FOREWORD

Thank you for selecting a SHIBAURA Tractor from the large number of agricultural tractors on the market. SHIBAURA has long experience in manufacturing tractors, and employs up-to-date designing techniques and production facilities. We can assure you that your tractor will be labor-saving, efficient, comfortable and universally useful at all times.

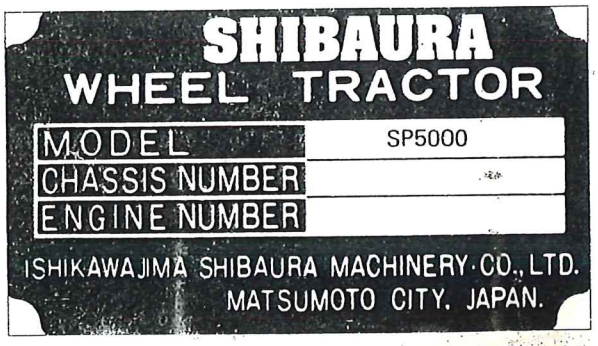
This instruction manual will help you to use SHIBAURA Wheel Tractors SP5000, SP5040, SP6000 and SP6040 more effectively.

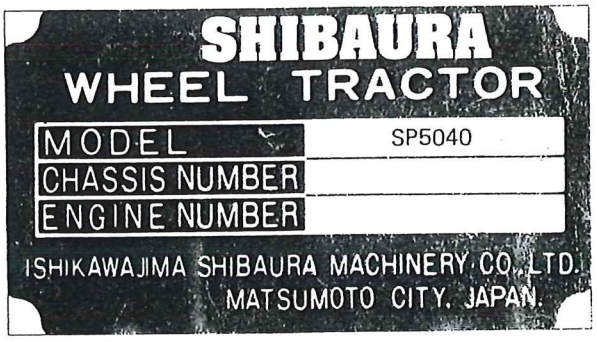
Read this instruction manual carefully for an understanding of working safety, and to obtain efficient operation, and the longest service life out of your tractor.

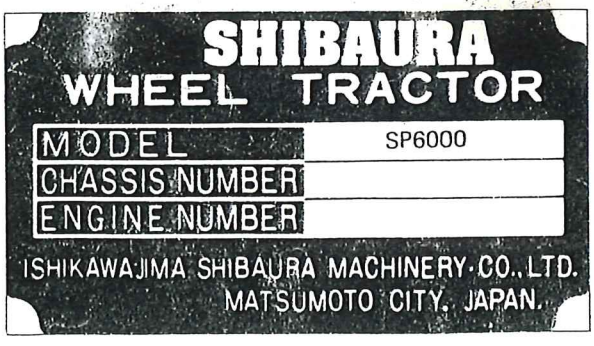
If you have any questions regarding the SHIBAURA Wheel Tractors SP5000, SP5040, SP6000 and SP6040, do not hesitate to ask your dealer.

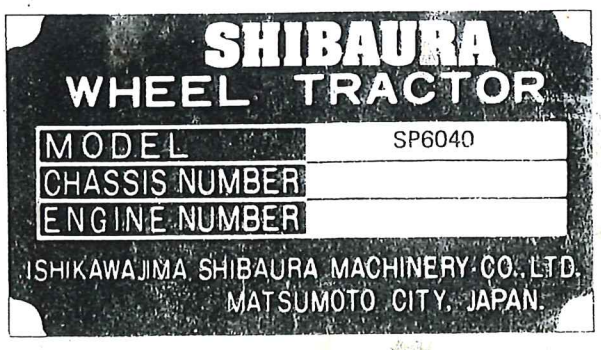
The specifications of this tractor are subject to change without notice.

A VEHICLE IDENTIFICATION PLATE is located on the left side of the transmission housing. The numbers on the plate are important should your tractor require future service. For your convenience, have your dealer record the numbers in the appropriate spaces below.









CONTENTS

INTERNATIONAL SYMBOLS

As a guide to the operation of your tractor, various international symbols have been utilized on the instruments and controls. The symbols are shown below with an indication of their meaning.


Engine speed


Hours recorded


Engine water temperature


Horn


Engine oil pressure


Axle connect


Axle disconnect


Alternator charge


Power take-off (on)

Creeper range

High range

"Tortoise," slow or minimum setting


"Hare," fast or maximum setting


Rock shaft (raised)


Rock shaft (lowered)


Fuel gauge


Electrolyte level

Parking Lamp


Air filter condition


Oil filter condition


Differential lock

Lower beam

Upper beam

SAFETY PRECAUTIONS

The following precautions are suggested to help prevent accidents.

A careful operator is the best operator. Most accidents can be avoided by observing certain precautions. Read and take the following precautions before operating this tractor to help prevent accidents. Equipment should be operated only by those who are responsible and instructed to do so.

THE TRACTOR

1. Read the Operator's Manual carefully before using the tractor. Lack of operating knowledge can lead to accidents.

2. Keep safety decals clean of dirt and grime.

SERVICING THE TRACTOR

1. The cooling system operates under pressure which is controlled by the radiator cap. It is dangerous to remove the cap while system is hot. Always turn cap slowly to the first stop and allow the pressure to escape before removing the cap entirely.

2. Do not smoke while refueling the tractor, Keep any type of open flame away. Wait for engine to cool before refueling.

3. Keep the tractor in good operating condition for your safety. An improperly maintained tractor can be hazardous.

4. Keep open flame away from battery or cold weather starting aids to prevent fires or explosions. Use jumper cables according to instructions to prevent sparks which could cause explosion.

5. Stop the engine before performing any service on the tractor.

6. Do not modify or alter or permit anyone else to modify or alter this tractor or any of its components or any tractor function without first consulting SHIBAURA Tractor-Equipment Dealer.

7. The fuel oil in the injection system is under high pressure and can penetrate the skin. Unqualified persons should not remove or attempt to adjust a pump, injector, nozzle or any part of the fuel injection system. Failure to follow these instructions can result in serious injury.

OPERATING THE TRACTOR

1. Apply the parking brake, place the P.T.O. lever in the neutral position, the position control lever in the down position, the remote control valve levers in the neutral position, and the transmission in neutral before starting the tractor.

2. Do not start the engine or operate controls while standing beside the tractor. Always sit in the tractor seat when starting the engine or operating controls.

3. Do not bypass the safety start switch. Consult your SHIBAURA Tractor-Equipment Dealer if your safety start controls malfunction. Use jumper cables only in the recommended manner. Improper use can result in tractor runaway.

4. Avoid accidental contact with the gear shift lever while the engine is running. Unexpected tractor movement can result from such contact.

5. Do not get off the tractor while it is in motion.

6. Shut off the engine and apply the parking brake before geting off the tractor.

7. Do not park the tractor on a steep incline.

8. Do not operate the tractor engine in an enclosed building without adequate ventilation. Exhaust fumes can cause death.

9. If power steering or engine ceases operating, stop the tractor immediately.

10. Pull only from the swinging drawbar or the lower link drawbar in the down position. Use only a drawbar pin that locks in place. Pulling from the tractor rear axle or any point above the axle may cause the tractor to upset.

11. If the front end of the tractor tends to rise when heavy implements are attached to the three-point hitch, install front end or front wheel weights. Do not operate the tractor with a light front end.

12. Do not leave equipment in the raised position.

13. Dim tractor lights when meeting a vehicle at night. Be sure the lights are adjusted to prevent blinding an oncoming vehicle operator.

OPERATING THE P.T.O.

1. When operating P.T.O driven equipment, shut off the engine and wait until the P.T.O. stops before getting off the tractor and disconnecting the equipment.

2. Do not wear loose clothing when operating the power takeoff, or when near rotating equipment.

3. When operating stationary P.T.O. driven equipment, always apply the tractor parking brake and block the rear wheels front and back.

4. To avoid injury, do not clean, adjust, unclog or service P.T.O. driven equipment when the tractor engine is running.

5. Make sure the P.T.O. master shield is installed at all times and always replace the P.T.O. shield cap when the P.T.O. is not in use.

DRIVING THE TRACTOR

1. Watch where you are going especially at row ends, on roads, around trees and low hanging obstacles.

2. To avoid upsets drive the tractor with care and at speeds compatible with safety, especially when operating over rough ground, when crossing ditches or slopes, and when turning corners.

3. Lock tractor brake pedals together when transporting on roads to provide two wheel braking.

4. Keep the tractor in the same gear when going downhill as used when going uphill. Do not coast or free wheel down hill.

SAFETY PRECAUTIONS (Continued)

5. Any towed vehicle whose total weight exceeds that of the towing tractor must be equipped with brakes for safe operation.

6. When the tractor is stuck or tires are frozen to the ground, back out to prevent upset.

7. Always check overhead clearance especially when transporting the tractor.

DIESEL FUEL

1. Under no circumstances should gasoline, alcohol or blended fuels be added to diesel fuel. These combinations can create an increased fire or explosive hazard. Such blends are more explosive than pure gasoline in a closed container such as a fuel tank. **Do not use these blends.**

2. Never remove the fuel cap or refuel the tractor with the engine running or hot.

3. Do not smoke while refueling or when standing near fuel.

4. Maintain control of the fuel filter pipe nozzle when filling the tank.

5. Do not fill the fuel tank to capacity. Allow room for expansion.

6. Wipe up spilled fuel immediately.

7. Always tighten the fuel tank cap securely.

8. If the original fuel tank cap is lost replace it with a SHIBAURA approved cap. A non-approved, proprietary cap may not be safe.

9. Keep equipment clean and properly maintained.

10. Do not drive equipment near open fires.

11. Never use fuel for cleaning purposes.

12. Arrange fuel purchases so that winter grade fuels are not held over and used in the spring.

When you see this symbol  it means: ATTENTION BECOME ALERT! YOUR SAFETY IS INVOLVED!

TRACTOR SEAT

Your SHIBAURA Tractor is equipped with a suspension seat as shown in Figure 1. The seat is adjustable to obtain the most comfortable position.

To move the seat fore and aft, move the seat release lever to the leftward and slide the seat fore or aft as desired.

To adjust the seat for flotation, turn the flotation adjustment bolt right for a firm ride or left for a soft ride.

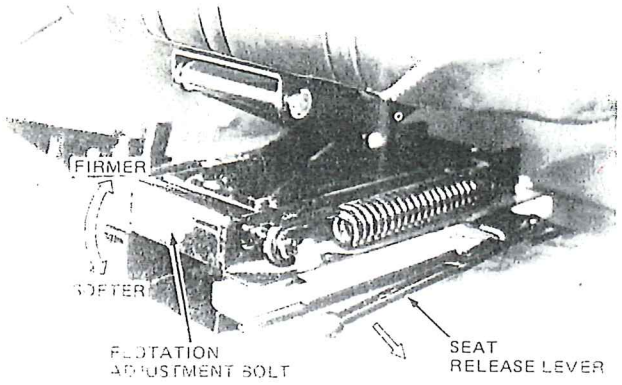


Figure 1 – Tractor Seat

LIGHT SWITCH

The head lamp switch, shown in Figure 3, is a dial type switch.

1st position ..... OFF
2nd position ..... Head Lamps (High Beam)
(Turn the switch clockwise
until a registance is felt)
3rd position ..... Head Lamps (Low Beam)
(Turn the switch clockwise
until the next registance is
felt.)

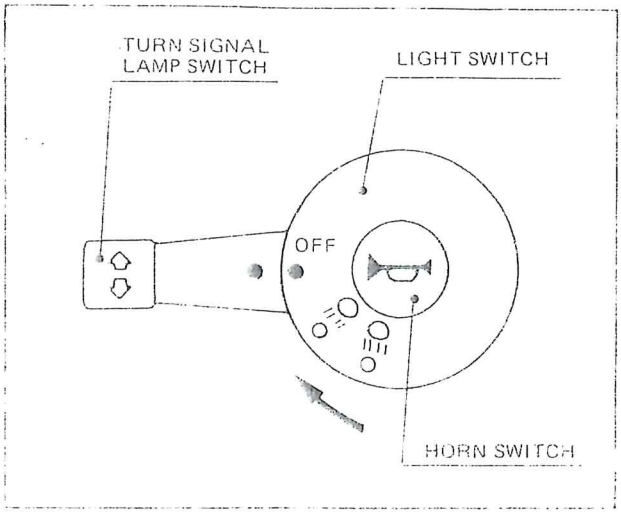


Figure 3 – Switches for Turn Signal Lamps, Head Lamps and Horn

LIGHTING

TURN SIGNAL LAMPS

Your SHIBAURA Tractor is equipped with turn signal lamps, Figure 2. The switch for the turn signal lamps is located on the left side of the instrument panel.

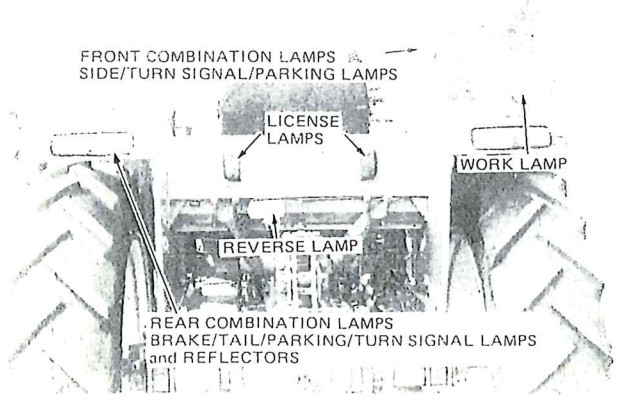


Figure 2 – Turn Signal Lamps

INSTRUMENT PANEL

STARTER SWITCH

HEAT: The glow plug is heated.

ON: Electricity is supplied to the electric circuit.

START: The self-starting motor is actuated and the engine starts.
To start, depress the clutch pedal fully and turn the key to the "START" position.

OFF: Electricity to the electric circuit is cut off. The key is put in and out at this position. To stop the engine, turn the key to the "OFF" position.

Always check to make certain the transmission main shift lever and PTO lever are in neutral before attempting to start the engine. Refer to page 13 for complete starting instructions.

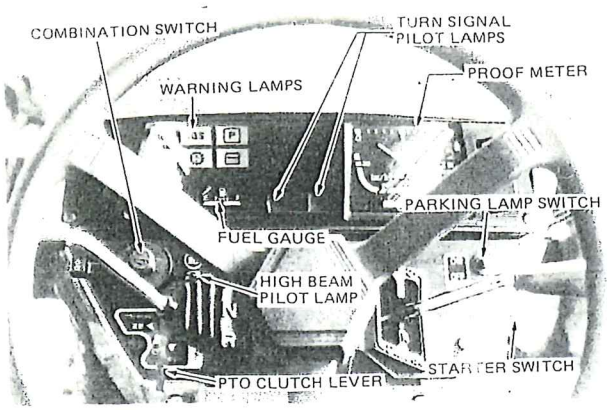


Figure 4 — Instrument Panel

IMPORTANT: The starter switch must remain in the OFF position while stopping the engine.

EMERGENCY STOP

If the engine does not stop when turning the key to the "OFF" position, EMERGENCY STOP must be done as follows;

1. Remove the right side hood.
2. The stop lever, in Figure 4-1, must be turned as the arrow mark to shut off fuel.

When the fuse (20A) for stop solenoid or fusible link is blown, engine can not be stopped by the key switch.

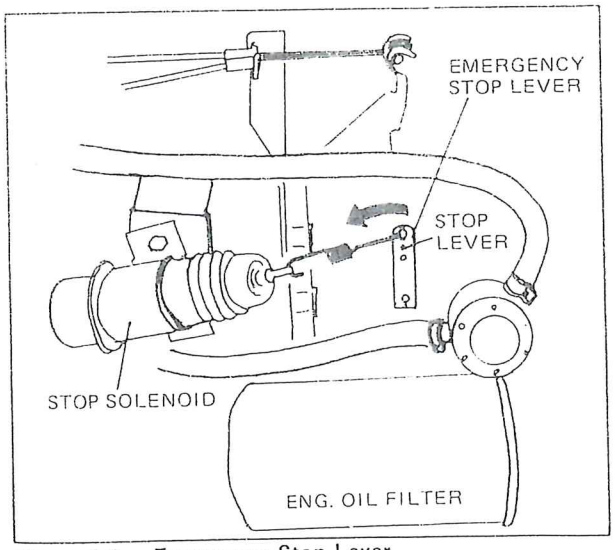


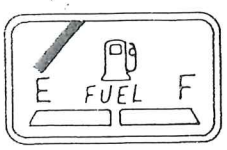
Figure 4-1 — Emergency Stop Lever

PROOF-METER

The Proof-Meter is located on the right side of the instrument panel, Figure 4. The Proof-Meter indicates:

- The hours and portions of hours your tractor has operated, based on an average engine speed of 1866 rpm. Engine speeds below 1866 rpm accumulate engine hours at a slower rate than clock hours. Engine speeds above 1866 rpm accumulate engine hours faster than clock hours. Use the Proof-Meter as a guide to determine hourly service and maintenance intervals.
- Use the engine revolutions per minute scale on the upper half of the Proof-Meter when operating PTO driven equipment. Additional information on PTO operation can be found on page 15.
- The scales on the lower half of the Proof-Meter indicate ground speeds in kilometers per hour (km/h) for 24th gears. Additional ground speed information can be found on page 47.

FUEL GAUGE



The needle in the gauge indicates the amount of fuel in the tank. If the needle is at the "E" marking, the tank is empty.

FUEL SHUT-OFF VALVE

The fuel shut-off valve is shown in Figure 5. To open the fuel shut-off valve, move the handle so that it points straight up and down. To close the fuel shut-off valve, move the handle to the horizontal position. Always shut off the valve when servicing any portion of the fuel system.

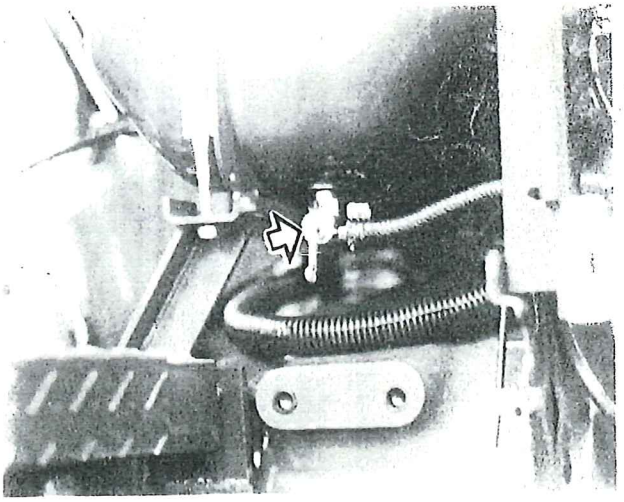
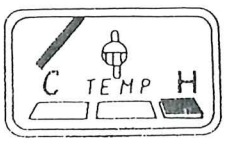


Figure 5 — Fuel Shut-off Valve

TEMPERATURE GAUGE

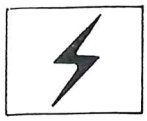


When the needle is in the middle area, the engine is at its normal operating temperature. The needle at the "H" end indicates an overheated engine.

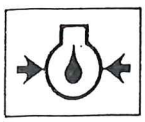
WARNING LAMPS

Your SHIBAURA Tractor is provided with the following warning lamps. If any warning lamp indicates a trouble, investigate the cause as soon as possible.

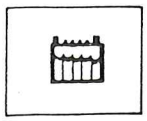
To check the bulb of warning lamp, turn the starter switch to the "START" position without depressing the clutch pedal. Then 8 warning lamps will light up. If not, the bulb of warning lamps have burnt out. Replace the bulb with a new one in such a case.



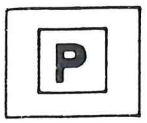
The charge indicator warning lamp lights with the key switch at the "ON" position. It will go out after the engine starts and the battery is charged.



The engine oil pressure warning lamp lights with the key switch at the "ON" position. It will go out after the engine starts and the oil starts circulating.

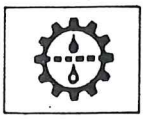


The battery electrolyte level warning lamp lights when the electrolyte has decreased below the lower level line.

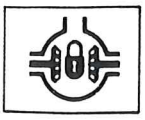


Parking brake warning lamp lights when the parking brake is applied.

Air cleaner warning lamp indicates the clogged air cleaner element.



Hydraulic system filter lamp indicates the clogged filter element.



Differential locking warning lamp lights while the differential locking clutch is working.

IMPORTANT: Check the battery electrolyte, air cleaner element, etc. actually check the tractor not only depending upon warning lamps.

IQS (Shibaura Quick Starting System)

1. Turn the key to the "HEAT" position and hold it there. This will light up IQS lamp to tell you that the precombustion chambers are being "pre-heated." The lamp will go out by itself for approximately 4 seconds, that is, when the chambers have been sufficiently warmed up.
2. As soon as IQS lamps goes out, turn the key to the "START" position (to crank the engine for starting).

HIGH BEAM PILOT LAMP

High beam pilot lamp will light while the light switch is at the high beam position.

PARKING LAMP SWITCH

Your SHIBAURA TRACTOR is equipped with parking lamp switch. It is located on the right side of the instrument panel, shown in Figure 4. When moving the parking lamp switch to the "ON", front and rear parking lamps will light.

THROTTLE CONTROLS

HAND THROTTLE AND ENGINE STOP CONTROL

The hand throttle is shown in Figure 6. Pull the throttle rearward to increase engine rpm.
Push the throttle forward to decrease engine rpm.
Turn the starter switch to the "OFF" position to stop the engine.
Refer to the "Emergency Stop" on page 7.

FOOT THROTTLE

The foot throttle, shown in Figure 6, can be used separately, or in conjunction with the hand throttle. With the hand throttle control lever set at a selected engine rpm, the foot throttle can be used to increase engine rpm to its maximum speed.

Upon release of the foot throttle, the engine speed will return to the rpm at which the hand throttle has been set, or idle, if the hand throttle is not at a pre-set position.

Figure 6 — Hand Throttle and Foot Throttle

BRAKE CONTROLS

BRAKE PEDALS

The brake pedals are shown in Figure 7. The right brake pedal is used to brake the right rear wheel. The left pedal is used to brake the left rear wheel. Depress both pedals simultaneously to stop the tractor.

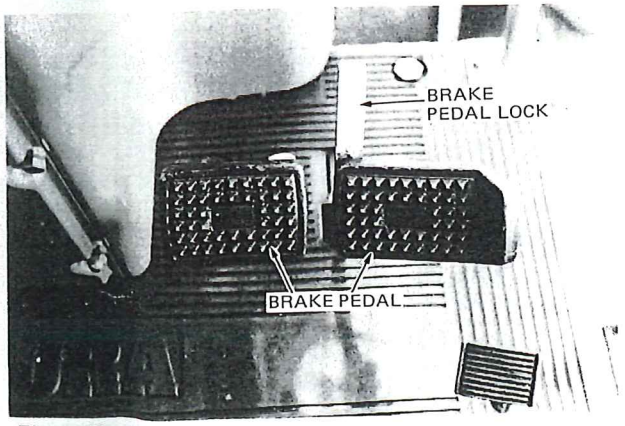


Figure 7 — Brake Controls

To assist in making sharp turns at slow speeds, depress the right or left brake pedal as required.

WARNING: When operating the tractor at high speeds, never attempt to make sharp turns by using the brakes. Sharp turns at high speeds may result in tractor overturn.

BRAKE PEDAL LOCK

The brake pedal lock, shown in Figure 7 is used to secure the brake pedals together. Lock the pedals together whenever the tractor is operated at high speeds and at any time the tractor is used on the highway.

PARKING BRAKE CONTROL

The parking brake control, shown in Figure 8, is used for locking the brake pedals in the applied position. The parking brake should be applied whenever the tractor is parked.

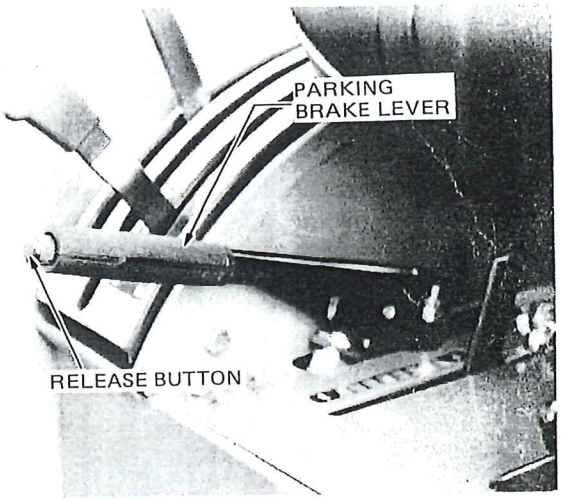


Figure 8 — Parking Brake

To apply the brake:

- Lock the brake pedals together with the brake pedal lock.
- Depress both brake pedals.
- Pull up the parking brake lever.

