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WIPERS AND WASHERS (G2342581)

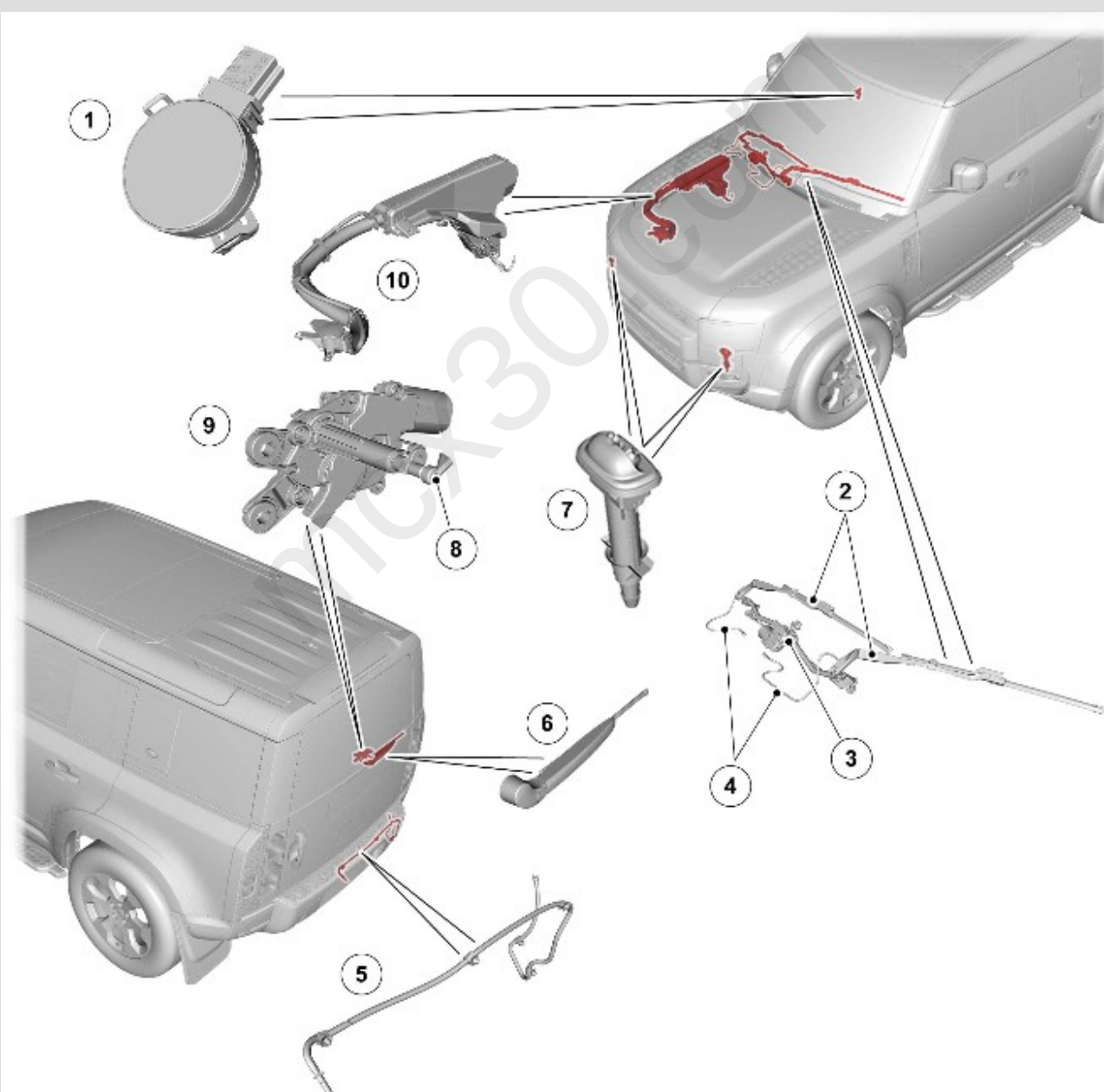
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COMPONENT LOCATION

COMPONENT LOCATION - 1 OF 2

 NOTES:

- Right Hand Drive (RHD) vehicle is shown, Left Hand Drive (LHD) vehicle is similar.
- Vehicle with 5 doors is shown, vehicle with 3 doors is similar.



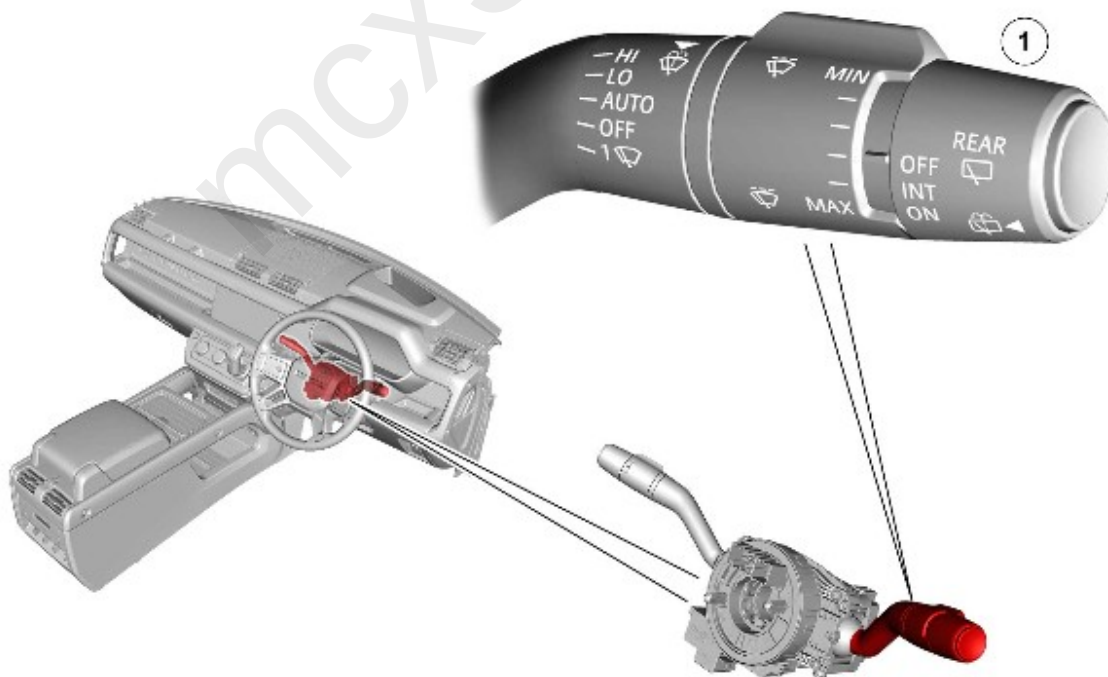
ITEM	DESCRIPTION
1	Rain/light sensor
2	Windshield wiper arm and blade (quantity 2)
3	Windshield wiper motor and linkage assembly
4	Windshield washer jet or heated windshield washer jet (quantity 2)
5	Washer jet - Rear proximity camera (if equipped)
6	Tailgate wiper arm and blade
7	Headlamp washer jet (quantity 2) (if equipped)
8	Tailgate washer jet
9	Tailgate wiper motor
10	Windshield washer reservoir

COMPONENT LOCATION - 2 OF 2



NOTE:

RHD vehicle is shown, LHD vehicle is similar.



E251809

ITEM	DESCRIPTION
1	Windshield wiper control switch

OVERVIEW

The wipers and washers system functions on receipt of requests made by the driver or the rain/light sensor. All wiper functions for the front and rear wipers are controlled from the right steering column multifunction switch.

