

REBUILDING THE TC GEARBOX

By Rick Storms – tcstormer01@gmail.com

As noted in the “The TC Gearbox” article I considered the gearbox to be the ultimate “black box” mechanism. I really wanted nothing to do with this complex set of gears and shafts. However, once I committed to the rebuild project and began to understand its workings, the rebuild was like a 3 dimensional puzzle with nicely machined parts fitting together in a very compact space. I must compliment the engineers who conceived of, and designed such wonderful pieces of machinery.

My set of references included The Blower Manual, the TC Instruction Manual, the MG Autobook One by Kenneth Ball Brown, a paper titled The Gearbox Fitted to the XPAG by Neil Cairns, all the articles in the TSO CD on gearboxes, as well as, studying illustrations in both the Moss and Abingdon Spares catalogues. This paper is a report of what I learned and hopefully I can pass along some tips I acquired while doing this project. I would also like to thank Lawrie Alexander who reviewed this text and answered numerous e-mails during the rebuild.

In the following please refer to the TC Gearbox illustrated in the Moss Catalogue on page 12. The numbers in parentheses (nn) refer to the illustration numbers. Also, for consistency I’ve chosen to use the terms layshaft and laygear in lieu of cluster shaft and cluster gear.

Special Tools Used

In addition to the normal set of Metric and Whitworth wrenches, hammers, screwdrivers, and drifts I added a few “special” tools to aid in the rebuild of the gearbox. Like all my special tools, I got them at the local home improvement store. This included:

1. A ¾” wooden dowel 7 ½ inches long to act as the temporary layshaft
2. A plastic (or metal) pipe coupling with an inside dimension of 3 ¼ inches and an outside dimension of 3 ½ inches, and 3 inches high. This is actually a plastic drain pipe coupling used to connect two sections of pipe.
3. A modern type 3 to 4 inch hose clamp.
4. A number of large flat washers

The hose clamp, pipe coupling and washers are used to reinstall the springs and balls of the Sliding Hubs and Striking Dogs

My Transmission Stand

In order to rebuild the gearbox is necessary to completely remove it from the car. Once removed place the gearbox on a good working surface, the unit is not too heavy and can be moved about without too much difficulty. Moss and Abingdon sell a part that fits in the drain hole that you can then mount in your vise. I did get one of these and gave it a try. I ended up not using it for it for the following reasons:

1. My vise is mounted at the end of the bench and made working difficult.
2. Since the bracket is screwed into the drain plug, the gearbox had a tendency to turn when working on it.
3. It raised the entire gearbox up too high.
4. I lost the use of the vise when working on the gearbox.

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Instead, I made my own gearbox stand out of some scrap wood. The unit measures 9 inches wide, 6 inches deep and 5 inches high. Lowest point at the rear is 1 ½ inches and 1 inch in the front (the picture is from the rear.) These measurements allowed the entire gearbox, fully assembled including the bell housing, to sit on the workbench. To make the front and rear cutout patterns I used stiff paper held against the front and back of the gearbox, traced the outline, cut it out and refined the pattern as needed.



Items I replaced

The following items were replaced because I could and since the gearbox was apart it seemed like the right thing to do. Although I ordered a set of synchromesh springs (Ill. numbers 77 & 92) I did not end up using them – see text on Synchromesh.

Item Description	Moss Ill. Nbr.	Moss Part Nbr.	Abingdon Part Nbr.
Spring Set – Selector Shafts	21	329-438	15 059
Ball Set – Selector Shafts*	22	329-588	15 024
Rear Bearing	51	126-200	15 018
Rear Bearing Guard	52	440-210	15 019
Rear Plate Guard	54	441-440	15 020
Rear Spring Plate	55	441-170	14 021
Front Bearing	58	128-200	15 009
Front Bearing Guard	59	440-370	15 010
Front Plate Guard	61	N/A	15 011
Front Spring Plate	62	440-140	15 012
Lock Washer – First Motion Bearing	63	461-270	15 014
Thrust Washer – Front	73	440-110	15 045
Thrust Washer – Rear	74	440-120	15 046
Springs – 3 & 4 Sliding Hub*	77	329-030	15 025
Ball Set – 3 & 4 Sliding Hub*	78	329-598	15 024
Springs – 1 & 2 Sliding Hub*	92	329-030	15 025
Ball Set – 1 & 2 Sliding Hub*	93	329-598	15 024
Gasket – Top Gearbox	122	293-700	15 066
Gasket – Rear Gearbox	123	293-800	15 067

