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2018 FORD Mustang Shelby GT350R OEM Service and Repair Workshop Manual

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Message Center

The message center is an integral part of the IPC (instrument panel cluster) that receives and acts upon much of the same information that is input and used to operate the IPC (instrument panel cluster) (gauges, informational indicators, and warning indicators). The message center uses both hardwired and network-based inputs to receive information. The message center functionality is controlled through the message center switch (part of the RH (right-hand) steering wheel switch).

Whenever conditions are present that require a warning message, the message center replaces the last selected display with the new warning display. Once the message is reset or cleared, the message center returns to the last selected display. If multiple warnings are present, the message center rotates through the messages, displaying each warning for approximately 4 seconds. Warning messages are also generally associated with other observable outputs of the IPC (instrument panel cluster) (gauges, informational indicators and Reconfigurable Telltales [RTTs]) . For example, when the ABS (anti-lock brake system) module detects a low brake fluid condition, the ABS (anti-lock brake system) module sends the IPC (instrument panel cluster) a request through the GWM (gateway module A) to illuminate the brake warning indicator and a request to display the LOW BRAKE FLUID message in the message center. This allows the message center to be a more informative supplement to the IPC (instrument panel cluster) gauges and indicators.

The system warning messages alert the operator to possible concerns or malfunctions in the vehicle operating systems. System warning messages can be stand-alone messages, but are often associated with another form of indication, such as a gauge or an indicator. The message center displays the last selected feature if there are no additional warning messages. Once a warning message has been displayed, the message must be acknowledged to allow full functionality of the message center by pressing the OK button to acknowledge and clear the warning message. For additional information on warning messages displayed, refer to the Owner's Literature.

Warning Chimes

The warning chimes provide the driver with audible warnings that act as reminders and supplemental alerts to visual IPC (instrument panel cluster) indications such as gauges, indicators and message center warnings. The IPC (instrument panel cluster) controls all warning chimes based on messages received from external modules. The IPC (instrument panel cluster) prioritizes the chimes according to a preset hierarchy programmed into the IPC (instrument panel cluster) software. When more than one chime request is received by the IPC (instrument panel cluster) , the most important chime sounds. If a lower priority chime is currently sounding, the higher priority request takes over and replaces or delays the lower priority chime.

The warning chimes are sounded through the audio system speakers and the IPC (instrument panel cluster) . The turn signal/hazard on (tick-tock) is the only individual chime that sounds through the IPC (instrument panel cluster) , not the audio system. The parking aid and BLIS (blind spot information system) / CTA (cross traffic alert) warning chimes are sounded through the rear speakers. All other warning chimes are sounded through the front audio system speakers.

NOTE

Instrument Panel Cluster (IPC) - System Operation and Component Description

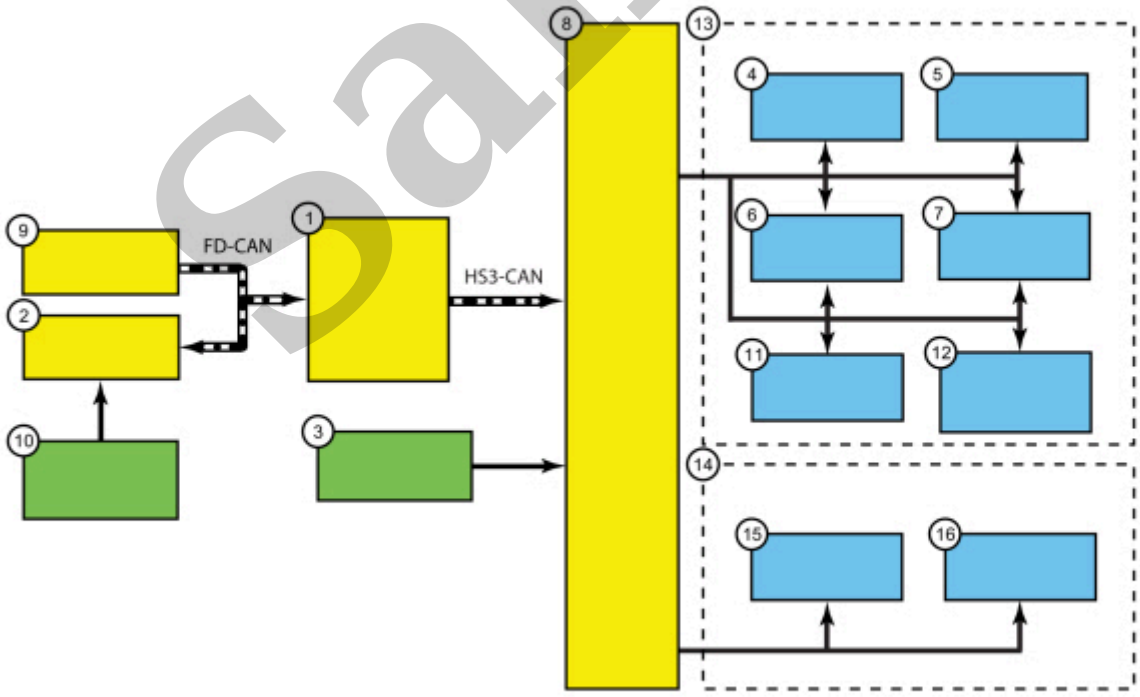
413-01 Instrumentation, Message Center and Warning Chimes	***2022 F-150***
Description and Operation	***Procedure revision date: 10/24/2022***

