Setting your Caster and Camber

Here is any easy guide to precisely setting up your LSR front end.

These instructions are for all LSR A-arms. Please note that some styles including Sport A-arms do not have complete adjustability. However, all other information still applies. If you purchased extended A-Arms you will be required to revalve or purchase new front shocks in order to achieve optimum performance and pro-long A-Arm life. All LSR A-Arms are backed by a one-year limited warranty against manufactures defects or defects in material only. We recommend that a professional ATV mechanic install all aftermarket parts. ***Check the end of the instructions for notes on specific models.*** Please note, the bags that you're A-arms are shipped in will be marked with the side they are to replace.

Camber

Camber is the amount of degrees that the tire and wheel is tilted in or out at the top in relation to the bottom of the tire. A tire that is tilted in at the top and out at the bottom is said to have negative camber. The farther it angles out at the bottom the greater the amount of negative camber.

For positive camber, the top of the tire is farther out than the bottom. The reason for having camber in your front end is as follows. An ATV's suspension is forced over in a corner and the suspension flexes. With everything in motion, all this force wants to flex the tire more upright, or reducing the amount of negative camber.

A tires greatest traction is achieved when more of the tread is in contact with the ground. As the bike enters a corner, the forces tend to bend everything over, adding positive camber. To make sure that the tires greatest amount of tread is in full contact when it is most needed, we set up the front suspension with a negative camber. How much negative camber you choose depends on the amount of suspension travel, and some various other factors such as the terrain you plan to ride on.

Caster

Caster is the amount of angle that the spindle has in relation to the vertical centerline of the wheel. If the upper ball joint is farther forward than the lower ball joint, it is said to have negative caster. If the upper ball joint is farther to the back than the lower ball joint, it is said to have positive caster. The greater the amount of positive caster, the more stable the ATV will be at speed. The less positive caster it has, the easier it will steer and the quicker it will turn. As the spindle is laid back, the tire has to lay over more when the front tires are turned. This adds stability. If there is not much angle, the wheel will turn more easily, making it quicker and easier to turn.

Recommended Caster: Positive		**Recommended Camber: Negative**	
Motocross:	**4.5°**	Motocross:	**4.5°**
Cross Country:	**4.5°**	Cross Country:	**4.5°**
Sand Duning:	**3 - 4.5°**	Sand Duning:	**2 - 4°**
Desert Racing:	**6.5°**	Desert Racing:	**2 - 4°**
Recreational:	**3.5 - 4.5°**	Recreational:	**1 - 3°**
TT Racing:	**3 - 4°**	TT Racing:	**1°**

Toe

The toe of an ATV measures the relation of the leading edge of the front tires to the back of the tires. Toe-out refers to the fact that the front of the tires point out. Toe-in refers to the fact that the front of the tires point in. **We recommend you set your toe-in to ¼ of an inch.**

How to Setup your Front End

Before you start this procedure, a few things need to be done first. Make sure your workspace floor is completely level. You will need a straight edge and an angle finder (available at your local hardware store). Do not attempt to set up your front end on a stand of any kind. Your quad ***must*** have the tires on, and be on the ground at ride height. Make sure that the tires have equal tire pressure from side to side. This is commonly overlooked and can significantly change your measurements.

Setting the Caster

Prior to installing your A-arms, thread the Heim joints in all the way on the upper arms. Leave the front rod end alone and back the rearward rod end out (3) complete revolutions. This is a good **starting point**. Now install your A-Arms. Tighten them completely. Rest the straight edge against the side edge of the upper and lower ball joint threads. (Make sure the straight edge is touching the same section of the ball joint threads) If the top of the straight edge leans towards the rear of your quad, you have positive caster. This is what you want. Rest the angle finder on the edge of the straight edge. This will tell you the exact caster setting. You may need to adjust the Heim Joints by turning one in or out more than the other to get the appropriate setting. Refer to the above recommendations for how much caster to run.

Setting the Camber

Setting the camber is a much easier process. Rest the straight edge against the outside of your front tire (making sure both wheels are pointing straight and you are touching the same part of the tire, top and bottom). The top of the straight edge should lean inward for negative camber. Now put the angle finder against the straight edge and note the reading. If you need more or less camber, you are going to have to remove one of the ball joints in order to adjust it. First remove the cotter pin and castle nut off of the ball joint, then "smack" the side of the spindle right where the ball joint goes through the spindle to jar the ball joint loose. It will take some pressure to remove it, and it helps if you lift up on the arm itself as your hitting the spindle. For more negative camber, turn the upper ball joint into the a-arm (clockwise). *On most A-Arms The upper ball joint will require the jam nut on the outside and the lower ball joint will require the jam nut on the inside of the arm when properly set up.

Toe Adjustment

For this all you will need is a tape measure. Make sure the handlebars are straight, then make sure both tires are pointing straight forward. To do this, measure from the inside of one tire to a point on the chassis. Make a note of the distance. Then on the other side, measure from the exact same points as you did on the previous side. These measurements need to be exactly the same so that you know your tires are pointed the same. Adjust the tie rods so that this measurement is the same. Now that you're sure the tires are the same distance apart, you need to measure for the toe in. On the front of the tire about half way up, place one end of the tape measure on the inside of the tire and take a measurement from the same point on the other tire. Note this measurement. Then repeat this for the rear of the tire, the same height from the ground as you did on the front, and make a note of this measurement. The front measurement needs to be a ¼ of an inch less than the rear measurement. Adjust the tie rods so that you achieve this measurement. And remember, count how many times you rotate the tie rod, then rotate the other side the same distance, so you can keep the tires going straight ahead, then take your measurements. One full turn on both tie rods will change the toe about $1/8^{th}$ of an inch.

Finalizing Installation

Make sure to completely tighten all nuts and bolts on your new front end to the manufacturers recommend torque and install your cotter pins. Make sure to add grease to all the pivot points that have grease zerks. Your ball joints come pre-greased and don't require lubrication at this time. Depending on the areas you ride, you might need to grease them in the future. Always check the boots to make sure they are sealed. If you notice any mud or rust colored water coming from the inside of the joint, you probably have a torn boot. The joint needs to be replaced if any foreign object gets into the boot where the grease is as they will wear out extremely quick. Never point a pressure washer directly at the ball joint, as it will force water and any dirt into the joints, therefore significantly shorting their life span. The joints will last a life time if they are properly maintained.

Specific Notes for your Model ATV

Honda TRX450R and TRX400EX: You must grind notches into your chassis at the lower A-arm connection points to make clearance for the zerk fittings when the A-arms compress completely. Failure to do so will result in the zerk fitting breaking off, and leaving the pivot tube open for contamination, and loosing the ability to grease them.

YFZ450: You will need to trim the radiator shrouds on some plastics to clear the upper a-arms at compression.