

INSTALLATION INSTRUCTIONS

SMR MODULAR series

TRANSMISSION KIT



www.smrtrans.com

WITH THIS PRE-ASSEMBLED KIT YOU WILL BE ABLE TO ASSEMBLE YOUR OWN TRANSMISSION WITH THE CONFIDENCE OF KNOWING THAT YOU WILL HAVE A SAFE AND RELIABLE DRIVELINE.

These instructions include an extreme number of pictures, that may seem intimidating, however, they are provided to help you in fine detail if you are unsure. We want to be precise and be sure that this task is completed as easily and correctly so that you will have a transmission that will work flawlessly the first time.

It is best if you place your new components in a clean dry area, away from your old transmission until it has been fully prepared for it's extreme makeover.

We cannot stress more emphatically the importance of **CLEANLINESS AND ATTENTION TO DETAIL** to building a top quality, performance transmission.

TEARING DOWN YOUR OLD TRANSMISSION

There are several ways to tear down your old transmission, with the main objective is to have an empty case, carefully inspected, cleaned, honed and ready to re-assemble. If you have never done this before, the following process we have found to be the quickest way to attack the task.



Set your transmission on a drain table or grate over a drain pan.

Remove all brackets and spray penetrating oil on any corroded or rusted bolts or component contact areas.



Remove and set aside the 7 bolts retaining the front pump.

With a 3/4" wrench loosen The band adjuster lock nut and with a 5/16" wrench remove the band Adjustment screw.



Now stand the transmission up, bellhousing down to and with a 1/2" socket, remove the 14 pan bolts and pan.



Discard accumulator Spring.

With a 7/16" socket, remove The 10 bolts and remove the Valvebody.

Remove the band apply strut and anchor wedge, now loose and turn band until it can drop down onto pump.

Using a large flat screwdriver, pry down in area shown alternating from side to side - until-



the pump and drum assembly drop out of the Bellhousing. Results as shown



In extreme cases , where the pump is severely corroded into the case, it may be necessary to drop the entire transmission from a height of 1 foot "squarely" onto a piece of cardboard, to shock it loose from the case.



Lay the transmission on its back on the drain grate.



Using outside snap ring pliers, Spread and remove the snap Ring retaining the front planetary.



Gently pry in the area shown To release the shell and Planetary set.

With the shell and planetary removed, remove the rest of the gear train section (the rear planetary, ring gear, rear drum, inner sprag race and spring and rollers) It may be necessary to turn the rear drum clockwise as you pull it out of the band and sprag.



By loosening the rear band adjuster screw, release the band by prying the rear strut loose and removed the rear band.

Stand the transmission back up- tailhousing down



With a 9/16" wrench, remove the 6 bolts attaching the tailhousing to the main case.

Remove the 2 Phillips screws that retain the small bearing retainer clip plate.



Spreading the bearing retaining clip with external snap ring pliers, lift the housing up and remove it from the main case.



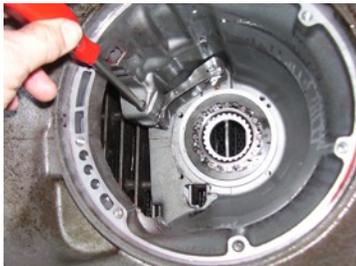
With the tailhousing now removed, lift the entire shaft assembly from the case and set it aside for return.

With a 1/2" socket remove the 4 retaining screws from the rear support.



Then with a soft rubber mallet tap the support out from the inside.

Stand the transmission case with the bellhousing up.



With a Phillips screw driver, tap out the rear strut pivot pin and remove the rear band strut assembly.



If not removed when removing the rear drum, pull out the inner race and the spring and rollers. save the race but discard the spring and rollers.



With a 1/4" square reducer and a firm straight pressure, screw out the band apply lever shaft plug. In some '62-70 cases, you may have to drill out the plug and tap the hole for a 1/4" NPT plug.



