

WARN . . .

"All Range"

OVER-DRIVE

MODELS

3326

and

3329

for . . .

4 by 4

*Jeeps
and
Scouts*



PARTS CATALOG

WITH

INSTALLATION OPERATION & SERVICE INSTRUCTIONS

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CATALOG No. 1842

WARN SALES CO.

Riverton Box 6132, Seattle 88, Wash.

OVER-DRIVE INSTALLATION INSTRUCTION

CAUTION..

DRAIN and FLUSH transfer case before proceeding with installation. Replace with a good grade of gear oil as recommended by your vehicle manufacturer. **DO NOT USE ADDITIVES IN THE GEAR OIL. FAILURE TO COMPLY WITH ALL INSTALLATION INSTRUCTIONS WILL VOID YOUR OVERDRIVE WARRANTY**

INSIDE CAB . . .

Put transmission into LOW or REVERSE gear and set hand brake. This makes it possible to remove necessary parts from transmission. Remove center floorboard section. (If so equipped).

UNDERNEATH CHASSIS . . .

PREPARE TRANSFER CASE FOR OVER-DRIVE UNIT

1. Clean end of transfer case of all debris before removing any parts. This will keep from contaminating the over-drive mechanism during installation.
2. Remove power take-off cover plate, or power take-off unit if installed, and clean the machined surface of the transfer case of all burrs and gasket material. With transmission output shaft and gear exposed, check for "end" and "side" play. If any play is noted, this condition must be corrected for satisfactory performance of the over-drive.

3. Remove main drive gear as shown in Fig. 1. The number of teeth on this gear and the planetary housing gear must be the same.

NOTE: If the transfer case, intermediate gear or bearings are in bad condition they should be replaced at this time.

INSTALLATION OF PLANETARY UNIT

4. Slide the planetary unit on to the transmission output shaft (Fig. 2).

Tighten the special nut (Fig. 3) on to the output shaft with 100 to 200 Ft./lbs. torque. **DO NOT USE IMPACT WRENCH.**

5. Install the special lockwasher, Fig. 3, by pushing it between the planetary gears until it contacts the special nut. The 4 lugs on the washer must go into 4 corners of the special nut, and at the same time, the tang must go into one of the 4 recesses in the planetary spider. If the first position tried will not work, then, try the other positions.

If none of the positions will work, then, the nut will have to be tightened (preferably) or loosened until lugs and tang freely enter one of the positions. Several attempts may be necessary, but correct positioning of the lockwasher is the only way to lock the planetary unit on the output shaft.

6. Install the special snap ring into the planetary spider groove, Fig. 3, using needle nose or snap ring pliers. **DOUBLE CHECK THIS STEP AND MAKE CERTAIN THAT THE SNAP RING IS PROPERLY SEATED IN ITS GROOVE.**

NOTE: If the snap ring is not properly seated in its groove the planetary unit will eventually work loose on the output shaft and cause severe damage to the overdrive unit.

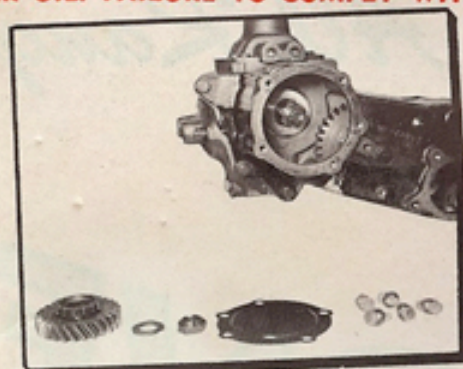


Fig. 1 — REMOVE DRIVE GEAR

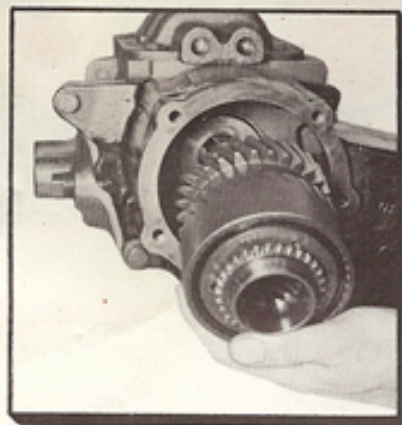


Fig. 2 — PLANETARY UNIT

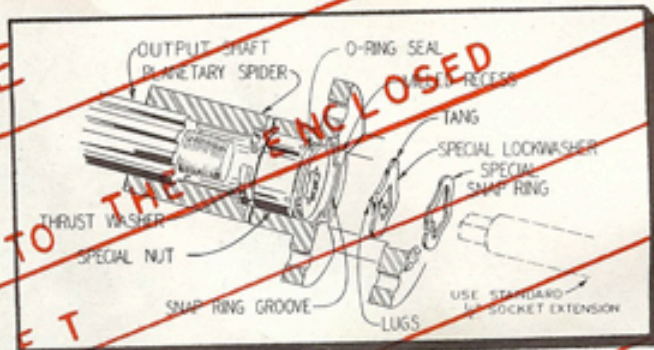


Fig. 3 — PLANETARY LOCKING



Fig. 4 — GUIDE UNIT INTO POSITION

UNDERNEATH CHASSIS (Continued)

7. Jack both rear wheels up "off" the floor.
8. Put vehicle transmission into "neutral" and release hand brake.
9. Put transfer case in gear and then turn the driveline by hand to make sure it rotates freely. **Caution** — If driveline does not rotate freely, recheck the above steps 7, 8, and 9. If these steps were followed and the trouble still exists then remove and reinstall the planetary unit, thoroughly checking each installation step as previously shown. Relief grinding is necessary on some vehicle castings if they interfere with the front washer on the planetary unit, or the planetary housing.

INSTALLATION OF SHIFTING MECHANISM CASE

10. With gasket in place, guide the oil tube, shift lever, and case into position. Fig. 4. Slightly, rotate the unit back and forth to mesh the gears if needed.
11. With lockwashers on bolts, insert four of them through the case and tighten down evenly and securely. The fifth bolt must have only a special seal washer on it, and must be located as shown in Fig. 4. Tighten all bolts to 30 Ft./lbs. torque.
12. Turn driveline by hand again to recheck freedom of rotation. If it does not rotate freely then remove the shift mechanism case and check for interference.

BACK INSIDE CAB AGAIN . . .

INSTALLATION OF SHIFT LEVER ASSEMBLY

13. Remove shift lever knobs, retaining plates, bolts, and floor mat.
14. Cut a hole in the transmission cover plate by using the retaining plate (in the kit) for a pattern, as shown in Fig. 5 and 6.
15. Raise the overdrive shift lever-link and connect it to the overdrive handle with the clevis pin and cotter pin provided as shown in Fig. 7. **Caution:** Be sure that the LOWER part of the overdrive shift lever clears the end of the transfer case shift lever pivot shaft, Fig. 8. If not, loosen set screw and move shaft slightly "end wise" until it does clear. Then tighten set screw. If shaft can not be moved, cut or file the protruding end for necessary clearance.
16. Remove two transmission cover bolts. Locate overdrive shift lever bracket and reinstall bolts as shown in Fig. 9. (If necessary, heat with torch and bend one or more levers to obtain the desired movement and clearances).

