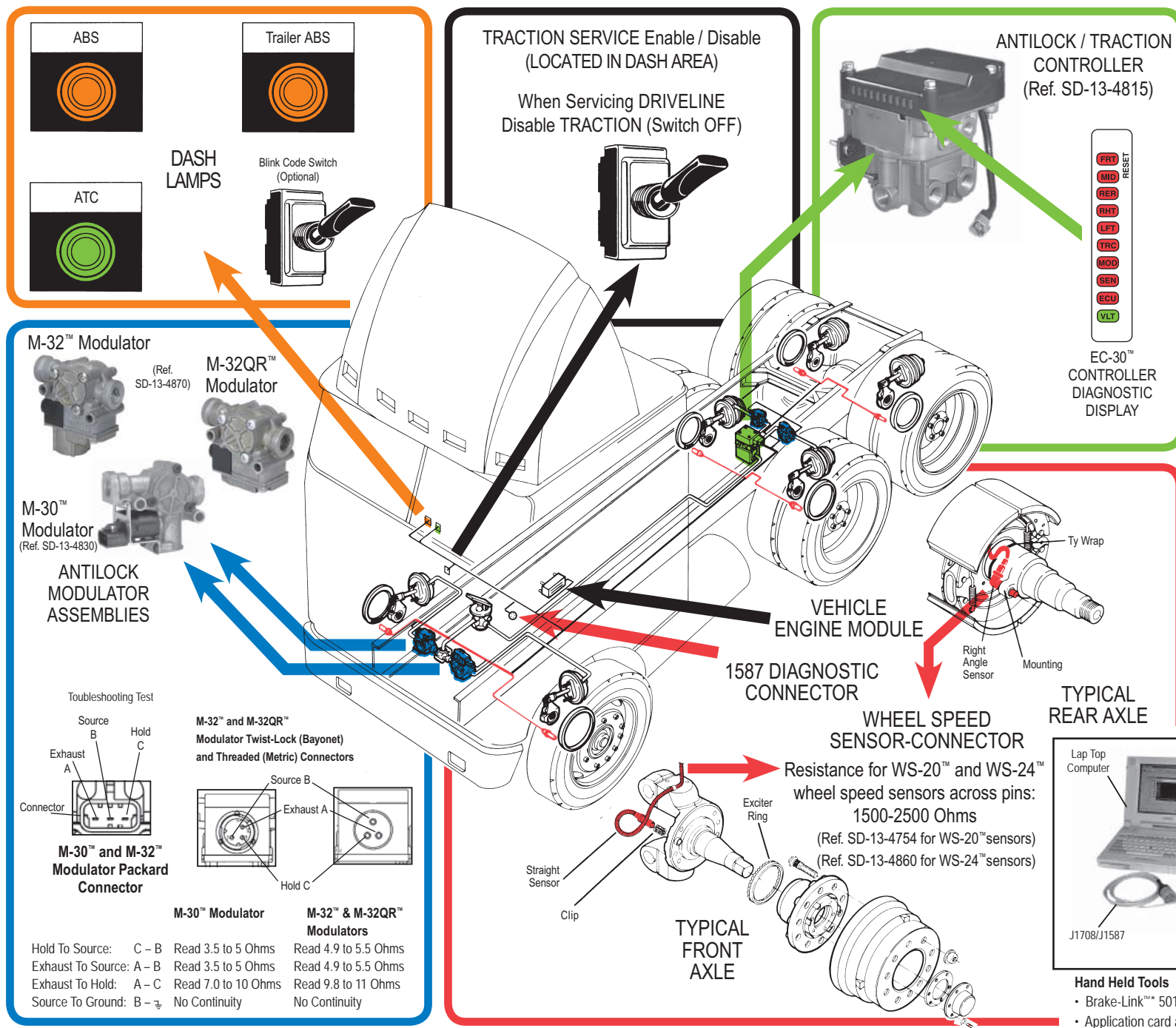


Troubleshooting EC-30™ Controller Antilock Systems with Optional Traction Control



INSTRUCTIONS

ALWAYS USE EXTREME CAUTION WHEN WORKING ON OR AROUND VEHICLES.

