1010 SINGLE ROW-CROP GASOLINE AND DIESEL TRACTORS

JOHN DEERE

OPERATORS MANUAL

1010 SINGLE ROW-CROP GASOLINE AND DIESEL TRACTORS

OMT17340 J1 English

OMT17340 J1

LITHO IN THE U.S.A.
ENGLISH

8. As soon as engine starts, release starter switch and adjust engine speed to approximately 1000 rpm. Oil pressure tel-light and generator tel-light should now go out. If indicators glow bright red after engine has been running 10 seconds, the engine should be shut off at once and the cause of difficulty determined.

9. Release clutch. Warm engine and transmission for five minutes by operating engine at 1000 rpm. Do not allow engine to operate at idle speed during engine warm up.

Cold weather starting

The fuel injected into the turbulence chambers of the engine is ignited by increased temperature due to compression. This temperature is high enough under ordinary operating conditions, but may not be sufficiently high at extreme low temperatures to ignite the fuel injected.

The tractor will start easier in extreme cold weather if the hand throttle is placed in the one-half speed position, the clutch is disengaged, and the longer periods of preheating with glow plugs are observed (see preheating table on page 8).

Use a lighter diesel fuel in extreme cold weather to insure delivery of fuel to the injectors, as recommended in table on page 37.

If tractor is completely cold, at temperatures below -10°F, it may be necessary to use a booster battery to obtain sufficient cranking speed for starting the engine. The booster battery and proper preheating should allow you to start the tractor even under the most severe cold conditions.

CAUTION: Ether is NOT recommended as a starting aid due to possible damage to the engine or starter.

The oil used in the air cleaner should be the same as that used in the engine. Do not dilute the oil in the air cleaner.

The battery should be brought to full charge (page 61) so that maximum cranking speed can be obtained.

Warm-up period

Before putting your tractor under full load or into high gear, be sure it is warmed up sufficiently. Oil will then circulate freely, preventing excessive wear on piston rings, cylinders, and bearings. Do not allow engine to operate at idle speed during engine warm up.

Engine idling

Avoid unnecessary engine idling. Prolonged engine idling may cause the engine coolant to fall below its normal range. This in turn causes crankcase oil dilution, due to incomplete fuel combustion, and permits formation of deposits on valves, pistons, and piston rings. It also promotes rapid accumulation of engine sludge.

When the tractor is to remain idle for a considerable length of time, stop the engine.

Engine speeds

The tractor engine is designed to operate at speeds ranging from 1500 rpm to 2500 rpm. These are variable governed speeds, and the engine can be operated at any speed between the two extremes to meet various working conditions.

Full load SAE standard PTO speed is 1900 rpm. Use this speed when operating the power take-off or belt pulley. Slow idle is 750 rpm.

In addition, an engine speed of 2500 rpm is provided to save you time when traveling on highways or on smooth-surfaced roads.

Using hand throttle

Use the hand throttle to select slow idle or any of the variable governed speeds. Moving the lever counter-clockwise increases engine speed; moving the lever clockwise decreases engine speed.

Move the throttle clockwise as far as it will go to obtain slow idle. To obtain the 1900 rpm engine speed, pull throttle counter-clockwise to the first stop. Placing the throttle halfway between slow idle and 1900 rpm gives the 1500 rpm speed. Engine speeds between 1500 and 1900 rpm may be selected by moving the lever between these two positions.

To obtain working speeds above 1900 rpm, pull out on the throttle knob and move throttle counter-clockwise as far as it will go. This is the 2500 rpm position. Engine speeds between 1900 and 2500 rpm may be selected by moving the throttle between these two positions.

Ballast

The performance of your tractor can be improved under certain conditions by adding or reducing ballast at the front end or at the rear wheels.

Front end weights

When operating with a heavy rear mounted implement, or when operating on hilly terrain, front end weights may be installed to maintain adequate stability.

Two front end weights, weighing approximately 150 pounds each, are available as optional equipment from your John Deere dealer.

