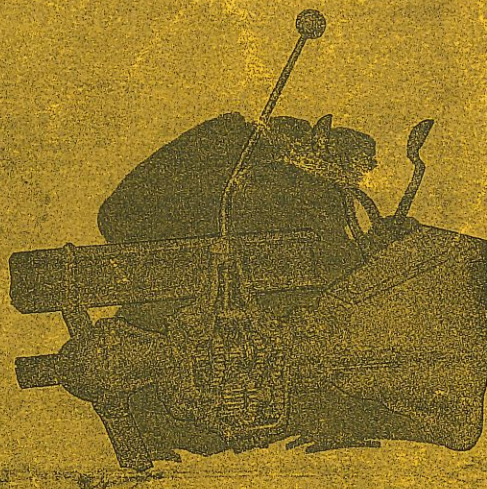


# IMPORTANT

Read these instructions carefully before installing  
and driving Ward's Gear Shift Equipped Ford

## HOW TO INSTALL AND OPERATE WARD'S GEAR SHIFT TRANSMISSION



*7 Speeds Forward*  
*5 Speeds Reverse*  
(COMBINATION)

### Equipped Ford Cars and Trucks

\*Note—Some of our customers fail to secure the perfect driving ease and full operating possibilities of the Ward's Gear Shift Equipped Ford because they do not thoroughly understand the operation of a sliding gear transmission—particularly when used with Double Reduction Drive. These instructions are written with the view of dispelling all doubt as to operating methods and common adjustments in order that maximum driving efficiency may be acquired by all Ward's Gear Shift operators.



PARIS PR

# THE MUNCIE GEAR SH

## Standard and Overspeed Transmi

*When ordering parts, please specify*

Part No.	Name of Part.	Price.
T5M—1	Transmission Case—Standard & Oversp'd...	\$ 8.00
T5M—1A	Transmission Case—Pleasure Car .....	8.00
T5—2M	Spline Shaft .....	3.50
T5—3B	Countershaft—Standard & Overspeed .....	1.20
T5—3D	Countershaft—Pleasure Car .....	1.20
T5—5½	Idler Bushing .....	.30
T5—6M	Main Drive Gear Retainer .....	3.00
T5—7M	Rear Retainer .....	3.00
T5—8D	Cluster Gear—Pleasure Car .....	8.00
AT5—8E	Cluster Gear Assembly—Overspeed .....	11.46
AT5—8F	Cluster Gear Assembly—Standard .....	11.46
AT5—10M	Idler Gear Assembly .....	6.40
T5—11	Sliding Gear (High and Inter.)—Standard .....	4.00
T5—11B	Sliding Gear (Dir. & Overspd)—Overspeed .....	4.00
T5—12	Sliding Gear (Low & Rev.) Stnd. & Overspd .....	3.00
T5—12A	Sliding Gear (Low & Reverse)—Pleas. Car .....	3.00
T5—16M	Main Drive Gear—Standard .....	5.00
T5—16N	Main Drive Gear—Overspeed .....	5.00
T5—20	Pull Rod (Direct) .....	.30
T5—21	Pull Rod (Low and Reverse) .....	.30
T5—23	Shift Fork .....	.90
T5—26	Thrust Washer .....	.34
T5—28D	Hyatt Bearing Spacer—Pleasure Car .....	.18
T5—35	Idler Shaft .....	.48
T5—44	Lock Screw .....	.05
T5—45M	Lock Stamping for T5-6M .....	.08
T5—86	Poppet .....	.06
T5—136	Oil Shim .....	.04
T5—136A	Oil Shim for Main Drive Gear .....	.04
T5—145M	Gasket for Rear Retainer .....	.03
T5—153M	Main Drive Gear Gasket .....	.06
T5—153½M	Gasket for Front Retainer .....	.06
T5—158M	Pull Rod Box .....	1.80
T5—159	Poppet Spring .....	.04
T5—164	Main Drive Gear Bushing .....	.30
T5—170	Pull Rod Box Gasket .....	.01
AC5—2M	Control Lever Assembly .....	1.44
C5—50	Control Lever Hand Ball .....	.25
C5—76	Control Lever Housing Cap .....	.06
E5—1P	Torque Tube Flange—Passenger .....	3.80
E5—1T	Torque Tube Flange—Truck .....	2.80
E5—2T	Radius Rod Fork—Truck .....	.66