REPLACEMENT OF FLOORBOARD HARDWARE

17. Replace the transmission sheet metal cover plate and floor mat.
18. Reinstall the rubber boot back over the transfer case shift levers.
19. Jeep — Place boot gasket and retainer furnished over the three shift levers. Fig. 5.
19. Scout — Place boot gasket and retainer furnished, over the overdrive shift lever. Fig. 6.
20. Then locate, center, punch and drill two additional $\frac{1}{8}$ holes for the number 8 diameter sheet metal screws furnished.



Fig. 5 — MARK AND CUT — JEEP

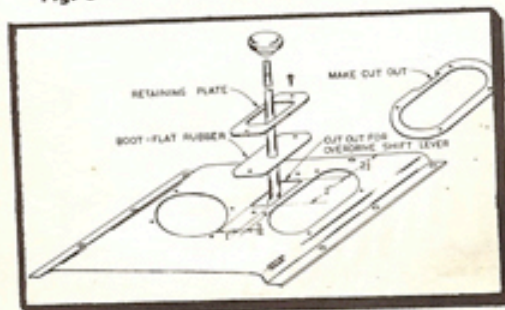


Fig. 6 — MARK AND CUT — SCOUT

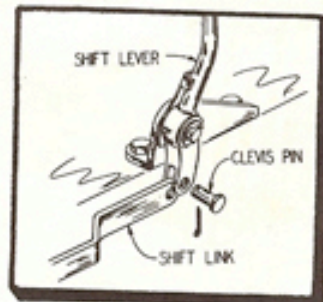


Fig. 7—INSTALL CLEVIS PIN

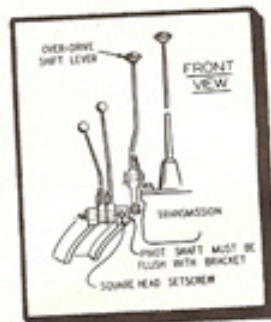


Fig. 8—CLEARANCE DIAGRAM



Fig. 9—INSTALL SHIFT LEVER

INITIAL LUBRICATION "RUN IN" PROCEDURE . . .

NOTE — A clean constant flow of oil is very important. Therefore, check oil and/or replace or refill periodically with a good grade of standard gear case lubricant as recommended by your vehicle manufacturer. Do not use additives in the gear oil.

21. Put transfer case into neutral so drivelines (front and rear) will not turn.
22. Start engine and put vehicle transmission into high gear. Run engine and transmission at fast idle for 5 to 10 minutes so oil can circulate through the overdrive.

Oil is circulated via the oil tube as shown in Fig. 10.

23. Recheck "oil level" in transfer case and refill if necessary.
24. The vehicle is now ready for operation.

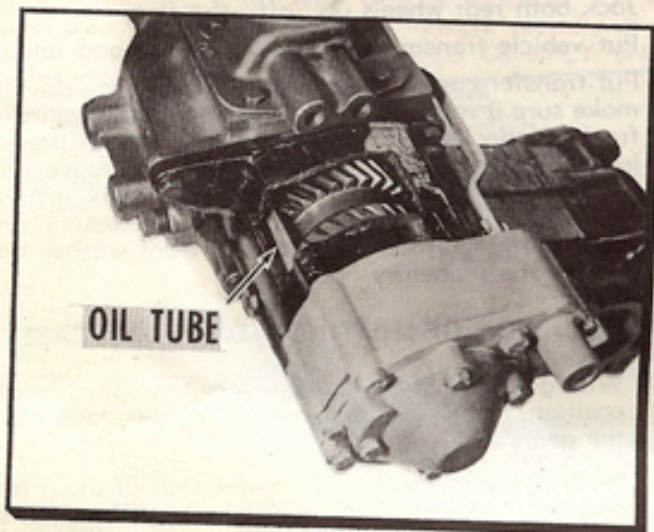
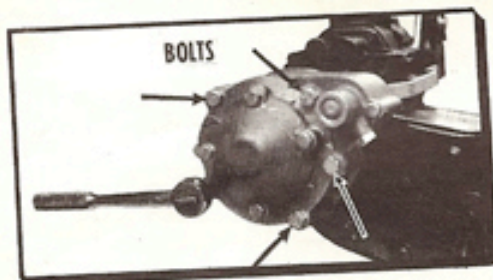


Fig. 10—OIL TUBE FUNCTION

IMPORTANT CHECK POINT AT A LATER PERIOD . . .

25. About 100 miles after installing the overdrive, check and retighten (if necessary) the five $\frac{3}{8}$ " bolts that hold the overdrive unit to the transfer case to approximately 30 ft/lbs. torque.

Recheck oil level and refill if necessary.



RETIGHTEN BOLTS

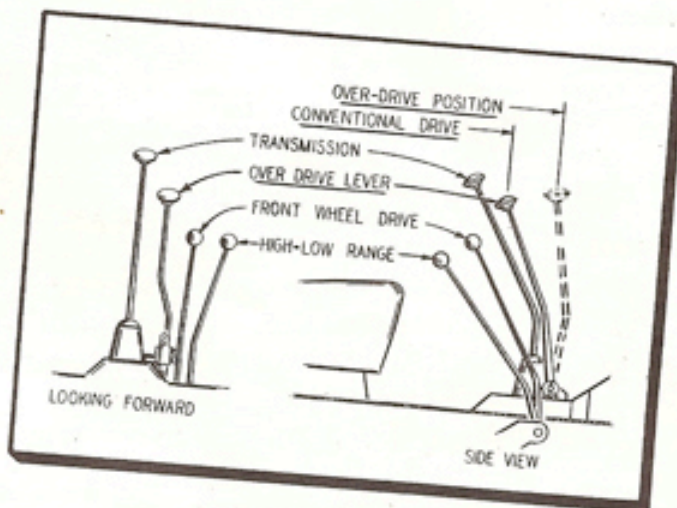
OPERATING INSTRUCTIONS

CONVENTIONAL DRIVE . . .

Leave overdrive shift handle in the rear position for straight conventional driving. (See illustration.)

OVERDRIVE . . .

Leave shift handle in forward position for overdrive. Shifting the overdrive is done in the same manner as with a standard transmission, that is, release throttle, depress clutch pedal and then shift. **Do Not Double Clutch.** It may be used at any time, in any gear, high range or low, two or four wheel drive, forward or reverse. It is designed with synchromesh action so that, shifting (up or down) may be done at any speed. Your vehicle now has a combination of twelve forward speeds and four reverse speeds, making it one of the most versatile in its field.



