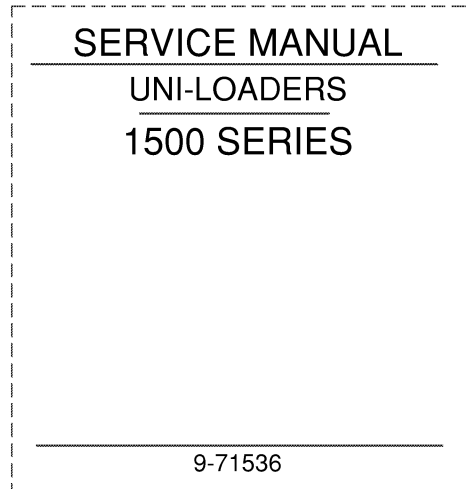


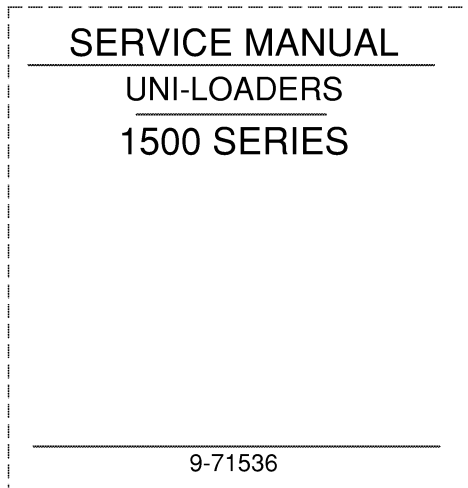
1. Trim along dashed line.
2. Slide into pocket on Binder Spine.

TYPE 1-4



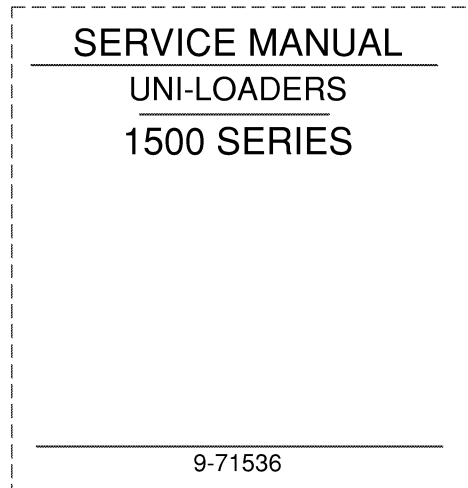
1. Trim along dashed line.
2. Slide into pocket on Binder Spine.

TYPE 1-4



1. Trim along dashed line.
2. Slide into pocket on Binder Spine.

TYPE 1-4



1. Trim along dashed line.
2. Slide into pocket on Binder Spine.

TYPE 1-4

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All Models

INTERVAL	SERVICE	FLUID/LUBRICANT	INSTRUCTIONS
Run-In Every 2 Hours	Check wheel bolt torque until stable. (85-100 ft. lbs.)		
Run-In After First 15 Hours	Replace hydraulic oil filter.		Section 41.
Every 10 Hours Or Daily	Grease the loader pivot points. Clean the air cleaner dust cup.	See chart, page 4.	
Every 20 Hours Hours	Grease variable speed pulleys. (Three strokes each fitting).	See chart, page 4.	
Every 25 Hours Severe Service	Check and adjust drive chains.		Section 61.
Every 50 Hours Normal Service	Check and adjust drive chains.		Section 61.
Every 60 Hours	Check battery electrolyte level. Check hydraulic oil level. Check tire pressure.	Distilled water.	Section 82. Section 41.
Every 120 Hours	Grease drive shaft universals. Check gear box oil level.	See chart, page 4.	Section 61.
Every 500 Hours	Replace or clean electric fuel pump filter. Change hydraulic oil. Replace hydraulic oil filter.	Case TCH Fluid.	Section 34. Section 41. Section 41.
Every 1000 Hours	Clean hydraulic reservoir breather and filler cap. Drain water from fuel tanks.		Section 41.
Every 2000 Hours Or Yearly	Change gear box oil. Replace fuel filter element (LP gas machines only).	See chart, page 4.	Section 61.
As Required	Clean or replace air cleaner element. Replace hydraulic filter. Check wheel bolt torque (85-100 ft. lbs.) Adjust clutches when lever travel exceeds 6" from neutral.		Section 24. Section 41. Section 61.

Section 41

HYDRAULIC SYSTEM

MAIN RELIEF VALVE

When a cylinder reaches the end of its travel, or is held by a load or obstruction, the main relief valve opens to prevent damage to the hydraulic system. When the main relief valve is open, the oil flows through passage 4 to the valve outlet, see Figure 6.

NOTE: The operation of single spool tilt valve is the same as the three spool valve except it is not equipped with a main relief valve. When the single spool valve is used, the hydraulic system is protected by the relief valve at the pump.

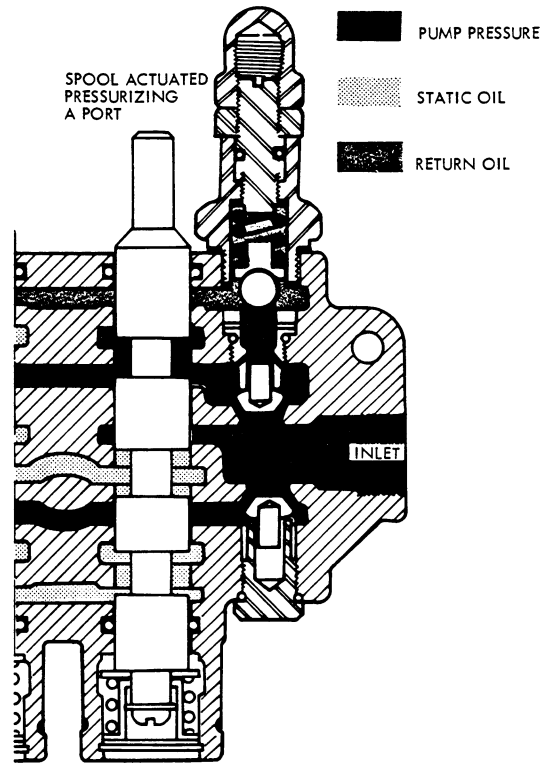


Figure 6 - Main Relief Valve Bypassing

Lift Control Valve

Description

The basic circuitry and operation of the lift control valve are the same as the three spool valve, therefore these items will not be reviewed for this valve.

