AUXILIARY TRANSMISSIONS
for
Cletrac HG or OC3 Crawlers

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INTRODUCTION:

This is an update of the auxiliary transmission articles written by Jon deMarrais of Worcester, New York. I want to thank Jon for all the work he did in designing and de-bugging and writing the description of this adaptation of a Model A Ford transmission to the Cletrac crawler. I am fortunate enough to live near Jon, so was able to get immediate assistance and to see his work. Also, he introduced me to Bob Basola, also of Worcester, who had worked on it with Jon and who gave me some more insight and inspired some alternate approaches to the job.

Furthermore, this project could not have been completed without the wisdom, knowledge, and skill of my friend Randy Zuell of Davenport, NY. Randy is a remarkably good welder and fabricator, with inherent design skills that continue to amaze me. And, he is very gracious about his advice. (He doesn't make me feel like an idiot for not seeing the many things that should have been obvious.)

I attempted to photograph the project as I progressed and have inserted photos where applicable. Also, I have attempted to measure and record accurate dimensions of any fabrication required.

This text is arranged under the following categories/headings in an attempt to make logic of it all:

1. PROJECT OVERVIEW:

The installation of an auxiliary transmission between the existing clutch and the rear end differential requires purchasing a Model A transmission, two sealed bearings, universal joint yokes and repair kits, a clutch disk, pilot bearing, throw-out bearing, and bearing carrier. You will have to remove (cut out?) the existing drive shaft, remove and cut down the cast iron clutch

cover, and fabricate adapter plates, new clutch linkage, the gas tank support, and driveshaft/u-joints.

Be aware that some of the bolts and bolt hole threads will be messed up, so plan to clean them up before re-assembly. I would even suggest replacing all of the bolts and lock washers that hold the clutch cover to the bell housing. I used grade 8 bolts, lock washers, and nuts on this project.

2. WHAT YOU'L NEED & PARTS YOU MUST PURCHASE:

A. I strongly recommend you have on hand the HG Instruction Manual and Parts Book. They are very helpful in identifying parts, etc.

B. For any work you do on the transmission, it is wise to use the repair and restore advice provided in the "Mid 1928 Ford Transmission Rebuild" text which can be found at: http://www.geocities.com/jim_mason49913/xmissionrebuild.html .

C. Model A Transmission:
The transmission MUST have the front input shaft designed for a single disk clutch. If yours is for a multi-disk clutch, I believe the front shaft can be swapped out for a single disk front shaft. You should be able to find a good Model A transmission for under $100. I paid $75.

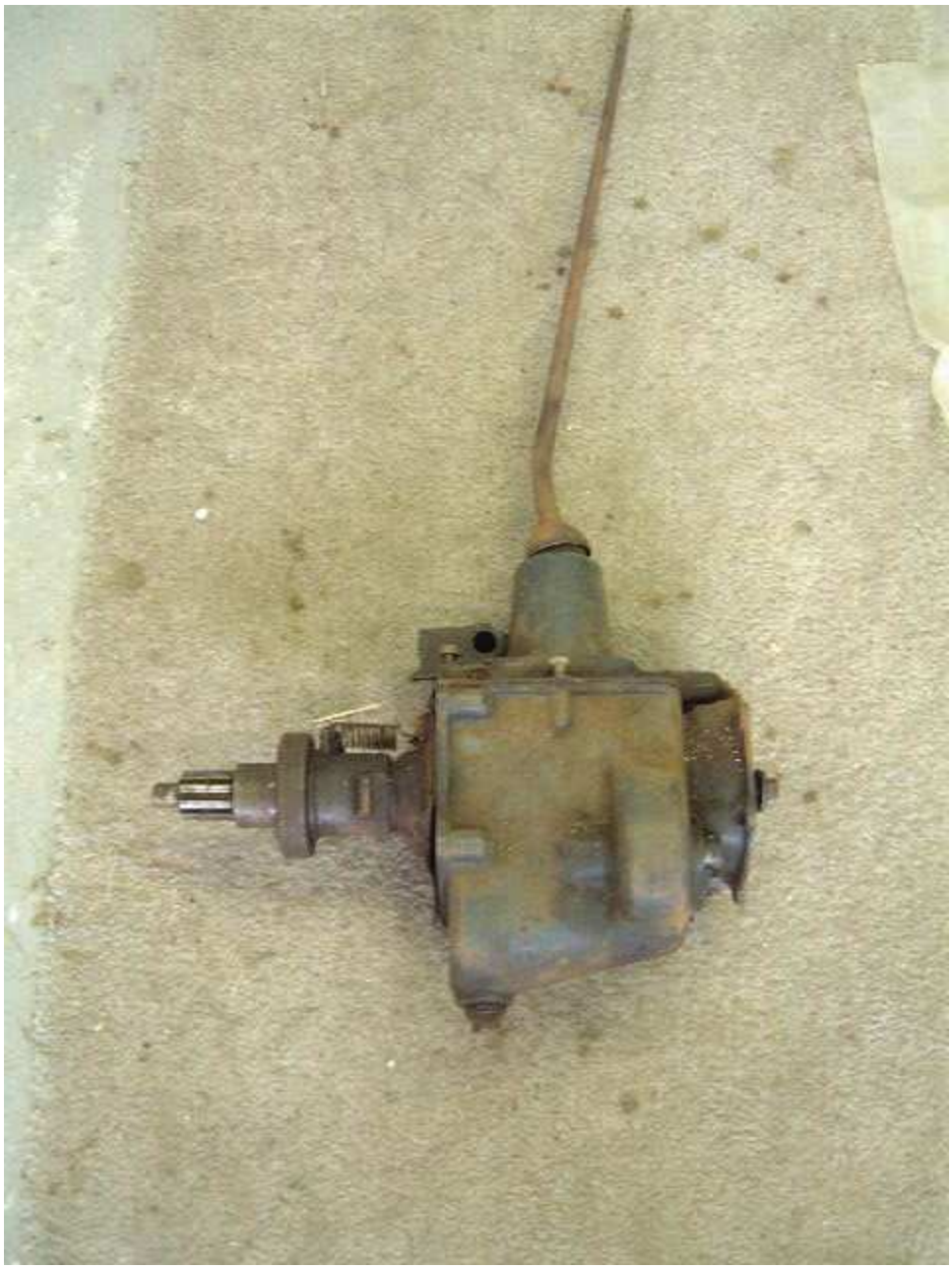

Photo of Model A transmission with throw-out bearing, bearing carrier, and pull back spring in place. Note the flange on back (right) end of the transmission that bolted to the rigid Model A driveshaft housing. (It gets cut down to facilitate installation.)

Photo of Model A transmission and clutch cover with multi-disk front shaft. Note absence of the sleeve that carries the throw-out bearing and carrier. Shaft dimensions are different as well. Also notice the position of the clutch lever, which is the basic design adapted for use by Jon, but abandoned in my effort.