Rear wheel weights

Power can be wasted and tire life cut drastically by excessive rear wheel slippage. Wheel slippage can be reduced to a minimum by weighting the rear wheels with a liquid solution in the tires or with cast iron weights.

Do not add ballast to the point where all wheel slippage is eliminated. To do so will hinder maximum performance of the engine. The ideal amount of ballast is enough so that the soil between the tire lugs is broken or shifted when the tractor is pulling under load. When too much weight is used, the tread marks will be clear and distinct. When too little weight is used, the tread marks will be entirely obliterated.

Cast-iron weights

Cast-iron weights may be bolted to the rear wheels of your tractor when weight is required in addition to liquid weight.

Each of the removable weights, available from your John Deere dealer, weighs approximately 135 pounds.

When plowing, best results are generally obtained by taking one weight from the furrow wheel and adding it to the land wheel. Tilting of the tractor places more weight than normal on the furrow wheel. Addition of weight to the land wheel provides more uniform weight distribution over the rear wheels.

Liquid weight

Water and calcium chloride solution is an economical means of adding weight to the rear wheels and is intended as an integral part of your tractor. This solution, added in the tire inner tubes, will not damage the inner tube or tire if used in the proper proportions. The addition of calcium chloride is recommended to prevent the water from freezing.

The following chart lists the liquid weight each tire will hold when 75 per cent full (filled to valve level when valve is positioned at highest point).

LIQUID WEIGHT PER TIRE

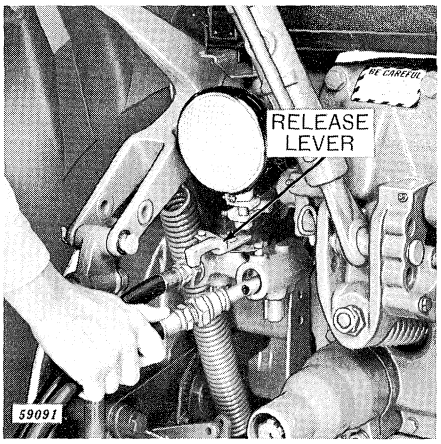
Tire Size	Water Only	Slush free at +13° F. solid at -23° F. (approx. 2 lbs. $CaCl_2$ per gal. of water)	Slush free at -12° F. solid at -52° F. (approx. 3-1/2 lbs. $CaCl_2$ per gal. of water)
5.00-15	25 lbs.	29 lbs.	30 lbs.
6.00-16	49 lbs.	56 lbs.	60 lbs.
9.5 -24	132 lbs.	150 lbs.	161 lbs.
11.2-24	188 lbs.	216 lbs.	228 lbs.
12.4-24	247 lbs.	280 lbs.	305 lbs.

Maximum ballast

When maximum ballast is added, adjust tire pressure as shown in the charts on page 18. The maximum ballast (whether it be liquid, cast-iron, or a combination of both), that may be added with safety to each rear wheel when using towed equipment or integral equipment is shown in the following charts.

Integral implements		
Tire size	Light implement	Heavy implement
9.5-24	175 lbs.	Do not use
11.2-24	350 lbs.	0 lbs.
12.4-24	500 lbs.	200 lbs.

Towed implements	
Tire size	
9.5-24	690 lbs.
11.2-24	930 lbs.
12.4-24	1170 lbs.



Attaching lines to coupling

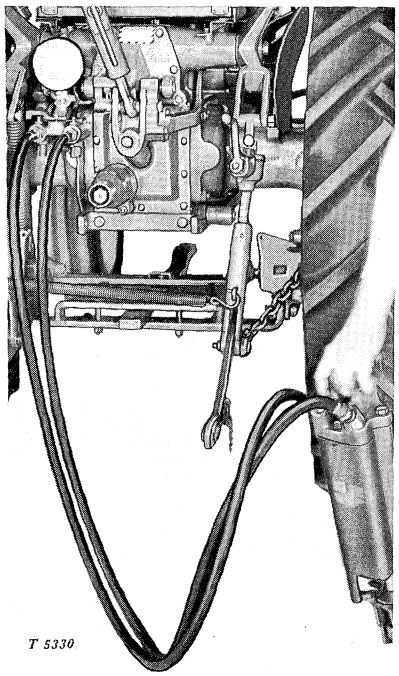
After hoses are inserted in breakaway coupling, lock them in place by rotating release lever about 1/2 turn. Make sure couplings are securely locked in place by pulling on the hoses. It should take approximately 150 to 200 pounds to pull a plug from its coupling hole. Amount of pull can be altered by adjusting the castellated nut on top of the coupling.