\*These parts may be purchased at

# THE MUNCIE G

MUNCIE,



# SHIFT TRANSMISSION

Transmission for Ford Cars and Trucks

Specify whether for truck or pleasure car

Part No.	Name of Part.	Price
E5—3P	Propellor Shaft—Passenger .....	8.40
E5—3T	Propellor Shaft—Truck .....	8.00
E5—4	Coupling at Rear of Transmission .....	.90
E5—5	Support Yoke Strap .....	1.36
E5—6	Support Yoke .....	.20
E5—7	Spring for Support Yoke .....	.04
AE5—8A	Universal Joint Assembly .....	4.00
E5—15	Ell Bolt—Truck .....	.20
E5—16	L. H. Channel Extension—Truck .....	2.25
E5—17	R. H. Channel Extension—Truck .....	2.25
AE5—18	Brake Rod Extension .....	.60
X—335	* $\frac{1}{2}$ "-20 SAE x $2\frac{3}{4}$ " long H. H. Screw .....	.06
X—410K	* $\frac{3}{8}$ "-24 SAE x $1\frac{1}{4}$ " l'g H.H. Scr. Drilled Hd .....	.03
X—706	* $\frac{7}{16}$ "-14 USS x $1\frac{3}{4}$ " long H. H. Screw .....	.06
X—727K	* $\frac{3}{8}$ "-16 USS x $\frac{7}{8}$ " long H.H. Scr. Drilled Hd. ....	.03
X—729K	* $\frac{3}{8}$ "-16 USS x $1\frac{1}{4}$ " lg. H.H. Scr. Drilled Hd. ....	.03
X—801	* $\frac{5}{16}$ "-18 USS x $\frac{3}{4}$ " long H. H. Screw .....	.02
X—902	* $\frac{1}{2}$ "-13 USS x $\frac{3}{4}$ " long H. H. Screw .....	.10
X—1516	* $\frac{1}{8}$ " Pipe Plug .....	.05
X—1520	* $\frac{3}{4}$ " Pipe Plug .....	.05
X—1703	* $\frac{3}{8}$ "-16 USS Hex. Nut .....	.02
X—1704	* $\frac{7}{16}$ "-14 USS Hex. Nut .....	.03
X—1706	* $\frac{1}{2}$ "-13 USS Hex. Nut .....	.02
X—1727	* $\frac{5}{16}$ "-24 SAE Half Hex. Nut .....	.02
X—1728	* $\frac{3}{8}$ "-24 SAE Hex. Nut .....	.02
X—1730	* $\frac{1}{2}$ "-20 SAE Hex. Nut .....	.02
X—1951	.375/.373 Dia. x $\frac{13}{16}$ Long Pin .....	.06
X—2016	* $\frac{1}{8}$ " Dia. x $\frac{3}{4}$ " Long Cotter Pin .....	$\frac{1}{2}$ c
X—2055	* $\frac{3}{16}$ " Dia. x $1\frac{3}{4}$ " Long Cotter Pin .....	$\frac{1}{2}$ c
X—2621 $\frac{1}{2}$ AK	*No. 14-20 x $\frac{7}{8}$ " Long Fill. Hd. Screw .....	.04
X—2952	* $\frac{1}{4}$ " Lock Washer .....	$\frac{1}{4}$ c
X—2953	* $\frac{5}{16}$ " Lock Washer .....	$\frac{1}{4}$ c
X—2954	* $\frac{3}{8}$ " Lock Washer .....	$\frac{1}{2}$ c
X—2955	* $\frac{7}{16}$ " Lock Washer .....	.01
X—2956	* $\frac{1}{2}$ " Lock Washer .....	.01
X—3127A	* $\frac{1}{4}$ " Dia. x $\frac{3}{4}$ " Long Button Hd. Rivet .....	.01
X—3173 $\frac{1}{2}$ A	* $\frac{5}{16}$ " Dia. x $1\frac{1}{4}$ " Button Hd. Rivet .....	.01
X—3205	No. 208 Ball Bearing .....	4.60
X—3219	No. 306 Ball Bearing .....	4.40
X—3927 (AT5-5 $\frac{1}{2}$ A)	Improved Rolled Bronze Bearing .....	1.60
X—3928	Hyatt Bearing RA-155—Pleasure Car .....	1.60

See any supply or hardware store.

