

INSTALLATION INSTRUCTIONS

Hanger and Attaching Parts Kits – Double Slipper Spring Suspension

HAP-161-01 Single Axle Hanger and Attaching Parts Kit
HAP-261-01 Multi Axle Conversion Hanger and Attaching Parts Kit

Safety Precautions

Before welding and installing any suspension component parts to the trailer frame requiring the raising of the vehicle, make sure that the vehicle is properly supported on lift stands of sufficient capacity. Follow the vehicle manufacturer's recommendations for lifting and supporting the unit.

Do not lift with or place supports under any part of the suspension system unless specifically directed to do so during these installation steps.

⚠ CAUTION

Never rely on jacks alone to support the vehicle. A vehicle that is not securely supported may fall and cause severe injuries or death.

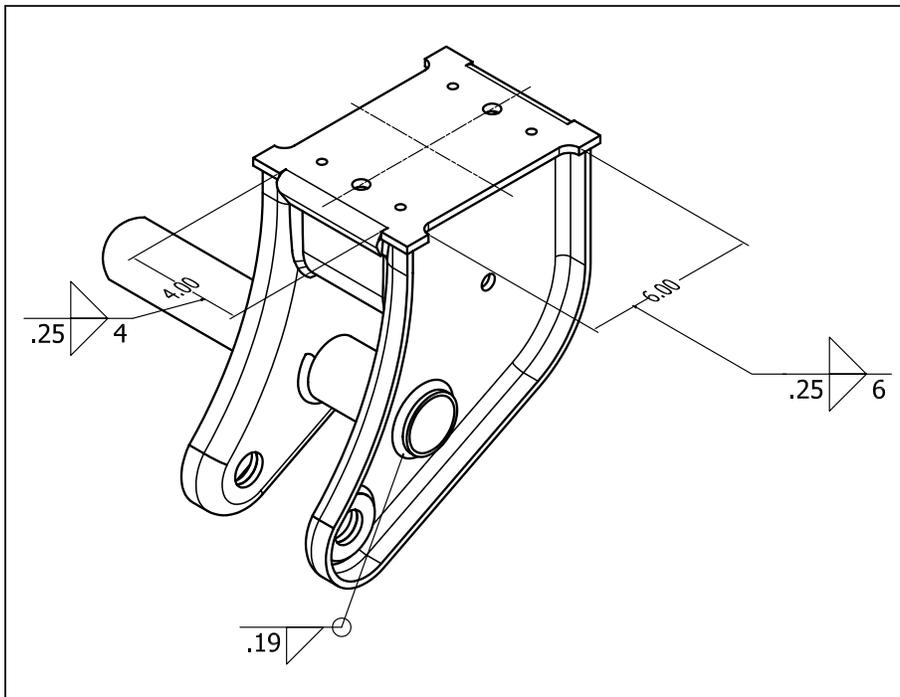
⚠ CAUTION

Safety glasses should be worn at all times when assembling or disassembling axles and their components. Failure to comply may result in serious eye injury.

