

JACOBSEN®

OPERATOR'S MANUAL

TRUCKS

Model 2015

Gasoline Engine
Product No. 84013
Serial No. 1601 and Up

Model 2315

Gasoline Engine
Product No. 84016
Serial No. 1601 and Up

Litho in U.S.A. 393

Part No. 367071



WARNING: *If incorrectly used this machine can cause severe injury. Those who use and maintain the machine should be trained in its proper use, warned of its dangers and should read the entire manual before attempting to set up, operate, adjust or service the machine.*

1. Safety is dependent upon the awareness, concern and prudence of those who operate or service the equipment.
2. It is your responsibility to read this manual and all manuals associated with this equipment (i.e. truck, engine, accessories and attachments)
3. Learn the proper use of the machine and the purpose of all the controls and gauges before you operate the equipment. Working with unfamiliar equipment can lead to accidents.



The safety alert symbol is used throughout the manuals to alert you to potential hazards. Failure to read and obey the safety instructions can result in serious injury and property damage.

4. Never allow anyone to operate or service the machine or its attachments without proper training and instructions.
5. Wear all the necessary protective clothing and personal safety devices to protect your head, eyes, ears, hands and feet. Operate the machine only in daylight or in good artificial light.
6. Thoroughly inspect the area where the equipment is to be used. Beware of overhead obstructions (low tree limbs, electrical wires, etc.) and also underground obstacles (sprinklers, pipes, tree roots, etc.). Remove all debris, enter a new area cautiously. Stay alert for hidden hazards.
7. Never operate the equipment with loose, damaged or missing components or without decals, guards, shields, or other protective devices in place.
8. The unit should be stopped and inspected for damage immediately after striking an obstruction and the damage repaired before resuming operation.
9. Do not disconnect or bypass any switch. Replace a defective switch immediately. Keep all switches clean and properly adjusted.
10. Carbon monoxide in the exhaust fumes can be fatal when inhaled, never run the engine inside a building without proper ventilation.
11. Handle fuel with care - it is highly flammable. Never fill the fuel tank with the engine running.
12. To reduce fire hazard, keep the engine free of grass, leaves, or excessive grease. Allow the engine to cool before storing in any enclosure and always remove the ignition key.
13. Use extreme caution and reduce speed when working on steep slopes. Operate the machine up and down the face of steep slopes, never across the face.
14. Disengage all drives and set parking brake before attempting to start the engine (motor). Always start engine when sitting in operator's seat, never while standing beside unit.
15. You must comply with the latest requirements per SAE J137 and/or ASAE S279 if this machine is driven on public roads.
16. Hydraulic fluid under pressure can have sufficient force to penetrate the skin and cause a serious injury. Never use your hands to search for oil leaks, use a piece of cardboard or wood.
17. Drive with both hands on the steering wheel and travel at moderate speeds. Always give clear and correct hand signals before turning.
18. Do not extend any part of your body beyond the bounds of the operator's compartment while the vehicle is in motion.
19. Do not change the engine governor setting or overspeed the engine.



CAUTION:

1. Before leaving operator's position for any reason: Shift transmission to forward and disengage all drives. Set parking brake, shut off engine and remove the ignition key.
2. Wait for all movement to stop before making any adjustments or servicing machine.
3. Keep the area of operation clear of all bystanders.
4. Never carry more than one passenger.

This manual contains set-up, operating, maintenance and adjustment instructions for your Jacobsen Truck.

By following the operating and maintenance instructions, you will prolong the life of your machine and maintain its maximum efficiency.

If additional information is needed or you require trained mechanic service, contact your Jacobsen Turf Equipment Dealer.

All Jacobsen Turf Equipment Dealers are kept informed on the latest methods of servicing this equipment and can provide prompt and efficient service in the field or at their service stations. They carry Jacobsen service parts or can secure them from the factory.

Use of other than original Jacobsen parts and accessories or Jacobsen authorized parts and accessories will void the warranty.

When ordering parts, always give the serial number and model of your machine, as well as the quantity, part number and description of the parts needed.

The vehicle serial number plate is located on the left side of the frame behind the seat. We suggest you record these numbers below for ready reference.

Serial No. _____

All information in this publication is based on the product information available at time of approval for printing.

Jacobsen reserves the right to make changes at any time without notice and without incurring any obligation.

For pictorial clarity, some Illustrations and Figures in this manual may show shields, guards or plates open or removed. Under no circumstances should this equipment be operated without these devices securely in place.



WARNING

This vehicle is equipped with an interlock system intended to protect the operator and others from injury by preventing the engine from starting unless the clutch is fully depressed while starting the engine. In the interest of safe operating conditions, this machine must never be operated with the interlock system disconnected or malfunctioning.

Familiarize yourself with the warning labels, they are critical to the safe operation of the machine. REPLACE DAMAGED DECALS IMMEDIATELY.



DANGER

TO AVOID INJURY:

ALWAYS CONNECT THE "GROUND" (BLACK) CABLE LAST AND REMOVE IT FIRST WHENEVER PERFORMING ANY BATTERY MAINTENANCE.

DO NOT CONTACT BATTERY TERMINALS OR TOOLS USED TO LOOSEN THE TERMINALS WITH METAL PARTS.

AVOID CONTACT WITH BATTERY ACID.

KEEP SPARKS AND FLAMES AWAY FROM THE BATTERY.



CAUTION

TO INSTALL BATTERY:

1. INSTALL BATTERY WITH TERMINALS TOWARD FRAME CENTER.
2. CLAMP BATTERY HOLDDOWN TO SUPPORT.
3. CONNECT POSITIVE (+) TERMINAL (RED CABLE).
4. CONNECT NEGATIVE (-) TERMINAL (BLACK CABLE).

TO REMOVE BATTERY:

1. REVERSE INSTALLATION PROCEDURE LISTED ABOVE.

TO JUMP THE BATTERY:

1. CONNECT JUMPER TO POSITIVE (+) TERMINAL ON GOOD BATTERY.
2. CONNECT OTHER END OF POSITIVE JUMPER TO POSITIVE TERMINAL ON THE FLAT BATTERY.
3. CONNECT JUMPER TO NEGATIVE (-) TERMINAL ON GOOD BATTERY.
4. CONNECT OTHER END OF NEGATIVE JUMPER TO FRAME OF VEHICLE WITH FLAT BATTERY.

J-T 336640 CA



CAUTION



MAXIMUM LOAD CAPACITY
OF THIS VEHICLE IS 1500 POUNDS



CAUTION



THIS VEHICLE DESIGNED AND BUILT
FOR "OFF THE ROAD" USE ONLY



WARNING

MUFFLER AND MUFFLER
SHIELDS MAY EXCEED 150°F

RO 339237

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1.0 ENGINE: (Model 2015)

Model..... Onan P220, Horizontally Opposed Twin
Cylinder, Gasoline, Air Cooled
Bore and Stroke..... 3.25" x 2.87"
Displacement..... 782 cc (47.7 cu. in.)
Horsepower..... 20 HP-SAE (14.9 Kw) @ 3600 RPM
Torque..... 32.5 ft. lbs. @ 2400 RPM
Spark Plug Type..... Champion R.H. - 18-Y
Spark Plug Gap..... .025"
Compression Ratio..... 7.0 to 1
Starter..... Heavy Duty
Alternator..... 62 Amp
Fuel Tank Capacity..... 8.5 U.S. Gallons (32.2 L)

1.1 ENGINE (Model 2315):

Model..... Kubota D905-B Diesel
Bore & Stroke..... 2.83" x 2.90" (71.8 mm x 73.6 mm)
Horsepower..... 23.5 @ 3,600 RPM (17.5 Kw)
20.0 @ 3,000 RPM (14.8 Kw)
Torque..... 39.4 Ft. Lbs. @ 2,400 RPM (53.4 Nm)
40.3 Ft. Lbs. @ 2,000 RPM (54.6 Nm)
Displacement..... 54.80 Cu. In. (899 cc)
Type..... 3 Cylinder, Water Cooled, 4 Cycle
Fuel Injection Pump.... Bosch MD Type
Governor..... Centrifugal Flyweight Type-Mechanical
Air Cleaner..... Dry Type - Donaldson
Starter..... 12 Volt
Oil Filter..... Full Flow Oil Filter Cartridge
Oil Capacity..... 4 Quarts with Filter
Lubrication..... Pressurized Lubricating by Trochoid
Pump
Muffler..... Nelson Muffler
Cooling..... Pressurized, Sealed Cooling System, 4
Blade Fan, Cooling Capacity, 6 Quarts

1.2 TIRES:

Front..... (1)18.0 x 9.50 - 8 Rib (6 ply)
Rear..... 23-10.50 x 12 - 6 ply Turf Trac.

