



ANTI-LOCK BRAKING SYSTEM (ABS)

OEM INSTALLATION MANUAL

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Introduction

Anti-lock braking systems (ABS) are designed to improve stability of the trailer during severe braking events. When the ABS control is not active, or if there is no power to the ABS module, the tow brake signal from the vehicle will pass through to the trailer brakes, the same as on a trailer without ABS technology. When the ABS system detects a wheel is about to lock, the brake signal from the tow vehicle is reduced on that specific wheel, to maintain wheel rotation. The tow vehicle brake signal is monitored at all times, and a proxy load is in place, to ensure the ABS system maintains compatibility with all tow vehicle brake controllers.

The system can send notifications to the driver via select Lippert mobile apps. Scan the QR code to find your app.



Key features of the anti-lock braking module are:

- Module Autoconfiguration
 - When the module is installed per the instructions, this feature will accurately predict tire size, track width, axle count and module orientation.
- True Course (When equipped)
 - Excessive trailer sway can result in loss of control of the vehicle with potentially severe consequences. ABS and Lippert's True Course technology work in tandem to detect trailer sway and engage the trailer brakes independently of the tow vehicle to bring the trailer back under control. The system engages and disengages automatically, and always defaults to the tow vehicle brake input. ABS is constantly monitoring wheel speeds during a True Course activation.
- Dynamic Brake Boost (When equipped)
 - Dynamic Brake Boost can temporarily boost brake torque during hard braking events to maximize trailer braking performance. In an emergency or sudden braking event, delivering the maximum brake torque without locking the trailer brakes can decrease total braking distance.

NOTE: Images used in this document are for reference only when assembling, installing and/or operating this product. Actual appearance of provided and/or purchased parts and assemblies may differ.

For information on the assembly or individual components of this product, please visit:

<https://support.lci1.com/lippert-anti-lock-braking-abs-system>

Safety

Read and understand all instructions before installing or operating this product. Adhere to all safety labels.

This manual provides general instructions. Many variables can change the circumstances of the instructions, i.e., the degree of difficulty, operation and ability of the individual performing the instructions. This manual cannot begin to plot out instructions for every possibility, but provides the general instructions, as necessary, for effectively interfacing with the device, product or system. Failure to correctly follow the provided instructions may result in death, serious personal injury, severe product and/or property damage, including voiding of the Lippert limited warranty.

WARNING

The "WARNING" symbol above is a sign that a procedure has a safety risk involved and may cause death or serious personal injury if not performed safely and within the parameters set forth in this manual.

CAUTION

The "CAUTION" symbol above is a sign that a safety risk is involved and may cause personal injury and/or product or property damage if not safely adhered to and within the parameters set forth in this manual.

CAUTION

Always wear eye protection when performing service, maintenance or installation procedures. Other safety equipment to consider would be hearing protection, gloves and possibly a full face shield, depending on the nature of the task.

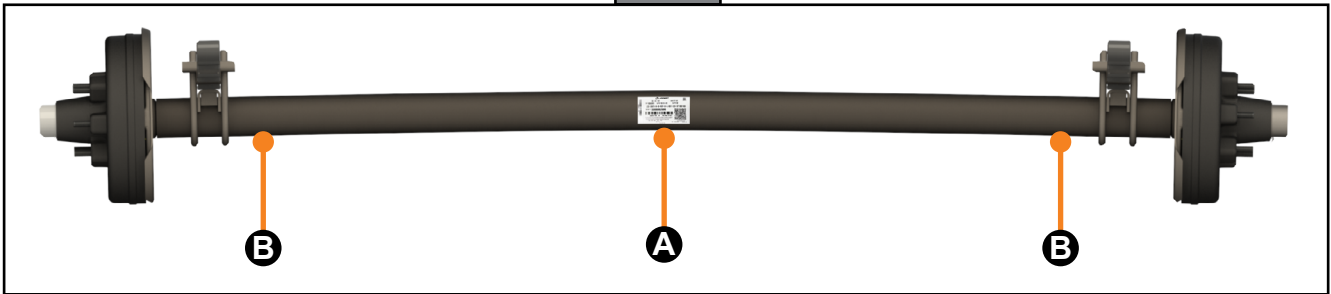
NOTICE

All electrical wiring harnesses shall be loomed and secured to prevent possible damage and installed in accordance with industry codes and standards.

Axle Mounting Orientation

To properly mount the Lippert axle to the coach frame, basic criteria must be met:

Fig. 1



1. Camber must be oriented in the UP position. The center of the axle beam (Fig. 1A) must be higher than the ends of the beam (Fig.1B).
2. Electric Brakes will have the magnet lead wires (Fig. 2A) exiting the Backing Plate on the rear of the axle.
3. The wiring for the brakes (Fig. 2B) protruding from the axle tube must be oriented to the rear of the trailer.
4. An oval adjuster slot (Fig. 2C) must be located at the bottom of the axle.
5. The spring clip (Fig. 3A) must be oriented to the front of the trailer.
6. Silver Axle ID Tag (Fig. 4) must be located on the backside of the axle tube.

