washer operation request signal to the front body control module (FBCM) as a CAN signal.(2)
2. When the front body control module (FBCM) receives the windshield washer operation request signal twice within a certain period of time, it supplies the base current from the internal CPU to the transistor (3), and collector current flows from the internal power supply (4), turning the headlight cleaner relay on.(5)
3. When the headlight cleaner relay is turned on, current flows from the power supply inside the front body control module (FBCM) to the headlight cleaner motor and the headlight cleaner motor operates, and washer fluid is sprayed from the headlight cleaner nozzles.(6)

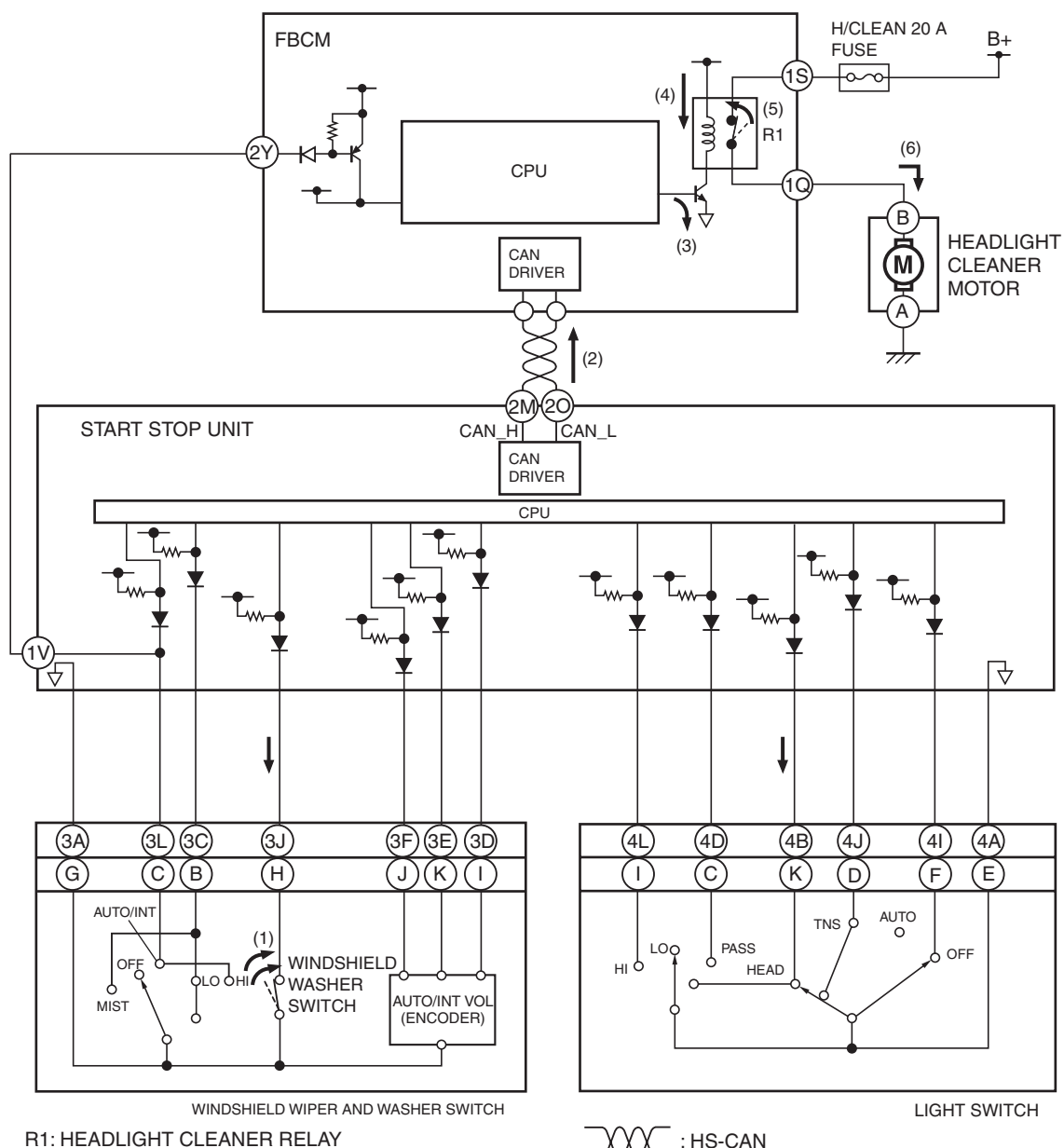


## With wiper and washer switch on right side

HEADLIGHT CLEANER MANUAL OPERATION CONTROL BLOCK DIAGRAM

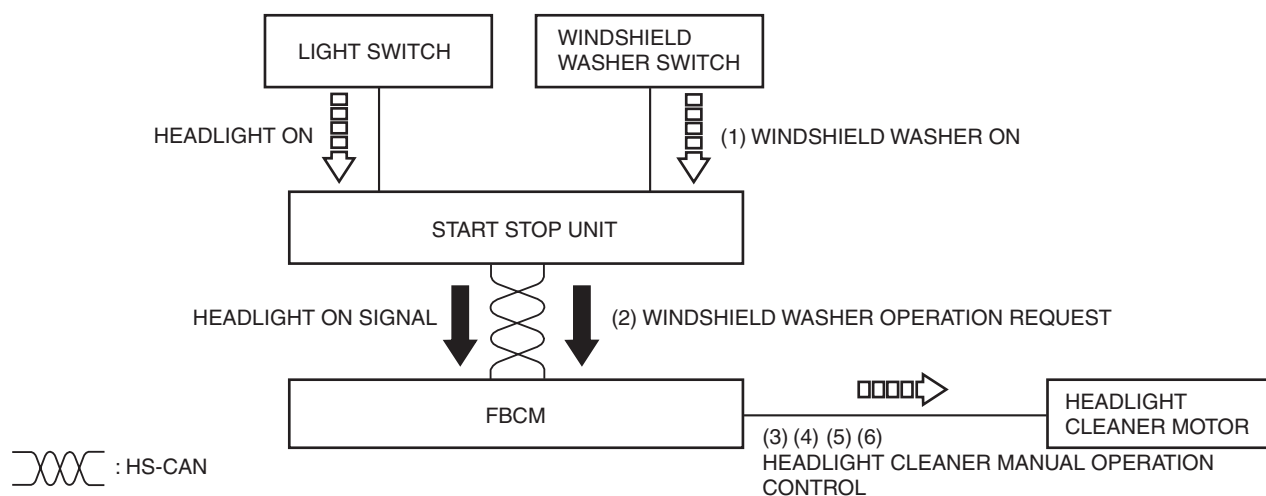


HEADLIGHT CLEANER MANUAL OPERATION CONTROL WIRING DIAGRAM



## With wiper and washer switch on left side

HEADLIGHT CLEANER MANUAL OPERATION CONTROL BLOCK DIAGRAM



HEADLIGHT CLEANER MANUAL OPERATION CONTROL WIRING DIAGRAM

