

FREQUENTLY ASKED QUESTIONS

➤ **AXLES - Can I buy Flexiride® axles directly from UCF America?**

UCF America does not manufacture axles directly; instead, UCF supplies the Flexiride® proprietary components to Licensees in the United States and Canada. These certified axle manufacturers stock the components and build axles to required track width, frame width and starting angle. All Flexiride® axles are manufactured specifically for each customer order. This build-to-suit system eliminates the need for large inventories of different axle configurations and reduces lead times considerably. There is a complete list of Flexiride® axles Licensees on our web site. They are situated in numerous locations and can provide complete axle assemblies with a very short lead-time.

➤ **AXLES - Can I buy just a spindle, or a cartridge?**

It is against our policy to sell loose components for axles. The installation, alignment, and welding of the Flexiride® components are critical operations in the manufacture of axles, and they need to be performed by our Licensees, in order to insure the proper quality. The only recourse is to obtain a new axle beam.

➤ **AXLES - Can axles be used without suspensions?**

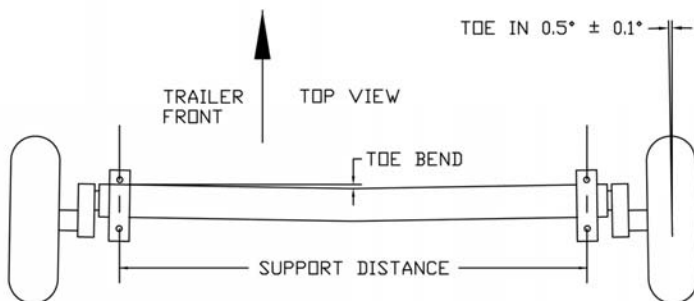
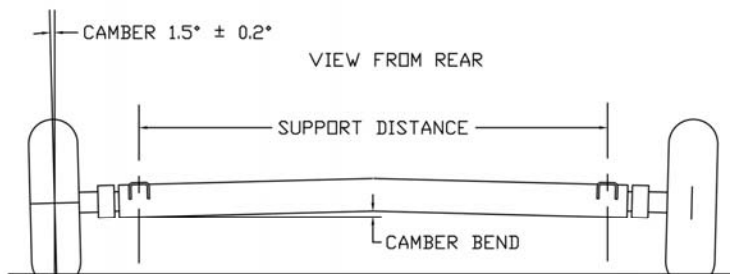
Axle capacity will be reduced by at least 50% when used without a suspension system (axles or stubs attached directly to the vehicle frame). This is NOT a recommended configuration as it transfers load directly to the frame rails and is a very harsh ride.

➤ **AXLES - Can mobile home axles be reused?**

The MH (mobile home) type axle is designed for limited usage in the delivery of manufactured homes and has a one-time limit use. The axle has steel forged spindles that are not precision ground. The brake assembly is welded onto the beam and not intended to be field replaced. Additionally, the bearing package is smaller than the more expensive service type axle. Most MH axles are also equipped with a single leaf spring suspension for very heavy loads.

➤ **AXLES - Why are some axles bent in the middle?**

The upward bend in the axle is called "camber". Camber is the angular relationship of the wheel to the road surface in the vertical plane. Axles are typically built with a pre-determined bend in the tube that compensates for the expected deflection under load.



SUPPT. DIST.	1.5°	0.5°
	CAMBER BEND	TOE IN BEND
30	.39	.13
36	.47	.16
42	.55	.18
48	.63	.21
54	.71	.24
60	.79	.26
66	.86	.29
72	.94	.31

1.5° CAMBER = SUPPT. DIST. × .0131
 0.5° TOE IN = SUPPT. DIST. × .0044

➤ **BEARINGS - How often should I grease the bearings?**

Along with bearing adjustment, proper lubrication is essential to the current function and reliability of your trailer axle. Bearings should be lubricated every 12 months or 12,000 miles.