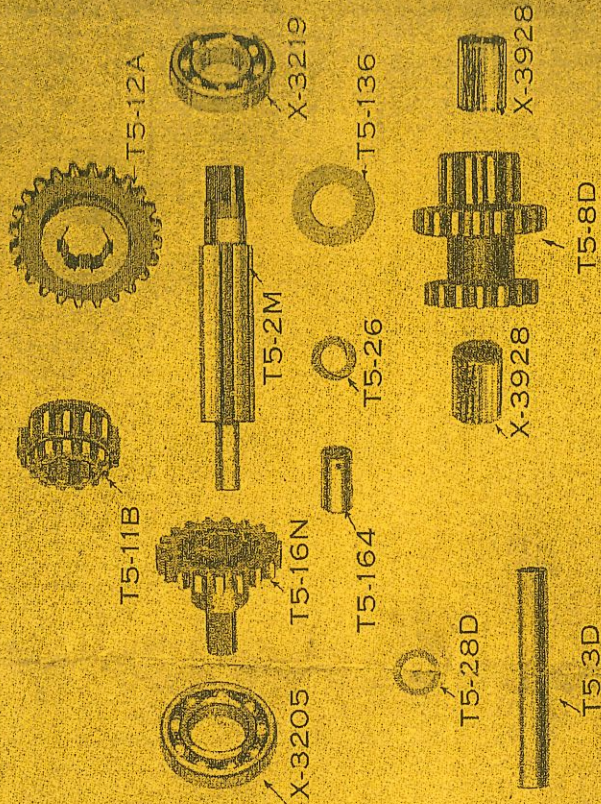
## GEAR WORKS

CIE, IND.

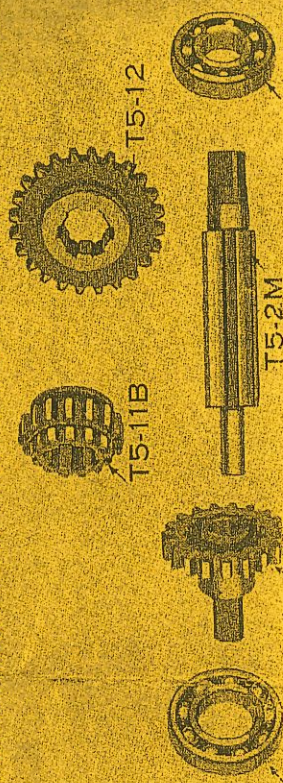
Transmission Since 1907



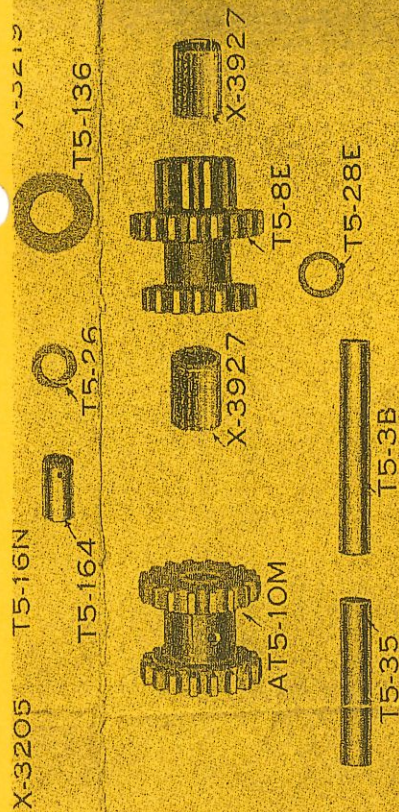
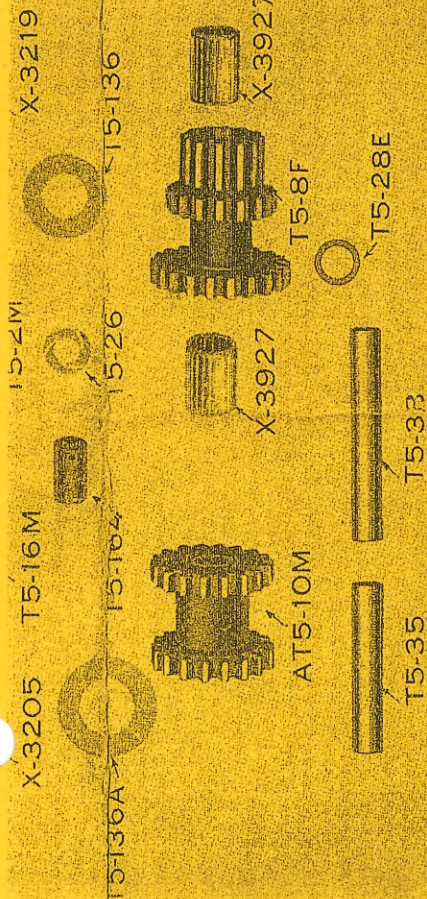
GEARS, BEARINGS AND SHAFTS  
FOR PLEASURE CAR TRANSMISSION