There are two areas different from the three spool valve, (1) the main relief valve is omitted and (2) the spool is a four position spool. The spool positions are lift, hold, lower and float. The system relief valve protects the hydraulic system should excessive pressure occur. Refer to Figure 2.

The float position is a detented position. The spool is held in this position mechanically until the spool is actuated by the operator. In float, the bucket will follow the contour of the ground.

Oil Flow, Spool In Float

Refer to Figure 7. With the spool in the float position the spool lands are positioned

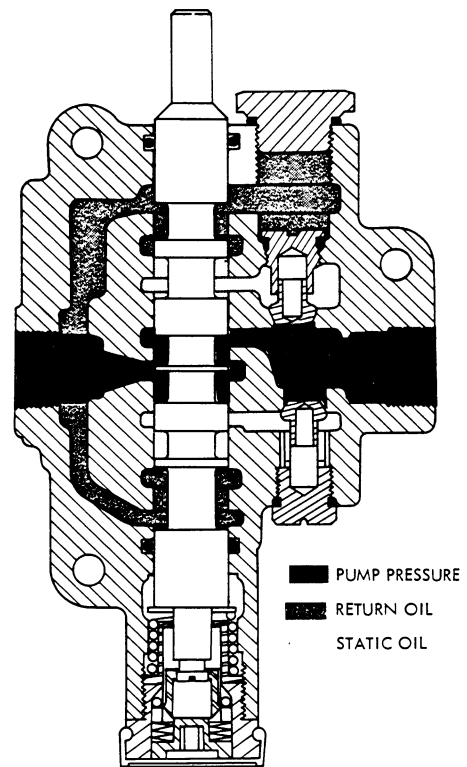


Figure 7 - Oil Flow With Spool In Float

Test No. 1 System Relief Valve

NOTE: Flowmeter check sheets will be found at the rear of this section.

1. Remove the floorboard.
2. Refer to Figure 14. Disconnect hose at system relief valve and install tee with cap installed on tee. Connect flowmeter pressure hose to tee.
3. Remove reservoir filler cap and install adapter in filler pipe. Connect flowmeter return hose to adapter.
4. Make sure the flowmeter load control valve is completely open and adjust the flow control to handle up to 20 gpm.
5. Start the engine and heat the oil by closing the load valve until the pressure is about 1000 psi. Run the engine under this load until the flowmeter temperature gauge indicates about 125° F. Open the load valve.
6. Increase engine speed to full throttle. Gradually close the load valve and observe the flow gauge. When the gallonage starts to drop, the "crack" point for the relief valve has been reached. Record the pressure reading.
7. Continue to close the load valve until gallonage drops to zero and read the pressure gauge. This is the setting of the system relief valve. Open the load valve and record reading.
8. If the pressure setting is not as specified on the check sheet, adjust the system relief valve as instructed on page 14 and recheck setting. Proceed to Test No. 2.

Test No. 2 - Pump Output

1. Flowmeter installation is the same as Test No. 1.
2. With the engine running at full throttle and the the load valve completely open, observe the flow gauge and record the reading.

3. With the engine at full throttle, close the load valve until the pressure gauge indicates 1600 psi. Observe the flow gauge and record the reading. Open load valve and stop engine.

Interpreting Test Results

At zero pressure the flow gauge should have indicated a gpm reading near that specified on the check sheet (even if pump is badly worn). If the reading was 10% or more under the specified gpm, a restriction or air leak in the suction line is a possibility.

If the gpm reading at 1600 psi was 20% or more under the specified gpm, the pump should be rebuilt or replaced.

Test No. 3 - 3 Spool Valve Relief Valve

1. Remove cap from tee used in the previous tests. Connect hose to tee.
2. Start engine and run at full throttle. Hold the tilt control lever in the rollback position and gradually close the load valve. Observe the flow gauge; when the gallonage starts to drop, the "crack" point for the relief valve has been reached. Record the pressure reading.
3. Continue to close the load valve until the gallonage drops to zero and read the pressure gauge. This is the setting of the relief valve. Open the load valve and record the reading.
4. If the pressure setting is not as specified on the check sheet, adjust the relief valve as instructed on page 14 and recheck setting.

Test No. 4 - Loader Circuit Performance

1. Flowmeter installation is the same as Test No. 3.
2. Test the tilt circuit. Run the engine at full throttle and close load valve until the flowmeter pressure gauge indicates 1600 psi. Completely dump the bucket and record the gpm reading.

