

CTM U-joint Installation Instructions

By BillaVista



First, here is a word for word transcript of the official CTM instructions:

Thank You for Purchasing CTM Heavy-Duty Rebuildable Front Axle U- Joints

Inside this box you should have two complete assemblies.

Each one consists of: 1 cross, 4 bearing caps, 4 o-ring seals, 4 clips & 4 grease fittings.

A great deal of work has gone into the development of this product and if installed properly and greased periodically they will provide years of trouble free service. The cross has two clearance cuts in it to aid installation. These joints should not be installed into a stock axle shaft as they are made of much stronger material and will cause the axle to fail prematurely! Use only high quality chro-moly axles with these joints.

Installation Instructions:

tools needed

external snap ring pliers with 90 degree bend

A piece of brass or hard wood

shop press or good machine vice

grease gun with needle fitting

9/32" socket, ratchet, and short extension

Note: be careful not to overextend the snaprings upon installation!

#1 Install 2 full circle clips onto cross opposite each other followed by 2 o-rings, hold u-joint so that the cut-out side that has the clips and o-rings on it faces you, then hold the clip into the cut-out area while installing this end into the yoke first. You may have to LIGHTLY tap the opposite end of the u-joint to get it into the yoke, use something like brass or wood, NOT the hammer.

#2 Proceed to install each cap carefully using a shop press or good machine vice being careful not to misalign the cap or the cross, stop once the clip groove is past the inside

flat on the yoke and then install the first clip, now press u-joint in opposite direction to set the clip against the inside of the yoke. [tapping the base of the yoke helps set the cap also]

#3 Now install the second cap by pressing part way down stopping slightly before clip groove emerges and spread clip onto cap then push cap all the way down till clip groove is completely visible then install clip all the way into groove and press that cap back against the inside of yoke till the clip does not spin with finger pressure.

#4 Repeat this procedure for other side. It will be slightly more difficult because now you will have less room.

#5 Install the grease fittings and grease the u-joints Check the movement of each axle, some SLIGHT drag is okay but if it feels tight then do not install into vehicle until axles move freely.

If you have any questions call CTM at (949-487-0770). It may be necessary to remove the grease fittings before installing axle into the axle housing. **One thing that is very important is to make sure that your axles do not contact each other at the base of the yokes when the wheels are turned, look for this to occur on sharp turns in four wheel drive. Some steering stop adjustment may be necessary to prevent this. Happy Trails....*

LIFETIME WARRANTY AGAINST BREAKAGE only when used in the application it was designed for

PATENT PENDING

BillaVista's CTM U-joint Assembly Instructions



Naming Conventions

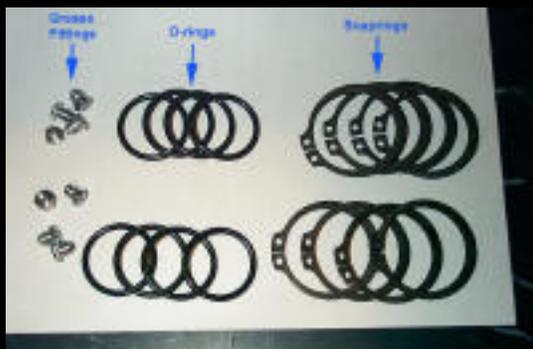
For clarity I have illustrated the names I shall use for the parts of the CTM U-joint and kit in the following pics to the left.

Here is a front view of the joint...



...a side view of the joint.

The main body I will call the "cross", the bearing journals "trunnion", and the bearing caps "caps".



The supplied hardware kit.

Simple stuff, sure enough, but by now you know I'm a fanatic for clarity and accuracy.



In the "tools needed" section of the official instructions with the CTMs say "shop press or good machine vice." I had a piece of junk bolted to the bench where a vice should go, so I took this opportunity to rationalize the purchase of a nice new vice.

Hey - when Axle Jack says get a good vice...you get a good vice!

You'll want one with jaws that open at least "



1. Take a joint, remove a pair of opposing bearing caps, and onto each trunnion place a snapping followed by an o-ring.



2. Hold the cross so the CTM label faces you and the cut-out is at the top facing you. Place the snapping in the cut out area (red arrow) and slip this trunnion into the yoke first.



