

# SERVICING FIXED-TRIPOD CVs



**This less-familiar style of CV appears on some popular imports. It's a service opportunity for those who know how to fix it.**

Repair and service of constant velocity joints is getting to be big business. Those darn protective boots can get unprotective in a hurry from wear and road hazards. Odds are that most of the joints you see damaged are the outer ones—the ones that catch all the abuse.

The odds are also good that most of your ex-

perience has been with the Rzeppa, or ball-and-cage type CV.

Enter the fixed tripod CV. Less common than the Rzeppa, it's still used on popular imports such as the Renault Alliance, Toyota Tercel, and Nissan Stanza. There you go—three good reasons to learn more about them!



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Some folks consider these joints to be a real headache. The tripod piece—sometimes called a tulip or “bear claw”—is factory-pressed into the axle shaft. When the bear claw wears out, you usually have to replace the entire axle assembly. Usually.

At presstime, at least one manufacturer (Rockford Constant Velocity, Rockford, IL) has developed service kits for these fixed tripod CVs. They offer a replacement bear claw and assembly kit you can install yourself, provided your welding skills are up to snuff.

The basic kit for these CVs includes new inboard and outboard boots, a new three-legged retaining clip, a new centering button and spring, grease, and assembly hardware.

While we haven't covered every aspect of axle R and R, the job is similar to the procedures used on

other front-drivers. We do mention those tricky little double roll pins that secure the Renault inboard joint, however.

Which joints are bad, you ask? If the boot's broken, was the joint making noise? If so, for how long? Any joint which has run with a torn boot and no lube is suspect. Use some discretion when inspecting any joint. Check for excessive wear on the races of the bear claw. A claw with severely cracked, chipped, or gouged races is junk.

You may feel more comfortable with complete axle replacement. Parts availability and welding expertise vary from shop to shop. Either way, the procedures shown here also apply to cleaning and rebooting a still-serviceable joint. At least now you have an alternative to trashing the whole axle.

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# 1

You'll have to remove the *double* roll pin set to detach the inboard joint from the drive stub. Dig away the blob of silicone covering the pins and drive them out with a long  $\frac{3}{16}$ -inch punch. Then pull the joint from the drive splines.



# 2

After removing the axle assembly from the car, clamp it in a soft-jawed vise. Be careful not to damage the inboard boot clamp—it's not included in the kit. Pull the boot back and remove the outer housing of the inner joint with a soft mallet. Don't smash the rollers or your fingers.



# 3

Remove the snap ring holding the inner joint tripod to the axle shaft. As you remove it, be careful not to dislodge the retaining caps on the needle bearings. Believe me, dumping these needle bearings on a dirty floor makes 52-card pick-up look easy.



# 4

Pry back the outer boot and dump out the excess grease. Use two screwdrivers to release the three-legged clip from its notches in the “bear claw.” Separate the inner and outer components. This three-legged clip can be stubborn the first time around, but be patient, it really does come off!

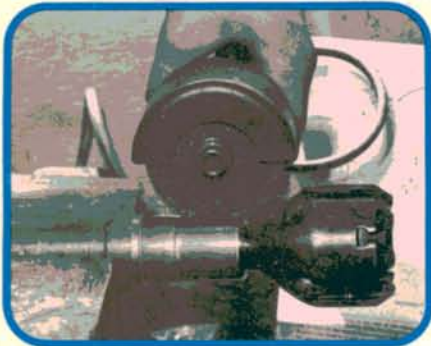


**5**

Here's the spring, clip, and tension button removed from the outer housing. Don't forget them during re-assembly. The Rockford kit includes new ones and a new three-legged clip.

**6**

Position the rollers as shown here to ease clip removal. You may have to wiggle or jockey the clip, but it will come out. Thoroughly clean the cup, rollers, and shafts, checking for signs of wear or discoloration. These bearings aren't replaceable. If they're bad, the joint's junk.

**7**

Use a power cut-off tool to slit the axle and relieve the tension on the bear claw. This picture better illustrates the notches into which the three-legged clip snaps.

**8**

With the tension removed, you can drive the bear claw from the axle. Be sure to wear eye protection—this is hard stuff and might splinter. Note the slit in the axle.