SHIFT LEVER OPERATION

POWER TAKE-OFF INSTALLATION

POWER TAKE-OFF UNITS COME IN SEVERAL TYPES, MAKES, AND MODELS—MOST OF WHICH CAN BE INSTALLED TO THE WARN OVER-DRIVE UNIT IN THE FOLLOWING MANNER

If a power take-off unit had been on the vehicle before installing the overdrive unit, it had to be removed. It can now be reinstalled, or another unit can be installed in the vehicle for the first time, as follows:

1. Locate and mark a (2" square) opening in the floor board. In vehicles with a single "long" seat, the opening will be under the seat as shown in Fig. 11. Drill a small hole in each corner of the (2" square) opening. The locating, marking and drilling is done from underneath the vehicle, and also, before the power take-off is installed, so the desired working room is available. The actual cutting or "chiseling" out the opening can be done from up above.
2. Put the vehicle in "overdrive gear" for removing the hex nut in step 4.
3. Remove bearing cap from overdrive unit, by taking out the four $\frac{3}{8}$ " — 16 NC x 1" capscrews. These capscrews are reused in step 7
4. Remove cotter pin, nut and spacer from splined shaft. Fig. 12.
5. Replace spacer with power take-off drive flange.
6. Install washer, nut (tighten to 100-120 ft/lbs. torque) and cotter pin.
7. Attach the power- take-off adaptor housing, and gasket furnished, to the over-drive unit with the same four $\frac{3}{8}$ " — 16 NC x 1" capscrews and the four new $\frac{3}{8}$ " lock washers furnished. Tighten to 25 ft/lbs. torque.
8. Align new gasket and attach the power- take-off unit to the adaptor housing with five $\frac{3}{8}$ — 16 NC x 1" capscrews and lockwashers.
9. The shafting or drivelines can now be attached to the power take-off. In some cases the shafting or drive-lines will have to be increased or decreased in length. A "shaft extension" is furnished if required, this shaft can either be welded, or drilled and pinned, in place.
10. Regarding the location of the power take-off shift

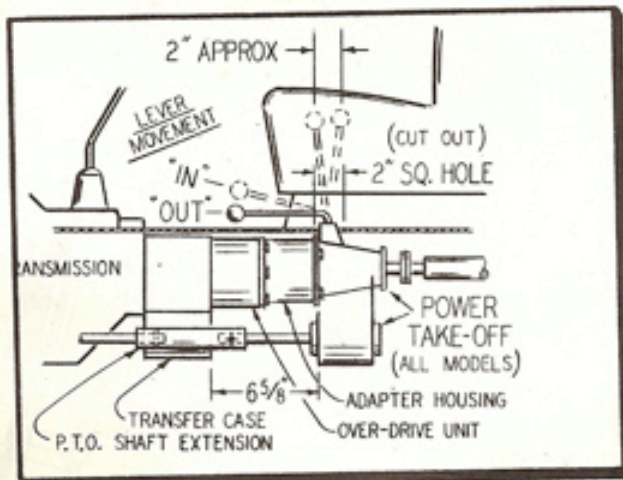


Fig. 11 — POWER TAKE-OFF INSTALLATION DIAGRAMS

lever. In vehicles with bucket seats, the lever will stick up between them and will offer no problem in operation. "Pull back" to engage, "push forward" to disengage. In vehicles with one "long" seat, the lever would normally stick up and interfere with the seat cushion, so therefore, the lever should be bent forward to clear the seat, as shown in Fig. 11, so that proper operation can be maintained "pull up" to engage, "push down" to disengage.

11. Put transfer case in neutral and put transmission into high gear. Start engine and run transmission for 5 to 10 minutes.
12. **RECHECK OIL LEVEL IN TRANSFER CASE AND REFILL IF NECESSARY.**
13. To use the power take-off, the overdrive shift handle must be in the rear (conventional drive) position.
14. The power take-off unit is now ready for operation.

