

Suspension Systems

The suspension systems incorporated into Dexter axles are designed to provide the trailer owner three basic functions:

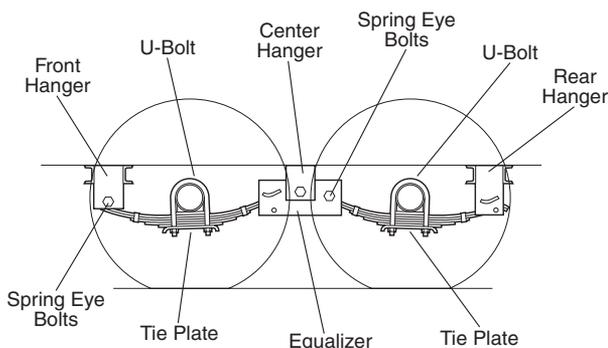
1. Attach the axle to the trailer
2. Dampen the effects of road shock
3. Provide stability to the trailer

All Dexter suspension systems are available in single and multiple axle configurations.

Slipper Leaf Springs

Slipper springs have an eye formed in one end only, with the other end formed into a reverse curve. The attachment of these springs is as follows:

1. The front eye is attached directly into the front hanger with a bolt and nut.
2. The rear end of the spring is captured in the rear hanger or equalizer with a “keeper bolt” that prevents the spring from coming out when the trailer is jacked up for service.



The articulation of this suspension occurs when the rear end of each slipper spring slides against the wear surfaces provided in the rear hangers or equalizers. This suspension is also available in single and multiple axle configurations.





Inspection and Replacement

All the components of your suspension system should be visually inspected least every 6,000 miles for signs of excess wear, elongation of bolt holes, and loosening of fasteners. Whenever loose or replaced, the fasteners in your suspension system should be torqued as detailed in the charts at the end of this book (Fastener Torque Values).

Worn spring eye bushings, sagging springs, or broken springs should be replaced using the following method.

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.

1. Support the trailer with the wheels just off the ground. Follow the trailer manufacturer's recommendations for lifting and supporting the unit. Do not lift or place supports on any part of the suspension system.
2. After the unit is properly supported, place a suitable block under the axle tube near the end to be repaired. This block is to support the weight of the axle only so that suspension COMPONENTS can be removed.
3. Disassemble the U-bolts, nuts, and tie plates.
4. Remove the spring eye bolts and remove the spring and place on a suitable work surface.
5. If the spring eye bushings are to be replaced, press out the old bushing using a hydraulic shop press.

CAUTION

Be sure to wear safety glasses when removing or installing force fitted parts. Failure to comply may result in serious injury.

6. Lubricate the rubber bushing with liquid soap (not petroleum.) Press the new bushing into the spring eye using a hydraulic press.
7. Reinstall repaired or replaced components in reverse order.

Note: For multiple axle units, the weight of each axle must be supported as outlined in Step 2 before disassembly of any component of the suspension system.

If the equalizer or equalizer bushings must be replaced, follow the instructions above for lifting and supporting the trailer unit and then proceed as follows:

1. With both axles blocked up, remove the spring eyebolt, keeper bolt, and equalizer bolt from the equalizer to be repaired or replaced.
2. Press the old rubber bushing out of the equalizer using a hydraulic press.
3. Lubricate the replacement bushing with liquid soap and press into the equalizer.
4. Reassemble in reverse order.

CAUTION

Be sure to wear safety glasses when removing or installing force fitted parts. Failure to comply may result in serious injury.



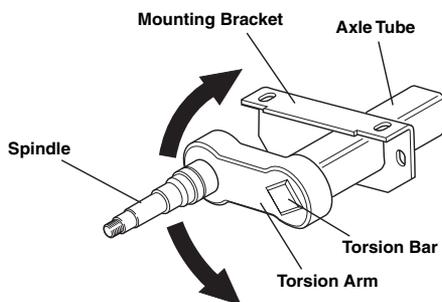


Suspension Replacement

1. Make sure springs are on straight. Align spring eyes to front hanger. Insert spring eye bolts but do not torque at this point.
2. Assemble springs into equalizer.
3. After leveling equalizer to frame, torque equalizer nuts to values specified in Fastener Torque Specifications (Replacement Parts/Kits section).
4. Torque spring eye bolts to values specified in Fastener Torque Specifications (Replacement Parts/Kits section) for rubber bushed suspension. Torque bronze bushed suspension to snug fit only.