B. Model A Parts:

The following parts were purchased NEW from don@snydersantiqueauto.com

A-7550 Clutch Disk	$34.95
A-7600 Pilot Bearing	$ 4.95
A-7084 U-Joint Rebuilt Kit (2 ea x $42))	$84.00

The following parts were purchased NEW from my local Parts Plus auto store:

Timken 208FF sealed input bearing for front transmission shaft $44.23
(Or may use another source with CR 6208-RSJ on box with bearing numbered SKF 6208-RS1)
Timken 306FF sealed output bearing for rear transmission shaft $23.60
(Or may use another source with SFF 6306-RSJ on box with bearing numbered MRC 306SZ)

The Model A Transmission and the two Model A U-joint yokes were USED purchased from Dave Rapp at Rapparts, email oldcars@epix.net, phone 570-798-0390.
Dave has a magnificent old-car junkyard with a big barn full of only Model A parts. He is located in Pennsylvania just across the Delaware River from Hancock, NY. As a note from experience, get price quotes on the phone before you visit him, as he charges more if you're there on the spot.

C. Adaptation Parts:

One each ½ inch diameter cold rolled steel rod 9 1/2 inches long. (For clutch)

The following parts were purchased from http://vintagepowerwagons.com (888-695-0578)
They are new-old parts for a Dodge Power Wagon.

CC581499 Throw-out Bearing	$25.00
CC581500 T-O Bearing Carrier/Sleeve	$10.00
CC573318 Pull Back Spring (Ultimately not used.)	$ 5.00

(Pull back spring not used. I chose to stay with the larger pull back spring which came with Model A transmission in photo above.)

(Note that similar parts may be purchased from NAPA: Entire assembly NAPA N1313 (~$70), etc.)

And if you need any Oliver/Cletrac parts: Zimmerman Oliver-Cletrac, Ephrata, PA (717) 738-2573

3. GENERAL PREPARATION & CLUTCH INSTALLATION:
A. Remove the gas tank and gas tank support.

B. Remove the driveshaft. I was not able to disassemble the U-joints and did not want to unbolt the HG transmission/differential and roll it back from the frame, so I used a torch to cut the U-joint cross pieces to remove it. I originally planned to use these yokes, but they are too long, so I used Model A (Spicer) yokes which are shorter and worked well.


Photo of stock HG drive shaft with U-joints and yokes at each end.

C. Remove and save the exterior clutch linkage.

D. Remove clutch cover bolts and pry clutch cover off of bell housing.

E. Remove and save the remaining clutch linkage from the clutch cover.

F. Remove the HG clutch pressure plate and disk.

G. Clean up all the clutch cover bolt hole threads in the bell housing.

H. Examine the HG flywheel and clutch pressure plate. Be sure they are in good condition. If they are not, repair or replace them. See HG Instruction Manual for details.

I. Install the new pilot bearing in the center of the flywheel.

J. Install the clutch pressure plate and the new Model A clutch disk to the flywheel.
BE SURE THE DISK IS INSTALLED WITH THE LONGER END OF THE SPLINE COLLAR TOWARDS THE ENGINE! Some disks will be marked on one side with "engine side" inscription. If so, install that side AWAY from the engine. This is very important, because if it is installed incorrectly, the disk spline will bind on the transmission input shaft tube that carries the throw-out bearing, and you won't be able to get the transmission tight to the clutch cover at final installation.

Prior to tightening the pressure plate, use the front input shaft from the transmission to align the clutch disk properly. Insert the end of the input shaft through the clutch disk splines and into the pilot bearing, and center the input shaft and clutch disk. Tighten the clutch pressure plate in place. Remove the input shaft and install it into the transmission as described below.

4. MODEL A TRANSMISSION:
While the Model A transmission is a relatively simple installation, it does require just a few modifications.

Prior to installing the transmission it is a good idea to go through it and replace any worn parts. They are readily available.

For any work you do on the transmission, it is wise to use the repair and restore advice provided in the "Mid 1928 Ford Transmission Rebuild" text which can be found at: http://www.geocities.com/jim_mason49913/xmissionrebuild.html . Following this text:

A. Replace the original front (input shaft) bearing with the new sealed bearing. Original bearings are not sealed and will leak like crazy. They didn't leak (much) in the Model A because the gear oil was extremely heavy.

IMPORTANT: While you have the transmission disassembled, be sure to use the front input shaft to align the clutch disk in the clutch pressure plate prior to tightening the pressure plate to the flywheel. This will allow easy installation of the transmission later on.

B. Replace the original rear (output shaft) bearing with the new sealed bearing. Then fill in the spaces between the output shaft splines and the bearing with epoxy or some other similar material. **You MUST do this to prevent transmission gear oil from leaking out.**

C. Remove the saw tooth emergency brake catch from the top front of the transmission.

D. Cut off the outer flange (which originally attached the transmission to the rigid driveshaft tube of the Model A) on the rear bearing retainer. This flange gets in the way when you're trying to install the completed transmission and adapter plate assembly into the clutch cover. Install the retainer on the transmission being sure to use gaskets and sealer at its joints to the transmission case and to the bearing.

Photo of transmission rear output shaft bearing retainer with outer flange cut off. The open shaft splines (hidden by the masking tape) must be sealed to the bearing to prevent oil loss.

5. FABRICATING THE ADAPTER PLATES:

This project requires two adapter plates (one ½ inch thick, and one 3/8 inch thick) because one must bolt to the front of the Model A transmission, resulting in the bolt heads being not visible or accessible when the transmission is installed to the clutch cover. The second adapter plate is welded to the clutch cover. Subsequently, the two adapter plates are bolted together, securing the transmission to the clutch cover and permitting disassembly.

Unfortunately I cannot find my photographs of the adapter plates, so refer to the photo in Jon's write-up. I did, however, make a sketch with the dimensions and measurements which may be seen below.

The adapter plates that I fabricated are similar to Jon's with the exception that I drilled only 4 holes to secure the plates together with bolts, while Jon drilled 8 holes (for 4 bolts and 4 alignment pins). Also, instead of using ½ inch diameter bolts welded to the top of the front plate

to hold the gas tank support, I used 3/8 inch bolts. Finally, instead of using the thinner 3/8 inch thick plate at the front and welded to the clutch cover, I chose to use the ½ inch plate there to reduce the risk of warping when it was welded to the clutch cover. By doing so, I was able to avoid milling the finished assembly otherwise required to ensure correct alignment.

Unfortunately, Jon's write-up does not specify the exact locations for bolt holes, etc in the adapter plates. I made those measurements and they are defined below and they are illustrated in the sketch on the next page.

A. Start with two steel plates, both cut to a nominal 8 inches square. (The 8 inch dimension is not critical and can be slightly more or less.). One plate should be ½ inch thick and the other 3/8 inch thick.