To release the parking brake:

- Move the parking brake lever down pushing the release button.
- Unlock the brake pedal if operating conditions require independent rear wheel braking action.

DIFFERENTIAL CONTROL

DIFFERENTIAL LOCK PEDAL

The differential lock pedal is shown in Figure 9. Depressing the pedal locks the rear axle shafts together, providing additional traction in wet or

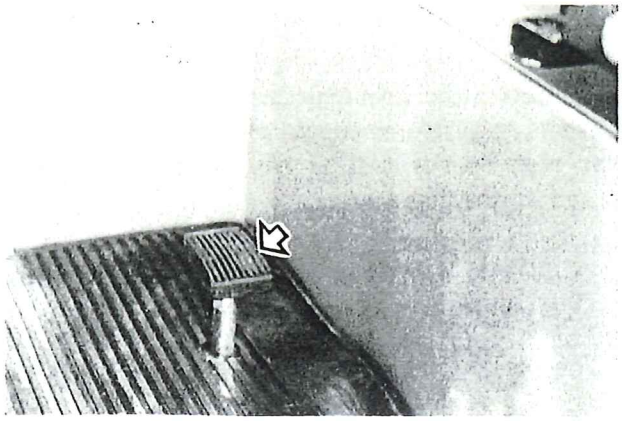


Figure 9 — Differential Lock

loose soil. Refer to page 16 for differential lock operating information.

WARNING: Do not engage the differential lock when turning the tractor. If the lock is engaged when turning, a loss of steering control will result.

POWER STEERING

The steering is helped by hydraulic power generated with a special power steering oil pressure pump for light steering.

WARNING: If the engine stops while travelling on a tractor with a power steering, the power system does not work and therefore the steering wheel becomes very heavy.

TRANSMISSION AND PTO CONTROLS

MAIN SHIFT LEVER

The transmission main shift lever is shown in Figure 10. A diagram showing the shift pattern is on the shift guide. Four speeds are provided.

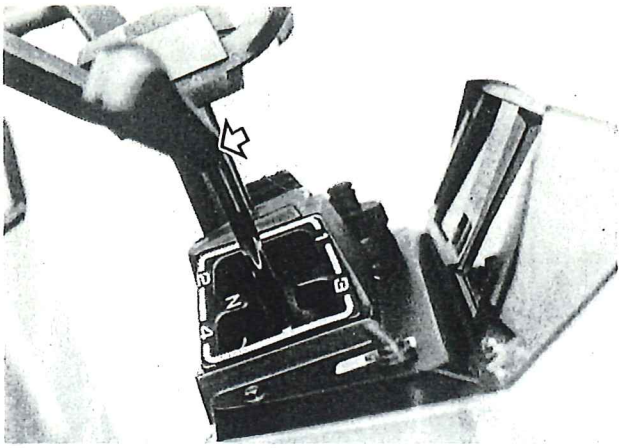


Figure 10 — Main Shift Lever

SHUTTLE SHIFT LEVER

The shuttle shift lever is used to travel forward or rearward, shown in Figure 11. Push it forward to travel forward and pull it rearward for reverse.

Figure 11 — Shuttle Shift Lever

RANGE SELECTOR LEVER

The range selector lever is shown, in Figure 12. It has three positions to select the required transmission range L, M, H. A diagram showing the shift pattern is on the shift guide.

CREEPER RANGE (OPTIONAL)

A creeper range with a 10.56: 1 ratio is available, which provides an additional 12 forward and 12 reverse speeds or a total of 24 forward and reverse speeds. The control is located at the left side of the seat, Figure 12.

Full forward movement of the lever engages (ON) the creeper range. Full rearward movement disengages (OFF) the creeper range.

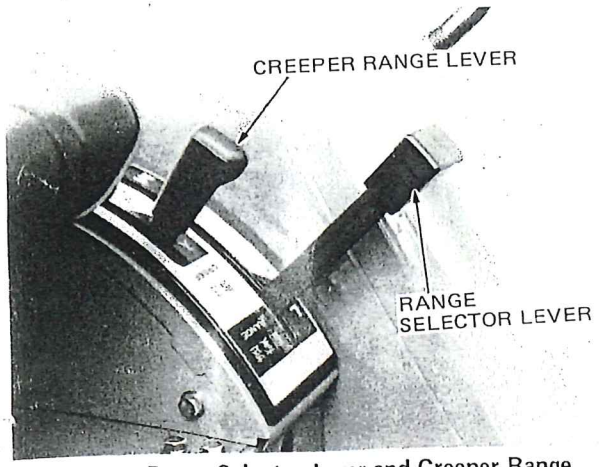


Figure 12 — Range Selector Lever and Creeper Range Lever

FOUR-WHEEL DRIVE (SP5040, SP6040)

The shift lever for the four-wheel drive is shown in Figure 13. Full downward movement of the lever disengages the four-wheel drive (OFF). Full upward movement engages the four-wheel drive (ON).

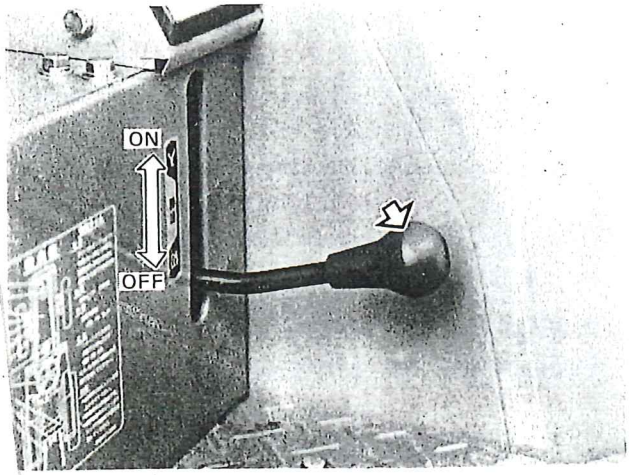


Figure 13 — Four-Wheel Drive Lever

CLUTCH PEDAL

The foot-operated clutch pedal, Figure 14, must be completely depressed to start (to actuate safety start switch) the tractor or to stop forward travel and PTO shaft rotation. Always fully depress the pedal when shifting the shuttle shift lever, changing gear ratios, four-wheel drive and creeping range.

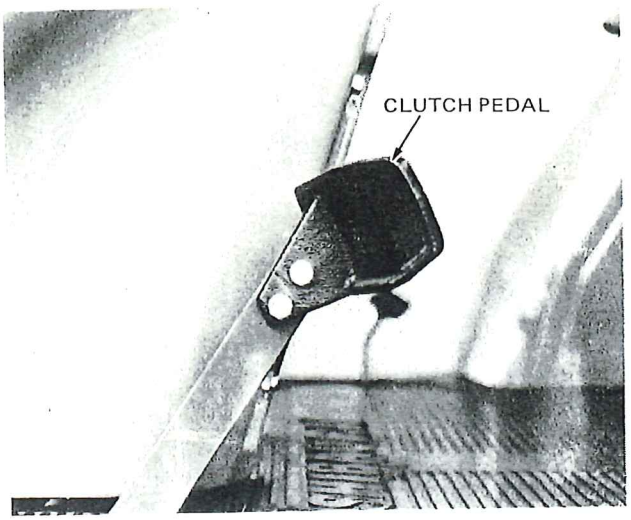


Figure 14 — Clutch Control

TRANSMISSION PTO GEARSHIFT LEVER

The transmission PTO gearshift lever is shown in Figure 15. If the tractor engine is running, always depress the clutch pedal fully before moving the lever.

SP5000/5040 has four PTO speeds.
SP6000/6040 has three PTO speeds.

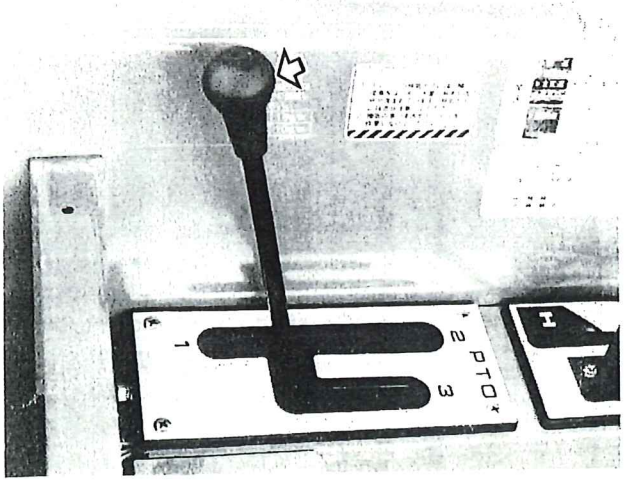


Figure 15 — PTO Control

INDEPENDENT PTO SYSTEM (OPTIONAL)

This tractor may be equipped with independent PTO system. The independent PTO system is controlled by PTO switch, Figure 16. Refer to page 15 for independent PTO system informations.

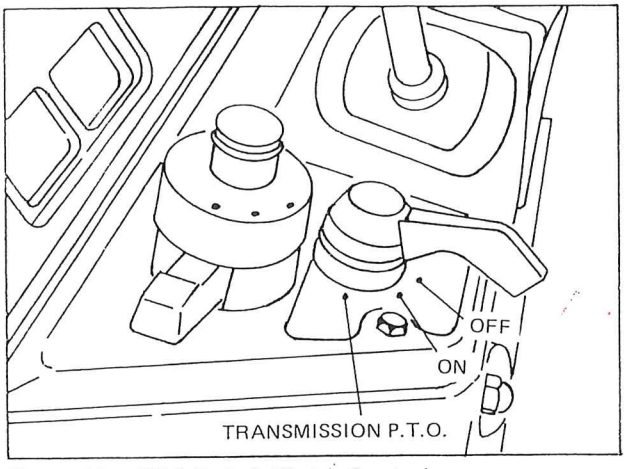


Figure 16 – PTO Switch-Clutch Control

HYDRAULIC LIFT SYSTEM CONTROLS

HYDRAULIC LIFT CONTROL LEVERS

The hydraulic lift control levers are shown in Figure 17. The levers are located at right side of the seat. The outer lever is the position control lever, the inner lever is the draft control lever. The position control lever is used to raise or lower the hydraulic lift arms. To raise the lift arms, pull the lever upward. To lower the lift arms, push the lever downward. The adjustable stop is provided for locating the lever at any position in the quadrant. The draft control lever is used to adjust draft load. The lift arms are raised by light draft load when the lever is pulled upward, and by heavy draft load when the lever is pushed down.

FLOW CONTROL LEVER

The flow control lever is shown in Figure 18. Moving the lever forward will decrease the lowering speed of the lower links, and moving the lever rearward will increase the lowering speed of the lower links. Refer to "FLOW CONTROL," page 18, for additional information on operating the flow control lever.

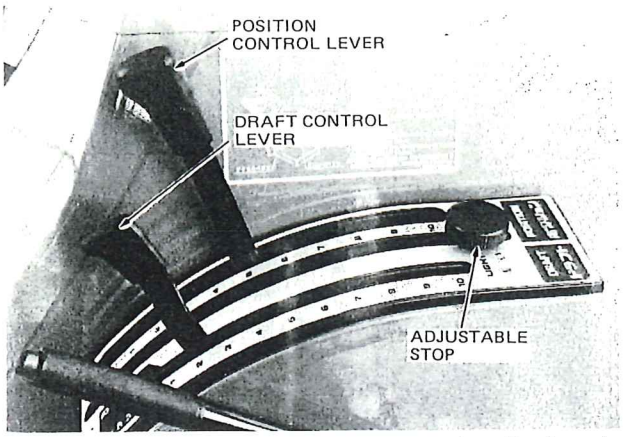


Figure 17 – Hydraulic Lift System Controls – Draft and Position Control

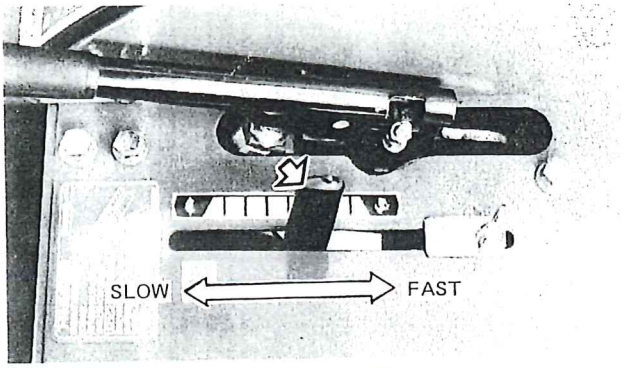


Figure 18 – Hydraulic Flow Control Lever

REMOTE CONTROL VALVE

One remote control valve is standard equipment for your SHIBAURA tractor as shown in Figure 28. Refer to page 19 for remote control valve operating information.

AUXILIARY SERVICE PORT

When using an implement requiring oil pressure such as a front loader, etc., use the take-out port of PT 3/8" on the right side of the transmission gear housing. Refer to page 18 for auxiliary service port informations.

BREAK-IN PROCEDURES

Your SHIBAURA Tractor will provide long and dependable service if given proper care during the 50-hour break-in period. During the first 50 hours of operation:

1. Avoid "lugging" the engine. Operating in too high a gear under heavy load may cause engine "lugging." "Lugging" is indicated when the engine will not respond to throttle increase.
2. Use the lower gear ratios when pulling heavy loads and avoid continuous operation at constant engine speeds. You will save fuel and minimize engine wear by selecting the correct gear ratio for a particular operation. Operating the tractor in low gear with a light load and high engine speed will waste fuel.
3. Avoid prolonged operation at either high or low engine speeds without a load on the engine.
4. Check the instruments frequently and keep the radiator and oil reservoirs filled to their recommended levels.
   Daily checks include:
   - Engine oil level
   - Radiator coolant

STARTING THE ENGINE

1. Set the shuttle, main shift and PTO control lever at the neutral (N) and set the hydraulic control lever at the LOWERING position.
2. Set the PTO switch at the "OFF" position. (Only with independent PTO)
3. Pull the throttle lever fully.
4. Turn the key switch to the preheat (HEAT) position.
   This tractor is provided with IQS (SHIBAURA Quick Starting System). By turning the key to the "HEAT" position for a moment, IQS lamp lights and then goes out about 4 seconds later. (Preheating is not required while the engine is warm.)
5. Depress the clutch pedal fully.
6. Turn the key switch to the "START" position, and then the starting motor rotates and the engine starts. Then release the key and the key returns automatically to the "ON" position.
7. Push the throttle lever forward, release the clutch pedal and warm up the engine for 5 to 10 minutes at the idling speed.

(Warming up is not required while the engine is warm.)

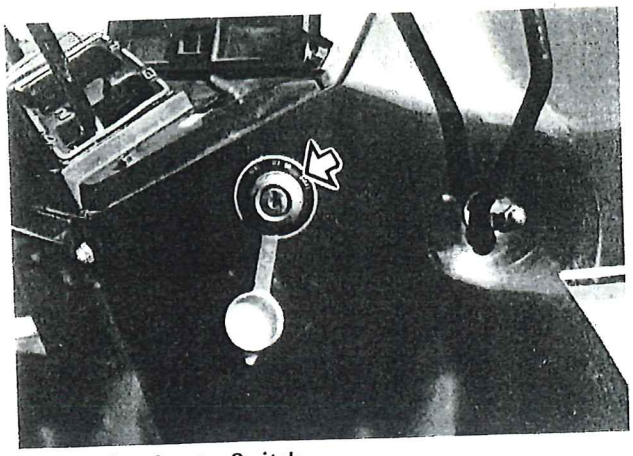


Figure 19 – **Starter Switch**

IMPORTANT: The engine is not started even when the key switch is turned, if the clutch pedal is not depressed fully and if the independent PTO switch (optional) is not in the "OFF" position.
When the pedal is depressed fully and PTO switch is in the "OFF" position, the safety switch is actuated, electricity flows to the starter and the engine is started.
If the engine fails to start, repeat it 4 to 6 items about 30 seconds later.
While the engine is working, never attempt to turn the key to the "START" position.
Be sure to keep the key at the "ON" position while the engine is working and "OFF" when it stops, or it may cause a trouble.

STARTING THE TRACTOR WITH JUMPER CABLES

If it is necessary to use jumper cables to start the engine, follow the instructions below.

Connect one end of the jumper cable to the tractor battery positive (+) terminal and the other to the auxiliary battery positive (+) terminal. Connect one end of the other cable first to the auxiliary battery negative (–) terminal, and the other end to the battery's negative (–) terminal. Follow the starting procedures after the jumper cables are connected.
Idle the engine and turn on all electrical equipment (lights, etc.), then disconnect the cables in reverse order of the connecting procedure above. This will help protect the alternator from damage due to extreme load changes.
Do not engage the starting motor continuously for more than 30 seconds; doing so may cause starting motor failure.

NOTE: Reversed battery polarity will damage the voltage regulator and alternator.

WARNING: Batteries contain sulfuric acid and produce explosive gasses. Follow the instructions below to prevent personal injury.

- Wear eye and skin protection
- Keep sparks and flame away.
- Always have adequate ventilation while charging or using the battery.
- Follow the battery manufactuer's instructions which are shown on the battery.

STOPPING THE ENGINE

Push the hand throttle fully forward, then turn the starter switch, Figure 19, to the "OFF" position.
Never fail to warm the engine at low idling speeds for 5 to 10 minutes.
Refer to the "Emergency Stop" on page 7.

OPERATING THE TRANSMISSION, FOUR-WHEEL DRIVE AND PTO

The transmission operates through the use of a clutch pedal, a shuttle shift lever, a main shift lever, and a range selector lever. Figure 20 illustrates the pedal and levers involved.

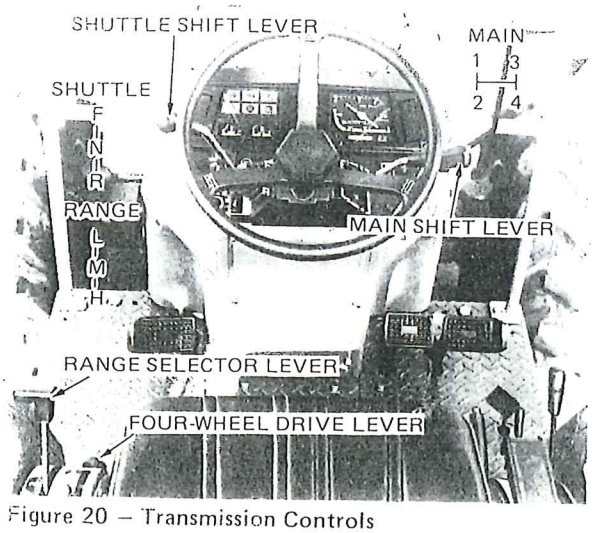


Figure 20 – Transmission Controls

Ground speeds for the various gear ratios can be found on page 47. Figure 21 shows the combination of main shift lever and range selector lever positions to obtain, the 12 forward and 12 reverse speeds.

SPEED	RANGE	MAIN
1 (R1)	L	1
2 (R2)		2
3 (R3)		3
4 (R4)		4
5 (R5)	M	1
6 (R6)		2
7 (R7)		3
8 (R8)		4
9 (R9)	H	1
10 (R10)		2
11 (R11)		3
12 (R12)		4

Figure 21 – Speed range combinations

The shuttle shift gears are composed of syncro-mesh, but when moving the shuttle shift lever always depress the clutch pedal fully and bring the tractor to a complete stop before moving the shuttle shift lever. Keep this manner to avoid a damage of components.
The main shift lever has for positions. Depress the clutch pedal and lift the lever, push forward for 1st gear and pull rearward for 2nd gear. Press the lever, push forward for 3rd gear and pull rearward for 4th gear. Any of these ratios may be selected with the tractor moving or stationary provided the clutch is depressed. The range selector lever has three positions to select the required gear ratio. Always depress the clutch pedal fully and bring the tractor to a complete stop before moving either gearshift lever. Do not attempt to change gears while the tractor is in motion.

NOTE: Avoid using the clutch pedal as a "foot-rest" (riding the clutch). Prolonged operation in this manner can cause damage to the clutch components.

The four-wheel drive is engaged and disengaged through the use fo the lever inside of the left-hand fender, Figure 13.

To engage the four-wheel drive, depress the clutch pedal fully and move the four-wheel drive lever fully upward. To disengage, move the lever downward.

WARNING: Do not operate the tractor in four-wheel drive while driving on roads or at high speeds.

IMPORTANT: The front wheel drive should be used only when additional traction is required while operating in loose soil, wet, slippery conditions or on slopes. For normal operation on firm soil, hard surfaces and roading the unit, front wheel drive should be disengaged to maximized tire and driveline life and fuel economy.

POWER TAKE-OFF (PTO)

PTO speeds for the various gear ratios can be found on page 46 which shows PTO control lever positions to obtain the three or four PTO speeds. The transmission PTO is controlled through a lever shown in Figure 15. The transmission PTO can be engaged, operated as described following "POWER TAKE-OFF OPERATION."

INDEPENDENT PTO SYSTEM (OPTIONAL)

This PTO clutch system can be used for transmission PTO and independent PTO by moving the PTO switch as shown in Figure 16, page 12. When the PTO switch is positioned to the TRANSMISSION PTO, the foot-operated clutch allows stopping the tractor and the PTO motion. The other way INDEPENDENT PTO means that it can be either engaged or disengaged, whether or not the tractor is in motion. Turning the PTO switch to the OFF position will desengage the PTO clutch. When starting the engine or changing the gear ratio, the PTO switch must be turned to the OFF position. Turning the PTO switch to the ON position will engage the PTO clutch. The independent PTO is controlled by the PTO switch only. And so, it is not necessary to depress the clutch pedal when PTO switch has been in the OFF position.

PTO SHIELD (OPTIONAL) AND CAP

The PTO shield, shown in Figure 22, is optional equipment. The PTO cap should always be installed when the PTO is not in use.

WARNING: Keep hands, feet and clothing away from PTO and other moving parts. Disengage PTO and shut off engine before servicing tractor or implements and attaching or detaching implements, keep safety shield in place. Pull only from draw bar, pulling from any other point may cause tipping.

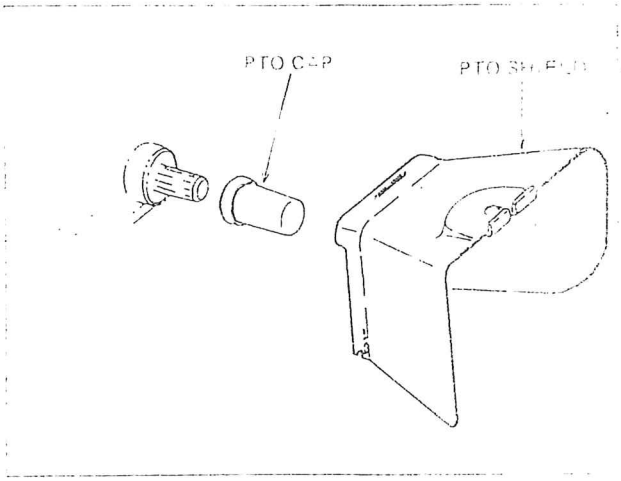


Figure 22 — PTO Shield and Cap

POWER TAKE-OFF OPERATION

1. Attaching the P.T.O.

- Stop the engine.

WARNING: To reduce the possibility of personal injury comply with the following before attaching or detaching PTO equipment, and before working on or clearing PTO equipment.

- Depress the clutch pedal fully and move the transmission gearshift lever to the neutral (N) position.
- Set parking brake.
- Disengage the P.T.O. with the P.T.O. control lever, Figure 15.
- Remove the P.T.O. cap.
- Wait until the P.T.O. shaft stops turning.
- Attach the mounted or drawn equipment. Make sure the equipment-driven shaft is properly aligned and locked to the tractor PTO drive shaft.

2. With the PTO at the neutral (N) position, start the engine. In the case of mounted equipment, raise and lower the equipment to make sure proper clearances exist.

3. With the transmission in neutral, depress the clutch pedal fully, then engage the PTO by moving the PTO control lever, Figure 15, to the desired operating range.

   NOTE: Failure to move the PTO lever through its full range may result in damage to the PTO.

4. Check the PTO-driven equipment for proper operation by gradually releasing the clutch pedal and increasing engine rpm.

5. After determining that the equipment is operating properly, depress the clutch pedal and shift to the desired operating gear. Release the pedal gradually to start the PTO and tractor in motion.

6. Disengage the PTO with the PTO control lever when making sharp turns and with mounted equipment in the fully raised position.