START UP: When power is applied the antilock and traction dash warning lamps will illuminate for a period of 2.5 seconds while the electronic control unit (ECU) is performing a self check, and "Chuff" test. If a trailer being towed has PLC, the trailer dash lamp will illuminate for 2.5 seconds then turn off unless a fault is indicated. The ABS and traction control modulators will be energized during the Chuff test. It is recommended during the initial start up that the brakes be applied to audibly hear the modulators exhaust during the "Chuff" test.

SERVICE NEEDED: When an issue is detected at start up, the dash lights will flash and remain illuminated. When a dynamic wheel speed issue is detected the dash lamps will illuminate as early as 10 mph, indicating a wheel speed issue. The dash lamps notify the driver that all or part of the ABS function has been disengaged and standard air braking is in effect. The ECU will automatically reset most intermittent codes (self healing). In most instances, if the intermittent code has occurred more than five times the issue will be latched and require a magnetic reset. The area of concern will always be identified in the diagnostic display.

TRACTION FUNCTION: The ECU monitors wheel spin. When a spin condition exist, the traction dash lamp will blink continuously indicating the traction control system is active. **IF SERVICING THE VEHICLE DRIVE LINE, TRACTION SERVICE ENABLE / DISABLE SWITCH MUST BE DISABLED.**

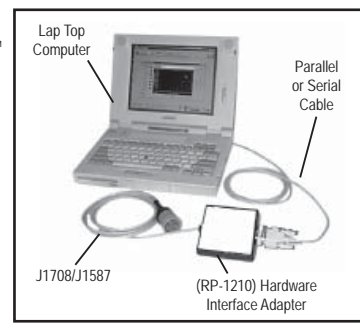
(The traction dash lamp will be illuminated)

RESET: The ECU can be magnetically reset by momentarily holding a magnet against the RESET area on the controller.

SELF CONFIGURING: During self configuring the ECU will automatically determine the number of sensors and if electronic engine equipped. The ECU will also determine if the vehicle is traction equipped ONLY if the traction switch is toggled prior to magnetically self configuring. Holding a magnet against the RESET area for 30 seconds completes self configuring.

BLINK CODE ACTIVATION: The ECU will provide blink code diagnostics through the use of the blink code switch. Details on active faults, fault history, ECU configuration, and clearing of faults can be found in service data SD-13-4815.

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PC Software
 • ACom™ Diagnostics order BW2329 or download from www.bendix.com

Hand Held Tools

- Brake-Link™ 5010749
- Application card available from NEXIQ™, SPX™, Kent-Moore™.



BLINK CODE DEFINITIONS

1st Digit	2nd Digit	Fault Description
1	1	No Faults
Power / ABS Controller		
1	2	Battery Voltage Too High
1	3	Battery Voltage Too Low
1	4	ABS Controller Fault (2)
1	5	ABS Controller Fault (6)
1	6	ABS Controller Fault (7)
1	7	ABS Controller Fault (9)
1	8	ABS Controller Fault (10)
1	9	ABS Controller Fault (11)
1	10	ABS Controller Fault (12)
1	11	ABS Controller Fault (13)
1	12	ABS Controller Fault (14)
1	13	ABS Controller Fault (1)
1	14	ABS Controller Fault (3)
1	15	ABS Controller Fault (8)
Wheel Speed Sensors		
2	1	LF Sensor Start
3	1	RF Sensor Start
4	1	LR Sensor Start
5	1	RR Sensor Start
6	1	LM Sensor Start
7	1	RM Sensor Start