If you do not have a good machine shop capability, I recommend you have the hole drilling (as specified below) done by a qualified machinist, as accuracy is critical.

B. Mark a horizontal and vertical line through the center of both plates, having the horizontal center line parallel with the top and bottom, and the vertical center line parallel with either side. **These lines and their intersection point are the base reference for all of the following dimensions.**

C. **In both plates**, mark and drill two 5/8 inch diameter holes to permit clearance for ½ inch shafts which come out of the top front of the transmission when shifting gears. These two holes are centered 2 5/8 inches above the horizontal center reference line and 7/8 inch to either side of the vertical center reference line.

D. **In both plates**, mark and drill the outer four holes for the 3/8 diameter bolts which will hold the two plates together at final assembly. The **top two holes** are centered 3 inches above the horizontal center reference line and 3 ¼ inches to either side of the vertical center reference line. The **bottom two holes** are centered 3 1/8 inches below the horizontal center reference line and 3 ¼ inches to either side of the vertical center reference line.

E. **In both plates**, mark (but do not yet drill) the hole locations for the four 7/16 inch bolts which hold the plates to the transmission. The **two top holes** are centered 1 5/8 inches above the horizontal center reference line and 2 5/8 inches to either side of the vertical center reference line. The **two bottom holes** are centered 2 1/8 inches below the horizontal center reference line and 2 5/8 inches to either side of the vertical center reference line.

F. **In the 3/8 inch thick adapter plate** which bolts to the transmission, **drill the holes for the 7/16 bolts** which hold the plate to the transmission in the locations as identified and marked in E. above.

G. **In the ½ inch thick adapter plate** which will be welded to the clutch cover, **drill four 1" diameter holes** in the locations as identified and marked in E. above. These larger holes will permit space for heads of the bolts which secure the 3/8 inch thick adapter plate to the transmission.

H. **In both plates**, Mark and cut out a 4 5/8 inch diameter hole centered at the intersection of the vertical and horizontal center reference lines. The 4 5/8 diameter will provide a nice snug fit around the transmission front collar which covers the input shaft.

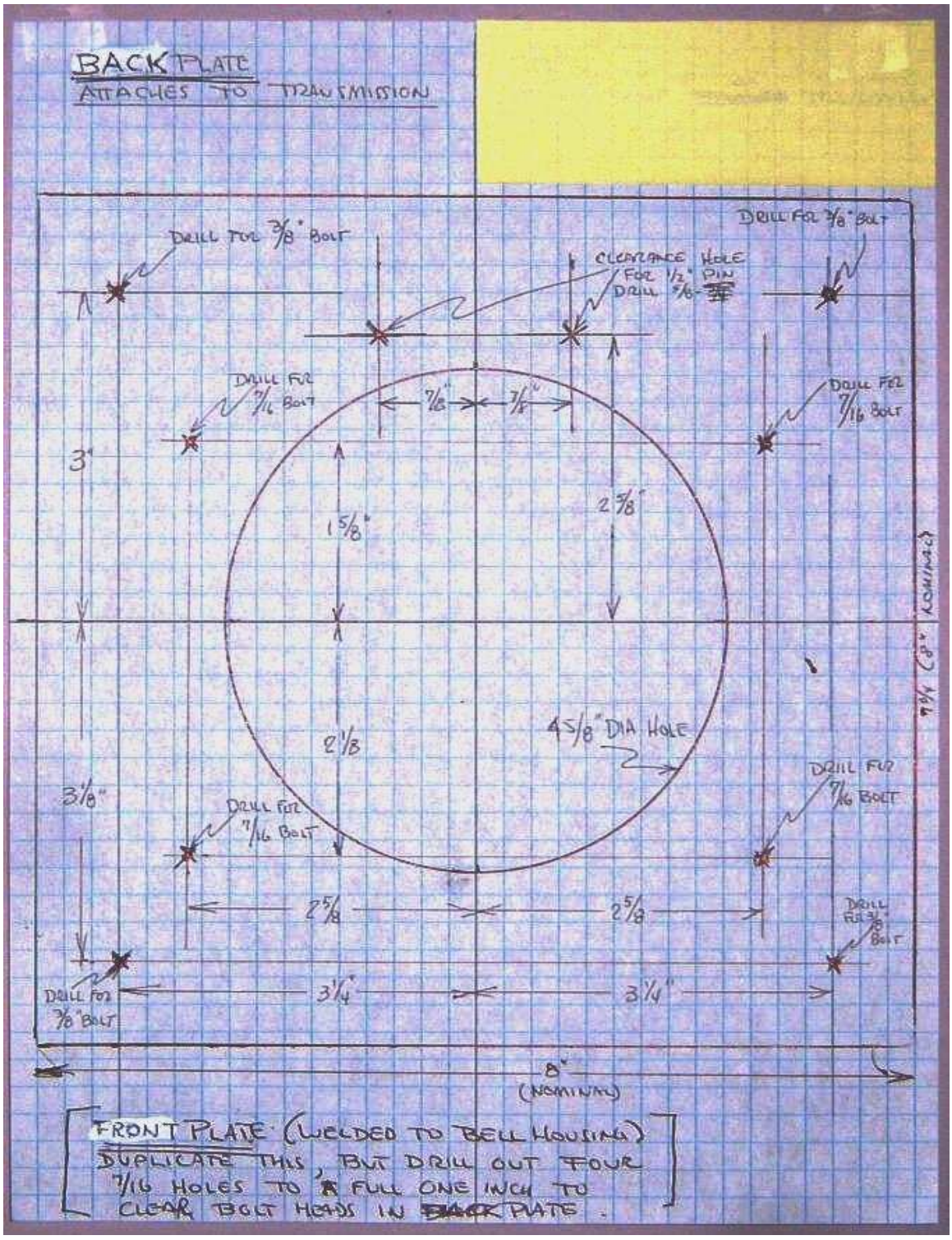

Photo of layout sketch of adapter plates.

I. Weld two 3/8 by1 ½ inch bolts to the top edge of the ½ thick front adapter plate, each being located 1 ½ inches on either side of the vertical center reference line. I just welded the heads to the top edge of the plate so the bolts would stand vertically when the assembly was installed. These bolts will be used to secure the modified gas tank support.

6. MODIFYING THE CLUTCH COVER:

Photo of HG clutch cover with clutch linkage removed. Center shaft may remain on the clutch cover, as it will be removed with the back side of the clutch cover when the cover is cut down.

A. Cut and machine the clutch cover to yield a rear mounting surface that is exactly 3 inches from and parallel to the front mating surface which lays against the bell housing. I had this done by a machine shop to ensure the cut and surface were accurate. Note that the front locating ring will extend approximately 1/8 inch beyond the front mating surface.