7. Disconnect the PTO-driven shaft at the tractor PTO shaft before traveling on highways or for any great distance.

8. Reinstall the PTO shaft cap when the PTO driven equipment is disconnected from the tractor or when the PTO is not being used.

TOWING THE TRACTOR

To tow your tractor, place the transmission mainshift levers in neutral. Do not exceed 15 km/h. Do not tow your tractor to start it.
If the tractor is to be moved any great distance, use a solid tow bar and pull the tractor at a speed not to exceed 15 km/h.

WARNING: For safe operation, towing the tractor on the highway is not recommended. Also, for safe operation, never attempt to start the engine by towing.

OPERATING THE DIFFERENTIAL LOCK

The differential lock is engaged by depressing the pedal located on the right side of the rear-axle center housing, Figure 23. Depressing the pedal locks both final drive pinion gear shafts together, preventing one wheel from rotating independently of the other. The lock should be used to obtain additional traction from the opposite wheel whenever one wheel begins to slip in wet or loose soil.

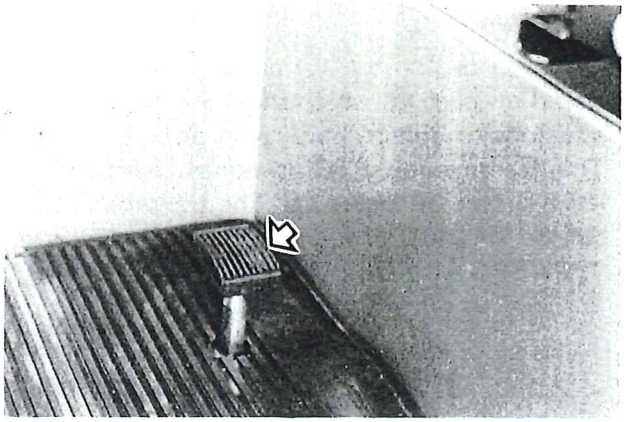


Figure 23 — Differential Lock Pedal

Do not engage the differential lock when driving the tractor on the highway or when ground speed is above 8 km/h.

WARNING: Do not engage the differential lock when turning the tractor. If the lock is engaged when turning, a loss of steering control will result.

To operate the differential lock, depress and hold down the pedal until the lock is positively engaged. It is best to engage the differential lock while the wheels are turning slowly to minimize shock loads to the drive line. If a wheel spins at high speed, as on ice, reduce engine speed to idle before engaging the lock, or damage may occur. The differential lock is released by releasing the pedal.

NOTE: In some instances the lock may remain engaged after the pedal is released. This may occur when the traction of both rear wheels is not equal the other. Should this happen, the lock may be disengaged by other of two ways.

- Decrease the drawbar pull by raising or disengaging the implement so that neither wheel tends to slip.

— Or —

- Rapidly apply and release a light braking load to the slipping rear wheel.

OPERATING THE HYDRAULIC LIFT SYSTEM

The hydraulic lift system provides accurate, smooth, and instant hydraulic power for raising a variety of compatible equipment whenever the engine is running.

Your tractor is equipped with the Two Lever Control System shown in Figure 24, there are two modes of Hydraulic Lift System operation — Position Control or Draft Control — that can be selected to satisfy operating conditions for the implement being used.

WARNING: Make sure the area is clear of people before lowering equipment.

POSITION CONTROL

When operating in position control, there is a definite relationship between the position of the control lever in the quadrant and the position of the equipment. The lever must be moved to change the position of the equipment relative to the tractor. The system will automatically maintain the equipment in the selected position.

Position control provides easy, accurate control of three-point linkage equipment that operates above the ground; such as sprayers, rakes, mowers, etc. It also provides a uniform depth when using a blade or similar equipment on level ground.

DRAFT CONTROL

When operating in draft control, the draft control lever is used to adjust the draft load. Once the lever is positioned, the hydraulic lift system will automatically adjust the depth of the equipment to maintain an even load on the tractor as soil conditions vary. The hydraulic system senses draft-changes through changes in upper link compression. The operation of the upper link draft sensing system is described below:

Upper Link Compression Loads: As the equipment is pulled through the soil, the draft caused by soil resistance tends to rotate the equipment upward around the lower link hitch points. This draft creates a pushing or compressive force on the upper link. When changes in soil resistance cause the draft to increase, the compression force on the upper link will also increase or decrease. These changes in upper link compression signal the hydraulic system, through internal linkage, to raise or lower the equipment, thereby maintaining uniform draft.

Upper Link Tension Loads: When working with long, heavy equipment in light soils or at shallow depths, the soil resistance is not always sufficient to create a compressive force on the upper link. At times the link will be in tension. The hydraulic system will automatically respond to tension as well as compression, thereby controlling working depth, even when using long, heavy equipment.

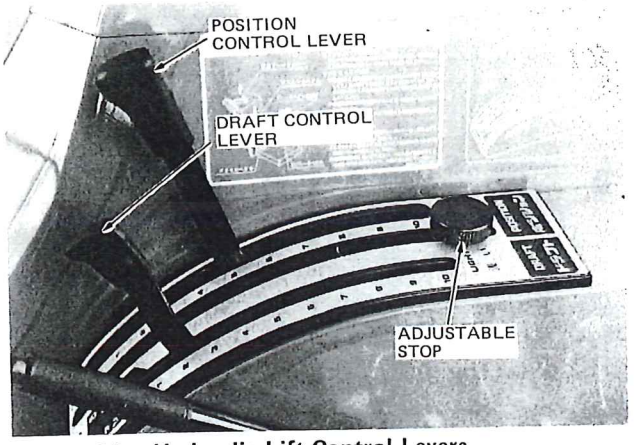


Figure 24 — Hydraulic Lift Control Levers

IMPORTANT: Before starting works, set the draft control lever at the middle position of the quadrant and the position control lever at the lowest position. Move the draft control lever forward if the tilling depth is too shallow and rearward if too deep to find the best position.

NOTE: When working in the draft control, push down the position control lever foremost usually. However, if the field conditions vary remarkably (e.g. hard clay and sand areas in the same field), or if the soil is soft and the depth increases gradually during the works, raise the position control lever to set it to a desired depth (set the lowering direction with the adjustable stop). When pushing down the draft control lever fully, the draft control does not work.

To make a turn while operating in the draft control, raise the implement with the position control lever.

HYDRAULIC LIFT ROCKER

The hydraulic lift rocker, Figure 25, has two holes for attaching the upper link. Attach the link in the lower hole, for light draft loads (cultivating) and in the top hole for heavier draft loads (plowing), as shown.

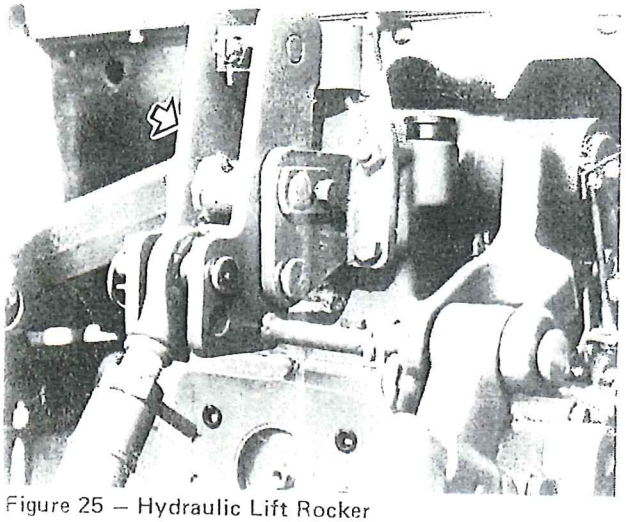


Figure 25 – Hydraulic Lift Rocker

FLOW CONTROL LEVER

The flow control lever, Figure 26, provides an adjustment to regulate the flow of oil from the lift cylinder, thus slowing or increasing the rate of drop of the lower links. To adjust the rate of flow, either move the flow control lever "forward" to decrease the rate of drop or "rearward" to increase the rate of drop.

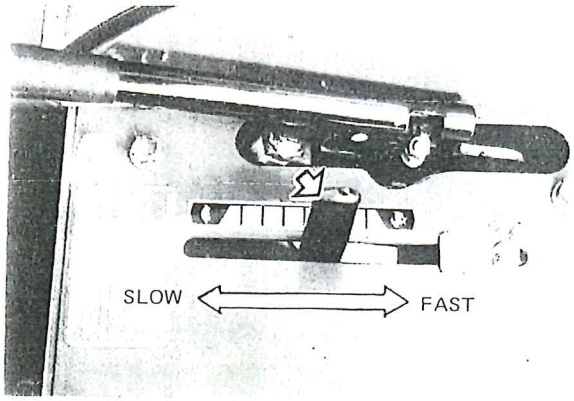


Figure 26 – Flow Control Lever

AUXILIARY SERVICE PORT

The auxiliary service port is provided to supply hydraulic oil to an equipment such as a front loader, dozer blade, etc. The service port is located on the right side of the axle center housing, in Figure 27.

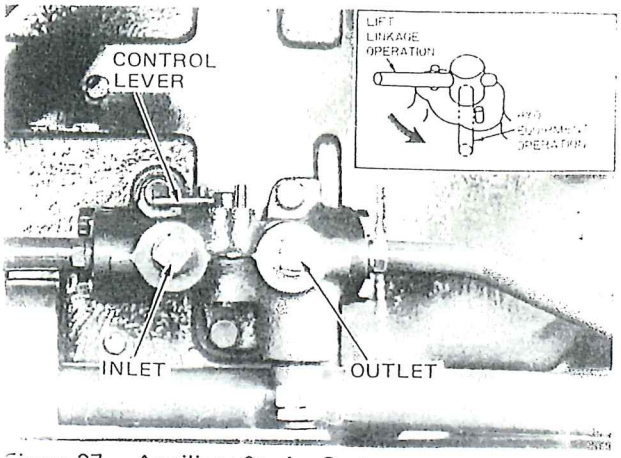


Figure 27 – Auxiliary Service Ports

REMOTE CONTROL VALVE

Up to 3 remote control valves can be mounted on this tractor and one of them is a standard equipment.

Incidentally, all of these valves are of single-acting/double-acting changeover type and can be operated either as a single-acting or a double-acting valve.

(The set pressure is 150 kg/cm² .)

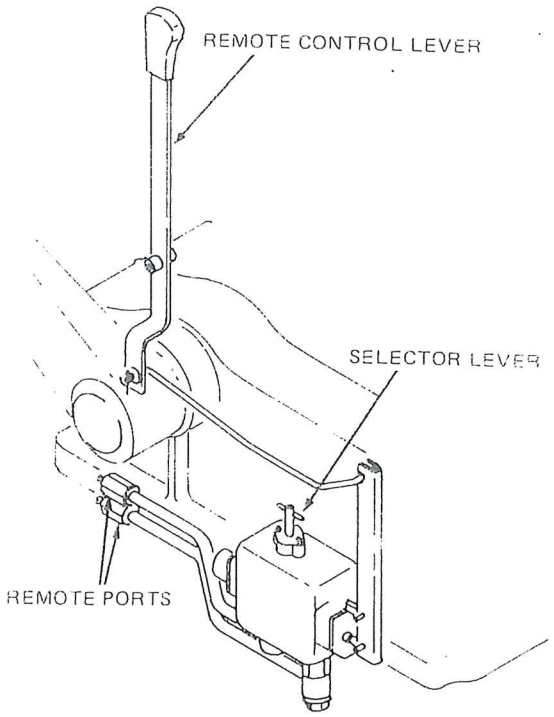


Figure 28 – Control Lever and Remote Ports

- Changeover of single action/double action
  Each valve can be changed from a single action over to a double action and vice versa with a selector lever shown in Figure 28. When the lever is turned full clockwise, the valve works as a double-acting valve and full counterclockwise, as a single-acting one.
- Hydraulic pressure outlet port
  There are 2 hydraulic pressure outlet ports at the right beneath the hydraulic arm shaft as shown in Figure 28 and each port is PT-3/8.

- Hydraulic control lever
  The attachment valve can be operated on the control lever shown in Figure 28.
- Using as a single-acting valve
  * Keep the selector lever turned full counter-clockwise.
  * Use the lower-side hydraulic pressure outlet port.
    When the remote control lever is moved rearward with the equipment required, pressure oil is supplied through the lower-side hydraulic pressure outlet port, then the cylinder of the equipment will be extended. When the remote control lever is pushed forward, the cylinder retracts by its own weight.
- Using as a double-acting valve
  * Keep the selector lever turned full clockwise. When the remote control lever is moved rearward for a double action, pressure oil is supplied through the lower-side hydraulic pressure outlet port and the upper-side port serves as a return side.
    When the remote control lever is pushed forward, pressure oil is supplied through the upper-side hydraulic pressure outlet port and the lower-side port serves as a return side the other way.

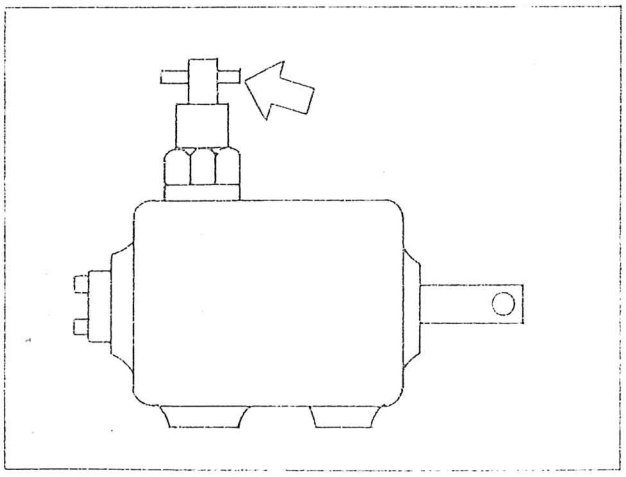


Figure 29 — Selector Lever of Remote Control Valve

DRIVING THE TRACTOR

WARNING: To avoid injury, observe the following precautions when driving the tractor.

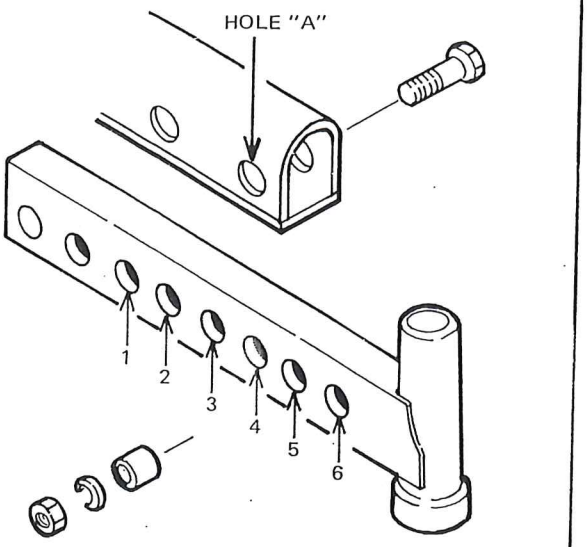
- Watch where you are going — especially at row ends, on roads, and around trees.
- Keep the tractor in gear when going down hill. Use a low gear to maintain control with minimum braking.
- If the tractor is stuck, back out to prevent upsetting the unit.
- Always use the drawbar for pull-type work. Do not pull from any other part of the tractor since it may tip backward.
- Keep the lights adjusted so they do not blind the operator of an oncoming vehicle.
- Engage the clutch slowly when driving out of a ditch, gully, or up a steep hillside. Disengage the clutch promptly should the front wheels rise off the ground.
- Reduce speed before turning quickly or applying brakes. Lock the brake pedals together when traveling at high speeds. Brake both wheels simultaneously when making an emergency stop.
- Never apply the differential lock when turning.
- Use extreme caution and avoid hard applications of the tractor brakes when pulling heavy towed loads at road speeds.
- Towed loads that weight more than twice the weight of the tractor should have brakes. If not, reduce speed and avoid inclines.
- Always sit in the driver's seat while starting or driving the tractor.

WHEEL TREAD SETTINGS

FRONT WHEEL TREAD SETTINGS (TWO-WHEEL DRIVE ONLY SP5000 AND SP6000)

The front wheel tread setting is adjustable from 124 to 185 cm by a combination of repositioning the front axle and reversing the front wheels. See Figure 30. To reposition the front axle.

1. Set parking brake and raise the front of the tractor with a jack placed under the center of the front axle. Set safely stands under each side of tractor frame behind front axle.
2. Loosen the tie rod setting bolt.
3. Remove the adjusting bolts, Figure 30, and move the axle sections in or out unit the desired setting is obtained, then reinstall the adjusting bolts.



LINE UP HOLE "A" AND HOLE NO.	TREAD WIDTH
1	124 cm
2	134 cm (STD)
3	144 cm
4	154 cm
5	164 cm
6	174 cm
6	* 185 cm

* To obtain 185 cm tread width, reverse the wheels and use the HOLE NO. "6" on the front axle.

Figure 30 — Front Wheel Tread Settings

4. Position the front wheels in the straight ahead position, then reinstall the tie rod setting bolt.
5. Check the toe-in as outlined on page 40.

WARNING: Never attempt to widen the tread setting by reversing front wheels on a four-wheel drive system.

NOTE: After changing the front wheel tread setting, side axle adjusting bolts should be torqued to 2350 — 2850 kg-cm and the tie rod clamp nuts should be torqued to 450 — 570 kg-cm.

REAR WHEEL TREAD SETTINGS

The rear wheels are adjustable from 124 to 194.5 cm. Tread width settings are made by changing the position of the rim with respect to the wheel disc, by changing the position of the wheel disc with respect to the axle, and by interchanging the rear rim from side to side. These various positions are shown in Figure 31.

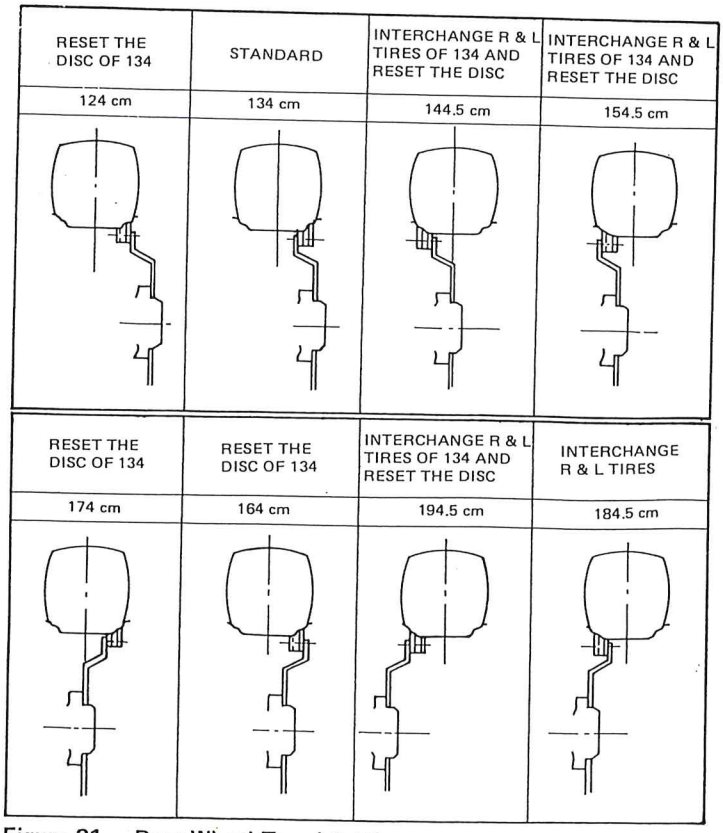


Figure 31 — Rear Wheel Tread Settings

NOTE: After changing the rear wheel tread setting, the wheel rim-to-disc nuts and the disc-to-axle bolts should be torqued to 1900 – 2200 kg-cm.

TRACTOR WEIGHTING

To obtain sufficient traction for maximum performance in heavy draft operations and to counter-balance rear-mounted equipment, weight should be added to the tractor in, cast iron weights, as shown in Figure 32 through 34, or a combination of both. Only enough weight should be added to provide good traction and stability. Adding more weight than is needed results in unnecessary soil compaction and increased rolling resistance and thus higher fuel consumption.

NOTE: When adding weight, adhere to the tire load capacities. Refer to "Tire Pressure" and the "Tire Inflation vs. Permissible Load" table on page 22.

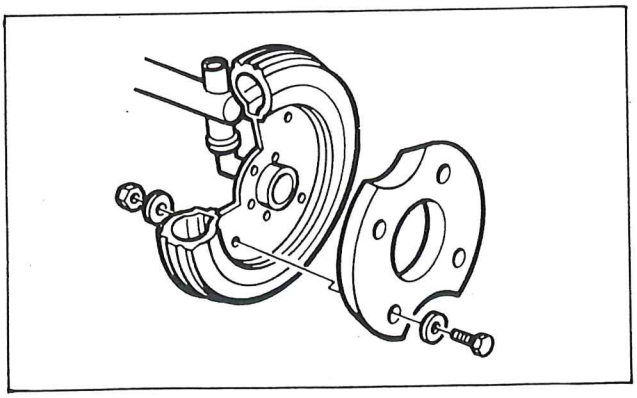


Figure 32 – Front Wheel Weights

WEIGHTING LIMITATIONS

The weighting limitations that follow are limitations only; they do not imply that the tractor should be weighted to obtain the weights shown. Use only enough weight to obtain good performance, and do not exceed the tire load capacities.

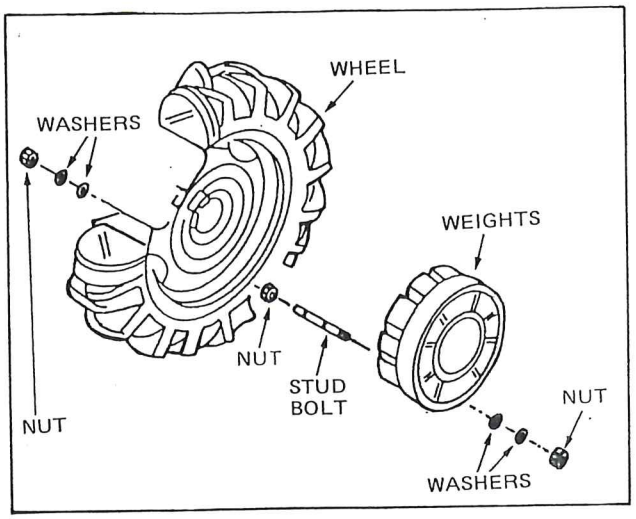


Figure 33 – Rear Wheel Weights

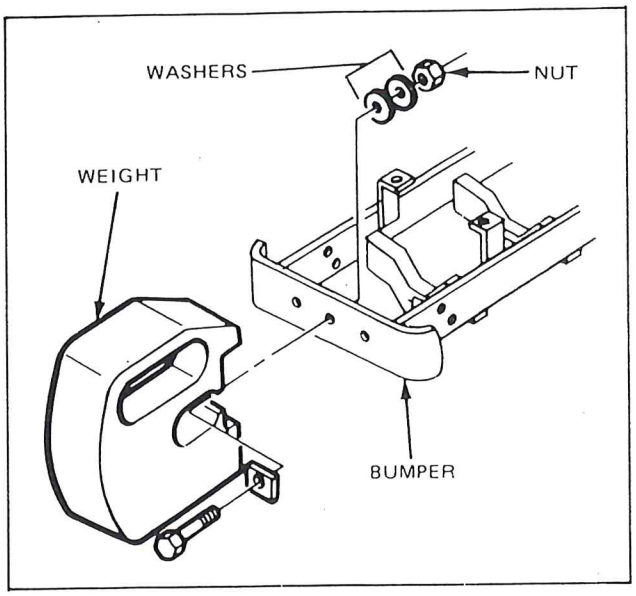


Figure 34 – Front End Weights

TOTAL VEHICLE WEIGHT

Do not add weight exceeding the following:

Front End – 180 kg.
Front Wheels – 120 kg (no additional weight on four-wheel drive)
Rear Wheels – 420 kg

CAST IRON WEIGHTS (OPTIONAL)

Cast iron weights are a factory installed option or are available as accessories from your SHIBAURA Tractor Dealer. Weights can be mounted on the front wheels, on the front end of the tractor, and on the rear wheels as shown in Figure 32 through 34.

TIRE PRESSURE

Tire pressure must be considered when adding weight to the tractor. The following "TIRE INFLATION vs. PERMISSIBLE LOAD" table lists the tire sizes available and shows the maximum load the tires can carry for a given air pressure. Note that the load capacities decrease as inflation pressures decrease, and also that a specific tire pressure is recommended for certain size tires.

