Troubleshooting Guide

Dolly ABS Module System - Single Axle
Brake Monitoring System (BMS)
& Stand Alone System Components

Reference:
Dolly ABS Module System Manual - L31267
Brake Monitoring System Manual - L31250
WARNING:  Haldex strongly recommends routine visual checks be performed at each maintenance service interval. Visually check the Dolly ABS Module System and Stand Alone Components for Panel or Bracket Clamp Cracks, Loose Nuts, Fittings, Tubing Wear, etc.

IMPORTANT NOTICE

This Troubleshooting Guide for the Haldex Dolly ABS Module System (DMS) or Stand Alone Dolly System contains general information based on typical problems that could effect the function of the Haldex Dolly ABS Module System (DMS) or Stand Alone Dolly System.

The information contained in this installation manual was current at the time of printing and is subject to change without notice or liability.

Safety First!

You must follow your Company Safety Procedures when installing this equipment. Be sure you understand all procedures and instructions before you begin.

IMPORTANT NOTICE

The data listed herein is correct to the best of Haldex's knowledge and belief, having been compiled from reliable and official sources of information. However, HALDEX CAN NOT ASSUME ANY RESPONSIBILITY for possible error or misapplication of the product. Final determination of the suitability of the products for the use contemplated by the Buyer is the sole responsibility of the Buyer. Haldex shall have no responsibility in connection with this suitability.

IMPORTANT NOTICE

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## Notes:

Pages 15-32 shows the function of each component within a Module System or Stand Alone System. The arrows indicate the flow of air when Service or Emergency air is Applied or Released.

1. **Do Not** apply more than 120 psi when testing or troubleshooting these components.

2. Always check for contamination in any components before testing or troubleshooting.

3. If you have any questions regarding this product or any other Innovative Products offered by Haldex, please contact your local distributor for complete details. Technical Service or Troubleshooting help can be obtained by calling Haldex and asking for the ABS Technical Support Line at (800) 643-2374 Press “2”.

www.haldex.com
Haldex - Dolly Operational Air System Tests

Required Fixtures for Testing:

Red (In) Gladhand Fixture No. 1 with Shut-Off Valve and Pressure Gauge (0-150 psi).

Blue (In) Gladhand Fixture No. 2 with Shut-Off Valve and Pressure Gauge (0-150 psi).

Blue (Out) Gladhand Fixture No. 3 with 50 cu. in. Air Reservoir and Pressure Gauge.

Red (In) Gladhand Fixture - No. 1

Blue (In) Gladhand Fixture - No. 2

Blue or Red (Out) Gladhand Fixture - No. 3
Troubleshooting Guide

Gladhand Attachment Points:

1.) Attach **Red (In)** Gladhand Fixture No. 1 to the Red Gladhand from the Lead Trailer.

2.) Attach **Blue (In)** Gladhand Fixture No. 2 to the Blue Gladhand from the Lead Trailer.

3.) Attach **Blue (Out)** Gladhand Fixture No. 3 to the Blue Gladhand to the Pup Trailer.

Emergency (Supply) Charging Test:

This test verifies proper operation of Pressure Protection with One-Way Check Valve and Air Suspension function.

* **Test Fixture No. 1 is required for this test.**

1.) Seal the Dolly **Red (Out)** Gladhand to the Pup Trailer.

2.) Attach shop air to the **Red (In)** Gladhand Fixture No. 1 with the Ball Valve Closed.

3.) Open the Ball Valve on **Red (In)** Gladhand Fixture No. 1.

Test Results:

- The Dolly Air Tank should fill and the Dolly Service Brakes should be **Released**.

- If equipped with Air Suspension, the Air Bags should inflate.

Troubleshooting:

- If the Air Tank **Does Not** fill, check the following:
  
  • Check Pressure Protection with One-Way Check Valve for proper operation.