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*All balls and springs are identical in size and are interchangeable Moss sells as sets, Abingdon as individuals

General Disassembly

Bell Housing and Rear Cover

1. Remove the eight bolts holding the bell housing and slide the housing off. Between the bell housing and the front of the casing will be the front Guard Plate (61) and Spring Plate (62). These sit in a circular cutout in the back of the bell housing.
2. Undo the six nuts (119) holding the remote gearbox cover and slowly lift up the cover. Keep some pressure on the cover as the springs (21) at the rear will have a tendency to force up the back end. Be careful not to lose the three springs and balls (21 & 22).
3. You can remove the Speedometer Housing (108) or leave it in place. To remove it cut the wires holding the two screws (109) and remove the screws. The unit will not just drop out; it is engaged with the rear flange (104) via the Speedometer Pinion (107). I used a very thin screwdriver to wedge between the speedometer housing and the Cover Plate (112) and by gently tapping on the screwdriver the housing slowly moved out.
4. To remove the Rear Flange (104), first remove the cotter pin and rear flange nut (106) and washer (105). I found that putting the drift through one of the bolt holes in the rear flange acted as a nice “wedge” to keep the main shaft from turning while removing this nut. The rear flange can now be removed using a gear puller.
5. Remove the Gearbox Rear Cover (112) by undoing the five nuts (three large and two small) and a single screw on the bottom left hand side of the cover. Note: none of these are illustrated in the Moss catalogue. When you remove the cover there should be a Guard Plate (54) and Spring Plate (55) located in the circular cutout on the inside of the gearbox rear cover.

Selector Shafts

1. Clip the wires holding the selector shaft lock bolts (20) and remove the bolts.
2. Remove the selector shafts (1, 2 & 4). If the shafts are sticking, you can use a drift to drive them through. I found that removing them through the front of the gearbox worked much easier. Be careful not to let the Stop (8), Steady (9) and Selector (10) fall into the casing as you remove the shafts.
3. The forks (5, 6 and 11) can now be lifted out.
4. Remove the two balls (22) that are on either side of the middle selector shaft.

Layshaft & Laygear Part I

To prevent damage to the teeth of the laygear and the input gear, it is advisable at this time to drop the laygear into the bottom of the case. Remove the bolt (69) which secures the layshaft then drive the wooden shaft (special tool no.1, above) against the forward end of the layshaft and use it to push the steel layshaft out of the back of the case. The wooden shaft is the length of the laygear and its thrust washers. If you stop

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pushing when it is centered lengthwise in the gear, it will secure the thrust washers in place and allow the whole assembly to drop as low as possible in the case.

Main Shaft

1. Remove the first motion shaft nut (64) and lock washer (63). Note this is a LEFT hand thread. To keep the shaft from moving I wedged a wooden hammer handle in the gearbox.
2. Remove both the first motion shaft bearing (58) and the rear main shaft bearing (51). The method I used was to strike the end of either the first motion or main shaft with a plastic-tip hammer. After a few blows the bearing on the opposite end began to move away from the casing. If you are lucky the entire bearing will pop out. If not you may have to use a drift from the inside to give it a nudge.
3. Remove both the front and rear bearing guards (52 & 59).
4. Remove the first motion shaft (56) from the front of the main shaft (50). There is nothing holding it in place, but it may be a bit sticky. Be careful not to lose any of the thirteen needle bearings (57).
5. The main shaft can now be removed. To do this, slide it back as far as it will go and angle the front slightly to the left, then lift the front end up through the box. On the left hand side near the top you will see a notch in the casing (see photo) that will allow the shaft to exit. Once the end of the shaft is clear of the casing, the entire shaft along with gears, sliding hubs and striking dogs can be removed.



Reverse Gear

1. Take out the cotter pin holding the nut (17) in place; remove the nut, washer (16) and Fulcrum Pin (15). This will allow you lift out the Reverse Gear Link (14).
2. Remove the Lock Bolt (18) and slide the Reverse Selector Shaft (3) out the back of the casing. The Reverse Fork (7) is now free and can be lifted out.
3. Reverse Gear (95) is also free and can slide off its shaft out the back of the casing.
4. Undo the Locking Bolt (98) and the Reverse Gear Shaft (96) will slide out of the back.

Layshaft & Gear Part II

1. Now raise the laygear to its original position and use the original steel shaft to drive the wooden shaft out so that you can check the end float. This is the

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measurement between the laygear thrust washer and the case at one end, when the other end is pushed hard up against the case. From what I have read this should not exceed ten thousandths (0.010"). If it does, the thrust washers should be replaced.

