REPORT NUMBER 103-GTL-09-001

SAFETY COMPLIANCE TESTING FOR FMVSS NO. 103 WINDSHIELD DEFROSTING AND DEFOGGING SYSTEMS

HONDA OF AMERICA MFG., INC.
2009 HONDA ACCORD LX, PASSENGER CAR
NHTSA NO. C95300

GENERAL TESTING LABORATORIES, INC.
1623 LEEDSTOWN ROAD
COLONIAL BEACH, VIRGINIA 22443

JUNE 30, 2009

FINAL REPORT

PREPARED FOR

U. S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
1200 NEW JERSEY AVE. S.E.
WASHINGTON, D.C. 20590

Prepared By: Debbie Messick

Digitally signed by Debbie Messick
DN: cn=Debbie Messick, c=US, o=GTL, email=gtl@general-testing.com
Date: 2009.07.21 15:06:03 -04'00'

Approved By: Grant Farrand

Digitally signed by Grant Farrand
DN: cn=Grant Farrand, c=US, o=GTL, email=gtl@general-testing.com
Date: 2009.07.21 15:06:17 -04'00'

Approval Date: 06/30/09

FINAL REPORT ACCEPTANCE BY OVSC:

Accepted By:

Acceptance Date: June 30, 2009

Technical Report Documentation Page

1. Report No. 103-GTL-09-001	2. Government Accession No. N/A	3. Recipient's Catalog No. N/A
4. Title and Subtitle Final Report of FMVSS 103 Compliance Testing of 2009 HONDA ACCORD LX, PASSENGER CAR NHTSA No. C95300		5. Report Date June 30, 2009 6. Performing Organ. Code GTL
7. Author(s) Grant Farrand, Project Engineer Debbie Messick, Project Manager		8. Performing Organ. Rep# GTL-DOT-09-103-001
9. Performing Organization Name and Address General Testing Laboratories, Inc. 1623 Leedstown Road Colonial Beach, Va 22443		10. Work Unit No. (TRAIS) N/A 11. Contract or Grant No. DTNH22-06-C-00032
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Enforcement Office of Vehicle Safety Compliance (NVS-220) 1200 New Jersey Ave., S.E. Washington, DC 20590		13. Type of Report and Period Covered Final Test Report June 3-4, 2009 14. Sponsoring Agency Code NVS-220
15. Supplementary Notes		
16. Abstract Compliance tests were conducted on the subject, 2009 HONDA ACCORD LX Passenger Car in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-103-13 for the determination of FMVSS 103 compliance. Test failures identified were as follows: None		
17. Key Words Compliance Testing Safety Engineering FMVSS 103	18. Distribution Statement Copies of this report are available from NHTSA Technical Information Services (TIS) Room W45-212 (NPO-411) 1200 New Jersey Ave., S.E. Washington, DC 20590 Telephone No. (202) 366-4947	
19. Security Classif. (of this report) UNCLASSIFIED	21. No. of Pages 34	22. Price
20. Security Classif. (of this page) UNCLASSIFIED		

Form DOT F 1700.7 (8-72)

TABLE OF CONTENTS

SECTION 1

PURPOSE OF COMPLIANCE TEST

1.0 PURPOSE OF COMPLIANCE TEST

A 2009 HONDA ACCORD LX Passenger Car was subjected to Federal Motor Vehicle Safety Standard (FMVSS) No. 103 testing to determine if the vehicle was in compliance with the requirements of the standard. All tests were conducted in accordance with NHTSA, Office of Vehicle Safety Compliance (OVSC) Laboratory Procedure, TP-103-13 dated 26 June 1996 and General Testing Laboratories, Inc. (GTL) Test Procedure, "Windshield Defrosting and Defogging Systems – Passenger Vehicles, Mulitpurpose Vehicles, Trucks and Buses".

1.1 TEST VEHICLE

The test vehicle was a 2009 HONDA ACCORD LX Passenger Car. Nomenclature applicable to the test vehicle are:

A. Vehicle Identification Number: 1HGCP25369A082848

B. NHTSA No.: C95300

C. Manufacturer: HONDA OF AMERICA MFG., INC.

D. Manufacture Date: 12/08

E. Color: Basque Red Pearl

1.2 TEST DATE

The test vehicle was subjected to FMVSS No. 103 testing on June 3-4, 2009.

SECTION 2

COMPLIANCE TEST PROCEDURE AND SUMMARY OF RESULTS

2.0 GENERAL

The 2009 HONDA ACCORD LX 4-door passenger car, NHTSA No. C95300 was subjected to FMVSS No. 103 tests on June 3-4, 2009. Photographs of the test vehicle are shown in Figures 5.1 through 5.4. The manufacturer's certification and tire information labels are shown in Figures 5.5 and 5.6. The test instrumentation and instrument panel setups are depicted in Figures 5.7 and 5.8. Figures 5.9 through 5.14 depict the windshield pre and post test defrost conditions.

