INSTALLATION INSTRUCTIONS - SPRITE MIDGET
FIVE SPEED OVERDRIVE TRANSMISSION CONVERSION KIT

Perform the shop work required to do this installation using good shop safety and workmanship practices. Reference to a quality Sprite/Midget service manual will be required. Read these instructions fully before beginning work, then refer back as you work.

I. PURCHASE MATERIALS

Purchase a five speed transmission from a 1979-82 Datsun 210. You can identify a correct transmission using these factors:

Both the input and output shafts are 13/16" with 18 splines.
The serial number, stamped on a pad at the top, front of the bellhousing, just behind the engine cylinder head, should start with the letter "F".

When you purchase the transmission also get: the gearshift lever, throw out bearing carrier and fork, and, if you are going to build your own adapter yoke, get the output yoke (driveshaft front yoke). If the car is to be used on the street, without the optional speedometer ratio correcting adapter and cable, obtain the stock Datsun 210 speedometer cable and housing.

If you did not purchase the deluxe kit, which includes these parts, you will need the following:

Throw out Bearing - NSK# TK40-14AU3

Rear Transmission Oil Seal - CR#11615 (a 30x45x10 metric seal), Nissan #32114-Y4000

Clutch Lineup Tool - for 1979-82 Datsun 210 (fits 13/16" 18 splines)

If your Spridget has the original twin-bore master cylinder (7/8" diameter on drum brake cars or ¾" on early disc brake cars) you will need to use the original slave cylinder. The slave cylinders on these cars are 1" and 7/8" diameter respectively.

If your Spridget is a later disc brake car (after September, 1967) it will have a separate master cylinder for the clutch. It is 5/8" diameter. It is also used with a 7/8" slave cylinder originally. On cars with this master cylinder (which includes many earlier cars that have been converted to disc brakes) you have a choice of slave cylinders. You may retain the original 7/8" cylinder. Or with the 5/8" master cylinder, you may use a ¾" slave cylinder, Nissan Part number 30620-B5010, or United (NAPA) number 37498. A hose, Nissan number 46211-79912, or United (NAPA) number 38117 can be used with this cylinder. They both fit 1980-86 Nissan 2WD pickups. This cylinder will give a quicker feel to the clutch – too quick for some tastes.

If the Nissan slave cylinder is used, the following fittings will be required: Weatherhead 1443 metric adapter, M10X1.0 bubble flare to 3/16" inverted seat. If hydraulic line is 3/16" O.D. also use: Weatherhead 105X3 inverted flare nut. If hydraulic line is ¼" O.D. also use: Weatherhead 105X4 inverted flare nut and Weatherhead 7828 inverted flare adapter. These four fittings and a ¾" slave cylinder and hose and sold as Rivergate part number 30446 Clutch Slave Cylinder and Hose Assembly.

The original Datsun 210 slave cylinder cannot be used, as it is too small. It will cause pedal pressure to be too high and will cause the pressure plate to over-travel.

II. PREPARATION OF CAR

Remove engine, transmission and driveshaft. Underneath the heater, in the area over the bellhousing, the heater duct built into the body will need to be dented upward slightly to give extra clearance for installing the engine/transmission assembly. Many are already dented here during installation of the stock units. Be certain the center screw attaching the heater to the body above this does not protrude downward where it will hit the transmission during installation. If the car's frame is bent upward in the front, as many are, this will be an even tighter fit.

If you are unwilling to put a dent in the heater duct, and if your frame is not bent upward at the front, the engine can generally be installed (without the dent) with some effort. Use the optional seal listed above in the rear of the transmission. This gives some extra installation room.

III. INSTALL ADAPTER PLATE ON ENGINE

The aluminum adapter plate is furnished with a brushed finish on the edges, which is about all that shows after installation. Because the adapter is machined from 6061 Aluminum, you can polish the edges to a high shine if you prefer.

Remove the starter, clutch, flywheel and engine rear plate. Inspect the two locator pins in the rear of the engine block, one at the top center and one below the oil pump. Be sure they are present and in good, straight condition. Straighten and file or replace as needed.

Remove the oil pump cover from the engine rear plate. Occasionally, on early engines, this may require heating, as these early engines had the cup soldered in. Be careful not to damage the cup.

Bolt the adapter plate to the front of the transmission, using only one 5/16" x 2-1/4" cap screw at each side to hold in place. The side with the counter sunk holes fits toward the transmission.

Look back through the hole for the oil pump cover in the adapter plate. Using a felt tip marker, mark the portion of the front of the transmission that protrudes into this circle. Remove the adapter plate from the transmission.

Grind or file away the area marked, to a depth of at least 5/16" back into the transmission. (Hint: If you use a rotary file in an electric drill, periodically spray with WD40 to prevent clogging.)

Temporarily place the oil pump cover in place in the adapter plate and hold it up on the front of the transmission to be sure the clearance cut is adequate.

Carefully clean the oil pump cover. Sand or buff off any solder that might be on the rim.