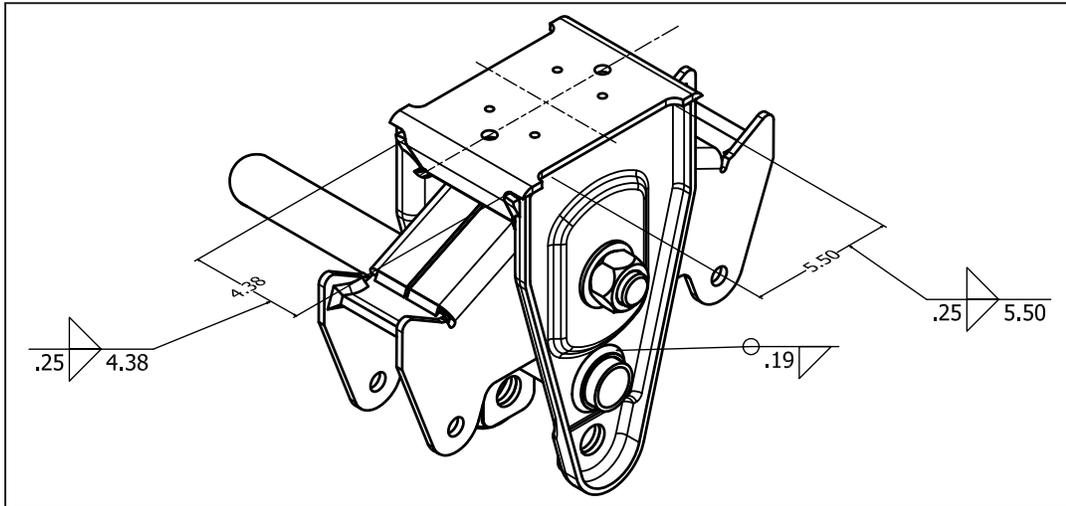
General Guidelines for Hanger Welding

1. It is recommended that the hangers be centered on the frame rails.
2. Starting and stopping at the corners of the hangers is NOT recommended.
3. Craters/ends of welds should be back-filled to prevent cracking.
4. The weld should be inspected for no cracks, no undercut, poor porosity, and inadequate penetration that may cause the hanger to fail.

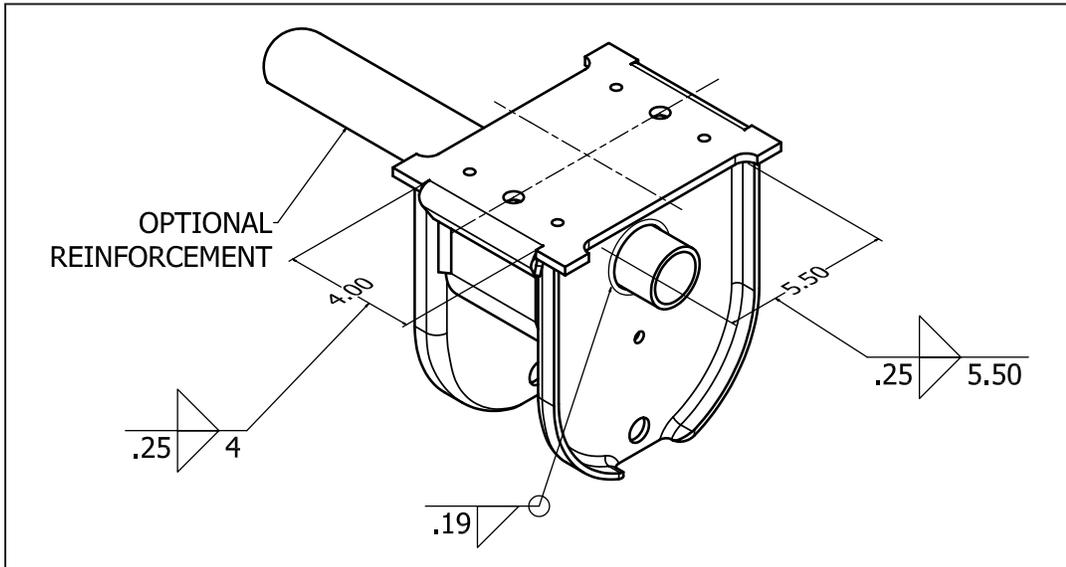
Front Hanger Welding



Center Hanger Welding



Rear Hanger Welding



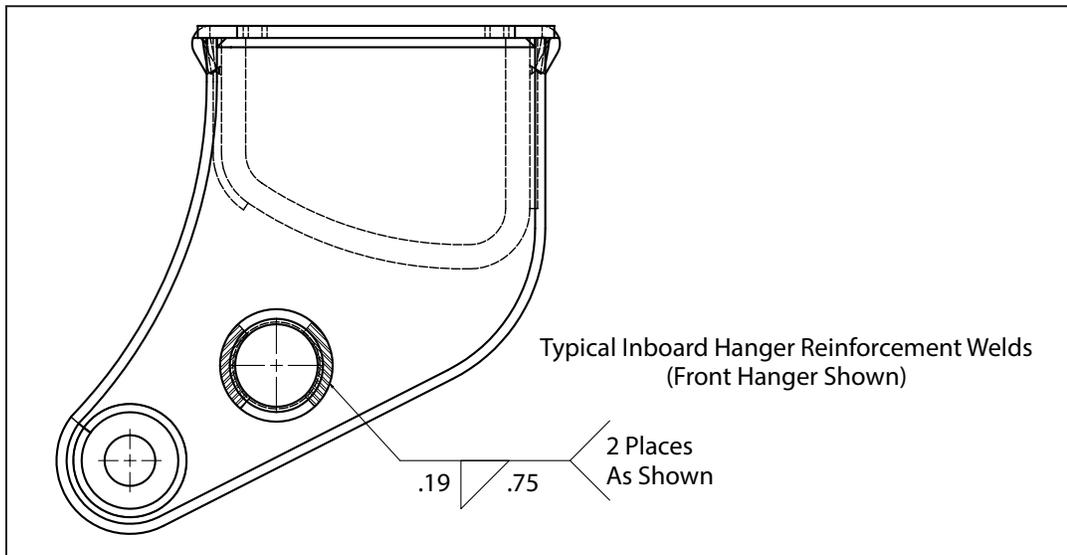
Cross Frame Reinforcement

Cross frame reinforcement required on front and center hangers, optional on rear hangers, to assure full load carrying capacity of axle suspension. For reinforcement, use 1.66 OD x .109 wall ASTM A500 Grade B STD mechanical tubing or 1.25 SCH 40 pipe or better.