Wheel Speed Sensors (Continued)		
2	2	LF Sensor Intermittent
3	2	RF Sensor Intermittent
4	2	LR Sensor Intermittent
5	2	RR Sensor Intermittent
6	2	LM Sensor Intermittent
7	2	RM Sensor Intermittent
2	3	LF Sensor Shorted to VBAT
3	3	RF Sensor Shorted to VBAT
4	3	LR Sensor Shorted to VBAT
5	3	RR Sensor Shorted to VBAT
6	3	LM Sensor Shorted to VBAT
7	3	RM Sensor Shorted to VBAT
2	4	LF Sensor Shorted to Ground
3	4	RF Sensor Shorted to Ground
4	4	LR Sensor Shorted to Ground
5	4	RR Sensor Shorted to Ground
6	4	LM Sensor Shorted to Ground
7	4	RM Sensor Shorted to Ground
2	5	LF Sensor Open
3	5	RF Sensor Open
4	5	LR Sensor Open

Wheel Speed Sensors (Continued)		
5	5	RR Sensor Open
6	5	LM Sensor Open
7	5	RM Sensor Open
2	6	LF Sensor Shorted Across Sensor
3	6	RF Sensor Shorted Across Sensor
4	6	LR Sensor Shorted Across Sensor
5	6	RR Sensor Shorted Across Sensor
6	6	LM Sensor Shorted Across Sensor
7	6	RM Sensor Shorted Across Sensor
2	7	LF Sensor Lock Time Out
3	7	RF Sensor Lock Time Out
4	7	LR Sensor Lock Time Out
5	7	RR Sensor Lock Time Out
6	7	LM Sensor Lock Time Out
7	7	RM Sensor Lock Time Out
2	8	LF Sensor Frequency Doubling
3	8	RF Sensor Frequency Doubling
4	8	LR Sensor Frequency Doubling
5	8	RR Sensor Frequency Doubling
6	8	LM Sensor Frequency Doubling
7	8	RM Sensor Frequency Doubling

Note 1: Check sensor gap. With sensor in contact with the tone ring, for Bendix wheel speed sensors, there should be at least 0.25 vac voltage output when turning wheel by hand at 0.5 rev/sec.

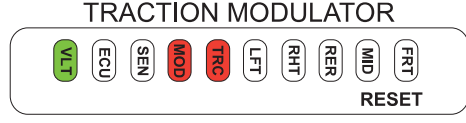
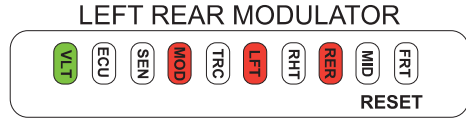
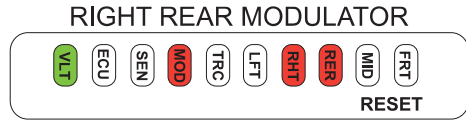
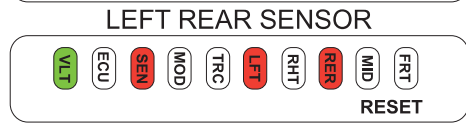
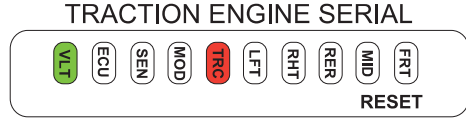
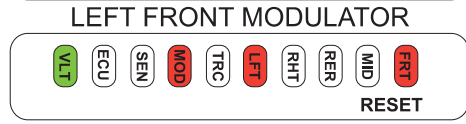
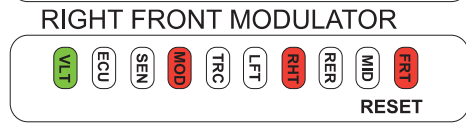
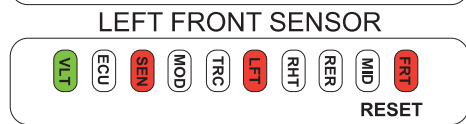