2.1 TEST PROCEDURE

Prior to test the test vehicle was inspected for completeness, systems operability, and appropriate fuel and liquid levels, i.e., oil and coolant to include antifreeze protection. The vehicle was then photographically documented as required by the DOT/NHTSA test procedure. The windshield patterns for areas A, B, C, and D had been furnished prior to testing and these areas were outlined on the windshield with a marker. The vehicle was then installed in the cold chamber and pre-conditioned for a 14-hour minimum, 0º ±5º F temperature soak for the first test run. After the pre-condition, the hood was raised to assure engine coolant and lubricant were stabilized within the test temperature range for a minimum of 2 hours.

At the end of the 2-hour minimum stabilization period, the entire windshield was sprayed evenly with 0.010 ounces of water per square inch of glass area. Refer to Section 3, Compliance Test Data, for test specifics such as total amount of water sprayed, spray gun identification, and air pressure regulation. The vehicle soak continued for an additional 30 minutes minimum but no more than 40 minutes after the windshield was sprayed.

At the conclusion of the additional soak time the vehicle's engine was started and operated at a target speed of 1500-1600 rpm or at the manufacturer's specification if different as noted on data sheets. The defroster blower was turned on to the high speed setting with the heater selector in the de-ice (defrost) position, and the temperature control in the maximum temperature position. All doors and windows were closed. The heater air intake was fully open and the vehicle's hood closed. At no time during the test were the windshield wipers used.

SECTION 2 continued

At start of testing and during test, at each 5-minute interval after engine start, cold chamber, engine coolant, heater coolant in and defroster air left/defroster air right temperatures were recorded. Likewise at each 5-minute interval the boundary of the defrosted area was marked on the inside surface of the windshield. The test was run for a maximum of 40 minutes from engine start, or until such time as 100 percent windshield clearance was achieved. Photographs were made of the windshield at the pre-test frosted state and 20-minute and 25-minute intervals. Post test actions included placing a vellum pattern on the windshield and tracing the windshield's 5-minute interval defrosted area boundary lines onto the vellum pattern.

After the traces were obtained, the windshield was again thoroughly cleaned and the vehicle engine coolant and lubricant stabilization period at 0º ± 5º F temperature commenced for a repeat of the procedure discussed. The windshield patterns for both tests were used subsequently to determine the cleared area percentages.

2.2 SUMMARY OF RESULTS

Based on the test performed, the test vehicle appears to be in compliance with the requirements of FMVSS 103.

SECTION 3

COMPLIANCE TEST DATA

3.0 TEST RESULTS

The following data sheets document the results of testing on the 2009 HONDA ACCORD LX.

SUMMARY DATA SHEET
FMVSS 103, WINDSHIELD DEFROSTING AND DEFOGGING SYSTEMS

VEH. MOD YR/MAKE/MODEL/BODY: 2009 HONDA ACCORD LX PASSENGER CAR
VEH. NHTSA NO: C95300; VIN: 1HGCP25369A082848
VEH. BUILD DATE: 12/08 TEST DATE: JUNE 3-4, 2009
TEST LABORATORY: GENERAL TESTING LABORATORIES
OBSERVERS: GRANT FARRAND, JIMMY LATANE

WINDSHIELD AREA: 1470 in^2 AREA C = 245 in^2 AREA D = 245 in^2 AREA A= 1061 in^2

MANUFACTURER'S WINDSHIELD PATTERN USED: Yes X No

ENGINE THERMOSTAT NOMINAL REGULATING TEMPERATURE: 172 ºF

HEATER-DEFROSTER SYSTEM INCLUDES AIR CONDITIONER: YES X NO

DESCRIBE UNUSUAL FEATURES OF DEFROSTING SYSTEM: None

DESCRIBE UNUSUAL FEATURES OF TEST CAR: NONE

DESIGNATION	AREA PERCENT DEFROSTED					
	TEST 1	TEST 2	AVG	REQ'D	PASS	FAIL
CRITICAL AREA C AT 20 MINUTES	100%	100%	100%	80% MINIMUM	PASS	
PASSENGER AREA D AT 25 MINUTES	100%	100%	100%	80% MINIMUM	PASS	
TOTAL AREA A AT 40 MINUTES	100%	100%	100%	95% MINIMUM	PASS	

REMARKS:

RECORDED BY: G. FARRAND DATE: 06/04/09

APPROVED BY: D. MESSICK

FMVSS 103 TEST DATA RECORD – TEST RUN NO. 1

VEH. MOD YR/MAKE/MODEL/BODY: 2009 HONDA ACCORD LX PASSENGER CAR
VEH. NHTSA NO: C95300; VIN: 1HGCP25369A082848
VEH. BUILD DATE: 12/08; TEST DATE: JUNE 3, 2009
TEST LABORATORY: GENERAL TESTING LABORATORIES
OBSERVERS: GRANT FARRAND, JIMMY LATANE

If 1st Test Run, chamber conditioned 24 hours @ 0º ±5º F (14 hrs. min.)