2. After checking the end float, you can remove the laygear assembly by, once again, installing the wooden shaft then lifting the unit from the box.
3. Before you lift up the laygear unit, look at the holes where the layshaft goes through the casing (both front and rear), you will see a small notch. Now look at the thrust washers, you will see pins on the outside of the washers. The only way to remove the laygear unit is to navigate the pins through these notches.

The casing should now be completely empty. I took the time at this point to thoroughly clean the casing using a general degreaser and repainted the unit.

Sub Assemblies and Inspections

Selector Shafts and Forks

Disassembly of the Reverse Gear Plunger (12)

1. Remove the cotter pin.
2. Slide out the plunger and spring.
3. In the perpendicular shaft you will find a ball and another spring (not shown in the Moss catalogue). These are there to keep the face of the plunger in alignment with the face of the reverse gear selector.

Inspection

1. Scoring of the shafts, look for grooves where the shafts go through the casing, check the notches used by the balls that lock the shafts in place.
2. Reinstall the shafts back in the casing holes without the balls and check for a smooth operation. Then try it again with just the two balls that reside on either side of the center selector shaft. Finally try with all five balls installed.
3. Look for wear on the forks; they need to be at least $\frac{1}{4}$ inch thick. If they are too thin the striking dogs will not fully engage the conical protrusions on their associated gears. This may cause "popping out of gear."
4. I would recommend just replacing the five balls (22) and three springs (21) since this seems to be the primary reason many gear boxes "pop out of gear."

After cleaning and inspection, I polished the three selector shafts using a buffer wheel.

First Motion Shaft

There is nothing additional that requires disassembly on the first motion shaft.

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Inspection

1. Clean the splines so the clutch disc will ride smoothly, and check inside the end where the needle bearings go to make sure it is clean and not scored. Also, check for any broken teeth on the helical gear or the conical protrusions.

After cleaning and inspection, the main shaft was polished using a buffer wheel.

The Layshaft and Laygear

Disassembly

1. Remove the thrust washers from both ends.
2. Push out the temporary layshaft and allow the needle bearings to fall out. Remember there are 30 (15 at each end); be sure to count them.
3. Remove the bottom washers that sit between the needle bearings and the spacing tube (not shown in Moss catalogue.)
4. Remove the spacing tube.

Inspection

1. Scoring or pitting of any surface especially on the layshaft and the needle bearings.
2. Any broken teeth on the laygear.
3. Worn thrust washers. Since they are out I would just replace the thrust washers. I know they are expensive, but you have already done the hard part, removing the gear box.

After cleaning and inspection the layshaft was polished using a buffer wheel.

Reassembly

Before reassembly, all parts were cleaned and air dried using compressed air. All parts were reassembled wet using transmission fluid.

1. Insert the spacing tube back inside of the laygear. The tube basically floats in the center and does not actually come in contact with the layshaft.
2. Insert the layshaft (not the temporary one) inside the laygear and through the spacing tube.
3. To replace the needle bearings:
 - a. Insert one of the bottom washers over the end of the layshaft and make sure it sits solidly on top of the spacing tube.
 - b. Smear a small amount of grease on the inside of the laygear where the needle bearings will sit (this area should be polished); this will help hold the needle bearings in place while you are replacing them.
 - c. Hold the laygear on end and insert the needle bearings one at a time. Dipping each needle into your grease will help make sure they all stick to each other and do not fall out when you change shafts.
 - d. When all of the needle bearings are in, slide the thrust washer over the end of the layshaft with the pin facing the outside and hold it tight against the laygear.

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- e. Turn the laygear over and repeat the needle bearing installation for the other end.
4. Replace the steel layshaft with the temporary layshaft. Make sure that neither end of the temporary shaft extends beyond the thrust washers.
5. Putting the laygear unit back into the casing takes a bit of doing. Once again you must line up the pins on the outside of the thrust washers. Notice that the two notches in the casing are not in alignment. I did a general alignment on the pins, got one in and then rotated the other end until it dropped in. Allow the laygear to drop to the bottom of the case.
6. At this point you should reinstall the steel layshaft (See Laygear under General Reassembly below) to recheck the end float. If it exceeds ten thousandths (0.010”), even if you have installed new thrust bearings, you should add shims. Once you have checked the float, replace the steel layshaft with the temporary one and allow the laygear to sit at the bottom of the casing to ease the re-installation of the input and main shaft assemblies.

