BODY BUILDER INSTRUCTIONS

Mack Trucks

Cab, Instrument Panel
MD
Section 8

Introduction

This information provides specifications for chassis body installation for MACK vehicles.

Note: We have attempted to cover as much information as possible. However, this information does not cover all the unique variations that a vehicle chassis may present. Note that illustrations are typical but may not reflect all the variations of assembly.

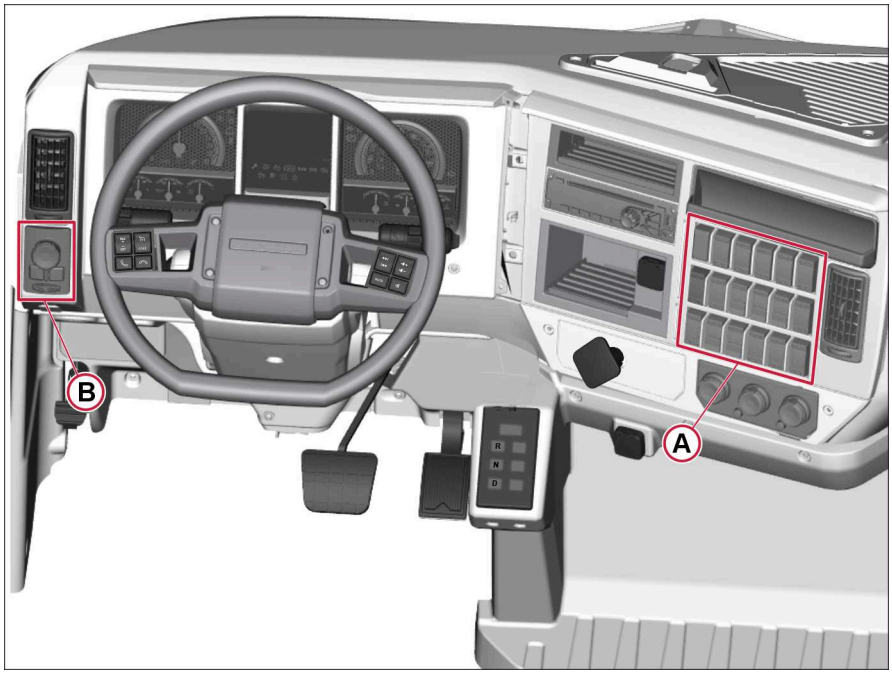
All data provided is based on information that was current at the time of release. However, **this information is subject to change without notice**.

Contents:

- “Dashboard Switch Locations”, page 2
- “Dashboard Switches”, page 5
- “Overview of Instruments”, page 6
- “Overhead Switches”, page 7
- “Instrument Cluster”, page 9
- “Alarm, Check and Information Symbols”, page 10
- “Warning Indicator Light Panel”, page 12
- “Gauge Layout”, page 15
- “PTO”, page 19
- “Lane Departure Warning System (LDWS)”, page 22
- “Highway Departure Warning System(HDWS)”, page 26

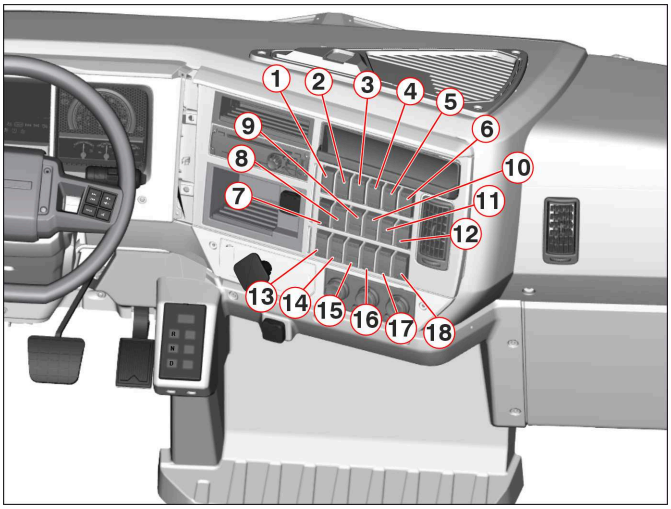
Instrument Panel

Dashboard Switch Locations



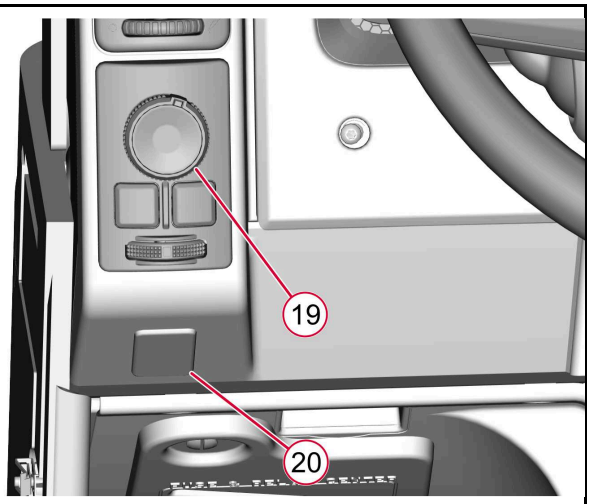
T8210326

Panel Arrangement A and B



T8210327

Panel A



W3133551

Panel B

Note: Some switch options may not be applicable for your vehicle.

