TRIP COMPUTER INFORMATION SYSTEM

id092200018000

Outline

- The trip computer system displays the instantaneous fuel economy, average fuel economy, remaining distance to empty, average vehicle speed and the vehicle speed alarm.
- The instrument cluster performs trip computer system fail-safe. (See INSTRUMENT CLUSTER.)

Function

- The instrument cluster controls the trip computer system based on the following CAN signals.
  - — Vehicle speed signal, fuel injection amount signal, traveled distance signal sent from PCM
  - — Fuel gauge sender unit voltage signal sent from rear body control module (RBCM)
  - — Steering switch operation signal sent from start stop unit

Instantaneous fuel economy calculation function

- The instrument cluster calculates the instantaneous fuel economy based on the fuel consumption and traveled distance over the past 2 s when the vehicle speed is at the set value or more. In addition, the calculation results are updated every 2 s.

Instantaneous fuel economy formula

A TYPE OR B TYPE OR WITH TFT LCD DISPLAY

$$\text{INSTANTANEOUS FUEL ECONOMY (L/100 km)} = \frac{\text{FUEL CONSUMPTION (L) OVER PAST 2 s} \times 100}{\text{TRAVELED DISTANCE (km) OVER PAST 2 s}}$$

C TYPE

$$\text{INSTANTANEOUS FUEL ECONOMY (mpg)} = \frac{\text{TRAVELED DISTANCE (mile) OVER PAST 2 s}}{\text{FUEL CONSUMPTION (gallon) OVER PAST 2 s}}$$

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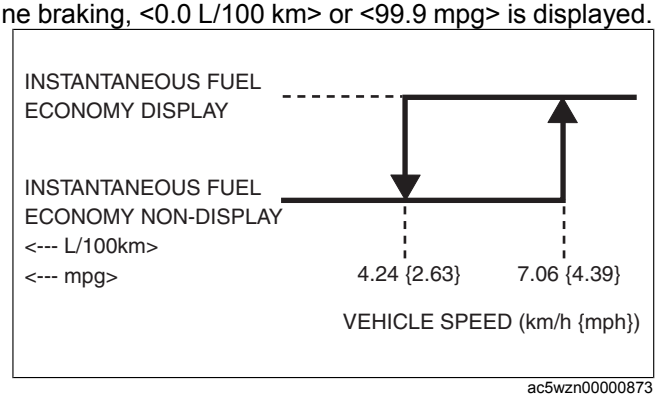
- When there is no fuel consumption, such as during engine braking, <0.0 L/100 km> or <99.9 mpg> is displayed.
- The instantaneous fuel economy is displayed when the vehicle speed is 7.06 km/h {4.39 mph} or more, and <--- L/100 km> or <--- mpg> is displayed when the vehicle speed is 4.24 km/h {2.63 mph} or less.



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Average fuel economy calculation function

- The instrument cluster calculates the average fuel economy based on the traveled distance and fuel consumption from connecting the battery or resetting the average fuel economy. In addition, the calculation results are updated every minute.

Average fuel economy formula

A TYPE OR B TYPE OR WITH TFT LCD DISPLAY

$$\text{AVERAGE FUEL ECONOMY (L/100 km)} = \frac{\text{CUMULATIVE FUEL CONSUMPTION}^{*1}\text{ (L)} \times 100}{\text{CUMULATIVE TRAVELED DISTANCE}^{*2}\text{ (km)}}$$

C TYPE

$$\text{AVERAGE FUEL ECONOMY (mpg)} = \frac{\text{CUMULATIVE TRAVELED DISTANCE}^{*2}\text{ (mile)}}{\text{CUMULATIVE FUEL CONSUMPTION}^{*1}\text{ (gallon)}}$$

*1: SUM OF FUEL CONSUMPTION FROM CONNECTING BATTERY OR RESETTING AVERAGE FUEL ECONOMY TO PRESENT

*2: SUM OF TRAVELED DISTANCE FROM CONNECTING BATTERY OR RESETTING AVERAGE FUEL ECONOMY TO PRESENT

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- If the cumulative traveled distance is 0 km, <99.9 L/100 km> or <0.0 mpg> is displayed.
- If the INFO switch is pressed for approx. 1.5 s or more while the average fuel economy is displayed, the cumulative fuel economy and cumulative traveled distance data are reset.
- If tripmeter A is reset, the average fuel economy is also reset.