- If the Air Suspension **Does Not** inflate the Air Bags with a charged tank of 120 psi check the following:
  
  • Check the Suspension Pressure Protection Valve, Suspension Dump Valve and Height Control Valve for proper operation.
Emergency (Supply) Release Test:

This test verifies proper operation of Pressure Protection with One-Way Check Valve, Emergency Control Valve and ABS Relay Valve

4.) If starting with this test repeat steps 1 - 3 of the Emergency (Supply) Charging Test, pg 4.

5.) Close the Ball Valve on Red (In) Gladhand Fixture No. 1.

6.) Remove the Shop Air from Red (In) Gladhand Fixture No. 1.

7.) Open the Ball Valve on Red (In) Gladhand Fixture No. 1 to vent.

Test Results:

- Dolly Service Brakes should Apply and remain Applied (Parked).

- Reservoir air should not exhaust out the Emergency (In) Gladhand.

- If equipped with Air Suspension, the Air Bags should deflate.

Troubleshooting:

- If the Service Brakes Do Not Apply, check the following:
  - Plumbing (correct routing, restricted or damaged tubing, etc.)
  - Check the Push/Pull (Hostler) Valve for proper operation.
  - Check the Emergency Control Valve for proper operation.
  - Check the ABS Relay Valve for proper operation.

- If Reservoir Air does exhaust out the Emergency (In) Gladhand. Replace the Pressure Protection Valve with One-Way Check Valve and Retest.

- If the Air Suspension Does Not deflate check the following:
  - Check the Suspension Dump Valve for proper operation.
**Emergency (Supply) Line Closing Pressure Test:**

This test verifies proper operation of Pressure Protection with One-Way Check Valve closing pressure.

* **Test Fixture No. 1 is required for this test:**

1.) Close the Dolly Red (Out) Shut Off Valve to the Pup Trailer.

2.) Attach Shop Air to the Red (In) Gladhand Fixture No. 1 with the Ball Valve Closed.

3.) Open the Ball Valve on the Red (In) Gladhand Fixture No. 1.

4.) When the Dolly Air Tank is fully charged to Shop Air pressure, close the Ball Valve on the Red (In) Gladhand Fixture No. 1.

5.) Drain the Dolly Air Tank by opening the Tank Drain Valve.

**Test Results:**

- The Pressure on the Red (In) Gladhand Fixture No. 1 Gauge should hold at 45 psi or higher.

**Troubleshooting:**

- If the Air Pressure Does Not hold, check the following:
  
  • Air leaks at gladhands, fittings, etc. If no air leaks are detected. Replace Pressure Protection with One-Way Check Valve feeding the Air Tank and Retest.
Dolly Service Brake Application Test:

This test verifies proper operation of Booster Valve and ABS Relay Valve.

* Test Fixtures No. 1, 2 & 3 are required for this test.

1.) Attach shop air and charge the Red (In) Gladhand Fixture No. 1 with shop air.

2.) The Dolly Brakes should be Released.

3.) Open the Ball Valve on the Blue (In) Gladhand Fixture No. 2.

4.) Charge the Blue (In) Gladhand Figure No. 2 with shop air.

Test Results:

- The Pressure in Test Fixture No. 3 should go from 0 psi to shop air pressure in 2 seconds or less.

- The Dolly Service Brakes Should Apply.

Troubleshooting:

- If Dolly Service Brakes Do Not Apply, check the following:
  
  • Plumbing (correct routing, restricted or damaged tubing, etc.)

  • Verify Service Air from the Booster Valve Delivery is flowing to the Blue (Out) Gladhand Fixture No. 3. If this is okay see next step below.

  • Check the Emergency Control Valve and ABS Relay Valve for proper operation.
Troubleshooting Guide

Dolly Service Brake Release Test:

This test verifies proper operation of the Booster Valve and ABS Relay Valve.

5.) If starting with this test repeat steps 1 - 4 of the Dolly Service Brake Application Test, pg 7.

6.) Close the Ball Valve on the Blue (In) Gladhand Fixture No. 2.

7.) Remove shop air from the Blue (In) Gladhand Fixture No. 2 to vent.

