

Bendix® Trailer ABS Universal Service Replacement Kit

Intended for Universal Service Replacement of Any Brand of 2S/1M Trailer ABS

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

When working on or around a vehicle, the following general precautions should be observed at all times.

1. Park the vehicle on a level surface, apply the parking brakes, and always block the wheels. Always wear safety glasses.
2. Stop the engine and remove 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.
3. 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.
4. 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 an AD-IS® air dryer system or a dryer reservoir module, be sure to drain the purge reservoir.
5. Following the vehicle manufacturer's recommended procedures, deactivate the electrical system in a manner that safely removes all electrical power from the vehicle.
6. Never exceed manufacturer's recommended pressures.
7. Never connect or disconnect a hose or line containing pressure; it may whip. Never remove a component or plug unless you are certain all system pressure has been depleted.
8. Use only genuine Bendix® replacement parts, components and kits. Replacement hardware, tubing, hose, fittings, etc. must be of equivalent size, type and strength as original equipment and be designed specifically for such applications and systems.
9. 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.

Code	Color	Pin	Function
1	Green	1	Power
2	Yellow	2	Ground
3	Red	3	Left Wheel Speed Sensor
4	Blue	4	Right Wheel Speed Sensor
5	White	5	Modulator
6	Black	6	Ground
7	Orange	7	Left Wheel Speed Sensor
8	Purple	8	Right Wheel Speed Sensor
9	Brown	9	Modulator
10	Pink	10	Ground
11	Grey	11	Power
12	Light Blue	12	Ground
13	Light Green	13	Left Wheel Speed Sensor
14	Light Yellow	14	Right Wheel Speed Sensor
15	Light Red	15	Modulator
16	Light Blue	16	Ground
17	Light Green	17	Power
18	Light Yellow	18	Ground
19	Light Red	19	Left Wheel Speed Sensor
20	Light Blue	20	Right Wheel Speed Sensor
21	Light Green	21	Modulator
22	Light Yellow	22	Ground
23	Light Red	23	Power
24	Light Blue	24	Ground
25	Light Green	25	Left Wheel Speed Sensor
26	Light Yellow	26	Right Wheel Speed Sensor
27	Light Red	27	Modulator
28	Light Blue	28	Ground
29	Light Green	29	Power
30	Light Yellow	30	Ground
31	Light Red	31	Left Wheel Speed Sensor
32	Light Blue	32	Right Wheel Speed Sensor
33	Light Green	33	Modulator
34	Light Yellow	34	Ground
35	Light Red	35	Power
36	Light Blue	36	Ground
37	Light Green	37	Left Wheel Speed Sensor
38	Light Yellow	38	Right Wheel Speed Sensor
39	Light Red	39	Modulator
40	Light Blue	40	Ground
41	Light Green	41	Power
42	Light Yellow	42	Ground
43	Light Red	43	Left Wheel Speed Sensor
44	Light Blue	44	Right Wheel Speed Sensor
45	Light Green	45	Modulator
46	Light Yellow	46	Ground
47	Light Red	47	Power
48	Light Blue	48	Ground
49	Light Green	49	Left Wheel Speed Sensor
50	Light Yellow	50	Right Wheel Speed Sensor
51	Light Red	51	Modulator
52	Light Blue	52	Ground
53	Light Green	53	Power
54	Light Yellow	54	Ground
55	Light Red	55	Left Wheel Speed Sensor
56	Light Blue	56	Right Wheel Speed Sensor
57	Light Green	57	Modulator
58	Light Yellow	58	Ground
59	Light Red	59	Power
60	Light Blue	60	Ground
61	Light Green	61	Left Wheel Speed Sensor
62	Light Yellow	62	Right Wheel Speed Sensor
63	Light Red	63	Modulator
64	Light Blue	64	Ground
65	Light Green	65	Power
66	Light Yellow	66	Ground
67	Light Red	67	Left Wheel Speed Sensor
68	Light Blue	68	Right Wheel Speed Sensor
69	Light Green	69	Modulator
70	Light Yellow	70	Ground
71	Light Red	71	Power
72	Light Blue	72	Ground
73	Light Green	73	Left Wheel Speed Sensor
74	Light Yellow	74	Right Wheel Speed Sensor
75	Light Red	75	Modulator
76	Light Blue	76	Ground
77	Light Green	77	Power
78	Light Yellow	78	Ground
79	Light Red	79	Left Wheel Speed Sensor
80	Light Blue	80	Right Wheel Speed Sensor
81	Light Green	81	Modulator
82	Light Yellow	82	Ground
83	Light Red	83	Power
84	Light Blue	84	Ground
85	Light Green	85	Left Wheel Speed Sensor
86	Light Yellow	86	Right Wheel Speed Sensor
87	Light Red	87	Modulator
88	Light Blue	88	Ground
89	Light Green	89	Power
90	Light Yellow	90	Ground
91	Light Red	91	Left Wheel Speed Sensor
92	Light Blue	92	Right Wheel Speed Sensor
93	Light Green	93	Modulator
94	Light Yellow	94	Ground
95	Light Red	95	Power
96	Light Blue	96	Ground
97	Light Green	97	Left Wheel Speed Sensor
98	Light Yellow	98	Right Wheel Speed Sensor
99	Light Red	99	Modulator
100	Light Blue	100	Ground