The wiper and washer system comprises:

- Windshield and tailgate wiper motors
- A windshield wiper linkage
- Windshield wiper arms and blades (quantity 2)
- Tailgate wiper arm and blade
- Windshield washer jets (quantity 2) or heated windshield washer jets (quantity 2) (if equipped)
- Headlamp washer jets (quantity 2) (if equipped)
- A washer jet - Rear proximity camera (if equipped)
- Tailgate washer jet
- Windshield washer reservoir
- Windshield wiper control switch
- Rain/light sensor.

The windshield wiper system has 5 wiper stages of operation:

- Flick wipe
- Slow wipe
- Fast wipe
- Windshield wash and wipe
- Automatic wipe.

The wiper system is equipped with a rain/light sensor which controls the automatic wiper functions and also the automatic lighting functions. The 'AUTO' function uses an output from the rain/light sensor to the Body Control Module (BCM)/ Gateway Control Module (GWM) on a Local Interconnect Network (LIN). The purpose is to provide automatic operation of the windshield wipers.

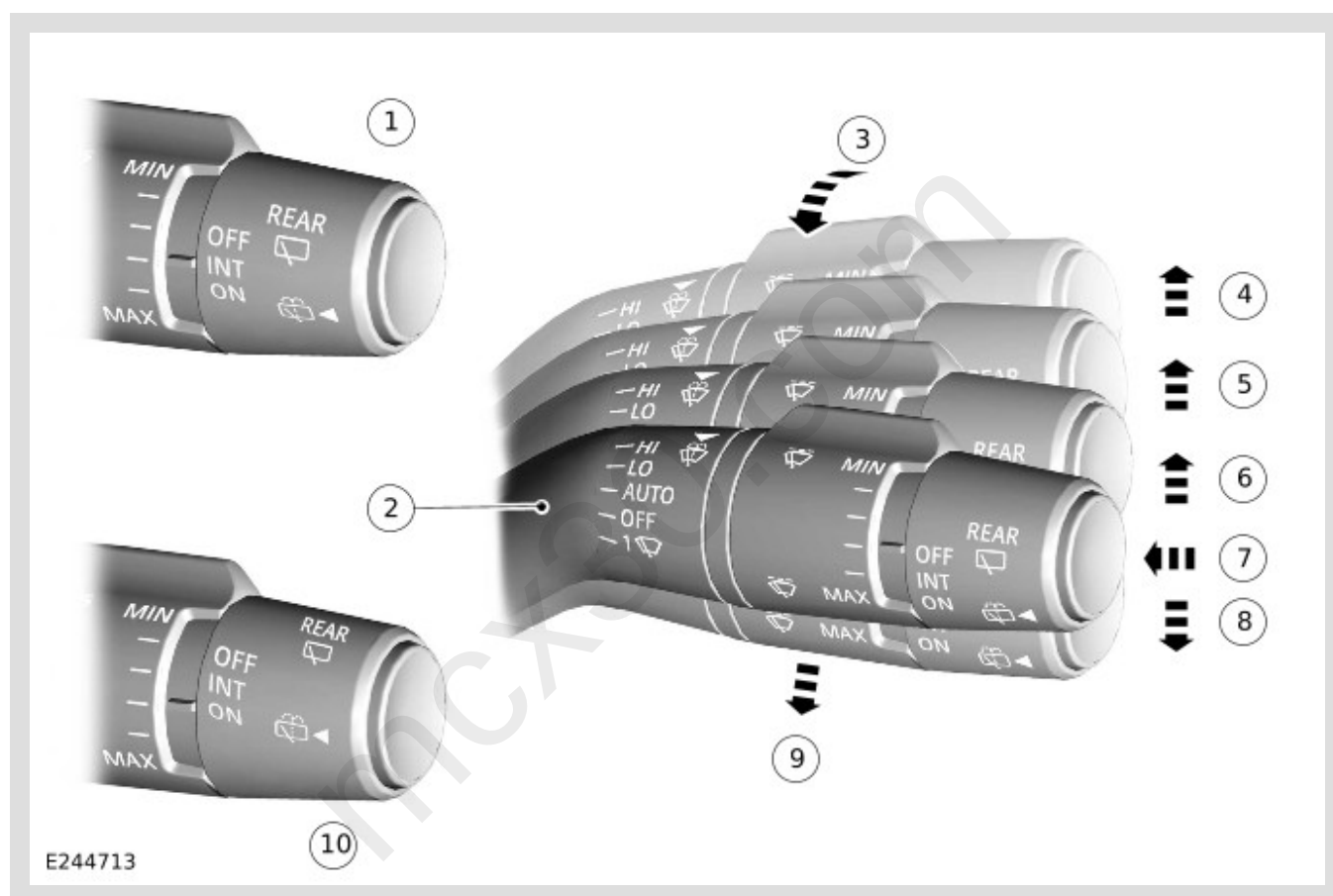
The tailgate wiper has 3 operational states:

- Tailgate wash and wipe
- Intermittent wipe
- Continuous wipe.

Tailgate wiper motor operation is suspended while the tailgate is open.

DESCRIPTION

WINDSHIELD WIPER CONTROL SWITCH



ITEM	DESCRIPTION
1	Tailgate wiper intermittent wipe position
2	Windshield wiper control switch
3	Rain/light sensor sensitivity adjust
4	Windshield fast wipe position
5	Windshield slow wipe position
6	Windshield automatic wipe position
7	Tailgate wash position

ITEM	DESCRIPTION
8	Flick wipe position
9	Wash and wipe position
10	Tailgate wiper continuous wipe position

The windshield wiper control switch is part of the Steering Wheel Module (SWM) and located on the right of the steering column. The windshield wiper control switch receives power supply from the Passenger Junction Box (PJB) through the SWM.

The windshield wiper control switch controls the windshield and the tailgate wiper functions. The windshield wiper control switch also controls the windshield, the tailgate and the headlamp washer functions.

All wiper and washer functions are controlled by the driver using the windshield wiper control switch.

