

SECTION XI—TRANSMISSION AND BEVEL GEAR

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1. GENERAL DESCRIPTION

Power from the engine is transmitted through the engine clutch and the universal joint assembly to the transmission. From the transmission, power is transmitted to the bevel gear, and from the bevel gear through the steering clutches, to the final drives and the track drive sprockets.

The transmission case is attached to the front of steering clutch and final drive housing with cap-screws. The transmission is piloted into the steering

clutch and final drive housing by a boss, located on the rear of the transmission case. This boss also serves as a bearing retainer for the transmission bevel pinion shaft rear bearing.

A fixed gear reduction is made between the transmission bevel pinion and the bevel gear to the final drive gears; further reduction for power or speed change is obtained by shifting the transmission gears.

2. TRANSMISSION

A. Description

The transmission is a constant mesh, helical gear, speed reduction unit designed to provide the proper gear ratio for the required speed or power for the operation of the tractor. The various speed changes (six (6) forward and three (3) reverse) are obtained by the use of shifting collars, located on hubs assembled on the intermediate shaft and the transmission bevel pinion.

The shifting collars are shifted into mesh with their corresponding gears by the use of shifting forks. The shifting forks are actuated by shifting fork shafts engaged with the gear shifting levers. The shifting movement of each shifting fork shaft is controlled by detent notches in the shifting shafts and steel balls (detent balls) located in the transmission case. Each shifting fork is so positioned and clamped to its shifting shaft so that when each shifting shaft is shifted to the desired speed range, the detent balls enter the detent notches in the shifting shafts and properly locate the shifting collar with its corresponding gear.

The shifting collars are locked in mesh with their corresponding gears by locking mechanisms consisting of two (2) shifting lock plungers attached to, and actuated by, two (2) shifting lock plunger rods. The front end of each shifting lock plunger

rod is connected to a lever located on the outer ends of the engine clutch shifting yoke shafts. When the engine clutch operating lever is pulled back to engage the clutch, the shifting lock plunger rods move the shifting lock plungers to a position between the detent balls and lock the shifting shafts in the desired position. *NOTE: The shifting shaft locking mechanisms are so designed that the transmission shifting shafts can be shifted only when the engine clutch operating lever is in the disengaged position.*

The transmission shafts are supported on one end by ball bearings and on the other end by roller bearings. The power input to the transmission is applied to the transmission top shaft.

B. Transmission Removal

1. Remove the oil drain plugs from the transmission case and from the bottom of the bevel gear compartment of the steering clutch and final drive housing and allow the oil to drain.
2. Remove the seat cushion, seat adjusting frame, brake pedal pads, gear shift lever guide, speed selection shift lever, floor plate, and the main frame bottom rear shield.

