

FILE: B
SECTION: 2.10

SHOP

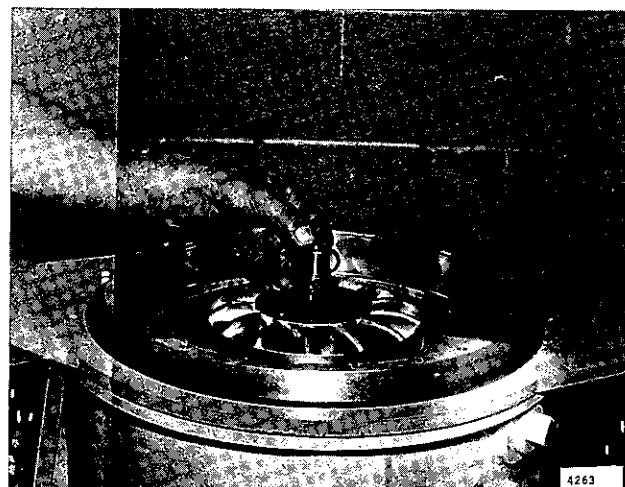


MANUAL



13

Remove turbine hub locating ring.



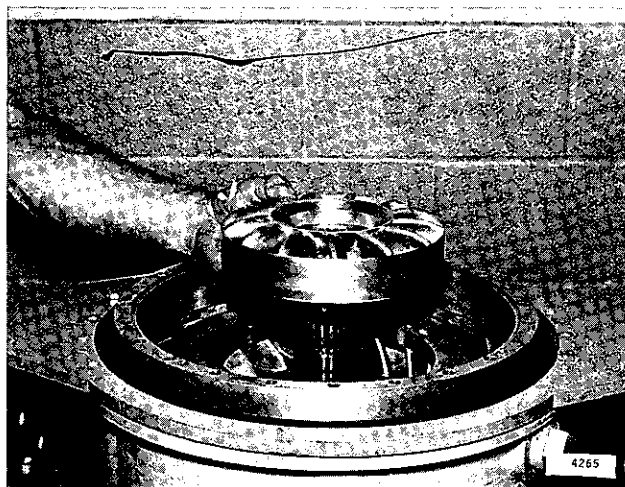
14

Remove reaction member retaining ring.



15

Remove reaction member assembly from stator support and sleeve.





16

Remove spacer from reaction member, if it is of two (2) piece design.

Later reaction members have the spacer cast as an integral part of the reaction member.

If the spacer is cast with the reaction member, a flat washer with a tang on it should be removed after removing the reaction member. Note the position of the flat washer with tang upon removal.



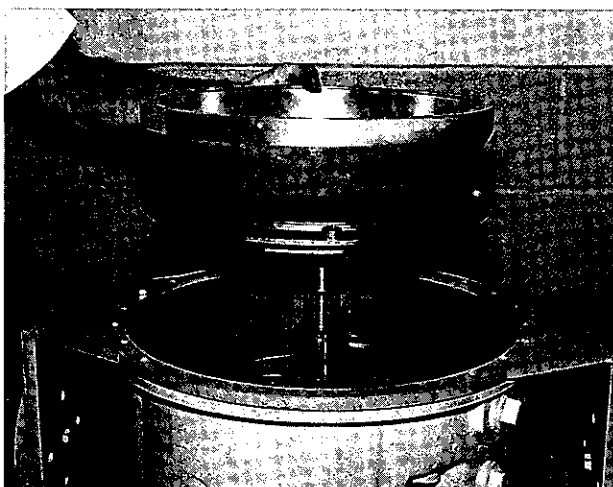
17

Remove three oil baffle retaining capscrews located in external portion of housing as illustrated. (2 not shown)



18

Remove impeller and baffle assembly from housing. Grasp impeller and snap against baffle.



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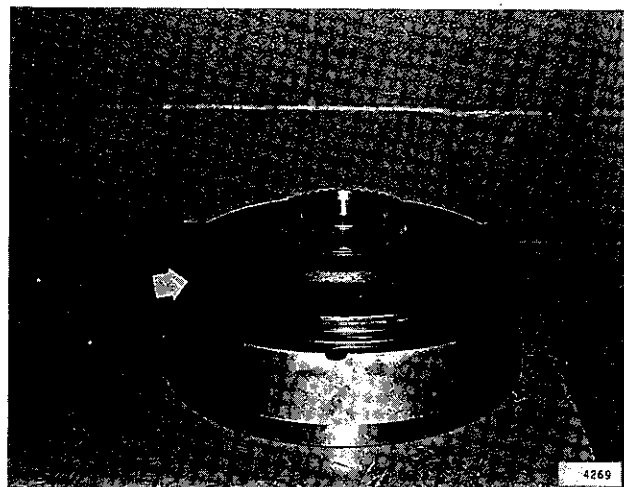


MANUAL



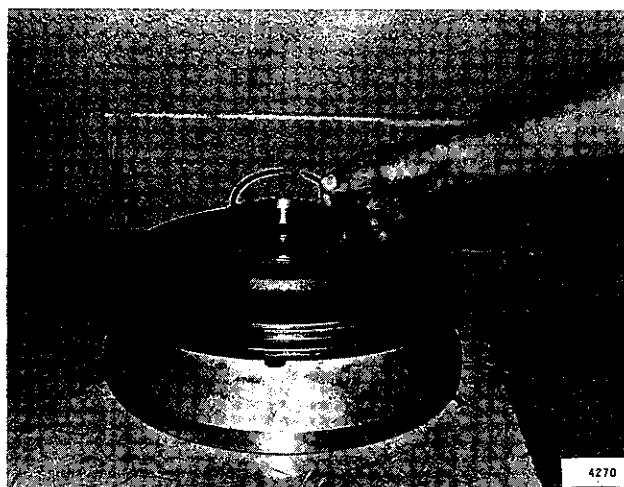
19

Remove oil baffle "o" ring and discard.



20

Remove impeller gear retaining ring.



21

Remove impeller gear.





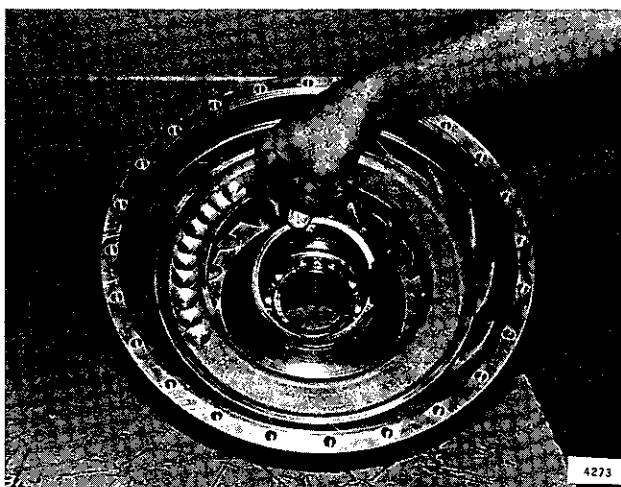
22

Remove oil seal from baffle.



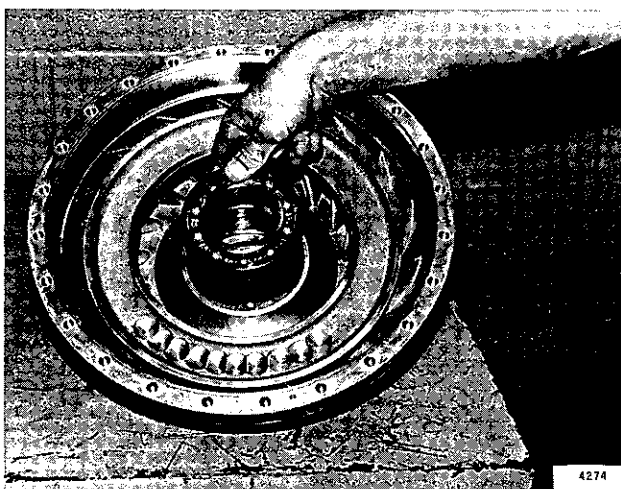
23

Remove output shaft bearing retaining ring.



24

Remove output shaft bearing from impeller hub.



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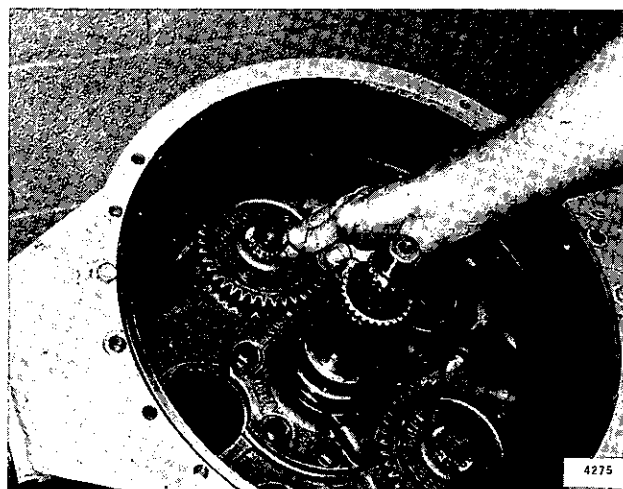


MANUAL



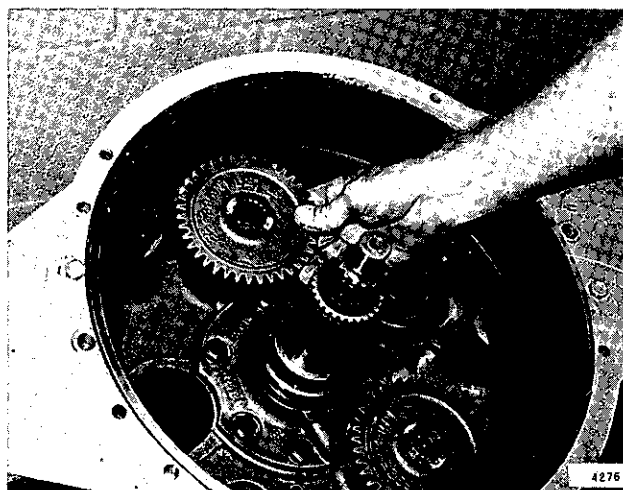
25

Remove charging pump drive gear retaining ring.