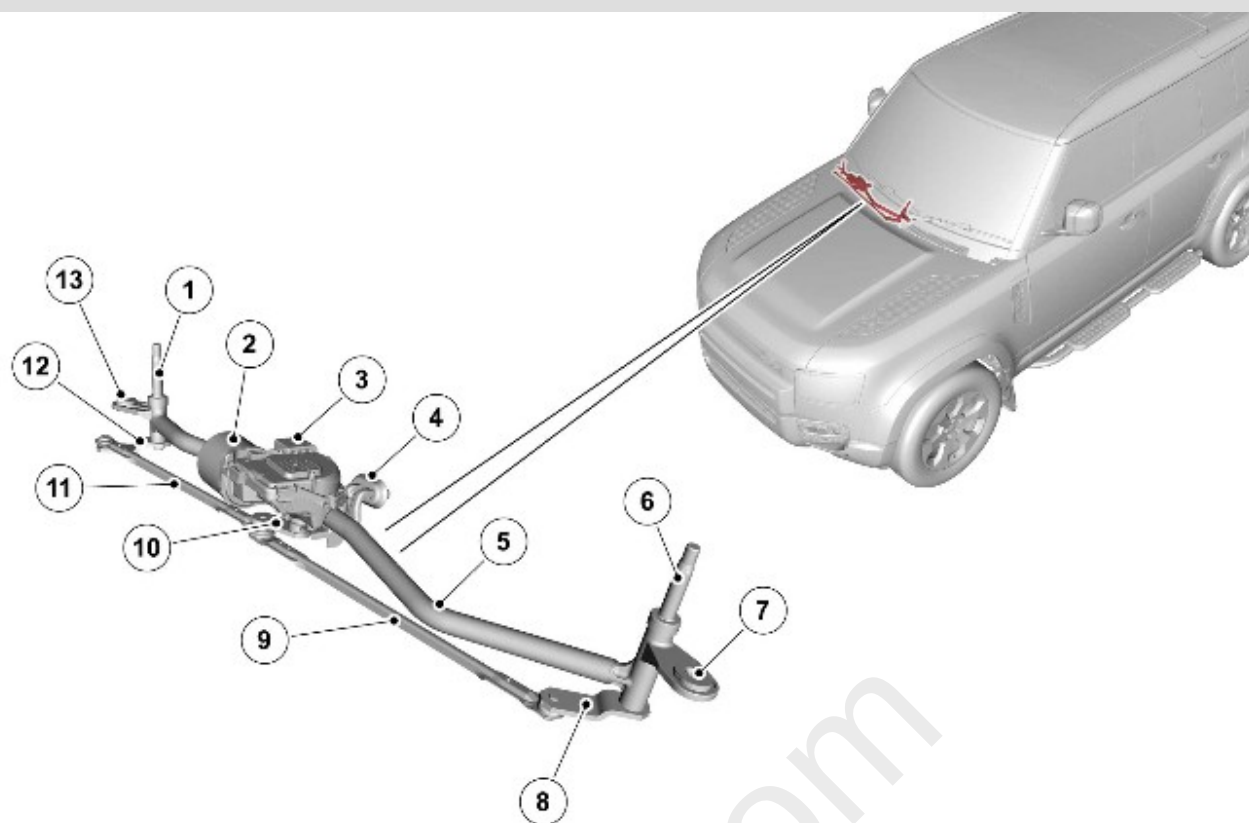
The outputs from the switches are converted to the LIN signals by the SWM and transmitted to the BCM/ GWM. The BCM/ GWM processes the LIN signals and activates the selected function directly through the relays. The relays are located in the Engine Junction Box (EJB) and the Rear Junction Box (BCMB).

WINDSHIELD WIPER MOTOR AND WIPER LINKAGE ASSEMBLY



NOTES:

- RHD vehicle is shown, LHD vehicle is similar.
- Vehicle with 5 doors is shown, vehicle with 3 doors is similar.



E251810

ITEM	DESCRIPTION
1	Pivot - Driver windshield wiper arm
2	Windshield wiper motor
3	Electrical connector
4	Rubber locating grommet
5	Main pipe
6	Pivot - Passenger windshield wiper arm
7	Rubber mounting
8	Pivot crank - Passenger windshield wiper arm
9	Link rod
10	Motor crank
11	Link rod
12	Pivot crank - Driver windshield wiper arm
13	Rubber mounting

The windshield wiper motor and linkage assembly differs between RHD and LHD vehicles. The windshield wiper linkage assembly and the motor are not available as separate service components.

The windshield wiper motor and linkage assembly is attached to the vehicle body with 2 bolts and washers at each end. The bolts are located in rubber bushes in the windshield wiper linkage assembly which isolate the assembly from the vehicle body. A rubber locating grommet is located behind the motor and engages on a spigot on the vehicle body to locate the linkage assembly.

The windshield wiper linkage assembly comprises a main pipe, with a pivot housing at each end. A bracket is attached, offset along the tube length, which locates the windshield wiper motor. A crank is positively attached to the windshield wiper motor output shaft. There are 2 link rods connected between the windshield wiper motor crank and the pivot crank at each end through the ball joints.

The motor crank converts rotary motion from the motor output shaft into linear movement of the link rods. The pivot cranks convert the linear motion back to rotary motion of the pivots. The rotary motion is passed to the wiper arms and blades causing the blades to wipe arc across the windshield.

The windshield wiper motor comprises a 12V Direct Current (DC) motor, gear wheel and worm drive, contained in an integral housing.

The windshield wiper motor assembly is connected to the vehicle harness by a 4-pin electrical connector.

The electrical connector provides:

- Startup battery voltage from the windshield wiper relay, located in the EJB.
- A ground path for the windshield wiper motor assembly.
- A LIN communication line, providing 2-way communication with the BCM/ GWM and the rain/light sensor.

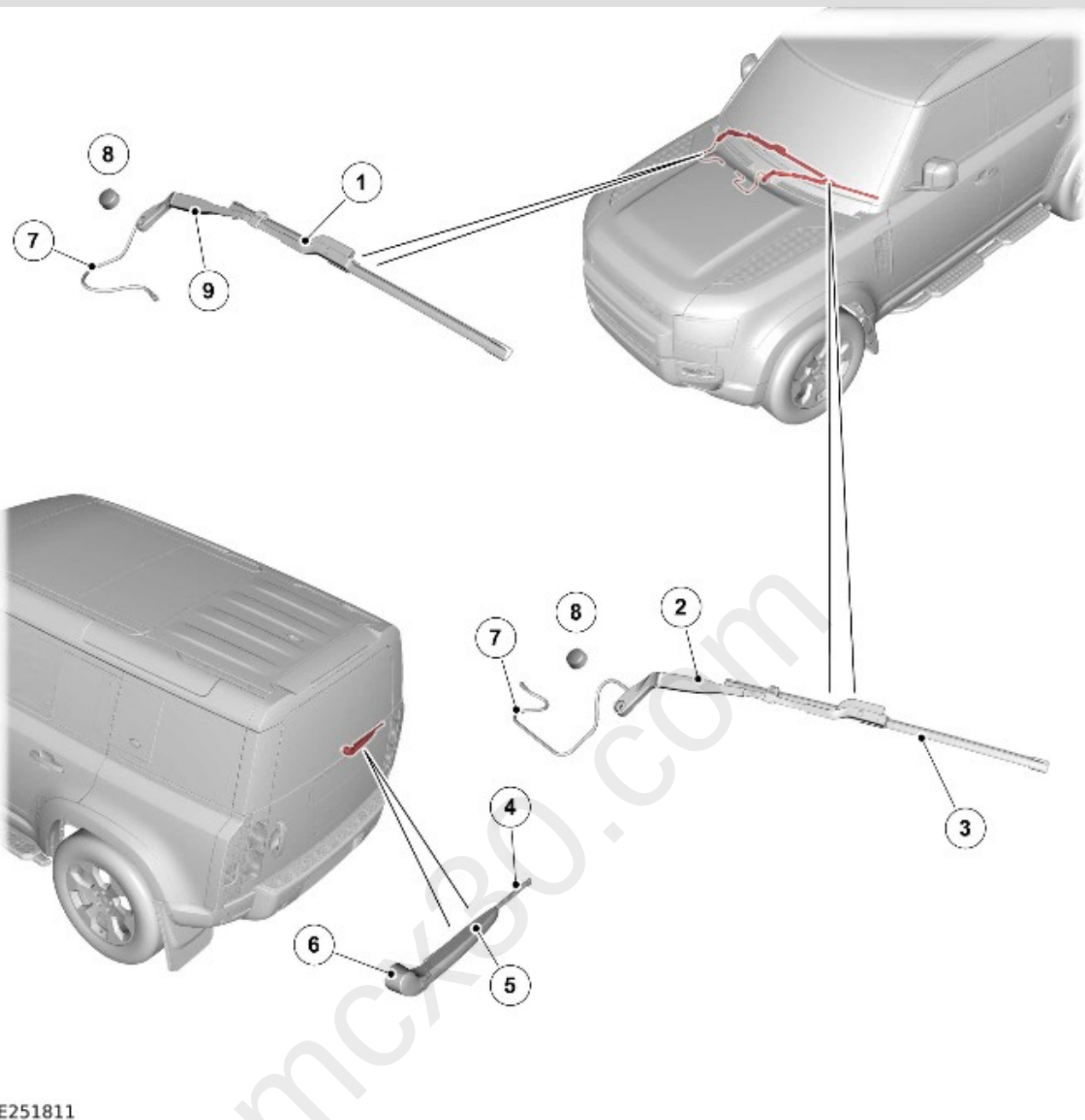
The windshield wiper motor is prevented from operating when the hood is open. When the vehicle speed is more than 6 km/h (3.7 mph), the BCM/ GWM considers the hood closed and the windshield wiper motor operates.