1.3 TRUCK:

Axle Differential..... Hypoid Ring and Pinion 12.25:1
Transmission..... 5 Speed Synchro Mesh, Plus one
Speed Reverse
Ratio's: 1st 4.078:1
2nd 2.414:1
3rd 1.507:1
4th 1.000:1
5th 0.676:1
Rev 4.078:1
Clutch
Gas..... 6.5" Diameter Mechanically Actuated
Diesel..... 7.0" Diameter Mechanically Actuated
Brake..... Hydraulic Rear (Drum Type)
Park Brake..... Mechanical Rear (Drum Type)
Electrical System..... 12 V Negative Ground
Lighting..... Dual Halogen Headlights, Tail and Brake
Lights
Front Suspension..... Dual Torsion Block Fork with Coil
Springs over Hydraulic Shocks
Speed
(Max. Governed)..... 24 MPH
Rear Suspension..... Transverse Semi-Elliptical Spring with
Hydraulic Shocks and Torsion Bar
Steering..... Rack and Pinion
Load Bed Size..... 52" Wide x 46" Long (55" x 47" without
Side Panels) with Tailgate Extended 60"
Load Bed Height..... 12"
Load Bed Capacity..... 16.61 Cubic Feet
Hitch..... Draw Bar
Tailgate..... Double hinge top or bottom manually
activated.

1.4 BATTERY:

For normal service use a battery rated 12V, 80 amp hours at 20
hour rate. AABM Group #22NF.

1.5 WEIGHTS AND DIMENSIONS:

Weight (Dry)..... 1630 lbs. (741 Kg) Diesel
1454 lbs. (659 Kg) Gas
Length..... 116" Tailgate Up (2.95 m)
129" Tailgate Down (3.28 m)
Width (At Rear Fenders)..... 60" (1.52 m)
Tread (Rear Wheels)..... 51" (1.29 m)
Wheel Base..... 84.25" (2.14 m)
Height at Floor..... 15" (381 mm)
Ground Clearance
(At Differential)..... 4.88" (124 mm)
Ground Clearance (At Engine)..... 5.5" (140 mm)
Load Capacity (Including Operator
Passenger(s) and Accessories)..... 1500 lbs. Max.
Turning Radius in Side Rear Wheel.. 3' (91.4 cm)

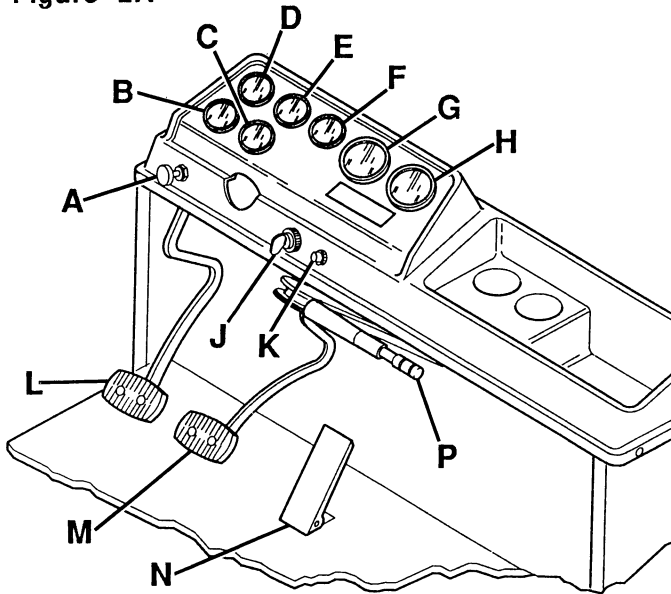
1.6 ACCESSORIES

See your Jacobsen Turf Equipment Dealer for a complete list of
accessories and attachments.



CAUTION: Do not attempt to drive the Truck unless you have read the Operator's Manual. Learn the location and purpose of all the controls and instruments before you operate this truck.

Figure 2A



2.0 INSTRUMENT PANEL

A. Light Switch

B. Fuel Gauge

C. Temperature Gauge

D. Oil Pressure Gauge: Will indicate "high" until the engine reaches normal operating temperature, then it should indicate approximately 20 lbs. of pressure or indicate "lower" pressure when the engine is idling.

E. Ammeter: When the ignition switch is "OFF", the indicator needle should rest at the center of the dial. If the needle remains on the low (-) side of the dial continuously, check the battery, alternator, and charging circuit immediately.

F. Hourmeter: used to indicate the number of hours the vehicle has been operated and can be used to keep track of maintenance intervals or the amount of time required to perform various tasks.

G. Speedometer: Standard equipment on the diesel truck optional kit for the gas truck.

H. Tachometer: Used to indicate the engine RPM and is usually used in conjunction with a Power Take Off (PTO) in seeding and spreading operations.

J. Ignition Switch

Acc..... Is used to operate the accessories.

Off..... Is the center or straight-up-and-down position. All power circuits are "OFF".

Run..... The ignition system is "ON" and the accessories may be operated.

Start..... Turn the key to the "START" position and release when engine starts. Refer to section 3.4.

K. Horn

2.1 LEVERS/PEDALS

L. Clutch: Your vehicle is equipped with a spring loaded, single plate automotive type clutch.

Use pedal only when shifting gears. Do not rest your foot on the clutch pedal; premature clutch failure may result from this practice.

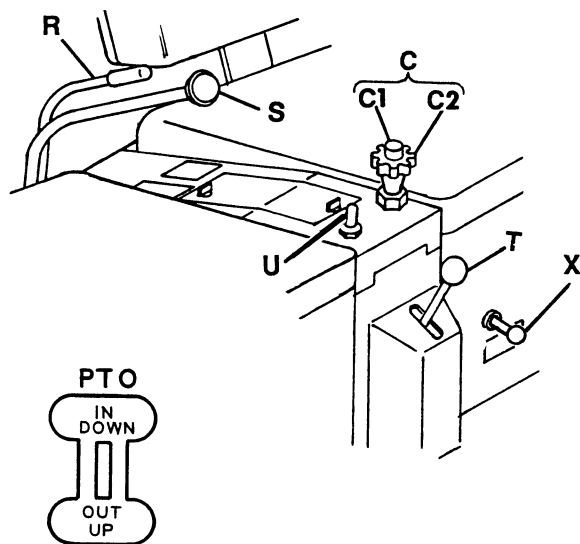
M. Brake Pedal: The vehicle is equipped with hydraulically operated rear wheel brakes.

To ensure that brakes seat adequately, use moderate pedal pressure except in emergency situations.

N. Accelerator: Used to regulate engine speed.

P. Parking Brake: It is a two position hand operated lever. The parking brake is engaged by pulling the lever back into the locked position.

Figure 2B



- R. Power Take Off Lever (Diesel Truck):** Used to operate attachments. Use in conjunction with control (C).

Adjust PTO speed by observing the tachometer and turning the speed adjust knob (C2) to obtain the desired R.P.M.

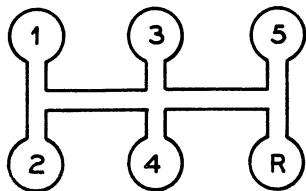
Use the quick release button (C1) to disengage the speed control.

IMPORTANT: Engaging PTO with a plugged attachment could permanently damage the gear box.

