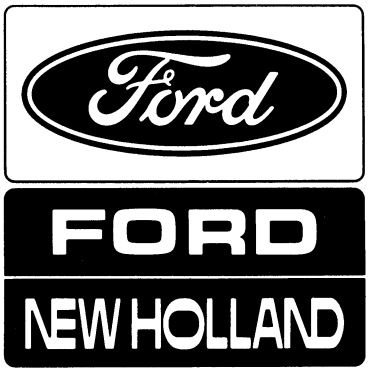

FORD
TRACTORS & EQUIPMENT

1982
SERVICE BULLETINS

JANUARY through DECEMBER

Ford New Holland, Inc.
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Ford

Tractors
Equipment

Service Bulletin INDEX

1982

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GENERAL

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Extended Power Train Warranty	5T	12-82	Ford 2000 through 7000 and TW Series Tractors

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Ford

Tractors
Equipment

Service Bulletin

Tractor and Implement Operations - North America

No. 1-82

IN THIS ISSUE

TRACTORS

CONSUMER PRODUCTS

GENERAL

TRACTORS

SERVICING THE STEERING CYLINDERS

1T

FW-20, 30, 40 AND 60 TRACTORS

When servicing 4-WD tractor steering cylinders, SFD 01-7774, the base of the cylinders should be inspected for possible deformation or "bulging" where the rod contacts the base. If the base has been deformed, but the cylinder barrel and rod are otherwise serviceable, a new Piston, SFD 02-4066T1, and Seal Kit, SFD 35-1336T1, should be installed.

Installation of the new style Piston, SFD 02-4066T1, Figure 1, will allow the piston to bottom out before the rod, thus distributing the load and eliminating the possibility of additional deformation of the cylinder base.

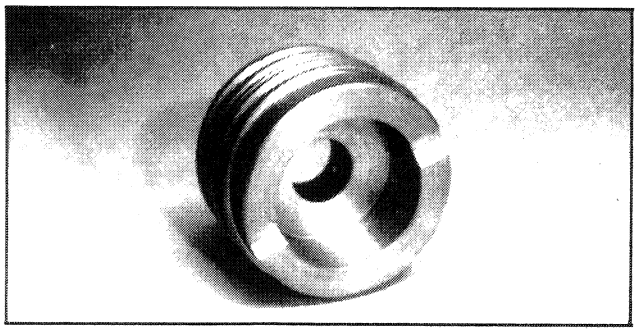

Figure 1
New Steering Cylinder Piston, SFD 02, 4066T1

The above improvements in the steering cylinder have been incorporated in current production tractors.

Warranty Status

For information only

END FLOAT ON BRAKE PEDAL CROSS SHAFT

2T

FORD 3 AND 4 CYLINDER TRACTORS

When replacing the brake cross shaft and/or seals always check the cross shaft end float. Excessive end float can result in early failure of the oil seals. The end float must not exceed .030 inch (.076 mm) when measured between the right hand thrust washer and the rear axle center housing. Use the following procedure to reinstall the brake cross shaft and obtain correct end float.

1. Install the brake cross shaft from the left side of the center housing with the clutch pedal and left hand thrust washer in position. Position the right hand thrust washer with the flat on the washer facing forward.

   NOTE: On Model 5000 Tractors built prior to Unit Code 8J03B (9/3/68), the right hand thrust washer was not used. Check the end float between the pedal hub and the center housing on these units.

2. Locate the key in the cross shaft goove and slide the left hand brake pedal over the key. Adjust the position of the left hand brake pedal and the right hand thrust washer until the distance between the washer and the center housing is .030 inch. (.076 mm). See Figure 2. Secure the pinch bolt.

3. Install the spacing washer, right hand brake pedal, washer and snap ring on the cross shaft. Check the brake and clutch pedals for freedom of operation.

Installation of new brake cross shaft seals is described in Service Bulletin 10/11-80, Article 4T.

Warranty Status

For information only

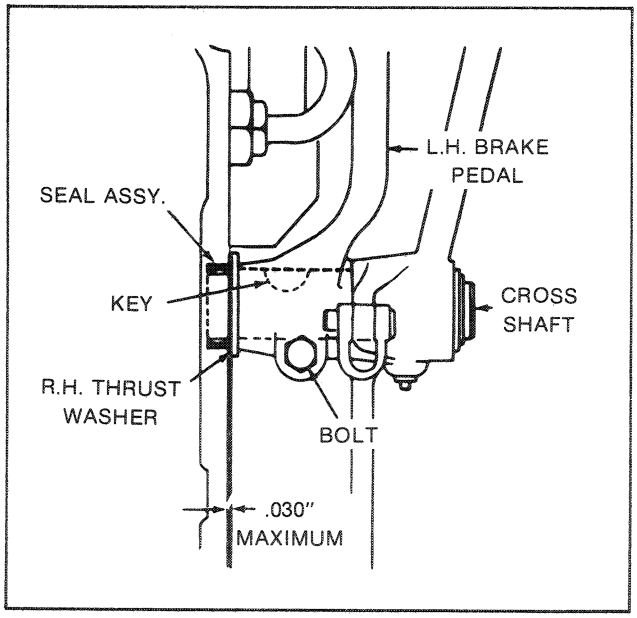

Figure 2
Brake Pedal Cross Shaft End Float

CONSUMER PRODUCTS

LOOSENING OF PUSH PLATE WEAR PADS

1CP

960 LOG SPLITTER

In some instances where the wear pad is bonded to the push plate on the 960 Log splitter, the wear pad has come loose from the push plate and could not be reattached.

Units with serial numbers higher than:

09GN5700-YC0100408
09GN5701-YC0150198

have the wear pad bolted to the push plate. This new wear pad, Part No. GB216338, can be adapted to the push plate on models with serial numbers lower and including the above numbers.

To attach the new wear pad, mark the push plate using the wear pad (2), Figure 3, as a template and drill an 11/32" hole. Use a 5/16" - 18 x 7/8" slotted flat head machine screw, a 5/16" - 18 hex nut, and a 5/16" lockwasher to fasten the wear pad to the push plate and tighten securely. The attaching hardware must be procured locally. Grade 5 hardware is preferred.

Warranty Status

For information only

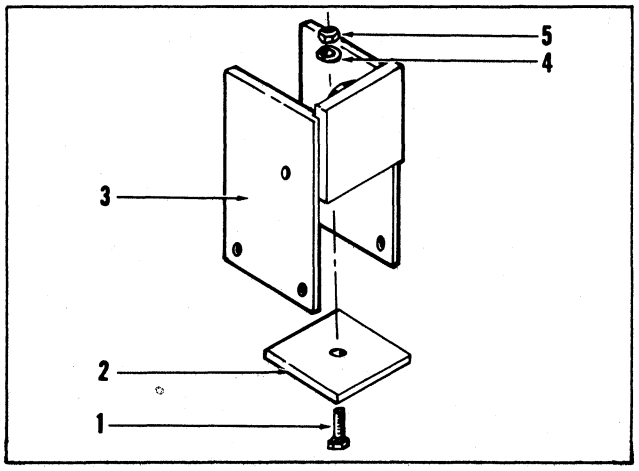

Figure 3
Push Plate and Wear Pad

1. 5/16" - 18 x 7/8" Slotted Flat Head Machine Screw
2. Wear Pad
3. Push Plate
4. 5/16" Lock Washer
5. 5/16" - 18 Hex Nut

INTERFERENCE BETWEEN UNIVERSAL DRIVE SHAFT AND TILLER HOUSING

2CP

105 ROTARY TILLER

We have received a number of reports of interference between the Series 105 Rotary Tiller housing and the universal drive shaft shield, resulting in damage to the universal drive shaft.

Operators should be advised that these failures are usually caused by incorrect adjustment of the tractor top link. Also, looseness of the top link nut will allow vibration to rotate the tube member and extend the link to a position where interference occurs between the tiller housing and drive line when the tiller is fully raised to transport position.

The following "Caution" note, which appears on page 3 of the Operator's Manual, SE 3762, also covers proper adjustment of the tractor upper link to avoid universal drive damage.

CAUTION: When raising the tiller to transport position, make certain the tractor's upper link is adjusted so as the tiller moves upward, the universal drive cannot close to the point of being forced together and will not interfere with the tiller housing. CHECK ALL MOUNTING BOLTS TO MAKE CERTAIN THEY ARE TIGHT.

Warranty Status

For information only

PRESEASON MAINTENANCE TIPS

3CP

715 SNOWBLOWER

To help maintain trouble free operation of the Model 715 Snowblowers, the following items should be checked, lubricated, and/or adjusted as required prior to use this winter.

- Check collector housing height to be sure clearance is adequate for gravel or crushed rock surfaces.