➤ **BEARINGS - What is the proper bearing adjustment procedure and recommended grease?**

Please review the [UCF instructions](#) and specifications relating to bearing adjustment:

1. While **turning the hub**, tighten the spindle nut with a 12 inch wrench, (approximately 50 ft-lbs.), until a definite drag is felt in turning the hub.
2. Without disturbing the hub and bearings, (**do not turn the hub**), back off the spindle nut to completely remove the torque.
3. Adjust spindle nut "**Finger Tight**" to nearest snug alignment of slots and cotter pin hole.
4. Install cotter pin, bending the legs with needle nose pliers, to lock the bearing adjustment and prevent the spindle nut from backing off.
5. Check the Bearing Adjustment:
 - a.) Check that the hub rotates freely.
 - b.) Check the hub for excessive end play. Grasp the hub and push and pull it, in and out, along the spindle axis to detect "End Play". A slight movement, up to .012", is acceptable, but pronounced looseness is not.
 - c.) If the hub does not rotate freely, or has excessive end play, the bearing adjustment is re-done. The Flexiride units are not shipped without acceptable bearing adjustment.
6. Install dust cap with installation tool or rubber mallet to avoid damage or marring of the dust cap.

WARNING: It is important to NOT mix different types of grease thickeners. The grease that UCF America recommends has a Lithium Complex thickener. Mixing our grease with a Barium, Calcium, Clay, or Polyurea soap based thickener agent will cause adverse affects. This may include causing the two greases to harden, separate, become acidic, or pose other hazards and damage to the bearings.

➤ **BRAKES - Can I change my brakes from electric to hydraulic or vice versa?**

This can be done on most axle models. We recommend contacting the trailer manufacturer prior to changing your braking system to identify any potential problems.

➤ **BRAKES - Can I upgrade to bigger brakes?**

No, the different brake sizes offered by UCF are not interchangeable on existing axles. There are only a few cases where you may be able to upgrade with stronger magnets and more aggressive linings. Typically the problem that causes weak brakes is under adjustment in the smaller brakes that require frequent manual adjusting (See: How often should I adjust my brakes?) or insufficient brake voltage in the electric brakes (see: Why aren't my electric brakes working properly).

➤ **BRAKES - Can brakes be added to an idler axle?**

Adding brakes to an idler axle are relatively easy if the idler axle is equipped with the brake mounting flanges (the plate to which the brake is bolted). About half of the trailer manufacturers decide not to put the flanges on their idler axles to reduce their cost. If the axle does have flanges, you need a RH and a LH brake assembly as well as two hub and drums to replace the plain hubs currently on the axle. If the axle is not equipped with flanges, you will need to purchase a new axle beam with brake flanges attached; we strongly discourage any attempt to attach brake flanges to the axle on the field.

➤ **BRAKES - Can brakes be used on trailers towed by motorcycles?**

UCF America does not recommend the use of brakes on small touring trailers designed to be pulled by motorcycles. Proper control of the brakes on these vehicles can be very difficult. Even the slightest imbalance of the trailer brakes might cause the rider to lose control. A secondary issue is the spontaneous and unexpected actuation of the brakes. This can occur when a Flexiride® axle is not fully loaded. Under this condition, the torsion arm is not rotated to its normal position, which puts the brake assembly out of level. If the axle is fitted with electric brakes, this non-level condition can result in unexpected brake actuation when the trailer encounters large bumps. This can occur because the magnet inside the brake has sufficient mass to move the actuating lever during extreme bounce situations. The farther the brake assembly is rotated out of level, the greater the chance that this spontaneous action can take place.

➤ **BRAKES - Do brake magnet wires have polarity?**

The wires on a UCF magnet do not have polarity. It works like a common resistor. One wire will connect to power and the other to a ground. It is UCF's recommendation that a common ground be run from the trailer plug to the brake magnets. Do not ground each brake individually to the trailer frame or structure. Also note that the brakes should be wired in parallel, not in series.

➤ **BRAKES - How do I measure brake current or amperage?**

UCF 7" brakes draw about 2.5 amps per brake and all other brake magnets draw about 3 amps per brake. The total system amperage is calculated by multiplying this number by the number of brakes/magnets connected to the brake system. To measure the brake current the engine of the towing vehicle should be running. Disconnect the wire at the point that you wish to measure the current draw and put the ammeter in series with this line. Make sure your ammeter has sufficient capacity and note polarity to prevent damaging it.