Fig. 2

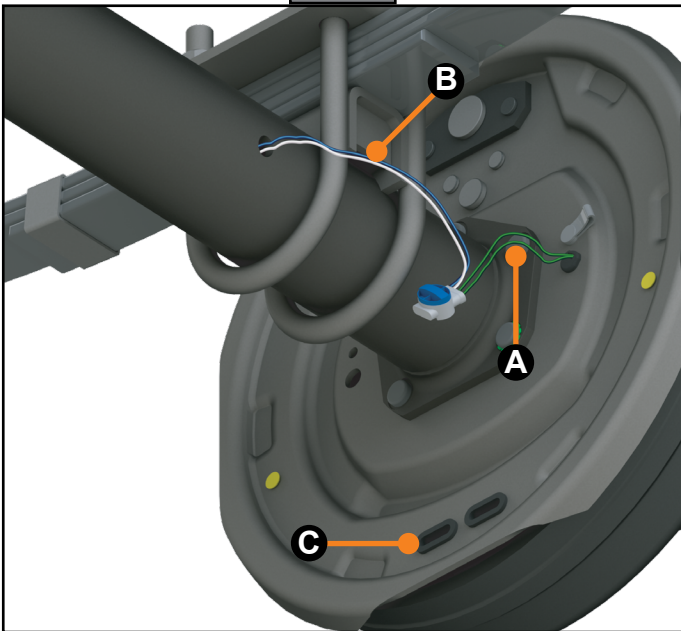


Fig. 3

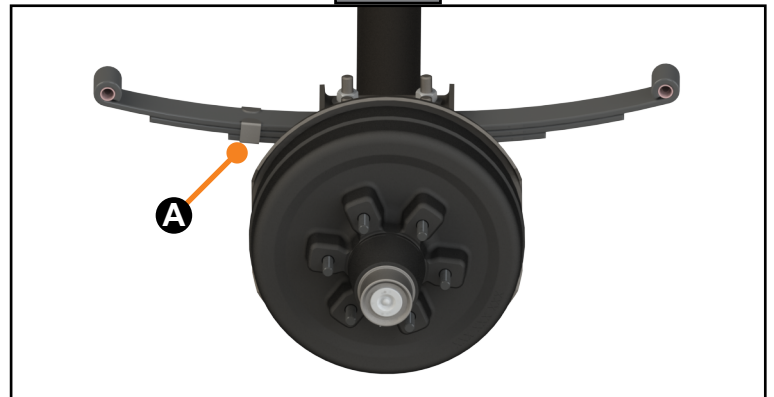


Fig. 4



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Resources Required

- Cordless or electric drill or screw gun
- Appropriate drive bits
- Four self-tapping pan head screws
- Silicone sealant
- Utility knife

Installation

⚠ NOTICE

Lippert strongly recommends that all brake and ABS module ground wires be routed to the junction box of the trailer.

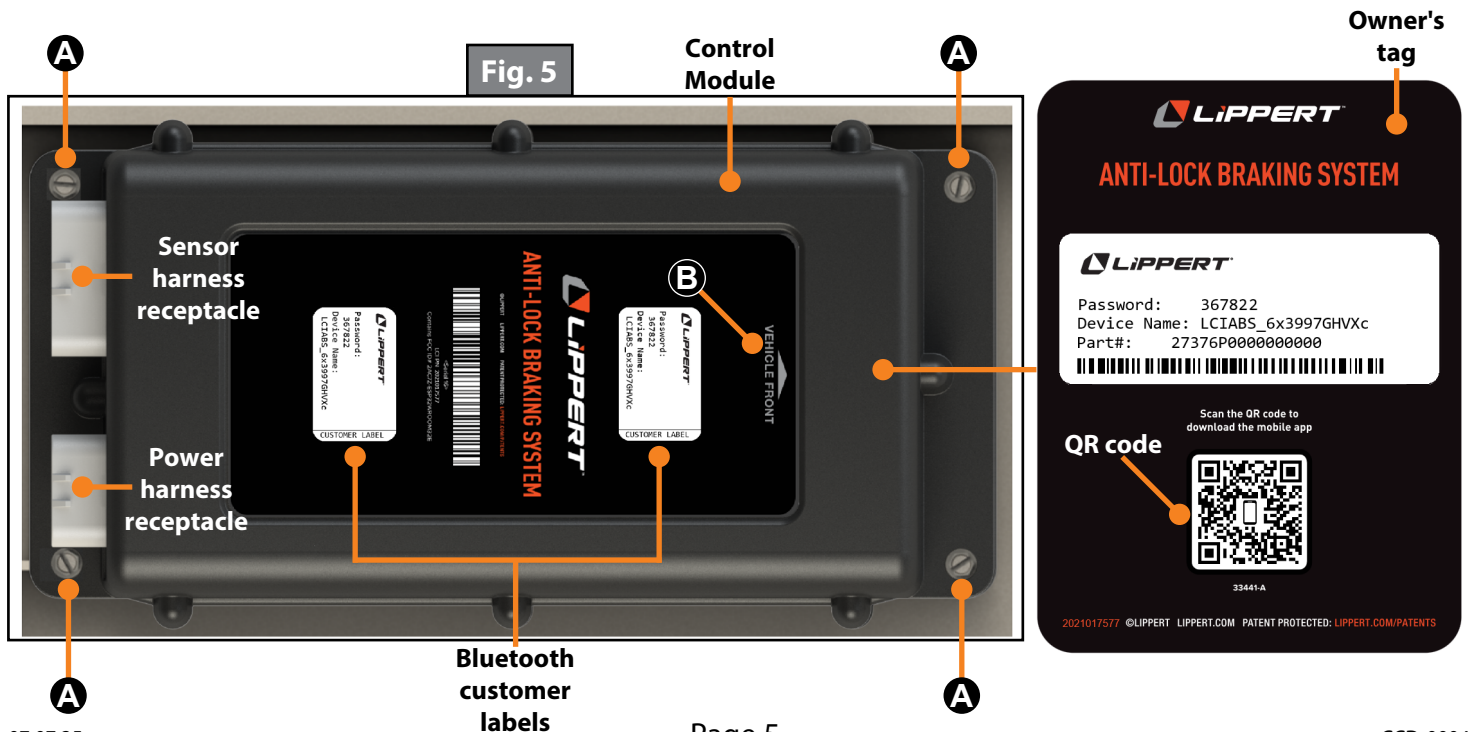
NOTE: This manual depicts a roadside installation. However, a curbside installation is possible by following the same general principles. It is recommended installers dry fit the harnesses prior to installation to make sure there is adequate length to attach the harnesses to the sensors.