Number	Part Number	Description
1	22392299	Cruise ON / OFF
2	22392282	Cruise SET / RESUME
3	22559210	Cummins Engine Brake
4	22392546	Grade Gripper Disable
5	22392314	ATC (MUD / SNOW)
6	22393029	Trailer AUX (CENTER PIN)
7	22396611	IGN AUX
8	22392442	DIFF LOCK (INTER WHEEL)
9	22846096	INTERAXLE LOCK
10	22392259	PLOW LAMPS
11	22559918	AIR SUSP (DUMP)
12	22392281	STROBE
13	22392399	BATTERY AUX
14	22846105	PTO 1
15	22846105	PTO 2
16	22559226	BEACON LIGHT
17	23229511	FAN CLUTCH OVERRIDE
18	22392285	ASSIGNABLE ON / OFF
19	82719617	HEADLAMP SWITCH
20	23006490	FLOOR LAMP SWITCH

Other Available Options

Note: Some switch options may not be applicable for your vehicle.

Part Number	Description
22572307	LDWS DISABLE
22392308	TIME GAP (ACC)
22392420	ATC
22392256	RETARDER
22392260	ASSIGNABLE ON / OFF
22392286	WINDSHIELD DEFROST
22392297	ECS RAISE / LOWER
22392311	ASSIGNABLE MOMENTARY
22396071	POWER FLOAT
22396079	LOW HYDRA OIL OVERRIDE
22396090	SPREADER LIGHTS
22396625	REAR AMBER FLASHER
22559241	SANDER LIGHT
22559244	CHAIN LIGHT
22559245	ROTATING LIGHT
22559917	BOGIE CONTROL
22846089	TAIL GATE LOCK / UNLOCK
22846090	TAIL GATE LOCK / UNLOCK
22846091	SNOW INGESTION
22846093	NEUTRAL CONTROL
22846096	INTERAXLE
22846097	SUSP HEIGHT CONTROL
22846101	5TH WHEEL
22846108	PTO CONTROL (MUNCIE)
22846121	ECS MODE
22879194	LOAD LIGHT
23053219	FORWARD LIFT AXLE
23053220	REAR LIFT AXLE
23093324	FRONT DIFF LOCK
23093325	REAR DIFF LOCK
23229509	SHUTDOWN OVERRIDE
23229510	WINDSHIELD DEFROST
23229512	ATC
23229513	INTER WHEEL LOCK
23229514	GRADE GRIPPER DISABLE
23229515	LOW HYDRA OIL OVERRIDE

Part Number	Description
23229516	LDWS DISABLE
23229517	FRONT DIFF LOCK
23229518	REAR DIFF LOCK
23239140	ASSIGNABLE MOMENTARY
23239141	IGNITION (15 AMP)
23239142	REAR AMBER FLASHER

Dashboard Switches

General

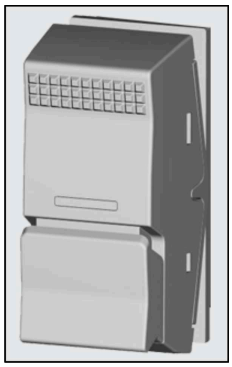
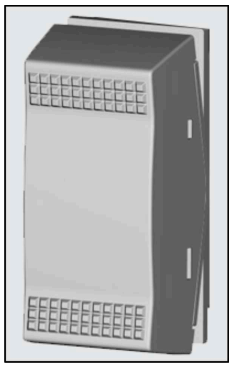
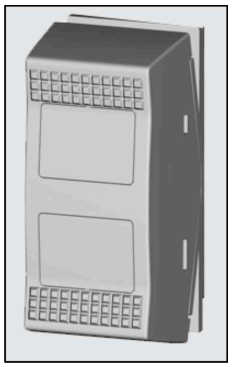
Switches that may be fitted in your vehicle are on the following pages. The available switches depend on the vehicle equipment.

Movable Switches

The location of the majority of the switches can be easily adapted to your requirements. A few switches cannot be moved for safety reasons. Contact an authorized Mack Vehicle dealer for more information.

Switch Styles

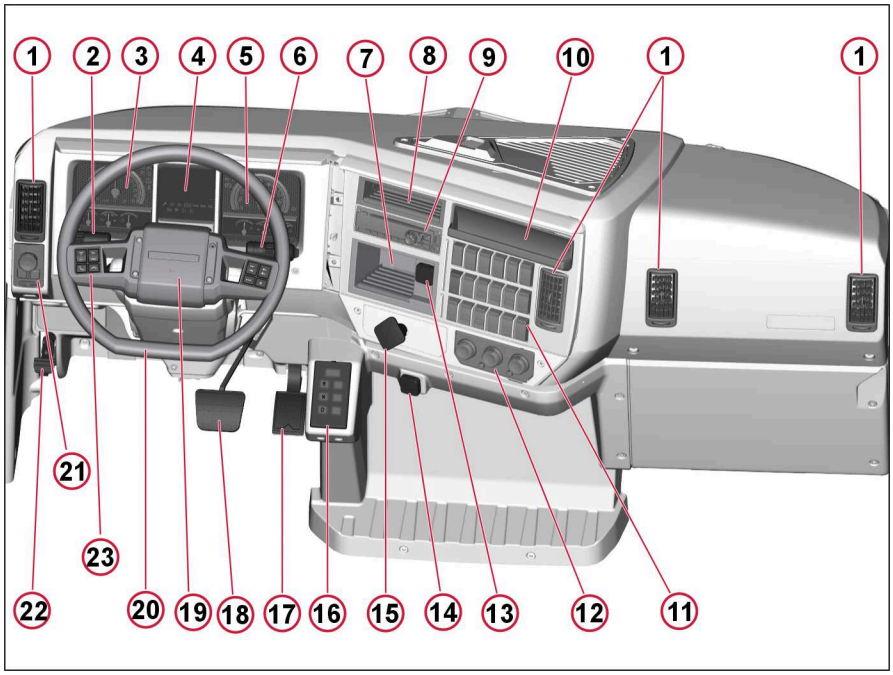
There are three types of switches that are used on the dashboard panel.