- Make sure the auger and fan operate freely.
- Oil chain with open gear lubricant SWG-S681-5.
- Lubricate the universal joints on the driveshaft assembly with C1AZ-19590-B.
- Check the oil level in the worm gear drive use C6AZ-19580-E Oil. Suggest PN of right tube be included.
- Check condition of fan and auger shear bolts.
- Lubricate the chute base with C1AZ-19590-B.
- The electric clutch must be burnished at the beginning of every snowblowing season. To burnish the clutch properly, start the tractor and increase engine rpm's to rated P.T.O. speed. Start and stop the blower completely 20 to 30 times. This will burnish the clutch and allow it to develop full torque. If the clutch plate is not properly burnished, it will not develop full torque. This will cause slipping and eventual failure of the clutch.

If the snowblower is not used for a period of one month, it is advisable to go through the burnishing routine to maintain good clutch operation.

Warranty Status

For information only

GENERAL

NEW PARTS AND SERVICE PUBLICATIONS

1G

GENERAL INFORMATION

The following publications are now available.

NEW PARTS PUBLICATIONS

Form Number	Description	New/Revised	Replaces	Price
FTO-17275-B	Series 200 & 205 Disc Harrows	Revised	FTO-17275	$3.75
FTO-17248-F	Series 240, 241, 242, 243 & 246 Disc Harrows	Revised	FTO-17248-D	4.00
FTO-17306-B	Series 251 Disc Harrows	Revised	FTO-17306-A	4.00
FTO-17333	Series 219, 220, 221, 222 & 236 Disc Harrows	New	—	3.75

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Ford

Tractors
Equipment

Service Bulletin

Tractor and Implement Operations
- North America

No. 2-82

IN THIS ISSUE

TRACTORS

NEW ENGINE COOLANT COUPLERS

1T

FORD FW-20, 30 AND 60 TRACTORS

All 4-WD Tractors currently being shipped have coolant transfer couplers factory installed on the engine. See Figure 1 and 2. The purpose of these couplers is to aid cold weather starting by allowing warm coolant to be transferred to and circulated through the cold engine from a slave unit such as another tractor or service truck that is already running and warmed up. For current service, and for installation of these couplers on earlier production 4WD Tractors, the following parts are available from Parts Distribution:

Part Number	Description	Qty.
SFD-31-1586	Adaptor	1
SFD-31-178	Reducer	2
SFD-50-1172T1	Nipple	2
SFD-31-1574	Nipple	1

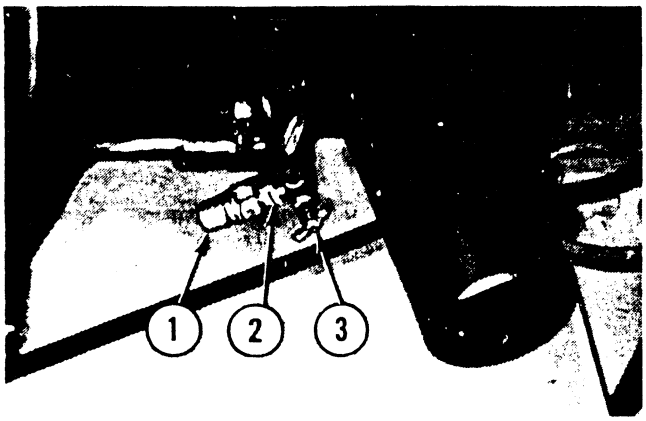

Figure 1

1. **Nipple, SFD 5C-1172T1**
2. **Reducer, SFD 31-178**
3. **Adapter, SFD 31-1586**

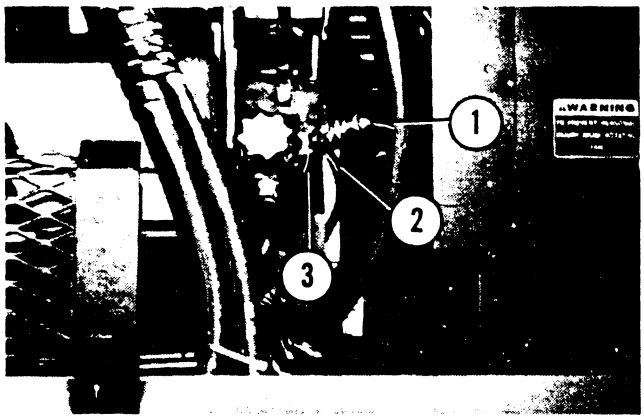

Figure 2

1. **Nipple, SFD 50-1172T1**
2. **Reducer, SFD 31-1586**
3. **Nipple, SFD 31-1574**

In addition, the adapters and female couplers necessary to complete the connection from the engine to a tractor or service truck slave unit are available through Parts Distribution as Kit No. SFD-35-1298T91 - New Part -0-, Kit-Coolant Exchange. The Kit includes:

SFD-50-1173T1 N/R	Coupling - Female (N.S.S.)	2
SFD-31-522 N/R	Barb Adapter (N.S.S.)	2

NOTE: The necessary 5/8" hoses of desired length must be procured locally.

In areas where starting difficulty is a problem due to severe cold conditions, owners should be made aware of the engine coolant transfer couplers on newer tractors, availability of the parts for earlier units, and the slave vehicle connector kit to be used with them.

Warranty Status

For information only

INSTALLATION OF 14 INCH CLUTCH PRESSURE PLATE AND COVER ASSEMBLY

2T

TW-20 AND TW-30 TRACTORS

During installation, the 14 inch clutch pressure plate and cover assembly can drop slightly, allowing the cover to overlap the attaching face on the flywheel at the bottom. This condition can cause the cover to catch on the flywheel lip and not fully seat when tightening the attaching bolts.

When servicing the clutch, visually check to be sure the clutch cover is fully seated in the flywheel recess completely around the bolt circle. During installation, hold upward pressure on the clutch and install and finger tighten the three lowermost bolts first. Next, install the three uppermost bolts. Then install the remaining six bolts. Finally, tighten all twelve bolts evenly and in a diagonal pattern to 20-26 lbs. ft. (27.11 to 35.10 Nm) torque, starting with the three lowermost bolts first.

Warranty Status

For information only

FWD OPTION WITH TURF TIRES

3T

1100, 1200, 1300, 1500, 1700 AND 1900 TRACTORS

Recent field reports indicate that some dealers and customers may not be using the FWD option on 1000 Series tractors properly and are operating the unit with the FWD engaged continuously, regardless of tractive conditions.

The FWD option is a front wheel assist and is designed to give additional traction only when required. Operating the tractor in FWD on a hard surface will cause transmission wind-up and possible damage to the drive line. This is more of a concern when the tractor is equipped with turf tires. The diameter of the turf tire varies more due to load changes and tire inflation.

Customers and operators should be instructed in the proper use of the FWD option. The FWD mechanism is most effective when used in the following conditions:

1. On slopes
2. Wet fields
3. Sandy or loose soil
4. Any condition that requires additional traction

When the FWD is used properly, the customer can prolong tire and drive line life and maximize fuel economy.

Warranty Status

For information only

KOHLER ENGINES

4T

SHEARED FLYWHEEL KEYS

Field reports have indicated the shearing of flywheel keys, a condition which may result from a number of causes.

Since shearing has been reported specifically on engines with flywheel drives and battery ignition systems, check conditions such as overload, ignition timing and spark plug gap, when such an engine is brought in for repair.

Spark plug gap on battery ignition engines must be set at .035 in. (.90 mm). If improperly gapped, a maverick spark can occur, which can cause improper ignition of unburned gases and create a force causing the fylwheel key to shear.

When repairing this type failure, replace the flywheel crankshaft key, flywheel washer and nut or bolt. Refer to the Engine Section of the LGT Series Service Manual, SE-3772, for proper removal, installation, and engine disassembly procedure.

Warranty Status

For information only

GENERAL

NEW WARRANTY CUMMINS ENGINE

1G

FORD FW-20, FW-30 AND FW-60 TRACTORS

Cummins Engine Company, Inc., has a two year agricultural warranty that became effective December 1, 1981. The new warranty applies to engines installed in the Ford 4WD Tractors that were sold to the first retail purchaser on or after the above date for agricultural application.

COVERAGE

Base Engine Warranty

The base Engine Warranty covers any failures of the engine which result, under normal use and service, from defects in workmanship or material. This coverage extends for two years or 2000 hours of operation, whichever first occurs, from the date of delivery to the first user, except that if the 2000 hour limit is exceeded during the first year, coverage continues until the end of the first year.

Extended Major Components Warranty

The Extended Major Components Warranty covers failures of the engine cylinder block, crankshaft and connecting rods (bushing and bearing failures are not included) which result, under normal use and service, from defects in workmanship or material in these parts.

This coverage begins with the expiration of the Base Engine Warranty and ends three years or 10,800 hours of operation, whichever occurs first, from the date of delivery to the first retail purchaser.

These warranties are made to all Owners in the chain of distribution and coverage continues to all subsequent Owners until the end of the periods of coverage.

RESPONSIBILITIES

Cummins Responsibilities During the Base Engine Warranty

Cummins will pay for all parts and labor needed to repair the warrantable failure. All labor costs will be paid in accordance with Cummins published Standard Repair Operation guidelines. Only new genuine Cummins or Cummins approved rebuilt parts and assemblies will be used in making the repair.

