OPERATOR'S MANUAL
STEERING ASSIST SYSTEM

Bendix®

This booklet contains important operational and safety information that benefits you and subsequent drivers.

Important Safety Information About The Steering Assist System

Improper use of the Steering Assist System may result in a collision resulting in property damage, serious injuries, or death. Be sure to read, understand, and carefully follow the instructions in this document.

Due to the inherent limitations of image recognition technology, camera-based safety technology — on rare occasions — may not be able to detect or may misinterpret lane markings. Examples may include but are not limited to: lane marking width, lane marking color(s), lane marking location from center, and road conditions where lane markings are applied. At these times, alerts may not occur, or erroneous alerts may occur.

Bendix safety technologies complement safe driving practices. No commercial vehicle safety technology replaces a skilled, alert driver exercising safe driving techniques and proactive, comprehensive driver training. Responsibility for the safe operation of the vehicle remains with the driver at all times.

This product may expose you to chemicals including nickel, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information, go to P65Warnings.ca.gov.

All vehicle Diagnostic Trouble Codes (DTCs) related to the engine, transmission, instrument cluster, engine cruise control, and Bendix® Antilock Braking Systems (ABS), Automatic Traction Control (ATC), or ESP® (Electronic Stability Program) systems must first be resolved, with no DTCs present during the vehicle operation while in cruise control, prior to running Bendix® ACom® PRO™ Diagnostic Software to resolve system faults.

If a problem with the Steering Assist System is detected, it should be serviced as soon as possible to restore full functionality. The Lane Keep Assist (LKA) feature may be deactivated.

It is the responsibility of the driver to always keep their hands on the steering wheel and to remain vigilant and change driving practices depending on traffic and road conditions.

Bendix®-brand Electronic Control Units (ECUs) are not designed to store data for purposes of accident reconstruction, and Bendix® ACom® PRO™ Diagnostic Software is not intended to retrieve data for purposes of accident reconstruction. Bendix makes no representations as to the accuracy of data or video retrieved and interpreted from ECUs for purposes of accident reconstruction. Bendix does not offer accident reconstruction services or interpretation of stored data. Bendix ECUs are not protected from fire, loss of power, impact damage, or other conditions that may be sustained in a crash situation and may cause data to be unavailable or irretrievable.

Introduction

The Steering Assist System is a driver assistance system that integrates with several Bendix systems including Bendix® Fusion™ as well as the vehicle itself and compatible 3rd party cameras. The Steering Assist System does not replace the driver or driving skills. **The driver is solely responsible for maintaining control of the vehicle with both hands on the steering wheel.**

Figure 1 - The driver should keep both hands on the wheel at all times.

The Steering Assist System combines unique Steering Assist technology with a forward-facing camera for lane identification.

This system may mitigate potential side collisions and lane-departure-related accidents, and also increases driver convenience. Steering Assist is built on the R.H Sheppard Co., Inc. HD94™ steering gear, which offers a quick steering ratio for less hand wheel turns, ideal for large wheel-base vehicles.

⚠ WARNING

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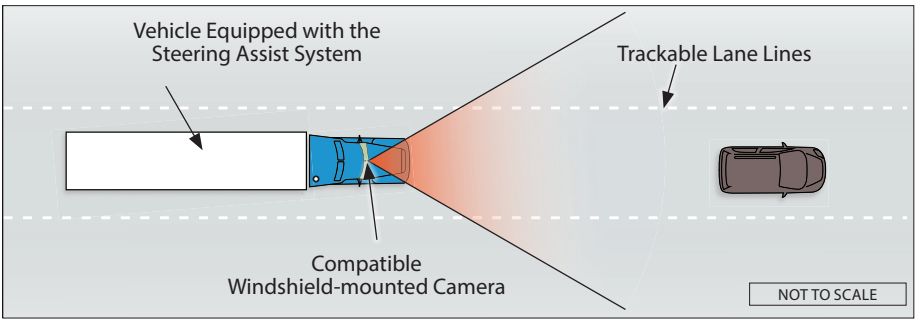

System Limitations

- If the system cannot detect the lane lines, the system may not warn or intervene.
- If the steering angle sensor is not calibrated as indicated by the manufacturer, the sytem may not operate as intended.
- If power supplied to the steering system, support components, or voltage supplied to the support systems are not within acceptable operating ranges, it may cause the steering system not to function as intended.
- If the support components or systems are not functioning as intended, the steering system may not operate as intended.

System Features

Lane Keep Assist (LKA): The Steering Assist System may detect lane markings and determine the vehicle's relative position within its lane. It also may recognize when the vehicle begins to drift toward either the right or left lane markings. When this occurs, if the driver has not activated the turn signal which overrides the system, the feature may intervene by adding correction torque to the steering gear before the vehicle reaches the lane marking. This is intended to to help keep the vehicle towards its current lane of travel.

Figure 2 - Green lane lines show the system is tracking the lanes and may intervene if needed.

Figure 3 - Orange lane lines show LKA feature intervening.

Figure 4 - White lane lines indicate the driver has activated the turn signal, LKA will not activate.

The system is designed to disengage as soon as the vehicle's path is re-established. The driver is able to override the system and steer the vehicle at any time. The LKA feature is available at speeds above 37 mph/60 kph if the road conditions and image recognition from the camera allow.

NOTE: This feature is NOT lane centering. It will not attempt to keep your vehicle in the center of the lane of travel.