- During the 1 min period after the data has been reset, <--- L/100 km> or <--- mpg> is displayed.

Remaining travel distance calculation function
- The instrument cluster calculates the remaining travel distance based on the instantaneous fuel economy, cumulative fuel economy and the fuel tank level. In addition, the calculation results are updated every second.

Remaining travel distance formula

A TYPE OR B TYPE OR WITH TFT LCD DISPLAY

$$\text{REMAINING TRAVEL DISTANCE (km)} = \frac{\text{FUEL TANK LEVEL (L)}}{\text{CUMULATIVE FUEL ECONOMY}^{*1}\text{ (L/km)} \times (1500-1)/1500 + \text{INSTANTANEOUS FUEL ECONOMY (L/km) IN PAST 0.1 km INTERVAL}/1500}$$

C TYPE

$$\text{REMAINING TRAVEL DISTANCE (miles)} = \frac{\text{FUEL TANK LEVEL (L)}}{\text{CUMULATIVE FUEL ECONOMY}^{*1}\text{ (L/mile)} \times (1500-1)/1500 + \text{INSTANTANEOUS FUEL ECONOMY (L/mile) IN PAST 0.06 mile INTERVAL}/1500}$$

*1: SUM OF FUEL ECONOMY EVERY 0.1 km {0.06 mile} FROM CONNECTING BATTERY TO PRESENT

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- When the fuel tank level reaches 6 L {2 US gal, 1 Imp gal} or less, the instrument cluster displays <0 km> or <0 miles>.

Average vehicle speed calculation function
- The instrument cluster calculates the average vehicle speed based on the cumulative traveled distance and cumulative traveled time from connecting the battery or resetting the average vehicle speed. In addition, the calculation results are updated every 10 s.

Average vehicle speed formula

A TYPE OR B TYPE OR WITH TFT LCD DISPLAY

$$\text{AVERAGE VEHICLE SPEED (km/h)} = \frac{\text{CUMULATIVE TRAVELED DISTANCE (km)}}{\text{CUMULATIVE TRAVELED TIME (h)}}$$

C TYPE

$$\text{AVERAGE VEHICLE SPEED (mph)} = \frac{\text{CUMULATIVE TRAVELED DISTANCE (mile)}}{\text{CUMULATIVE TRAVELED TIME (h)}}$$

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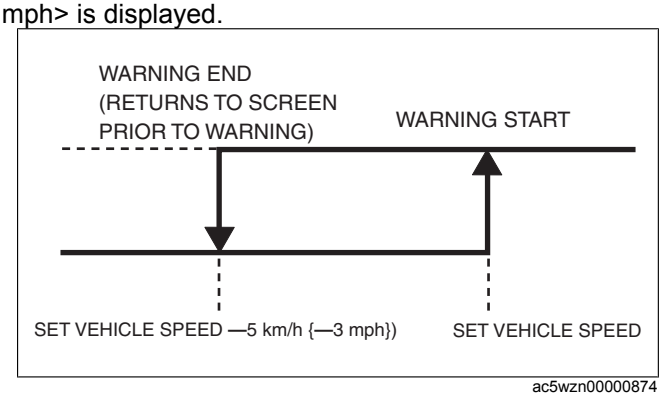
- If the INFO switch is pressed for approx.1.5 s or more while the average vehicle speed is displayed, the average vehicle speed (cumulative traveled distance and cumulative traveled time data) is reset.
- During the 1 min period after the data has been reset, <--- km/h> or <--- mph> is displayed.