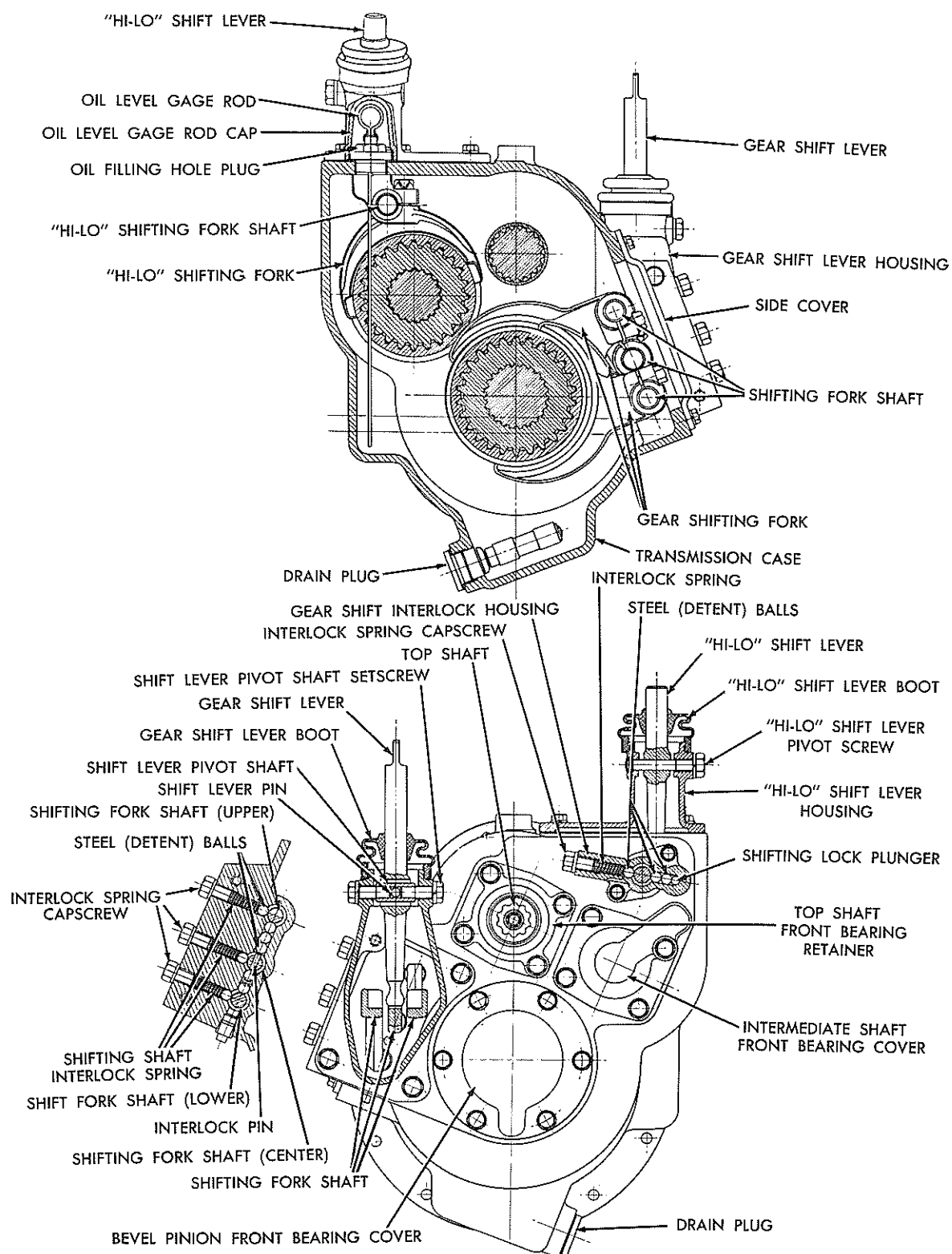


Fig. 1 — Transmission Sectional View

Fig. 1—Transmission Sectional View

3. Remove the four (4) capscrews from the right brake pedal lever bracket and move the bracket assembly to provide clearance for removal of the transmission.
4. Remove the "HI-LOW" gear shift lever from the high-low shift lever of the transmission.
5. Disconnect the steering clutch control rods from the steering levers. Remove the capscrews attaching the steering lever bracket to the transmission case and remove the steering levers and bracket as an assembly.
6. Disconnect both shifting lock plunger rods at the transmission end and allow the rods to drop down to provide clearance.
7. Remove the two (2) U-bolts attaching the universal joint to the rear yoke. Hold the two (2) universal joint bearing assemblies to prevent them from falling off. Place a small pry-bar between the universal joint and the rear yoke and pry the universal joint assembly forward to clear the rear yoke. Tie or tape the bearing assemblies in place on the universal joint journal. Remove the universal joint assembly by pulling the front yoke from the engine clutch shaft splines.
8. Thoroughly clean the top of the transmission case and the surrounding area.
9. Install a $\frac{5}{8}$ " NC eye bolt in the tapped hole of the transmission case as shown in Fig. 2. Using a suitable chain and hoist, support the weight of the transmission assembly and remove the capscrews attaching the transmission to the steering clutch and final drive housing.
10. Move the transmission forward until the rear boss of the transmission case is free of its bore in the steering clutch and final drive housing, then raise and remove the transmission.

NOTE: Keep the transmission in alignment (straight) when removing to prevent the boss on the transmission case from binding in the bore of the steering clutch and final drive housing.

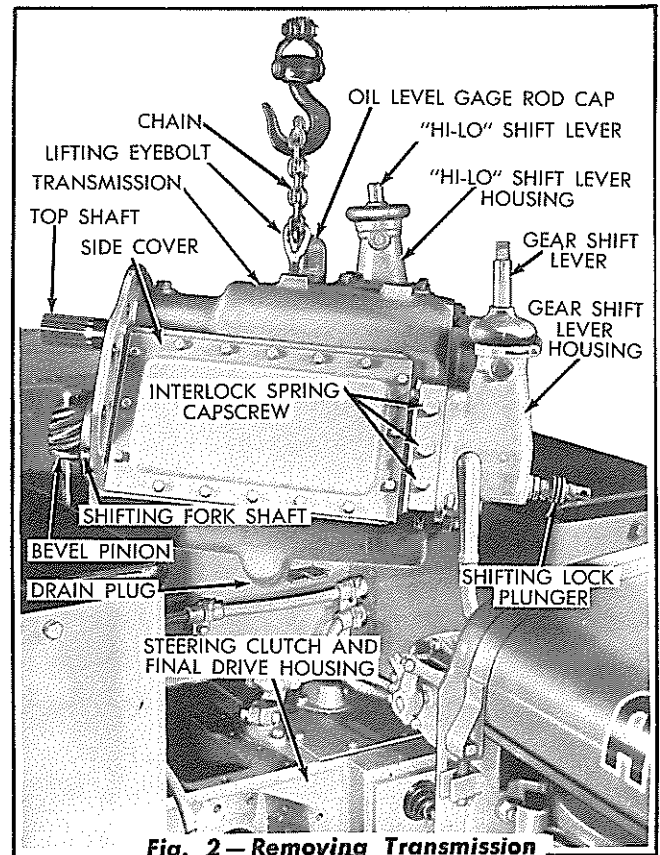


Fig. 2—Removing Transmission

C. Disassembly of Transmission

1. Thoroughly clean the transmission case before disassembly.
2. Place the transmission assembly on a clean work bench, with the right side upward, and remove the side cover.
3. Remove the capscrews attaching the gear shift lever housing and the "HI-LO" gear shift housing to the transmission case and remove the housings.
4. Loosen the shifting fork capscrews attaching the shifting forks to the shifting fork shafts. Loosen the interlock spring capscrews and pull the lower of the three (3) shifting fork shafts from the transmission case; catch the three (3) steel balls (detent balls) which will drop from position when the shaft is removed. Remove the shifting fork from the shifting collar.
5. Pull the center shifting fork shaft and interlock pin from the transmission case, catching the four (4) steel balls (detent balls) which

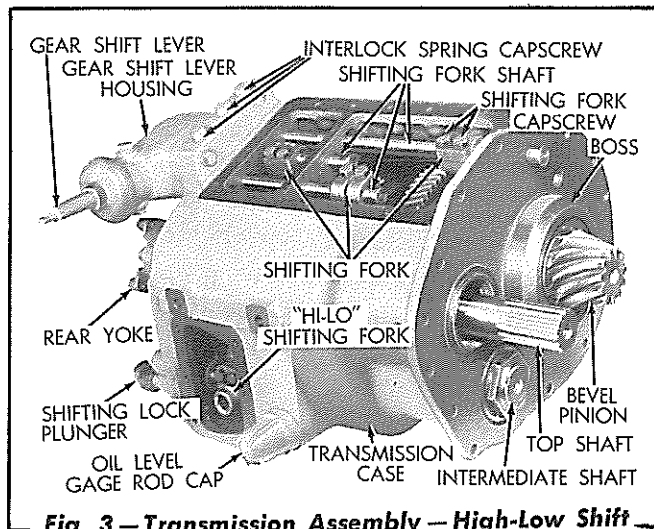


Fig. 3 — Transmission Assembly — High-Low Shift Lever Housing and Side Cover Removed

will drop from position when this shaft is removed. Remove the shifting fork from the shifting collar.

6. Pull the upper shifting fork shaft from the transmission case, catching the steel ball (detent ball) which will drop from position when this shaft is removed. Remove the shifting fork from the shifting collar. *NOTE: The three (3) shifting forks which were removed*

above are identical but the shifting shafts differ and must be installed in their correct positions when reassembling the transmission.

7. Remove the bevel pinion front bearing cover and tie the cover shims to the cover to prevent loss of the shims.
8. On early model tractors, unlock the lock-washer and remove the nut from the front of the transmission bevel pinion. On later model tractors, unlock the bevel pinion lock-nut before loosening it for removal from the transmission bevel pinion. Do not remove the snap ring from the bevel pinion front ball bearing or the bevel pinion depth adjusting shims at this time.
9. Turn the transmission case on the work bench so that the top of the case is downward and block the case in this position. Using special tools similar to the ones shown in Fig. 4, push the bevel pinion from the bevel pinion front ball bearing. Pull the bevel pinion from the gears and the transmission case.