Wheel Speed Sensors (Continued)		
2	9	LF Sensor High Frequency Noise
3	9	RF Sensor High Frequency Noise
4	9	LR Sensor High Frequency Noise
5	9	RR Sensor High Frequency Noise
6	9	LM Sensor High Frequency Noise
7	9	RM Sensor High Frequency Noise
2	10	LF Sensor Wobble Run
3	10	RF Sensor Wobble Run
4	10	LR Sensor Wobble Run
5	10	RR Sensor Wobble Run
6	10	LM Sensor Wobble Run
7	10	RM Sensor Wobble Run
4	11	LR Sensor Gross Mismatch
5	11	RR Sensor Gross Mismatch
6	11	LM Sensor Gross Mismatch
7	11	RM Sensor Gross Mismatch
2	12	LF Sensor Abnormal Speed
3	12	RF Sensor Abnormal Speed
4	12	LR Sensor Abnormal Speed
5	12	RR Sensor Abnormal Speed
6	12	LM Sensor Abnormal Speed
7	12	RM Sensor Abnormal Speed

ABS Modulators		
8	1	LF Modulator Lock Time Out
8	7	RF Modulator Lock Time Out
9	1	LR Modulator Lock Time Out
9	7	RR Modulator Lock Time Out
8	2	LF Modulator Open / Shorted to GND
8	8	RF Modulator Open / Shorted to GND
9	2	LR Modulator Open / Shorted to GND
9	8	RR Modulator Open / Shorted to GND
8	3	LF Modulator Shorted to Ground
8	9	RF Modulator Shorted to Ground
9	3	LR Modulator Shorted to Ground
9	9	RR Modulator Shorted to Ground
8	4	LF Modulator Shorted Solenoid
8	10	RF Modulator Shorted Solenoid
9	4	LR Modulator Shorted Solenoid
9	10	RR Modulator Shorted Solenoid
8	5	LF Modulator Shorted to VBAT
8	11	RF Modulator Shorted to VBAT
9	5	LR Modulator Shorted to VBAT
9	11	RR Modulator Shorted to VBAT

ABS Modulators (Continued)		
8	6	LF Modulator Shorted Between
8	12	RF Modulator Shorted Between
9	6	LR Modulator Shorted Between
9	12	RR Modulator Shorted Between
Retarder Relay Control		
10	1	Retarder Relay Open
10	2	Retarder Relay Shorted
ATC - Traction Control		
10	5	Traction Modulator Open
10	6	Traction Modulator Shorted to Ground
10	7	Traction Modulator Shorted
10	8	Traction Modulator Shorted to VBAT
Lamps		
10	9	Traction Lamp Open
10	10	Traction Lamp Shorted
10	11	ABS - Warning Lamp Open
10	12	ABS - Warning Lamp Shorted
11	1	Trailer ABS - Warning Lamp Open (Dash Mounted)
11	2	Trailer ABS - Warning Lamp Shorted (Dash Mounted)
Engine Serial Communications		
11	3	J1939 Data Link Retarder Communication Fault
11	4	J1939 Data Link Engine Communication Fault
11	5	J1922 Data Link Engine Communication Fault
11	6	J1922 Data Link Retarder Communication Fault

If the LED's shown below are illuminated . . .



Blink Code Sequence

1st 2nd

3 (1-10, 12)

2 (1-10, 12)

8 (7-12)

8 (1-6)

11 (5-J1922)

(4-J1939)

5 (1-12)

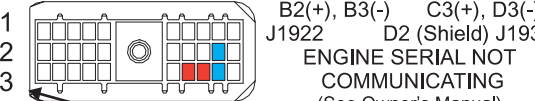
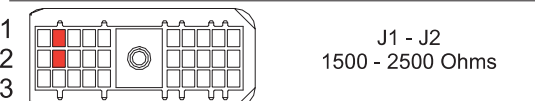
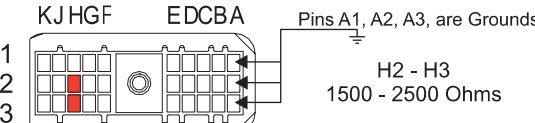
4 (1-12)

