

The Dime, Quarterly

The Technical Newsletter written by and for the Datsun Five-Ten Enthusiast.

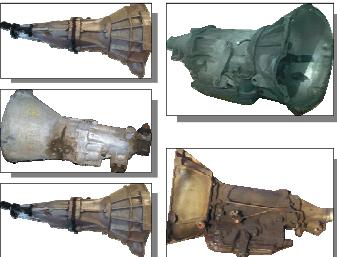


Volume 11 Issue 4

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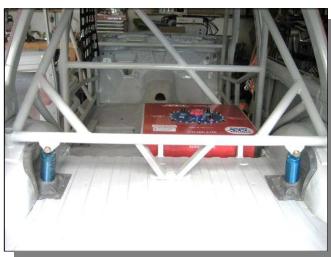
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Taking the guesswork out of identifying Nissan transmissions, Mike Rogers lays them all out, providing the original applications, gear ratios, and key identifying marks. Don't know your FS5W63 from your FS5W63A? This article will clear up your questions.

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Paul Moore goes over the basic steps he performed to install the PL510 IRS into a WPL510. While fabrication ability is required, the process appears very straightforward.

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<http://dimequarterly.blogspot.com>**From the Editor's Garage**

by Julian Series

SoCal Fun Runs Aren't Dead Yet.

I live in Southern California. As a region, the car is worshiped beyond all rational means. We shun public transport, demand drive-up ATMs, and order food by phone. Waiting in a running automobile while some poor waitperson schleps a few cartons of corporate homogeniety out to the driver's window has nothing in common with the nostalgic drive-ins of yesteryear.

SoCal car culture, responsible for the original drive-ins, has proliferated to such an extent that many of the finest examples of any make and model are no longer used as they were originally conceived. Even the relatively low status of the Datsun 510 has been elevated to the point that some owners only bring their cars out for events like JCCS, relegating them to garages and warehouses the remaining 360+ days of the year.

Sure, a 510 may not be the choice for an I-405 battle royale, but, at least in SoCal, the 510 Fun Run has died. Shiny paint, mad camber stance, ear-splitting exhaust notes, and more power than can be put to the ground make for crowd-pleasing 510s, but do they make for good driver's cars? By the years-ago disappearance of fun runs from UFO SoCal's calendar, the answer is obvious.

Or is it? September of 2010 saw me try to gather the massive SoCal 510 population together for a run in the hills of Ventura and Santa Barbara counties. After all, if the East Coast crowd can bring 30+ 510s together, some having travelled days to the event, and if Canby can pull dozens and dozens of Datsun owners from all over the West Coast, and if JCCS can bring in over 60 510s (more than any other model at the show, and more than some entire makes)...surely we'd have a kick-ass turnout to use the cars as they had always been intentioned.

We did. 13 510s showed up at the start point. Maybe, in comparison to the numbers cited in the paragraph above, it doesn't seem like a "kick-ass" turnout, but I was extremely pleased with the number of cars. It's one thing to walk amongst a couple dozen 510s at a car show, but quite another to lead a line of a dozen 510s over some great driving roads. Looking in your rearview mirror and seeing that distinctive quad-headlamp signature, hearing the various exhaust notes rise and fall, hitting 70mph on fast, sweeping turns and being passed at 90mph by other 510s, engines screaming...the whole experience was very evocative.

I'd thought the fun run was dead in SoCal. It has certainly lain dormant for many years. Perhaps we didn't have a show-winning 510 present but we did have the widest range of owners and cars show. Wagon, four-door sedan, two-door sedan; left-hand-drive, right-hand-drive; daily-driver, weekend driver; L-, LZ-, SR-, KA-, VG-series engines. We all showed up, however, not to compare cars, but to hit some open roads.

The upper section of Highway 33 was probably the gem of the route. Part 3rd-gear twisties, part 5th-gear twisties, there was little traffic and with some newly paved sections it was in great condition. Beyond the road was the scenery – mountains and valleys, both covered in a high-desert scrub; the crisp and cool November morning brought out the best in the views.

The fun run in SoCal isn't dead. It turns out if you organize it, they will come.

DQ

Cover: Diane Cuyle's two-door 510, as featured in this issue's Reader's Dime. Turn to page 10 to read the details of the build.



At some point it would be great to see a list of companies and individuals who supply parts (NOS, remanufactured, used, and reproduction) for the 510, including address, phone, e-mail, web site, and a contact name, and indicating what they offer.

Stephen DeMay



This would be a very useful tool for every 510 owner. The reality is, however, that vendor lists are very difficult to generate, much less keep current and accurate.

The 510, being a global car, has vendors strewn on every continent except Antarctica. We would have to rely on the 510 community as a whole contributing vendors' and suppliers' names and information just to start the list. Then DQ (or whomever maintained the list) would have to keep in regular contact with each vendor in order to verify they remain a going concern.

Simply linking to a vendor's web page doesn't solve the problem because not all vendors have web pages, and because the Internet is constantly changing, a web page (or simply part of a URL) can change by the minute and make the link useless. This would be a mammoth undertaking and would require a person or persons devoted to the task. Any volunteers?

DQ



I'd like to see articles covering the rebuilding of the 200SX 5-speed transmission, a discussion of the various L-series cylinder heads, and tuning information for the

Weber DGV carburetor.

Jim Le Galley

A You are in luck. DQ has already covered the rebuilding of the 200SX 5-speed (aka dogleg) transmission. See *Dog-Leg 5-Speed Rebuild* by Derek Garnier in DQ 7.1. Weber DGV tuning was comprehensively documented in *Tuning The Weber DGV For The L-Series 510 Motor*, featured in DQ 2.1. DQ will feature an L-series cylinder head guide in an upcoming issue.

The complete list of articles DQ has published can be found on the web at: <http://dimequarterly.tierranet.com/articles.shtml>. If you would like us to revisit an article, let us know how we could improve it.

DQ

Q More tech! A little less history. I have every issue and subscribe because of the tech articles. More pages would be nice. Just one more sheet would be an increase to 24 instead of 20 pages.

John Herdener

A I'd love nothing more than to turn DQ into a larger publication full of technical articles. A few years ago we did increase the content of each issue over 20% by removing the classified listings. To increase the page count of an issue to 24 would require the first-ever hike in DQ subscription pricing and require an increase in article contributions. I'm game if you all are.

Julian Serles

DQed

Please send your technical questions or letters to the editors to:

E-mail: dimequarterly@gmail.com

On The Horizon...

- **Fuse Box Building:** Can't find the specific fuse box for your car, or are you planning a restoration and EFI engine installation? Build a new fuse box to interface with the stock 510 harness.
- **Cylinder Head Guide:** L-series cylinder heads are many and varied, and becoming harder to find. Before you shell out cash, know what to look for and what each casting can present you. Bonus coverage of unobtainium L-series heads.

- **Cylinder Head Modification:** Eight basic modifications you can make to improve performance.
- **DIY Sway Bars:** Build your own set of sway bars in your desired size and design for a quarter of the price of an off-the-shelf pair, and build 'em like BRE.
- **Nissan Flywheels:** A listing of different Nissan flywheels, including weights, original applications, and casting marks. Identify that doorstop or junk-yard find.

Nissan Transmission Identification Guide

Taking the guesswork out of identifying Nissan transmissions.

by Mike Rogers

With a car that's up to 40 years old, there's a good chance that many of its drivetrain components have worn out, or broken, and been replaced. It's also safe to say that many 510 owners feel they can take something that is great and make it even better. Thus, the car you have now may have had over a half-dozen owners, all who have added and subtracted parts to increase their driving pleasure. Make that, performance driving pleasure. Stock engine performance can easily be increased or the engine can be swapped from a bewildering array of domestic and foreign power plants. This can seriously tax the ability of the stock transmission to handle dramatic increases in power and torque. With some motor transplants, the stock tranny has to be changed anyway because it simply does not fit the new motor. There are at least four different style 5-speeds that will fit, or can be made to fit the L-series motor. Naturally they won't all 'drop in,' and some modification of the tranny mount position, the shortening of the driveshaft, and/or widening of the tranny tunnel may be needed. This isn't a how-to-install a transmission, but more of a how-to-identify the transmission in your car (stock or otherwise), or identify a replacement upgrade you are buying.

Let's look at some of the standard transmissions that could be in your 510. If you are thinking of upgrading to a 5-speed, or just something stronger, it sure would be handy to know how to identify what you have and what you come across for sale on eBay or in a junk yard. Often it happens that a tranny is mis-named in an ad, or the owner simply does not know what it is he is selling. It would be nice to be able to know what it came out of or its approximate age. Can

you tell at a glance if the tranny for sale is actually from a 280ZX and has the high overdrive 5th gear that you are looking for, or is it simply an earlier wide-ratio 280Z or 620 5-speed? I'll show you how to quickly identify a dog-leg, tell a Z-series tranny from an L-series, a 4-speed from a 5-speed, and the strengths and weaknesses of each.

Before journeying to a destination it helps to know your starting point. Let us look at the stock standard transmissions for the North American W/PL510. The following information is from first-hand personal observations coupled with research from Factory Service Manuals and Nissan Parts manuals and is not intended to be thought of as all-encompassing. While everything has been done to be as accurate as possible, it must be understood that there are always exceptions and last minute changes that may have gone unrecorded. Some pictures are mine, some given to me, and many just collected. If you see one of yours, thank you. If you have any information or corrections you wish to share, e-mail me at: datzenmike@hotmail.com.

OE 510 MANUAL TRANSMISSION

F4W63 4-SPEED

This is by far the most common and easily recognized transmission in the 510. The F4W63 is of two-piece all-aluminum construction with the gears and bell housing in one section and a removable tailstock bolted to it. The bellhousing has several longitudinal casting webs and the main body is heavily ribbed and resembles a waffle. The gears are accessed by a removable bottom pan with drain plug. The oil fill plug is about half way up the left (driver's)

side while the speedometer drive is on the left side tailstock (the only L-series 4-speed so positioned).

It uses internal shift linkages coupled to an external 'A' type shifter above the output spline. The 'A' shifter is also known as the 'monkey motion shifter,' a name that is well earned even when the rubber shift bushings aren't worn out.