The Main Shaft – Second and Third Gears

Disassembly

1. If you have not already done so, remove the two sliding hubs and striking dog units; be careful not to allow the sliding hubs and striking dogs to come apart.

Before removing these units note their alignment to the main shaft by marking them in some manner.

2. Third Gear:
 - a. Turn the main shaft on end with the third gear pointing up.
 - b. Look down into the area where the main shaft exits the end of third gear. Between the splines you will see a very small pin. Now look on the third gear and you will see a small hole behind the conical protrusions.
 - c. Align that hole to the small pin.
 - d. At this point you may want to mount the shaft in a vise or other means of holding it up right as the next several steps will take both hands.
 - e. With the shaft held up right insert a stiff wire into the hole and depress the spring loaded pin.
 - f. With the pin held down, rotate the collar (81) until the male splines of the collar line up with the female splines on the main shaft.
 - g. The collar and the gear can now be removed from the main shaft.
 - h. When the gear is removed the needle bearings (36 for third gear, 22 for second gear) will be released.
 - i. Remove the locking pin and spring.
3. Second Gear is removed in similar fashion. The major difference is that between the second gear collar and the needle bearings you will find a split washer.

Inspection

1. Scoring of any surface especially on the main shaft and the needle bearings.

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2. Any broken teeth on the gears and / or conical protrusions.

After cleaning and inspection the main shaft was polished using a buffer wheel.

Reassembly

Before reassembly, all parts were cleaned and air dried using compressed air. The gears have a number of small holes make sure they are clean. All parts were reassembled wet using transmission fluid.

1. Place the shaft on end.
2. Add a smear of grease on the main shaft to help hold the needle bearings in place.
3. Place third gear on the shaft.
4. Insert the needle bearings, again dipping each one in grease as you insert it.
5. Insert the spring and locking pin using needle nose pliers.
6. Align the hole on the gear to the locking pin.
7. Insert a stiff wire and press down on the pin.
8. While holding down the pin, insert the collar and twist it so the male splines on the collar align with the male splines on the main shaft. You should hear a distinct “click” to indicate that the pin has locked the gear in place.
9. Second gear is installed in the same manner except for the following.
 - a. After installing the needle bearings you need to add the split washer. Make sure that the tabs on the washer do not align up with the hole for the lock pin.
 - b. When installing the collar (88), the notches need to fit into the tabs on the split washer.

Synchromesh - The Sliding Hubs and Striking Dogs

Disassembly

If you don't feel you need to dismantle these items don't. They are a bit of a bugger to get back together, but if you want to then...

Before disassembly mark the relative positions of the sliding hub and the striking dog. Again I would recommend using a triangle file and make a straight mark across the surface of both items.

1. If you just slide the striking dog off the sliding hubs the balls and springs will fly in every direction ensuring that at least one spring and four balls will be lost forever. To circumvent this I used a 3 inch plastic pipe coupling (see Special Tools above) that allows the striking dog to sit on the top of the pipe while the sliding hub will be free to drop into the pipe. Simply put the unit on top of the pipe, center it, and press the sliding



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hub down into the pipe. If there is some resistance use a plastic headed hammer and gently tap the sliding hub out. When the sliding hub exits from the striking dog, the springs and balls will be captured inside the pipe.

Inspection

1. Once they are apart take a look at both the striking dog and the sliding hub. Inside of the striking dog are the splines that lock into the synchromesh conical protrusions on the gears (see The TC Gearbox.) On the outside of the sliding hubs are additional splines that the striking dog rides on. With the springs and balls removed the sliding hub should slide easily within the striking dog. Look for any burrs or other anomalies that may hinder movement.
2. The sliding hub should also move freely on the main shaft.
3. Check the brass inserts on the inside of the sliding hubs to see if they have been worn smooth, there should be “cuts” in the brass about every 1/8 of inch or so.
4. Make sure none of the springs are bent. All should be the same length and for that matter all should have the same resistance (I’ll leave it up to you on how to test that). In one paper I read, it said that it should take about 25 pounds of pressure to release the lock-out springs holding the striking dog to the sliding hub. If you choose to replace the springs, as I did, check the length of the replacement springs. The ones I ordered from Moss were about one eighth of inch longer than the originals. I don’t know which length was correct, but when I used the replacements they seemed too strong and I ended up using the original springs.
5. Check the balls for any nicks or burrs or just replace the entire set.

Reassembly

Before reassembly, all parts were cleaned and air dried using compressed air. The sliding hubs have a number of small holes to allow for oil to lubricate the springs and balls, make sure they are clean. Where ever possible exposed surfaces were polished using a buffer. All parts were reassembled wet using transmission fluid.

