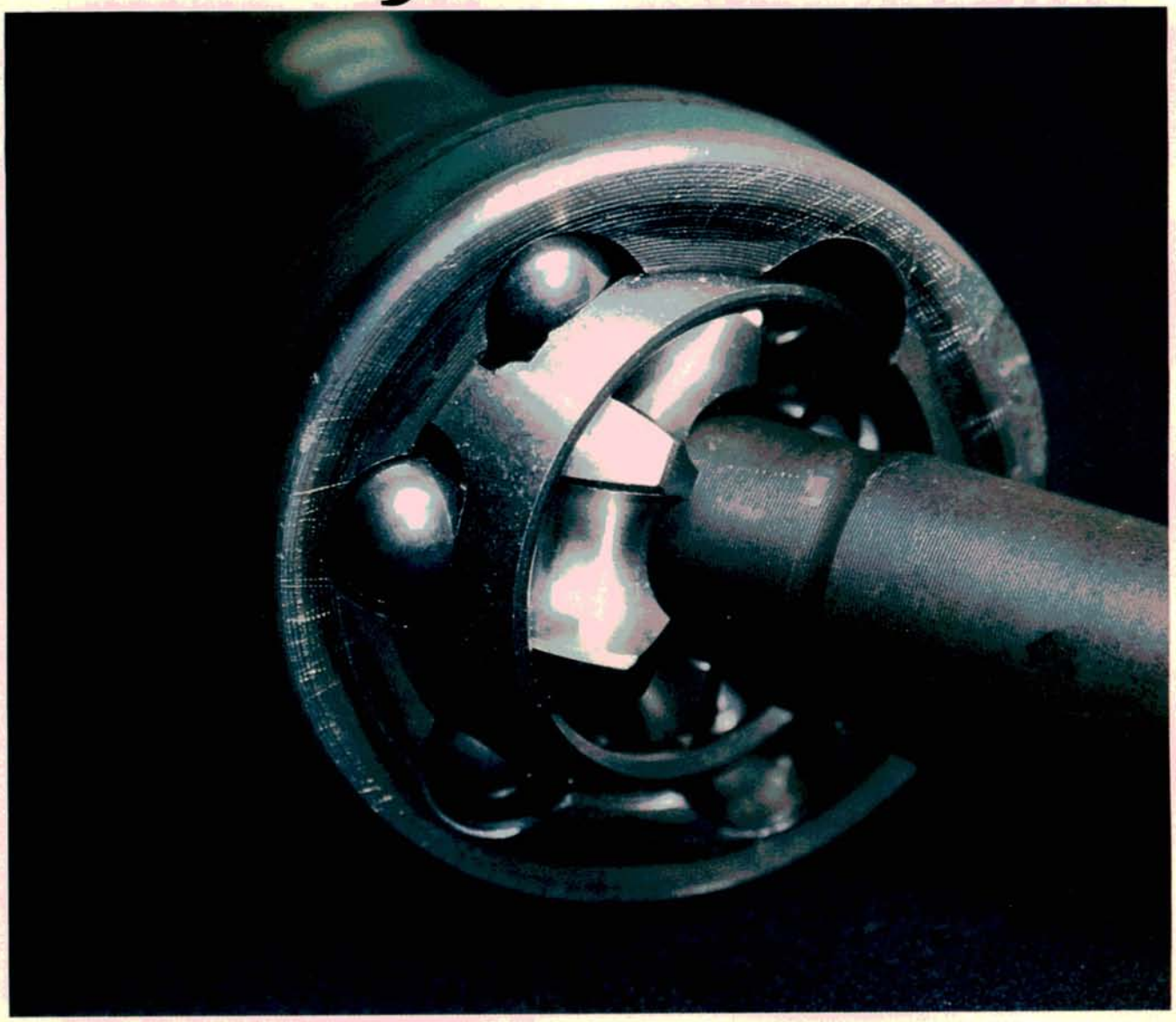
IMPORT SERVICE

SERVICING RZEPPA JOINTS



I can still remember my very first encounter with a Rzeppa-style drive joint. I was pretty proud of myself when I managed to remove the axle without sustaining or inflicting severe injury. I was even happier when I found that sneaky little retaining clip and freed the outer joint from the axle.