WIPER ARMS AND BLADES



NOTES:

- RHD vehicle is shown, LHD vehicle is similar.
- Vehicle with 5 doors is shown, vehicle with 3 doors is similar.



E251811

ITEM	DESCRIPTION
1	Windshield wiper blade - Driver side
2	Windshield wiper arm - Passenger side
3	Windshield wiper blade - Passenger side
4	Tailgate wiper blade
5	Tailgate wiper arm
6	Tailgate washer jet cap
7	Windshield washer jet or heated windshield washer jet (quantity 2)
8	Nut cap (quantity 2)

ITEM	DESCRIPTION
9	Windshield wiper arm - Driver side

Each windshield wiper arm is located on a taper spline on the respective pivot. A nut is screwed on the end of the pivot shaft and positively secures the windshield wiper arm on the taper spline.

The windshield wiper blades are attached to the windshield wiper arms with quick release fittings. The windshield wiper arms are spring loaded to maintain windshield wiper blade pressure. The windshield wiper blades have spines which provide pressure along the length of the windshield wiper blade. The spines allow the windshield wiper blade to curve and match the windshield profile throughout their arc.

The tailgate wiper arm is similar in design to the windshield wiper arms. The tailgate wiper arm attachment hole has tapered splines, which mate with the splines on the wiper motor spindle. The tailgate wiper arm is secured to the wiper motor spindle with a nut. The tailgate wiper arm has a pivot point, close to the spindle attachment. A tension spring is connected to the tailgate wiper arm on each side of the pivot point. A tension spring applies pressure to maintain the tailgate wiper blade in contact with the rear window.

The tailgate wiper blade clicks into the tailgate wiper arm. The tailgate wiper blade is a flat blade type with a spine, which provides an even pressure along the length of the tailgate wiper blade. The spine allows the tailgate wiper blade to curve and match the rear window profile throughout its arc.

Windshield washer jets

The windshield washer jets are attached on the windshield wiper arms. The washer fluid feed hose from the front/rear washer pump is connected to the jets. In line with each washer jet there is a non-return valve to prevent washer fluid draining back to the windshield washer reservoir. The non-return valves also limit the amount of washer fluid, which can be forced from the jets during cornering.

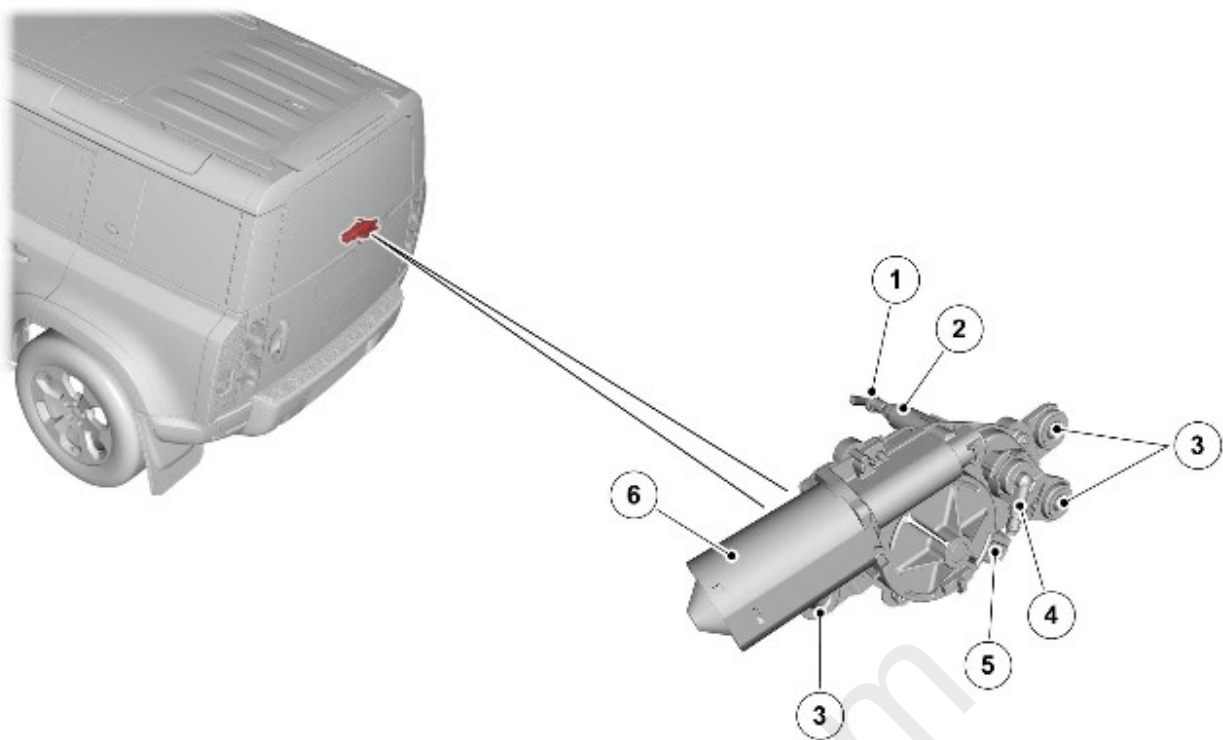
When the vehicle is equipped with heated windshield washer jets, the washer jets contain heater elements, which improve performance in cold conditions. The heater elements are controlled by the BCM/ GWM. The BCM/ GWM energizes the heater elements when the Ambient Air Temperature (AAT) falls below a predetermined temperature.

TAILGATE WIPER MOTOR



NOTE:

Vehicle with 5 doors is shown, vehicle with 3 doors is similar.



E251812

ITEM	DESCRIPTION
1	Tailgate washer jet
2	Spindle
3	Rubber mounting (quantity 3)
4	Washer fluid connector
5	Electrical connector
6	Tailgate wiper motor

The single speed tailgate wiper motor is installed on the inner surface of the tailgate. The tailgate wiper motor is secured by 3 bolts. The interior trim panel covers all the electrical components that are installed in the tailgate. Rubber bushes isolate the tailgate wiper motor assembly from the tailgate.

The tailgate wiper motor drives an integral gear wheel through a worm drive attached to the motor spindle. The gear wheel is installed with a crank which in turn is connected to the tailgate pivot. The crank converts the rotary motion of the gear wheel into the required reciprocating arc to wipe the rear window.

The 3-pin electrical connector is used to connect the tailgate wiper motor to the vehicle harness.

The electrical connector provides:

- Startup battery voltage from the tailgate wiper relay, located in the BCMB.
- A ground path.
- A voltage from the BCM/ GWM for the wiper park.

The BCM/ GWM removes voltage to the tailgate wiper motor when:

- The tailgate wiper or the linkage becomes obstructed.
- The park signal state does not change within 6 seconds.

The tailgate wiper motor remains disabled until the obstruction is cleared, or an alternative active wiper mode is selected. There are 2 disable events allowed:

- Until a 180 second disable period is activated.
- Until the next ignition cycle when the event counter is reset to 0.