Vehicle speed alarm function
- The instrument cluster compares the current vehicle speed with the speed set by the user and if the current vehicle speed exceeds the set vehicle speed, the alarm is triggered.
- The set vehicle speed can be set in 10 km/h {10 mph} increments between 30 km/h—250 km/h {20 mph—150 mph}.
- If the vehicle speed alarm is not set, <--- km/h> or <--- mph> is displayed.
- The instrument cluster outputs a warning display and warning sound when the current vehicle speed is the same as the set vehicle speed.
- The instrument cluster switches the warning display back to the screen prior to the warning display when the current vehicle speed is -5 km/h {-3 mph} or less than the set vehicle speed.



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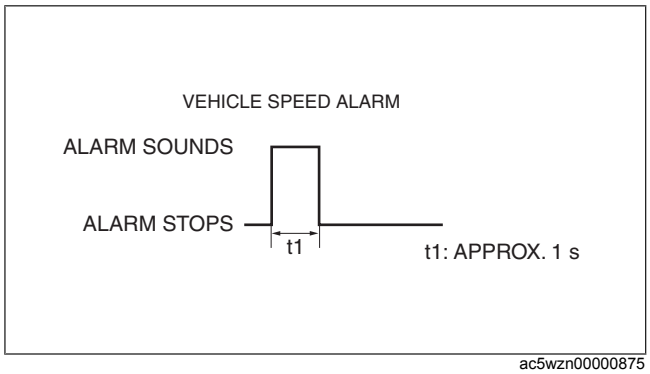
- The alarm sound pattern is as follows:



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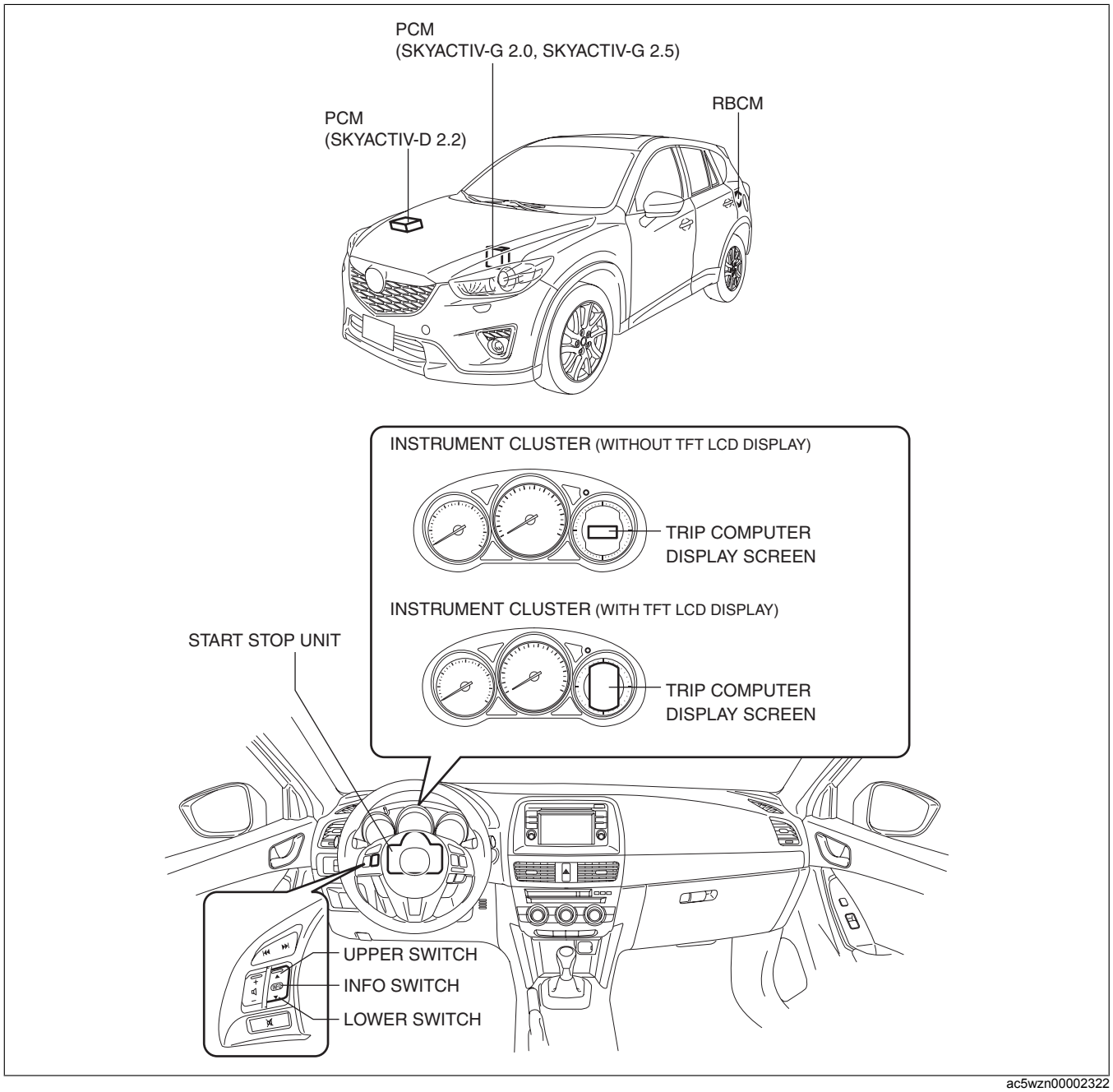
Structural view