Install the oil pump cover into the aluminum adapter plate from the front side, just as it was in the original plate. If your oil pump cover is the type that solders on the backside of the engine plate, it may be too thin to clear the oil pump. This is especially likely if your engine is fitted with the later model oil pump. If there is inadequate clearance, purchase a Rover # AEG553 oil pump cover. Mini Mania stocks these.

Put silicone seal around the inside of the oil pump hole in the adapter plate and around the edge of the oil pump cover. Place the cover into the plate from the front (opposite the countersinks). If time permits, place the plate on blocks, front side up and place a weight in the cover to hold it firmly in place. Let the silicone harden overnight if possible. Wipe off excess silicone on the front of the plate and cover.

Clean the gasket surface on the rear of the block.

Mount the adapter plate on the engine using either a gasket with a gasket sealant, or alternately, a silicone sealant. Put a bead of silicone around the edges of the surface and around each expansion plug and around the oil pump. Don't use so much silicone that excess is pushed into the oil pump cavity where it can plug the oil pump cavity drain hole.

Use the 5/16" x 1-1/4" flat head cap screws to attach the plate. In the hole at the left side, at about the 9:30 position, use the 5/16" x 1-3/4" cap screw so that the end of it can be used for the brace for the carburetor heat shield. Re-tighten the 12 screws twice to be sure all excess sealant is pushed out. Put silicone seal into the groove around the backside of the oil pump cover.

Install the starter in the adapter plate using the two 3/8" x 1-1/4" NC cap screws with lock washers.

Remove the pilot bushing from the hole in the back of the crankshaft and replace it with the special pilot bushing furnished. The kit is furnished with a 5/8" pilot bushing. **(Try to determine as early as possible if your car will require a three quarter inch pilot bushing so that we can mail it to you quickly to avoid a delay in your installation.)** Very late engines will require the ¾" bushing. Drive it in up to the shoulder. (Hint: A long 7/16" cap screw can be used as a bushing driver: run a nut all the way up on the threads, place bushing over the threads and hit head of bolt.) Lubricate the bushing and re-install the flywheel.

Install and align the clutch disc furnished using the stock pressure plate. The protruding hub of the clutch disc should be installed to the side away from the flywheel.

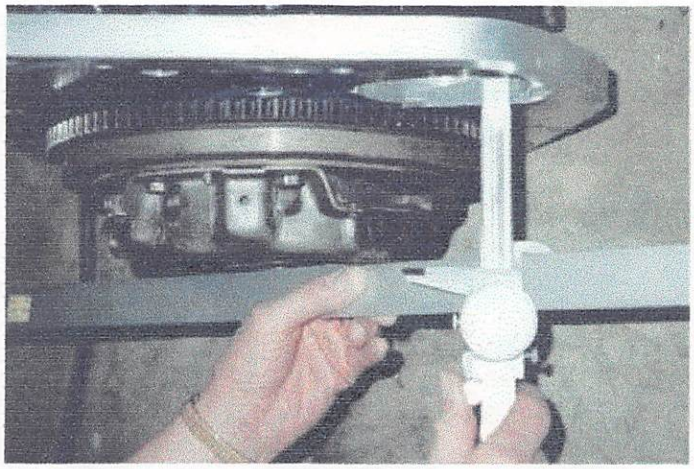
If the plate being installed includes the rear crankshaft seal, see the addendum.

IV. MEASURE PAD-TO-ADAPTER

Carefully measure the distance from the rear surface of the clutch throw out bearing contact pad on the clutch pressure plate to the back side of the aluminum adapter plate. Use a straight edge across the clutch pressure plate.

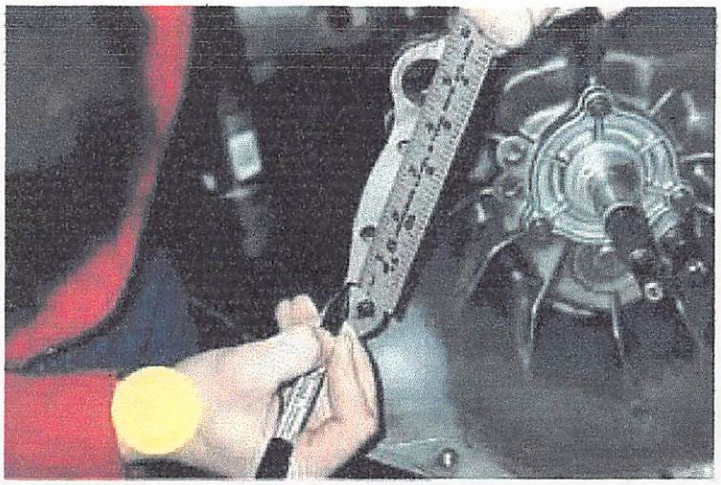
If the clutch cover holds the straight edge off the contact pad, measure this distance and subtract it from the distance from the straight edge to the back of the adapter. (See Photo Below) Note this Pad-to-Adapter figure for use later.