NOTE: If a resistor is used in the brake system, it must be set to zero or bypassed completely to obtain the maximum amperage reading. The amount of current draw will depend on what point you are measuring. If the ammeter is at the plug, you will get the total current draw from all magnets. If the ammeter is connected at one of the magnets, you will measure the current draw through that magnet only.

➤ **BRAKES - How do I measure brake voltage?**

System voltage is measured at the magnets by connecting a voltmeter to the two magnet lead wires at any brake. This may be accomplished by using a pin probe inserted through the insulation of the wires dropping down from the chassis or by cutting the wires. The engine of the towing vehicle should be running when checking the voltage so that a low battery will not affect the readings. Voltage in the system should begin at 0 volts and, as the controller bar is slowly actuated, should gradually increase to about 12 volts. This is referred to as modulation. No modulation means that when the controller begins to apply voltage to the brakes it applies an immediate high voltage, which causes the brakes to apply instantaneous maximum power. The threshold voltage of a controller is the voltage applied to the brakes when the controller first turns on. The lower the threshold voltage the smoother the brakes will operate. Too high of a threshold voltage (in excess of 2 volts as quite often found in heavy duty controllers) can cause grabby, harsh brakes.

➤ **BRAKES - How often should I adjust my brakes?**

UCF recommends that manual adjust brakes should be adjusted :

1. After the first 200 miles of operation when the brake shoes and drums have "seated" ,
2. At 3,000 mile intervals, or,
3. As use or performance requires.

- **BRAKES - Why are my boat trailer brakes rusting so fast?**
Salt water is a harsh corrosion environment for a marine application. You will need the brake components to be all either E-Coated, stainless steel, or zinc plated to resist corrosion.
- **BRAKES - My brake linings are cracked, do I have to replace them?**
Usually, light cracking of the surface of a brake lining can be expected under normal use. This is not cause for replacement. However, if the lining is deeply cracked to the shoe surface or is missing chunks, your brake linings will require replacement.
- **BRAKES - Which magnet wire is the positive, they are both the same color?**
The UCF magnet is not a polarized component. Use one wire to connect to power from the brake controller and use the other to attach to ground. It is UCF's recommendation that a common ground be run from the trailer plug to the magnets. Do not ground each brake individually to the trailer frame or structure. Also note that the brakes should be wired in parallel, not in series.
- **BRAKES - Which way do electric brakes mount to the axle?**
The actuation lever should curve around the front side of the spindle. The wires should always exit the brake to the backside of the assembly when installed on the trailer.
- **BRAKES - Why aren't my electric brakes working?**
Most electric brake malfunctions that cannot be corrected by either brake adjustment or synchronization adjustments of your brake controller can generally be traced to electrical system failure. Mechanical causes are ordinarily obvious (i.e. bent/broken parts, worn out linings or magnets, seized lever arms or shoes, scored drums, etc.). A voltmeter and ammeter will be essential tools for proper troubleshooting of electric brakes. NOTE: After replacing your brake shoes and magnets you will experience a decrease in braking performance until the components have worn into the drum and finished the burnishing process. This process requires many stops to bring the new shoe's performance back to normal. This may take more than 100 stops to finish this break-in period with stops of 20 mph decreases in speed.
- **MISCELLANEOUS - How can I change the height of my trailer?**
Changing the spring mounting from underslung to overslung (or vice versa) will change the trailer frame height and change the center of gravity of the trailer. This may affect the towing characteristics of the trailer.
- **MISCELLANEOUS - How do you calculate hitch weights?**
The hitch weight for conventional, bumper type hitches should be 10% to 14% of the gross weight of the vehicle. The remaining 86% to 90% of the load will be carried on the running gear. The hitch weight for 5th wheel and gooseneck type trailers should be 15% to 20% of the gross weight of the vehicle. The remaining 80% to 85% of the load will be carried on the running gear.
- **MISCELLANEOUS - Is it okay to jack up my trailer?**
UCF recommends that you do not jack up the trailer on the suspension components because there is always the potential for damage. Bent hangers, leaf springs, or axle tubes can cause bad axle alignment with bad tire wear resulting. We recommend jacking up only on the trailer frame.
- **MISCELLANEOUS - Where can I buy UCF replacement parts that are not on your web site?**
All UCF America genuine replacement parts are available on our website. If you cannot find a specific part online, it most likely is not offered as a replacement. To double check, contact the Sales department at (800) 777-1823.