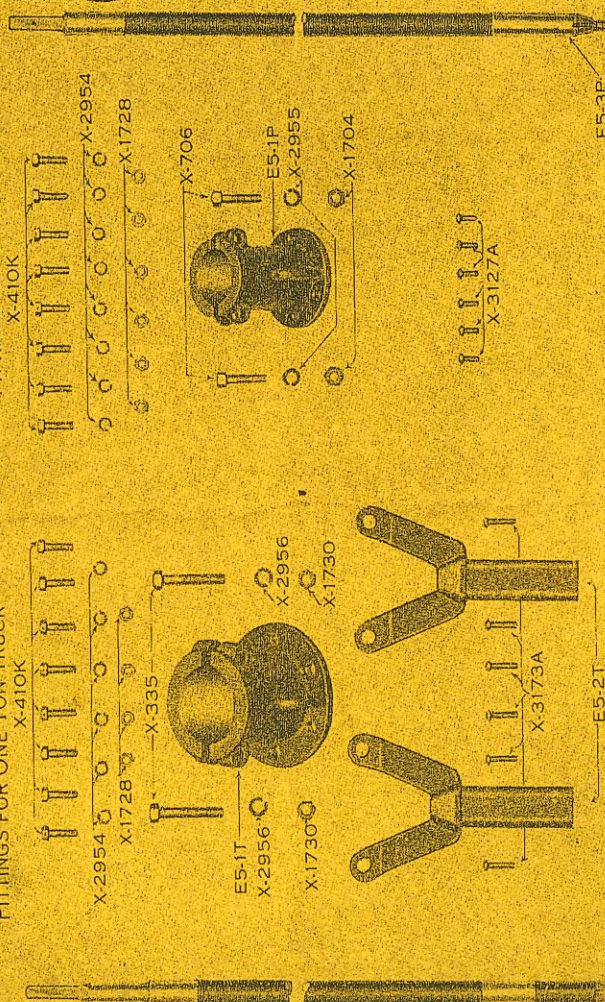
## GEARS, BEARINGS AND SHAFTS FOR OVERSPEED TRANSMISSIONS