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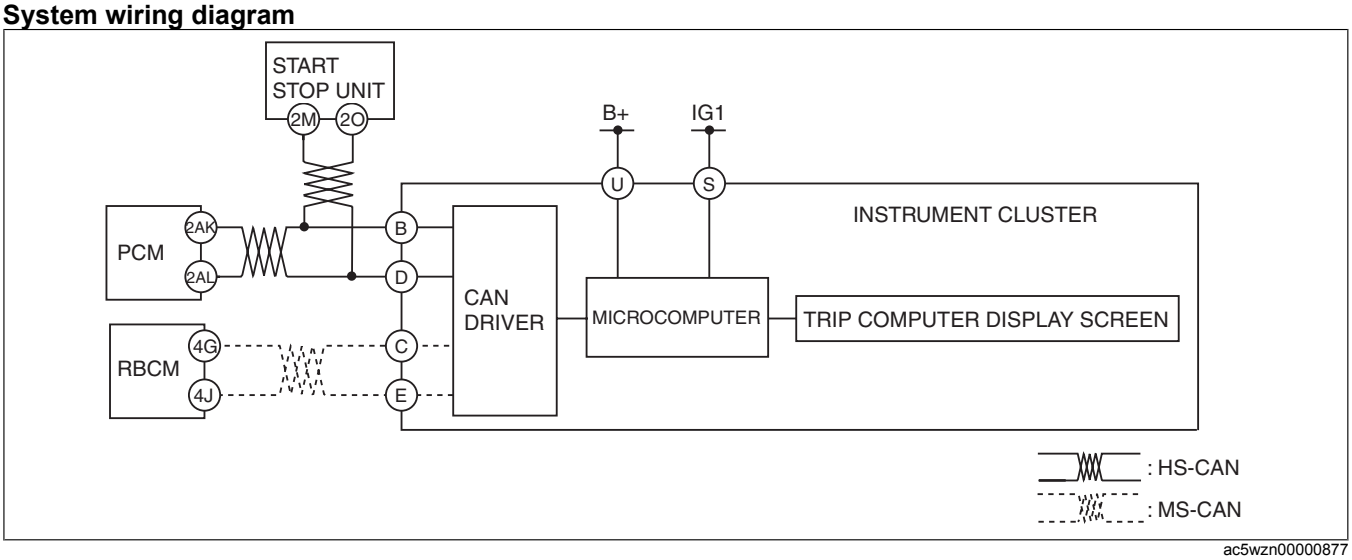
System wiring diagram