Again flipping the case, bellhousing down, push the rear spring retainer inward and with a small flat screwdriver, remove the retaining snap ring. And remove the piston assembly.



With the help of a large socket and a large clamp, compress the front servo and like the rear servo, remove the retaining snap ring and remove the servo assembly.

To remove the band apply lever now that the plug is out, slapping the lever back and forth several times will usually shake it out and release the lever.



RETAIN THESE REMOVED PARTS TO RE-INSTALL DURING ASSEMBLY.

TAILHOUSING

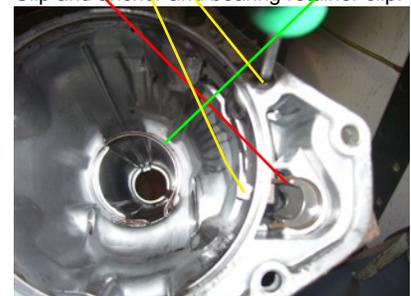


With a sharp chisel, remove the tailseal from the housing



With a bushing driver, or socket or piece of pipe with the same diameter as the bushing drive the old bushing out of the housing.

If your tailhousing is dirty on the inside And cannot be cleaned with a solvent Spray and wipe, you will need to remove The park pawl, pin and spring, anchor Clip and anchor and bearing retainer clip.



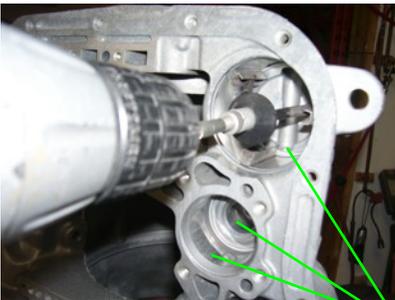


With your disassembly now complete, these are the parts that you will be returning for your core deposit refund.

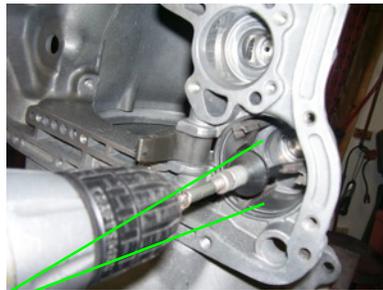
When done assembling your new unit, drain and wipe as much dirt, fluid and grease as possible from these parts, wrap them in rags and plastic to prevent leakage and package them securely back into the boxes in which your new Components arrived.

You are now ready to clean
 Your disassembled case and prepare it for its' new life.
 Soak, scrape, scrub, pressure wash, and/or media blast your case and tailhousing, until they are clean of **All** dirt, oil, grease or Undercoating (and media blast). You can now Paint or lacquer the exterior as desired.
AGAIN WE STRESS THE EXTREME IMPORTANCE OF CLEANLINESS in the Performance and reliability of this top quality Transmission.

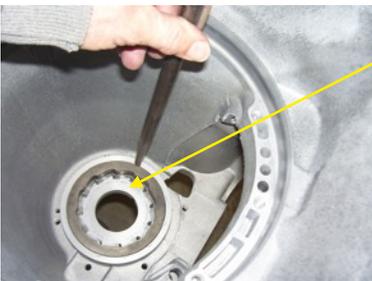
PREPARING YOUR CASE AND TAILHOUSING



With a fine grit brake hone, re-surface the servo and accumulator bores until there are no scratches or wear, then thoroughly clean them.



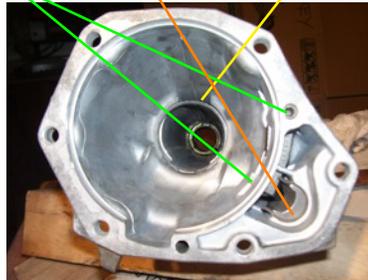
Optional: With a 1/8 NPT tap, thread the direct port hole [this will allow you to fine tune the 2-3 shift if ever required]



Inspect the rear of the case for wear. If worn, dress it with 600 grit paper. If a groove of more than 1/10th of an inch is found, install a spacer between the inner race and the back of the low/rev. Drum. *Contact SMR if you Need more details.*