The transmission is approximately 26.3" long for use in the 510 but also is produced in 31.5" length with a 5.25" longer tailstock for use in other Datsun cars. The distance between the internal main shaft and counter shaft center lines is 63mm, which dictates the maximum gear and bearing diameter that will fit between them. This in turn limits the power they can handle. Under load the main and counter shafts are under sideways thrust to force them apart so the counter shaft bearings must be able to handle this. The F4W63 uses small needle bearings to support the counter shaft and is robust enough to handle the stock L16 but only adequate for an L20B.

The F4W63 used in the 510 wagon is identical but has a wider gear ratio set than the sedan, with a lower (higher numerically) first gear. This identical transmission is also used in the 1972-September 1973 620 truck with L16. Reverse is lower for use in a vehicle that was designed for extra load carrying.

Sedan Gear Ratios:

- 1st 3.382
- 2nd 2.013
- 3rd 1.312
- 4th 1.000
- Rev 3.364

Wagon Gear Ratios:

- 1st 3.657
- 2nd 2.177
- 3rd 1.149
- 4th 1.000
- Rev 3.638

R3W65 3-SPEED

Honorable mention to the remote operated (column shift) 3-speed used with the L13 engine on non-US 510s. The R3W65 outwardly resembles the F4W63 and is also 26.3" long. Both have a two-piece design with ribbing and removable pan with drain. The speedometer drive is on the left side of the tailstock, as is the reverse light switch on the main body. The external shift linkages are located on the right (passenger) side of the main body. Gear ratios are the same for sedan or wagon.

TRANSMISSION SWAPS

There is little to be gained from replacing one tired or broken 510 4-speed with another. For the work involved you might as well move up to a 5-speed which will give you an overdrive 5th gear to reduce RPMs at highway speeds. Depending on the transmission there are also some close(r) ratio options as well. The following are some 5-speed transmissions that can be installed on the 510's L-series engine.

FS5W63A 5-SPEED (L-SERIES BOLT PATTERN)

Unique in its shift pattern, having reverse above first and fifth below forth, this transmission has become known as the 'dogleg.' The dogleg is the same length (26.3") as the stock 510's F4W63 and so no driveshaft shortening is needed. The 1st-4th gear ratios are also identical but with a 0.854 overdrive fifth gear. This overdrive ratio is second highest only to the two 280ZX transmissions! The dogleg has a closer ratio gear set than the stock 510 wagon 4-speed.

The dogleg has a smooth bellhousing and a front case free of raised casting webs or waffling. Unlike the stock 4-

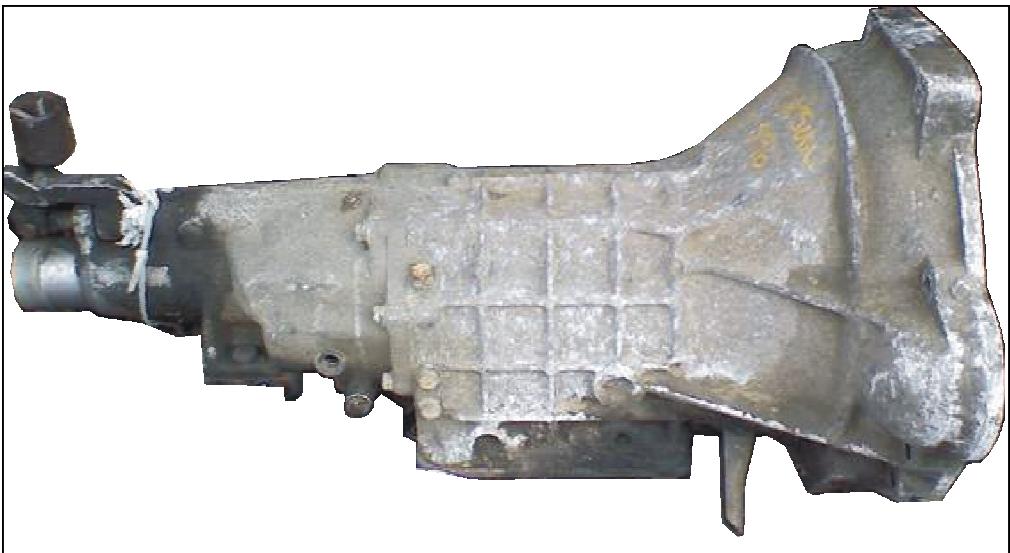


Photo 1—F4W63 4-speed, stock manual US 510 transmission.

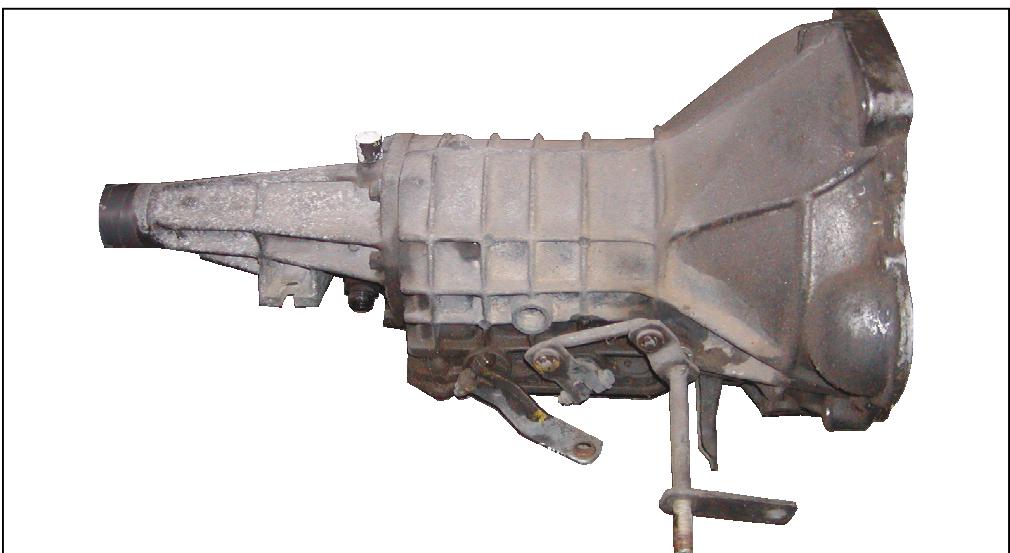


Photo 2—R3W65 3-speed, manual transmission for L13 510s.



Photo 3—FS5W63A 5-speed, L-series "dogleg" transmission.

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speed, the dogleg has no bottom oil pan and has a 1" thick steel adapter plate that holds all internal gears and shift rods, sandwiched between the aluminum bellhousing and rear tailstock. The steel adapter plate has a small metal breather tube on the top left side and the speedometer drive cog is on the left side of the tailstock just like the 510 4-speed. On the bottom of the main case, just forward of the adapter plate, is a threaded drain plug and a fill plug about half way up the left side. All switches, top gear, neutral switch, and reverse switch are mounted on the right side of the tailstock. Looking into the front of the bellhousing, behind the clutch arm is a cover plate with seven bolts that is unique to the dogleg. The main and counter shafts are spaced 63mm apart, the same as the stock 510 4-speed, but the counter shaft is better supported front and back on much larger tapered roller bearings. Because of this the dogleg is better able to handle higher power compared to the stock 4-speed.

FS5W63A Gear Ratios

- 1st 3.382
- 2nd 2.013
- 3rd 1.312
- 4th 1.000
- 5th 0.854

Vehicles Using The FS5W63A

- 1977 through 1979 200sx (S10). All standard transmissions were FS5W63 doglegs.
- 1978 through 1979 US and 1978 through 1980 Canadian A10 (the later HL510) with optional 5-speed only.

FS5W63 DOGLEG (Z-SERIES BOLT PATTERN)

Identical to the FS5W63A dogleg but having a Z-series bolt pattern for use on the Z20S motor. If you have a broken FS5W63A, the front case can be swapped onto the Z-series FS5W63 to convert it for use on an L-series using a 12mm wrench and snap ring pliers.

The internal gears in the FS5W63 have a higher (lower numerically) first gear and closer ratios compared to the FS5W63A. The FS5W63 ratios are as follows:

FS5W63 Gear Ratios

- 1st 3.170
- 2nd 1.921
- 3rd 1.310
- 4th 1.000
- 5th 0.854

This would be an option for use on cars with more power or requiring a closer ratio gear set with less RPM drop between shifts, as on a race course.

Vehicles Using The FS5W63

- 1980 and 1981 US, and 1981 Canadian, A10 (the later HL510) with Z20S. This was an optional 5-speed.

NOTE: Long L-series doglegs were also made measuring 31.5". These are reported to come on 610SSS and 810SSS models for the Australian market. This "long" dogleg will work on a 510 if the driveshaft is shortened and a longer speedometer cable is used on the opposite side.

Here are a few not-so-common 5-speed swaps. You may never come across some of these but it can't hurt to know they exist.

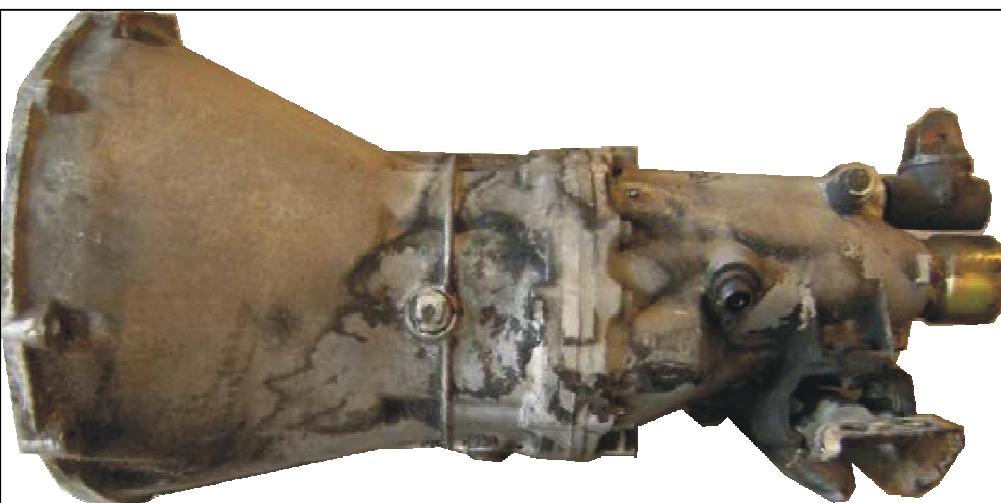


Photo 4—FS5W63 5-speed, "dogleg" Z-series transmission.