Pad-to-Adapter: _____inches

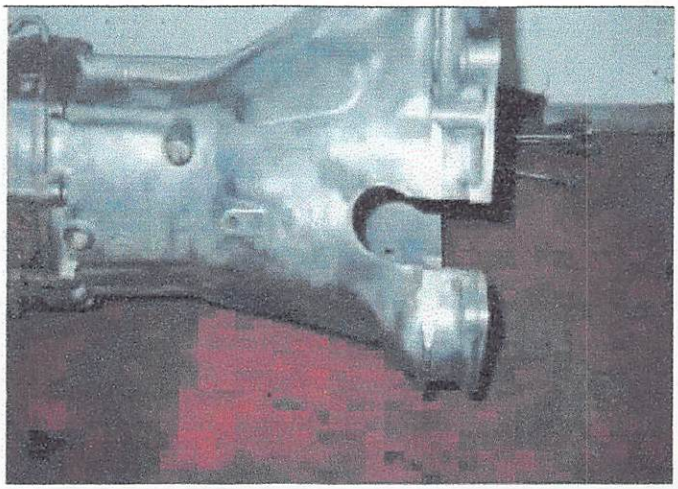


V. PREPARE THE TRANSMISSION

Cut clearance for starter drive in bellhousing as follows. Before cutting, compare the transmission front to the engine rear to confirm where to cut. (See Photo below) If the car has been fitted with a gear drive starter, this hole will not be required. Just grind enough clearance inside the bellhousing for the drive end of the starter.



DONE



Looking at the front surface of the bellhousing, measure downward along the flange 4-1/8" from the bottom edge of the 1" hole in the flange and mark this spot. From this mark, measure straight back onto the side of the transmission 3" and make a second mark.

Centered on the second mark, drill a 2" hole using a hole saw. Saw from each edge of this hole forward to the transmission front flange, making a "U" shaped slot to clear the starter drive.

Drill through the two, threaded, bottom bolt holes in the Datsun transmission with an 11/32" bit to make clearance for the 5/16" bolts that will be installed later.

A rib on the bottom of the transmission will interfere with the two bolts to be installed in the holes mentioned above.. File or grind the rib to make clearance for these bolts.

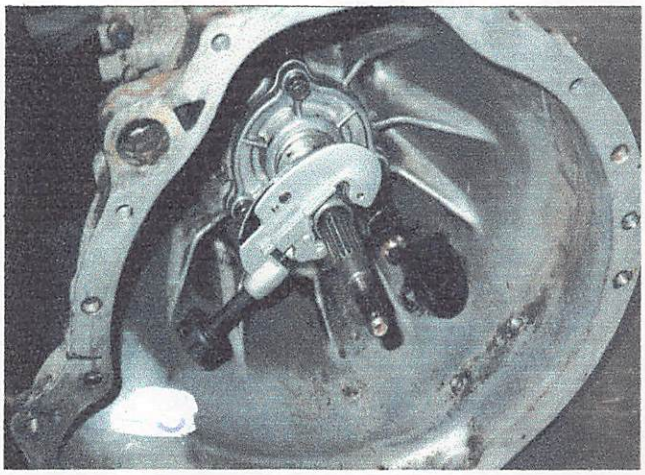
Remove the gearshift lever and check the pivot bushing for the lever. Most are found bad. You can purchase a new bushing from your Nissan dealer- Part #32855-H1010. The bushing at the lower end is rarely bad, but if needed is Nissan #32861-H7301. The gearshift lever is available as Nissan #32841-H8510. It is suggested that the gearshift lever be shortened to a length of 7-1/2" above the pivot hole to provide a short, crisp shift pattern. Stock length may suit some. After sawing it off, grind the top end down to a diameter of 5/16" for a length of 1". Thread it 5/16" NC and the original type knob or the Datsun knob will fit.

We suggest you install a new transmission rear housing seal. The CR #11615 is cheaper that the original seal because it does not have the protective shield, which is not needed inside the Spridget transmission tunnel. It also eases installation of the transmission into the chassis.

Find the protrusion along the back top slope of the transmission bellhousing. Grind or cut this off to ease installation of the engine/transmission assembly. We recommend sanding down the rib that runs down the top of the bellhousing, for appearance and a little extra installation clearance.

Remove the throw-out bearing and carrier and release forks from the Datsun transmission.

Cut the tube the throw out bearing slides on to a length of 1.6". Measure out from the flat area that retains the spring behind this aluminum tube and scribe a mark at 1.6" (about 1-19/32") and cut at the mark. A compact tubing cutter (like a Ridgid #101) works great for this. (See Photo Below)

