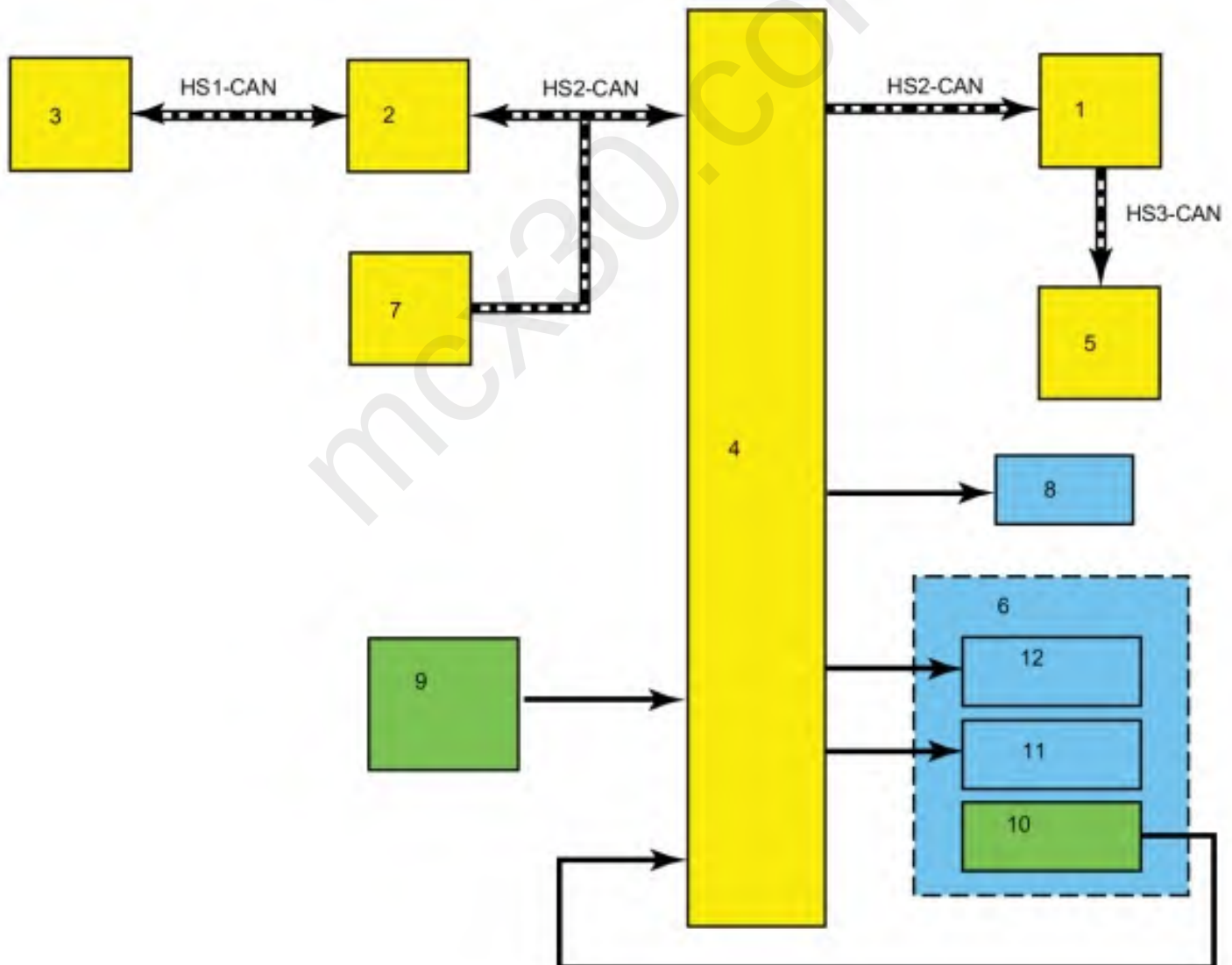


Four-Wheel Drive Systems - System Operation and Component Description

System Operation

System Diagram

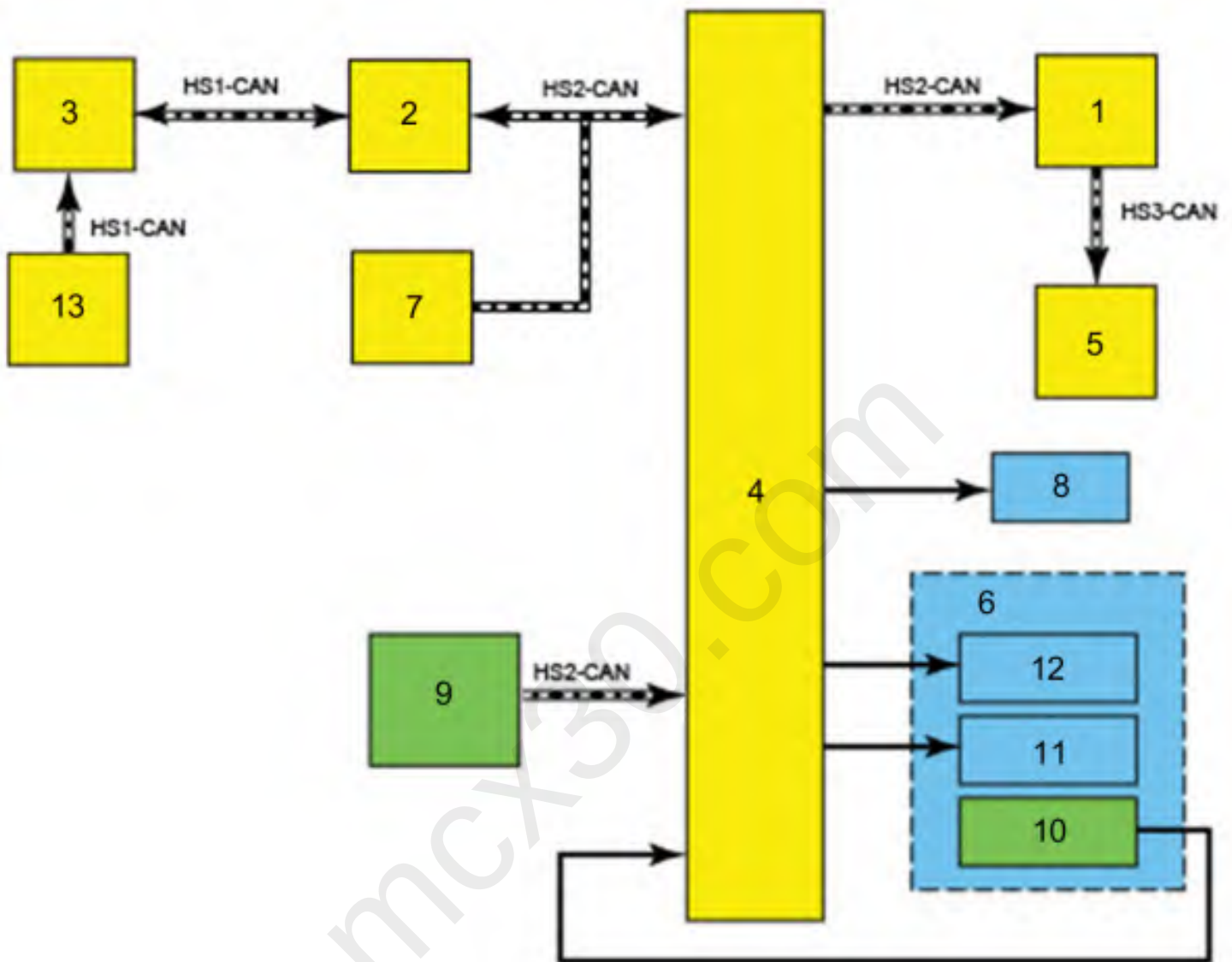


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Item	Description
1	GWM
2	GWM
3	PCM
4	TCCM
5	IPC
6	Transfer Case
7	ABS
8	IWE
9	Mode Select Switch
10	Position Sensors
11	Motor
12	Clutch Solenoid