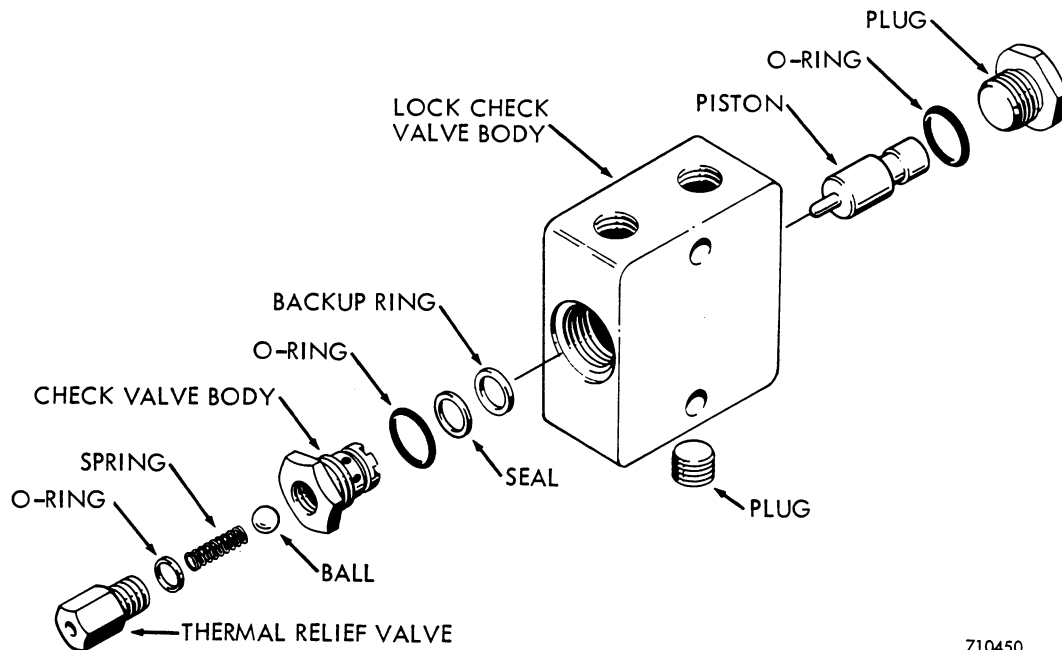


Figure 21 - Exploded View of Lock Check Valve

3. Remove the plug on the opposite side and remove the piston.

Inspection

1. Discard the back up ring and all o-rings.
2. Clean all parts in cleaning solvent and dry with moisture free compressed air.
3. Inspect the piston and piston bore for scoring and wear.
4. Inspect the ball for wear and other defects.
5. Inspect the ball seat in check valve body for wear.
6. Check to see that ball in thermal relief valve moves freely. If the serviceability of the valve is doubtful, replace the valve.

Assembly

1. Note the numbers 1 and 2 cast into the lock check valve body. Secure the body in a vise with the numbers facing you.

2. Install the piston, pin first, into bore behind the number 2. Then install plug with new o-ring and tighten securely.

3. Install new backup ring and o-rings on check valve body and install in bore opposite the piston.

4. Install the thermal relief valve with new o-ring in the check valve body.

5. Install plug in cylinder port 2, if removed.

Installation

1. Install hoses in ports to control valve.

2. Place valve on mounting bolt and secure in place with lockwasher and nut. Make sure the thermal relief valve is to the rear and the smooth surface of the lock check valve faces the center of the machine.

3. Connect hoses to variable speed control valve.

4. Connect hose from rotary coupling to lock check valve. Make sure hose forms a natural loop and is not twisted.

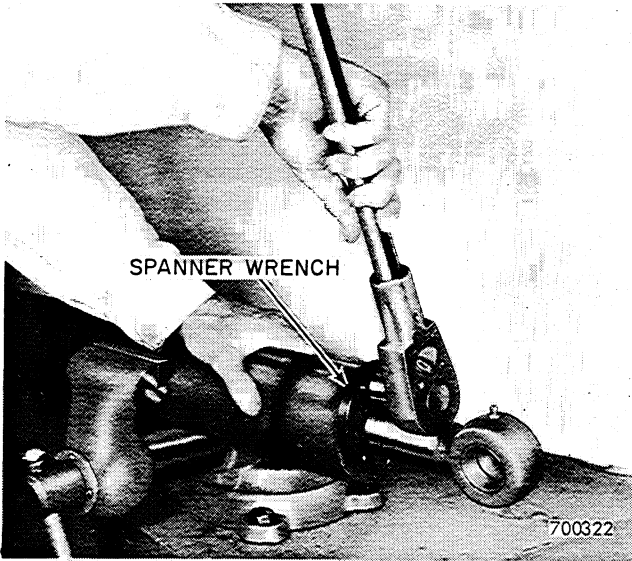


Figure 31 - Removing Gland

4. Remove the piston and washers from the rod. Then remove the nut, seal ring and o-ring from the piston and o-ring from piston rod.
5. Remove the gland from piston rod. Then remove the o-ring, rod seal and rod wiper.

Inspection

1. Discard the o-rings, seal ring, seal and wiper.
2. Clean all parts in cleaning solvent and dry with moisture free compressed air.
3. Shine a light into the cylinder tube. If it has deep grooves or score marks, or has been severely damaged in any way, it should be replaced.
4. Inspect the piston rod for alignment. Replace if bent; do not attempt to straighten.
5. Inspect bushings and replace as required.
6. Before reassembling, remove any minor nicks, scratches, etc. on the rod or in the cylinder tube with medium grit emery cloth. Polish with a rotary motion.
7. Scoring, pitting etc. are signs of possible

oil contamination. Check the hydraulic oil for contamination (water, metal particles, etc.).

Assembly

1. Install new rod seal in groove in gland with lips to the inside. Install a new rod wiper in gland with lip to the outside. Then install a new o-ring in groove around gland.
2. Lubricate the piston rod and gland bore with hydraulic oil and install gland on rod. If necessary, drive the gland onto the rod with a soft hammer.
3. Secure the rod eye in a vise and support the piston end. Install o-ring in groove in piston rod. Then install a washer, the piston and remaining washer on piston rod. Install the piston nut and tighten securely. Secure nut in place with cotter pin. Do not loosen nut to install cotter pin. Install the o-ring and seal ring in groove in piston.
4. Secure the cylinder tube in a vise and thoroughly lubricate the cylinder wall and piston with hydraulic oil. Install the piston rod straight into the tube. After the piston has started into the smooth portion of the tube, screw the gland into the tube but do not tighten at this time. The piston rod can now be worked further into the tube with a rod through the rod eye or a soft hammer. Then tighten gland securely.

Installation

1. Position cylinder in mounting brackets and install pivot pins. Secure pins in place with retaining hardware.
2. Connect hoses or tubes.
3. Start engine and operate the cylinder through several complete cycles to bleed air from the circuit and check for leaks.
4. Check hydraulic reservoir oil level and add oil as required.