Consternation set in when I tried to disassemble the joint to clean and inspect it. Hmmmm. Must be pressed together at the factory, I thought.

The elder statesman of the shop saw me poking

and stabbing at the joint with a cleaning brush and solvent. Wash and blow dry. Wash and blow dry. That was some stubborn grease.

He watched my futile efforts until he could take no more of my foolishness. With characteristic diplomacy, he called me an idiot and ripped the dripping joint from my hands.

A few flicks of the wrist later, the joint was completely disassembled and spread on a cloth for *proper* cleaning and inspection.

Experience had spoken.

We'd like to deal with these joints in a more diplomatic way. The only sin in not knowing is refusing to learn. There are a few simple tricks to servicing these joints, but it's basically easy — and potentially profitable — work.

Rzeppas, like the fixed-tripod joints we covered in an earlier issue, don't do well when water and dirt replace grease as a lubricant. Boots will be boots, however. They rip, tear, and just plain wear out with the same disastrous consequences for the joint.

When you find a torn boot, assume that the joint is contaminated. Take the time to completely disassemble, clean, and inspect the joint for signs of damage. There's no sense putting a new boot on a bad joint.

We've also included some coverage of the removal of the joint from the car. While this sequence will vary slightly among specific applications, you'll get the general idea.

Now you can impress your shop's old-timer with your expertise, which will ultimately impress your customers.

—By Ralph Birnbaum

1

We've raised and supported this Rabbit, and removed the wheel. Remove the two bolts holding the caliper to the knuckle. Pull the rubber brake line and protective grommet from the bracket on the strut tube. This will keep you from damaging the brake hose.

2

Don't just let the caliper hang from the hose. Take a moment to inspect the hose for signs of tears or cracking. This is also a good time to check the brakes. Inspect the pads for thickness and look to see that they're wearing evenly. We don't want to create a no-stop condition.

3

Take your impact and loosen the axle nut. If you're using the Armstrong method and a breaker bar, you'll want to do this while the car is still on the ground (tire installed, brakes on). In the best of all possible worlds, this nut should be replaced and torqued at reassembly.

4

We removed the brake rotor for a better photo but you don't have to. Remove this pinch bolt at the ball joint. Good boot kits include this nut and bolt and the axle nut we removed in the last step. Don't get carried away spreading the ball joint collar or you'll damage it.

5

Pull down on the control arm and pull the drive hub away from the outer drive joint at the same time. The outer joint splines are not a press fit in the hub, but you may need a little penetrating oil on them and on the ball joint in order to finally free things up.

6

See the split in the ball joint pinch collar? We caution you again not to spread it too far when trying to remove the ball joint. It's pretty tough stuff but it does have its limits. If you're only being paid to replace a torn inner boot, don't cut the outer one on the strut tube.

7

Since the inner joints bolt to the transaxle drive stubs on the Rabbit, you'll need this splined socket to remove the bolts. Take the time to clean the bolt sockets. The teeth are very fine, and unless the socket gets a good bite, you'll strip them in an instant.

8

Hold the axle tight and break all six bolts loose by hand. If you use an air tool and don't get a good bite the first time, you'll be digging these babies out with locking pliers — not to mention the fact that you'll be looking for new bolts to reinstall the axle.

9

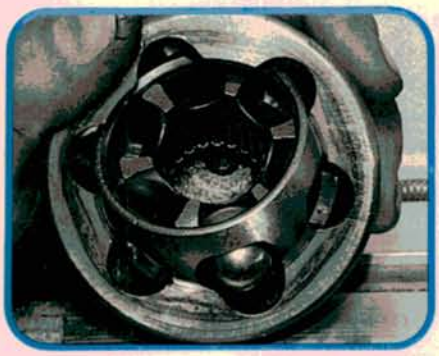
Mount the axle in a soft-jawed vise for disassembly. The metal collar on the boot for the inner joint can be stubborn. It's nothing a small chisel won't handle. If you're replacing the outer boot, save some time and just cut it away, clamps and all.