Instrument Panel Cluster (IPC) - System Operation and Component Description

System Operation

System Diagram - Gauges

Analog Gauges



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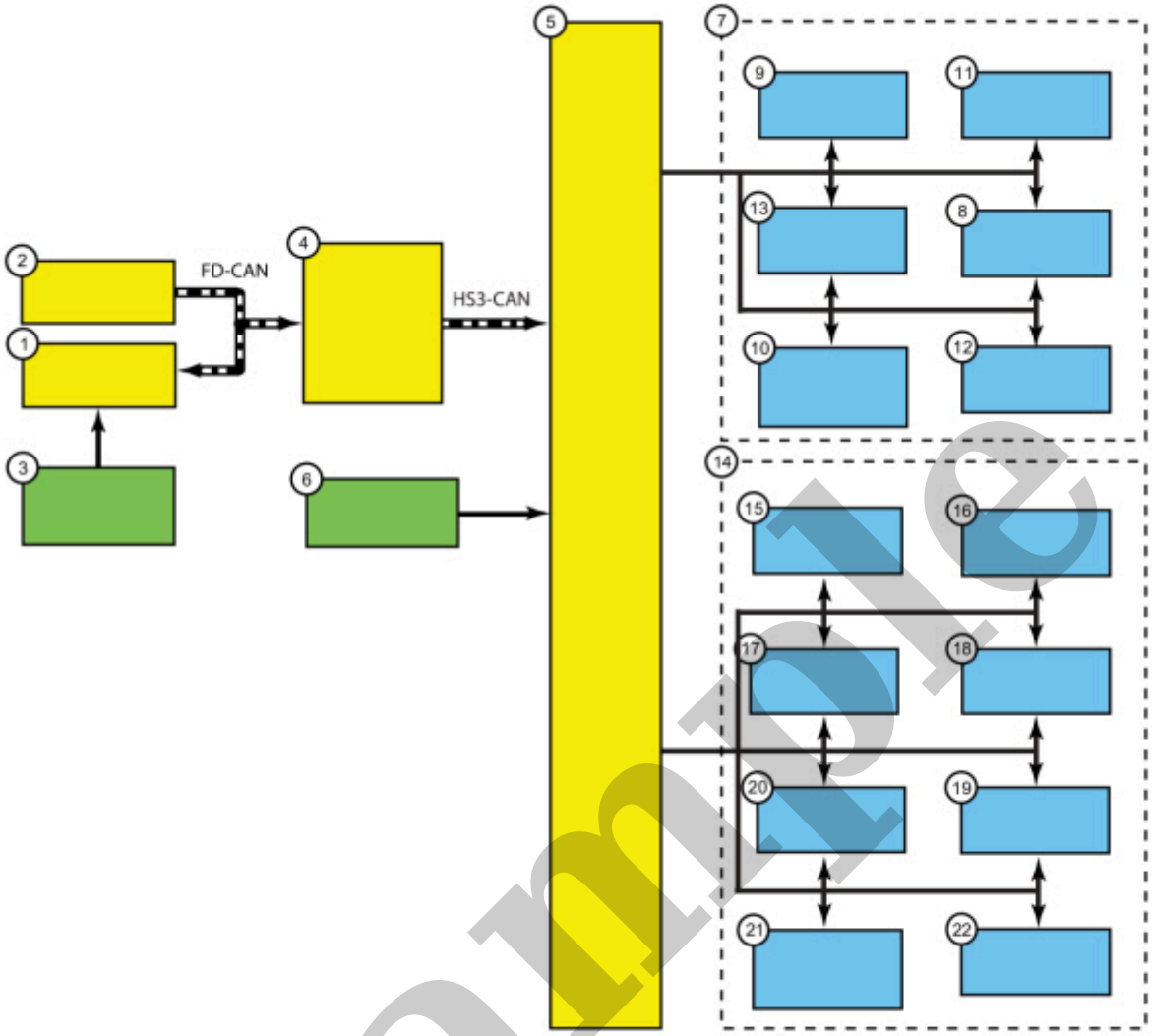