SPECIFICATIONS

Hydraulic pump		
Description	Spur gear, positive displacement, driven by gear box output shaft.	
Output	18 gpm @ 2000 psi @ full throttle (2150 rpm) 68 l/mn @ 141 kg/cm ² @ full throttle (2150 tr/mn)	
3 spool valve		
Description	Open center with parallel circuits and power beyond fitting in open center outlet. Two work ports per spool.	
Main relief valve setting	2000 ± 75 psi @ full throttle (2150 rpm) 141 ± 5,2 kg/cm ² @ full throttle (2150 tr/mn)	
Spool travel		
Neutral to pressure	1/4" in and out (6,4 mm in and out)	
Spool in	pressurizes A port (nearest spool eye)	
Spool out	pressurizes B port (nearest spool cap)	
Weight	32 pounds (15 kg)	
Variable speed control valve		
Description	Open center type with one work port.	
Main relief valve setting	350 ± 50 psi @ half throttle, non adjustable 25 ± 4 kg/cm ² @ half throttle, non adjustable	
Thermal relief valve setting	1000 ± 50 psi 70 ± 4 kg/cm ²	
Spool travel		
Neutral to pressure	5/16" in 7,6 mm in	
Neutral to release (open sheave)	3/8" out 9,5 mm out	
Spool in	Pressurizes port B (nearest spool cap)	
Spool out	Oil returns through port B	
Weight	8 pounds (3,6 kg)	
Check valve pressure setting	10-14 psi 0,70-0,98 kg/cm ²	
Tilt circuit relief valves	2400 ± 100 psi 169 ± 7 kg/cm ²	
Springs		
	Free Length	Compressed Length
Rollback and dump circuit relief valves	1.281" ± .005" 32,5 mm ± 0,13 mm	1-3/32" @ 300 lbs. 27,8 mm @ 136,1 kg
3 spool valve main relief valve	1.281" ± .005" 32,5 mm ± 0,13 mm	1-3/32" @ 300 lbs. 27,8 mm @ 136,1 kg
Variable speed control relief valve	1-1/32" 26,2 mm	31/32" @ 100 ± 10 lbs. 24,6 mm @ 45,4 ± 4,5 kg
Thermal relief valve	1-7/32" 30,9 mm	1-1/32" @ 57 lbs. 26,2 mm @ 25,9 kg
Check ball	43/64" 17 mm	3/8" @ 4.5 lbs. 9,5 mm @ 2.03 kg

SYMPTOM	POSSIBLE CAUSE	REMEDY
Cylinder Drifts With Control Lever In Neutral	<ol style="list-style-type: none"> 1. Worn piston packing. 2. Spool or relief valve leakage. 	<ol style="list-style-type: none"> 1. Check cylinder packing as outlined in step 2, Problem: Poor Operation of One Circuit Only, page 16. Rebuild cylinder if defective. 2. Continue with circuit checks outlined under Problem: Poor Operation of One Circuit Only.
Control Lever Hard to Operate	<ol style="list-style-type: none"> 1. Spool binds. 	<ol style="list-style-type: none"> 1. See Spool Binds, page 14.
Lift Control Lever Will Not Stay In Float	<ol style="list-style-type: none"> 1. Defective detent mechanism. 	<ol style="list-style-type: none"> 1. Remove control valve and replace detent mechanism.

Problem: Failure Or Poor Operation Of Major Component

Pump is Noisy	<ol style="list-style-type: none"> 1. Loose mounting bolts. 2. End cover mounting bolts loose. 3. Worn or damaged bearings or gears. 	<ol style="list-style-type: none"> 1. Tighten. 2. Check bolts with a torque wrench. Tighten to specifications. 3. Remove and rebuild pump.
Flowmeter Test Shows That Pump Output Is Low	<ol style="list-style-type: none"> 1. Worn or damaged pump. (Also see Pump Damage below.) 2. Use of improper oil. 	<ol style="list-style-type: none"> 1. Remove pump from tractor. Replace or disassemble and rebuild. Drain reservoir and refill with Case TCH Fluid. Also flush system if oil is contaminated. Service filter. 2. Use Case TCH Fluid.
Pump Leaks Oil	<ol style="list-style-type: none"> 1. Worn seal or pump shaft. 2. Drain passage to suction side of pump plugged. 3. End cover mounting bolts loose. 	<ol style="list-style-type: none"> 1. Remove pump and replace seal. Check shaft at sealing surface for damage. 2. Disassemble pump and clean the passage. 3. Check bolts with a torque wrench. Tighten to specifications.
Pump Damage: <ol style="list-style-type: none"> 1. Wear Plates Scored 2. Heavy Wear Or Scoring At Inlet 3. Gears, Shafts And Bearings Corroded, Pitted, Etc. 4. Drive Shaft Broken 	<ol style="list-style-type: none"> 1. Contaminated oil. 2. Contaminated oil. 3. Contaminated or improper oil. 4. Damaged or misaligned coupling. 	<ol style="list-style-type: none"> 1. Rebuild pump. Drain, flush, and refill system with Case TCH Fluid. Service filter. 2. Same as 1. 3. Same as 1. 4. Rebuild pump. Replace coupling.

8. Secure the relief valve body in a vise and remove the acorn nut, loosen the lock nut and remove the adjusting screw.
9. Remove the cap from the relief valve body and remove the spring and poppet from the body.
10. Push the spring seat out of the cap.
11. Remove plug opposite the relief valve and remove the poppet. Mark this poppet so it will be installed in the proper bore during assembly.
12. Remove the power beyond fitting from the outlet port.

Inspection

1. Discard the quad rings, O-rings and seal ring.
 2. Clean all parts in cleaning solvent and dry with moisture free compressed air.
 3. Inspect poppets and poppet seats for wear and other defects.
 4. Inspect spool lands and spool bores for scoring and wear.
- NOTE:** If inspection indicates replacement of a spool or the valve body, the complete control valve must be replaced.
5. Inspect the main relief valve poppet for wear and defects that would prevent it from seating. Also inspect the poppet seating surface in the relief valve body.
 6. Inspect all springs for signs of cracking and distortion. If either condition is present, replace the spring.

Assembly

CAUTION: Make sure work area, tools and parts are clean.

1. Install a quad ring in the groove at the top of the spool bore. After the quad ring is installed, run a smooth rod around the exposed surface of the ring until a perfect fit is obtained. To check, run a fin-

ger around the exposed surface. It should be a smooth, perfect ridge with no kinks or twists.