Test Results:

- Dolly Service Brakes should be Released.

Troubleshooting:

- If Dolly Service Brakes Do Not Release, check the following:
  
  • Plumbing (correct routing, restricted or damaged tubing, etc.)

  • Foundation Brakes binding or not releasing completely.

  • Booster Valve or ABS Relay Valve not releasing air completely.
Service Air to Dolly During Failed Air Tank Pressure:

This test verifies proper operation of the One-Way Check Valve feeding the Booster Valve

* Test Fixture No. 1, 2 & 3 are required for this test:

- **Red (In)** Gladhand Fixture No. 1 Ball Valve Open, shop air removed.

- **Blue (In)** Gladhand Fixture No. 2 Ball Valve Open, shop air removed.

- Drain the Dolly Air Tank to 0 psi and leave the Tank Drain Valve open.

- Apply Shop Air to the **Blue (In)** Gladhand Fixture No. 2 while observing the **Blue (Out)** Gladhand Fixture No. 3 Pressure.

**Test Results:**

- **Blue (Out)** Fixture No. 3 Pressure should be the same as the **Blue (In)** Fixture No. 2 Pressure.

- No air should be venting from the open Dolly Air Tank Drain Valve.

**Troubleshooting:**

Replace One-Way Check Valve feeding the Booster Valve if the Dolly Air Tank is venting air during this test.
### Technical Information: Dolly ABS Module System - Single Axle (DMS-SA)

**C-Channel Dimension:**
- Approx: Height 5-1/4” x Width 3”
- Approx: Height 7-3/4” x Width 3”

**Recommend Tubing Sizes:**

<table>
<thead>
<tr>
<th>Component</th>
<th>Tubing Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service/Control (In)</td>
<td>3/8” Tubing (Blue)</td>
</tr>
<tr>
<td>Service/Control (Out)</td>
<td>1/2” Tubing (Blue)</td>
</tr>
<tr>
<td>Emergency/Supply (In)</td>
<td>1/2” Tubing (Red)</td>
</tr>
<tr>
<td>Emergency/Supply (Out)</td>
<td>1/2” Tubing (Red)</td>
</tr>
<tr>
<td>Push/Pull Valve</td>
<td>Supply Line - 3/8” Tubing (Red)</td>
</tr>
<tr>
<td></td>
<td>Reservoir Line - 3/8” Tubing (Blue)</td>
</tr>
<tr>
<td></td>
<td>Delivery Line - 3/8” Tubing (Black)</td>
</tr>
<tr>
<td><strong>Air Tank</strong></td>
<td>Supply Line - 5/8” Tubing (Black)</td>
</tr>
<tr>
<td><strong>Air Bags</strong></td>
<td>Supply Line - 3/8” Tubing (Red)</td>
</tr>
<tr>
<td><strong>Leveling Valve</strong></td>
<td>Supply Line - 3/8” Tubing (Green)</td>
</tr>
<tr>
<td></td>
<td>Deliver Line - 3/8” Tubing (Black)</td>
</tr>
<tr>
<td><strong>Pintle Hook Chamber</strong></td>
<td>Delivery Line - 1/2” Tubing (Red)</td>
</tr>
</tbody>
</table>
Dolly ABS Module
System Assembly

ABS Electronic Control Unit (ECU)
Emergency Control Valve
Booster Valve
One-Way Check Valve
Quick Release Valve
Manifold
Pilot Valve (Suspension Dump)
2-Port ABS Relay Valve
Brake Monitoring System

Pressure Protection Valve (PPV)
(Supply to Height Control Valve)
One Way Check

Pressure Protection Valve (PPV)
with One-Way Check Valve
Technical Information: Dolly (Stand Alone) System

Recommend Tubing Sizes:

