

U-JOINT FAILURE

Frank Lewis, Austin, TX
1965 Cortez

I want to let you know that the famous 16-bolt fix on the left U-Joint failure problem turned out to be a worthless fix in my case. My mechanic came up with a better one, and I believe you should pass this on to those with the '65 type of U-Joint fastenings. It may save some poor joker a second failure, which is what I enjoyed.

Here's how: I had completed two solid months of overhauling everything under the engine and everything that bolted to the transmission. This included, of course, complete disassembly of the wheels, replacing of one worn wheel bearing, magnafluxing of spindles (OK), careful 450 lb torquing of spindle nuts to the minimum end play, and, of course, in view of the warnings, removal and inspection of axle bearings, and replacement of the left one, as well as installation of 16 new U-Joint bolts, lock washers, 30 lb torque carefully applied--10,20,30--and safety-wiring exactly as shown in the bulletin.

Everything under the front end was cleaned down to clean paint or bare metal and undercoated in wheel wells again (factory stuff peels off--mine doesn't), priming and painting everything with Rust-O-Leum and careful reassembly of entire steering linkage and front wheels to torque specs. I was very proud of my work and the way it looked, better than new, and not one thing worn, dirty, or suspect. I even replaced every wheel cylinder, the slave cylinder, and all rubber hoses--hydraulic and water. Greased, wheel bearings packed, and drove her to my garage for wheel balance and alignment.

SO--DISASTER! At noon, my friend called to tell me the left in-board U-Joint had disintegrated. Can you imagine my reaction to this?

Well, my mechanic disassembled it all as I thought of the almost \$400 the prior experience cost me 11 years ago. As before, the thrashing U-Joint yoke hit the transmission control cover snout and broke it clean off right between the back-up light and little breather cap on top.

The axle yoke from the transmission was damaged where the U-joint cap split in two and galled the yoke in pulling loose. It appeared to us that the bolts did not fail in shearing (brand-new) nor in loosening up, so it had to be something else. It looked to us as though one bolt simply pulled out of the threads in the yoke. Both bolt and yoke threads were damaged, but the bolt's much more. In fact, the yoke bolt-hole threads later took a new bolt clear to 30 lbs torque as normal. So, apparently the bolts are not threaded deeply enough, or the yoke threads are not tapped deeply enough for the job they are expected to do. Its companion bolt sheared off as U-joint cap twisted and broke. The yoke was looking useless due to some damage and the fact that the threads in one hole were damaged, though not badly. We would have been able to use the yoke, but not trust it. With no new yokes to be had, we had to proceed in another direction.

My mechanic turned out to be a whiz. He looked it all over and had two terrific suggestions which is the heart of this letter.

No. 1: The axle yoke could be salvaged if a different bolt-hole was installed than recommended. That turned out to be a longer (2") No. 8 hardness bolt, five extra threads, tightened in to 30 lbs torque on a lock washer, then--on the back side of the yoke, a self-locking nut turned onto the end of the long bolt up as tight as an open-end wrench could get it.

Friends, this is the fix that we should have had from Clark in the first place. No way this bolt fix can possibly pull loose. It looks beautifully secure, and has proved itself in a long trip. Not the slightest loosening of any of the bolts. Safety wire? Not needed, though it could certainly be installed if one wished to drill the bolt heads. ut with a lock washer, adequate torque, and a nut on the other end, too, that bolt is as secure as you could possibly wish.

Now, one little trick. You cannot use a second lock washer on the end of the bolt under the nut. You must use a tapered self-locking nut only, because a standard nut over a lock washer impinges on the very corners of the nuts which secure the axle bearing carrier to the trans-axle body. There is barely clearance with the tapered lock-nuts alone, but that is enough. Anyone wishing more clearance could easily file or grind off tiny corner tips from the bearing carrier nuts--but I see no reason for this since those self-locking nuts aren't about to loosen up and back off.

I am in the process of replacing Clark's bolts on the outer U-joints at the wheels, too, but no hurry about that. There are more threads in those holes than their little short bolts ever reach. I am fitting new bolts trimmed off to screw entirely into the next-to-the last thread in those holes as I arrive at 30 lbs torque.

One reason for the failure of Clark's bolts this second time, I am convinced, is that they did not lengthen the new bolts the slightest over the original ones that were installed without the thickness of a lock washer under them. Thus, the new bolts may be more secure about loosening up, but they do not penetrate the axle yoke thread holes as far as they would without the lock washer. Pityfully short thread contact, in fact; as we measured it on the pulled-out bolt, no more than 5/16th inch, and closer to 1/4th. Certainly not enough.

I'll have more for you later. I learned so much about short cuts, tools, 450-lb torqueing, etc. that I believe would be of aid to others in the fraternity who elect to struggle with front-wheel maintenance. My first suggestion is: DON'T! But if, as seems obvious, more and more of us must resort to our own maintenance, then the more tips on how to do it, the better.

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15 March 1981

Dear Notos and other Cortezzers:

Winter over here--no snow! Wonderful; time to get the old Cortez rolling. The trip this Summer is to take us home to Texas, for good--hopefully, it will make the trip without the usual troubles. Going to have to work at it, too, since must tow my son's WW II restored Jeep behind. Intend to install, temporarily, a trailer inertia brake system to tie into the Jeep's. Don't relish braking two vehicles on one set of brakes.

Have not had time to think of Cortezzes much lately what with Winter and other things, but wanted to pass a couple of things along to you that I learned in my massive front-end disassembly and overhaul last Spring.

The Northeast Cortez Club printed in their newsletter my suggestion on replacing the Kent U-joint short bolts with longer ones through the flange, locking them up on the back side with self-locking nuts. This worked beautifully on my 1100-mile jaunt with the kid last Summer--no sign of loosening of any bolt, this after my bitter, bitter experience of two previous failures.

