

Troubleshooting & Repair Guide

The following guide applies to TruckWings models below:

TruckWings for Gen 3 TruckWings Systems

Table of Contents

Introduction	3
How To Order Parts	3
Visual Glossary	4
Troubleshooting Guides	5
T00-10 TruckWings Do Not Deploy Using Controller	5
T00-20 TruckWings Do Not Deploy on Highway	6
T00-30 Trailer Distance Sensor Error	8
T00-40 No Power to TruckWings Controller	10
T00-50 Identifying Airflow System Leaks	11
Repair Guides	12
R00-00 Service Modes	12
R00-10 Switching System to Safe To Service Mode	12
R00-20 Adding or Removing System from Remote Hold Closed Mode	14
R00-30 Securing TruckWings in the Event of Emergency	15
R10-00 Panels	16
R10-10 Side Panel Replacement	16
R10-11 Side Panel Upper Tube Repair	18
R10-12 Side Panel Tube Rivet Replacement	19
R10-20 Grab Handle Reinforcement Replacement	20
R10-21 Grab Handle Replacement	22
R10-30 Top Panel Triangle Replacement	23
R10-31 Top Panel Assembly Complete Replacement	25

R20-00 Mounts, Frame, and Hinges	28
R20-10 Side Panel Hinge Replacement	28
R20-11 Side Panel Hinge Bushing Service	30
R20-20 Distance Sensor Bracket Repair	31
R20-30 Air Hose Hanger Replacement	32
R20-40 Cab Bracket Rivet Replacement	33
R30-00 Airflow System	34
R30-10 Top Actuator Replacement	34
R30-20 Bottom Actuator Replacement	36
R30-30 Airflow Control Assembly Replacement	37
R30-40 Actuator Hose Bundle Replacement	39
R30-41 Tractor Air Supply Hose Replacement	41
R40-00 Electronic & Harness	42
R40-10 Distance Sensor Replacement	42
R40-20 TruckLabs Telematics Replacement	43
R40-21 TruckWings Controller Replacement	45
R40-22 TruckWings Controller Test Screen Mode	46
R40-30 Exterior Harness Replacement	47
R40-31 CAN Harness Replacement	48
Torque Specifications	49

Introduction

This repair guide provides instructions and procedures for troubleshooting, repairing and replacing various TruckWings components and subsystems.

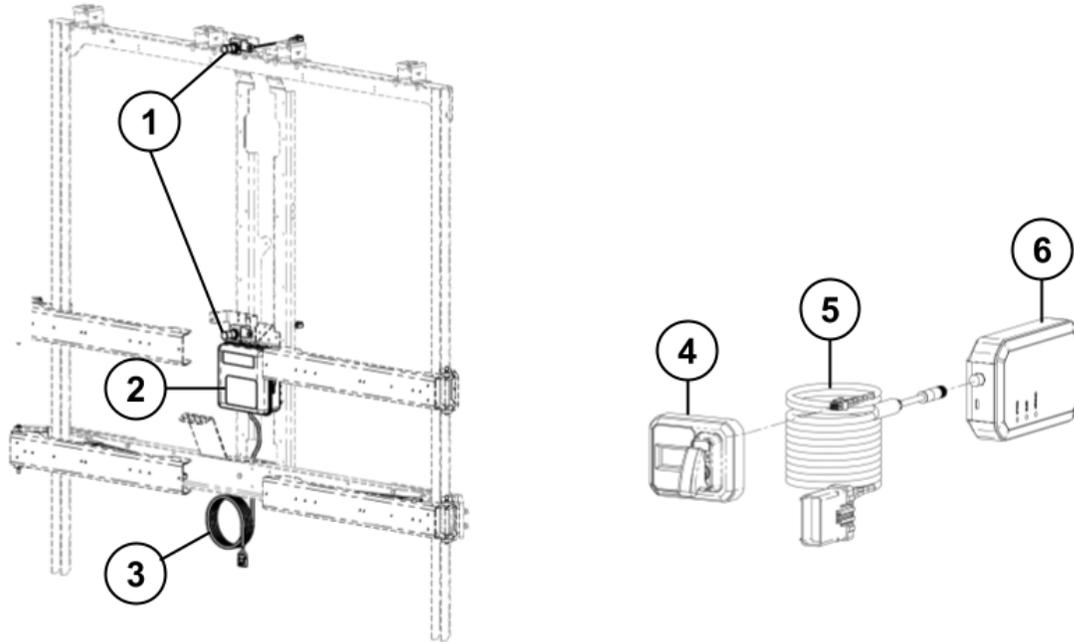
How To Order Parts

Contact TruckLabs Support if a parts catalog is not accessible through your fleet's part info system.

Once all required parts to complete a repair have been identified, please contact TruckLabs Support via phone or email to place a parts order. Be ready to provide fleet name, fleet truck number, last six of truck VIN, and shop location.

(415) 857-0263 - support@trucklabs.com

Visual Glossary



No.	Part	Description
1	Trailer Distance Sensor	Ultrasonic sensor used to detect cab-to-trailer gap.
2	Airflow Control Box	Houses Directional Control Valve, regulator, & ball valve.
3	Exterior Harness	Harness connecting (1) and (2) to (4) on dash.
4	TruckWings Controller	Mounted to the vehicle dash.
5	TruckWings CAN Harness	Connects to vehicle RP1226 connection.
6	TruckLabs Telematics	Mounted behind the vehicle dash.

Troubleshooting Guides

T00-10 TruckWings Do Not Deploy Using Controller

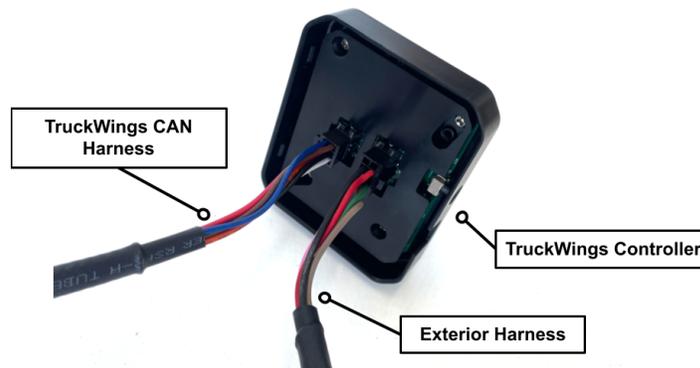


CAUTION

For safety, before attempting to manually deploy TruckWings, ensure the area behind the TruckWings is entirely clear of all personnel and equipment.

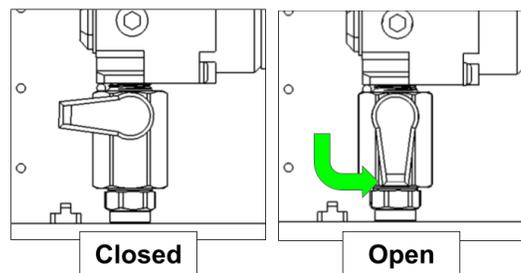
If the TruckWings do not open manually from the TruckWings Controller toggle switch on the dash, check the following:

1. Check that the TruckWings Controller is connected. Pull out the TruckWings Controller from the dash and ensure that each of the two connectors and the individual wires are securely and fully connected.

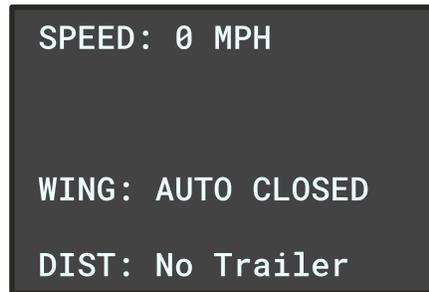


2. Ensure the air valve located in the Airflow Control Box is turned open to allow air flow (with valve lever pointing down) as shown.

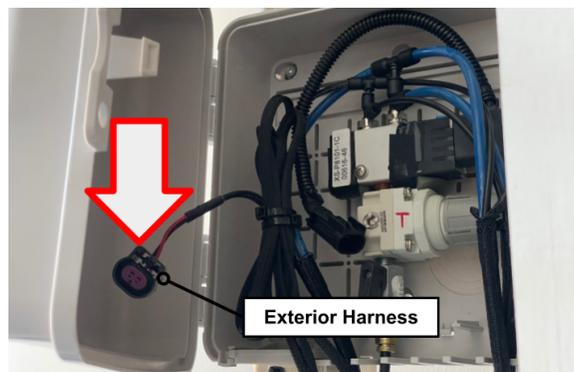
CAUTION: If the valve is found to be closed, return to the TruckWings Controller and flip the switch down to “**AUTO**”. If this step is not performed, TruckWings will extend when the valve is moved to the open position with a person standing immediately behind the wings. With TruckWings Controller in “**AUTO**”, the valve can be opened, then, with no one on the catwalk behind TruckWings, TruckWings Controller toggle can be flipped all the way up to “**MANUAL EXTEND**” mode.



3. Check that the system has more than 85 psi in the secondary air tank.
4. Turn vehicle ignition ON and check the TruckWings Controller display. **With the toggle cover down** in AUTO, and no trailer hooked up, the screen should display as shown with 'DIST: No Trailer'.