<table>
<thead>
<tr>
<th>Component</th>
<th>Line Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service/Control (In):</td>
<td>3/8” Tubing (Blue)</td>
</tr>
<tr>
<td>Service/Control (Out):</td>
<td>1/2” Tubing (Blue)</td>
</tr>
<tr>
<td>Emergency/Supply (In):</td>
<td>1/2” Tubing (Red)</td>
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<td>Delivery Line - 1/2” Tubing (Red)</td>
</tr>
</tbody>
</table>
Dolly ABS System
(Stand Alone Components)

Top View

Pressure Protection Valve with One-Way Check

One-Way Check Valve

Air Chamber (2)

Electronic Control Unit (ECU)

2-Port ABS Relay Valve

One-Way Check Valve

Emergency Control Valve

Brake Monitoring System (BMS-1)

Quick Release Valve

One-Way Check Valve

Booster Valve

Blue (Out) Red (In)

Blue (In) Red (Out)

One-Way Check Valve

Pintle Hook Chamber

Push/Pull Valve

Blue (In) Red (Out)
Emergency Control Valve Assembly

Front View

Mounting Holes (2 Places 5/16”)

90° Fitting
(3/8” NPT X 3/8” Tubing)
(3 Places)

90° Fitting
(3/8” NPT X 3/8” Tubing)

One-Way Check Valve

Side View

Parker - Composite Fittings:

Supply Port - 3/8” NPT - (369PTC-6-6)
Control Port - 3/8” NPT - (369PTC-6-6)
Reservoir Port - 3/8” NPT - (369PTC-6-6)
Delivery Port - 3/8” NPT - (68PMT-6-6)

Note: This valve is used on axles with Service Brake Chambers only. It is commonly used on dollies, trailer turntables and other axles exempt from Spring Brake requirements.
Emergency Control Valve Function

Emergency Air Applied:
1.) Emergency (In) air is Applied and piston (inside) moves up releasing the Parking Brakes.
2.) One-Way Check Valve closes off Supply Pressure from Reservoir Pressure.
3.) Service (In) air is Applied and Released for Service Brake application.

Emergency Air Released:
1.) Emergency (In) air is released and piston (inside) moves down, Service brakes applied (Parked).
2.) One-Way Check Valve allows reservoir air to flow to delivery port of Emergency Control Valve.
3.) Reservoir air is applied to the Delivery Port feeding the Control Port of ABS Relay Valve (Parked Service Brakes Applied).

NOTE: If brakes DO NOT released or apply see Booster Valve and ABS Relay Valve Function.
Pilot Valve Assembly
(Suspension Dump)

Exhaust Port

Mounting Holes
(4 Places 1/4”)

90° Fitting
(3/8” NPT X 3/8” Tubing)
(3 Places)

Tee Fitting
(1/8” NPT X 1/4” Tubing)

N.O. Port
(Exhaust)

Pilot Port
(Supply/Emergency Port)

N.C. Port
(Leveling Valve)

SUS. Port
(Air Bags)

Parker - Composite Fittings:
- Pilot Port - 1/8” NPT - (372PTC-4-2)
- N.O. Port - 1/4” NPT - (369PTC-6-4)
- N.C. Port - 1/4” NPT - (369PTC-6-4)
- SUS. Port - 1/4” NPT - (369PTC-6-4)

Note:
The 3-Way Pilot (Suspension Dump) Valve is used on a trailer suspension systems to deflate the air bags, when the vehicle is parked.
Pilot Valve Function
(Suspension Dump)

Air Bags Inflating:
1.) Emergency (In) air is applied to pilot port and piston (inside) moves down.
2.) Delivery air from the Height Control Valve port opens.
3.) Air will flow through valve, inflating the air bags.

Air Bags Deflating:
1.) Emergency (In) air is released from pilot port and piston (inside) moves up.
2.) Delivery air from the Height Control Valve is closed off.
3.) Air bags deflate through exhaust.
Booster (FAB) Valve Assembly

Parker - Composite Fittings:

1/2” NPT X 1/2” Tube Straight - (68PMT-8-8)
1/2” NPT X 1/2” Tube 90 Deg - (68PTC-8-8)
1/2” NPT X 3/8” Tube 90 Deg - (68PTC-6-8)
3/8” NPT X 3/8” Tube Straight - (68PMT-6-6)

Top View

Front View

Side View

Note:
Booster Valves are used to speed up Apply and Release Timing to Service Brake Valves.
Booster (FAB) Valve Function

Air Applied:

1.) Emergency (In) air Applied to charge the air reservoir.
2.) Service (In) air Applied to the Booster Valve and piston (inside) moves down.
3.) The Booster Valve flows reservoir air to the Delivery Ports of the Valve.
4.) Service brakes should Apply.

