

OPERATION MAINTENANCE SERVICE MANUAL

AIRFLEX® AIR RIDE SUSPENSION SYSTEM



DEXTER

www.dexteraxle.com

Introduction

This manual is designed to provide information for you to understand, use, maintain, and service your trailer running gear system. Your axles are manufactured by Dexter. Since 1960, Dexter's experience in the design, testing, and manufacturing of trailer axles has resulted in the most complete product line in the industry. The Dexter running gear system consists of axles, suspensions, and braking systems which are engineered to provide you the finest towing and stopping performance available today.

Two Dexter philosophies are at work to provide you the best product available and have enabled us to maintain our position of leadership. First, we operate on the theory that "there is always a better way" for a product to operate, to be manufactured, and/or to be serviced. We are constantly striving to find that better way.

Secondly, we maintain the highest quality control standards in the industry and adhere to ISO 9001. Dexter has operated with detailed documented processes and procedures long before completing ISO Certification, continually placing quality and customer service as the focus. This ensures that critical components including axle beams, hubs, drums, spindles, and braking systems are manufactured to the highest quality standards so that we can provide our customers with dependable products, the most comprehensive product offering and reliable, consistent customer service.

Trusting is hard. Knowing who to trust even harder. Through vertical integration we engineer, design, manufacture and test virtually every part in-house to ensure superior quality trailer running gear. We fuss over details, so you don't have to. **Trust Dexter.**

Visit us online at www.dexteraxle.com.



Contents

AC-019 Air Supply and Control Kit	3
Enclosure	3
Compressor	3
Air Reservoir	4
Relay Switch	4
Circuit Breaker	4
Reservoir Drain Valve.....	4
Manual Fill Valve	4
Pressure Switch	5
Air Gauge.....	5
System On-Off Toggle Switch	5
Trailer Raise-Lower Valve.....	5
Tube Fittings.....	6
Instructions for Front Pivot Bushing Replacement	6
AC-016 Height Control Valve Kit	8
Height Control Valve.....	8
Normal System Operation	9
Starting the System.....	9
Troubleshooting Guide.....	11
System Won't Start	11
Trailer Won't Rise to the Proper Height.....	11
Compressor Will Not Shut Off.....	12
Air System Will not Build Pressure.....	12
Compressor Overheats and Circuit Breaker Opens.....	12
The System	13
The Electrical System	13
The Pneumatic System.....	13
Air Supply and Control Enclosure.....	14
Air System Diagram With 12 VCD Compressor.....	15
Ride Height Installation Procedure	16
Limited Warranty.....	18
Dexter Video Gallery.....	21

 **CAUTION**

This is the safety alert symbol. It is used to alert you to potential injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

AC-019 Air Supply and Control Kit

The kit enclosure is a 12" x 12" x 5" stainless steel box that contains the 12 Volt Air Compressor, Air Reservoir, Relay Switch, Circuit Breaker, Reservoir Manual Drain Valve, Manual Air Fill Valve, Pressure Switch, Air Gauge, System On-Off Toggle Switch, Trailer Raise-Lower Valve, and 50 feet of each of the color coded air lines that are needed for the installation on the trailer. The air fittings are also color coded to make it easy to plumb or trouble shoot the system.

Enclosure

The solid stainless steel enclosure box comes completely assembled, fully tested electrically and pneumatically for proper operation. The box must be mounted vertically on a wall or bulkhead with the manual drain valve and fittings on the bottom. There are predrilled flanges on each side of the enclosure to allow easy attachment to the trailer. If it is ever necessary, the rear cover can be easily removed. To remove the rear cover, unbolt the system from the trailer and unbend the tangs of the rear cover which stick through the flanges of the enclosure.

Compressor

The 12 Volt DC air compressor provides compressed air for operating the air suspension. It is rated for intermittent duty with a 30% duty cycle; for example, 13 minutes on and 30 minutes off. The compressor motor is internally thermally protected with a circuit breaker that will automatically reset when the motor cools down. This is a very reliable unit with many years of history in this type of application.