Cummins will pay for the lubricating oil, antifreeze, filter elements, belts, hoses and other maintenance items that are not reusable due to the warrantable failure.

Cummins will pay reasonable labor costs for engine removal and reinstallation when necessary to make the warranty repair.

Cummins will pay for all reasonable travel expenses for mechanics from the repairing facility, including meals, mileage, and lodging when it is necessary for the repairing mechanic to make an on-site warranty repair.

Cummins Responsibilities During the Extended Major Components Warranty

Cummins will pay for the defective engine cylinder block, crankshaft or connecting rod.

Cummins will pay for any connecting rod, crankshaft or engine cylinder block which is progressively damaged by a failure of the above parts.

Owner Responsibilities During the Base Engine Warranty

Owner is responsible for the cost of lubricating oil, antifreeze, filter elements, belts, hoses and other maintenance items replaced during warranty repairs except where such items are not reusable due to the warrantable failure.

Owner Responsibilities During the Extended Major Components Warranty

Owner is responsible for the costs of all labor required for removal, repair and reinstallation of the engine.

Owner is responsible for the costs of all parts required for the repair except for:

— The defective cylinder block, crankshaft or connecting rod.

— Any connecting rod, crankshaft or cylinder block progressively damaged by a failure of the above parts.

Owner is responsible for the cost of lubricating oil, antifreeze, filter elements, belts, hoses and other maintenance items replaced during the repair.

Additional Owner Responsibilities During Both Warranties

Owner is responsible for the operation and maintenance of the engine as specified in Cummins Operation and Maintenance Manuals.

Prior to the expiration of the applicable warranty, Owner must give notice of any warrantable failure to a Cummins distributor or authorized dealer or other repair location approved by Cummins and have the engine repaired by such facility. Locations are listed in Cummins United States and Canada Sales and Service Directory.

Owner is responsible for communication expenses, meals, lodging and incidental costs incurred by Owner or employees of Owner as a result of a warrantable failure.

Owner is responsible for "downtime" expenses, and all business costs and losses resulting from a warrantable failure. CUMMINS IS NOT RESPONSIBLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

LIMITATIONS

Cummins is not responsible for failures resulting from Owner or operator abuse or neglect, such as: operation without adequate coolant, fuel or lubricants; overfueling; overspeeding; lack of maintenance of lubricating, cooling or air intake systems; improper storage, starting, warm-up, run-in or shutdown practices.

Cummins does not warranty accessories supplied by Cummins which bear the name of another company. These accessories are warranted by their manufacturers and not by Cummins.

Examples of these accessories are: alternators, starters, non-Cummins air compressors, clutches, air cleaners, fans, transmissions, torque converters and non-Cummins hydraulic pumps.

Before a claim for excessive oil consumption will be considered, Owner must submit adequate documentation to show that consumption exceeds Cummins published standards.

Lower power output claims relating to fuel pump calibration will not be considered after 1800 hours or 180 days, whichever occurs first.

Failures of belts are covered only during the first 500 hours of operation.

Cummins is not responsible for failures resulting from improper repair or the use of parts not approved by Cummins.

These warranties set forth herein are the sole warranties of Cummins. There are no other warranties, express or implied, or of merchantability or fitness for a particular purpose.

WARRANTY CLAIMS

All engine warranty claims are to be directed to a Cummins distributor or authorized dealer, or other repair location approved by Cummins. Refer to the "Yellow Pages" for specific repair locations.

Manufacturer —
Cummins Engine Company, Inc.
Columbus, Indiana U.S.A. 47201

NOTE: Service Adjustment Requests (SAR's) are not to be submitted to T&I Operations for Cummins engine warranty repairs.

Warranty Status

For information only

Ford Tractor Operations • Ford Motor Company • 2500 East Maple Road • Troy, Michigan 48084 Litho in U.S.A.

Ford

Tractors
Equipment

Service Bulletin

Tractor and Implement Operations — North America

No. 3-82

IN THIS ISSUE

TRACTORS

EQUIPMENT

CHANGE IN TRANSMISSION PUMP DRIVE

1T

FORD FW-20, 30 AND 60 TRACTORS

Effective in production in approximately August 1980, a running change was made in the pump drive on the SST 1010 transmission used in FW-20, 30 and 60 Tractors. This change became effective at the following serial numbers:

FW-20 - X100146
FW-30 - X200293
FW-60 - X400220

The lube oil circulating pump is now driven directly off the rear of the left transmission countershaft, whereas, the prior transmission pump drive was located on the bottom left side of the transmission.

The following information details the significant part changes and interchangeability differences.

Description	Prior Parts	New Parts
L.H. Countershaft	SFD 12-2069	SFD 90-2287T91
* Rear C/S Bearing	SFD 12-1447	SFD 90-2284T1
* C/S Rear Bearing Spacer	——	SFD 90-2285T1
Gasket, Pump Flange to Housing	SFD 12-1509	SFD 90-1715T1
Flange for Pump 1 of	SFD 12-1508	SFD 90-2286T1
Gasket, Pump to Flange	——	SFD 90-2288T1
Pump	SFD 01-2114	SFD 90-2369T1

***NOTE:** Bearing, SFD 90-2284T1 MUST be used with Spacer, SFD 90-2285T1. Prior Countershaft Bearing, SFD 12-1447 will interchange, but Spacer, SFD 90-2285T1 MUST NOT be used. The rear countershaft snap ring is optional and not required. See Figure 1.

Warranty Status

For information only

CLUTCH IMPROVEMENTS

2T

FORD FW-20, 30, 40 AND 60 TRACTORS

To provide improved performance and durability, several changes have been made in the 14 and 15.5" (35.5 and 39.37 cm) clutch assemblies and clutch discs used in FW-20, 30, 40 and 60 Tractors.

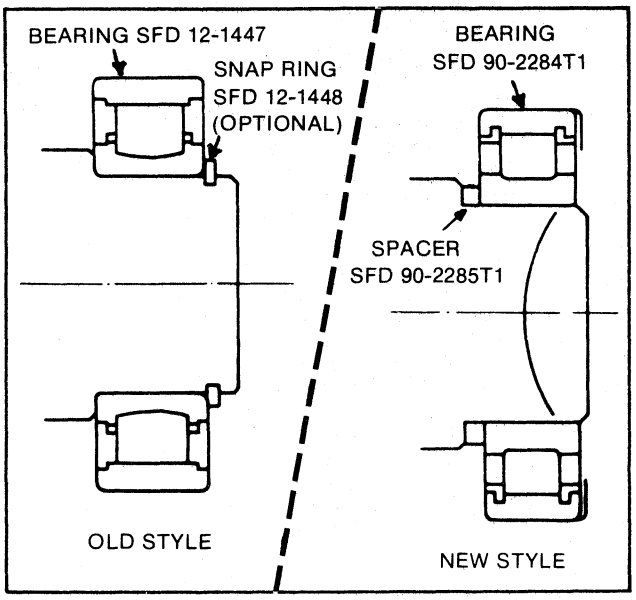

Figure 1
Rear Countershaft Bearing Change

Since these changes have been incorporated over a period of time, the following information is being provided for identification and application purposes in the field.

14" (35.5 cm) Clutch for FW-20, 30 and 40 Tractors

Part Description	Original Part	Latest Part Change
14" Clutch Assy.	SFD01-4631	to SFD01-4631T92
14" Disc-Rear	SFD13-147	to SFD13-147T2
14" Disc-Front	SFD13-146	to SFD13-146T2

15.5" (39.37 cm) Clutch for FW-60 Tractor

Part Description	Original Part	Latest Part Change
15.5" Clutch Assy.	SFD01-4632	to SFD01-4632T92
15.5" Disc-Rear	SFD13-199	to SFD13-199T2
15.5" Disc-Front	SFD13-201	to SFD13-201T2

The change in the 14" and 15.5" Clutch Assembly part numbers shown above was a result of changes in the discs only. The components are completely interchangeable within each size as long as the discs are used in matching pairs.

Specific improvements in the clutch parts are:

- The first change made was in the dampener springs. The original dampener springs are identified by their yellow color, while the new springs are colored red.

- The second change was made in the clutch pads. The original pads were a copper colored ceramic material, while the new pads are a metallic grey colored iron composition.

Warranty Status

For information only

LOW PRESSURE HYDRAULIC SYSTEM REGULATING VALVE

3T

TW-10, TW-20 AND TW-30 TRACTORS

Field complaints indicate that the .031 inch (0.79 mm) orifice in the system pressure valve spool can become restricted due to contamination in the oil. This condition will result in vibration and low pressure in the system. To correct this concern, a filter screen has been incorporated in the valve spool effective with unit date code 1C01 (3-1-81). The system pressure valve spool is identified in Service Bulletin 10-79, Article 12T.

When diagnosing complaints that could be due to low pressure or when low pressure is actually observed, check the system pressure valve spool for orifice restriction. If the valve spool is found to be restricted, it must be thoroughly cleaned out before reinstallation. To avoid recurrence of the restriction condition, it is recommended that the new valve spool with the filter screen be installed. The new valve spool is available for service as Part No. E0NN-7R445-AA. It is fully interchangeable with the previous part which has been discontinued.