Torflex® Suspension

The Torflex® suspension system is a torsion arm type suspension which is completely self contained within the axle tube. It attaches directly to the trailer frame using brackets which are an integral part of the axle assembly. The Torflex® axle provides improved suspension characteristics relative to leaf spring axles, through the unique arrangement of a steel torsion bar surrounded by four natural rubber cords encased in the main structural member of the axle beam.



The spindle is attached to a lever, called the torsion arm, which is fastened to the rubber encased bar. As load is applied, the bar rotates causing a rolling/compressive resistance in the rubber cords. This action provides the same functions as conventional sprung axles with several operating advantages including independent suspension.

Except for periodic inspection of the fasteners used to attach the Torflex® axle to the vehicle frame, no other suspension

maintenance is required on Torflex® axles. They are, of course, subject to the maintenance and inspection procedures regarding brakes, hubs, bearings, seals, wheels, and tires, as outlined in this manual.

CAUTION

DO NOT WELD ON THE TORFLEX® BEAM. It has rubber cords inside and the heat generated by welding could damage the cords.





Heavy Duty Suspension System Axle Alignment

Alignment

For safe and efficient trailer operation, to prevent excessive tire wear off-tracking and hard pulling, it is recommended that after a short break-in period you have a qualified trailer mechanic check the alignment.

To align a four (4) spring suspension, the track arms need to be adjusted. There is one adjustable track arm (rod) on each axle; typically on the road (left) side.

Loosen the clamp nuts at each end of the adjusting bolt so the adjusting rod can rotate (see Figure 1). Align front axle with the king pin or coupler and adjust rear axle parallel to the front axle. Be sure to secure the clamps on the adjustable track arm after alignment (see Figure 1).

Alignment Procedure (Figure 1)

Before taking axle alignment measurements, make sure the trailer is unloaded and free the suspension of any binds by pushing the trailer backwards and then pulling the trailer forward. While pulling the trailer forward on a level floor, apply the brakes and release. This will ensure that an adjustable undercarriage is in its rearmost lock position. The trailer **MUST** be level from side to side as well as from front to rear.

Note: Neither service nor parking brakes should be applied during the measurement procedure.

Ensure the king pin or coupler is at the correct height. Use axle end extenders (or remove outer wheels and any obstructions) to achieve a straight line for measuring from king pin to the axle ends or axle centers.

Proper tools for axle alignment inspection are:

- Spring loaded kingpin extender with level or plum-bob.
- Axle end extenders.
- 50 foot steel tape.
- Optional; adjustable tram.

- A means to measure axle center to axle center.
- Optional; Extra adjustable track arm (rod) clamp bolts if required.

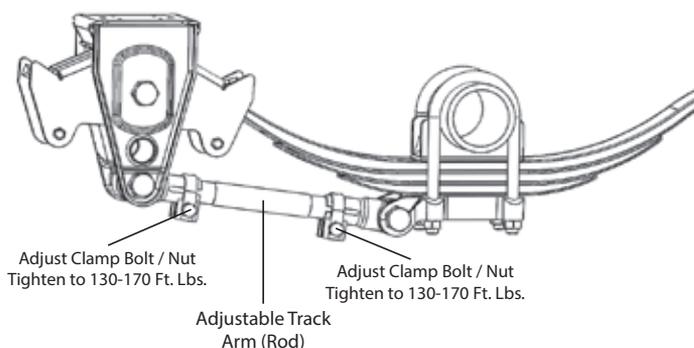


Figure 1

Measuring (Figure 2)