Tailgate washer jet

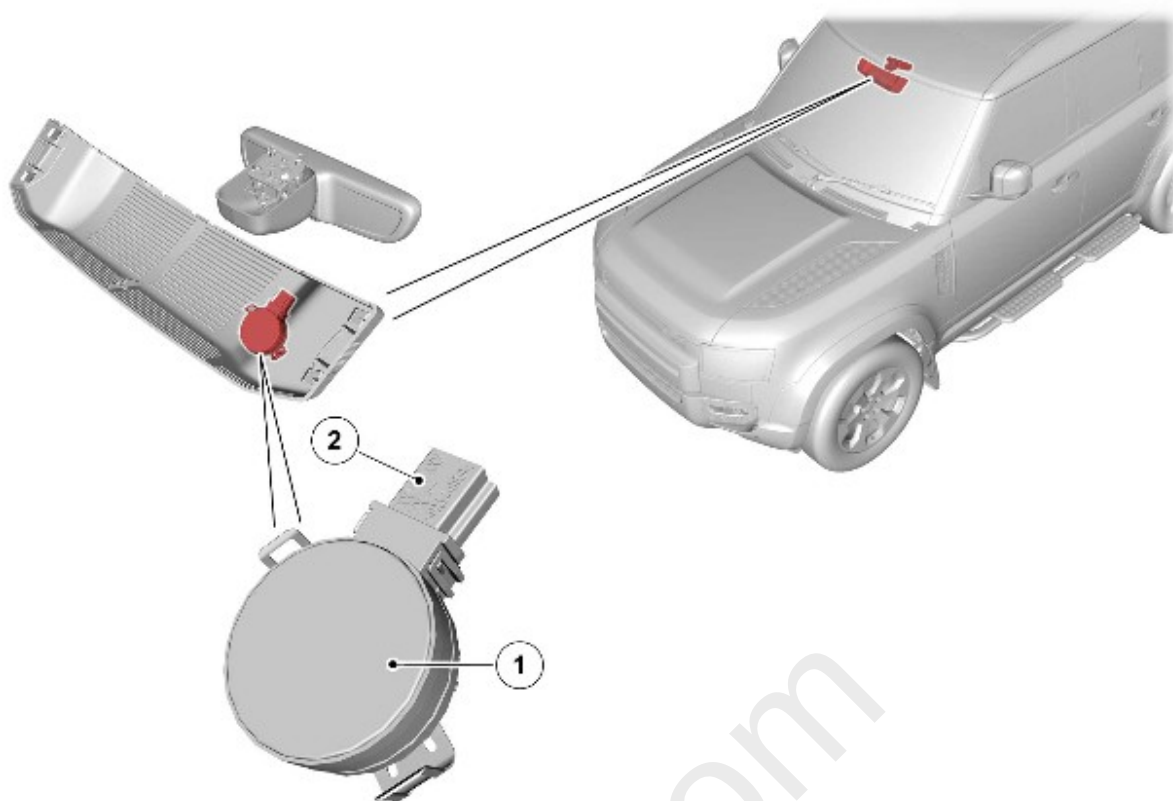
The tailgate washer jet is attached to the spindle of the tailgate wiper motor. The washer fluid feed hose from the front /rear washer pump is connected to the washer fluid connector which is located on the tailgate wiper motor. The washer fluid flows through the spindle to the tailgate washer jet. The washer fluid connector contains a valve to prevent washer fluid draining back to the windshield washer reservoir.

RAIN/LIGHT SENSOR



NOTE:

Vehicle with 5 doors is shown, vehicle with 3 doors is similar.



E251813

ITEM	DESCRIPTION
1	Silicon pad
2	Electrical connector

The rain/light sensor is installed in a bracket attached to the inside of the windshield, close to the Rear View Mirror (RVM). The rain/light sensor is concealed under a cover, which clips onto the bracket. Contact between the rain/light sensor and windshield is provided through a silicon pad. The silicon pad is compressed during the assembly process by 2 locking retaining clips either side of the sensor. The rain/light sensor receives voltage from the BCM/ GWM. The rain/light sensor provides information to the BCM/ GWM and the windshield wiper motor through a Local Interconnect Network (LIN).

For additional information, refer to: [Exterior Lighting](#) (417-01 Exterior Lighting, Description and Operation).

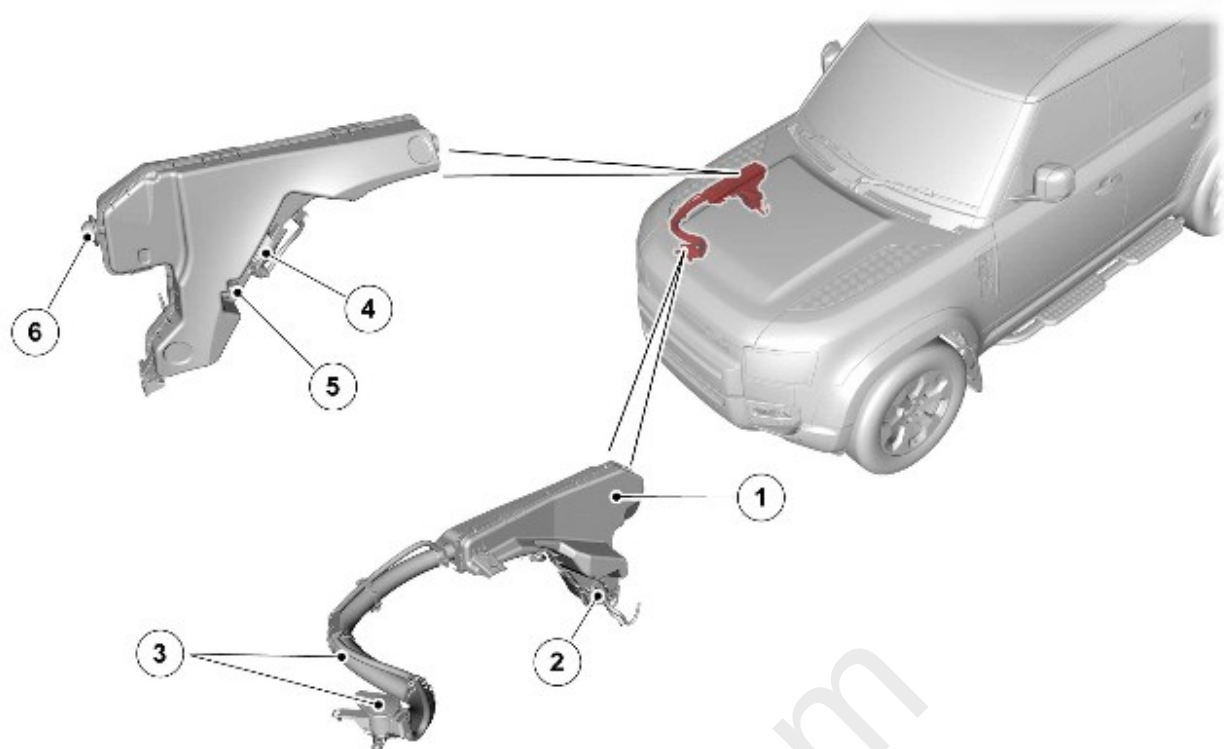
The rain/light sensor contains a heater element. The software within the rain/light sensor uses the heater element to keep the optical unit clear of condensation. The software receives Ambient Air Temperature (AAT) signals from the BCM/ GWM assembly through the LIN connection. Depending on the AAT signal value, the software activates the heater element.

WINDSHIELD WASHER RESERVOIR



NOTE:

Vehicle with 5 doors is shown, vehicle with 3 doors is similar.



