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MANUAL PREVIEW

Long
Operator's Manual
1400

Tractor, Loader & Backhoe
5-N-1 Super

Operator's Manual

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LO-O-1400



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MODEL 1400

5-N-1 SUPER

OWNER'S MANUAL

OPERATING INSTRUCTIONS



LONG MFG. N.C. INC.

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Super 15' Super 16'**HYDRAULIC CRANE (Optional)**

Leveling Angle	12°	12°
Lifting Capacity		
Vertical at Full Reach		
Using Boom Cyl. Only	2,100 lbs.	1,950 lbs.
Boom Pinned Using		
Dipperstick Cyl. Only	3,500 lbs.	2,950 lbs.

Lifting capacity:	Up to 4400 lbs
Boom length;	10 ft to 16 ft 6¾ in length, power telescoping by action of hydraulic cylinder

HYDRAULIC SPECIFICATIONS

DUAL PUMP CAPACITY:
 9 GPM and 26 GPM @ 2200 RPM
 @ 2250 PSI

PUMP:

4 GPM — Power Steering
 26 GPM Section — Loader and Crane
 31 GPM Total — Backhoe

SYSTEM CAPACITY 32 Gal.

SYSTEM RELIEF VALVES 2250 PSI

FILTRATION — 10 Micron, Replaceable Cartridge Without
 System Drainage, Full Flow By Pass.

Hoist;	Actuates by hydraulic motor
Single line speed;	105 ft/min.
Single line pull;	1470 lbs
Boom derricking;	Elevates and lowers by hydraulic cylinder
Range;	0° to 65°
Speed;	8.5 deg/sec

Boom telescoping;	Extends and retracts by hydraulic cylinder
Speed;	9.8 in/sec

Swinging;	Rotates by hydraulic motor
Range;	Full circle
Speed;	3.7 rpm.

Cable (wire rope); ¾" dia, 6 x 37 98 ft 5 in length

LOADER:

Lift Cylinder Two D.A. * 3½" Bore
 Bucket Cylinder Two D.A. 3½" Bore
 Valve Two Spool, Hyd. Self-Level,
 Regenerative Circuit in
 Dump.

Hook; 3 parts lines reeving type

Hydraulic pump; Gear

Delivery; 26 GPM

Pressure; 2000 PSI

BACKHOE:

Bucket Cylinder D.A. 3½" Bore
 Dipperstick D.A. 4½" Bore
 Boom Cylinder D.A. 4½" Bore
 w/cushion
 Swing Cylinder Two D.A. 4" Bore
 w/cushion

Stabilizer Cylinder Two D. A. 3½" Bore
 w/Lockouts

Valve Six Spool, 2500 PSI
 Circuit Relief Valves @ Swing, Boom, Dipperstick and
 Bucket Cylinders.

(*Double action)

LOADER FORK TINE ATTACHMENT

WEIGHT 630 lbs.

FORKS:
 Length 48"
 Width 5"
 Thickness 1¾"

Load Capacity @ 24 in. Centers 4,125 lbs.

Maximum Lift Height 10' 6"

Reach From Centerline of Front Wheel 8' 6"

BOOM TRANSPORT LOCK

The backhoe boom has been provided with a transport lock. This should be used as a safety lock when transporting the backhoe on the highway or doing loader work. (Item "B" Fig. 10)



Fig. 10

DRIVING INSTRUCTIONS

1. Starting Cold Engine

- Move the throttle lever down half its travel.
- Insure that the main gear lever is in the neutral position and the stop control returned to the fully closed position.
- Turn the starter key switch clockwise to operate the starter.

2. Starting in Cold Weather

- Move the throttle lever down its full travel.
- Insure that the main gear lever is in the neutral position and the stop control returned to the fully closed position.
- Press in the excess fuel button, (the button will return to its normal position as the engine starts). Operate the starter. (See Fig. 11 for location of excess fuel button).

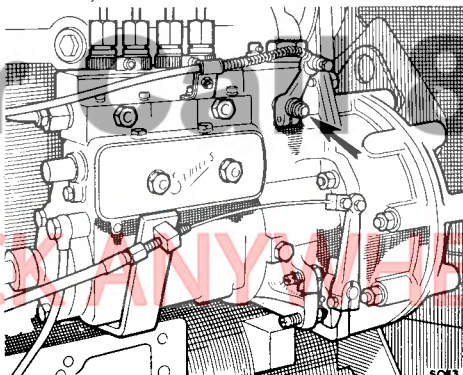


Fig. 11

CAUTION: Avoid running the engine with the fuel turned off, or until the tank is empty, as either practice will allow air to enter the fuel system requiring bleeding of the system.

3. Moving From Rest

- Move the throttle control lever smoothly; do not snatch the lever downwards to increase the engine speed, particularly when moving uphill.
- Do not run the engine at a higher speed than is necessary.

4. Braking

- When using the brakes to assist in making sharp turns, do not use full lock except at low speed. Avoid using the brakes to assist steering except when necessary.