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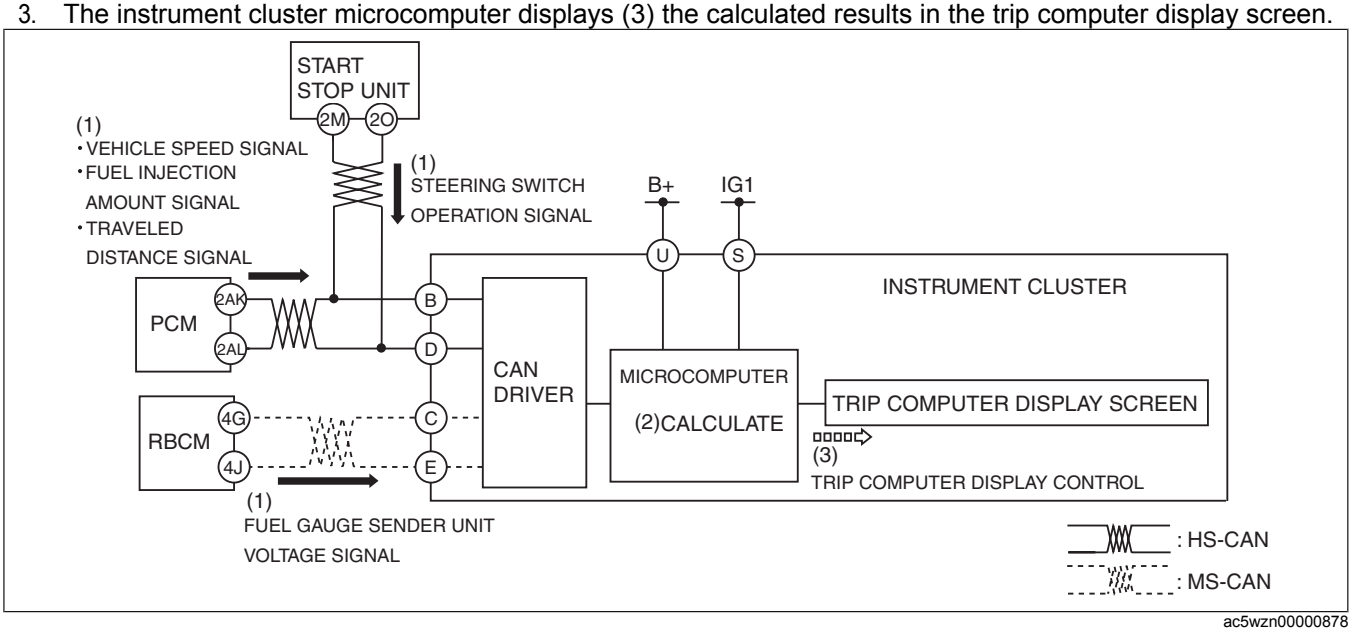
Operation

1. When the ignition is switched ON (engine on), the instrument cluster receives (1) the vehicle speed signal, fuel injection amount signal, traveled distance signal from the PCM, the fuel gauge sender unit voltage signal from the rear body control module (RBCM), and the steering switch operation signal from the start stop unit.
2. The instrument cluster microcomputer calculates (2) the instantaneous fuel economy and average fuel economy based on the received data.
3. The instrument cluster microcomputer displays (3) the calculated results in the trip computer display screen.