- S. Transmission:** Five speed synchromesh transmission uses a standard pattern with five forward and one reverse position with lock out in reverse.

The clutch must be completely disengaged when shifting and release the clutch slowly for smooth engagements.

NOTE: When downshifting, always downshift to the next lowest gear. Do not omit intermediate gear positions since unnecessary clutch wear or possible damage to the clutch and transmission may result.



T. Dump Bed Control (Diesel Truck)

Neut..... Normal off position.

Extend.... Used to raise the bed to any degree desired. With detent for use with remote hydraulic.

Retract.... Used to lower the bed.

Float..... Not used in conjunction with the dump bed. This position is used for certain accessories.

U. Glow Plug Switch (Diesel Engine Only)

Refer to Section 3.4.

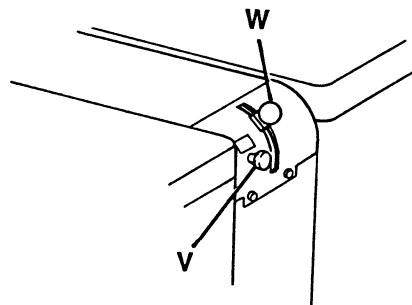
V. Choke Control (Figure 3C) (Gas Engine Only)

Refer to Section 3.4.

W. Throttle Control (Figure 2C): Used only on gas model with PTO kit.

X. Hydraulic Remote: Used in conjunction with control (T). Pull to engage and place dump bed control in extend position.

Figure 2C



3.0 GENERAL

Before putting this vehicle into operation, you should become thoroughly familiar with the truck, the controls and the proper use of the equipment. You and each operator you employ should read this manual carefully in its entirety.

3.1 DAILY CHECK LIST

1. Perform a visual inspection of the entire unit. Look for obvious signs of abrasive wear, oil leaks, loose hardware, etc.
2. **BRAKES**
Make sure that the parking/hill brake will hold on a hill and that when disengaged, does not drag or prevent the vehicle from rolling freely.
3. **FUEL**
Fill the tank with fresh, fuel. (Refer to Section 5.9 for more specific information).

**WARNING**

Never fill the fuel tank when smoking or near an open flame. Fumes or spilled fuel could ignite. Do not overfill fuel tank; leave room for expansion.

4. OIL

The oil level in the crankcase should be up to the full mark on the dipstick.

Check hydraulic oil lever (Diesel Truck)

5. TIRES

Tire inflation is governed by the type of the terrain.

On hard turf, slightly higher inflation pressure is desirable and on very soft turf, lower pressure prevents tires from cutting into the turf.

All tires should have the same pressure for optimum handling characteristics. Be careful not to overinflate. (Refer to Section 5.18)

3.2 OPERATING SUGGESTIONS

1. When starting the truck engine, the operator must be seated on the truck seat, under no circumstances should the engine be started with operator standing next to the truck.
2. Study the area to determine the best and safest operating procedure. Consider the height of the grass and the type of terrain (level, hilly or rough). Each condition will require certain adjustments or precautions.



CAUTION: Pick up as much debris as you can find. Enter a new area cautiously. Operate at speeds that allow you to have complete control of the vehicle and can maneuver safely or stop in case of an emergency.

3. Be careful not to oversteer, especially at higher speeds. Drive with both hands on the steering wheel and always keep your feet and legs inside the vehicle.
4. Always give clear and correct hand signals before turning. Know that is behind you before backing up.
5. Vehicle is limited to 2 occupants maximum.
6. Avoid quick stops and starts. Always remain seated and *hold on* while vehicle is in motion.
7. Headlights should be turned on at dusk. This will aid your visibility and enable other drivers to see you more easily. Keep the headlights properly adjusted.

3.3 BREAK-IN PROCEDURE**(Diesel Engine)**

1. During the first 50 hours of operation, a new engine should be operated at full load. However, the engine *Must be allowed to reach an operating temperature of at least 140° F (60° C) prior to operation at full load conditions.*
2. The engine oil should be checked *twice daily* during the *first 50 hours of operation. Higher than normal oil consumption is not uncommon during the initial break-in period.*
3. Change engine oil and filter element after first 35 hours of operation.
4. Check fan belt tension after first 10 hours of operation and adjust for proper tension. Refer to the engine manual for specific instructions.
5. During break-in period, check and tighten all hardware.

(Gasoline Engine)

1. An extensive break-in period is not required for your new vehicle. Drive moderately for the first 25 hours, avoid full throttle starts and rapid acceleration until the engine has achieved operating temperature.

IMPORTANT: Full throttle acceleration in low gear can result in overrevving the engine and should be avoided.

2. During the break-in period, check the engine oil every five (5) hours of operation. Check and tighten all hardware.

NOTE: *Higher than normal oil consumption is not uncommon during the initial break-in period.*

Never overfill the engine with oil, foaming may result and enter the breather system.

3. Change engine oil and filter element after first 30 hours of operation.
4. Check alternator belt tension after first 10 hours of operation and adjust for proper tension.

3.4 TO START

(Gasoline Engine)

1. Engage parking brake. Fully depress the clutch.
2. Pull choke control out to start a cold engine.
3. Move transmission lever to "neutral" position.
4. Disengage PTO lever (if so equipped).
5. Depress accelerator pedal slightly and turn key to the "START" position. Release as soon as engine starts. Do not hold key in "START" position for more than 15 seconds at a time.
6. After engine starts, push choke knob in about half way. As the engine warms up push the choke all the way in.
7. TO START A FLOODED ENGINE, press the accelerator pedal gently to the floor and hold it there.
 - a. Turn the ignition key to the "START" position until the engine starts.
 - b. Release the accelerator pedal IMMEDIATELY after engine starts.
 - c. Allow the engine to run at a fast idle for a few seconds until the flooded condition is cleared.

(Diesel Engine)



CAUTION:

DO NOT USE STARTING ASSIST FLUIDS.

Use of starting assist fluids in the air intake system may be potentially explosive or cause a "Runaway" engine condition that could result in serious engine damage and/or personal injury.

1. Make certain the fuel shut-off valve is open. The fuel filter is located on the lower right hand side of the fuel tank mounting assembly.
2. Sit in operator's seat and make sure the parking brake is locked, the transmission lever is in "neutral" position and the PTO is disengaged.
3. Depress glow plug switch for 7 seconds, release the switch.

4. Insert ignition key, turn clockwise to "Start" position and release as soon as engine starts. Do not hold key in "Start" position for more than 15 seconds at a time.

5. Allow engine to warm up.

3.5 TO DRIVE

1. Disengage parking brake.
2. Shift transmission lever to desired gear.
3. Gently depress accelerator pedal and slowly release the clutch pedal.
4. To stop, remove foot from accelerator pedal, depress clutch pedal and apply the brake pedal.
5. For general low load driving the vehicle may be operated using third, fourth and fifth gears. First and second gears are designed for use in situations where vehicle is fully loaded or operating in sand or snow.

NOTE: Before shifting from forward to reverse, the truck must come to a complete stop. Rapid "on-the-go" shifting will result in extensive transmission damage.

3.6 TO PARK

1. Bring the vehicle to a complete stop.
2. Disengage the PTO.
3. Set the parking brake.
4. Place transmission in first gear or "reverse" and if possible, "curb" the front wheel when parking on an incline.
5. Turn ignition switch to "OFF" position and remove key.

3.7 OPERATION WITH ATTACHMENTS



DANGER

Do Not attempt to clear obstructions from attachments by engaging PTO lever. Disengage PTO lever, stop engine, set parking brake, remove key from ignition switch then remove obstruction.

1. Refer to the installation and operating instructions of the implement to be used for more specific instructions.
2. Make sure parking brake is engaged and shift transmission lever to neutral.
3. Engage PTO lever and set speed control to desired RPM.

3.8 HILLSIDE OPERATION**WARNING**

In order to minimize the possibility of overturning, the least dangerous method of operating on hills and terraces is to travel up and down the face of the slope, not horizontally. Avoid any unnecessary turns, use extreme caution and travel at reduced speeds.