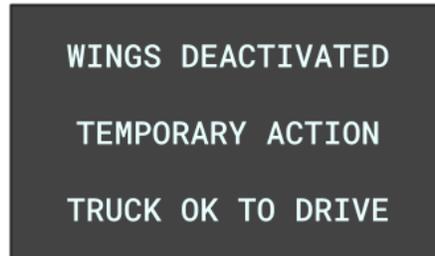


- I. If DIST reads 'Error', see [T00-20: Trailer Distance Sensor Error](#)
 - II. If 'OK' or 'Too Close', something is blocking the sensor. Clear obstruction and try again.
5. If problem persists with 'DIST: No Trailer', remove installed TruckWings Controller and replace with known working TruckWings Controller. Flip the toggle up to "Manual Extend" and check for functionality.
 6. If problem persists with replacement TruckWings Controller, disconnect the Exterior Harness from the Directional Control Valve in the Airflow Control Box. Use a voltmeter to check for 12V at the output of the Exterior Harness, as shown at arrow below. **Voltage is only sent if 'DIST: No Trailer' & Controller toggle is all the way UP.**
 - I. If 12V is present, replace the Directional Control Valve assembly.
 - II. If 12V is not present, investigate Exterior Harness continuity.



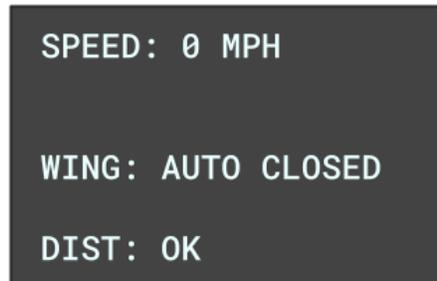
T00-20 TruckWings Do Not Deploy on Highway

1. Verify the TruckWings can be deployed manually by flipping the toggle switch UP on the TruckWings Controller while the tractor is stationary and unhooked from trailer. If TruckWings do not deploy, follow steps in [T00-10: TruckWings Do Not Deploy Using Controller](#).
2. Flip the toggle cover DOWN and check the display. If the display shows the following, the TruckWings are disabled by software at the request of a technician. Follow instructions in [R00-20: Adding or Removing System from Remote Hold Closed Mode](#) to return TruckWings to automatic operation.



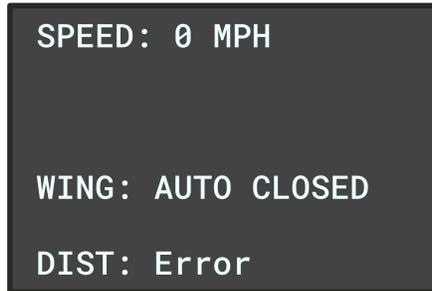
3. TruckWings require a minimum distance between cab and trailer. If the Fifth Wheel is slid too far forward, the Distance Sensor will detect the trailer as “Too Close” and disable deployment. Move the Fifth Wheel back until “DIST” reads OK on the display screen when hooked up to a trailer.

If “DIST” reads “Error”, proceed to [T00-30: Trailer Distance Sensor Error](#)

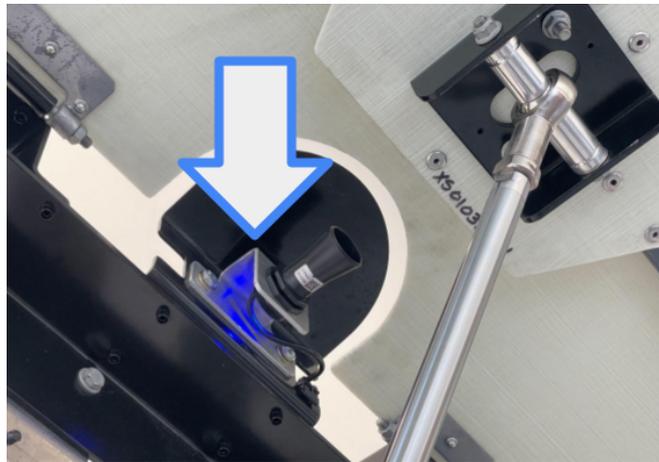


T00-30 Trailer Distance Sensor Error

If the TruckWings Controller screen shows 'Dist: Error' when the toggle is closed in "AUTO" as shown below:



1. Confirm the Exterior Harness is connected at both the Distance Sensor and TruckWings Controller.
2. Confirm that power is supplied to the sensor through blinking blue LED on back of the sensor, visible while standing on the tractor's deck plate, shown below.



3. If the Distance Sensor LED is off, check pin integrity on the Molex connector of Exterior Harness going into the TruckWings Controller.

Continue on next page.

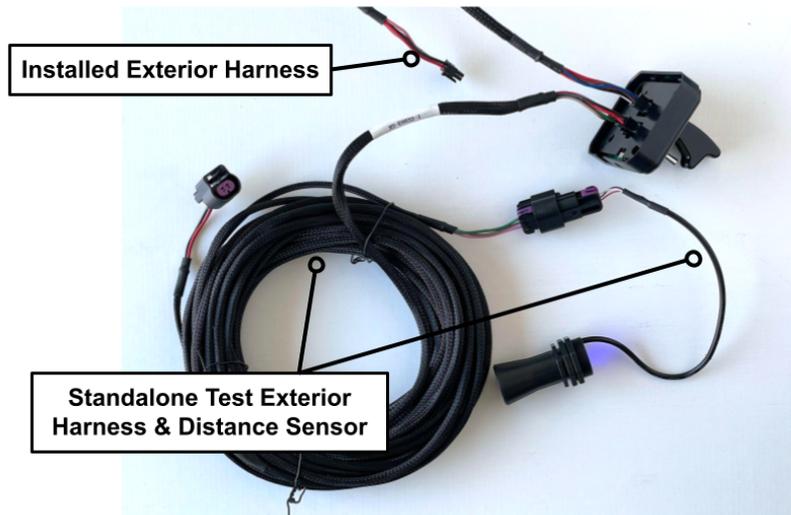
4. If all connections appear OK and error persists, disconnect the Exterior Harness from the TruckWings Controller.

Disconnect the Telematics from vehicle power.

Attach a standalone, known working Exterior Harness and Distance Sensor, as shown below.

Reconnect the Telematics to vehicle power.

- I. If the test Harness and Distance Sensor produce a valid sensor reading, replace the Distance Sensor on the vehicle with the one tested. Reconnect installed Exterior Harness and confirm full system functionality.
- II. If the test Harness and Distance Sensor still produce an 'Error', replace the TruckWings Controller and repeat. Confirm full system functionality. Reconnect the Exterior Harness installed in the vehicle and again confirm full system functionality.
- III. If 'Error' remains after installing both a new Distance Sensor and new TruckWings Controller, investigate Exterior Harness for faults.



T00-40 No Power to TruckWings Controller

If the TruckWings Controller screen is blank, use the following table to troubleshoot.

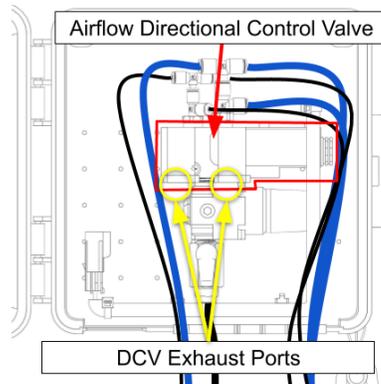
Controller Screen	Controller Power LED	Telematics Cloud LED	Troubleshooting Tips
is off	is solid green 	is pulsing blue 	<ul style="list-style-type: none"> ➤ Press and hold the reset button on the bottom of the Controller for five seconds to reboot the system. ➤ Swap in known working Controller (R40-22: TruckWings Controller Replacement).
is off	is off	is pulsing blue	<ul style="list-style-type: none"> ➤ Check harness connection between Telematics and Controller. ➤ Swap in known working TruckWings Controller. ➤ Swap in known working Telematics (R40-20: TruckLabs Telematics Replacement).
is off	is off	is off	<ul style="list-style-type: none"> ➤ Check connection to vehicle 12V at RP1226 connector. ➤ Check fuse for vehicle's accessory circuit providing power to RP1226 connector. ➤ Swap in known working Telematics.

T00-50 Identifying Airflow System Leaks

If an air leak is heard, locate the leaking component and perform the following:

If the leak is coming from the Airflow Control Box located in the center back of the fuel cabinet:

1. Open and close the TruckWings rapidly using the toggle switch on the TruckWings Controller. Switch up to **“MANUAL EXTEND”** and down to **“AUTO”** quickly about 5 times. Check if the leak persists. If so, continue to the next step.
2. Open TruckWings and open the white airflow control box in the center where the leak is coming from.
3. If the leak is at a tubing to fitting connection, try pushing the tubing in more. If leak persists, take tubing out and cut it square. If the leak persists, replace the Airflow Control Assembly per [R30-30: Airflow Control Assy Replacement](#).
4. If the leak is coming from around fitting or component threads, try tightening the threaded connection. If the leak persists, replace the Airflow Control Assembly.
5. If the leak is coming from the Airflow Directional Control Valve (DCV) exhaust ports, apply SAE 10W oil to all actuator ports to lubricate the actuator internals. Open and close the TruckWings another 5 times. If the leak persists, continue to the next step.



6. Use a pair of needle nose pliers to start pinching off airlines going to actuators until the leak stops and you identify the actuator with an internal seal leak. Replace cylinder per [R30-10: Top Actuator Replacement](#) or [R30-20: Bottom Actuator Replacement](#).

If the leak is coming from a cylinder fitting, replace fitting using thread sealant on fitting threads.

If the leak is coming from a cylinder end seal, replace the cylinder per [R30-10: Top Actuator Replacement](#) or [R30-20: Bottom Actuator Replacement](#).