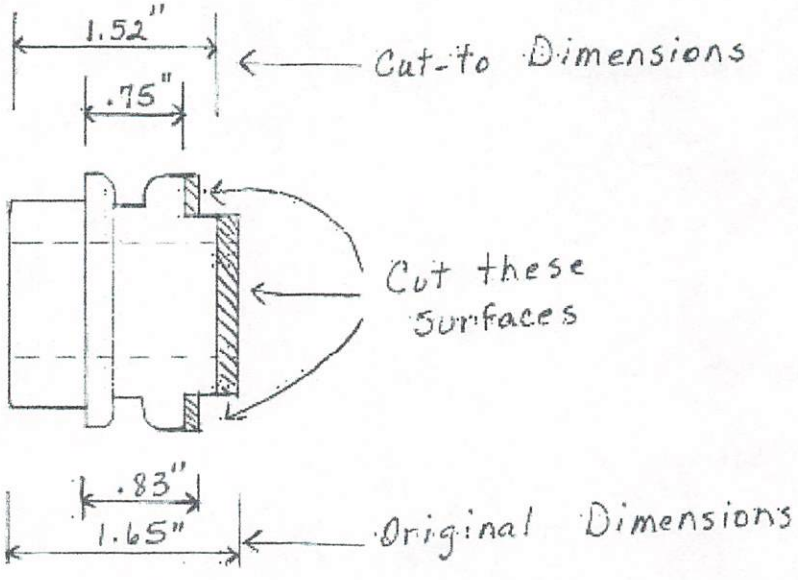


Before installation, be certain the transmission will shift into all six positions. The input shaft may have to be turned while shifting. Occasionally installers have found transmissions which have been handled roughly which will not allow the shifter out of the gate it is in. This is caused by a shift rail sliding out of the neutral position due to an impact on the front or rear. If you find this problem, it can normally be solved by dropping the transmission several inches (on to a wood block please). Try one end, then the other until gearshift locking is cleared.

VI. MODIFY & MEASURE CLUTCH CLEARANCE

Remove the old throw out bearing from the throw out bearing carrier. Shorten the carrier to an overall length of 1.52" (almost 1-17/32") by cutting, filing or grinding the rear of the carrier. Stock length is about 1.65". Sometimes we find an incorrect throw-out bearing carrier in these transmissions. If a longer carrier is found, replace it with the correct 210 carrier, Nissan #30501-H7500.

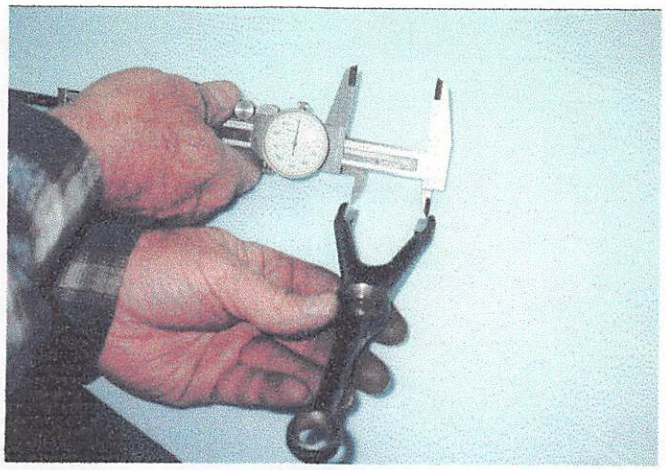
File the flats on the throw out bearing carrier where the release forks contact the carrier. Originally the distance from these flats to the surface the throw out bearing presses against is .83". Cut them until the distance is .75" (3/4"). Keep them even, flat and level. (See Drawing Below)



Put the clutch release fork in place in the transmission. If the fork is missing from your 210 transmission, a new one is available from Nissan as part #30531-H1600.

DONE

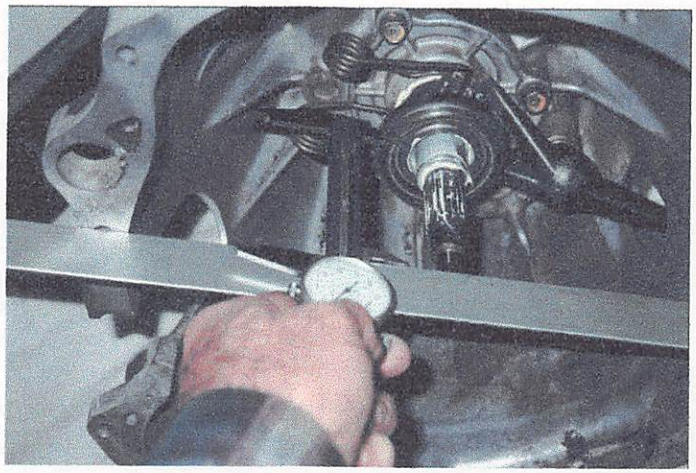
Note where the back side of the forks contact the spring retaining ring on the transmission. Grind or file this area on the back of the forks (See Photo Below) to a depth of about 3/16". Be sure the notches are wide enough to straddle the spring retaining ring. Cut to a slope matching the angle at which they contact the spring retaining ring.



Done

Install the new throw out bearing on the carrier. (The curved surface installs away from the carrier.) Install the carrier and release forks onto the transmission. Hook the retracting spring in front of the ears on the carrier.