1. This vehicle has been designed for good traction and stability under normal driving conditions, however, caution must be used while operating on slopes, especially on wet grass that will reduce traction and steering control.
2. When climbing a steep slope and the tires begin to slip, the grade is too steep for safe operation. Angle the truck to a less steep slope until traction is regained.
3. Do not start or stop suddenly or make sharp turns to prevent tipping or the loss of control.
4. Correct tire pressure is essential for maximum traction and hillside holding. Keep tires properly inflated.

3.9 TOWING MACHINERY

A large percentage of light machinery can be towed using no special equipment other than standard equipment trailer hitch.

3.10 AFTER OPERATION

1. Park the truck on a flat and level surface, stop the engine, set parking brake and remove key from ignition switch.
2. Wash the truck and the attachments after each use. Do not use high pressure spray. Do not spray water directly at the ignition switch or other electrical components on the instrument panel.
IMPORTANT: Do not wash a hot or running engine, you may damage the injection pump and the engine.
3. Keep the grill, radiator fins and engine block free of grass and dirt to prevent serious heat damage to the engine or hydraulic oil circuit.
4. Grease and lubricate all points immediately after washing. (Section 7.0).
5. To prevent condensation in the fuel tank, fill tank with fresh, clean fuel at the end of every operating day. (Section 5.9).

3.11 DUMP BED

1. The diesel truck is equipped with a hydraulically operated dump bed as standard equipment.
2. The gasoline truck is equipped with a manually operated dump bed. (Electro/hyd. dump optional)

**WARNING**

For safety, a prop is provided on the gasoline truck to hold the dump bed up while interior maintenance is performed. Failure to use the prop could result in personal injury should the truck bed be displaced.

3. The tailgate is top and bottom hinged and should be up and locked while the vehicle is in motion. ignition switch.

3.12 DRIVING ON SAND, SNOW, OR ICE

1. While driving through loose sand or deep snow, proceed cautiously, shifting to second and first gears as required to maintain steady progress.
2. If the rear wheels become stuck, avoid spinning them deeper into the sand or snow. Shift back and forth between reverse and first gears.
 - a. Keep a light, steady pressure on the accelerator pedal. *Avoid racing the engine.*
 - b. Time the shifts between gears to take advantage of the rocking momentum of the vehicle.
 - c. If vehicle is still stuck after a minute or two of rocking, have the vehicle pulled out to prevent engine overheating or possible damage to the transmission.



WARNING

To avoid possible serious bodily injury, before making any adjustments, stop engine, set parking brake and remove key from ignition switch.

Never work under a vehicle that is supported by jacks alone. The vehicle must be chocked and supported by jack stands.

4.1 GENERAL

1. Efficient and trouble-free performance cannot be obtained from your machine unless the parts are properly adjusted and lubricated. If proper adjustment cannot be made, contact your Jacobsen Turf Equipment Dealer.
2. Remove all watches, rings, and other jewelry when adjusting or repairing the vehicle's mechanical or electrical components.
3. Always wear protective clothing when working on a hot engine. Do not wear loose clothing in the vicinity of moving parts, such as flywheels, blowers, couplings, fans, belts, etc.
4. Keep your hands away from moving parts.

4.2 BRAKE LINKAGE

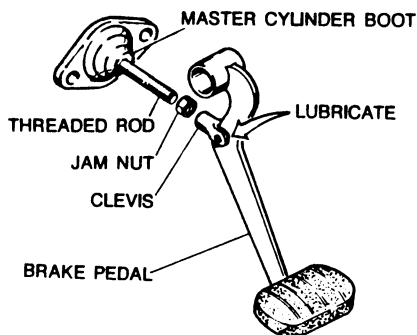
If the master cylinder should have to be removed for any reason, the pedal will require readjustment.

The threaded operating rod should be snug against the master cylinder plunger (inside cylinder, under rubber boot) with no pressure on the plunger.

To adjust, loosen the jam nut on the operating rod and turn the rod in the desired direction until it becomes snug against the plunger.

NOTE: The master cylinder has built in free travel.

Figure 5A



4.3 BRAKE ADJUSTMENT

Excessive pedal travel indicates the need for an adjustment that should be made at the wheel drums.

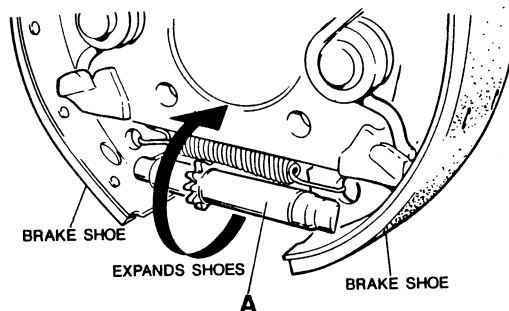


WARNING

Never work on a vehicle supported by a jack alone. To prevent possible personal injury, the vehicle must be supported on jack stands during this procedure. Lift the front end with a jack and support with two jack stands placed on the most forward flat section of the frame. Never raise the rear of the vehicle without also raising the front wheel clear of the ground.

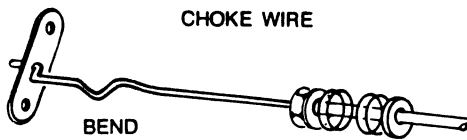
1. Loosen each of the rear wheel nuts 1/2 turn.
2. Place a jack under the outboard end of the axle and lift until the tire is raised above ground. Place a jack stand under the axle and slowly lower the jack. Repeat the procedure for the other wheel. Remove the wheel nuts and the wheel.
 - a. Remove the brake drum and inspect the brake shoes for excessive wear.
 - b. If brake shoe replacement is not required, replace the drum and adjust the shoe clearance.
 - c. Rotate the brake adjusting screw (A) through the slot in the brake drum. Continue until contact is made between shoes and the brake drum.
 - d. To obtain proper clearance, turn the adjusting screw three (3) clicks in opposite direction.

Figure 5B



4.4 CHOKE (Gasoline Truck)

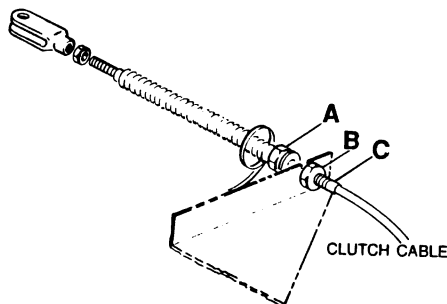
If the control cable stretches with use, the choke can be adjusted by bending the wire between the choke control and the carburetor.

Figure 5C**4.5 CLUTCH**

1. Adjustment should be made only to obtain correct pressure plate clearance for full release.
2. 1/32" to 3/32" is recommended clearance between the release bearing and the pressure plate activating fingers. This clearance is to ensure full plate contact when the clutch pedal is released.
3. The clearance between the release bearing and the pressure plate is extremely important. If the bearing is in constant contact with the pressure plate, it will reduce the life of the bearing by almost a half and could also cause the clutch to be in a semi-released position.
 - a. Loosen nuts (A, B) and adjust cable housing (C).
 - b. Adjust the cable housing until the proper clearance is reached (1/32" to 3/32").
 - c. Tighten jam nuts (A, B) to 12-15 ft. lbs. torque and recheck adjustment.

(Diesel Truck Only)

4. With clutch pedal fully depressed the pressure plate fingers move a maximum of 1/8" to release the clutch disc. The clutch becomes disengaged at the bottom of the clutch pedal stroke. Adjustment other than this will cause early failure of the clutch components.

Figure 5D**4.6 FRONT WHEEL ALIGNMENT AND STEERING ADJUSTMENT**

The need for an alignment may be determined by the vehicle pulling to one side and can usually be felt through the steering unit.

1. Select a flat surface.
2. Turn front wheel to the straight ahead position.
3. Loosen the lock nuts on the ends of the axle, and loosen the two jam nuts on the axle (inside the fork arms).
4. Using a large framing square and suitable pry bar between the axle and support, align the wheel relative to the ground.
5. Tighten outside axle jam nuts and lock nuts.
6. Confirm the adjustment by rechecking with the frame square.
7. Tighten the jam nuts and lock nuts to 90-100 ft. lbs. torque.