3. Even with the snapping in the cutout (red arrow) clearance at the opposite trunnion will be very tight (blue arrow)



4. Use a brass or hardwood drift to GENTLY tap the trunnion past the yoke ...



... until the U-joint sits fully in the axle yoke.



5. Carefully install a bearing cap on the trunnion by pressing it through the hole in the axle yoke.



Start by using your fingers, being extra careful to keep the trunnions, caps, and yoke bores all lined up, and making sure the o-rings and snaprings aren't pinched or caught up...



6. Once the cap is lined up and finger tight proceed to press it in using your vice or shop press. When doing the first one, be sure to use a rag to protect the end of the opposite trunnion (yellow arrow) from being marred by the jaws of the vice.



7. Pause partway once the cap protrudes past the inside flat of the yoke. Spread the snapring with pliers and slip it over the cap (yellow arrow).

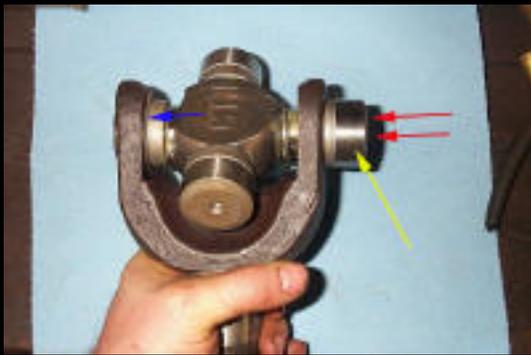


8. Continue to press the cap on until the snapring groove (yellow arrow) is fully inside the yoke.



9. Install snapring in snapring groove using snapring pliers (yellow arrow)

(snapring, snapring, snapring.....hmm, funny - after you say it to yourself 36 times the word loses all meaning!)



10. Place the other cap on its trunnion (yellow arrow) and using the brass or hardwood drift tap the joint in the direction indicated by the red arrows to seat the snapring (blue arrow) tightly between the flat on the inside of the yoke and the snapring groove in the cap. Set the cap and snapring in this manner so that you cannot spin the snapring in its groove with finger pressure.



11. Continue pressing the second cap on with your vice or press and continue as per the first cap install.



12. Remember to pause and slip the snapring over the cap, press cap until snapring groove is visible inside yoke, and insert snapring in groove



13. You must also press joint back in opposite direction to seat cap and snapring. I found it necessary to place cap over a large socket and tap the opposite cap to seat the snapring



When you have finished installing both snaprings and clips, the cross should rotate freely in the bearing caps with no hint of bind, but you shouldn't be able to spin either snapring in its groove just by trying to turn them with your fingers



14. Continue by removing the caps from the remaining 2 trunnions, and installing an o-ring followed by snapping onto both.



15. The trickiest part of the CTM installation is getting the cross in the second yoke. Because of the size of both the U-joints and the Superior Alloy shafts clearances are quite tight. You will have to carefully align the trunnions with the yoke bores...



...and make use of the second clearance cut-out (yellow arrow)...



...too get the trunnions to pop through the bores. But it will fit, just be patient, and don't hammer or force anything but feel free to apply a little persuasion with a brass drift.

Not only is this trickiness more than made up for by the fact that there are NO needle bearings do drop, crush, get trapped etc - but if you're struggling, remember that the parts fit tightly because of their maximum size and strength - which is exactly what you want!



16. Once the cross is situated in the yoke of the second axle, proceed as above to press on the first cap



17. Stop when the snapping groove is inside the yoke

Don't forget to frequently pause and admire the amazing beef of your super-cool new axles and U-joints ;-)



18. Install the snapping



19. Install the final cap



20. Final snapping in place

AWESOME!



Very cool, VERY beefy, - form and function in one sweet package.

installing the CTM's was a JOY! I have never had such an easy time installing u-joints. I didn't have to force anything, no dropped needles, no getting the whole thing assembled and one cap wont sit right and you realize a needle has fallen over and you have trapped it - jeez I hated that! I love these joints. Down with needle bearings I say!



21. Install the grease fittings in the ends of each of the caps and grease the U-joint at each cap with a high quality synthetic grease..