The installing of the springs and balls in the sliding hubs and striking dogs is identical for both units.

1. Place the sliding hub inside the striking dog making sure that you have aligned the unit using the witness mark made when you took it apart.
2. Put the unit on a flat work surface and place a number of washers under the sliding hub so that when sitting flat the six holes that hold the springs and balls are exposed above the striking dog.
3. Replace the six springs.
4. Place a hose clamp (see Special Tools) around the sliding hub and open it just enough so the clamp rests on the striking dog. The clamp needs to be open enough to allow for the insertion



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- of the balls, but tight enough to keep them in place while doing so. Make sure that the screw devise that tightens the clamp is between two sets of springs.
- Using a needle nose pliers, insert the balls between the springs and the hose clamp. I found it worked well when I installed the balls opposite sides rather than going around the unit.
 - When all the balls are in place, slowly tighten the clamp until it's tight against the sliding hub.
 - For the next step the first / second gear sliding hub unit (91) needs to be placed on top of the 3 inch pipe, while the third /fourth gear sliding hub unit (76) needs to be done on a flat surface.
 - With one hand grasp the unit at the hose clamp, then holding it tight against the pipe (or flat surface) with downward pressure, slowly tap the sliding hub into the striking dog using a plastic tipped hammer. At first it will move easily, when the balls engage the end of the striking dog there will be some resistance and the sliding hub will have a tendency to pop back. Hitting the sliding hub a bit harder will convince it to move pass that point. A few more taps and you will feel the balls lock into the notch on the inside of the striking dog.



When both units are reassembled, replace them on the main shaft.

General Reassembly

Basically reassembly is just the reverse of disassembly. It is assumed that the laygear is in the casing as outlined in the “Layshaft and Laygear” section above.

As with the sub assemblies all parts are first cleaned, air dried using compressed air and reassembled wet using transmission fluid.

Reverse Gear

- Insert the reverse gear shaft (96) into the casing from the back and secure with its lock bolt.
- Slide the reverse gear (95) on the reverse shaft with the grooved end toward the front of the gearbox.
- Place the reverse fork (7) into the groove on the reverse gear and slide the selector shaft through the reverse fork and into the hole in the casing. Secure it with its lock bolt.

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4. Place the reverse link (14) into the notch on the reverse fork with the pin facing the inside of the gearbox and secure it with the fulcrum pin, washer, nut and cotter pin.

Check the reverse gear for smooth operation. It should spin easily on its shaft and move forwards and backwards without any hesitation.

Main Shaft

1. Hold the main shaft with all components (both sets of sliding hubs and striking dogs, second and third gear) in upright position.
2. Insert the main shaft, “back end” first into the casing, allowing the shaft to exit out the back of the gearbox casing.
3. Bring the front of the main shaft down and to the left guiding it through the notch in the front of the casing (see disassemble picture above).
4. Allow the main shaft to rest on the laygear.

First Motion Shaft

1. Before installing the first motion shaft you need to add the needle bearings back into the hole at the back end of the first motion shaft. This is done in the same fashion as with the layshaft and main shaft.
 - a. Add some grease to the inside of the hole where the needle bearings will sit.
 - b. Hold the shaft upright.
 - c. Insert the needle bearings into the end of the shaft, again dipping each one in grease as you insert it.
2. Now with one hand hold up the main shaft, slowly bring the first motion shaft towards the front of the main shaft and slide the two together. This may take several attempts depending on how cooperative the needle bearings are in staying in place.

Front and Rear Bearings

1. Slide the front bearing guard over the first motion shaft.
2. Slide the front bearing, with circlip to the outside, over the first motion shaft and gently tap the bearing in about half way.
3. Slide the rear bearing guard over the main shaft
4. Side the rear bearing, again with the circlip to the outside, over the main shaft and gently tap the bearing in about half way.
5. Continue to tap the bearings in until they are tight up against the casing.
6. On the front of the first motion shaft install the lock washer (63) with the tab into the slot. The replacement lock washer I received from Moss had two tabs, but only one is used. I had to grind off the unused one in order for the lock washer to fit correctly.
7. Add the first motion shaft nut (64); remember this is a LEFT hand thread.