2. Lubricate spool and spool bore with hydraulic oil.
3. Install spool thru bottom of bore, eye end first. When the spool eye is exposed, slip a screwdriver thru spool eye and pull spool out of valve with a twisting motion until the bottom quad ring groove is exposed.
4. Install the bottom quad ring as instructed in step 1.
5. Push the spool into the valve with a twisting motion until the spool is flush with the bottom of the spool bore.
6. Install the spring seat, centering spring, and spring retainer. Secure parts in place with screw and lockwasher. Torque the screw to 10 foot pounds.
7. Install the stop disc, snap ring and rubber cap.
8. Repeat steps 1 thru 7 for the remaining spools.
9. Install the marked check poppet in the bore opposite the relief valve. Install a new O-ring on the plug and screw plug into valve. Tighten plug.
10. Secure the relief valve body in a vise. Install a new seal ring on the relief valve poppet and install poppet in body. Then place spring over poppet.
11. Install a new O-ring on the spring seat and cap. Install the spring seat in the cap with hole in seat toward the poppet.
12. Screw the cap into the body and tighten. Then screw adjusting screw into cap. Do not adjust relief valve until the control valve has been installed.
13. Install new O-rings on the body and place the check poppet in the bottom of the relief valve body.

Section 61

POWER TRAIN

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wheels, heat shield and seat. Torque 5/16" cover nuts to 7-9 foot pounds or 3/8" nuts to 10-12 foot pounds, clutch

shaft nuts to 35-40 foot pounds and wheel nuts to 85-100 foot pounds.

CHAIN REPLACEMENT AND ADJUSTMENT

Adjustment Interval

Severe working conditions every 25 hours
Normal (light duty) working conditions every 50 hours

It may be found that the adjustment interval may be extended after the chains have been adjusted several times.

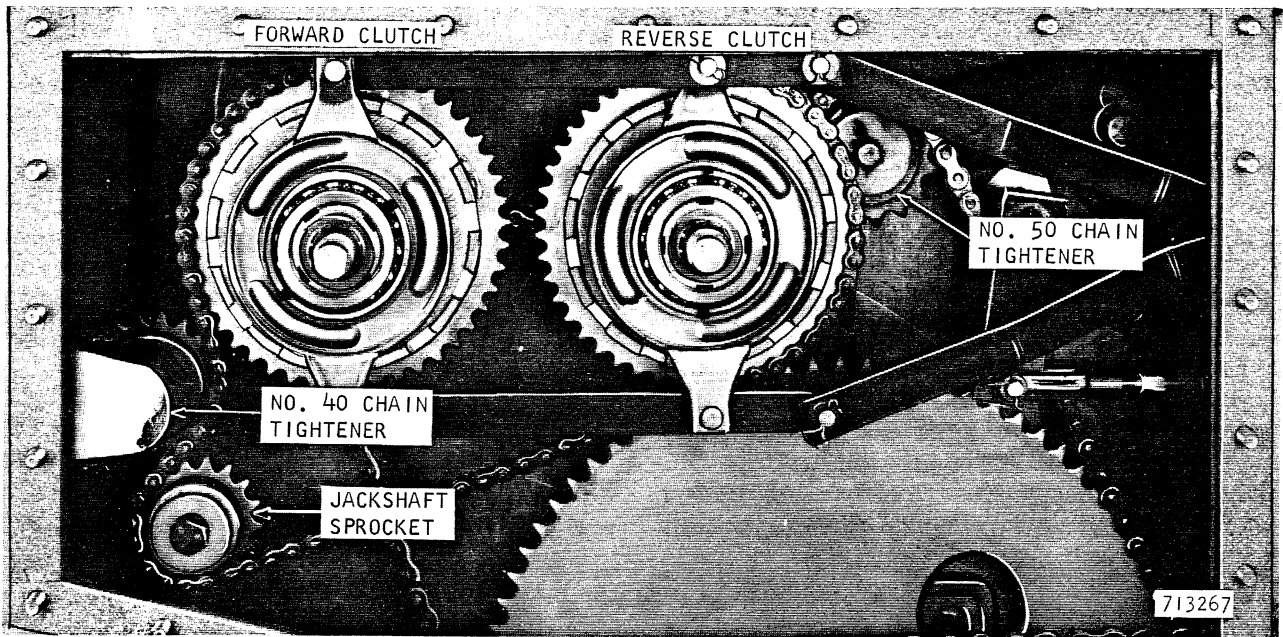


Figure 11 - Drive Chains, Clutches and Sprockets

No. 80 Chain

Removal and Installation

1. Raise machine and block in place. Then remove wheels, drive compartment cover(s) and floorboard.
2. Loosen No. 50 chain tightener to gain maximum slack in chain.
3. Loosen the main drive sprocket and wedge retaining nuts on the the inner and outer drive compartment panels.
4. Hold wedges away from sprocket mounting brackets and push down on sprocket to gain slack in chain.
5. Locate master link (painted yellow) and remove side bar from link. Discard cotter pins.
6. Position the chain over the sprockets and install the master link. Install the rear chain master link with the side bar to the outside and the front chain master link with the side bar to the inside. Always use new cotter pins when assembling a master link.

Disassembly

1. Loosen the set screws in the adjusting nut and remove nut, Figure 20.
2. Remove the two cam and bearing assemblies from the hub. Separate the cams and remove the three steel balls. Then press the bearing from each cam.
3. Remove the pressure plate spacer and pressure plate from the drive cup.
4. Remove clutch discs and belleville springs from the drive cup.
5. Remove drive cup and bearing assembly from hub and press bearing out of drive cup.
6. Remove bearing spacer from hub. Do not remove needle bearings from hub unless inspection indicates need for replacement. Disassemble three piece hub if necessary, Figure 20.

