

## Frequently Asked Questions

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### Self-Steer Axles

**Q:** What is a Leading Kingpin Self-steer axle?

**A:** A Leading Kingpin Self-steer axle is where the pivot point of the axle is in front of the axle tube. This allows the axle to steer passively through road friction. Otherwise known as Ingersoll Axles Smartsteer.

**Q:** What is an In-line Kingpin axle?

**A:** An Inline Kingpin is where the pivot point of the axle (the kingpin), is inline with the axle tube. This type of axle is typically found in forced steer applications.

**Q:** What turn angles can I get on the SmartSteer?

**A:** We offer standard turn angles of 15, 20, 25, 28 and 30 degrees, but we can customize to whatever turn degree you require.

**Q:** Can my SSA king pins be used in my in-line kingpins application?

**A:** Yes, the parts are interchangeable

**Q:** How much vertical play am I allowed?

**A:** Vertical Play is not important with the self steer axles, as long as the o-ring is keeping the grease inside, however on a normal brand new axle the vertical play should be roughly 1/16", and when worn could be as much as 3/16".

**Shims:** If vertical play becomes a concern, shims are available for purchase to reduce this movement. They come in 0.015" and 0.030" thicknesses with part numbers 700703 & 700702 respectively.

**Q:** What is the maximum allowable side play?

**A:** On the last page of the Axle Installation Maintenance Manual is a figure showing information about how to measure side play. It shows that 0.110" of side play movement is the maximum allowed. If the movement is more than that, then the king pin and bushings should be replaced.

Q: Are there right hand and left hand kingpins?

A: The king pins are stamped LH and RH on the top of the king pin opposite the rotation hole.



Left



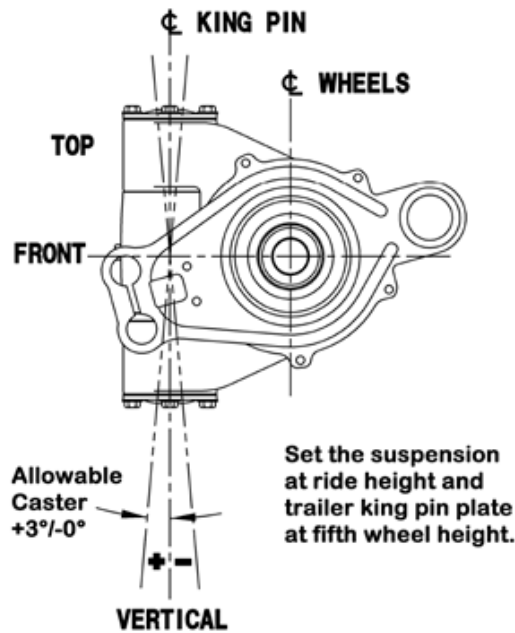
Right

Q: Will new kingpin kits work on an old style self steer axle?

A: Yes. As long as its not a tapered style king pin. If you have an older style, it can be identified by the single screw lock instead of the two draw key set up as used in current production SSA's.

Q: What is caster angle?

A: Castor Angle is the vertical offset angle between the kingpin axis and the road.



**Q:** What are my limits on caster angle?

**A:** The allowable limits for castor angle are 0° to +3° at ride height. Improper castor angle can lead to reduced turning performance and premature tire wear. See the troubleshooting section to understand the elements that effect castor angle.

**Q:** What is the little Double Convolute Air Spring in the center of the SSA?

**A:** This air spring is part of the Torpress Assembly and is called the Torpress Air Spring.

**Q:** What does the Torpress Assembly do?

**A:** During straight line operation the Torpress dampens the shimmying (the shopping cart effect) of the axle. During maneuvering the Torpress helps return the axle to center. Also the Torpress keeps the axle centered when the axle is in the raise position.

**Q:** How much pressure do I need in my Torpress Air Spring?

**A:** On rear facing tie rod models we would expect to see between 30 and 40 psi. On forward facing tie rod models we would expect to see between 75 and 80 psi.

**Q:** Do I need full spring brake chambers on an SSA?

**A:** Full spring Brake chamber are not usually necessary, but you should confirm this with the regulations in which you trailer is operating. In general, as long as your trailer can pass the parking brake test requirements without spring brake chambers, you are ok to operate without full spring brake chambers.

**Q:** Do I need an expansion tank when using an SSA?

**A:** We recommend using an expansion tank of 1000-1500 inches per steer axle when using a Torpress style self-steer. This is based on a normal operating Torpress air spring pressure of 30-40 psi for rear facing tie-rod models or 75-80 psi for forward facing tie-rod models. If an expansion tank is not used, the starting (at rest/centered) position of the Torpress air spring must be set to approximately 15 psi so that when the pressure increases in the air spring, it won't be too high and will still allow for the axle to turn properly. However, by not using an expansion tank the air spring will not have enough pressure to center the wheels immediately after a turn and the wheels will "wobble" as they return to a center position and will therefore "scrub" against the road and increase tire wear.