Trailer ABS Kit Piece No. 801837 Consists of:

Item No.	Description	Qty.
1	ABS Harness	1
2	Trailer ABS Assembly	1
3	Identification Label	1
(not shown)	Service Data sheet	1

FIGURE 1 - KIT CONTENTS

10. Prior to returning the vehicle to service, make certain all components and systems are restored to their proper operating condition.
11. For vehicles with Antilock 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.

Prior to installation or performing service to ABS controllers always perform the following steps:

1. Inspect the vehicle for damage, chafing, etc. to current ABS unit, hoses or wiring and adjust routing of replacement installation as necessary.
2. Turn power off.
3. Drain the air pressure from all reservoirs.
4. Remove as much contamination as possible prior to disconnecting electrical connections and air lines.
5. Note the original controller assembly mounting position on the vehicle.

REMOVING THE ORIGINAL CONTROLLER

1. Disconnect the ECU connector and any modulator connector from the controller.
2. Remove all air lines connected to the unit. (Use spray lubricant on the swivel fittings of the delivery lines where necessary before attempting to remove them.)
3. Remove the controller assembly from the vehicle by removing the mounting bracket nuts or by rotating the entire assembly counterclockwise from the tank mount.
4. Disconnect the ABS sensors and remove the existing harness. Bendix recommends that only Bendix wheel speed sensors be used for Bendix ABS systems.

WHEEL SPEED SENSOR REPLACEMENT

Due to the critical safety function provided by any ABS product, Bendix does not assume responsibility for antilock system reliability or performance issues in situations where substitute non-Bendix® ABS components, not supplied by Bendix (for example, substituting a non-Bendix® wheel speed sensor or modulator valve) are used on a vehicle equipped with Bendix® ABS. In addition, use of alternate components in place of genuine Bendix components could lead to rejection of ABS warranty claims. See Bulletin TCH-013-009 for more details.

INSTALLATION

1. Position and secure the unit in the original mounting orientation: (The exhaust port must point straight down.)
Tank (nipple) mount unit - Install the nipple fitting into the modulator-valve supply port. Then rotate the entire assembly into the tank port until secure. Over-torquing of the tank nipple could cause damage to the valve body.
Frame (bracket) mount unit - Torque the mounting nuts to 180-220 in-lbs.
2. Reconnect all air lines and plugs to the modulator-valve assembly. Make certain that no thread sealing material enters the valve. All air lines and fittings should be checked for leaks prior to returning the vehicle to service.
3. Reconnect the ECU, modulator and sensor electrical connectors to the unit. Apply a moderate amount of non-conductive electrical grease to each connector pin before reconnecting.
4. Install the new harness, starting at the ECU and properly securing the harness every 18 inches to the power connector location.
5. Where the harness length is more than needed, reroute harness, or tie extra harness as shown in Figure 3.
6. The new controller may need to be reconfigured for proper operation. **Leakage and Operational Tests must be performed before returning the vehicle to service.**

LEAKAGE AND OPERATIONAL TESTS

1. Before performing leak tests, block the wheels.
2. Fully charge air brake system and verify proper brake adjustment.
3. Make several trailer brake applications and check for prompt application and release at each wheel.