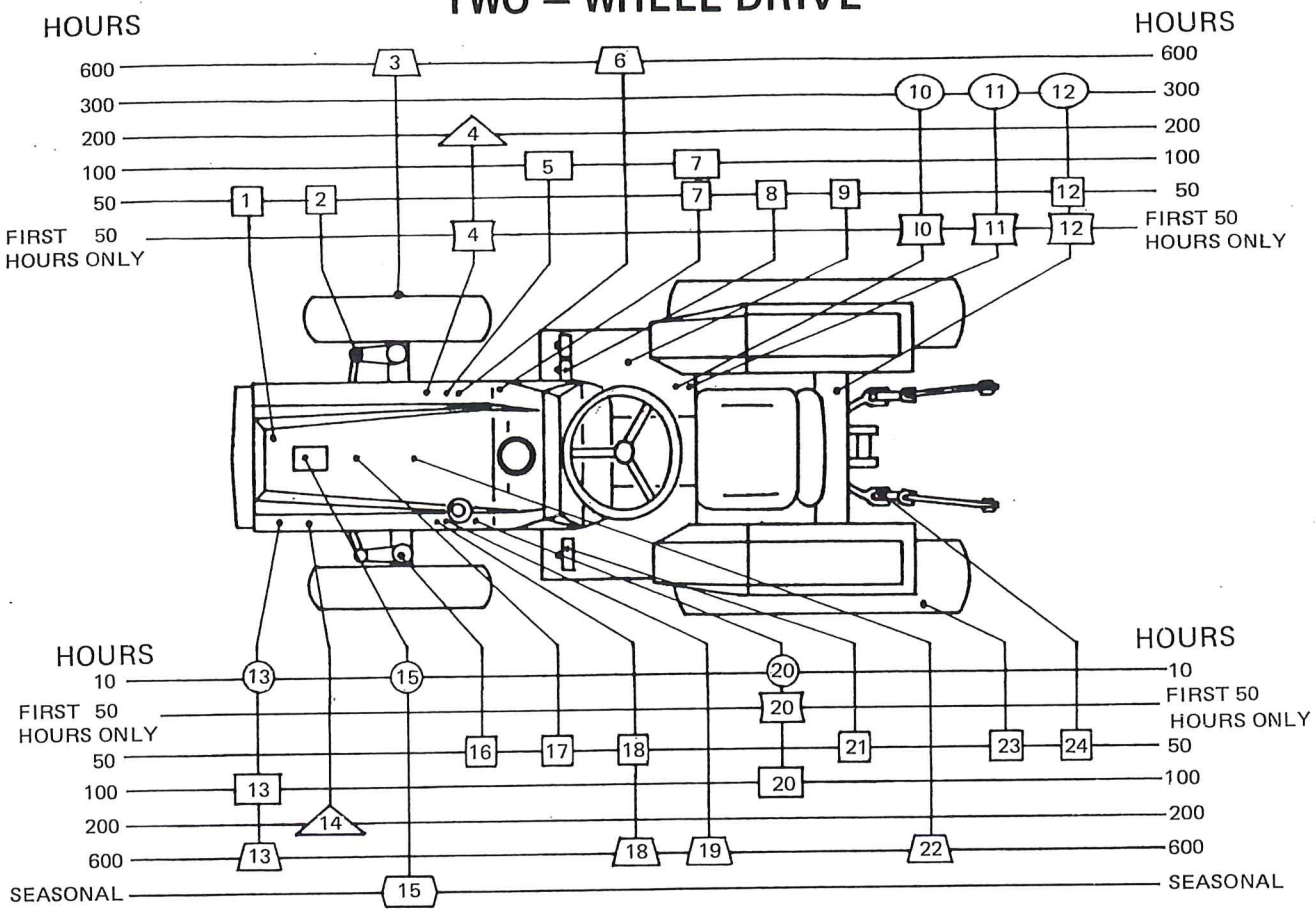
TIRE INFLATION vs. PERMISSIBLE LOAD

	INFLATION PRESSURES – kg/cm²									
FRONT TIRE SIZE	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	3.0
	MAXIMUM PERMISSIBLE LOAD – kg									
6.50-16 F-2 6PP	–	–	355	390	420	450	480	510	530	615
8.3 -20 G-1 4PR	370	425	470	515	–	–	–	–	–	–
9.5 -20 G-1 4PR	465	530	590	645	560	–	–	–	–	–
INFLATION PRESSURES – kg/cm²										
REAR TIRE SIZE	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	3.0
	MAXIMUM PERMISSIBLE LOAD – kg									
12.4-32 R-1 6PR	880	1000	1070	1220	1355	–	–	–	–	–

NOTE: Do not exceed the maximum load listed. Also, do not under-inflate or over-inflate the tires.

LUBRICATION AND MAINTENANCE CHART – SP5000 SP6000

TWO – WHEEL DRIVE

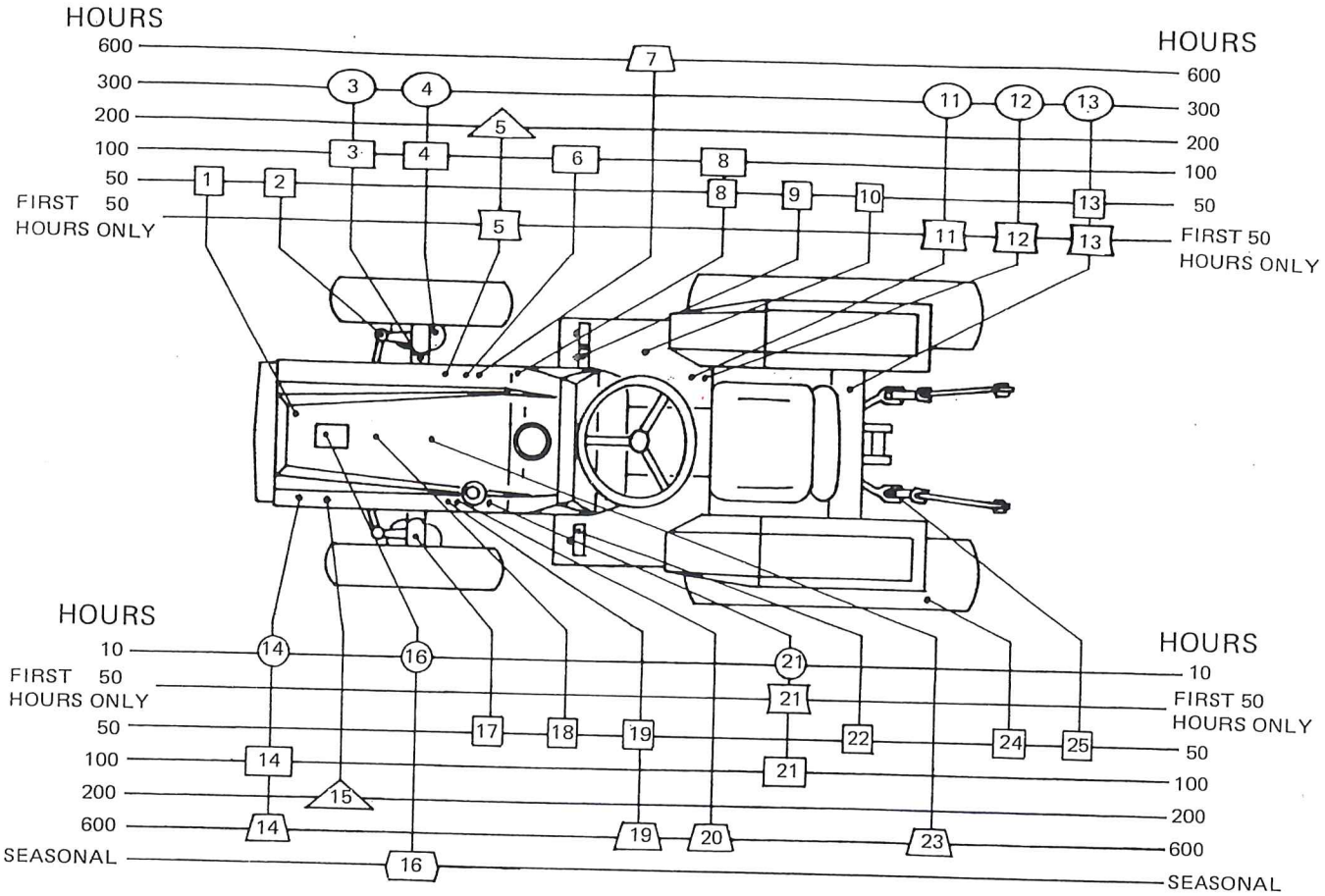


NO.	LUBRICATION AND MAINTENANCE ITEMS	CHECK	CLEAN	LUBE	CHANGE	ADJUST	SERVICE INTERVALS
20	Engine Oil Level	X					Ever (10) Hours
15	Radiator Coolant	X					
13	Air Cleaner Dust Pan	X					
20	Engine Oil				X		First 50 Hours
12	Transmission and Rear Axle Oil				X		
10	Hyd. Oil Filter				X		
11	Hyd. Oil Strainer		X				Only
4	Engine Oil Filter				X		
12	Transmission and Rear Axle Oil Level	X					Every 50 Hours
7	Fuel Filter			DRAIN			
18	Power Steering Oil Level	X					
1	Battery	X					
23	Tires	X					
21	Clutch Pedal	X				X	
8	Brake Pedals Lubrication Fittings;	X				X	
2	Steering Linkage			X			
17	Pivot Shaft			X			
16	King Pins			X			
24	Hyd. Lift			X			
9	Pedal Shaft			X			

NO.	LUBRICATION AND MAINTENANCE ITEMS	CHECK	CLEAN	LUBE	CHANGE	ADJUST	SERVICE INTERVALS
7	Fuel Filter		X		X		Every 100 Hours
20	Engine Oil		X				
13	Air Cleaner						
5	Injection Pump Oil			X			
4	Engine Oil Filter				X		Every 200 Hours
14	Fan Belt	X				X	
12	Transmission and Rear Axle Oil				X		Every (300) Hours
10	Hyd. Oil Filter				X		
11	Hyd. Oil Strainer				X		
3	Front Wheel Bearings			X			Every 600 Hours
18	Power Steering Oil				X		
19	Power Steering Oil Strainer		X				
6	Fuel Injectors	X	X			X	
22	Valve Clearance	X				X	
13	Air Cleaner Element				X		
15	Radiator Coolant				X		Seasonal

LUBRICATION AND MAINTENANCE CHART – SP5040 SP6040

FOUR – WHEEL DRIVE



NO.	LUBRICATION AND MAINTENANCE ITEMS	CHECK	CLEAN	LUBE	CHANGE	ADJUST	SERVICE INTERVALS
21	Engine Oil Level	X					Every (10) Hours
16	Radiator Coolant	X					
14	Air Cleaner Dust Pan	X					
21	Engine Oil				X		First [50] Hours Only
13	Transmission and Rear Axle Oil				X		
11	Hyd. Oil Filter				X		
12	Hyd. Oil Strainer		X				
5	Engine Oil Filter				X		
13	Transmission and Rear Axle Oil Level	X					Every [50] Hours
8	Fuel Filter			DRAIN			
19	Power Steering Oil Level	X					
1	Battery	X					
24	Tires	X					
22	Clutch Pedal	X				X	
9	Brake Pedals Lubrication Fittings;	X				X	
2	Steering Linkage			X			
18	Pivot Shaft			X			
17	King Pins			X			
25	Hyd. Lift			X			
10	Pedal Shaft			X			

NO.	LUBRICATION AND MAINTENANCE ITEMS	CHECK	CLEAN	LUBE	CHANGE	ADJUST	SERVICE INTERVALS
8	Fuel Filter		X				Every [100] Hours
21	Engine Oil				X		
14	Air Cleaner		X				
3	Front Diff. Oil Level	X					
4	Front Final Gear Oil Level	X					
6	Injection Pump Oil			X			
5	Engine Oil Filter				X		Every [200] Hours
15	Fan Belt	X				X	
13	Transmission and Rear Axle Oil				X		Every (300) Hours
3	Front Diff. Oil				X		
4	Front Final Gear Oil				X		
11	Hyd. Oil Filter				X		
12	Hyd. Oil Strainer		X				
19	Power Steering Oil				X		Every [600] Hours
20	Power Steering Oil Strainer		X				
7	Fuel Injectors	X	X				
23	Valve Clearance	X				X	
14	Air Cleaner Element				X	X	
16	Radiator Coolant				X		Seasonal

FUEL AND LUBRICANTS

DIESEL FUEL

Type of fuel to use:

When operating in temperature above −5°C, use diesel fuel oil No. 2 (No. 2D) with a minimum cetane rating of 45. When operating in temperatures below −5°C use diesel fuel oil No. 1 (No. 1D) with a minimum cetane rating of 50.

Fuel represents a major portion of your tractor operating costs; therefore, it is important to use it efficiently. Do not let low price tempt you to use inferior diesel fuel. The initial savings is a false economy when you consider the damage poor fuel can do to your tractor fuel system.

NOTE: Use only fuel designated for diesel engines. Some heating fuels contain harmful chemicals that, if used, can seriously affect tractor efficiency and performance. Refer to the "Engine Oil Recommendations" on page 26 for additional fuel information.

FUEL STORAGE

Extremely small clearances exist between the fuel delivering elements of the fuel injection pump and the fuel delivering elements of the injectors. Therefore, it is of vital importance that precautions be taken to make sure the fuel is kept free of dirt and water. See Figure 35.

Diesel fuel should be stored in black iron tanks or containers. Do not store diesel fuel in a galvanized tank, as the zinc coating will react with the fuel and form undesirable compounds that may interfere with the proper operation of the fuel injection pump and injectors.

The most satisfactory arrangement is a bulk storage installation with either a tank and pump, Figure 36, or a gravity feed installation located high enough for the tractor tank to be filled direct. The tank should slope downward at the rear to allow sediment to settle away from the take-off point. Whenever the tank is refilled, allow the fuel to settle for 12 hours before using. A drain valve should be positioned at the lowest point in the tank so the moisture and sediment can be drained periodically.

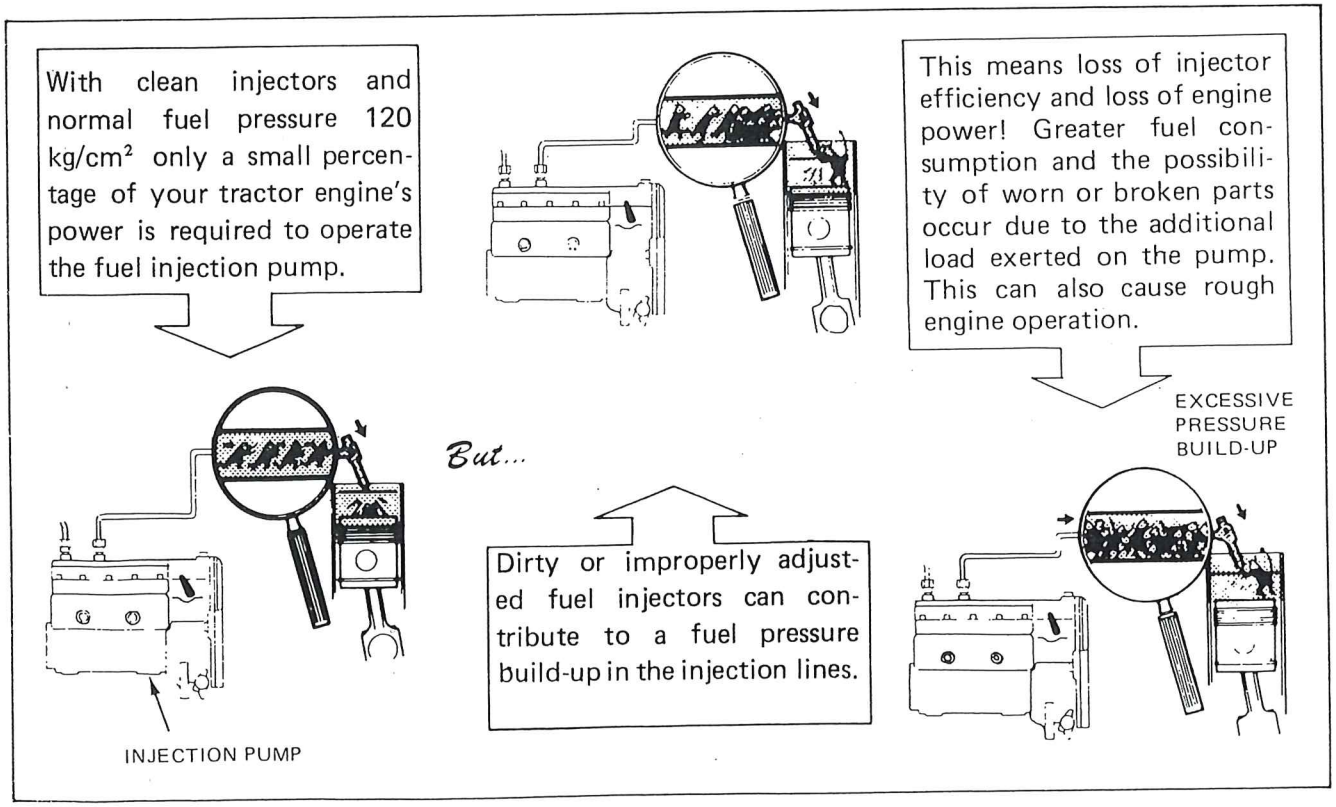
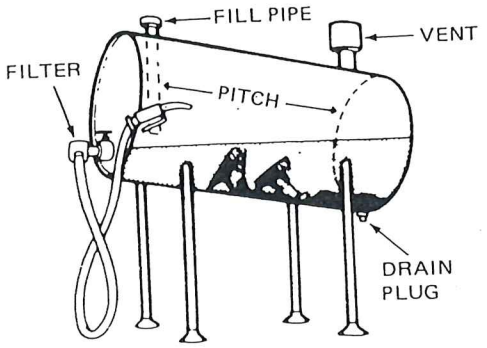
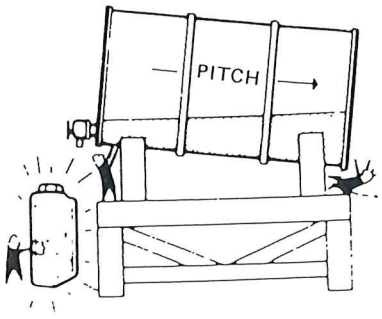


Figure 35 – Dirt vs. Injectors



Install your storage container above the ground and tilt the tank so the discharge outlet is on the highest end of the tank. Provide a drain plug at the lowest point of the tank so that moisture and sediment can be drained off periodically. Install a suitable filter on the discharge outlet of the storage container.



50 gallon drums make suitable containers for diesel fuel, provided they are tilted on their stands. The drums should be cleaned and flushed before each refilling.

Figure 36 – Diesel Fuel Storage

A fuel outlet filter should be used, as shown in Figure 36. Use the largest tank feasible and keep it as full as possible to minimize condensation.

If bulk storage is not possible and the fuel is stored in barrels, keep them in a clean, dry place. The barrel in use should be fitted with a fuel outlet filter and a drain tap, and should be supported so it slopes downward 4 cm per meter length away from the tap.

After use, install the cap at the top of the barrel and clean up fuel which may have been spilled. Diesel fuel will not evaporate and thus will collect dust and dirt.

REFUELING THE TRACTOR

If there is no filter on the outlet of the storage tank, filter the fuel through a 100-mesh screen or finer when filling the tractor fuel tank. Keep the tractor tank as full as possible to minimize condensation.

NOTE: It is a good practice to fill the tractor fuel tank with fuel at the end of each day, as this will reduce overnight condensation. Also, any fuel which may have been spilled should be cleaned up.

LUBRICANTS

Type of lubricant to use:

Engine Oil .... Service Grade CD
SAE 10W30, for year around use

or

SAE 20W for use –5° C ~ 25° C
SAE 30 for use 10° C ~ 35° C

Transmission,
Rear Axle, Front Axle, Front Final Reduction
Hydraulic System ..... SAE 80
Power Steering Oil ..... Hyd. System Oil ISO VG32 ~ 46

Front Wheel Bearings
and All Lubrication Fittings ..... NLGI No. 2

LUBRICANT STORAGE

SHIBAURA Tractor is equipped with lubricant filters to protect vital points from damage caused by dirt which may enter under normal operating conditions. Precautions must, however, be taken by you to prevent lubricant contamination by dirt or water during storage. Service intervals in this section are based on the assumption that only new oil, of the type specified is used.

Barrels of lubricant should be kept under cover, preferably in a clean, dry place, and should be clearly marked to indicate the lubricant which they contain.

When a barrel is kept in an exposed location, it should be tilted to allow any moisture to run away from the filler cap. Always use a clean container when transferring oil from a barrel to the tractor and make sure that any cap or bung, which has been removed, is installed as soon as possible.

FUEL AND LUBRICANT SERVICE PROCEDURES

ENGINE OIL

Checking Oil Level: Check the engine oil level daily or every 10 hours.

1. With the tractor standing level, and after the engine has been stopped for a period of time, check the oil level with the dipstick, Figure 37.

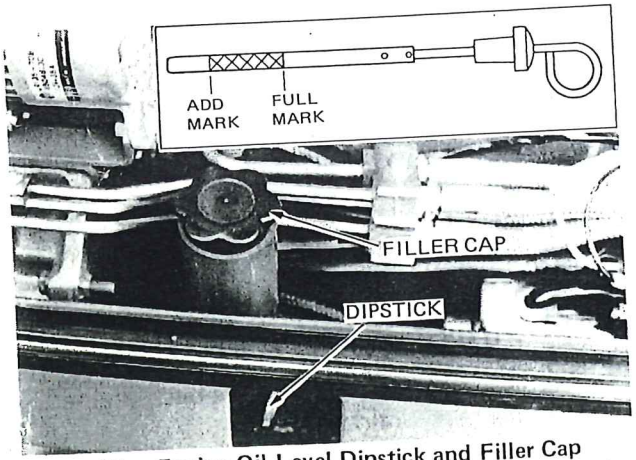


Figure 37 — Engine Oil Level Dipstick and Filler Cap

2. If the oil level is low, remove the filler cap and add oil to the engine through the filler hole to bring the oil level between the marks on the dipstick. Be careful not to overfill.

3. Install the oil filler cap.

Changing Oil and Filter: Change the engine oil after the first 50 hours operation and every 100 hours. Change the engine oil filter after the first 50 hours operation and every 200 hours.

NOTE: More frequent engine oil and filter changes are recommended if the tractor is operated for extended period of time at maximum rated power and speed. Under such conditions, or other types of continued severe operating conditions, the engine oil should be changed 70 hour intervals and the filter at 140 hour intervals.

1. With the engine off, but at normal operating temperature, drain the engine oil by removing the drain plug, Figure 38. Reinstall the plug after the oil has drained and discard the oil.

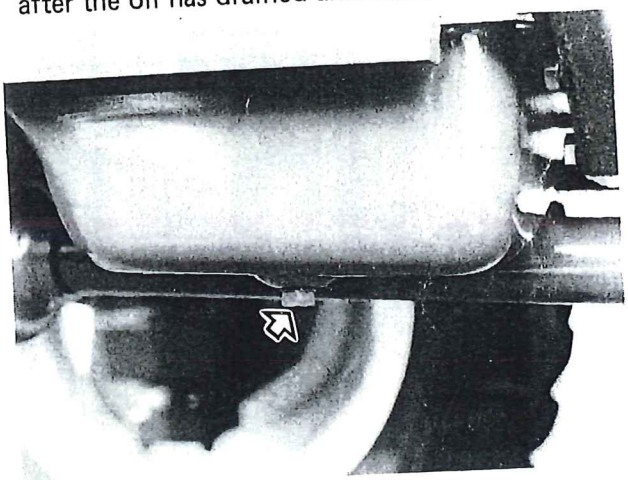


Figure 38 — Engine Oil Drain Plug

2. Unscrew the oil filter, Figure 39, catching the used oil in a suitable container placed below the filter. Discard the filter.

3. Coat the gasket on the new filter with a film of oil. Screw the filter into place until the gasket contacts its mating surface, then turn the filter approximately 3/4 of a turn by hand. Do not over-tighten.

4. Add new oil of the type specified, page 26. Start the engine and check the filter for leaks after adding the oil. Be sure the oil level is at the proper level.

