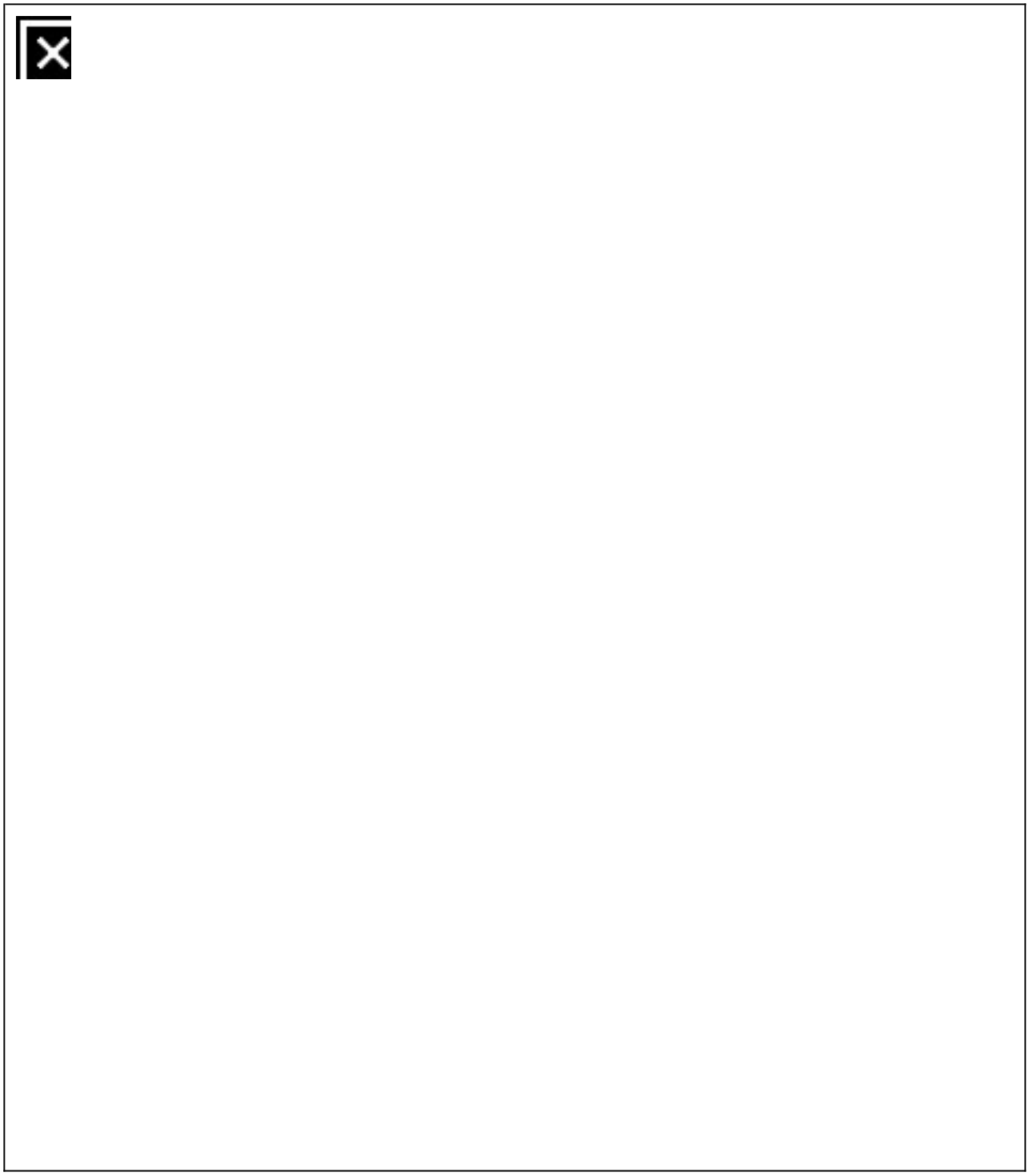
Wipers and Washers - System Operation and Component Description

System Operation

System Diagram



Network Message Chart

SCCM Network Input Messages

Broadcast Message	Originating Module	Message Purpose
Vehicle speed	PCM	The SCCM uses vehicle speed information for operation of the

		speed sensitive wiper function.
Message center feature configuration	IPC	The SCCM uses the message center feature configuration to enable/disable the courtesy wipe and the rain sensitive wiper features.