CAUTION: Always engage the brake pedal latch before driving the 5-N-1 Super on the road.

COLD WEATHER OPERATION

During cold weather, the 5-N-1 Super engine should be allowed to operate for approximately 5 minutes, to allow the hydraulic oil to "warm up," before checking the level or operating the system.

CAUTION: Never run the 5-N-1 Super engine with the oil drained out of the reservoir. This could damage the hydraulic pump in a few seconds.

STARTING IN COLD WEATHER

5-N-1 Super with "Start Pilot" (Optional)

Insure that the main gear lever is in the neutral position and the stop control returned to the fully closed position.

Pump the start pilot plunger two strokes for priming and then wait twenty or twenty-five seconds. Open the throttle lever to its full travel. Operate the starter, while pumping the plunger at the rate of one stroke per second, until the engine picks up and over-runs the starter.

The "Start Pilot" is located directly behind the front-end loader control lever on the right-hand fender. (See Fig. 12)

To prepare the unit for use, unscrew the capsule cover, insert a capsule and replace the cover firmly to insure air tightness. Press piercer knob to the bottom of its stroke to pierce both top and bottom of the capsule.

CAUTION: Do Not Use Ether as a Starting Aid.

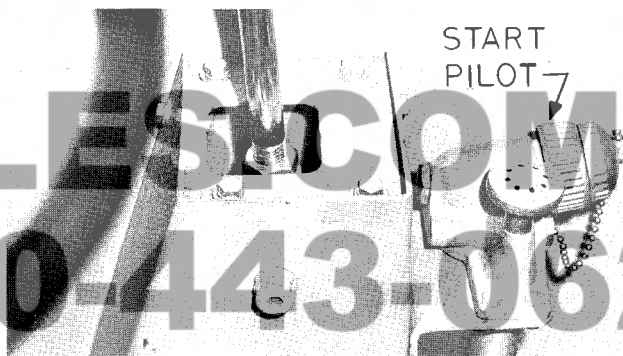


Fig. 12

BACKHOE CONTROLS

When the operator has driven the 5-N-1 Super into position to begin Backhoe operation, he may pivot the operator's seat to the rear by applying quick sideward motion to the left. There is also a lever under the front of the seat that may be actuated to adjust the seat forward or rearward for the best operator position.

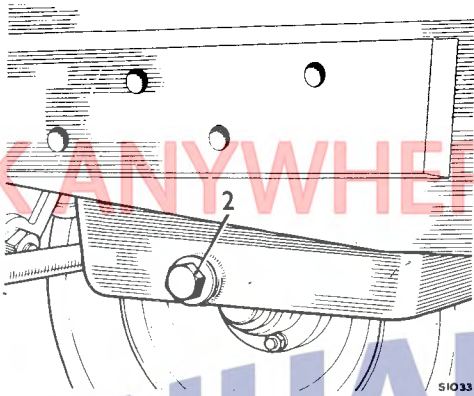


Fig. 45

FUEL INJECTION PUMP: To drain the pump, remove the drain plug (1). Remove the level plug (2) and the filler plug (3). Fill the pump with new oil till it just runs from the level plug (2) hole. This should be done every 200 hours. (Fig. 47).

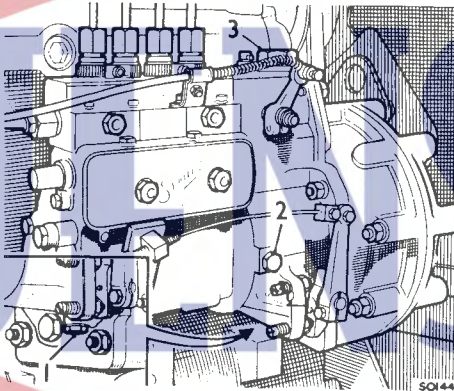


Fig. 47

ENGINE OIL FILTER: Remove the central bolt (1) and the bowl (2). Remove and discard the filter element (3). Clean the bowl with fuel. Fit a new element and re-assemble the bowl to the filter head (4). Note the order of assembly of the components. Always renew the bowl sealing gasket (5). (See Fig. 48).

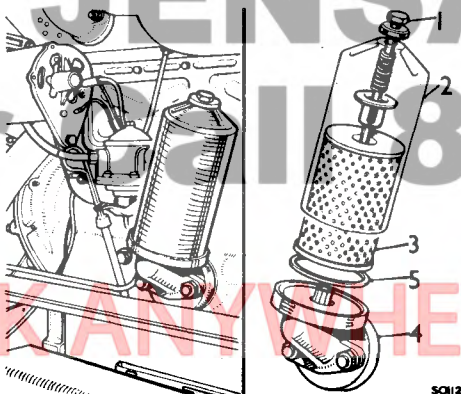


Fig. 48

FUEL INJECTORS: Injector cleaning and spray testing can only be carried out with specialized equipment and this work should be done by your authorized Long Dealer. To remove an injector, disconnect the high pressure pipe (1), and remove the leadoff pipe union (2) from all the injector cap nuts (3). Note the seal washers either side of each banjo. Remove the two injector retaining bolts (4) and withdraw the injector. When refitting an injector, tighten the two retaining bolts evenly to the correct torque figure (12 lb. ft.). Refit the high pressure feed pipe and leakoff pipe. (See Fig. 49).