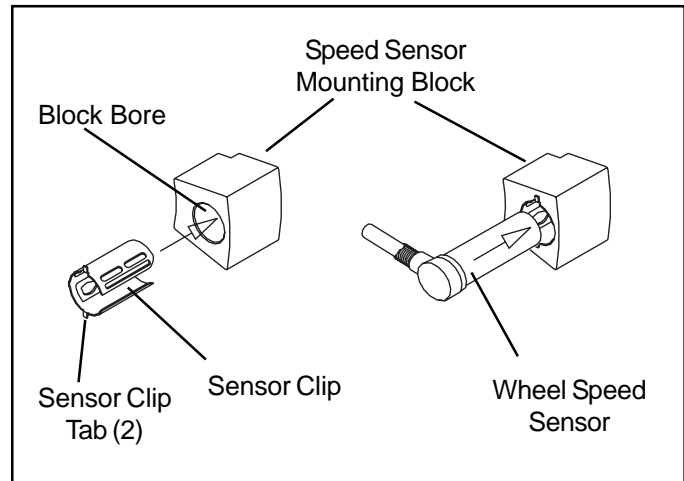


FIGURE 2 - SENSOR CLIP AND SENSOR INSTALLATION

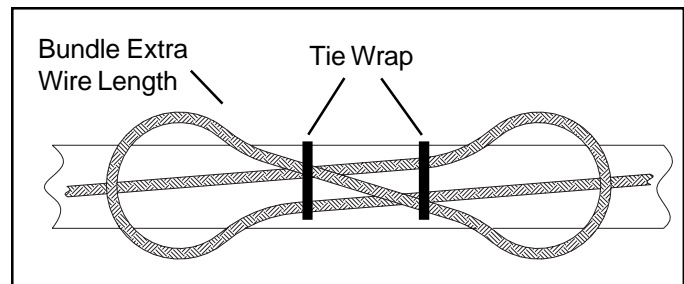
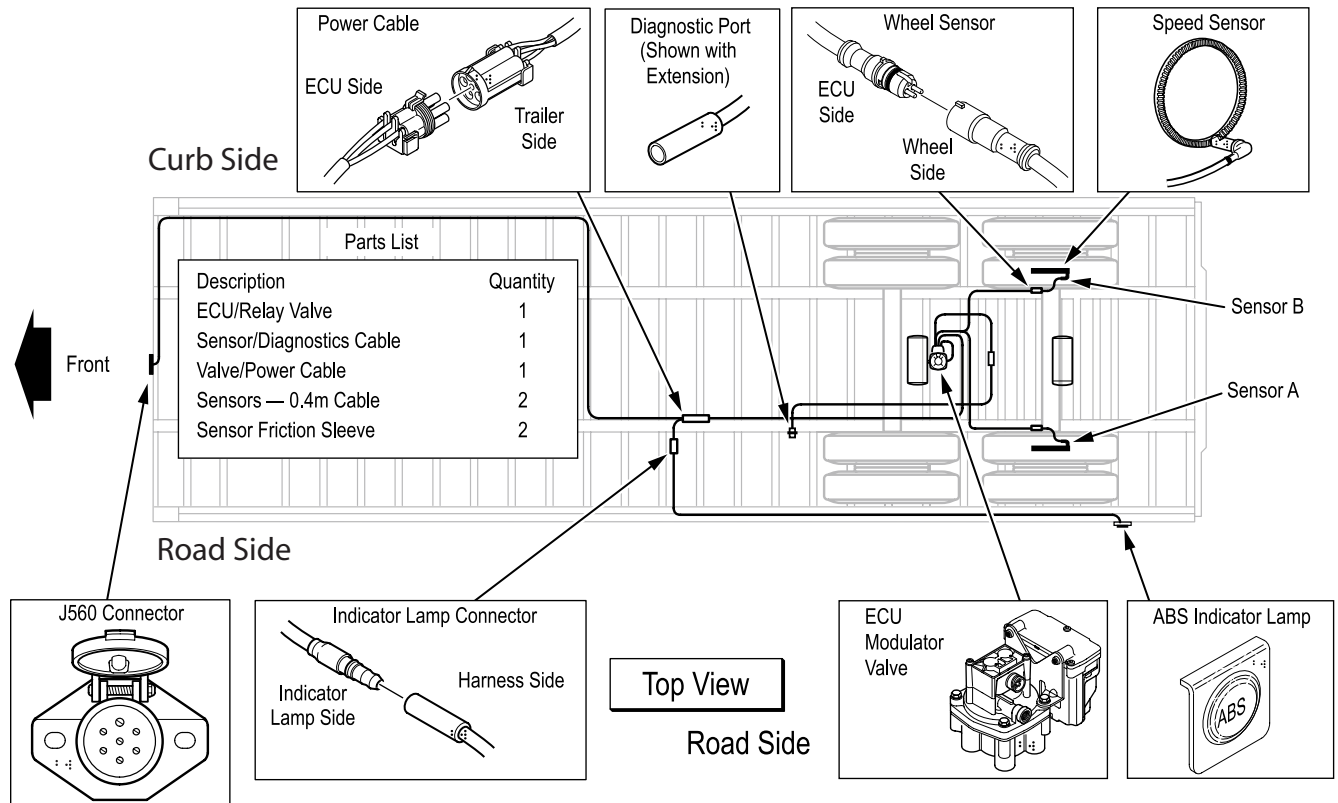