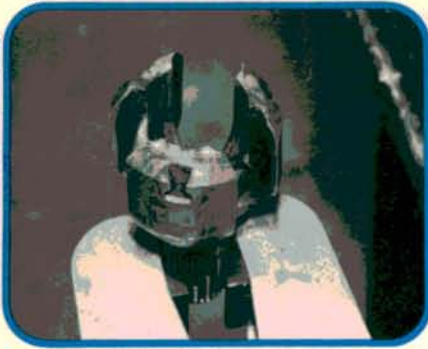
**9**

With the bear claw removed, it's time to replace the boot. Clean the shaft, lightly lube the new boot and slide it as far as possible from the area to be welded. Carefully cover it with damp rags before welding to protect it from welding sparks and spatter.

**10**

Old and new three-legged clips. The shiny triangular-shaped area is the contact surface for the tensioner button. A new clip is included in the kit. Use it.





# 11

Note the splines on the old bear claw. The new one is splinesless. Torque transfer will rely on the quality of your weld.



# 12

The new bear claw has been driven into the shaft and circumference welded. Weld the slit in the tube *first* and allow it to cool. This will help shrink the axle tube onto the joint for a tighter fit.



# 13

The outer drive housing is squeaky-clean, its splines wrapped in a protective cloth before being snugged in the vise. Now install the kit's flexible washer with retrieval wire attached. The washer is installed as an aid to reassembly and will be removed later.



# 14

Reinserting the three-legged clip is the opposite of removing it—more wiggling and jockeying. The flexible washer installed in the previous step helps center and tension the clip during reassembly. Again note the position of the rollers.



# 15

Washer, clip, and rollers are ready for reassembly of the joint. Don't forget the spring, spacer, and tension button. Note how clean, clean, clean things are. Remember, any dirt trapped inside the boot will act as an abrasive and shorten the life of the joint.



# 16

Snapping the bear claw back into the three-legged clip takes some muscle and a fair amount of oomph! Grab the axle shaft as shown and force it downward until all three legs of the clip fully engage the slots in the bear claw. Remember, you're compressing that spring and tensioner against the clip.





# 17

Clean the rollers of the inner joint with a solvent that leaves no residue. Then pre-lube them with some spray grease. Carefully drive this tripod back onto the shaft. If the inner edge of its retaining circlip is rounded or chamfered slightly, place the rounded side toward the joint.



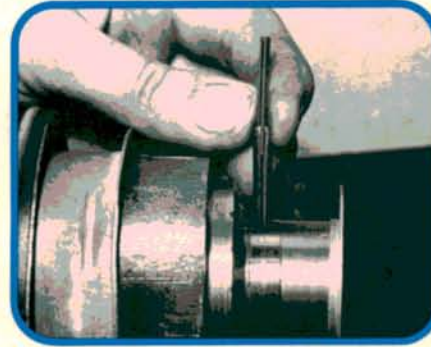
# 18

Tap the housing into place with a soft mallet. Be careful not to kink the lip at the far right. A damaged lip may cut the transaxle seal and cause a leak.



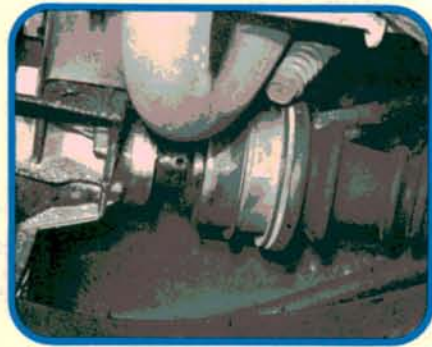
# 19

Remember the clamp you saved when disassembling the inner joint? You'll need it now for the inner boot. Make sure the fit is clean and tight.



# 20

This close-up shows the double roll pins used to keep the inboard joint attached to the stub axle. Be sure to space the grooves in each pin 180 degrees apart to tension them properly. Start the first pin into the joint, drive the second pin partially into the first, and then drive the pair.



# 21

Inboard side of the axle reinstalled. I usually add a dab of silicone sealer over the roll pin heads to keep the crud out.



# 22

To replace an outer boot on a fixed-tripod CV without disassembling the inner joint, buy or fabricate a tool such as this Renault device. After you lube the new boot liberally, summon a Sumo wrestler to force it over this tool and onto the joint. If you can weld a bear claw, you can make one of these!