BCM Network Input Messages

Broadcast Message	Originating Module	Message Purpose
Front wiper status	-	-

Windshield Wipers

The wiper relay, integrated into the BJB, is energized when the ignition is on providing voltage to the windshield wiper motor assembly and the rain sensor (if equipped).

The SCCM monitors the wiper/washer switch inputs and sends the wiper/washer switch data to the windshield wiper motor assembly through a LIN.

Based on the input, the windshield wiper motor assembly activates the appropriate wash, low, high and intermittent or rain sense modes. The logic for wiper system operation is a function of the ECU in the windshield wiper motor assembly.

When the wiper/washer switch is in the high speed setting, the windshield wiper motor assembly also receives a ground signal directly from the SCCM (bypassing the logic within the module). This fail-safe circuit makes sure the windshield wipers function in high speed mode in the event of a LIN communication failure.

Mist Wipe

When the mist wipe function is activated, the SCCM sends the request to the windshield wiper motor assembly over the LIN to perform a single wipe of the windshield. The windshield wipers operate for as long as the mist wipe function is active.

Windshield Washer

When the wiper/washer switch is activated, the SCCM sends the washer request to the windshield wiper motor assembly over the LIN. The windshield wash relay is internal to the windshield wiper motor assembly. When the windshield wiper motor assembly activates the windshield wash relay, voltage is provided to the washer pump, directing washer fluid to the windshield. If equipped with a front camera, washer solvent is also directed to the front camera lens when the washer pump is active. When the switch is released, the windshield wiper motors will continue to activate for 3 additional wipes and then turn off.

Courtesy Wipe

If the wiper/washer switch is off when the when the windshield washer is requested, a few seconds after the windshield wash cycle has completed, an additional wipe of the windshield occurs to clear any remaining fluid that remains on the windshield.

Intermittent Wipers

When the wiper/washer switch is in an intermittent setting, the windshield wiper motors activate at timed

intervals. The lower the setting, the longer the interval between wipes.

Speed Dependent Wipers

When the wiper/washer switch is in any intermittent setting except the lowest setting, the speed dependent feature increases the frequency of wiping as the vehicle speed increases to compensate for the extra moisture that accumulates on the windshield.

The SCCM receives the vehicle speed from the PCM. The SCCM then sends the vehicle speed data to the windshield wiper motor assembly through the LIN.

Rain Sensitive Wipers (if equipped)

When equipped, the rain sensitive wiper feature replaces the intermittent wiper feature. The rain sensitive feature is active when the wiper/washer switch is in any of the 6 auto/intermittent sensitivity settings. The setting closest to OFF is the least sensitive to moisture, the highest setting being the most sensitive to moisture.

The rain sensor sends data through the LIN to the windshield wiper motor assembly. Based on the data received from the rain sensor and the auto/intermittent setting from the wiper/washer switch, the system automatically activates and adjusts the wiper speed and frequency when moisture is detected on the windshield.

If a fault is detected with the rain sensitive feature, the windshield wipers change to a default intermittent mode. The timing of the wipers correspond to a standard intermittent setting based on the auto/intermittent sensitivity setting on the wiper/washer switch.

Component Description

Wiper/Washer Switch

The wiper/washer switch is mounted directly to the SCCM. The windshield wiper/washer inputs to the SCCM are:

- Mist wipe
- Windshield wash
- Off
- AUTO 1/INT 1
- AUTO 2/INT 2
- AUTO 3/INT 3
- AUTO 4/INT 4
- Low
- High

Washer Pump

The washer pump is controlled by the windshield wiper motor assembly. The washer pump delivers washer fluid to the windshield when the ECU in the windshield wiper motor assembly activates the internal windshield washer relay, which provides voltage to the washer pump. When activated, the washer pump delivers washer fluid to the windshield.

Rain Sensor

The rain sensor uses an infrared beam to optically sense water on the windshield. The intensity of the reflected

beam is measured and compared to the intensity of the transmitted beam. If there is water on the surface of the windshield, the beam distorts, reducing the intensity of the beam. If the beam is not reflected completely, it is interpreted as rain on the windshield and the windshield wipers are activated.

A gel-type lens is used as the interface between the rain sensor and the windshield. If the lens is missing or damaged, the rain sensing wipers can be inoperative. The rain sensor gel-type lens cannot be replaced separately on a rain sensor of this type.