Also, they mentioned, for someone's good, I hope, that the transmission control assembly snout that always breaks off circumferentially with inboard left U-joint failure could be welded back on by a MASTER welder--not a gas station vocational school type. Worked beautifully, for \$20.00 instead of \$265.00--even if those cover plates are still available.

The flanges are not, therefore, if damaged by U-joint failure, as both mine were, cannot be reused unless my long-bolt fix is resorted to. This saves the galled flange with its ruined threads. The alternative? Obviously, finding another flange in a junk yard, or another transaxle.

Some thoughts on that 450 pounds of torque on the spindle nut on whatever series of vehicles besides 1965's that sport them.(the blankety-blank, *,/,+ (*) things!) I completely disassembled my wheels, replaced one wheel bearing, wheel cylinders, hoses, etc.

The BIG PROBLEM was that 450 pounds of torque. How to get it? I called a half dozen shops to which owners might take Cortezzes for wheel bearing work. Not one of them was capable of coping with that 450 pounds. No such thing available as a torque wrench in any shops beyond 150 lbs. for engine head bolts. Not even truck shops have huge torque wrenches, and they are HUGE! Four feet long, with another four-foot extension handle absolutely necessary.

My theory on spindle failures that I have not seen brought out in any literature is somewhat cynical and simple. When innocent people have taken their Cortezzes into the usual Chrysler or other shops for that wheel bearing packing and reassembly, they have NOT gotten proper service. The mechanics I talked to said they would service them like any other wheel bearings--that is, snug them up tight, spinning the wheel, then back off and snug up again to about 15 foot pounds, and install the roll pin. How would they know different?

Inasmuch as they know nothing about bearings requiring huge torque readings on the nut, they would handle the job as they always do-- particularly in consideration of the lack of 450-pound-capacity torque wrenches.

How did I do it, then? Well, by more luck than cunning, I ran across such a wrench belonging to a tool rental place that normally did not rent it and had never rented it. But I talked them into it for five bucks a day.

I fabricated the two adapters needed (where do you get them otherwise?) And just how would a shop do this job without the wheel adapter needed to twist that 450 pounds? The answer is: they would not, therefore, they would not put on the required torque, thus loose wheel bearings, thus incipient failures, as have apparently happened copiously, here and there.

I built the adapters out of scrap from the High School machine shop scrap bin for about a total of \$20.00, including welding and purchase of a huge screw, #8 hardness, to be welded onto the wheel twister plate. When I mentioned such adapters needed to several mechanics, they almost laughed at the absurdity of procuring such odd-balls.

After installing one new wheel bearing, I found the spacer needed to be longer. Rather than fool around with the Kent people, I did what most machine shops do--used shim stock, .001; cut it into washers by tracing the spacer on it, then adding them one at a time and torquing (what a job!) down until I got the recommended end-play.

My point in all this is that shops are not prepared to do a good job on those wheel bearings, but most owners probably are not equipped with the tools to do it themselves (what of those huge 3/4-inch-drive sockets I had to buy?), therefore, those wheel bearings have been taking a real beating. No wonder there have been failures.

I can only say--it can be done, but you've got to find one of those torque wrenches. The question is--Where? There are a lot of little Podunky-sounding towns in that directory list. Maybe in LA, but not in Podunk. I was lucky. For all I know, my rented wrench is the only one in Maine.

Another point: does everyone know that to disassemble the drive shafts, remove the U-joints at the wheels, they should jack the wheels up to about level driving position? If they are left hanging at the bottom of the suspension travel, the disassembly of almost everything becomes almost impossible.

The two most useful tools I found for my wheel work were a small hydraulic jack and a Sears two-foot pry bar with the 90-degree crook in one end for removing nails. Beautiful! I used it constantly--in fact, found it would pry out the U-joint flange that the spindle nut snugs up to right off the splines without needing the adapter I built. Had to do that a dozen times to get the right end-play and to finally get 450 pounds of torque simultaneously with getting roll-pin holes lined up.

Oh, what a chore! Over and over again. But, it is possible. I feel my front wheels are in better shape than when they left the factory.

Another point: I almost discarded a somewhat worn U-joint when I looked all four over. Well, when my inboard joint failed, after installation of Kent's 16-bolt fix and driving it into my local garage for wheel alignment, I was up the creek. No replacement joint for the destroyed one, and a trip three days away. I'd already installed my one new one.

As you know, a badly worn U-joint has many thousands of more miles in it. I frantically searched my trash bins for the worn joint I thought I had thrown away (lousy memory), and was about to give up the trip and order a new joint from Kent when I found the old one in a box in the garage corner.

The mechanic agreed that, though worn, and should be replaced soon, it was useable--so we installed it and am going to replace (but keep it) before another trip. But, it took us on our 1100-mile trip last Summer, and without it, we would not have gone. How much longer will those joints be made? They are an odd-ball, and I found only one factory making them, and we got one from them but have never been able to get another. Kent's are much more expensive, if they have any. Lordy, I hope they do.

So, enough is enough. Thought I'd send on these points that have bugged me. Hope you can find some use ofr them, if someone else has not already come up with same or better tips.

Looking forward to Cortezzing again. Naturally, I have a glitch right now. Went out today to charge the battery and check her out, and, sure enough, after starting beautifully, running nicely, everything checked out for safety inspection this week, on shut-down and attempted to re-start--nothing. A click, massive voltage drop on voltmeter to bottom of gage with every turning on of any electrical switch, and no starter.

Brother--how I hate to go into that electrical system. It has always been a nightmare, particularly the starting circuit. Probably a short somewhere. That's a Cortez for you. At least, it looks pretty, sitting there juiceless.

Best to all of you

Frank Lewis