Air Reservoir

The purpose of this air reservoir tank is to prevent rapid on-off cycling of the compressor and to collect moisture, which condenses from the compressed air so that it can be drained from the system. Draining this water from the system protects the air system from water damage and freezing damage to system components. The reservoir should be drained each time the trailer is operated. For reference, be aware that the reservoir air pressure indicated on the gage on the front of the enclosure, is not the same as the pressure in the air springs.

Relay Switch

The relay is an electrically operated switch that turns on or off the high current from the 12 Volt battery supply, which operates the compressor. When the relay is energized by the on-off switch for the system, the small current in the on-off switch that runs through the pressure switch when system pressure is below 110 PSI causes the relay to turn on the high current to the compressor.

Circuit Breaker

A 30 AMP circuit breaker protects the compressor and other electrical components from electrical overloads or short circuits. The circuit breaker automatically resets when the overload or short is eliminated and it cools.

Reservoir Drain Valve

The reservoir drain valve has a manually operated metal pull cable. To drain moisture from the reservoir, pull the cable. When the trailer is being used, this should be done at least once per day or each time the trailer is operated.

Manual Fill Valve

The manual fill valve is furnished for use in the unlikely event that the air supply system fails to function. Simply fill the air system from a typical tire compressor. External fills are only effective for a short distance. The air will bleed off as the height control valve operates. The trailer may still be operated without the air supply. Without air, the rubber torsion suspension is not as soft as the air suspension, but is still a very effective backup suspension providing some level of vehicle and cargo protection.

Pressure Switch

The pressure switch is preset to close contacts and if the system on-off switch is on, it will activate the relay switch and turn on the air compressor at 110 PSI. At 145 PSI, the pressure switch contacts open de-energizing the control circuit to the relay switch and shutting off the air compressor. It is important to note: THESE PRESSURES ARE RESERVOIR PRESSURES, NOT AIR SPRING PRESSURES.

Air Gauge

The air gauge displays the air pressure in the reservoir. It does not display the air pressure in the air springs. Air spring pressure is automatically controlled by the Height Control Valve based on the load on the suspension.

System On-Off Toggle Switch

The system on-off toggle switch completes the circuit to the relay switch through the pressure switch using very small current levels to control the high current needed to operate the compressor. The switch is lit when the system is turned on. The compressor may not come on when the switch is turned on since the compressor only runs when the pressure in the air reservoir drops below 110 PSI.

Trailer Raise-Lower Valve

The Raise-Lower valve is a rotary valve that is connected to the output of the height control valve and to the line leading to the air springs. When the control knob is rotated clockwise, the air circuit to or from the air springs is connected to the center port of the Height Control Valve and the height of the suspension is automatically controlled by the Height Control Valve. When the valve control knob is rotated counterclockwise, the line from the center port of the height control valve is shut off and the line from the air springs is exhausted to atmosphere through a muffler attached to the valve lowering the suspension and trailer about 2½ to 3 inches. There are no connections to the valve within the enclosure. The black tubing from the air springs is connected to the rear-most port on the valve and the green line from the center port of the height control valve is connected to the front-most port





of the valve. When rotated, the valve knob must always be rotated completely until it stops.

Tube Fittings

Tube fittings are premium stainless steel push-type fittings for ¼" OD plastic tubing. Always be sure that the tubing is cut off squarely on the ends and pushed all the way into the fitting, otherwise the connection will leak. The tubing can be removed if need be from the fitting by pushing in on the small ring on the end of the fitting while pulling outward on the tubing.

Instructions for Front Pivot Bushing Replacement

Notice to Buyer

It is recommended that both pivot bushings be replaced at the same time to ensure continued axle alignment. Additionally, each side needs to be replaced while the other side remains intact to maintain control over the suspension components.

Safety Precautions

It is recommended that if you are unfamiliar with this type of work, you should refer to a qualified service center specializing in trailer suspensions. It is also recommended that if you choose to do this yourself, that a factory service manual be obtained for the proper procedures pertaining to removal, replacement and proper torque specifications for your vehicle. This instruction set is intended as a guideline for the safe installation of Dexter's polyurethane bushings, once you have removed the factory components from your vehicle.