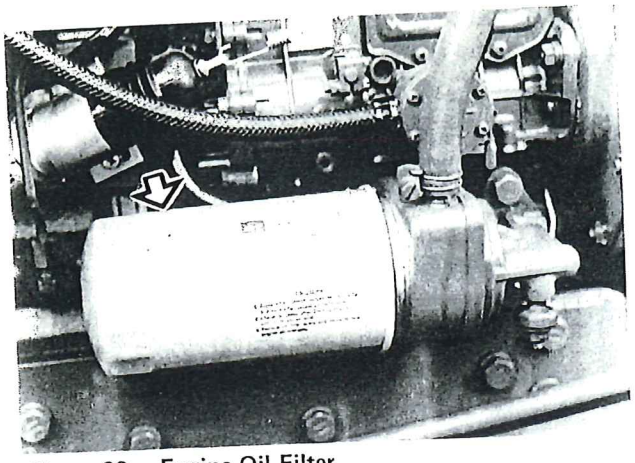


Figure 39 — Engine Oil Filter

FUEL INJECTION PUMP

The fuel injection pump uses oil from the engine crankcase for lubrication. When changing the engine oil, also add new engine oil to injection pump, Figure 40.

Remove the filter plug and add approximately 200 cc new engine oil as specified on page 26.

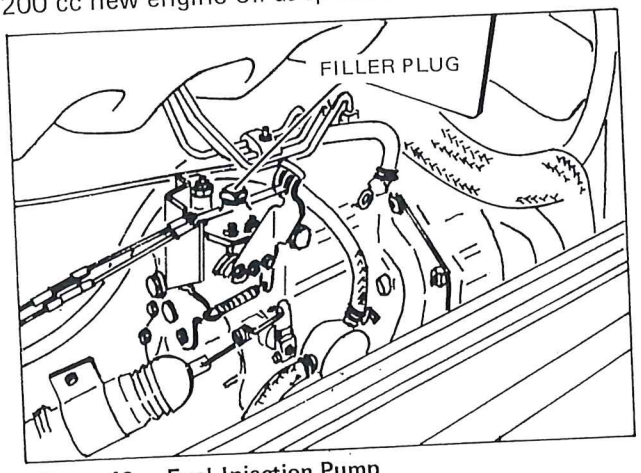


Figure 40 — Fuel Injection Pump

FUEL FILTER

Draining the Filter: Drain the diesel fuel filter when water is visible in the sediment bowl.

Cleaning the Fuel Filter: Clean the fuel filter every 100 hours by rising in a container of clean diesel fuel.

1. Be sure there is adequate fuel in the fuel tank, close the fuel shut-off valve, Figure 42 then remove the fuel sediment bowl, Figure 41.

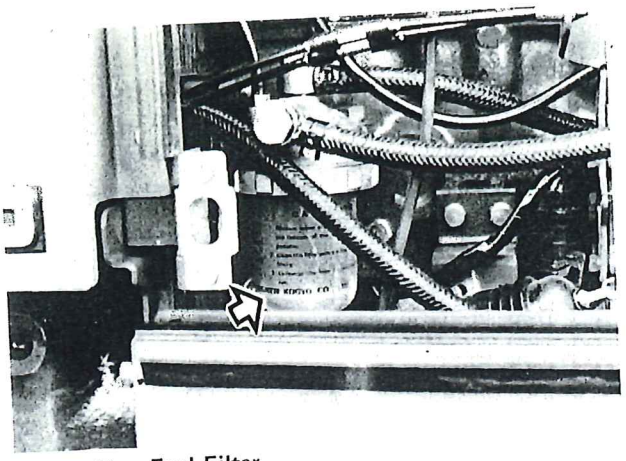


Figure 41 — Fuel Filter

2. Clean the filter element and sediment bowl with diesel fuel to remove water and etc.
3. Install the fuel element and sediment bowl and bleed the system as "Bleeding the Fuel System."

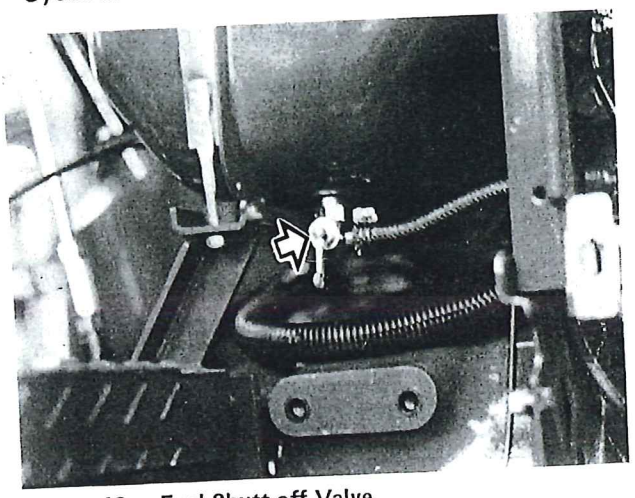


Figure 42 — Fuel Shutt-off Valve

Changing the Fuel Filter: Change the diesel fuel filter if it has been damaged.

1. Close the shut-off valve, Figure 42.
2. Remove the sediment bowl, Figure 41.
3. Discard the old element and install a new element.
4. Install and securely tighten the sediment bowl.
5. Open the fuel shut-off valve so fuel will flow to the filter.
6. Bleed the fuel filter and injection pump as outlined in the following procedure.

BLEEDING THE FUEL SYSTEM

Bleed the fuel system after it has been drained.

- If it has been drained,
- If a new filter element has been installed,
- If the tractor has run out of fuel,

- If the lines leading to or from the filter have been disconnected,
- If the injection pump has been removed and reinstalled.

The fuel system of your SHIBAURA tractor can be bled by only actuating the priming pump lever, in Figure 43.
Bleed the fuel system as follows:

1. Be sure there is adquate fuel in the fuel tank.
2. Actuate the priming pump lever approximately 10 times, in Figure 43.

Once the engine starts, the air bubbles in the system will escape automatically. If the engine fails to start, attempt again as above.

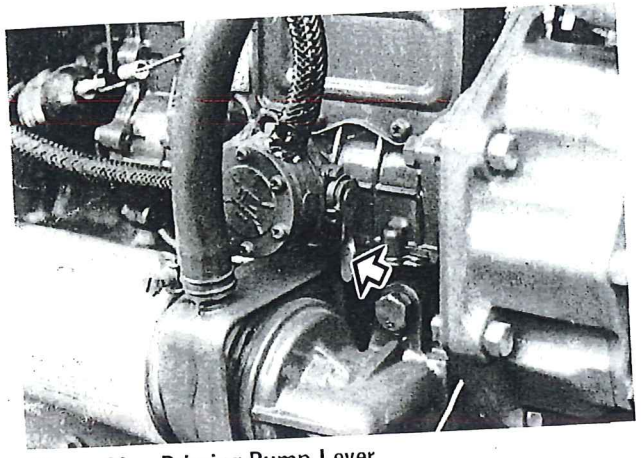


Figure 43 — Priming Pump Lever

AIR CLEANER

Checking Dirt Level: Check the dirt level in the dust pan daily or every 10 hours (Figure 44).

Figure 44 — Air Cleaner — Disassembled

Clean the element every 100 hours of service.

1. Loosen the wing nut and remove dust pan, Figure 44.
2. Remove seal and dust cap from dust pan and clean dust pan, using a damp lint free cloth, Figure 44.
3. Remove wing nut holding filter element and remove filter element from body.
4. Pat sides of element with palm of hand to remove dust trapped in the pleats.

   IMPORTANT: Tapping element against hard surface or with hard objects may dent or break element end cap seals.

5. Using low air pressure (not over 2.0 kg/cm^2), blow out remaining dust from inside out opposite normal air flow through the element.

   IMPORTANT: Be careful not to rupture the filter element. Maintain a reasonable distance between the air nozzle and the filter element when directing air up and down the clean air side of the element pleats.

6. Clean the fins and inside of the air cleaner body with a dry cloth.
7. Check with a light bulb inside the element for leaks in paper or bonding of paper to end plate. Replace element of any leaks are found.
8. Reassemble the air cleaner.

WASHING ELEMENT

1. Washing may be necessary to remove soot or oil material.
2. Agitate the element in warm water containing a small amount of non sudsing type detergent.

   IMPORTANT: Do not use water hotter than the hand can stand, as the element will be damaged. Never wash the element with fuel oil, gas or solvent. Do not oil the element.

3. Rinse the element with clean water. Shake excess water from the element and allow it to air dry.

   IMPORTANT: Do not dry element with compressed air, as the air will rupture a wet element. Also, do not install a wet element as the tractor engine will not start with a wet element installed.

4. After drying, check for damage by holding a light bulb inside the element. If an even, fine pattern of light is seen, the element is clean and undamaged. A bright spot of light indicates the element is damaged, and a new element must be installed.
   Change the element after six cleanings or once a year.

TRANSMISSION, REAR AXLE AND HYDRAULIC SYSTEM

Checking Oil Level: Check the oil level every 50 hours.

1. With the tractor standing level and the engine off, check the oil level with the dipstick, Figure 45.
2. The oil level should be between the FULL mark and lower end of the dipstick. If low, add new oil of the type specified, page 26, through the filler cap hole. Do not fill beyond the FULL mark on the stick, as the transmission will be overfilled.
3. Install the dipstick and filler cap.

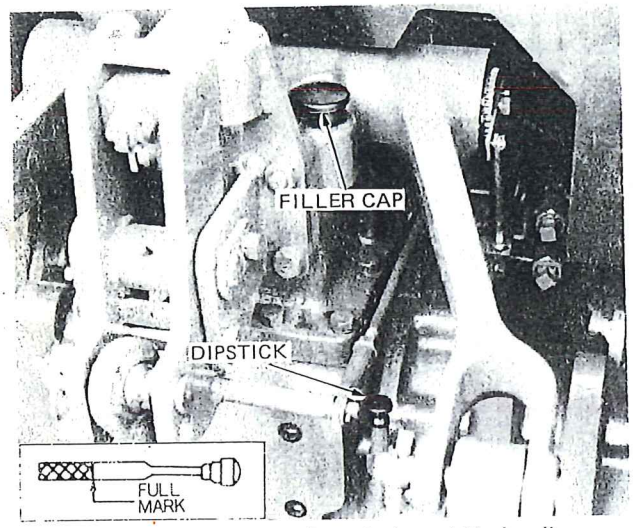


Figure 45 — Transmission, Rear Axle and Hydraulic System Oil Level Dipstick and Filler Cap

Changing Oil: Change the oil after the first 50 hour operation and every 300 hours.

1. With the oil at normal operating temperature, drain the oil by removing the transmission and rear axle drain plugs, Figure 46. Also refer to the next page for the oil of FOUR-WHEEL DRIVE. Reinstall the plugs after the oil has drained. Discard the oil.
2. Remove the filler cap, Figure 45, and fill with new oil of the type specified, page 26.
3. The transmission is filled to the correct level when the oil level is between the FULL mark and lower end of the dipstick. Do not fill beyond the FULL mark on the stick, as the transmission will be overfilled.
4. Install the dipstick and filler cap.

IMPORTANT: Because there is a common sump for the transmission, rear axle and hydraulic system, special attention is necessary in keeping the oil clean.

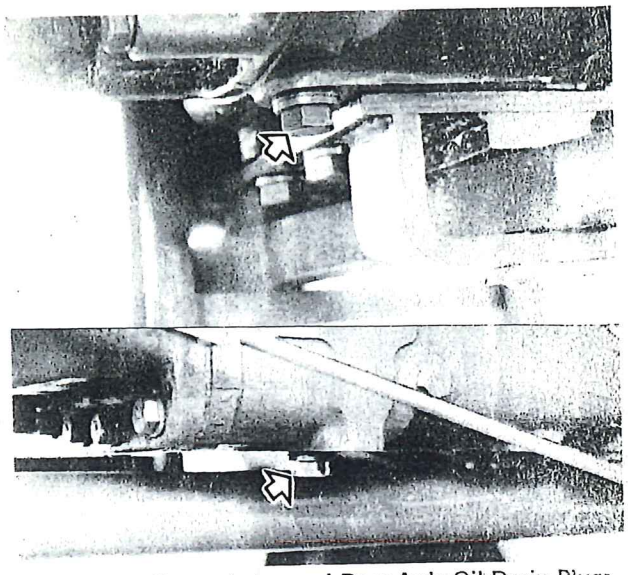


Figure 46 — Transmission and Rear Axle Oil Drain Plugs

HYDRAULIC SYSTEM OIL FILTER

Your IHI-SHIBAURA Tractor is equipped with two hydraulic lubricant filters; cartridge oil filter and the other having magnets.

Changing the Oil Filter Cartridge: The filter is located under the right-hand step, Figure 47. Change the filter after the first 50 hours of operation and every 300 hours.

1. Unscrew the oil filter, Figure 47, catching the used oil in a suitable container placed below the filter. Discard the filter.
2. Coat the gasket on the new filter with a film of oil. Screw the filter into place until the gasket contacts its mating surface, then turn the filter approximately 3/4 of a turn by hand. Do not overtighten.
3. Add new oil of the type specified, page 26. Start the engine and operate hydraulic system. Check the filter for leaks. Stop the engine and check the oil level. Replenish if necessary.

Cleaning the Oil Strainer (Oil Filter): The magnetic strainer is located behind the cartridge oil filter. Clean this strainer after the first 50 hours and every 300 hours.

1. Remove the hydraulic oil pipe (suction), after removing 6 mounting bolts on the cover. Then pull out the oil strainer.

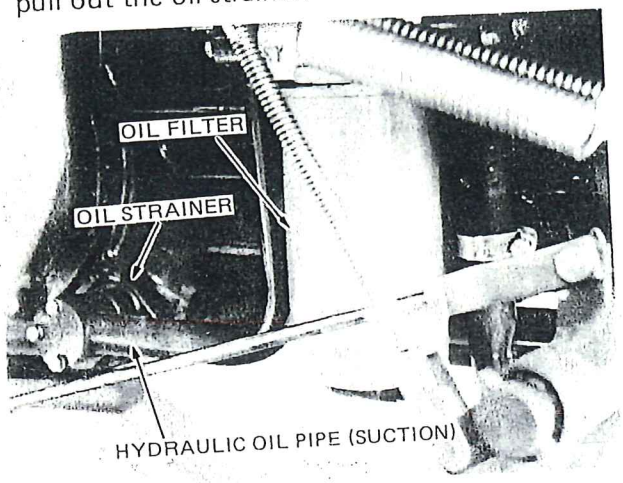


Figure 47 — Hydraulic Oil Filter and Strainer

2. There are 3 magnets and a spring on the rim of the filter element (Figure 48). Remove the spring and magnets, and wipe off all dust adhering to the magnets with a soft cloth.
3. Rinse the filter with clean kerosene and clean thoroughly.
4. If the filter element is damaged, replace it with a new one.

IMPORTANT: Be careful of the gasket not to be damaged on the filter.

5. Assemble the unit reversing the above procedure.

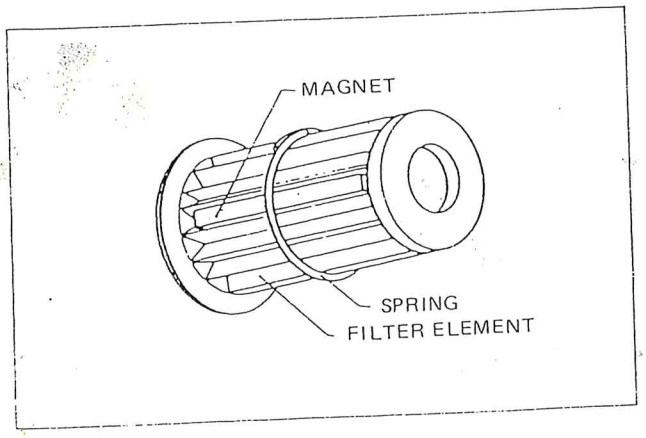


Figure 48 — Filter Element

POWER STEERING RESERVOIR LUBRICATION AND MAINTENANCE

Checking Oil Level: The oil level in the power steering reservoir should be checked every 50 hours. The reservoir is located at the left side of the engine. This check should be made after the engine has been stopped for a period of time.

1. With the tractor standing level, and the wheel in the straight-ahead position, check the oil level, Figure 49.
2. The oil level should be between the FULL mark and the lower end of the dipstick. If low, add new oil of the type specified, page 26, through the filler hole. Do not overfill beyond the FULL mark on the stick.
3. Start the engine and turn the steering wheel from lock to lock several times to purge air from the system.
4. Stop the engine and recheck the oil level. Add oil as required and repeat item 3.

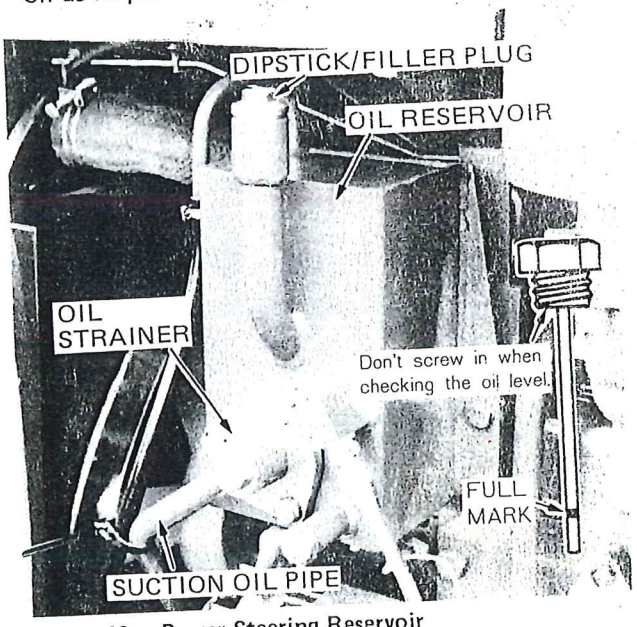


Figure 49 — Power Steering Reservoir

Cleaning the Oil Strainer: Clean the oil strainer every 600 hours.

1. Drain the oil from the reservoir.
2. Remove the suction oil pipe.
3. Remove the three bolts mounting the filter to the reservoir.
4. Remove the filter and clean.

5. If the filter element is damaged, replace it with a new one.
6. Assemble the unit reversing the above procedure.

IMPORTANT: Be careful of the gasket not to be damaged on the filter.

7. Fill the reservoir with new oil of the type specified page 26.
8. Start the engine and turn the steering wheel from lock to lock several times to purge air from the system.
9. Stop the engine and recheck the oil level. Add oil as required and repeat item 8.

LUBRICATION FITTINGS

The following lubrication points (refer to the Lubrication Chart, page 23 or 24) require the application of good quality grease every 50 hours. In extremely dirty conditions, lubrication should be more often. Refer to page 26 for the type of grease that should be used.

- Steering linkage
- Front wheel spindles
- 3-point linkage
- Pedal shaft
- Front-wheel drive king pins (if so equipped)
- Pivot shaft (if so equipped)

1. Wipe away all old grease and dirt from the lubrication fittings to prevent dirt or foreign material from entering the fittings when new grease is applied.
2. Use a high pressure grease gun to force in the new grease until clean grease oozes from the assembly being lubricated.
3. Wipe away any excess grease.

FOUR-WHEEL DRIVE (SP5040, SP6040)

FRONT AXLE DIFFERENTIAL CASE AND FINAL REDUCTION GEAR CASES

Checking Oil Level: Check the oil level every 100 hours

1. With the tractor standing level and the engine off, check the oil level with the dipstick, Figure 50.

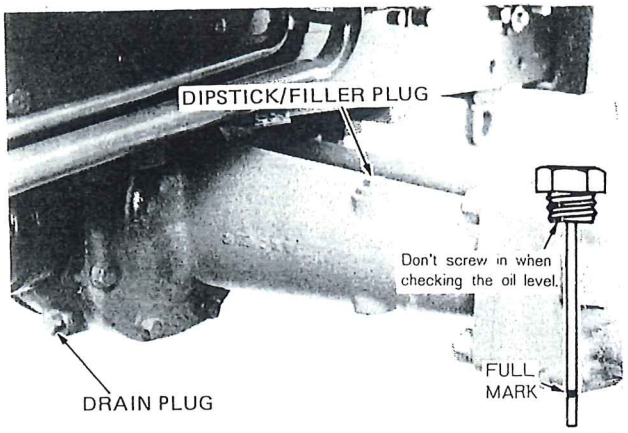


Figure 50 — Front Axle Differential Oil Level Dipstick/ Filler Plug and Drain Plug

2. The oil is at the correct level when the oil level is between the mark and lower end of the dipstick. If low, add new oil of the type specified, page 26, through the combined dipstick/ filler plug hole. Do not fill beyond the mark on the stick, as the front axle will be overfilled.
3. Install the dipstick/filler plug.

Changing Oil: Change the oil every 300 hours.

1. With the oil at normal operating temperature, drain the oil by removing the front axle differential, Figure 50, and final reduction gear case drain plugs, Figure 51. Reinstall the plugs after the oil has drained. Discard the oil.
2. Remove the filler plugs at each final reduction gear case, Figure 51 and fill with new oil as specified, page 26. The oil should be level with the bottom of the plug opening. Install the filler plug.
3. Remove the filler plug on the top, right side of axle housing, Figure 50, and fill with new oil of the type specified, page 26.
4. The front axle is filled to correct level when the oil level is between the mark and lower end of the stick. Do not fill beyond the mark on the stick, as the front axle will be overfilled.
5. Install the dipstick/filler plug.

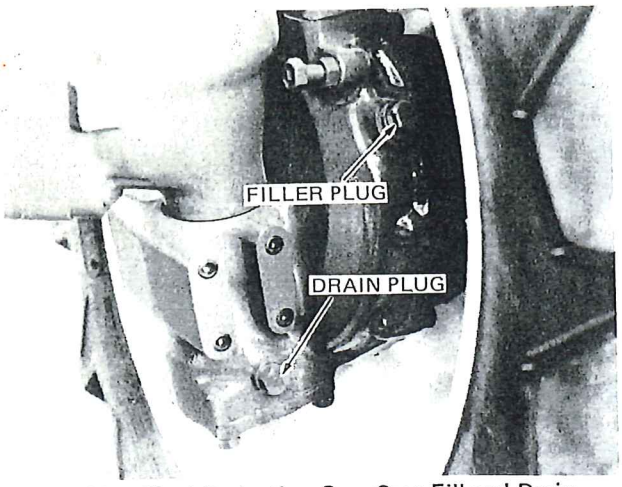


Figure 51 — Final Reduction Gear Case Fill and Drain Plugs

GENERAL MAINTENANCE

TURBO-CHARGER SYSTEM (SP6000, , SP6040)

This tractor is equipped with Turbo-Charger System. For obtainning maximum efficiency and service life from Turbo-Charger, be careful in maintenance.

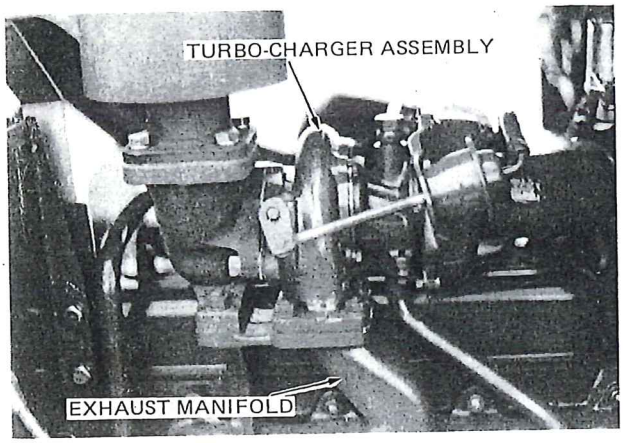


Figure 52 — Turbo-Charger

PRECAUTIONS FOR OPERATION OR TRACTOR

1. Never fail to warm up the engine for 5 to 10 minutes.
   In cold districts, warm up the engine for a longer time to warm the oil for smooth flow before starting the works.
2. The turbine continues to rotate for a while after the engine is stopped. Therefore, if the engine is stopped suddenly, the turbine rotates at a high speed with no lubricant oil supplied, giving damages to bearings or other parts, reducing their life, or causing serious accidents. Stop the engine after idling operation for about 5 minutes.
3. The turbo-charger utilizes oil from the engine (crankcase for lubrication). Be sure to keep the engine oil at a proper level. Replace the oil and oil filter securely according to the Lubrication Chart on page 23 or 24.
4. When the loading changes rapidly, black smoke will be generated for a short time but disappear in some seconds. This is due to time lag because the turbine is driven with the exhaust gas to pressure-feed the air increasing the fuel rate.
   If a too large load is given to the engine before the turbine function fully, the black smoke may not disappear and the engine may stop. To prevent this, decrease the load. Keep the engine speed 2200 rpm or more since the turbo-charger has been set to function sufficiently at such the engine speed.