NOTE: In no case is it permissible to shim a low pressure hydraulic system valve to correct low pressure complaints.

Old and new parts are listed as follows:

Old Part No.	Description	New Part No.
D8NN-7R445-AB	Spool Assembly– System Pressure Valve (0.031 inch (0.79 mm) orifice	E0NN-7R445-AA

Warranty Status

For information only

HYDRAULIC PUMP SEAL KIT

4T

1000 SERIES TRACTORS

Hydraulic Pump Seal Kits are now available through the Ford Tractor Parts System for the Ford 1000 Series Tractors. The kits consist of the shaft seal and the "O" rings that seal the pump internally.

If a hydraulic pump is determined to be leaking through a defective shaft seal, the seal may be ordered separately and replaced. If the pump is disassembled for any reason, the seal kit should be used so all internal "O" rings and the shaft seal can be replaced.

Part Numbers are as follows:

Tractors	Hydraulic Pump	Shaft Seal	Seal Kit
F1100	SBA 340040040	SBA 340490160	SBA 340490158
F1200	SBA 340040130	SBA 340490160	SBA 340490158
F13/1500	SBA 340450150	SBA 050203115	SBA 340490159
F13/1500	SBA 340450250	SBA 050203115	SBA 340490159
F17/1900	SBA 340450240	SBA 340450151	SBA 340490157
F17/1900	SBA 340450180	SBA 340450151	SBA 340490157

Tractors that require Hydraulic Pump, SBA 340450101, do not have a seal kit available and must be replaced as an assembly.

Warranty Status

For information only

NEW LOAD CHECK SEAL KIT FOR HYDRAULIC CONTROL VALVE

5T

FORD FW-20, 30, 40 AND 60 TRACTORS

A new seal kit is now available to service the load check valves on Ford 4-WD Tractors. The new Seal Kit, SFD 02-4786T1, contains Viton "O"-Rings and a new back-up ring which will provide substantially better seal life.

It will be necessary to order one SFD 02-4786T1 Seal Kit for each load check valve requiring service.

Warranty Status

For information only

GEARSHIFT ROD CLAMP BOLTS

6T

FORD 2610, 3610, 4110, AND 4610 TRACTORS WITH SYNCHRO-MESH TRANSMISSIONS

A few cases have been reported where one or both of the gearshift rod clamp bolts shown in Figure 2, have loosened allowing the connecting rods to move out of engagement. To correct this condition, reinstall the connecting rods and adjust them further in or out of the clamp as required to maintain correct gearshift operation. With the rods correctly installed, and with the clamp bolts tightened, the approximate total vertical movement of the shift linkage should be:

Main Shift Linkage - 0.83 in (21.1 mm)
Range Shift Linkage - 0.69 in. (17.5 mm)

Following reinstallation of the connecting rods, operate the tractor in all gears to verify correct installation. Next, tighten the clamp bolts to 42 lbs. ft (56.7 Nm). Finally, scribe reference marks on the connecting rods adjacent to the top of the clamp. These scribe marks will allow correct reassembly following subsequent repairs or overhaul.

Check the clamp bolt torques on all 3-cylinder tractors with synchromesh transmissions during pre-delivery inspection to be sure they are tightened to the specified torque.

Warranty Status

For information only

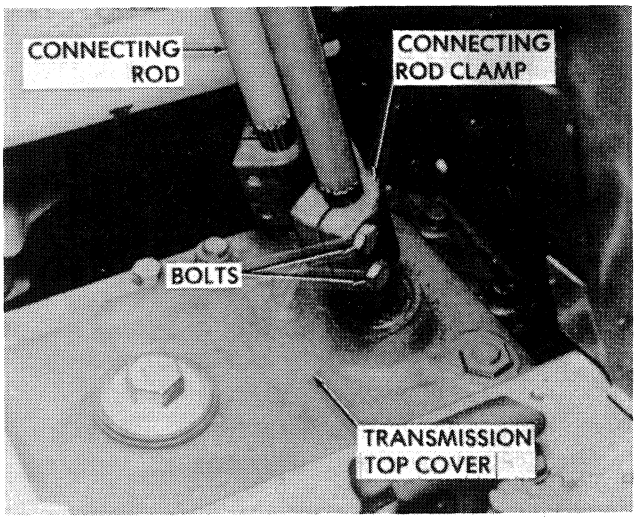

Figure 2
Gear Shift Linkage

HYDRAULIC SYSTEM PRESSURE AND FLOW TESTS

7T

ALL FORD SERIES 10 TRACTORS

The following information supplements various hydraulic pump and circuit tests contained in the Series 10 Tractor Repair Manual, SE-3870. The procedures are revised to illustrate the use of test equipment contained in the Series 10 Essential Tool Kit, No. 2879, the Master Hydraulic Test and Fitting Kit, No. 2850, and the Hydra-Analyzer, and eliminates the use of parts stock hoses and tubes and local modification of fittings presently shown in the Repair Manual.

The fitting and special tool numbers referenced in the illustrations are the latest tool numbers contained in the Service Tool and Equipment Catalog, SE-3565, dated 10-80, and the catalog supplement dated 5-81. Refer to the cross-reference index in the catalog to identify existing fittings and special tools having the previous part number.

Main Pump, Auxiliary Pump and Low Pressure Pump Pressure and Flow Tests

These tests are outline in Part 8, Chapter 12, of the Tractor Repair Manual. They are broken down into three main categories:

1. Main and auxiliary pump pressure test only–all models
2. Main and auxiliary pump pressure and flow test–all models
3. Low pressure ("piggy-back") pump pressure and pressure and flow test - 5610-7710.

These tests are to be used to determine the condition of the hydraulic pump by checking the ability of the pump to supply the specified flow at a given pressure to the hydraulic system. These tests should be performed before attempting pump removal and replacement.

Main and Auxiliary Pump Pressure Test

(Refer to Pages 6 through 11, Figures 1 through 8, Chapter 12, Part 8, SE-3870)

The following hydraulic pump pressure tests are for dealers not having a flow and pressure test unit and who are using a pressure gauge only.

While flow cannot be checked with this test procedure, if the specified system pressure can be obtained it is an indication that the pump is in reasonably good condition.

CAUTION: *While carring out these tests, always observe the following:*

Before beginning the Test:

1. The lift arms are in the full lowered position.
2. All connections are tight.

CAUTION: *Do not check for leaks with bare hands.*

3. The load valve is fully open.

During the Test:

1. Obtain the specified engine speed before closing the load valve.
2. Slowly close the load valve until the specified pressure is obtained. Do not fully close the valve or exceed the specified pressure.
3. Fully open the valve before stopping the engine and disconnecting the equipment.

Figures 3, 4, 5 and 6 illustrate the test equipment used for the main and auxiliary pump pressure test for the different tractor models.

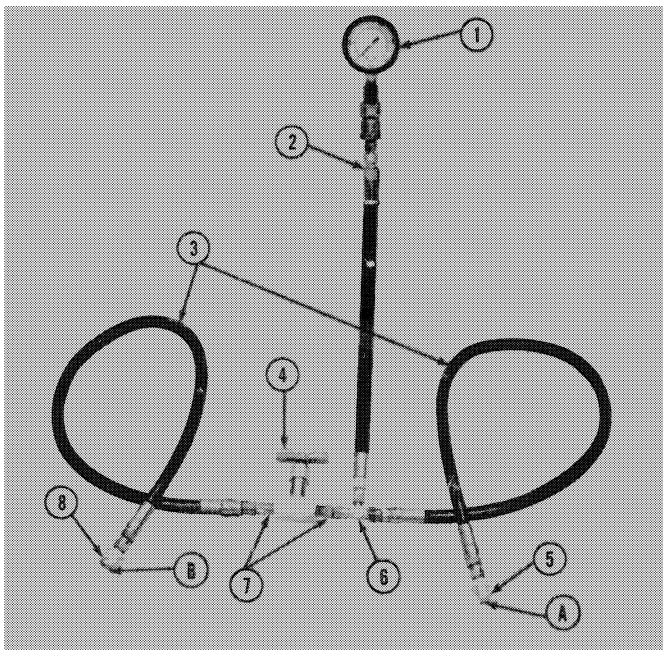

Figure 3
Main Pump Pressure Test
2610, 3610

A. To Pressure Tube
B. To Pressure Tube Elbow
1. Change 0-500 psi No. 2028
2. Hose No. 7099
3. Hose No. 6661 (2)
4. Valve No 1394
5. Fitting No 0741
6. Tee No. 0027
7. Fitting No 0035 (2)
8. Fitting No. 0724