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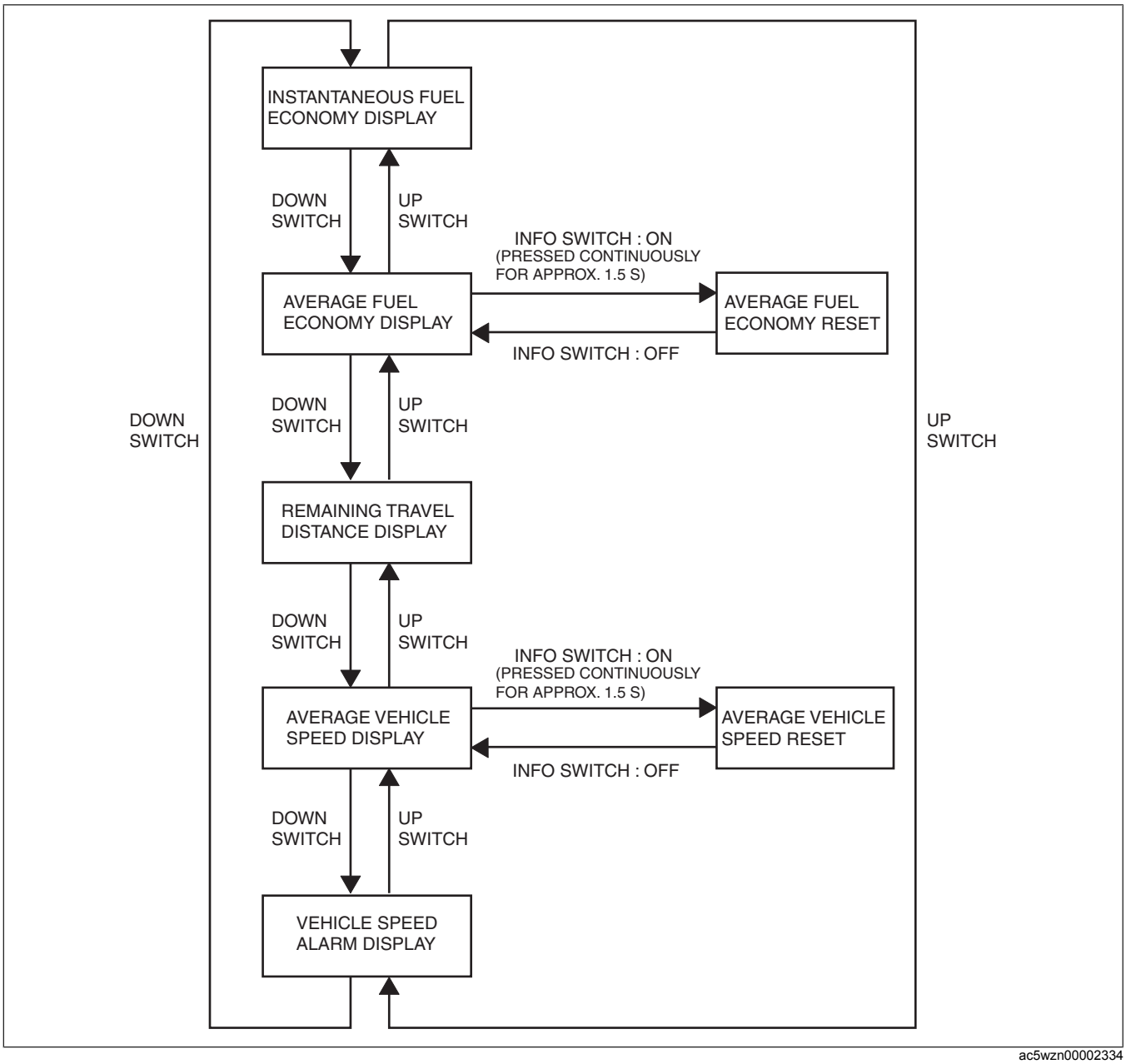
Trip computer display switching operation

- The instrument cluster switches the trip computer display content as follows based on the steering switch operation signal from the start stop unit.



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Display screen table

WITHOUT TFT LCD DISPLAY

	INSTANTANEOUS FUEL ECONOMY	AVERAGE FUEL ECONOMY	REMAINING TRAVEL DISTANCE	AVERAGE VEHICLE SPEED	VEHICLE SPEED ALARM
A TYPE	10.5 L/100km	Ø 10.5 L/100km	160 km	Ø 40 km/h	100 km/h
B TYPE	CURRENT 10.5 L/100km	AVG 10.5 L/100km	RANGE 100 km	AVG 40 L/100km	—
C TYPE	22.4 mpg	Ø 22.4 mpg	160 miles	Ø 25 mph	80 mph

WITH TFT LCD DISPLAY

INSTANTANEOUS FUEL ECONOMY	AVERAGE FUEL ECONOMY	REMAINING TRAVEL DISTANCE	AVERAGE VEHICLE SPEED	VEHICLE SPEED ALARM
Consumption **10.5** L/100km	Consumption Ø **10.5** L/100km	Range **160** km	Speed Ø **40** km/h	Speed Warning **100** km/h

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