CAUTION

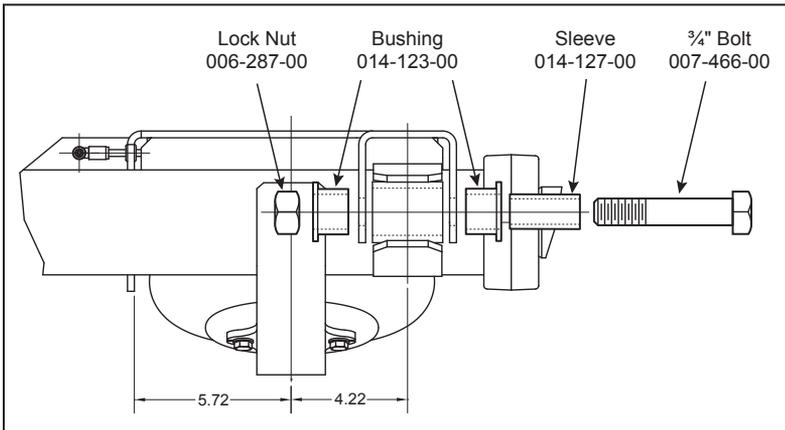
Do not lift or support the trailer on any part of the axle or suspension system. Never go under any trailer unless it is properly supported on jack stands which have been rated for the load. Improperly supported vehicles can fall unexpectedly and cause serious injury or death.

**Pivot Bushing Replacement
(K71-734-00 Kit for one Airflex® Axle)**

Disassemble 3/4" nut and bolt. Remove original rubber/polyurethane bushings (you may need a punch for this) and clear the Airflex® joint of any old rubber or rust. When installing polyurethane bushings, apply grease as instructed.

1. Apply light coat of grease to inside of the axle bracket sleeve.
2. Apply light coat of grease to the inside and outside of the bushing (all parts that contact metal).
3. Apply light coat of grease to the outside of the sleeve.
4. Apply light coat of grease to the faces of the bushings after they are installed.

Torque the 3/4" pivot bolts to 270-280 **Ft. Lbs.** to prevent bushing wear and/or suspension damage.





AC-016 Height Control Valve Kit

This kit contains the Height Control Valve, all required fasteners, brackets, and linkage. The Height Control Valve mounts to the predrilled frame bracket and the free end of the pre-assembled linkage attaches to the predrilled hole in the side of the lower air spring beam.

Height Control Valve

The Height Control Valve controls the height of the trailer and air spring air pressure automatically. When starting or after loading, the Height Control Valve will, through a linkage, cause the valve to open, allowing air to enter the air springs until the trailer rises to the predetermined design height. The air spring air pressure rises as the trailer load is increased. When the trailer is unloaded, the trailer will rise due to the higher than needed air pressure in the springs. When this occurs, the Height Control Valve will open allowing the air springs to exhaust air until the trailer comes back to the pre-determined design height. Normally, the trailer will raise 2½ to 3 inches from the air-exhausted height to the design height for highway use.

Normal System Operation

Starting the System

Check around the trailer to be sure there are no people or obstacles under or around the trailer.

CAUTION

Do not get under the trailer or in pinch points around wheel wells at any time. Air suspensions can descend suddenly and without warning, which can cause serious injury or death.

1. Rotate the system Raise-Lower valve counterclockwise to the Lower position.

CAUTION

Be sure all items and people are clear of the descending trailer.

2. Turn the system On-Off toggle switch to the On position. The compressor should come on.
3. Allow the system air pressure to build to approximately 145 PSI. The compressor will automatically shut off at about 145 PSI.
4. Rotate the system Raise-Lower valve to the Raise position. The trailer should rise 2½ to 3 inches at the wheel wells. When the trailer is at the proper height and the reservoir air pressure is at about 145 PSI, the compressor will shut off.
5. The trailer is ready for operation.
6. When pulling the trailer, the compressor will come on from time to time, more often in stop and go operation in the city. This is normal; however the compressor should not run constantly.





Normal System Operation

7. When parking for short periods of time, it is not necessary to turn off the system. When stopping overnight or longer, it is recommended that the trailer be lowered and the system turned off to prevent running the battery down. The trailer should be lowered and the system should be turned off before disconnecting the trailer from the tow vehicle.