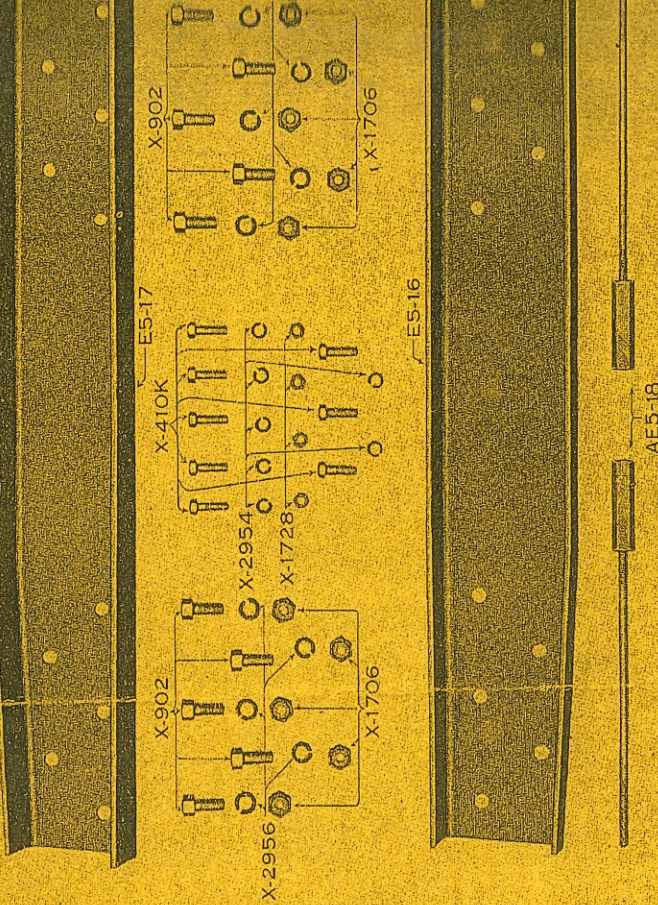




# FITTINGS FOR ONE TON TRUCK



# FITTINGS FOR PASSENGER CAR



# FRAME EXTENSION AND PARTS



STAND ROD ON THIS END. MEASURE UP  $32 \frac{5}{8}$  "

AND 20 INCHES AND MARK. CUT ROD

HERE AT 20 INCH MARK

CUT HERE

OPEN TUBE SLIGHTLY SO THAT

LONG PIECE WILL START INTO SHORT

18"

$32 \frac{5}{8}$ "

$12 \frac{5}{8}$ "

TRUCK



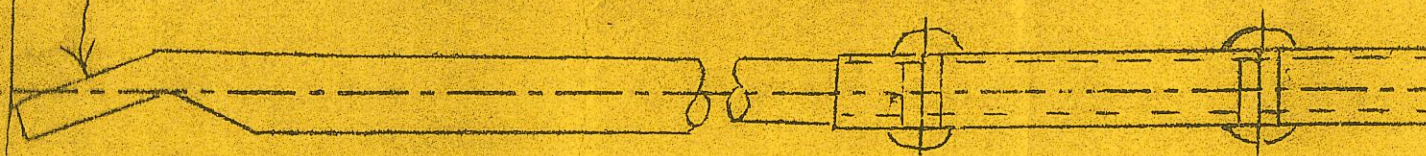
MARK BEFORE CUTTING  
OFF AT OTHER POINT

DRIVE LONG PIECE  
INTO SHORT UP TO THE  
32 5/8" INCH MARK

12 5/8"

DRILL 3 HOLES AND RIVET

BE SURE YOU TURN THE BENDS IN OPPOSITE  
DIRECTIONS BEFORE RIVETING





# How to Install "Wards Gear Shift" Transmission

## Installation Instructions of WARD'S GEAR SHIFT Transmission with SHORTENED PROPELLOR SHAFT in FORD TON TRUCK

1. Raise rear end of car body or chassis with chain falls or jacks. Remove rear spring shackle pins and clevis pins in emergency brake rods.

2. Remove 4 bolts in torque tube ball joint and roll out the rear end.

Note—(a) Leave torque tube ball cap in end of planetary housing.  
(b) Be sure our aligning joint square, fits into the Ford square hole before presenting our transmission to be bolted.

3. Bolt Ward's Gear Shift transmission on to end of the FORD planetary, use paper gaskets instead of cork gaskets on rear of planetary. Use the hook bolts as shown in cut on front page.

Note—Pack universal joint housing with grease.

4. Bolt on cross frame supporting member as follows: Bolt stud in center of member to bottom of universal housing (at rear of Ward's Gear Shift transmission) then attach U bolts with threads down. Do not tighten nuts too far, as springs should be taken up only half way.

5. Remove torque tube. Disassemble torque tube parts and drive shaft—Cut  $13\frac{1}{2}$  inches from rear end of torque tube (measure from machined surface of flange) wrap tube with card board to mark off straight.

Note—Torque tubes vary in diameter—if tube is too large for clamp, dress with a file—if too small bush it with a piece of sheet iron. Tube must fit tight in clamp.