Repair Guides

R00-00 Service Modes

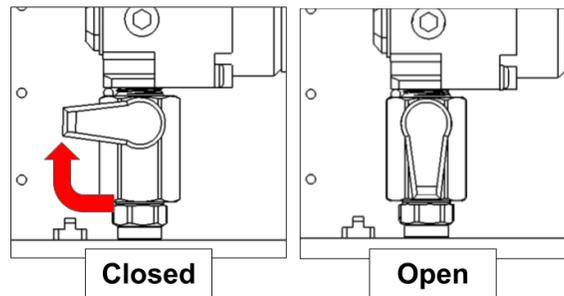
R00-10 Switching System to Safe To Service Mode

WARNING

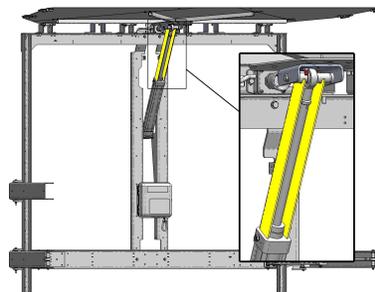
Failure to follow this procedure may result in the unintended movement of TruckWings while servicing. Do not work within a deployed TruckWings envelope while the system is pressurized.

Before servicing any part within the TruckWings system or working on the back of cab, place the system in Safe to Service mode by performing the following:

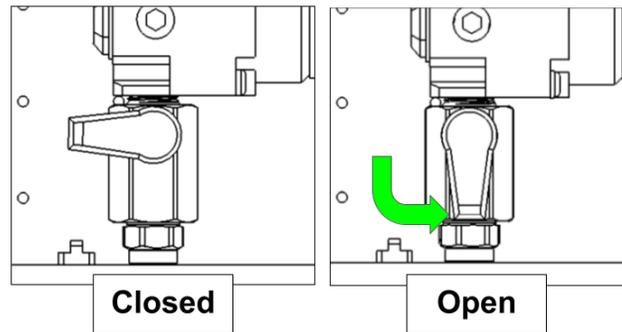
1. **Open the TruckWings system by flipping the toggle switch UP** on the TruckWings Controller while the tractor is stationary and unhooked from a trailer.
2. Move to the catwalk and **disable airflow to TruckWings** by turning the ball valve on the Airflow Control Assembly to **Closed**.



3. **Drain the air tanks** by pumping the brake pedal repeatedly until the air pressure gauge on the dash reads **0 PSI**.
4. **Remove keys from ignition** to prevent any unwanted attempts of starting the motor and truck building up air pressure.
5. **If required for repair, prop the TruckWings open** by pushing trapezoid to fully deployed position and inserting the TruckLabs Prop Tool (XS-010782-1).



6. **Perform repair(s) as needed.**
7. **Remove the upper cylinder holder if installed.** Reconnect any disconnected tubing.
8. **To return TruckWings to normal operation, ensure the vehicle's air pressure gauge reads 0 PSI.** Turn the ball valve on the Control Valve Assembly vertically to **Open**. Close the lid on the Control Valve Assembly and reinstall carabiner.



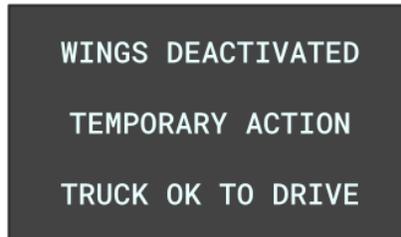
9. **Close the toggle cover on the TruckWings controller.**
10. The TruckWings will close when the secondary air tank is filled to above **80 PSI**.

R00-20 Adding or Removing System from Remote Hold Closed Mode

TruckWings can be disabled remotely by software in the event of damage while waiting on repairs. This will disable TruckWings from deploying at any speed.

Note: If airflow system is leaking, follow procedure in [R00-30: Securing TruckWings in the Event of Emergency](#) to physically restrain TruckWings in addition to adding system to Remote Hold Closed.

If the following message is displayed on the Telematics controller, the system is set to Hold Closed and TruckWings *will not deploy* at highway speeds.



To add or remove a unit from Remote Hold Closed Software, contact TruckWings Technical Support at support@trucklabs.com or (415) 857-0263.

R00-30 Securing TruckWings in the Event of Emergency

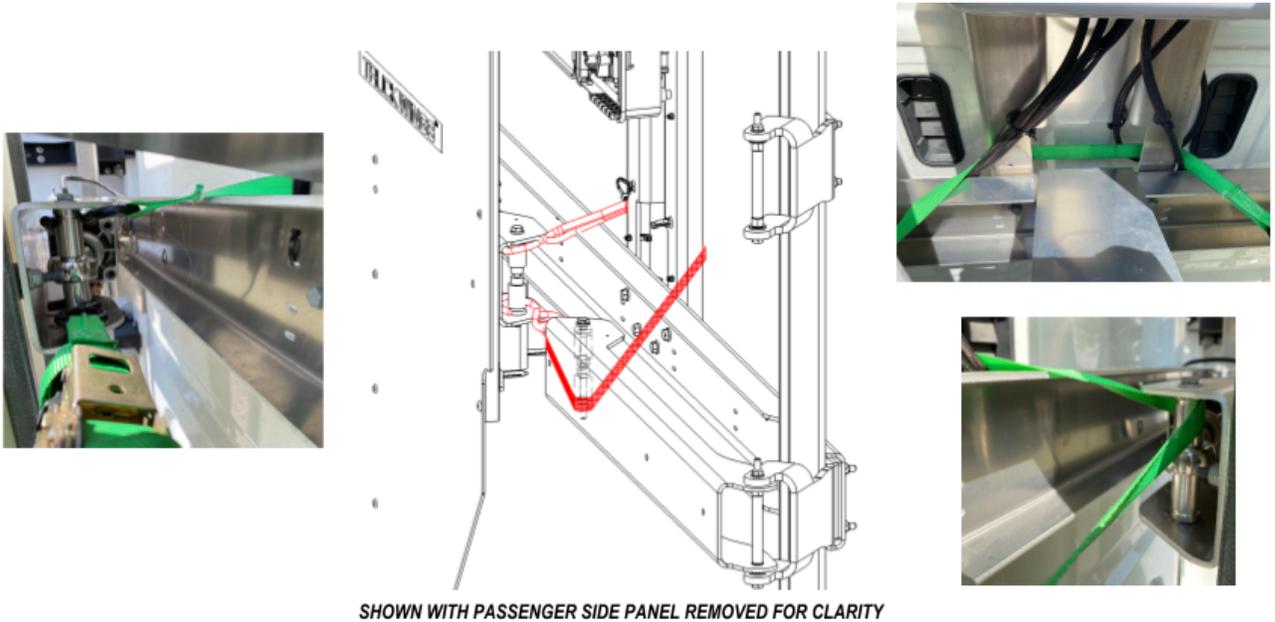
Required Tool

6' Ratchet Strap

In the event of an accident resulting in damage to the TruckWings, disable TruckWings by setting Controller toggle to the middle position until repairs can be made. Notify your terminal maintenance department or repair facility of damage and/or functional loss as soon as possible so repairs can be evaluated and scheduled.

If TruckWings have incurred structural damage and need to be secured, follow the procedure below:

1. Close the ball valve found inside the Airflow Control Box.
2. Strap the TruckWings shut using ratchet straps across points shown below. Repeat the same on both sides to secure each Side Panel.
3. Ensure the strap is snug and cannot slip.



4. Pull on each of the large TruckWing panels to verify it is secure and cannot be moved or opened .
5. Stow the excess strap so it will not move around in the wind and/or catch on other portions of TruckWings or the tractor.

R10-00 Panels

R10-10 Side Panel Replacement

Required Repair Kit

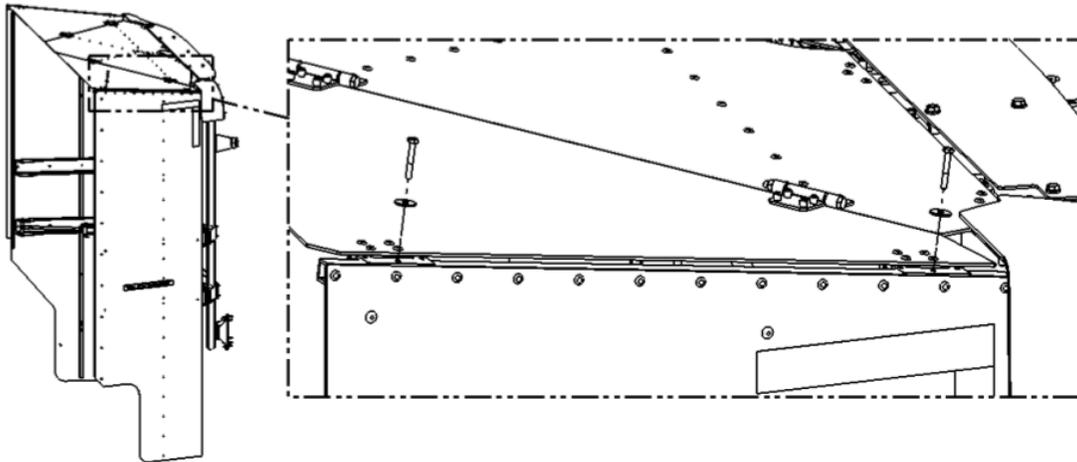
SIDE PANEL DRIVER + SIDE PANEL FASTENER KIT

OR

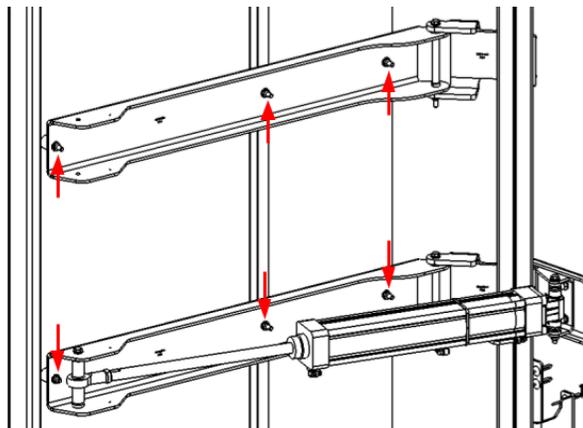
SIDE PANEL PASSENGER + SIDE PANEL FASTENER KIT

1. Place system in the recommended [Safe to Service](#) mode. After this procedure, the system is deployed and fully depressurized.
2. Remove the two ¼” bolts and nuts located at the top tube of the wing. They secure the Triangle to the Wing.

