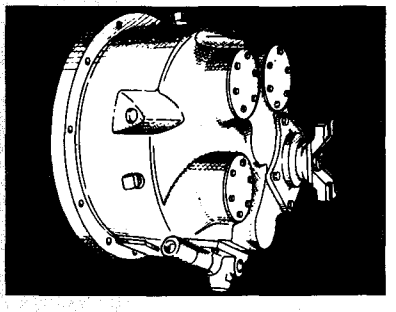
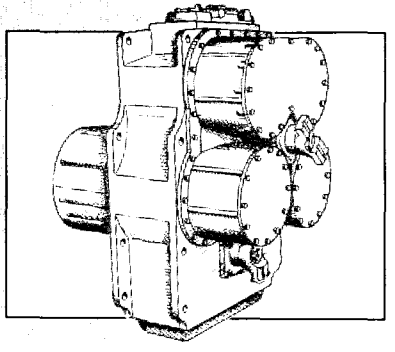
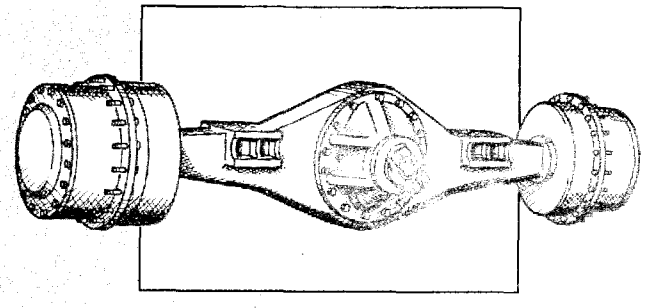
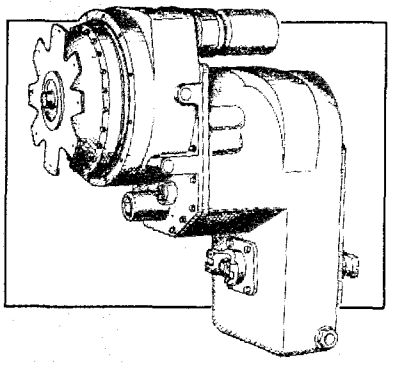
Maintenance and Service Manual









C 5000 Torque Converter

CLARK-HURTH COMPONENTS

SMC 5000 (Rev. 11-93)

Service Publications

I-77 at I-40, Rt. 18, Box 38

Statesville, NC 28677

TOWING OR PUSH STARTING

Before towing the vehicle, be sure to lift the rear wheels off the ground or disconnect the driveline to avoid damage to the transmission during towing.

NOTE: If the transmission has 4 wheel drive, disconnect both front and rear drivelines. Because of the design of the hydraulic system, the engine **cannot** be started by pushing or towing.

FOREWORD

This manual has been prepared to provide the customer and the maintenance personnel with information and instructions on the maintenance and repair of the **CLARK-HURTH COMPONENTS** product.

Extreme care has been exercised in the design, selection of materials and manufacturing of these units. The slight outlay in personal attention and cost required to provide regular and proper lubrication, inspection at stated intervals, and such adjustments as may be indicated will be reimbursed many times in low cost operation and trouble free service.

In order to become familiar with the various parts of the product, its principal of operation, trouble shooting and adjustments, it is urged that the mechanic study the instructions in this manual carefully and use it as a reference when performing maintenance and repair operations.

Whenever repair or replacement of component parts is required, only **Clark-Hurth Components**-approved parts as listed in the applicable parts manual should be used. Use of "will-fit" or non-approved parts may endanger proper operation and performance of the equipment. **Clark-Hurth Components** does not warrant repair or replacement parts, nor failures resulting from the use of parts which are not supplied by or approved by **Clark-Hurth Components.** IMPORTANT: **Always furnish the Distributor with the serial and model number when ordering parts.**

TABLE OF CONTENTS

HOW THE UNITS OPERATE

The torque converter portion of the power train enacts an important role in delivering engine power to the driving wheels. In order to properly maintain and service these units it is important to first understand their function and how they operate.

The torque converter and transmission function together and operate through a common hydraulic system. To obtain maximum serviceability they have been designed and built as separate units. It is necessary, however, to consider both units in the study of their function and operation.

To supplement the text herein, and for reference use therewith, the following illustrations are provided.

Fig. A — Torque Converter Assembly — Cross Section
Fig. B — Internal Oil Flow — Torque Converter
Fig. C — Torque Converter Assembly — Exploded View
Fig. D — External Oil Flow — Converter and Transmission

The torque converter is composed of four members: The impeller which is the driving member, the drive disc or impeller cover, the turbine, which is the driven member and the reaction member. The reaction member is splined to the converter support and does not rotate in either direction. The impeller and drive disc form the outer shell. The turbine runs within the outer shell and is connected to the output shaft. The oil is the only connection between the turbine and impeller members.

Three pump drive gears are bearing mounted in the converter housing and meshed with a gear splined to the impeller hub. With the engine running the pump drive gears rotate at engine speed. The pumps are externally mounted on the converter housing and the splined pump shafts are inserted in the pump gear shaft.

With the engine running, the converter charging pump draws oil from the transmission sump and directs it through oil filters to the pressure regulating valve located in the control cover. The control cover is mounted on the top of the transmission. From the regulating valve it is then directed through the control cover to the transmission clutches and to the converter.

The pressure regulating valve remains closed until required pressure is delivered to the transmission for actuating the direction and speed clutches. This regulator valve consists of a hardened valve spool operating in a closely fitted bore. The valve spool is backed up by a spring to hold the valve spool against its seat until the oil pressure overrides the spring force. The valve spool moves toward the spring until a port is exposed in the side of the bore. The oil can flow through this port into a distributor which directs the oil through a line to the converter inlet port.

After entering the converter, the oil is directed into the converter support through the impeller bearing and to the converter cavity.

Three members of the torque converter are composed of a series of blades. The blades are curved in such a manner as to force the oil to circulate from the impeller to the turbine, through the reaction member and again into the impeller. This circulation causes the turbine to turn in the same direction as the impeller. Oil enters the inner diameter of the impeller and exits from the outer diameter into the outer diameter of the turbine, then exits from the inner diameter of the turbine and through the reaction member. The oil again enters the inner diameter of the impeller.

The oil exits between the turbine shaft and converter support and through an oil distributor which directs the oil out of the converter, through a regulating valve and to the oil cooler. After leaving the cooler the oil is directed to the lubricating oil inlet on the transmission and through a series of tubes to the transmission bearings, and clutches. The oil is internally returned to the transmission sump.

The converter lube and leakage oil is returned to the transmission sump by a flexible hose installed in the lowest pipe tap hole in the converter housing. This line must have a continuous drop to allow by gravity flow, leakage oil to return to the transmission sump.

A safety valve is built in the transmission control cover and will open to bypass oil only if an excessive pressure is built up due to a blocked passage.

With the engine operating at any speed and the turbine and output shafts stationary, the converter is in a "stall" condition. Full power or wide open throttle "stalls" for more than 30 seconds at a time will generate excessive heat and may cause converter or transmission seal damage.

The converter pressure regulator valve consists of a valve body, valve spool and back-up spring. The spool is backed up by a spring to hold the valve closed until a specified oil pressure builds up. The valve is used to maintain a given pressure within the converter to insure proper performance under all conditions.

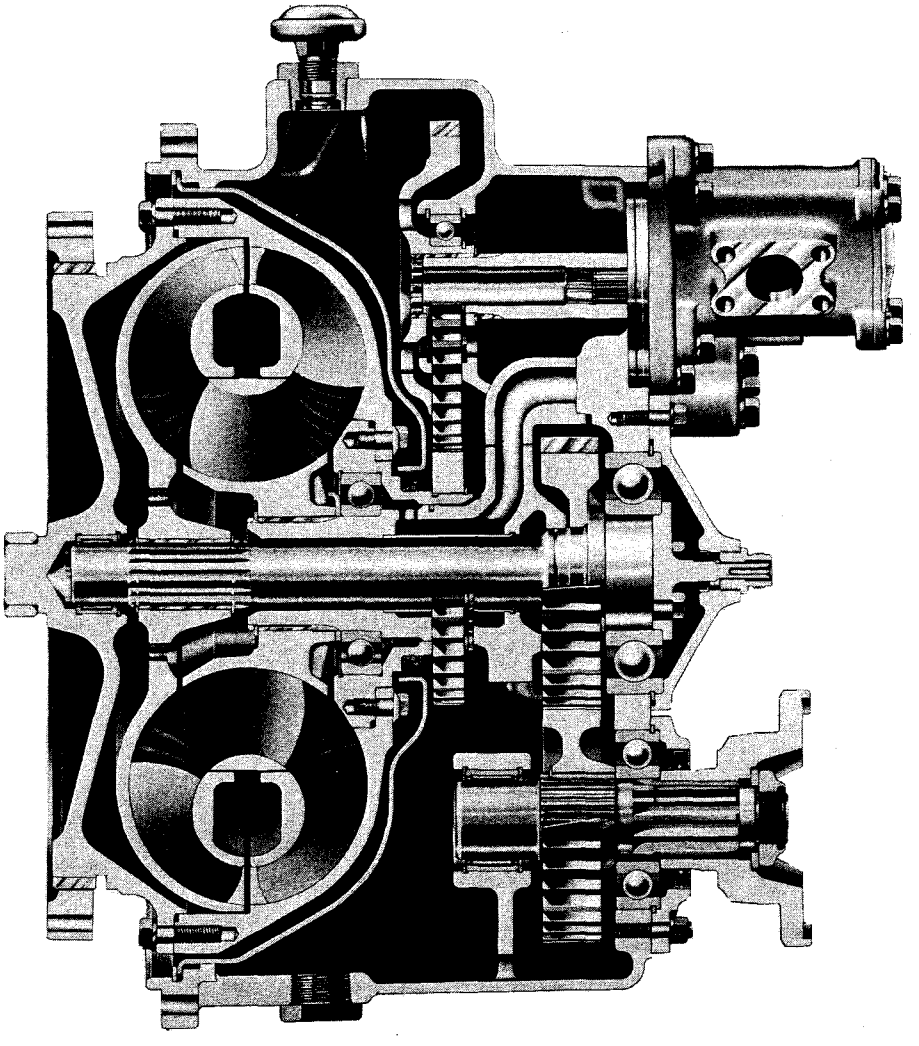


FIG. A — Torque Converter Assembly — Cross Section

C-5000 SERIES CONVERTER OIL FLOW DIAGRAM

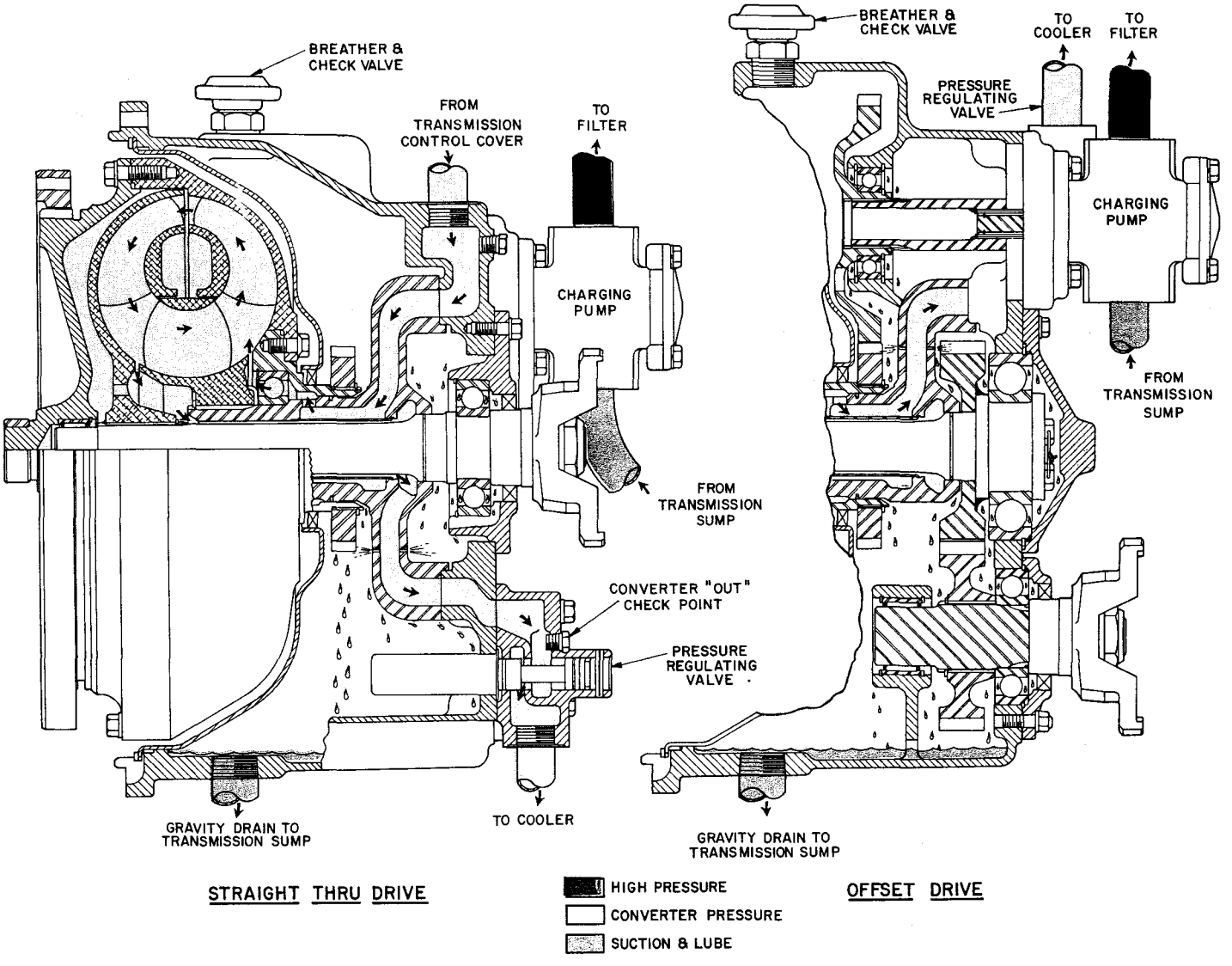


FIG. B — Internal Oil Flow — Torque Converter Assembly

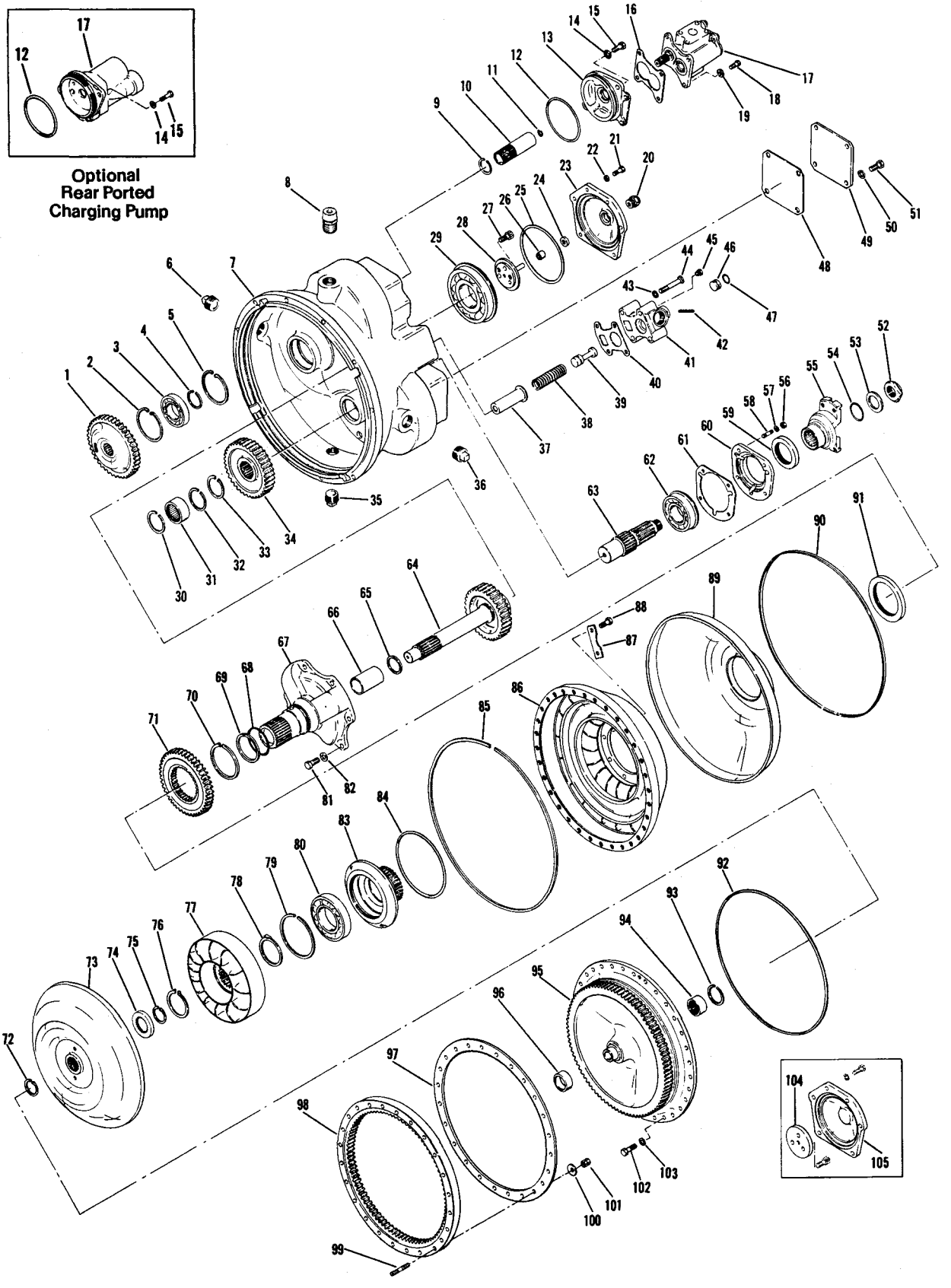


FIG. C — Torque Converter Assembly — Exploded View

ITEM	DESCRIPTION	QTY.
1	Pump Drive Gear	1
2	Bearing Locating Ring	1
3	Gear Bearing	1
4	Bearing Snap Ring	1
5	Bearing Locating Ring	1
6	Converter Housing Pipe Plug	1
7	Converter Housing	1
8	Air Breather Check Valve Assembly	1
9	Pump Sleeve Snap Ring	1
10	Pump Drive Sleeve	1
11	Pump Sleeve Snap Ring	1
12	Pump Mounting "O" Ring	1
13	Pump Adaptor	1
14	Pump Mounting Screw Lockwasher	2
15	Pump Mounting Screw	2
16	Pump to Adaptor Gasket	1
17	Charging Pump Assembly	1
18	Pump to Adaptor Screw	4
19	Pump to Adaptor Screw Lockwasher	4
20	Tube Nut	1
21	Bearing Capscrew	6
22	Bearing Capscrew Lockwasher	6
23	Tachometer Drive Bearing Cap	1
24	Tachometer Drive Bearing Cap Oil Seal	1
25	Tachometer Drive Bearing Cap "O" Ring	1
26	Tachometer Drive Adaptor Bushing	1
27	Tachometer Drive Adaptor Screw	3
28	Tachometer Drive Adaptor	1
29	Turbine Shaft Bearing	1
30	Bearing Retainer Ring	1
31	Output Shaft Front Bearing	1
32	Bearing Retainer Ring	1
33	Gear Snap Ring	1
34	Output Shaft Gear	1
35	Converter Housing Pipe Plug	1
36	Converter Housing Pipe Plug	1
37	Regulating Valve Spring Retainer	1
38	Regulating Valve Spring	1
39	Regulating Valve Piston	1
40	Regulating Valve to Housing Gasket	1
41	Regulating Valve Body	1
42	Regulating Valve Stop Roll Pin	1
43	Regulating Valve to Housing Screw Lockwasher	4
44	Regulating Valve to Housing Screw	4
45	Pipe Plug	1
46	Regulating Valve Stop	1
47	Regulating Valve Stop "O" Ring	1
48	Oil Pump Hole Cover Gasket	2
49	Oil Pump Hole Cover	2
50	Pump Hole Cover Screw Lockwasher	8
51	Pump Hole Cover Screw	8
52	Output Shaft Nut	1
53	Output Shaft Washer	1
54	Output Flange "O" Ring	1
55	Output Shaft Flange	1

See page 28 for large impeller cover bearing design.