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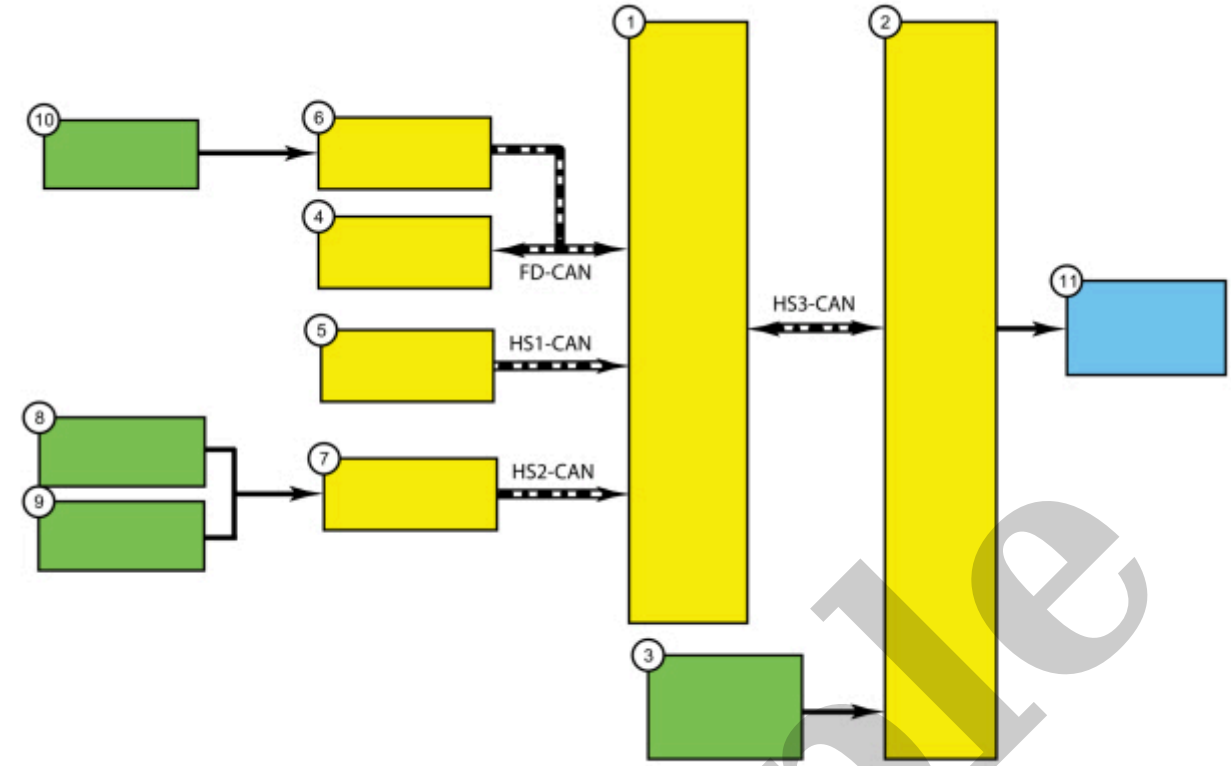
Item	Description
1	PCM (powertrain control module)
2	TCM (transmission control module) (Diesel)
3	Engine oil pressure sensor
4	GWM (gateway module A)
5	IPC (instrument panel cluster)

Gauge	Network Message	Originating Module	Originating CAN (controller area network)	Receiving Module
Diesel Exhaust Fluid (DEF) level (virtual)	Diesel exhaust fluid level indicator	PCM (powertrain control module)	FD-CAN (Flexible Data Rate Controller Area Network)	IPC (instrument panel cluster)
Engine Oil Pressure (analog or virtual)	Oil pressure warning indicator request	PCM (powertrain control module)	FD-CAN (Flexible Data Rate Controller Area Network)	IPC (instrument panel cluster)
Engine Temperature (analog or virtual)	Engine coolant temperature data	PCM (powertrain control module)	FD-CAN (Flexible Data Rate Controller Area Network)	IPC (instrument panel cluster)
	Engine overheat indication request			
Fuel (analog or virtual)	Fuel level display	PCM (powertrain control module)	FD-CAN (Flexible Data Rate Controller Area Network)	IPC (instrument panel cluster)
	Fuel level data	IPC (instrument panel cluster)	HS-CAN3 (high-speed controller area network 3)	PCM (powertrain control module)
Motor Temperature (virtual, HEV (hybrid electric vehicle))	Engine coolant temperature data	PCM (powertrain control module)	FD-CAN (Flexible Data Rate Controller Area Network)	IPC (instrument panel cluster)
	Engine overheat indication request			