Photo 5—FS5W63A dogleg cover plate (left). Note seven mounting bolt holes around outside and the small main and counter shaft bearing cavities. The center-to-center distance is 63mm.

FS5W71B cover plate (right). Note five bolt holes, larger bearings, and 71mm spacing.

FS5C71A

Available outside North America on the early 240Z cars. This transmission is a Roadster aluminum three-piece 5-speed with steel adapter plate between the main body and the tailstock and is approximately 31" long. The 10-bolt removable bellhousing is fitted with an L-series bolt pattern and a lengthened tailstock for use on the L-series. The shifter is an 'A' type and has a flange output bolted to the output spline. Speedometer drive and breather tube are on the right side of the tailstock. The 'C' denotes Competition and so contains Porsche steel syncro rings which are more wear-resistant and stronger for racing. Some have found their way here and can be fitted into a 510 with modifications.

FS5W71A

Same as FS5C71A above but with brass synchro rings.

FS5C71B

Used on the 260z car outside North America. It has a two-piece aluminum case sandwiching a steel adapter plate. Speedometer drive and plastic vent are on right side of tailstock. Has a 'B' type shifter, flange output, and Porsche steel synchros. This transmission is identical to the NISMO close-ratio overdrive box.

F5C71B

This is a competition box with direct drive 1:1 5th gear (no overdrive).

FS5W71B

Like the dogleg this is probably as common, if not more popular, as a 5-speed swap.

Introduced for the 1977 model year 280Z and 620 trucks. For just short of ten years, one of Nissan's most versatile transmissions, used on no less than four different engine types: L20B, L24, L24E, L28E, LD28, Z20E, Z22S, Z24, SD22, SD25, CA18ET, and CA20E. For all that, it needed only a different front case half with the proper bolt pat-

tern for the engine type used. With some work and patience the front case halves can be swapped and this is a great way to select a newer or different ratio box for use on an L-series. The last L-series bolt pattern FS5W71B was used in 1984.

The FS5W71B is a robust transmission, much stronger than the dogleg, and able to handle the L28 engine. It gets its strength from its main and countershaft center lines being 71mm apart, allowing larger diameter gears and, more importantly, larger diameter main and 56mm diameter front counter shaft bearings to support it.

The FS5W71B has an aluminum front and rear case sandwiching a steel center adapter plate similar to the FS5W63 dogleg, but that's where the similarity ends. The FS5W71B 5-speed is larger, has ribbing on the bellhousing, and square ribbing on the main case.

NOTE: The CA version of the FS5W71B has a smooth front case and bellhousing without ribbing.

The FS5W71B uses the same external shifter/shift lever as the dogleg, the speedometer drive is on the right side of the tailstock, and the plastic vent is in the center top right side of the tailstock. The reverse light switch is on the right of the front case half about midway up the side. Besides the reverse light switch, depending on year and model, there may have been a neutral and fifth-gear switch on the tailstock. The oil drain plug is in the bottom of the front main case and the fill plug midway up the left side.

Looking into the bellhousing behind the clutch arm, there are five bolts holding the front main and counter bearing cover plate on. Internally, there are at least five different 1st-3rd gear ratio sets (all 4th gears are the same) and three of these



Photo 6—FS5C71A 5-speed, stock transmission on non-US 240Z cars.

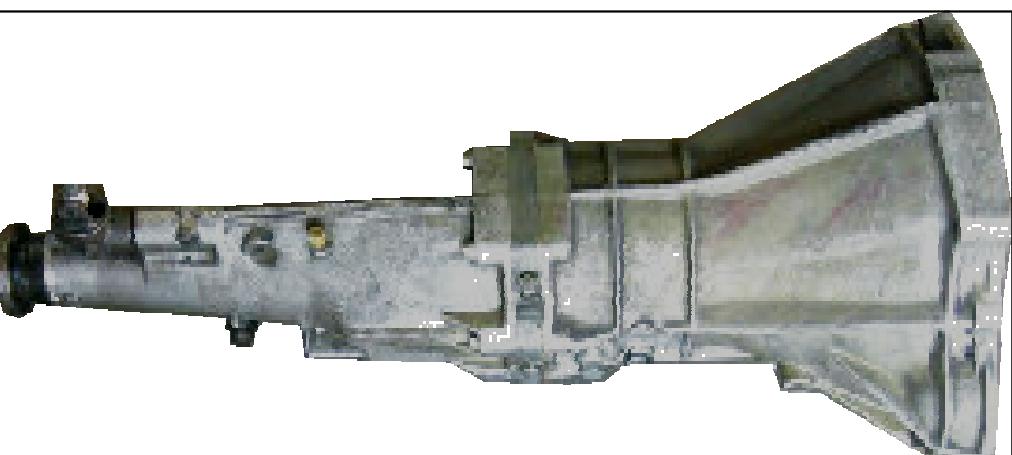


Photo 7—FS5C71B 5-speed, stock transmission on non-US 260Z cars.

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come with two different overdrive 5th gears and may or may not have the higher hole gear ratios. The 5th and the reverse gears are located in the tailstock just behind the adapter plate. The reverse and overdrive 5th gears and are reasonably easily to get at and swap by removing the tailstock.

The length is 31.5" on all FS5W71B models, although I have a short Z-series FS5W71B from a 720 4WD truck that is 26.3". It does not have the tailstock machined out to take a speedometer drive cog. If there is a 2WD 720 short FS5W71B it would only need an L-series bellhousing swap to fit the 510's 26.3" tranny space, just like the dogleg.

See Photo 9 for the short FS5W71B and notice the speedometer drive on left side. I assume it is from a 1980 720 2WD or 1981-86 720 2WD with an L-series bellhousing swapped onto it. It has a car transmission mount on it and like the long dogleg, I have no information on its intended use in a Datsun car.

Over ten years, changes and improvements were inevitable. Starting with the 1980 model year all FS5W71B transmissions used a modified shift linkage with taller "ears," moving the shift lever pivot point about 1/4" higher, shortening the throw. Larger plastic bushings replaced the easily worn older style plastic 'washers' on the shift lever. In addition, the 10mm speedometer drive cog retaining bolt was moved from the old 12-o'clock position on the tailstock to the 6-o'clock position. Four- and 5-speed 'B' type speedometer drive cogs prior to 1980 will not work in the FS5W71B made after 1980 (or vice-versa).

The shifter ears and speedo cog retaining bolt positions then become a way to date pre- and post-1980 FS5W71B transmissions. If someone claims to have a late model 280ZX 5-speed with the taller 0.745 overdrive 5th gear and the speedometer cog retaining bolt is in the 12-o'clock (pre '80s) position, or you notice the shorter shifter ears, you will now know to pass on it.

Post-1980 5-speeds will have taller ears

and may or may not have the higher hole for the shifter cross pin, but all will have the early L28 motors to handle. By the larger shift bushings and have the early-to-mid 1980s the 280ZX was growing in power, the S12 200SX was soon to sport higher HP turbo motors, and the 720 was introducing the higher-torque

When introduced in 1977 models, the

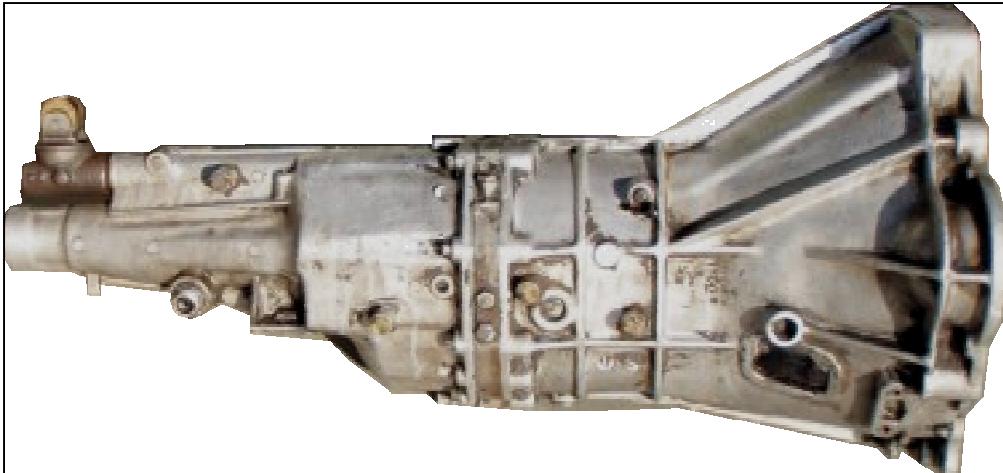


Photo 8—FS5W71B 5-speed with the long tailshaft.

