

Removing the Transmission from the 900C

Roger Chaney
Technical Editor

As a follow-up on the January 1972 article describing 911C "Pull" clutches, it is fitting to describe how the early C clutch assemblies can be retracted to allow the transmission to be separated

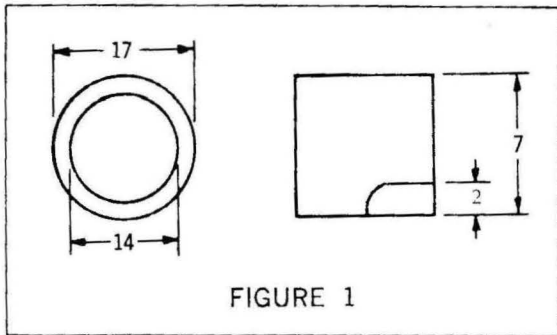


FIGURE 1

rated from the engine when the driven plate (clutch friction disc) wears out. The problem of separating the transmission for access to the clutch assembly stems from the fact that the early C clutch throw-out forks were not adjustable to compensate for friction disc wear. The C clutch throw-out bearing (as shown in the January article, diagram B) can't be separated from the clutch pressure plate assembly until after the plate is unbolted from the flywheel and the throw-out fork holds the transmission to the clutch because it is attached to both the throw-out bearing and the transmission.

After removing the power package (engine and transmission), you will need to use a special tool set that you can make with simple shop tools. These tools for the clutch consist of 3 small sleeves and 3 machine screws. The sleeves should be as shown in figure 1. Along with this sleeve, use a thin steel washer 17mm o.d. with a 6.5mm hole. You may need to use a rat-tail file to cut the hole slightly oval for the bolt to center. For the bolt, use an M6x12 bolt used to hold door hardware in place and other jobs on lots of Porsches. Porsche part numbers for the bolt are 900.119.019.02 or 900.067.008.02.

To use your tool, remove the starter and rotate the flywheel until you line up one of the pressure plate "rivets" (see figure 2). Assemble the sleeve

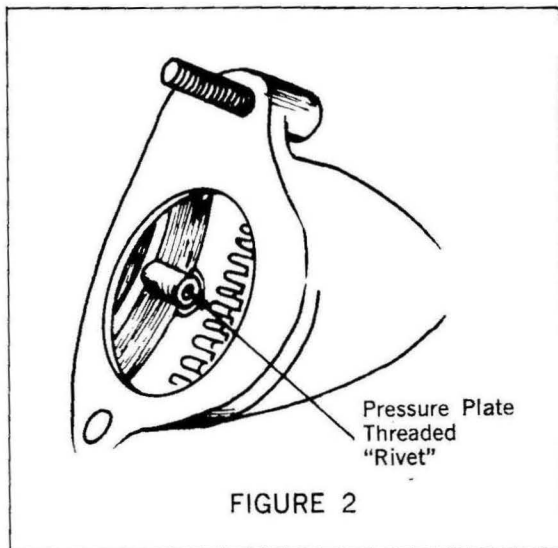


FIGURE 2

and washer over the rivet and screw the bolt in until it contacts the washer. Rotate the flywheel and repeat at the other two "rivets". Continue rotating the flywheel and tighten each bolt with the appropriate hex head wrench (Allen type wrench) a little at a time until the clutch has been pulled enough so the clutch throw-out bearing can be rotated by 90°. This will allow the work to slide over the flat sides of the bearing housing and the transmission will now come off easily. 5/72

A TECHNICAL ERROR

"Removing the Transmission from the 900C", Figure 2, p. 19, May 1972, is printed upside down. According to author Chaney, the drawing is usable only if it is oriented properly.

Nadella's revisited

DONALD E. PETERSON
Maverick Region

The February '69 issue of PANORAMA included my "fix" for Nadella axles. The fix worked although not for as long as I expected. My axles developed a little slop after about 15,000 miles.

After giving careful consideration to the loads and stresses involved, I had the 24mm yoke holes drilled to 1¹/₃₂". I then hand reamed them to provide a light interference fit for the Spicer 5-1200X 1¹/₁₆" bearing cups. A little hand filing to provide a snug snap-ring fit and my axles are now better than new.