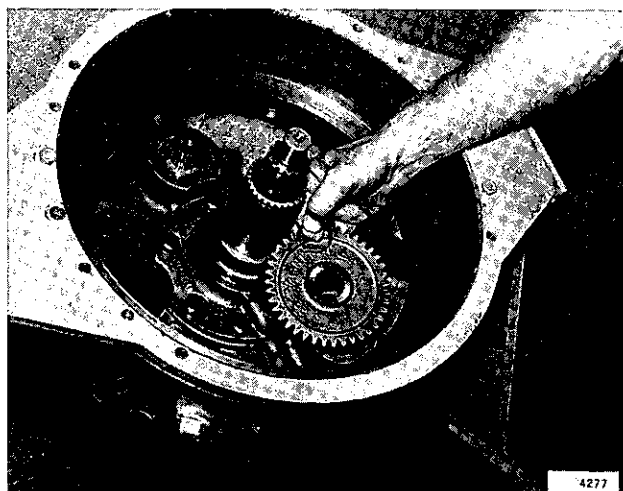
26

Remove charging pump drive gear.



27

Remove hydraulic pump drive gear retaining ring and drive gear.

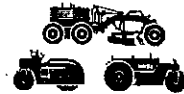


FILE: B
SECTION: 2.10

SHOP

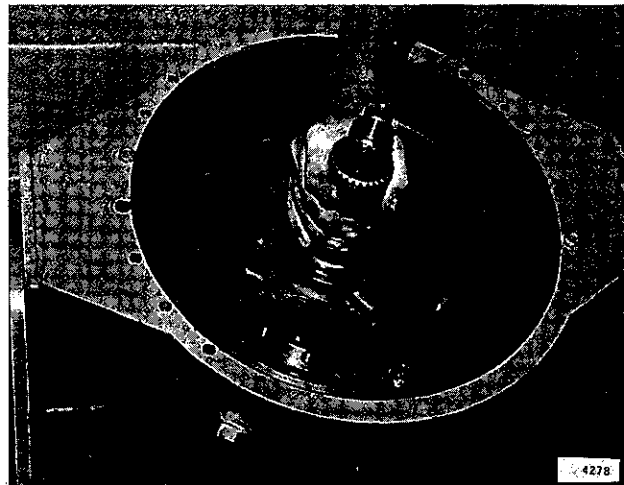


MANUAL



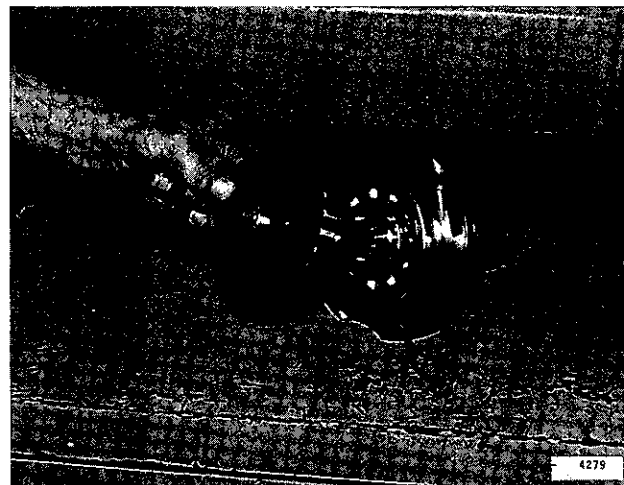
28

Remove capscrews from stator support. Remove stator support, sleeve and output shaft assembly.



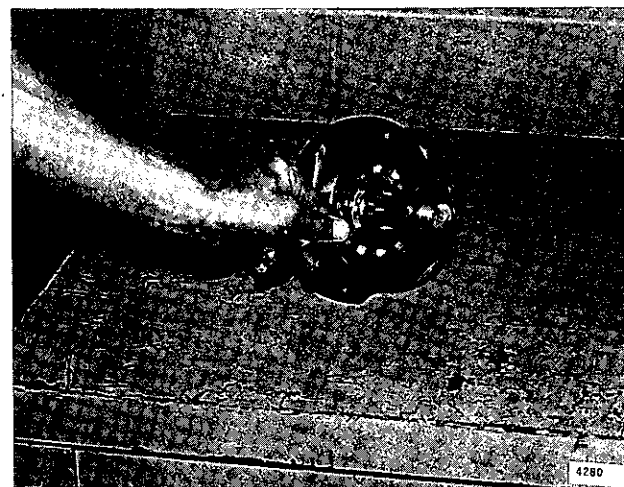
29

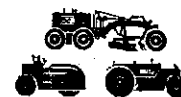
Remove turbine shaft gear from output shaft.



30

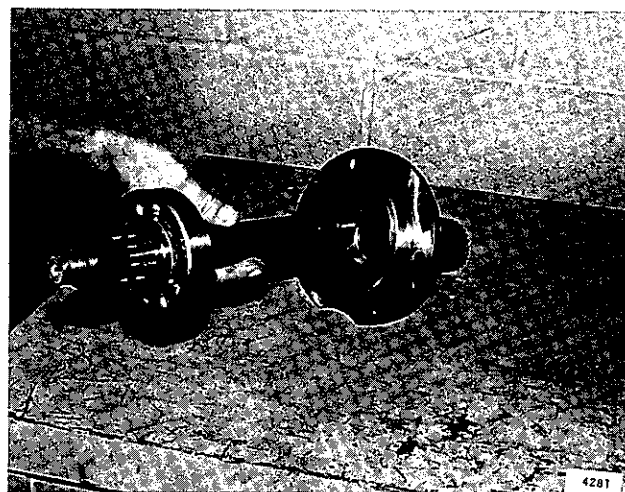
Remove output shaft bearing retaining ring.





31

Remove output shaft and bearing from stator support.



32

Press bearing from output shaft.



33

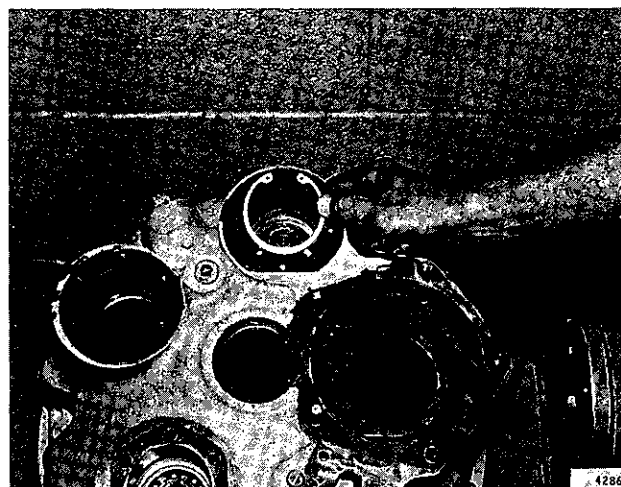
Remove hook ring seals from output shaft and stator support. Discard hook ring seals.





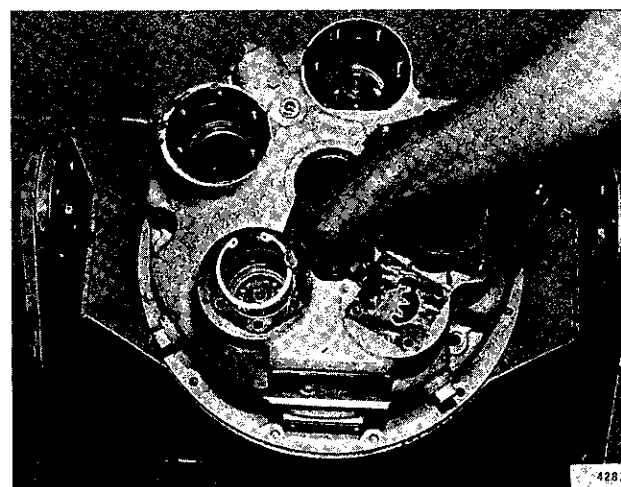
34

Remove charging pump drive shaft bearing retaining ring.



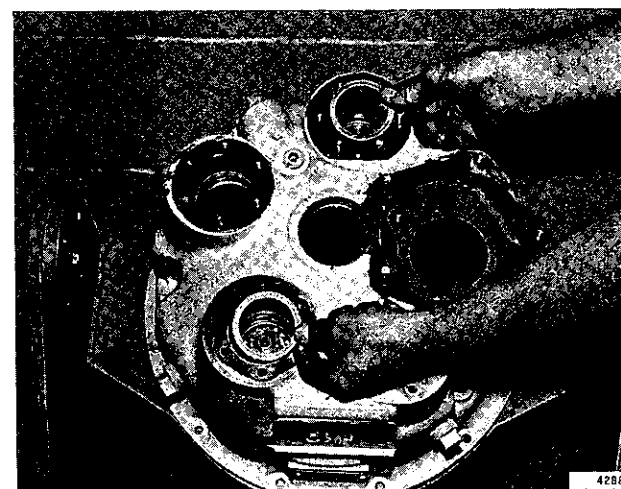
35

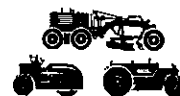
Remove hydraulic pump drive shaft bearing retaining ring.



36

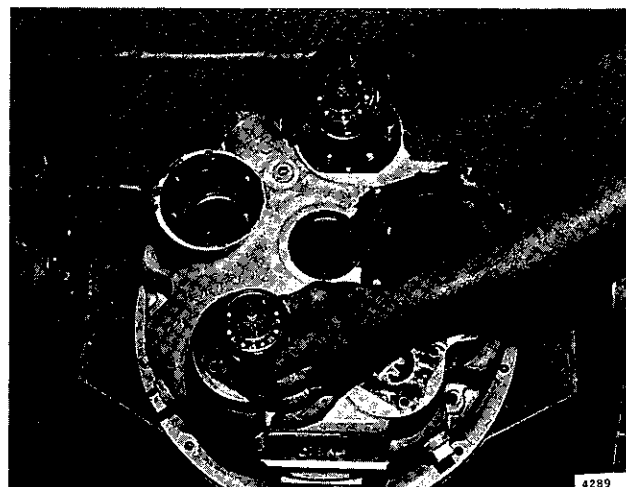
Remove bearing retaining washers.





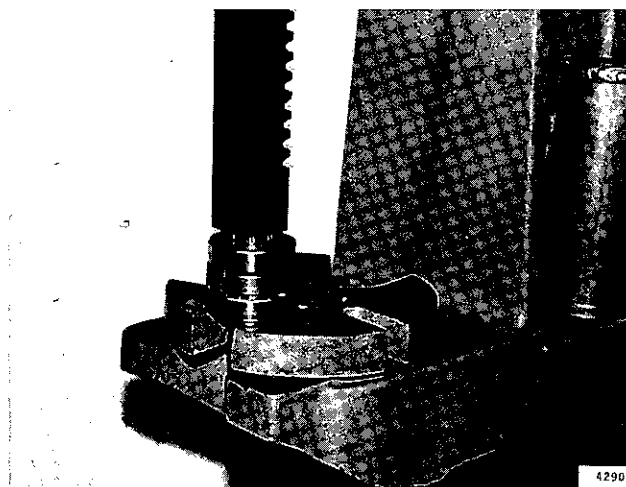
37

Remove pump drive shaft assemblies. Drive shaft assemblies are identical.