B. Drill out the 3/8 inch clutch actuator pivot rod holes on either side of the clutch cover to ½ inch.

In my design, I use a ½ inch cold rolled steel rod for the pivot in the original location and welded the stock HG clutch actuator bracket (clutch release yoke) to it inside the clutch cover, and the linkage lever to it on the outside of the clutch cover. If you feel the ½ diameter rod is not adequate, use a ¾ inch rod and drill the holes out to that measurement. This is fully discussed below.

C. Drill a large (such as 2 inch diameter) hole in the top center of the clutch cover. This provides a very convenient way to set up the clutch linkage and to install the pull back spring from the throw-out bearing carrier to the front of the transmission. Epoxy a cover on the hole when done with assembly and prior to installing the gas tank support.

Photo of modified clutch cover with ½ thick adapter plate welded in place. Note the large access hole drilled in top of cover, the ½ inch clutch actuator rod, and the two 3/8 inch gas tank support mounting bolts.

7. ATTACHING THE ADAPTER PLATES TO THE TRANSMISSION & CLUTCH COVER:
A. Bolt the 3/8 inch thick adapter plate to the front of the transmission. Be sure it seats well around the 4 5/8 inch collar for the input shaft. If all of the bolts do not line up exactly, drill out the difficult holes slightly to allow more space. Use grade 8 bolts.

B. Bolt the ½ inch adapter plate to the 3/8 inch adapter plate using only 2 bolts at opposite corners. Snug the bolts in place but do not tighten, as the plates will have to be separated again for welding the ½ inch plate to the clutch cover.

THE FOLLOWING STEPS ARE BEST HANDLED WITH TWO PEOPLE, ONE TO ALIGN AND HOLD THE TRANSMISSION, WHILE THE OTHER TACK WELDS THE ½ INCH ADAPTER PLATE TO THE CLUTCH COVER.

C. Insert the front shaft of the transmission (with the adapter plates installed) through the clutch disk splines and into the pilot bearing until the ½ inch adapter plate is flush against the clutch cover. (The throw-out bearing and carrier should not have been installed at this time.) The fit of the front shaft through the clutch disk splines is very tight, so be patient.

D. Align the transmission so that it is centered in the clutch cover and the rear output shaft is aligned with the input shaft to the HG transmission/differential.

E. Tack weld the ½ inch adapter plate to the clutch cover. **Continue to support the transmission in that position.**

F. Remove the two bolts holding the two adapter plates together.

G. Remove the transmission and 3/8 inch adapter plate from the clutch and clutch cover. Remove the clutch cover with the ½ inch adapter plate from the bell housing.

H. Weld the ½ inch adapter plate to the clutch cover. **Note that the clutch cover is cast iron and that welding to it is difficult. The cast iron must be pre-heated prior to welding, and special welding rod must be used. I strongly recommend this only be attempted by a qualified welder.**

I. You are likely to have small openings between the adapter plate and the clutch cover where the one inch holes were drilled in the adapter plate. Fill those holes with epoxy to keep dirt from entering the clutch assembly.

8. MODIFYING THE INTERIOR CLUTCH LINKAGE:

The original HG clutch was actuated by a rod entering the bottom of the clutch cover which pushed on a U-shaped lever/bracket (clutch release yoke) which pivoted on a 3/8 inch diameter top rod secured into the clutch cover. The lever/bracket release yoke pushed on the throw-out bearing carrier and released the clutch.

I modified this assembly by using the U-shaped lever/bracket (clutch release yoke) and welding it to a larger ½ inch top rod. This top rod projects out the left side of the clutch cover so that a lever may be installed which is pushed on by the exterior clutch peddle linkage. The outside lever should be exactly the same length (rod hole to rod hole centers) as the clutch release yoke lever/bracket, as we know that this design pressure will match that of the original HG clutch linkage.

Jon deMarrais' approach was different, using the Model A Ford clutch fork positioning its pivot low in the clutch cover, copying the Model A installation as may be seen in the photo of the Model A multi-disk clutch transmission earlier in this text. Dimensions were not available in Jon's work, so I chose to play it safe and stay with the HG design. He also used a ¾ inch diameter shaft and chose to use pivot bushings. I chose the smaller diameter shaft and no bushings after consultation with others who have seen other similar stock clutch installations with ½ inch shafts and no bushings. I will quickly modify this text if I find the ½ inch shaft and/or absence of bushings is inadequate.

A. Drill out 3/8 holes in the top open end of the U-shaped clutch release yoke lever/bracket to ½ inch diameter.

Position the ½ inch diameter rod through the clutch cover holes and the ½ inch holes drilled in the clutch release yoke with the right end of rod flush with outer surface of the clutch cover.