NOTE: There may be flat spacers on the underside that need to be kept and reused.



3. With an assistant, remove the bolts holding the side panel to each of the two hinge arms. Make sure the Panel is supported during this step, as it will be loose at this point and can fall.



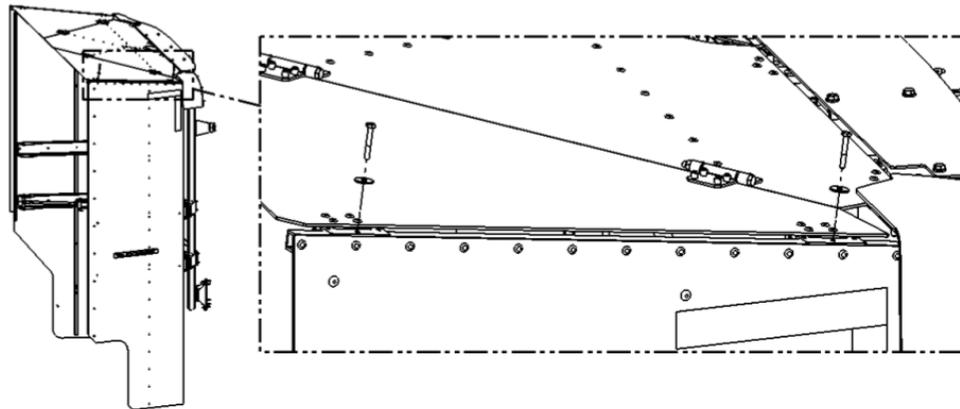
4. Reverse procedure after transferring any hardware or handles that were used on the discarded panel to the new replacement panel. **Make sure that the bolts are tightened until they clamp and do not spin freely. At locations with a composite tube, do not overtighten, as this will crush the tube.** For locations with a rubber bumper, tighten until the bumper is compressed 25%. Refer to torque specifications at the end of this Repair Guide.

R10-11 Side Panel Upper Tube Repair

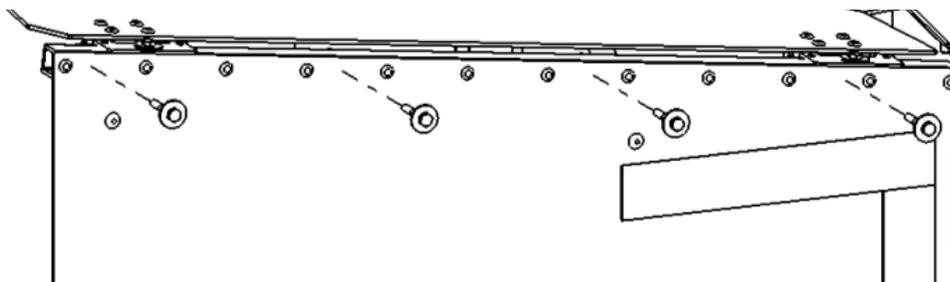
Required Repair Kit

None

1. Place system in the recommended [Safe to Service](#) mode. After this procedure, the system is deployed and fully depressurized.
2. Disconnect the Triangle from the Side Panel by removing the 2 bolts connecting the hinge to the Side Panel tube, if the tube is still attached to the wing.



3. Place the tube at the top of the Wing if it has been detached from the Wing. Hold it in place with a clamp.
4. Drill 4 holes spaced evenly across the top ¼" diameter.
5. Secure tube using ¼' X 1.75" bolts and lock nuts to reattach tube to top of side panel.



6. Reattach the 2 Triangle to Wing bolts and nuts that secure the Triangle to the Side Panel. Only tighten until parts are just clamped and the bolt does not spin freely. **Do not overtighten, as this will crush the tube.** Refer to [Torque Specifications](#) at the end of this Repair Guide.

R10-12 Side Panel Tube Rivet Replacement

Required Repair Kit
None

Rivets can pull through the panel tubes, resulting in the exterior sheet becoming separated from the support tube.



It is recommended that the rivet be removed and replaced with a ¼” nut and bolt to secure the panel to the support tube. A new hole can be drilled near the rivet if the rivet hole is oversized or damaged.

Do not overtighten, as this will crush the tube. Refer to [Torque Specifications](#) at the end of this Repair Guide.

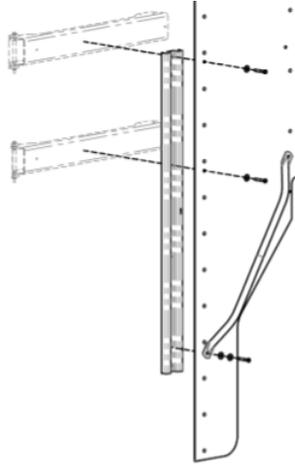
R10-20 Grab Handle Reinforcement Replacement

Required Repair Kit

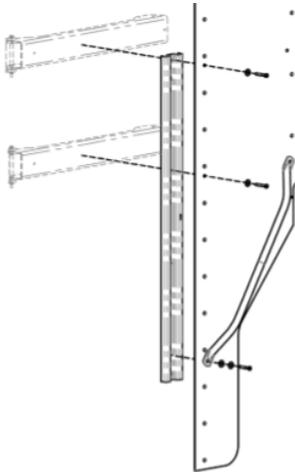
GRAB HANDLE REINFORCEMENT

Note: Applies to units with panel-mounted grab handles only.

1. Remove the 2 bolts that secure the Side Panel to the Side Panel Hinges.



2. Disconnect the lower end of the Grab Handle, if present.
3. Remove the existing reinforcement. Insert the new reinforcement between panel tube and Side Panel hinge arms.



4. Reinstall the bolts removed, securing Side Panel and reinforcement to the Side Panel hinge arms. **Do not overtighten, as this will crush the tube.** Refer to [Torque Specifications](#) at the end of this Repair Guide.

R10-21 Grab Handle Replacement

Required Repair Kit
GRAB HANDLE KIT

Note: Applies to units with panel-mounted grab handles only.

1. Remove the upper bolt holding the Grab Handle to the panel hinge arm.
2. Remove the nut and bolts combination securing the lower part of the handle.
3. Remove old handle and replace with new handle.
4. Reinstall all removed hardware to secure the new Grab Handle, including the rubber spacers. Make sure that the lower bolt is tightened until it clamps the tube and does not spin freely. **Do not over tighten this bolt, as this will crush the tube.** Refer to [Torque Specifications](#) at the end of this Repair Guide.

R10-30 Top Panel Triangle Replacement

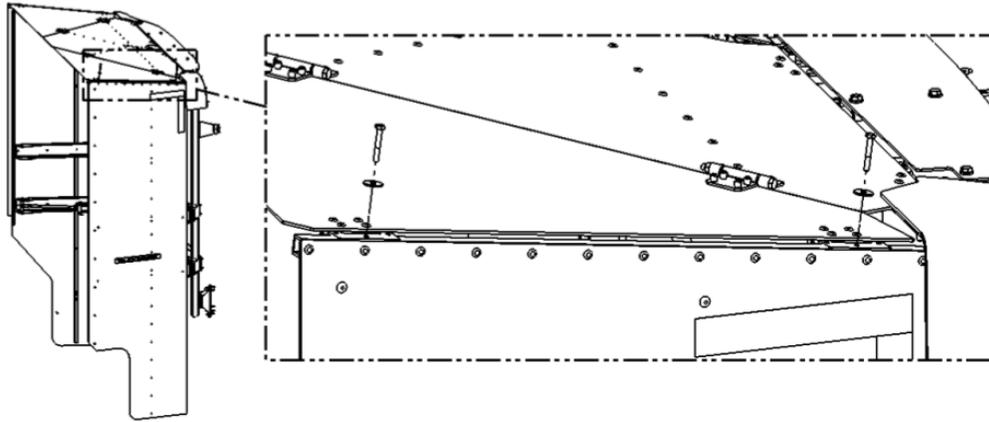
Required Repair Kit

TOP TRIANGLE DRIVER + TOP TRIANGLE FASTENER KIT
OR
TOP TRIANGLE PASSENGER + TOP TRIANGLE FASTENER KIT

WARNING

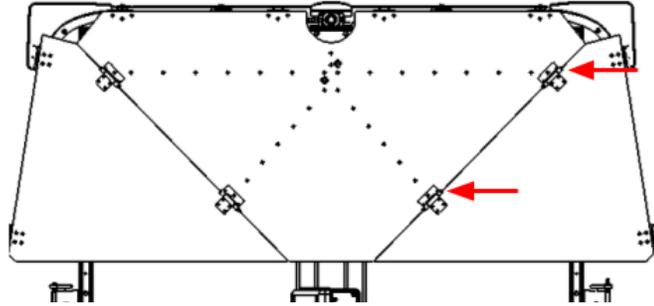
Always use Safety Glasses and Face Shield when working with items above your head.

1. Place system in the recommended [Safe to Service](#) mode. After this procedure, the system is deployed and fully depressurized. **Install Prop Tool on Top Actuator.**
2. Open the system all the way open and remove the two upper nuts and bolts securing the Triangle to Side Panel.



3. Remove the prop from the upper actuator and move the center panel to the lowest position causing the other Side Panel to follow to the closed position. The side that is being repaired should be all the way open.

4. Use a small ladder on the catwalk to access the two 5/16" bolts and nuts going through the center of the hinges, connecting the Trapezoid Panel to the Triangle being replaced.



