# Installation Instructions

## BENDIX® STEER ANGLE SENSOR CALIBRATION REMOTE DIAGNOSTIC UNIT (RDU)

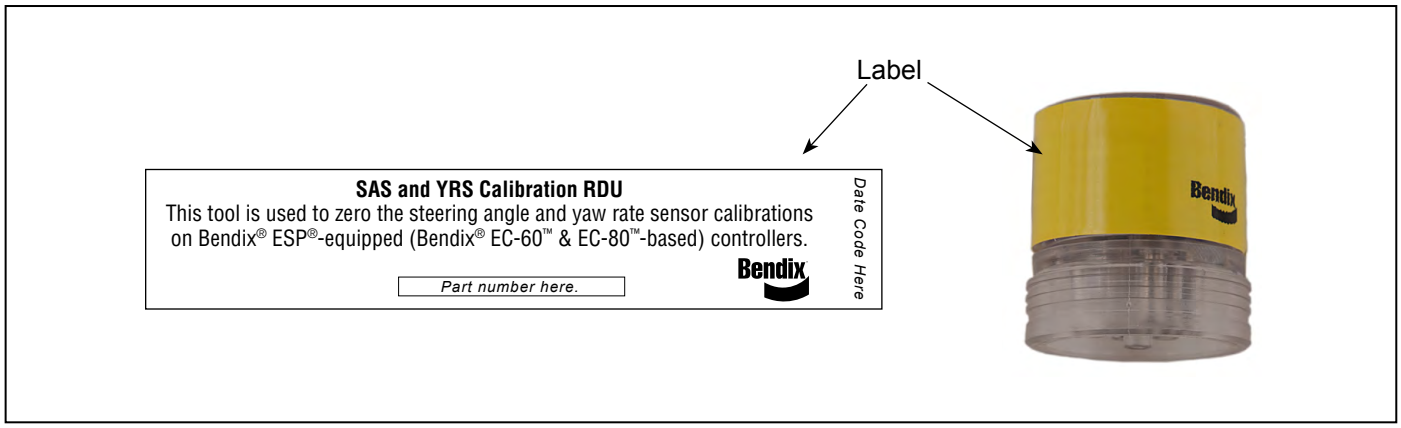



***Figure 1 – Remote Diagnostic Unit with Label***

### DESCRIPTION

The Bendix® Remote Diagnostic Unit (RDU) is available in different configurations. This instruction sheet covers the RDU that is identified by the label shown in Figure 1.

### DEVICE FEATURES

This RDU is a diagnostic tool providing the user with a method of zeroing the Steer Angle Sensor (SAS), the Lateral Acceleration Sensor (LAS), and the Yaw Rate Sensor (YRS) on a Bendix® ESP®-equipped controller. The RDU communicates across the vehicle data link. This unit is specifically designed for use with only the Bendix® EC-60™ and ESP® EC-80™ electronic controllers. Bendix makes no claims of its operation or usability with other brands of ABS systems.

### VEHICLE PREPARATION

**⚠ CAUTION**

1. Ensure the steer wheels on the vehicle are pointed straight ahead, within ± five (5) degrees.

**⚠ CAUTION**

2. Ensure the vehicle is on level ground.
3. Turn the ignition "ON" and verify that the Antilock Braking System (ABS) Electronic Control Unit (ECU) goes through its power-up sequence of modulator activation. The power-up sequence is described in the Bendix Service Data sheet SD-13-4869 (Bendix® EC-60™ ABS/ATC/ESP Controllers (Advanced)), or SD-13-4986 (ESP® EC-80™ Controller.)
4. Connect the RDU to the diagnostic connector and observe the RDU as it cycles through the calibration operation. This process should take less than 10 seconds.

### CALIBRATION OPERATION

When the RDU is plugged into the diagnostic connector and receives power, all the Light Emitting Diodes (LEDs) will illuminate for one half second: The green voltage (VLT) LED will flash four (4) times to indicate communication has been established with the ABS ECU. The green LED will continue to be illuminated while the RDU is performing the calibration.

If the calibration was successful, the RDU will flash two (2) half moon patterns – first downward then upward on the LEDs. It will repeat this pattern until the RDU is removed from the diagnostic connector.

1. Disconnect the RDU from the diagnostic connector when calibration is completed.
2. Turn the ignition "OFF," then back "ON."