Locking	Standard	BodyBuilder Assignable
 W3133393	 W3133394	 W3133395

Notes

Overview of Instruments

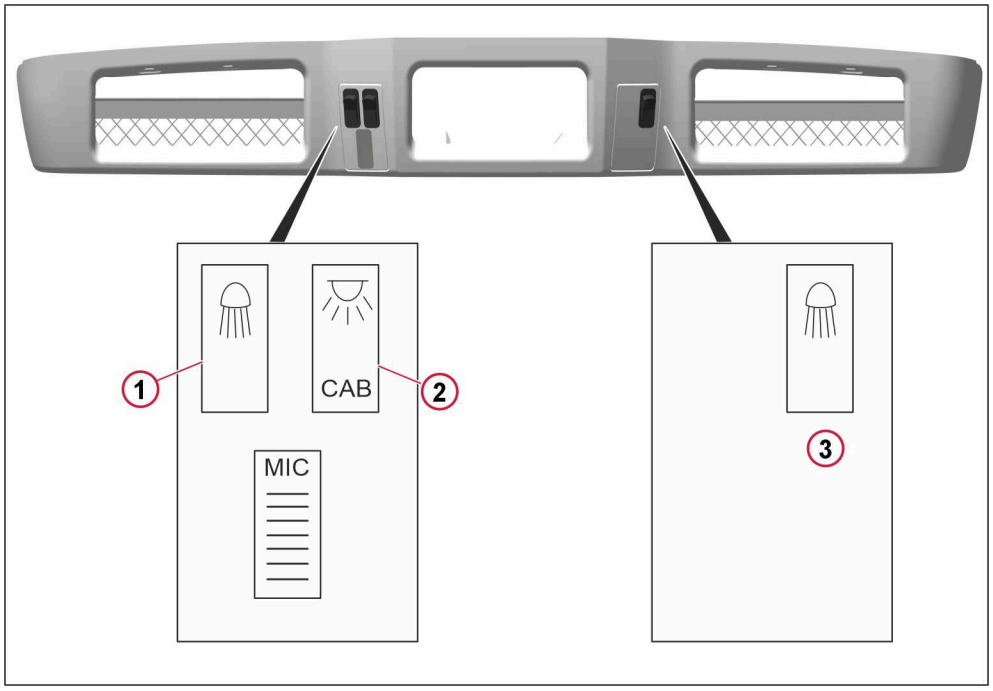
Before driving this vehicle, locate the instruments and controls and become thoroughly familiar with their operation. After starting and when driving, ensure that the instrument readings are normal.



T8210210

1. Air Vent	9. Radio	17. Accelerator Pedal
2. Left Stalk Control	10. Storage Slot	18. Brake Pedal
3. Power Meter	11. Dashboard Switches	19. Electric Horn Button (City Horn)
4. Mack® Co-Pilot™	12. Climate Control Unit	20. Steering Wheel
5. Speedometer	13. Power Outlet	21. LCP (Light Control Panel)
6. Right Stalk Control	14. USB (Universal Serial Bus)	22. Steering Column Tilt Control Pedal
7. Storage Slot	15. Parking Brake	23. Steering Wheel Switches
8. Storage Slot	16. Drive Selector	

Overhead Switches

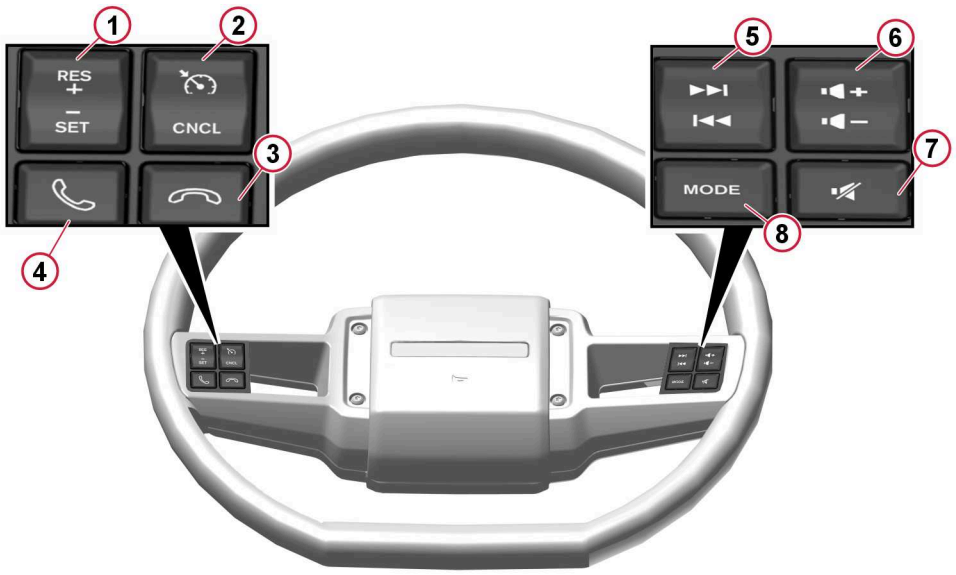


T8210274

1. Map Lamp Switch, Driver Side
2. Map and Overhead Lamp Switch (Turns On All Four Lamps)
3. Map Lamp Switch, Passenger Side

Note: Trucks built from week 01 of 2025 have the overhead switches.