System Diagram

Vehicles Equipped With The 3.5L GTDi, With 10R80 Transmission



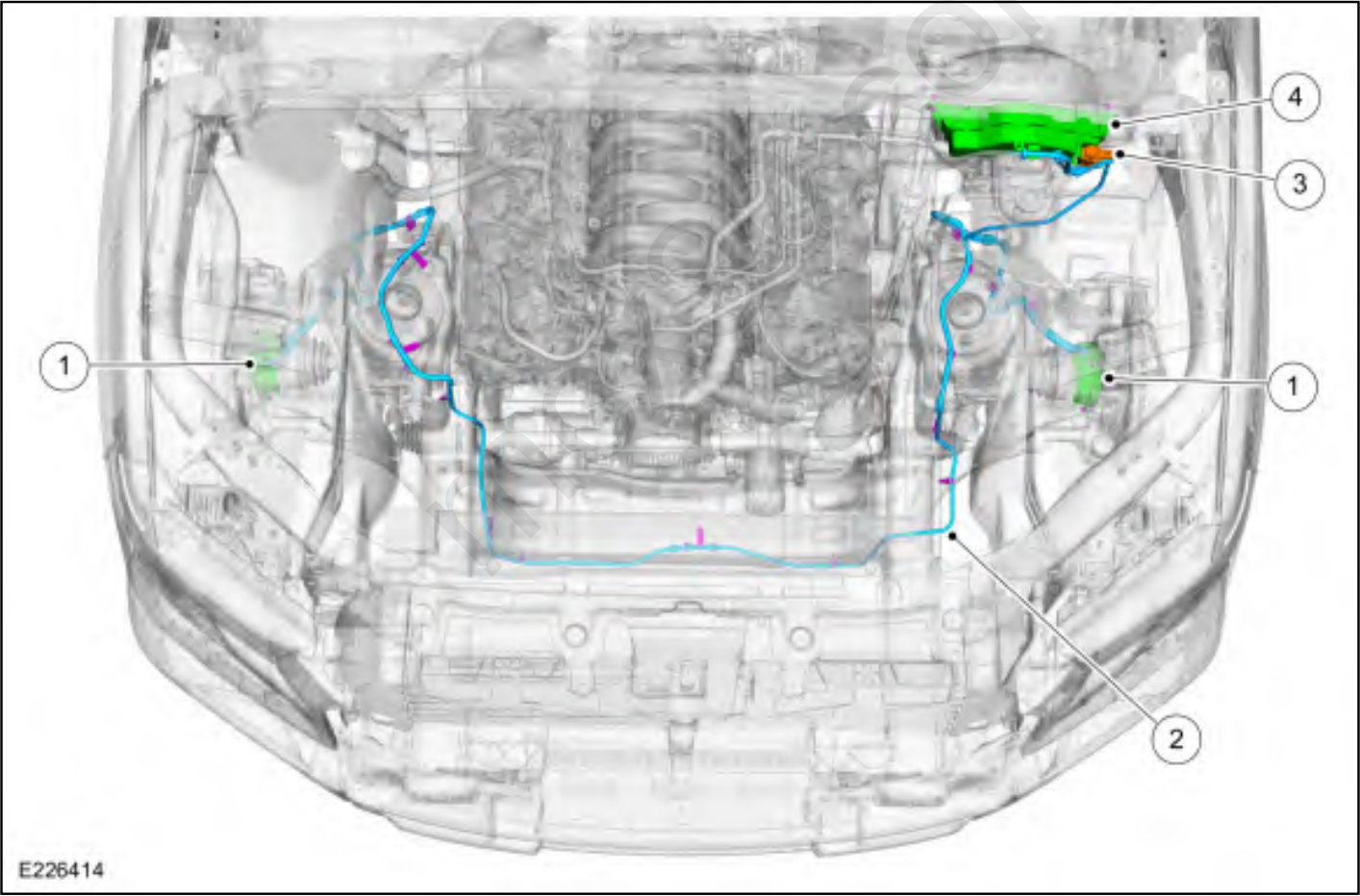
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Item	Description
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6	Transfer Case
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9	Mode Select Switch
10	Position Sensors
11	Motor
12	Clutch Solenoid
13	TCM

IWE System

The IWE system consists of the following:



1	IWEs (spring-loaded vacuum hubs)
2	Vacuum hoses
3	IWE solenoid

The IWE system, used on Electronic Shift-On-The-Fly (ESOF) and 2-speed torque-on-demand equipped vehicles, uses vacuum hubs that engage or disengage the front wheel hubs from the front halfshafts.

The IWE solenoid receives engine vacuum from the vacuum reservoir. When the 4WD system is in 2H mode, the TCCM supplies a ground path to the IWE solenoid to apply vacuum to the IWEs (disengaging the front hubs from the front halfshafts). When operating in any 4x4 mode, the TCCM does not supply the ground path to the IWE solenoid, vacuum is not applied to the IWEs and an internal spring keeps the front hubs engaged to the front halfshafts. Vehicles equipped with a 2.7L EcoBoost engine are equipped with an engine mounted/cam-driven brake booster vacuum pump that supplies vacuum to the IWE vacuum reservoir. The brake vacuum pump is located on the backside of the cylinder head.

Refer to: [Brake Vacuum Pump - 2.7L EcoBoost \(238kW/324PS\)](#) (206-07 Power Brake Actuation, Removal and Installation).

As a first step in service, eliminate obvious items such as loose wiring connections, loose vacuum connections or damaged vacuum lines

Electronic Locking Differential (ELD) System

The Electronic Locking Differential (ELD) system consists of the following components:

- ELD field coil, located at the rear differential
- Rear differential
- MSS (unique for ELD equipped vehicles, the ELD switch is integrated with the MSS), located on instrument panel.

Neutral Flat Tow

NOTE: 2WD vehicles cannot be towed with any wheels on the ground as vehicle or transmission damage may occur.

NOTE: Failing to put the transfer case into the NEUTRAL position damages vehicle components.

Vehicles equipped with a 4WD system have neutral flat tow software in the TCCM. Following the neutral flat tow activation procedure commands the transfer case shift motor into a neutral position. Locking the transfer case in neutral prevents damage to the transmission while towing a 4WD vehicle on all 4 wheels (such as when being towed behind a motorhome).

Component Description

For component information,

Refer to: Four-Wheel Drive Systems - Vehicles With: 2-Speed Torque On Demand Transfer Case (308-07 Four-Wheel Drive Systems) .

Refer to: Four-Wheel Drive Systems - Vehicles With: Electronic Shift Transfer Case (308-07 Four-Wheel Drive Systems) .

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