B. Weld the clutch release yoke lever/bracket to the ½ inch rod, being sure the welds are of high quality.

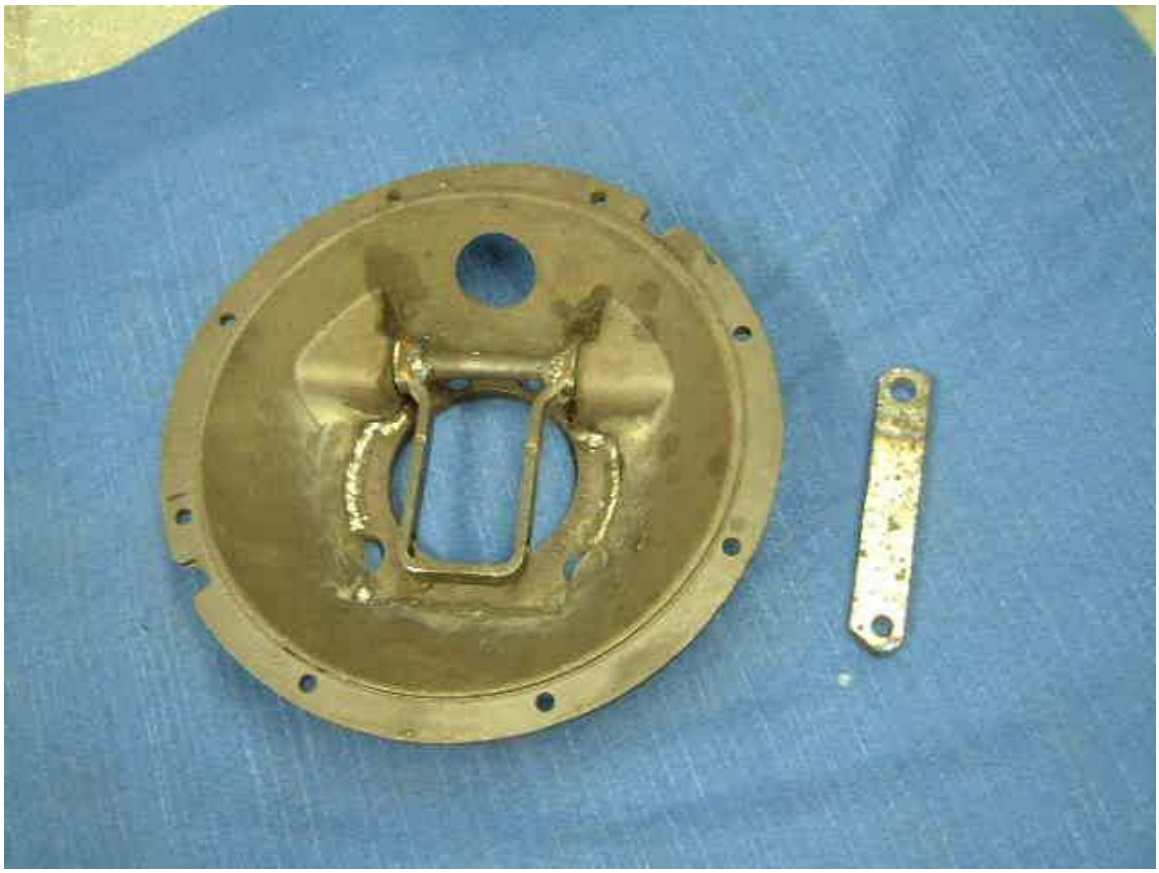

Photo of the clutch release yoke welded to the ½ inch diameter actuating rod inside the clutch cover. Note that the lever to the right of the assembly is too long. The pivot holes in it should be (4 5/8 inches) the same distance apart as the top pivot rod is from the holes in the side of the yoke near the bottom, to ensure the clutch peddle pressure and lever travel are correct. After this picture was taken, a new lever was made. (No the material is not gold. The color results from fluorescent lighting and incorrect camera settings.)

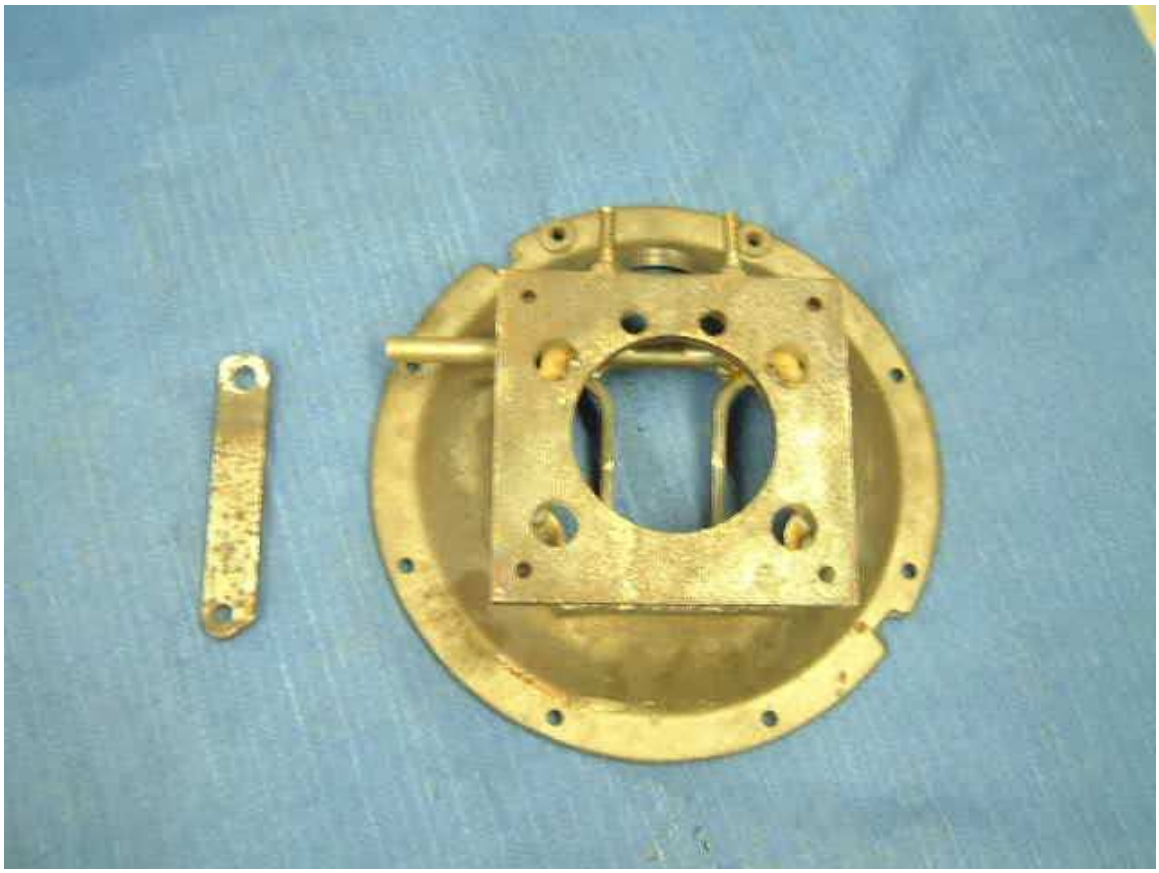

Photo of exterior of clutch cover with adapter plate and clutch linkage in place. Note small voids in the two top one inch adapter plate holes. Fill those with epoxy to keep dirt out of the clutch. The clutch actuating rod extends out of the left side of the clutch housing where the lever will be welded in place after the clutch cover is assembled to the bell housing, and proper positioning can be determined. The right end of the actuating rod is flush with the right side exterior of the clutch cover.

9. INSTALLING THE TRANSMISSION TO THE CLUTCH COVER:

A. Install the new throw-out bearing to the new throw-out bearing carrier. Install the pull back spring into the hole at the top of the throw-out bearing carrier and tape it in place so it does not fall out later. Apply a very thin coat of grease or white-lube to the inside surface of the throw-out bearing carrier, the Model A transmission front splines, and the guide tube which covers the Model A transmission front input shaft.

B. Position the assembled throw-out bearing and carrier into the clutch release yoke in the clutch cover, being sure the throw-out bearing and carrier are located to the front (engine side) of the clutch release yoke and the pull back spring faces up and to the rear toward the transmission. With a piece of small diameter wire, snake the wire through the carrier hole for the pull back spring and up through the clutch cover top access hole to hold the bearing and carrier in place, and to position it for final installation.

C. Install the modified clutch cover to the bell housing. I recommend using new grade 8 bolts. (3/8-16 x 1 1/8” are specified. I used 1 inch. The top two are 1 ½ inch to accommodate the gas tank support.)

D. Visually align the throw-out bearing and carrier on center with the center of the clutch disk, and use the fine wire to hold it in place.

E. Install the transmission to the clutch cover, inserting the transmission input shaft through the throw-out bearing carrier and clutch disk into the pilot bearing. Be patient. This may take some jiggling, etc. The two adapter plates should mate and bolt together easily.