**Q:** Are there Left and Right hand tie rod ends?

**A:** Yes

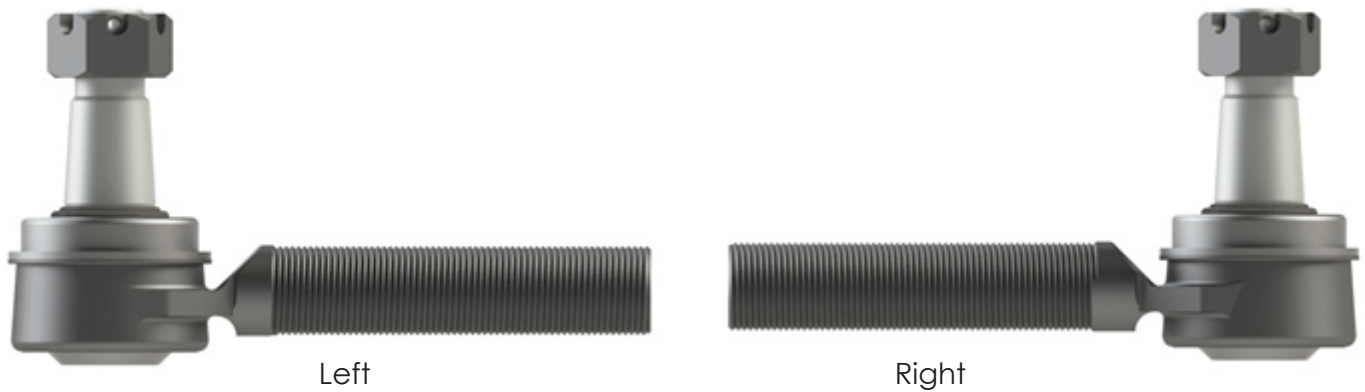
**Q:** How do I identify left and right-hand tie rod ends?

**A:** When Packaged:

Red sleeve over the threads is a right hand thread; Yellow thread over the sleeves is a left thread.

If Used, or Not Packaged (Determine by Thread Direction):

While holding the tie rod, with the ball joint at the floor, if the direction of the thread is going up and to the left the thread is left handed, and if it is up and to the right, it is right handed. See images below:



Depending on vendor, there may be an L or R stamped on the ball portion of the tie rod end.

**Q:** What is Toe In & Toe Out?

**A:** Toe in and toe out is the angle the tires make with the frame of the trailer in the direction of travel.

Toe in (positive toe) is when the tire is pointing towards the frame.

Toe out (negative toe) is when the tire is pointing away from the frame.

**Q:** How do I check toe in and toe out?

**A:** Toe in/Toe out is set when the axle leaves the factory.

Otherwise follow procedure IN020 to check your Toe In/Toe Out Setup.

## Standard Axles

**Q:** Can I buy a spider?

**A:** Yes. But please contact the factory to get the installation instructions

**Q:** Can I buy a torque plate?

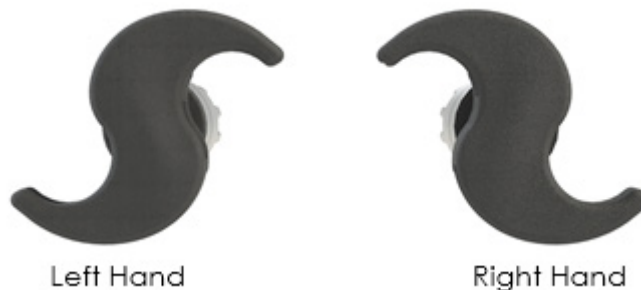
**A:** No. They are very sensitive and need proper fixturing to install. Please let the experts handle this.

**Q:** Can I replace a spindle?

**A:** No, we do not recommend this.

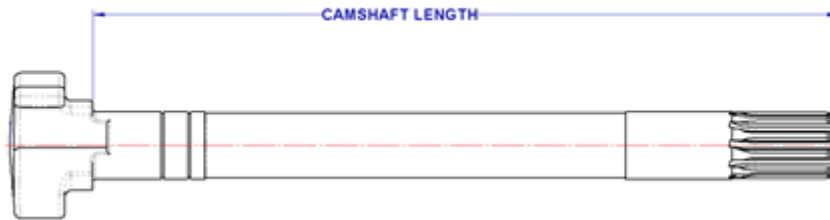
**Q:** Are there left hand, right hand camshafts?