Cold Soak Period: 24 HOURS

Time engine coolant and lubricant remained stabilized at 0º F: 3 hrs. 0 minutes

Water Spray Gun and Nozzle Type: BINKS #66 S

Spray Gun Pressure: 50 psi (50 psi ± 3 psi)

Water used: 14.7 fluid oz. (0.010 ounces per square inch of windshield area)

Soak Period Between Ice Application and Test Start: 32 minutes (30 to 40 minutes)

Engine Speed: 1700* rpm (Target engine speed 1500 to 1600 rpm)

*1700 for first five minutes then 1500.

Wind at specified location in front of windshield: .5 mph (0 to 2 mph)

Number of Vehicle Occupants: 1 (2 maximum)

Describe window openings, if any: NONE

TIME FROM START (minutes)	MOTOR VOLTAGE (volts)	TEMPERATURE, ºF					DEFROSTED AREA, %		
		TEST ROOM	ENGINE WATER	HEATER WATER IN	DEFROSTER AIR				
					DRVR	PSGR	A	C	D
0	13.4	-2.4	-2.5	-1.4*	-2.0	-2.0	0%	0%	0%
5	14.5	-2.8	-.2	43.7*	47.0	48.4	8.3%	0%	0%
10	14.4	-2.0	24.3	84.1*	101.5	102.2	70.8%	79.9%	80.5%
15	14.4	-0.6	52.1	115.2*	109.4	110.3	100%	100%	100%

REMARKS: *Heater Water In thermocouple is located on outside of heater water connectors.

RECORDED BY: G. FARRAND DATE: 06/04/09

APPROVED BY: D. MESSICK

FMVSS 103 TEST DATA RECORD – TEST RUN NO. 2

VEH. MOD YR/MAKE/MODEL/BODY: 2009 HONDA ACCORD LX PASSENGER CAR
VEH. NHTSA NO: C95300; VIN: 1HGCP25369A082848
VEH. BUILD DATE: 12/08 ; TEST DATE: JUNE 4, 2009
TEST LABORATORY: GENERAL TESTING LABORATORIES
OBSERVERS: GRANT FARRAND, JIMMY LATANE

If 1st Test Run, chamber conditioned N/A hours @ 0º ±5º F (14 hrs. min.)

Cold Soak Period: 24.0 HOURS

Time engine coolant and lubricant remained stabilized at 0º F: 11 hrs. ___ minutes

Water Spray Gun and Nozzle Type: BINKS #66S

Spray Gun Pressure: 50 psi (50 psi ± 3 psi)

Water used: 14.7 fluid oz. (0.010 ounces per square inch of windshield area)

Soak Period Between Ice Application and Test Start: 35 minutes (30 to 40 minutes)

Engine Speed: 1700* rpm (Target engine speed 1500 to 1600 rpm)
*1700 for first five minutes then 1500.

Wind at specified location in front of windshield: .5 mph (0 to 2 mph)

Number of Vehicle Occupants: 1 (2 maximum)

Describe window openings, if any: NONE

TIME FROM START (minutes)	MOTOR VOLTAGE (volts)	TEMPERATURE, ºF					DEFROSTED AREA, %		
		TEST ROOM	ENGINE WATER	HEATER WATER IN	DEFROSTER AIR				
					DRVR	PSGR	A	C	D
0	13.5	-4.0	-2.5	-3.0*	-3.5	-3.5	0%	0%	0%
5	14.4	-2.1	4.6	67.7*	70.6	71.6	11.1%	0%	0%
10	14.3	-.4	39.5	96.6*	100.0	100.7	77.7%	93.3%	89.6%
15	14.3	1.4	65.3	114.1*	117.9	118.8	100%	100%	100%

REMARKS: *Heater Water In thermocouple is located on outside of heater water connection.

RECORDED BY: G. FARRAND DATE: 06/04/09

APPROVED BY: D. MESSICK

SECTION 4
INSTRUMENTATION AND EQUIPMENT LIST

TABLE 1 - INSTRUMENTATION & EQUIPMENT LIST

EQUIPMENT	DESCRIPTION	MODEL/ SERIAL NO.	CAL. DATE	NEXT CAL. DATE
TIMER	ACCU-SPLIT	ACT1	05/09	05/10
TAC/RECORDER	MONARCH	1444664	05/09	05/10
TEMPERATURE RECORDER	FLUKE	7471026	10/08	10/09
SPRAY GUN	BINKS	66S	BEFORE USE	BEFORE USE
ANEMOMETER	OMEGA	HH-600	05/09	05/10
AIR PRESSURE GAGE	BINKS	0-160	05/09	05/10
SCALE	METTLER	H315/ 445951	05/09	05/10
GRADUATED BEAKER	PHOTAX	N/A	N/A	N/A
EVENT RECORDER	COMPUTER	GEO1	BEFORE USE	BEFORE USE