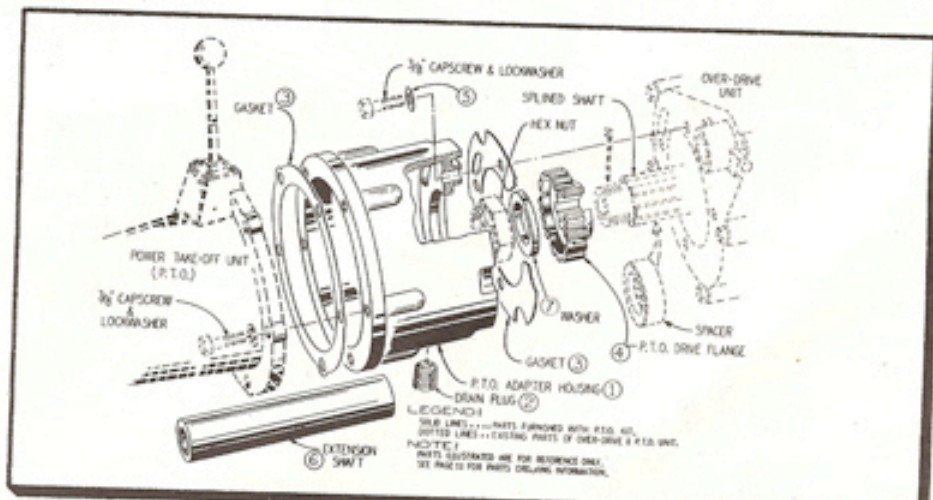


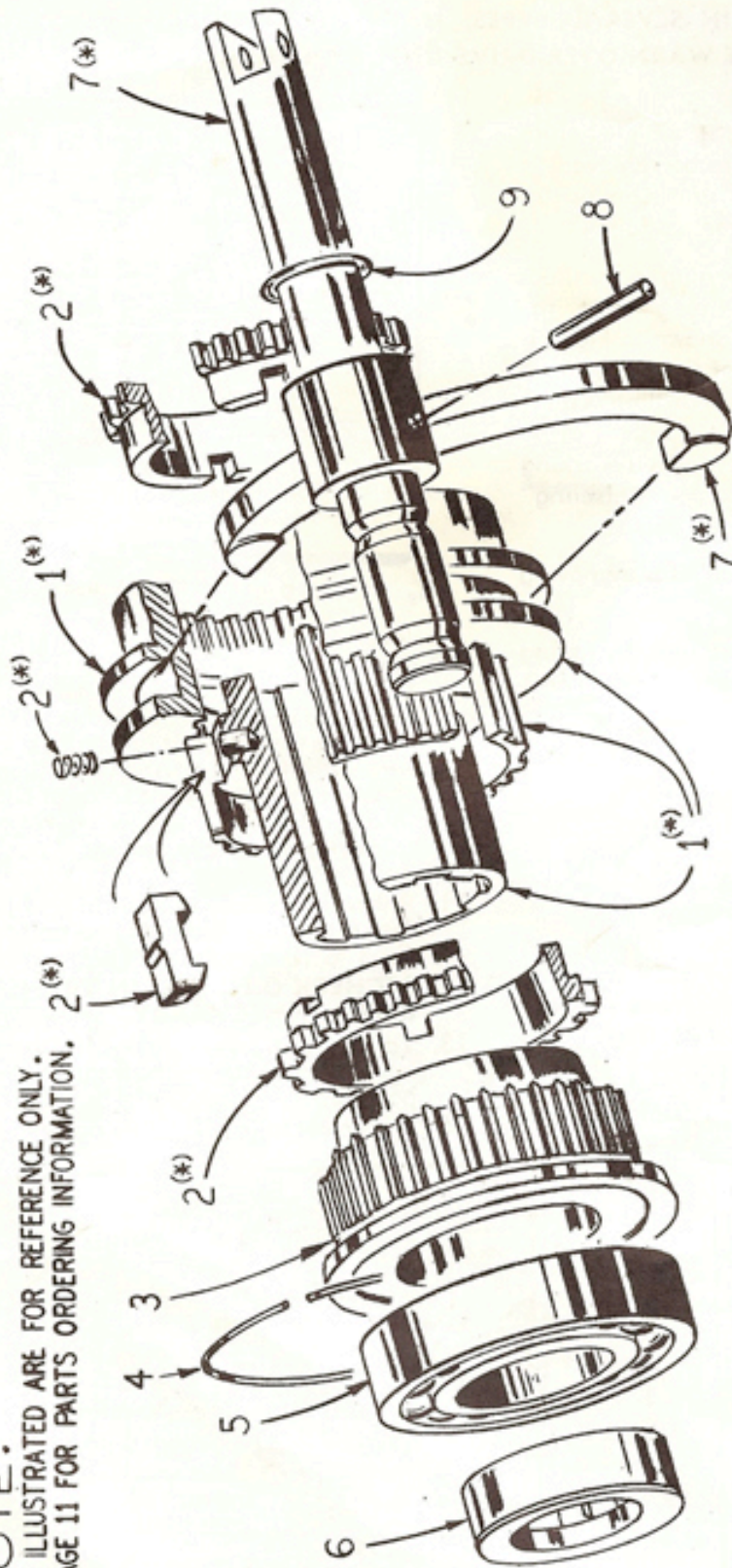
Fig. 12 — POWER TAKE-OFF (EXPLODED VIEW)

PARTS CATALOG

SYNCHROMESH UNIT

NOTE:

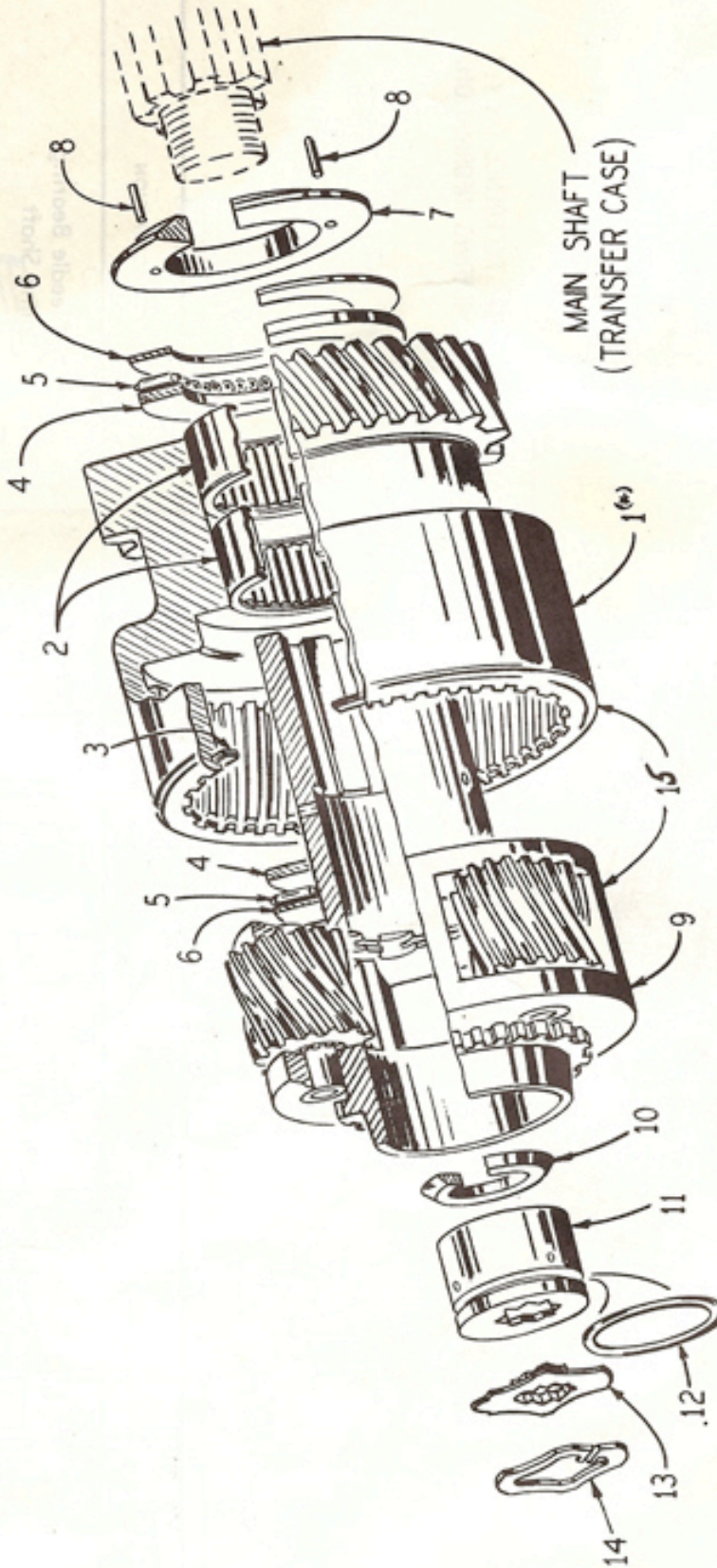
PARTS ILLUSTRATED ARE FOR REFERENCE ONLY.
SEE PAGE 11 FOR PARTS ORDERING INFORMATION.