With the throw out bearing pushed fully to the rear, measure the distance from a straight edge across the front edge of the bellhousing to the front face of the throw out bearing. (See Photo Below)



Bearing to front of bellhousing _____

Pad-to-Adapter distance (from Section IV) _____

Difference (Subtract) _____

This difference must equal 1/8" (.125"). A preferable difference is about 3/16" (.187"). This is a minimum on high revving or race cars. If this difference is not sufficient, the clutch can begin slipping before it is worn all the way to the rivet heads on the clutch facing.

If the difference above is too small examine the area where the rear of the carrier contacts the spring retainer. Determine which of the three areas filed in the above instructions is holding the throw out bearing from retracting further. File that surface.

Reassemble and recheck measurements until difference equals 1/8" or more. Before final installation, grease the throw out bearing slide tube. Also pack the groove inside the throw out bearing carrier.

Occasionally after the modifications described above are performed, the clutch clearance is still less than 1/8". Normally, the reason for this is use of a pressure plate that has been rebuilt including heavy grinding of the face of the pressure plate. When the face is ground thinner, the clutch release pad moves toward the rear of the car, reducing clearance.

If this problem is found, we suggest switching to a new, not rebuilt, pressure plate.

If the problem still exists, or as an alternative to a new pressure plate, the clutch release forks can have additional thickness ground off. Grind the two curved surfaces where the fork contacts the throw out bearing carrier. Insure that the grinding is equal on each side and that the curvature of the surface remains the same as it was originally.

Locate the back-up light switch on the right side of the transmission just forward of the mount. Remove the switch. Coat the 1/4" pipe plug in the kit with sealant and install here. Screw in only flush, not fully to the bottom of the hole. Backup lights will not be operational unless you wish to install a manual switch.

Look closely at how the rear mount in the kit is assembled (washer positions, etc.) Be sure final assembly matches this.

Remove the top plate of the transmission rear mount and fasten it to the transmission with the countersunk screws furnished. The "U" shaped cutout mounts to the front. Reassemble the mount leaving the bolts through the pad mounts slightly loose for now.

Bolt the transmission to the adapter plate on the rear of the engine. Use (5) 5/16" x 2-1/4" caps crews with lock washers at the top and sides. At the bottom use (2) 5/16" x 1-1/2" cap screws with lock washers and flat washers. If an exhaust pipe brace or a ground strap are attached by these bolts, the flat washers should be omitted.

Install the (2) 10mm x 40mm caps crews with lock washer from the front of the adapter plate, screwing into existing threads in the transmission.

Next install the slave cylinder. If the original Spridget slave cylinder is used, the holes for attachment bolts must be widened to fit the Datsun transmission. Use of a round file will do this. Hold the cylinder in place, with the adjustable pushrod furnished installed. Note if the pushrod goes straight back to the clutch release lever. If needed to improve alignment of the pushrod, install the 3/16" spacer furnished under the cylinder when it is installed.

Note whether the front end of the cylinder interferes with the edge of the transmission. If so, grind clearance in the transmission. Sometimes this grinding will need to slightly alter the edge of the adapter plate.

Bolt on the cylinder with the metric screws and washer furnished in the kit.

Install the modified yoke of the front of the Spridget driveshaft. A new "U" joint is suggested. If you didn't purchase the option of having the yoke pre-assembled with the kit, see Addendum D for construction of the yoke.

VII. SPEEDOMETER

If the Spridget is a street car, you may wish to use the Datsun and the Spridget speedometer cable and housing to build a cable that will fit.

Remove the connector from the top (speedometer) end of the Datsun and the Spridget cable housings. To reform the Spridget connector so that it will slide over the housing, carefully drive a round tapered punch into it from the housing end. Install the connector from the Spridget onto the top of the Datsun housing.

With the bottom of the housing tightened into place on the transmission the cable should extend 5/8" beyond the end of the top connector. If not, remove the connector and shorten the housing to get the 5/8".

Crimp the connector into place. If you aren't certain your crimp is durable you may wish to reinforce it with a wrap of duct tape overlapping the connector and the end of the housing.

Although the speedometer cable housing can be attached to the transmission working through the gearshift lever hole after the engine is installed, it is easier to use the following method.

Attach the cable and housing to the transmission before installing in chassis. Form a loop extending about 8" to the rear of the transmission. Tape this loop to the rear seal area of the transmission to hold it in place during engine/transmission installation.

Remove the tape after installation.

After attaching the cable to the speedometer assure that the loop of cable in the driveshaft housing is far enough back to prevent the cable from contacting the exhaust at its front end. Fasten the cable into place to the body to the left of the transmission.

Should the speedometer fail to operate, disconnect the cable and housing from the speedometer. Apply a coating of brazing (or solder) to the squared end of the speedometer chain, extending back about 1/4" from the tip. Grind or file this added material into a square shape approximately .124" across. Reinstall onto speedometer.

As a more acceptable alternative, Rivergate Restoration Products (RRP) offers a new custom speedometer cable and a ninety degree speedometer ratio adapter, that both connects the speedometer more easily, and corrects the speedometer reading for the size tires and differential ratio used. This optional speedometer cable and adapter kit can be installed after the engine and transmission have been installed. See order blank.