SECTION 5

PHOTOGRAPHS

2009 HONDA ACCORD LX
NHTSA NO. C95300
FMVSS NO. 103

FIGURE 5.1
LEFT SIDE VIEW OF VEHICLE

2009 HONDA ACCORD LX
NHTSA NO. C95300
FMVSS NO. 103

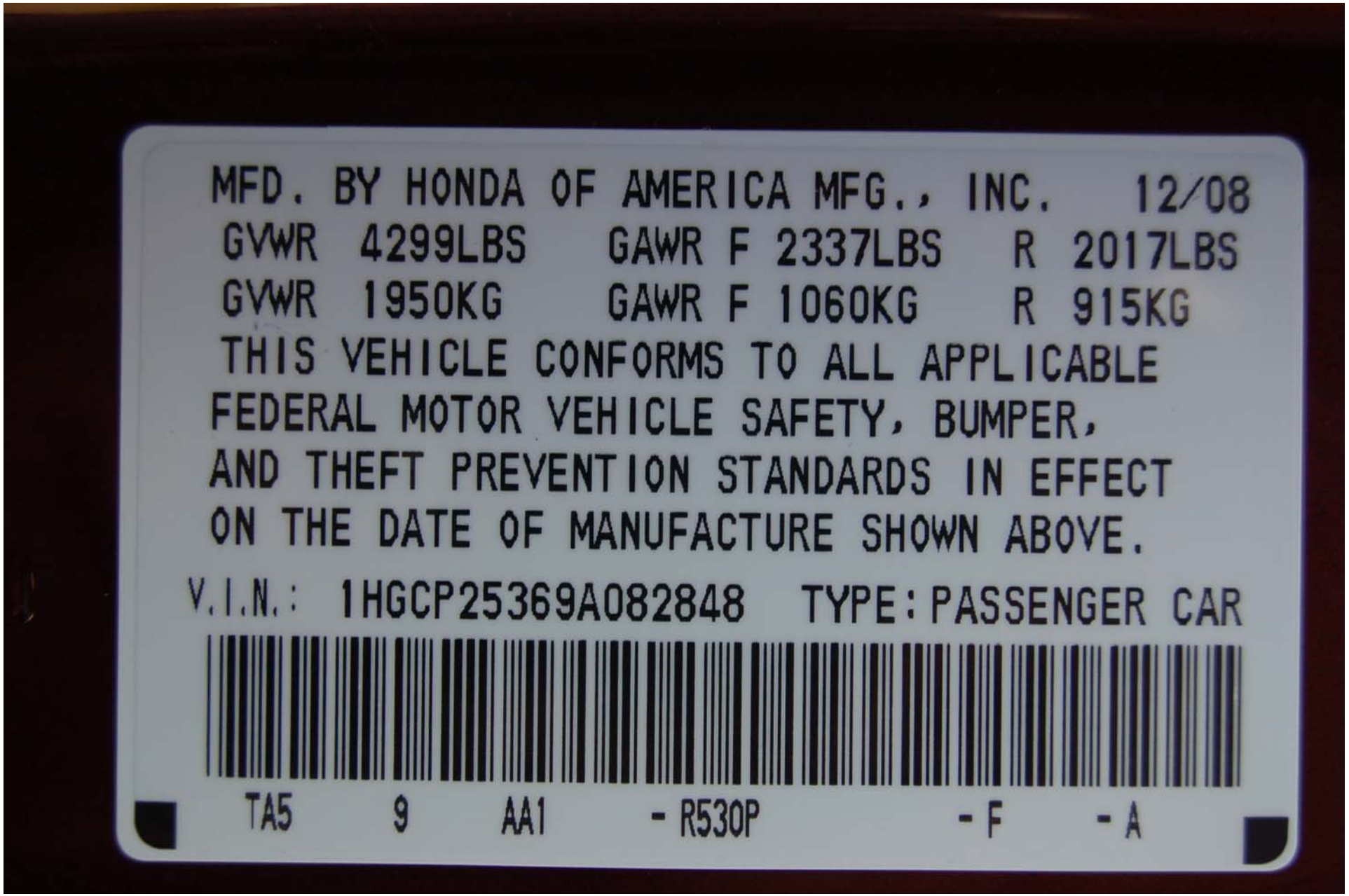
FIGURE 5.2
RIGHT SIDE VIEW OF VEHICLE

2009 HONDA ACCORD LX
NHTSA NO. C95300
FMVSS NO. 103

FIGURE 5.3
¾ FRONTAL VIEW FROM LEFT SIDE OF VEHICLE

2009 HONDA ACCORD LX
NHTSA NO. C95300
FMVSS NO. 103

FIGURE 5.4