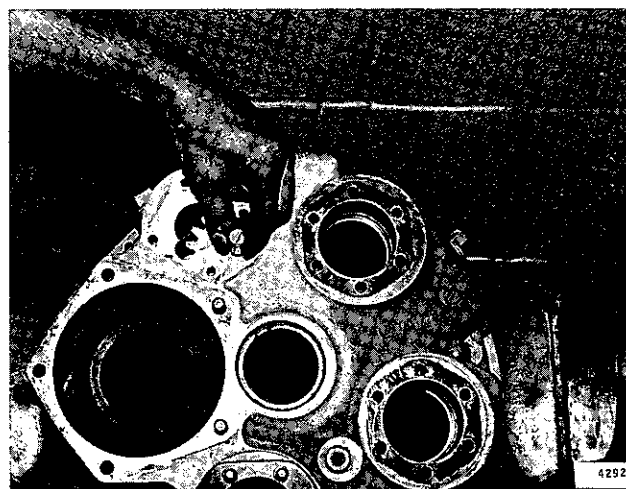
38

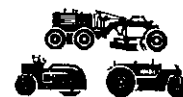
Press bearings and spacer from each shaft if replacement is necessary. Remove bearing locating rings from shafts.



39

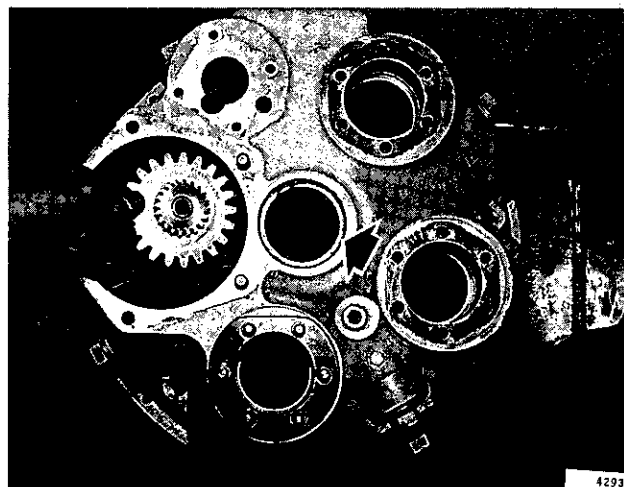
Remove governor idler shaft from housing. Remove "o" ring from shaft and discard.





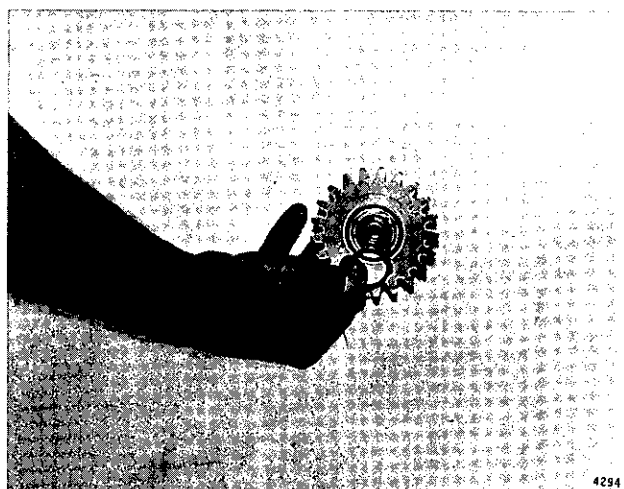
40

Remove governor drive gear assembly. Remove output shaft oil seal and discard (arrow).



41

Remove governor drive gear idler shaft retaining ring.



42

Press governor drive gear and woodruff key from idler drive shaft gear.



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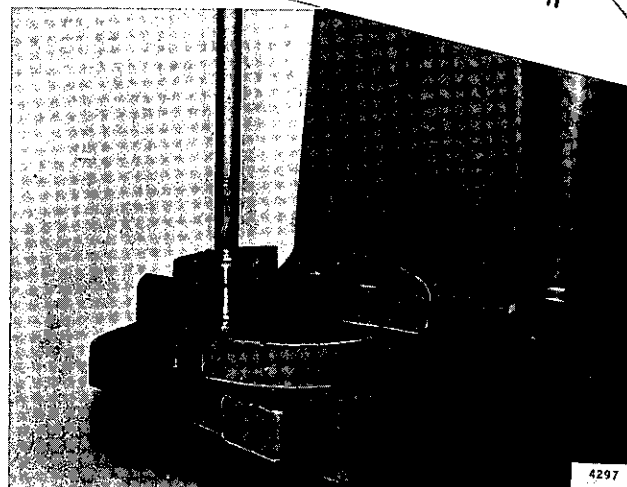
SHOP



MANUAL

43

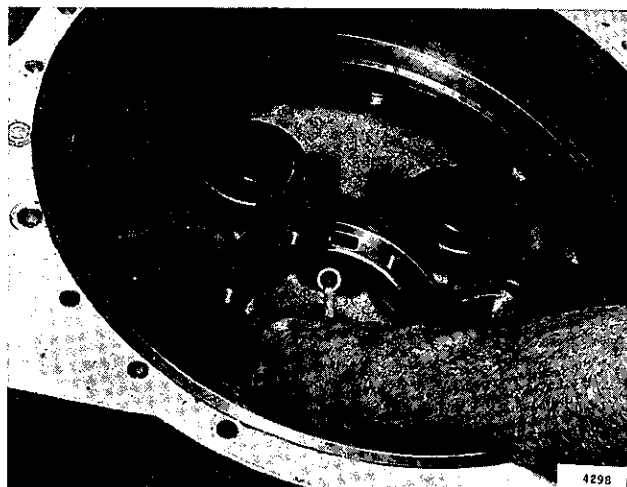
Remove needle bearings from governor drive gear only if replacement is necessary.



44

Clean spray-lubrication orifice in convertor housing. Orifice must be open and free of any foreign material. Size of orifice is $1/64$ " - DO NOT DRILL OR REAM OVERSIZE.

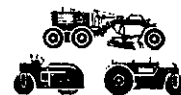
C-273 CONVERTOR ASSEMBLY



45

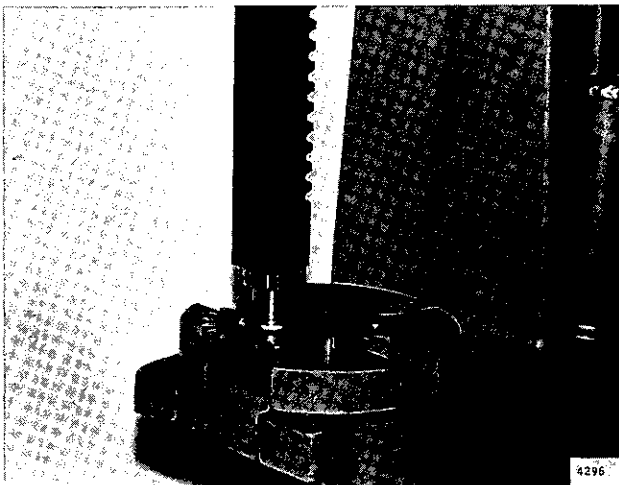
Install needle bearings in governor drive gear hub if previously removed. NOTE: Extreme care must be used during pressing operation.





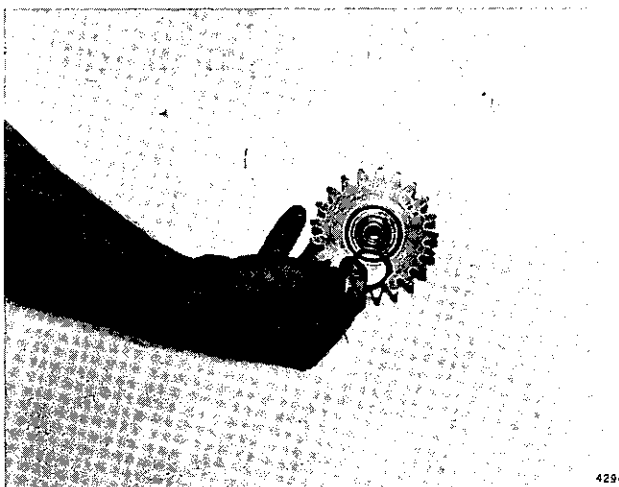
46

Install woodruff key in governor drive gear hub. Press governor drive gear into idler gear.



47

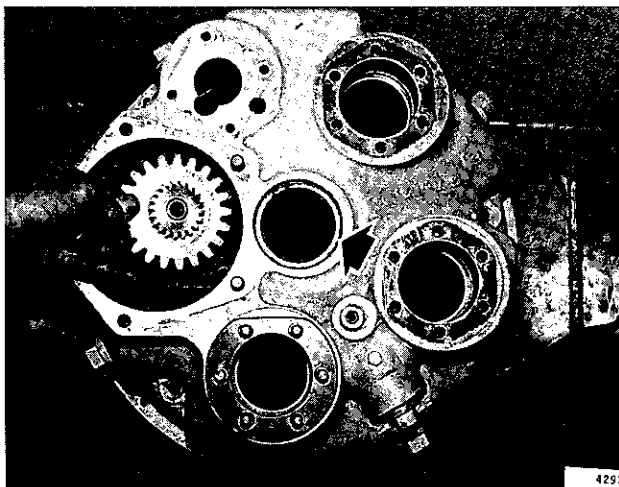
Install governor drive gear retaining ring.



48

Apply a light coat of permatex to outer diameter of seal before installing. Seal must be installed with raised lip outward and recessed 5/16" below face of bore in housing.

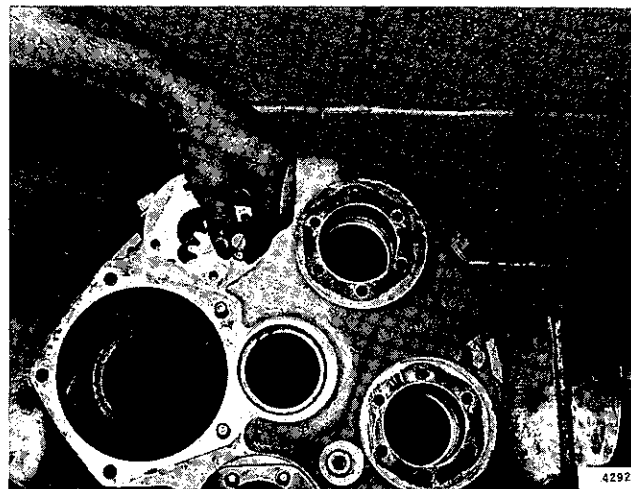
Position governor drive gear assembly in housing. The smaller gear installs toward the front of the housing.