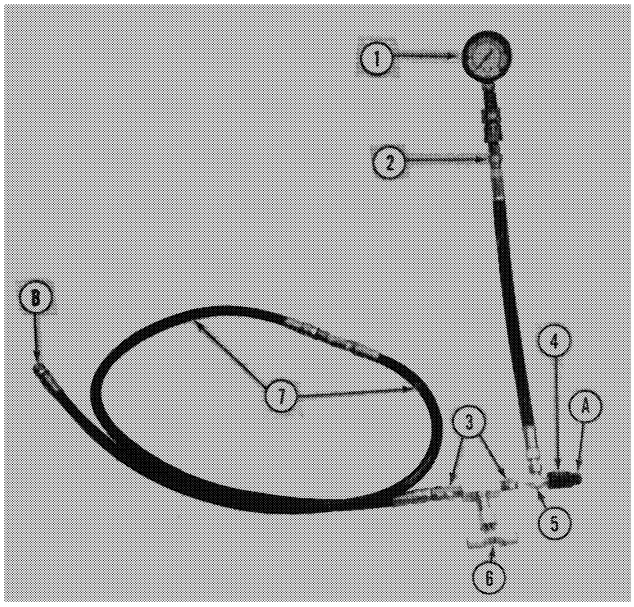

Figure 4
Main Pump Pressure Test
4110, 4610

A. To Flow Control Valve Pressure Port
B. To Rear Axle Oil Filler Hole
1. Gauge 0-5000 psi No. 2028
2. Hose No. 7099
3. Fitting No. 0035 (2)
4. Fitting No. 6211
5. Tee No. 0027
6. Valve No. 1394
7. Hose No. 6661 (2)

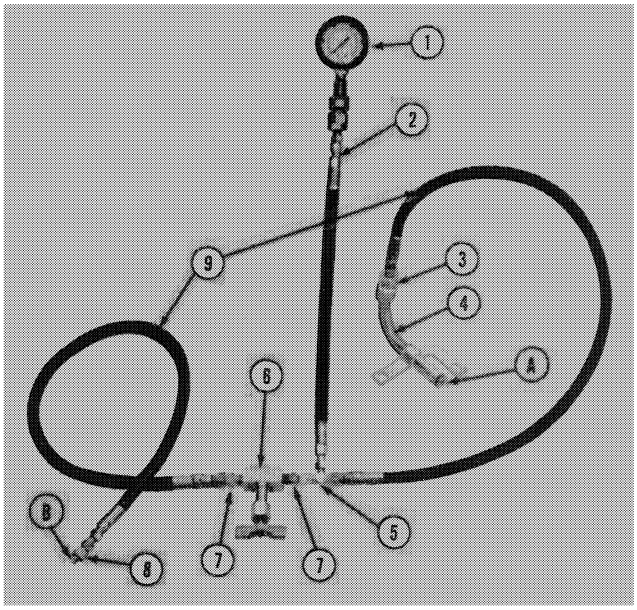

Figure 5
Main Pump Pressure Test
5610, 6610, 6710, 7710

A. To Pump Pressure Port
B. To Center Housing Pressure Port
1. Gauge O-500 psi No. 2028
2. Hose No. 7099
3. Fitting No. 0742
4. Elbow No. 4649
5. Tee No. 0027
6. Valve No. 1394
7. Fitting No. 0035 (2)
8. Fitting No. 0013
9. Hose No. 6661 (2)

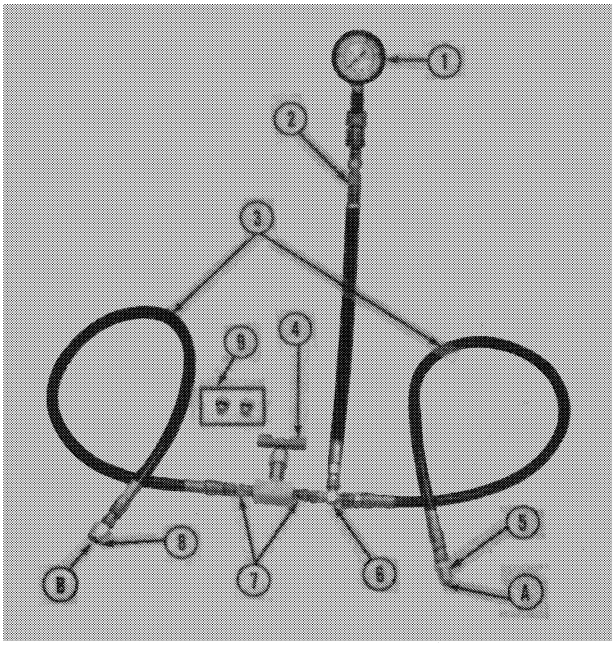

Figure 6
Auxiliary Pump Pressure Test
All Models

A. To Pressure Tube
B. To Priority Valve Elbow
1. Gauge O-500 psi No. 2028
2. Hose No. 7099
3. Hose No. 6661 (2)
4. Valve No. 1394
5. Fitting No. 0741
6. Tee No. 0027
7. Fitting No. 0035 (2)
8. Fitting no. 0724
9. Plug No. 6671 (2) - To Plug Load Monitor Tube Ports

Test Equipment Connections

Main Pump

1. 2610, 3610 - Disconnect the pump pressure tube at the elbow on the underside of the rear axle center housing and connect the test equipment shown in Figure 1, between the pressure tube and elbow.

2. 4110, 4610 -
IMPORTANT: To check the pressure of the main hydraulic pump, it is necessary to install an auxiliary service control valve. On 4110, 4610 tractors equipped with dual pumps, it will be necessary to remove the priority valve pack to install the ASC valve. Disconnect the auxiliary pump pressure pipe and connect a hose to the pipe to direct the flow of auxiliary pump oil into the rear axle filler hole. Tighten the valve accessory plug on the top of the housing. Remove the plug below the flow control knob and install the fitting end on the test equipment, Figure 4, in the plug hole and route the end of the opposite hose into the rear axle filler hole.

3. 5610, 6610, 7610, 7710 - Disconnect and remove the pump pressure pipe. Install fitting No. 4649 in the pump and fitting No. 0013 in the center housing and connect the balance of the test equipment shown in Figure 5.

NOTE: On straddle mount tractors less cab, it may be necessary to loosen the running board bolts to remove the pressure tube bracket bolts.

Auxiliary Pump—All Models

Disconnect the auxiliary pump pressure tube at the priority valve pack and connect the test equipment, Figure 6, between the pressure tube and valve pack.

NOTE: On tractors with load monitor, it will be necessary to disconnect the load monitor tubes and plug the lift cover ports with Plug No. 6671 in order to disconnect the auxiliary pump pressure tube at the priority valve pack. The Auxiliary Service Valve must be in the "In" position.

Test Procedure

1. Fully open the loading valve, start the engine and maintain 1650 rpm.

2. On 4110 and 4610 tractors, pull the ASC knob to its full "Out" position and place the lift levers in the full raise position.

3. Gradually close the loading valve and observe the pressure gauge reading which should gradually rise to the relief valve pressure of 2500 psi. Do not exceed this pressure.

   NOTE: When checking main pump pressure on 4110 - 7710 Tractors, if pressure rises steadily as the load valve is closed but stops before reaching specified pressure, replace the relief valve and repeat the test.

4. Fully open the loading valve.

5. On 4110 and 4610 tractors, return the lift levers to the full lower position and push the ASC knob to its full "In" position.

6. Stop the engine and disconnect the test equipment.
   NOTE: The test procedure and equipment for 4110 and 4610 tractors is used for 2610 and 3610 tractors that are not equipped with the tandem pump and priority valve pack.

Pressure and Flow Test
(Refer to Pages 12 through 15, Figures 9 through 12, Chapter 12, Part 8, SE-3870)

The following hydraulic pump pressure and flow tests are for dealers having a Hydra-Analyzer or similar test equipment. The same precautions are to be followed with the use of this equipment as when using only the pressure tests.

Since oil flow can also be measured with this equipment, the condition, or efficiency, of the pump can be determined more accurately.

Figures 7, 8, 9 and 10 illustrate the test equipment used for the main and auxiliary pump pressure and flow tests for the different tractor models

This test procedure is in two parts to test pump performance.

1. Cavitation Test
2. Efficiency Test

Test Equipment Connections

While different test equipment is used, the procedure for connecting the equipment is the same as outlined previously for pressure testing.