10

With the outer boot out of the way, clean away enough grease to expose the spreadable clip holding the joint on. Spread it with pointed snap-ring pliers and tap the joint off with a soft mallet. This photo shows the clip right above the ball bearing closest to you.

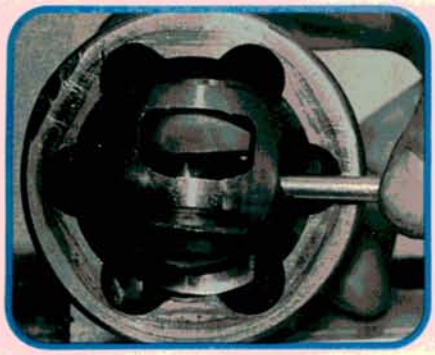
11

With the joint removed you can see the preload spacers. Between them is the groove for the snap ring. Later models use an internal snap ring. We'll cover this general type in the next picture. Internal types have the groove at the outer end of the shaft.



12

Here's an internal snap ring type. Note the groove at the base of the splined bore. Aside from this difference, the joints are remarkably similar. We already disassembled, cleaned, and reassembled the joint for photography. No, they don't come off the axle looking this good.



13

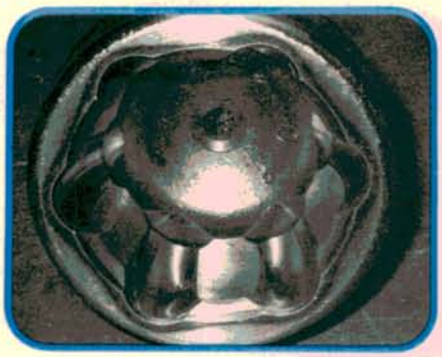
Here's that part that got me stumped the first time around. Roll the inner race and cage around and remove the ball bearings. (See the previous photo.) With the balls out, align one leg of the inner race with one of the two wide windows in the cage. This will let you remove the race.

14

Here's a better view of one of the long windows in the bearing cage. Another long window is located directly across from this one. If (and only if) you align the cage with the outer race of the joint, you can remove it completely. Check the cage for signs of wear or damage.

15

Here's a view of the Rabbit joint. It comes apart just like the Nissan one in the previous photo. You may have to wiggle the inner race and cage a bit the first time you try this, but once you get the knack, it's easy. Check that inner race for pitting, galling, and wear.

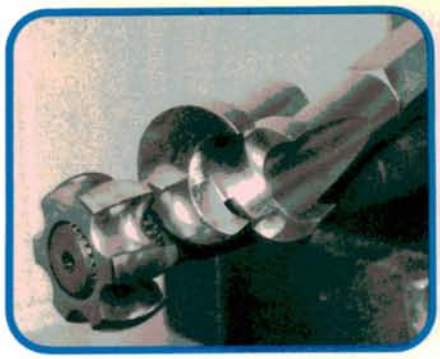


16

With all parts removed, we can really clean and inspect the outer bearing races. I call this the cup. Again, check the bearing surface where the ball bearings ride for excessive wear or damage. As you can see, this one cleaned up nicely and will be reused.

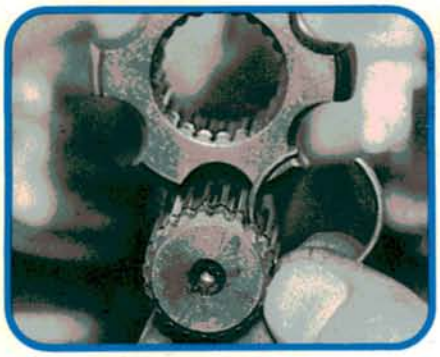
17

Occasionally, those joints with the internal snap rings will refuse to come off. Striking the cup part of the joint with excessive force is a no-no. This tool allows you to strike the inner bearing, next to the shaft. This prevents damaging the rest of the joint.