ITEM	DESCRIPTION	QTY.
56	Output Bearing Retainer Stud Nut	4
57	Output Bearing Retainer Stud Lockwasher	4
58	Output Bearing Retainer Stud	4
59	Output Bearing Retainer Oil Seal	1
60	Output Bearing Retainer	1
61	Output Bearing Retainer Gasket	1
62	Output Shaft Rear Bearing	1
63	Output Shaft	1
64	Turbine Shaft and Gear Assembly	1
65	Turbine Shaft Piston Ring	1
66	Stator Support Sleeve	1
67	Stator Support Assembly (Includes Item No. 66)	1
68	Piston Ring Expander Spring	1
69	Stator Support Piston Ring	1
70	Impeller Hub Gear Snap Ring	1
71	Impeller Hub Gear	1
72	Turbine Hub Snap Ring	1
73	Turbine	1
74	Trapping Ring	1
75	Turbine Hub Snap Ring	1
76	Reaction Member Hub Snap Ring	1
77	Reaction Member	1
78	Reaction Member Spacer	1
79	Impeller Hub Bearing Snap Ring	1
80	Impeller Hub Bearing	1
81	Stator Support Screw	6
82	Stator Support Screw Lockwasher	6
83	Impeller Hub	1
84	Impeller Hub "O" Ring	1
85	Oil Baffle Retainer Ring	1
86	Impeller	1
*87	Impeller to Hub Screw Lock Plate	4
88	Impeller to Hub Screw	8
89	Oil Baffle	1
90	Oil Baffle Seal Ring	1
91	Oil Baffle Oil Seal	1
92	Impeller to Impeller Cover "O" Ring	1
93	Impeller Cover Bearing Snap Ring	1
94	Impeller Cover Bearing	1
95	Impeller Cover	1
96	Impeller Cover Sleeve	1
97	Ring Gear Backing Plate	1
98	Ring Gear	1
99	Ring Gear Stud	24
100	Ring Gear Stud Washer	72
101	Ring Gear Stud Nut	24
102	Impeller to Impeller Cover Screw	32
103	Impeller to Impeller Cover Screw Lockwasher	32
104	Adaptor (Not used with Tachometer Drive)	1
105	Bearing Cap (Not used with Tachometer Drive)	1

*See note on page 10, Figure 19.

A. CLUTCH PRESSURE

B. CONVERTER OUT PRESSURE

C. CONVERTER OIL TEMPERATURE GAGE CONNECTION

D. LUBE PRESSURE - TEE INTO LINE

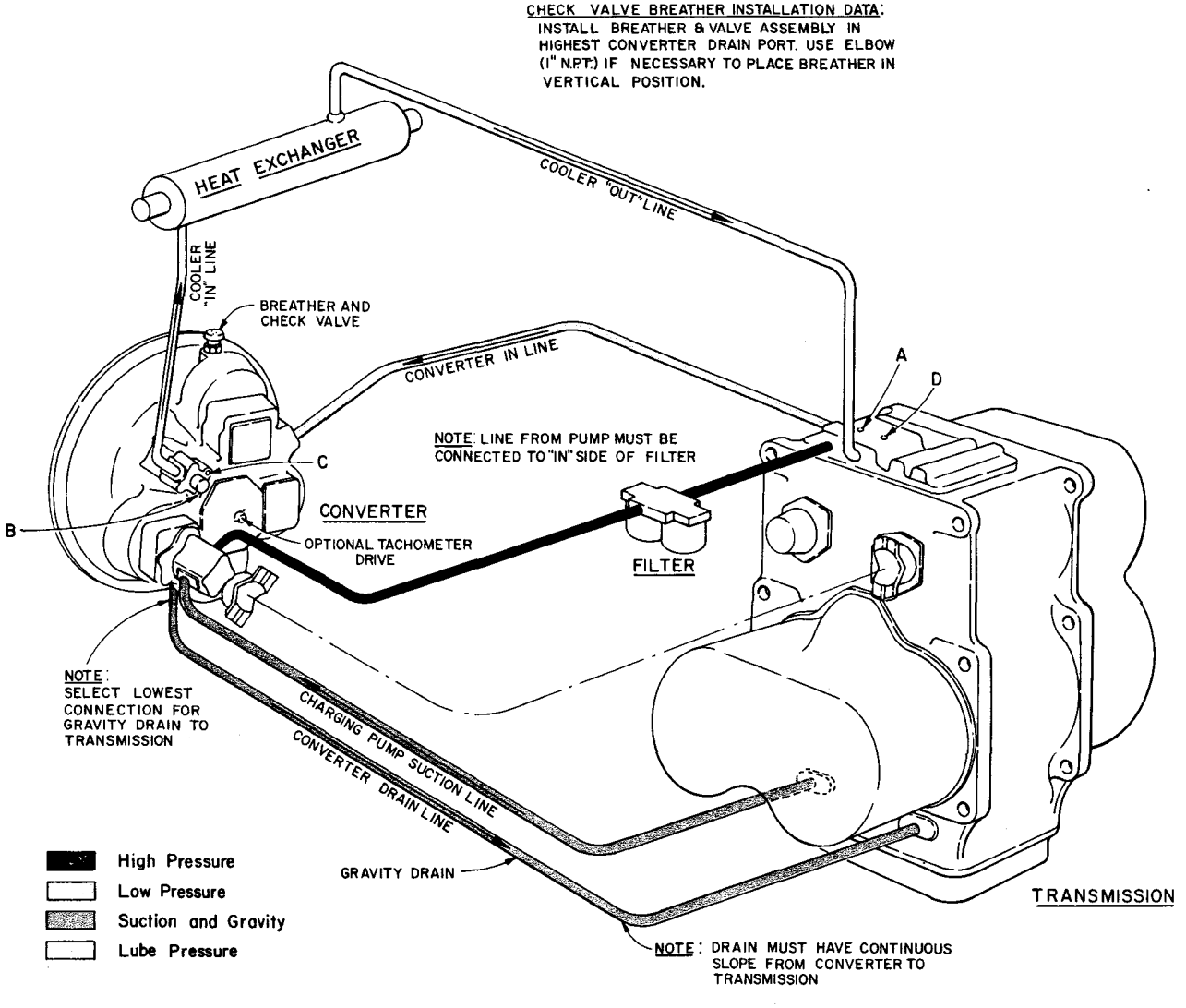


FIG. D — External Oil Flow — Converter and Transmission

OVERHAUL INSTRUCTIONS FOR TORQUE CONVERTER

The following instructions will cover the disassembly and reassembly of the torque converter in a sequence that would normally be followed after the unit is removed from the machine and is to be completely overhauled.

CAUTION: Cleanliness is of extreme importance and an absolute must in the repair and overhaul of this unit. Before attempting any repairs, the exterior of the unit must be thoroughly cleaned to prevent the possibility of dirt and foreign matter entering the mechanism.

NOTE: Some models will have a larger bearing in the impeller cover. Disassembly of the impeller cover and turbine will differ from the procedure shown in the following text. If your converter has a model number C5502- with a dash - 91-96-97 or any C 5000 - dash 200 and over, turn to page 29 for disassembly and reassembly of large impeller cover bearing design.

DISASSEMBLY OF THE TORQUE CONVERTER

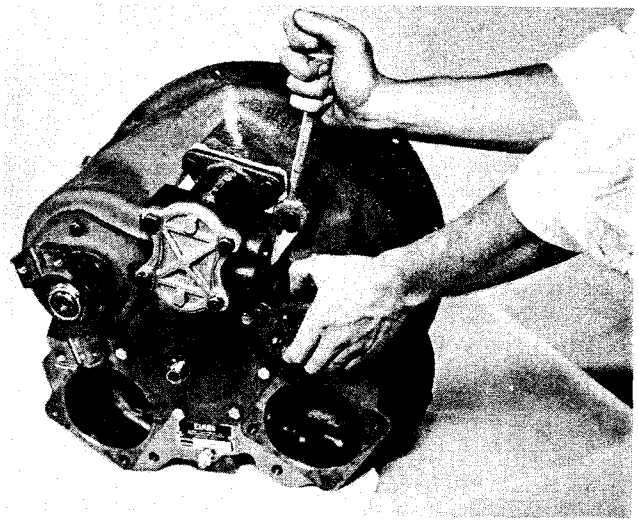


Figure 1
Remove charging pump adaptor to housing bolts.

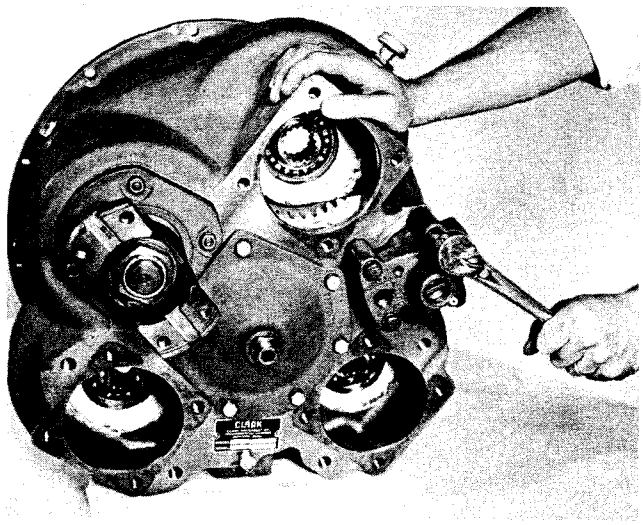


Figure 3
Remove pressure regulating valve to housing bolts.

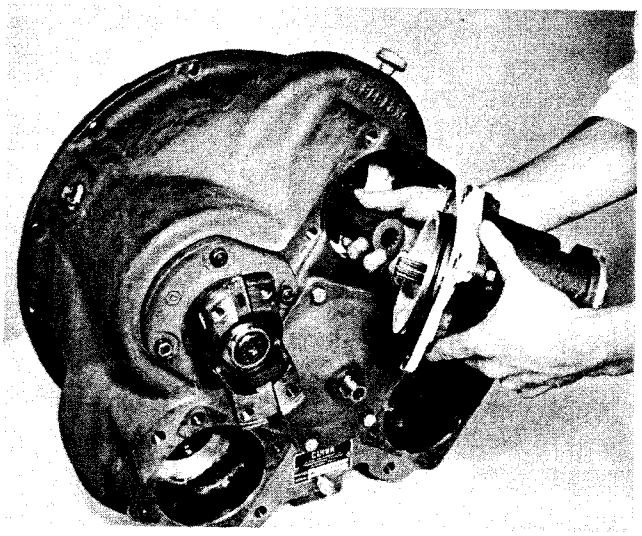


Figure 2
Remove charging pump and pump drive sleeve.

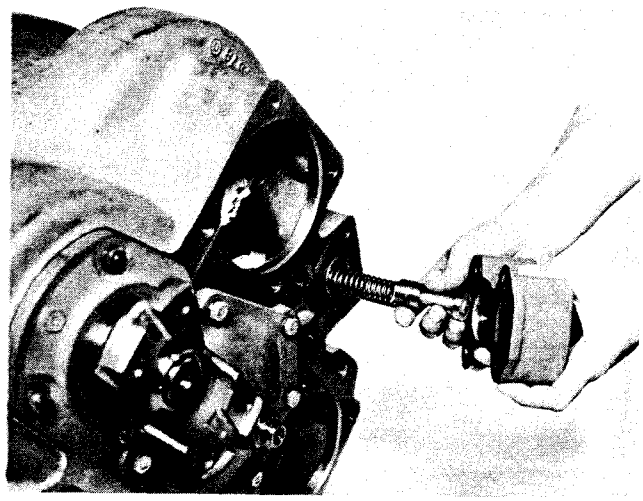


Figure 4
Remove pressure regulating valve body, piston, spring and spring retainer.

SEE NOTE ON PAGE 7.

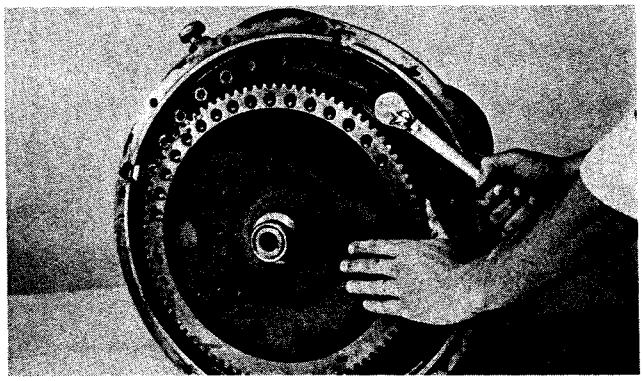


Figure 5
Remove impeller to impeller cover bolts.

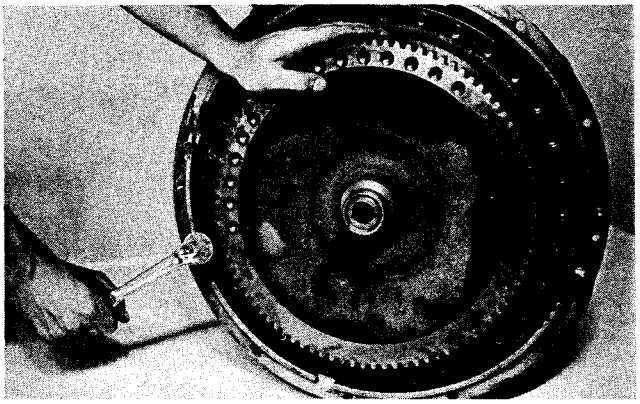


Figure 6
Install two bolts in threaded holes in the impeller cover. Turn bolts evenly to remove impeller cover. **Note:** It is recommended a container be available to catch remaining oil in wheel section.

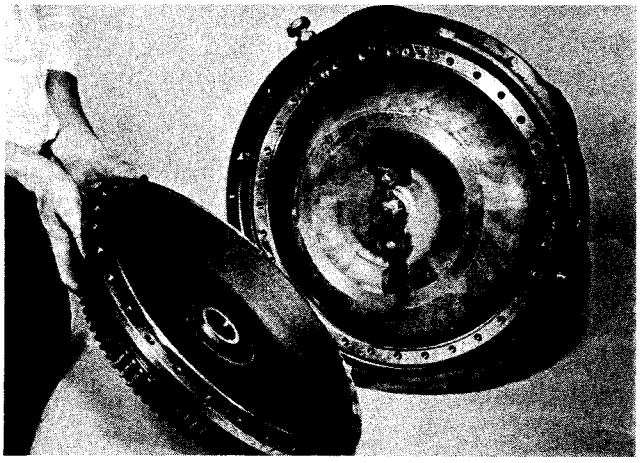


Figure 7
Remove impeller cover.

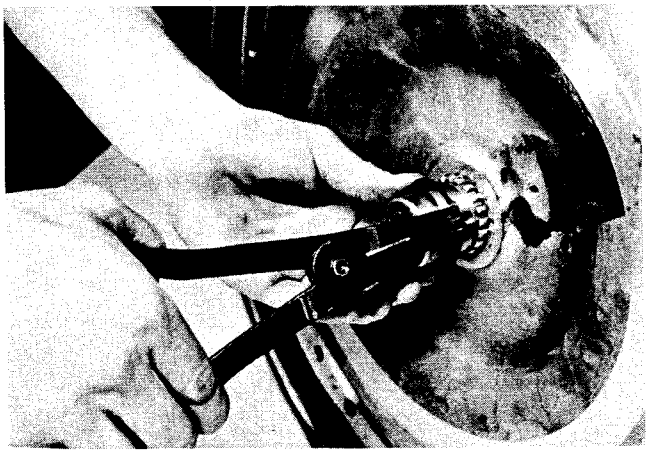


Figure 8
Remove turbine retainer ring.

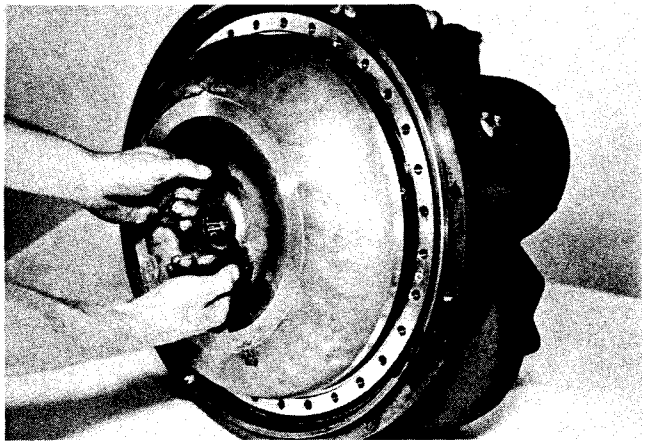


Figure 9
Two bolts installed in threaded holes will facilitate turbine removal.

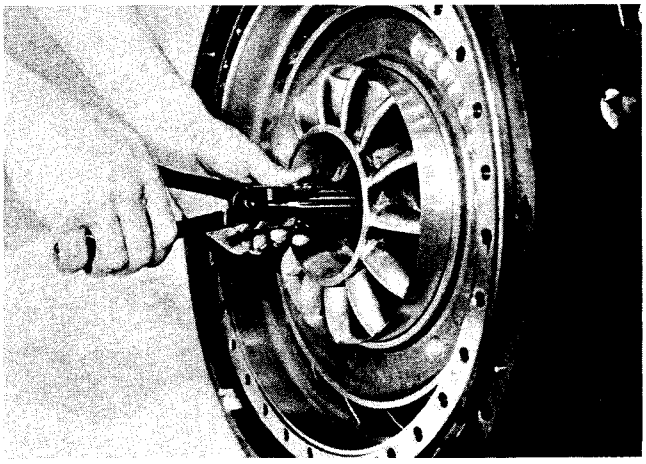


Figure 10
Remove trapping ring and turbine locating ring.

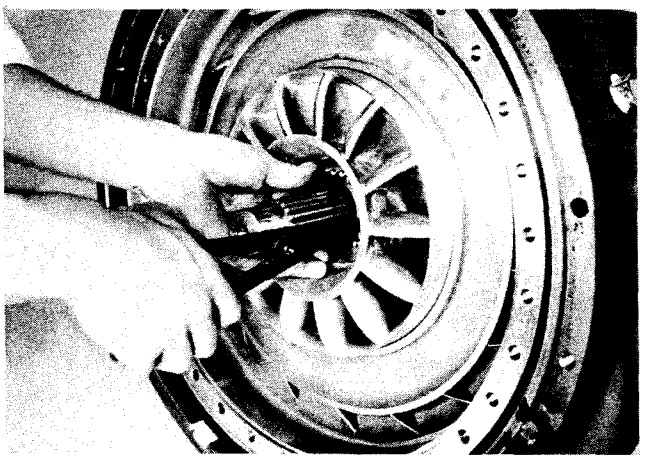


Figure 11
Remove reaction member retainer ring.