4.7 TIE ROD ADJUSTMENT

Tie rod adjustment is required only if the front fork will not turn as far one way as the other.

1. Loosen the jam nut at each end of the tie rod. (Remember that one is a left hand thread).
2. Turn the steering wheel to the left as far as possible.
3. Rotate the tie rod tube until the fork comes in contact with the fork stop.
4. Move steering wheel to right to ensure that the fork contacts the opposite stop.
5. Tighten tie rod jam nuts securely.

4.8 STEERING

If ball joint of tie rod assembly end is worn or damaged the rack and rod end assembly must be replaced as a complete unit.

MAINTENANCE



WARNING

To avoid possible serious bodily injury, before making any adjustments or performing maintenance, stop engine, set parking brake and remove key from ignition switch.

Never work under a vehicle that is supported by jacks alone. The vehicle must be chocked and supported by jack stands.

5.0 PROCEDURE

1. The long, trouble-free life of your vehicle depends on the maintenance it receives.
2. Inspect your vehicle on a regular basis and replace worn or damaged parts, before operating the machine or before actual breakdown occurs.
 - a. Keep the truck and attachments clean.
 - b. Keep all moving parts properly adjusted and lubricated.
 - c. Keep all fluids at their proper levels.
 - d. Keep shields in place and all hardware securely fastened.
 - e. Keep tires properly inflated.
3. Remove all watches, rings and other jewelry when adjusting or repairing the vehicle's mechanical or electrical components.
4. Always wear protective clothing when working on a hot engine.
5. Use the illustrations in the Parts Catalog as reference for the disassembly and assembly of components.
 - a. Always maintain relative position of parts when disassembling.
 - b. Clean and lubricate individual parts and components as required.
6. Set up a maintenance program and follow the intervals listed in Chart 7.3. Also refer to sections 5.8, 6.0 and 7.0.

5.1 AIR CLEANER (Diesel)

1. Empty dust cup daily. **Do not remove the element for inspection or cleaning.**
2. Unnecessary removal of the element increases the risk of injecting dust and other impurities into the engine.
3. Replace the element yearly, more frequently when operating in extremely dusty conditions.
 - a. Remove the old element as gently as possible.
 - b. Carefully clean the inside of the filter housing without allowing dust into the intake.
 - c. Inspect the new element and gasket for damage. Do not use a damaged element.

- d. Assemble the new element and make sure the gasket seats evenly.
- e. Reassemble the dust cap making sure it seals completely around the filter housing.

3. Check all hoses and air ducts. Tighten hose clamps to insure a leak-tight fit.

(Gasoline)

The air filter requires periodic replacement for optimum engine life and performance. Weekly inspection is advisable in extremely dusty areas. For access, tip the passenger seat forward. Loosen the clamp which holds the filter cartridge. Remove the cartridge.



CAUTION: This is a dry air filter, do not use oil. Do not attempt to clean the element by beating or rapping it. Also do not use gasoline or other volatile solvents to wash the air cleaning element.

Before installing the filter cartridge, remove any foreign material (dirt, dust, lint, etc.) that may have collected inside the air filter hose. Clean as required, taking care not to allow debris to fall into the engine intake.

5.2 BATTERY

1. Make absolutely certain the ignition switch is in the "Off" position and the keys have been removed before servicing the battery.



CAUTION: Always use insulated tools, wear protective glasses or goggles and protective clothing when working with batteries. You must read and obey all the battery manufacturer's instructions.

To prevent severe damage never allow both the positive and negative terminals to come in contact with any metal objects at the same time.

2. When the battery is being installed or removed, verify battery polarity before connecting or disconnecting the battery cables.
 - a. When installing the battery, always assemble the red, positive (+) battery cable first and the ground, black, (-) cable last.
 - b. When removing the battery, always remove the ground (-) cable first and the positive (+) cable last.
 - c. Check the electrolyte level every 100 hrs.
3. Clean the cable ends and battery posts with steel wool. Use a solution of baking soda and water to clean the battery. Do not allow the solution to enter into the battery cells.
4. Tighten cables securely to battery terminals and apply a light coat of silicone dielectric grease to terminals and cable ends to prevent corrosion. Keep terminal covers in place.

5.3 BATTERY – CHARGING

1. Refer to the Battery and Charger's manual for specific instructions.

**DANGER**

Charging must take place in a well ventilated area. Batteries contain sulfuric acid and generate explosive mixtures of hydrogen and oxygen gases. Keep any device that may create sparks or flames away from the battery to prevent an explosion.

To avoid possible injury, stand away from battery when the charger is turned on. A damaged battery could explode.

2. Whenever possible remove the battery from the truck before charging and make sure the electrolyte covers the plates in all the cells.
3. Make sure the charger is "Off", then connect the positive (+) connector from the charger to the positive battery terminal and the negative (-) connector of the charger to the negative battery terminal.
4. Always turn the charger "Off" before removing a charger lead from the battery.
5. Always turn charger to "Off" before removing a charger lead from the battery.

5.4 BELTS

For efficient performance of your machine, worn or frayed belts must be replaced.

5.5 BODY AND UPHOLSTERY.

1. Thoroughly wash the attachments and vehicle after each use. Do not spray water directly at the ignition switch or other electrical components on the instrument panel.
2. Keep the radiator fins, pumps and engine block free from grass or dirt to prevent serious heat damage to the engine or hydraulic oil circuit.
IMPORTANT: Do not wash a hot or running engine, you may damage the injection pump and the engine.
3. Thoroughly clean all areas where mud or other debris can collect. Do not use hot water, strong soap, or harsh chemical detergents. Use cold water and automotive cleaners.
4. Clean and retouch scratched or worn painted surfaces. Jacobsen "Orange" spray paint cans, are available at your Jacobsen Dealer. Polish the vehicle for maximum paint protection.
5. Clean seats and plastic or rubber trim with a mild soap solution or use a commercially available vinyl/rubber cleaner.

5.6 BRAKE FLUID

Raise up instrument panel by loosening 1/4 turn screws and lift up panel. When checking the master cylinder fluid, wipe off any dirt from the fill cap, then turn the cap counterclockwise to remove. Fluid level should be maintained at 3/8 inch below the top of the housing only. Use DOT 3 standard automotive brake fluid.

5.7 ELECTRICAL SYSTEM

Use extreme care when working with the electrical system. Turn the ignition switch off and remove the negative battery cable when checking connections or wires.

1. Make certain all terminals and connections are kept clean and properly secured. Inspect all wiring after the first 25 hours of operation and every 25 hours thereafter.
2. Check switches regularly to be sure they are kept clean and operating correctly. Check circuit breakers.

**WARNING**

Never operate truck with interlock system disconnected or malfunctioning.

3. If the interlock system does not function properly, the switch may be faulty, the wires may not be properly assembled, or there may be a short in the electrical system. If the problem cannot be corrected, contact your nearest Jacobsen Dealer.
4. Keep wire harness and all individual wires away from moving parts to prevent abrasive wear and potential short circuits.

5.8 ENGINE**(Diesel)**

1. Maintenance information for your Diesel engine may be obtained from the Kubota Manual supplied with the truck.
 - a. Change oil and oil filter after the first 25 hours of operation and every 75 hours thereafter.
 - b. Refer to Section 7.2-D.
2. If the injection pump, injectors or the fuel system require adjustment or servicing, contact your Jacobsen Dealer.

(Gasoline)

Refer to section 6.0 for general maintenances. For more detailed information refer to the Engine Manual.