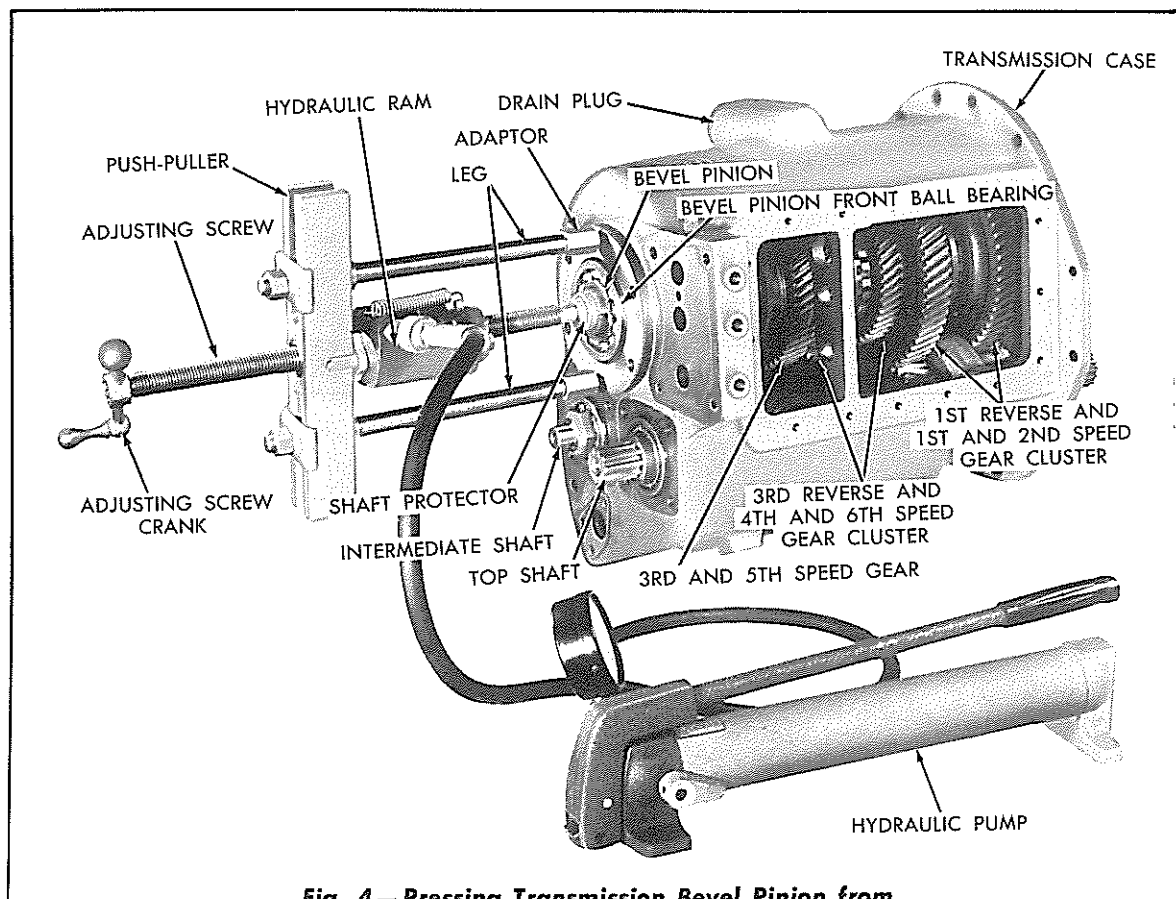


Fig. 4 — Pressing Transmission Bevel Pinion from Front Ball Bearing

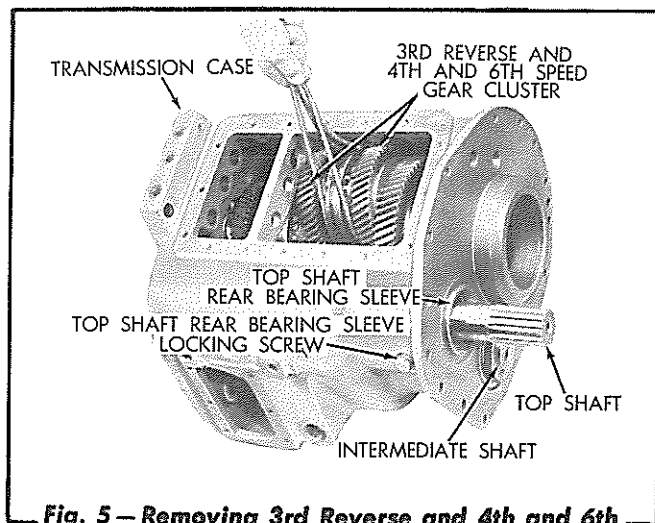


Fig. 5 — Removing 3rd Reverse and 4th and 6th Speed Gear Cluster

10. Place a rope around the center cluster of gears (3rd reverse and 4th and 6th speed gears) and remove the gear cluster and the gear spacing washers from the transmission case as an assembly (refer to Fig. 5).
11. The front gear cluster (2nd reverse and 3rd and 5th speed gears) must be disassembled inside the transmission case as there is not sufficient space to permit removal as a cluster. To disassemble this gear cluster, slide the rear gear (3rd and 5th) from the hub and remove the gear from case. Slide the shifting collar from the hub and the hub from the front gear (2nd reverse) and remove these items and the 2nd reverse gear from the case.
12. The rear gear cluster (1st reverse and 1st and 2nd speed gears) may now be removed if desired by following the disassembly procedure as outlined in step 11 above. However, it is suggested that the rear gear cluster be left in the transmission case until the top and intermediate shafts have been removed; the cluster can then be removed as an assembly.
13. Turn the transmission case on the bench so that the right side of the transmission case faces upward. Remove the capscrew and retainer washer attaching the universal joint rear yoke to the front end of the transmission top shaft and remove the yoke. Remove the capscrews attaching the top shaft front bear-

ing retainer to the transmission case and remove the retainer. Remove the top shaft rear bearing sleeve locking screw (refer to Fig. 5) and remove the rear bearing sleeve and shims from the transmission case.

14. Drive the top shaft toward the rear of the case until the shaft is free of the front bearing spacing sleeve and front roller bearing. Pull the shaft from the transmission case and remove the three (3) gears, bearing spacing sleeve, and the bearing spacer from the case.
15. Clamp the top shaft in a vise, protecting the splines of the shaft by use of copper jaws or similar measure. On early model tractors, unlock the lockwasher and remove the nut, lockwasher, bearing, and the 1st reverse gear from the top shaft. On later model tractors, unlock the locknut and remove the locknut, bearing, and the 1st reverse gear from the top shaft.
16. Remove the intermediate shaft front bearing cover from the front end of the transmission case. *NOTE: If the oil seal in the bearing cover is removed for replacement, the new oil seal must be installed in the bearing cover so that the sealing lip of the seal is toward the front when the cover is installed.*
17. Loosen the clamp bolt on the high-low shifting fork and remove the two (2) capscrews securing the interlock housing to the transmission case. Remove the interlock assembly and shifting fork shaft from the transmission case as a unit. Remove the high-low shifting fork from the shifting collar.
18. On early model tractors, unlock the lockwasher and remove the nut and the lockwasher from the front end of the intermediate shaft. On later model tractors, unlock the locknut and remove it from the front end of the intermediate shaft. Drive the intermediate shaft toward the rear of the case to free it from the front ball bearing and from the high range gear bearing inner race. Remove the shaft from the transmission case. Remove the gears, spacers, etc., from the transmission case.