FIGURE 3 - BUNDLING EXTRA WIRE LENGTH

4. Check the modulator-valve body and all air hose fittings for leakage by spraying each area with a soap solution:
 - Check the ABS solenoid body with the trailer service brakes fully applied. If leakage is excessive, replace the entire modulator-valve. A single 1" bubble within 3 seconds is permitted.
 - Check the relay exhaust port and the area around the retaining ring with the trailer service brakes released. A single 1" bubble within 3 seconds is permitted.
 - Check the relay exhaust port and the area around the retaining ring with the trailer service brakes fully applied. A single 1" bubble within 3 seconds is permitted.If excessive leakage is detected at the relay exhaust port, perform the following test before replacing the modulator-valve:
Apply the trailer spring brakes. Recheck for leakage around the exhaust port. If the exhaust port stops leaking, this indicates a leak between the emergency and service sides of the spring brake chamber. However, if the relay exhaust port continues to leak, replace the entire modulator-valve.
5. Apply power and monitor the controller power-up sequence to verify proper system operation. The warning lamp should come on for approx 2.5 seconds and then go out.
6. Calibrate and set odometer parameters if necessary using a diagnostic tool.
7. Where a test track is available, test the ABS function by making an abrupt stop from a vehicle speed of about 20 MPH to check for proper function. The wheels should not enter a prolonged lock condition and ABS function should be audible. It is the responsibility of the technician to perform this test in a safe location.

2S-1M Electrical Configuration (Top View)



2S-1M Air System Configuration (Top View)

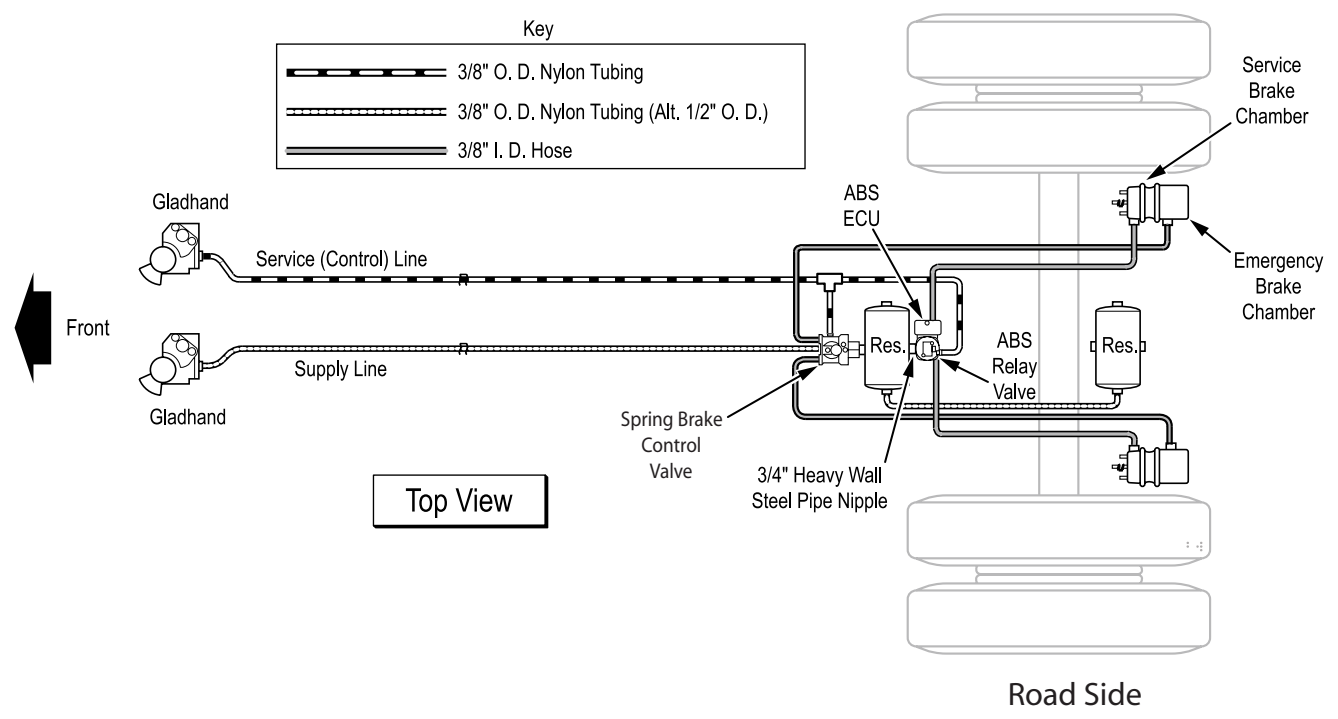


FIGURE 4 - TRAILER ABS 2S/1M SYSTEM SCHEMATICS

ABS WIRING

The Bendix pigtail wiring harness and connectors are weather resistant and sealed at the connector interface.