Air Released:

1.) Emergency (In) air Applied to charge the air reservoir.
2.) Service (In) is Released from the Booster Valve and piston (inside) moves up.
3.) The Booster Valve closes off reservoir air from the Delivery Ports of the Booster Valve.
4.) Service brakes should Release completely without any trapped air or dragging brakes.

NOTE: If brakes DO NOT release completely see ABS Relay Valve Function
Quick Release Valve Assembly

**Front View**

- Inlet Port: 1/2" NPT X 1/2" Tube 90°
- Delivery Port: 3/8" NPT X 1/2" Tube 90°
- Exhaust Port
- Male Branch Tee (1/2" NPT X 1/2" NPT)
- Mounting Holes (2 Places) 5/16"

**Side View**

- Inlet Port: 1/2" NPT X 1/2" Tube 90°
- Delivery Port: 3/8" NPT X 1/2" Tube 90°

**Parker - Composite Fittings:**

- 1/2" NPT X 1/2" Tube 90° - (369PTC-8-8)
- 3/8" NPT X 1/2" Tube 90° - (369PTC-8-6)
- 1/2" NPT Male Branch Tee (2224P-8)
Quick Release Valve Function

Air Applied:

1.) Emergency (In) air Applied to charge the air reservoir.
2.) Emergency (Out) air will flow through the Quick Release Valve.

1. Diaphragm moves down sealing off exhaust port

Air Released:

1.) Emergency (In) air Released and system vents.
2.) Emergency (Out) air will vent through the Quick Release Valve Exhaust Port.

NOTE: If valve DOES NOT exhaust when air is released, replace valve.

Diaphragm moves up opens exhaust port
Parker - Composite Fittings:

- 3/8” NPT X 3/8” Tube 90° - (369PTC-6-6)
- 3/8” NPT X 1/4” Tube 90° - (369PTC-4-6)
- 3/8” NPT Run Tee (2225P-6)
ABS Relay Valve Function

Brakes are applied:

* Apply Emergency (In) to charge the reservoir
1.) Service (In) air is Applied to the ABS Relay Valve and piston (inside) moves down.
2.) The ABS Relay Valve flows reservoir air to the Delivery Ports of the ABS Relay Valve.
3.) Service brakes should Apply.

Brakes are Released:

1.) Service (In) air is Released from the ABS Relay Valve and piston (inside) moves up.
2.) The ABS Relay Valve closes off reservoir air from the Delivery Ports of the Valve.
3.) Service brakes should Release completely.

NOTE: If brakes DO NOT release completely see Booster Valve Function.
Air Leaking out of ABS Relay Valve Exhaust Port

Leakage could be within the ABS Valve or One-Way Check Valve

Step 1: Apply Emergency (In) to charge the reservoir.

Step 2: If air is leaking out of the ABS Relay Valve exhaust port, go to Step 3.

Step 3: Remove air line from the delivery port of the ABS Relay Valve. If air is leaking out of the ABS Relay Valve exhaust port, replace ABS Relay Valve and retest.
Air Leaking out of ABS Relay Valve Exhaust Port

Step 4. If air is leaking out of the open line from the One-Way Check Valve. Replace One-Way Check Valve and retest.
Push/ Pull Valve Function

Air Applied:

1.) Emergency (In) air is Applied. Push/Pull Valve knob pops out.
2.) Parking brakes are released.

NOTE: If Push/Pull Valve knob does not pop out, check Emergency (In) air pressure is greater than 100 PSI.