Most any machine shop can drill out the holes for \$5 or less. The reamer, adjustable from 1⁵/₁₆" to 1¹/₁₆", is from the Sears or J. C. Whitney Catalog.

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Nadella axle fix

By DONALD W. PETERSEN
Maverick Region

Good design practice for needle bearing applications dictates that any one needle should oscillate or roll to the position previously occupied by the adjacent needle. Since the Hooks joint (U-joint) of the Nadella axle operates at almost no angularity, the outboard joints lose their lubrication and soon brinell. The seals aren't the best, either. The inboard joints take the place of a sliding spline and therefore "work" more, thereby distributing the lubricant. The outboard joint is also almost directly under the inner fender and is well washed by the run-off water kicked up by the tires. (Those seals again.)

With about 23,000 miles on the clock of my '66 911 the needles fell out of the joint on the driver's side. (I am told that this one usually goes first.) This was preceded by an occasional once-per-revolution warning (which I failed to recognize) squeek for about 2000 miles.

Being an ex-Alfa owner (you think Porsche parts are hard to come by?) I have learned to improvise when possible, not to mention the \$80 per side.

The fix I have been using successfully for about 3 months consists of a Spicer joint fitted with bushings. This joint has a zerck, so that I can give it a shot of MoS₂ grease every 2 or 3 weeks. The Spicer 5-1200X joint has the longest cross I could find which would fit the ears of the axle, while having a diameter large enough to carry the load, yet small enough to allow for a reasonable thickness of the bushing. The standard caps of the joint are 1/16 in. in diameter. The Nadella caps are 24mm (.946 in.) and there just doesn't seem to be enough material to bore the holes in the axle ears to 1/16 in. Hence, another reason for bushings.

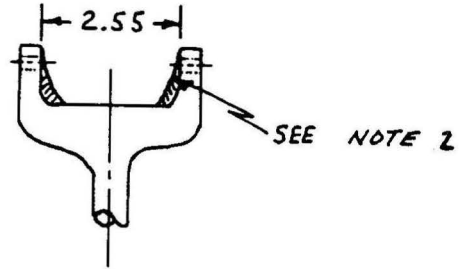
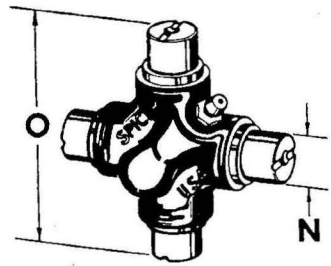
The accompanying sketches should provide sufficient data such that any good machinist can make them up. The Spicer seals are retained. The bushings are made of axle steel with a Rockwell C of about 35-40. Since relative motion of the cross and bushing is a minimum, I anticipate no problem from galling. Steel was chosen over phosphorbronze because of the skinnyness of the axle ears. I must give credit for the design of the bushings to an elderly machinist in the Dallas area.

The cost of all this? \$25 plus the joint which goes for another \$5. That's a far cry from \$80, plus I feel I have a permanent fix.

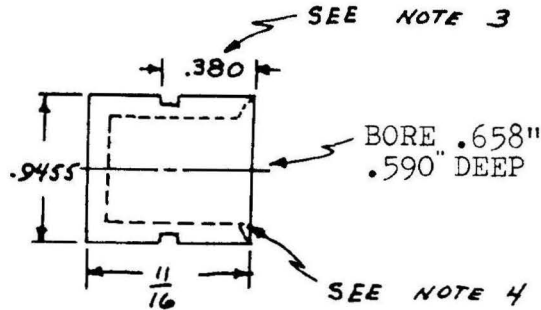
I have over 4000 miles on one and 3000 miles on the other and they still feel as tight as ever. Should anyone pursue this fix, I suggest a Spicer joint. Recently, the Porsche mechanic at the local friendly Porsche dealer had one of his fixed. He used another brand "replacement" joint and had trouble finding a grease gun to fit.

If there is no trustworthy machinist in your area, I will send you the name, etc., of the one here, who has assured me he will repair those in need. The only catch is that you must allow 10 days for machining. He doesn't like to rush things. Write: Donald W. Petersen, 3504 West Bangor Court, Irving, Texas 75060.