Steering Wheel Switches



T8210452

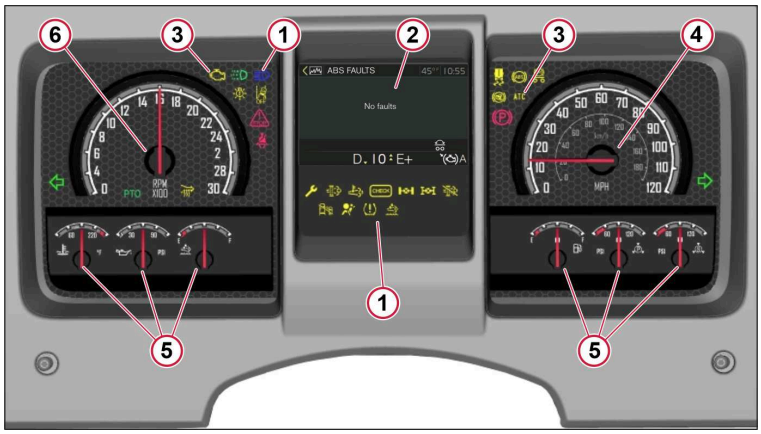
1. Cruise Control Resume/Set
2. Cruise Control ON/OFF/Cancel
3. Phone Hang Up
4. Phone Answer/Mute
5. Radio Seek Up/Down
6. Radio Volume +/-
7. Radio Mute
8. Radio Mode

Note: Trucks built from week 01 of 2025 have the radio and cruise control switches on the steering wheel.

Instrument Cluster

The instrument cluster provides system/component condition information to the driver. This information is available to assist the driver in determining any necessary actions.

The instrument cluster consists of the following components: condition indicators (tell-tales), driver information display (DID), gauges, speedometer and tachometer, on-board diagnostic (OBD) fault and warning indicators.



T8162832

1. Condition Indicators (Tell-tale)
2. Driver Information Display (DID)
3. On Board Diagnostic (OBD) Fault and Warning Indicators
4. Speedometer
5. Gauges
6. Tachometer

Notes

Tell-Tales

A tell-tale is a display that indicates the actuation of a device, a correct or defective condition, or a failure to function. The operator must become familiar with these symbols in order to recognize and react (if necessary) to the indicated condition. Tell-tale symbols are shown in the instrument panel cluster.

Colors

To promote visual recognition internationally, specific colors for tell-tales have been established. Unless governmental regulations (in the area where the vehicle is to be used) or engineering directives specify otherwise, the standard colors are:

- **Steady Blue** — high-beam headlights
- **Flashing Green** — turn signals
- **Flashing Red** — hazard condition involving the safety of personnel
- **Steady Green** — system in operation
- **Steady Red** — warning, immediate action required
- **Amber** — early warning, such as low fuel or Anti-Lock Brake System (ABS) malfunction

Alarm, Check and Information Symbols

Note: Some Warning Indicator Lamps may not be applicable for your vehicle.

Number	Symbols	Meaning
1	 W3133317	Malfunction Indicator Lamp
2	W3133318	Hill Assist Indicator
3	 W3133319	Stop
4	W3133320	Interaxle lock
5	 W3133322	Turn Signal Indicator
6	 W3133324	Parking Brake engaged
7	 W3133-326	Safety Belts Reminder
8	 W3133327	Aftertreatment DPF Regeneration
9	W3133328	Aftertreatment High Exhaust System Temperature
10	W3133330	ABS Malfunction Tractor

Number	Symbols	Meaning
11	W3133331	Preheating Active or Preheating Fault
12	 W3133333	High Beam Indicator
13	W3133334	Aftertreatment DEF Tank Low Indicator
14	W313333-5	Check Indicator
15	 W3133336	Light Indicator
16	 W3133337	Tractor Control System (TCS) Indicator
17	W3-133-338	Lane Departure Warning System (LDWS) Indicator
18	 W3133339	Power Take-off (PTO) Indicator
19	W31-333-40	Electronic Stability Control (ESC) Indicator
20		Daytime Running Light (DRL) Indicator

Number	Symbols	Meaning
	W3133341	
21	 W3133342	Lane Changing System (LCS) Indicator
22	W3133343	Airbag Indicator
23	W3133344	Tire Pressure Monitoring System (TPMS) Indicator
24	W31333-45	Automatic Traction Control (ATC)

Warning Indicator Light Panel

Note: Some Warning Indicator Lamps may not be applicable for your vehicle.

1. Malfunction Indicator Lamp

Malfunction Indicator Lamp indicates government regulatory On-Board Diagnostics (OBD) faults.

2. Hill Assist Indicator

Indicates that hill assist is active.

3. STOP Tell-Tale

Illuminates when conditions require the driver to stop the vehicle. This usually occurs when vehicle conditions fall below designated standards for operation.

⚠ DANGER

Failure to take necessary action when the STOP tell-tale is on can ultimately result in automatic engine shutdown and loss of power steering assist. A vehicle crash can occur, resulting in personal injury or death.

4. Interaxle Lock

Illuminates when interaxle lock is engaged.

5. Turn Signal Indicator

Flashes when turn signals are active.

6. Parking Brake Engaged

Indicates that parking brake is engaged.

7. Safety Belt Reminder

Indicates that the safety belt needs to be fastened.

8. Aftertreatment DPF Regeneration

Indicates that aftertreatments DPF regeneration is required.

9. High Exhaust System Temperature (HEST) Indicator

The HEST Indicator illuminates when the exhaust temperature reaches 300° C (572° F) and the regeneration process begins. When the regeneration process is completed, the engine should be allowed to run until the HEST indicator shuts off.