18

These drivers from Stempf Automotive come in two different sizes for large and small axles, and have an interchangeable extension handle to keep your knuckles out of harm's way. We cheated a little and disassembled the joint first so you could see where the driver rides.

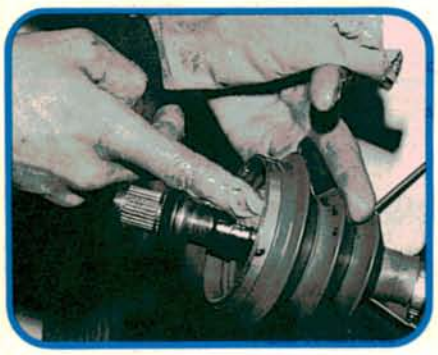


19

This little clip doesn't look like much does it? Well, it can be incredibly obstinate. The ring expands to a size slightly larger than the diameter of the splines and locks in a companion groove cut into the inner race. To remove the joint, you have to compress or cut the ring.

20

Looks like we did a little cutting *and* a little compressing to get this one off. This ring is obviously damaged and will be replaced. Even if the ring comes off unscathed, we suggest you replace it every time. If it came off too easily, chances are it'll come off on its own.

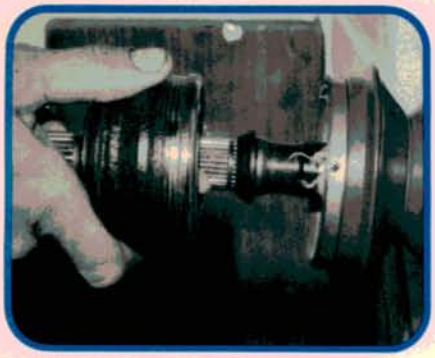


21

Slide the inside clamp over the axle. Then slide on the boot. Install the preload washers. Put a fingerful of grease on the base of the boot to help seal it. Now we're ready to pack the joint with the grease in the kit and reinstall it. Don't forget to tighten the clamps.

22

To install an internal snap-ring type joint on the axle, you'll need to enlist the help of a large persuader. Make sure you start the joint on the splines and whack it with a dead-blow or other type soft-headed mallet. Speaking of softheaded, I'm not holding the joint straight enough.



23

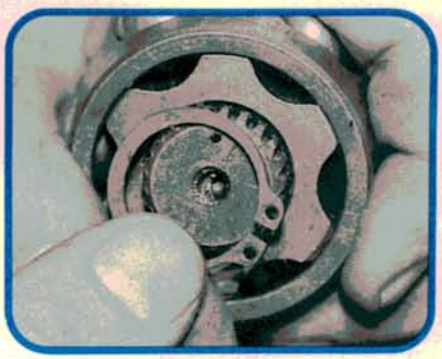
The Rabbit joint goes on in similar fashion. The tapered end of the axle has to spread the clip before the splines can properly align. Press on the joint to spread this clip. Once the splines are started, take the same soft hammer and drive it home until the clip locks.

24

The outer joints were the tough part. The inner ones are really easy. The Rabbit-style inner joint is held to the axle by a circlip. Always replace this clip and put the face with the sharp edge facing inboard. With the clip removed, tap the joint to remove it from the axle.

25

The joint on the Nissan is slightly different. Remove the boot and clean away enough grease to expose this retaining clip from its groove. This ring is hard to see when it's covered with grease and you'll wonder why the darn thing won't cooperate.

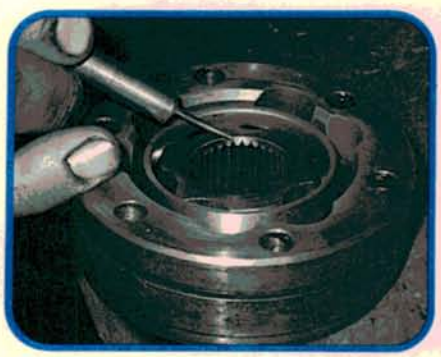


26

With that clip removed, the outer race slides off easily. The Nissan joint also has a small retaining clip on the back. Remove it and tap the joint off for cleaning and inspection, or replacement. The same cautions apply to this snap ring as they did for the Rabbit's.