49

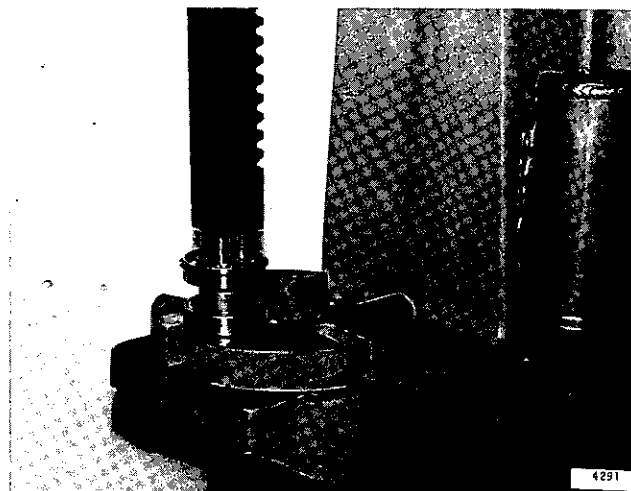
Install "o" ring on idler shaft and lubricate. Insert shaft in gear - press into case. Do not damage "o" ring.



50

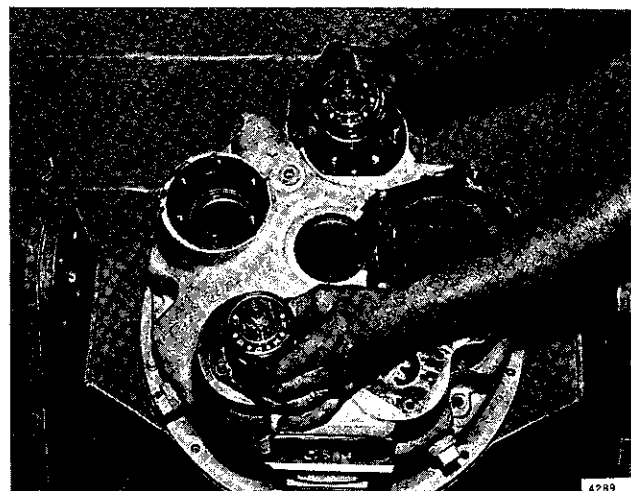
Install bearing locating ring on charging pump drive shaft if previously removed.

Press bearings and spacer on charging pump drive shaft. Bearing must seat against locating ring. Repeat these steps to assemble hydraulic pump drive shaft assembly.



51

Install both pump drive shafts in housing.

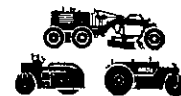


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SHOP

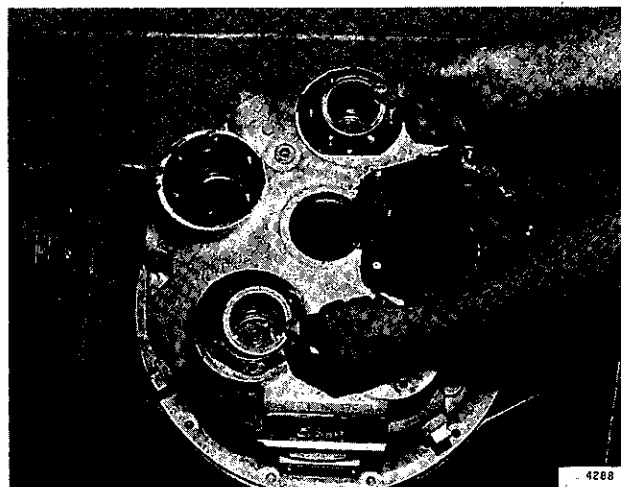


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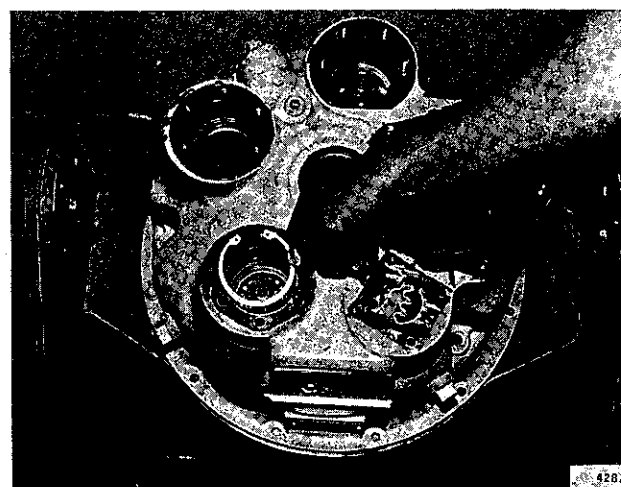
52

Install both bearing retaining washers.



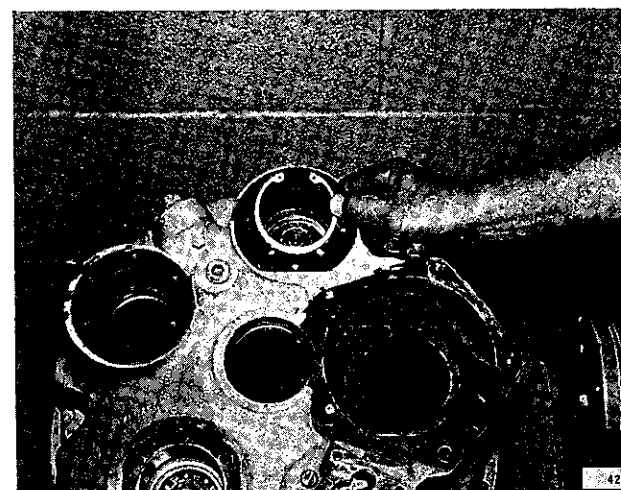
53

Install hydraulic pump drive shaft bearing retaining ring.



54

Install charging pump drive shaft bearing retaining ring.





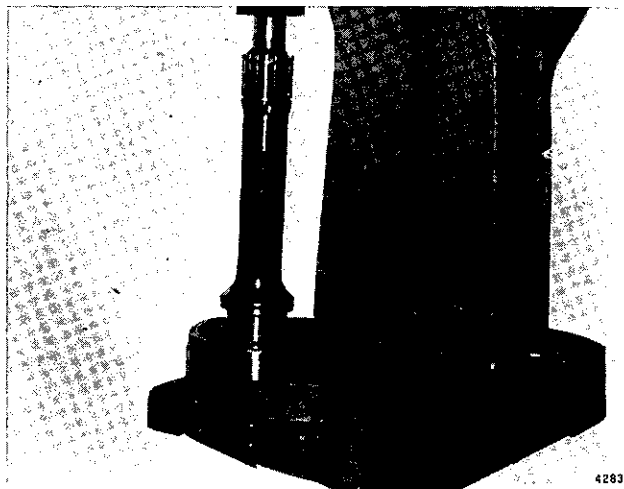
55

Install new hook ring seal on stator support and lubricate with Type "A" oil. Install new hook ring seal on output shaft and lubricate with Type "A" oil.



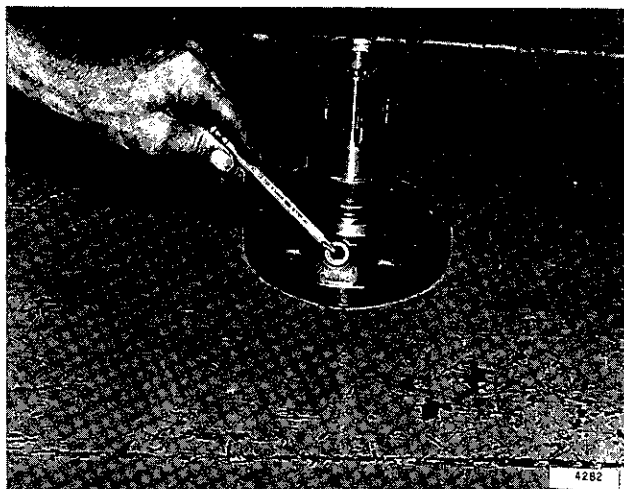
56

Install bearing on output shaft.



57

Check lubrication spray orifice in stator support. Orifice must be open and free of all foreign material. Orifice size is 1/64" - DO NOT DRILL OR REAM OVERSIZE.

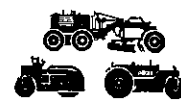


FILE: B
SECTION: 2.10

SHOP

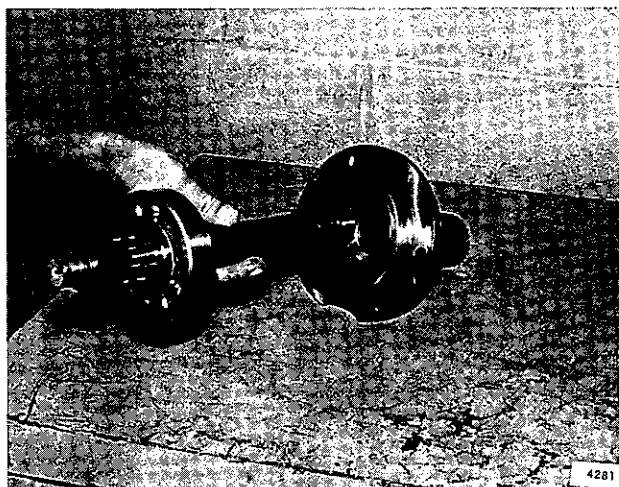


MANUAL



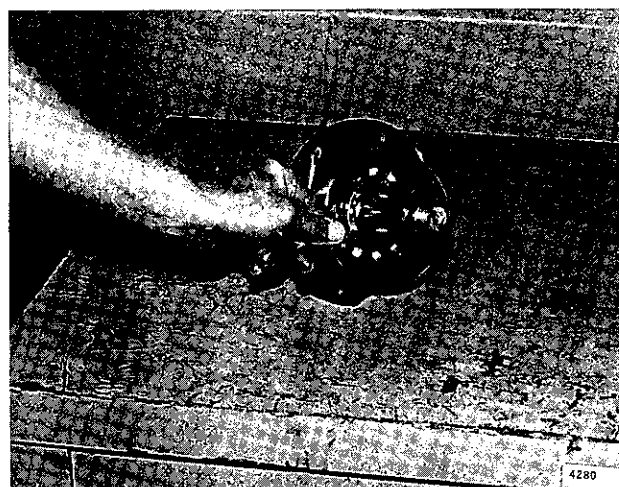
58

Install output shaft and bearing in stator support and sleeve.