E251814

ITEM	DESCRIPTION
1	Windshield washer reservoir
2	Front/rear washer pump
3	Windshield washer reservoir filler neck and cap
4	Headlamp washer pump
5	Washer fluid level sensor
6	Rubber isolator

The windshield washer reservoir is located behind the front right wheel, behind the wheel arch liner. The windshield washer reservoir is a plastic molding. The reservoir is secured in the wheel arch to the body with 2 bolts.

A filler cap is located at the front of the windshield washer reservoir and connects to the windshield washer reservoir through a filler neck. The filler cap is accessible from the engine compartment.

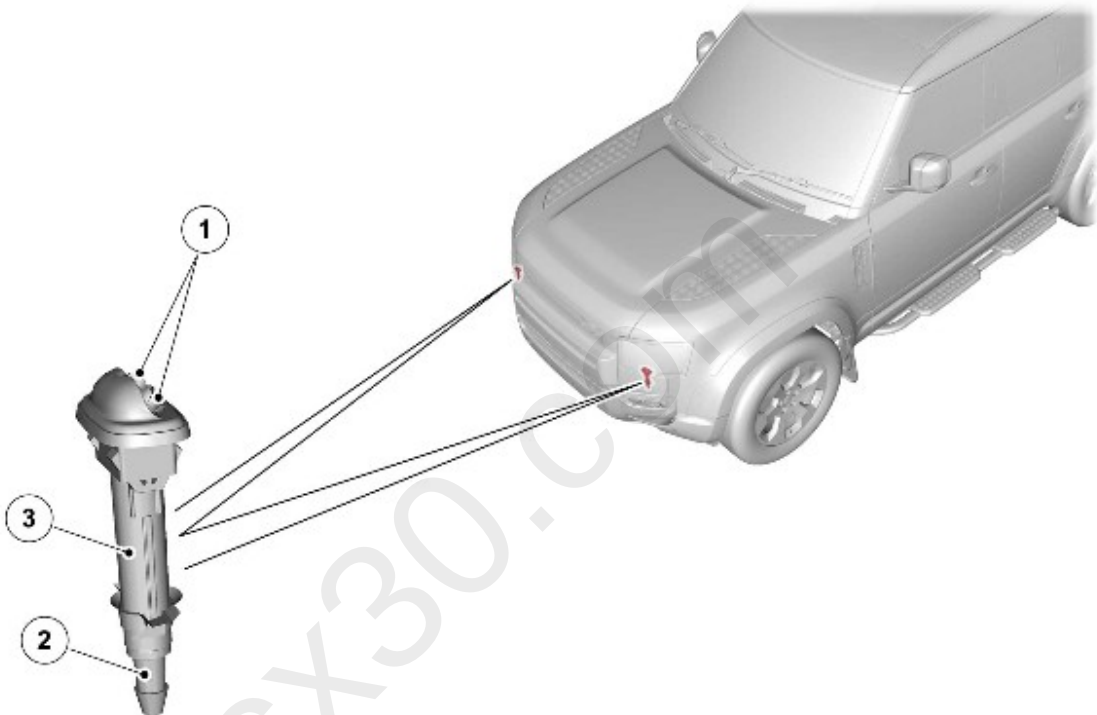
A washer fluid level sensor is located in the windshield washer reservoir and connects to the BCM/ GWM through a hardwired connection. A float, with integral magnet, is located around the tube, inside the reservoir. The sensor has a reed switch which is normally open. When the fluid level reduces, the magnetic pivot float drops. When the magnet reaches the sensor contacts, the magnetic field closes the contacts. The BCM/ GWM senses this completed circuit and displays the low fluid level message in the Instrument Panel Cluster (IPC).

A combined front/rear washer pump is installed at the base of the windshield washer reservoir. The headlamp washer pump is installed above the washer fluid level sensor. The front/rear washer pump supplies washer fluid to the windshield washer jets and the tailgate washer jet. The headlamp washer pump supplies fluid to the left and right headlamp washer jets.

HEADLAMP WASHER JET - IF EQUIPPED

 NOTE:

Vehicle with 5 doors is shown, vehicle with 3 doors is similar.



E251815

ITEM	DESCRIPTION
1	Washer jet (quantity 2)
2	Washer fluid supply hose connection
3	Washer jet housing

 NOTE:

The headlamp washers only operates when the following conditions occur:

- The vehicle headlamps are ON.

- In Power Mode 6 (ignition ON) or higher.
- The 'Washer Low Fluid Level' is not shown.

The front bumper is installed with 2 headlamp washer jets. The headlamp washer is located in an aperture at the front of the bumper below the headlamp assembly. The headlamp washer is attached to a bracket moulded into the bumper structure.

The washer fluid feed hose from the headlamp washer pump is connected to the headlamp washer jet. Each headlamp washer jet directs washer fluid under pressure onto the headlamp lens when the headlamp washer jet is operating.

WASHER JET – REAR PROXIMITY CAMERA (IF EQUIPPED)

When the vehicle is equipped with rear proximity camera, there is a washer jet located beside the camera in the rear bumper. The washer fluid feed hose from the tailgate washer is connected to the washer jet with a 'Y' connector. Therefore the washer jet operates with the tailgate washer jet at the same time. The washer jet assembly contains a valve to prevent washer fluid draining back to the reservoir.

OPERATION

WINDSHIELD WIPERS

The windshield wiper system has the following functionality:

- Flick wipe
- Slow wipe
- Fast wipe
- Windshield wash and wipe
- Automatic wipe.

Flick wipe

Flick wipe is activated when the driver moves the windshield wiper control switch to the single wipe position. The BCM / GWM detects a message through the LIN. Then the BCM/ GWM energizes the wiper ON/OFF relay in the EJB to supply power to the windshield wiper motor. The windshield wiper motor operates at fast speed. When the windshield wiper control switch is released from the flick wipe position, the windshield wiper motor operates at slow speed. The wipers operate for a minimum of 1 full cycle before the relay is de-energized.

Slow wipe

When the driver moves the windshield wiper control switch to the slow wipe position, the BCM/ GWM detects a LIN message. The BCM/ GWM energizes the wiper ON/OFF relay in the EJB to supply power to the windshield wiper

motor. The BCM/ GWM also transmits the LIN message to the windshield wiper motor to operate at slow wiping speed. The windshield wiper motor operates at slow speed until 1 of the following:

- Fast speed is selected.
- The wiper ON/OFF relay is de-energized, removing the voltage to the windshield wiper motor.

Fast wipe

When the driver moves the windshield wiper control switch to the fast wipe position, the BCM/ GWM detects a LIN message. The BCM/ GWM energizes the wiper ON/OFF relay in the EJB to supply voltage to the windshield wiper motor. The BCM/ GWM also transmits the LIN message to the windshield wiper motor to operate at fast wiping speed. The windshield wiper motor operates at fast speed until 1 of the following:

- Slow speed is selected.
- The wiper ON/OFF relay is de-energized, removing the voltage to the windshield wiper motor.

Wash and wipe

Moving the windshield wiper control switch towards the operator selects front wash/wipe. The position is non-latching and the windshield washer pump is operated for as long as the switch is active. When the switch is only momentarily operated, only the washer pump operates. When the switch is activated for more than 250 ms, the windshield wiper motor begins to move.

The BCM/ GWM monitors the windshield wiper control switch operation. After the switch is released, the BCM/ GWM allows a number of full wipe cycles to clear the windshield. The number of full wipe cycles is dependent on headlamp wash operation.

Automatic wipe

When the windshield wiper control switch is in the 'AUTO' position, the BCM/ GWM detects and monitors the LIN message received from the rain/light sensor. The wiping speed varies depending on the vehicle speed and the moisture level detected by the rain/light sensor. The BCM/ GWM receives vehicle speed signals from the Anti-Lock Brake System Control Module (ABS) on the FlexRay.