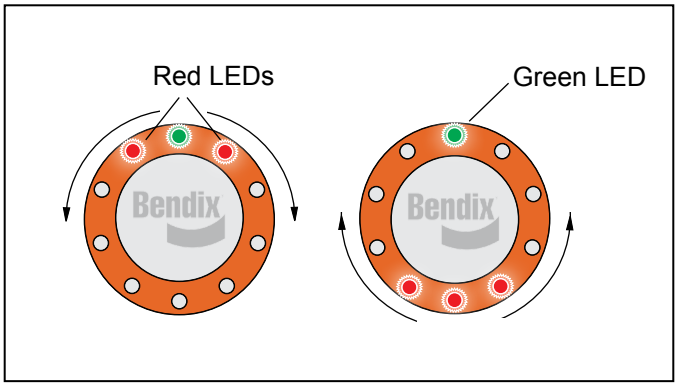


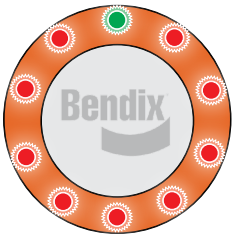

***Figure 2 – Successful Calibration***

## GENERAL SAFETY GUIDELINES

**WARNING! PLEASE READ AND FOLLOW THESE INSTRUCTIONS TO AVOID PERSONAL INJURY OR DEATH:**

**When working on or around a vehicle, the following guidelines should be observed AT ALL TIMES:**

- **Park the vehicle on a level surface, apply the parking brakes and always block the wheels. Always wear personal protection equipment.**
- **Stop the engine and remove the ignition key when working under or around the vehicle. When working in the engine compartment, the engine should be shut off and the ignition key should be removed. Where circumstances require that the engine be in operation, EXTREME CAUTION should be used to prevent personal injury resulting from contact with moving, rotating, leaking, heated or electrically-charged components.**
- **Do not attempt to install, remove, disassemble or assemble a component until you have read, and thoroughly understand, the recommended procedures. Use only the proper tools and observe all precautions pertaining to use of those tools.**
- **If the work is being performed on the vehicle's air brake system, or any auxiliary pressurized air systems, make certain to drain the air pressure from all reservoirs before beginning ANY work on the vehicle. If the vehicle is equipped with a Bendix® AD-IS® air dryer system, a Bendix® DRM™ dryer reservoir module, or a Bendix® AD-9si® air dryer, be sure to drain the purge reservoir.**
- **Following the vehicle manufacturer's recommended procedures, deactivate the electrical system in a manner that safely removes all electrical power from the vehicle.**
- **Never exceed manufacturer's recommended pressures.**
- **Never connect or disconnect a hose or line containing pressure; it may whip and/or cause hazardous airborne dust and dirt particles. Wear eye protection. Slowly open connections with care, and verify that no pressure is present. Never remove a component or plug unless you are certain all system pressure has been depleted.**
- **Use only genuine Bendix® brand replacement parts, components and kits. Replacement hardware, tubing, hose, fittings, wiring, etc. must be of equivalent size, type and strength as original equipment and be designed specifically for such applications and systems.**
- **Components with stripped threads or damaged parts should be replaced rather than repaired. Do not attempt repairs requiring machining or welding unless specifically stated and approved by the vehicle and component manufacturer.**
- **Prior to returning the vehicle to service, make certain all components and systems are restored to their proper operating condition.**
- **For vehicles with Automatic Traction Control (ATC), the ATC function must be disabled (ATC indicator lamp should be ON) prior to performing any vehicle maintenance where one or more wheels on a drive axle are lifted off the ground and moving.**
- **The power MUST be temporarily disconnected from the radar sensor whenever any tests USING A DYNAMOMETER are conducted on a vehicle equipped with a Bendix® Wingman® system.**
- **You should consult the vehicle manufacturer's operating and service manuals, and any related literature, in conjunction with the Guidelines above.**




All LEDs are Illuminated

***Figure 3 – Unsuccessful Calibration***

### TROUBLESHOOTING

If the calibration was unsuccessful, the RDU will leave all LEDs illuminated until the RDU is removed from the diagnostic connector.

1. If calibration was unsuccessful, check to verify that the ABS ECU is a Bendix® EC-60™ or an ESP® EC-80™ ECU. Also, verify the ECU part number is correct for the application.
2. The RDU will indicate if it cannot establish communications with the ABS ECU by leaving the green VLT LED illuminated solidly upon power up, then illuminate the red LEDs in a clockwise pattern. If the green LED flashes four (4) times and is immediately followed by all LEDs illuminated, a Bendix ECU was found, but it is not an ESP-equipped ECU.
3. Determine the issue with communications. Some possible issues may be a problem with the vehicle data link at the 9-pin connector. The ECU or 9-pin diagnostic connector are not powering up, the J1708 or J1939 link is overloaded, or a malfunctioning RDU.
4. Once the communication problem is corrected, repeat the calibration operation.
5. If communication issues or the calibration is unsuccessful after several attempts, contact the Bendix Tech Team at 1-800-AIR-BRAKE (1-800-247-2725), option 2.

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