During regeneration while the vehicle is moving, the HEST indicator will only illuminate when vehicle speed is less than 8 km/h (5 mph). During a parked regeneration, the HEST indicator will turn off when regeneration is complete and the exhaust temperature has returned to a normal temperature.

10. ABS Tractor Malfunction

Indicates a problem being reported by the Tractor ABS System.

11. Preheating Active

Indicates that preheating is active.

12. High Beam

Illuminates when high beam lights are engaged.

13. Aftertreatment DEF Tank Low

Illuminates when the fluid level is low. It also Flashes when the level becomes critically low.

14. Check Indicator

Illuminates when there is an engine or aftertreatment system issue.

15. Light Indicator

Illuminates when there is a lighting system error.

16. Traction Control System (TCS) Indicator

Indicates that the TCS is active.

17. Lane Departure Warning System (LDWS) Indicator

Indicates that the LDWS is off.

18. Power Take-off (PTO) Indicator

Indicates that the PTO is active.

19. Electronic Stability Control (ESC) Indicator

Indicates that the ESC system is active.

20. Daytime Running Light (DRL) Indicator

Indicates that the DRLs are active.

21. Lane Change System (LCS) Indicator

Indicates that the LCS is off or disabled.

22. Airbag Indicator

Indicates that there is an airbag error. Service is required.

23. Tire Pressure Monitoring System (TPMS) Indicator

Indicates that there is an issue with the vehicle’s tire pressure. Maintenance is required.

24. Automatic Traction Control (ATC) Indicator

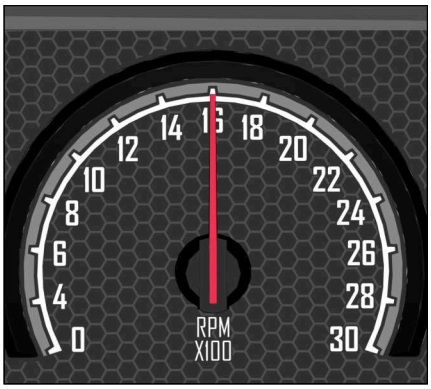
Indicates that the vehicle is losing traction and the ATC is engaging.

Notes

Gauge Layout

Tachometer

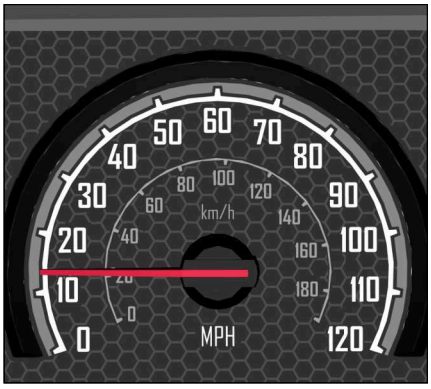
The tachometer displays the engine’s revolutions per minute (RPM).



W3133360

Speedometer

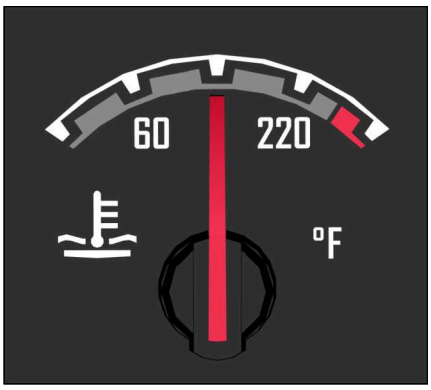
Indicates the speed of the vehicle. The vehicle electronic system drives the speedometer.



W3133361

Coolant Temperature Gauge

The coolant temperature gauge indicates engine coolant temperature. The normal operating temperature for Cummins engines is 80 to 105° C (170 to 215° F). If the temperature remains below or exceeds the normal temperature range, the cooling system should be checked for problems by an authorized Mack Vehicle dealer. When coolant temperature is excessive, the red STOP tell-tale illuminates and the buzzer will sound. The engine is at risk and the ECM may reduce the engine power. Stop at the first safe place where the problem can be checked.



W3133363

Engine Oil Pressure Gauge

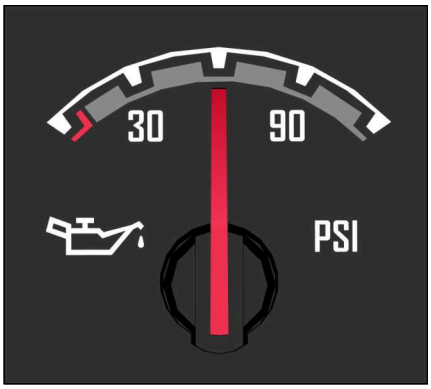
Indicates engine oil pressure. When the engine oil pressure is too low, the red STOP tell-tale illuminates and the buzzer will sound. If the engine oil pressure becomes low, the engine is at risk. Bring the vehicle to a safe stop where the problem can be checked.

DANGER

Failure to take necessary action when the STOP tell-tale is on can ultimately result in automatic engine shutdown and loss of power steering assist. Vehicle crash can occur, resulting in personal injury or death.

W3133319

STOP Tell-Tale



W3133362

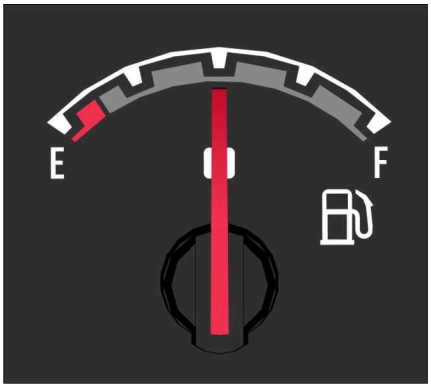
Aftertreatment DEF Gauge

Indicates the amount of Diesel Exhaust Fluid (DEF) in the tank.