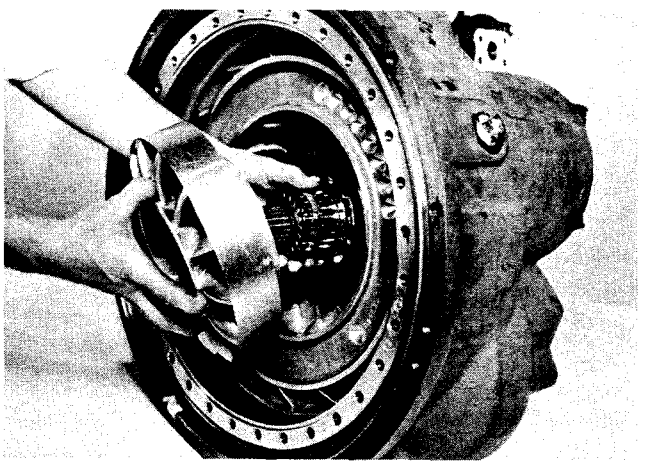


Figure 12
Remove reaction member and spacer.

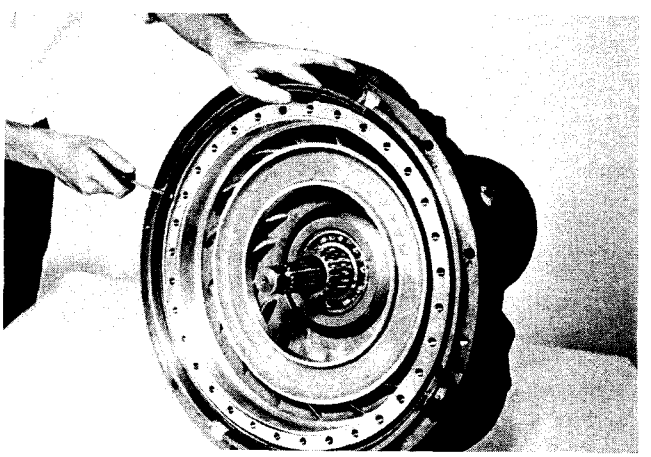


Figure 13
Using slots provided in converter housing remove oil baffle retainer ring.

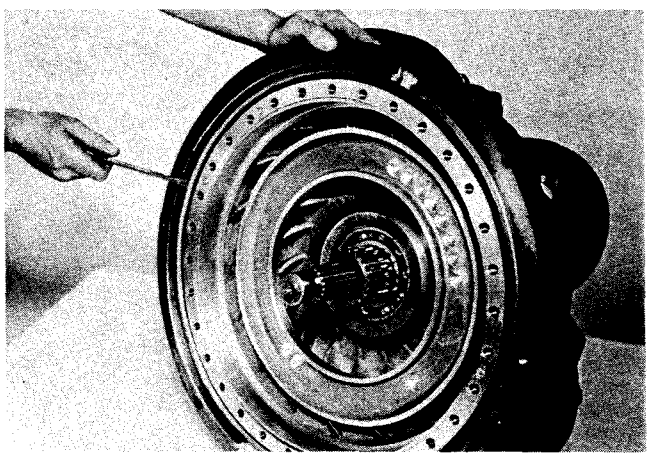


Figure 14
Using slots provided, pry oil baffle and impeller assembly from housing.

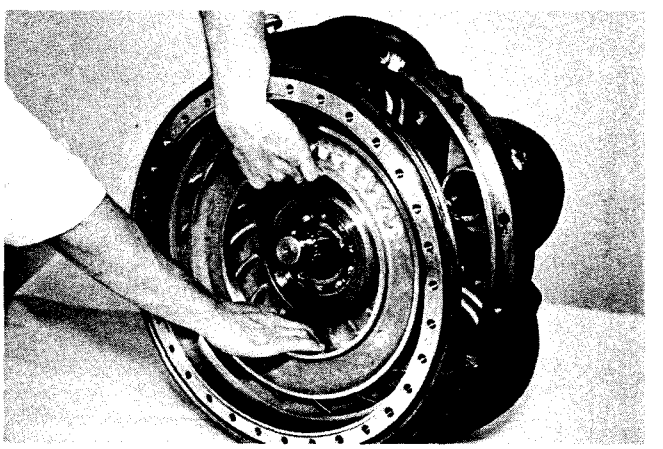


Figure 15
Lift impeller assembly from stator support.

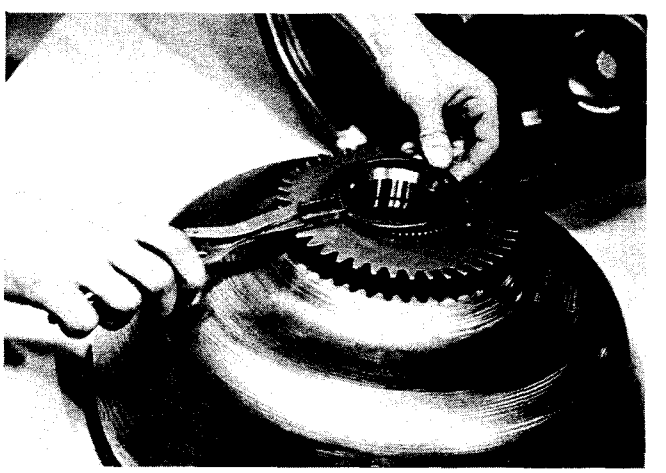


Figure 16
Remove impeller hub gear retainer ring.

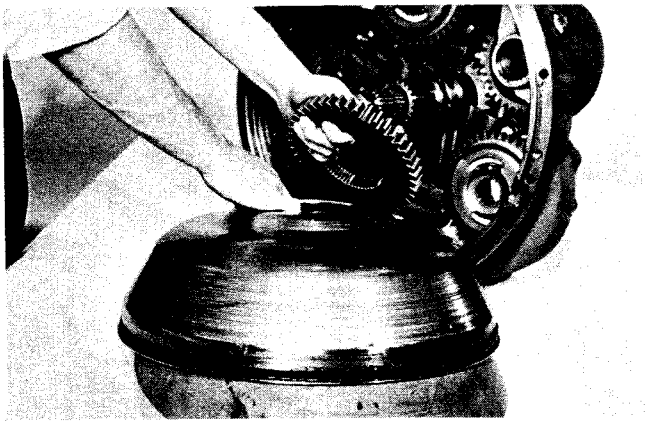


Figure 17

Remove impeller hub gear and oil baffle from impeller.

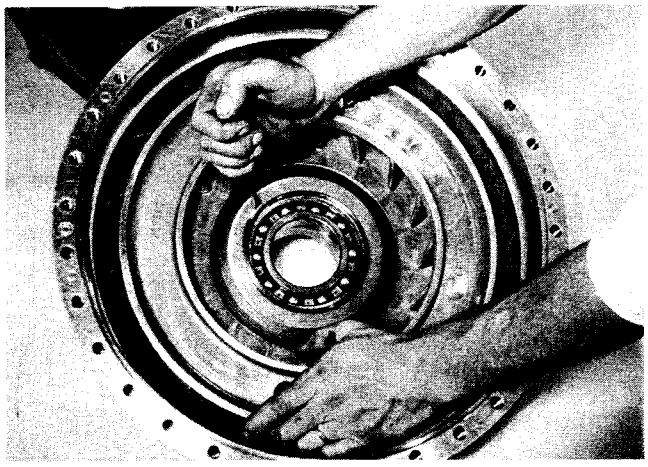


Figure 18

Remove impeller hub bearing retainer ring. Turn impeller over, tap bearing from hub. **Note:** This bearing is a roller bearing in the large impeller cover bearing design.

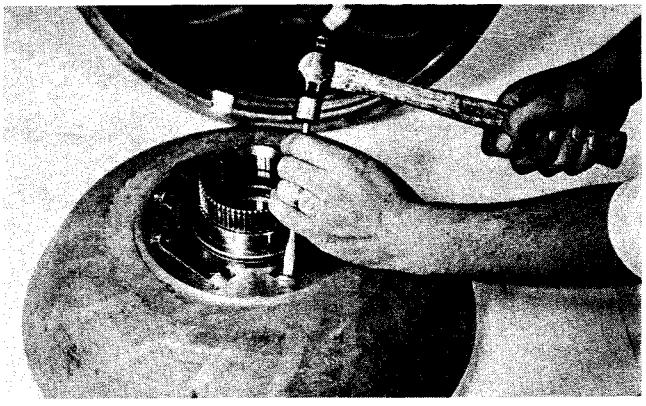


Figure 19

Straighten impeller hub bolt lock tabs. Remove hub bolts. **NOTE:** Some units will have a backing ring instead of lock tabs. Impeller and hub must be reassembled as explained in Figure 51. Remove impeller to impeller hub bolts. Remove impeller hub and "O" ring.

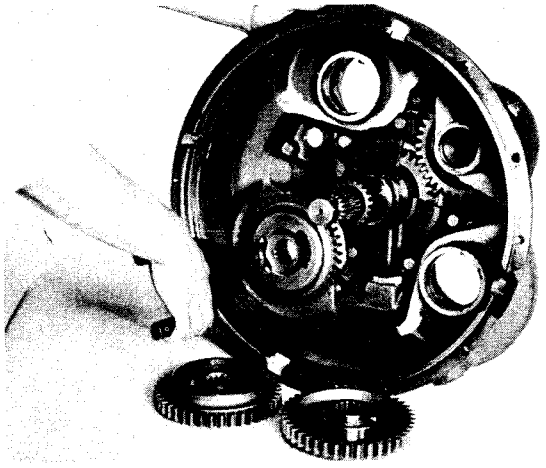


Figure 20

Rotate pump gears to expose snap ring ends in pump gear slot. Remove snap ring from snap ring groove. From rear of converter housing, tap pump gear and bearing from housing. Locating ring removed will remain between pump gear and bearing.

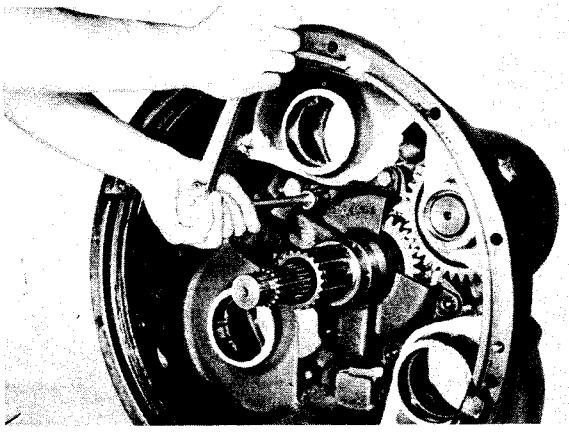


Figure 21

Remove stator support bolts.

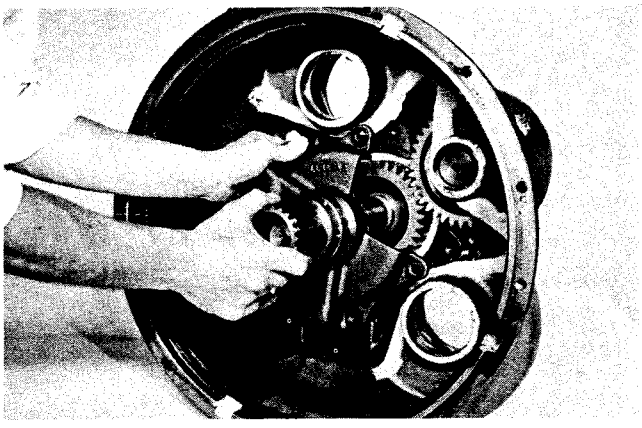


Figure 22

Remove stator support.

REFER TO SECTION AFTER FIGURE NO. 32 FOR STRAIGHT THRU DRIVE DISASSEMBLY.

OFFSET DRIVE DISASSEMBLY

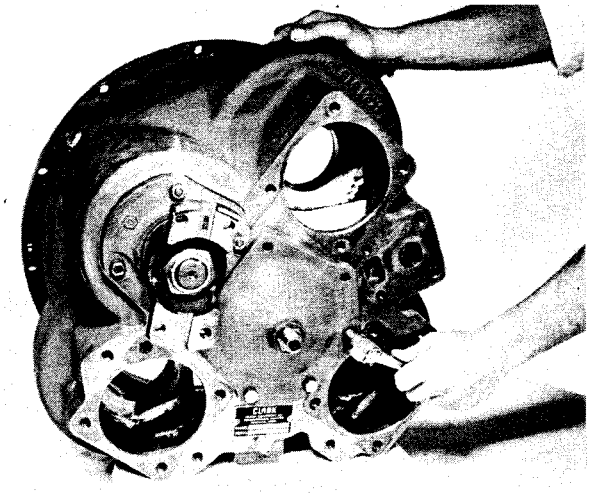


Figure 23
Remove turbine shaft bearing cap bolts. Remove bearing cap.

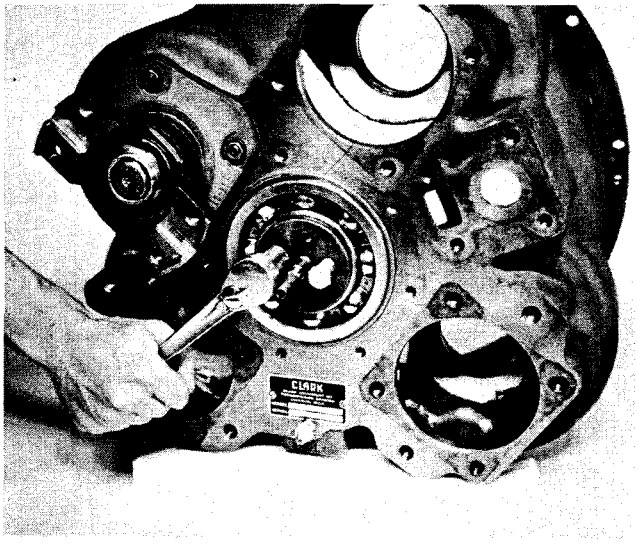


Figure 24
Remove turbine tachometer drive adaptor bolts. Install two bolts in threaded holes, turn evenly, remove adaptor.

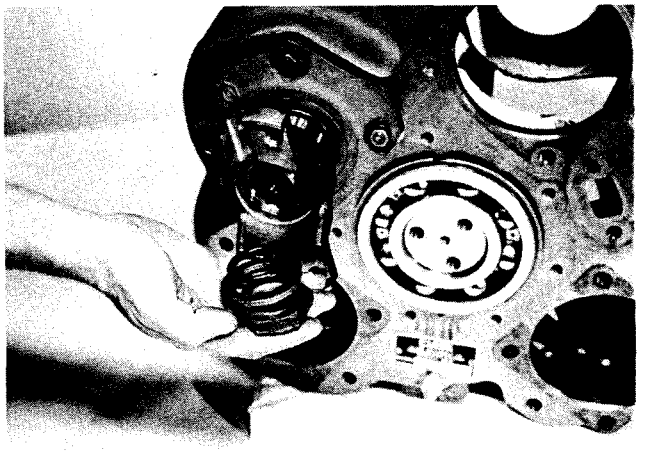


Figure 25
Lock output gears with a soft bar. Remove companion flange nut, washer, "O" ring and flange from output shaft.

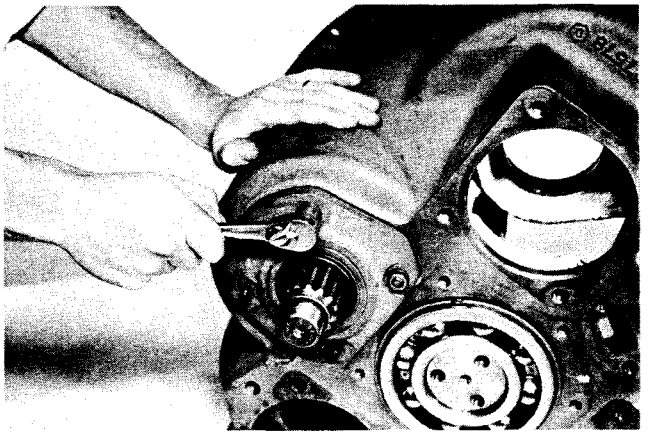


Figure 26
Remove output bearing cap stud nuts and washers.

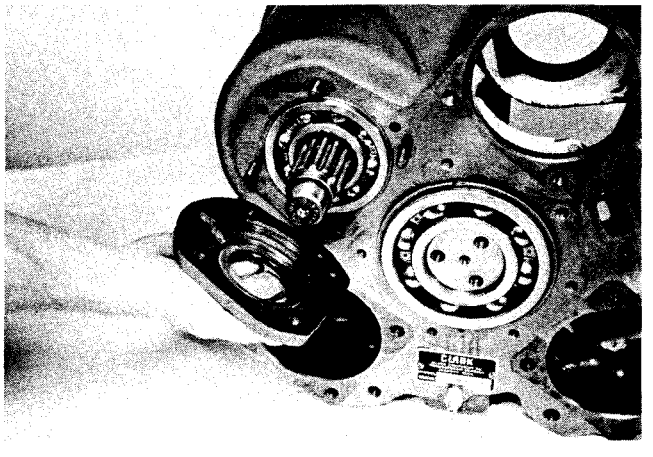


Figure 27
Remove output bearing cap and oil seal.

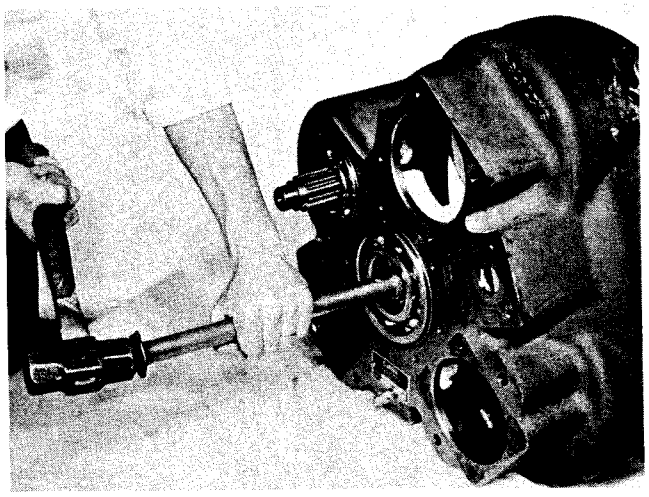


Figure 28
Drive turbine shaft and gear assembly from bearing.

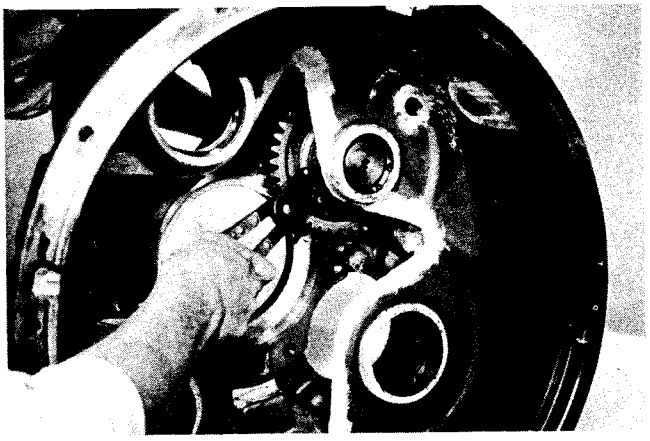


Figure 30
Using a pair of 45° external snap ring pliers as shown in Figure 30, remove gear to shaft snap ring from snap ring groove.

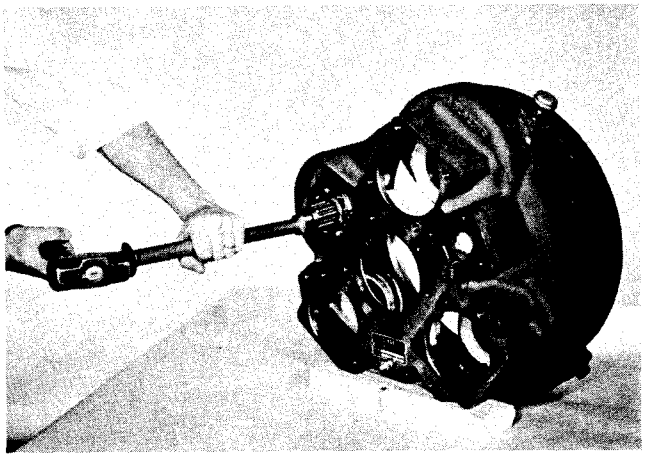


Figure 29
Tap output shaft to relieve output shaft to gear snap ring. See Diagram A.