6. After the torque tube clamp is placed onto the rear end of the torque tube—reassemble the parts with the new short drive shaft, be sure there is no end play in drive shaft assembly, then bolt torque tube clamp and short assembly to the axle housing with 6 cap screws.

7. We have found that altering the radius rods according to the accompanying print gives more strength and is easier to do than other methods. Please follow the instructions on the print.

Try the shortened radius rods in place for length, also line or true up the torque tube by gauging from the same points at rear end to center of tube at front end. Remove the shortened radius rods and rivet in place. Be sure the torque tube is in line after the radius rods and tube clamp are secured. Pack Ford Universal Joint with grease.

8. Don't roll the rear end back in place until you are sure the torque tube is lined up and fits tight in tube clamp.

Note—A cork gasket may be needed between the torque tube ball housing of the WARD'S GEAR SHIFT transmission and the FORD ball cover, to prevent the ball from binding when the bolts are drawn up tight. This is IMPORTANT.

9. Besure the slow speed connection (FORD part No. 3445) has no play. The low speed band should only take hold when the pedal is pressed almost to the floor board, (it is sometimes necessary to notch the floor board a little or bend the clutch pedal forward) this allows a greater range between high speed and low speed band—making the shifting easier.

10. Don't forget to fill the transmission up to the oil level (plug on left hand side) with a good grade of transmission oil (as 600-W).

11. In cold weather or with heavy oil shifting will be improved if you will run the FORD planetary in low before shifting into speed of the Ward's Gear Shift transmission as this allows the planetary speed to approach the Ward's Gear Shift speed before shifting.

## Installation Instructions of WARD'S GEAR SHIFT TRANSMISSION WITH FRAME EXTENSIONS IN FORD TON TRUCK

1. Remove body and block up frame in front of place to be cut. Cut frame where taper begins, or about  $36\frac{1}{2}$  inches from front face of rear spring frame.

2. Remove 4 bolts in torque tube ball joint and brake rods at front then roll out rear end.

Note—(a) Leave torque tube ball cap in end of planetary housing.  
(b) Be sure our aligning joint square, fits into the Ford square hole before presenting our transmission to be bolted.

3. Bolt Ward's Gear Shift transmission on to end of the FORD planetary, use paper gasket instead of cork gaskets on rear of planetary. Use hook bolts as shown in cut on front page.

Note—Pack universal joint housing with grease.

4. Bolt on cross frame supporting member as follows: Bolt stud in center of member to bottom of universal housing (at rear of Ward's Gear Shift transmission) then attach U bolts with threads down. Do not tighten nuts too far as springs should be taken up only half way. Note—Pack Ford Universal Joint with grease.

Note—A cork gasket may be needed between the torque tube ball housing of the WARD'S GEAR SHIFT transmission and the FORD ball cover, to prevent the ball from binding when the bolts are drawn up tight. This is IMPORTANT.

5. Connect the universal joint with squared hole coupling and bolt the torque tube to the rear of Ward's Gear Shift transmission. Place extension frame members right and left in position and drive onto Ford frame, leaving a space of  $13\frac{1}{4}$  inches between the ends of Ford frame members. Drill Ford frame for bolts where the extensions are drilled. Bolt firmly using the lock-washers provided under the nuts.

6. Lengthen the brake rods with the turn buckles and rod extensions we furnish and reconnect. Adjust brakes if necessary.

7. Be sure the slow speed connection (FORD part No. 3445) has no play. The low speed band should only take hold when the pedal is pressed almost to the floor board, (it is sometimes necessary to notch the floor board a little or bend the clutch pedal forward) this allows a greater range between high speed and low speed band—making the shifting easier.

8. Don't forget to fill the transmission up to the oil level (plug on left hand side) with a good grade of transmission oil (as 600-W).

9. In cold weather or with heavy oil shifting will be improved if you will run the FORD planetary in low before shifting into speed of the Ward's Gear Shift transmission as this allows the planetary speed to approach the Ward's Gear Shift speed before shifting.



## Installation Instructions of PLEASURE CAR TRANSMISSION with SHORTENED SHAFT FOR PLEASURE CAR AND 1/4-TON TRUCK

1. Raise rear end of car body or chassis with chain falls or jacks. Remove rear spring shackle pins and clevis pins in emergency brake rods.