VIII. INSTALLATION IN CHASSIS

Install the engine/transmission into the chassis as described in your workshop manual. Loosely install the front engine mounts.

Install the original bolts up through the crossmember into the rear transmission mount and tighten. Next tighten the front engine mounts.

Now center the transmission in the rear mount and tighten the transmission pad mounts.

Install the furnished bolts in the sides of the rear mounts from inside the car with the self-locking nuts inside the tunnel. (Hint: Tape the nuts in the wrench to make starting the threads easier.)

Install the driveshaft with the modified front yoke fitted. Grease the splines and seal surface of the yoke before installing. If you expect to turn the driveshaft at very high revolutions, you may wish to have the driveshaft assembly balanced. (Kits have been installed in race cars with engine/differential ratio combinations allowing driveshaft speeds of over 10,000 RPM!) Driveshaft imbalance is infrequent. If you feel a vibration, not present before kit was installed, at high speed while coasting in neutral, you probably should have it balanced. Check Yellow Pages under "Driveshafts" for this service in your area.

Install the gearshift lever in the transmission.

Fill the transmission with gear lube. Valvoline Synthetic gearlube or some comparable top quality synthetic gearlube is strongly suggested for excellent shifting feel. Two and one quarter pints are required.

IX. PLUMBING CLUTCH HYDRAULICS

Re-route the clutch hydraulics original hydraulic tube to the left of the transmission and shorten as needed. It is suggested the tube be cut to length required and reflared. If a flaring tool is unavailable, the tube may be shortened by making a coil in it by wrapping it around a round object (a food can works). If this method is used, you may choose to leave the hydraulics intact when the old transmission is removed, avoiding the need for bleeding the air out, as below. If the original slave cylinder is re-used, use the original tube nut. If the Nissan ¾" cylinder kit from R.R.P. is used, use the nut and adapters furnished in the kit as needed. Parts are included for both a 3/16" and a ¼" tube as Spridgets were furnished with either. Be sure to place the nut on the tube **before** flaring. Fasten steel tubing to the frame and keep it away from exhaust piping.

Bleed the clutch hydraulics. If the original cylinder is re-used, it must be bled before being bolted to the transmission. If a flex hose is used, bend the hose to invert the cylinder. If no flex hose is used, loosen the fitting slightly so that the cylinder can be twisted into the inverted position and retighten after final installation. Use of a hydraulic bleeder pump is desirable for clutch

bleeding, particularly if your car is fitted with the ¼" tube on the clutch hydraulics. To eliminate all air the slave cylinder piston should be held in the fully retracted position while bleeding. Do this by running out the adjustable pushrod until it is pushing firmly on the clutch forks. Keep the master cylinder reservoir topped up while **slowly and gently** pumping the clutch slave cylinder into operating position. On original cylinders, hold the piston in by hand while the air is being bled from the system. (Hint: In the absence of a power bleeder, several owners have improvised very successfully. Any source of low air pressure into the master cylinder reservoir will suffice. Some have used a manual air pump with a ball inflation needle inserted into the reservoir filler cap to provide the needed pressure, for example.)

Adjust pushrod length to give some free travel at the clutch pedal. Assure clutch is releasing fully while the vehicle is still up on jack stands. Because of the possibility that wear in the pedal linkage can mimic clutch clearance, you should confirm freeplay by assuring that you can move the clutch operating lever away from the clutch cylinder pushrod. Finger pressure against the lever should be able to move it against the pressure of the spring inside the bellhousing. Generally ¼" to ½" of freeplay measured at this fork will be adequate. Be aware that the clutch pressure plate can be overtraveled. If the clutch releases when the pedal is part way down but then seems to re-engage at full pedal down, it is being overtraveled. Add freeplay until this condition disappears.

Install gearshift boot and liner being certain it doesn't put pressure on the gearshift lever in any position. If the gearshift linkage interferes at the left side, loosen the chassis-to-transmission mount bolts and the bolts through the transmission mount pads. Force the transmission fully to the right side and retighten. It may be difficult to prevent the early Sprite metal shifter cover from interfering with the shift lever. It so, use of the later model shift boot is suggested.

X. ROAD TEST

You are now ready to road test the installation. Note that clutch feel may be different than stock. If speedometer is used, check it for correct reading. If the speedometer error is unacceptably high, consider use of the speedometer angle ratio adapter and cable kit available from RRP to correct the reading.

After a break-in period for the clutch disc, the clutch slave cylinder pushrod may require a re-adjustment to maintain free travel at the clutch pedal. With proper maintenance of free travel the clutch can be expected to last much longer than the stock setup, due to the synchronized low gear.

XI. ASSISTANCE AVAILABLE

RRP offers products and services to make your installation of the 5 speed conversion kit easier and better. See the order blank.

1. Speedometer angle ratio adapter and cable kit. Custom geared to correct the speedometer reading to be accurate with the tires and differential ratio you use. Includes a new custom cable. Makes installation easy and neat. ($125.00)

2. If you purchased a kit not including the driveshaft yoke, we will furnish a new special yoke, with U-joint installed for $70.00.