REF. NO.	PART NUMBER	NO. REQ	DESCRIPTION
1	1318	1	Synchromesh Kit (includes Parts 1 & 2)
2	1317	1	Synchromesh Kit (includes Parts 2 only)
3	1337	1	Stationary Member, Synchromesh
4	1838	1	Retainer Spring
5	1313	1	Main Bearing, Spline Shaft
6	1334	1	Spacer, Spline Shaft
7	1348	1	Shifter Shaft Fork Assembly (includes Parts 7 & 8).
8	1102	1	Roll Pin, 3/16" Dia. x 1" Long
9	1349	1	Seal Set (includes all gaskets & seals)
*Matched parts — not sold separately			

PLANETARY SYSTEM

NOTE: PARTS ILLUSTRATED ARE FOR REFERENCE ONLY.
SEE PAGE 11 FOR PARTS ORDERING INFORMATION

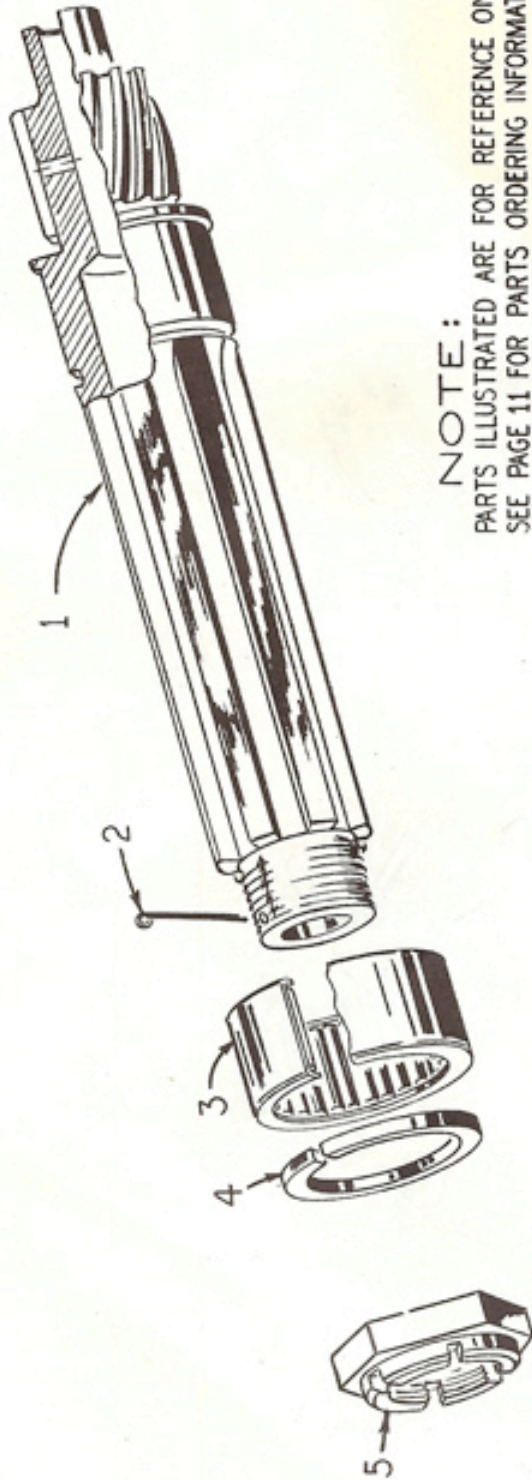


REF NO.	PART NUMBER	NO. REQ	DESCRIPTION	REF NO.	PART NUMBER	NO. REQ	DESCRIPTION
1	1223	1	Housing, 26 Tooth (includes 1, 2 & 3)	10	1095	1	Washer, Beveled Thrust
1	1224	1	Housing, 29 Tooth (includes 1, 2 & 3)	11	1731	1	Nut, Special (drive shaft)
2	1091	1 set	Bearings, Planetary Housing	12	1349	1	Seal Set (includes all gaskets & seals)
3	1136	1	Retaining Ring, Planetary Housing	13	1806	1	Lockwasher, Special
4	1094	2	Inner Race, Thrust Bearing	14	1236	1	Retaining Ring, Special
5	1099	2	Thrust Bearing	15	1835	1	Hsg. Assy. Comp. (No. 1-15) 3326
6	1100	2	Outer Race, Thrust Bearing	15	1836	1	Hsg. Assy Comp. (No. 1-15) 3329
7	1225	1	Washer, Beveled Spacer (includes Parts 7 & 8)				
8	1126	2	Roll Pin, 1/8" Dia. x 1/2" Long)				
9	1837	1	Spider Assy. (Parts 8 thru 15)				

*Matched Parts—not sold separately

PARTS CATALOG

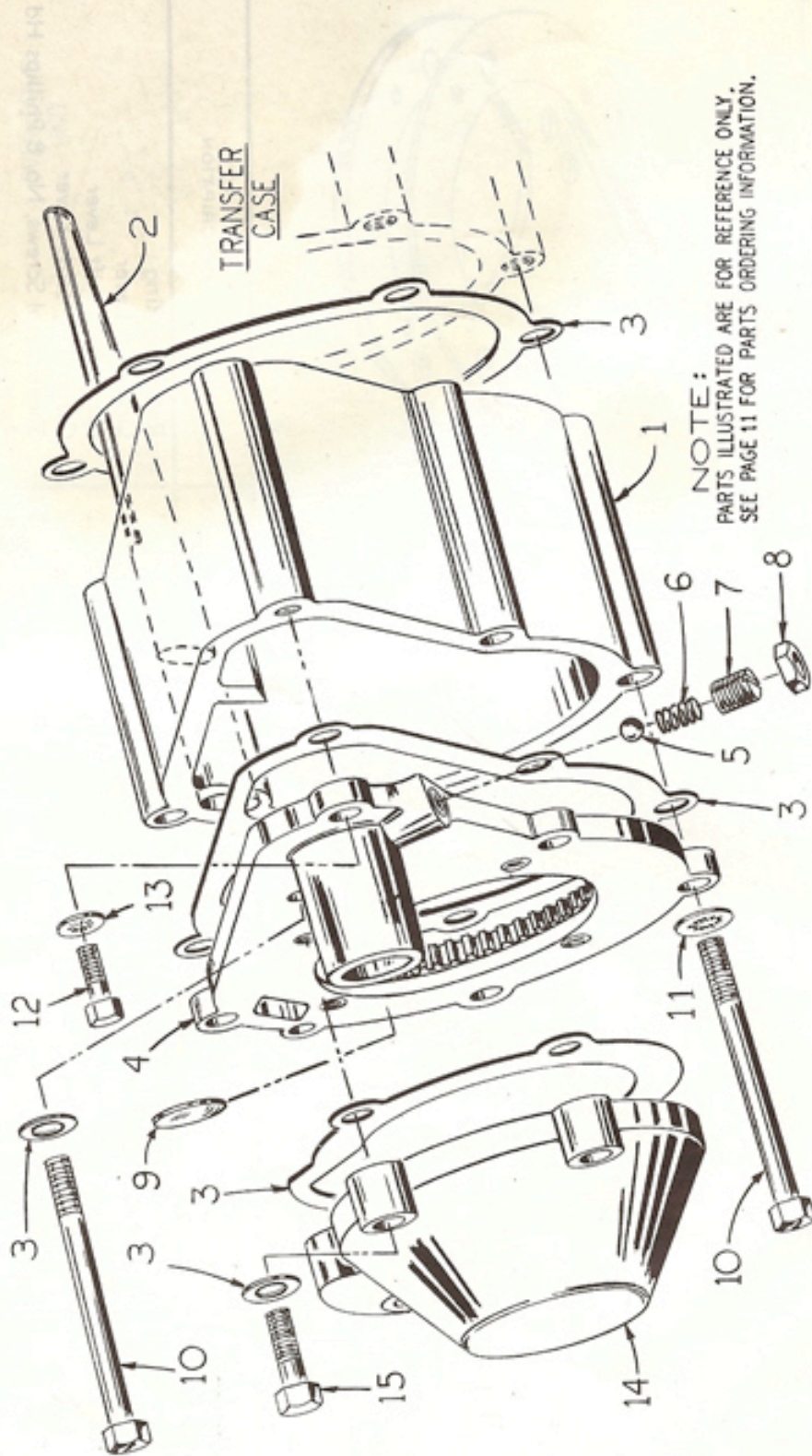
SUN GEAR ASSEMBLY



NOTE:
PARTS ILLUSTRATED ARE FOR REFERENCE ONLY.
SEE PAGE 11 FOR PARTS ORDERING INFORMATION.