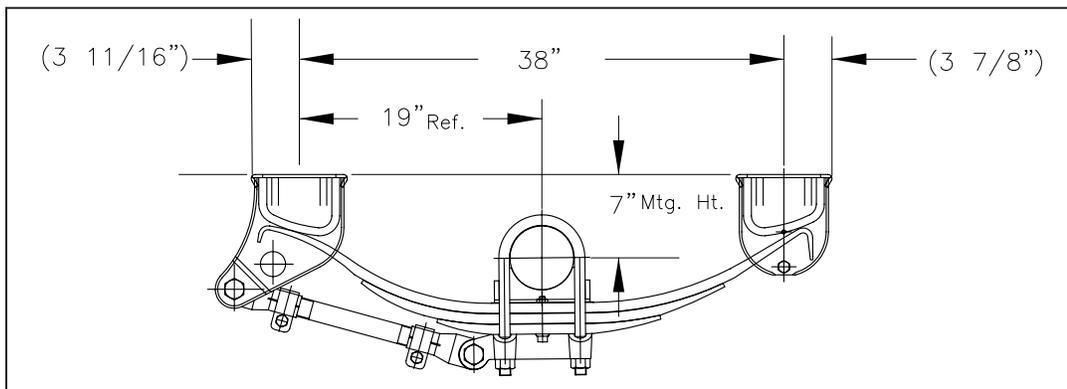
Weld completely around reinforcement on the outside of the hangers, ensuring penetration into the hanger side plates.

Weld (2) .75 long welds on the horizontal centerline of the reinforcement on the inside of the hangers, ensuring penetration into the hanger side plates as shown in front hanger view.

Front Hanger Reinforcement Welding

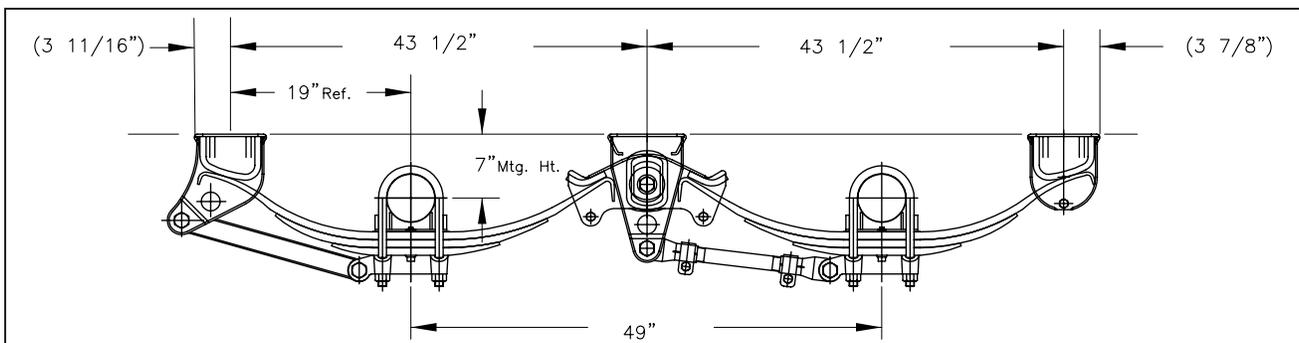


HDSS Axle Hanger Spacing – Single



1. Long hook of spring to rear hanger.
2. Note rear hanger slipper pad orientation.

HDSS Axle Hanger Spacing – Tandem



1. Long hook of springs to equalizer.
2. Note rear hanger slipper pad orientation.

Heavy Duty Suspension System Axle Alignment

To align a four (4) spring suspension, there is one adjustable track arm (rod) on each axle. These will typically be on the road (left) side.

Release the clamps at each end of the adjustable rod (Figure 1). Align front axle with the king pin and adjust each axle thereafter parallel to the front axle. Be sure to secure the clamps on the adjustable track arm (rod) after alignment (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. 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 is at the correct height. Use axle and extenders (or remove outer wheels and any obstructions) to achieve a straight line for measuring from king pin to the axle ends/centers.