W3133364

Fuel Gauge

Indicates the fuel level. The fuel gauge is connected to the fuel sensor unit in the fuel tank. There is only one sensor even if the vehicle is equipped with dual tanks.



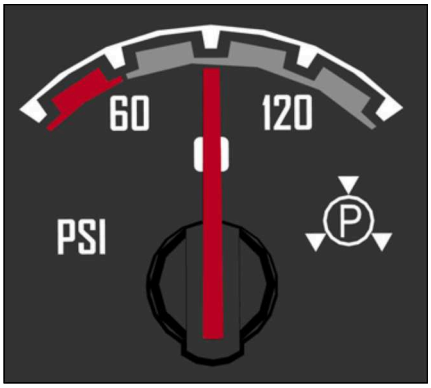
W3133365

Primary Brake Air Pressure Gauge

The primary brake air pressure gauge is connected to the rear circuit tank via sensors mounted on the pass-through wall. The front and rear air gauges should register equal air pressure. By observing the gauge pointers, the operator can detect a pressure drop if an air leak develops and can readily identify the circuit affected.

DANGER

Failure to observe these precautions can result in the loss of braking performance. This can lead to a vehicle accident, which can result in personal injury or death.



W3133367

Secondary Brake Air Pressure Gauge

The secondary brake air pressure gauge is connected to the front circuit tank via sensors mounted on the pass-through wall. The front and rear air gauges should register equal air pressure. By observing the gauge pointers, the operator can detect a pressure drop if an air leak develops and can readily identify the circuit affected.

DANGER

Failure to observe these precautions can result in the loss of braking performance. This can lead to a vehicle accident, which can result in personal injury or death.

W3133366

PTO

⚠ DANGER

A Rotating PTO shaft can snag clothes, hands, etc., causing severe personal injury or death. To avoid injury or death:
• DO NOT go near rotating shafts when the engine is running.
• STOP the engine before attempting to work on a PTO, its controls or related equipment.

⚠ CAUTION

It is important to only engage the switch when the PTO is required. Leaving the PTO pump engaged when not needed can lead to poor performance and pump damage.

Note: Some PTOs cannot be operated while driving the vehicle. To do so would cause component damage.
To avoid component damage, contact a authorized Mack Vehicle dealer to confirm if the vehicle's PTO can be used while driving.

A Power Take-Off (PTO) is a device that transfers power from the engine to another piece of equipment attached to the vehicle. Some examples include cement mixers and the compactor on a garbage vehicle.

A maximum of two PTOs can be operated in unison. One PTO is preset as a priority component. The remaining PTOs are preset as secondary in priority. The priority settings are dependent on the PTO preset arrangement and the number of PTOs available.

One basic type of PTO is available: transmission-mounted.

Depending on customer specification, some transmission-mounted PTOs are not operable when driving the vehicle.

The **Split shaft PTO** consists of an additional gearbox that divides the drive shaft into two shafts. One shaft drives the vehicle's axle. The other shaft drives the PTO.

When the PTO is engaged, the PTO tell-tale illuminates in the instrument cluster.

W3133339

PTO Tell-Tale

Use the PTO switch to activate or deactivate the PTO.

W3133396

PTO Switch

For automatic transmissions:

1. Engage the PTO by pressing the PTO switch. Press the locking tab and at the same time depress the main part of the switch.

The PTO engages.

PTO Speed Adjustment

For the PTO speed adjustment to function, the Cruise Control and PTO must be activated. If the PTO can be activated while driving the vehicle, the vehicle speed must be under approximately 8 km/h (5 mph).

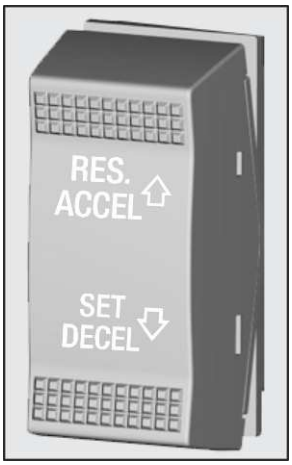
To set the engine speed:

1. Press the Speed Control (Cruise Control) Switch to the ON position. This switch is located on the dash of the vehicle.

2. Press the PTO switch to the ON position.

The PTO is now active. The PTO speed (rpm) automatically adjusts to the preset PTO speed.

3. Press and hold the RESUME / SET or ACCEL / DECEL button to increase or decrease PTO engine speed. Then press SET to have the PTO maintain the desired speed.



T8159370

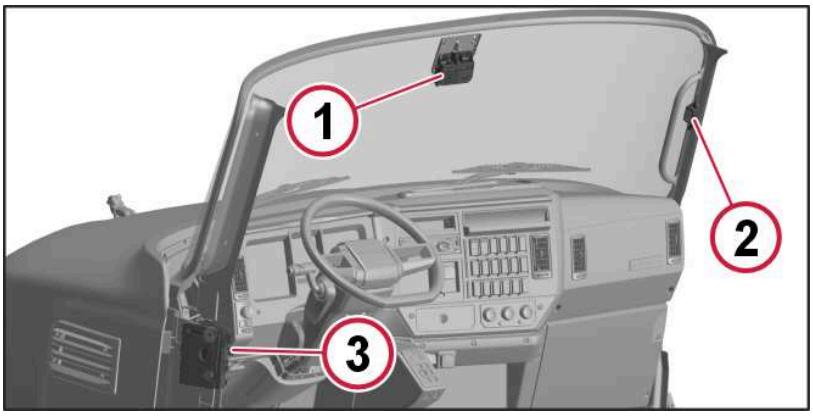
1. Cruise Control Resume / Set Steering Wheel Switch
2. Cruise Control ON / OFF / Cancel Steering Wheel Switch