Screw coupling caps onto coupling plugs and place the plugs in bracket on left fender.

To attach or detach remote cylinder from implement, remove spring locking pins and pull out attaching pins.

If cylinder is to be removed from implement, replace attaching pins on cylinder immediately.

Bleeding air from cylinder



Bleeding air from cylinder

After connecting remote cylinder to breakaway coupling, bleed all air trapped in the cylinder. Support cylinder with hose end up, and with engine running, actuate control lever seven or eight times to extend and retract piston.

Adjusting remote cylinder

The remote cylinder has an adjustable stop so the working stroke may be matched to the requirements of the implement. The stroke may be varied to obtain a maximum of 8 inches.

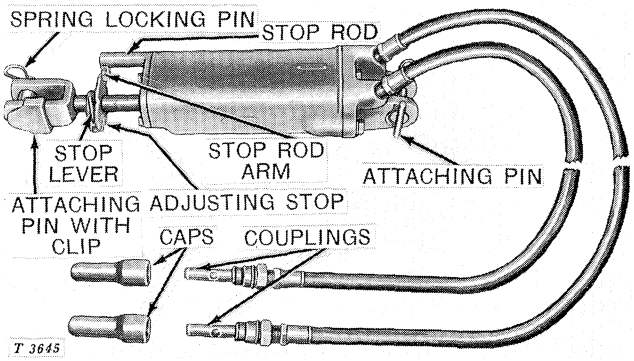
To adjust for average working stroke, lift piston rod and stop lever and slide adjustable stop assembly along piston rod to desired position. Press lever down. If clamp does not hold securely, lift piston rod stop, rotate clockwise 1/2 turn, and press lever in place. An additional 1-1/2 inches of slow travel is available after adjustable stop contacts stop arm. To utilize this additional 1-1/2 inches of slow travel, control lever must be held in rearward position.

CAUTION: Adjustable stop must be located on the piston rod so the stop arm contacts one of the flanges on stop. To prevent damage, be sure lever is clamped securely.

Control lever

When the hoses are connected, moving the control lever rearward retracts the cylinder. Moving the lever forward extends the cylinder. Holding the lever in the rearward position after cylinder adjustable stop contacts arm provides 1-1/2 inches of slow travel.

Control lever operation can be reversed by exchanging flexible oil lines in breakaway coupling.



Remote cylinder and oil lines

Lubricants

Effective use of lubricating oils and greases is perhaps the most important step towards low upkeep cost, long life, and satisfactory service. Without oil and grease, the important working parts of your tractor can be ruined in a very few minutes.

Lubricating oils

The engine has one of the finest lubricating systems it is possible to design. Do not handicap it by using an oil of doubtful quality. It pays to buy only nationally known brands of oil.

Lubricating oils are available in single and multi-viscosity, in various grades or weights, and for various types of engine service.

The viscosity (or fluid quality) of an oil is expressed by a viscosity number which identifies its relative weight. This viscosity number has been assigned in a system developed by the Society of Automotive Engineers (SAE). As viscosity numbers increase, the weight of the oils they identify becomes progressively heavier. A multi-viscosity oil may be chosen instead of a single-viscosity oil, because it has a range of viscosities. Such an oil is light-bodied for easy starting at low temperatures, with additives which, at high temperatures, give it a heavier body for maximum protection.