Troubleshooting Guide

System Won't Start

1. Check battery condition for full 12 Volt charge. Also check ground, wire and battery connections.
2. If connections are tight and battery is fully charged, it may become necessary to open the air supply enclosure.
3. Once the enclosure is opened using a multi-meter, check the circuit breaker for continuity. If circuit breaker contacts are open replace the breaker.
4. Check On-Off toggle switch for proper operation. Check switch contacts and proper wire connections.
5. Check air pressure switch for continuity. If contacts are open when air pressure is not present, replace the switch.
6. Check electric relay switch for proper operation. Terminals 86 and 85 are connected to the relay coil windings and should show continuity at all times. Contacts 87 and 30 are normally open and should close when 12 Volt power is applied to contacts 86 and 85. Replace switch if this is not the case.

Trailer Won't Rise to the Proper Height

1. If compressor has built air pressure to 145 PSI in the reservoir, check to see if air pressure is in the blue line going to the height control valve.
2. If the blue line has air pressure, check the green line for air pressure. If there is no pressure in the green line, check the height control valve linkage for damage, wrong adjustment or pinched tubing.
3. If the green line has air pressure, check the black line for pressure. If no pressure, check the Raise-Lower valve for proper position. It must be rotated fully clockwise to the raise position. If air does not flow through the valve when the valve is in the proper position, check for proper airline hook up and pinched tubing; replace the valve if necessary. If the black line does have air pressure, check down stream tubing for pinched tubing.





Compressor Will Not Shut Off:

1. Replace the pressure switch if switch contacts do not open when 12 Volt power is not present.
2. Replace electric relay switch if contacts 87 and 30 do not open when 12 Volt is not present.

Air System will not Build Pressure to 145 PSI and Cause Pressure Switch to Open

1. Turn Raise-Lower valve to the fully lower position. Turn compressor on and allow time to build up reservoir pressure. If compressor does not build to proper pressure, check air lines and fittings on the blue and green tubes. If these fittings and tubes are secure and no leaks are found, open the enclosure and check tubes and fittings inside the enclosure. If these are secure and no leaks are found, it may be necessary to replace the compressor. Read and follow all trouble shooting instructions found in the Viair User Manual (280C Air Compressor part #28021) provided with your system. A clogged air filter may also be the culprit. Check it and replace or clean it.
2. If the air system pressure builds to 145 PSI and shuts off as it should when the Raise-Lower valve is in the fully lower position, there must be an air leak downstream from the Raise-Lower valve. With the compressor on, rotate the Raise-Lower valve to the fully raise position.
3. Check the air line fittings on the black tubing for leaks.
4. Use water with soap to check for bubbles at air leaks.

Compressor Overheats and Circuit Breaker Opens

1. Check for the use of too small wiring size or loose wire connectors or a loose ground connection. The compressor will overheat if operated with a low voltage or a partially discharged battery.
2. Clean or replace the air filter.

The System

There are two parts to the system 1) the electrical system and 2) the pneumatic system.

The Electrical System

A vehicle battery supplied by the customer. Connected through a circuit breaker to a low current control circuit and a high current circuit.

Low Current Circuit

1. On-Off switch with lighted rocker.
2. Relay Switch: Input side - terminals 85 and 86.
3. Pressure Switch: closed at or below 110 PSI. Open at or above 145 PSI.

High Current Circuit

1. Relay Switch: Output side - terminals 30 and 87. Normally open unless terminals 85 and 86 are energized.
2. 12 Volt DC air compressor: 30% duty cycle - thermally protected.