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Item	Description
1	GWM (gateway module A)
2	IPC (instrument panel cluster)
3	Traction control disable/hill descent control switch
4	PCM (powertrain control module)
5	BCM (body control module)
6	ABS (anti-lock brake system) module
7	RCM (restraints control module)
8	Driver seatbelt buckle
9	Passenger seatbelt buckle
10	Brake fluid level switch

12	Seatbelt warning
13	Stability-traction control (sliding car icon) warning
14	Stability-traction control disabled (sliding car OFF icon) warning
15	TPMS (tire pressure monitoring system)
16	Wait to start
17	IPC (instrument panel cluster)

RTT (reconfigurable telltale) Indicators

2	IPC (instrument panel cluster)
3	Reconfigurable Telltales (RTTs)
4	Washer fluid level sensor
5	Fuel pump and sender unit
6	Traction control disable/hill descent control switch
7	Driver/passenger seatbelt buckle
8	Rear passenger seatbelt buckle
9	RCM (restraints control module)
10	SASM (steering angle sensor module)
11	Door/hood ajar switches
12	Power tailgate latch
13	BCM (body control module)
14	Brake fluid level switch
15	PCM (powertrain control module)
16	SOBDMC (secondary on-board diagnostic control module C)
17	ABS (anti-lock brake system) module
18	IPMA (image processing module A)
19	Side Obstacle Detection Control Module x (SODx)
20	Parking brake switch
21	Engine oil presure sensor
22	TCM (transmission control module) (Diesel)

Item	Description
1	4WD Reconfigurable Telltales (RTTs) (2H, 4H, 4L, 4A)
2	ABS (anti-lock brake system)
3	Adaptive steering
4	Airbag
5	Auto high beam
6	Auto hold
7	Auto stop-start
8	BLIS (blind spot information system) off
9	Brake warning
10	Charging system
11	Cruise control/adaptive cruise control
12	Diesel Exhaust Fluid (DEF) level
13	Auto regeneration off (diesel)
14	Door, hood ajar
15	Power tailgate ajar
16	Electric park brake
17	ELD (electronic locking differential)
18	Engine over-temperature (motor over-temperature for HEV (hybrid electric vehicle))
19	Engineering test mode
20	Forward collision system warning

42	Stability-traction control (sliding car icon)
43	Stability-traction control disabled (sliding car OFF icon)
44	TPMS (tire pressure monitoring system)
45	Trail control
46	Trail turn assist
47	Wait to start (diesel)
48	Water in fuel (diesel)
49	Drive modes (Eco, Sport, Tow Haul, Slippery, Trail, Mud/Ruts, Deep Snow/Sand, Rock Crawl)
50	Drive modes - Raptor (Eco, Sport, Tow Haul, Slippery, Trail, Mud/Ruts, Deep Snow/Sand, Rock Crawl, Baja)
51	IPC (instrument panel cluster)

Network Message Chart - Indicators and Reconfigurable Telltales (RTTs)

The telltales and Reconfigurable Telltales (RTTs) are illuminated or displayed in the IPC (instrument panel cluster) when the IPC (instrument panel cluster) receives messaged inputs from other modules on the CAN (controller area network) , due to system faults detected, system status changes or for driver information. The IPC (instrument panel cluster) communcates on the HS-CAN3 (high-speed controller area network 3) . If the originating module communicates on a network other than the HS-CAN3 (high-speed controller area network 3) , the messaged signals are sent to the GWM (gateway module A) first, then to the IPC (instrument panel cluster) .

Indicator	Telltale/ RTT (reconfigurable telltale) (T, RTT or Both)	Network Message	Originating Module	Originating CAN (controller area network)	Receiving Module
ABS (anti-lock brake system) warning	Both	ABS (anti-lock brake system) warning indicator request	ABS (anti-lock brake system) module	FD-CAN (Flexible Data Rate Controller	IPC (instrument panel cluster)