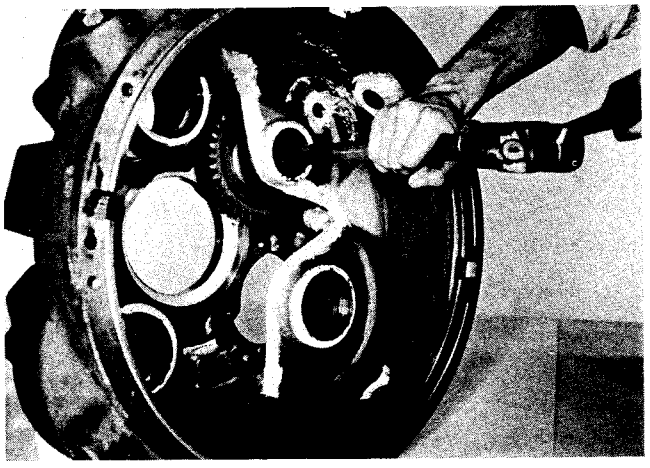


Figure 31
Drive output shaft through gear and out of converter housing. See diagram B. and C.

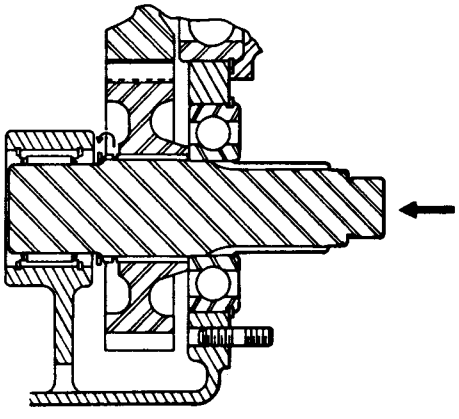


DIAGRAM A

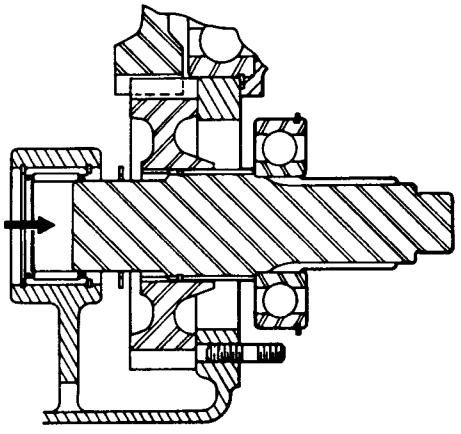


DIAGRAM B

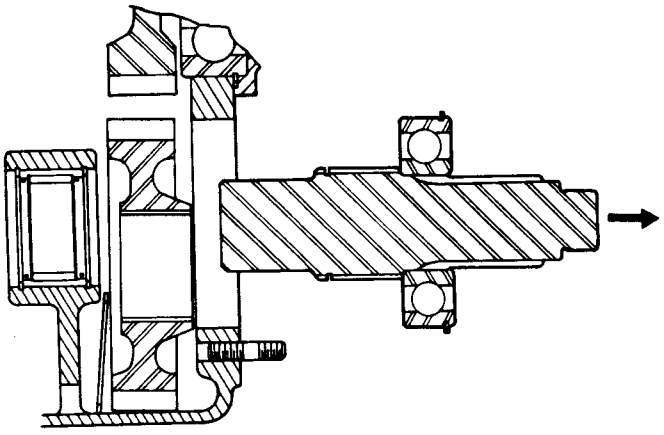


DIAGRAM C

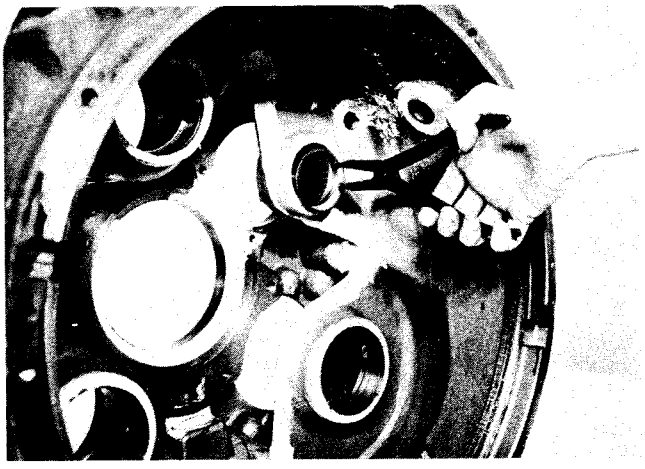


Figure 32
Remove output shaft front bearing retainer ring, remove bearing from housing.

STRAIGHT THRU DRIVE DISASSEMBLY

1. Secure companion flange to prevent turning.
2. Remove Companion flange nut washer, "O" ring and flange from turbine shaft.
3. Remove turbine shaft rear bearing retainer bolts.
4. Remove turbine shaft, bearing retainer and bearing from housing.
5. Press turbine shaft from bearing.
6. Remove bearing retainer ring from retainer.
7. Press bearing and oil seal from bearing retainer.

CLEANING

Clean all parts thoroughly using solvent type cleaning fluid. It is recommended that parts be immersed in cleaning fluid and moved up and down slowly until all old lubricant and foreign material is dissolved and parts are thoroughly cleaned.

CAUTION: Care should be exercised to avoid skin rashes, fire hazards and inhalation of vapors when using solvent type cleaners.

Bearings

Remove bearings from cleaning fluid and strike flat against a block of wood to dislodge solidified particles of lubricant. Immerse again in cleaning fluid to flush out particles. Repeat above operation until bearings are thoroughly clean. Dry bearings using moisture-free compressed air. Be careful to direct air stream across bearing to avoid spinning. Do not spin bearings when drying. Bearings may be rotated slowly by hand to facilitate drying process.

Housings

Clean interior and exterior of housings, bearing caps, etc., thoroughly. Cast parts may be cleaned in hot solution tanks with mild alkali solutions providing these parts do not have ground or polished surfaces. Parts should remain in solution long enough to be thoroughly cleaned and heated. This will aid the evaporation of the cleaning solution and rinse water. Parts cleaned in solution tanks must be thoroughly rinsed with clean water to remove all traces of alkali. Cast parts may also be cleaned with steam cleaner.

CAUTION: Care should be exercised to avoid inhalation of vapors and skin rashes when using alkali cleaners.

All parts cleaned must be thoroughly dried immediately by using moisture-free compressed air or soft, lintless absorbent wiping rags free of abrasive materials such as metal filings, contaminated oil or lapping compound.

INSPECTION

The importance of careful and thorough inspection of all parts cannot be overstressed. Replacement of all parts showing indication of wear or stress will eliminate costly and avoidable failures at a later date.

Bearings

Carefully inspect all rollers, cages and cups for wear, chipping or nicks to determine fitness of bearings for further use. Do not replace a bearing cone or cup individually without replacing the mating cup or cone at the same time. After inspection, dip bearings in Automatic Transmission Fluid and wrap in clean lintless cloth or paper to protect them until installed.

Oil Seals, Gaskets, Etc.

Replacement of spring load oil seals, "O" Rings, metal sealing rings, gaskets and snap rings is more economical when unit is disassembled than premature overhaul to replace these parts at a future time. Further loss of lubricant through a worn seal may result in failure of other more expensive parts of the assembly. Sealing members should be handled carefully, particularly when being installed. Cutting, scratching, or curling under of lip of seal seriously impairs its efficiency. Apply a thin coat of Permatex No. 2 on the outer diameter of the oil seal to assure an oil tight fit into the retainer. When assembling new metal type sealing rings, same should be lubricated with coat of chassis grease to stabilize rings in their grooves for ease of assembly of mating members. Lubricate all "O" Rings and seals with Automatic Transmission Fluid before assembly.

Gears and Shafts

If magna-flux process is available, use process to check parts. Examine teeth on all gears carefully for wear, pitting, chipping, nicks, cracks or scores. If gear teeth show spots where case hardening is worn through or cracked, replace with new gear. Small nicks may be removed with suitable hone. Inspect shafts and quills to make certain they are not sprung, bent, or splines twisted, and that shafts are true.

Housing, Covers, etc.

Inspect housings, covers and bearing caps to be certain they are thoroughly cleaned and that mating surfaces, bearing bores, etc., are free from nicks or burrs. Check all parts carefully for evidence of cracks or condition which would cause subsequent oil leaks or failures.

REASSEMBLY OF TORQUE CONVERTER

The following instructions on reassembly of components are given in the sequence that must be followed in rebuilding.

REASSEMBLY OF STRAIGHT THRU DRIVE

For reassembly of offset drive see Fig. 33.

1. Press rear output bearing in bearing retainer. Secure with retainer ring.
2. Apply a light coat of Permatex No. 2 on the outer diameter of the output oil seal. Press oil seal (lip of seal down) in rear bearing retainer.
3. Press turbine shaft into rear bearing and thru bearing retainer.
4. Install companion flange on turbine shaft, use caution as not to damage oil seal. Install new "O" ring, flange washer and flange nut. Secure companion flange and tighten flange nut 200 to 250 ft. lbs. torque [271,2 - 338,9 N.m.].
5. Install new oil sealing ring on turbine shaft. Install new gasket on bearing retainer.
6. Install turbine shaft assembly in converter housing and secure with bolts and washers. Tighten to specified torque.

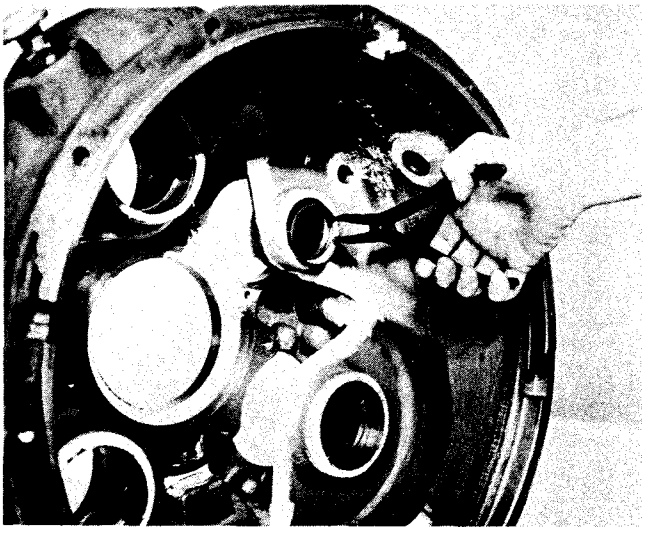


Figure 33

Install output shaft front bearing and secure with retainer ring.

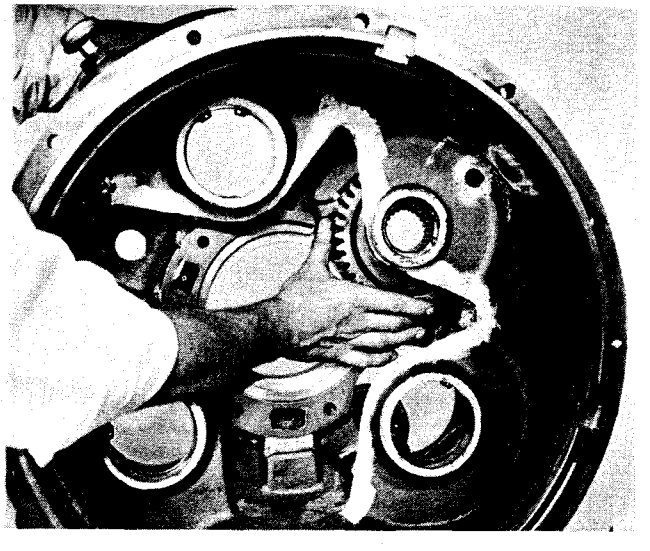


Figure 34

Position output gear in converter housing with longer hub of gear toward rear of housing. See Diagram A.

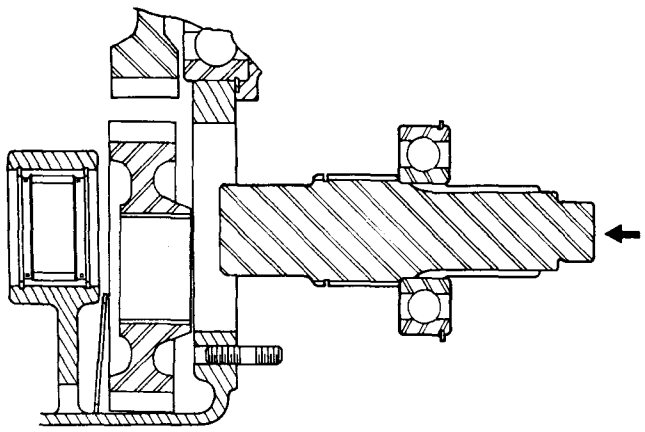


DIAGRAM A

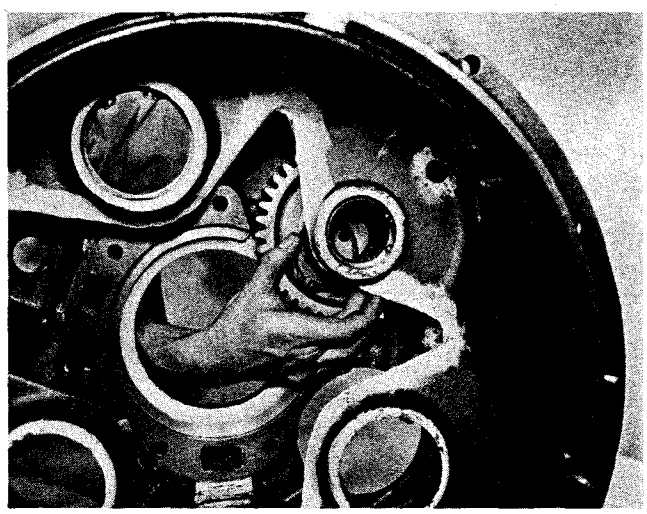


Figure 35

Insert output shaft thru rear of converter housing. Align splines of output gear with splines on shaft. Position snap ring on shaft before shaft enters front bearing. See diagram B.

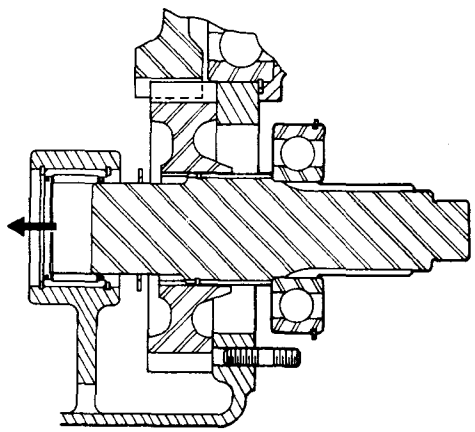


DIAGRAM B

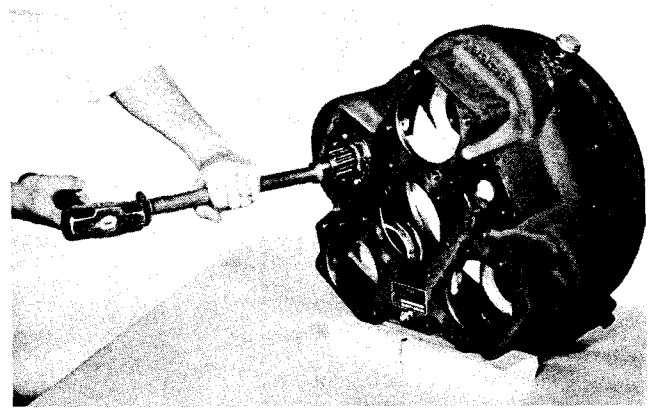


Figure 36

Tap output shaft and bearing in housing and thru output gear. See Diagram C.

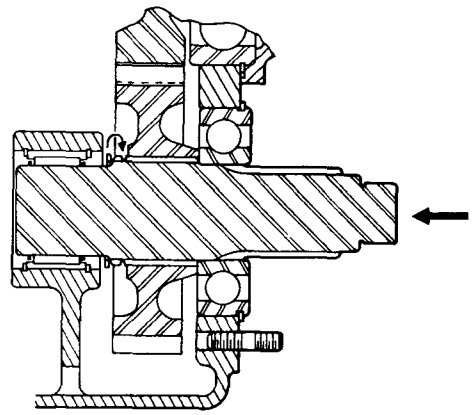


DIAGRAM C

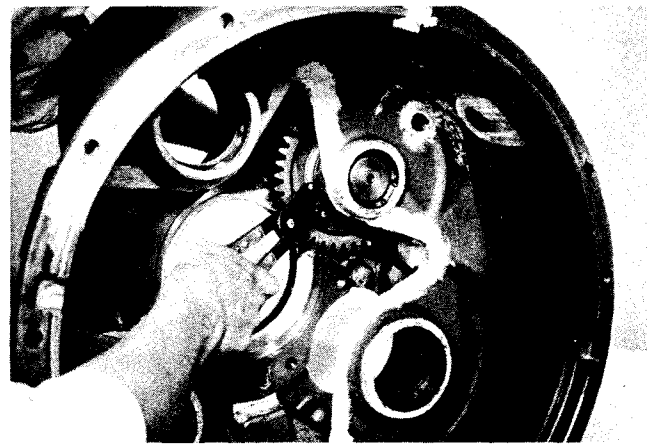


Figure 37

Tap output shaft thru gear until snap ring groove clears output gear. Using a pair of 45° external snap ring pliers, install snap ring, being certain ring is in full position in groove.

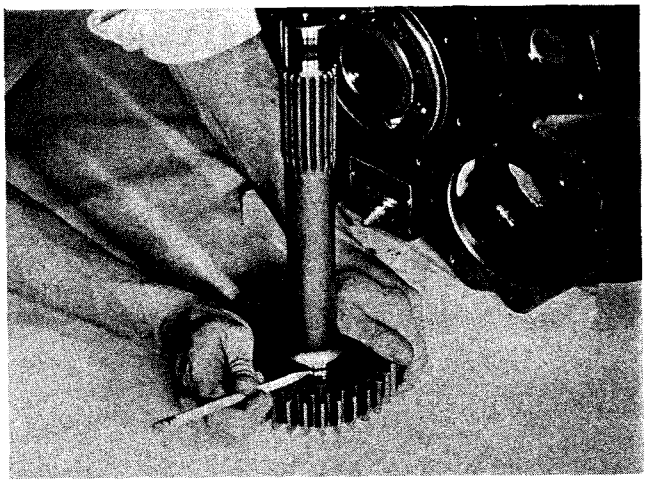


Figure 38

Install turbine shaft rear bearing in converter housing. Position new oil sealing ring on turbine shaft.

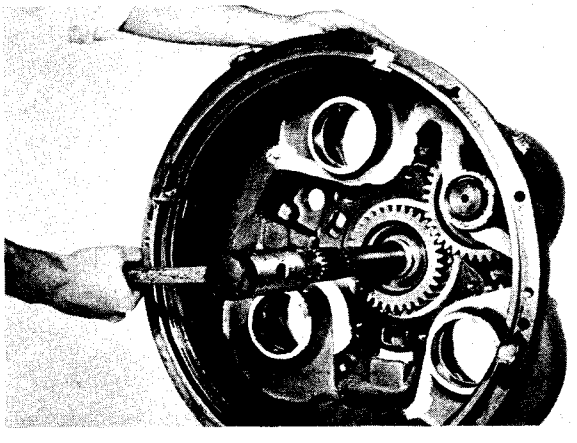


Figure 39

Tap turbine shaft in rear bearing.