REF NO.	PART NUMBER	NO. REQ	DESCRIPTION	REF NO.	PART NUMBER	NO. REQ	DESCRIPTION
1	1362	1	Spline Shaft includes parts 2, 3, 4, & 5	4	1147	1	Lock Ring, Needle Bearing
2	1065	1	Cotter Pin $\frac{1}{8}$ " Dia. x $1\frac{1}{2}$ " Long	5	1043	1	Hex Nut, Spline Shaft
3	1143	1	Needle Bearing, Spline Shaft				

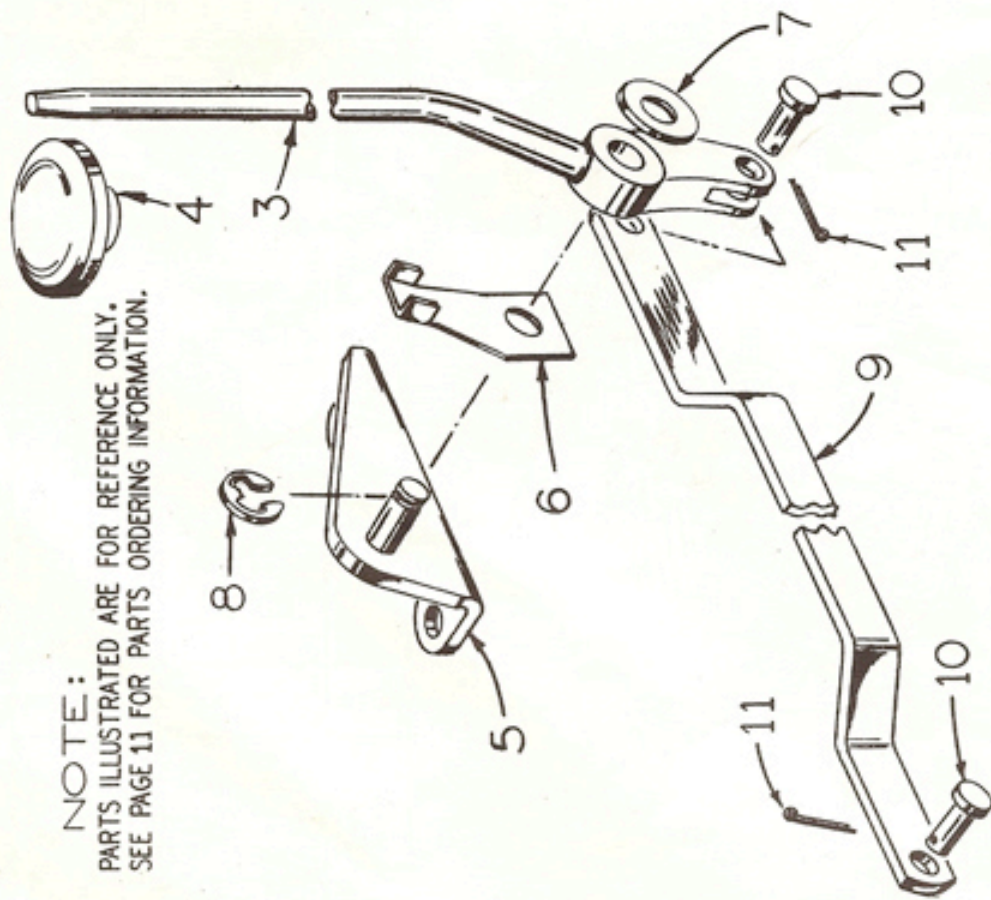
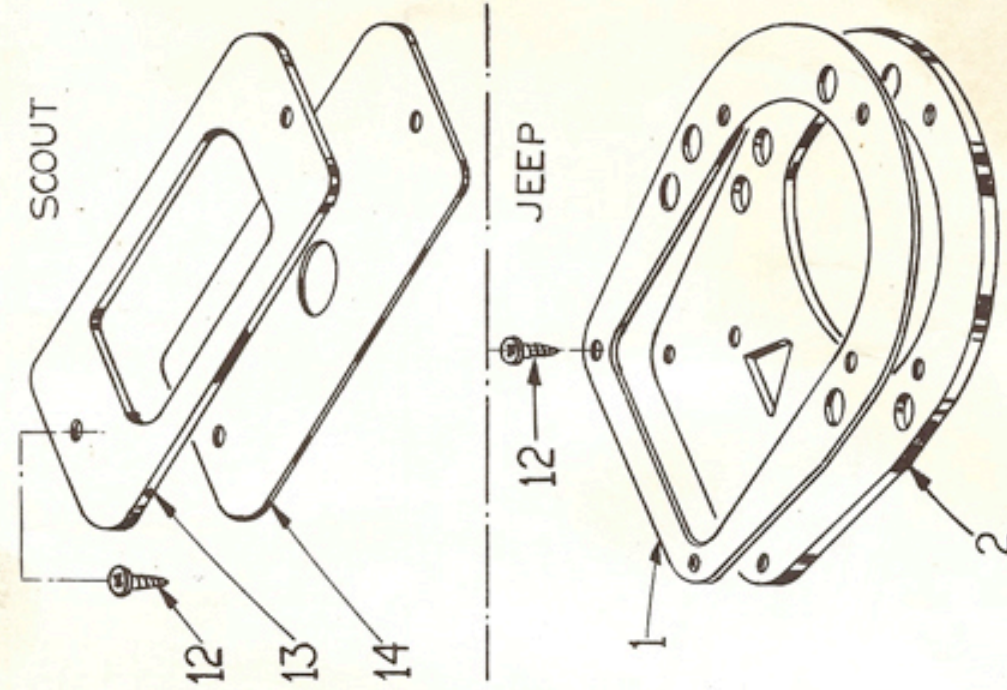
HOUSINGS, COVERS, & GASKETS