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Laygear

1. Now is the time to raise the laygear assembly. Either by lifting or by turning the gearbox upside down, being careful to keep the thrust washer pins aligned with their notches, work the laygear back into position so that you can replace the temporary layshaft with the actual one by sliding it in from the rear of the casing. Again this will take a bit of doing, moving the lay unit up and down until it aligns with the holes for the layshaft. When you do insert the shaft make sure that you install the shaft's locking bolt notch at the rear of the case and facing the bottom of the case.
2. Once the layshaft is in place, replace its locking bolt.

Now test the movement of the first motion / main shafts with the laygear. The first motion and main shafts should spin independently of each other. The laygear, first and second gear should spin when turning the first motion shaft. Engage the reverse gear and test again, this time the main shaft should turn in opposite direction of the first motion shaft.

Do NOT, at this time, attempt to engage second, third or fourth gear using the striking dogs. Since there are no stops in place it is possible to extend the striking dog beyond its limit and release the synchromesh springs and balls.

Selector Shafts and Forks

1. Place the first / second gear fork (5), third / fourth gear fork (6) and reverse selector (11) into place.
2. Since it doesn't matter which shaft is installed first, I will begin with reverse. To identify the shafts, the third / fourth shaft has two side notches with a pin, reverse has one side notch and two top notches, while first / second had one side notch and three top notches.

Reverse Gear Selector Shaft

- a. Slide the reverse selector shaft from the front of the casing, through the hole in the third / fourth gear fork (6), then add the steady (9) and continue to slide it through the reverse selector (11) and into the hole at the back of the casing.
- b. Turn and align the selector shaft until the pre-drilled hole aligns with the hole in the reverse selector (11) and lock in place with the lock bolt.
- c. Align the steady with its pre-drilled hole and lock in place with the lock bolt.
- d. At the back of the casing, add the single ball that resides between the center selector shaft and reverse shaft. You might want to add just a small amount of grease to hold the ball in place.

Third / Fourth Gear Selector Shaft

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- a. Slide the third / fourth selector shaft from the front of the casing, through the hole in the third / fourth fork (6), through the steady (9) and then add the third / fourth gear selector (10) and continue to slide it through the hole at the back of the casing.
- b. Turn and align the selector shaft until the pre-drilled hole aligns with the hole in the third / fourth selector fork (6) and lock in place with the lock bolt.
- c. Align the third / fourth gear selector (10) to its pre-drilled hole and lock in place with the lock bolt.
- d. At the back of the casing, add the single ball that resides between the center selector shaft and first / second shaft.

First / Second Gear Selector Shaft

- a. Slide the first / second selector shaft from the front of the casing, add the stop (8), pass it through the hole in the third / fourth fork (6), and then through the first / second gear fork (5) and continue to slide it through the hole at the back of the casing.
- b. Turn and align the selector shaft until the pre-drilled hole aligns with the hole in the first / second selector fork (5) and lock in place with the lock bolt.
- c. Align the stop (8) to its pre-drilled hole and lock in place with the lock bolt.

3. Finally, you need to add the securing wire to each of the lock bolts.

At this time it is possible to test the sliding hubs and striking dogs, however it will take a fair amount of pressure to push the gear selector forks (5 & 6).

Rear Cover

1. If you removed the speedometer housing, reinstall in the rear cover plate. Be sure to wire the two screws together.
2. Insert the rear spring plate (55) into the circular cutout of the rear cover plate.
3. Add the rear plate guard (54) on top of the spring plate.
4. Add the rear cover gasket. I used silicon sealer in addition to the gasket.
5. Place the rear cover on the casing and secure with the three large, two small nuts and single screw.
6. Gently tap the rear flange in into place and allow it to turn as it guides itself into place as it meshes with the speedometer pinion.
7. Install the rear flange washer and nut.
8. Secure the nut with a cotter pin.

Remote Control

1. Add the top gasket, as before I choose to use silicon sealant in addition to the gasket.
2. Install the three selector shaft balls (22) into the holes at the back of the casing.
3. Install the three springs (21) on top of the balls.

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4. Looking from beneath, line up the rear of the remote cover with the three springs, press down on the back, and then slowly bring the front of the cover down until it sits on top of the casing.
5. Secure the remote control unit with the 6 lock washers and nuts.

Bell Housing

1. Insert the front spring plate (62) into the circular cutout of the bell housing.
2. Add the front plate guard (61) on top of the spring plate.
3. Slide the bell housing over the first motion shaft and up against the front of the casing. As you do so, watch the front plate guard as it has a tendency to slip out of the circular cutout.
4. Secure the bell housing with 8 bolts and lock washers.

Now the only thing left to do is to put it back into the car. Good luck and have fun.