W3133398

Speed Control (Cruise Control) Switch

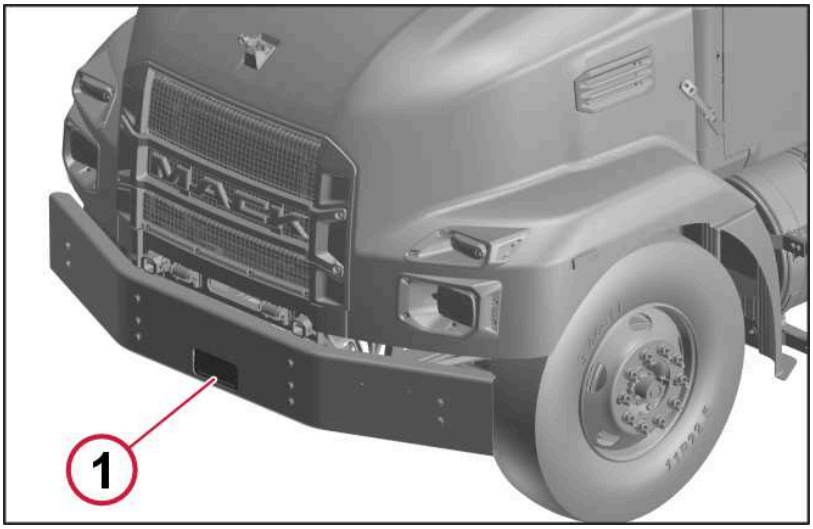
Lane Departure Warning System (LDWS)

The system components include the following:



T8222716

1 Camera with Windshield Bracket
2 Lane Change Support LED
3 Driver Assistance Control Unit (DACU)



T8222717

1 Forward–looking radar

T8222727

Enable/Disable Switch (LDWS and HDWS)

When entering construction zones or in areas where lanes are not clearly marked, it could be necessary to disable Lane Departure Warning alerts or Lane Keeping Support temporarily. Pressing the deactivation switch will disable the lane assistance functions for 10-minutes.
During the 10-minute period after this switch is pressed, no audible or visible alerts will occur. If the driver would like to turn the alerts on prior to the end of the 10-minute period, simply press the switch once again.

Note: The system can be deactivated in the event of unclear road markings or certain weather conditions such as heavy rain, snowfall, or similar.

WARNING

To avoid personal injury or component damage, if there is a problem with the Lane Departure Warning System (LDWS) system, service it as soon as possible to restore full functionality.

LDWS Tell-tales

There are five tell-tales available for the LDWS that display in the instrument cluster under certain conditions. These tell-tales include:

- Disabled LDWS
- Enabled LDWS (Not Tracking Lanes)
- Enabled LDWS (Tracking Left Lane Only)
- Enabled LDWS (Tracking Right Lane Only)
- Enabled LDWS (Tracking Right and Left Lanes)

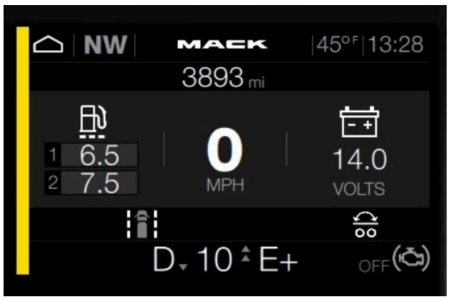
Instrument Cluster Tell-tale	Tell-tale Description	Triggers and Responses
 T8222718	Disabled LDWS	If the LDWS is disabled because: • the vehicle is turned off. • the LDWS disable switch was 'momentarily' activated. • a malfunction is occurring with the LDWS.
 T8222719	Enabled LDWS (Not Tracking Lanes)	If the LDWS is enabled and: • the vehicle is turned on. • the vehicle has not reached the predetermined vehicle speed. • the vehicle has not maintained the predetermined vehicle speed for 5 seconds or longer. • a malfunction is occurring with the LDWS.

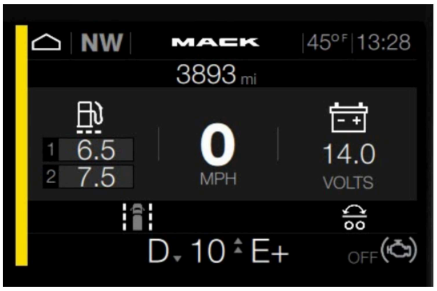
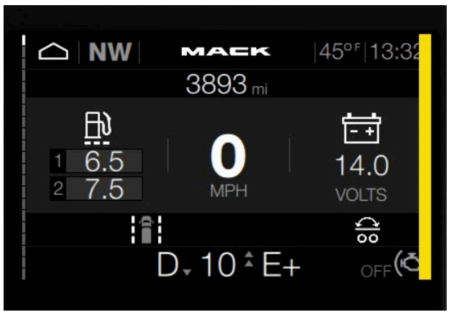
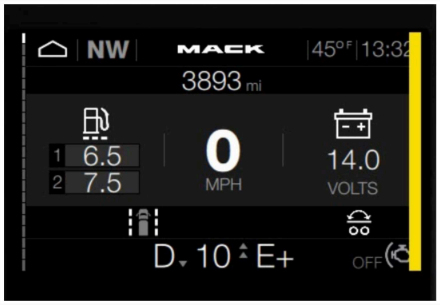
 T8222720	Enabled LDWS (Tracking Left Lane Only)	If the LDWS is enabled and: • the vehicle is turned on. • the vehicle has reached the predetermined vehicle speed. • the vehicle has maintained the predetermined vehicle speed for 5 seconds or longer. • the system has determined where the vehicle is positioned in relation to the left lane.
 T8222721	Enabled LDWS (Tracking Right Lane Only)	If the LDWS is enabled and: • the vehicle is turned on. • the vehicle has reached the predetermined vehicle speed. • the vehicle has maintained the predetermined vehicle speed for 5 seconds or longer. • the system has determined where the vehicle is positioned in relation to the right lane.
 T8222722	Enabled LDWS (Tracking both Right and Left Lanes)	If the LDWS is enabled and: • the vehicle is turned on. • the vehicle has reached the predetermined vehicle speed. • the vehicle has maintained the predetermined vehicle speed for 5 seconds or longer. • the system has determined where the vehicle is positioned in relation to both lanes.

