Specialty Products FAQ

Series numbers 23510-23540, 23710-23730, 23800-23830

Offset Ball Joints

Q1: Can I adjust this ball joint once it is installed?

A1: No, this offset ball joint is a press fit. The only way to move it to a different position is to press it back out of the axle housing and reinstall it in the desired position. The provided template is used to help make sure the ball joint is installed in the proper position the first time.

Q2: The shaft of the ball joint moves up and down in the housing or the ball joint is shorter than the stock one. Is this normal?

A2: Even though this is called a ball joint it is really a pin joint. There is no ball socket in the housing. The pin rides on bushings and is designed to move up and down in the housing. The lower ball joint is a standard ball joint and it positions the knuckle assembly. So don't be alarmed if the ball joint seems shorter than the stock ball joint, it will pull down when the stud nut is tightened.

Q3: My vehicle is lifted, can this ball joint help get back some of the caster that was lost?

A3: Yes. This ball joint works great for adding positive caster to a lifted vehicle without increasing front differential pinion angle. This will make the vehicle track and drive better.

Q4: Why would I want to adjust caster using your pin joint anyway, can't I just use the other caster solutions you sell – either cam bolts or adjustable-length control arms?

A4: There are various reasons to choose each solution. The benefit of being able to change caster at the steering axis with our upper joint series is that it is the only way you can change caster without changing front driveline running angles. This can be important on 4WD vehicles especially if they are lifted – as it makes possible an improvement/correction to tracking without having to put up with driveline vibrations caused by non-ideal running angles.

Q5: Why does my pin joint fit loosely in the axle end yoke after I have removed the old pin joint?

A5: Some aftermarket pin joints (such as the "Moog Problems Solver" series) are slightly oversized compared to the OE press fit. Once they are used on a vehicle, they will leave the axle with an oversized receiving hole. Moog designed their Problem Solver series of balls joints to be oversize for both the

pin joint stud and housing to insure a tight fit in both areas even if the mating parts are slightly oversize due to previous service work. Unfortunately, this does permanently alter the part interfaces for all future chassis part replacements like the 235x0 series which uses OE specified press fit tolerances.

The continued removal and installation of same-size pin joints from the vehicle will eventually enlarge the pin joint receiving holes, resulting in somewhat less retaining pressure on the joint during subsequent installations. However, since the pin joints operate in compression, as long as insertion still requires some effort, the parts should still work properly and safely.

Q6: The steering knuckle is very tight or will not turn at all after installation of the 23800-23830 ball joints. What could be the problem?

A6: Due to manufacturing tolerances in machining the yoke and knuckle, as well as between OEM and aftermarket lower ball joints, we have found that the SPC upper ball joint may be pressed up by as much as 1/8" as the lower ball joint nut is tightened. This can be seen as a slight gap between the flange of the ball joint and the upper surface of the axle yoke. This gap is acceptable because the SPC upper ball joint is designed with a taller housing to retain proper contact with the inside of the axle yoke even when raised off the yoke up to ¼". The weight of the truck is carried only by the lower ball joint, meaning the vertical position of the upper makes no difference to the durability or alignment of the assembly.

Q7: I have heard that offsetting the upper pivot location could cause a bind that could result in memory steer?

A7: All lower joints in the various Dana and AAM solid front axles that use 'pin type' upper joints have a truly spherical 'ball' joint at the lower position. This means it's possible to avoid bind with an offset upper pin joint, but only if the new offset housing 'aims' the pin at the center of the lower ball. Consequently, each housing in our series is not only offset, but if you look closely it is also angled proportional to the offset to assure that the pin is aimed at the lower joint ball center to avoid bind. Don't be fooled by knock-offs that don't know their geometry. Only buy from SPC.

Certain series upper pin joints share many applications and appear to be similar to a competitive ball joint that is installed in the lower position on the knuckle. They say theirs only adjusts camber while you claim camber &

caster.

Q8: How do you get caster and camber change while they only get camber?

A8: The competitive part offsets the stud, but not the location around which the knuckle rotates for steering, so the knuckle can be tilted to change camber, but the steering axis doesn't move, so caster remains unchanged. SPC's actually moves the pivot location, so both camber and caster can be changed, and depending on installation orientation, the change can be any ratio from camber-only to caster only or a combination of caster and camber.

Q9: So why do competitors offer one joint while you sell a whole series?

A9: Because both camber and caster are changing by means of the same offset (of the pivot location), the amount of offset built into the joint MUST be consumed in some combination of caster and camber change. So the total amount of change needed between the two needs a certain amount of offset, so a series of different offsets allows different total amounts of change to be achieved.

Q10: What about strength? I use my rig hard with large tires. Will either joint design hold up?

A10: Our offset-housing/pivot approach takes advantage of 'surplus diameter' in the OE joint design – so we have room to offset the pin without having to make it smaller in diameter than the OE design. So if the OE joint holds up to your tire size and driving style, so should ours. We of course cannot rate others' designs, but it's easy to notice that their offset pin approach requires a 'necked down' cross section in the stud. Each consumer and professional installer must make their own decision as to whether they think a necked down and offset stud in a load bearing position is a good idea. Both the OE stud and ours use very high strength steel with very specific heat treating, to maximize strength. There may be some materials out there that can make up for such a mechanical disadvantage with metallurgy, but we are not aware of them.

Q11: I greased my SPC upper joints and the top 'cap' blew off – why?

A11: Most likely because you greased it 'too fast'. Like most SFA Upper Pin joints, SPC's are high-precision machined designs that have minimal internal 'space' to fill up with grease. They also have a deliberate – but small – flow path where grease can make its way to where it is needed inside the joint. The small size of the 'path' for grease to flow cannot be increased without

compromising the strength of the joint, but the side effect is that it can only 'flow' grease at a low rate (limited volume). Because grease can act like hydraulic fluid and generate significant pressure when the flow in exceeds the flow out, if a lot of grease is injected too quickly, something has to give – and the weakest point is usually the swage that holds the top cap on. This is NOT a defect of the joint manufacture or design. Typically this is a result of using a pneumatically driven grease gun but in some rare cases could happen with a manual gun, utilized in an exuberant way.

Reference Numbers: 23510, 23520, 23530, 23540, 23710, 23720. 23730, 23800, 23810, 23820, 23830