COOLING SYSTEM

The cooling system in your SHIBAURA Tractor has been filled with one year life antifreeze.

To obtain maximum efficiency and service life from the engine, it must operate at the correct temperature. This is dependent on the cooling system. The system should be kept filled with a 50/50 solution of permanent antifreeze and clear water.

Checking Coolant Level: Check the coolant level daily or every 10 hours. This check should be made when the engine is cold.

1. Remove the radiator cap and visually check the level of the coolant.

WARNING: The cooling system operates under pressure which is controlled by the radiator cap. It is dangerous to remove the cap while the system is hot. Always cover the cap with a thick cloth and turn the cap slowly counterclockwise to the first stop. Allow all pressure to escape before removing the cap completely.

2. If the coolant level is more than 4 to 5 cm below the bottom of the filler neck, add clean water or antifreeze solution as necessary. If the cooling system already contains antifreeze, add only antifreeze solution of the correct water/antifreeze mixture. Plain water will dilute the solution and weaken its protection.

IMPORTANT: Alcohol-type antifreeze is not recommended. Do not mix alcohol-type solution with permanent antifreeze.

3. Keep the radiator fins clear of chaff or dirt to allow free passage of air.

Draining and Flushing the Cooling System: Drain and flush the radiator and engine block every 12 months. Refill with a 50/50 mixture of long-life antifreeze, or equivalent, and clear water.

To Drain the System:

1. Remove the radiator cap and open the drain valve at the engine block. The engine block drain valve is located on the left side of the engine. Figure 54.
2. After the coolant has drained, place a water hose in the radiator filler neck and run water through the system with the engine running. Make sure water is draining from block drain valve before starting engine. When the water flowing from the drain valve is free of discoloration and sediment, stop the engine and remove the hose. Allow all water to drain from the system through drain valves.
3. Close the drain valve and slowly refill the system with a 50/50 solution of permanent antifreeze and clean water. Full until the coolant level is approximately 4 to 5 cm below the bottom of the fillter neck. Do not fill beyond this level.

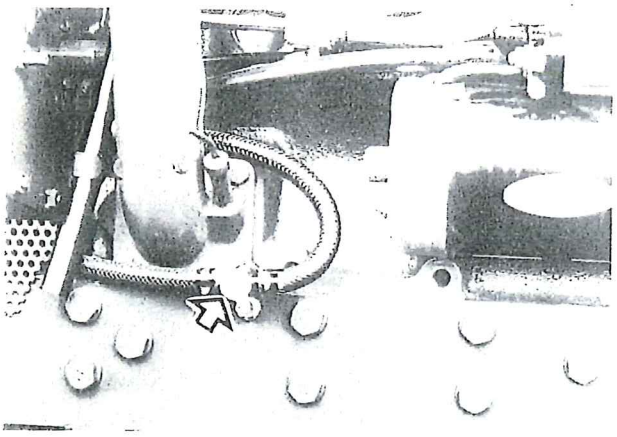


Figure 54 — Engine Block Drain Valve

4. Clean the radiator cap and cap seal. Install the cap.
5. Clean the radiator front screen, Figure 55. In fields with much dust, or during works at night, the radiator screen may be clogged with seeds of grass or worms. Before starting the engine, check and clean if clogged remarkably. Clogged screen may cause the overheat of the engine. In such a case, remove the mounting wing bolt at the lefthand and upside, and slide out the radiator screen leftward, then clean it.
6. Run the engine until normal operating temperature is reached, then stop the engine and recheck the coolant level. Add coolant as required.

IMPORTANT: Never run the engine when the cooling system is empty, and do not add cold water or cold antifreeze solution if the engine is hot.

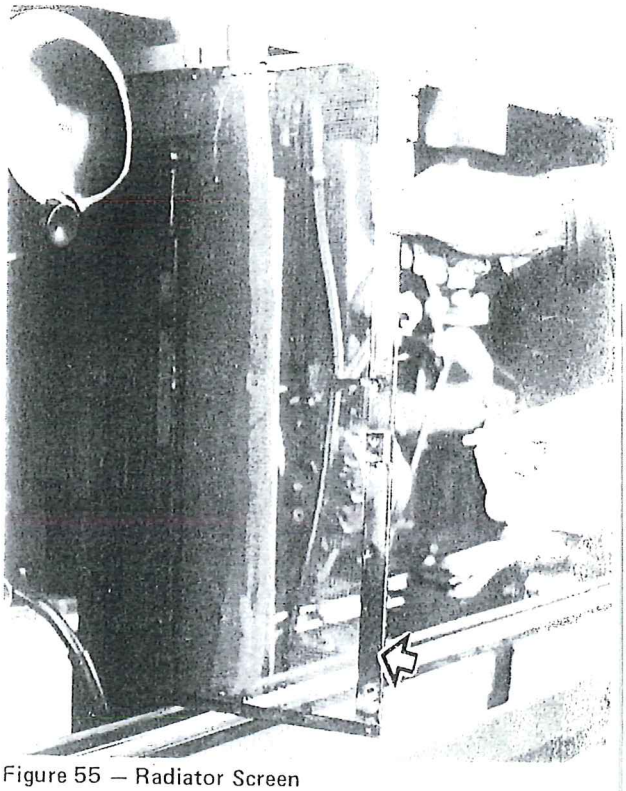


Figure 55 — Radiator Screen

Thermostat: The thermostat is located in the coolant outlet connection in the front of the cylinder head, Figure 56.

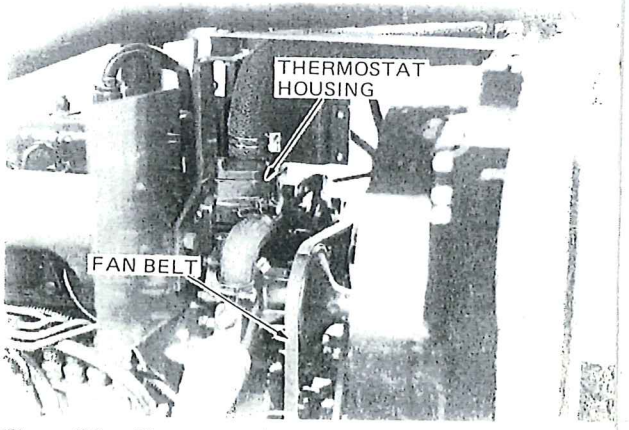


Figure 56 — Thermostat Housing

When the engine is cold, the thermostat, which is a heat sensitive valve, shuts off the flow of coolant to the radiator, thus allowing rapid engine warm up. A recirculating by-pass allows the coolant to circulate within the engine whenever the thermostat shuts off flow to the radiator.

IMPROTANT: Do not remove the thermostat in an attempt to improve the cooling. This will cause the engine to run below normal working temperatures, resulting in excessive engine wear.

If it ever becomes necessary to install a new thermostat, it should be positioned in the recess of the water outlet connection so that the heat element (spring end) will be in the cylinder head of the engine.

Fan Belt: A belt-driven fan at the front of the engine draws air through the fins of the radiator to cool the coolant in the radiator. A slipping fan belt will lower the efficiency of the fan, resulting in the engine running too hot. If the belt is too tight, it will shorten the alternator bearing life. A correctly tightened belt will deflect 10 to 15 mm when 9 to 11 kg thumb pressure is applied midway between the belt pulleys. Check the condition and tension of the fan belt every 200 hours. If the belt shows signs of cracking or fraying, install a new belt.

To Adjust Belt Tension:

1. Loosen the alternator mounting bolts, Figure 57.

WARNING: Never attempt to loosen or tighten the bolts when the engine is running.

2. Pry the alternator away from the engine and tighten the mounting bolts.
3. Recheck belt deflection.

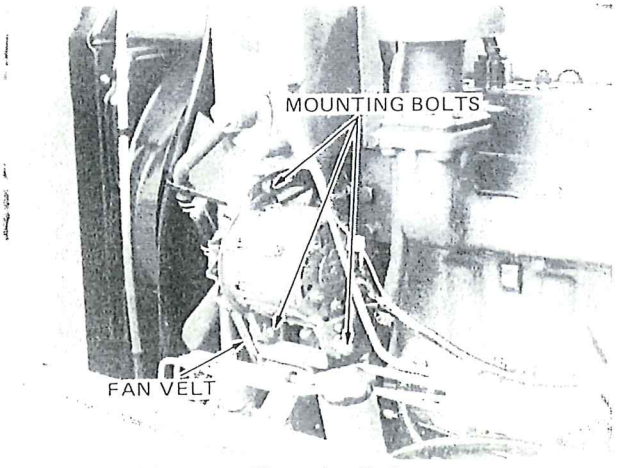


Figure 57 – Alternator Mounting Bolts

FUEL INJECTOR REMOVAL AND INSTALLATION

The injectors should be cleaned, tested, and adjusted every 600 hours. Do not disassemble or adjust the injectors yourself. Remove them from the tractor engine and have them serviced by your SHIBAURA Tractor Dealer.

To remove the injectors:

1. Clean all loose dirt from around the injectors and lines. Disconnect the leak-off lines from the injectors, Figure 58.
2. Disconnect the injection pump lines at the pump and injectors. Cover the ends of the lines and the injector inlet and leak-off ports to prevent the entry of dirt.
3. Remove and discard the copper injector sealing washers from the injector locating bores. If a spare set of injectors is not immediately available, cover the bores to prevent the entry of dirt.

After the injectors have been serviced, install them as follows:

1. Install a new copper sealing washer in each injector locating bore. Install the injectors and tighten the retaining nuts to 6 – 7 kg-m.

IMPORTANT: Do not overtighten the retaining nuts. Overtightening may distort the injector.

2. Install the injector lines.
   Tighten the fittings at the injection pump to 2.5 – 3 kg-m.

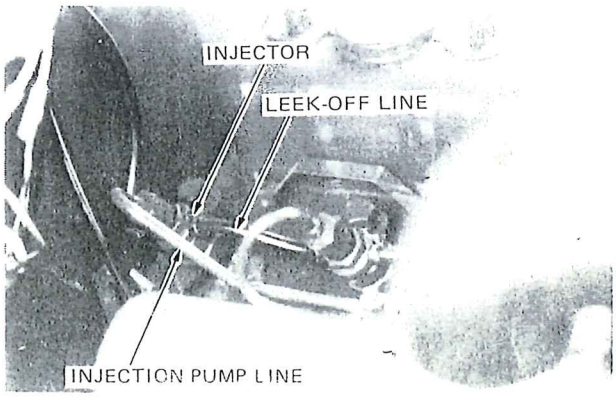


Figure 58 – Fuel Injector Leak-off Line

3. Install the leak-off line, Figure 58. Tighten the leak-off line nuts to 3 – 4 kg-m.

4. Bleed the fuel system as covered under "Bleeding the Fuel System," page 28. Tighten the injector fittings.

ENGINE SPEED ADJUSTMENT

The adjustment for maximum no-load speed setting should be adjusted according to the following procedures.

1. Loosen the lock nuts, Figure 59.

2. Pull the hand throttle lever fully.

3. Keep the foot throttle pedal at the same level as the upper surface of step plate.

   IMPORTANT: Do not depress the foot throttle pedal below the level of upper surface of the foot step plate.

4. Adjust the length of the hand throttle wire using the turnbuckle so that the throttle lever on the injection pump may be in contact with the maximum no-load speed stopper.

5. Adjust the length of the foot throttle wire as same as the adjustment of the hand throttle wire.

6. Move the hand throttle lever forward fully and release the foot throttle pedal to return to the idle position.

7. Check the maximum and idle speeds to be as follow;
   Maximum No-Load Speed
   SP5000/SP5040 – 2750 ~ 2800 rpm
   SP6000/SP6040 – 2650 ~ 2700 rpm
   Idle speed – 750 ~ 800 rpm

8. Retighten the lock nuts.

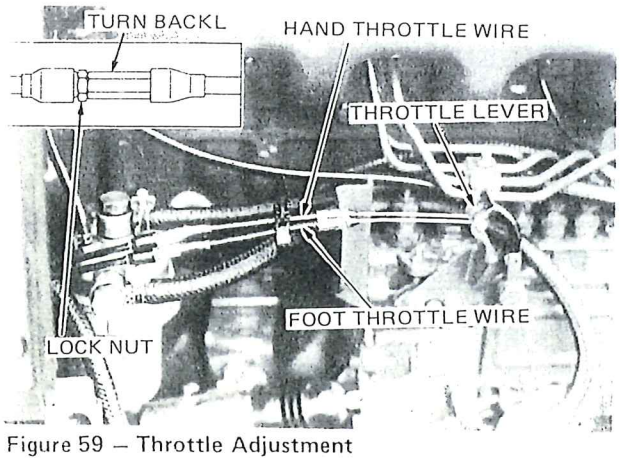


Figure 59 – Throttle Adjustment

VALVE CLEARANCE (LASH)

Correct valve clearance is one of the most important factors of good engine performance. Excessive clearance will cause the engine to operate excessively noisy, and insufficient clearance will cause poor performance. Because of this, it is extremely important that care be used when adjusting the valve clearance.

Checking and Adjusting Valve Clearance: Check and adjust the valves every 600 hours. The clearance check and adjustment should be made with the engine cold.

1. Remove the valve rocker arm cover.

2. Check the clearance of each valve with the feeler gauge, Figure 60.

The setting should be:
Intake 0.3 mm
Exhaust 0.3 mm

3. If the clearance is incorrect on any valve, turn the adjusting screw at the push rod end of the valve rocker arm either into or out of the arm while checking for correct clearance with the feeler gauge.

4. Install the rocker arm cover. Use a new gasket if the old one is damaged. Tighten the cover bolts evenly.

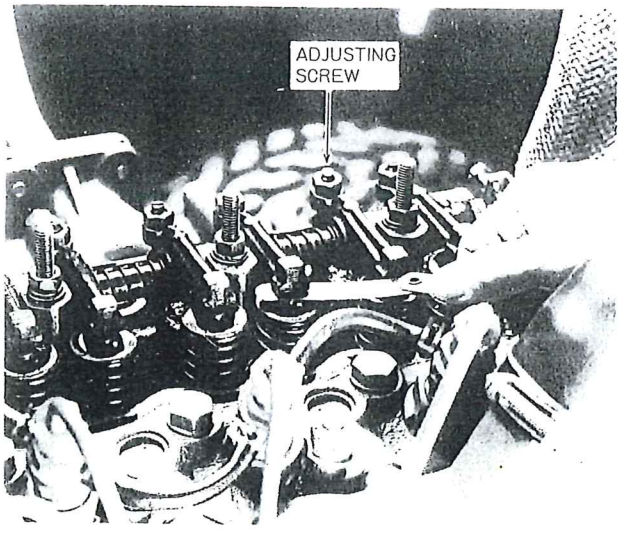


Figure 60 – Checking Valve Clearance

BATTERY

Keep the battery connections tight free of corrosion. An ammonia or baking soda-water solution is good for washing the outside surface and

terminals of the battery. Make sure the solution does not enter the battery. After cleaning, wash the battery with clean water. Apply a small amount of petroleum jelly to the terminals to protect them from corrosion.

In freezing temperatures, the battery must be maintained in good state of charge. When a battery is discharged or run down, the electrolyte is weak and may freeze, causing damage to the case. If it becomes necessary to add water (distilled), it should be done just before using the tractor so the charging will mix the water with the electrolyte and prevent the water from freezing.

Determine the battery charge by checking the specific gravity of the electrolyte.

Checking Electrolyte Level: Check the electrolyte level in the battery every 50 hours.

WARNING: When the alternator is changing, an explosive gas is produced inside the battery. Therefore, always check the electrolyte level with the engine stopped. Do not use an exposed flame and do not smoke when checking the battery electrolyte level.

1. Clean the top of the battery, then remove the vent plugs.
2. If the electrolyte level is low, add distilled water. The level is correct when the liquid is 10 mm above the plates.

   NOTE: Keep distilled water in a clean, well-covered, non-metallic container.
3. Install the vent plug after making sure the vent holes are not blocked. At below freezing temperatures, be sure to run the engine for a period of time, after adding water, so the battery will charge and prevent the water from freezing.

ALTERNATOR

The alternator, Figure 61, is belt-driven from the engine crankshaft pulley. It is important that belt slippage does not occur, otherwise, the charging rate will be affected. Details of belt adjustment are given on page 35.

Other than belt adjustment, the only maintenance required on the alternator is to periodically inspect the terminals and keep them clean and tight. The alternator cooling fan should also be cleaned periodically.

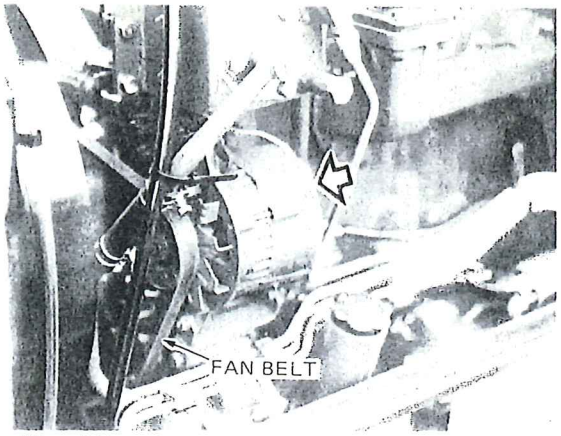


Figure 61 – Alternator

When working on or checking the alternator, comply with the following precautions to prevent alternator damage.

- DO NOT, under any circumstances, short the FIELD terminal of the alternator to ground.
- DO NOT disconnect the alternator output lead or battery cables while the alternator is operating.
- DO NOT remove the alternator from the tractor without first disconnecting the negative (–) battery cable. If the battery is to be removed, disconnect the negative cable first.
- If battery is being installed, MAKE CERTAIN that the positive (+) cable is connected first and that the negative terminal is connected to ground. Reverse polarity will destroy the rectifier diodes in the alternator.

FUSE BOX

The fuse box is shown in Figure 62. Remove the fuse box cover which is easily removed by pulling it off. Always replace blown fuses with the specified fuse.

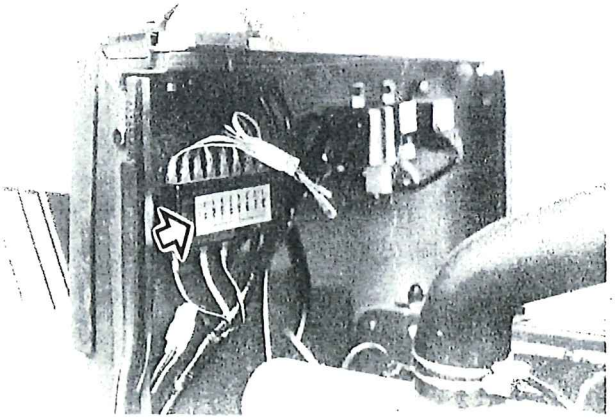


Figure 62 – Fuse Box

FUSIBLE LINK

The fusible link is shown in Figure 63. It functions just like a fuse, protecting wiring except the battery cable. When the fusible link is broken, all electrical systems cease to work.

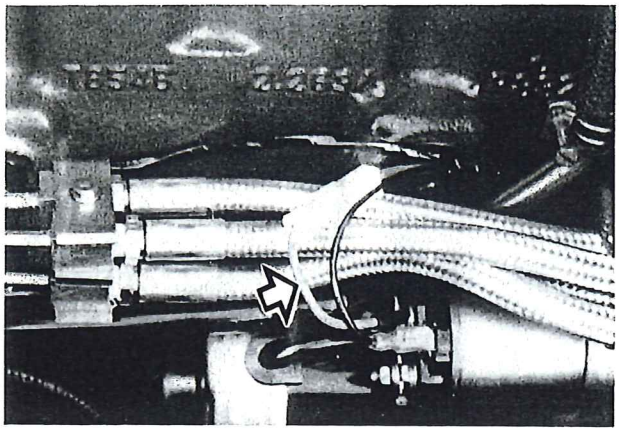


Figure 63 – Fusible Link

IMPORTANT: If a new fuse or fusible link is blown as soon as it has been replaced, the wiring is short-circuited anywhere. Investigate the cause and replace a new fuse or fusible link specified.

WARNING: Never use a wire or else instead of the fuse or fusible link specified. It is important to prevent an accident of fire.

HEADLAMPS

Should a headlamp failure occur, the bulb must be replaced:
To change the bulb:

1. Remove the left (or right) side hood.
2. Remove the headlamp wiring assemblies from clamps and disconnect wiring assembly, if necessary.
3. Slide rubber boot back off the lamp socket, Figure 64.
4. Push in the spring retainer with one hand to release bulb from retainer tabs.
5. Position a new bulb to socket, making sure that contacts will properly mate. The retaining tabs will only line up one way. Rotate the bulb until tabs are properly aligned. Twist the bulb pushing spring retainer.

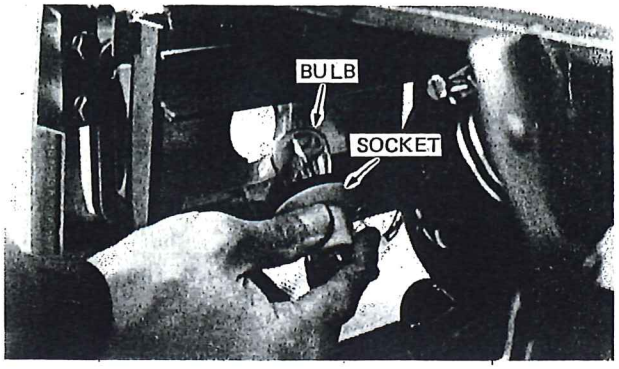


Figure 64 – Headlamp Assembly

WARNING LAMPS

When the warning lamps blow out, replace the bulbs in the following procedure.

1. Loosen the screws setting the instrument panel.
2. Remove the cover at the back of the instrument panel.
3. Pull the lead wire of the lamp holding the root, and then the bulb is taken out.

NOTE: It is recommended that your SHIBAURA tractor dealer services the tractor in replacing these bulbs.

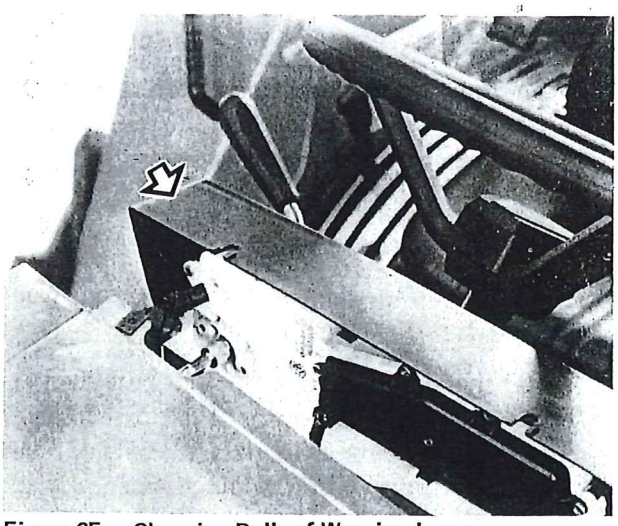


Figure 65 – Changing Bulb of Warning Lamp

TURN SIGNAL LAMPS, BRAKE LAMPS, TAIL LAMPS and LICENSE LAMP

To replace lamps bulb:

1. Remove the lens, then remove the bulb.
2. Install a new bulb and reinstall the lens and/or rim assembly.

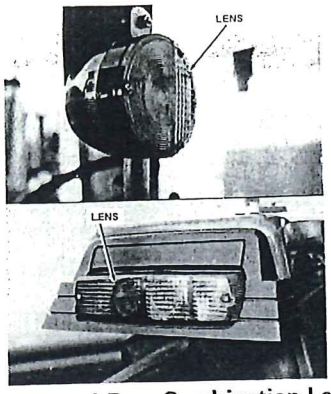


Figure 66 — Front and Rear Combination Lamps

TIRES

Check tire pressure every 50 hours, or weekly. Refer to the "Tire inflation vs. Permissible Load" table on page 22 for the air pressure that should be used.

When checking tire pressure, inspect the tire for damaged side walls and tread cuts. Neglected damage will lead to early tire failure.

WARNING: Inflating or servicing tires can be dangerous. To avoid possible injury, follow the safety precautions below.

- Use a clip-on tire chuck with a remote hose and gauge which allows the operator to stand clear of the tire while inflating it.
- Do not inflate a rear tractor tire over 1.6 kg/cm^2.
- Do not inflate a tire unless the rim is mounted on the tractor or is secured so that it will not move if the tire or rim should suddenly fail.
- Do not re-inflate a tire that has been run flat or seriously under-inflated until the tire has been inspected for damage by a trained person.
- Do not weld, braze, otherwise repair, or use a damaged rim.