If the transmission does not insert all of the way into the clutch cover to provide good mating between the adapter plates, the modified clutch cover is not correctly sized to be 3 ½ inches from the front mating surface to the back face of the ½ inch adapter plate (3 inch cut down clutch cover plus ½ inch adapter plate) and you will have to cut a little off the front end of the transmission front input shaft or the transmission front input shaft sleeve (on which the throw-out bearing rides). If the front shaft is bottoming at the pilot bearing, cut the shaft end. If the tube is hitting the clutch disk hub, cut the tube. You should be able to see if the tube binds on the disk hub by viewing through the clutch cover access hole, but you may have to measure both of those dimensions to determine which is causing the problem.

E. Remove the thin wire used to hold the throw-out bearing in place and, using a long thin screwdriver, hook the throw-out bearing pull back spring into the hole at the front of the transmission. Careful, you don't want to drop that spring.

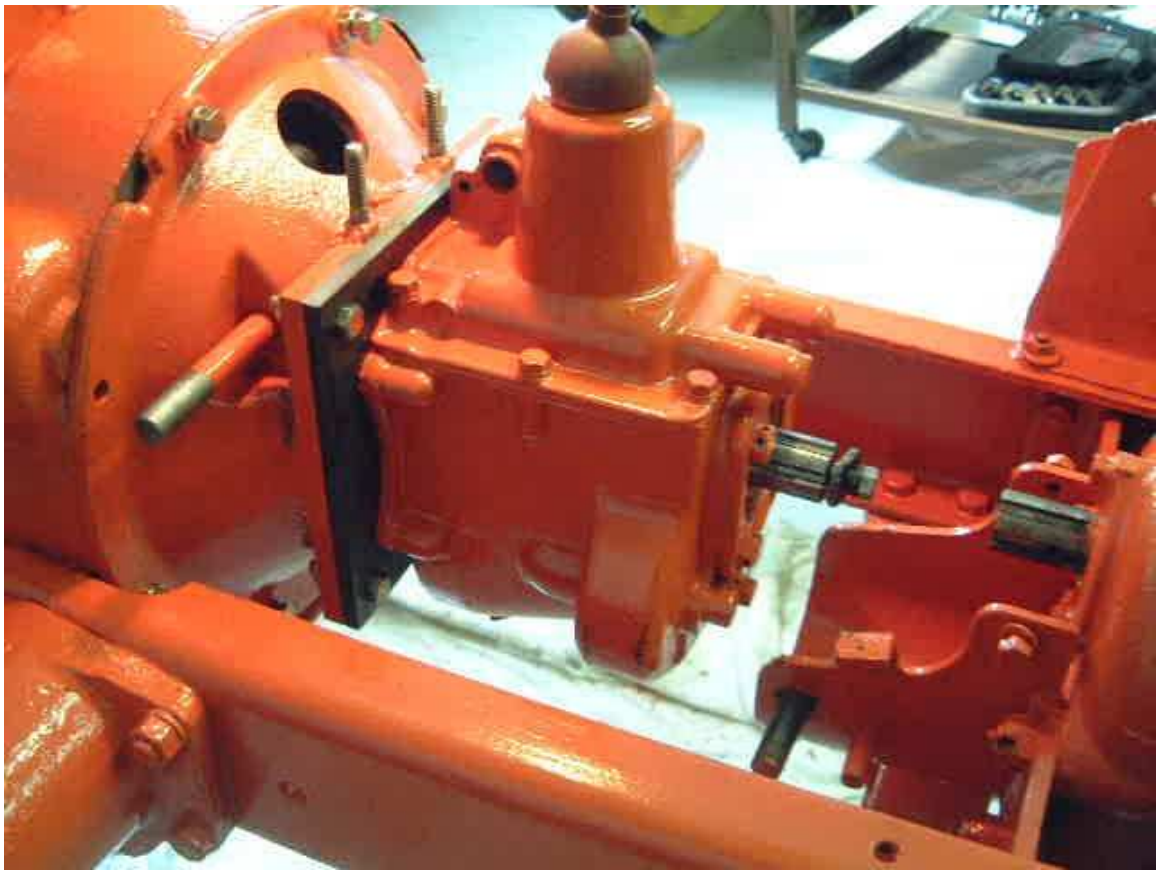

Photo of the Model A transmission assembled to the clutch cover. The front adapter plate welded to the clutch cover is painted. The rear adapter plate is unpainted.

10. MODIFYING THE EXTERIOR CLUTCH LINKAGE:

A. Locate the clutch lever onto the clutch actuating rod which protrudes through the clutch housing.

A. Get a bolt the same diameter as the inside diameter as the clutch pedal lever pivot hole. Weld the head end of the bolt to the left frame side rail in the same location as the adjacent original pivot welded on the driveshaft tunnel. Install and weld in place retainer nuts on both sides of the foot lever with the foot lever in a position directly in line with the clutch lever on the clutch actuating rod (as A above).

B. Fabricate an adjustable rod to connect the foot lever to the clutch lever with yokes at each end to swivel on the levers. Position it so both levers move as desired, and where the clutch lever actuates the clutch pressure plate correctly (as can be seen through the access hole in the clutch cover.).

C. Weld the clutch lever to the clutch actuating rod in the correct actuating position.

Photo of clutch lever linkage. Note pivot bolt welded to frame side rail, linkage rod with end yokes, clutch rod welded to clutch actuating rod, spring added to ensure relaxed position of levers does not wear throw-out bearing.

11. FABRICATING THE NEW DRIVESHAFT:

You have to fabricate a small driveshaft assembly that connects the rear output shaft of the Model A transmission to the front input shaft of the HG transmission. This requires two Model A U-joint yokes (Spicer), two Model A U-joint repair kits, and three fabricated chunks of metal. Two of the

chunks of metal will be the two side plates which hold the U-joint bearing cups, and the third will be the spacer between them. They will form a sandwich with the spacer between the side plates, and the side plates locking onto the U-joint bearing cups. (Actually they are not bearings, but bushings.) This sandwich will be bolted together for rigidity and can be easily disassembled.

You need two Model A (Spicer) universal joint yokes (the end which fits the back output shaft of the Model A transmission). Note that the HG yokes are too long and will not fit end-to-end between the installed Model A transmission and the HG transmission.

Photo of the HG U-joint yoke (left) and the Model A U-joint yoke. Note the length difference.

A. After the Model A transmission is installed in the machine, install U-joint repair kits to U-joint yokes, and..

B. Install the assembled U-joints to the Model A transmission output shaft and the HG transmission front input shaft. **Be sure the front yoke is bolted with the washer into the output shaft of the Model A transmission, as this prevents the shaft from moving forward and out of position in the transmission. And, do NOT stake the rear yoke to the HG transmission input shaft except for measurement purposes, as it must be able to move a little bit.**

C. Measure the distance between the bearing cup centerlines of the two yokes. **Be sure to leave space for some play at the rear yoke, as it may have to slide a little (1/16 inch?) on the rear transmission input shaft during operation. I temporarily staked the rear yoke to the HG transmission spline to establish a measurement that was safe.** This measurement will be the centering location of the holes of the U-joint bearing cups in the side plates of the driveshaft.