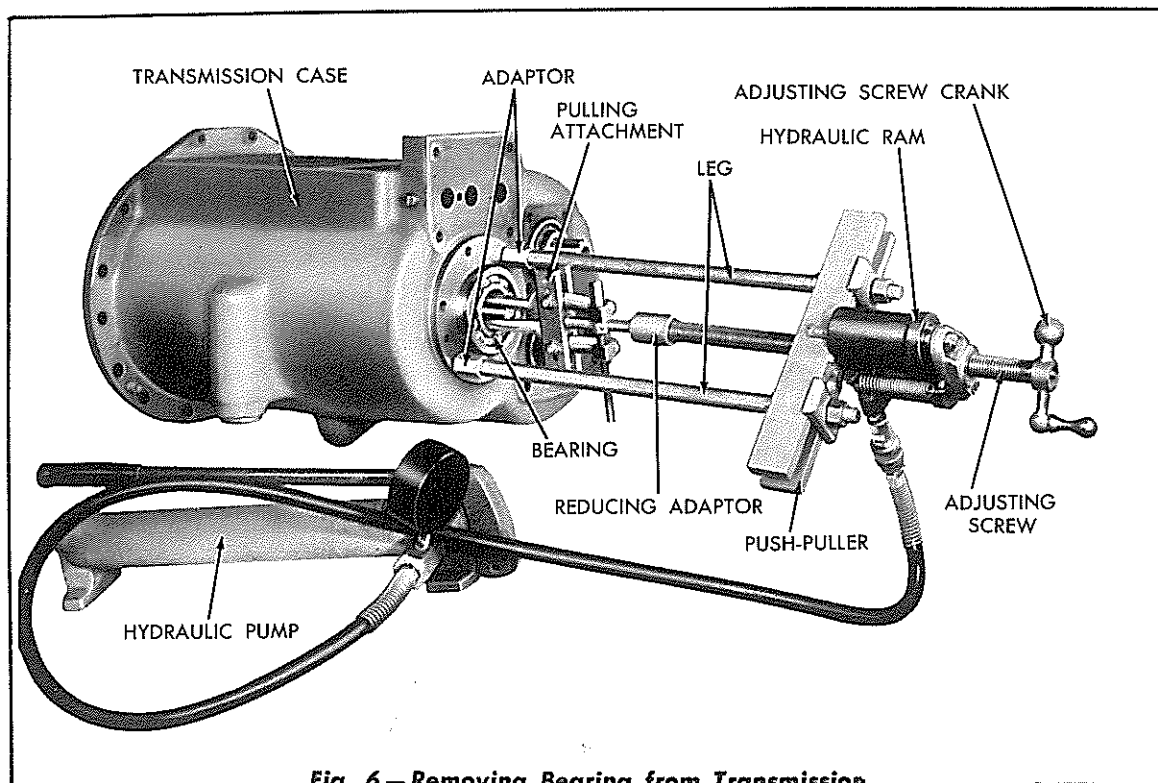


Fig. 6—Removing Bearing from Transmission

19. If the rear gear cluster of the bevel pinion was left in the transmission case, remove the cluster at this time.
20. Clamp the intermediate shaft in a vise, protecting the splines of the shaft by use of copper jaws or similar measure. Unlock and remove the nut from the rear of the shaft. Remove the bearing and the 1st and 2nd speed gear from the shaft.
21. Using special tools similar to the ones shown in Fig. 6, remove the ball bearings from the bores in the front of the transmission case.

D. Cleaning and Inspection of Parts

Clean and inspect all the transmission parts thoroughly as described in pertinent parts of "GENERAL MAINTENANCE INSTRUCTIONS" in Section XXI. Replace or recondition the worn or damaged parts.

The transmissions in Tractors Serial No. 2939 through 3895 have shifting collars, hubs and corresponding gears with wide engaging teeth which require shifting fork shafts with elongated detent grooves for the detent balls. However, the trans-

missions in Tractors prior to Serial No. 2939 and in Tractors Serial No. 3896 and above, have shifting collars, hubs, and corresponding gears with narrow engaging teeth and have shifting fork shafts with equally spaced detent grooves.

NOTE: The wide tooth type shifting collars, hubs, and gears, and the shifting fork shafts with the elongated detent grooves for the detent balls (as used in transmissions in Tractors Serial No. 2939 thru 3895) were discontinued. Whenever the transmissions in these tractors are disassembled for repairs, new shifting collars, hubs, and gears having the narrow type engaging teeth, and new shifter fork shafts with equally spaced detent grooves, should be installed.

Effective with Tractor Serial No. 3749, heavier transmission shifter forks were installed. The heavier shifter forks contain two (2) capscrews for clamping the fork to its respective shifter shaft instead of one (1) clamping capscrew as used in transmissions in Tractors prior to this Serial Number. Whenever the transmissions in Tractors prior to Serial No. 3749 are disassembled for repairs, the heavier shifter forks should be installed.

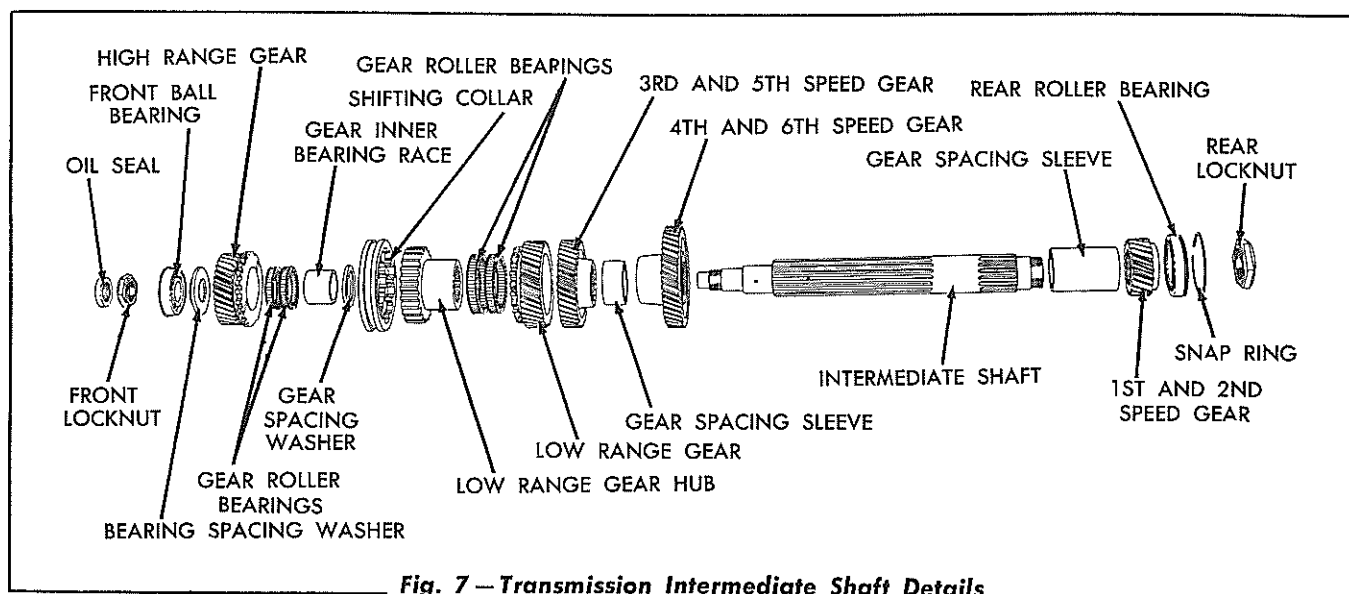


Fig. 7 — Transmission Intermediate Shaft Details

E. Assembly of Transmission

1. Installation of Intermediate Shaft Assembly

NOTE: Before installing the components of the intermediate shaft in the transmission case, the bevel pinion rear gear cluster (1st reverse and 1st and 2nd speed gears) should be assembled and placed in position inside the transmission case. This will make the installation of the transmission bevel pinion easier.