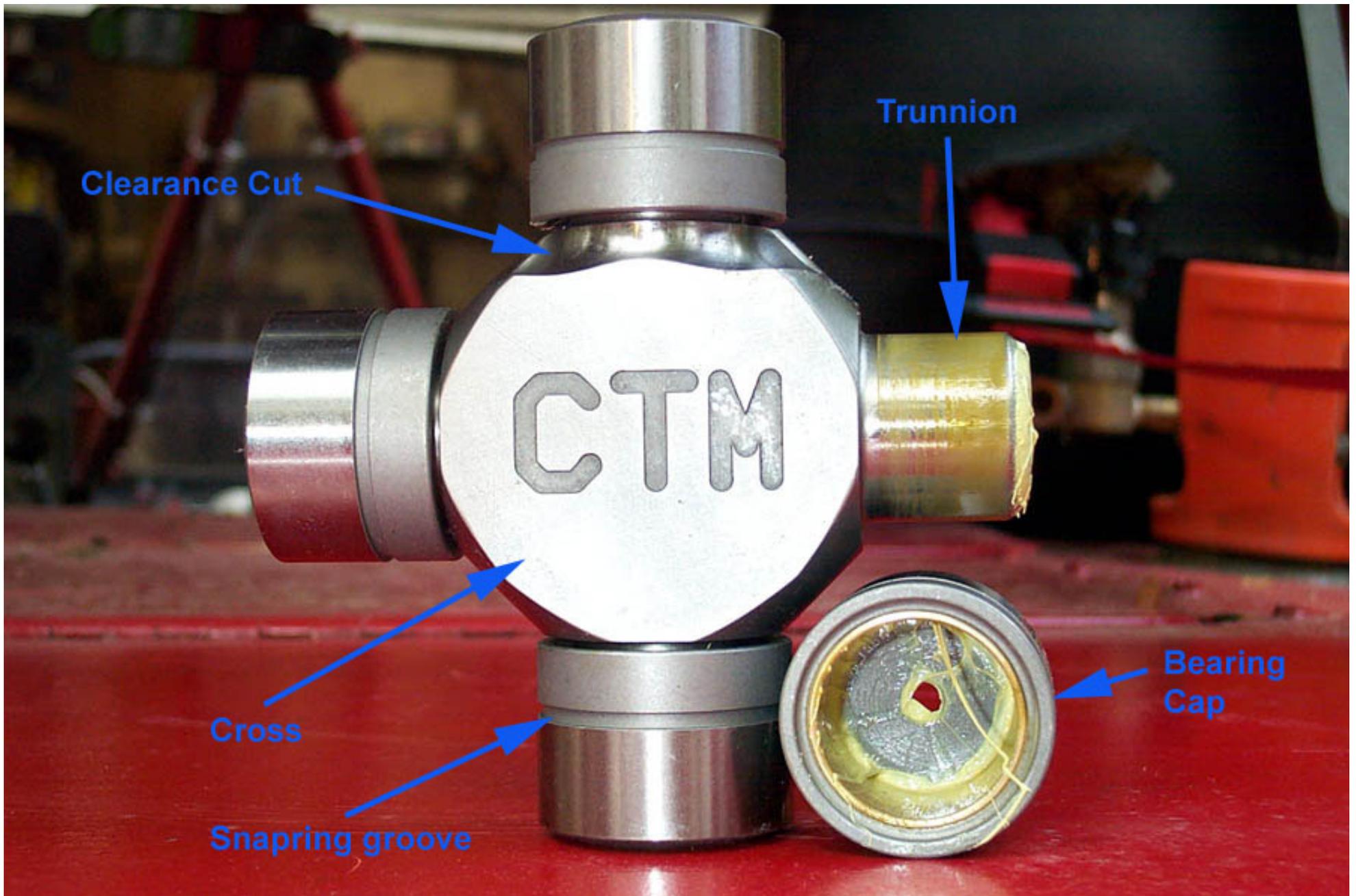


22. Before installing the axle assemblies into the axle housing - do a final check that all yokes move smoothly and freely with no binding; that all caps are greased and grease fittings are installed; and that all snaprings are firmly seated in the groove and do not spin under finger pressure.