Inspection

1. Clean all parts in cleaning solvent and dry with moisture free compressed air.
2. Rotate ball bearings under pressure to check for flat spots on balls or races. Inspect races for signs of cracking.
3. Inspect the thrust bearings for pitting, scoring and flat spots. Also inspect the thrust washers for wear.
4. Inspect pressure plate for wear and scoring at clutch disc contact surface. Also check tangs on inside diameter for wear.
5. Inspect steel clutch discs for wear and scoring. Replace as required.
6. If friction discs are worn smooth, discard discs and replace with new parts. It is recommended that the steel discs and belleville springs be replaced whenever the friction discs are replaced.
7. Inspect sprocket to drive cup welds for cracks and repair as required. Check late production drive cup for loose rivets.

8. Inspect clutch shaft for wear at the bearing contact surfaces.

Assembly

1. Press bearing into drive cup until snap ring is seated against cup.
2. If needle bearings were removed from hub, press in new bearings 1/16" below edge of bearing bore.
3. Assemble three piece hub. Install sprocket with shoulder toward snap ring groove and secure in place with snap ring.
4. Place bearing spacer (early production only) and drive cup assembly on hub.
5. Place hub and cup assembly on work bench with sprockets down. Install a friction disc in drive cup. Then install one belleville spring on hub with inside diameter of spring against inner race of drive cup bearing.
6. Refer to Figure 20. The remaining belleville springs must be installed in pairs as illustrated. Continue installing clutch discs (steel disc, friction disc and two springs) until all discs and springs have been installed. Then install pressure plate in drive cup.
7. Press bearings into cams until cam is seated against snap ring. Apply a light coat of wheel bearing grease on grooves in each cam.
8. Install pressure plate spacer. Then install a cam assembly with grooves up on the hub and place a steel ball in each groove.
9. Install the remaining cam assembly on hub with grooves down and cam arms opposite each other. Then screw adjusting nut onto hub. Do not attempt to adjust clutch assembly until installed on machine.

Installation

NOTE: When installing a clutch assembly the front clutch alignment marks must face the front of the machine and the alignment

3. Install the shaft bearing assembly in the housing and secure in place with snap ring.
4. Secure coupling in a vise using care not to distort the housing and install hose in housing.
2. Reconnect hose to lock check valve.
3. Start the engine and run at half throttle. Open and close the sheave four or five times to bleed air from the rotary coupling and sheave cylinder.

Installation

1. Install coupling with a new gasket on the 9" sheave.
4. Reinstall seat.

12" SHEAVE

Servicing

NOTE: Prior to disassembly make an alignment mark on each sheave half to maintain proper balance when sheave is assembled.

1. Refer to Long Jackshaft on page 7 for removal and installation instructions.
2. To remove the bushing from the sliding sheave half, drive the roll pins through the bushings and press or drive out bushings and wipers. See Figure 26.
3. Press in new bushings 1/4" below end of sheave. Use a 7/64" diameter drill in roll pin hole and drill through bushing. Then drive in roll pin 1/16" below sheave hub O.D.
4. Check fit of bushings on jackshaft. It should be a sliding fit. Ream bushings as required to obtain a sliding fit.
5. Press in wipers, lips to the outside, until seated against bushing.