2. Remove 4 bolts in torque tube ball joint and clevis pins from brake rods at front then roll out the rear end.

Note—(a) Leave torque tube ball cap in end of planetary housing. (b) Saw out the curved member (directly in front of front seat on new model cars) 4½ inches from both side frame members. (c) Be sure our aligning joint square, fits into the Ford square hole before presenting our transmission to be bolted.

3. Bolt Ward's Gear Shift transmission on to end of the FORD planetary, use paper gasket instead of cork gaskets on rear of planetary. Hook bolts are not used on pleasure cars.

Note—Pack universal joint housing with grease.

4. Bolt on cross frame supporting member as follows: Bolt stud in center of member to bottom of universal housing (at rear of Ward's Gear Shift transmission) then attach U bolts with threads down. Do not tighten nuts too far, as springs should be taken up only half way.

5. Remove torque tube. Disassemble torque tube parts and drive shaft—Cut 13½ inches from rear end of torque tube (measure from machined surface of flange) wrap tube with cardboard to mark off straight.

Note—Torque tubes vary in diameter—if tube is too large for clamp, dress with a file—if too small bush it with a piece of sheet iron. Tube must fit tight in clamp.

6. After the torque tube clamp is placed onto the rear end of the torque tube—reassemble the parts with the new short drive shaft, be sure there is no end play in drive shaft assembly, then bolt torque tube clamp and short assembly to the axle housing with 6 cap screws.

7. See blue print of instructions for cutting radius rods.

8. Try radius rods in place for length, also line or true up the torque tube by gauging from the same points at rear end to center of tube at front end. Remove the radius rods and rivet in place. Be sure the torque tube is in line after the radius rods and tube clamp are secured.

Note—Pack Ford Universal Joint with grease.

Note—A cork gasket may be needed between the torque tube ball housing of the WARD'S GEAR SHIFT transmission and the FORD ball cover, to prevent the ball from binding when the bolts are drawn up tight. This is IMPORTANT.

9. Don't roll the rear end back in place until you are sure the torque tube is lined up and fits tight in tube clamp.

10. Be sure the slow speed connection (FORD part No. 3445) has no play. The low speed band should only take hold when the pedal is pressed almost to the floor board, (it is sometimes necessary to notch the floor board a little or bend the clutch forward) this allows a greater range between high speed and low speed band—making the shifting easier.

11. Don't forget to fill the transmission up to the oil level (plug on left hand side) with a good grade of transmission oil (as 600-W).

12. In cold weather or with heavy oil shifting will be improved if you will run the FORD planetary in low before shifting into speed of the Ward's Gear Shift transmission as this allows the planetary speed to approach the Ward's Gear Shift speed before shifting.

## How to Operate "Ward's Gear Shift" Transmission

Read these instructions carefully and practice. Do not force gears into mesh. When the truck is standing and the motor running, step lightly on the foot brake pedal before shifting into gear. Always be sure you are fully in gear before dropping the pedal in.

OVERSPEED speed positions are: Left rear for low speed; Right rear for direct; Right forward for Overspeed; Left forward for reverse.

### IMPORTANT

1. The operations necessary in getting into low gear are as follows:

(a) Set gas feed so that motor is running easily but not rapidly.

(b) Release clutch by pressing left foot pedal down about one inch or just enough to feel the weight of the clutch spring. (Do not press this pedal down too far.)

(c) While clutch is released move shifter lever into left rear (low speed) position and try gears gently. If gears burr step on planetary brake (right foot pedal)—this acts as a brake on the clutch, slowing same down to permit gears to be meshed noiselessly.

2. In shifting into second and high speeds or from high to second—either release the clutch and make the shift at the same instant—or make a slow shift, allowing the engine and shaft to attain the same speed, after clutch is released before shift is completed.

Do not force gears into position; they will slip into gear easily and quietly when properly handled. A little practice is sometimes necessary to acquire perfection in shifting.

3. To obtain double reduction drive, simply shift Ward's Gear Shift Transmission into low gear and then press left foot pedal down until the planetary low speed transmission band engages. This doubly reduces the gear which practically doubles the pulling power of the truck.

\*The same operations may be employed with the Ward's Gear Shift Transmission in second or high speeds.