1. Using four self-tapping screws, attach control module to frame rail (Fig. 5A). Module should be:
 - A. Located not more than 18" in front of axle 1.
 - B. Parallel with the top web of the frame rail but not placed against the top web. The module will be harder to service if it is located too close to the top of the frame rail.
 - C. Mounted as level as possible.
 - D. Positioned with the VEHICLE FRONT indicator (Fig. 5B) pointing towards the front of the trailer.
2. Remove one of the two peel-off Bluetooth customer labels located on the control module (Fig. 5).
 - A. One sticker should follow the build sheet of the trailer through production.
 - B. One sticker remains on the controller.
 - C. The owner's tag (Fig. 5) is taped to the control module and should be removed and placed in an interior cupboard or on support documentation to permit the end user to scan the QR code and determine the appropriate mobile app.
3. Connect appropriate power harness to the control module port (Fig. 5).

NOTE: There are variable lengths of power harnesses.

4. Connect sensor harness to the control module and extend to the appropriate wheel speed sensors.

NOTE: The harnesses are fixed lengths, including shorter harnesses that connect to the roadside wheels and longer harnesses for the curbside wheels.



5. Route harness along the frame (Fig. 10) so it terminates behind the pin box where it can be wired into the seven-way power cord (Fig. 11).
6. Route a wire that is grounded at the junction box at the front of the trailer to the controller by connecting to the white wire of the sensor harness (Fig. 6B, 7B, 8B).
7. Route the harness ends (Fig. 6C, 7C, 8C) to the wheel sensors through the typical frame cutouts and cross members. Install harnesses based on the length of each section and using the appropriate harnesses for single axle (Fig. 6), double axle (Fig. 7) and triple axle (Fig. 8).
8. Cut a slit in the underbelly near each brake hub and push the end of each sensor harness and brake power wire through this penetration.