REF NO.	PART NUMBER	NO. REQ	DESCRIPTION	REF NO.	PART NUMBER	NO. REQ	DESCRIPTION
1	1038	1	Case, Main Housing—w/O-Ring	9	1138	1	Soft Plug, 3/4 Dia.
2	1133	1	Oil Scoop	10	1144	5	Capscrew, 3/8-16 NC x 3 1/2" Long
3	1349	1	Seal Set (includes all gaskets and seals)	11	1146	4	Lockwasher, 3/8" shakeproof
4	1364	1	Cover, Main Housing—w/Plug	12	1141	2	Cap Screw, 1/4-20 NC x 3/4" Long
5	1106	1	Ball, Shifter Shaft	13	1129	2	Lockwasher, 1/4" shakeproof
6	1105	1	Spring, Shifter Shaft	14	1326	1	Cap, Spline Shaft Bearing
7	1098	1	Screw, Shifter Spring	15	1142	4	Capscrew, 3/8-16 NC x 1" Long
8	1085	1	Jam Nut, 7/16-20 NF				

PARTS CATALOG

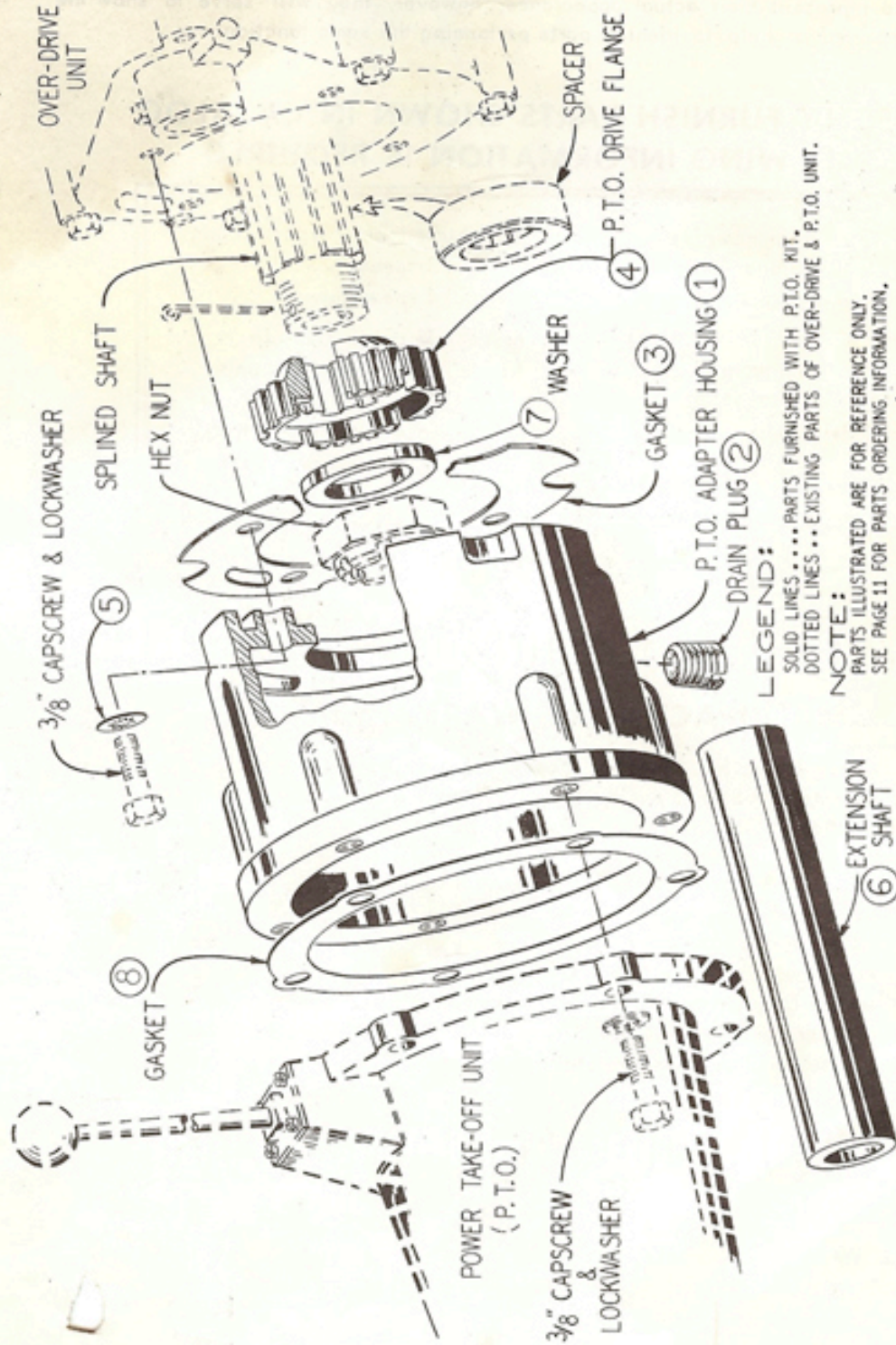
LINKAGE SYSTEM



NOTE:
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SEE PAGE 11 FOR PARTS ORDERING INFORMATION.

REF. NO.	PART NUMBER	NO. REQ.	DESCRIPTION	REF. NO.	PART NUMBER	NO. REQ.	DESCRIPTION
1	1149	1	Retainer Plate	8	1159	1	Retaining Ring
2	1152	1	Boot, Flat Rubber	9	1121	1	Link Shift Lever
3	1120	1	Lever, Over-Drive Shift	10	1125	2	Clevis Pin, Shift Lever
4	1156	1	Knob, Shift, Lever	11	1127	2	Cotter Pin, Shift Lever
5	1112	1	Bracket, Shift Lever	12	1166	2	Sheet Metal Screws, No. 8 Phillips Hd.
6	1119	1	Spring Clip, Shift Lever	13	1365	1	Retainer
7	1145	1	Flat Washer, 1/2"-St'd.	14	1366	1	Boot, Flat Rubber

POWER TAKE-OFF ATTACHMENTS



LEGEND:
 SOLID LINES.....PARTS FURNISHED WITH P.T.O. KIT.
 DOTTED LINES...EXISTING PARTS OF OVER-DRIVE & P.T.O. UNIT.
 NOTE:
 PARTS ILLUSTRATED ARE FOR REFERENCE ONLY.
 SEE PAGE 11 FOR PARTS ORDERING INFORMATION.

REF NO.	PART NUMBER	NO. REQ.	DESCRIPTION
4	1344	1	Drive Flange
5	1146	4	Lockwasher, Shake proof
6	1161	1	Koenig Extension
6	1162	1	Ramsey Extension
7	1049	1	Washer, Spline Shaft
8	1131	1	Gasket
1	1233	1	*Kit, P. T. O. Adaptor, Koenig (includes Parts 1, 2, 4, 5, 6 & 7)
2	1234	1	*Kit, P. T. O. Adaptor, Ramsey (includes Parts 1, 2, 4, 5, 6 & 7)
3	1207	1	Adaptor HSG, P. T. O. w/Plug
	1041	1	Drain Plug, 1/8" N. P. T.
	1335	1	Gasket

*NOTE—Specify Warn O.D. Mod. No. and Ser. No. (if any). For information on other P.T.O. Adaptors send request to Factory.