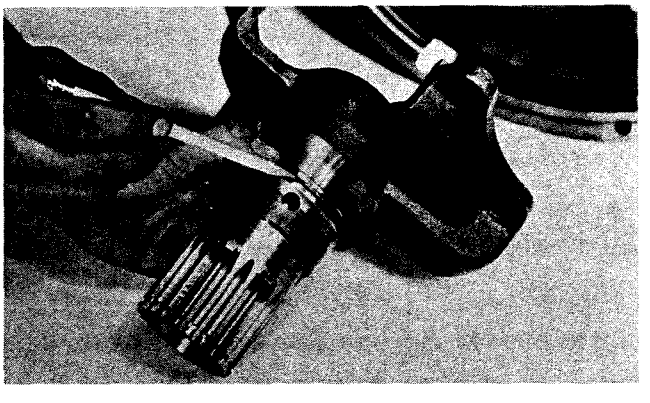


Figure 40

Install new sealing ring expander spring and oil sealing ring on support. Expander spring gap to be 180° from sealing ring hook joint.

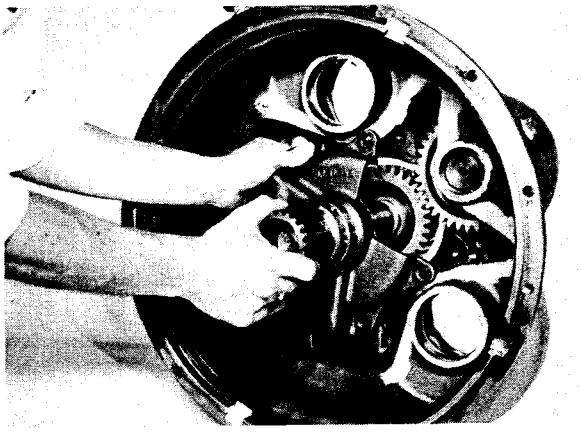


Figure 41

Install stator support over turbine shaft using caution as not to damage turbine shaft oil sealing ring.

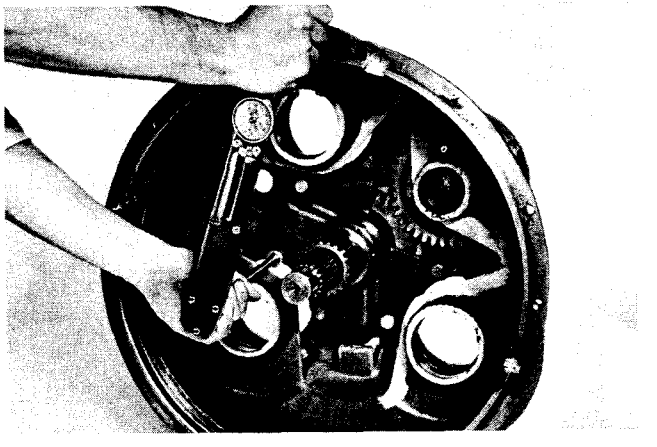


Figure 42

Install stator support bolts and tighten to specified torque.

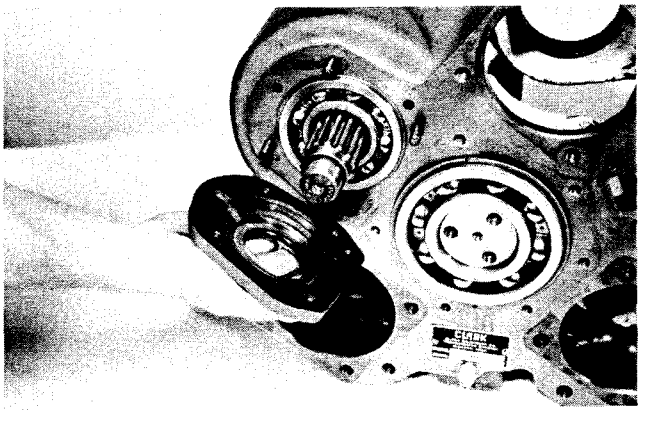


Figure 43

Apply a light coat cf Permatex No. 2 on the outer diameter of the output oil seal. Press oil seal (lip of seal down) in rear bearing retainer. Position new gasket on bearing retainer. Install retainer on studs.

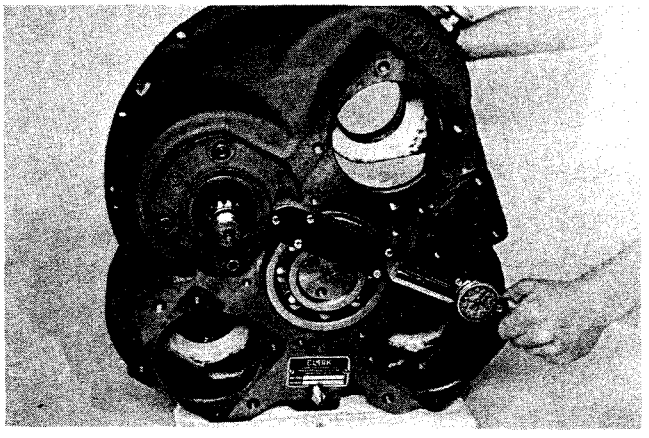


Figure 44

Install retainer washer and nuts, tighten to specified torque.

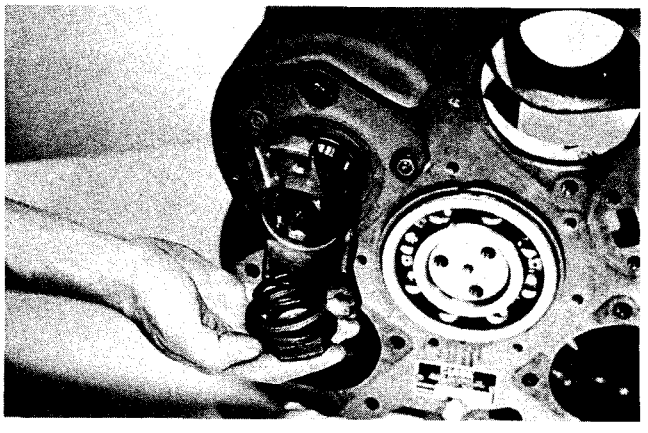


Figure 45

Install output companion flange, "O" ring, washer and nut. Block output gears with a soft bar. Tighten flange nut 200 to 250 ft. lbs. torque [271,2 - 338,9 N.m]

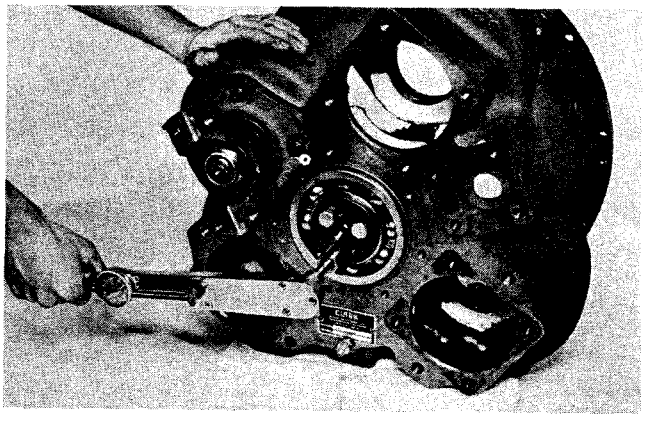


Figure 46

Position turbine shaft tachometer adaptor on shaft. Install bolts and tighten to specified torque. Lockwire to prevent loosening.

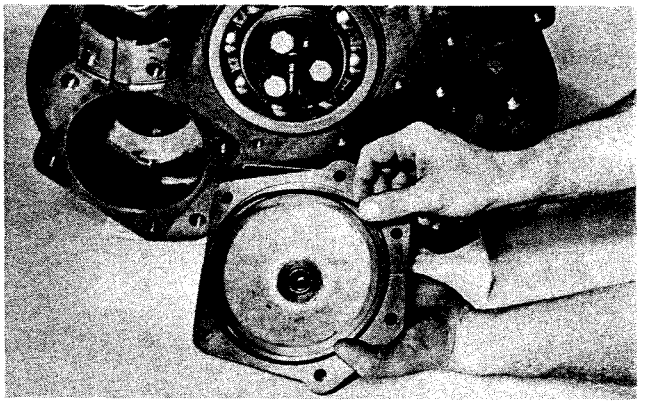


Figure 47

Apply a light coat of Permatex No. 2 on the outer diameter of the tachometer drive oil seal. Press seal (lip of seal up) in turbine shaft bearing retainer. Install new "O" ring on retainer, position retainer on converter housing.

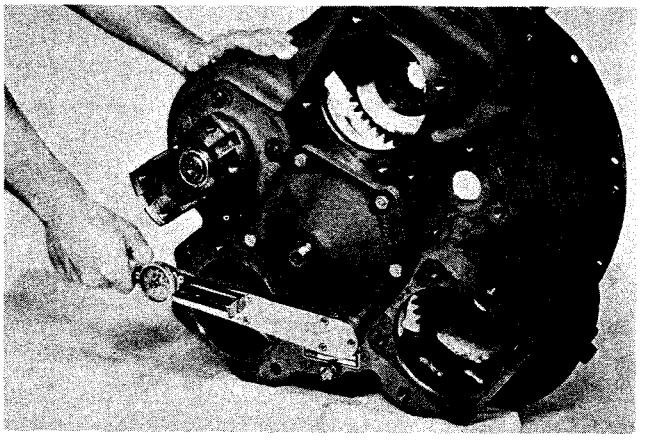


Figure 48

Install retainer bolts and tighten to specified torque.

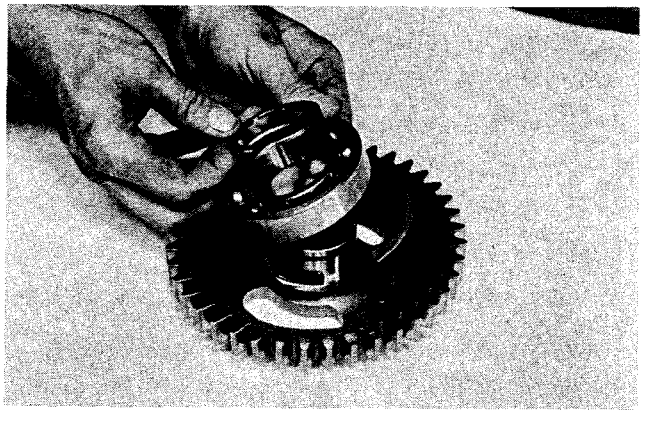


Figure 49

Position pump gear bearing retainer ring on pump gear. Press pump gear bearing on gear hub and secure with retainer ring.

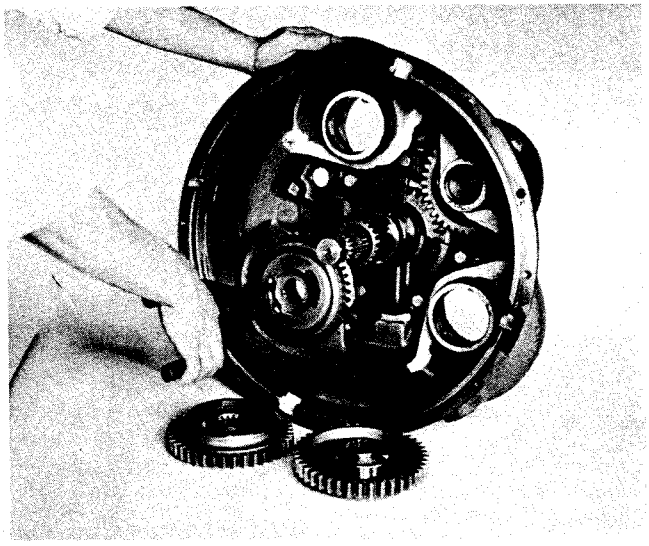


Figure 50

With pump gear bearing locating ring in housing, tap gear and bearing in housing pump bore. Rotate pump gear to expose snap ring ends. Install snap ring being certain ring is in full position in groove.

IMPELLER & HUB REASSEMBLY

Clean hub mounting surface and tapped holes with solvent. Dry thoroughly, being certain tapped holes are clean and dry. Install new "O" ring on impeller hub.

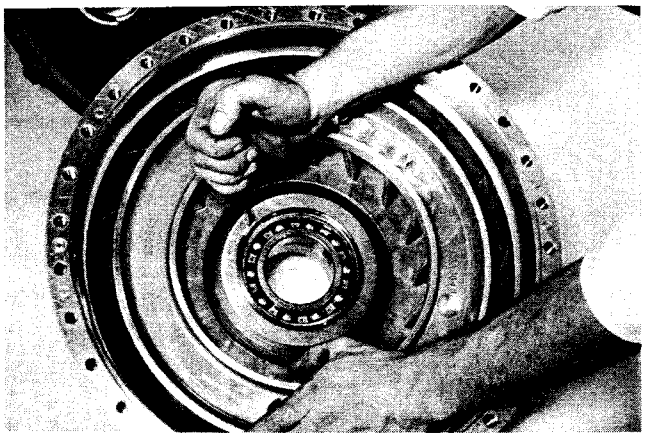


Figure 51

Align holes in impeller with impeller hub. Use caution as not to disrupt "O" ring. Install backing ring and special self locking screws. Tighten screws 58-64 ft. lbs. [79-87 N.m]. **NOTE:** Assembly of hub must be completed within a fifteen minute period from start of screw installation. The special screw is to be used for one installation only. If the screw is removed for any reason it must be replaced. The epoxy left in the hub holes must be removed with the proper tap and cleaned with solvent. Dry hole thoroughly and use a new screw for reinstallation. Install hub bearing and secure with retainer ring.

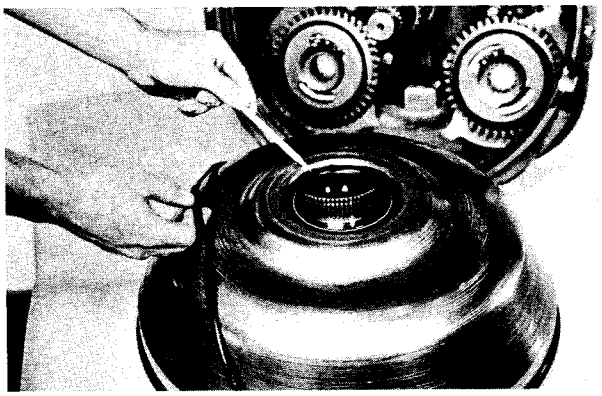


Figure 52

Apply a light coat of Permatex No. 2 on the outer diameter of the oil baffle oil seal. Press seal (lip of seal up) in oil baffle. Lubricate baffle seal ring. Position flat with no twist on baffle.

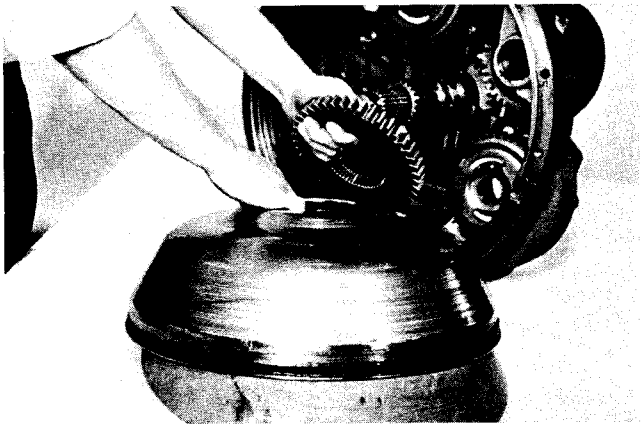


Figure 53

Install oil baffle on impeller using caution as not to damage baffle oil seal.

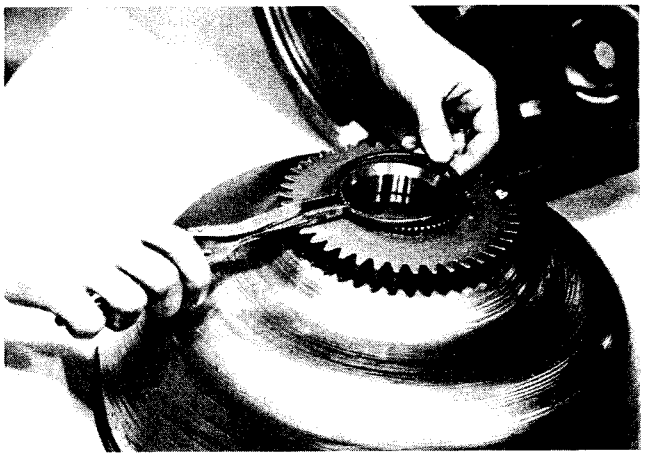


Figure 54

Install impeller hub gear and secure with retainer ring.

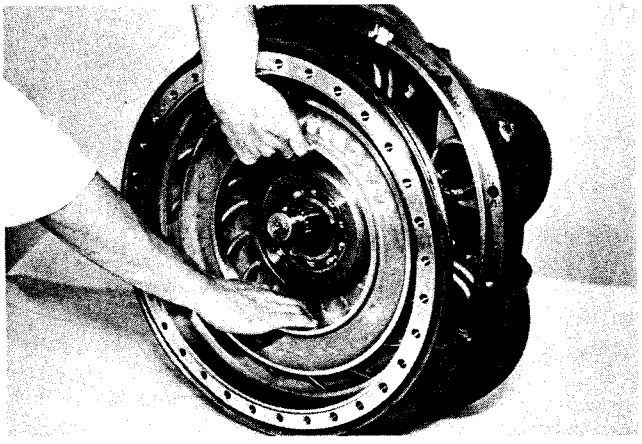


Figure 55

Position oil baffle and impeller assembly on stator support. **CAUTION:** Do not damage support sealing ring or baffle seal ring.

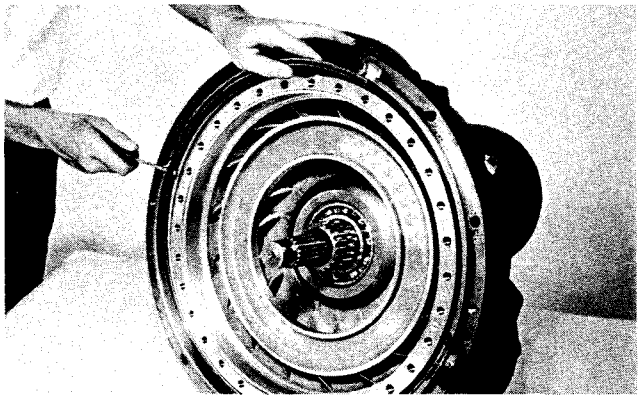


Figure 56

With oil baffle and impeller in full position install oil baffle retainer ring.

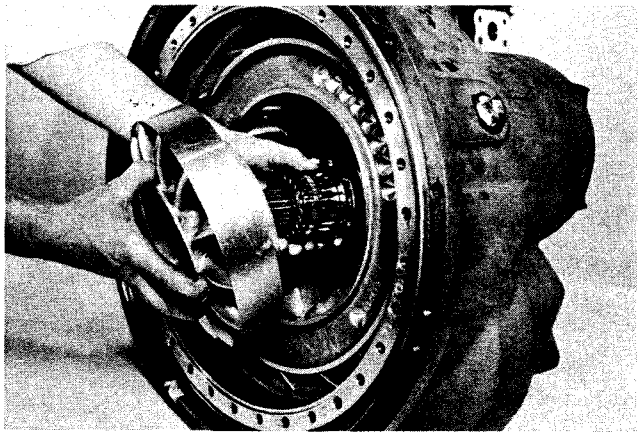


Figure 57

Install reaction member spacer on stator support with tang on spacer out. Install reaction member.