4. If Ward's Gear Shift Transmission, when truck is using double reduction drive, is difficult to get out of reverse gear—difficulty is due to planetary low speed band drag. This will be noticed when truck is standing on a grade. To shift out of reverse under these conditions step on gas enough to move truck slightly (3 or 4 inches) and make shift while truck is in motion.

\*Note—If truck is backed up against a stop so that it cannot be moved backward to allow the shift, step on planetary reverse pedal and truck will go forward.

5. If car jumps when starting up—cause is due to clutch being too tight or to driver letting clutch in too quickly or because oil is low in Ford motor causing clutch plates to grab. Properly operated and adjusted the WARD'S GEAR SHIFT EQUIPPED FORD will start as smoothly and quietly as any car on the road.

6. In cold weather or with heavy oil shifting will be improved if you will run the FORD planetary in low before shifting into speed of the Ward's Gear Shift transmission as this allows the planetary speed to approach the Ward's Gear Shift speed before shifting.

In conclusion we wish to state that to all intents and purposes the Ward's Gear Shift Equipped Ford Car or Truck is operated exactly the same as every other big car on the road. Double reduction drive is used only in rare instances when extreme power is needed.

We have thousands of satisfied users of Ward's Gear Shift transmissions. If you are experiencing any difficulties which you are unable to solve with the assistance of our Installation Sheet or the instructions as set forth above, we will be very glad to have you write us fully in order that we may take the matter up with you in detail.



## Care and Construction of "Ward's Gear Shift" Transmission

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**NOTE:** Always keep the control lever ball cap tight.

The Ward's Gear Shift Transmission is of the sliding gear selective type, having three speeds forward and one reverse. It is composed of eight gears, which are made from five per cent nickel steel forging triple heat treated and hardened to withstand severe strain and wear.

The drive shaft or main drive gear is mounted on an annular ball bearing in the front of the transmission case, the end of which projects through the forward end of the case, and is squared to fit the joint which we furnish to fit into Ford planetary.

The spline shaft is a continuation of the drive shaft, but separate from same. Forward end of this shaft is supported by a bronze bearing inserted in the end of the main drive gear and at the rear by an annular ball bearing. On the spline shaft are two sliding gears, direct and over speed and low and reverse speed. These gears can be moved forward or backward to select the different speeds, by means of a lever mounted in the cover.

The countershaft gears are directly below the spline and are mounted on two improved rolled bronze bearings, which revolve on a stationary shaft. The countershaft gears are made of one solid steel forging, having 3 gears thereon eliminating all keys.

The reverse idler gears are also mounted on two long bronze bearings, which revolves on a stationary shaft.

The transmission cover is held in place by four cap screws and carries the shifting mechanism, which is composed of the shifter rods, shifter forks and gear change lever. One gear must be in neutral to shift the other. There are two shifter rod finder plungers, which locate the rods for neutral or in gear positions. Each shifter rod has three notches into which these plungers are forced by a small coil spring inserted behind each of the plungers.

Care should be taken to have clutch disengaged before attempting to shift gears, as otherwise the result will be a noisy clashing of gears.

The advantages of this transmission are that it has a minimum number of parts, eliminating as many keys and key ways as possible, making a most rugged and simple design.

Since we are using the very best annular ball bearings and the improved rolled bronze bearings, it requires no adjustment and it should only be necessary to see that all the nuts and screws are tight.

Practically the only attention that is necessary is to see that the gear box is filled with oil to the oil level (Plug on left hand side). Number 600-W or common steam cylinder oil is an excellent lubricant, except that in extremely cold weather it is sometimes advisable to thin with a lighter oil to make gear shifting easier.

If trouble is experienced in retaining oil, keep both front and rear universal joint well packed with grease and this will prevent leakage at these points.

The first symptoms of trouble would be noise, caused by the transmission not being properly lubricated and which can be prevented at all times by keeping the oil to the proper level as explained above.

Transmission grease should be drained every five hundred miles by removing plug at bottom of case. Before refilling with fresh lubricant it is advisable to flush gears and inside of case with kerosene or gasoline.

# MONTGOMERY WARD & CO.

Chicago, Kansas City, St. Paul, Baltimore, Portland, Ore., Oakland, Calif., Fort Worth.