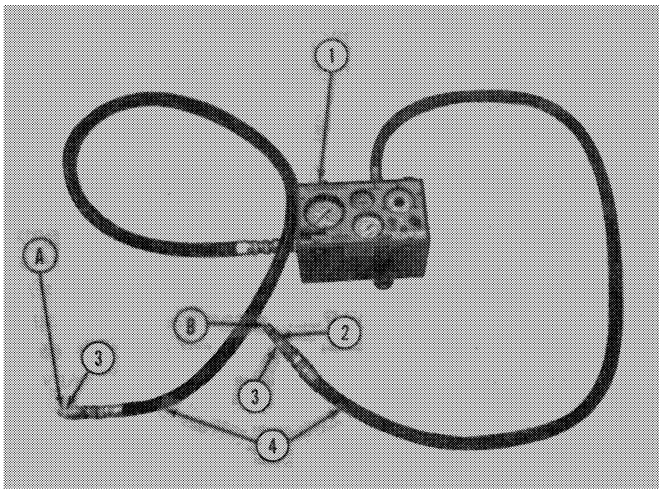

Figure 7
Main Pump Pressure and Flow Test
2610, 3610

A. To Pressure Tube
B. To Pressure Tube Elbow
1. Hydra-Analyzer
2. Fitting No 0435
3. Fitting No. 6667 (2)
4. Hose No. 0093 (2)

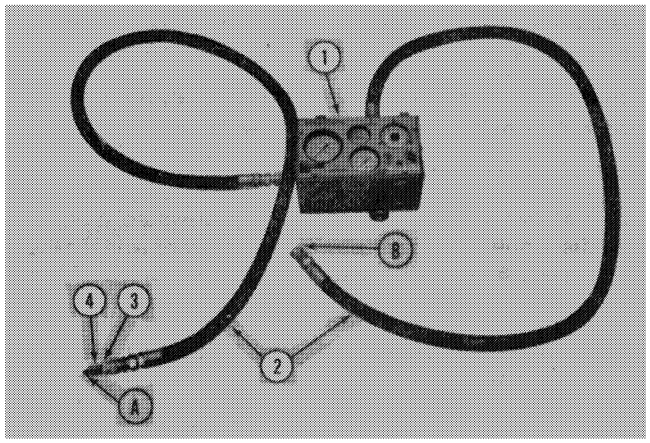

Figure 8
Main Pump Pressure and Flow Test
4110, 4610

A. To Flow Control Valve Pressure Port
B. To Rear Axle Oil Filler Hole
1. Hydra-Analyzer
2. Hose No. 0093 (2)
3. Fitting No. 0743
4. Fitting No. 6211

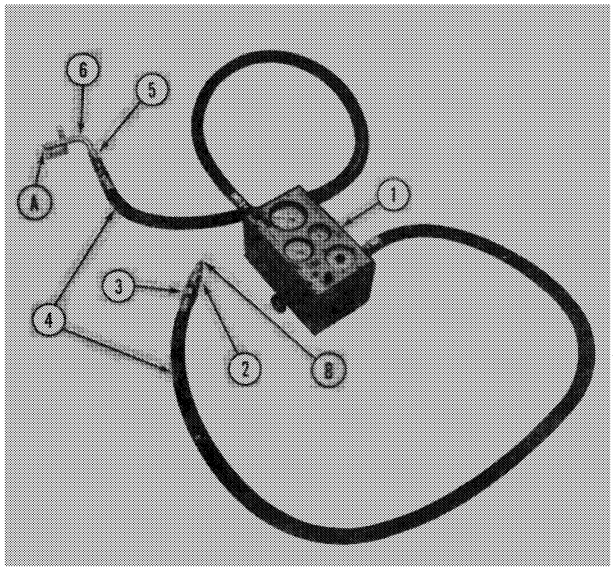

Figure 9
Main Pump Pressure and Flow Test
5610, 6610, 6710 7610, 7710

A. To Pump Pressure Port
B. To Center housing Pressure Port
1. Hydra-Analyzer
2. Fitting No. 0433
3. Fiting No. 6667
4. Hose No. 0093 (2)
5. Fitting No 6724
6. Elbow No. 4649

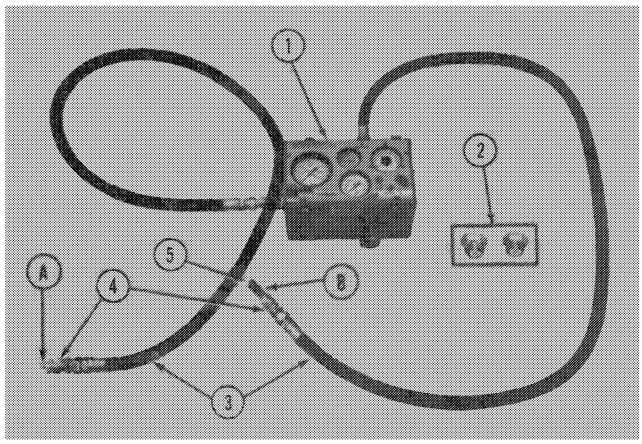

Figure 10
Auxiliary Pump Pressure and Flow Test
All Models

A. To Pressure Tube
B. To Priority Valve Elbow
1. Hydra-Analyzer
2. Plug No 6671 (2) - To Plug Load Monitor Ports
3. Hose No. 0093 (2)
4. Fitting No. 6667 (2)
5. Fitting No. 0435

Test Procedure
Cavitation Test

This test is made with the load valve fully open and noting the pump output on the flow meter.

1. Connect the test equipment for the applicable

tractor model as outlined in the procedure for pressure testing.

2. Start the engine and set at 1650 rpm. Close the load valve to obtain 1000 psi and warm the oil to approximately 120°F (50°C), then fully open the load valve.
3. Set the engine at one-half rate engine speed. Leave the load valve fully open and note the oil flow in gallons per minute.
4. Now set the engine at rated speed. The gallons per minute should be approximately twice the flow noted at one-half engine speed.

If the pump flow at rated engine speed is significantly less than twice the flow at one-half engine speed, the following items should be checked:

A. Oil Level in the rear axle
B. Clogged inlet oil filter
C. Air leaks on the suction side of the pump

The following is a table of the approximate oil flow for the various pumps at one-half and full rated engine speed:

Model	Flow at One-Half Rated Engine Speed	Flow at Full Rated Engine Speed
2610-3610 Piston Pump	2.1 GPM	4.2 GPM
2610-3610 Gear Pump	3.5 GPM	7.0 GPM
4110-4610 Gear Pump	3.5 GPM	7.0 GPM
5610-7710 Gear Pump	4.0 GPM	8.0 GPM

Pump Efficiency Test

This test is made with the engine set at rated speed and noting the oil flow at no load and at relief pressure.

NOTE: It may be necessary to readjust the engine speed to maintain rated speed.

1. Connect the test equipment for the applicable tractor model as outlined in the procedure for pressure testing.
2. Start the engine and set at 1650 rpm. Close the load valve to obtain 1000 psi and warm the oil to approximately 120°F (60°C), then fully open the load valve.
3. Set the engine at full rated speed for the tractor model being tested. With the load valve fully open, note the oil flow in gallons per minute.
4. Slowly close the load valve to obtain 1800 psi and, again, note the oil flow, Then fully open the load valve and stop the engine.

In this test, the oil flow at 1800 psi pressure should be no more than 10% less than the flow at no load.

Pump Efficiency =

$$\frac{\text{Output at rated speed @ 1800 psi}}{\text{Output at rated speed @ no load}} \times 100\%$$

If pump efficiency is less than .85%, inspect and repair, or replace, the pump as necessary.

NOTE: On 4110-7710 Tractors, if a defective relief valve is suspected, follow the procedure for outlined in Pressure Testing, above, by using the Hydra-Analyzer Load Valve.

Pressure and Flow Testing The Low Pressure Hydraulic System Pump - 5610-7710
(Refer to Pages 16 and 17, Figures 13 and 14, Chapter 12, Part 8, SE-3870)

To test the pressure and flow of the low pressure system pump on 5610 through 7710 tractors, it is necessary to install Special Fitting No. 4653 in the pump outlet port at the bottom of the pump cover (Figure 11 and 12). With this fitting installed, all oil from the low pressure pump is bypassed directly to the test equipment. No oil goes to the PTO, dual power or front wheel drive control valves.

The purpose of the following tests is to determine that the pump is capable of supplying the necessary pressure and flow to operate the low pressure system components. As with the previous hydraulic system tests, the pressure only test gives a fair indication of pump capability, while the pressure and flow test confirms the efficiency of the pump.

On tractors without dual power or front wheel drive, remove the pump pressure port plug to install Fitting No. 4653.

On tractors with dual power and/or front wheel drive, disconnect the pressure lines at the pressure port fitting and then remove the fitting to install Special Fitting 4653.

The hose from the load valve or hydra-analyzer is routed to the rear axle center housing filler hole.

Pressure Test Procedure

1. Remove the low pressure pump pressure plug, or disconnect the dual power and/or front wheel drive pressure lines and remove the fitting.
2. Install special fitting and connect the test equipment as shown in Figure 11. Be sure the load valve is fully open.
3. Start the engine and set at 1650 rpm.
4. Slowly close the load valve until the gauge indicates 250 psi.
5. Fully open the load valve, stop the engine and disconnect the test equipment.

If the specified pressure can be obtained, the pump can be assumed to be in reasonably good condition.