5. Remove the damaged Triangle and position the new Triangle. Replace the hinge bolts now and bolts with supplied hardware.
6. Tighten the hinge bolts, until the bolt will not spin relative to the wider three-hole hinge leaf in the Trapezoid Panel. **Make sure that there are at least 2 threads showing past the end of the nut to ensure that the locking feature of the nut is fully engaged.** Refer to [Torque Specifications](#) at the end of this Repair Guide.
7. Pull the wings open all the way and replace the prop tool to keep panels fully open.
8. Reconnect the new Triangle to the Side Panel. Make sure that the washer or spacer on the underside is replaced. **Do not overtighten, as this will crush the tube.** Refer to [Torque Specifications](#) at the end of this Repair Guide.

R10-31 Top Panel Assembly Complete Replacement

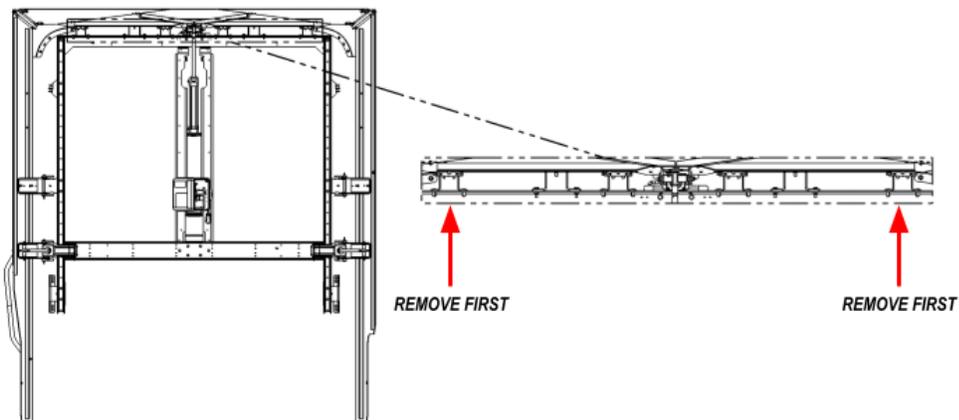
Required Repair Kit

UPPER PANEL ASSY + UPPER PANEL FASTENER KIT

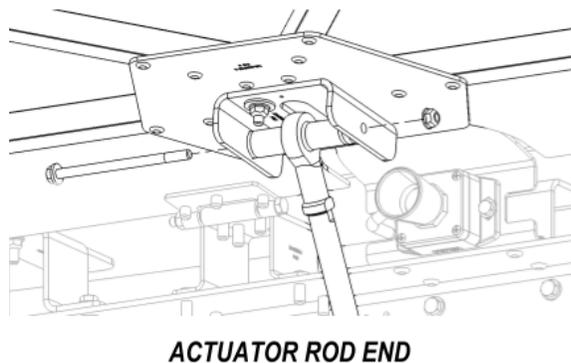
WARNING

Always use Safety Glasses and Face Shield when working with items above your head.

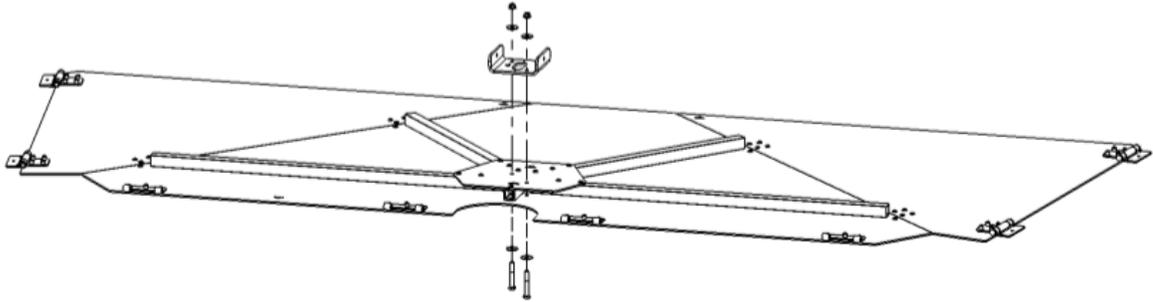
1. Place system in the recommended [Safe to Service](#) mode. After this procedure, the system is deployed and fully depressurized. **Install Prop Tool on Top Actuator.**
2. Remove the 2 bolts securing the Triangle to Side Panels on each side, disconnecting the top panel from the side panels.
3. Use a small ladder on the catwalk to access the bolts that secure the upper panel to the frame. Remove the bolts from the two outer hinges, leaving the two inner hinges intact.



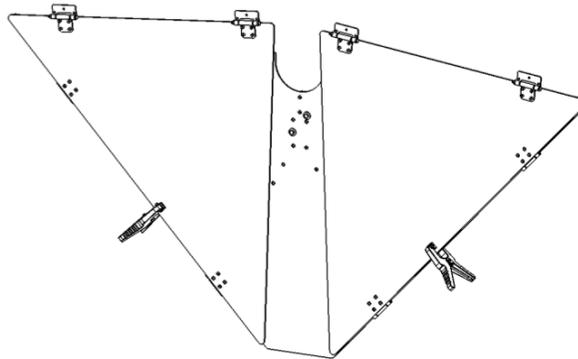
4. Remove the hardware securing the upper actuator to Trapezoid paying attention to the orientation or the spacers and retain them, as they might fall when the bolt is removed.



5. Lower the extended actuator down so that it is out of the way.
6. While supporting the trapezoid, remove the remaining two bolts in the hinges holding the Trapezoid to the frame. Make sure to support the panel as it weighs about 30lbs and is now completely detached. It is recommended that a second person assists with this step to help hold the panel.
7. With the panel on the ground, remove the bracket from the center by removing the two bolts that secure the bracket. Install this bracket on the new panel set with the same bolt orientation as the old panel.



8. Use a clamp, vise grip, or similar to fold Triangles over the Trapezoid and hold in place.



9. While standing on the ladder, use one arm to place the panel's hinges back into alignment with the hinge halves on the frame and reinstall the four (4) bolts that connect to the hinges on the upper frame. Tighten the hinge bolts until the bolt will not spin relative to the wider three-hole hinge leaf on the trapezoid panel, making sure that there are at least 2 threads showing past the end of the nut to ensure that the locking feature of the nut is fully engaged. Refer to [Torque Specifications](#) at the end of this Repair Guide.
10. Raise the connected panel set all the way up and reattach the upper actuator to the bracket with the appropriate hardware. Tighten the bolt until spacers will not spin freely. Refer to [Torque Specifications](#) at the end of this Repair Guide.

11. Remove the clamps holding the Triangles to Trapezoid and reinstall triangles to the Side Panels, tightening only until the tube is just clamped and the bolt does not spin freely. **Do not overtighten, as this will crush the tube.** Refer to [Torque Specifications](#) at the end of this Repair Guide.
12. Remove the prop on the upper actuator and cycle the system open and close several times to ensure proper operation. Verify all bolted connections are tightened.

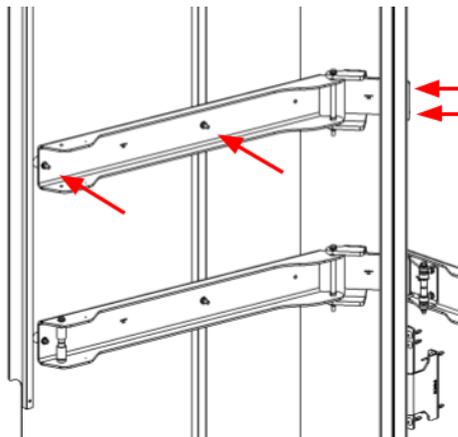
R20-00 Mounts, Frame, and Hinges

R20-10 Side Panel Hinge Replacement

Required Repair Kit

SIDE PANEL HINGE ASSEMBLY KIT, UPPER
OR
SIDE PANEL HINGE ASSEMBLY KIT, LOWER

1. Place system in the recommended [Safe to Service](#) mode. After this procedure, the system is deployed and fully depressurized.
2. If replacing a Side Panel Hinge Assembly with an actuator, disconnect the actuator from the Side Panel Hinge. Retain the metal spacers that will fall out when the bolt is removed, as well as the bolt and nut.
3. Remove the bolts used to secure the Side Panel hinge to the wing. Keep all the fasteners and rubber spacers for reinstalling the new Side Panel Hinge.



HINGE ARM ASSY

4. Remove the bolts connecting the side panel hinge assembly to the vertical frame member. Note which holes were used to attach the side panel hinge assembly.
5. Discard removed Side Panel Hinge assembly.
6. Align the new Side Panel Hinge with the holes in the vertical frame member and fasten in the same place as the old hinge, making sure to torque all fasteners as described in [Torque Specifications](#) section.
7. Attach the Side Panel Hinge Assy to the Side Panel by reinserting the bolts, including the rubber spacers where needed. Do not overtighten when reinstalling.

8. If replacing a side panel hinge assembly with an actuator, re-connect the actuator to the new Side Panel Hinge, using the metal spacers on each side.
9. Return TruckWings to automatic operation if on Hold Closed software by following instructions in [Removing System from Remote Hold Closed Mode](#)

R20-11 Side Panel Hinge Bushing Service

Required Repair Kit

SIDE PANEL HINGE BUSHING KIT, X02

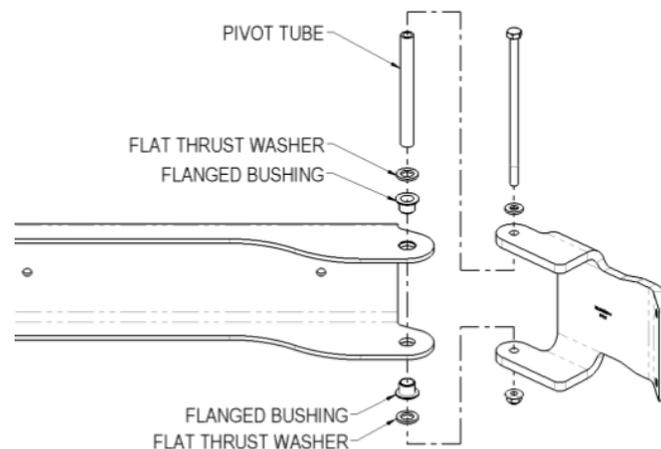
1. Position step ladder on vehicle to access Side Panel Hinges.
2. Disconnect a Side Panel Hinge from its Cab Hinge by removing the pivot bolt between the two hinges. Discard hardware and pivot tube.
3. Pull Side Panel away from Cab Hinge. Remove thrust washers and plastic bushings from Side Panel Hinge and discard.
4. Install new plastic bushings in the Side Panel Hinge.
5. Insert new pivot tube through bushings and center vertically in Side Panel Hinge.
6. Add thrust washers between the Side Panel Hinge and the Cab Hinge at both bottom and top flanges.
7. Carefully place Side Panel Hinge assembly back in Cab Hinge.