5.9 FUEL

Diesel

1. Use clean, fresh, #2 Diesel fuel. Minimum Cetane Rating 45.
2. Fill tractor's fuel tank at the end of each operating day to within 1" (25 mm) below filler neck. Do not over fill and never allow the fuel tank to become empty.
3. Store fuel in clean drums equipped with a water trap. Drain trap regularly.
 - a. Do not store diesel fuel in galvanized tanks and keep drums under cover away from direct sunlight.
 - b. Once in place, avoid moving the drum and do not use the last few gallons that may contain water and sediment.
 - c. Handle fuel as little as possible. Avoid using cans and funnels to transfer fuel.

Gasoline

1. Fill the tank with a good quality, clean, regular grade unleaded gasoline, 86 octane minimum.
2. Do not use hi-test gasoline or an oil gasoline mixture. When using blended fuel, do not use a blend with more than 10% ethanol.
3. *Under no circumstances should you use a blend with methanol.*
4. Handle fuel with care - it is highly flammable. Use an approved container, the spout must fit inside the fuel filler neck.
 - a. Never fill the fuel tank with the engine running or while the engine is hot.
 - b. Do not smoke when handling fuel or fill the tank indoors.
 - c. Never overfill the tank or spill fuel. Wipe up spilled fuel immediately.
 - d. Never store fuel containers near an open flame or any device that may create sparks and ignite the fuel.

5.10 FUEL FILTER

(Gasoline Engine)

Before servicing the fuel filters, thoroughly clean outside of filter housing and fuel hoses, dirt must not be allowed to enter into the fuel system.

Replace both in-line fuel filters after every 200 hours of operation.

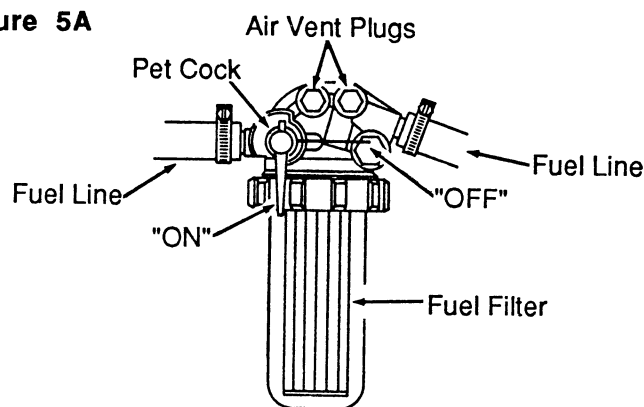
1. Slide hoses onto new filter with the arrow on the body pointing toward the fuel pump.
2. When replacing the fuel filter, check for cracked or damaged fuel lines. Replace hoses showing signs of deterioration or damage.

(Diesel Engine)

Before servicing the fuel filter element, thoroughly clean outside of filter housing, dirt must not be allowed to enter into the fuel or fuel injection system.

1. Close the fuel filter pet cock.
2. Loosen the ring screw on top of the filter cup, detach filter cup, and clean the cup interior with light oil.
3. Remove the element and rinse it with light oil. Replace element every 200 hours of operation.
4. Refit element and reassemble the filter.
5. Open fuel pet cock and loosen the two air vent plugs a few turns. When bubbles cease to flow, tighten the plugs.

Figure 5A



5.11 BLEEDING THE FUEL SYSTEM

Bleeding the fuel system is required after the fuel filter and lines have been removed, after the fuel tank has become empty, or after long storage.

1. Fill the fuel tank to the fullest extent. Open the fuel pet cock.
2. Loosen air vent plugs a few turns.
3. Tighten the plugs when bubbles cease to flow.
4. Open the air vent plug on top of the fuel injection pump.
5. Retighten the plug when bubbles stop flowing.

IMPORTANT: Always keep the air vent plug on the fuel injection pump closed except when air is vented, or it may cause the engine to stop.

5.12 HYDRAULIC OIL

1. Park the truck on a flat and level surface.
2. Before removing the cap, thoroughly clean the area around the cap to prevent dirt or grass from entering the tank and contaminating the system.
3. Oil should be at 60°F to 90°F (16°-32°C), when checking level. Do not check oil level when oil is hot.

4. Unscrew the cap and clean the dipstick then reinsert dipstick and check. Oil level should never be below the "add" mark or above the "full" mark.
5. Drain and replace the hydraulic oil every 500 hours or yearly. Refer to Section 7.2-G.
6. The oil should be changed after a major component failure, or if you notice the presence of water (noted by a cloudy or milky appearance), air (noted by foam), or a rancid odor (indicating excessive heat).
7. Once a year check the breather element and replace if necessary.

5.13 HYDRAULIC OIL FILTER

Oil filter should be changed after the first 25 hours of operation and every 200 hours thereafter.

1. Remove the old filter and fill new filter with clean fluid.
2. Install new filter. Hand tighten only.
3. Check hydraulic oil level on dipstick and add if necessary.

5.14 JUMPER CABLES

Before attempting to "jump" start the truck, check the condition of the battery.

1. Stop the engine on vehicle with good battery.
2. Connect red jumper cable to positive terminal on good battery and to the positive terminal on the "dead" battery.
3. Connect the black jumper cable from the negative terminal on the good battery to ground (frame) of vehicle with dead battery.
4. Start the engine.

5.15 LIGHTS

Check for burned out bulbs or defective wiring. Keep lights and reflectors clean for maximum visibility.

To prevent premature failure, Halogen bulbs (headlights) must not be handled with bare hands. Always use a tissue or paper towel when installing.

Test the brake lights by making several test stops.

5.16 MUFFLER AND EXHAUST

1. When the engine is running properly the exhaust fumes are colorless, if you notice a change in the sound or color of the exhaust, shut the unit down immediately and repair the cause.
2. Ensure that exhaust manifolds are secure and are not warped by bolts unevenly torqued.
3. If either the muffler or tailpipe must be replaced, the entire muffler/tailpipe assembly will have to be replaced.



WARNING

Leaking exhaust fumes contain carbon monoxide that is toxic and can be fatal.

The best protection against carbon monoxide inhalation is proper installation and regular, frequent inspections of the complete exhaust system.

5.17 RADIATOR

(Diesel Engine)

1. Check coolant level daily. Radiator should be full and the recovery bottle should be up to the "full" mark.
2. Drain and refill every 500 operating hours or annually.
 - a. Remove the radiator cap (14 psi - 96 kPa - higher rated cap should not be used)
 - b. Open the engine block drain and the radiator drain and also drain the recovery bottle.
3. Mix clean water and ethylene glycol based anti-freeze. (capacity 3 quarts - 5.6 ltr) Mix the anti-freeze for your coldest ambient temperature following the manufacturers' instructions.
4. Keep radiator air duct fins clean.
5. If you have to add coolant more than once a month, or if you have to add more than one quart at a time, have a Jacobsen Dealer check the cooling system.

5.18 TIRES

1. Keep tires properly inflated to reduce the amount of wear and prolong the life of the tire. Pressure should be checked while the tires are cool.
2. Check the pressure once a month. Use an accurate, low pressure tire gauge with one pound per square inch graduations. Keep tires inflated to 36 psi (248 kPa)



CAUTION: Unless you have the proper training, tools and experience, DO NOT attempt to mount a tire on a rim. Improper mounting can produce an explosion which may result in serious injury.

6.0 GENERAL

1. This section covers general maintenance for **gasoline engines** to maintain the vehicle in good operation condition. For more detailed information refer to Engine Manual.
2. Identify your model by referring to the MODEL and SPEC (specification) NO., shown on the unit nameplate. Always use this number and the engine serial number when making reference to your engine.
3. Tune the engine every 200 hours.

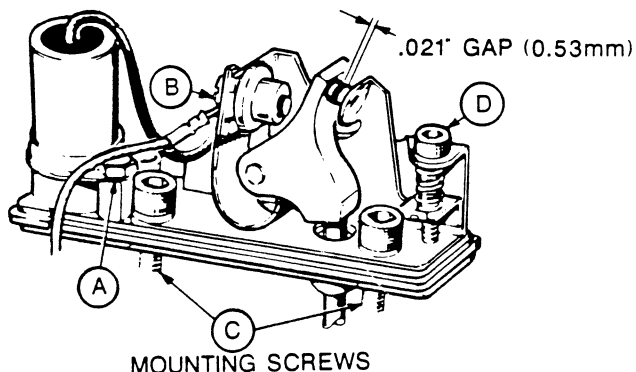
6.1 SPARK PLUGS

Check and regap spark plugs every 100 hours of operation to 0.025" (Champion RH-18-Y). Replace spark plugs that show signs of fouling or electrode erosion.