The widespread use of additives to improve quality brought about the need for defining lubricating oils other than in viscosity alone. The result is the American Petroleum Institute API/SAE classification of oils according to the type of engine service to be encountered. The categories of service are as follows:

Gasoline engines

Service ML

Oil suitable for service typical of gasoline engines operating under light loads and favorable service conditions.

Service MM

Oil suitable for service typical of gasoline engines operating under moderate to severe service conditions.

Service MS

Oil suitable for service typical of gasoline engines operating under unfavorable or severe types of service conditions.

It is recommended that oil used for gasoline engines be suitable for Services MM or MS.

Diesel engines

Service DG

Oil suitable for service typical of diesel engines in any operation where there are no severe requirements for wear or deposit control due to fuel, lubricating oil, or to engine design characteristics.

Service DM

Oil suitable for service typical of diesel engines operating under severe conditions or using fuels of a type normally tending to promote deposits and wear but where there are design characteristics or operating conditions which may make the engine either less sensitive to fuel effects or more sensitive to residues from lubricating oil.

Service DS

Oil suitable for service typical of diesel engines operating under very severe conditions, or having design characteristics, or using fuel tending to produce excessive wear or deposits.

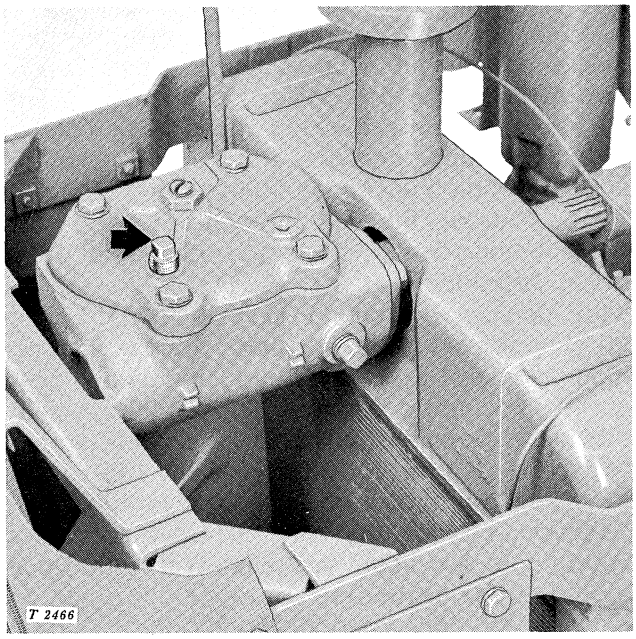
It is recommended that oil used for diesel engines be suitable for Service DM or DS.

Use Service DM type oil for light or average service conditions when the fuel contains less than 0.5% sulphur. Use Service DS type oil for average to exceptionally severe service, low temperature start-and-stop service, high temperature-heavy load service, or when the fuel contains more than 0.5% sulphur.

Never use Service DG type oil in your tractor.

Be sure to select the oil you will use both by viscosity and by type of expected engine service; for example - SAE 20W, Service DS.

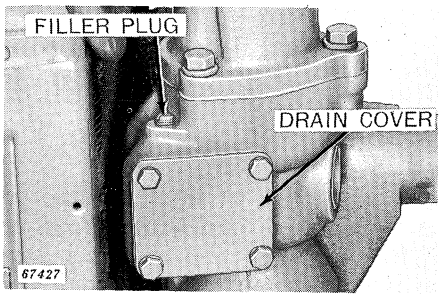
20. Steering housing



Steering housing filler plug

Remove hood from tractor, and remove filler plug from steering housing. Add SAE 140 multipurpose lubricant until supply is within 1/8-inch below top gasket surface of housing.