➤ **FLEXIRIDE® - Can I change my Flexiride® start angle?**

Yes, the spindle arm is a one piece forging with a splined joint connecting it to the cartridge. The splines, at 6 degree intervals, make an exceptionally strong connection while providing a range of starting angles, between +10° and -45°.

➤ **FLEXIRIDE® – My Flexiride® suspension makes a squeaking noise in function. Why?**

This only happens when the Nylon bushing used as a bearing is pressed tight against the cartridge shaft; the friction will induce vibrations and create a high pitched noise. As a consequence of the issue that a few licensees have experienced with the Flexiride® bushings squeaking, we have made some changes to eliminate the problem:

1. We have changed the bushings material from Delrin to Nylon 66 with Teflon. The new material allows less friction than the Delrin.
2. We are using a new reaming machine to ensure that there is no chatter and the hole cleans up perfectly. This prevents debris and particles from lodging themselves in the bushing.
3. The use of a retainer plate to hold the bushing in place instead of rivets also helps the bushing move freely and reduces the chance of squeaking.

Testing and field study have shown that these changes have been effective in eliminating the squeaking. However, if you experience this annoyance, you may eliminate the noise by removing the Flexiride® arm, and spraying some Silicone lubricant between the bushing and the shaft. Do not use any petroleum compound, since this will damage the rubber in the cartridge. If the noise persists, you will need to have the unit replaced by the Flexiride® licensee that provided it to you.

➤ **FLEXIRIDE® – What are the Flexiride® derating conditions?**

1. Determine the correct size Flexiride® Half Axle to do the job. Flexiride® ratings are based on maximum loading of single axle applications used on paved roads and highways.

A) For off-road or “arduous” conditions, de-rating of 10% is necessary.

B) For tandem (dual axle) applications, de-rating of 20% is necessary.

Example: Horse trailer application for 5000 lb load. tandem axle setup.

$5000 \text{ lb load} + 0.9 + 0.8 = 6944 \text{ lbs } 2 \text{ axles} = 3472 \text{ lbs (FR—3500B)}$

(Total load de-rated for off-road and for tandem axle.)

This requires a capacity of 3472 lbs/axle a Flexiride®

Triple axle setup is not recommended due to the fact that Flexiride® Axles are independent. The suspension system does not have the capability of equalizing the load such as a leaf spring system. In a triple axle setup, overloading of suspension components may occur and result in damage.

2. Changing to the Flexiride® Half Axle will not increase the capacity of the trailer, but will only help support the proper rated load put upon the trailer. If you have questions when replacing your current axle with the Flexiride® Half Axle, please consult your local trailer manufacturer.

3. Before removing the original axle system, measure and record the wheel centers' distance from the hitch point. The original trailer balance will be maintained by keeping the same distance from the hitch point to the center of the wheel. Improper balance will adversely affect handling ability, load carrying capacity and safety.
4. Unless already present it will be necessary to put a cross member on the frame in order to weld base plates, to which the Flexiride® Half Axles are bolted.
5. Flexiride® Half Axles must be bolted (using all bolt holes) to a base plate which fully supports the Flexiride® Half Axle. The optional base plates supplied for Flexiride® Half Axle mounting must also be fully supported for the entire length of the plate. For example, if the base plates are welded directly to the added cross member (new axle beam), the cross member must fully extend to the outside edge of the plate.

Any welding whatsoever, to the Flexiride® Half Axle, will critically alter the rubber and bonding adhesive properties and void the warranty.

Improper support of the Flexiride® Half Axle and any welding applied to the Flexiride® Half Axle will cause failure and may result in injury.

6. Trailer wheels must be properly aligned. Proper alignment will result in better road handling.
7. Grade 5 automotive fine thread bolts with lock washers must be used to attach Flexiride® Half Axles to the base plates or frame surface.