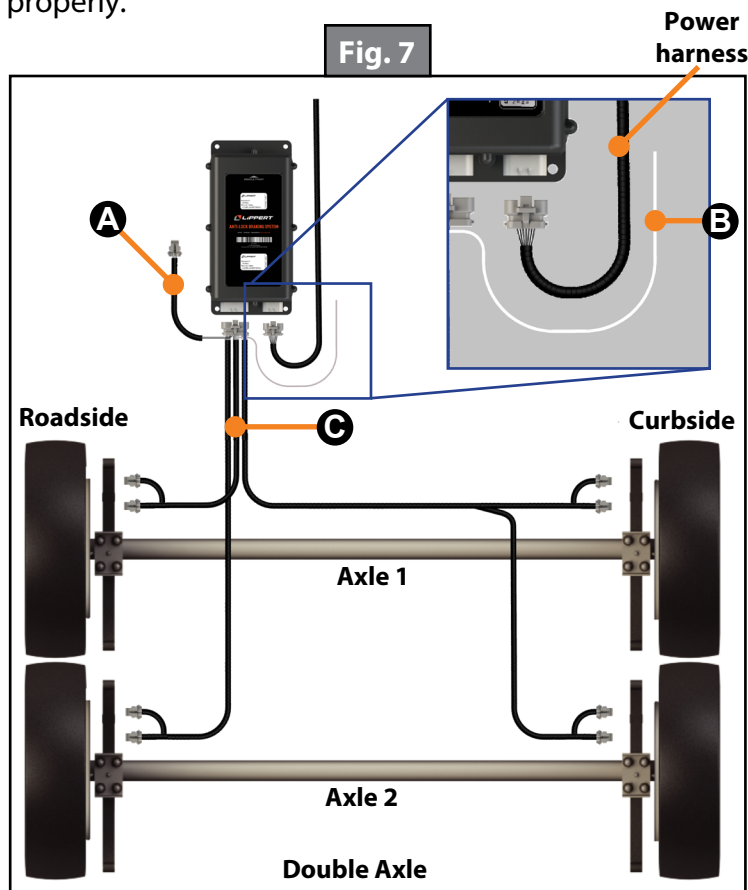
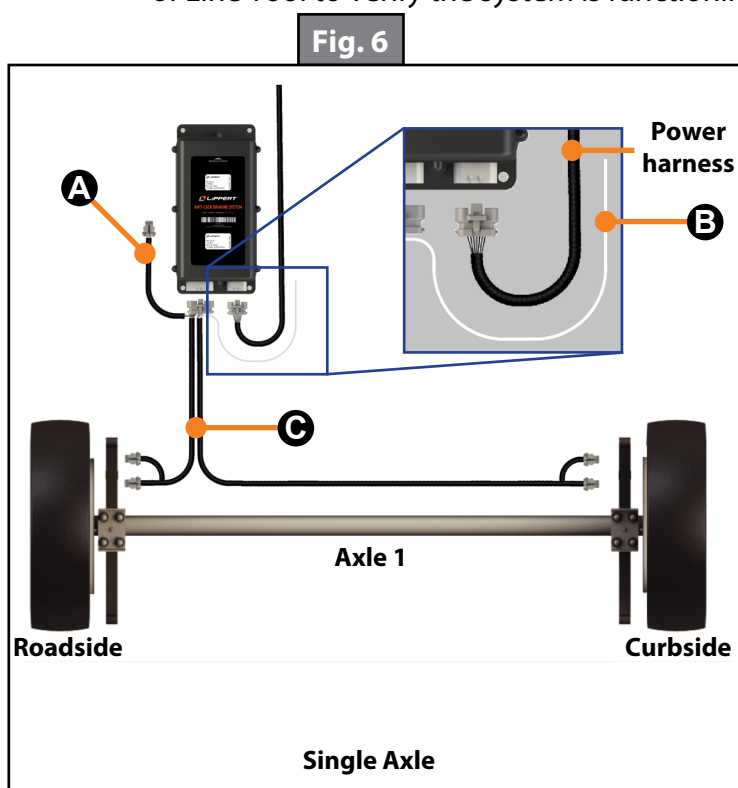
NOTE: The examples depict a roadside installation. For a curbside installation, the harnesses would be reversed.

9. Seal penetrations with silicone sealant.

NOTE: OEM may secure harness with whatever means are used to secure other unit harnesses.

10. Using best practices, leave access to the service connector (Fig. 6A, 7A, and 8A) for conducting an End of Line system verification.

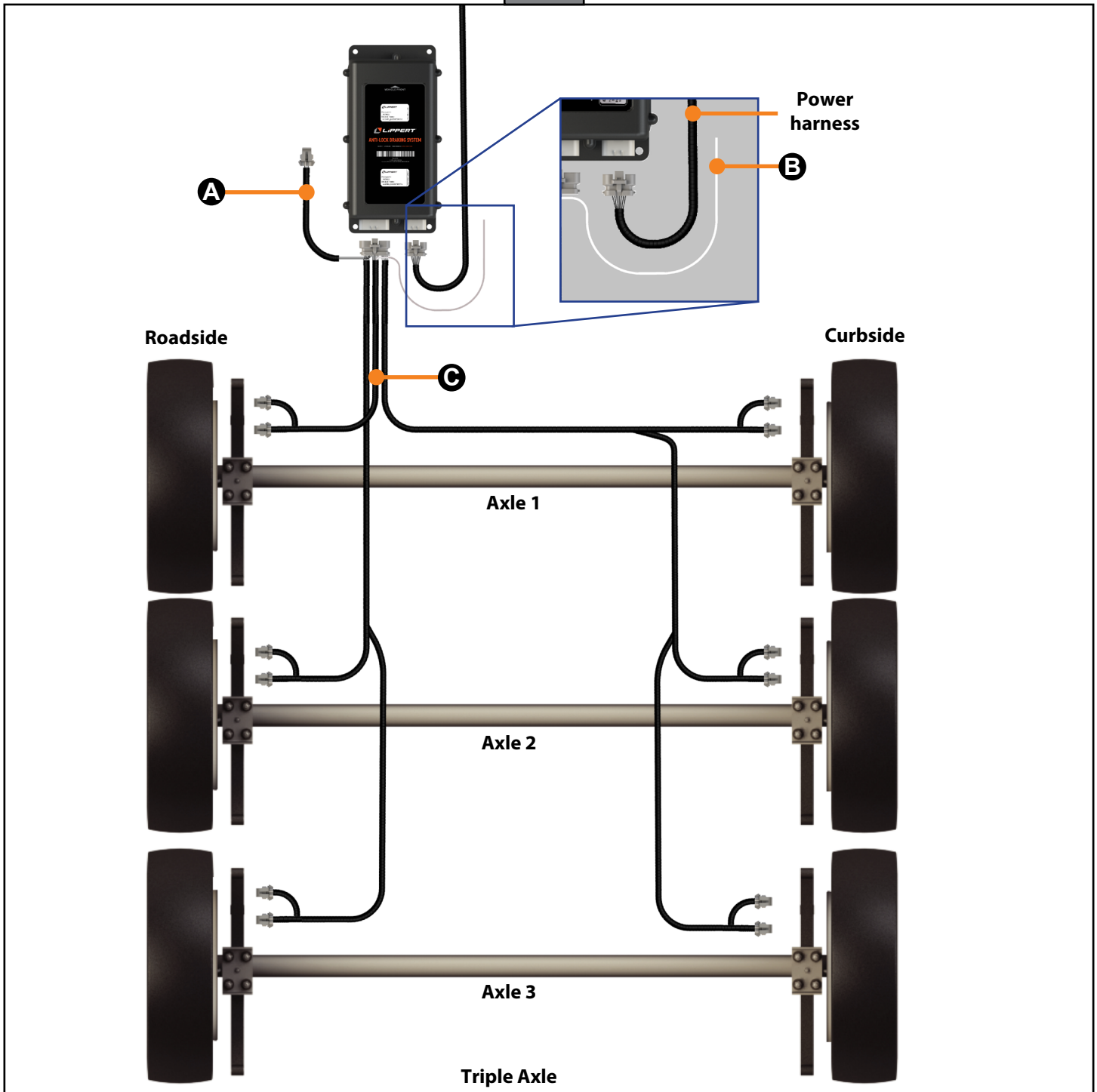
NOTE: An exposed service connector (Fig. 6A, 7A, and 8A) at the module will be used to connect to an End of Line Tool to verify the system is functioning properly.