NOTE: Do not allow thrust washers to be pinched or dislodged.

8. Insert 1/2" bolt through Pivot Tube. Use a new, 1/2" lock nut and tighten until the pivot tube does not spin.

CAUTION: Do not overtighten - pivot tube can collapse.

9. Repeat for the remaining three hinges.



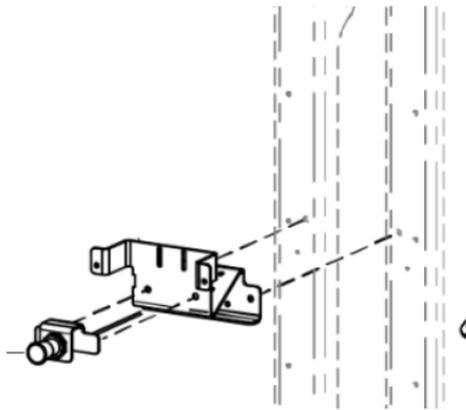
- 1.

R20-20 Distance Sensor Bracket Repair

Required Repair Kit

LOW MOUNT BRACKET, KIT

1. Unplug the sensor from the main harness.
2. Remove the two ¼” bolts on both sides of the sensor body.
3. Remove all zip-ties that secure the sensor harness and remove the sensor as a unit. Cut the zip ties, but do not remove the edge clip mounts.
4. Unbolt the Distance Sensor Mount bracket from the TruckWings vertical frames.



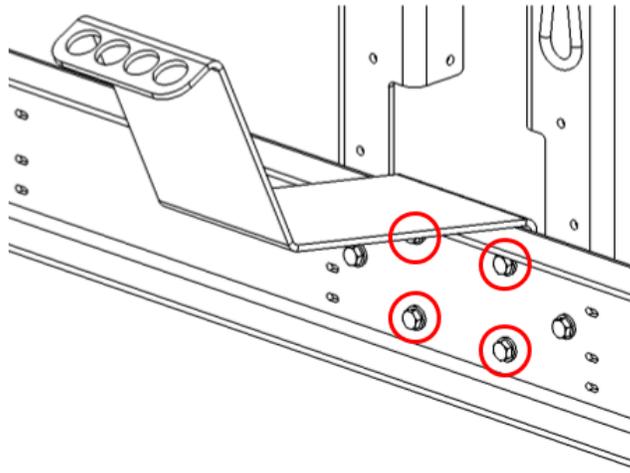
5. Reverse the removal steps to reinstall. Reconnect the distance sensor and replace zip ties.
6. Verify that the sensor is functioning by using the TruckWings Controller Test Screen. On the Controller dash unit, move Service Toggle to the middle position. The screen should display a value for Rear Sensor other than 'Error'.

R20-30 Air Hose Hanger Replacement

Required Repair Kit

AIR HOSE MOUNT REPLACE KIT

1. Place system in the recommended [Safe to Service](#) mode. After this procedure, the system is deployed and fully depressurized.
2. Remove the carabiner that holds the air hose/electric cord and place them on the catwalk.
3. Remove the four fasteners that secure the Hose Hanger to the back of the cab.



AIR HOSE HANGER

4. Reverse removal steps to reinstall, making sure to torque all fasteners as described in [Torque Specifications](#) section.

R20-40 Cab Bracket Rivet Replacement**Required Repair Kit**

CAB ATTACHMENT REPAIR KIT, X02

To conduct this repair, a Gesipa HN 2-BT tool or equivalent is required. This tool is capable of installing the 9/32-inch bulbing rivets used for cab bracket attachment.

**GESIPA HN 2-BT**

1. Place system in the recommended [Safe to Service](#) mode. After this procedure, the system is deployed and fully depressurized.
2. Drill out the rivet requiring replacement connecting the Cab Bracket to the back of the Cab using a 5/16-inch drill bit. Remove the old rivet.
3. Insert the replacement bulbing rivet from the repair kit, ensuring that the cab bracket is straight and flush with the cab. Pull rivet using the specified tool.
4. Repeat for any additional rivet replacements, one rivet at a time.

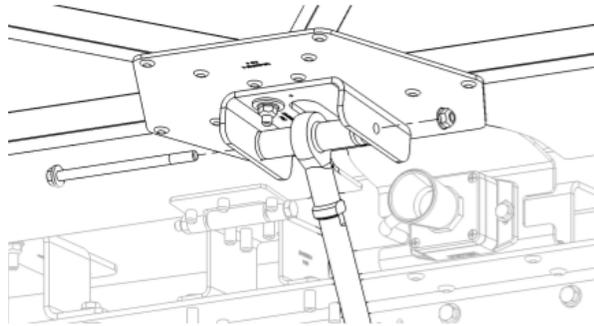
R30-00 Airflow System

R30-10 Top Actuator Replacement

Required Repair Kit

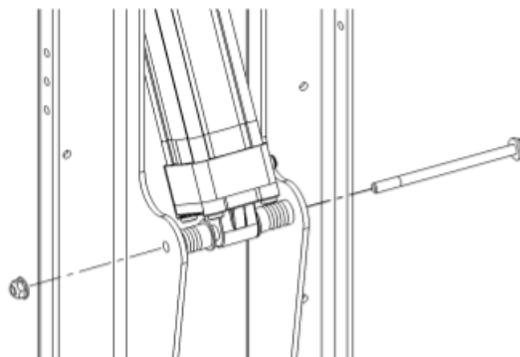
ACTUATOR COMPLETE, TOP, KIT

1. Place system in the recommended [Safe to Service](#) mode. After this procedure, the system is deployed and fully depressurized.
2. With a ladder, access the top actuator rod end connection to the Trapezoid actuator bracket. Remove the pivot bolt and nut from the rod end side. Discard the used fasteners and spacers.



ACTUATOR ROD END

3. Disconnect the air lines connected to the actuator fittings. Also remove any zip ties securing the hoses to the actuator body.
4. Remove the bolts and nut at the lower actuator body bracket. Discard the used fasteners and spacers.



ACTUATOR FIXED END

5. Remove the actuator being replaced.

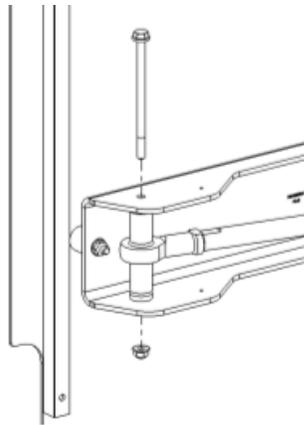
6. Reverse the removal steps to reinstall the new actuator, including installation of zip ties securing air line routing. Use the new fasteners and spacers from the fastener kit to reinstall.
7. **Tighten bolts at both ends of actuator connections until spacers will not spin freely.** Do not overtighten, as spacers can crush. Refer to [Torque Specifications](#) at the end of this Repair Guide.
8. Ensure the air lines get fully pushed in the fitting so they do not leak. Inspect for leaks with the tractor pressurized and the engine off.

R30-20 Bottom Actuator Replacement

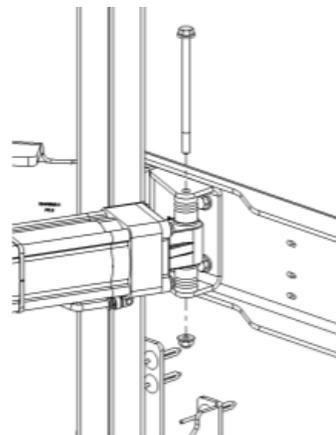
Required Repair Kit

ACTUATOR, COMPLETE, BOTTOM, KIT

1. Place system in the recommended [Safe to Service](#) mode. After this procedure, the system is deployed and fully depressurized.
2. Remove the pivot bolt and nut from the rod end side. Discard the used fasteners and spacers.



ACTUATOR ROD END



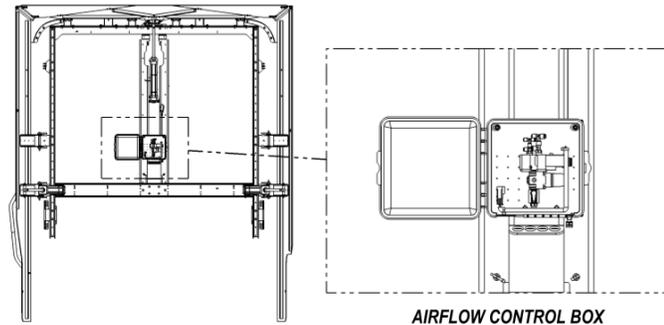
ACTUATOR FIXED END

3. Disconnect the air lines attached to the actuator's fittings. Also remove any Zip ties securing the hoses to the actuator body.
4. Remove the pivot bolt from the actuator's fixed end. Discard the used fasteners and spacers.
5. Remove the actuator being replaced.
6. Reverse the removal steps to install the new actuator, including installation of zip ties securing air line routing. Use the new fasteners and spacers from the fastener kit to reinstall.
7. **Tighten bolts at both ends of actuator connections until spacers will not spin freely.** Do not overtighten, as spacers can crush. Refer to [Torque Specifications](#) at the end of this Repair Guide.
8. Ensure the air lines get fully pushed in the fitting so they do not leak. Inspect for leaks with the tractor pressurized and the engine off.