6.2 BREAKER POINTS

Check breaker points every 100 hours. Replace points and condenser every 200 operating hours. Replace sooner if points are pitted or burned.

1. Remove spark plugs.
2. Remove breaker box cover. Rotate crankshaft clockwise (facing flywheel) until points are fully open.
3. Remove condenser (A) and detach condenser lead and coil lead screw (B).
4. Remove two Allen screws (C) and lift breaker assembly from engine.
5. Replace condenser and point assembly with new parts.



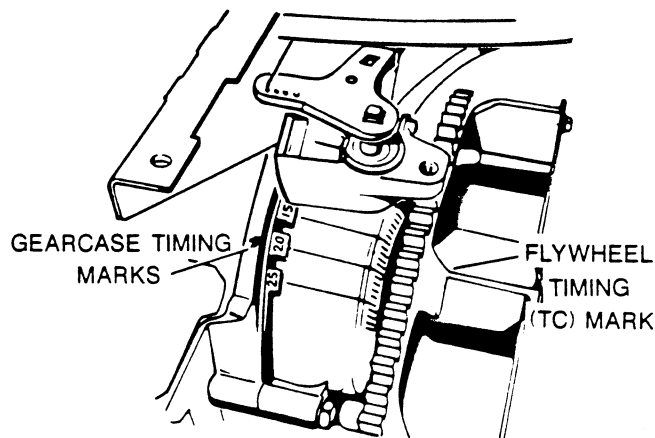
6. Adjust point gap by rotating crankshaft clockwise (facing flywheel) by hand until the points are fully open. Set the point gap (using flat feeler gauge) at 0.021 inch (0.53 mm) by adjusting the Allen socket head screw (D) inward or outward. A 0.021 inch point gap is equivalent to 21° BTC.

NOTE: Make sure feeler gauge is clean and free of any grease, oil or dirt.

7. Reassemble breaker box cover, coil wire, spark plugs, and spark plug cables.

6.3 CONTINUITY TEST

1. Adjust breaker points.
2. Remove blower housing to expose timing marks on top of gear case cover and flywheel.



3. Rotate flywheel clockwise until timing mark is aligned with the mark corresponding to 21° BTC on top of gear case cover.
4. Connect an ohmeter or a continuity test lamp set across the ignition breaker points. Touch one test probe to the coil lead terminal B Figure 6.
5. Touch the other test probe to a good ground on the engine.
6. Turn crankshaft against rotation (counterclockwise) until the points close. Then slowly turn the crankshaft with rotation (clockwise).
7. The lamp should go out (continuity lost) just as the points break which is where ignition occurs. If timing is early (advanced), the point gap is too large. If timing is late (retarded), the point gap is too small. Adjust gap accordingly.

6.4 COOLING SYSTEM

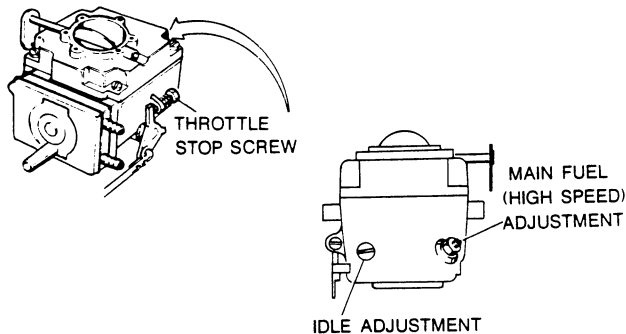
Check and clean cooling fins and chaff screen. Remove any dust, dirt or oil which may have accumulated.

See that nothing obstructs air flow to and from the engine.

6.5 CARBURETOR ADJUSTMENTS

The carburetor idle and main mixture screws were set for maximum efficiency at the factory. First make sure the ignition system is working properly and is not the source of the problem.

1. Turn both mixture screws in until lightly seated, then back the idle mixture screw out 1-1/8 turns and the main mixture screw out 1-1/4 turns.



CAUTION: Forcing the mixture adjustment screws tight will damage the needle and seat. Turn in only until light tension can be felt.

2. Start the engine and allow it to warm up thoroughly (at least 10 minutes).
3. Turn the IDLE adjustment screw IN until engine speed drops and then OUT until engine speed drops again. Over a narrow range between these two settings, engine speed will be at its maximum. Set the idle adjustment screw about 1/8 turn outward from the midpoint of this range.
4. Readjust the THROTTLE stop screw to obtain the 1200 RPM.
5. Check the main mixture adjustment by rapidly accelerating the engine from idle to full. The engine should accelerate evenly and without hesitation.
6. If it does not, turn the main adjustment screw out in 1/8 turn increments until the engine accelerates smoothly, but do not turn it out more than 1/2 turn beyond the original setting.

6.6 CRANKCASE AND OIL FILTER**(Gasoline)**

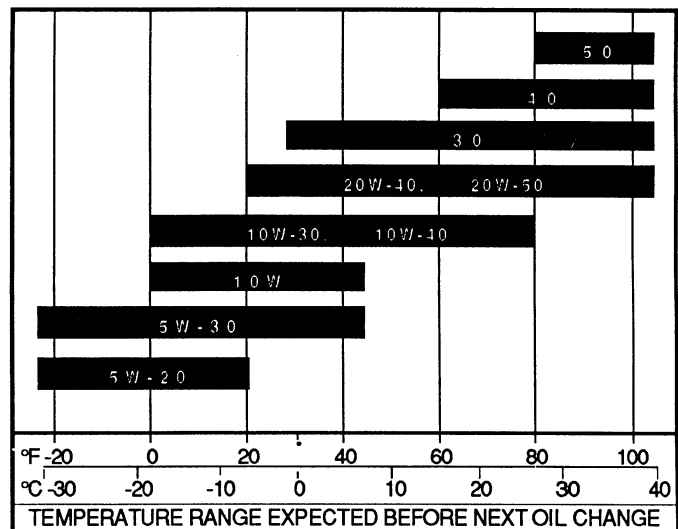
1. Change crankcase oil and filter after the first 25 hours of operation and every 50 hours thereafter. If operating in extremely dusty, high ambient, or low ambient conditions, change oil and filter more often.

NOTE: Do not mix brands and viscosity grades of oil.

2. Use the correct grade and weight of oil for the temperature conditions. Change the oil only when the engine is warm.
3. Replace with a good quality detergent oil meeting API service designations SE, SE/CC.

Diesel Engine

Change after 25 hours and then 75 hours thereafter. Replace with good quality detergent oil meeting API service designation.



7.0 GENERAL

Lubrication coupled with cleanliness is the most inexpensive preventive maintenance tool.

1. Always clean the grease fitting before and after lubricating.
2. Apply grease with a manual grease gun and fill slowly until grease begins to seep out. Do not use compressed air guns.
3. For smooth operation of all levers, pivot points and other friction points that are not listed on the lubrication chart, apply several drops of SAE 30 oil every 50 hours or as required.

7.1 POWER TRAIN LUBRICANTS

NOTE: All checks should take place with the vehicle on a level surface. The fluid level should always be level with the bottom of the plug hole.

1. The transmission lubricant is checked at the filler plug hole on the right side of the transmission near the fuel tank. The filler plug is accessible from the top with the dump body raised but is more easily accessible from under the vehicle.
2. Change the transmission lubricant while the lubricant is still warm to allow more impurities to be drained out. Remove the two magnetic drain plugs in the transmission housing.
3. Clean any metallic debris from the magnetic plugs before reinstalling.
4. The differential lubricant level is inspected from the rear of the differential housing. The filler plug is easily accessible from the top of the differential with the dump body raised.