Air Released:

1.) Emergency (In) air is Released. Push/Pull Valve knob remains in the popped out position.
2.) Parking brakes are Applied.

Push/ Pull Valve Function: (Dolly is Parked)

1.) Push the knob (In) to Release Parking brakes.
2.) Pull the knob (Out) to Apply Parking brakes.

Note: This manual function will cycle until reservoir air is depleted.

Note: If Parking brakes do not Apply & Release with greater than 50 psi in the tank, check Emergency Control Valve and ABS Relay Valve for proper function.
Push/ Pull Valve Function

Bendix® or Sealco Push/ Pull Valve

Air Applied:

1.) Emergency (In) air is applied. Push/Pull Valve knob pops out.
2.) Parking brakes are Released.

NOTE: If Push/Pull Valve knob does not pop out, check Emergency (In) air pressure is greater than 100 PSI.

Air Released:

1.) Emergency (In) air is Released. Push/Pull Valve knob remains in the popped out position.
2.) Parking brakes are Applied.

Push/ Pull Valve Function: (Dolly is Parked)

1.) Push the knob (In) to Release Parking brakes.
2.) Pull the knob (Out) to Apply Parking brakes.

Note: This manual function will cycle until reservoir air is depleted.

Note: If Parking brakes do not Apply & Release with greater than 50 psi in the tank, check Emergency Control Valve and ABS Relay Valve for proper function.
Pressure Protection Valve
(Stand Alone System)

**Emergency (In) Air Applied:**

Apply Emergency (In) air pressure. Once Pressure Protection Valve opens air will charge the reservoir.

**Note:** Shop or Tractor pressure must be greater than 80 psi to open Pressure Protection Valve.

**Emergency (In) Air Released:**

The Pressure Protection will close and the One-Way Check Valve will seal off tank air from bleeding out the open Red Gladhand.

**Note:** If the tank air drains down after releasing Emergency (In) pressure, replace Pressure Protection with One-Way Check Valve.
Pressure Protection Valve (Brake Module Only)

![Diagram of pressure protection valve system]

**Emergency (In) Applied:**

Emergency (In) air applied to charge the reservoir. When reservoir pressure builds to 75 psi or greater, the Suspension Pressure Protection Valve will open. Air will flow through the Height Control Valve, inflating the Air Suspension System.
Manifold Assembly  
(Brake Module Only)

**Material:** Aluminum

**Mounting Screws:** 1/4-20 X 3/4” Socket Head Cap Screw (3)

**Parker - Composite Fittings:**

- 3/8” NPT X 1/2” Tube 90° - (369PTC-8-6)
- 3/8” NPT X 1/2” Tube Straight - (68PMT-8-6)
- 3/8” NPT X 3/8” Tube 90° - (369PTC-6-6)
- 3/8” NPT X 3/8” Tube Straight - (68PMT-6-6)
- 3/8” NPT X 1/4” Tube 90° - (369PTC-6-4)
- 1/4” NPT X 3/8” Tube 90° - (369PTC-6-4)
- 3/8” NPT X 1/4” Male Reducer - (3/8 x 1/4FF-S Vibraseal)
- 3/8” NPT - Pipe Plug - (1/2HHP-S Vibraseal)
**Pressure Protection Valve with One-Way Check Valve (Brake Module Only)**

Charge System Air:

Charge the system thru **Red (In) Gladhand**. Air will flow thru the Pressure Protection with One-Way Check Valve. The reservoir air will not bleed back because of the One-Way Check Valve.

Remove Red (In) Gladhand:

When the **Red (In) Gladhand** pressure is removed, the system will only vent air from the end of the Pressure Protection Valve. If air continues to bleed out of the Pressure Protection with One-Way Check Valve, then the One-Way Check Valve is deflective, replace with new Pressure Protection with One-Way Check Valve and **Retest**.

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Haldex is listed on the Stockholm Stock Exchange. Haldex has a yearly turnover of close to 5.6 billion SEK and employs 4,300 people.

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