3. Labor to rework your clutch throw out carrier, clutch release fork and gearshift lever as required for installation. ($38.00)

If you need assistance in installation of the kit, call Bill or Will at 423-332-2030, 10 AM to 8 PM Eastern time. Please call only after having carefully read the instructions and studying the parts involved. This way, we can have an informed discussion of your problem.

ADDENDUM A: Early cars with the single tandem master cylinder for brakes and clutch:

If the 7/8" bore iron master cylinder originally fitted to drum brake cars or the ¾" master cylinder on early disc brake cars is used with the Nissan slave cylinder, pedal pressure will be unacceptably high and release travel too long.

The solution we prefer is conversion to disc brakes, if this hasn't already been done. This brings brake performance comparable to transmission performance with the five speed kit. The preferred conversion is to use front and rear brakes from a disc brake donor car along with the master cylinders, pedals and pedal mounting frame and plumbing arrangement from a September 1967 to 1979 Spridget.

Use of this pedal and cylinder assembly gets you the dual circuit brake cylinder for safety in the proper size for disc brakes. It also gets you a smaller diameter clutch master cylinder to make clutch pedal pressure reasonable. Both cylinders are relatively modern cylinders and more reliable.

If you don't wish to change to the more modern master cylinder, an alternative is to use the original 1" or 7/8" slave cylinder fitted to the early cars with the five speed conversion. Use a round file to widen the bolt holes in the cylinder so that it will bolt to the Datsun transmission. Use the adjustable pushrod furnished with the kit. Positioning the stock cylinder on the left of the transmission places the bleed screw at the bottom of the slave cylinder. Therefore it must be bled before bolting it on. Hold the pushrod in manually, positioning the bleed screw upward while bleeding the circuit, then bolt it on.

ADDENDUM FOR COMPETITION CARS:

I. For car fitted with Tilton racing type clutch: The clutch disc that should be used with the Datsun 210 transmission and the Tilton 7-1/4" clutch is Tilton part number 364185-0-A-18..

Because there are a variety of flywheels and release mechanisms used with the Tilton clutch on Spridgets, you will not use the instructions on modifying the clutch release linkage.

After the flywheel and clutch are installed , measure the "Pad-to-Adapter" distance as in Section IV.

With clutch release mechanism mounted in the transmission, and fully retracted (to the rear), measure the "Bearing to front of bellhousing" as detailed in Section VI. Assure that the "Bearing to front of bellhousing" exceeds the "Pad-to-Adapter" distance by about .1" to assure adequate clutch clearance. Modify as required to get this clearance if it doesn't have .1" or above.

If stock Datsun clutch release mechanism is retained, check to see if the tube that the throwout bearing slides on will interfere with the clutch hub. If it will, shorten it as required as in instructions at the end of Section V.

II. When the Datsun 5 speed overdrive transmission is to be used in competition, we suggest the car be fitted with one step lower ratio differential than was used with the non-overdrive transmission. For example, it if previously used a 4.22:1 ratio, change to the 4.55:1 ratio. This allows use of the top three gears only on most race tracks. This is advantageous because these are the closest ratios in the Datsun transmission.

Column #1 under each transmission is the gear ratio. Column #2 under each is the percent RPM reduction upon upshift to that gear.

Stock Sprite Ribcase			Leyland Close Ratio Ribcase			Datsun 210 5-Speed		
Gear	1	2	Gear	1	2	Gear	1	2
						1	3.513	----
1	3.2	----	1	2.573	----	2	2.17	38.2%
2	1.916	40.1%	2	1.722	33.1%	3	1.378	36.5%
3	1.357	29.2%	3	1.255	27.1%	4	1.0	27.4%
4	1.0	26.3%	4	1.0	20.3%	5	.846	15.4%

III. If the 5-speed race car is ever used in competition where rules require only a four speed, it can be converted easily. Shifting this transmission into low gear slides the shift rail into a pocket at the right, top of the extension case. Drill and tap this pocket from the rear end. Run in a screw, with a jam nut, that will block travel into low gear. To convert back to five speeds, back out the screw enough to allow engagement of low gear, and retighten the jam nut. Changing between 4 and 5 speeds can be done with the transmission in the car.

IV. Installation of the special lightweight competition version of the aluminum adapter plate is the same as the stock plate except as follows. The adapter-to-engine fasteners in the four holes in the cutdown part of the plate are 5/16" x ¾" NF capscrews. Use with flat washer and lockwasher.

PARTS REFERENCES:

Retain these instructions for future references when maintaining your Spridget.

For replacement parts use parts as follows:

Universal joint for new Rivergate yoke – Motor Master number 2125CA

Rear transmission seal (front seal is the same) – Nissan number 32114-Y4000, or CR seal number 11615

Throw out bearing – NSK number TK40-14AU3

Slave cylinder – if you converted to the ¾" cylinder – Nissan number 30620-B5010 or United 37498 (fits 1980-86 Nissan 2WD pickups

Clutch disc for Tilton race clutch installation – Tilton number 364185-0-A-18

Clutch disc – 1098 engines – use standard Datsun 210 clutch disc.