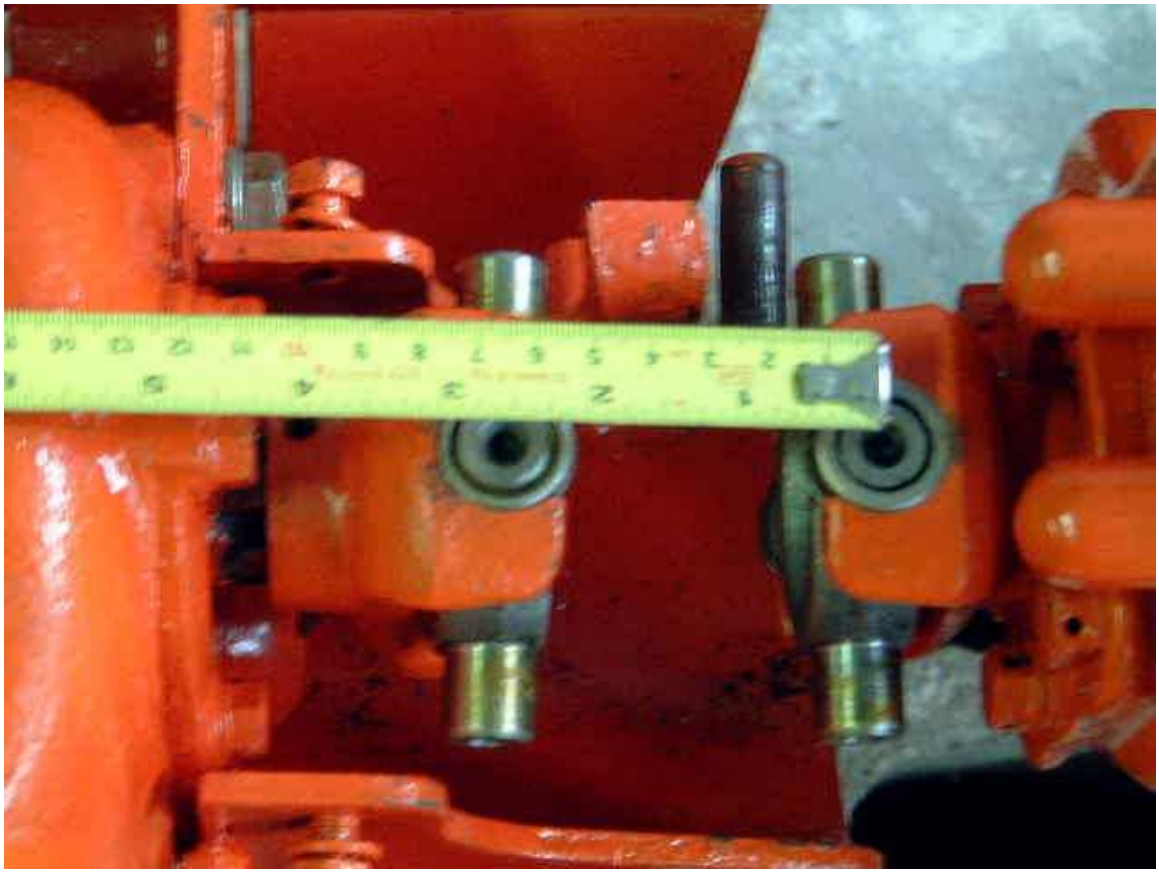

Photo of measurement between u-joint bearing cut centerlines.

D. Layout and fabricate two side plates:
Side Plate Size: Thickness – ¾ Inches.
Width – 1 ½ Inches
Length – Measurement between u-joint bearing cup centerlines plus approximately 1.5 inches. (Mine is 3 5/8 between the centerlines and 4 ¼ overall)

Side Plate Bearing Holes (two in each side plate):
Diameter – 7/16 Inch (outside diameter of bearing cups)
Depth – 5/8 Inch. (leaves 1/8 inch material to retain cups.)
Location – Centered along long centerline of largest surface on each side plate.

Clamp the two side plates together, exactly so that the bearing cup holes will be in prefect alignment.

Drill 1/8 inch holes through both plates at bearing cup hole center locations.

Unclamp the side pieces and drill out the bearing cup holes to their full diameters, drilling the full diameter 7/16 inch holes only 5/8 deep, so that the side plates clamp onto and secure the cups when assembled. The 1/8 inch holes which extend through the side plates can be used for greasing the U-joint bearing cups.

E. Layout and fabricate spacer block.
Thickness – 2 3/8 Inches
Width – 1 ½ Inches (same width as side plates)
Length – Measurement of space between u-joints, less ½ inch.

F. Layout and drill bolt holes, select bolts:
Clamp the side plates and spacer block together being sure the cup holes are in perfect alignment. Drill four bolt holes all the way through the assembly. Select 4 appropriately sized bolts. **Use Grade 8 bolts, nuts, and lock washers.**

G. Install the fabricated side plates over the U-joint bearing cups, and position the spacer plate between them. Bolt the assembly together.

H. The fabricated driveshaft will not clear the protective "tunnel" that protrudes from the rear transmission. It must be cut away on both the right and left sides to provide clearance for the driveshaft to rotate.

Note:
My welder/fabricator suggested another driveshaft design which uses the same dimensions as above, but uses bolted welded plates rather than a spacer block. (I'm not totally confident in this design, and will revert to the original spacer block design if this fails.) See photos below.