Torque bolts as follows:

Nom. Size & T.P.I.	Torque Range
5/16 - 24	18 – 20 ft lbs
3/8 - 24	30 – 25 ft lbs
1/2 - 20	75 – 85 ft lbs

8. If you have purchased a Flexiride® Half Axle with a splined shaft and adjustable arm, pay close attention to the following.

To obtain the best ride characteristics, the arm angle has been pre-adjusted for you to 22° down starting angle. If you feel it necessary to adjust the starting angle, do not set arm angle any higher than 10° up starting angle or 45° down starting angle. Failure of improper adjustments will cause warranty to be voided.

Maintenance:

Do not expose Flexiride® Half Axle to grease,-oil or fuel. If exposed, it will damage the rubber. Remove any grease, etc. with detergent and water.

All trailer axles should be inspected once a year. Boat trailer axles should be checked twice a year. If you need complete instructions, contact your local trailer or marine dealer.

Every time vehicle is used:

1. Check tire pressures
2. Check wheel bolt torque to 90 ft lb
3. Do not exceed rated load
4. 60% of trailer load should be in front of the trailer axle.

➤ **FLEXIRIDE® - Can I use 3 Flexiride® axles under my trailer?**

No, UCF completely discourages triple Flexiride® applications, even if the axles or half axles are derated. Because Flexiride® axles are totally independent and not equalized like a typical leaf spring set of axles, there is no ability to transfer loads from one axle to another. When going over uneven road surfaces such as driveway entries, railroad crossings, potholes or speed bumps the entire load can be put onto one axle causing severe overload and damage. It isn't reasonable to expect one axle to carry the entire load of three axles when these conditions occur, even though these instances cause only momentary over-loading.

➤ **FLEXIRIDE® - Can I weld to my Flexiride® axle or move the brackets?**

No, the Flexiride® axles contain a rubber cartridge as the core of the suspension system, which can be damaged by the heat generated from welding on the bracket or the tube.

➤ **FLEXIRIDE® - What is the design stress for Flexiride® units?**

The spindle is considered the weakest link in the design of the Flexiride® axle assembly. If static or dynamic overload occurs, the axle failure point is expected to be at the maximum stress point in the drop spindle, which is produced at the transition between the inner bearing shoulder and the seal diameter.

The design stress is based on the yield strength of the material used to manufacture the drop spindle. The spindles are designed to withstand the stress with a safety factor of slightly over 4. Based on the above, a load of 7,500 LB would produce a stress that begins to exceed the maximum design stress and yield point of the material. Permanent deformation of the spindle would occur (spindle would be bent). This bending of the spindle is considered failure. In the case of lubricated drop spindles, the lubricating side hole at the inner bearing shoulder level is an added stress concentrator, and in extreme conditions (severe overload, accident) will facilitate spindle breakage.

During fatigue testing, the Flexiride® unit is subjected to a static load of 3 times the rated load to preset the rubber. For example, the 3500 LB axle assembly, the unit would be preset to a load of 5250 LB. This helps reduce any settling that might take place during the fatigue cycling. The fatigue testing is performed at dynamic loading amplitude of 0.5G to 1.7G. The minimum fatigue of 100,000 cycles must be obtained to be considered acceptable.