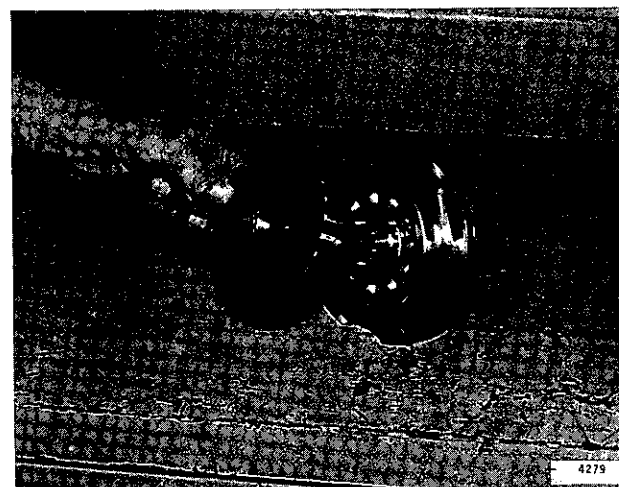
59

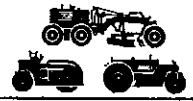
Install output shaft bearing retaining ring.



60

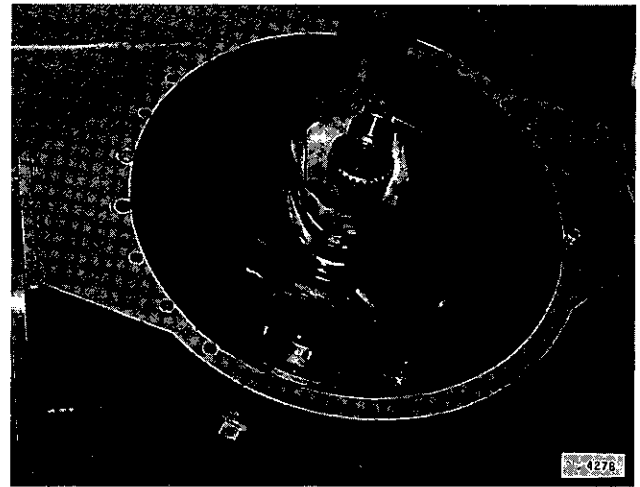
Install turbine shaft gear on output shaft. (Splined side of gear hub toward threaded end of shaft.) Gear must seat against output shaft bearing.





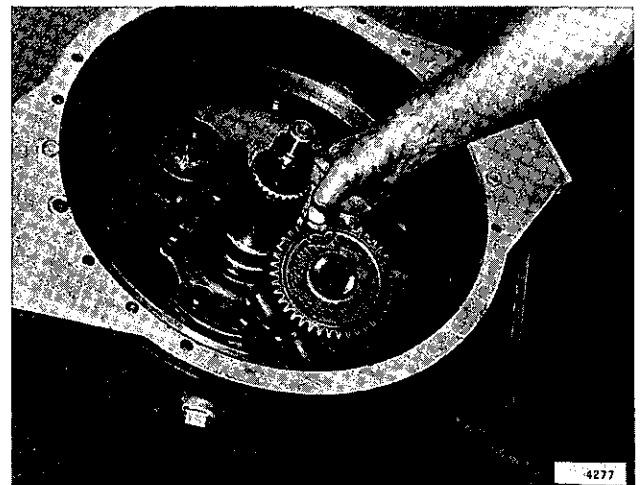
61

Install stator support and output shaft assembly to housing. Install capscrews and internal tooth washers. Torque to 50 foot pounds.



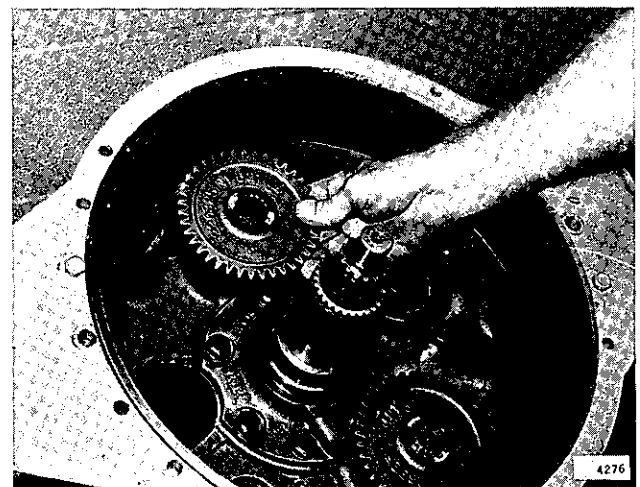
62

Install hydraulic pump drive gear and retaining ring.



63

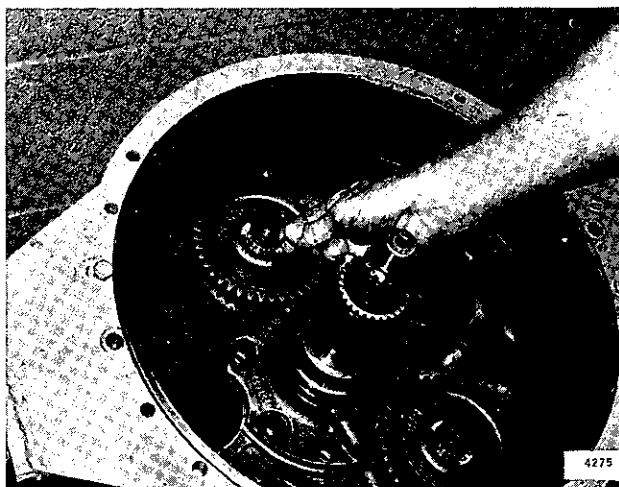
Install charging pump drive gear.





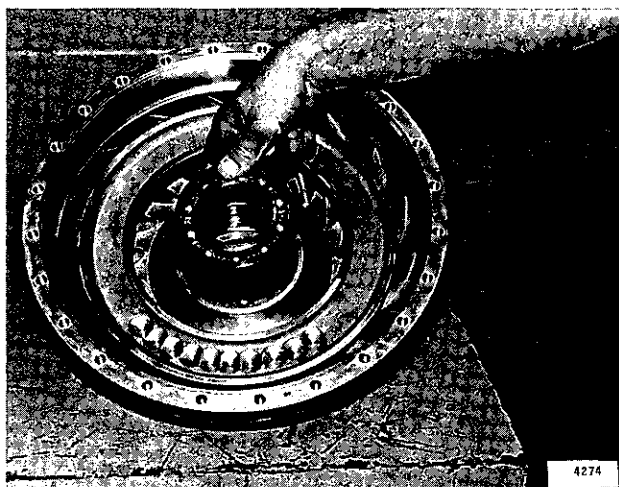
64

Install charging pump drive gear retaining ring.



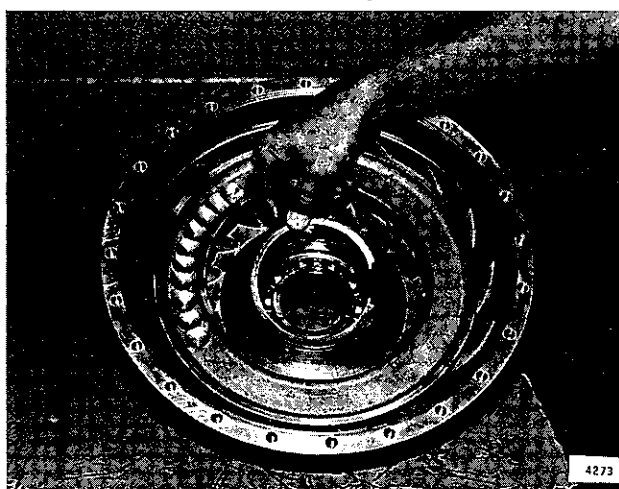
65

Install output shaft bearing in impeller hub.



66

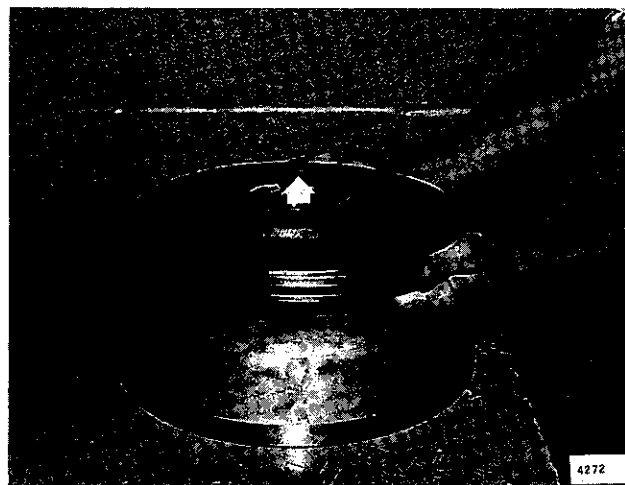
Install output shaft bearing retaining ring.





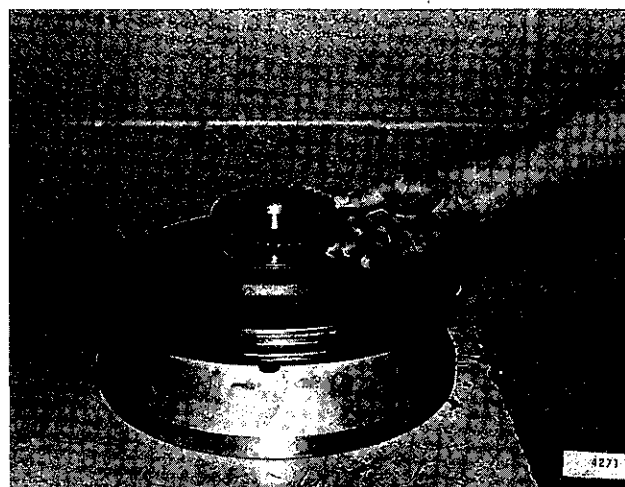
67

Apply light coat of permatex to outer diameter of seal. Install oil seal in baffle. Lip of seal up (arrow). Install oil baffle on impeller hub.



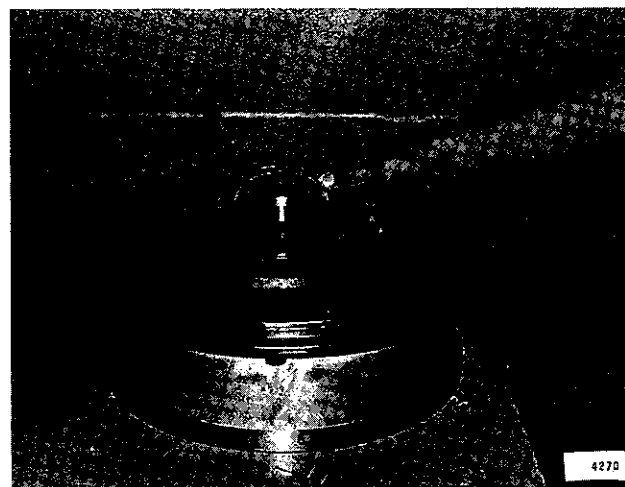
68

Install gear on impeller hub.