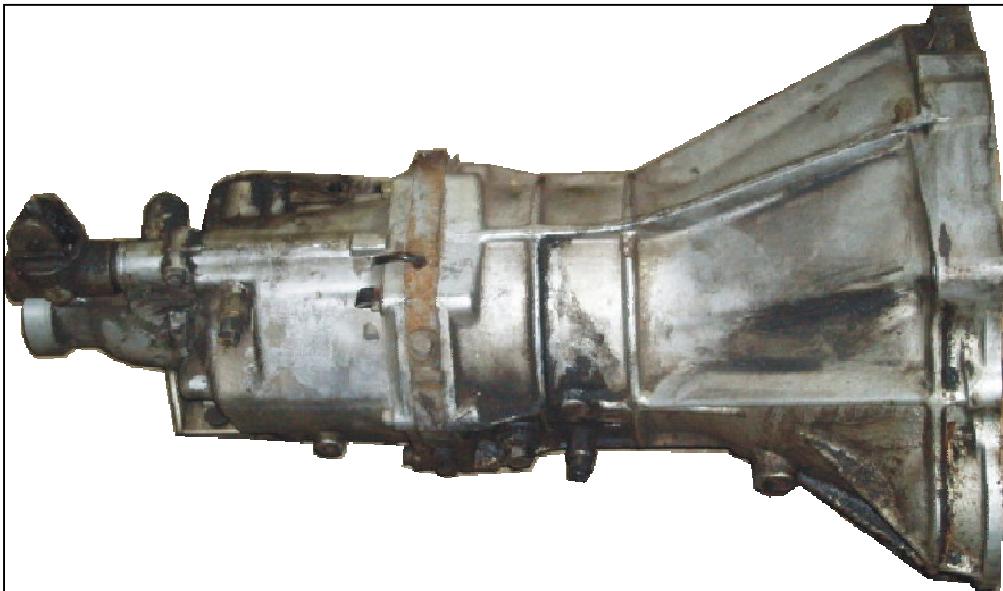


Photo 9—FS5W71B 5-speed with the short tailshaft.

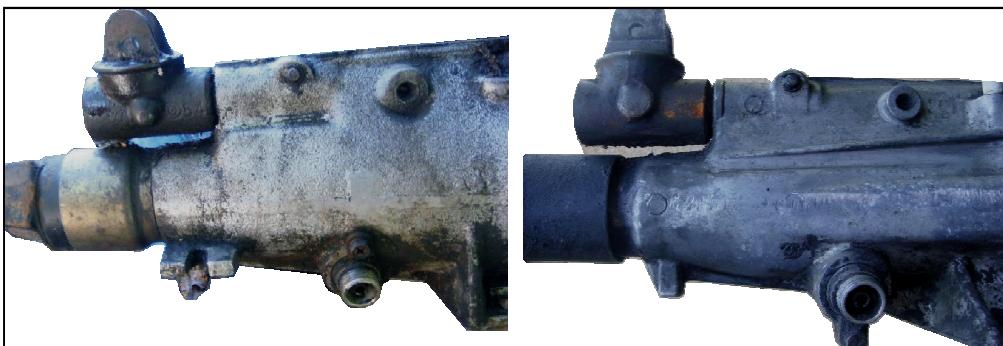


Photo 10—FS5W71B shift linkage. Left, pre-1980 with shorter pivot ears. Right, 1980+ with taller pivot ears.

Z24 motor. Higher torque engines (especially using 5th gear for passing and towing) will over-stress the front counter shaft bearing. Late in the 1984 S12 and early in the 1985 720, the front case was modified to accept a larger 62mm counter shaft bearing to replace the 56mm bearing. The bearing cover plate was also modified to circulate oil past the main and counter bearings to better lubricate them. The 1st/2nd shift rod was increased from 14mm to 16mm diameter to strengthen it to support the much larger shift fork.

I have taken my 1985 CA18ET FS5W71B apart and have seen the changes. I do know the 1985 720 has the larger front counter bearing in it but I don't know about the other modifications. Grafting an L-series bellhousing

onto one of these will be problematic as the older case will only be machined for the 56mm counter bearing and the 14mm shift rod. The 62mm bearing can be removed and a 56mm bearing pressed on or a machine shop could bore the case out to proper 62mm size. The shift rod hole must also be drilled out to 16mm for the swap.

F4W71B 4 SPEED

I'll mention this transmission so that it not be mistaken for a FS5W71B. The F4W71B has been around since mid-year 1973 on the Z cars and 620 trucks, and also used on the Z-series 720 truck. All F4W71Bs have a six-bolt cover plate with a plastic breather just forward of the shifter on the tailstock, the biggest difference between it and the 5-speed.

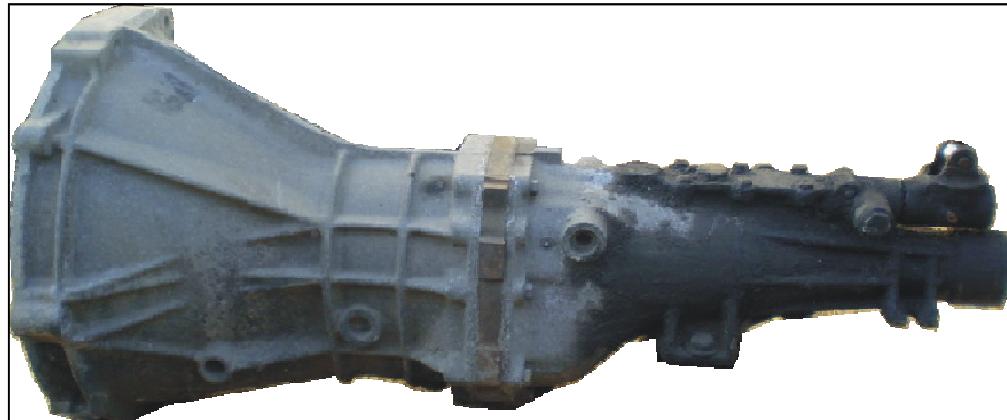


Photo 11—F4W71B 4-speed, original manual transmission for the Z cars, 620 trucks, and 720 trucks equipped with the Z-series engine.



Photo 12—L-series (left) and Z-series (right) bellhousing comparison. Bolt hole on RIGHT OF RIB is Z-series. Bolt hole on left of rib is L-series. Just remember LEFT IS L-SERIES and you can't go wrong.

Harder to notice is the reverse light switch, positioned about one inch further back on the main case than on the FS5W71B. Other than the reverse light switch position, the 4- and 5-speed bellhousings could be swapped. Early FS5W71B are basically a F4W71B with a modified tailstock to hold the overdrive 5th gear. The 4-speed is 31.5" long.

L SERIES OR Z SERIES TRANSMISSION?

Often when looking at removed transmissions, or pictures, you only get a quick glance so it would be helpful to be able to identify it just as quickly. You will notice that forward of the vertical shift lever is a small casting ridge running along the transmission top center line to the bulge of the bellhousing. At the bellhousing the casting line becomes a well-defined ridge that continues up the 'bell' to where the block would be if attached. There are two bolt holes, one on each side of this casting ridge. Now, if the casting ridge is closer, about 1" away from the right-side hole (when looking forward), then it is a Z-series transmission. If the casting ridge is about 1" away from the left-side hole you have an L-series transmission.

FS5W71C

Similar to the FS5W71B, including a ribbed aluminum front case and rear half and a steel adapter plate holding the gears and shift rods.

NOTE: The CA version of the FS5W71C has a smooth front case and bellhousing without ribbing.

The metal vent pipe is usually on the top right of the tailstock. The biggest visual difference is the tailstock with a revised internal shifter mechanism with shift lever held in place with a snap ring. The tailstock may contain a speedometer cog and cable drive or an electronic speed sensor unit on the right side. The sensor can be removed and any earlier 'C' or post-1980 'B' type speedometer drive cog can be used in a 510. Looking into the front of the transmission behind the

(Continued on page 17)

Reader's Dime

Diane

DQ: Tell us about yourself.

My name is Diane Cuyle, I'm a California native, and I grew up helping my parents rebuild British cars, mostly MGs and Sprites. Although I didn't take auto shop in school, I was definitely attracted to the boys who were and could fix anything wrong with my car.

DQ: How did you get into 510s?

DC: I got into 510s in high school when the boys I liked were tuning them up and cruising around town. Each one had its own personality and quirks. The cars didn't have paint or a full interior, but they sure could run fast. That led into spending more time at the track with SCCA and watching the ITC class of 510s.

DQ: How long have you had your 510?

DC: I bought this car in April 2009. As soon as I saw it, I made one lap around, laid my hand on the hood, and told my husband to go make the deal – this was my car. On the drive home we came up with a theme and graphics, further defining her as my car. As it turns out, it's the same car I owned in the late '90s,

which I didn't know at the time until we started the tear down.

DQ: What were your objectives?

DC: My objectives were to do a really good restoration and clean up. I wanted something refreshed, reliable, and fun to drive. A great sound system was a must as well.

DQ: What tuning style would you describe this car as? (ex. old-school, street racer, autocrosser, etc.)

DC: The tuning style of this car is definitely old school street racer. We kept the L-series motor from our old GT4 race car so that at any time it is also autocross ready.

DQ: Who helped you build this car?

DC: Jim Cuyle of Top Jimmy's Motorsports gets all the credit for building this car. Jim has built at least 15 different 510s over the years and put a lot of his tricks into this one. He pulled out parts I didn't know we had in inventory to put on this car. She has the heartbeat of her brother the race car and the bling of his beloved Datsun that was totaled (passed away) several years ago.

DQ: What makes your car special?

DC: Her soul and personality make her special to me. The fact that we were reunited and I was able to put more energy and effort into restoring her this time makes a big difference.

I think she's also special because we kept her old school and she has a well rounded restoration, both interior and exterior. She's also the only 510 I know that has the driver's seat centered to the steering wheel.

DQ: What is your favorite part?

DC: My favorite part is the little details that Top Jimmy's has added and plans to add in the future. A 510 project is never truly done. It's bad mojo to say your 510 is done, because once you do, it gets totaled.

DQ: Who or what inspired the direction of modifications on this car?

DC: Top Jimmy's Motorsports brought me tons of ideas of tricks from the past, necessary upgrades and functionality and had me make decisions.

DQ: What don't you like about this car?



Cuyle

by Diane Cuyle

DC: The new front and rear window seals that we installed less than a year ago have cracked and now leak. This car is garaged, so it's really frustrating to see a new product look horrible compared to the rest of the car.

DQ: What would you like to change?

DC: I'm really looking forward to some of the upgrades we have planned, such as power windows and a larger fuel cell.

DQ: What would you do to the car if money were no object?

DC: I'd do another full tear down, strip her to bare metal and repaint. We had a really clean body and nice paint job, but Mother Nature decided to destroy that by collapsing the car port last Thanksgiving. We've touched it up, but would still like to re-paint.

DQ: What is your favorite place to drive this car?