¾ REAR VIEW FROM RIGHT SIDE OF VEHICLE



2009 HONDA ACCORD LX
NHTSA NO. C95300
FMVSS NO. 103

FIGURE 5.5
VEHICLE CERTIFICATION LABEL

2009 HONDA ACCORD LX
NHTSA NO. C95300
FMVSS NO. 103

FIGURE 5.6
VEHICLE TIRE INFORMATION LABEL

2009 HONDA ACCORD LX
NHTSA NO. C95300
FMVSS NO. 103

FIGURE 5.7
CLOSE-UP VIEW OF DEFROSTER CONTROL SETTING ON DASH

2009 HONDA ACCORD LX
NHTSA NO. C95300
FMVSS NO. 103

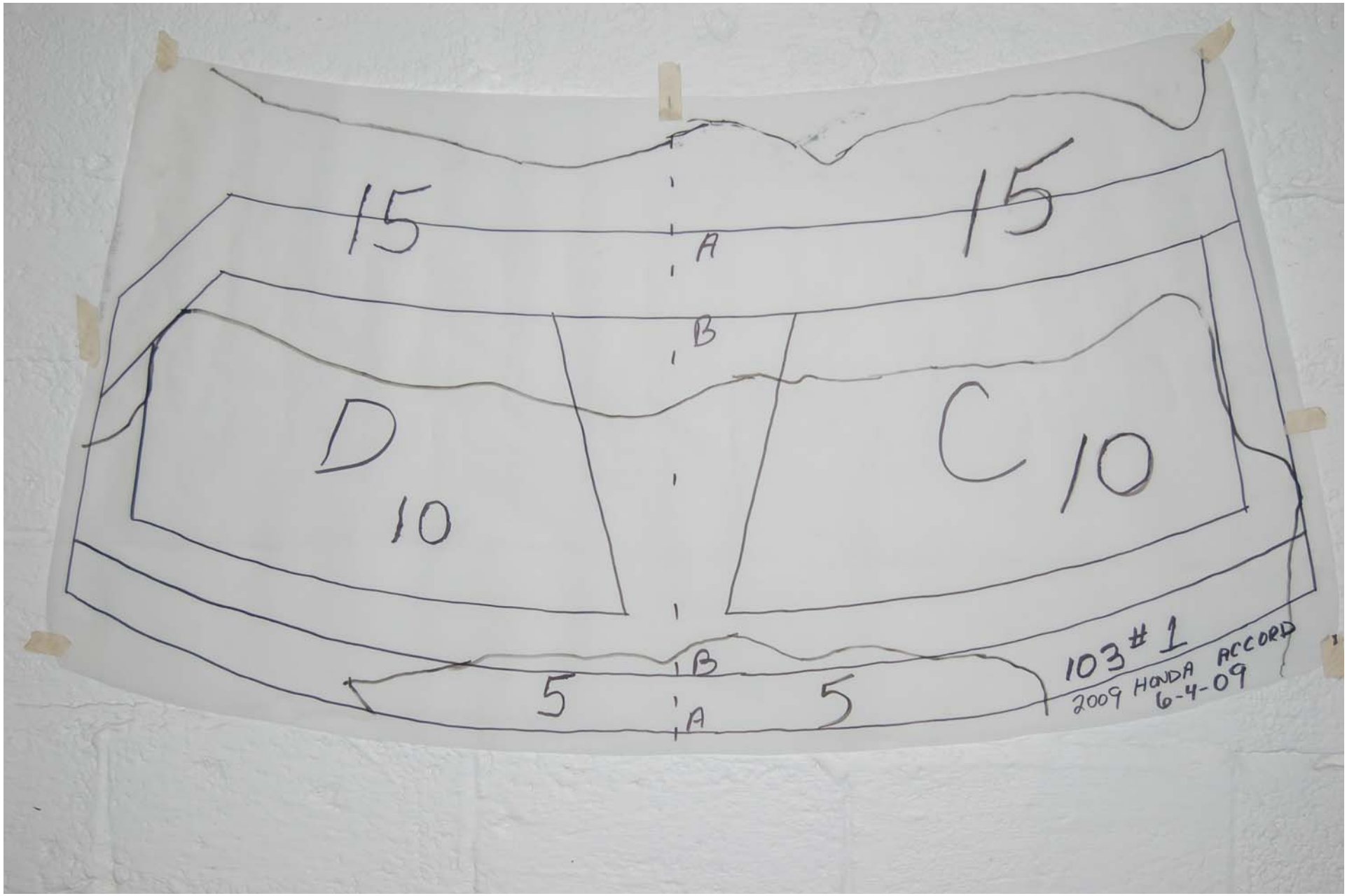
FIGURE 5.8
INSTRUMENTATION SET-UP

2009 HONDA ACCORD LX
NHTSA NO. C95300
FMVSS NO. 103

FIGURE 5.9
WINDSHIELD, PRE-TEST FROSTED STATE TEST #1

2009 HONDA ACCORD LX
NHTSA NO. C95300
FMVSS NO. 103

FIGURE 5.10
DEFROSTED AREA AT 15 MINUTES TEST #1



2009 HONDA ACCORD LX
NHTSA NO. C95300
FMVSS NO. 103

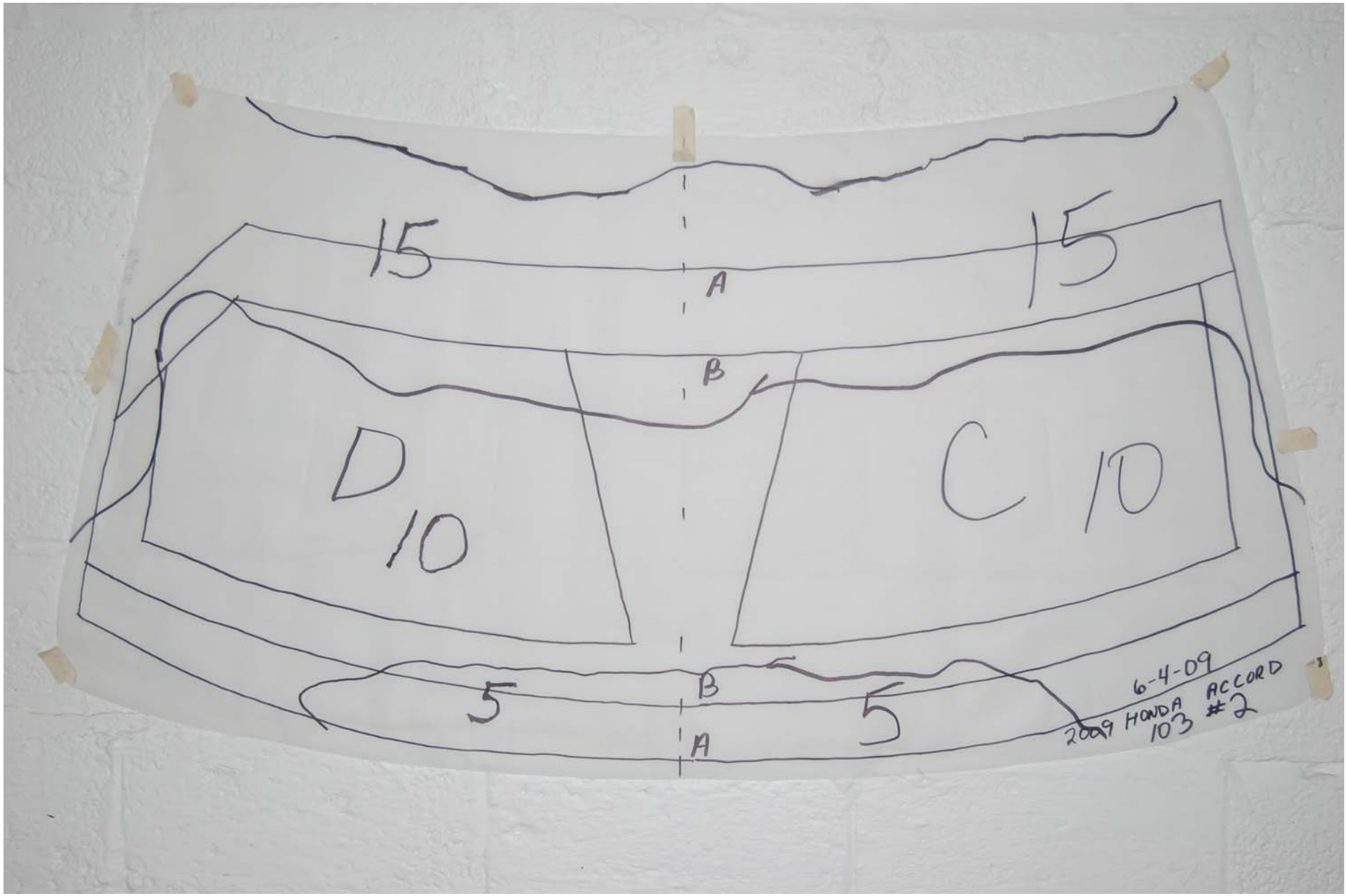
FIGURE 5.11
WINDSHIELD VELLUM PATTERN, POST TEST #1