When using the stock sprag, tap it tight into the back of the case and with a long punch, **re-stake** it by striking the aluminum case support around the outer edges of the race. *If installing an ULTRA SPRAG, follow the instructions included with the sprag.*

With the case now prepared for re-assembly, The tailhousing can be re-assembled and New bushing and seal installed. Re-install the bearing retainer "C" clip and Park pawl and anchor as removed



Installing the tail bushing

Note the lube passage **in the top** of the tailhousing

The hole in the bushing must be aligned with this Hole to lubricate Slip yoke.



With the bushing and the housing surface coated with MolySlip additive, drive the aligned bushing squarely into the housing using a block of wood and complete the installation with a driver or large washer until it is flush with inside surface. [Test fit your slip yoke and if necessary remove any burrs created by driving the bearing]

Installing the tail seal



Pack the inner seal (between the seal and The metal flange) with Vaseline.

If installing the boot type of seal - Note the drain hole in the boot. This hole must face the bottom of transmission



Use your old output support, place it over the seal (keeping the hole towards the bottom of the transmission) as the driver, lay a piece of wood on top of the support to protect it.

Drive the seal into the housing with a rubber mallet, until the metal flange of the seal is flush against the Housing.

Set the completed Tailhousing aside For final assembly



SERVOS and ACCUMULATOR

1971 and later FRONT SERVO (2nd gear band-apply servo)
 NOTE: This servo not only applies the front band, it also releases the band when shifting to 3rd gear, therefore the seals must seal tight to bore to obtain a good 2-3 shft.

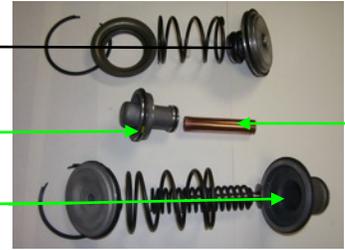


NOTE: OUTER SPRINGS, RETAINER CLIPS NOT PICTURED SEE INSET PICTURE to right

REAR SERVO (Low/Reverse band apply piston)

ACCUMULATOR (1-2 delay)

1962-1970 FRONT SERVO
 NOTE: Small dia. apply pin not shown this type had no internal accumulator and requires no modification to obtain a firm 2-3 shift



Blocker rod added when installing ProSportsman or Competition Eliminator valvebody

1971 and later FRONT SERVO
 Must be modified as shown in Instructions supplied with valvebody

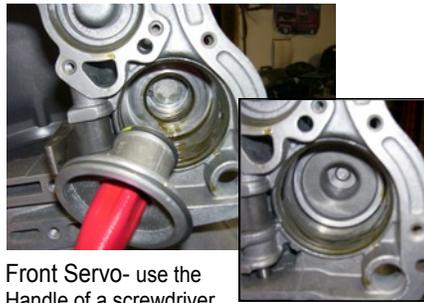
SERVO and ACCUMULATOR INSTALLATION

AFTER THOROUGHLY CLEANING and installing the supplied new seal rings on the Servo Pistons (rubber lip seal on the Rear Servo Piston) and Accumulator Piston, you are now ready to install them into your **CLEAN** case.

Liberaly coat the bores with the **MolySlip A.T.S.** supplied to aid installation and prevent damage to seals.



NEXT Install the accumulator Piston with blocker rod, into the bore.



Front Servo- use the Handle of a screwdriver And with a rocking motion, insert the inner piston Of the '62-70 servo, on the '71 and later, insert The inner piston by pushing on the apply rod in And rocking motion until seated in the bore.

APPLY PORT
 After assembly apply compressed air here to test ring seal. If apply pin does not shoot out and retract quickly or you here air leaking, disassemble, and check reason.



As with the removal of the front servo on teardown, use a large clamp with a large washer to compress the installed rear servo spring assembly and install the retainer snap ring.