The Pneumatic System

12 Volt DC Air Compressor

1. Replaceable inlet filter.
2. 18 inch braided metal output hose.
3. Check valve attached to end of braided hose.

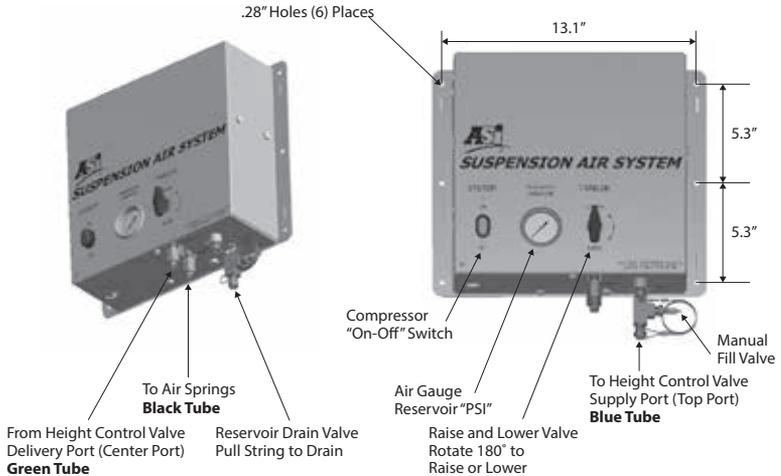




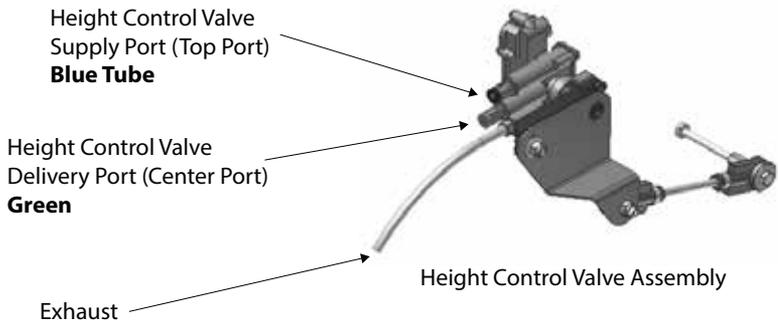
Air Supply and Control Enclosure

Part # K71-692-02

Note: Mount panel vertically with tube connections pointed down.