1. **Lateral Centerline (E).** Determine lateral centerline of trailer body and axles by measuring distance E between trailer and axle centerlines first, and correct so that distance E is $\frac{1}{4}$ " or less for each axle.
2. **Thrust Angle (A, B).** Measure distances A (curbside) then B (roadside) from the king pin or coupler to the front of the axle extension or axle centers. These must be equal to within 0.1 degree or $\frac{1}{8}$ " of each other ($A = B \pm \frac{1}{8}$ "). Ensure the lateral tension (pulling force) applied to the measuring tape is the same for both A and B measurements. Use a tensioning device scale or optical (laser) to ensure accuracy.
3. **Scrub Angle (C, D).** Measure distances C (curbside) then D (roadside) between axles, measuring from front of axle extension to front of axle extension, or axle center to center. Adjust the rear axle so it aligns to the front axle. These also must be equal to within $\frac{1}{16}$ " of each other ($C = D \pm \frac{1}{16}$ "). This measurement should be as close to zero as possible. The smaller the offset, the lower the rolling resistance and the better the fuel economy.



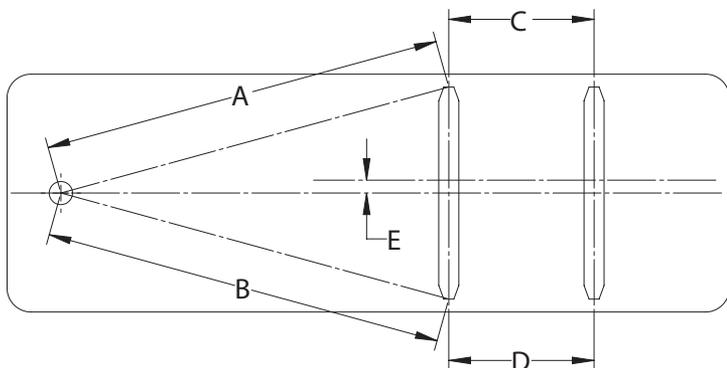


Figure 2

Adjusting

1. Loosen the adjustable track rod clamp bolts (Figure 1) and turn the center rod to adjust as necessary per above.
2. After adjusting, tighten the adjustable track rod clamp nuts (Figure 1) to proper torque. Recheck measurements and readjust as needed.

Precautions

1. Always measure to the front axle ends for accurate alignment.
2. Avoid measuring to rims, suspension brackets, hub cap, vent holes, brake drums, etc. This can result in improper alignment. For accurate measurements, use axle extenders.
3. Always align any succeeding axles with the front axle, not to the kingpin or coupler.

Additional Suspension Maintenance Check

Track arms should be checked for clearance. If slack is found, it should be repaired immediately since this indicates that there is wear in the rubber bushing or track arm parts. Check the adjustable track arm clamps for proper torque. Loose clamps will

cause wear on the adjusting threads and the suspension cannot be kept in alignment. On leaf spring type suspensions, have the trailer checked for axle alignment after two to three thousand miles.

Check leaf springs for broken leaves. Replace broken leaves immediately to prevent the other leaves from being overloaded. On taper leaf springs, be sure the plastic liner is serviceable and on top of the spring. The liners between leaves should be in place and serviceable.

Heavy Duty Suspension Torque Requirements

CAUTION

Before torquing equalizer bolts, level equalizers parallel to main frame members. After initial break-in period (up to 1,000 miles) and at least every 4 months thereafter; all bolts and nuts should be checked to ensure recommended torque is being maintained.

Minimum Torque Values for Bolts With Clean Dry Threads

Description	Torque Min Ft. Lbs.	Torque Max Ft. Lbs.
1 $\frac{1}{8}$ -7 UNC Nut		
Oiled	565	615
Dry	765	815
1-8 UNC Nut	325	350
Spring Keeper Nut		
5 $\frac{16}{32}$ -18 UNF	35	50
Track Rod Clamp Nut		
5 $\frac{16}{32}$ -18 UNF	130	170