DC: Anywhere there's no traffic jam so I can open her up and let her stretch her legs, reach 5th gear and hum at a cruising altitude of 80+ mph. The final destination could be anywhere, as long as there are other car enthusiasts.

DQ: Technical specs?

ENGINE

- L16 bored .50 over
- Reworked A87 head with 1.5" ports and valve work
- Z24 flat top forged pistons
- Z24 rods
- Mild cam
- Datsun competition headers
- Dual 45mm Solex side draft carburetors
- G35 3" custom tail pipe system with stainless Borla Boomer muffler

DRIVETRAIN

- 5 speed 200SX transmission
- 2000 Roadster clutch

SUSPENSION

- Eibach coil over suspension
- Tokico ZX strut inserts (front)
- GReddy strut tower brace – polished
- Electramotive 1" front sway bar
- Electramotive 3/4" rear sway bar
- Rear competition springs
- Slotted rear end
- Urethane bushings
- G35 rear shocks

WHEELS/TIRES

- 17" Eagle Racing rims
- 205 40 ZR17 Toyo Proxes 4
- 25mm wheel spacers
- Wilwood disk brakes – front and rear
- Stainless steel brake lines – front and rear

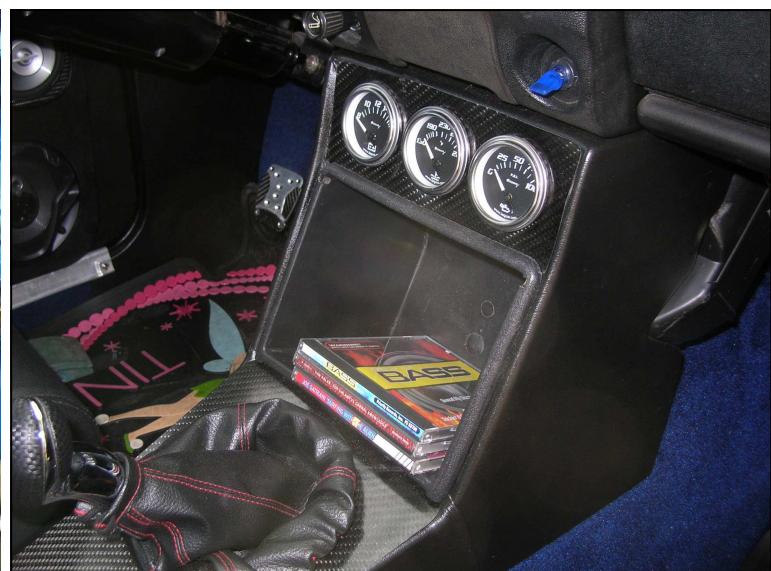
EXTERIOR

- Custom three-tone paint
- New rubber weatherstripping, seals, door stops, hood stops, fuel door stops
- Power mirrors
- Dual air horns

INTERIOR

- Scorpion race seats with Simpson race harnesses
- 13" Grant GT steering wheel
- Lowered steering column
- Wink mirror
- Equus engine gauges
- Factory tachometer
- Suede and carbon fiber upholstery
- Custom center console

DQ



510 Wagon Independent Rear Suspension

The basics behind swapping your wagon's live rear axle for the sedan's IRS.

by Paul Moore

We are blessed in this day and age. The tools, techniques, and the *staggering* amount of technology and resources that surround us today are almost incomprehensible. As a fellow Dime enthusiast, and fabricator, I remember when doing something yourself meant just that - doing it yourself! There wasn't much to be had in the way of "kits" to adapt one thing to another. If you wanted something different you were crawling the junkyard with a Hollander interchange manual looking for the answer.

Fast forward a couple of decades; after engineering school, I have accumulated some 20 years of experience working for some of the best in the business. I am still learning new things, but that is the one aspect of this profession that keeps me hooked. As a huge vintage race car nut, my shop, The Moore Speed Co., specializes in the construction, restoration, and preservation of vintage cars.

It is no surprise that I've been having fun with Datsuns. These awesome little machines are a real throwback to a time

when building cars was fun, and not just a job. Call it grassroots, or maybe interesting history, but either way it is undeniably pure, vintage fun.

PROJECT BACKGROUND

When a good friend and fellow Datsun enthusiast approached me about building his next car, a 510 wagon for vintage racing, I knew we could have some fun with it. The idea was to build a (somewhat) legal 510 wagon for vintage racing that could be as competitive as a sedan. And why not? The wagon shares the same major dimensions with the sedan, the only difference is the wagon is three inches longer and has a bit more roof. The only real design difference is—you guessed it—the rear suspension.

While a solid rear axle can be made to work, and work fairly well, it isn't as advantageous as an independent rear suspension (IRS). With many well-known modifications that can be made to the 510 IRS, it was only logical that the wagon got one. No surprise that there isn't a "kit" to make it happen.

Now, we're certainly not the first to convert a wagon to IRS, it has been done many times. We might, however, be the most recent to enter the ranks of vintage racing with one.

PROJECT PLANNING

Before the cutting began, we took a look at the sedan and the wagon floors, which are surprisingly different. I've seen others adapt the IRS by cutting and swapping the whole rear floor section. That would work, but it's a lot of work! The beauty of the sedan IRS is that it uses only four mounting points, plus a couple spring pockets and shock mounts if you are using stock springs. We decided that we wanted to incorporate rear coilovers as well, but we'll get back to that later.

After closely comparing the two rear floors, the obvious choice was to cut the solid-axle mounts out and create the necessary four mounting points for the IRS.

MODIFICATIONS

The first step was finding and marking the wagon's axle centerline, then meas-

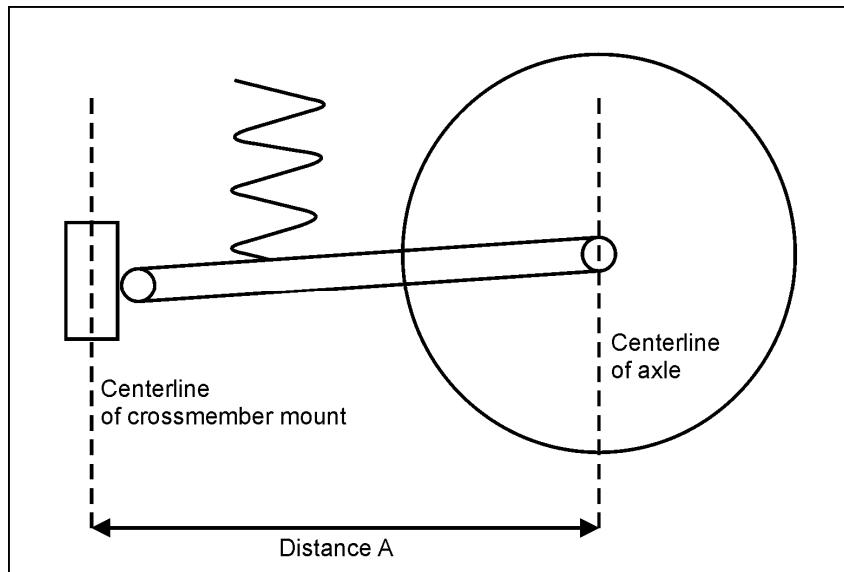


Figure 1—Measure "Distance A." This determines the position of the IRS crossmember on the wagon chassis.

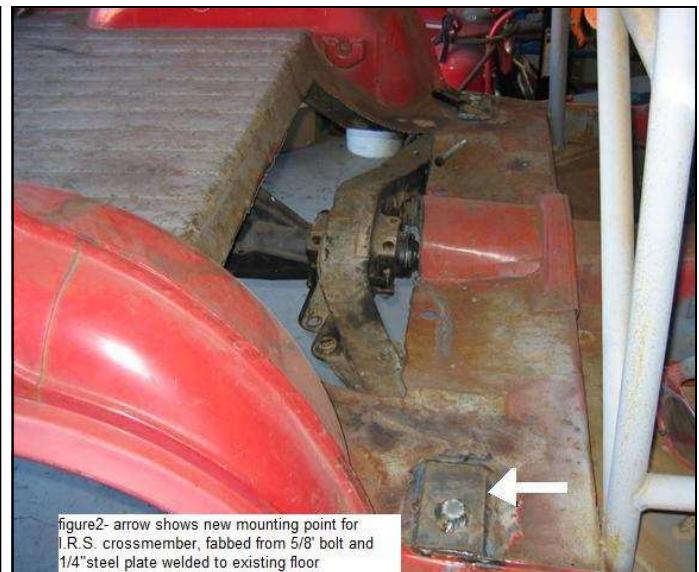


Photo 1—Arrow shows location of IRS cross-member mounting.

uring the stock location of the IRS crossmember. Knowing that the crossmember is centered makes the math easy. After checking a stock sedan for the crossmember height relative to the ground, we knew where to start.

We determined the distance between the main crossmember mounting bolt and the IRS's axle centerline. With that distance calculated, we could transfer the information to the wagon. Dropping a plumb-bob from the axle centerline that we had previously marked on the wagon, we could then measure forward to determine exactly where the crossmember mounting stud would have to be. We discovered that the mounting stud, or bolt as it would become, would have to be right in the area of the front leaf spring mounting 'pocket'. We cut the mount with a plasma cutter and, after boxing in around the pocket to regain structural integrity, we were able to mark the mounting bolt locations.

Once you hold the new crossmember up in its future position, it becomes obvious that the center of the wagon floor needs to be opened up to clear the center of the IRS crossmember. This issue is aggravated by our decision to mount the crossmember about 2-1/2" higher than stock so we could have a lowered ride height and horizontal CV axles. We converted the half shafts to BMW CV joints, but it's nice to reduce the angu-

larity as much as possible.

We decided to make the new pickup points for our IRS crossmember out of 5/8" grade-8 bolts instead of the stock studs, and that was as simple as marking and drilling the new locations through the floor. We then cut two 6"x6" squares out of 3/16" plate and drilled 5/8" holes in the centers, put the 4" long, 5/8" bolts through the plates and welded the bolts to the plates. We then slid the bolts through the new holes in the floor from the topside and welded the plate to the floor, much like roll cage mounting feet, leaving a new 5/8" stud to mount the crossmember. See arrow in Photo 1.