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Clearance Cut

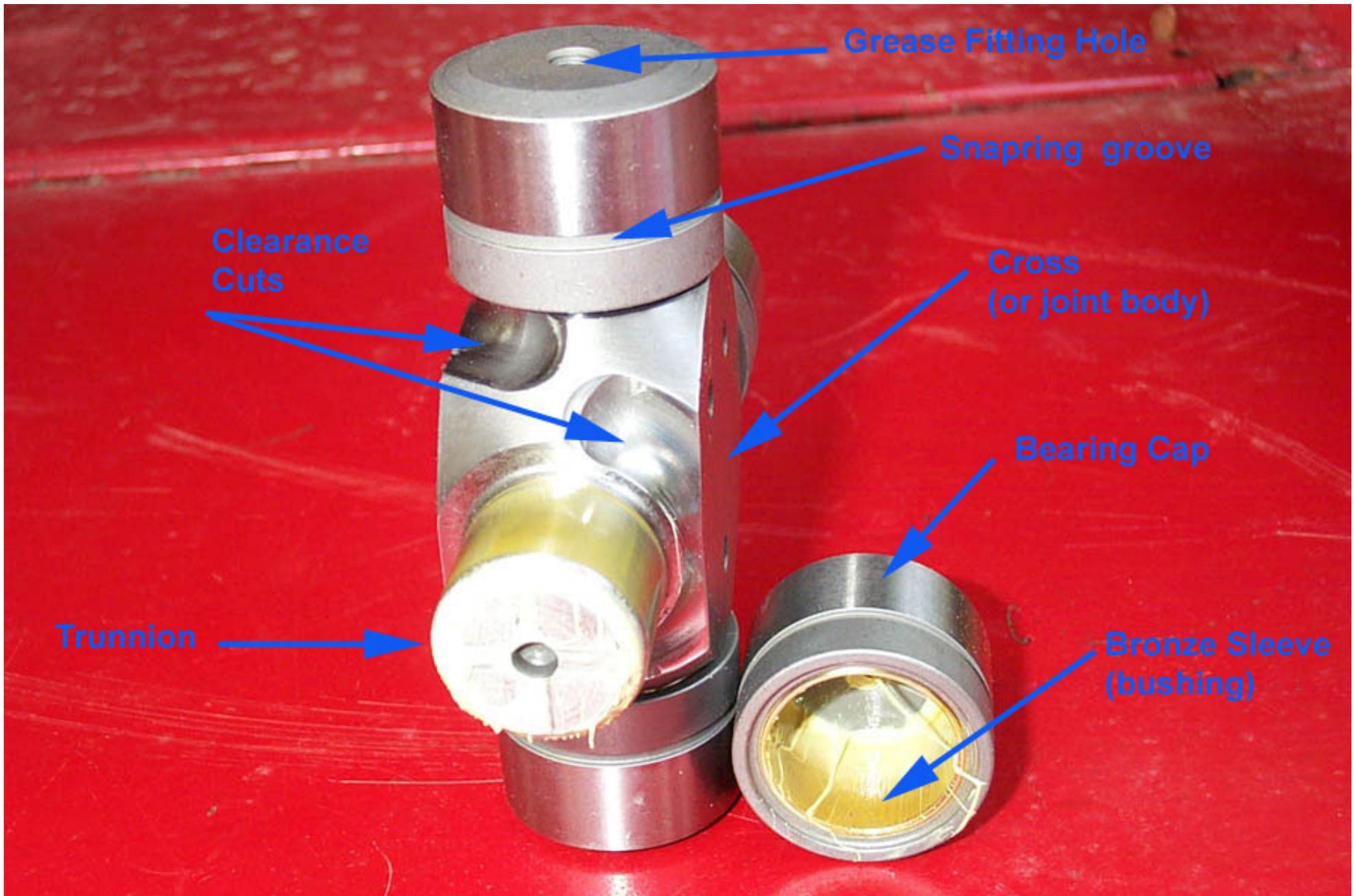
Trunnion

CTM

Cross

Snapping groove

Bearing Cap



Grease Fitting Hole

Snapping groove

Clearance Cuts

Cross (or joint body)

Bearing Cap

Trunnion

Bronze Sleeve (bushing)