**A:** Yes.



**Q:** How do I measure length of my camshaft?

**A:** Industry practices differ, but Ingersoll Axles measures it from under the head to the very end of the cam.



**Q:** Do you offer cambered axles?

**A:** As a standard offering, we do not offer cambered axles, but they can be available upon special request.

**Q:** What are the longest and shortest axles lengths available.

**A:** Ingersoll Axles can manufacture axles from 30" up to 144" in length in 1/2" increments.

**Q:** What diameters are you axles available in?

**A:** 5", 5 3/4"

**Q:** What are your axle capacities?

**A:** Our capacities range from 13,200 lbs up to 45,000 lbs depending on the application.

**Q:** Can you manufacture drop centre axles?

**A:** Yes. We can offer drop distances of 6", 8", 9". These are available in both drop and inverted drop style.

**Q:** Do you offer disc brake axles?

**A:** Yes we do. Our disc brake axles accommodate wheel sizes from 17.5", 19.5" and 22.5" and capacities from 20,000 lbs to 23,500 lbs. We carry all major brands of calipers.

**Q:** Can I get a suspension with my axle?

**A:** Yes. Ingersoll Axles offers a full line of suspensions known in the industry as the ISS Series.

# Suspension

**Q:** What is Suspension Rating / load capacity mean:

**A:** The vertical load/capacity the suspension is designed and tested for.

In many applications the capacity is not dictated by the actual, required vertical load.

Good examples are, using 30,000-LB suspensions on hwy trailers, such as dump trailers. Also using 25,000-LB liftable suspensions due to higher axle up travel.

**Q:** What is ride height?

**A:** Ride height is the measurement from the bottom of the frame to the centre of the axle (or top of axle plus 2.5" for 5" OD tube or 2.875" for a 5 3/4" OD)

**Q:** What is jounce?

**A:** The upward travel of the suspension. It is usually more than the "bumper contact" travel. It includes the compression of the air bag's bumper and the pivot bushing.

**Q:** What is Rebound?

**A:** The downward travel of the suspension. It is limited by the allowable maximum height of the air bags and controlled by the extended length of the shock absorber. The shock absorber physically stops the suspension at the full rebound position.

**Q:** What is a Primary suspension?

**A:** Non-Liftable, non-steerable suspension. It usually has more rebound than jounce. In some cases, it may have an equal jounce & rebound. It may come in different configurations.

**Q:** What is a Liftable suspension?

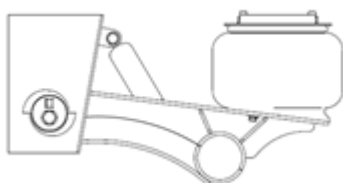
**A:** It has more jounce than rebound (opposite to the primary suspension). In most cases, the trailing arm has an additional weldment, whether a lift bracket or a lift arm. Also an additional weldment on the hanger or into the trailer's frame. A liftable suspension and a primary suspension of the same ride heights, are engineered differently. In most cases they will have different components, such as, hangers, shock brackets and upper air bag spacers.

**Q:** What is axle equalization?

**A:** All the axles on a trailer are load equalized. When liftables are included in the trailer design this may lead to the use of a proportioning valve due to different suspension geometries.

**Q:** What does Topmount, overslung mean?

**A:** A suspension where the trailing arm is mounted on top of the axle. It is usually for tall ride heights of 10 inches and higher.



**Q:** What does Underslung, undermount?

**A:** A suspension where the trailing arm is mounted under the axle. It is usually for ride heights of 12 inches and less.



**Q:** What is Beam (Hanger) centers?

**A:** The distance between the centerlines of the suspension's LH & RH hangers, or LH & RH of the trailing arms.

**Q:** Is a ride Height Control Valve (HCV) needed with my suspension?

**A:** Yes and No. Height control valves are used to keep the air ride suspension at ride height thereby offering the optimum performance of the suspension and axles. There is usually one height control valve per trailer setup, not one per axle. The air ride suspensions are all linked to the same air system so the height control valve actually controls the ride height in all the linked axles.

E.g. A tridem axle trailer will have a height control valve on the middle of the three axles.

## Tires/Brakes

**Q:** What Tire Pressure should I run?

**A:** Only the tire manufacturer should give out information related to the tire pressure, but the pressure would be determined by the load they are required to be carrying.

**Q:** Can I mix and match tires on my trailer?

**A:** Ingersoll Axles recommends that the tires from the same manufacturer, and have the same tread pattern, be the same size, the same age, and be set to the same pressure.

**Q:** Are my brakes certified?

**A:** The CTEA (Canadian Transportation Equipment Association) has records of all certified brake assemblies. Please contact them directly to access their list.