Harness Wire Colors

	Roadside		Curbside	
Axle	Brake Magnet Harness	Sensor Plug Harness	Brake Magnet Harness	Sensor Plug Harness
Axle 1	Blue w/ Orange stripe and White	Red w/ Orange stripe and Orange	Blue w/ Green stripe and White	Red w/ Green stripe and Green
Axle 2	Blue w/ Yellow stripe and White	Red w/ Yellow stripe and Yellow	Blue w/ Violet stripe and White	Red w/ Violet stripe and Violet
End of Line Tool harness: Pink and Brown				

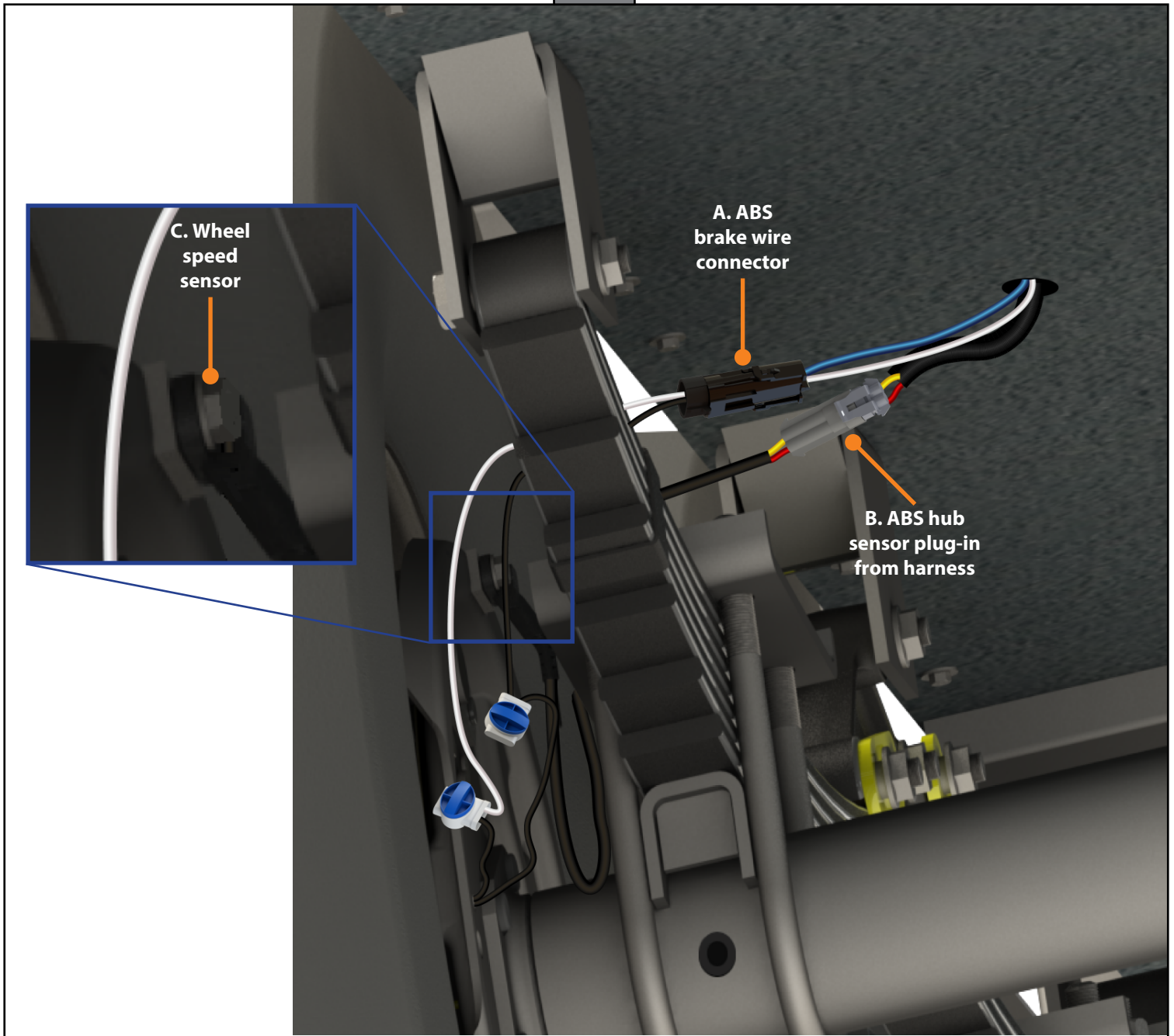
Fig. 8



Harness Wire Colors				
	Roadside		Curbside	
Axle	Brake Magnet Harness	Sensor Plug Harness	Brake Magnet Harness	Sensor Plug Harness
Axle 1	Blue w/ Orange stripe and White	Red w/ Orange stripe and Orange	Blue w/ Green stripe and White	Red w/ Green stripe and Green
Axle 2	Blue w/ Yellow stripe and White	Red w/ Yellow stripe and Yellow	Blue w/ Violet stripe and White	Red w/ Violet stripe and Violet
Axle 3	Blue w/ Black stripe and White	Red w/ Black stripe and Black	Blue w/ White stripe and White	Red w/ White stripe and White
End of Line Tool harness: Pink and Brown				

11. Connect the harnesses to the wheel speed sensors (Fig. 9C) by connecting the male and female connector ends together (Fig. 9A).
12. Connect the harnesses to the brake magnet wires on the back of the brake assembly by connecting the male and female ends together (Fig 9B).

Fig. 9



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13. Wire the end of the power harness into junction box of seven-way power cord (Fig. 12)
- A. See Fig. 13 for RV 5th wheels/Travel Trailers/Campers.
 - B. See Fig. 14 for Utility/Gooseneck/Cargo/Equipment Trailers