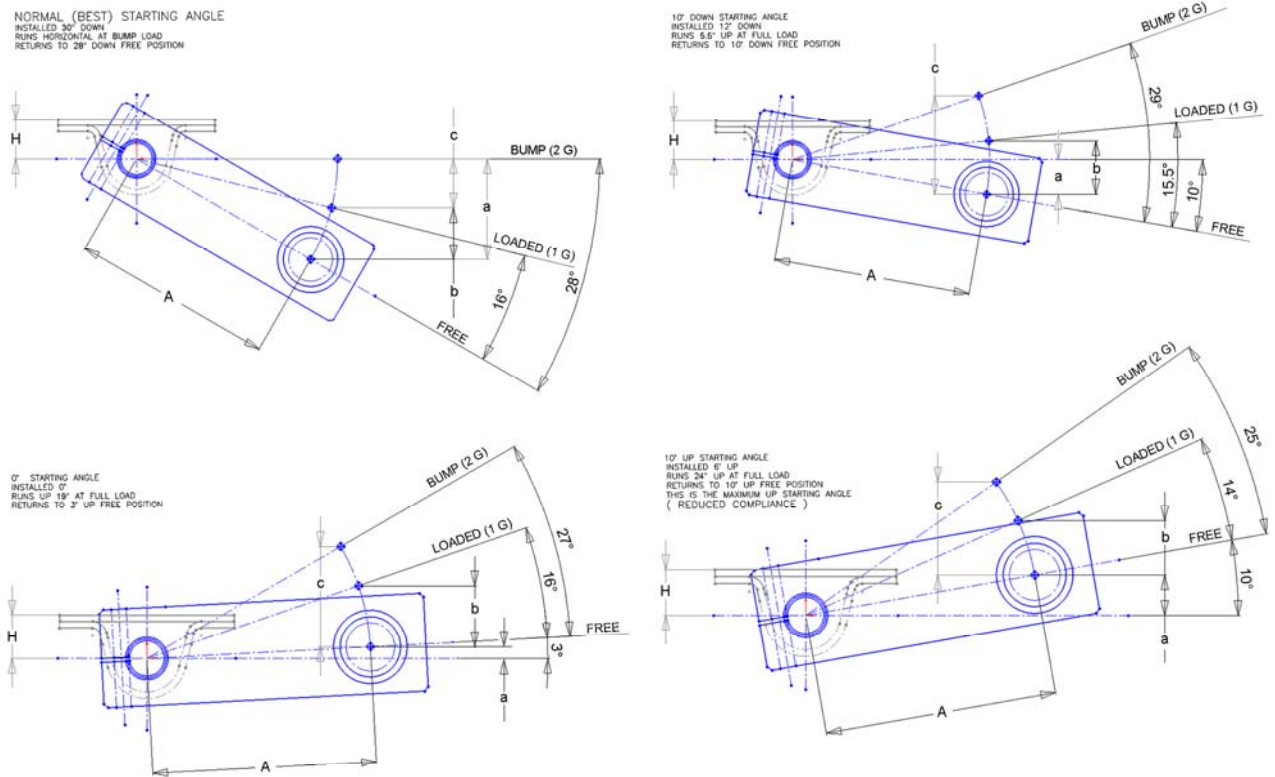
➤ **FLEXIRIDE® - What are the advantages of Flexiride® versus Leaf Spring axles?**

The UCF Flexiride® axle carries series of advantages that prove its superiority over Leaf spring axles:

- **Independent wheel action:** Soft, quiet, practically shock-free ride.



- Durability:** The cartridge construction offers superior resistance to abrasive road elements, increasing the life and durability of the axle. Because the cartridge is press fit inside the axle tube, it forms a water tight seal, thus allowing the axle immersion without having the tube inside exposed to corrosion.
- Smoother ride and longer life:** The high quality proprietary formula rubber guarantees a smoother ride and longer life. The independent suspension allows each wheel to travel totally independent from the others. A smoother ride, less sway and reduced noise is achieved with the rubber suspension.
- Progressive torque:** It increases carrying capacity as the load is applied, allowing smooth ride even with an unloaded trailer.
- Safer and stronger:** The specially engineered one piece forged spindle arm creates a system which is safer and stronger than any welded unit. The axle tube acts like an extra cross member, adding strength and preventing frame twisting. The rubber cartridge is completely encapsulated inside the axle tube, so there are no pinch points.
- Adjustable:** The splined spindle arm is adjustable for a range of starting angles to suit special applications. The axle can be built with various start angles to achieve desired trailer height.

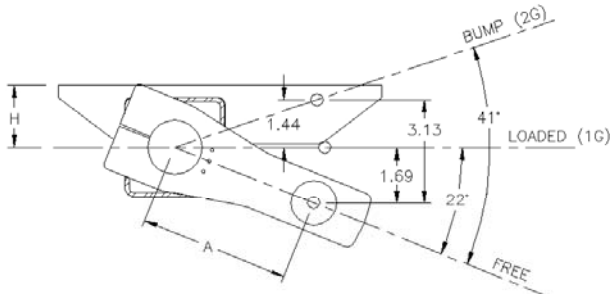


AXLE CAPACITY (Lbs)	425	550	935
A (inches)	3.50	4.50	3.50
H (inches)	0.80	0.88	0.88