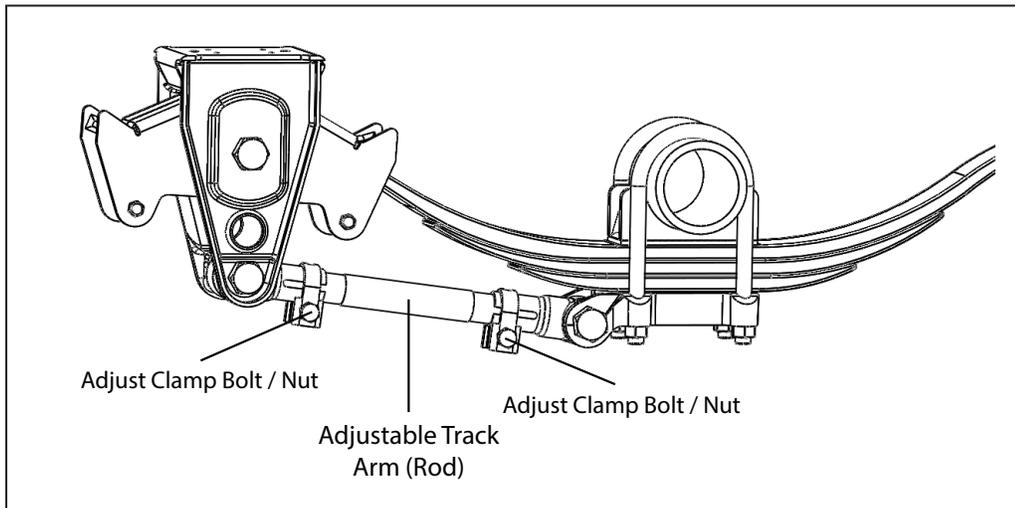


Figure 1

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 to the front of the axle. 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 (same as center to center). 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.

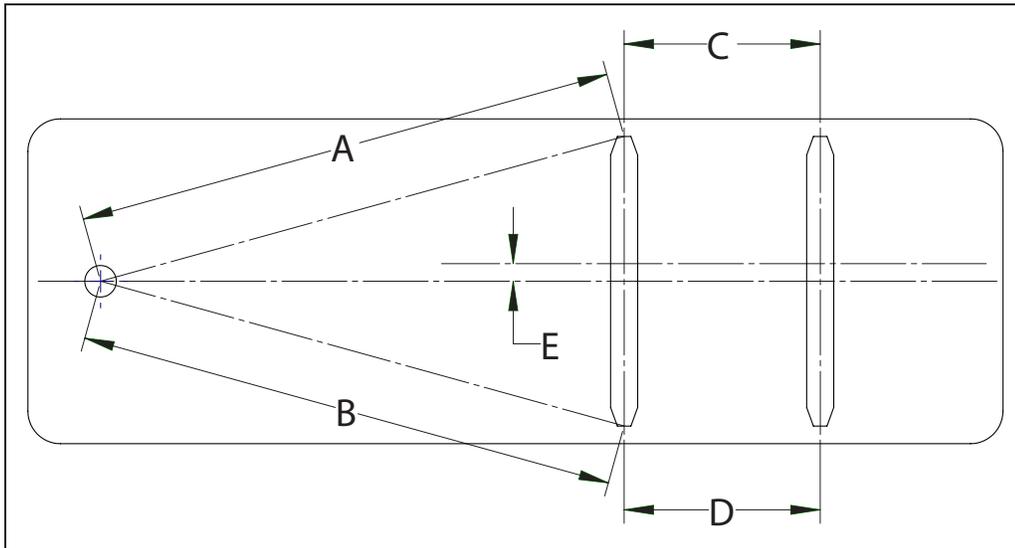


Figure 2

Adjusting

1. Loosen the adjustable track rod clamp bolts (Figure 1) and turn the center rod to adjust as necessary (see torque table).
2. After adjusting, tighten the adjustable track rod clamp nuts (Figure 1) to proper torque (see torque table) and recheck measurements.

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 extenders.
3. Always align any succeeding axles with the front axles, not the kingpin.

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.

Description	Torque Ft. Lbs.
1½-7 UNC Nut Oiled Dry	615 815
1-8 UNC Nut; Dry	350
Spring Keeper Nut ⅝-18 UNF; Dry	50
Track Rod Clamp Nut ⅝-11 UNC; Dry	150
U-Bolt ¾-10 UNC Nut; Dry	200