Part # K71-692-01

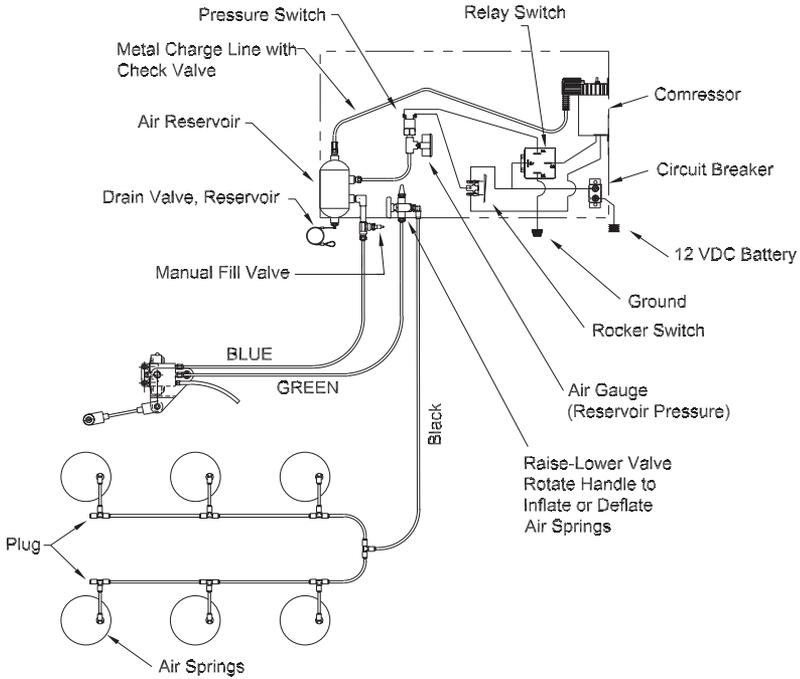


Air Supply and Control Enclosure

Air System Diagram With 12 VCD Compressor

Part # K71-692-02

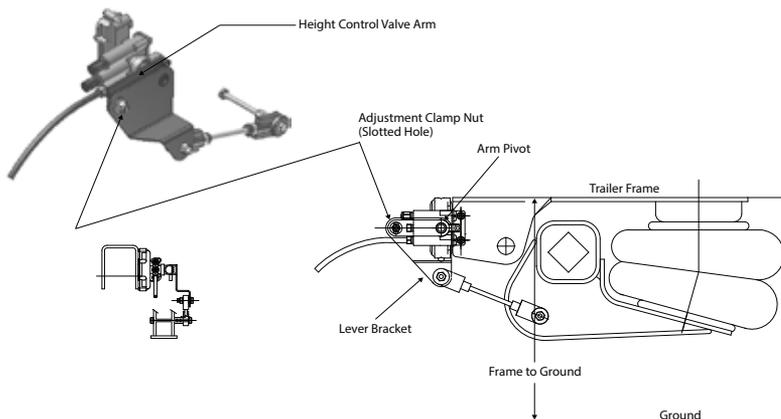
Air System Diagram





Installation Procedures

Height Control Valve Adjustment



Ride Height Installation Procedure

Trailer Design Height Adjustment

1. Check all around and under vehicle to be sure the area is clear of people and obstacles.
2. Set landing gear so that the trailer is level and place wheel chocks.
3. LOWER the trailer by exhausting air from the air suspension.
4. Measure the frame to ground dimension and record.
5. RAISE the trailer by adding air to the system.
6. Measure the frame to ground dimension at the same location as step 5.
7. Subtract the LOWER dimension from the RAISED dimension. The difference should be 2" to 2½".
8. If the result dimension is more or less than 2" to 2½", adjust the height control valve setting.

 **CAUTION**

Keep clear of trailer, tires and fenders when adjusting the height control valve. **DO NOT GET UNDER THE TRAILER.** Failure to do so could cause crushing injury or death.

9. With air in the system, loosen the adjustment clamp nut.
10. If the trailer is too low, rotate the height control valve arm counter clockwise to RAISE to the height required.
11. If the trailer is too high, rotate the height control valve arm clockwise to LOWER to the height required.
12. There is a three to five second delay before air flows when adjusting.
13. When the trailer has moved the desired height, tighten the adjustment clamp nut to 24-48 **In. Lbs.**
14. Using Raise-Lower feature on the air system panel, check the design height setting by lowering the trailer again and then raising it back to design height, recheck the dimension. Re-adjust if required.





Dexter Axle Limited Warranty

What Products Are Covered

All Dexter Axle Company (“Dexter”) trailer axles, suspensions, and brake control systems manufactured on or after September 1, 2016, excluding Dexter 6000 series Manufactured Housing Axles. Additional exclusions include the following brands: UFP by Dexter, AL-KO (IAC), Titan Brakes and Actuators by Dexter, and BrakeRite by Dexter products, which are covered under separate warranties.

Limited 1 Year Warranty

As specified in Dexter’s current publication “Operation Maintenance Service Manual”, grease and oil seals FOR ALL PRODUCTS have a one (1) year limited warranty to the original purchaser from the date of first sale of the trailer incorporating such components. **Except as to grease and oil seals, the following four other warranties are available.**

Limited 2 Year Warranty

Dexter warrants to the original purchaser that its electric/hydraulic brake actuators shall be free from defects in material and workmanship for a period of two (2) years from the date of first sale of the trailer incorporating such components.

Limited 5 Year Warranty

Dexter warrants to the original purchaser that its axles, suspension systems and Genuine Replacement Parts shall be free from defects in material and workmanship for a period of five (5) years. The warranty period shall begin from the date of the original purchase of the trailer and/or Genuine Replacement Parts.

Limited 7 Year Warranty

Dexter warrants to the original purchaser that its Predator Series® electric brake controllers shall be free from defects in material and workmanship for a period of seven (7) years from the date of purchase.

Limited 10 Year Warranty

Dexter warrants to the original purchaser that the suspension components of its Torflex® axles shall be free from defects in material and workmanship for a period of ten (10) years from the date of first sale of the trailer incorporating such suspension components.

Exclusive Remedy

Dexter will, at its option, repair or replace the affected components of any defective axle, repair or replace the entire defective

Limited Warranty

axle, or refund the lesser of the original purchase price and the then-current list price of the axle or components. In all cases, a reasonable time period must be allowed for warranty repairs to be completed. Allowance will only be made for installation costs specifically approved by Dexter.

What You Must Do

In order to make a claim under these warranties:

1. You must be the original purchaser of the trailer in which the sprung suspension axles or Torflex® axles or components were originally installed.
2. You must promptly notify Dexter after detection of any defect, but in any case within the applicable warranty period of such defect, and provide us with the axle or applicable component serial number and any substantiation of such defect which may include, but is not limited to, the return of part(s) that we may reasonable request.