Clutch disc – 948 and 1275 engines – special disc RRP part number 30303 for 948 and 30301 for 1275

Seal for Rivergate Rear Crankshaft Seal Kit – TCM number 78x100x10TC

(Revised and printed 11/99 – RRP)

ORDER FORM

Name _____ Phone _____

Address _____

Car used for: Street ____ Competition ____ Show ____ Car Make _____ Model _____ Year _____

FIVE SPEED OPTIONS:		AMOUNT:
Special driveshaft adapter yoke with new U-joint installed (included in Deluxe Kit) (#30424)--------	$ 70.00	_____
Rework of clutch throw out bearing carrier, clutch release fork and gearshift lever as required for installation (#30428) ----------	$ 38.00	_____
Slave Cylinder and Hose – Nissan, ¾" (#30446) ---------- Includes new metric slave cylinder and slave cylinder hose. (These can be purchased locally if you wish. Part numbers are listed in the instructions.)	$ 50.00	_____
Clutch Disc – To change sizes of engine (948, 1098 or 1275) only a change of clutch disc is required.		
For 948 engines order #30303 ----------	$ 89.00	_____
For 1098 engines order #30302 ----------	$ 89.00	_____
For 1275 engines order #30301 ----------	$ 89.00	_____
Speedometer Adapter Kit (#30040) ---------- Includes 90 degree speedometer ratio adapter for transmission and custom made speedometer cable. Corrects reading and connects to original speedometer. (Optional Item. Information on adapting a Datsun cable is included in 5-speed kit instructions, but speedometer reading may differ from actual speed.)	$125.00	_____

To order we need: Tire Size _____ Differential Ratio: _____:1
Rolling circumference of rear tires** _____inches

**To measure: (1) Make a chalk mark on the side of tire at the exact bottom.
(2) Mark the pavement in line with this mark on the tire.
(3) Roll vehicle until tire turns one revolution and mark on tire is at bottom again.
(4) Mark pavement exactly in line with mark on tire
(5) Measure the distance between marks on pavement.

MERCHANDISE TOTAL ----------	_____
In Tennessee add 7.75% Sales Tax ----------	_____
SHIPPING CHARGES ----------	5.00
TOTAL ENCLOSED	_____

INSTRUCTIONS FOR INSTALLATIONOF 7/8" CNC SLAVE CYLINDER

This slave cylinder will require that a portion of the front flange of the bellhousing be cut down to allow the cylinder to set flat on the 3/16" steel spacer. Typically, the cut will need to extend into the aluminum adapter plate a small distance. So cutting the clearance with the transmission bolted up to the adapter is suggested.

Bolt the slave cylinder to the transmission, using the 10mm x 30mm Allen Head Cap Screws furnished. Use the lock washers, adjustable pushrod and 3/16" thick spacer furnished with the conversion kit

Attach the straight end of the stainless steel braid-covered Teflon hose to the 90° fitting on the slave cylinder. Using the straight adapter with the sealing ring, attach the end of the hose with the 90° fitting to the master cylinder. On later model Spridgets, with the ¼" tubing, remove the original adapter fitting from the rear of the clutch master cylinder. Screw the straight adapter fitting furnished directly into the cylinder. Then attach the hose. Bleed the clutch hydraulics as normal. Use of a power bleeding arrangement is suggested.

Done

INSTALLATION INSTRUCTIONS FOR SPEEDOMETER ADAPTER KIT

If the transmission is in the vehicle, install the adapter, as below, through the shifter hole in the transmission tunnel. If the transmission is out of the car, install the cable and adapter as detailed, and tape the rearward loop in the cable to the output of the transmission with the speedometer end of the cable taped to the left side of the engine during engine/transmission installation.

Attach the speedometer cable to the angle adapter.

Attach the speedometer angle adapter to the transmission speedometer output with the output of the adapter facing straight upward from the adapter. Leave the attaching nut loosened until after final alignment.

Route the cable across the top of the transmission. The cable should then be routed upward to the hole in the firewall directly behind the speedometer. Attach the cable to the speedometer tightening to finger tight only.

Assure that the cable cannot contact the exhaust system. Tighten the adapter to the transmission.

The speed angle adapter furnished was calculated to be the ratio required, based upon information furnished. After installation, test the accuracy of the speedometer reading against some known accurate standard. Occasionally, due to variations in the speedometer head, the readings will still be inaccurate. Due to the limited number of gear teeth in the adapter, adjustments smaller than 4% are not possible. If you find a variation exceeding 4%, Rivergate will exchange your adapter for another ratio free of charge. Simply return the adapter with an accurate figure of the percent and direction by which the speedometer reading varies from accurate. We will send you a recalibrated adapter. Expect 3-4 week delivery.

Before installation of the speedometer, oil the input shaft of the speedometer with thin oil. We use "3-in-1" household oil for this.

The cable and housing and the angle adapter have been well lubricated and should not require re-lubrication for 100,000 miles.