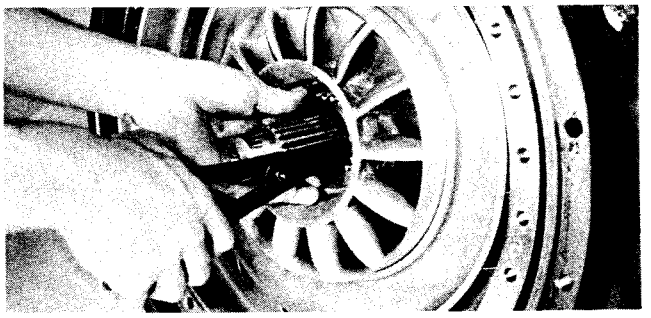


Figure 58

Secure reaction member with retainer ring.

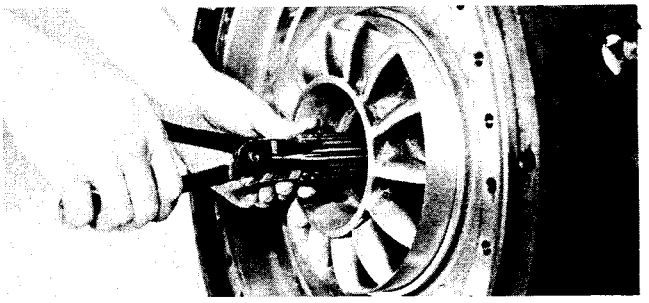


Figure 59

Install turbine locating ring in inner snap ring groove. **Use caution as not to overstretch this ring or the trapping ring will not fit in full position. (See Fig. 60).**

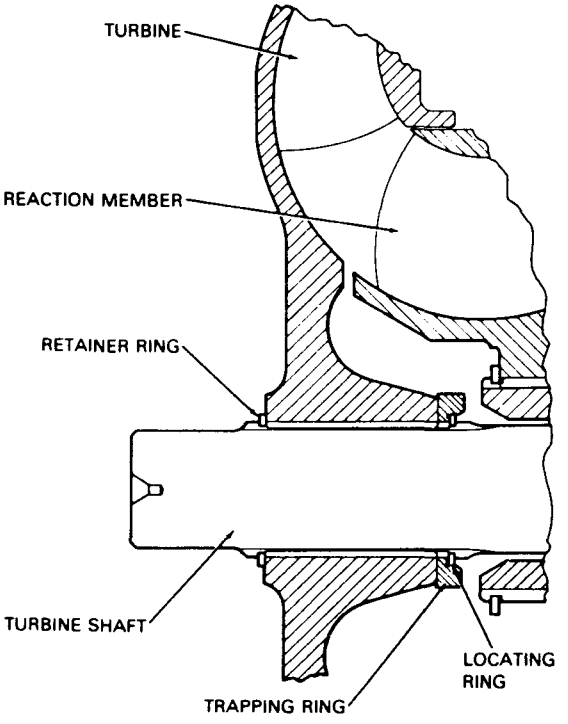


Figure 60

Install trapping ring over locating ring being certain trapping ring is in full position as shown. Install turbine on turbine shaft.

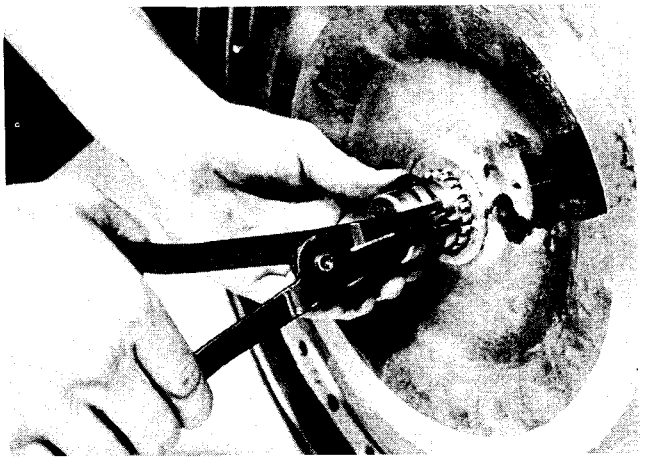


Figure 61
Install turbine retainer ring.

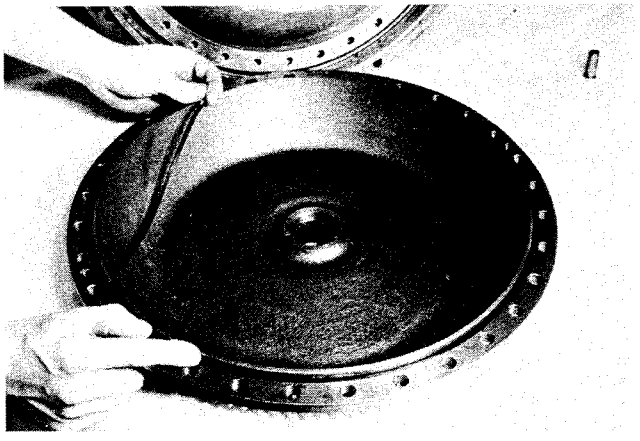


Figure 62
Lubricate new "O" ring and position on impeller cover.

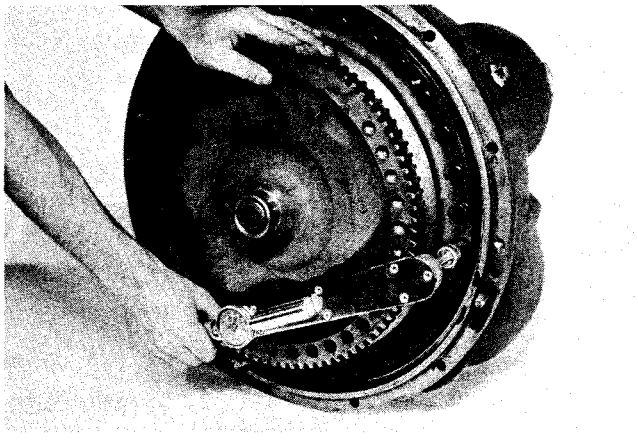


Figure 63
Position impeller cover on impeller using caution as not to damage cover to impeller "O" ring. Install cover bolts and tighten to specified torque.

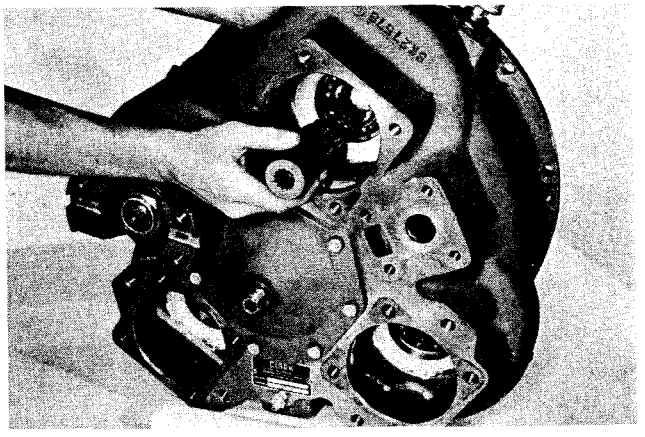


Figure 64
With snap rings in position on the outer and in the inner splines of the pump drive sleeve, insert sleeve in pump drive gear.

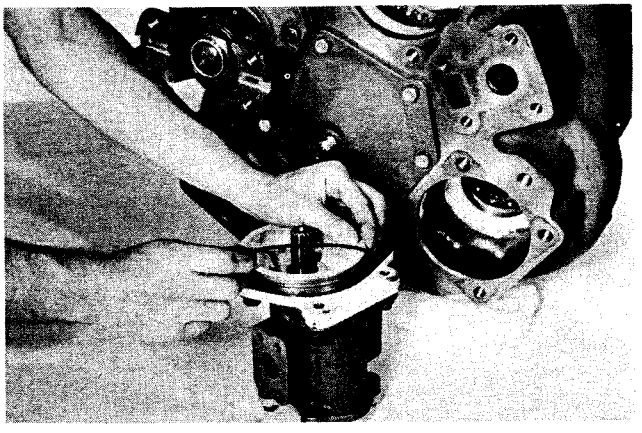


Figure 65
Lubricate new "O" ring and position on charging pump adaptor. Install charging pump on converter housing and secure with bolts and washers.

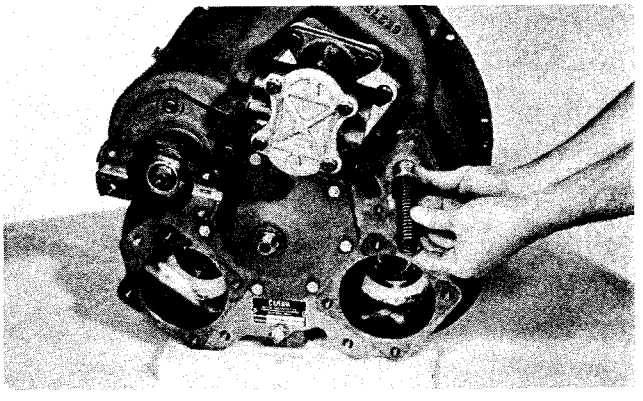


Figure 66
Insert pressure regulating valve spring in spring retainer, position spring and retainer in housing.

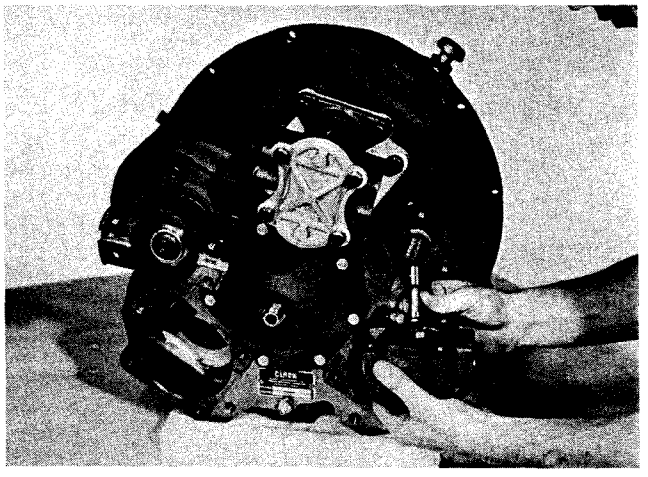


Figure 67
Insert valve piston in valve body as shown. With new gasket in place compress valve spring with piston and valve body. Install retainer bolts.

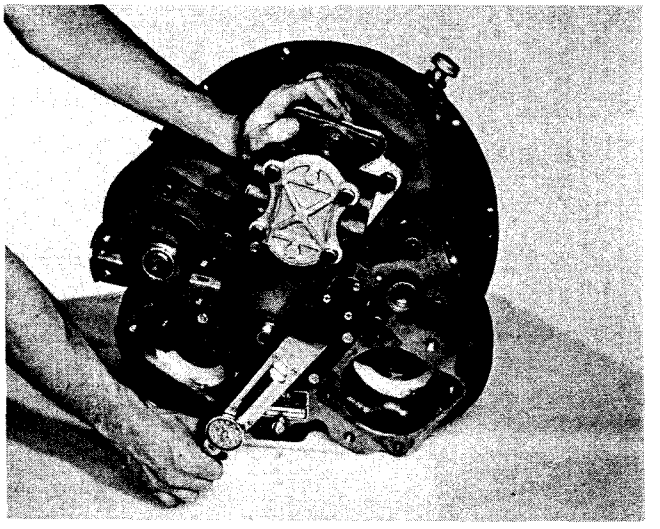


Figure 68
Tighten valve body bolts to specified torque.

(See page 34 for speed sensor installation.)

SERVICING MACHINE AFTER TORQUE CONVERTER OVERHAUL

The transmission, torque converter, and its allied hydraulic system are important links in the drive line between the engine and the wheels. The proper operation of either unit depends greatly on the condition and operation of the other; therefore, whenever repair or overhaul of one unit is performed, the balance of the system must be considered before the job can be considered completed.

After the overhauled or repaired transmission has been installed in the machine, the oil cooler, and connecting hydraulic system must be thoroughly cleaned. This can be accomplished in several manners and a degree of judgment must be exercised as to the method employed.

The following are considered the minimum steps to be taken:

1. Drain entire system thoroughly.

2. Disconnect and clean all hydraulic lines. Where feasible, hydraulic lines should be removed from machine for cleaning.

3. Replace oil filter elements, cleaning out filter cases thoroughly.

4. The oil cooler must be thoroughly cleaned. The cooler should be "back flushed" with oil and compressed air until all foreign material has been removed. Flushing in direction of normal oil flow will not adequately clean the cooler. If necessary, cooler assembly should be removed from machine for cleaning, using oil, compressed air and steam cleaner for that purpose. **DO NOT** use flushing compounds for cleaning purposes.

5. On remote mounted torque converters remove drain plug from torque converter and inspect interior of converter housing, gears, etc. If presence of considerable foreign material is noted, it will be necessary that converter be removed, disassembled and cleaned thoroughly. It is realized this entails extra labor; however, such labor is a minor cost compared to cost of difficulties which can result from presence of such foreign material in the system.

6. Reassemble all components and use only type oil recommended in lubrication section. Fill transmission through filler opening until fluid comes up to **LOW** mark on transmission dipstick. **NOTE:** If the dipstick is not accessible oil level check plugs are provided.

   Remove **LOWER** check plug, fill until oil runs from **LOWER** oil hole. Replace filler and level plug.

   Run engine two minutes at 500-600 RPM to prime torque converter and hydraulic lines. Recheck level of fluid in transmission with engine running at idle (500-600 RPM).

   Add quantity necessary to bring fluid level to **LOW** mark on dipstick or runs freely from **LOWER** oil level check plug hole. Install oil level plug or dipstick. Recheck with hot oil (180-200° F.) [82, 2-93, 3° C].

   Bring oil level to **FULL** mark on dipstick or runs freely from **UPPER** oil level plug.

7. Recheck all drain plugs, lines, connections, etc., for leaks and tighten where necessary.

SPECIFICATIONS AND SERVICE DATA—POWER SHIFT TRANSMISSION AND TORQUE CONVERTER

CONVERTER OUT PRESSURE	Converter outlet oil temp. 180° - 200° F. [82,3° - 93,3° C]. Transmission in **NEUTRAL**. Operating specifications: 55 psi [379,3 kPa] minimum pressure at 2000 R.P.M. engine speed **AND** a maximum of 70 psi [482,6 kPa] outlet pressure with engine operating at no-load governed speed.
CONTROLS	Forward and Reverse — Manual Speed Selection — Manual
CLUTCH TYPE	Multiple discs, hydraulically actuated, spring released, automatic wear compensation and no adjustment. All clutches oil cooled and lubricated.
CLUTCH INNER DISC	Friction.
CLUTCH OUTER DISC	Steel.
OIL FILTRATION	Full flow oil filter safety by-pass, also strainer screen in sump at bottom of transmission case.
CLUTCH PRESSURE	180-220 psi [1241,1 - 1516,8 kPa] — With parking brake set **(see note)** , oil temperature 180° - 200° F. [82,2° - 93,3° C], engine at idle (400 to 600 RPM), shift thru direction and speed clutches. All clutch pressure must be equal within 5 psi, [34,5 kPa]If ,clutch pressure varies in any one clutch more than 5 psi, [34,5 kPa] repair clutch.

NOTE: Never use service brakes while making clutch pressure checks. Units having brake actuated declutching in forward and/or reverse will not give a true reading.

ALWAYS USE PARKING BRAKE WHEN MAKING CLUTCH PRESSURE CHECKS.

LUBRICATION

TYPE OF OIL	See Lube Chart.
CAPACITY	Consult Operator's Manual on applicable machine model for system capacity. Torque Converter, Transmission and allied hydraulic system must be considered as a whole to determine capacity.
CHECK PERIOD	Check oil level DAILY with engine running at 500-600 RPM and oil at 180° to 200° F. [82, 2 - 93, 3° C]. Maintain oil level to FULL mark.
NORMAL * DRAIN PERIOD	Every 500 hours, change oil filter element. Every 1000 hours, drain and refill system as follows: Drain with oil at 150° to 200° F. [65, 6 - 93, 3° C].

NOTE: It is recommended that filter elements be changed after 50 and 100 hours of operation on new and rebuilt or repaired units.

(a) Drain transmission and remove sump screen. Clean screen thoroughly and replace, using new gaskets.

(b) Drain oil filters, remove and discard filter elements. Clean filter shells and install new elements.

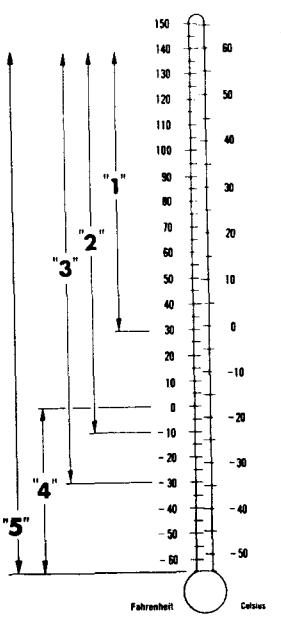
(c) Refill transmission to **LOW** mark.

(d) Run engine at 500-600 RPM to prime converter and lines.

(e) Recheck level with engine running at 500 - 600 RPM and add oil to bring level to **LOW** mark. When oil temperature is hot (180-200° F.) [82,2-93,3° C] make final oil level check. **BRING OIL LEVEL TO FULL MARK.**

RECOMMENDED LUBRICANTS FOR CLARK-HURTH COMPONENTS POWER SHIFTED TRANSMISSION AND TORQUE CONVERTERS

Prevailing Ambient Temperature



*Dexron is a registered trademark of General Motors Corporation.

Temperature Range	"1"	(a) C-2 Grade 30 (b) C-3 Grade 30 (c) Engine Oil:-Grade 30 API-CD/SE or CD/SF (d) MIL-L-2104C-Grade 30 (e) MIL-L-2104D-Grade 30
Temperature Range	"2"	(a) MIL-L-2104C-Grade 10 (b) MIL-L-2104D-Grade 10 (c) C-2 Grade 10 (d) C-3 Grade 10 (e) Engine Oil:-Grade 10 API-CD/SE or CD/SF (f) Quintolubric 822-220 (Non Phosphate Ester Fire Resistant Fluid)
Temperature Range	"3"	(a) *Dexron (b) *Dexron II D - **See Caution Below**
Temperature Range	"4"	(a) MIL-L-46167 (b) MIL-L-46167 A
Temperature Range	"5"	(a) Conoco High-Performance Synthetic Motor Oil — Spec. No. 6718

PREFERRED OIL VISCOSITY: Select highest oil viscosity compatible with prevailing ambient temperatures and oil application chart.

Temperature ranges "2" and "3" may be used to lower ambient temperatures when sump preheaters are used.

Temperature range "4" should be used only in ambient temperature range shown.

MODULATED SHIFT TRANSMISSIONS: T12000, 18000, 24000, 28000 & 32000 series transmissions with modulated shift use only C-3 or temperature range 3 items (a) & (b) *Dexron or *Dexron II D. **SEE CAUTION BELOW.** 3000, 4000, 5000, 6000, 8000, 16000 & 34000 series transmissions with modulated shift use only C-3 or temperature range 3 item (a) only *Dexron. Do **NOT** use *Dexron II D. **SEE CAUTION BELOW.**

CAUTION: *Dexron II D is not compatible with graphitic clutch plate friction material UNLESS IT MEETS THE APPROVED C-3 SPECIFICATIONS. *Dexron II D cannot be used in the 3000, 4000, 5000, 6000, 8000, 16000 or 34000 series power shift transmissions, or the HR28000 & HR32000 series having converter lock-up, or the C270 series converter having lock-up UNLESS IT MEETS THE APPROVED C-3 SPECIFICATIONS.