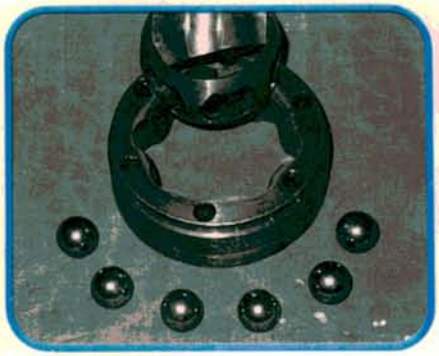
27

To disassemble the Rabbit's inner joint, simply twist the inner race and cage as shown and pop the ball bearings out. See the recessed area at the outer edge of the outer race? This side faces the stub axles on the transmission. The other end has no relief cut in it.



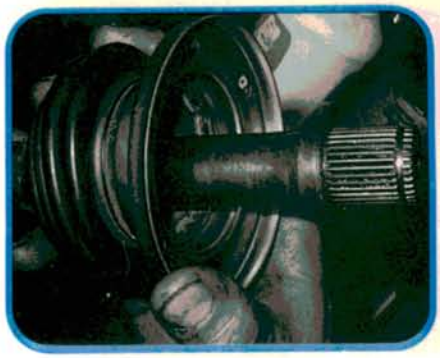
28

The inner race also goes on a certain way. This chamfer is cut to help you start the joint on the shaft. As a result, it will face away from the transaxle. In other words, the relief on the outer race and the chamfer on the inner race, face in opposite directions.



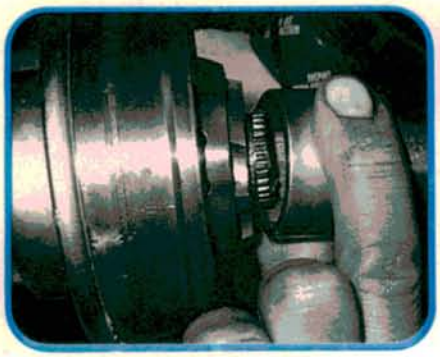
29

This joint looks good after clean up. The ball bearings are shiny, the races smooth, and the cage sound. Look for badly discolored or blued ball bearings, abnormal wear at the cage/ball bearing contact surfaces, and any signs of scoring, galling, breakage, or excessive wear.



30

Slide the boot over the axle shaft and put a little grease in the bottom. This grease won't do a lot for the joint, but it will help seal the neck of the boot and keep water out. Don't install the boot clamp until the joint is on so you can turn it to align the bolt holes.



31

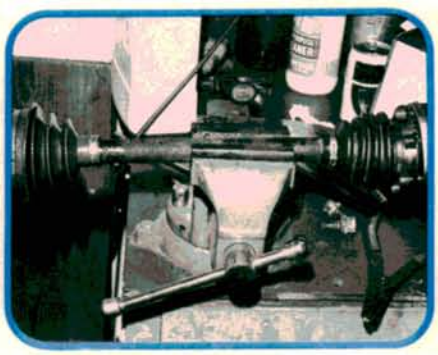
Here we are reinstalling the joint on the axle. The relief in the outer race will face toward the axle stubs. Start the snap ring over the splines with snap ring pliers and then drive it home with a small piece of pipe or a socket that just clears the axle splines.

32

Before you pull the boot up tight, pack the joint with the fresh grease that should be supplied with the boot kit. Work the grease into the joint as you would with a wheel bearing. Use your fingers to pack the joint and be sure you remove all the air pockets.

33

You may need some adjustable pliers to pull the metal collar on the boot over the joint. Make sure you align the bolt holes in the boot collar with the holes in the joint. Now you can remove any twist in the boot and install the boot clamp.



34

Here she is, cleaned, greased, and rebooted. Sure looks a lot better than it did way back in our ninth photo. With any luck, the customer will wander in about here and ooh and aah over the nice job you did. Fat chance, huh? ■