Install the balance of the servo components (as pictured above) and using a large socket and clamp, compress the outer servo cover and spring assembly, then install the retainer snap ring. When it is fully seated, release the clamp and apply compressed air in apply hole to check servo operation

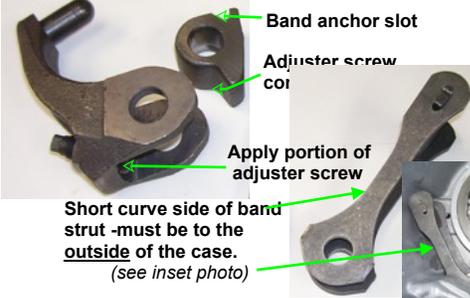
MAKE ABSOLUTELY SURE THAT BOTH OF THE RETAINER SNAP RINGS ARE FULLY SEATED IN THEIR GROOVE.

REAR BAND APPLY STRUT ASSEMBLY INSTALLATION



After thoroughly cleaning these parts and removing the old "o"ring(s) from the pivot shaft, replace the "o"ring(s) with the new one(s) supplied.

Careful assembly must be observed to assure that these parts are properly installed the first time. If not the band will not fit.



Short curve side of band strut -must be to the outside of the case. (see inset photo)

Install the assembly into the case and push The pivot shaft into the Hole from the rear of Case. (apply a sealant At the "o"ring). While Aligning the holes, push The shaft in and tap it Lightly, With a hammer To fully seat it Into the case.



INSTALLING EXTERNAL CASE COMPONENTS

MANUAL SHAFT SEAL
 Pack the inside of the seal with Vaseline to protect it and retain The inner spring while installing



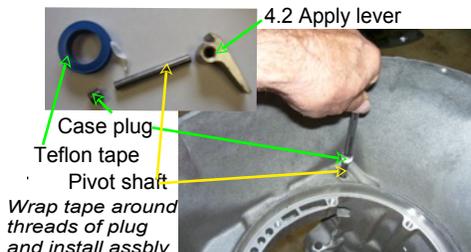
Use a 1- 1/8" socket turned insideout as a driver, drive in flush with case

NEUTRAL SAFETY SWITCH



After cleaning your old switch, install new washer supplied re-install switch

4.2:1 Billet Steel INTERMEDIATE BAND APPLY LEVER



4.2 Apply lever
 Case plug
 Teflon tape
 Pivot shaft
 Wrap tape around threads of plug and install assbly

Be sure that the lever is installed as shown here.



REAR SUPPORT, SPRING and ROLLER CLUTCH (also referred to as the sprag) INSTALLATION



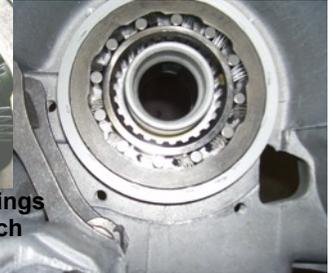
Lubricate and insert the new support into the case as shown. It may require **light** tapping with a rubber mallet or hammer on a wooden block.



Install the 4 bolts removed in teardown. And torque to 150 INCH lbs. If installing Ultra Sprag follow instructions in kit



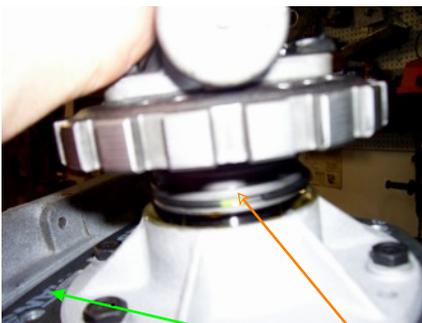
Flip case bellhousing up and install the inner race, then the springs and then the rollers



Note the location of **springs** and the direction in which they are installed.

OUTPUT SHAFT, GASKET and TAIL HOUSING INSTALLATION

Rotate the case and stand it bellhousing DOWN



After placing the new gasket onto the rear of the case; liberally lubricate the output shaft support and insert the shaft assembly into the case. Use caution to be sure that the seal rings are not damaged when installing them into the support



Shaft installed into case



Lubricate the bearing.