21. Power steering cylinder housing



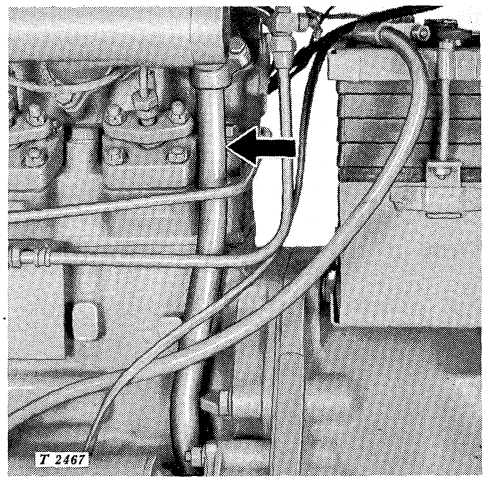
Power steering cylinder plug

On tractors equipped with power steering, remove hood and take out filler plug located on the right side of support. Add SAE 80 multipurpose lubricant to level of filler hole.

400-hour service

22. Ventilator outlet tube

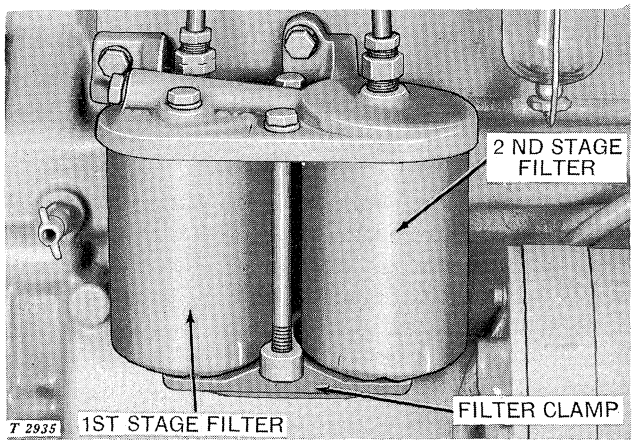
Service ventilator outlet tube every 400 hours or more often if tractor is operated in unusually dusty conditions. Remove tube and swab out assembly with solvent or kerosene.



Ventilator outlet tube (diesel illustrated)

600-hour service

23. First stage fuel filter (diesel)



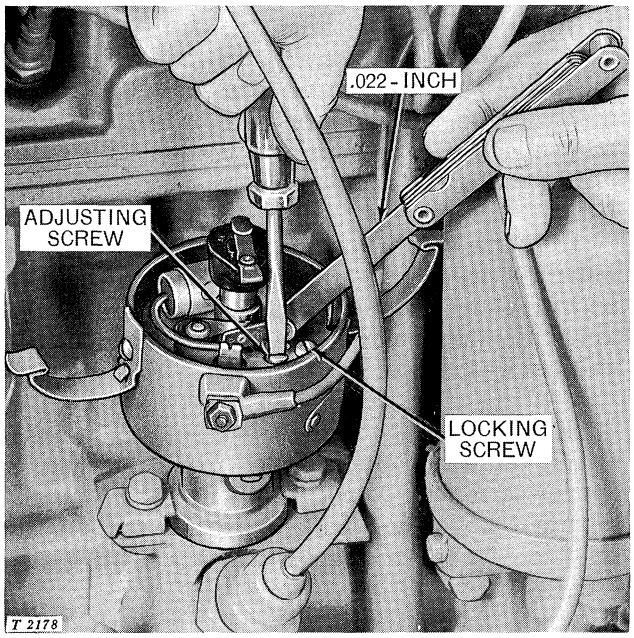
The first stage micronic fuel filter should be serviced by replacing the filter element every 600 hours of operation. To do this, loosen bolts holding filter clamp and remove filter case marked "1ST STA" from filter head. Make sure that metal ferrule on top of element is removed from stud with element. Replace the first stage filter with a new one.

NOTE: Be careful in handling and installing the element as it can be easily damaged.

Install a new O-ring packing in top opening of fuel element. Unless first stage element is extremely dirty or water soaked, do not replace second-stage element except at major overhaul. Use extreme care to see that dirt or other foreign matter does not enter filter or fuel lines. Install filter case under filter head. Adjust clamp and tighten clamp bolts.

Bleed fuel system before operating engine (see page 55).

CAUTION: Never use emery cloth or sandpaper since particles of emery or sand will embed in the points and cause them to burn. If points are badly pitted or worn, they should be replaced with a set of new points available at your John Deere dealer's.