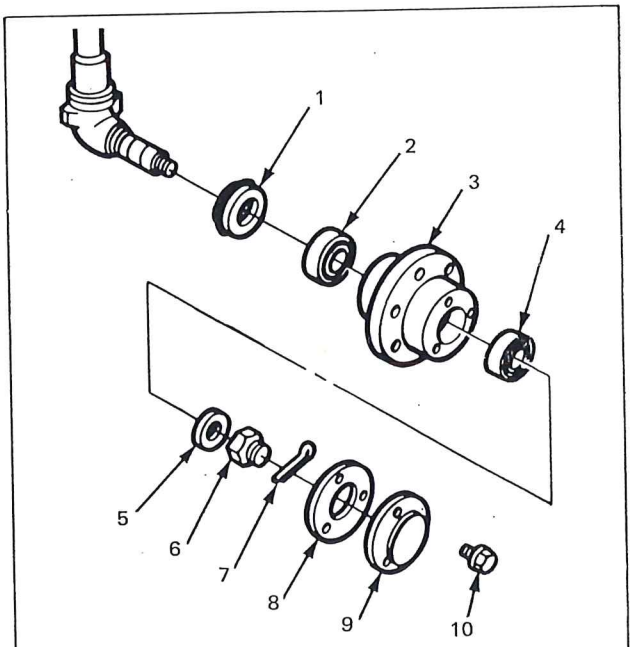
FRONT WHEEL BEARINGS

(TWO-WHEEL DRIVE SP5000, SP6000)

The front wheels are carried on the wheel spindles by inner and outer tapered roller bearings. An oil seal is provided at the inner end of the spindle, and a hubcap at the outer end, to retain the lubricant and to keep out dirt and other foreign material.

Front wheel bearings should be repacked every 600 hours as follows:

1. Apply the parking brake to hold the tractor securely.
2. Jack up one of the front wheels and remove the hubcap, the cotter pin and the nut, Figure 67. Remove the spacer, outer bearing, and then the complete wheel assembly.
3. Remove the oil seal from the rear of the hub and the inner bearing from the wheel.
4. Thoroughly clean all parts in a suitable solvent and allow to dry naturally. Do not use compressed air. Inspect the bearing cone and roller assemblies for excessive discoloration, pitting, or wear of the rollers; similarly, check the bearing cups.



1. OIL SEAL
2. INNER BEARING
3. HUB
4. OUTER BEARING
5. SPACER
6. CASTELLATED NUT
7. COTTER PIN
8. GASKET
9. HUB CAP
10. BOLT

Figure 67 — Servicing Front Wheel Bearing-Two-Wheel Drive (SP5000 and SP6000)

5. Repack the cone and roller assembly with clean, short-fiber grease. Pack approximately 7 mm of grease in the space between the bearing cups in the hub, but do not pack the hub completely. Apply a film of grease on the surface of the spindle.
6. Reinstall the inner bearing and the oil seal in the rear of the hub.

7. Place the wheel assembly on the spindle and install the outer bearing, spacer, and castellated nut. Tighten the nut, at the same time turning the wheel, until a slight drag is felt. Back off the nut until the nearest slot in the nut lines up with the hole in the spindle. Install a new cotter pin, a new gasket, then the hubcap.

STEERING WHEEL FREE PLAY

Steering wheel play in the direction of rotation should be between 20 — 50 mm as shown in Figure 68.

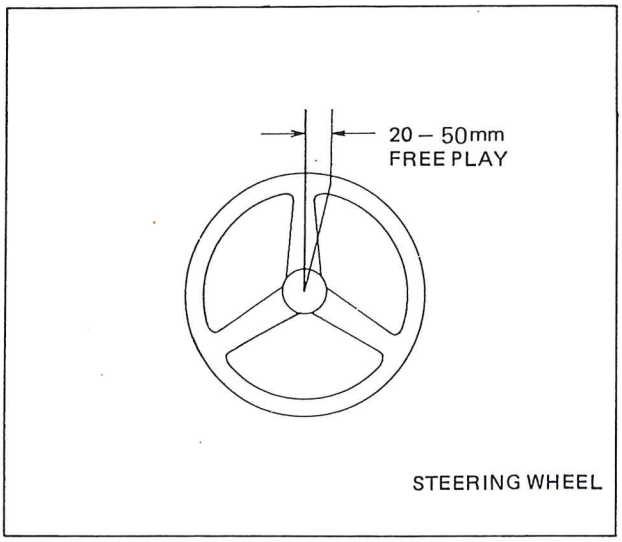


Figure 68 — Steering Wheel Free Play

FRONT WHEEL TOE-IN

Front wheel toe-in adjustments on your tractor were made at the factory. Normally, the wheels maintain their toe-in; however, an occasional check should be made.

Checking Toe-In:

1. Determine the straight-ahead position by turning the steering wheel from lock to lock and then halfway back. After rolling the tractor forward with the front wheels in the straight-ahead position, mark the front of the wheels (not the tires) at wheel hub height, Figure 69.
2. Measure and record the distance between the front the wheels at the marks, then push the tractor forward until marks are at wheel hub height on the rear of the wheel.
3. Measure and record the distance between the marks at the rear of the wheels.
4. The difference between the dimensions recorded in item 2 and 3 should give (0 — 5 mm) toe-in. The distance between the marks on the wheels should be 0 — 5 mm greater when the marks are at the rear than at the front.
5. If the toe-in is not correct, adjust as outlined in the following procedure.

Adjusting Toe-in:

1. Loosen the tie rod locknut.
2. Adjust the tie rod tube assembly as required to give 0 — 5 mm toe-in.
3. After the correct toe-in is obtained, tighten the tie rod locknut. Also tighten the tie rod and assembly with mouting bolts.

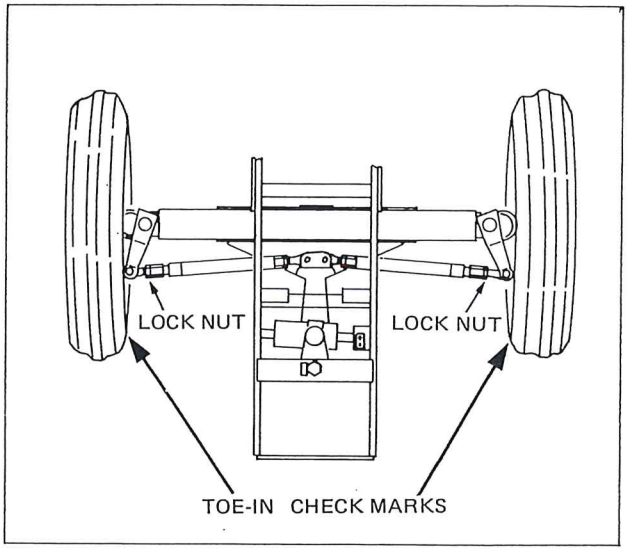


Figure 69 — Checking Toe-In

BRAKE ADJUSTMENT

Whenever the brake pedal travel becomes excessive, or if the travel of one pedal is unequal to that of the other, adjustment of each pedal should be made in the following procedure:

1. Jack the tractor up until both rear wheels are free to turn. Support with safety stands.
2. Loosen the locknut, Figure 70, and rotate the brake rod as necessary until there is 60 — 80 mm of pedal free play.
   Lengthening the rod increases free play while shortening the rod decreases free play.

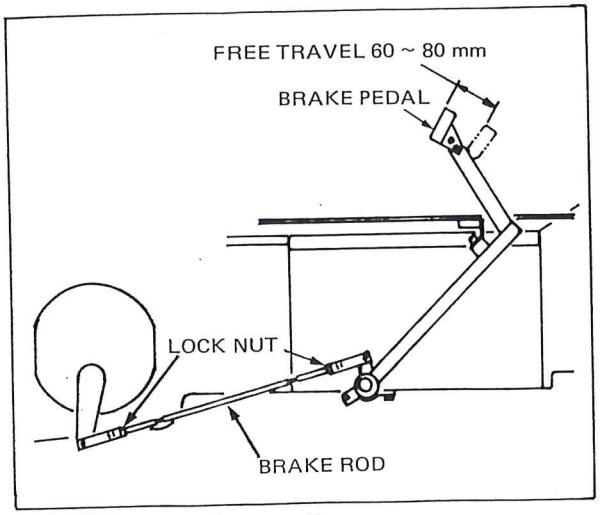


Figure 70 — Brake Pedal Adjustment

3. Test drive the tractor to make sure the braking action of both rear wheels is equal. Readjust as necessary.

PARKING BRAKE ADJUSTMENT

The parking brake control always should be adjusted correctly for the sake of safety, according to the following procedures;

1. Loosen the locknut in Figure 71.
2. Adjust the length of parking brake wire not to be loose without moving the brake pedal and fasten the wire with the locknut.
3. When the parking brake lever is pulled up, adjust the parking brake lamp switch with two locknuts so that the lamp may go out. And when the parking brake lever is pushed down, also adjust the switch so that the lamp may come on.

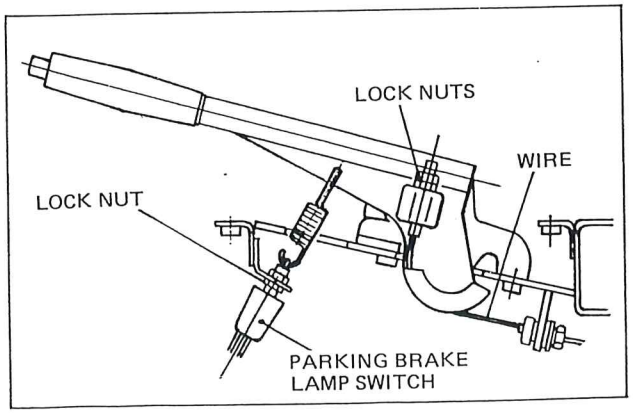


Figure 71 — Parki. J Brake Adjustment

CLUTCH PEDAL ADJUSTMENT

To obtain maximum clutch life, it is essential that the clutch pedal free travel be checked every 50 hours so as to maintain free travel be at 30 — 40 mm, Figure 72.

1. Remove the cotter pin and clevis pin.
2. Turn the clevis to increase or decrease pedal travel as required.

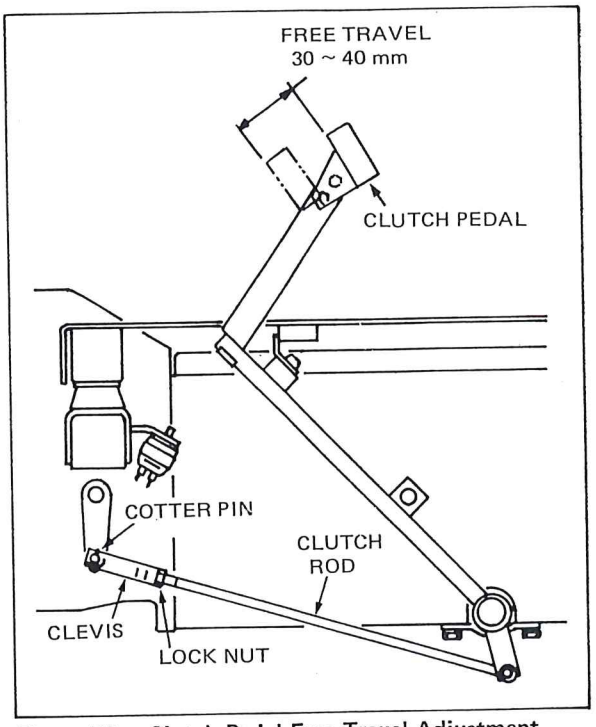


Figure 72 — Clutch Pedal Free Travel Adjustment

TRACTOR STORAGE

Tractors that are to be stored for an extended period should be protected during storage. The following is a suggested list of operations to be carried out.

1. Thoroughly clean the tractor. Use touch-up paint where necessary to prevent rust.
2. Check the tractor for worn or damaged parts. Install new parts as required.
3. Raise the lift arms hydraulically to their fully raised position so the lift piston is in a fully extended position. This fills the cylinder with oil and will protect the cylinder wall surfaces from corrosion.
4. Lubricate the tractor. Drain and refill the transmission, hydraulic system and rear axle with new oil. Drain the engine oil and refill with new lubricating oil. Also clean the air cleaner.
5. If the tractor is stored or removed from operation for an extended period, special precautions should be taken to protect the fuel injection pump and the injector nozzles against corrosion and gumming during the storage period.

- Before storing, the fuel system should be flushed with a special oil, a quantity of which will remain in the system when the engine is shut down for storage.
- Special diesel fuel system flushing oils are available from most oil companies. If special flushing oil is not readily obtainable, mix 0.3 liters of SAE 10 non-detergent engine oil with 6 liters of No. 2 diesel fuel.
- Drain the fuel tank and pour 6 liters of the special flushing oil (or lubricating mixture) in the fuel tank.
- Run the engine for 10 minutes to ensure complete distribution of the special oil through the injection pump and fuel injectors. There is no need to remove the injector nozzles.
- Fill the fuel tank with No. 1 diesel fuel.

IMPORTANT: Do not use No. 2 diesel fuel for winter storage because of wax separation and setting at low temperatures.

6. Drain the radiator and engine block. Flush the system, close the drain valves, and fill with a 50/50 solution of permanent antifreeze and clear water.
7. Remove the battery and clean it thoroughly. Be sure that it is fully charged, and that the electrolyte is at the proper level. Place it in storage in a cool, dry place above freezing temperature. The battery should be charged periodically during storage.
8. Place blocking under the tractor axles to remove the weight from the tires.
9. Cover the exhaust pipe opening.
10. Set the lock lever after depressing the clutch pedal completely to separate the clutch disc from the fly wheel, Figure 73.

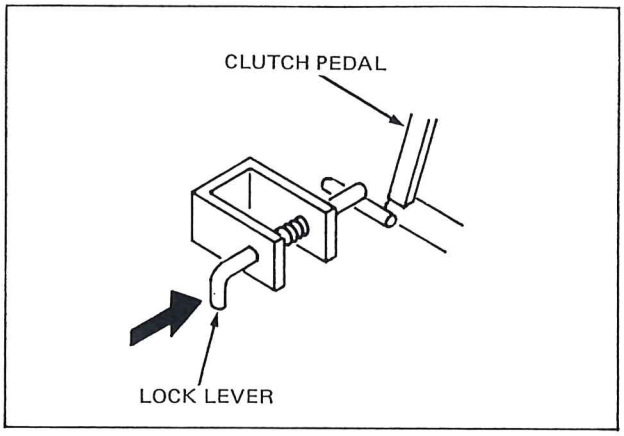


Figure 73 — Setting the Lock Lever of Clutch Pedal

Tractors that have been placed in storage should be completely serviced in the following manner before using:

1. Inflate the tires to the recommended pressures, and remove the blocking.
2. Check the oil level in the engine crankcase, the common sump (for the hydraulic lift, transmission, rear axle), power steering and optional front wheel drive axle.
3. Install a fully charged battery and remove the exhaust cover, if other than a rain cap.
4. Check the cooling system. The system should be filled with a 50/50 solution of permanent anti-freeze and clear water.
5. Disengage the lock lever of clutch pedal by depressing the clutch pedal, Figure 73.
6. Start the engine and allow it to idle a few minutes. Be sure the engine is receiving lubrication and that each control is functioning correctly.
7. Drive the tractor without a load and check to be sure it is operating satisfactorily.

GENERAL TORQUE SPECIFICATION TABLE

USE THE FOLLOWING TORQUES WHEN SPECIAL TORQUES ARE NOT GIVEN

Bolt size	Bolt Head Identification Marks as grade	Coarse thread		Fine thread	
		Pitch (mm)	Torque (kg-cm)	Pitch (mm)	Torque (kg-cm)
M6	4T ⬡ (4)	1.0	50 – 70	–	–
	7T 8T (7) (8)		85 – 115		–
	10T (10)		120 – 160		–
M8	4T	1.25	130 – 170	1.0	155 – 205
	7T 8T		230 – 290		270 – 360
	10T		290 – 370		310 – 410
M10	4T	1.5	260 – 340	1.25	290 – 370
	7T 8T		450 – 570		500 – 640
	10T		550 – 710		590 – 750
M12	4T	1.75	380 – 480	1.25	440 – 560
	7T 8T		570 – 850		760 – 960
	10T		940 – 1180		1010 – 1290
M14	4T	2.0	640 – 820	1.5	710 – 890
	7T 8T		1060 – 1340		1190 – 1510
	10T		1420 – 1780		1500 – 1900
M16	4T	2.0	880 – 1120	1.5	930 – 1170
	7T 8T		1520 – 1880		1600 – 1960
	10T		2100 – 2600		2250 – 2750
M18	4T	2.0	1160 – 1440	1.5	1340 – 1660
	7T 8T		2000 – 2400		2350 – 2850
	10T		2800 – 3400		3050 – 3750

SPECIFICATIONS

The specifications on the following pages are provided for your information. For additional information, see your SHIBAURA Dealer.

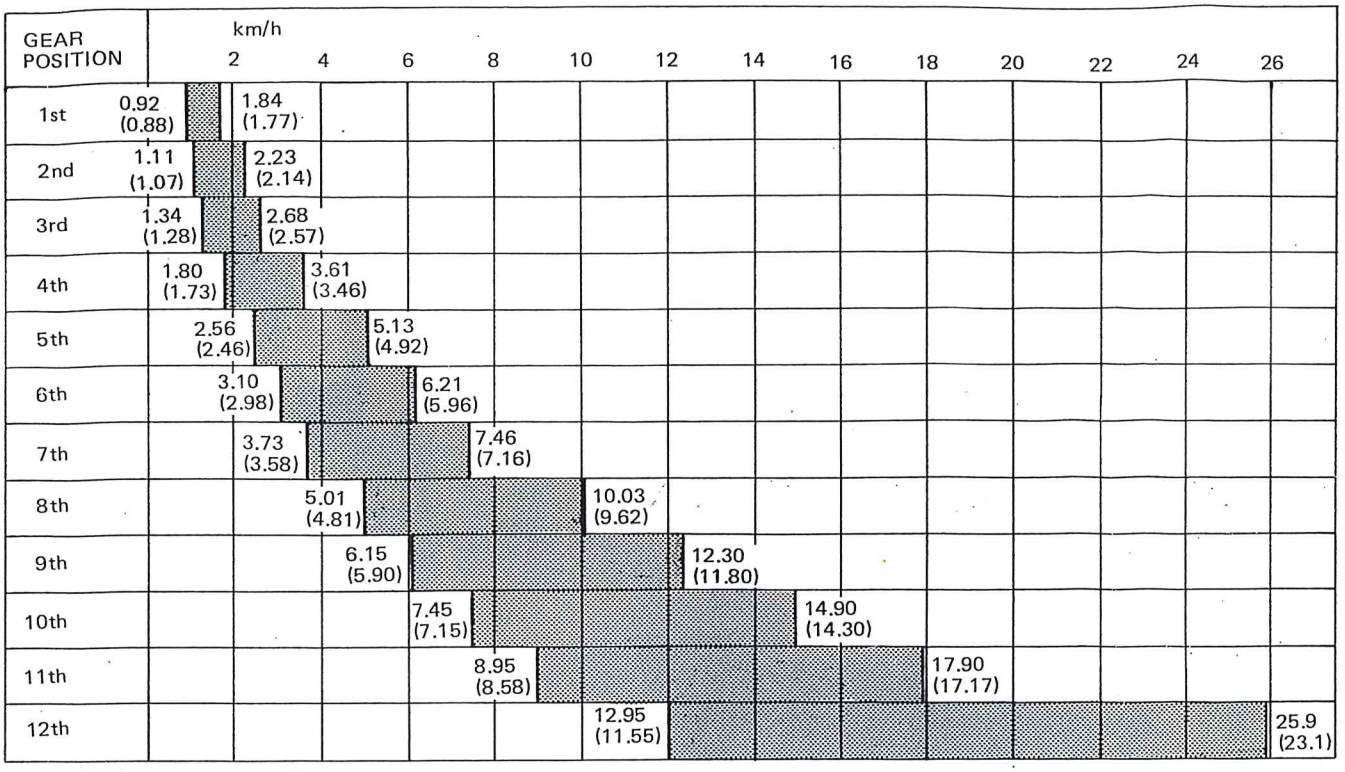
Properly Maintained Equipment is Safe Equipment

"SHIBAURA, whose policy is one of continuous improvement, reserves the right to make changes in design and specifications at any time without notice and without obligation to modify units previously built."

SPECIFICATIONS

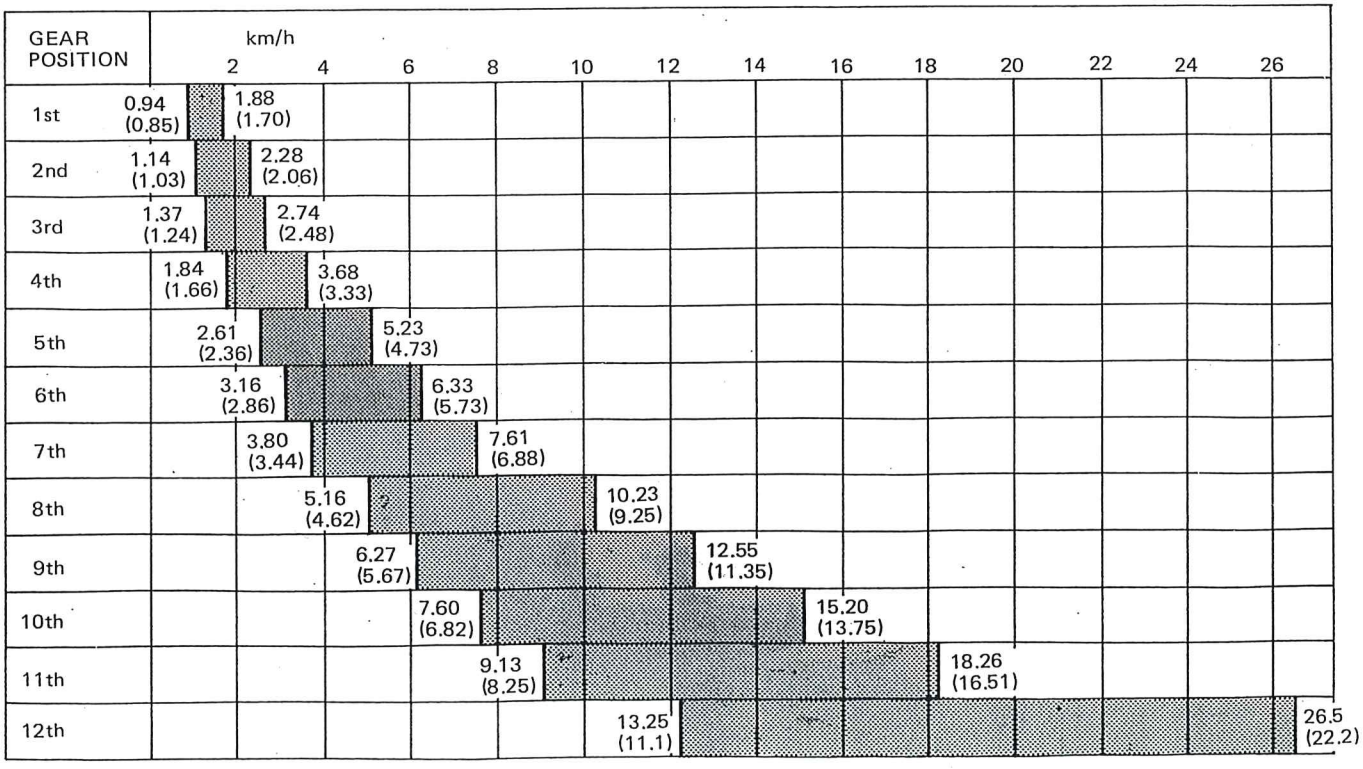
Model			SP5000	SP5040	SP6000	SP6040
Drive			2 Wheel Drive	4 Wheel Drive	2 Wheel Drive	4 Wheel Drive
Dimensions	Overall Length (mm)		3560			
	Overall Width (mm)		1670			
	Overall Height (mm)		2140		2310	
	Wheel Base (mm)		1960			
	Tread	Front (mm)	1240 – 1850 (7st.)	1340	1240 – 1850 (7st.)	1340
		Rear (mm)	1240 – 1945 (8 stages)			
	Min. Ground Clearance (mm)		440	365	440	385
	Min. Turning Radium	WO/Brake (mm)	3100	3600	3100	3600
		W/Brake (mm)	2800	2800	2800	2800
Engine	Model		T854B		TB54B-T1 (TURBO)	
	Type		4-Cycle Water Cooled Vertical Diesel Engine			
	No. of Cylinder (Bore x Stroke)		4 (85 x 100)			
	Compression Ratio		21.0			
	Total Displacement (cc)		2269			
	Max. bare output: ps		50		60	
Chassis	Clutch		Dry Single Disc			
	Transmission		Slide Mesh, Synchro Mesh			
	Braking System		Wet Disc			
	Differential Lock		Standard			
	Tire	Front	6.50 – 16 6PR	8.3 – 20 4PR	6.50 – 16 6PR	9.5 – 20 4PR
		Rear	12.4 – 32 6PR			
Weight (kg)			1780	1910	1800	1930 + blade
P.T.O.	Shaft Size		1-3/8 in. (ϕ35 mm), 6 teeth splines			
	Direction of Revolution		Clockwise			
	Speeds (rpm/Engine rpm)		609, 751, 1189, 1418/2600		585, 790, 1250/2500	
Control System			Hydraulic Position and Draft Control			
Max. Lifting Capacity (kg)			2075			
Hydraulic Pump			Gear Pump			
Capacity	Fuel Tank (ℓ)		55			
	Engine oil (ℓ)		9.5			
	Coolant (ℓ)		8		10	
	Transmission (Hydraulic) (ℓ)		33			
	Front Axle (ℓ)		–	5	–	5
	Power Steering Reservoir (ℓ)		2			
Alternator (V.A.)			12V 35A			
Battery (V. AH)			12V 100AH			
3-point linkage			Standard, category 1			
Speeds	Forward (km/h)		1st – 12th 1.84 – 25.90		1st – 12th 1.88 – 26.50	
	Reverse		1st – 12th 1.77 – 23.10		1st – 12th 1.70 – 22.21	
	Creeper Speed		Optional			
	Forward (Creeper)		1st – 12th 0.17 – 2.28		1st – 12th 0.18 – 2.32	
	Reverse (Creeper)		1st – 12th 0.16 – 2.18		1st – 12th 0.16 – 2.10	