NOW place the prepared tailhousing over the output shaft and onto the case and gasket.

You will need to spread the bearing retainer clip with external snap ring pliers, to allow the housing to drop over the bearing and onto the gasket and case.

Note: It may be necessary to lift the shaft up slightly to seat the clip into the bearing groove.



Apply weatherstrip sealant to the

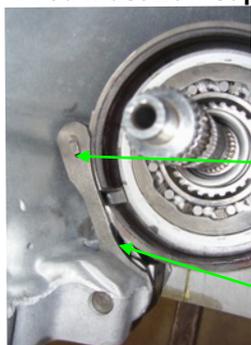
bearing cover gasket (housing side) and install over access hole. Then install cover plate and screws (as removed)



Apply weatherstrip sealant to all 6 of the tailhousing bolts and torque to 25 ft.lbs.

INSTALLING THE INTERNAL MODULES

You must now support the transmission with the bellhousing up and the tailshaft down in a vertical position.



Install the Low/reverse (back) band and apply strut.

The anchor on the band must be inside of the retaining strut and fully seated.

Note the position of the apply strut.



Liberally lubricate the sprag and output shaft support with automatic transmission fluid.

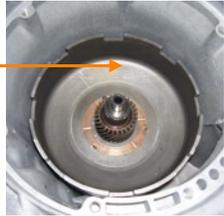


Lower the low/rev drum into the case and while turning it in a clockwise direction work it into the band and inner Sprag race until fully seated. When properly installed it **must not** be able to be rotated counter-clockwise

INSTALLATION OF OUTPUT AND GEAR TRAIN MODULE



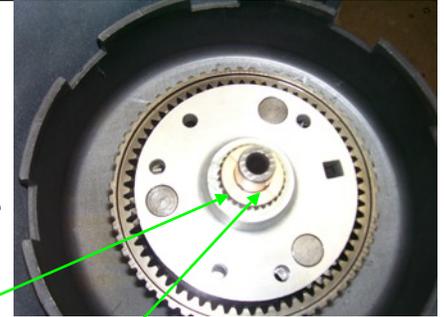
Install this assembly as removed from the kit



When properly assembled into the case, the supplied snap ring will snap snugly into the groove on the front of the output shaft
If it will not fit into the groove, a washer or shim is out of place.

Install snap ring here

Be careful to keep all washers and shims in the order shipped and make sure that each retaining tab is fully seated in the respective mounting holes when installing into case.



Install brass washer supplied here.

INSTALLATION OF INPUT, PUMP AND DRUM MODULE



Module as removed from kit.

Lift the pump from the input Assembly, as shown.



Install the pump to case Gasket, properly aligning all Holes.

Lower the complete assembly into the case and onto the output and gear train assembly, turning the input shaft until all of the clutch teeth and rear sunshell/front drum tabs are aligned. *You will notice a thud sound when the assembly is in the correct location*



When properly installed in the case, it will look like this.

ADJUSTING and SETTING THE OVERALL ENDPLAY



Using a phillips screwdriver as an alignment tool, lower the pump over the input shaft and secure to case with a pump bolt on each side. Torque these bolts to 175 Inch lbs.



With the pump torqued in place, set up a dial indicator to obtain a reading on the end of the input shaft.



With a pair of vise grip pliers, lift the input shaft and record the travel. After obtaining the travel reading, lift the pump out of the case.

Our objective is to obtain an endplay travel of .025-.038" by subtracting .025 from the reading recorded, you will know the amount that you will need to add or subtract to obtain .025" of endplay. Note: the variance between .025 and .038, will allow you more adjustment latitude.



By measuring the thickness of the selective washer used during the measurement, and by adding or subtracting the thickness of the supplied selective washers, you can determine which washer must be installed to obtain the desired endplay.