Once the crossmember was mounted, the rest fell into place. The next step was to install a differential in the new crossmember and use the position of the stock IRS mustache bar to build the new mustache bar mount for the chassis. This mount was built by welding in a 2" square crossmember between the wagon's rear frame rails, then hanging two mounting bolts from it to mount the mustache bar as on the sedan. We opted to machine a couple of threaded 'bungs' to weld to this crossmember instead of bolts so the differential could be removed without taking the mustache bar off of the diff. Being a race car application, it affords a little more working room and a quicker change "in the heat of battle." See Photo 2.

SPRINGS AND SHOCKS

We now have IRS in the wagon and our last step is figuring out what we want to do for springs and shocks. As we mentioned earlier, we had already decided to go coil over. Obviously the wagon doesn't have the shock towers on the rear inner fender wells like the sedan. We contemplated grafting on a pair of sedan towers for that factory look. I have seen it done but in the end we decided that we wanted the shocks mounted at the most effective angle. They came up right through the wagon's rear floorboard, with the upper shock mount bolting to the roll cage. See Photo 3.

Converting the rear control arm to a double-shear shock mount was basic fabrication. All that was left was to bolt on the coilovers to make it a roller. Because of our lowered height, we had to cut our lower rear doors and fender lips and add fender flares to get the wheel clearance we needed, but it was the look and the height that we wanted anyway. Upon final installation of the coilovers, we fashioned a couple of rubber bellows that slide down over the shock bodies as they come through the floor. The cool part is the visual; seeing the coilovers poking through the floor, it makes you wonder what's going on under there!

DQ

www.moore-speed.com



Photo 2—Full view of the sedan IRS mounted in a wagon chassis. Arrows point to structure to hold the stock sedan differential mustache bar. Frame rails had to be modified to pass the coilovers through. Other visible modifications include the fuel cell.



Photo 3—View into the cargo area showing relocated fuel cell and tops of rear coilovers.

Strut Swap Information

Found a later Datsun or '80s Nissan in the junkyard?
Here's a guide to brake and strut specifications.

by Brendan Parrot, Introduction by Julian Series

Brake upgrades, and the strut changes that typically accompany them, are a very common modification for Datsun 510 owners. They are becoming even more common due to the increasing rarity of new and rebuilt stock 510 calipers and caliper rebuild kits. DQ has covered the 280ZX brake upgrade in *280ZX Brakes Stop Your 510 On A Dime* (DQ 2.4) and the 300ZX upgrade for 280ZX struts in *Bigger Brakes, Wider Track* (DQ 5.3). There remain a number of possible donor cars to upgrade the struts and brakes on a 510 aside from the 280ZX parts and this article will cover them.

Note: This article has been adapted from the long-dead www.pl510.com website run by Brendan Parrot.

Basic data for each adaptable strut is located in Table 1 and reflect measurements for unmodified struts. This includes donor vehicle information, inner strut tube length (i.e. length of the standard insert), length of the strut tube between the spindle knuckle and the spring perch, and brake sizing information. Information including the pros and cons of the donor parts and potential upgrades are included in the text below.

RIDE HEIGHT

Please note that any changes in ride height are not listed, as that will depend on a number of factors including where you set the spring perch and what springs you will be using. Still, you can use the listed dimensions to help calculate ride height changes. For example, if you're currently using a strut with a "B" dimension of 11.5" and plan on swapping in a strut with a "B" dimension of

10," expect a 1.5" drop if you're using the same springs and upper strut mount.

As mentioned, the specifications listed in Table 1 are for unmodified struts. Strut tubes can be shortened to increase suspension travel and spring perches can be relocated up or down to change ride height. Strut tube shortening is documented in *Strut Shortening And Economical Ride Height Adjustment* (DQ 6.3). If you don't have the skills to do this yourself, a local machine shop should be able to handle the task. Just be sure you have the precise measurements that you need.

COILOVERS

Some enthusiasts choose to replace the stock spring perches with coilover kits. These kits allow easy adjustment of suspension height, but understand that your alignment will have to be reset every time you adjust the height. Coilover kits also use the smaller diameter aftermarket springs. These allow you to choose a wide variety of spring rates and provide more room for camber and caster adjustments. Ground Control, Design Products Racing, Carrera, Experimental Engineering, and others offer kits for the 510. The Ground Control kit is approximately \$200. If you're on a budget but still want ride height adjustability, DQ 6.3 has a low-cost method as well.

PL510

ADVANTAGES

You have them! A few experienced enthusiasts still use the stock calipers. Proper maintenance (lubed sliders, fresh seals) and great pads such as Porterfield

make a big improvement over the sad brakes we normally inherit when we buy our cars.

DISADVANTAGES

Small, solid rotors and single piston calipers. Smaller wheel bearings have a harder time with extended hard driving. As a result, the wheel bearings may not last as long as the larger bearings found in later model struts. The post-'69 struts are fairly tall. This greatly reduces suspension travel on a lowered car.

JUNKYARD UPGRADES

VW Rabbit Caliper Upgrade

First generation Rabbit calipers with Performance Friction pads (part #PFC P/N 2804) have twice the surface area compared to the stock 510 assembly, yet weigh the same. Swap the struts from left to right (and vice versa) for clearance issues. Drill out the bolt holes in the caliper to match the diameter of the stock 510 mounting bolt. Have the rotors turned down .100" off the radius so that they clear the caliper.

Volvo Caliper Upgrade

Four-piston calipers that supposedly bolt on. These calipers have two brake line inlets, so a brass "T" and two short hard lines will need to be installed. This still limits you to the stock rotor.

Volvo Caliper/ZX Vented Rotor Upgrade

The 280ZX vented rotor bolts up to the stock 510 hub. A short spacer is installed between the hub and rotor (thickness unknown). Volvo four-pot calipers for the vented Volvo rotor (from the 6 cyl models) bolt on. This still leaves you with stock 510 wheel bearings. One pos-

sible drawback to any Volvo caliper is the weight. The caliper for the vented conversion weighs nine pounds.

610

The '73 610 strut is the same as the early 510 unit. The 610, 710, and SX struts listed were popular in the late '70s and early '80s due to the slightly larger rotors, bigger calipers, and bigger wheel bearings. These are rarely used today due to their scarcity and the availability of the ZX and later SX struts.

810

This is a strut with real possibilities. I would highly recommend shortening the housing to accommodate the 15" ZX insert. There have been reports of the control arm tip contacting the rotor on full compression and bumpsteer spacers seem to compound the issue. Trimming the tip of the control arm would solve this problem

UPGRADES

Machine the lip off the back of a 260z hub (for strut clearance), rotors bolt on.

The early Toyota 4Runner 4-pot caliper bolts to this strut. The 4Runner caliper is very heavy.

200SX ('80-'83)

As an upgrade over stock PL510 parts, it provides a big improvement in braking.

ADVANTAGES

Larger rotors, larger bearings.

DISADVANTAGES

The strut tube is too long. Shortening is definitely in order on a lowered car. The stock spring perches are offset. This could possibly cause interference on a lowered car. The brake rotor is closer to the strut tube on this strut. On a lowered car, the rotor may hit the tip of the control arm on full compression—remedied by trimming ~1/8" from the tip of the arm. A 510 with a stock ride height will not have these issues.

JUNKYARD UPGRADES

240Z-280Z calipers bolt on with no modifications needed. These are a dual piston (opposing) design and frankly, they look really cool and the braking capability is improved. The Toyota 4Runner caliper also bolts on.

280ZX

This is the most popular upgrade, hands down. The spring perches are too big to use. Replace with stock perches or

coilovers. There shouldn't be any need to cut the strut tube down.

JUNKYARD UPGRADES

The late Toyota 4Runner 4-piston caliper bolt-on is just a rumor for ZX struts. That caliper fits the Z struts. The 240Z-280Z does NOT use the same strut as the ZX. The spindle angle, nor any parts, are compatible with the 510 suspension or ZX struts.

DQ

DONOR VEHICLE	DIMENSION A	DIMENSION B	STOCK BRAKES
510 '68-'69	15.8	10.5	9.1" disc, single-piston caliper with 3" bolt spacing
510 '70-'70.5 and '72-'73	16.25	11	Same as above
510 '70.5-'71	16.8	11.5	Same as above
280ZX '79-'83	15	10.5	9.9" vented disc, large single-piston caliper
Maxima '83	15	10.5	Same as above
810 '77-'79	16.25	9.75	10.7" solid rotors
610 '73	16.25	11	9.1" disc, single-piston caliper
610 '74-'77 710 '75-'77	16.25	11	9.625" rotor, two piston (shared bore) caliper
HL510 '77-'82	17.375	unknown	Same as above
200SX '77-'79	17.375	unknown	Same as above
200SX '80-'83	17.375	10	10.4" solid disc, two-piston caliper
200SX '84.5-'88	15	10	9.8" vented rotor

Table 1—Brake rotor and strut length specifications.

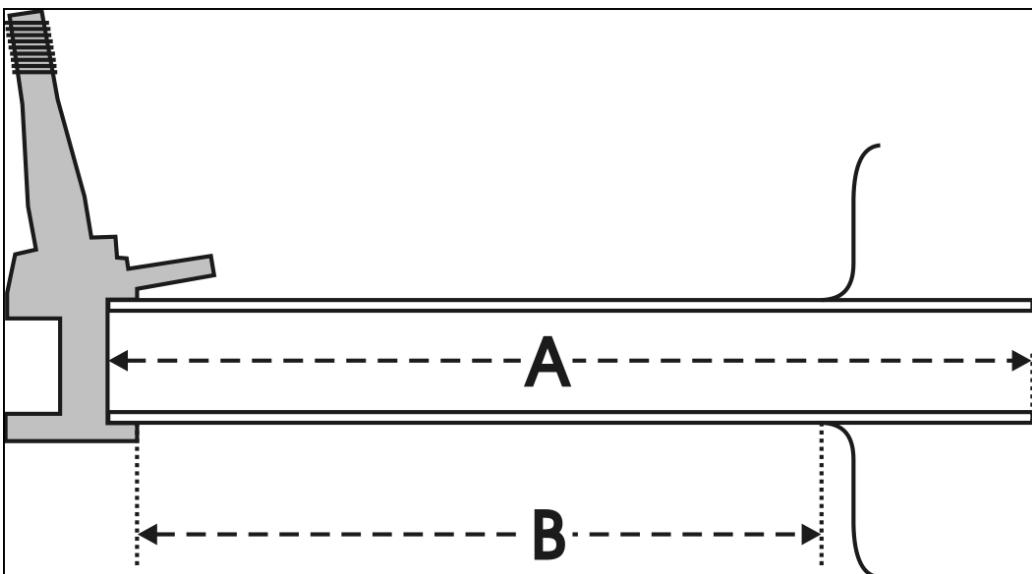


Figure 1—Strut length measurements are taken at the noted locations.