Fig. 10

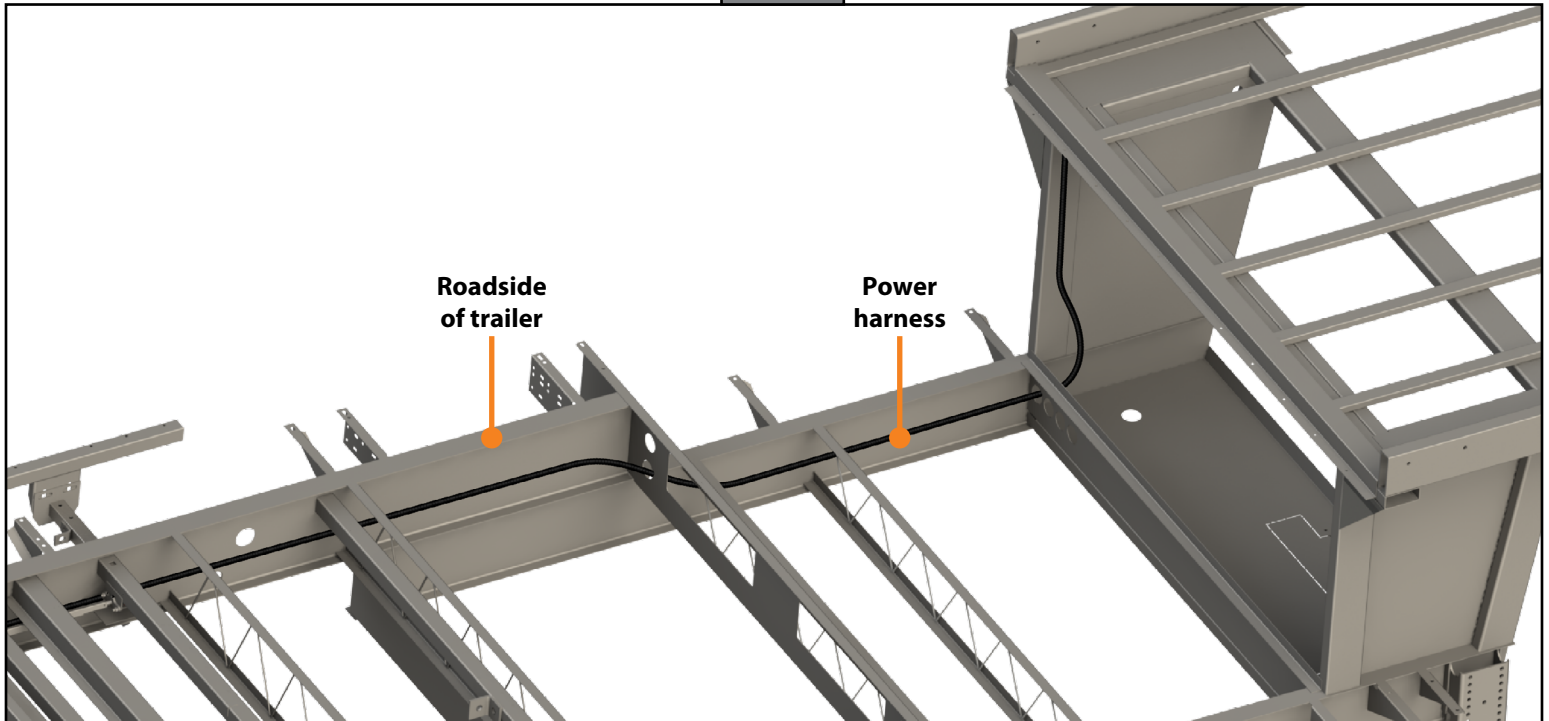
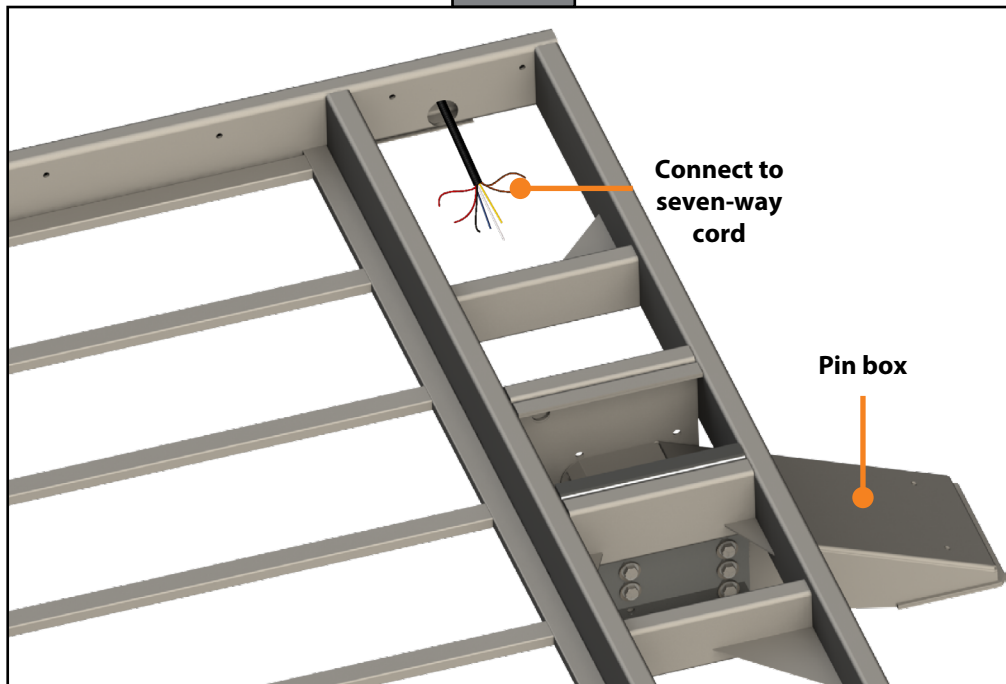


Fig. 11



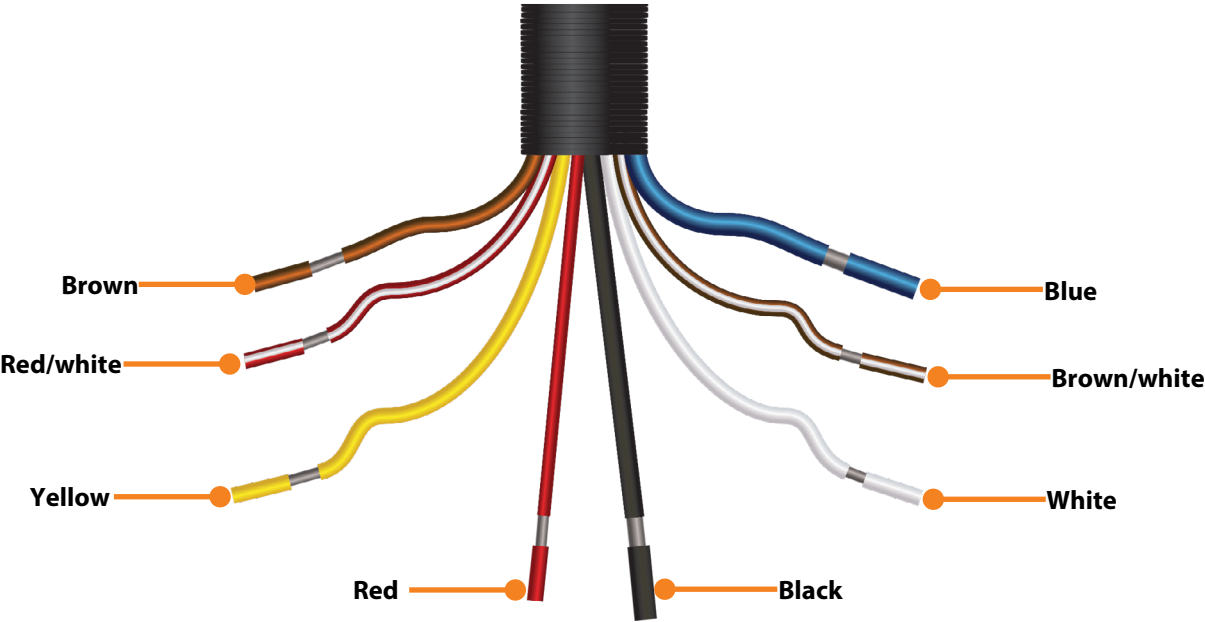
⚠ NOTICE

Lippert strongly recommends that all brake and ABS module ground wires be routed to the junction box of the trailer.