2009 HONDA ACCORD LX
NHTSA NO. C95300
FMVSS NO. 103

FIGURE 5.12
WINDSHIELD PRE-TEST FROSTED STATE #2

2009 HONDA ACCORD LX
NHTSA NO. C95300
FMVSS NO. 103

FIGURE 5.13
DEFROSTED AREA AT 15 MINUTES TEST #2



2009 HONDA ACCORD LX
NHTSA NO. C95300
FMVSS NO. 103

FIGURE 5.14
WINDSHIELD VELLUM PATTERN, POST TEST #2

SECTION 6

OWNER'S MANUAL DEFROSTER INSTRUCTIONS

To Defog and Defrost
To remove fog from the inside of the windows:
1. Set the fan to the desired speed, or high for faster defrosting.
2. Select . The system automatically switches to fresh air mode and turns on the A/C. The A/C indicator will not come on if it was off to start with.
3. Adjust the temperature so the airflow feels warm.
4. Select / to help clear the rear window.
5. To increase airflow to the windshield, close the corner vents.

When you switch to , from or , the A/C stays on. This helps prevent the windows from rapidly fogging up when the air is suddenly routed away from the windshield. If you want to turn the A/C off, press and release the A/C button twice. The indicator in the button comes on and then goes off.

To Remove Exterior Frost or Ice From the Windows
1. Select . The system automatically switches to fresh air mode and turns on the A/C. The A/C indicator does not come on if it was off to start with.
2. Select .
3. Set the fan and temperature controls to maximum level.

To clear the windows faster, you can close the dashboard corner vents by rotating the wheel below each vent. This sends more warm air to the windshield defroster vents. Once the windshield is clear, select fresh air mode to avoid fogging the windows.

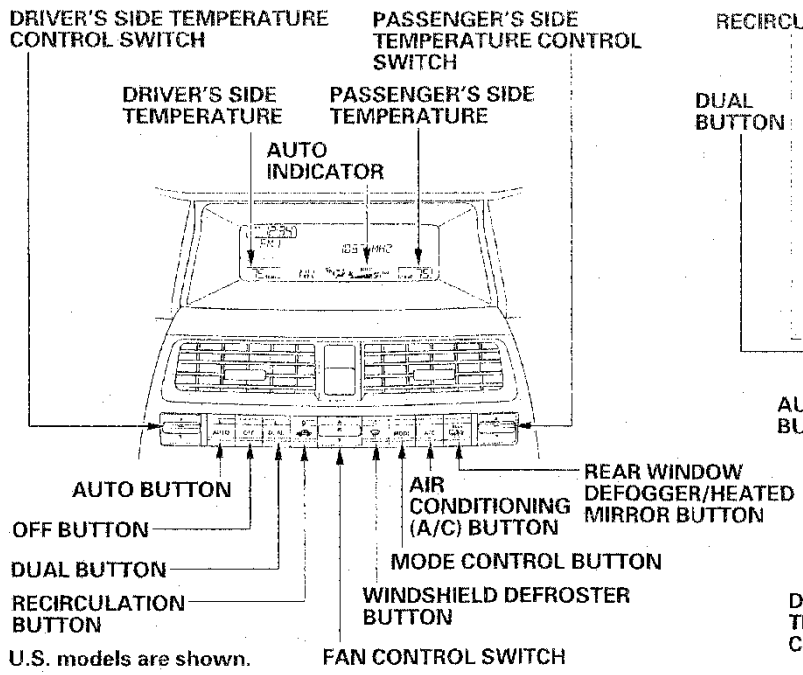
For your safety, make sure you have a clear view through all the windows before driving.

To Turn Everything Off
Turning the fan speed control dial all the way to the left shuts the system off.

- Keep the system off for short periods only.
- To keep stale air and mustiness from collecting, you should have the fan running at all times.

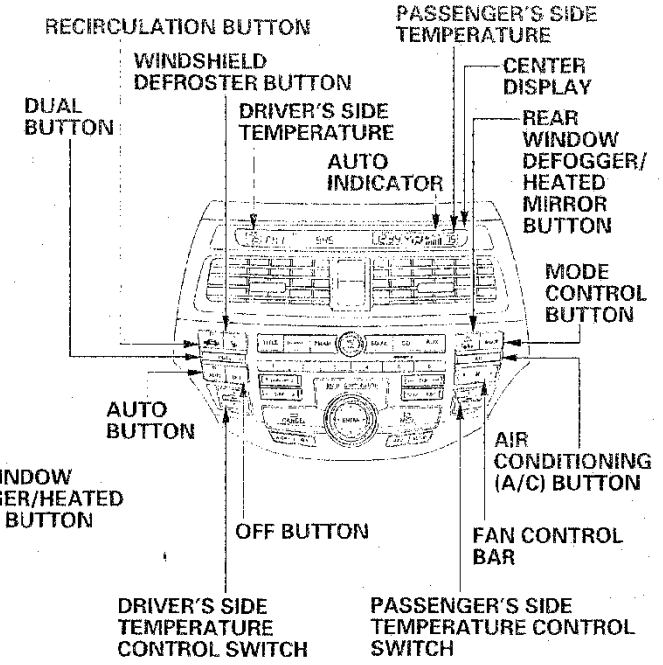
EX-L and EX-L V6

Without navigation system



U.S. models are shown.