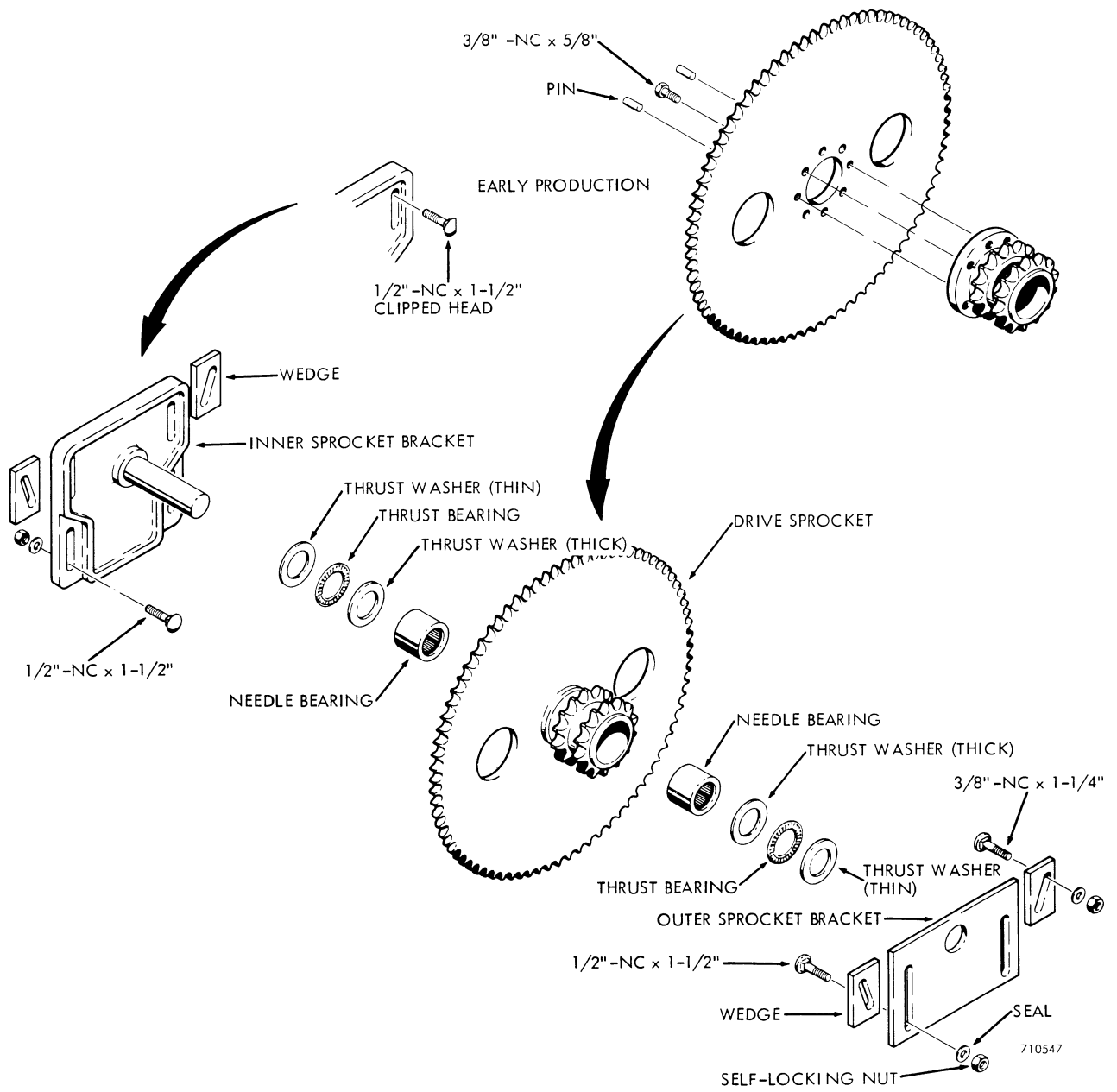


Figure 33 - Main Drive Sprocket

Section 72

BRAKES

5. Inspect the primary cup, piston, check valve and valve seat for wear and defects that could result in master cylinder failure. A repair kit containing these parts is available, refer to Case Parts Catalog.
6. Inspect spring for signs of cracks and distortion. Replace is either condition is present.
7. Lubricate the cylinder bore, piston and primary cup with clean brake fluid.
8. Install the valve seat, check valve, spring, primary cup and piston in the cylinder bore. Secure in place with snap ring.
9. Place push rod in piston and attach boot to master cylinder.

Installation

1. Place master cylinder in mounting bracket. Install mounting bolts with return spring anchor. Install lockwashers and nuts on bolts and tighten nuts.
3. Connect brake lines to master cylinder. Connect push rod to brake pedal bellcrank.

The parking brake is simply the mechanical actuation and locking of the foot brakes. The parking brake mechanism should rarely require repairs.

Parking Brake Lever Disassembly And Cable Replacement

1. Remove the rear section of the floorboard. Remove the lower seat panel mounting bolts.

NOTE: Remove both floorboard sections if the brake cable is to be replaced.

2. Remove the nuts and lockwashers from the upper and lower brake lever mounting bolts.

4. Connect return spring to brake pedal and spring anchor.
5. Bleed brakes as instructed below.
6. Reinstall floorboard.

Bleeding The Brake System

Whenever the brake system has been disconnected for repairs, the system must be bled at the wheel cylinders. It is recommended that a pressurized bleed tank be used to bleed the brakes.

To bleed the brakes:

1. Fill and bleed the pressure tank according to the manufacturer's instructions.
2. Connect line from pressure tank to master cylinder filler opening and open valve on pressure tank.
3. Loosen the bleeder valve on the wheel cylinder and observe the brake fluid flow. When air bubbles cease to appear, close the wheel cylinder bleeder valve.
4. Repeat step 3 for the other wheel.

PARKING BRAKE

3. Remove the mounting spacer and upper bolt. As the upper bolt is removed, remove spacer between the side plates.
4. Remove the lower mounting bolt and remove spacer between cable clamps.
5. Remove cotter pin and washer from clevis pin in slot and remove clevis pin.
6. Remove cable retaining clamps as required.
7. Remove cable mounting clamp at rear of brake assembly. Disconnect cable from parking brake cam lever.
8. Reverse this procedure for installing brake cable and assembling parking brake lever.

meter reading, then turn control knob back to OFF position.

- a. If voltmeter reading was within the green band or at least 4.8 volts for a 6 volt battery, or 9.6 volts for a 12 volt battery or higher, battery has good output capacity. Test Specific Gravity as outlined on page 7, and if

necessary charge battery before placing back in service.

- b. If voltmeter reading was out of green band or less than 4.8 volts for a 6 volt battery, or 9.6 volts for a 12 volt battery, proceed with the Three Minute Charge Test to determine if the battery is discharged or defective.

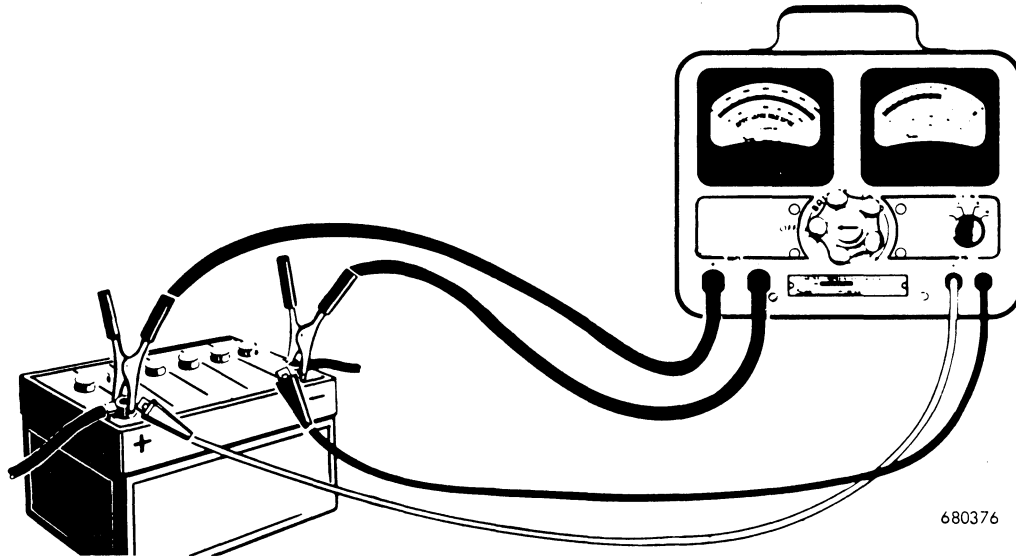


Figure 6 - Battery Capacity (Load) Test

Three Minute Charge Test

Refer to Figure 7.

Use only on batteries which fail the Capacity Test.