If replacement of the front selective washer with one of the supplied washers is not enough to obtain the desired setting, it will be necessary to lift the input/drum assembly, and add a selective steel washer on top of the brass washer on the output shaft. *We do not recommend changing the selective washer between the front and rear drum.* When set, re-install the input/front drum assembly with the same precautions as set out above.

FINAL ASSEMBLY OF INPUT, DRUM and PUMP ASSEMBLY



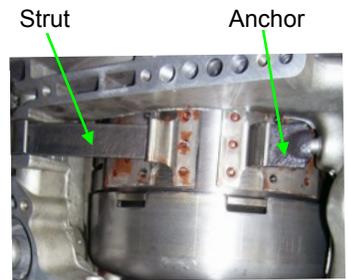
Install the pump "o"ring onto the pump body. *Be sure that it is not twisted-it must be even all around.*



After soaking the band in AT fluid, place it around the drum and maneuver into place and install strut and anchor.



Tighten the band adjustment screw in with your fingers until it holds the band strut and anchor in place.



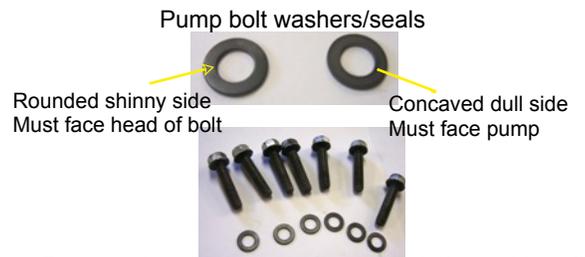
This is how the band assembly and drum, sunshell alignment must look when installed.



Re-install the pump gasket and apply and spread Moly-Slip lubricant on the area of the case that the pump "o"ring will contact.



Again with a screw driver as a guide, Lower the pump into place



Remove the old washers from your bolts and install the new washers/seals as shown above. Install all 7 bolts into the pump and draw the pump into place by tightening alternately side to side. Tighten all pump bolts to 175 INCH lbs.

FINAL BAND ADJUSTMENT



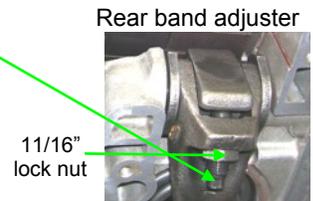
Rotate your transmission to a horizontal position (*so the bands will be centred on the drums*)



While rotating the assembly with A screwdriver as shown, slowly Tighten the front band by hand Until it drags on the band



Tighten the front band adjustment Screw to 75 INCH lbs, then back It off 1 1/2 turns. *While holding the Screw with a wrench, tighten the locknut to 35 ft.lbs*

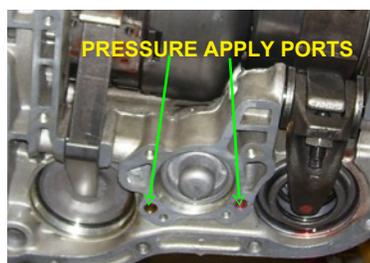


Follow the same Procedure on the rear band, except Back it off 2 turns *While holding the Screw, tighten lock nut*

FINAL BAND CHECK



Again with a screwdriver, turn the assembly and watch that both the front and rear drum are turning. If not back the band(s) off another 1/4 turn until, they will turn together.



You can now check your servo apply seals, by applying compressed air pressure to the apply ports and observe the action of the servos. *They should hold firm without air leakage.*



When the valvebody is correctly installed it will lay flush against the case and the manual shaft will move through all gear detents without binding. Install the v.d. bolts and tighten to 100 INCH lbs.

INSTALL VALVEBODY
Into case aligning the park lever the rear hole and lift the manual shaft through the seal/hole. *It may be necessary to Turn the outputs shaft.*



FINALLY install your filter extension (if applicable), your filter, your pan gasket and pan. Tighten the 14 pan bolts to 150 INCH lbs.

CONGRATULATIONS - your top quality transmission is now ready to install, adjust the throttle linkage, fill with Dextron fluid and enjoy