TROUBLESHOOTING

Fault information can be retrieved from the controller by using blink code diagnostics shown on the yellow label included in the kit, or a diagnostic tool. See the Service Data sheet SD-13-4757 included in the kit for more details.

SOFTWARE REVISION LEVEL

The software revision number can be read using a diagnostic tool.

CONTACTING BENDIX

www.Bendix.com

The Bendix on-line troubleshooting guides help you determine the cause of any performance issues with the braking system. For additional troubleshooting information please see the Service Data sheet included in this kit.

The Bendix on-line contacts guide will make it easy for you to find the Bendix contacts you need. From this page, you can navigate to technical support contacts, Service

Engineers, Bendix Account Managers, international contacts and more. Bendix.com is your complete Bendix resource.

Bendix Technical Assistance Team

For direct personal technical support, call the Bendix technical assistance team at **1-800-AIR-BRAKE** (1-800-247-2725-2-1), Monday through Friday, 8:00 A.M. to 6:00 P.M. EST, and follow the instructions in the recorded message.

Or, you may e-mail the Bendix technical assistance team at: techteam@bendix.com.

To better serve you, please record the following information before calling the Bendix Tech Team:

Bendix product model number, part number and configuration.

Vehicle make and model.

Vehicle configuration. (Number of axles, tire size, etc.)

System performance symptoms. When do they occur?

What faults have been identified using blink codes or diagnostic tools?

What troubleshooting / measurements have been performed?

What Bendix service data literature do you have or need?

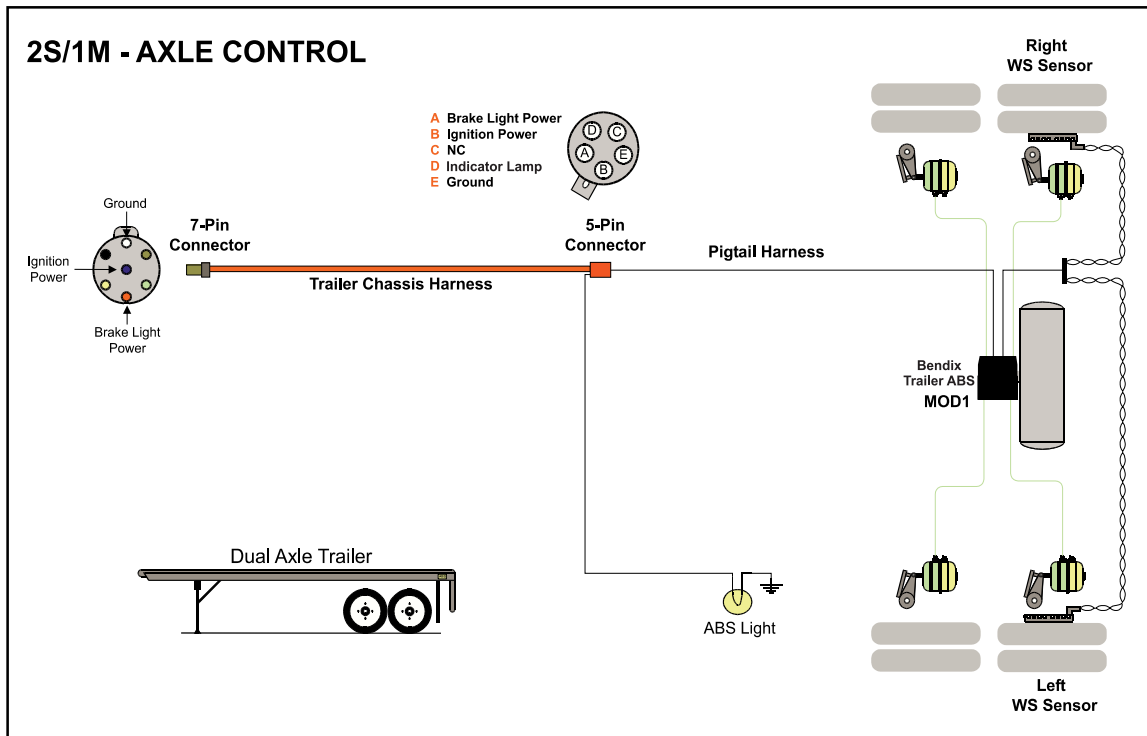


FIGURE 5 - 2S/1M SCHEMATIC