With navigation system



Voice Control System

On models with navigation system

The climate control system can also be operated by voice control. See the Navi section in your quick start guide for an overview of this system, and the navigation system manual for complete details.

Using Automatic Climate Control

The automatic climate control system in your vehicle picks the proper combination of air conditioning, heating, and ventilation to maintain the interior temperature you select. The system also adjusts the fan speed and airflow levels.

1. Press the Auto button. The indicator in the button also comes on as a reminder. You will see AUTO on the display (in the center display on models with navigation system).

2. Set the desired temperature with the temperature control switch. You can set the driver's side temperature and the passenger's side temperature separately.

The system automatically selects the proper mix of conditioned and/or heated air that will, as quickly as possible, raise or lower the interior temperature to your preference.

Temperature Control

The driver's side temperature and the passenger's side temperature can be set separately. Push up the switch of the appropriate temperature control to increase the temperature of airflow. Push down the switch to decrease it. Each set temperature is shown in the display (in the center display on models with navigation system).

When you set the temperature to its lower limit (Lo) or its upper limit (Hi), the system runs at full cooling or heating only. It does not regulate the interior temperature.

When you adjust a fan control, the fan is taken out of AUTO mode.

When the indicator in the dual button is on, the driver's side and passenger's side temperature can be controlled independently (see page 130).

On models with navigation system
In AUTO mode, the vehicle's interior temperature is independently regulated for the driver and front passenger according to each adjusted temperature. The system also regulates each temperature based on the information of the sun light sensor and the sun's position which is updated automatically by the navigation's global positioning system (GPS). If one side of the vehicle is getting too much sun, the system lowers the temperature only on that side.

Dual Button
You can set the temperatures for the driver's side and the passenger's side separately when this button is pressed (indicator is on). When the indicator in the DUAL button is off, the temperatures for both sides are synchronized to the driver's side set temperature. When defrost mode is selected, dual mode operation is canceled.

To Turn Everything Off
If you press the OFF button, the climate control system shuts off completely.

- Keep the system completely off for short periods only.
- To keep stale air and mustiness from collecting, you should have the fan running at all times.

Semi-automatic Operation
You can manually select various functions of the climate control system when it is in fully automatic mode. All other features remain automatically controlled. Making any manual selection causes the word AUTO in the display to go out.

Fan Control
On models without navigation system
Push the switch up to increase the fan speed and airflow. Push the switch down to decrease them.

On models with navigation system
Press the ▲ side of the bar to increase the fan speed and airflow. Press the ▼ side of the bar to decrease them.

Air Conditioning (A/C) Button
This button turns the air conditioning on and off. You will see A/C ON or A/C OFF in the display.

When you turn the A/C off, the system cannot regulate the inside temperature if you set the temperature control below the outside temperature.

Recirculation Button
When the indicator in the button is on, air from the vehicle's interior is sent through the system again. When the indicator is off, air is brought in from the outside of the vehicle (fresh air mode).

The outside air intakes for the climate control system are at the base of the windshield. Keep this area clear of leaves and other debris.

The system should be left in fresh air mode under almost all conditions. Keeping the system in recirculation mode, particularly with the A/C off, can cause the windows to fog up.

Switch to recirculation mode when driving through dusty or smoky conditions, then return to fresh air mode.

Rear Window Defogger Button This button turns the rear window defogger off and on (see page 74).

Pushing this button also turns the power mirror heaters on and off.

Mode Control
Use the mode control button to select the vents the air flows from. Some air will flow from the dashboard vents in all modes.

Airflow is divided between the floor and corner vents and the defroster vents at the base of the windshield.

Air flows from the floor vents.

Airflow is divided between the vents in the dashboard and the floor vents.

Air flows from the center and corner vents in the dashboard.

Windshield Defroster Button This button directs the main airflow to the windshield for faster defrosting. It also overrides any mode selection you may have made.

When you select , the system automatically switches to fresh air mode and turns on the A/C. For faster defrosting, manually set the fan speed to high. You can also increase airflow to the windshield by closing the corner vents on the dashboard. To close the vents, rotate the wheel under each corner vent.

When you turn off by pressing the button again, the system returns to its former settings.

To remove fog from the inside of the windows, set as follows:

1. Select . The system automatically switches to fresh air mode and turns on the A/C.
2. Adjust the temperature with the driver's side temperature control so the airflow feels warm.
3. Select to help clear the rear window.
4. To increase airflow to the windshield, close the corner vents. For faster defogging, manually set the fan speed to high.

For your safety, make sure you have a clear view through all the windows before driving.

When the indicator in the button is on, the front passenger's temperature cannot be set separately from the driver's.