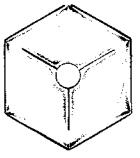
Any deviation from this chart must have written approval from the application department of the Clark-Hurth Components Engineering and Marketing Department.

*** Normal drain periods and filter change intervals are for average environmental and duty-cycle conditions. Severe or sustained high operating temperatures or very dusty atmospheric conditions will cause accelerated deterioration and contamination. For extreme conditions judgment must be used to determine the required change intervals.**

TORQUE IN (LBS.—FT.)
BOLTS, CAPSCREWS, STUDS AND NUTS

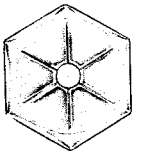
Grade 5 Identification, 3 Radial Dashes 120° Apart on Head of Bolt

Grade 8 Identification, 6 Radial Dashes 60° Apart on Head of Bolt



Grade 5

LUBRICATED OR PLATED



Grade 8

Nominal Size	Fine Thread Torque Lbs. Ft./N.m.	Course Thread Torque Lbs. Ft./N.m.	Fine Thread Torque Lbs. Ft./N.m.	Course Thread Torque Lbs. Ft./N.m.
.3125	16-20 [21,7-27,1]	12-16 [16,3-21,7]	28-32 [38,0-43,4]	26-30 [35,3-40,7]
.3750	26-29 [35,3-39,3]	23-25 [31,2-33,9]	37-41 [50,2-55,6]	33-36 [44,7-48,8]
.4375	41-45 [55,6-61,0]	37-41 [50,2-55,6]	58-64 [78,6-86,8]	52-57 [70,5-77.3]
.5000	64-70 [86,8-94,9]	57-63 [77,3-85,4]	90-99 [122,0-134,2]	80-88 [108,5-119,3]
.5625	91-100 [123,4-135,6]	82-90 [111,2-122,0]	128-141 [173,5-191,2]	115-127 [156,0-172,2]

PRESSURE AND OIL FLOW CHECK SPECIFICATIONS. ALL CHECKS MADE WITH HOT OIL (180 - 200° F.) [82,2 - 93,3° C.]

A.	Clutch Pressure at Transmission Control Cover	See Specifications and Service Data.
B.	Transmission to Converter Line	See External Oil Flow Diagram.
C.	Converter-Out Pressure	See Pressure and Oil Flow Checks.
D.	Temperature Gauge Connection	See External Oil Flow Diagram.
E.	Lubricating Pressure	25 p.s.i. [172,4 kPa] Maximum at High Free Idle.
	Converter Return Line	See External Oil Flow Diagram.
	Converter Pump Output	See Pump Chart.

TROUBLE SHOOTING GUIDE

The following data is presented as an aid to locating the source of difficulty in a malfunctioning unit. It is necessary to consider the torque converter charging pump, transmission, oil cooler and connecting oil lines as a complete system when running down the source of trouble since the proper operation of any unit therein depends greatly on the condition and operation of the others. By studying the principles of operation together with data in this section, it may be possible to correct any malfunction which may occur in the system.

TROUBLE SHOOTING PROCEDURE BASICALLY CONSISTS OF TWO CLASSIFICATIONS: MECHANICAL AND HYDRAULIC.

MECHANICAL CHECKS

Prior to checking any part of the system from a hydraulic standpoint, the following mechanical checks should be made.

1. A check should be made to be sure all control lever linkage is properly connected and adjusted at all connecting points.

2. Check shift levers and rods for binding or restrictions in travel that would prevent full engagement. Shift levers by hand at transmission case, if full engagement cannot be obtained, difficulty may be in control cover and valve assembly.

HYDRAULIC CHECKS

Before checking on the torque converter, transmission and allied hydraulic systems for pressures and rate of oil flow, it is essential that the following preliminary checks be made.

1. Check oil level in transmission. This should be done with oil temperatures of 180-200°F. [82,2-93,3°C.]. DO NOT ATTEMPT THESE CHECKS WITH COLD OIL. To bring the oil temperature to this specification it is necessary to either work the machine or "stall" out the converter. Where the former means is impractical, the latter means should be employed as follows:

Engage shift levers in forward and high speed and apply brakes. Accelerate engine half to three-quarter throttle.

Hold stall until desired converter outlet temperature is reached. CAUTION: FULL THROTTLE STALL SPEEDS FOR AN EXCESSIVE LENGTH OF TIME WILL OVERHEAT THE CONVERTER.

PRESSURE AND OIL FLOW CHECKS

Whenever improper performance is evident the following basic pressure and oil flow checks should be performed and recorded. It is also recommended that these checks be taken periodically as a preventative maintenance measure. Doing so will permit possible detection of difficulties in advance of actual breakdown, thus permitting scheduling of repair operation. Likewise, repair of minor difficulties can be made at considerably less cost and down-time than when delayed until major and complete breakdowns occur.

Analyzing the results of these checks by comparison with specifications and with each other will indicate in most cases the basic item or assembly in the system as the source of difficulty. Further checking of that assembly will permit isolation of the specific cause of trouble.

(SEE PLUMBING AND CHECK POINT DIAGRAM)

OIL PRESSURE AT **CONVERTER OUT** PORT.

Install hydraulic pressure gauge at **PRESSURE** connection on Converter Regulator Valve or at **CONVERTER OUT** pressure tap. (All models do not have pressure regulating valves.) Check and record oil pressure at 2000 RPM and at maximum speed (engine at full throttle) (see instructions on Stalling Converter previously listed).

CONVERTER MODEL	MINIMUM CONVERTER OUT PRESSURE	MAXIMUM CONVERTER OUT PRESSURE
C-5000	55 p.s.i. [379,3 kPa]	70 p.s.i. [482,6 kPa]
C-8000	55 p.s.i. [379,3 kPa]	70 p.s.i. [482,6 kPa]
C-16000	55 p.s.i. [379,3 kPa]	70 p.s.i. [482,6 kPa]

If a flow meter is available, install in line between converter charging pump and oil filters. Flow meter must be able to withstand 300 p.s.i. [2068,4 kPa].

Disconnect hose between pump and filter at filter end and using suitable fittings connect to pressure port of tester. Install hose between filter and tester, connecting same to reservoir port of tester.

DO NOT USE TESTER LOAD VALVE AT ANY TIME DURING TEST. When taking flow reading, all readings should be taken on the first (left) half of flow gauge. Whenever the needle shows on the right half of gauge, correct by switching to higher scale.

If a flow meter is not available for checking converter pump output, proceed with manual transmission and converter checks. If the converter shows leakage within specifications and clutch pressures (180 to 220 p.s.i.) [1241,1 - 1516,8 kPa] are all equal within 5 p.s.i. [34,5 kPa] refer to paragraph on Low Converter Charging Pump Output.

PUMPS ARE RATED AT 2000 RPM — Refer to Vehicle Manufacture Manual for specific pump output.

NOMINAL PUMP RATINGS:	C-5000	C-8000	C-16000
	21 G.P.M.	21 G.P.M.	40 G.P.M.
	31 G.P.M.	31 G.P.M.	50 G.P.M.
		40 G.P.M.	65 G.P.M.

Pump output listed applies to a new pump in each case. A 20% tolerance below this figure is permissible; however, if pump output is more than 20% below specification the pump must be replaced or rebuilt.

TRANSMISSION CLUTCH LEAKAGE

Check clutch pressures at low engine idle with oil at operating temperatures 180 - 200° F. [82, 2 - 93, 3° C]. Engine speed must remain constant during entire leakage check. Shift lever into forward 4 or 8 speeds. Record pressures. Shift lever in reverse and 1st. Record pressure. All pressure must be equal within 5 p.s.i. [34,5 kPa]. If clutch pressure varies in any one clutch more than 5 p.s.i. [34,5 kPa] , repair clutch.

If a flow meter is available install in line coming out of converter pump. See flow diagram for location of pressure on flow checks. Check pump volume at 2000 RPM and at low engine idle. Record readings. See pump volume specifications at 2000 RPM.

Install flow meter in the line coming from transmission to converter. Check oil volume at 2000 RPM and at low idle in the following speed selections. Record readings.

Forward — Low speed thru High Reverse — Low speed

Subtract readings in each speed from pump volume reading to get transmission clutch leakage.

Example:				
	Pump Volume at idle	8 gal.	Pump volume	8 gal.
	Forward—Low speed thru High	6 gal.	Forward — Low speed	6 gal.
	Reverse—Low speed	6 gal.	Clutch leakage	2 gal.

If clutch leakage varies more than 1 gal. from one clutch to another, repair clutch.

LEAKAGE IN TRANSMISSION CLUTCHES

Leakage in 3000 series must not exceed 4 gal. max.
Leakage in 5000 series must not exceed 4 gal. max.
Leakage in 8000 series must not exceed 6 gal. max.
Leakage in 16000 series must not exceed 7 gal. max.

CONVERTER LUBE FLOW

Disconnect CONVERTER DRAIN BACK line at transmission with engine running at 2000 RPM and measure oil into a gallon container. Measure oil leakage for 15 seconds and multiply the volume of oil by four to get gallons per minute leakage.

LEAKAGE IN CONVERTER

Leakage in C270 series not to exceed 2 gal. max.
Leakage in C5000 series not to exceed 3 gal. max.
Leakage in C8000 series not to exceed 5 gal. max.
Leakage in C16000 series not to exceed 5 gal. max.

LOW CLUTCH PRESSURE WITH NORMAL CLUTCH LEAKAGE

CAUSE	REMEDY
1. Low Oil Level.	1. Fill to proper level.
2. Broken spring in transmission regulator valve.	2. Replace spring.
3. Clutch pressure regulator valve spool stuck in open position.	3. Clean valve spool and sleeve.
4. Faulty charging pump.	4. See paragraph on charging pump output.

LOW CLUTCH PRESSURE WITH EXCESSIVE CLUTCH LEAKAGE

1. Broken or worn clutch piston sealing rings.	1. Replace sealing rings.
2. Clutch drum bleed valve ball stuck in open position.	2. Clean bleed valve thoroughly.
3. Broken or worn sealing rings on clutch support.	3. Replace sealing rings.
4. Low converter charging pump output.	4. See paragraph on charging pump output.

LOW CONVERTER CHARGING PUMP OUTPUT

CAUSE	REMEDY
1. Low oil level.	1. Fill to proper level.
2. Sump screen plugged.	2. Clean screen and sump.
3. Air leaks at pump intake hose and connections or collapsed hose.	3. Tighten all connections or replace hose if necessary.
4. Defective oil pump.	4. Replace pump.

LOW FLOW THROUGH COOLER WITH LOW CONVERTER IN PRESSURE

1. Defective safety by-pass valve spring.	1. Replace spring.
2. Converter by-pass valve partially open.	2. Check for worn by-pass ball seat.
3. Excessive converter internal leakage. See paragraph on converter lube flow.	3. Remove, disassemble, and rebuild converter assembly, replacing all worn or damaged parts.
4. Broken or worn sealing rings in transmission clutches.	4. See paragraph on Clutch leakage.

LOW FLOW THROUGH COOLER WITH HIGH CONVERTER OUT PRESSURE

1. Plugged oil cooler. Indicated if transmission lube pressure is low.	1. Back flush and clean oil cooler.
2. Restricted cooler return line.	2. Clean out lines.
3. Lube oil ports in transmission plugged. Indicated if transmission lube pressure is high.	3. Check lube lines for restrictions.

OVERHEATING

1. Worn oil sealing rings. See paragraph on converter lube flow.	1. Remove, disassemble, and rebuild converter assembly.
2. Worn oil pump.	2. Replace.
3. Low oil level.	3. Fill to proper level.
4. Pump suction line taking air.	4. Check oil line connections and tighten securely.

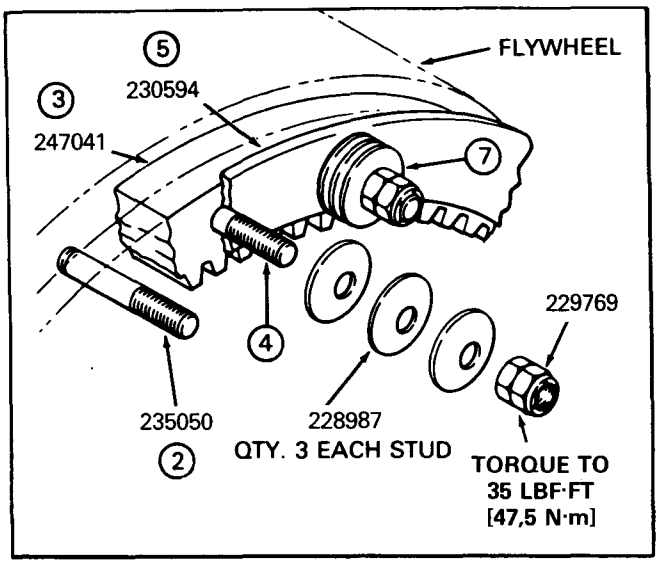
NOISY CONVERTER

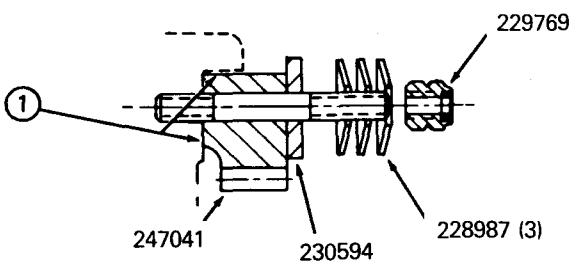
1. Worn coupling gears.	1. Replace.
2. Worn oil pump.	2. Replace.
3. Worn or damaged bearings.	3. A complete disassembly will be necessary to determine what bearing is faulty.

LACK OF POWER

1. Low engine RPM at converter stall.	1. Tune engine check governor.
2. See "Over-heating" and make same checks.	2. Make corrections as explained in "Over-Heating.

C-5000 TORQUE CONVERTER RING GEAR INSTALLATION AND ASSEMBLY PROCEDURE





① —REMOVE ALL BURRS FROM FLYWHEEL MOUNTING FACE & PILOT BORE, CLEAN WITH SOLVENT.

THE ENGINE FLYWHEEL & HOUSING MUST CONFORM TO STANDARD S.A.E. NO. 1 — S.A.E. J927 TOLERANCE SPECIFICATIONS FOR PILOT BORES, ECCENTRICITIES & MOUNTING FACE DEVIATIONS. CHECK ENGINE CRANKSHAFT "END PLAY", MUST BE THE SAME VALUE BEFORE AND AFTER THE TORQUE CONVERTER IS MOUNTED TO THE ENGINE.

② —INSTALL THREE (3) STUDS 235050 — EQUALLY SPACED. TIGHTEN 33 TO 36 LBS.FT. [44.8 - 48,8 N.m] OF TORQUE.

③ —INSTALL RING GEAR 247041 BY TAPPING LIGHTLY IN PLACE.

④ —INSTALL REMAINING STUDS. TIGHTEN 33 TO 36 LBS.FT. [44, 8 - 48,8 N.m] TORQUE.

⑤ —INSTALL BACKING PLATE 230594.

⑥ —LUBRICATE STUD THREADS, BELLEVILLE WASHERS & NUTS WITH S.A.E. #10 OIL.

⑦ —INSTALL BELLEVILLE WASHERS & ELASTIC STOP NUTS AS SHOWN (3 WASHERS, EACH STUD). TIGHTEN NUTS TO TORQUE INDICATED IN ILLUSTRATION ABOVE.

FLYWHEEL RING GEAR REPLACEMENT PROCEDURE

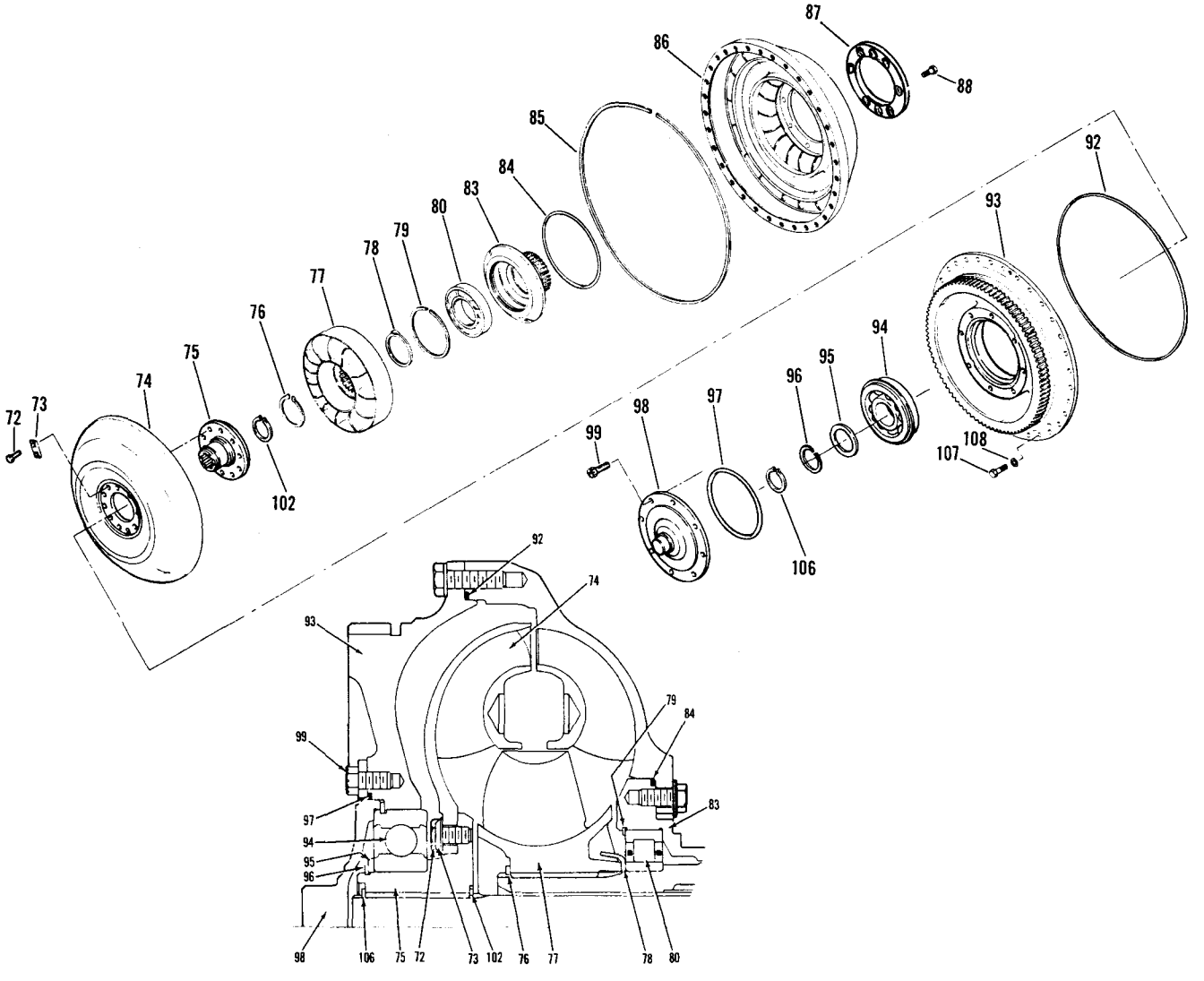
When the C-5000 flywheel ring is to be replaced order Kit No. 802495.

If the backing ring is to be replaced order Part No. 230594 backing plate.

The 802495 Kit Includes:

1	247041	Ring Gear
24	235050	Stud
96	228987	Belleville Washer
24	229769	Stud Nut
1	802496	Instruction Sheet

When servicing the C-5000 flywheel ring gear with 24 bolt holes you will use 72 of the 96 Belleville washers (3 on each stud) and 24 stud nuts. Tighten the nuts to 35 lbs.ft. [47,5 N.m] torque.