- a. Place the transmission case on a bench with the side cover opening in the case upward.
- b. Install the 1st and 2nd speed gear (22 teeth) on the rear end of the intermediate shaft, with the hub end of the gear facing the rear of the shaft. Press the inner race of the rear roller bearing in position on the shaft.
- c. Place the gear spacing sleeve ($4\frac{1}{8}$ " long) on the shaft and against the front face of the gear and insert the assembly in the transmission case from the rear just far enough to start the remaining components onto the shaft.
- d. Start the 4th and 6th speed gear (46 teeth) on the splines of the shaft, with the hub end of the gear toward the front of

the shaft. Install the gear spacing sleeve ($1-5\frac{1}{16}$ " long) on the shaft against the hub of the gear. Install the 3rd and 5th speed gear (41 teeth) on the shaft, with the hub end of the gear against the spacing sleeve.

- e. **NOTE:** On early model tractors, the low range gear (40 teeth) contained a bushing and on later model tractors the bushing in this gear was discontinued. The low range gear in the later model tractors is supported on the low range gear hub by two (2) roller bearings.

On early model tractors, lubricate the bushing in the low range gear (40 teeth) and install the gear in position on the low range gear hub. Install this assembly on the shaft with the gear located next to the 3rd and 5th speed gear. Install the shifting collar in position on the low range gear hub.

On later model tractors, install the two (2) low range gear roller bearings in position on the low range gear hub and lubricate the bearings. Install the low range gear (40 teeth) in position on the roller bearings. Install this assembly in position on the shaft with the gear located next to the 3rd and 5th speed gear. Install the shifting collar in position on the low range gear hub.

- f. *NOTE: On early model tractors, the high range gear (32 teeth) contained a bushing and on later model tractors the bushing in this gear was discontinued. The high range gear in the later model tractors is supported by two (2) roller bearings.*

On early model tractors, lubricate the bushing then install the bearing inner race in position in the bushing of the gear. Install the gear spacing washer in the bore of the high range gear, with the chamfer on the ID of the washer toward the rear of the assembly as installed. Start this assembly in position on the shaft, with the large diameter of the gear located next to the low range gear hub, and drive the bearing inner race into position on the shaft.

On later model tractors, install two (2) high range gear roller bearings in position in the high range gear (32 teeth) and lubricate the bearings. Install the roller bearings and the gear spacing washer in the bore of the gear, with the chamfer on the ID of the washer toward the rear of the assembly as installed. Install the assembly on the shaft, with the large diameter of the gear located next to the low range gear hub, and push the shaft forward into position. Start the gear inner bearing race onto the front end of the shaft and drive it into position on the shaft and against the gear spacing washer.

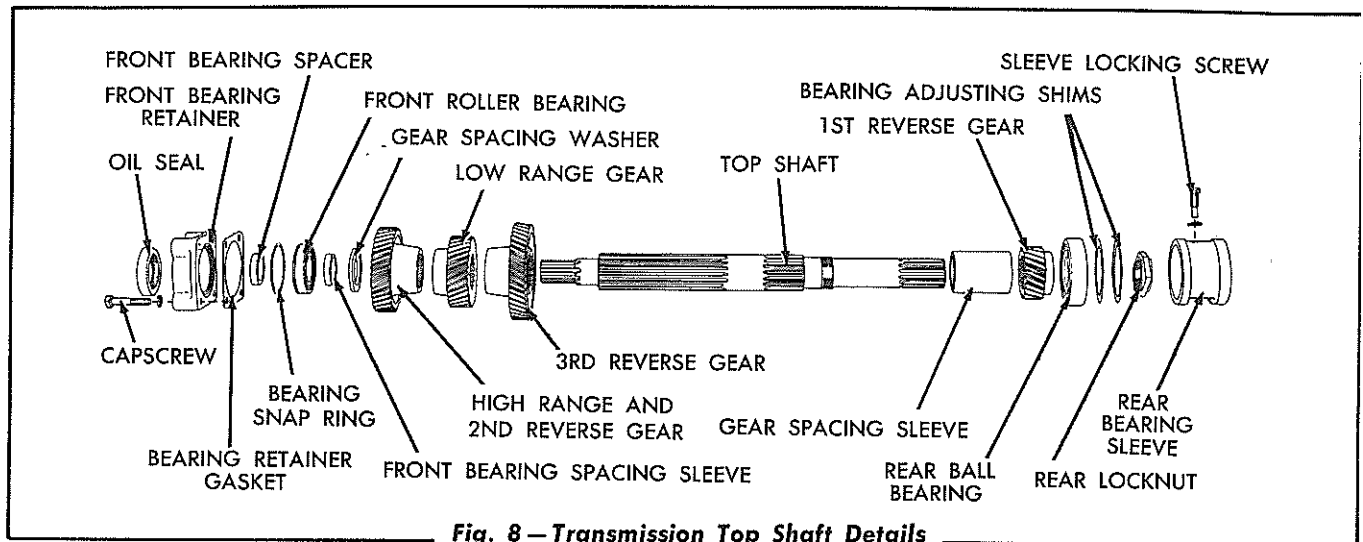
- g. Install the front bearing spacing washer on the shaft, with the flat face of the washer located next to the high range gear. With the snap ring installed in the rear roller bearing, install the rear roller bearing into position in the rear bore of

the transmission case and onto the inner race of the bearing which was installed on the shaft. On early model tractors, install the lockwasher and the rear nut on the shaft. On later model tractors, install the rear locknut on the shaft.

- h. Install the front ball bearing into position in the bore of the transmission case and onto the shaft. On early model tractors, install the lockwasher and the front nut on the shaft. On later model tractors, install the front locknut on the shaft. Do not tighten the shaft nuts at this time as they will be tightened when assembly of the transmission is completed.
- i. Install a new oil seal in position in the intermediate shaft front bearing cover, with the sealing lip of the seal toward the front when the cover is installed. Install the bearing cover and its attaching gasket in position on the case but do not tighten the attaching capscrews at this time.