14. After installation is complete, plug in the End of Line Tool to the service connector to verify that wiring has been properly connected. Instructions for use are contained inside the tool case.

Fig. 12

ABS Power Harness			
Color/Stripe	AWG	Function	Truck/Trailer Connections
Black	10	Battery	AUX 12V+ (7-way/Pos 4)
Brown	16	Right turn light in	Right turn signal (7-way/Pos 6)
Brown/White	16	Right turn light out	Right taillight (Trailer)
Red	16	Left turn light in	Left turn signal (7-way/Pos 5)
Yellow	16	Backup light	Reverse light (7-way/Pos 7)
Red/White	16	Left turn light out	Left taillight (Trailer)
Blue	12	Brake	Brake signal (7-way/Pos 2)
White	10	Battery (-)	Ground



ABS power harness from ABS controller



End of 14-pin ABS power harness

Pin	Color	Pin	Color
1	Black	8	Yellow
2	Black	9	Red/White
3	Brown	10	Blue
4	Brown/White	11	Blue
5	Red	12	Blue
6	Black	13	Not Used
7	Not Used	14	White

Fig. 13

Color from Fig. 12 ABS Power Harness	Seven-Way Cord That Plugs Into Tow Vehicle Note: Wire sizes are OEM specific.		
	Color	Function	Truck/Trailer Connection
Black 10 awg	RV - Black	Battery	AUX 12+ (7-way/Pos 4)
Blue 12 awg	RV - Blue	Brake	Brake signal (7-way/Pos 2)
Yellow 16 awg	RV - Yellow	Backup light	Reverse light (7-way/Pos 7)
Red 16 awg	RV - Red	Left turn light in	Left turn signal (7-way/Pos 5)
Brown 16 awg	RV - Brown	Right turn light in	Right turn signal (7-way/Pos 6)
Red/White 16 awg Brown/White 16 awg	RV - Green	Taillights	Taillights
White 10 awg	RV - White	Battery (-)	Ground

RV 5th wheels/travel trailers/campers
Trailer side seven-way plug in wire colors

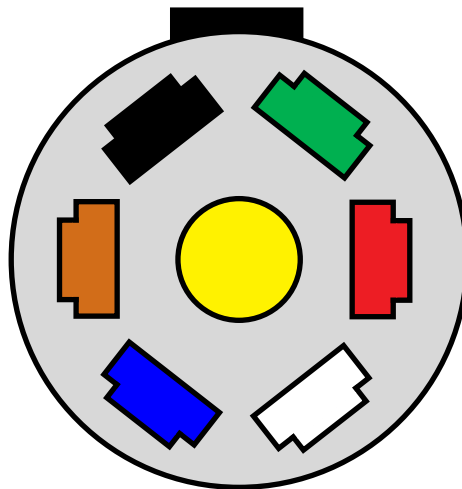
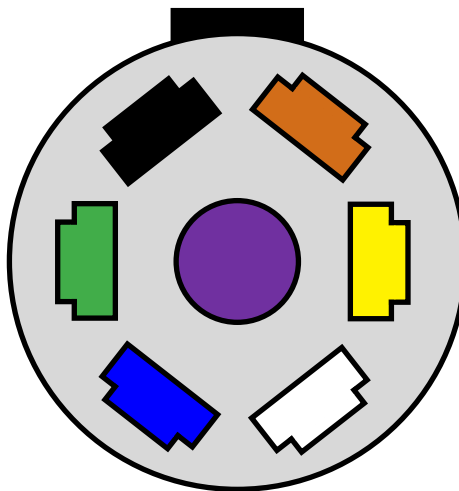


Fig. 14

Color from Fig. 12 ABS Power Harness	Seven-Way Cord That Plugs Into Tow Vehicle Note: Wire sizes are OEM specific.		
	Color	Function	Truck/Trailer Connection
Black 10 awg	Utility - Black	Battery	AUX 12+ (7-way/Pos 4)
Blue 12 awg	Utility - Blue	Brake	Brake signal (7-way/Pos 2)
Yellow 16 awg	Utility - Purple	Backup light	Reverse light (7-way/Pos 7)
Red 16 awg	Utility - Yellow	Left turn light in	Left turn signal (7-way/Pos 5)
Brown 16 awg	Utility - Brown	Right turn light in	Right turn signal (7-way/Pos 6)
Red/White 16 awg Brown/White 16 awg	Utility - Green	Taillights	Taillights
White 10 awg	Utility - White	Battery (-)	Ground

Utility/gooseneck/cargo/equipment trailers
Trailer side seven-way plug in wire colors



Notes

[illegible]



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