69

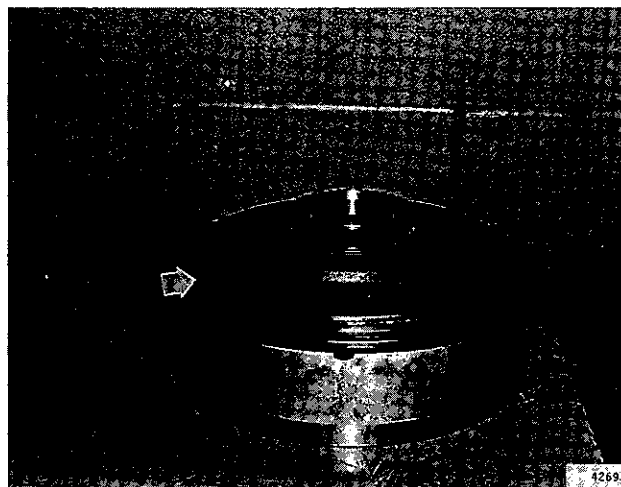
Install retaining ring.





70

Lubricate "o" ring and install on baffle.

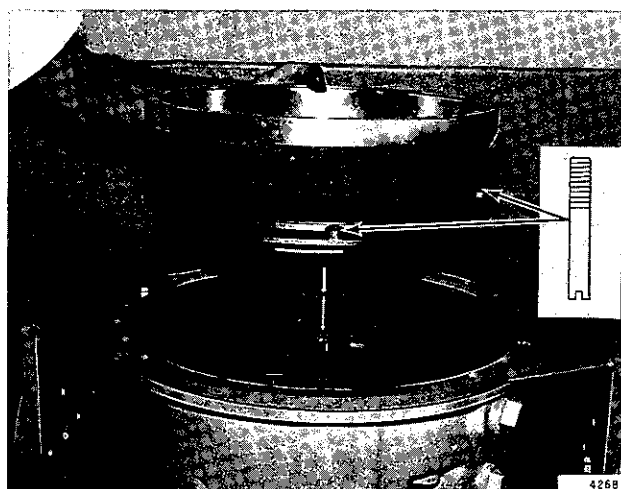


71

Install impeller and baffle assembly in converter housing. NOTE: Mounting holes in oil baffle plate are not evenly spaced and will align with holes in housing in one position only.

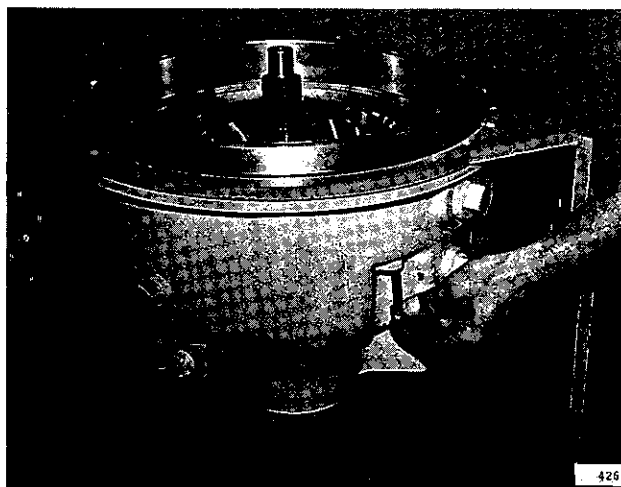
CAUTION: Do not damage hook ring seal or "o" ring.

Suggest two pilot bolts (dowels) be installed prior to assembly to insure correct alignment. Dowels should be approximately 3" long ---- 3/8 U.S.S. thread.



72

Install three capscrews and lockwashers and torque 25 to 30 foot pounds.





73

Install spacer on reaction member. It may be necessary to spread roll pin to obtain interference fit into reaction member.

If reaction member has spacer cast as one piece, the above assembly need not be done.

Install the flat spacer washer on stator support with the tang on the washer facing up.



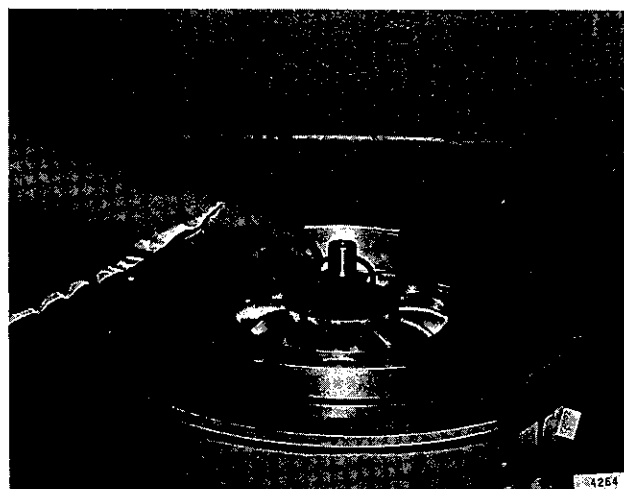
74

Stator installs with spacer down.



75

Install reaction member retaining ring.



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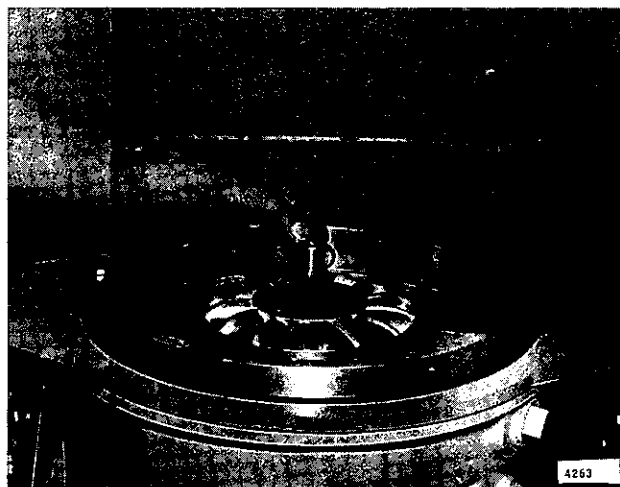


MANUAL



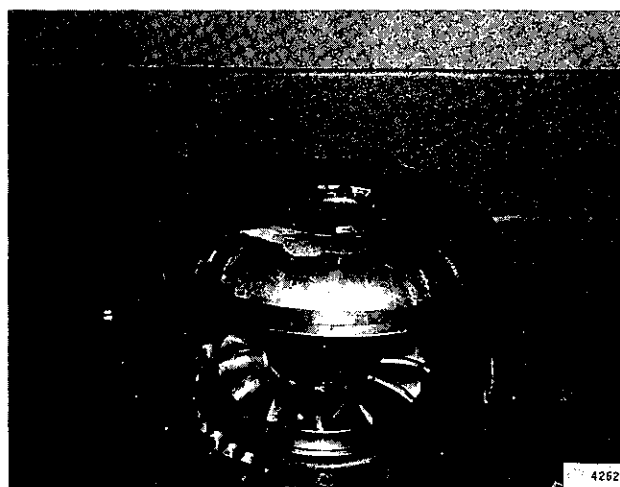
76

Install turbine hub retaining ring.



77

Install turbine.



78

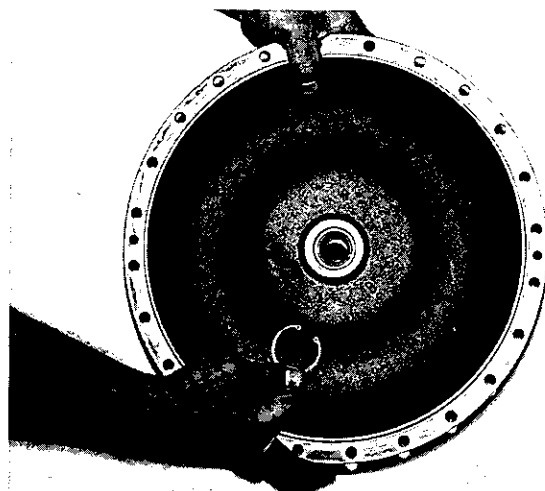
Install turbine retaining ring.





79

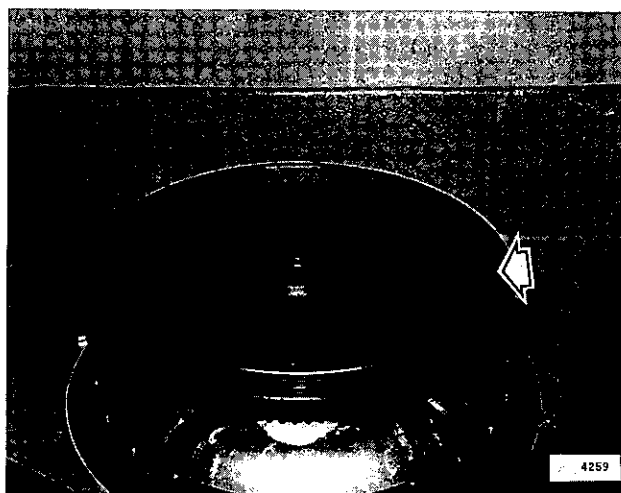
Install roller bearing and retaining ring in impeller cover if previously removed. Install impeller cover sleeve if previously removed.



4250

80

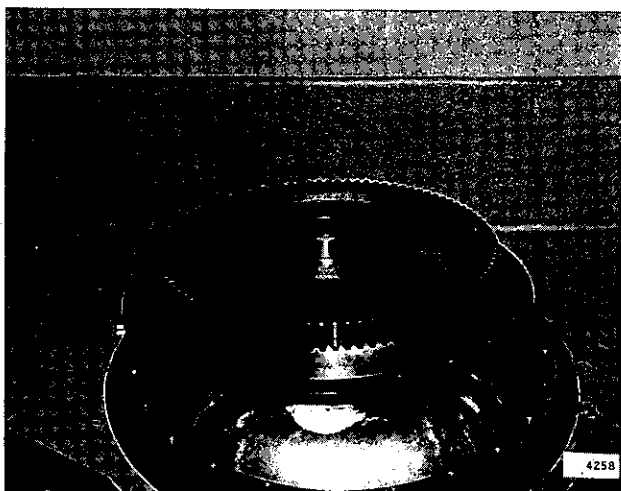
Lubricate and install "o" ring (arrow) on impeller cover.



4259

81

Position impeller cover and install capscrews. Use care not to damage "o" ring. Torque capscrews 25 to 30 foot pounds.