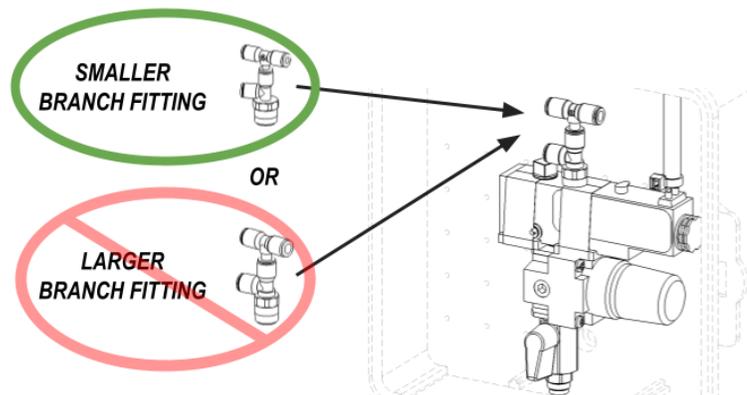
R30-30 Airflow Control Assembly Replacement

Required Repair Kit

AIRFLOW CONTROL ASSY



1. Place system in the recommended [Safe to Service](#) mode. After this procedure, the system is deployed and fully depressurized.
2. Remove the truck air hoses that are retained by a carabiner on the Hose Hanger and lay them on the catwalk.
3. Open up the Airflow Control Box by removing the carabiner that holds it closed.
4. Unplug the 2-pin electrical harness going to the Directional Control Valve (DCV) valve.
5. Unscrew the Phillips head screw that secures the valve assembly to the box.
6. Disconnect the black 1/4" Air Supply line and Remove all the 1/4" blue and/or 5/32" black lines.
7. Locate the additional loose fittings provided with the new Airflow Control Assembly. Replace the plug fitting on the control valve with the appropriately sized branch fitting to match the tubing coming from the actuators. Use the smaller OD branch fitting for systems with black and blue tubing coming from the actuators.



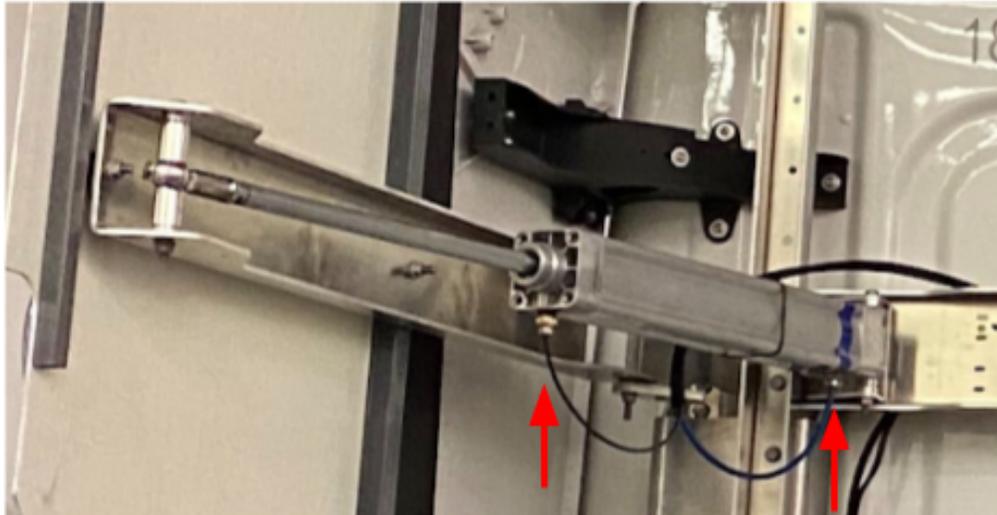
8. Reverse the removal procedure to reinstall.
9. Ensure that all lines are pushed in fully so they do not leak. Inspect for leaks with the tractor pressurized and the engine off.
10. Test system for operation after install.

R30-40 Actuator Hose Bundle Replacement

Required Repair Kit

ACTUATOR HOSE BUNDLE

1. Place system in the recommended [Safe to Service](#) mode. After this procedure, the system is deployed and fully depressurized.
2. Remove the truck air hoses that are retained by a carabiner on the Hose Hanger and lay them on the catwalk.
3. Open up the Airflow Control Box, undoing the carabiner that holds it closed.
4. Disconnect the hose bundle from Actuator by removing hoses from ports and cutting zip ties.



5. Cut and remove the zip ties securing the harness pair that is being replaced. Keep the Zip Tie mounts in place for securing the new tube.
6. Disconnect the hose bundle from tee fittings in the Airflow Control Box. Remove the old hose bundle.
7. Connect the new hose bundle, starting at the Airflow Control Box. Reverse the removal procedure to reinstall.
8. Check that all lines are pushed fully into fittings to avoid leaks.
9. Secure the tubing to the actuator bodies and ensure that the tube does not enter fittings at an angle. For the tubing going up to the top actuator, do not trim. For tubes on side actuators, trim as necessary to match the original installation configuration. Cut tubing so that it is square, do not cut at an angle.
10. Secure the bundle to the cab and brackets with new zip ties to the existing zip tie mounts. The new bundle should be zip tied in the same places as the original.

11. Check that the tubing pair is secured to the actuator body before it goes to the actuator fittings. This prevents the fittings from rotating when the TruckWings open and close.
12. Test the system for operation after install.

R30-41 Tractor Air Supply Hose Replacement

Required Repair Kit
TRACTOR AIR SUPPLY HOSE

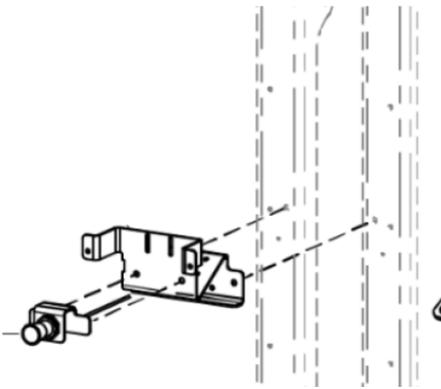
1. Place system in the recommended [Safe to Service](#) mode. After this procedure, the system is deployed and fully depressurized.
2. Remove the truck air hoses that are retained by a carabiner on the Hose Hanger and lay them on the catwalk.
3. Open up the Airflow Control Box, by removing the carabiner that holds it closed.
4. Remove the black ¼” Air Supply line and clip the zip ties securing it in position. Keep the Zip Tie mounts in place for securing the new tube.
5. Connect the new hose bundle and reverse the removal procedure to reinstall.
6. Ensure that all lines are pushed in fully so they do not leak. Inspect for leaks with the tractor pressurized and the engine off.
7. Secure the air line bundle to the cab and brackets with new zip ties to the existing zip tie mounts. The new bundle should be zip tied in the same places as the original.
8. Test system for operation after install.

R40-00 Electronic & Harness

R40-10 Distance Sensor Replacement

Required Repair Kit
DISTANCE SENSOR KIT

1. If the formed metal bracket is damaged or bent, perform [R20-20: Distance Sensor Bracket Repair](#).



2. Unplug the sensor from the main harness.
3. Remove the two 1/4" bolts on both sides of the sensor bracket.
4. Remove all zip-ties that secure the sensor harness and remove the sensor as a unit.
5. Reverse procedure to install the new sensor and reapply zip ties so that harness will not rub on sharp edges. Pay special attention that the plug's terminals are free from any corrosion.
6. Check the TruckWings Controller Test Screen by flipping the toggle switch to the middle position. Confirm that the Rear Sensor reads distance and not 'Error'.

```
WING:  MANUAL RETRACT
ID:    TLT_86YG32
Speed: OK
Odometer: OK
Fuel:  OK
Cell:  OK
Rear Sensor: 49.2 in
```

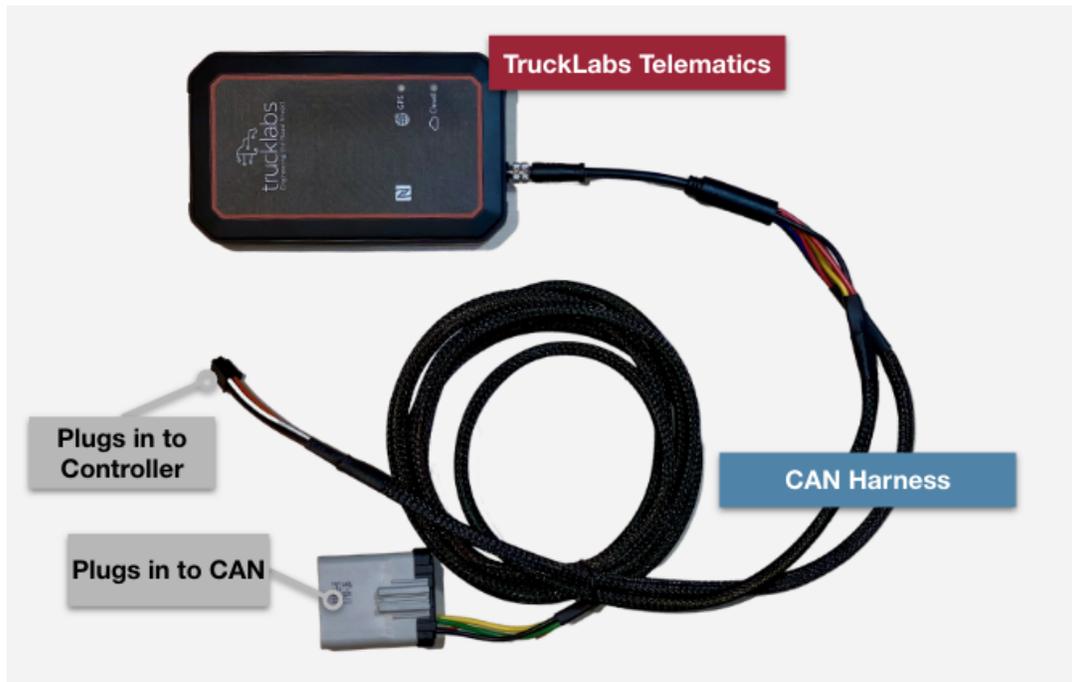
R40-20 TruckLabs Telematics Replacement

Required Repair Kit

TRUCKLABS TELEMATICS

Note: It is critical to follow all instructions in this procedure. If Step 6 is not followed, TruckWings will be inoperable until registration is complete.