210TK Cylinder Head

For that little edge in regulation-restricted racing,
try to find the 210TK cylinder head.

by Matt Armfield

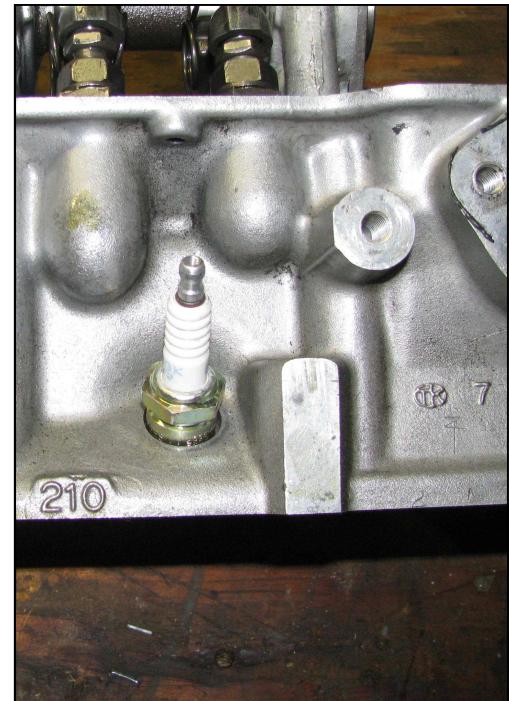
There is an L-series cylinder head which is said to be the best due to the fact that it has cleaner castings on the insides of the runners compared to stock heads. It is called a "TK" head. I ran a 210 head in my race car but was getting pulled slightly on the main straights by the competition. I found that I had a TK head on one of my spare motors, went through it, milled to minimums, and installed it.

With it, I started pulling equally down the long straights - yea! I am now converting to vintage racing and have a closed-chambered head on the engine, currently. My TK head is boxed up in the attic, but it has "TK" stamped in raised letters. The marking is below and to the left of the fuel pump hole in the head. On mine, it is a small, oval marking 1/2" long with 1/4" to 3/8" tall let-

ters. The letters contact the oval around them - it seems the top of the "T" is almost part of the oval. That head was noticeably smoother (fewer raised nubs) inside the runners of the head and thus flowed marginally better as if it was cleaned up.

Dave at Rebello told me about these heads. I have written down that the TK heads came on '71 510s, but I have always remembered that they were only available via the parts counter.

I also have recorded "TK head 210 closed chamber." However, my TK head sure is not a peanut head. I have a 219 head on my car now. My TK head is more of a semi-closed design similar to the very early 210 heads.



DQ Photo 1—"TK" marking shown just forward of the #1 spark plug.

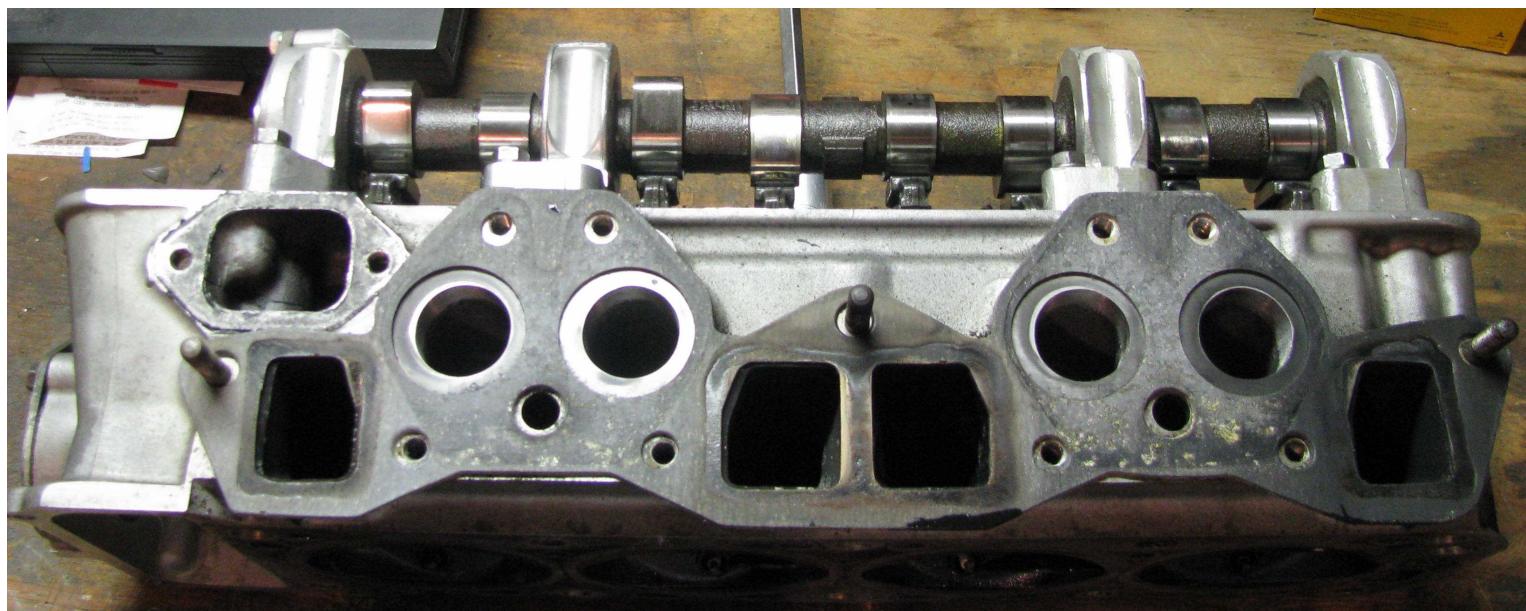


Photo 2—Main advantages of the 210TK head are in the intake ports, but they're hard to photograph. It shares the standard 210 small intake port diameter, but cleaner runners make for slightly better flow.

Tech How-To: Nissan Transmission Identification

clutch fork, the cover has five retaining bolts, identical to the 'B'. 'C' type transmissions come in at least two different lengths, the shortest from the Hardbody is 33" so it will not likely replace any FS5W71B unless the driveshaft is shortened. 240SX 'C' type transmissions are 33.75".

A much stronger direct descendent of the FS5W71B, the FS5W71C was designed to handle the newly-introduced VG30 in the 1984 non-turbo Z-31, Hardbody, and 200SX; arguably much stronger than even the FS5R90 (T5) used in the turbo 280ZX and 300ZX.

The FS5W71C was used on at least five different motor types: CA-series, VG-series, KA-series, SR-series, and RB-series. Will bolt to the L-series block but the transmission will 'tilt' like a NAPS Z-series. An L-series 5-speed bellhousing, with some machining or counter bearing swaps, can be fitted onto the 'C' to make it work. The KA- and the Z-series bolt pattern is identical so no 'bell' swapping is needed for use on the Z-series motors.

Internally the 'C' type has the same 71mm main and counter gear spacing as the 'B' type. All have the larger 62mm front and now the 'C' type incorporates a 62mm rear counter shaft bearing mounted in the adapter plate for better support and strength. All 'C' syncro hubs are narrower to allow more space between them for wider, stronger gears. The 1st-2nd shift rod has been enlarged to 16mm. Much larger, stronger shift forks are used. The five-bolt front cover plate has been revised to accept the larger counter bearing and modified to circulate oil around both bearings from the new upper oil feed hole in the front case.

F4W71C

The 'C' type was also produced as an F4W71C 4-speed for two years in the late 1980s D21 Hardbody 2WD. Outwardly looking the same as the 5-speed, it can easily be mistaken for one. If the

transmission is out of the vehicle, place in the 5th gear position and turn input shaft while observing that the output spline turns (FS5W71C) or does not turn (F4W71C). I've seen one in a 1989 Hardbody and the only way to tell was to read the engine compartment tag. Look near the bottom of the tag where the transmission type is stamped into it.

It should be noted here that while clutch disc input splines and driveshaft output splines are the same for all Nissan 4- and 5-speeds, since the late '60s at least, the output spline for the VG-powered Z-31

FS5W71C is larger in diameter requiring a larger driveshaft yoke spline to match it. Be sure to check any VG 'C' type output spline for driveshaft compatibility.

FS5R90A BORG WARNER T5

The early L28ET motors were only available with an automatic, most likely because Nissan did not consider the FS5W71B up to the task of handling the turbo motor. The FS5W71C was still on the drawing board and not available until the new VG30 motor came out in 1984. Even then, Nissan considered it only

Photo 13 (right)—FS5W71B front cover (left) and FS5W71C front cover (right). Comparison of the 56mm B-type (left) and the much improved oil circulation on the 62mm C-type front cover plates.



Photo 14—FS5W71C 5-speed from the 240SX.