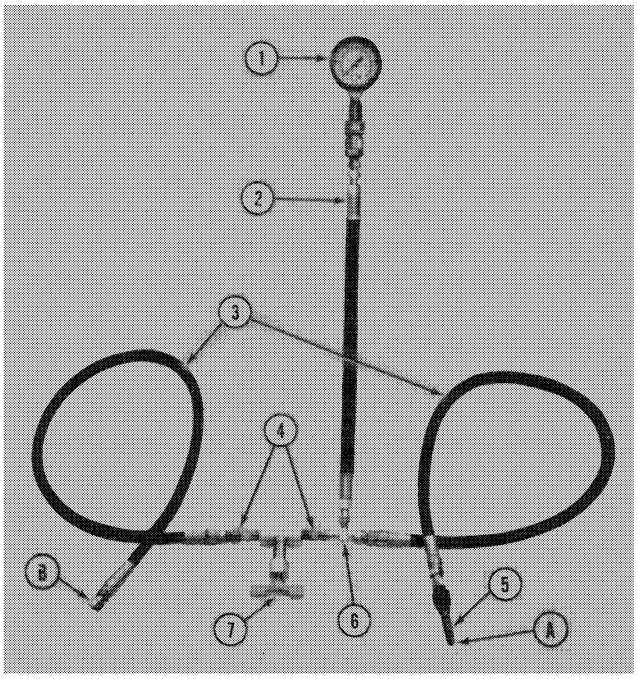

Figure 11
Low Pressure Pump Pressure Test
5610, 6610, 6710, 7610, 7710

A. To Low Pressure Pump Pressure Port
B. To Rear Axle Oil Filler Hole
1. Gauge O-600 psi No. 2027
2. Hose No. 7099
3. Hose No. 6661 (2)
4. Fitting No. 0035 (2)
5. Fitting No. 4653
6. Tee No. 0027
7. Valve No. 1394

Pressure and Flow Test Procedure

1. Install the Fitting, No. 4653, as outlined in Steps 1 and 2 for pressure testing and connect the test equipment. Be sure the load valve is fully open (Figure 12).
2. Start the engine and set at 1650 rpm until the oil temperature is approximately 120° F (50° C).
3. With the load valve fully open, set the engine at 2100 rpm and note the oil flow.
4. Slowly close the load valve to obtain 250 psi and again note the oil flow.
5. Fully open the load valve, stop the engine and disconnect the test equipment.

In this test, the oil flow should be approximately 6.0 gpm in both the no load and loaded positions. The flow at the loaded position should not be more than 10% less than the flow in the unload position.

Pump Efficiency =

$$\frac{\text{Output at rated speed @ 250 psi}}{\text{Output at rated speed @ no load}} \times 100\%$$

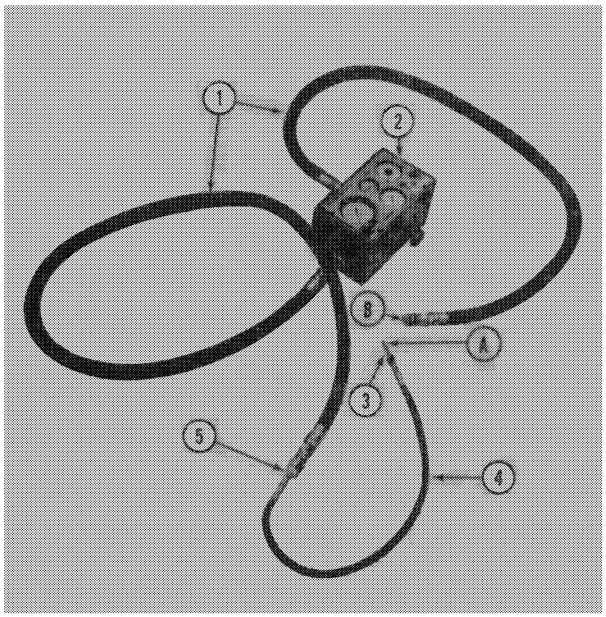

Figure 12
Low Pressure Pump Pressure and Flow Test
5610, 6610, 6710, 7610, 7710

A. To Low Pressure Pump Pressure Port
B. To Rear Axle Oil Filler Hole
1. Hose No. 0093 (2)
2. Hydra-Analyzer
3. Fitting No. 4653
4. Hose No. 6661
5. Fitting No. 0743

NOTE: The 6.0 gpm flow noted above may be somewhat lower due to line restrictions with Fitting No. 4653 and Hose No. 6661. However, when the unloaded and loaded flows are applied to the pump efficiency formula above, the two flow readings must still be within 15% of each other.

If pump efficiency is less than 85%, the pump should be removed for examination and repair or replacement as necessary.

Dual Power Pressure Test

(Refer to Part 5, Chapter 6, Pages 17 and 18, Figure 22, SE-3870) - Ford 5610, 6610, 6710, 7610, 7710 with dual power only -

An alternate method for testing the dual power system on tractors with dual power only is described below. All of the components required are contained in the Series 10 Essential Tool Kit, No. 2879, and the Master Hydraulic test and Fittings Kit, No. 2850.

Test Equipment Installation

1. Disconnect the dual power pressure tube and remove the tube fitting from the low pressure pump pressure port.
2. Connect the test equipment as shown in Figure 13.

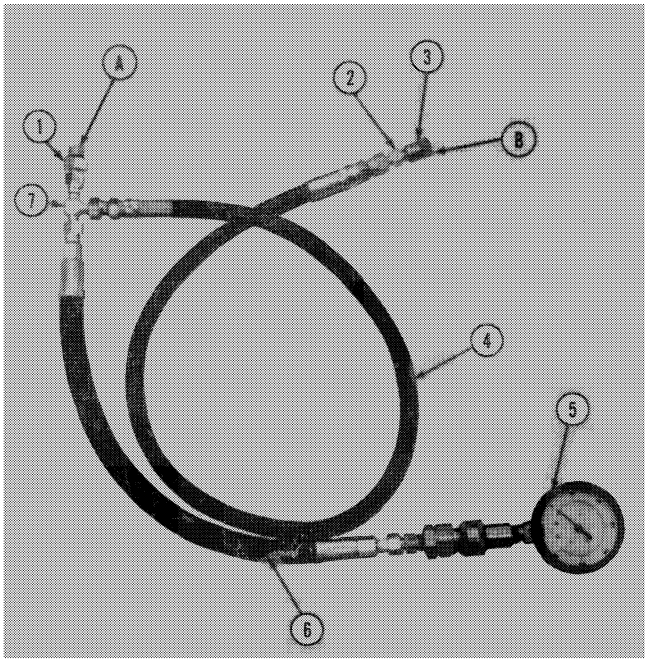

Figure 13
Dual Power System Pressure Test

A. To Low Pressure Pump Pressure Port
B. To Dual Power Pressure Tube
1. Fitting No. 0013
2. Fitting No. 0700
3. Fitting No. 4995 - Part of Elbow No. 1221
4. Hose No. 6661
5. Gauge O-600 psi No. 2027
6. Hose No. 7099
7. Tee No. 0027

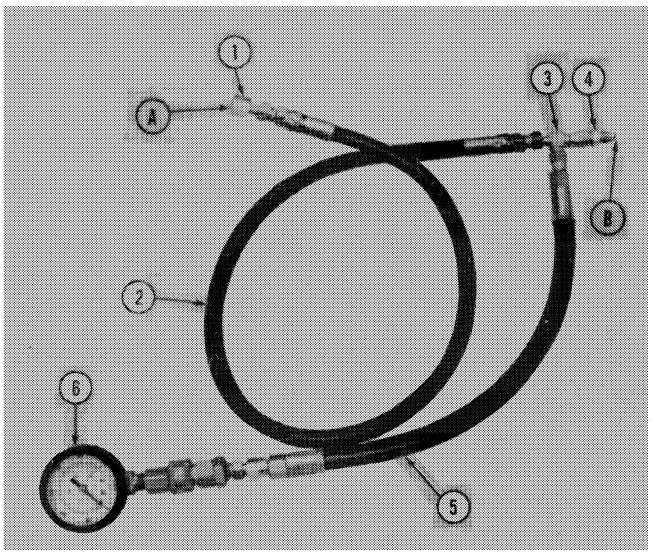

Figure 14
Dual Power/Front Wheel Drive System Pressure Test
5610, 6610, 6710, 7610, 7710

A. To Dual Power/FWD Pressure Tube Fitting
B. To Dual Power/FWD Pressure Tube
1. Fitting No. 0723
2. Hose No. 6661
3. Tee No. 0027
4. Fitting No. 0739
5. Hose No. 7099
6. Gauge O-600 psi No. 2027

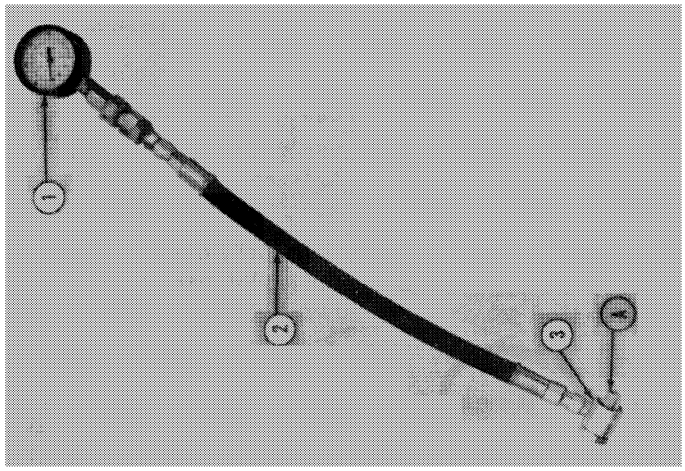

Figure 15
IPTO Regulating Valve/Cooler Circuit
Relief Valve Test 5610, 6610, 6710, 7610, 7710

A. (1) At Low Pressure Pump Port for IPTO
(2) At Cooler Tube Banjo Connection for Cooler Circuit
1. Gauge O-600 psi No. 2027
2. Hose No. 7099
3. Banjo Fitting No. 4646

Front Wheel Drive and Dual Power Pressure Test

- Ford 5610, 6610, 6710, 7610 7710 -
An Alternate method for testing the front wheel drive system, and the dual power system when front wheel drive is installed, is described below. All of the components required are contained in the Master Hydraulic Test and Fitting Kit, No. 2850.