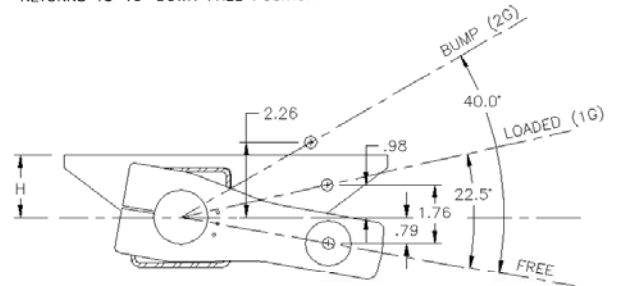
Starting Angle	For A=3.50"			For A=4.50"		
	a (inches)	b (inches)	c (inches)	a (inches)	b (inches)	c (inches)
Normal (30° down)	1.75	0.90	0.85	2.25	1.16	1.09
10° down	0.61	0.94	1.75	0.78	1.21	2.25
0°	0.18	0.96	1.57	0.24	1.23	2.01
10° up	0.61	0.82	1.40	0.78	1.05	1.80

NOTE:
 The starting angles above refer to the FR-425-S, FR-550-S and FR-935-S assemblies, with adjustable arm position.
 For FR-550 and FR-935 assemblies, with welded arm, use the Normal (30° down) diagram.

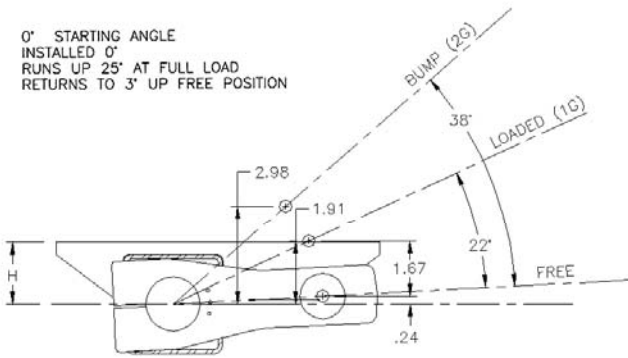
NORMAL (BEST) STARTING ANGLE
 INSTALLED 24° DOWN
 RUNS HORIZONTAL AT FULL LOAD
 RETURNS TO 22° DOWN FREE POSITION



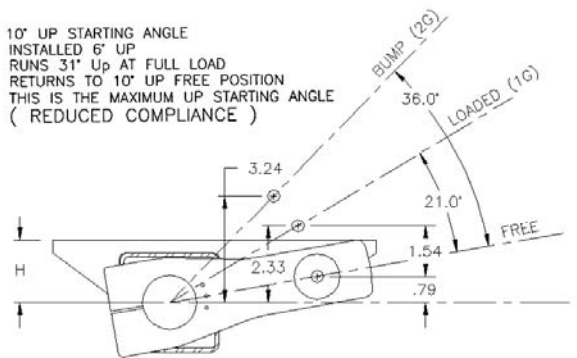
10° DOWN STARTING ANGLE
 INSTALLED 12° DOWN
 RUNS 12.5° UP AT FULL LOAD
 RETURNS TO 10° DOWN FREE POSITION