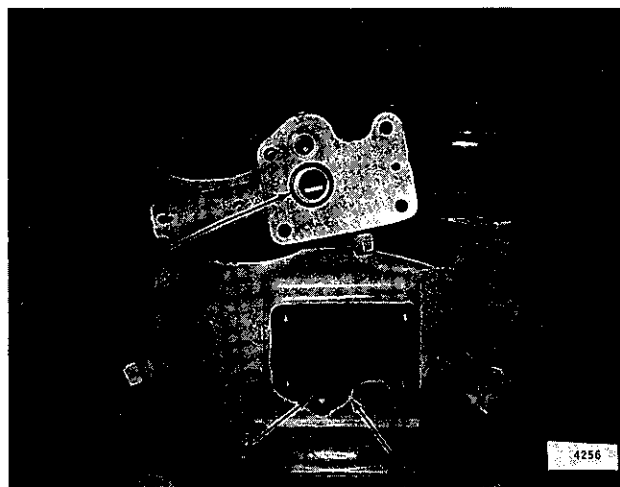


4258



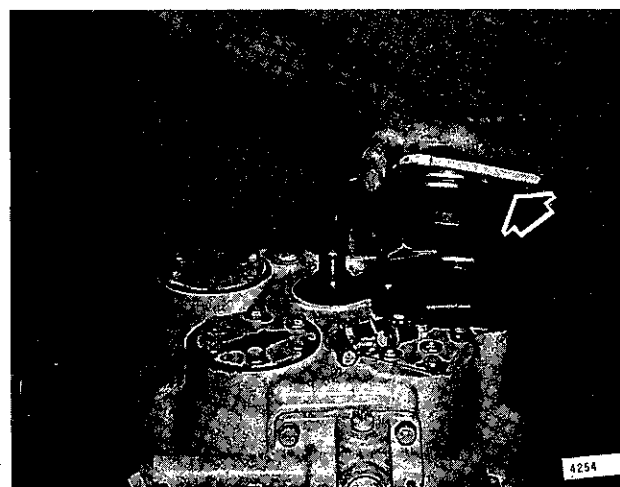
82

Position "o" ring (3) in regulating valve body. Install regulating valve gasket (1), valve spring and plunger (2) in housing. Install regulating valve assembly to housing. Torque capscrews 25 to 30 foot pounds.



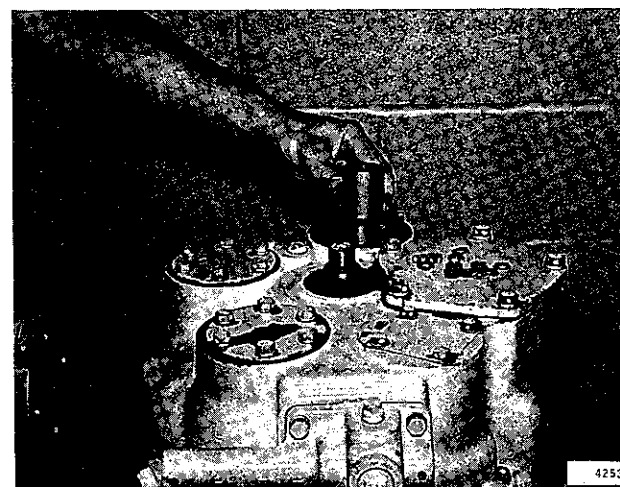
83

Install housing cover plates and gaskets. Torque capscrews 25 to 30 foot pounds. Lubricate and install "o" ring (arrow) on offset drive cover. Install offset drive cover. Install three capscrews and two nuts. Torque to 50 foot pounds.



84

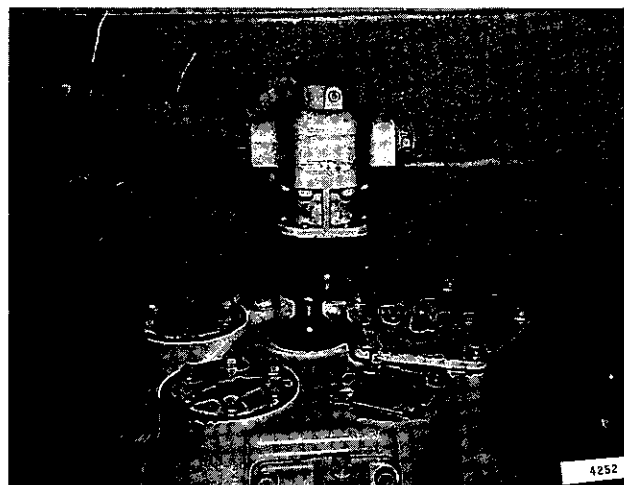
Install charging pump adaptor.





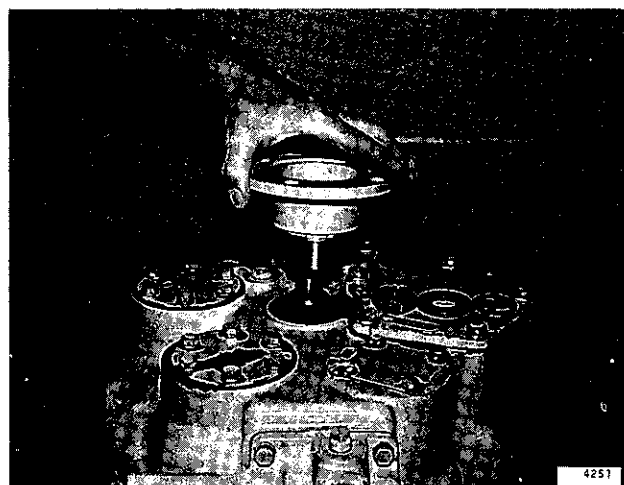
85

Install charging pump and gasket.



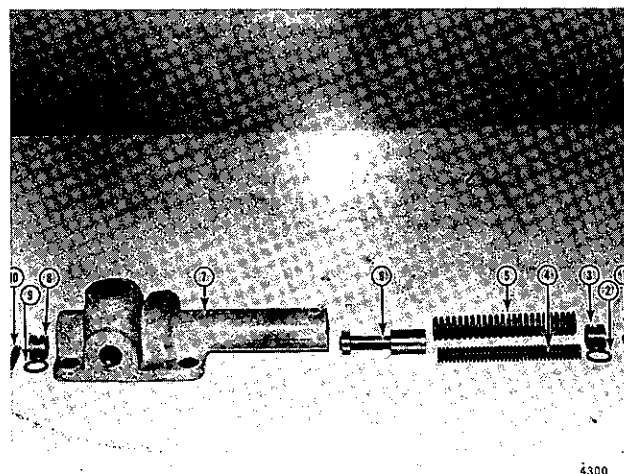
86

Install output flange coupling, "o" ring, washer and nut. Torque nut to 225 foot pounds. Install cotter pin. Use care not to damage output shaft seal.



87

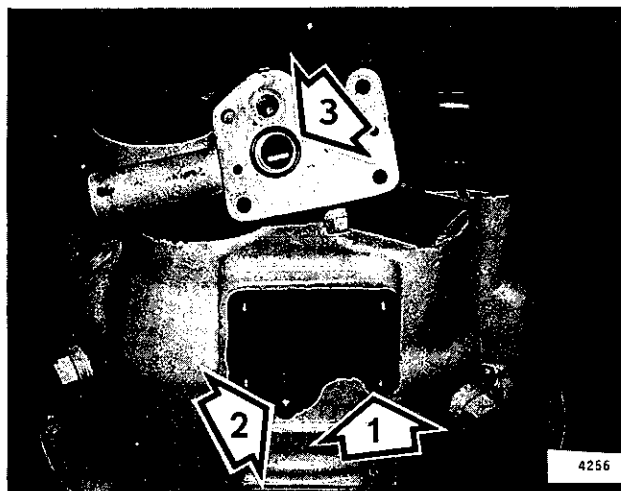
Remove roll pin (1). Spring tension will push stop (3) and "o" ring (2) from body. Remove inner spring (4) and outer spring (5). Remove valve piston (6). Remove roll pin (10), stop (8), "o" ring (9). Assemble in reverse order.



4300



The Fiber Ring Gear Kit in which the gear contains eight (8) mounting holes is being replaced with a Fiber Ring Gear Kit in which the gear has sixteen (16) mounting holes; however, these two ring gears are completely interchangeable. The sixteen (16) hole ring gears can be mounted to an eight (8) hole flywheel and the eight (8) hole ring gears can be mounted to a sixteen (16) hole flywheel.



INSTALLATION

1. Thoroughly clean flywheel to remove any burrs or dirt which may not allow proper seating of the ring gear to the flywheel.
2. Position ring gear on flywheel.
3. Install the special cap screws and washers provided with the ring gear. Under no circumstances can standard screws or washers be used.
4. Torque cap screws in a cross sequence as specified below depending on the cap screws provided with the ring gear.

TORQUING OF THE INTERFERENCE FIT CAP SCREWS SUPPLIED WITH THE RING GEAR WITH EIGHT (8) MOUNTING HOLES:

- 1) After installing the cap screws by hand, use a torque wrench to take a "turning torque" reading of each cap screw to determine the torque required to overcome the interference fit between cap screw and hole. Mark this torque value beside each cap screw.
- 2) Add 20-25 foot pounds to the turning torque value and torque the cap screws to this figure. The combination of these two torques provides the proper torque value to hold the ring gear in place.

Note: Overtightening or undertightening will result in premature failure of the ring gear.

TORQUING THE "NYLOC" CAP SCREWS SUPPLIED WITH THE RING GEAR WITH SIXTEEN (16) MOUNTING HOLES.

- 1) These "nyloc" cap screws can be identified by a nylon insert embedded in the threads. Do not take a turning torque reading on these cap screws; torque them to 30-33 foot pounds of torque.
5. Both styles of cap screws should be lock wired in pairs. Twist the lock wire between the cap screws to ensure a secure locking action.
6. Lightly coat with grease the pilot bore on the torque converter and the ring gear teeth to ease installation.
7. When mounting the torque converter to the engine, do not use force, the teeth should mesh together easily.

Note: It is good procedure to check crankshaft end play, before and after, converter to engine installation. The same end play must be present to ensure proper crankshaft end clearance. Improper clearance will result in crankshaft thrust bearing failure.



CHECKING

POWERSHIFT TRANSMISSION & CONVERTER HYDRAULIC PRESSURES

T-600 SERIES B GRADER

WITH

CUMMINS & DETROIT DIESEL ENGINES

1. CHECK OIL LEVEL IN TRANSMISSION (DIPSTICK):

- (a) Oil at operating temperature.
- (b) Moldboard in ground, parking brake set.
- (c) Engine idling.
- (d) Forward & Reverse Lever in neutral.
- (e) Remove seat cushion - Slide aside 6" cover.
- (f) Reach through 6" hole and pull out dipstick. Wipe dipstick clean, re-insert dipstick and check oil. *Maintain oil level between full and add mark on dipstick. DO NOT OVERFILL.

*Use Type "A" Suffix A, Automatic Transmission Fluid or Dexron.