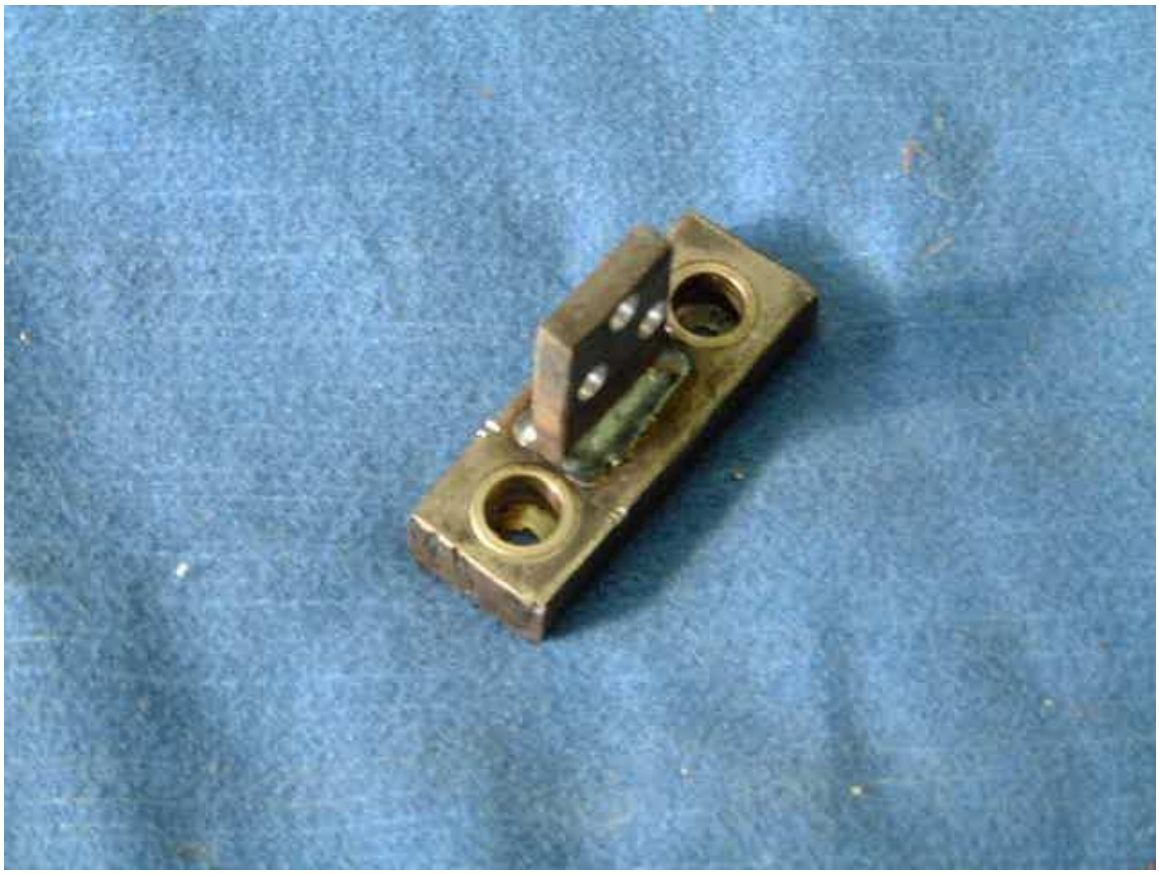

Photo of one side plate assembly with bearing cup in place. Other side plate is similar.

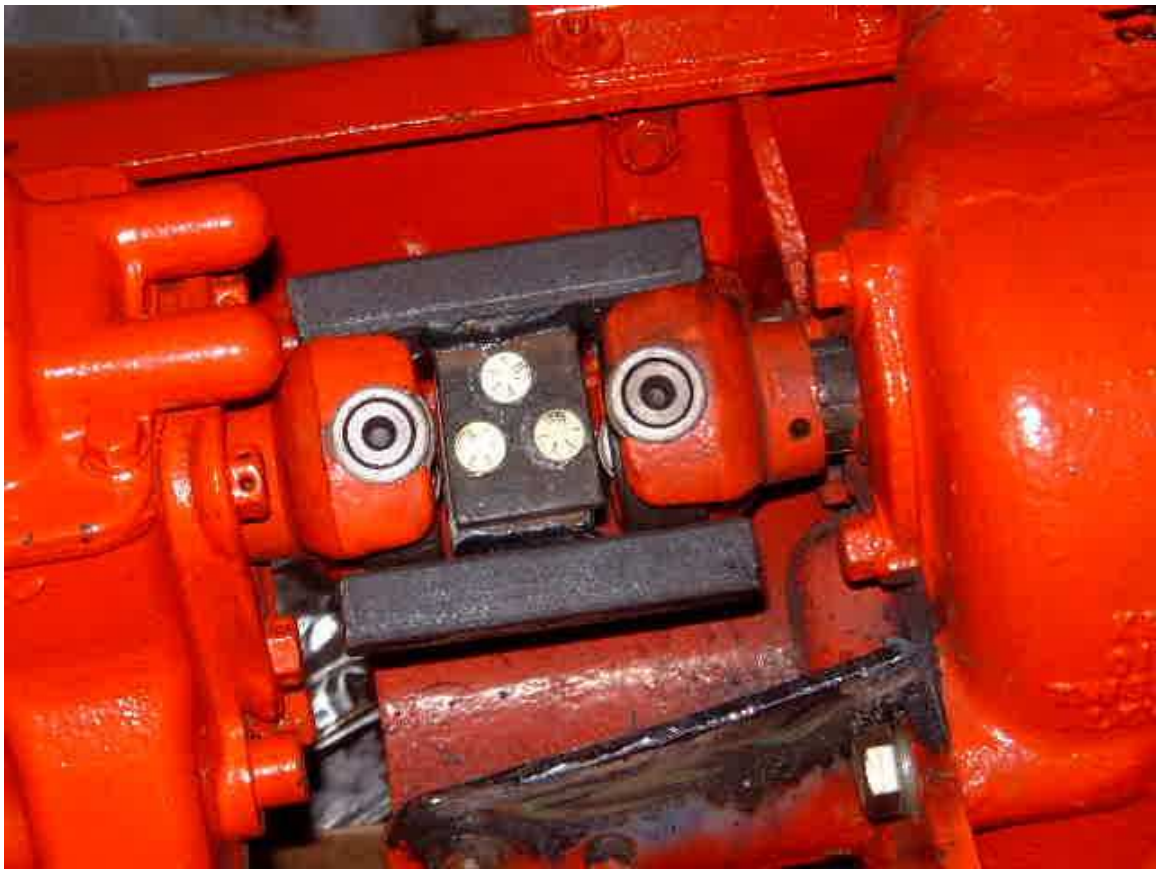

Photo of assembled driveshaft installed. Note that the metal tunnel has been cut to provide clearance for driveshaft rotation.

12. MODIFYING THE GAS TANK SUPPORT:

The gas tank support must be modified because the Model A transmission falls in the location of the original bottom bolt.

A. Cut the bottom of the support bracket off straight and level at a location that will clear the transmission.

B. Fabricate a square metal plate to rest on the adapter plate between the transmissions. Drill two holes to go over the 3/8” bolts welded to the top of the adapter plates.

C. Position the plate over the bolts and install lock washers and nuts to hold it in position. Install the cut down support bracket. Weld the bottom plate to the support bracket.

D. Epoxy sheet metal cover plate over access hole in clutch cover, and install modified support.

Photo of original gas tank support bracket.

Photo of modified gas tank support bracket installed. Note location where original was cut.

13. FINAL TWEAKS:
A. Fabricate drive shaft top shield.
B. Relocate battery, gauges, etc.

14. QUESTIONS?
I will be happy to assist anyone with their conversions, so contact me with any questions.

The author of this text may be reached at:

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(This is subject to change, as I'm at retirement age.)