The driver may use the disable switch to override or suppress LKA-applied steering wheel toque; this feature may be useful when driving on roads with inconsistent lane markings that can cause excessive false warnings. Examples would include construction zones, poorly marked lanes, or missing lane markings. The system alerts will automatically become available again after 15 minutes or if the disable switch is pressed a second time.

System Features (cont.)

Speed-Dependent Steering Assist: This feature provides variable steering assist based on the vehicle speed to help the driver experience easier steering response at low speeds and a firmer steering response at higher speeds. It may also aid the driver by helping to reduce fatigue related to steering.

The driver may notice:

- The steering wheel may be easier to turn at low vehicle speeds.
- The steering wheel may be firmer at higher vehicle speeds.
- The vehicle is equipped with two selectable steering profiles for driver preference (driver can select via the dash):

  - **Profile 1 (default):** At low speeds, such as in city driving, or while yard maneuvering and parking, less steering effort is experienced to help reduce driver exertion; or,

  - **Profile 2:** At higher speeds, such as cruising on highways, the wheel feels firmer, with a more on center feel, to help the driver maintain a steady position.

    Available when vehicle travels in both forward or reverse directions.

Figure 5 - Profile setting selection screen example.

IMPORTANT

There is no activation on/off switch for the Speed-Dependent Steering Assist feature. The driver should always drive normally and safely.

System Features (cont.)

Active Return: At low vehicle speeds, this feature may help to reduce driver fatigue through easier maneuvering by returning the steering wheel and the steer wheels to the center position.

The driver will notice:

- The steering wheel may return to its center position after low-speed turning events, which is especially noticeable after a backing event that requires turning left or right.

IMPORTANT

There is no activation on/off switch for the Active Return feature. The driver may override this feature by applying additional steering input force. The driver should always drive normally and safely.

Road Disturbance Compensation: This feature may help improve the driveability of the vehicle by reducing steering wheel vibration typically caused by road disturbances like potholes, railroad tracks, road debris, or other bumps in the road.

The driver will notice:

- When running over potholes or other bumps in the road, the driver may notice a steadier steering wheel. Road Disturbance Compensation is designed to isolate the bumps and not let all the vibrations be felt at the steering wheel, which may reduce driver fatigue. This feature may also help the driver maintain their desired direction.
- Depending on the severity of the bump, suspension of the truck and cab will still absorb and transmit vibration. This feature only impacts vibration through the steering wheel.

IMPORTANT

There is no activation on/off switch for the Road Disturbance Compensation feature. The driver should always drive normally and safely.

System Components

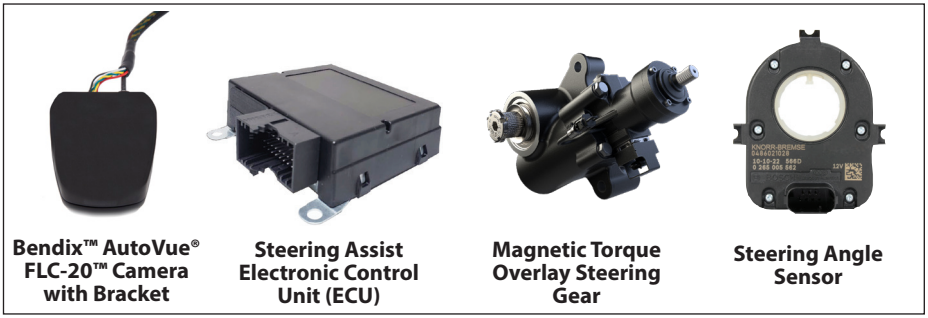

Figure 6 - Main System Components Example

IMPORTANT

Before operating a vehicle, perform a precheck sequence as recommended by the vehicle manufacturer. Perform a visual inspection to ensure proper installation and functionality. The power steering gear with torque overlay should be clean and free of fluid. All connectors around the gear should be connected and secured.

Bendix™ AutoVue® FLC-20™ Camera: The AutoVue FLC-20 is a forward-facing camera that tracks the lane markers and provides the lane characteristics to the Steering Assist System. A properly-mounted windshield bracket holds the camera secure and keeps it facing in the correct direction to successfully determine lane width and position.

- For additional information, *refer to SD-64-20124, Bendix™ AutoVue® FLC-20™ Camera Service Data Sheet, on b2bendix.com.*

Steering Assist Electronic Control Unit (ECU): The Steering Assist System ECU is a standalone unit designed to work with J1939 Vehicle CAN and applicable system components.

Magnetic Torque Overlay (MTO) Power Steering Gear: The MTO power steering gear enables hydraulic steering.

- For additional information, *refer to rhsheppard.com for product and diagnostic support.*

Steering Angle Sensor (SAS): The SAS reports the steering wheel position through a serial communication link or CAN network.

- For additional information, *refer to the vehicle Manufacturer's instructions or the Steering Angle Sensor's manufacturer for support.*

Technical Support

For the latest information and to download the Bendix® ACom® PRO™ Diagnostic Software, visit b2bendix.com.

Contact technical support by email at techteam@bendix.com or by phone at 1-800-AIR-BRAKE (1-800-247-2725), option 2. Follow the instructions in the recorded message. Representatives are available Monday through Thursday, 8 a.m. to 6 p.m. ET, and Friday, 8 a.m. to 5 p.m. ET.