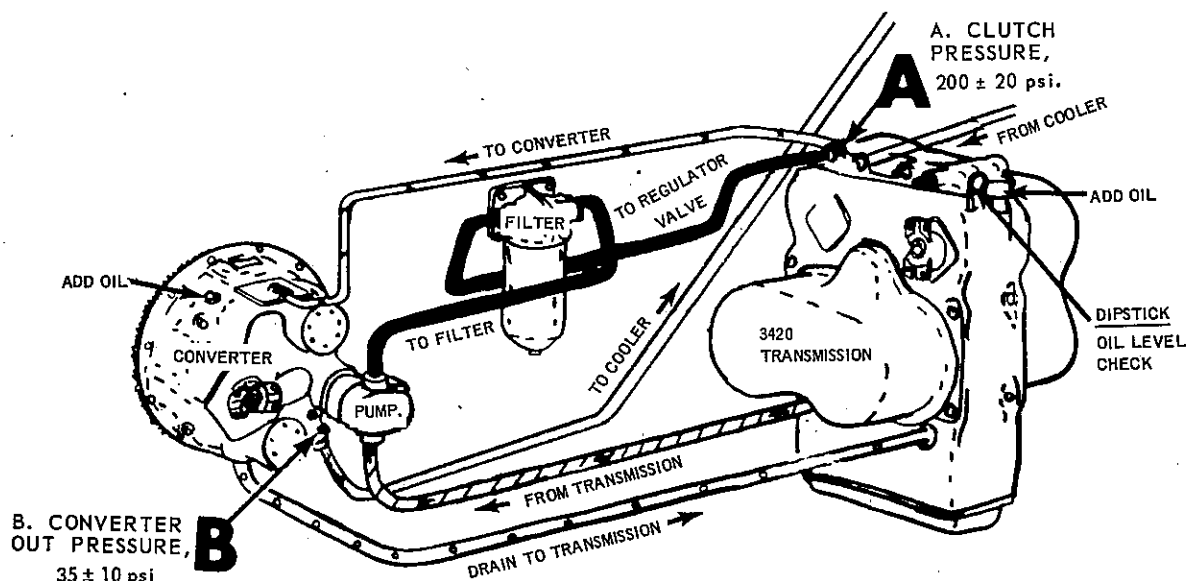
2. CHECK CLUTCH PRESSURE AT POINT A.

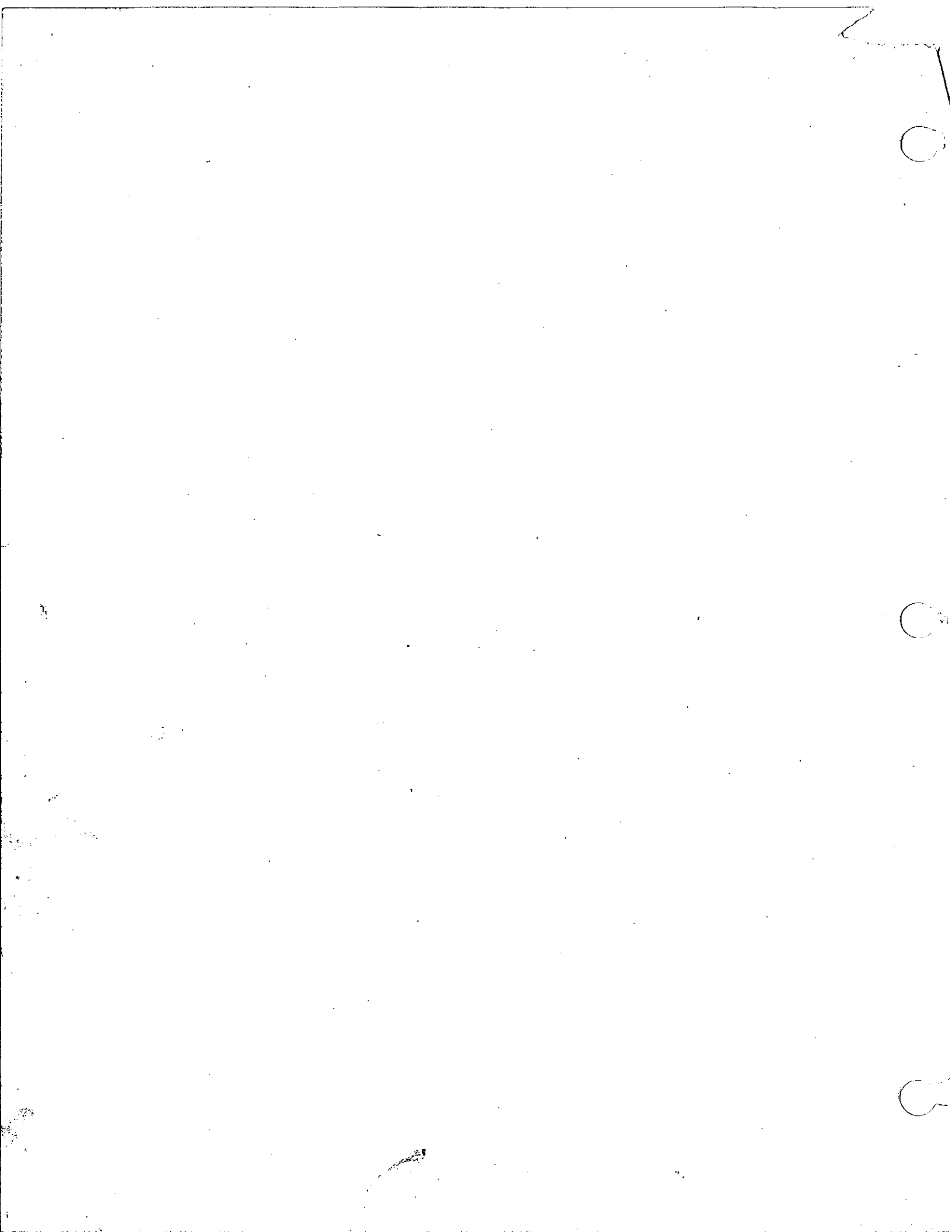
- (a) If clutch pressure does not read 200 ± 20 psi on instrument panel - install a reliable 300-350 psi gage at point A.
- (b) Record pressures at engine high idle and low idle.
- (c) Moldboard in ground, parking brake set.
- (d) Check all 6 clutches :
 - Forward clutch engaged - 1, 2, 3, 4 clutch in 4th.
 - Reverse clutch engaged - 1, 2, 3, 4 clutch in 4th.
 - Forward & Reverse clutch in neutral - check 1, 2, 3, 4 clutch.

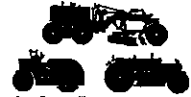
Record all pressures - pressure 200 ± 20 psi.

3. CHECK CONVERTER OUT PRESSURE - POINT B:

- (a) Install 100 psi gage at point B.
- (b) Engine at High Idle, Transmission in Neutral.
- (c) Converter Temperature 180° - Pressure 35 ± 10 .





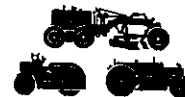


GRADER ENGINE SPEEDS

GRADER MODEL	ENGINE MAKE & MODEL	HIGH IDLE		LOW IDLE		FULL LOAD RPM	STALL RPM
		RPM	LIMITED BY HAND THROTTLE	DECELERATOR SETTING	LIMITED BY HAND THROTTLE		
T400A	IHC D-407	2750	2250	700	900	2500	2480
T400A	DD 4-53	2750	2250	700	900	2500	2480
T500A	DD 4-71	2450	2150	700	900	2300	2360
T500A	CUM C464-C160	2500	2150	700	900	2300	2340
T500A	IHC DT 407	2500	2000	700	900	2300	2360
T500QP4	CUM C464-C160	2500	2150	700	900	2300	2340
T500QP4	DD 4-71	2450	2150	700	900	2300	2360
T500L	DD 4-71	2450	2150	700	900	2300	2360
T500L	IHC DT 407	2500	2000	700	900	2300	2360
T500L	CUM CT464-C175	2700	2300	700	900	2500	2510
T500QP5	CUM CT464-C175	2700	2300	700	900	2500	2510
T600B	IHC DT 407	2500	2000	700	900	2300	2360
T600B	CUM CT464-C175	2700	2300	700	900	2500	2510
T600B	DD 6-71	2450	2250	700	900	2300	2140

CRANE ENGINE SPEEDS

CRANE MODEL	ENGINE MAKE & MODEL	LOW IDLE ±50 RPM	HIGH IDLE ±50 RPM	STALL SPEED ±50 RPM
90A	IHC UV-345	750	2900	2400
90A	DD 4-53	750	2900	2400
100A	IHC UV-345	750	2900	2400
100A	DD 4-53	750	2900	2400
110A	IHC UV-345	750	2900	2400
110A	DD 4-53	750	2900	2400
125A	IHC UV-345	750	2900	2400
125A	DD 4-53	750	2900	2400
150A	IHC UV-345	750	2900	2400
150A	DD 4-53	750	2900	2400
150A	CUMMINS V-352-C	750	2900	2400



CHECKING

POWERSHIFT TRANSMISSION & CONVERTER HYDRAULIC PRESSURES

GRADERS: T400A, T500A, T500L and T600B /IHC DT-407 engine

CRANES: Series A Hydraulic Cranes

GRADER AND CRANE ENGINE SPEEDS

1. TRANSMISSION OIL LEVEL CHECK:

- Oil at operating temperature.
- Moldboard in ground, parking brake set.
- Engine idling.
- All shifting levers in neutral.
- Remove top plug (Point C). If the transmission is over filled, allow all the oil to drain out of the top plug. If there is no oil at the top plug, remove the bottom plug (Point C). If there is no oil at bottom plug **ADD OIL** (at converter, with engine off). Recheck with engine running. Maintain between top and bottom plug (Point C).

*Use Type "A" Suffix A, Automatic Transmission Fluid or Dexron.

2. CHECK CONVERTER OUT PRESSURE AT POINT B.

- Install 100 psi gage at Point B.
- Engine at High Idle. Transmission in Neutral.
- Converter Temperature 180° - Pressure 35 ± 10.

3. CHECK CLUTCH PRESSURES AT POINT A.**

- If clutch pressure does not read 260 ± 20 psi on instrument panel - install a reliable 300 - 350 psi gage at point A.
- Record pressures at engine High idle and Low idle.
- Moldboard in ground and parking brake set.
- Check all 4 clutches:
 - Forward clutch engaged - Hi - Low in neutral.
 - Reverse clutch engaged - Hi - Low in neutral.
 - Forward & Reverse clutch in neutral Hi clutch engaged.
 - Forward & Reverse clutch in neutral Low clutch engaged.

Record all pressures - Pressure 260 ± 20 psi.

**Clutch pressures may be taken from individual clutch caps point D. A 1/8" N.P.T. fitting is located on each cap for gage installation.