7.2 LUBRICANTS

- A -** Use pressure gun grease - (NLGI Grade O). Apply with grease gun
- B -** Use fibre based, nonmetallic, additive type wheel bearing grease - (NLGI Grade 2).
- C -** Use SAE 80-90 weight gear lubricant, MIL L-2105-C, or classification GL5.
- D - Diesel Engine**
Use oil with MIL-L-2140B/MIL-L-2140C or API Classification CC/CD Grade.

Recommended Oils:

Above 77°F use SAE 30

32°F to 77°F use SAE 20

Below 32° use SAE 10 or SAE 10W-30

- E - Gasoline Engine**
Use a good quality detergent oil meeting API classification SE, SE/CC grade. (Refer to Section 6.6)
- F -** Use SAE 30 weight oil
- G -** Use Jacobsen hydraulic oil. 5 gallon container - Part No. 502693 or two 2-1/2 gallon container - Part No. 502696.

Optional Oils are:

Sunoco H.P. Engine Oil SAE 10W30

Mobil Delvac (Special) SAE 10W30

7.3 MAINTENANCE CHART

Recommended Inspection and Lubrication Intervals								
A - Add or Adjust	C - Clean		I - Inspect		R - Replace			
HOURS								
	8.....	25.....	50.....	75....	100....	200....	500.....	Section
Air Filter (Diesel Truck).....	I-C.....				C.....		R.....	5.1
Alternator Brushes.....			I.....					6.0
Battery.....			I.....					5.2-5.3
Bearing, Front Fork.....						I-A.....		7.2-B
Bearing, Wheels.....						I-A.....		7.2-B
Brakes.....					A.....			4.2/4.3
Brake Master Cylinder.....						I-A.....		5.6
Clutch.....					A.....			4.5
Cooling System (Diesel).....	I.....						R.....	5.17
Cooling System (Gasoline).....	I.....							6.4
Differential Lubricant Level.....				I.....			R.....	7.2-C
Engine Oil Change (Diesel).....	I.....	R.....		R.....				5.8
Engine Oil Change (Gasoline).....	I.....	R.....	R.....					6.6
Engine Oil Filter Change (Diesel).....		R.....		R.....				5.9-A
Engine Oil Filter Change (Gasoline).....		R.....	R.....					6.6
Engine Tune Up.....								6.0
Fuel Filter (Diesel).....					C.....	R.....		5.10
Fuel Filter (Gas).....					C.....	R.....		5.10
Grease Fitting (All).....							A.....	7.0/7.2-A
Headlights.....					A.....			5.15
Hydraulic Filter (Diesel).....		R.....				R.....		5.13
Hydraulic Oil (Diesel).....	I.....						R.....	5.12
Muffler and Exhaust.....					I.....			5.16
Starter Brushes.....					I.....			6.0
Steering Lubricant Level.....						I-A.....		7.2-C
Tires.....			I.....					5.18
Transmission Lubricant Level.....				I.....		R.....		7.1/7.2-C
Wheel Alignment.....						A.....		4.6/4.7
Wiring.....					I.....			5.7

STORAGE

8.0 GENERAL

Your vehicle should be kept dry and protected from the elements during storage.

1. Lubricate the truck. Check the hydraulic oil. Replace oil filters.
2. Wash the vehicle thoroughly and paint any scratched, worn or exposed metal.
3. Take this opportunity to thoroughly inspect the truck, tighten all hardware, replace worn or damaged components.
4. Clean the tires thoroughly and store the vehicle so that the load is off the tires. If it is not jacked up, check the tires at regular intervals and reinflate as necessary.

8.1 BATTERY

1. Remove and clean the battery. (Refer to Sections 5.2 and 5.3)
2. Batteries should be stored in upright position, in a cool, dry place. Storage above 80°F (26.7°C) greatly increases self-discharge. If wet batteries are discharged, the electrolyte will freeze when stored below 20°F (-7°C).
3. The battery should be checked every 60 to 90 days while in storage and should be recharged as necessary.

8.2 ENGINE

1. While the engine is still warm, drain the oil from the crankcase and change oil filter. Refill with fresh oil. (Section 7.2-D/E).
2. Clean exterior of engine. Paint the exposed metal or coat it with a light coating of rust preventative oil. Use oil that complies with SAE #30 MIL-L-21260 Standards.
3. To prevent the build up of gum residues and varnish films on the fuel lines, carburetor and injector, Jacobsen recommends you fill the tank with stabilized fuel. Use an anti-oxidant fuel conditioner, such as STA-BIL®. Read and follow the instructions carefully.

Run the engine for about 5 minutes to distribute the treated fuel. Stop the engine close the fuel shut off valve and let the engine cool.
4. Drain and refill radiator. (Section 5.17)
5. During long storage, start and run the engine for about fifteen minutes at full throttle every 2 or 3 months to prevent internal engine rust.

8.3 AFTER STORAGE

1. Check and reinstall the battery. (Sections 5.2 and 5.3).
2. Check or service the fuel filter and air cleaner .
3. Check level of oil in the engine crankcase and hydraulic system.
4. Fill the fuel tank with fresh fuel.
5. Remove the spark plug and wipe dry. Crank the engine (with spark plug removed), using starter, until excess oil has been expelled through the spark plug hole. Replace the plug and connect the ignition lead wires.
6. Before driving the vehicle, make certain that the tires are properly inflated.
7. Move the vehicle outside before starting the engine or open doors and/or windows for ventilation to prevent danger from carbon monoxide gas in the exhaust.

Start the engine and run at 1/2 throttle. Allow enough time for the engine to become properly warmed and lubricated.

LIMITED WARRANTY

Product No. 84013 – Gasoline Engine Truck

Product No. 84016 – Diesel Engine Truck

1. Warranty

Jacobsen Division of Textron Inc. (Jacobsen) warrants only to the original retail purchaser ("Warrantee") that this product shall be free from defects in material and workmanship for a period of one year from the date of the first retail purchase. (90 days if used for rental purposes).

2. Items Not Warranted

Jacobsen makes no warranties or representations with respect to repairs performed by anyone other than a Jacobsen Turf Equipment Dealer or with respect to engines★, batteries and tires, which are separately warranted by their respective manufacturers. Routine adjustments or normal maintenance items such as belts, lubricants and filters are not covered by this warranty.

3. Conditions Which Will Void Warranty

A) The speed of the unit is increased beyond factory specifications or the product is modified in any way which would adversely affect its safety or performance;

B) The unit is not maintained or serviced in accordance with the Jacobsen "Operator's Manual";

C) The unit is abused, or is not used in its intended manner.

D) The use of attachments and allied equipment not approved by Jacobsen.

4. Exclusive Remedy

The warrantee's sole and exclusive remedy for breach of this warranty or any other defect or failure of the product, including any remedy provided by applicable federal or state law, statutory or common, is that Jacobsen will, at its sole option, repair or replace the product or any defective parts and cover the cost of labor associated with such repair or replacement. Transportation costs are not covered by this warranty.

5. How to Obtain Warranty Service

If warranty repair is necessary, contact your nearest Jacobsen Turf Equipment Dealer. All defective parts must be returned to the Dealer and become the property of Jacobsen.

6. Disclaimer

* *This warranty is made in lieu of all other warranties, implied or express, including any warranty of merchantability or fitness for a particular purpose.*

* *Jacobsen further disclaims any liability for incidental, direct or consequential damages, to include but not limited to, personal injury or property damage, arising from a breach of this warranty or any other defect or failure of the product to the extent allowed by law.*

No agent, employee or representative of Jacobsen, or any other person, has any authority to bind Jacobsen to any other affirmation, representation, or warranty concerning the goods sold under this Warranty.

For further information, call (414) 637-6711 or write to Jacobsen, Division of Textron Inc. at:

**Warranty Department
1721 Packard Avenue
Racine, Wisconsin 53403-2561**

★ The Kubota Engine is warranted by Jacobsen for a period of one year from the date of purchase.

JACOBSEN TEXTRON

Jacobsen Division of Textron Inc.