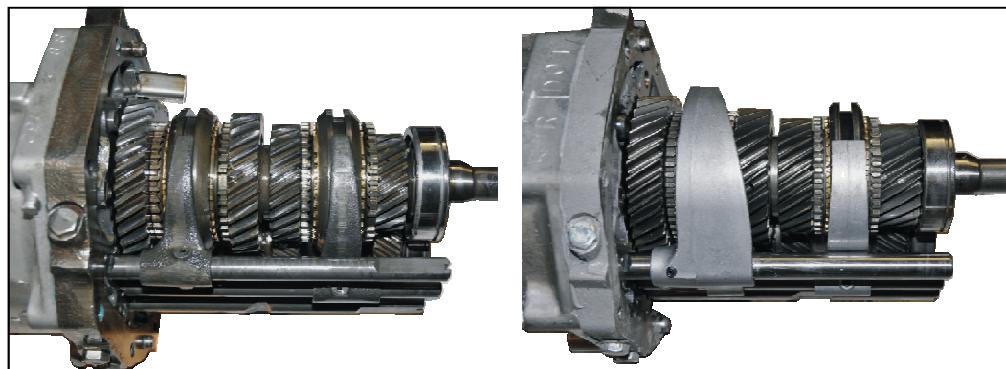


Photo 15—Later FS5W71B internals (left) compared to FS5W71C internals (right) with larger-width gears and heavy duty shift forks

strong enough for the non-turbo VG30. In hindsight they were likely incorrect.

As a Band-Aid measure, the Borg Warner T5 was grafted onto the 280ZX turbo in mid-1982. The T5 has a removable bell housing with an L-series bolt pattern. Because of the input and output spline, a T5-specific clutch disc and driveshaft yoke are used. Carried over when the new VG30ET was introduced, the T5 survived until 1986. Hindsight has shown that the T5 wasn't that strong and is not the 'world class' transmission used in the Camaro and Mustang. A testament to the superb design, the FS5W71C can easily handle more power than the T5 and its only advantage is that it is cheap to rebuild.

The T5 is a massive transmission compared to the 'B' and 'C,' requiring tunnel modifications if used on a 510. The shifter is similar in design to the 'C' type and access to the internal gears is via its 'top loader' design. The T5 is a couple of inches longer than the 'B' type of 31.5". The T5 is the second-to-last L-series 5-speed used in production. Using the T5 in a 510 would require lots of modifications and is doable but hardly worth it.

FS5R30A

The 'in house' Nissan-built variant of the T5 Borg Warner is very much improved in power handling. Two models were used, one for each of the Z31 and Z32 cars, with either the VG30ET or DETT motors. Internally they are the same but with different ratios. If you plan to run a VG motor in your 510 and feel the FS5W71C won't stand up to the power then your only other choice is the ultimate FS5R30A. There is no way to convert it for use with the L-series and no real need. To put any strain on this transmission you would need six L20Bs.

The FS5R30As are two-piece aluminum cases with a steel adapter plate resembling the 'B' and 'C' type. The oil drain plug is on the bottom but the fill plug is on the right side midway up. The vent

tube is on the adapter plate top right and the speed sensor on the right tailstock.

Z31 transmissions generally have a smooth bellhousing with casting ribs on the main body and an internal shifter just like the 'C' type. The plate for the shifter is tilted upward at the front.

Z32 transmissions generally have a smooth bellhousing with light ribbing on the main body only. The shifter mounting plate is horizontal and closed with a cover. The shift lever is mounted outboard above the driveshaft with the 'striking rod' entering the back of the tailstock. This shift lever set up is very similar to the original 510's F4W63L, having now come full circle.

NISSAN AUTOMATICS

Although most people prefer a standard transmission, there are others that, because of injury, choice, or family con-

venience have to have an automatic.

Because some owners may have an automatic-equipped 510 and may contemplate replacing it or changing over to a standard, I'll list them here with a brief description.

All 510 automatics are approximately 26.3" long.

BW35 LETCH WORTH

Probably the earliest automatic of Borg Warner design, used until March 1971 when the JATCO 3N71 replaced it. Square removable oil pan with drain plug and screened vent opening on lower right side of bellhousing. Cable down shift and shift linkage on left side.

BW35 MUNCIE

Used on 1970 to March 1971 when the JATCO 3N71 replaced it. Square removable oil pan without drain plug and screened vent hole on the very bottom of

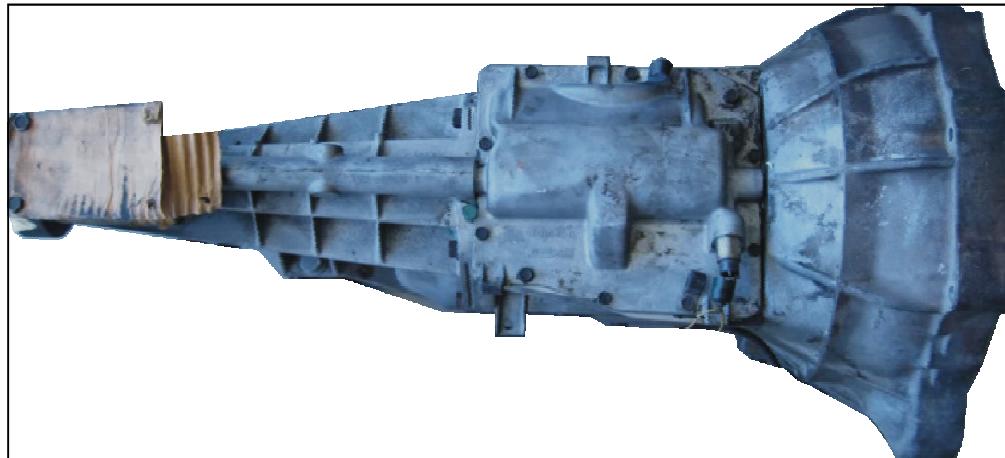


Photo 16—FS5R90A Borg Warner T5 transmission from the 280ZX Turbo.



Photo 17—FS5R30A 5-speed from the Z31 300ZX.

the bellhousing. Vacuum-operated down shift and shift linkage on left side.

JATCO 3N71B

Nissan's in-house automatic based somewhat on the BW35 design. Introduced in April 1971 to replace the short-lived 3N71A on the 240Z and the BW35 on the 510. It received improvements over the years and was featured on most 1970's and late 1980's RWD vehicles. A short version (26.3") of the 3N71B was used in the 510 while all other vehicles used one 31.5" long. The front bellhousing is removable. Only the 2WD 720 came with an automatic.

The same internal gear ratios were used in all vehicles equipped with the 3N71A except the 280ZX turbo.

3N71B GEAR RATIOS—ALL

- 1st 2.548
- 2nd 1.458
- 3rd 1.000
- Rev 2.182

3N71B GEAR RATIOS—280ZX TURBO

- 1st 2.842
- 2nd 1.542
- 3rd 1.000
- Rev 2.400

This lower (higher numerically) gearing would help with off-the-line performance and rev the motor into boost quicker. Other improvements included a higher stall speed torque converter, extra clutch discs and plates, and stiffer regulator springs to raise the shift pressure.

L3N71B

For the 1982 model year the automatic was upgraded for use in the 200SX and 720 2WD truck. Re-named L3N71B, it received a locking torque converter to reduce highway revs and improve economy. Converter lock up is set by vehicle speed independent of driver input. The 'L' does not refer to the locking converter but to 'Light Duty.' There were no L-series L3N71B locking converter automatics but I had one of these apart and the main input shaft, torque con-

verter, and flex plate were different than the 3N71B. An older 3N71B L bolt pattern front bellhousing looked the same, however, and could be installed on an L3N71B and used in an older car. Internal gearing is the same as the 3N71B.

L4N71B

The L4N71B is a true 4-speed (overdrive) automatic introduced for the 1983 model year of the Maxima (with L-series bolt pattern) and the 1984 200SX and 300ZX. The gearing was changed for the CA-series cars to improve low-speed performance with the turbos, but otherwise it is the same as the 3N71B.

The bellhousing will only swap with other L4N71B automatics. I have one from an 1984 Maxima; it is close but doesn't match the original 3N71B or L3N71B patterns. Fourth gear has a switch to deactivate it when not needed for towing or climbing a hill. The L4N71B is 1" longer than the 3N71B.

L4N71B (CA-SERIES)

- 1st 2.842
- 2nd 1.542

- 3rd 1.000
- 4th 0.686

E4N71B

Same as the L4N71B but the 'E' refers to 'Heavy Duty' use with the VG30E 200SX and VG30ET 300ZX engine. The internal gearing is also higher to take advantage of the torquier engines.

VG30E/ET 4 SPEED AUTOMATIC

- 1st 2.458
- 2nd 1.458
- 3rd 1.000
- 4th 0.686

The Maxima L-series bellhousing should make these E4N71Bs available for use with high-HP L-series engines.

Automatics are becoming more and more complex, including supplying input to, and receiving shift instructions from, the car's ECU to reduce emissions and improve economy. The original 3N71B has reached its useful limit after 26 years and makes way for the next generation RE4R01A and RE4R03A.

DQ



Photo 18—BW35 Muncie (left) and 3N71B (right) 3-speed automatics.

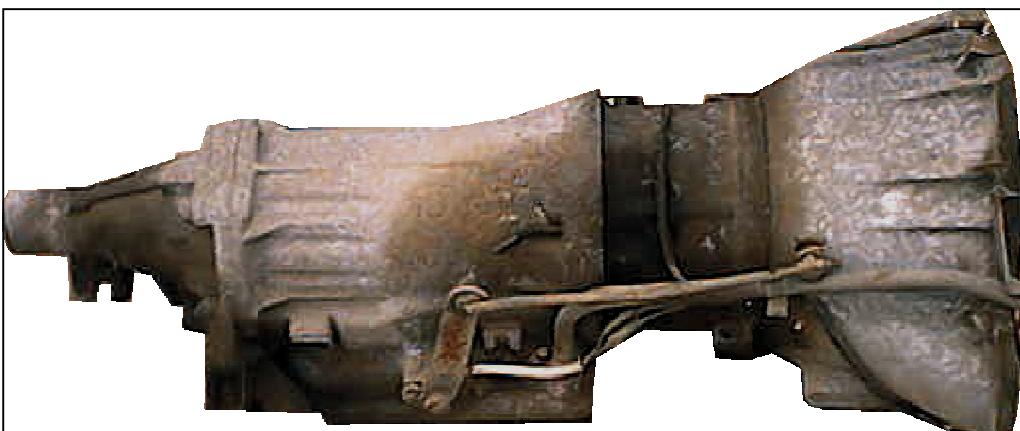


Photo 19—L4N71B 4-speed automatic.

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