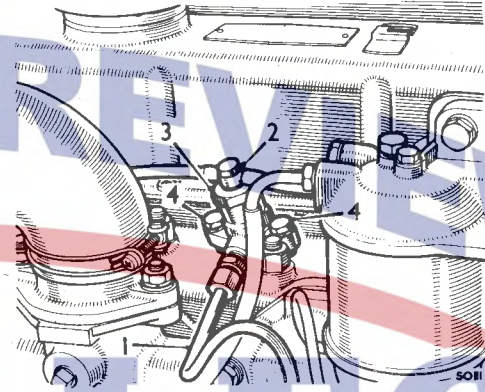


Fig. 49

FUEL LIFT PUMP FILTER: Remove the cap screw (1). Lift off the cap (2), cork gasket (3) and filter gauge (4). Clean the gauge in fuel using a stiff brush. Clean out the fuel chamber (5). Check that the cork gasket is serviceable. If not, replace it with a new one. Re-assemble the components. Do not overtighten the cap screw. (See Fig. 50).

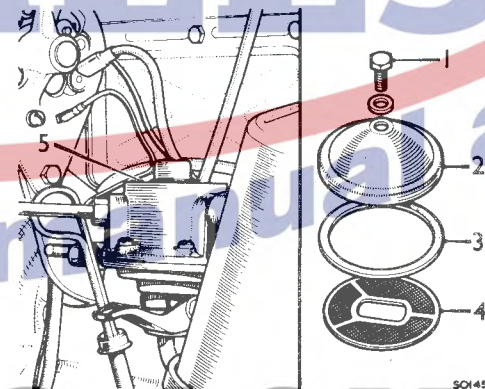


Fig. 50



INSTRUCTIONS FOR SERVICING AND REPAIRING DIGMOR CYLINDERS

- I. Remove complete cylinder from the Digmor Extension.
- II. Connect unit to hydraulic power supply (do not exceed 2,500 psi) and activate cylinder.
 - A. Check tubing for leaks. If tubing has been damaged, replace with approved part.
 - B. Inspect cylinder rod for straightness and surface abrasions.
 - C. With cylinder closed and valve in an open position, check the rod end of the cylinder to see if there is any oil bypassing the gland O-Rings or packing. Reverse procedure and check the base end of cylinder.
- III. If disassembly is required:
 - A. Drain hydraulic oil from cylinder by first extending rod to its farthest extent under power. Release pressure and remove power supply from cylinder. Apply air pressure to open end of hydraulic return tube until cylinder rod has retracted to the closed position. This will remove oil that would prove a nuisance in disassembly.
 - B. Mount cylinder in vise with clevis end approximately 8-12 inches from vise jaws. Use brass or aluminum for protection from vise jaws. Secure cylinder with hydraulic tube on top.
 - C. Remove roll pin from clevis and remove clevis from cylinder rod. If this proves difficult, pull rod out several inches and wrap a piece of fine grain sandpaper around rod and hold with a strap wrench while removing clevis. **Do not use a pipe wrench on cylinder rod under any circumstances, as this will cause permanent damage to rod and will mutilate bearings and chevron packing when the cylinder is activated.**
 - D. Remove nylon set screw that secures lock ring. Use spanner wrench to remove lock ring. If lock ring is extremely tight, use hammer and tap lightly on barrel around lock ring. This will loosen Lok-Tite sealer that has been applied to lock ring threads.
 - E. Pull rod out slowly from barrel. As this is done, gland will come out when piston contacts it. A slight tug may be necessary at this point since gland has an O-Ring pressure seal. Bearings and packing may stay intact inside of gland during removal from rod.
- IV. Inspect component parts before removing the individual parts of rod.
 - A. Check cast-iron rings for scores or cracks.
 - B. Check bronze bearings on rod for excessive play. The bearing inside diameter should not exceed .008 larger than the outside diameter of the rod.
 - C. If only the seals need to be replaced, use a Series "A" Kit. If either the bearings or piston rings need to be replaced, use a Series "B" Kit.
 - D. Check outside of piston. If it has been worn, replace it.
 - E. Mount cylinder rod in vise with piston end approximately 6-8 inches from vise. Be certain that rod is protected from vise jaws when securing rod in vise.
 - F. In removing lock nut, it may be necessary to heat same for removal. If this is necessary, do not re-use same lock nut.
 - G. Remove piston, cushion spring and cushion. Remove O-Ring from rod and O-Ring from cushion. Also remove O-Ring from piston as well as cast-iron rings if required.