ITEM	DESCRIPTION	QTY.
72	Turbine Hub Screw	10
73	Turbine Hub Screw Lock Tab	5
74	Turbine	1
75	Turbine Hub	1
76	Reaction Member Snap Ring	1
77	Reaction Member	1
78	Reaction Member Spacer	1
79	Impeller Hub Bearing Snap Ring	1
80	Impeller Hub Bearing	1
83	Impeller Hub	1
84	Impeller Hub "O" Ring	1
85	Oil Baffle Retainer Ring	1
86	Impeller	1

ITEM	DESCRIPTION	QTY.
87	Impeller to Hub Screw Backing Ring	1
88	Impeller to Hub Screw	8
92	Impeller to Impeller Cover "O" Ring	1
93	Impeller Cover	1
94	Turbine Hub Bearing	1
95	Impeller Cover Hub Brg. Spacer	1
96	Impeller Cover Hub Brg. Snap Ring	1
97	Impeller Cover to Impeller Cover Hub "O" Ring	1
98	Impeller Cover Hub	1
99	Impeller Cover to Hub Screw	8
102	Turbine Hub Snap Ring	1
106	Impeller Cover Hub Bearing Snap Ring	1
107	Impeller to Impeller Cover Screw	32
108	Impeller to Impeller Cover Screw Lockwasher	32

DISASSEMBLY OF THE CONVERTER SECTION
WITH LARGE IMPELLER COVER BEARING DESIGN

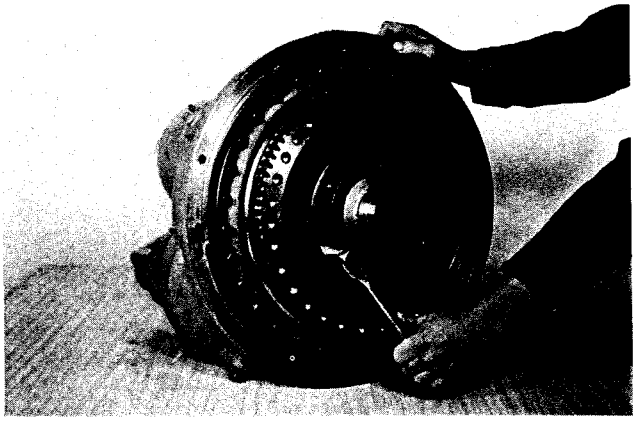


Figure 1

Remove impeller cover hub bolts - **Note:** It is recommended a pan or pail be available to catch the oil that remains in the converter wheel section.

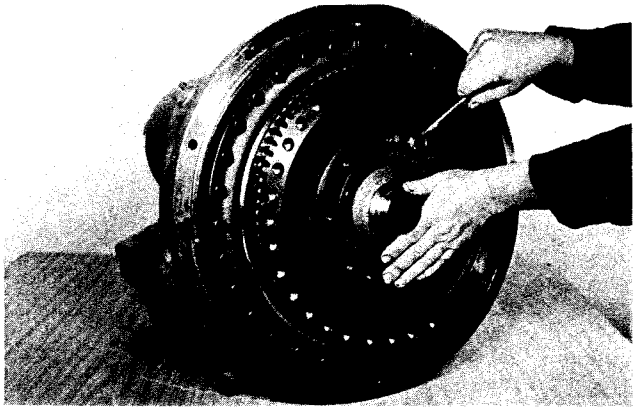


Figure 2

Install two bolts in threaded holes in cover hub. Turn bolts evenly to remove hub. See note in figure 1.

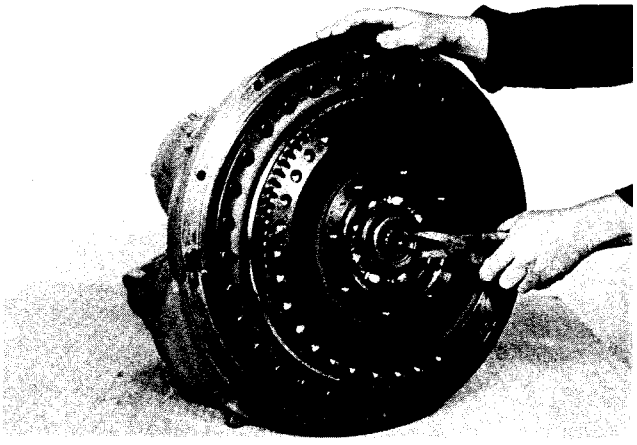


Figure 3

Remove turbine hub to turbine shaft retaining ring.

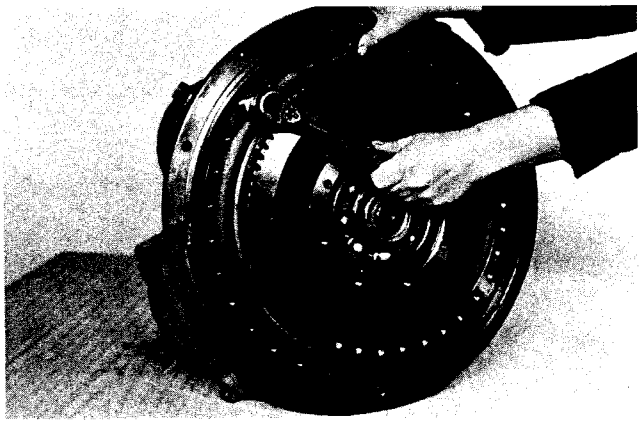


Figure 4

Remove impeller cover to impeller bolts. See note in figure 1.

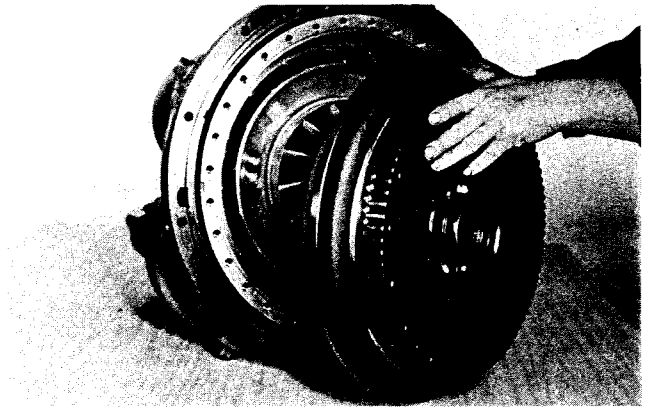


Figure 5

Remove impeller cover and turbine as an assembly.

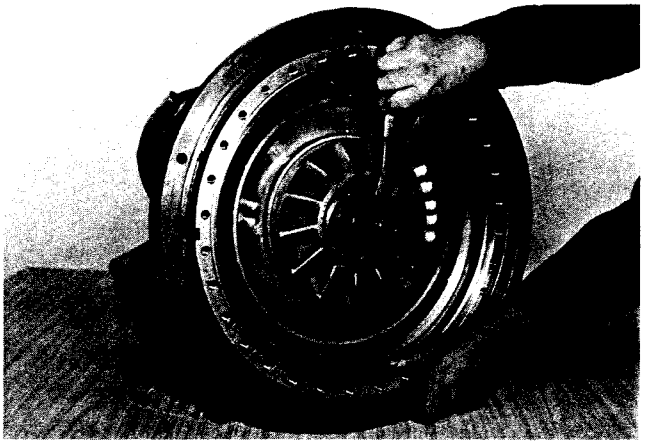


Figure 6

Remove turbine hub locating ring.

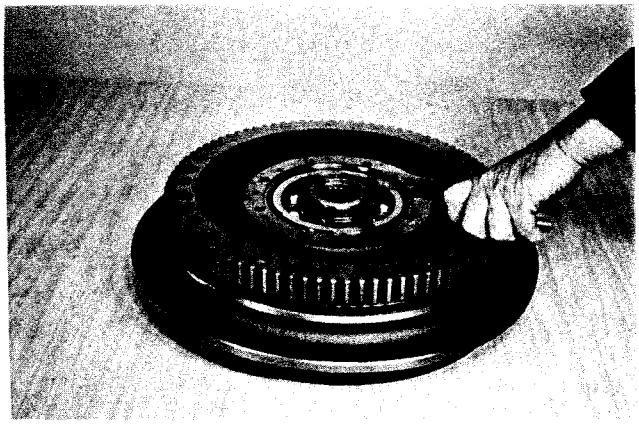


Figure 19
Install impeller cover bearing retainer ring.

Refer to figure 33 on page 14 thru figure 58 on page 19 for reassembly of converter to turbine and impeller cover installation.

REASSEMBLY OF CONVERTER FRONT END

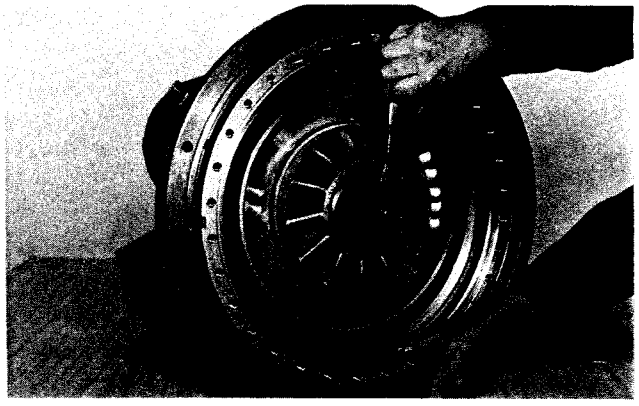


Figure 20
Install turbine locating ring.

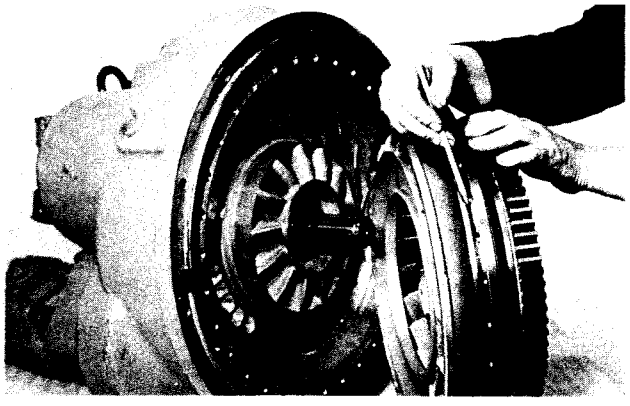


Figure 21
With new impeller cover to impeller "O" ring in position. Install impeller cover and turbine assembly on turbine shaft. Use caution as not to damage or disturb "O" ring.

Figure 22
Install impeller cover to impeller bolts. Tighten bolts to specified torque.

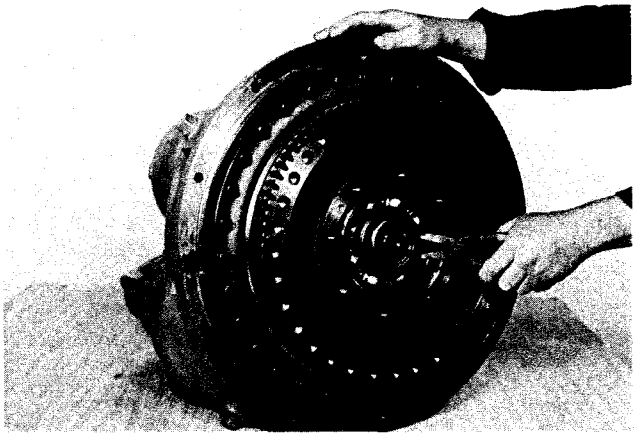


Figure 23
Install turbine hub to turbine shaft retainer ring.

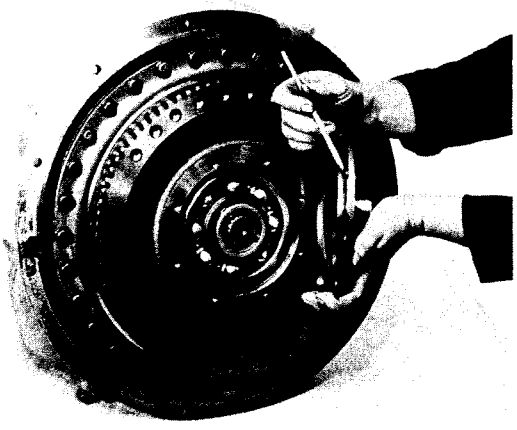


Figure 24
Position new "O" ring on impeller cover hub. Install hub on impeller cover. Use caution as not to damage or disturb "O" ring.

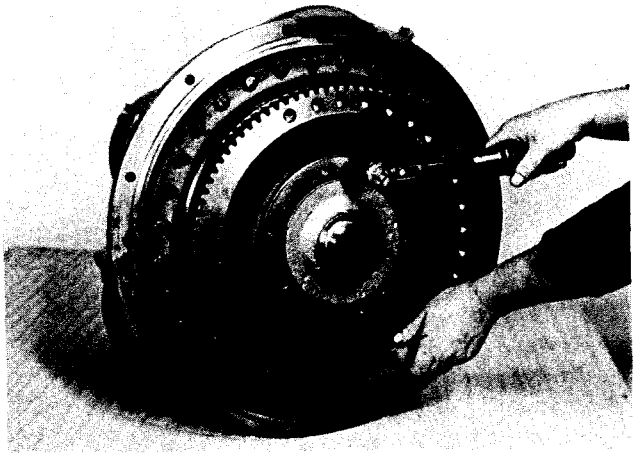
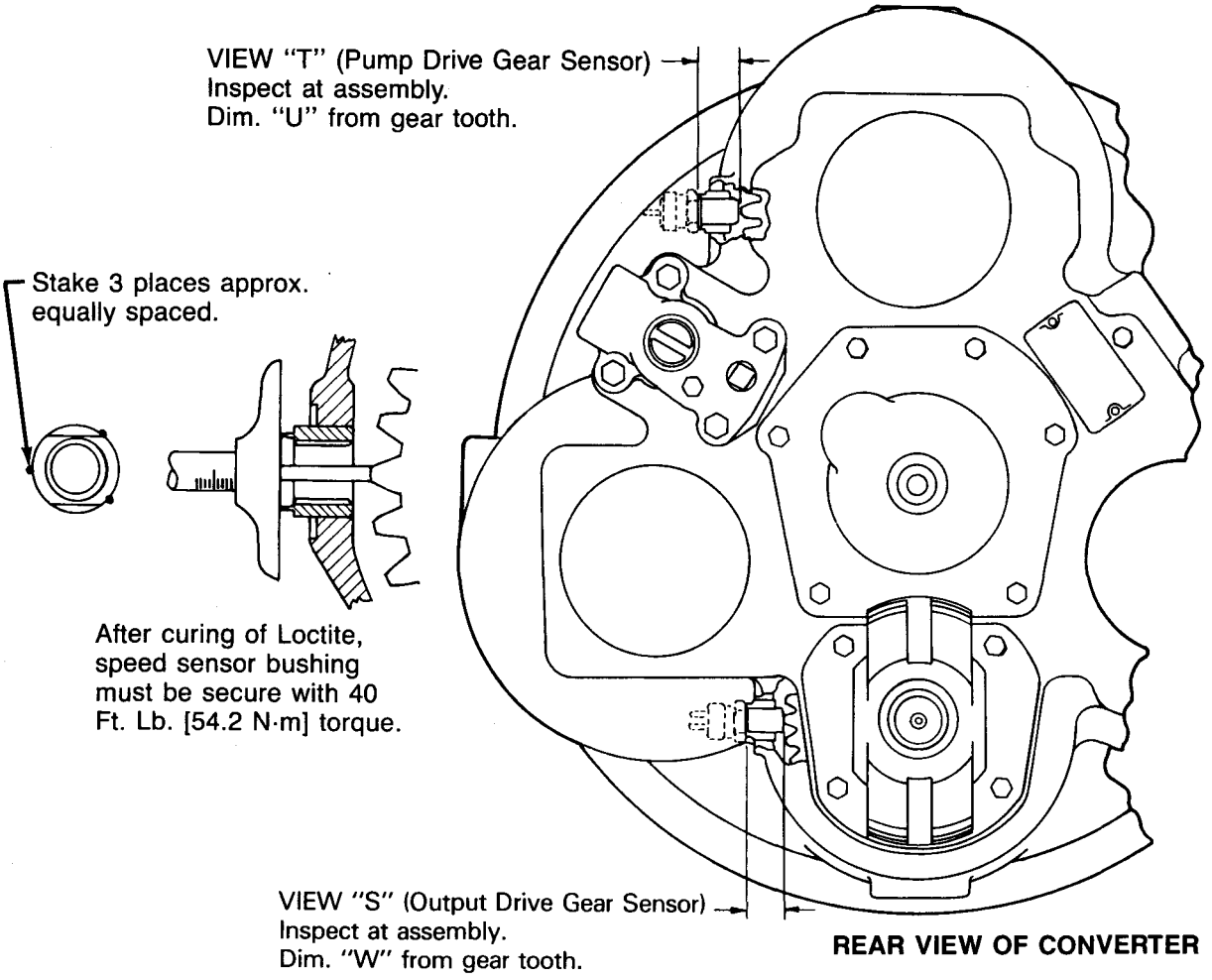


Figure 25
Install hub bolts, tighten to specified torque.

CONVERTER CHARGE PUMP REPLACEMENT AND PRIMING PROCEDURE

1. The cause for pump failure must be found and corrected before a replacement pump is installed. Check all of the hoses, tubes, "O" rings, adaptors and split flanges.
2. Replace any collapsed or damaged hoses, damaged split flange "O" rings, tube "O" rings and adaptors.
3. After all checks have been made and corrections completed install the pump.
4. See filling instructions in paragraph 6 above.
5. Start the engine. Run the engine at low idle for two minutes, watch the clutch pressure gage and listen for cavitation of the pump.
6. If the pressure does not come up, check the oil level and bleed off air from system as follows.
7. To bleed off the air from the system, loosen the pressure gage line at the pressure regulating valve or loosen the pressure hose at the oil filter or pressure regulating valve. Crank the engine over until the air is displaced with oil. DO NOT START THE ENGINE.
8. If bleeding the lines does not correct the problem it may become necessary to prime the pump. Disconnect the suction hose or pressure hose, whichever is higher, and fill the port with transmission oil, reconnect the hose and tighten.
9. Start the engine and check pressure.
10. Recheck oil level with hot oil (180-200°F) with engine at idle. Add oil as necessary to bring oil level to full mark.



REAR VIEW OF CONVERTER

Assemble Speed Sensor Bushing in housing to specified dimension "U" or "W" with Loctite 262 and stake (3) three places. See Pump Drive and Output Gear Charts for dimensions.

PUMP DRIVE RATIO

RATIO	DRIVE GEAR NO. OF TEETH	DRIVEN GEAR NO. OF TEETH	SPEED SENSOR BUSHING DEPTH "U" PER VIEW "T"
.826	46	38	2.394 ± .007 [60.8 ± .17]
.886	44	39	2.394 ± .007 [60.8 ± .17]
.995	43	41	2.394 ± .007 [60.8 ± .17]
1.100	40	44	2.394 ± .007 [60.8 ± .17]
1.270	37	47	1.390 ± .007 [35.3 ± .17]
1.400	35	49	1.390 ± .007 [35.3 ± .17]
1.625	32	52	1.060 ± .007 [26.9 ± .17]

OUTPUT GEAR RATIO

RATIO	TURBINE SHAFT & GEAR ASS'Y NO. OF TEETH	OUTPUT GEAR NO. OF TEETH	SPEED SENSOR BUSHING DEPTH "W" PER VIEW "S"
.800	40	32	2.394 ± .007 [60.8 ± .17]
.895	38	34	2.394 ± .007 [60.8 ± .17]
1.000	36	36	1.390 ± .007 [35.3 ± .17]
1.118	34	38	1.390 ± .007 [35.3 ± .17]
1.250	32	40	1.060 ± .007 [26.9 ± .17]