Adjusting distributor gap (Delco-Remy illustrated)

To adjust breaker points, turn the engine flywheel until a high lobe on the distributor cam holds the points at their greatest opening. Loosen contact support locking screw; then adjust the gap to 0.022 inch. Tighten the locking screw and re-check the gap.

Replace cover plate, rotor, distributor cap, and cables. Firing order is 1-3-4-2.

Replacing distributor points

Remove old distributor points and install new points and condenser. See that the points are in alignment with each other. If points are not aligned, use a regular point alignment tool or a needle nosed pliers to bend lower contact support.

BE SAFE

It pays to be careful,

It costs to be careless!

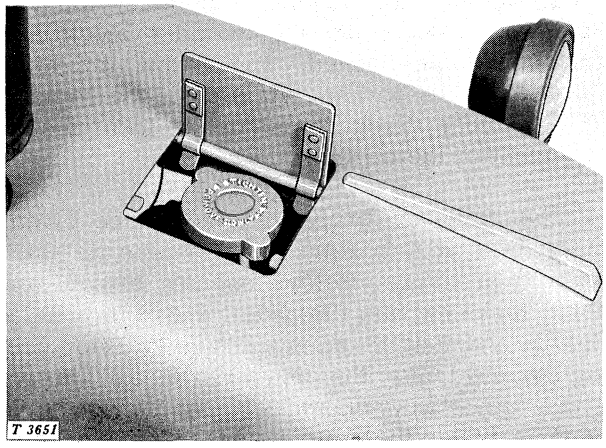
Cooling system

Your tractor is equipped with a pressure cooling system. This system will not operate properly unless it is tight. The filler cap must be properly tightened. The gasket surface of the cap must be in good condition. The system must not have loose connections or leaks. Unless these conditions exist, pressure will not be maintained, and loss of water and consequent overheating will result.

Water is circulated in the cooling system by a water pump.

Proper operating temperature is maintained by means of a thermostat located in the water outlet manifold. A bypass line from water outlet manifold to water pump insures fast engine warm-up and provides a more uniform coolant temperature throughout cylinder block.

For safety, the pressure valve in the radiator filler cap is set to release when the pressure in the cooling system is between 3-1/2 and 4-1/4 pounds.



Radiator cap

CAUTION: Do not remove radiator filler cap until the coolant temperature is below its boiling point. Then loosen cap slightly to the stop to relieve any excess pressure before removing cap completely.

If the system is kept tightly sealed you will find it necessary to add water at less frequent intervals.

Engine overheats—continued

Possible cause	Possible remedy
Dirty cooling system radiator core or grille screen.	Remove all foreign matter from exterior of radiator core and grille screen. Page 60.
Defective thermostat.	Remove and check thermostat.
Loose or defective generator belt.	Adjust belt tension. Replace worn belt. Page 62.
Cooling system limed up.	Drain and flush cooling system. Page 60.

Below normal engine temperature

Defective thermostat.	Remove and check thermostat.

Low oil pressure

Low oil level.	Check crankcase oil level on filler gauge and add oil if necessary. Page 44.
Improper type of oil.	Drain and fill crankcase with oil of the proper viscosity and quality. Page 47.

High oil consumption

Too low viscosity crankcase oil.	Drain and fill crankcase with oil of the proper viscosity and quality. Page 47.
Oil leaks.	Check for leaks in lines and around gaskets and drain plugs.

High fuel consumption

Improper type of fuel.	Consult fuel chart on page 37 and use proper type of fuel for operating conditions.
Engine overloaded.	Reduce load or shift to lower gear.
Clogged or dirty air cleaner.	Clean air cleaner and replace oil if necessary. Page 42.
Improper hitching of equipment.	See equipment operator's manual for proper hitching.
Dirty or faulty injectors.	Check injectors and, if necessary, remove them for dealer servicing. Page 55.
Engine out of time.	Make sure injection pump is timed properly. See your John Deere dealer for this service.