2. Installation of Transmission Top Shaft Assembly

- a. Place the top shaft in a vise, with the rear end of the shaft upward; protect the splines of the shaft by use of copper jaws in the vise. Install the 1st reverse gear (21 teeth) on the shaft, with the hub end of the gear towards the rear of the shaft. Install the rear ball bearing in position on the shaft. On early model tractors, install the lockwasher and the rear nut on the shaft. On later model tractors, install the rear locknut on the shaft. Tighten the rear nut, or locknut, to a torque of 175 to 200 lbs. ft. and lock in position.



- b. Start the front end of the shaft into the top shaft rear bore of the transmission case. Install a gear spacing sleeve ($3\frac{7}{8}$ " long) on the shaft followed by the 3rd reverse gear (46 teeth), with the hub end of the gear facing the front of the shaft.
- c. Install the low range gear (34 teeth) on the shaft and next to the 3rd reverse gear, with the hub end of the gear facing the front of the shaft.
- d. Install the high range and 2nd reverse gear (41 teeth) on the shaft, with the hub end of the gear facing the rear and against the hub of the low range gear.
- e. Install the $\frac{3}{8}$ " thick high range and 2nd reverse gear spacing washer (chamfer toward the gear), front bearing spacing sleeve, and the inner race of the front roller bearing on the shaft in the order named. Install the roller bearing (with its snap ring) into position in the front bore of the case and on the shaft. Install the front bearing spacer ($\frac{1}{2}$ " thick) on the shaft and against the inner race of the front roller bearing.
- f. Install an oil seal in the front bearing retainer, with the sealing lip of the seal toward the rear.
- g. Using gasket cement, cement a front bearing retainer gasket to the transmis-

sion case and attach the front bearing retainer to the case with four (4) $\frac{1}{2}$ " x $2\frac{1}{2}$ " capscrews and lockwashers.

- h. Insert the rear bearing sleeve into the transmission top shaft rear bore, aligning the hole for the sleeve locking screw. Use sufficient bearing adjusting shims between the rear of the ball bearing and the front of the sleeve so that the sleeve has .000" to .005" standoff from the rear face of the case.
- i. After the retaining sleeve has been properly positioned as outlined above, secure it in position with the sleeve locking screw and lockwasher.

3. Installation of Transmission Bevel Pinion

- a. With the bevel pinion rear gear cluster in position in the transmission case as outlined in E, 1 above, refer to Fig. 9 and assemble the front gear cluster (2nd reverse gear [55 teeth] and 3rd and 5th speed gear [55 teeth]), inside the transmission case in the same manner in which the rear gear cluster was assembled. When assembling, coat the rear face of the front bearing spacing washer with grease to hold it in position against the 2nd reverse gear. *NOTE: The gear hub for the 2nd reverse and the 3rd and 5th speed gears, of the front gear cluster, has two different width bearing journals;*

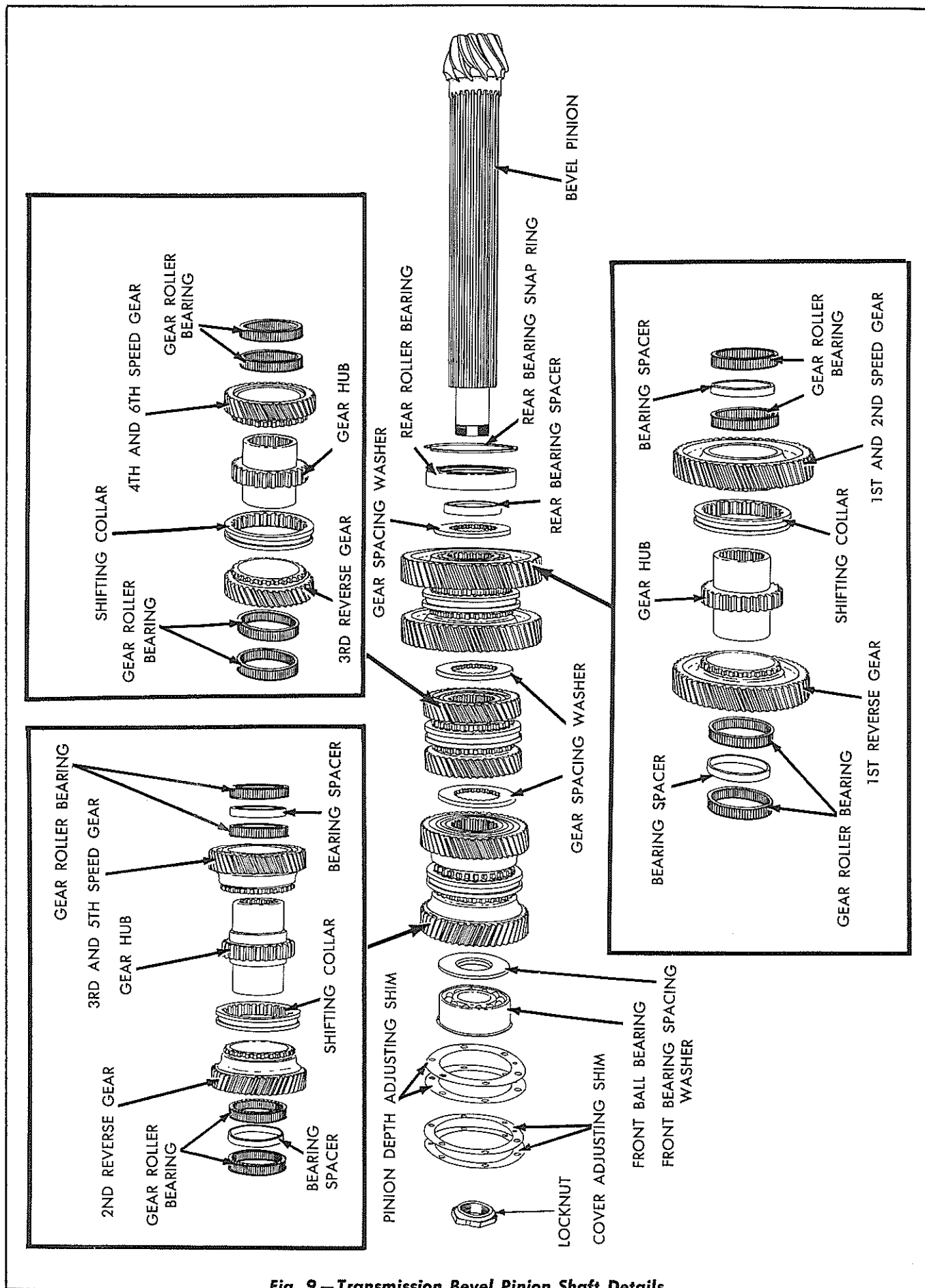


Fig. 9 — Transmission Bevel Pinion Shaft Details

this gear hub must be installed with the longer journal toward the rear of the case.