Test Equipment Installation

1. Disconnect the front wheel drive or dual power pressure tube at the pump fitting.
2. Connect the test equipment as shown in Figure 14.

Independent PTO Pressure Regulating Valve Test and Cooler Circuit Relief Valve Test
(Refer to Part 6, Chapter 3, Pages 7-8, Figures 5 and 6, SE-3870) - Ford 5610, 6610, 6710, 7610, 7710 -

Alternate test equipment for testing the independent PTO pressure regulating valve and the cooler circuit relief valve are listed below. The components listed are in the Series 10 Essential Tool Kit, No. 2879, and the Master Hydraulic Test and Fitting Kit, No. 2850.

Installation (Refer to A-(1) and A-(2) under Figure 15)

A-(1) Independent PTO Regulating Valve
- Disconnect the dual power and front wheel drive pressure tubes and fitting, or low pressure pump pressure port plug, and install the test equipment.

A-(2) Cooler Circuit Relief Valve

- Disconnect the cooler tube at L.H. side of the rear axle center housing. Remove the banjo bolt. Insure that the short plastic transfer tube is located in the control valve. Install the test equipment.

Warranty Status

For information only

NEW GENERATOR VOLTAGE REGULATORS

8T

FORD 4-CYLINDER TRACTORS 1948/1964, 6-CYLINDER TRACTORS 1961/1968

Service Bulletin 12-79, Article 4T, announced new generator voltage regulators for the above tractors and advised that some rework was required to install the regulators and connect the harness wires. Those regulator assemblies are no longer available.

New regulator assemblies are now available as a direct replacement for the original regulator and with the same configuration and dimensions. No rework is required for mounting or connecting wires.

Part numbers for these regulator assemblies are listed below:

Prior Part Number	*New Part Number*
A8NN-10505-C	*8N-10505-C*
B3NN-10505-A	*FAG-10505-A*
B8NN-10505-A	*CONF-10505-A*

Warranty Status

For information only

EQUIPMENT

HYDRAULIC TONGUE POSITIONER CYLINDER TO CARRIER FRAME PLATE - REINFORCEMENT

1E

SERIES 538 MOWER- CONDITIONER

If cracking in the weld surrounding the cylinder mounting plate on the carrier frame is observed on 538 Mower-Conditioners, a locally fabricated reinforcement plate, may be installed as shown in Figure 16.

The reinforcement plate should be made from low carbon steel and should be 3/16" (4.76 mm) thick, 2-1/2" (63.5 mm) wide and 5-1/2" (139.7 mm) in length.

The new reinforcing plates have been added in production at the following effective points:

7 Ft. Machines - S.N. YA400022
9 Ft. Machines - S.N. YA425034

Warranty Status

For information only

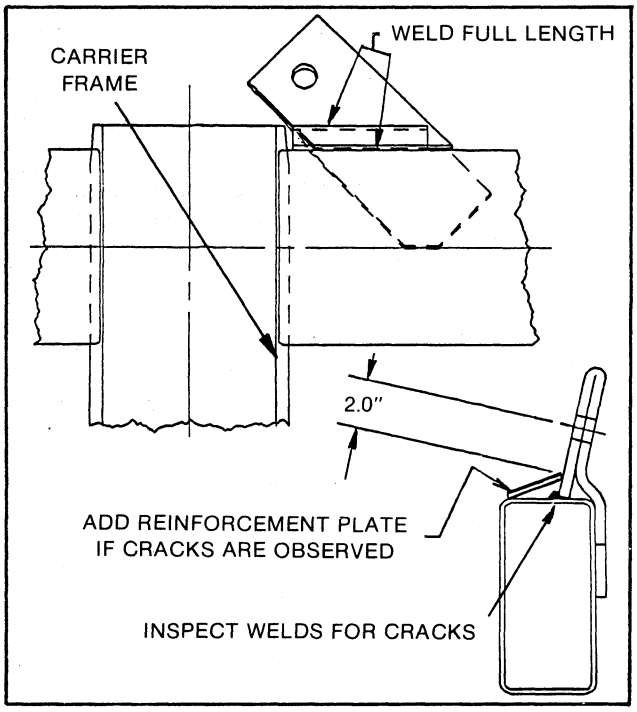

Figure 16
Installing Hydraulic Cylinder Mounting Plate Reinforcement

CORRECTING PLATFORM BELT LACING SKEW

2E

SERIES 551 ROUND BALERS

To maintain proper platform belt tracking and the resulting increase in platform belt life on Series 551 Round Balers, it is essential that the platform be checked periodically and readjusted to reduce excessive lacing skew.

A new decal, P.N. GH-073511, giving detailed instructios for reducing belt skew is now available. Dealers may wish to install these new decals (See Figure 17) on Ford 551 Round Balers in their inventory, starting with Unit Serial Number 50300 and ending with Serial Number 50995. The decal should be placed on the baler axle so that it can be easily read from the rear of the machine. The importance of these adjustments also should be conveyed to shop service personnel and owners of Series 551 Round Balers.

Quantities of the new decals, GH-073511, will be available at no charge through your Regional Service Department. The new decal will be installed on all balers produced after S.N. 50995.

Warranty Status

For information only

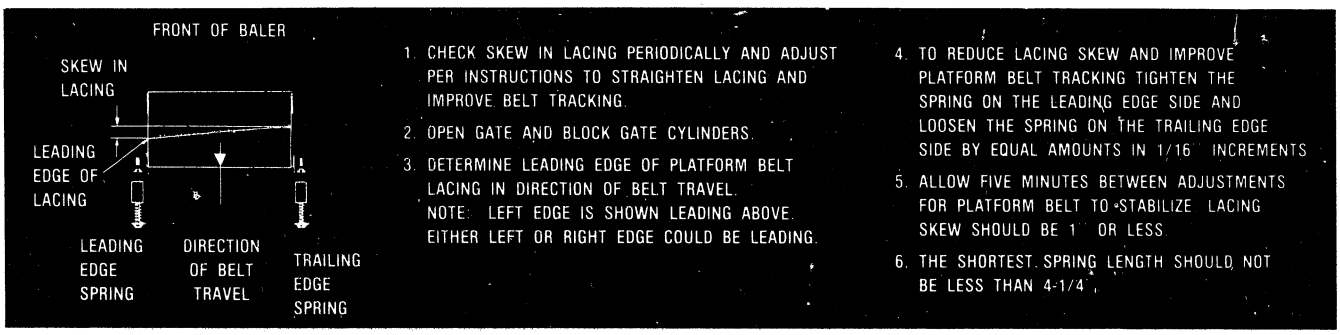

Figure 17
Platform Belt Lacing and Tracking Adjustments

NEW ROUND DRIVE BELT (P.N. NEW 400849)

3E

SERIES 513 SIDE DELIVERY RAKE

To provide additional tightening capabilities and minimize the possibility of belt loosening and resulting breakage, a new shorter 137" (347.98 cm) round drive belt has been released for use on Series 513 Side Delivery Rakes.

This new belt, NEW-400849, (Figure 18) replaces the longer (141") (358.14 cm) belt, NEW-400194, previously used.

Warranty Status

For information only

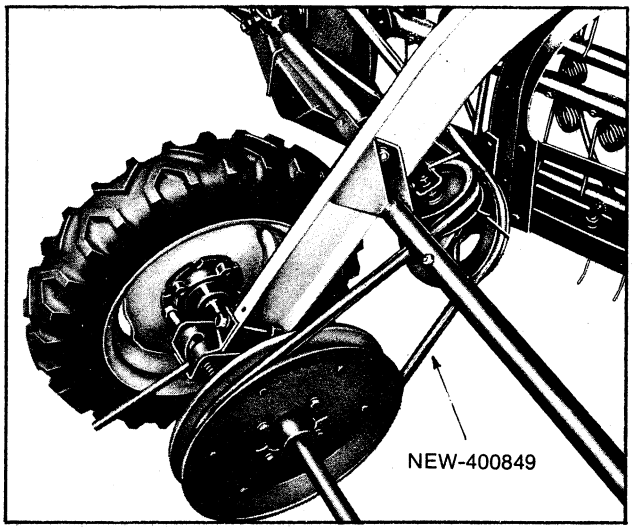

Figure 18
New Shorter Round Drive Belt