0° STARTING ANGLE
 INSTALLED 0°
 RUNS UP 25° AT FULL LOAD
 RETURNS TO 3° UP FREE POSITION

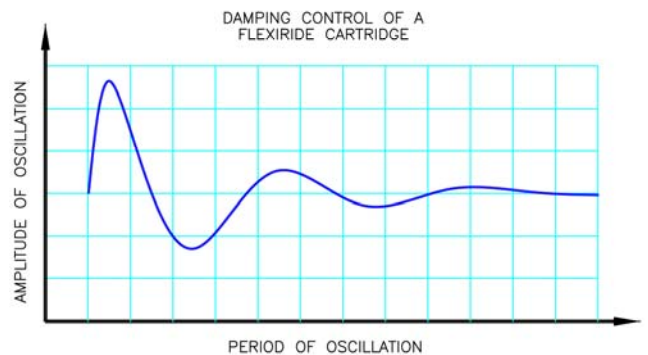
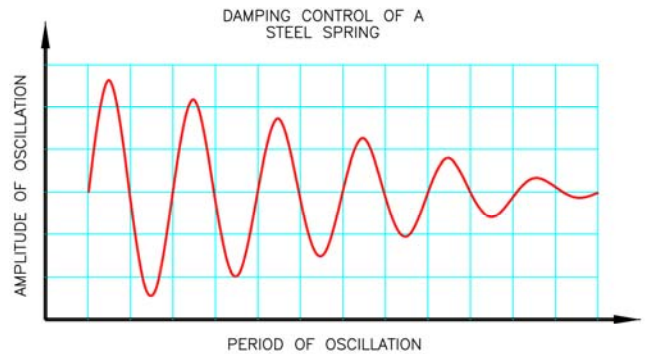


10° UP STARTING ANGLE
 INSTALLED 6° UP
 RUNS 31° UP AT FULL LOAD
 RETURNS TO 10° UP FREE POSITION
 THIS IS THE MAXIMUM UP STARTING ANGLE
 (REDUCED COMPLIANCE)



AXLE CAPACITY (LBS)	1400	2000	3500	5200	7000
A (inches)	4.5	4.5	4.5	4.5	4.5
H (inches)	1.56	1.56	1.88	2.50	2.50

- **Damping control:** Because of the rubber natural vibrations absorbing capabilities, no shock absorbers are required.



- **Easy replacement:** Unlike welded systems the Flexiride® spindle arm can be removed easily for repair or replacement.
 - **Quick installation:** The axle assembly requires only four bolts to mount reducing installation time. Half axles can also be bolted quickly to the frame, and have built-in the camber angle for correct positioning.
 - **Maintenance free:** Because there is no metal-to-metal contact, there it eliminates the need for lubrication of the components. There are no suspension parts to wear out (spring shackles, hangers, etc.).
 - **Delivery:** Built-to-suit axle system reduces lead times and inventory.
- **TOWING - How do I determine hitch weight?**
The hitch weight for conventional, bumper type hitches should be 10-14% of the gross weight of the vehicle. The remaining 86-90% of the load will be carried on the running gear. The hitch weight for 5th wheel and gooseneck type trailers should be 15-20% of the gross weight of the vehicle, with the remaining 80-85% of the load being carried on the running gear.
 - **WHEELS & TIRES - Can I change to aluminum wheels?**
Aluminum wheels are thicker through the mounting bolt area and may not leave enough stud length for proper nut engagement. Consult the wheel manufacturer for stud length and mounting face requirements and wheel nut torque.
 - **WHEELS & TIRES - Can I use wheels with greater offsets?**
Wheel offset is the distance from the mounting surface to the centerline of the tire. UCF America bearing sets are designed for wheel with 0 to ½" inset. Exceeding this offset will shorten bearing life and may lead to dangerous bearing failure.
 - **WHEELS & TIRES - What is the difference by "hub" and "stud" piloted wheels?**
Hub-piloted wheels have a center hole machined to a close tolerance and are intended to mate with a hub having a properly sized pilot diameter. The bolt holes will be bored or stamped straight through the center disc which is designed to be fastened with either flanged nuts or a clamp ring using cone nuts. Stud-piloted wheels have a center hole which provides clearance to the hub nose. The bolt holes feature a tapered seat designed for clamping with properly matched cone nuts. The cone angle of the nut must match the cone angle around the bolt hole of the center disc. Failure to properly match these components will result in catastrophic wheel loss.
 - **WHEELS & TIRES - Why do I need to re-torque my trailer wheels when I don't do that on my truck?**
Trailer wheels carry substantially more weight than tow vehicle wheels of the same size and see more rims flexing due to side loading stresses. It is necessary to re-torque them several times until the wheel nut torque stabilizes. This is especially true for new wheels that need to have the paint worn away at the hub mounting face and under the wheel nuts. **WARNING:** Be very careful to use only the recommended wheel fastening torque amount as specified for that wheel and fastener. It is possible to permanently damage a wheel that has been over torqued and may cause the loss of that wheel from the trailer.