- b. After the bevel pinion front gear cluster has been assembled, push it as far forward as possible in the transmission case and into mesh with the mating gears on the top and intermediate shafts.
- c. Assemble the transmission bevel pinion center gear cluster (3rd reverse and 4th and 6th speed gears each having 48 teeth), on a work bench. When assembling, coat the two (2) gear spacing washers with grease to hold them in position against their corresponding gears. Install the assembled cluster in position in the transmission case, between the front and rear clusters. Make certain the gear spacing washers are in their proper position and that the gears of the center gear cluster mesh properly with the mating gears on the top and intermediate shafts.
- d. With the three gear clusters in position in the transmission case, check to be sure that all gears are on the proper ends of their respective gear hubs, so that the helixes of the gear teeth will mesh with their mating gears (refer to Fig. 1).
- e. Press the inner race of the rear roller bearing into position on the bevel pinion and install the rear roller bearing in position on the inner race. Install the rear bearing spacer (1" long) on the bevel pinion, with the chamfered end of the spacer toward the bearing. Place a gear spacing washer in position on the bevel pinion and against the rear bearing spacer.
- f. Turn the transmission case so that the top of the case rests on the work bench as shown in Fig. 10. Make certain the three (3) shifting collars are in their neutral position. Start the bevel pinion into the case from the rear. While pushing on the pinion, turn the gears and

position the bevel pinion as necessary to align the splines of the pinion with the corresponding splines in the gear spacing washers and the gear hubs, and push the pinion into the gear hubs until the rear bearing is started into the bore of the case. Drive the rear bearing into the bore of the case and install the rear bearing snap ring in position in the case.

- g. Remove the snap ring from the double row ball bearing and start the bearing into position on the bevel pinion. On early model tractors, install the lock-washer and the front nut on the bevel pinion. On later model tractors, install the front locknut on the bevel pinion. Tightening of the nut or locknut will pull the double row ball bearing into position on the bevel pinion and into the bore of the transmission case. Tighten the nut or locknut to a torque of 480 to 520 lbs. ft. and lock in position.

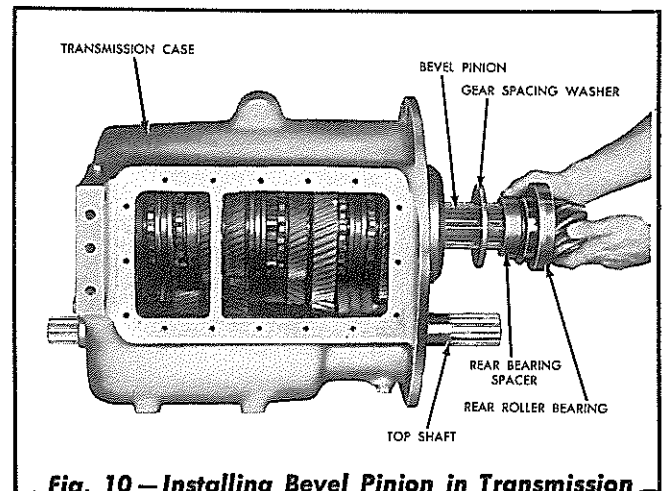


Fig. 10 — Installing Bevel Pinion in Transmission

- h. Remove the front bearing cover from the intermediate shaft, tighten the intermediate shaft front and rear nuts to torque of 180 to 220 lbs. ft., and lock the nuts in position. Install the intermediate shaft front bearing cover and gasket and secure the cover to the case with the attaching capscrews.
- i. Place the snap ring in its groove in the bevel pinion front bearing and tap the bevel pinion toward the rear until the snap ring is against the face of the transmission case. Hold the front bearing

- cover firmly against the front bearing, and, using a feeler gage, measure the gap between the bearing cover and the face of the transmission case. Make up a shim pack of cover adjusting shims approximately .001" thicker than the feeler gage measurement; this will provide .000" to .002" bearing end play in the bearing cover when the bearing cover is attached to the case. Keep the shim pack with the bearing cover.
- j. Drive the transmission bevel pinion forward approximately 1/16" and remove the snap ring from the front bearing. Install the pinion depth adjusting shims (approximately .080"), which were removed at disassembly, in place on the front bearing. Install the snap ring and drive the bevel pinion toward the rear until the snap ring is tight against the adjusting shims.
 - k. Install the bevel pinion front bearing cover with the correct amount of cover adjusting shims, as determined in step (i) above, and secure with the attaching capscrews.
 - l. The initial transmission bevel pinion depth (controlled by depth adjusting shims located between the transmission bevel pinion front bearing snap ring and the transmission case) should be set so that the rear face of the bevel pinion extends 4.149" from the rear face of the transmission case.
 - m. If the bevel pinion has a mounting distance dimension marked on the rear face of the pinion, subtract this dimension from 9.521", which is the specified dimension from the rear mounting face of the transmission case to the center of the bevel gear hub. The difference between these two dimensions is the distance the toe end of the pinion should extend from the rear mounting face of the transmission case, without the case mounting gasket in place (refer to Fig. 11).
 - n. Occasionally, after a transmission bevel pinion and gear have been adjusted in the above manner, it is necessary to add or remove pinion depth adjusting shims to obtain the desired tooth bearing pattern. Always use a marking compound