The axles, suspensions and components must have been installed and maintained in accordance with good industry practice and any specific Dexter recommendations, including those specified in Dexter’s current publication “Operation Maintenance Service Manual”.

Exclusions

These warranties do not extend to and do not cover defects caused by:

1. The connecting of brake wiring to the trailer wiring or trailer wiring to the towing vehicle wiring.
2. The attachment of the running gear to the frame.
3. Parts not supplied by Dexter.
4. Any damage whatsoever caused by or related to any alteration of the axle including welding supplemental brackets to the axle.
5. Use of an axle on a unit other than the unit to which it was originally mounted.
6. Normal wear and tear.
7. Improper alignment.
8. Improper installation.
9. Unreasonable use (including failure to provide reasonable and necessary maintenance as specified in Dexter’s current publication “Operation Maintenance Service Manual including required maintenance after “Prolonged Storage”.)





10. Improper torque values and torquing of wheel nuts. (The proper torquing procedure and torque values are contained in Dexter's current publication "Operation Maintenance Service Manual").
11. Cosmetic finish or corrosion.

Limitations

1. **In all cases, Dexter reserves the right to fully satisfy its obligations under the Limited Warranties by refunding the lesser of the original purchase price and the then-current list price of the defective axle (or, if the axle has been discontinued, of the most nearly comparable current product).**
2. Dexter reserves the right to furnish a substitute of replacement component or product in the event an axle or any component of the axle is discontinued or is otherwise unavailable.
3. These warranties are nontransferable.

General

THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES EXCEPT THAT OF TITLE, WHETHER WRITTEN, ORAL OR IMPLIED, IN FACT OR IN LAW (INCLUDING ANY WARRANTY AGAINST INFRINGEMENT OR OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE).

These warranties give you specific legal rights, and you may also have other rights which vary from state to state.

DEXTER HEREBY EXCLUDES INCIDENTAL AND CONSEQUENTIAL DAMAGES, INCLUDING LOSS OF TIME, INCONVENIENCE, LOSS OF USE, TOWING FEES, TELEPHONE CALLS, COST OF MEALS OR LODGING, FOR ANY BREACH OF ANY EXPRESS OR IMPLIED WARRANTY.

Some states do not allow limitations on how long an implied warranty lasts, or the exclusion or limitation if incidental or consequential damages, so the above exclusion or limitation may not apply to you.

Inquiries regarding these warranties should be sent to:

Dexter Axle Company
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Elkhart, IN 46515

Note: Current publication "Operation Maintenance Service Manual" can be found at www.dexteraxle.com.

Dexter Video Gallery

In keeping with our continual commitment to industry safety and the development of innovative products, please feel free to view our ongoing video gallery at www.dexteraxle.com/resources/videos or scan the following QR codes. We are confident these videos will help educate and promote the Dexter product line that you, as our customer, are investing in.



Bearing Maintenance



E/H Actuator Installation



Electric Brakes



E-Z Flex[®] Suspension



E-Z Lube[®] System



Genuine Brakes



Genuine Replacement Parts



Leaf Spring Axles



Manual Bleed Hydraulic Disc



Medium Duty Axles



Nev-R-Adjust[®] Brakes



Power Bleed Hydraulic Disc



Removable Spindle



Sway Control



Torflex[®] Suspension Axles



Dexter Online Parts Store

From magnets and seals to complete brake and hub kits, Dexter offers a complete line of genuine replacement parts for your trailer. Most products are available in-stock and ready to ship within 24 hours direct to you from the factory. With dedicated customer support and quick turnaround, the Dexter Online Parts Store helps keep your trailer going.

- Hub Components
- Brake Components
- Suspension Components
- Complete Hub Kits
- Brake Assemblies & Kits
 - Brake Controllers & Actuators



**Ready for Immediate Shipment
Direct to Your Door**

Visit us online at www.dexteraxle.com

Genuine Dexter axles and components are available nationwide from our plant locations listed below or through our network of distributors. Check our web site for the distributor nearest you.



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