The rain/light sensor sensitivity can be adjusted by turning the rotary switch on the windshield wiper control switch to the required position. The selected setting communicates on the LIN to the BCM/ GWM.

The intermittent function can be selected through the Touch Screen (FCDIM) to disable the autowipers function. The intermittent delay period is adjustable using the rotary switch on the windshield wiper control switch. The delay period is also subject to vehicle speed, with the selected delay period decreasing with an increase in road speed. The windshield wiper motor changes the wiping speed based on the information from the BCM/ GWM and the rain/light sensor.

Winter wiper park mode

The winter wiper park function allows the wipers to park in a higher position to lift the blades from the windshield for these reasons:

- So that the wipers do not contact the hood when you lift them off the windshield.
- So that you can clear snow from the cowl panel area.
- To allow heat from the defroster remove ice from the wiper blades.

The wipers move to the winter park position when in Power Mode 4 (accessory (vehicle unlocked and Smart Key present)). The wipers remain in the winter park position until 1 of the following occurs:

- The vehicle speed is more than 8 km/h (5 mph).
- The wipers are operated.

The winter wiper park function is enabled or disabled through the FCDIM.

Wiper service position

The wiper service position allows the windshield wipers to be parked in a position to allow easy access to the wiper blades for replacement.



NOTE:

The smart key must remain in the vehicle when the windshield wipers are in the service position.

To set the service mode to ON, do this:

- 1 Set the windshield wiper control switch OFF and in Power Mode 4 (accessory (vehicle unlocked and Smart Key present)) or lower.
- 2 Set the windshield wiper control switch OFF and in Power Mode 6 (ignition ON) or higher.
- 3 Set the windshield wiper control switch OFF and in Power Mode 4 (accessory (vehicle unlocked and Smart Key present)) or lower.
- 4 Move the windshield wiper control switch to the flick position when in Power Mode 6 (ignition ON) or higher.
- 5 The windshield wipers move to the service position.

The wipers remain in service position until in Power Mode 4 (accessory (vehicle unlocked and Smart Key present)) or lower where they return to park position.

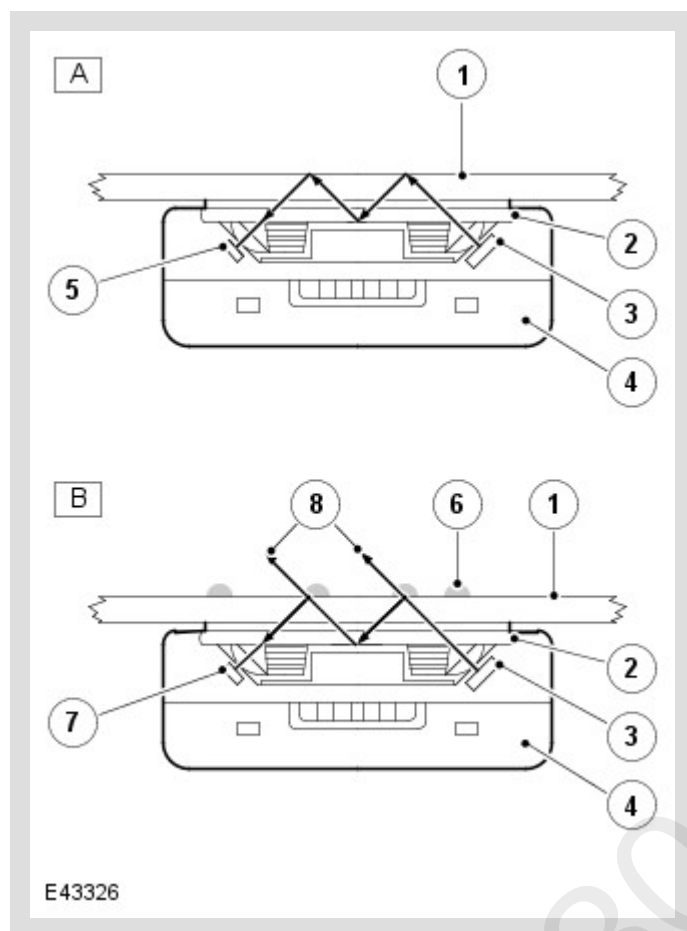
Vehicles with keyless entry require the smart key to be left in the vehicle. The purpose is to make sure that the vehicle remains in Power Mode 6 (ignition ON) or higher while replacing windshield wiper blades.

To return the windshield wipers to the normal park position, do this:

- 1 Turn the ignition switch in Power Mode 4 (accessory (vehicle unlocked and Smart Key present)) or lower.

2 The windshield wipers return to the park position.

RAIN/LIGHT SENSOR



A = CLEAN AND DRY WINDSHIELD: B = WET AND DIRTY WINDSHIELD.

ITEM	DESCRIPTION
1	Windshield outer surface
2	Optical element
3	Transmitter diodes (100% light transmitted)
4	Rain/light sensor assembly
5	Receiver diodes (100% light received)
6	Water droplets or water film
7	Receiver diodes (less than 100% light received)
8	Lost light

The rain/light sensor contains a number of transmitter and receiver diodes which emit and receive infrared light. By comparing the received light signal against the known transmitted light signal, the rain/light sensor can determine the amount of water.

The autowipers are activated when the windshield wiper control switch is moved to the 'AUTO' position. The sensitivity of the rain/light sensor can be adjusted by rotating the rotary switch on the windshield wiper control switch. Clockwise rotation increases sensitivity, while counter clockwise adjustment decreases sensitivity. An increase in sensitivity adjustment results in a flick wipe.

The rain/light sensor feature can be selected through the FCDIM.

The software within the rain/light sensor can compensate the following:

- Short-term effects – For example dirt or smear, caused by worn wiper blades.
- Long-term effects – For example scratches or stone chips on the windshield, in the area of the optical unit.

CAUTION:

The adaption process needs to be conducted when the outer surface of the windshield is dry and clean with the ignition ON and auto selected. Successful recognition of an adaption request shall result in a wipe cycle.

When the self-adaptation is no longer possible, a recalibration routine must be completed, using the Jaguar Land Rover (JLR) approved diagnostic equipment. The routine allows to reset the rain/light sensor values then the sensor can adapt to the new conditions. For additional information, refer to: [Rain/Light Sensor](#) (501-16 Wipers and Washers, Removal and Installation).

TAILGATE WIPER

NOTE:

The tailgate wiper does not operate when the tailgate is open and the vehicle is stationary.

When it receives a request for tailgate wiper operation, the BCM/ GWM energizes the tailgate wiper relay in the BCMB. When energized, the relay supplies voltage to the tailgate wiper motor.

The BCM/ GWM receives signals from the park switch which is integral with the tailgate wiper motor. The purpose is to make sure the wiper returns to the park position when the tailgate wiper request is canceled mid-stroke.

The BCM/ GWM also powers the tailgate wiper motor when REVERSE is selected while the windshield wiper function is active. The REVERSE signal originates in the Transmission Control Module (TCM). The TCM transmits a REVERSE signal over the FlexRay to the BCM/ GWM, which operates the tailgate wiper (when the windshield wiper function is active).

The tailgate wiper system has the following functionality:

- Tailgate wash and wipe
- Intermittent wipe
- Continuous wipe.

Tailgate wash and wipe

Press and release the right end button on the windshield wiper control switch to operate tailgate washer and wiper. The wiper operates in a set cycle to minimize drips when the button is released. When more washer fluid is required, push and hold the button.