9 (7-12)

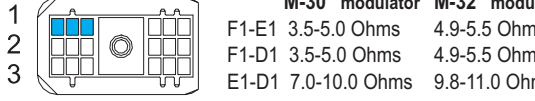
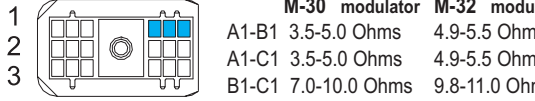
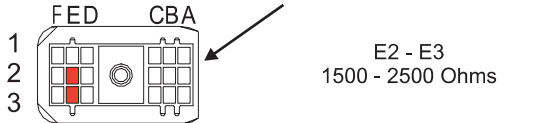
9 (1-6)

10 (5-8)

Check the vehicle WIRING HARNESS CONNECTOR for the proper resistance with system power off (ignition off.)



Orient flat side of connector



Display Active DTC Codes

To display active DTC codes, press the blink code switch one time. Following activation, there will be a 3 second delay followed by a blink code display of all active DTC codes.

Press the Blink Code Switch	Blink Code Action
1 time	Display Active DTC Codes
2 times	Display DTC Code History
3 times	Reset Active DTC Codes
4 times	Display EC-30 Configuration

Display DTC Code History

To display history DTC codes, press the blink code switch two times. Following activation, there will be a 3 second delay followed by a blink code display of all history DTC codes.

Reset Active DTC Codes

To reset active DTC codes, press the blink code switch three times. Following activation, there will be a 3 second delay followed by a blink code message of:
1-1, (System Fully Operational - No DTCs Detected)
or,
A blink code display of all active DTC codes.

The ABS warning lamp will stay on if active DTCs are still present.

Resetting active DTC codes with blink code diagnostics does not clear information from DTC history. DTC history can be retrieved by using blink code diagnostics or by using a diagnostic tool.

Display EC-30™ Controller Configuration

To check the ECU configuration, press the blink code switch four times. Following activation, there will be a 3 second delay followed by a blink code display of the EC-30™ configuration.

1st Digit	Sensors
2	4 Sensors
3	6 Sensors
2nd Digit	Modulators
2	4 Modulators
3rd Digit	ATC
2	Not ATC
3	ATC Engine Torque Limiting Only
4	ATC Differential Brake Only
5	Full ATC (Engine Torque Limiting and Differential Braking)

Most Commonly Encountered Problems That Result in LED's Being Illuminated

Repair or Replace Components as Necessary

1. Abraded or cut wires in the convoluted tubing near frame clamps.
2. Cut or corroded wires near sharp frame members and frame mounted modulators.
3. Wire jacket worn through from overlapping sensor and modulator wires near frame members and frame mounted modulators.
4. Corroded connectors and connections not properly sealed or damaged seals.
5. Damaged connector latches or connectors not completely seated to mating assemblies.
6. Terminals not completely latched or seated into connectors.
7. Excessive sensor air gap, sensor clip tension, or excessive bearing end play (gently push sensor against wheel hub, or readjust bearings.)
8. Damage to exposed wires exiting or entering the convoluted tubing.
9. Worn, chipped or damaged sensor or modulator.
10. Non functioning antilock controller.

If Traction Dash Lamp Only Illuminated, Check/Repair These Items First:

1. Traction enable/disable switch in wrong position.
2. Loss of traction engine serial communication (check service manual).
3. Traction solenoid not connected, or exceeds resistance range.

Contacts above should have no continuity to ground, except contacts A1, A2, A3 of 30-pin connector. Contacts B1, K2, and K3 supply power to the EC-30™ controller connector

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