INSTALLATION OF SPECIAL DRIVE NUT, SPECIAL LOCK WASHER, AND SPECIAL RETAINING RING.

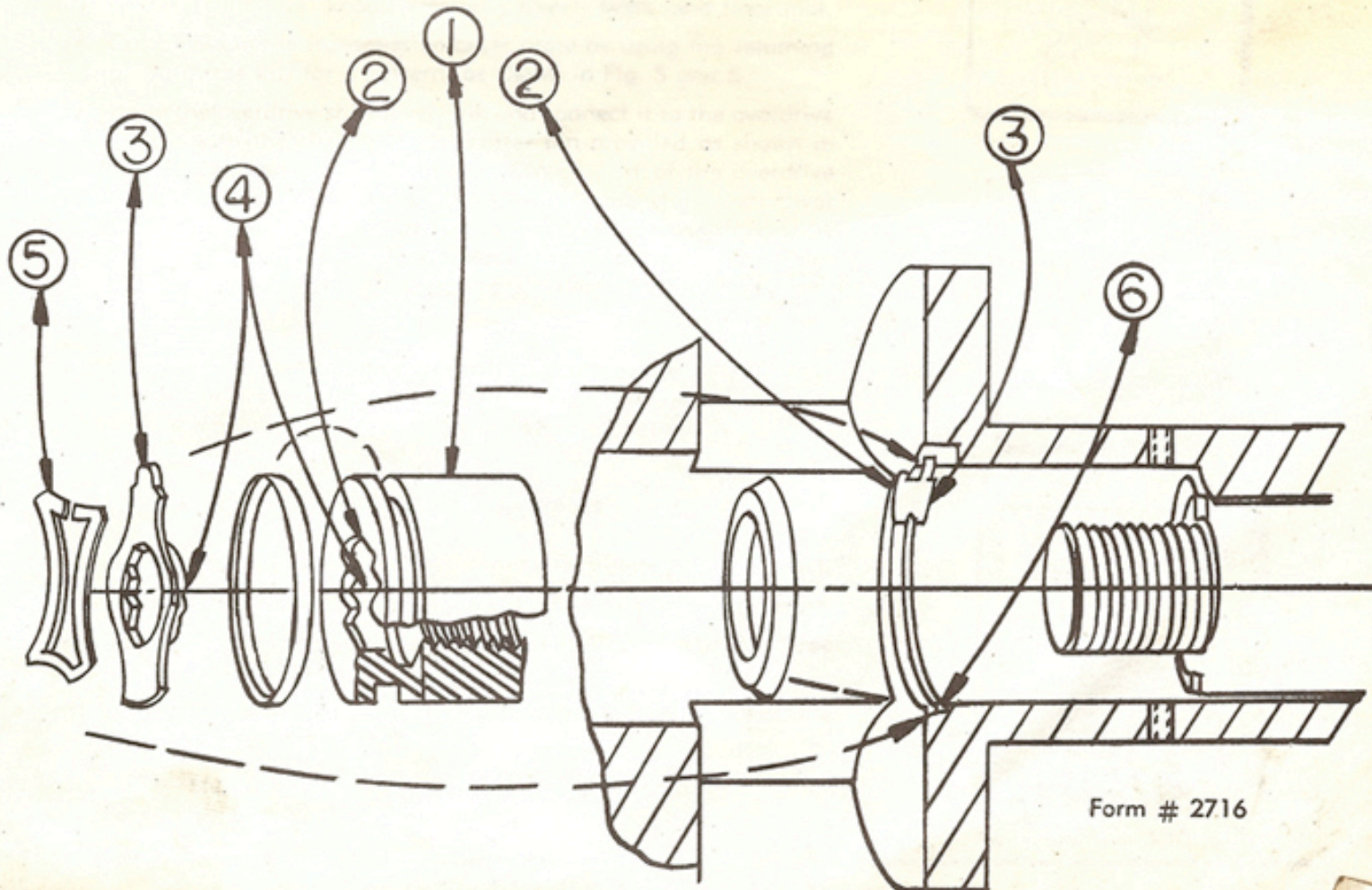
- Step 1. (Ref. 1) Tighten the special nut (drive nut) to 100 to 120 ft. lbs. torque. (Do not use impact wrench.)
- Step 2. (Ref. 2) One of the 8 points on the drive nut must line up with the center of one of the 4 recesses in the planetary spider. If one of the points will not line up in the center of one of the recesses, then, the drive nut will have to be tightened (preferably) or loosened until it does line up.
- Step 3. (Ref. 3) The lug on the special lockwasher will then go into the recess and,
- Step 4. (Ref. 4) The lockwasher will freely enter the special nut.
- Step 5. (Ref. 5) Compress the snap ring until the two (2) ears touch. (Use "snap ring" or "needle nose" pliers.) Do not compress the ears past each other.



- Step 6. (Ref. 6) Slide the snap ring into position and make sure it is properly seated in its groove.

ENCLOSED SHEET

REFERENCE



— REPLACEMENT PARTS ORDERING INFORMATION —

The illustrations in this catalog are intended to show typical construction of the various parts of the Warn "all range" Over-Drive Unit. In some instances the shapes or details of the parts illustrated may not seem to represent their actual appearance; however, they will serve to show the servicing methods explained or help to identify parts performing the same function.

TO CORRECTLY FURNISH PARTS SHOWN IN CATALOG THE FOLLOWING INFORMATION IS REQUIRED

- | | |
|---|--|
| 1. Over-Drive model number
(located on housing nameplate) | 5. Vehicle type of transmission:
<input type="checkbox"/> 3 speed forward
<input type="checkbox"/> 4 speed forward |
| 2. SER Number of Over-Drive, if any
(located on housing nameplate) | 6. Vehicle power take-off:
<input type="checkbox"/> Does not have a unit
<input type="checkbox"/> Does have a unit
(Please give brand name) |
| 3. Part Numbers and quantity required
(See Parts Catalog section) | |
| 4. Vehicle Model number | |

SEND THE ABOVE DATA TO YOUR NEAREST DEALER — SEE BOTTOM OF PAGE.

MANUFACTURER'S WARRANTY

This is to certify that Warn Sales, Inc., Seattle, Washington, guarantees each new Warn Over-Drive to be free from defects in material and workmanship under normal use and service, for a period of 1 year after purchase. Our obligation under this Warranty being limited to making good at our factory any part or parts thereof returned to us with transportation charges prepaid, and which upon our examination shall disclose to have been defective. This Warranty being expressly in lieu of all other warranties expressed or implied and of all other obligations or liabilities on our part, and we neither assume nor authorize any other person to assume for us any other liability in connection with the sale of our Over-Drive except as stated above. This Warranty shall not apply to any Over-Drive that has been repaired or altered in any way, so as in the judgment of the manufacturer, to affect its stability or reliability, nor which has been improperly installed, subject to misuse, negligence or accident.

WARN SALES CO.

SOLD BY.....