

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.



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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.

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.

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

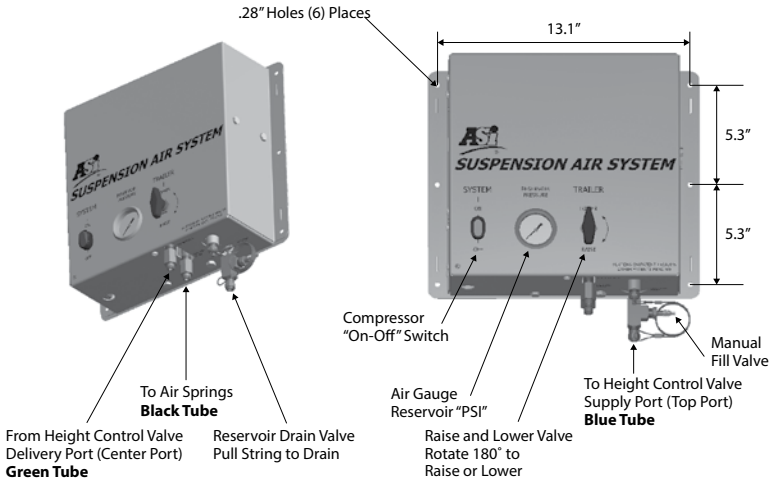
12 Volt DC Air Compressor

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

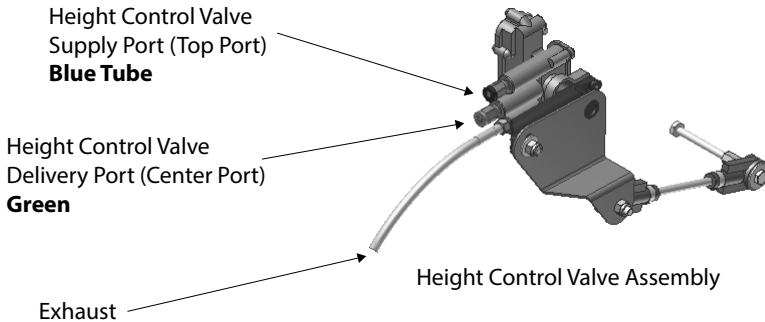
Air Supply and Control Enclosure

Part # K71-692-02

Note: Mount panel vertically with tube connections pointed down.



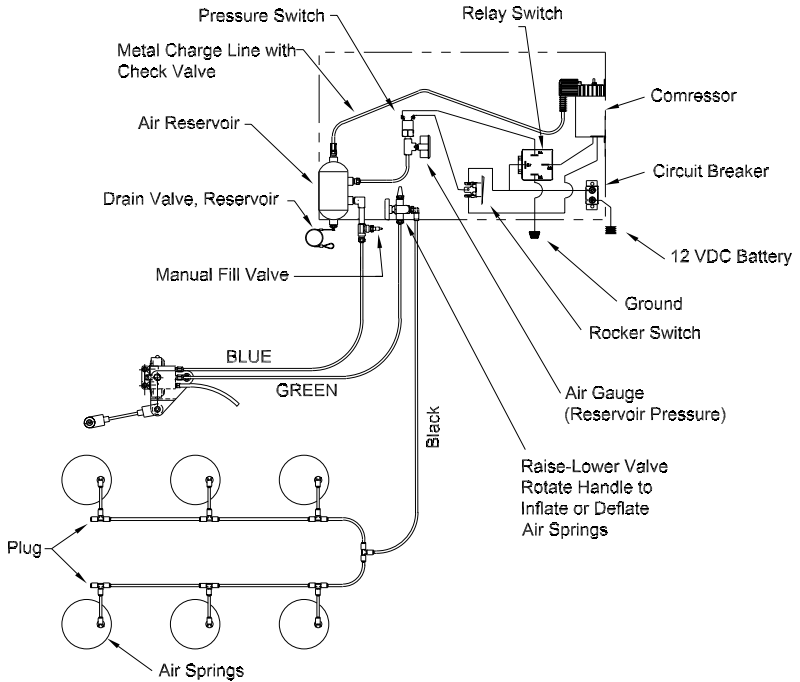
Part # K71-692-01





Air System Diagram With 12 VCD Compressor

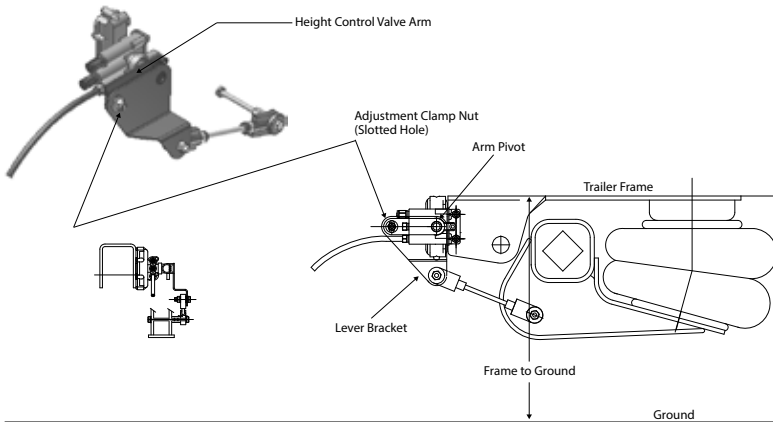
Part # K71-692-02



Air System Diagram

Installation Procedures

Height Control Valve Adjustment



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 Axle”) trailer axles, suspensions, and brake control systems excluding Dexter 6000 series Manufactured Housing Axles.