Mack® Co-Pilot™ Warning Screens

Lane departure warning screens appear in the Mack® Co-Pilot™. The screen displays yellow bars on the left or right side of the Mack® Co-Pilot™ screen. The side depends on which lane is being departed.

There are two types of lane departure warning screens: imminent and occurred. If there is an imminent lane departure the bar displays in a solid, yellow color. If the lane departure has occurred, then the bar flashes yellow.
The bar continues to display until the vehicle has returned to the appropriate lane.

Mack® Co-Pilot™ Screen	Triggers	Warning
	Departure is imminent on left side of the lane	The Mack® Co-Pilot™ shows a solid yellow bar on left side of the screen and audible warning on the left side speaker once.

T8222723		
 T8222724	Vehicle has departed from the lane of travel and has veered to left side of the lane	The Mack® Co-Pilot™ shows a flashing yellow bar on left side of the screen and audible warning on the left side speaker four times.
 T8222725	Departure is imminent on right side of the lane	The Mack® Co-Pilot™ shows a solid yellow bar on right side of the screen and audible warning on the right side speaker once.
 T8222726	Vehicle has departed from the lane of travel and has veered to right side of the lane	The Mack® Co-Pilot™ shows a flashing yellow bar on right side of the screen and audible warning on the right side speaker four times.

Highway Departure Warning System(HDWS)

HDW is a driver assist feature and is continuation of the LDW system. When the vehicle unintentionally drifts out of its lane of travel onto the shoulder, the LDW system issues an audible warning to the driver. If the driver does not take corrective action and the front tires are crossing the lane, the LDW system starts an intensified and rapid audible warning to the driver.

If the driver does not take corrective action after LDW, and if the vehicle continues to drift in the same direction to the shoulder of the road, the HDW system then issues the audio/visual warning to the driver.

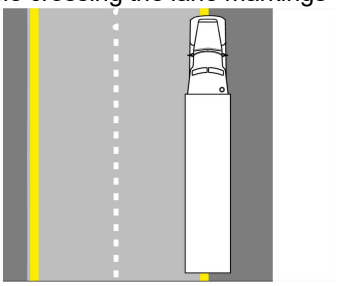
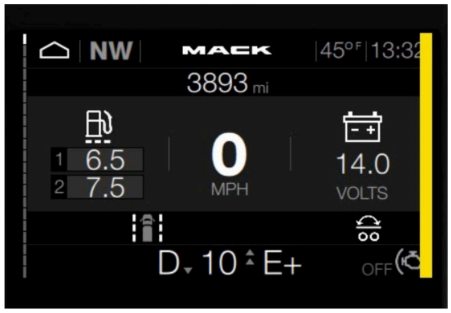
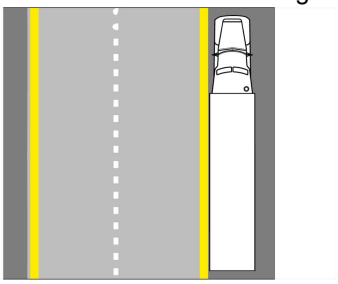
An HDW message is displayed in the instrument cluster and audio alert can come from the overhead cabin-mounted speakers. The alert will time out after a configurable time duration. If the vehicle is configured and equipped with the haptic warning feature, a haptic warnin gcan be issued. This haptic alert may consist of seat or steering vibration and engine de-throttle.

HDW relies on the camera's ability to detect lanes. The performance of HDW will have similar limitations to that of the LDW system.

HDW will not be available if:

- The vehicle turn signals are "on" or "indicating" on the same side as lane departure.
- The vehicle hazard lights are on.
- FLC (Forward Looking Camera) is detecting less than two lane lines.
- LDW is disabled because the LDW switch is toggled from "Enable" to "Disable".
- LDW is disabled because vehicle speed below LDW speed threshold.

Mack® Co-Pilot™ Warning Screens

Mack® Co-Pilot™ Screen	Triggers	Warning
-	Vehicle crossing the lane markings  T8222920	When the vehicle starts to deviate from the lane and no turn signal is activated, the LDW system issues an audible warning to the driver. If the driver does not take corrective action and the front tires are crossing the lane, the LDW system starts an intensified and rapid audible warning to the driver.
 T8222919	Vehicle crossed the lane markings  T8222921	If the driver does not take corrective action after LDW, and if the vehicle continues to drift in the same direction to the shoulder of the road, the HDW system then issues the audio and visual warning to the driver.