2/69



AXLE
and
SHAFT



BUSHING

	Spicer	Nadella
O,	2 31/32	77 mm
N,	21/32	18 mm

NOTES

1. Spicer 5-1200X is a replacement for the Cleveland joint used on the '62 & '63 Ford Galaxies and some Dodge trucks.

2. Shaded material must be milled off or counter-bored to provide a flat surface for retaining rings. Alignment is critical. A little misalignment can mean a lot of vibration.

3. This dimension must be consistent with the 2.55" of the flanges when assembled.

4. This corner must be chamfered so that bushing will bottom on end of cross.

5. Use TruArc Series 5100-93 snap-rings as retaining rings.

Sloppy gearshift levers on 356B and 356C models

By CURT KUEBLER
Los Angeles Region

If your gearshift lever seems loose and/or vibrates or rattles while at cruising speed, chances are the molded guide ring (Part No. 695.424.211.01) has split. This guide ring is located directly below the shift lever back to transmission.

To replace the ring, remove the gearshift lever assembly and then disconnect the shift tube (remove the access plate at the foot of the rear seats and pull back the rubber boot. Mark the angular and longitudinal position of the tube with a sharp pointed scribe and then remove the clamp). Slide the tube forward in the tunnel until the guide ring bracket is free.

Either install a new ring, or make a lifetime replacement from Teflon. A Teflon replacement should be made with smaller flange diameters to ease assembly. Following careful re-assembly, the gearshift will operate silently.

12/67

Adapting 356B transmission to a 356A Speedster

By CHARLES WELLER
Lone Star Region

One of the joys of driving a Porsche is the proverbial hot-knife-through-butter shifting through the gears. But let's face it, gear boxes do get tired, they get noisy, and in the earlier boxes the synchromesh in first gear often becomes a runner-up only to a vintage MG-TC.

Recently I was faced with the choice between a second "rebuild" of my Type 519 split-case transmission in the 1956 Speedster at some \$32 an ounce for parts only, and trying to adapt the highly satisfying Type 741 transmission abundant in all models starting with the B's as well as in places where bent Porsches are taken apart for the benefit of the 356 enthusiast trying to perpetuate the marque.

So I purchased a 741/2A transaxle out of a wrecked '63 B Coupe, complete with axles, axle tubes and drum brakes, and naively assumed that it would fit into the A Speedster, since rough preliminary measurements indicated that it might. Well it did not, since the snout of the cover plate and the gear change lever which protrudes from it just barely did not miss the lower cross-tube in the body. It is just as well that it did not, or I would have been faced with some floor panel modifications and other complications around the gearshift mechanism.

The conversion is relatively simple, but you will need these parts:

1	644.20.114	Transmission cover (double mount)
1	A 15x24 DIN 6503	Radial oil seal for gear change lever, also a VW part
1	644.20.301	Selector shaft for reverse speed
1	644.20.302	Selector shaft for 1st and 2nd speed
1	644.20.303	Selector shaft for 3rd and 4th speed
1	644.20.111	Shim (gasket) for cover
2 ea	644.20.109/110/111	Shims (0.1, 0.15, 0.2mm) from which to select proper combination to place between intermediate plate and housing
1	900.074.051.00	hex-head bolt M 8x125 DIN 931

You can use the remaining items, after removing the front cover, from the 519: hex bolts, gear change lever, head of reverse selector shaft, reverse gear; from the 741: shaft for reverse sliding gear and rubber suspension mounts.

The assembly is straightforward and it is detailed in Section 2RA (p. 33, etc.) of the 356B workshop manual. No special tools are needed, and once the front cover is removed from the 741, the gear clusters will slide out with the intermediate plate and these need not be disturbed if they are in good condition. Remember to measure with a micrometer the total thickness of the shims between the 741 intermediate plate and the transmission case

and replace these with the same combined thickness from the selection given above. Also, after having installed the new selector forks, adjust each sliding sleeve in neutral to be exactly in the center between synchronizing rings.

Should you start with a Type 644 transmission supplied in later 356A models, you have virtually all the parts needed already, as indicated by the part numbers in the list, and the conversion should be quite inexpensive—assuming that you decide to use your old parts rather than buying new ones.

After assembly, the transmission will slide right in place and connect to the old gear shift mechanism which may require minor adjustment. The rest of the transaxle, "B" backing plates and all, will also fit right in, and if necessary you may use your "A" brake drums with the new setup. The procedure outlined should be valid for all "A" models.