LIMITED 1 YEAR WARRANTY

As specified in Dexter Axle’s current publication “Operation Maintenance Service Manual”, grease and oil seals FOR ALL PRODUCTS have a one (1) year limited warranty 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 Axle warrants to the original purchaser that its axles, suspension systems, and E/H 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.

Dexter Axle warrants to the original purchaser that its Genuine Replacement Parts shall be free from defects in material and workmanship for a period of two (2) years from the date parts were installed and serviced.

LIMITED 3 YEAR WARRANTY FOR PARTICIPATING OEMS

Dexter Axle warrants to the original purchaser of a trailer equipped with axle models D90, D100GD, D100HD, D120, or D150 and installed with properly matched Genuine Dexter Hanger and Attaching Parts Kits (HAP Kits) or Dexter Heavy Duty Suspension System (HDSS), that this combination of components shall be free from defects in material and workmanship for a period of three (3) years. The warranty period shall begin from the date of the original purchase of the trailer.

LIMITED 5 YEAR WARRANTY

Dexter Axle warrants to the original purchaser that its Nev-R-Lube® bearings and the suspension components only, of its Torflex® axles shall be free from defects in material and workmanship for a period of five (5) years from the date of first sale of the trailer incorporating such components.





LIMITED 7 YEAR WARRANTY

Dexter Axle 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.

EXCLUSIVE REMEDY

Dexter Axle will, at its option, repair or replace the affected components of any defective axle, repair or replace the entire defective axle, or refund the then-current list price of the axle. 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 Axle.

WHAT YOU MUST DO

In order to make a claim under these warranties:

1. You must be the original purchaser of the vehicle in which the spring suspension axles or Torflex® axles were originally installed.
2. You must promptly notify us within the warranty period of any defect, and provide us with the axle serial number and any substantiation which may include, but is not limited to, the return of part(s) that we may reasonably request.
3. The axles or suspensions must have been installed and maintained in accordance with good industry practice and any specific Dexter Axle recommendations, including those specified in Dexter Axle's current publication "Operation Maintenance Service Manual."

EXCLUSIONS

These warranties do not extend to or 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. Hub imbalance, or any damage caused thereby.
4. Parts not supplied by Dexter Axle.
5. Any damage whatever caused by or related to any alteration of the axle including welding supplemental brackets to the axle.
6. Use of an axle on a unit other than the unit to which it was originally mounted.
7. Normal wear and tear.
8. Alignment.
9. Improper installation.

10. Unreasonable use (including failure to provide reasonable and necessary maintenance as specified in Dexter Axle's current publication "Operation Maintenance Service Manual" including required maintenance after "Prolonged Storage").
11. Improper wheel nut torque.
12. Cosmetic finish or corrosion.

LIMITATIONS

1. **In all cases, Dexter Axle reserves the right to fully satisfy its obligations under the Limited Warranties by refunding 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 Axle reserves the right to furnish a substitute or 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 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 AXLE HEREBY EXCLUDES INCIDENTAL AND CONSEQUENTIAL DAMAGES, INCLUDING LOSS OF TIME, INCONVENIENCE, LOSS OF USE, TOWING FEES, TELEPHONE CALLS OR COST OF MEALS, 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 of 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
P.O. Box 250
Elkhart, Indiana 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/video_gallery” 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



Genuine
Replacement Parts



Torflex®
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E/H Actuator
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Leaf Spring Axles



E-Z Lube®
System



Nev-R-Adjust®
Brakes



E-Z Flex®
Suspension



Removable
Spindle



Genuine Brakes



Sway Control

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, quick turnaround and a 30-day money back guarantee, the Dexter Online Parts Store helps keep your trailer going.

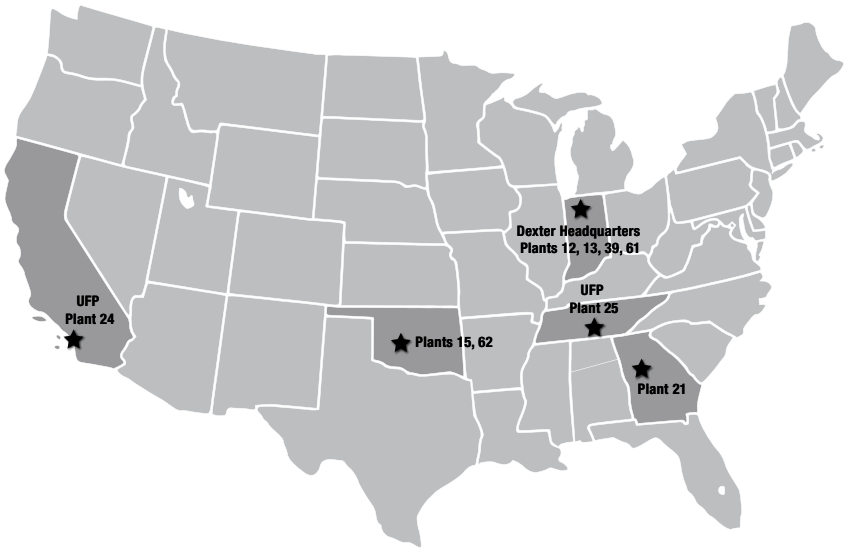
- Hub Components
- Brake Components
- Suspension Components
- Complete Hub Kits
 - Brake Assemblies & Kits
 - Brake Controllers & Actuators



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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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