1. Remove the dash panel to access the TruckLabs Telematics device.



2. Unscrew the barrel connector from the CAN Harness to the Telematics.



3. Install new Telematics device. Screw on barrel connector.
4. Verify that the TruckWings Controller screen is powered up and move the Service Toggle to its middle position. The QC Screen should display OK for all values with the vehicle ignition ON.

Continued on next page.

5. On the TruckWings Controller screen, note the Telematics ID (example: TLT_86YG32). This will be used to register replacement with TruckLabs.

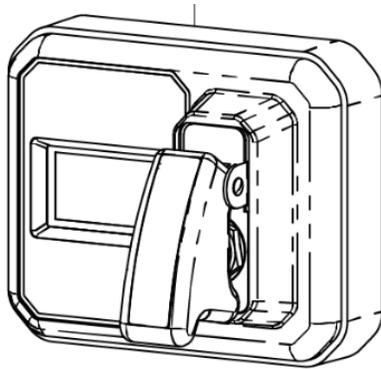
```
WING:  MANUAL RETRACT  
ID:  TLT_86YG32 ←  
Speed:  OK  
Odometer:  OK  
Fuel:  OK  
Cell:  OK  
Rear Sensor:  49.2 in
```

6. Contact TruckWings Technical Support at (415) 857-0263 or support@trucklabs.com to report Telematics swap and register the new Telematics device. **Be prepared to provide vehicle number and the new Telematics ID shown above.**
7. The tractor is OK to release after submitting the request. A confirmation message will be sent to the provided email within 24 hours.

R40-21 TruckWings Controller Replacement

Required Repair Kit
TRUCKWINGS CONTROLLER

1. Lift up on the lid of the Controller to separate from its base.
2. Disconnect CAN Harness and Exterior Harness from lid of Controller.
3. Remove rivets and base from the dash.
4. Install new base with new rivets. Pass harnesses through base grommet.
5. Plug in Exterior Harness to the new Controller lid.
6. Plug in CAN Harness to the new Controller Lid. **Note:** If screen is blank after installing harnesses, press and hold Reset button on bottom of lid for 2 seconds to reboot Telematics system.
7. Install Controller lid on base. If included, insert included rivets through lid and base on bottom edge.



R40-22 TruckWings Controller Test Screen Mode

Required Repair Kit
NONE

The TruckWings Controller has a test screen mode to help diagnose any issues with the CAN connection, cell connection, and Trailer Distance Sensor.

1. Lift toggle switch cover and put the toggle switch in the middle position.
2. Screen will display functions and the status of each function.

```
WING:  MANUAL RETRACT  
ID:  TLT_86YG32  
Speed:  OK  
Odometer:  OK  
Fuel:  OK  
Cell:  OK  
Rear Sensor:  49.2 in
```

3. When done, flip the switch cover all the way down for normal operation.

R40-30 Exterior Harness Replacement

Required Repair Kit
EXTERIOR HARNESS KIT

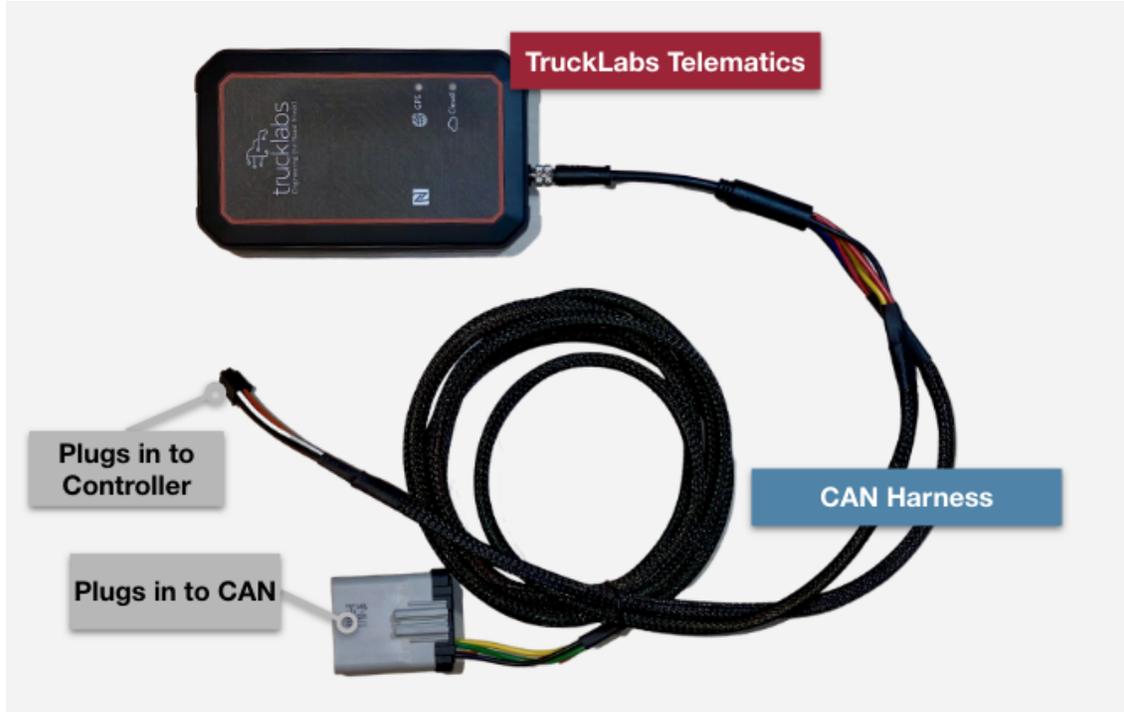
If your exterior harness is damaged, we recommend replacing the complete harness with a new one due to the environment it operates in.

1. Starting at the back and working towards the front, remove old harness and replace with new harness. Cut the zip ties from the old harness but leave any anchored zip tie mounts such as Christmas tree zip tie mounts, adhesive zip tie mounts or edge clip zip tie mounts that are still secure.
2. Remove old zip-ties and replace with new zip ties to secure the new harness. Note the routing of the old harness and install new harness in the same manner while applying zip-ties every 12" to hold secure. Reinstall zip ties in the same locations where possible.
3. Insert the harness through the existing hole in the firewall into the cab and replace and reseal the grommet in the firewall hole.
4. Remove any dash or instrument cluster panels needed to get access to the harness and behind the TruckWings Controller.
5. Connect the new harness to the TruckWings Controller.
6. Check the TruckWings Controller diagnostic screen by flipping the toggle switch to the middle position. Confirm that the Rear Sensor reads distance and not 'Error'.

R40-31 CAN Harness Replacement

Required Repair Kit

CAN HARNESS KIT



The CAN Harness is located entirely in the interior of the cab. Repair or modification to the CAN Harness is not recommended. However, if you believe you have a damaged or defective CAN harness, replace it with a new one.

1. Unplug CAN harness from the TruckLabs Telematics and TruckWings Controller.
2. Follow the harness to find the other end connector, a gray RP1226 plug. The plug will be in the vicinity of Telematics connected to the truck's CAN bus.
3. Remove any zip-ties securing it to other harnesses in the truck.
4. Replace old CAN harness with new CAN harness. First reconnect the TruckWings Controller, and then reconnect the RP1226 connection to the truck.
5. Turn vehicle ignition ON. Check the Telematics diagnostic screen by flipping the toggle switch to the middle position. Confirm that Speed, Fuel and Odometer values read OK.

Torque Specifications

For all repair activities, the following torque specifications must be used:

For **metal-on-metal connections** (mounts components), torque 5/16-inch fasteners to 215 to 255 in-lb.

For **composite connections** (side panels to side panel hinge arms and triangle to side panel), tighten fastener until fastener will not turn. Do not overtighten as panel FRP tube material can crush or FRP plastic panel can dimple or crack.

For **actuator spacers** (both ends of all three actuators), tighten until all slack is removed and spacers will not spin. Do not overtighten as aluminum spacers can crush. NOTE: plastic thrust washers captive between the spacers and actuator should also be free to spin and should have a small amount of vertical/lateral freeplay.

For **small hinges** (panel-to-panel and trapezoid to frame), tighten until all slack is removed and the bolt will not spin relative to three-hole hinge leaf. Do not over tighten and deform the hinge leaf.

For **composite-bumper connections** (side panel to side panel hinge arms), tighten fastener until bushing is compressed to approximately 0.75" (Bushings have a 1" free height).

For **main side panel hinges**, tighten until all slack is removed and spacers will not spin. Do not over tighten as aluminum spacers can crush. NOTE: plastic thrust washers captive between the spacers and side panel hinge arm should also be free to spin and should have a small amount of vertical/lateral free play.