Procedure

1. Turn voltmeter selector switch to:
8 volts for 6 volts battery.
16 volts for 12 volt battery.
2. Connect battery charger and voltmeter leads as shown:

Red clips to positive (+) battery post.
Black clips to negative (-) battery post.
3. Turn charger on.
4. Turn charger time switch past 3 minutes and back to 3 minutes.
5. Adjust charging switch to highest rate possible without exceeding 75 amperes for a 6 volt battery, or 40 amperes for a 12 volt battery.
6. After 3 minutes, when time switch has returned to slow charge, reset switch to fast charge.
7. With charger operating on fast charge, observe voltmeter reading.
 - a. If reading is beyond green band or exceeds 7.75 volts on a 6 volt battery or 15.5 volts on a 12 volt battery, the battery is sulphated or worn out and should be replaced.
 - b. If reading is within the green band or less than 7.75 volts on a 6 volt battery or 15.5 volts on a 12 volt battery, proceed with next step.
8. Check individual cell voltage:
 - a. If battery has connecting straps

If clearance is excessive before disassembly, parts wear is the probable cause. Inspect parts carefully after disassembly.

If clearance is excessive after assembly, improper assembly is the probable cause.

To check pinion clearance:

1. Disconnect the motor field coil connector from the solenoid M terminal and INSULATE IT CAREFULLY.
2. Connect a battery, of the same voltage

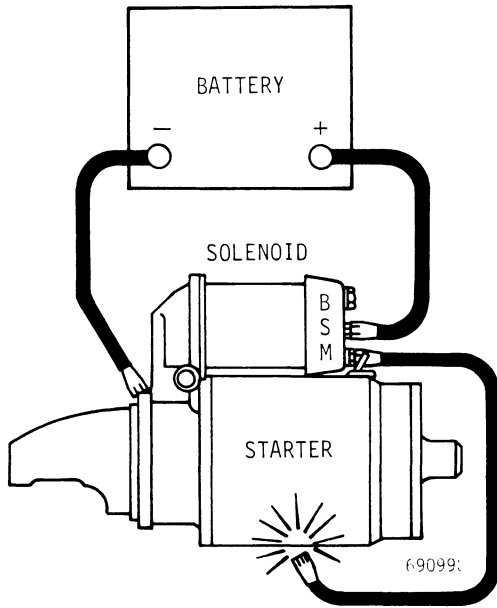


Figure 18 - Circuit for Checking Pinion Clearance

as the solenoid, from the solenoid switch terminal to the solenoid frame, Figure 18.

3. Temporarily connect a jumper lead from the solenoid motor terminal to the solenoid frame. This will shift the pinion into cranking position and it will remain so until the battery is disconnected.

CAUTION: Check pinion clearance quickly to avoid damage to solenoid windings.

4. Push the pinion back towards the commutator end to eliminate slack movement.
5. Measure the distance between pinion and pinion stop, Figure 19.

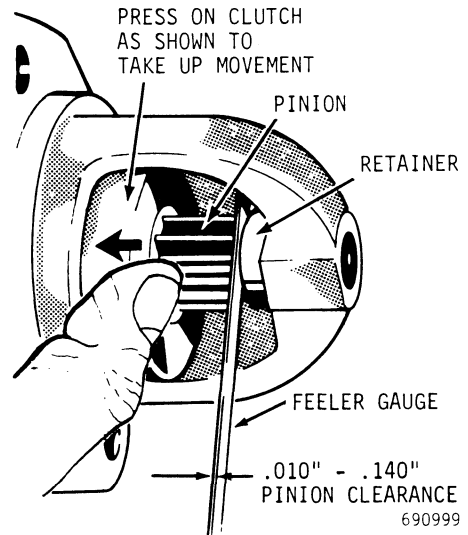


Figure 19 - Measuring and Adjusting Pinion Clearance

STARTER SOLENOID

Specifications

Part number	Delco-Remy No. 1114356
Current draw	
Hold-in winding	14.5-16.5 amps @ 10 volts
Pull-in winding	13-15.5 amps @ 5 volts

Solenoid Tests

The solenoid can be tested on or off the starter. If the solenoid remains on the starter, disconnect the field coil lead from the solenoid M terminal and insulate (tape) the field coil lead to prevent the starter from operating.

Test No. 1 - Hold-In Winding

1. Make the test connections as shown in Figure 20.
2. Close the switch and adjust the carbon pile until the voltmeter indicates 10 volts.

SPARK PLUGS

The basic requirement of a spark plug is to provide a gap inside the combustion chamber across which the high voltage can discharge or form a spark to ignite the compressed mixture of fuel vapor and air in the cylinder.

The spark discharge occurs in two steps. The first step of the spark discharge is called the capacitive discharge and is difficult to see. A rapid rise in voltage occurs until the voltage is sufficient to jump the spark plug gap. At this point, the spark plug ionizes (changes from a non-conductor to a conductor of electricity) and heavy current flows across

the gap. The capacitive discharge is stored in the spark plug until ionization occurs and is the portion of the spark discharge which starts the combustion process in the cylinder.

The balance of the energy, which causes a noticeable flash, second step, is stored in the remainder of the ignition system and is called the inductive discharge. The inductive discharge contributes nothing to the combustion of the fuel, but is a factor in electrical interference and severe electrode erosion.

Now that the spark discharge has been explained, it can be easily understood that



Figure 30 - Spark Plug Conditions and Causes

Potatoe Bucket

1. Remove bucket from machine.
2. Remove all cutting edge welds using carbon arc rod. If carbon arc rod is not available an acetelyne cutting torch may be used but care should be taken to keep distortion to the minimum.
3. Remove the cutting edge and grind off any remaining welds to provide a smooth surface for the new cutting edge.
4. Place cutting edge on bucket, using C clamps to hold it in position.
5. Use a welding rod meeting A.W.S. specification E-7018. Refer to Figure 3 for weld specifications. To prevent distortion when welding the front bucket edge to the cutting edge:
 - a. Start at one end of the bucket and weld toward the center until one rod is used.
 - b. Repeat at the center of the bucket. On succeeding center welds work out from both sides of center.
 - c. Repeat step 5.a at the other end of the bucket.
 - d. Continue welding in this manner until the cutting edge is completely welded.

Section 92

SUPPLEMENT 1

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