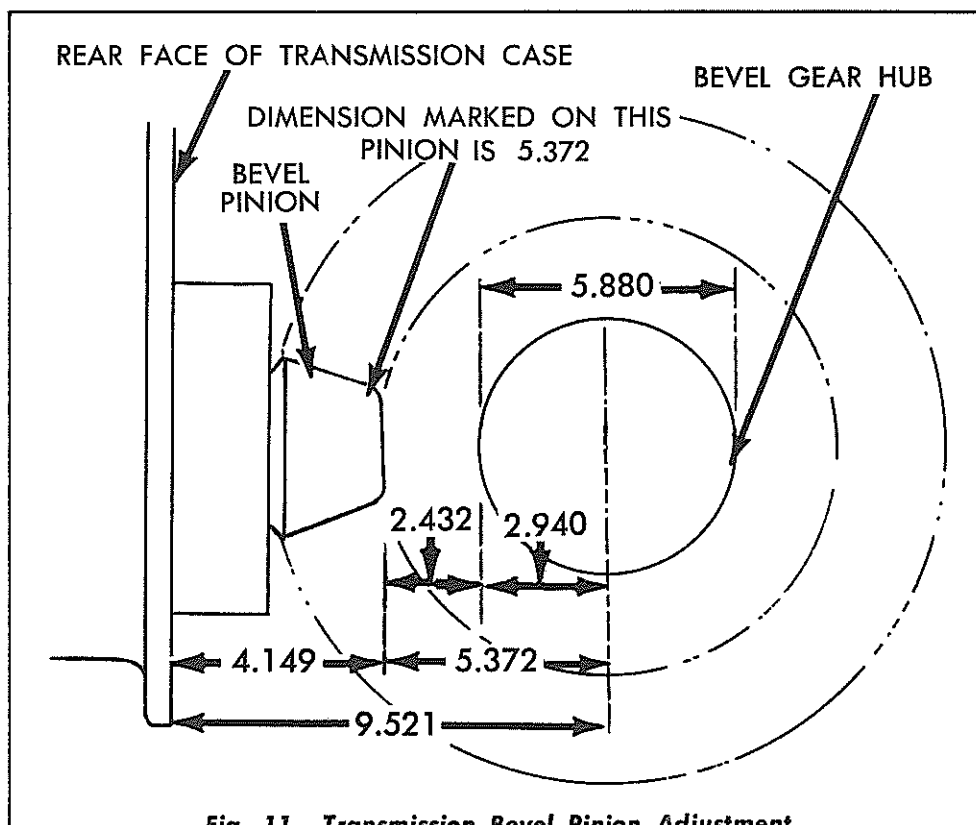


Fig. 11 — Transmission Bevel Pinion Adjustment

to check the tooth bearing pattern after making an adjustment (refer to Fig. 18 in this Section for proper tooth pattern).

4. Installation of Gear Shift Mechanism

Turn the transmission case on the work bench so that the case rests on its left side. Refer to Figs. 1 and 3 and install the shifting fork shafts and their components as follows:

- a. Install the three shifting forks in position in the slots of their corresponding shifting collars. The forks must be installed with the bosses for the fork attaching capscrews positioned as shown in Fig. 3.
- b. The three (3) shifting fork shafts are of different lengths; the lower shaft being the longest, the upper shaft being next in length, and the center shaft being the shortest.

Insert the upper shifting fork shaft through the upper shifting shaft bore in the case and into the shifting fork located on the center cluster of gears. Refer to Fig. 1 and insert three (3) steel balls (detent balls) in position in the case and make certain that the ball contacting the upper shifting fork shaft is located in the center detent notch of the shifting fork shaft.

- c. Install the interlock pin in position in the center shifting fork shaft and insert the shaft through the center shifting shaft bore in the case and into the shifting fork located on the front cluster of gears. Refer to Fig. 1 and insert two (2) steel balls (detent balls) in position in the case and make certain that the ball contacting the center shifting fork shaft is located in the center detent notch of the shifting fork shaft.
- d. Insert the lower shifting fork shaft through the lower shifting shaft bore in the case and into the shifting fork located on the rear cluster of gears. Make certain the center detent notch of the

shifting fork shaft is in line with the steel balls (detent balls).

- e. Insert a steel ball (detent ball) and an interlock spring into each hole over each shifting fork shaft, then install the three washers and interlock spring capscrews. Tighten the capscrews securely.
- f. Make certain that the shift lever notches in the front ends of the shifting fork shafts are properly aligned. Center the three shifting collars on the gear hubs and center the shifting forks in the slots of the shifting collars. Tighten the shifting fork capscrews ($\frac{1}{2}$ " capscrews) to a torque of 85 to 95 lbs. ft. *NOTE: The shifting forks in Tractors Serial No. 1945 thru 3748 contained $\frac{5}{8}$ " capscrews; the $\frac{5}{8}$ " capscrews in these forks (if these forks are reinstalled) should be tightened to a torque of 170 to 180 lbs. ft.*
- g. Install the gear shift lever housing and gasket in position on the front of the transmission case, inserting the lower end of the gear shift lever into position in the notched ends of the shifting fork shafts. Install the attaching capscrews and tighten securely.
- h. Install the high-low shifting fork in position in the shifting collar of the intermediate shaft, with the clamping slot of the fork facing toward the center of the transmission (refer to Fig. 3). Insert the high-low shifting fork shaft, assembled in the gear shift interlock housing, into the bore of the transmission case and into the shifting fork.
- i. Center the shifting collar of the gear hub and center the shifting fork in the shifting collar. Tighten the shifting fork capscrews ($\frac{1}{2}$ " capscrews) to a torque of 85 to 95 lbs. ft.

NOTE: The shifting fork in Tractors Serial No. 1945 thru 3748 contained a $\frac{5}{8}$ " cap-screw; the $\frac{5}{8}$ " cap-screw in this fork (if this fork is reinstalled) should be tightened to a torque of 170 to 180 lbs. ft.

- j. Install the high-low shifting lever in position on the high-low shift lever. Install the drain plug in the transmission case. Thoroughly inspect the inside of the transmission for foreign objects. Check all capscrews inside the transmission and make certain they have been tightened securely. Using a small pry bar, or similar tool, move each shifting fork shaft into its various "detent" positions and check to see if the shifting forks are properly located on the shafts so that the shifting collars are properly engaged with their corresponding gears. Install the transmission side cover and gasket.
- k. Install the rear yoke (universal joint) in position on the front of the transmission top shaft, using a new yoke seal between the top shaft and the yoke retaining washer (refer to Fig. 20). Secure the rear yoke in position with a capscrew and locking wire.

F. Installation of Transmission Assembly

1. Use a new mounting gasket between the transmission case and the steering clutch and final drive housing and install the transmission case by a direct reversal of the removal procedure. Check the adjustment of the transmission bevel pinion and bevel gear and adjust if necessary as explained in "ASSEMBLY OF BEVEL GEAR" in this Section.
2. Connect the universal joint assembly to the rear yoke with the two (2) U-bolts.
3. Install the capscrews to attach the right brake pedal lever bracket. Install the steering levers and bracket in position on the transmission case and secure with the attaching capscrews. Connect the steering clutch control rods to the steering levers.
4. Install the yoke pins and cotter pins used to connect the shifting lock plunger rods to the two (2) shifting lock plungers and check the adjustment of the rods when connecting as follows:
 - a. To adjust the shifting lock plunger rod on the right side of the transmission, pull the engine clutch operating lever to its "ENGAGED" position. Measure the compressed length of the plunger rod rear spring and record this measurement. Push the engine clutch operating lever to its "DISENGAGED" position. Turn the nuts on the front end of the plunger rod as necessary to compress the plunger rod front spring to obtain the same compressed length as recorded for the rear spring. When the correct adjustment is obtained, tighten the jam nut.
 - b. The shifting lock plunger located on the left side of the transmission, is properly adjusted when there is $\frac{1}{8}$ " clearance between the shoulder of the plunger and the shifting lock plunger sleeve with the engine clutch operating lever in its "DISENGAGED" position. The correct adjustment can be made by turning the adjustable yoke at the forward end of the shifting lock plunger rod as necessary.
5. Install the floor plate, brake pedal pads, seat adjusting frame, speed selection shift lever, gear shift lever guide, and seat cushion. Install the drain plug in the bevel gear compartment and install the main frame bottom rear shield.
6. Fill the transmission and bevel gear compartments to the proper level with the specified lubricant.