Intermittent wipe

When the driver rotates the windshield wiper control switch to the tailgate intermittent wipe position, the tailgate wiper operates intermittently. There is a delay between wipes related to the speed of the vehicle.

Continuous wipe

When the driver rotates the windshield wiper control switch to the tailgate continuous wipe position, the windshield wipers operate continuously.

WINDSHIELD WASHER

When the driver moves the windshield wiper control switch to the windshield wash position, the BCM/ GWM energizes the front/rear washer pump. The BCM/ GWM delays windshield wiper operation for a short period after the driver operates the windshield wiper control switch in the windshield wash position.

When these 2 steps occur:

- The windshield wiper operates in either position.
- The driver moves the windshield wiper control switch to the windshield wash position.

The BCM/ GWM energizes the front/rear washer pump, but the wiper sequence does not change.

After the washer pump stops, the BCM/ GWM operates the wipers to complete the current wipe cycle and a number of further full cycles before PARK.

TAILGATE WASHER

When the tailgate washer operation is requested, the BCM/ GWM energizes the front/rear washer pump. The front /rear washer pump operates in the opposite direction to the windshield washer operation. Reversing the polarity of the pump allows washer fluid to be directed to the tailgate washer jet rather than the windshield washer jets.

The tailgate washer jet operates for up to 10 seconds when continuously requested. When the tailgate washer switch is released, the BCM/ GWM then operates several wipe cycles to remove any residual washer fluid from the rear window.

Washer jet - Rear proximity camera

On vehicles with rear proximity camera, the washer jet for the rear proximity camera only operates when the tailgate washer activates.

HEADLAMP WASHER – IF EQUIPPED

The headlamp washers are only active when the headlamps are switched ON and in Power Mode 6 (ignition ON) or higher.

When the windshield wiper control switch is in the windshield WASH position and the headlamps are ON, the BCM/ GWM activates the headlamp washer relay. The headlamp washer relay is in the EJB which supplies power to the headlamp washer motor.

The number of headlamp washer operations in a given period is limited to preserve the washer fluid in the washer reservoir. The BCM/ GWM then suspends the headlamp wash activation for the next 10 minutes and 3 operations of the wash/wipe switch. After the 10 minute period has expired, the headlamp power washers are activated on the fourth operation of the windshield wiper control switch.

When the driver requests more than 3 windshield washes during the 10 minutes inhibit period, the BCM/ GWM does not activate the headlamp washer again until:

- The 10 minute period has expired.
- The driver requests 1 more front wash.

When the washer fluid level becomes low, the BCM/ GWM suspends headlamp washer operation to preserve the remaining washer fluid.

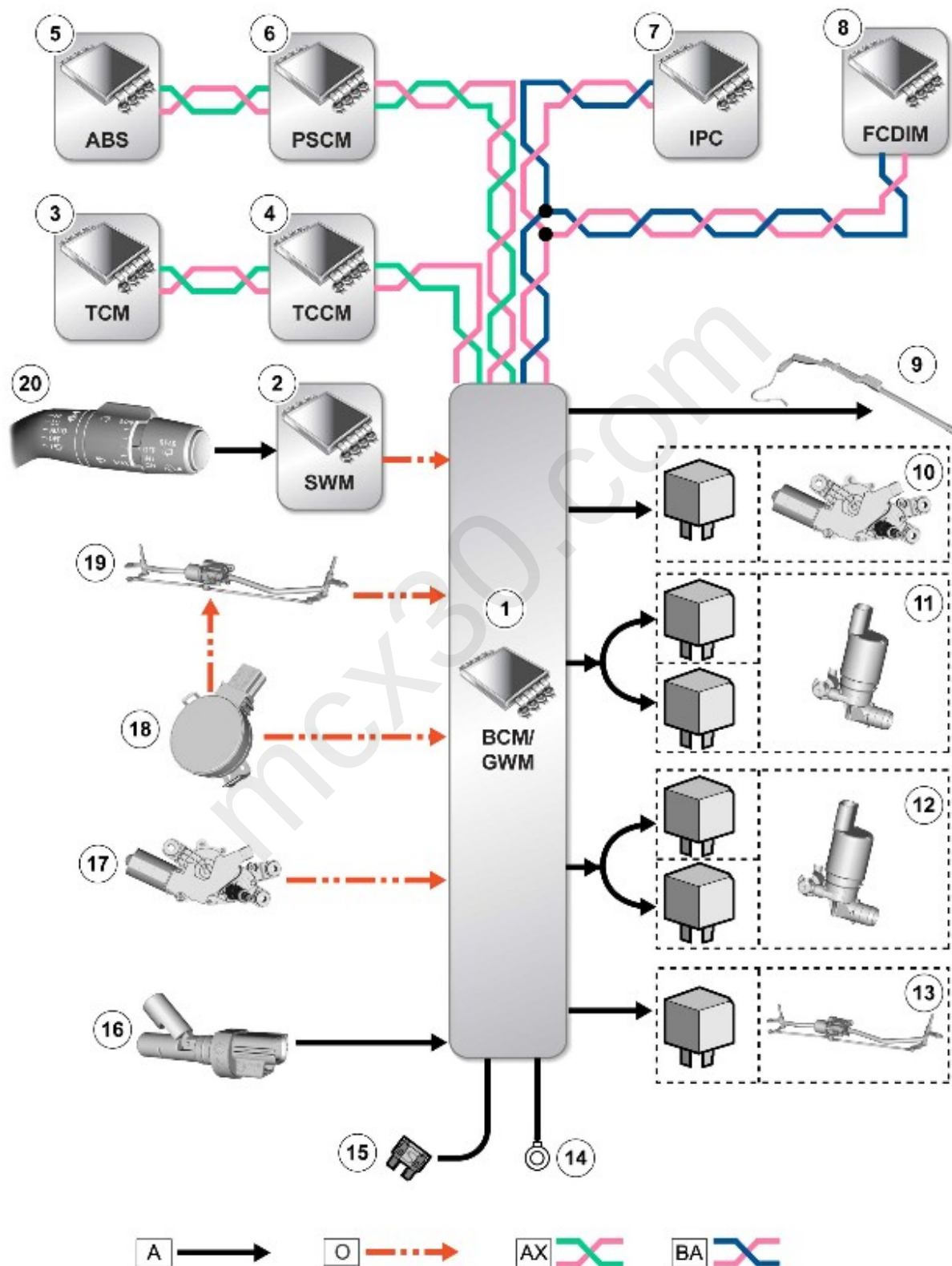
DIAGNOSTICS

The BCM/ GWM records any Diagnostic Trouble Code(s) (DTC)s and related data. Read the DTCs and related data with the JLR approved diagnostic equipment.

The JLR approved diagnostic equipment can read live data and activate certain components.

CONTROL DIAGRAM

CONTROL DIAGRAM - 1 OF 1



A = HARDWIRED: O = LIN: AX = FLEXRAY: BA = HIGH SPEED (HS) CONTROLLER AREA NETWORK (CAN) HUMAN MACHINE INTERFACE (HMI) SYSTEMS BUS.

ITEM	DESCRIPTION
1	BCM/ GWM
2	SWM
3	TCM
4	Transfer Case Control Module (TCCM)
5	ABS
6	Power Steering Control Module (PSCM)
7	IPC
8	FCDIM
9	Heated windshield washer jet (quantity 2) (if equipped)
10	Tailgate wiper motor
11	Front/rear washer pump
12	Headlamp washer pump (if equipped)
13	Windshield wiper motor
14	Ground
15	Power supply
16	Washer fluid level sensor
17	Tailgate wiper motor
18	Rain/Light sensor
19	Windshield wiper motor
20	Windshield wiper control switch