SP5000, SP5040 GROUND SPEEDS FROM 1300 to 2600 RPM ENGINE SPEED



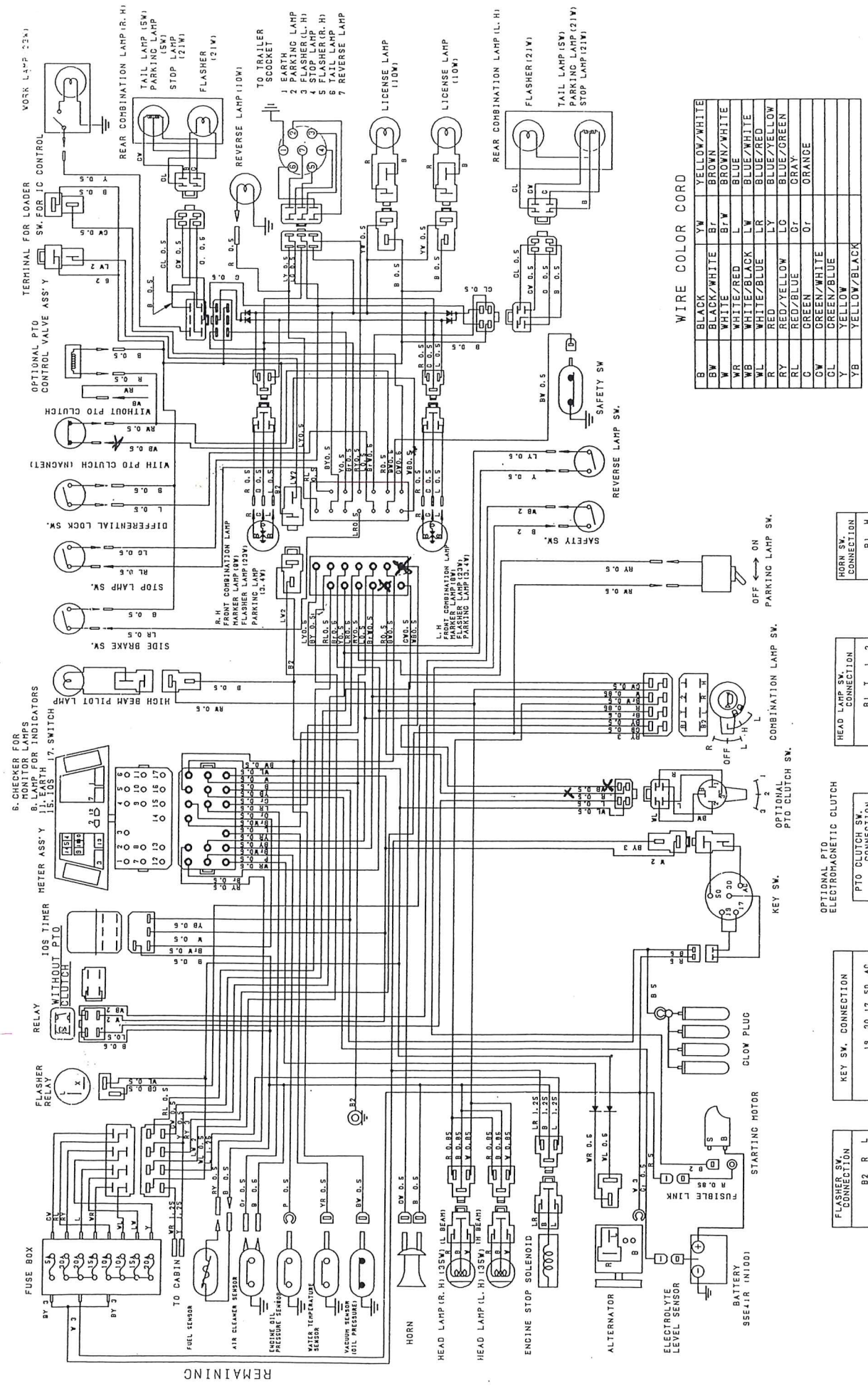
( ) REVERSE SPEEDS

SP6000, SP6040 GROUND SPEEDS FROM 1250 TO 2500 RPM ENGINE SPEED



( ) REVERSE SPEEDS

WIRING DIAGRAM



SAFETY AND INSTRUCTION DECALS

In the event that decals become damaged or illegible, they should be replaced with new decals at their original position.

⚠ WARNING

CAUTION FOR ROAD RUNNING

1. When running on the road, be sure to connect the right and left brake pedals to each other previously. Also, during the running, keep the PTO lever at the NEUTRAL position, and do not use the differential lock pedal.
2. On a downhill, do not depress the clutch pedal but use the accelerator lever instead to reduce the running speed for the purpose of using the engine brake.
3. When starting on the road(including a place other than the regular road), first confirm the environmetal saftey to then slowly release the clutch pedal for the accleration simultaneously enforced and subsequently increased gradually.

CAUTION FOR OPERATION

1. When operating the tractor, have a previous knowledge of all the operating procedures and safety precautions described in the OPERATOR'S MANUAL.
2. When starting the engine, use the operator seat only and set the transmission in Neutral previously. Also, at this time, keep the PTO disengaged and the hydraulic controls placed each in the lowered position.
3. For the avoidance of any upset, slow down on turns, rough roads and slopes.
4. Authorize no person but the specified operator for the riding on the tractor. There is no safe place for irregular riders.
5. Before leaving the tractor seat, be sure to lower the equipment, place the gear shift levers in Neutral, stop the engine and apply the parking brake properly.
6. For the details of the maintenance of the safety and performance, refer to the OPERATOR'S MANUAL supplied.

390193210

WARNING — CAUTION FOR ROAD RANNING
PART NO. — 390193210
LOCATION — Top of L.H. fender

CAUTION

1. Never attempt to operate the machine with the battery removed or the battery cord disconnected.
2. When removing or installing the battery, be careful to avoid sparking(shortcircuit).
   Disconnect ⊖ terminal first (when removing) and connect ⊕ terminal first (when installing).
3. To check the electrolyte, have the engine shut down. Remember, it is a sulfuric acid solution and can burn your cloth and skin.
4. Any battery discharges even when not in use, though the current is just a trickle.
   A battery in storage should be recharged: once a month(in summer) or every two months(in winter).

For proper care of the battery, consult the operation manual.

390193110

CAUTION — Never attempt to operate the machine removed
PART NO. — 390193110
LOCATION — Inside of L.H. guard

CAUTION

When PTO(Power Take-Off) shaft is not in use, be sure to have the cap in place, keeping it tightened good and hard.
This is for safety's sake.

390193070

CAUTION — When PTO shaft is not in use
PART NO. — 390193070
LOCATION — Side of PTO shaft

⚠ WARNING

KEEP HANDS AND CLOTHING AWAY FROM ROTATING FAN AND BELTS TO PREVENT SERIOUS INJURY

WARNING — Keep hands and clothing away from rotating fan.
PART NO. — 390191351
LOCATION — R.H. side of radiator fan shroud

IMPORTANT

- For normal operation on firm soil, hard surfaces and roading the unit, front wheel drive should be disengaged to maximize tire and driveline life and fuel economy
- Only use front wheel drive when addtional traction is required while operating in loose soil: wet, slippery conditions or on slopes.

IMPORTANT — For normal operation on firm soil
PART NO. — 390192420
LOCATION — L.H. fender

CAUTION FOR CARE OF RADIATOR

1. Before starting each day's work, check level and replenish with clean fresh water.
2. In hot weather or for long continuous or heavy-duty operation, check level more often than usual.
3. Periodically clean the net and core, removing bugs, dirt and trash to avoid engine overheating.
4. In subfreezing weather, use ANTI-FREEZE or, after each day's work, drain the radiator by opening cocks at radiator and engine.
5. As to the use of ANTI-FREEZE and RUST INHIBITOR, consult the operation manual

During or immediately after duty operation, never attempt to remove the radiator cap or steam will blow out to burn your hand.

390193090

CAUTION FOR CARE OF RADIATOR
PART NO. — 390193090
LOCATION — Cover above the radiator cap

CAUTION

1. Remember, engine exhaust gases are toxic. Carbon monoxide(CO)and other harmful gases come out of the exhaust pipe.
2. Working the machine in poorly ventilated space, such as closed rooms and tunnels, is dangerous.

390193080

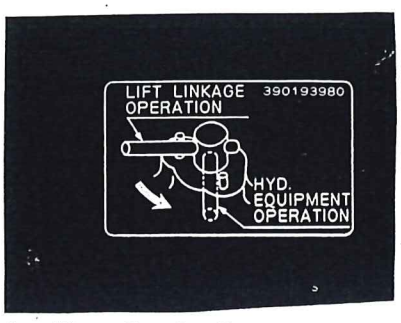
CAUTION — Remember, engine exhaust
PART NO. — 390193080
LOCATION — L.H. fender

SAFETY AND INSTRUCTION DECALS

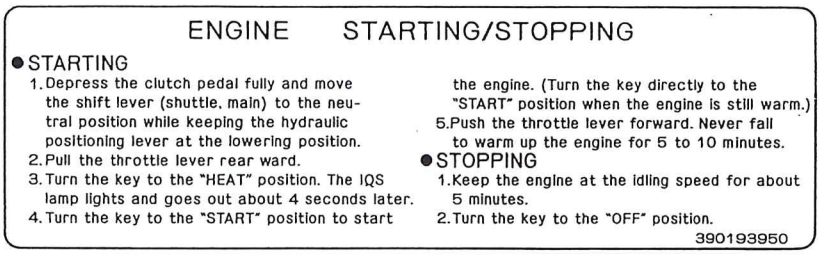
IMPORTANT — Always depress the clutch pedal fully
PART NO. — 390193940
LOCATION — Side of shuttle shift lever

390192910

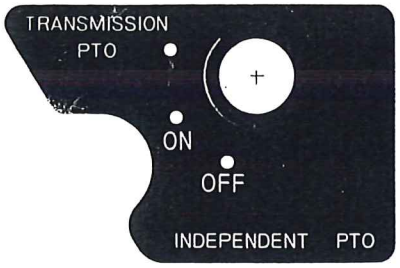
INFLAMMABLE
PART NO. — 390192910
LOCATION — Side of fuel filler cap



Auxiliary Service Port
PART NO. — 390193980
LOCATION — R.H. side of transmission case



ENGINE STARTING/STOPPING
PART NO. — 390193950
LOCATION — Top of L.H. fender



PTO SWITCH LEVER (OPTION)
PART NO. — 390194000
LOCATION — L.H. side of instrument panel

PTO SWITCH
390193970

POSITION		ACTION
INDEPENDENT PTO	OFF	PTO—disengage (Keep this position to start the engine or to shift the PTO lever.)
	ON	PTO—engage
TRANSMISSION PTO		The foot-operated clutch allows stopping the tractor and the PTO motion.

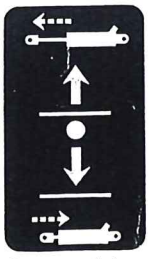
PTO SWITCH LEVER (OPTION)
PART NO. — 390193970
LOCATION — Side of PTO switch lever

Flow Control Lever
PART NO. — 390371080
LOCATION — Side of flow control lever

Four-Wheel Drive Control Lever
PART NO. — 390171640
LOCATION —

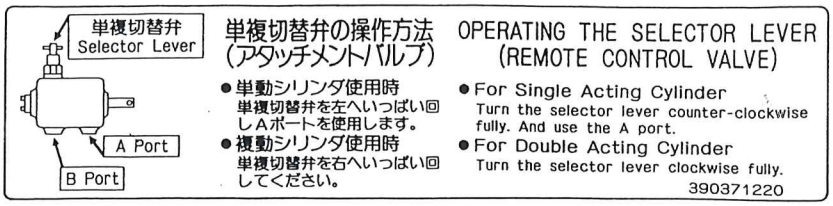
Parking Brake Lamp Switch
PART NO. — 390193740
LOCATION — On the instrument panel

Flow Control Lever
PART NO. — 390191070
LOCATION — Side of flow control lever guide



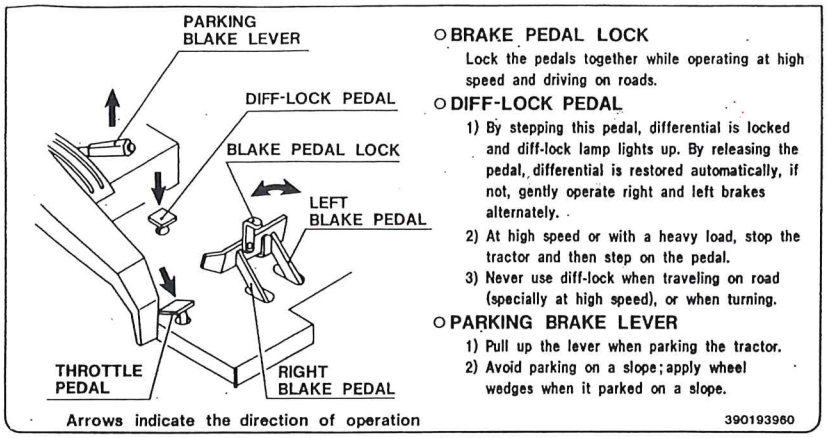
Remote Control Lever
PART NO. — 390370300
LOCATION — Side of remote control lever

High Beem Pilot Lamp
PART NO. — 390192210
LOCATION — Side of high beem pilot lamp switch

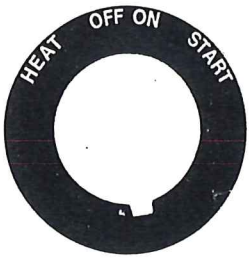


OPERATING THE SELECTOR LEVER
PART NO. – 390371220
LOCATION – R.H. fender

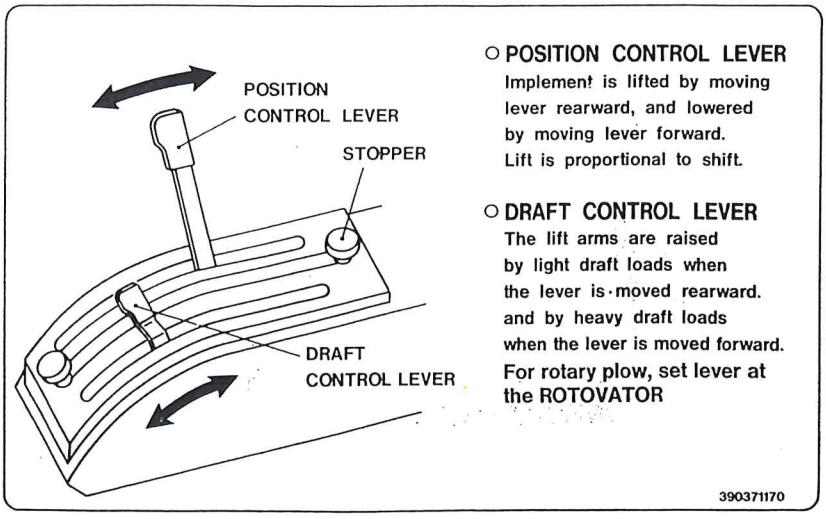
OPERATING INSTRUCTIONS



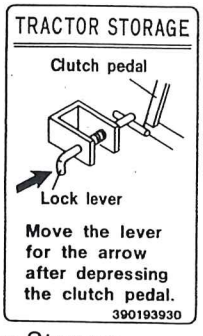
OPERATING INSTRUCTIONS
PART NO. – 390193960
LOCATION – R.H. fender



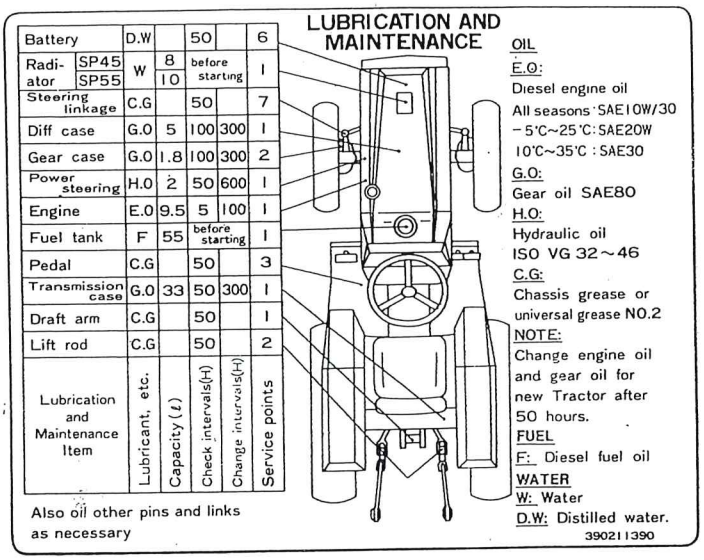
Starter Switch
PART NO. – 390190030
LOCATION – R.H. side of the instrument panel



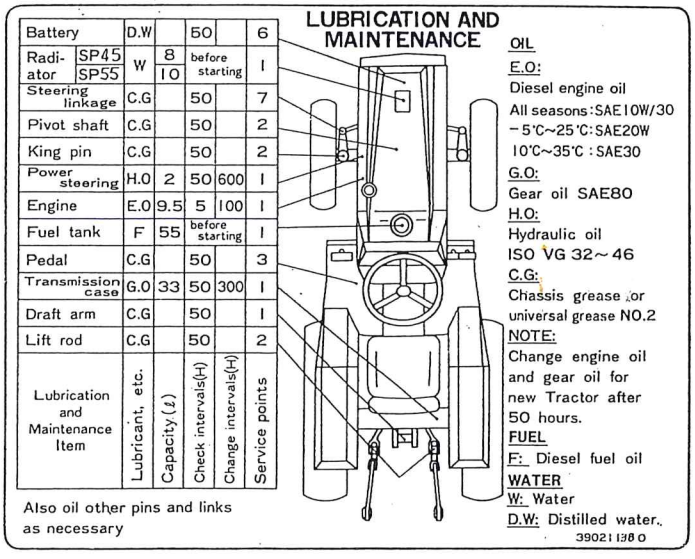
Hydraulic Lift Control
PART NO. – 390371170
LOCATION – R.H. fender



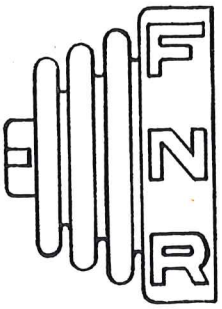
Tractor Storage
PART NO. – 390193930
LOCATION – Side of clutch pedal



Lubrication and Maintenance of Tractor
PART NO. – 390211390 (SP5040, SP6040)
LOCATION – L.H. side of cover under the seat

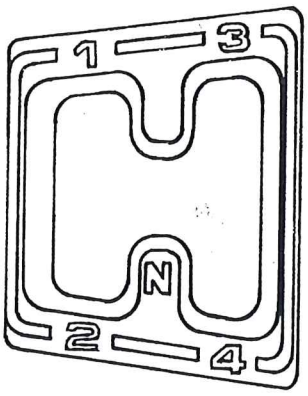


Lubrication and Maintenance of Tractor
PART NO. – 390211380 (SP5000, SP6000)
LOCATION – L.H. side of cover under the seat

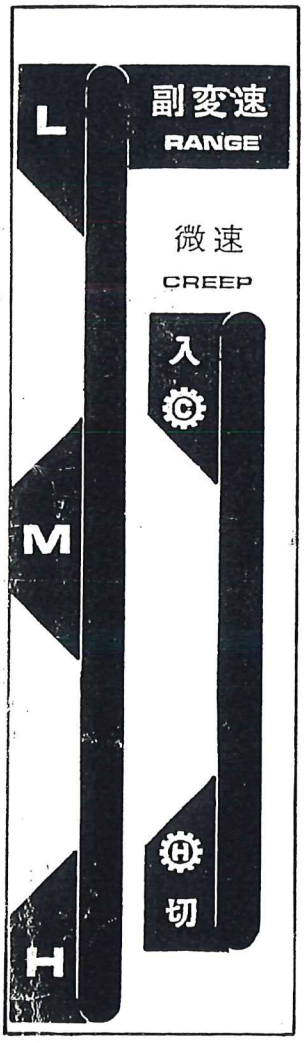


Shuttle Shift Lever Cover
PART NO. — 398114060
LOCATION — Below Steering Wheel

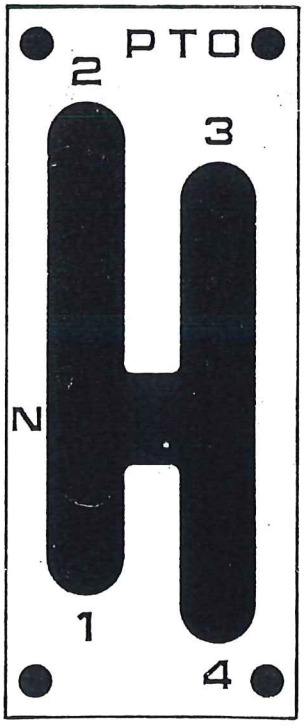
Hand Throttle Lever Grip
PART NO. — 398180710
LOCATION — On the Hand Throttle Lever



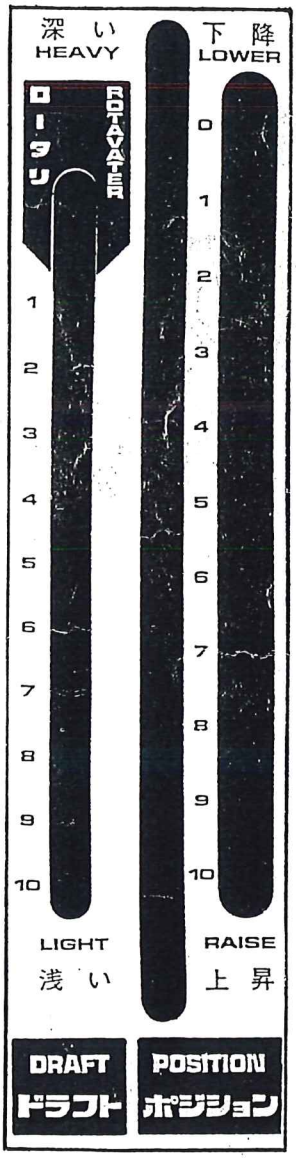
Main Shift Lever Guide
PART NO. — 398114080
LOCATION — Below steering wheel



Range Selector Lever and Creeper Range Lever Guide
PART NO. — 390171710
LOCATION — L.H. side of seat



PTO Shift Lever Guide
PART NO. — 390171720 (SP5000 / SP5040)
390171730 (SP6000 / SP6040)
LOCATION — L.H. side of seat



Hydraulic Control Lever Guide
PART NO. — 390371110
LOCATION — R.H. side of seat

PRE-DELIVERY SERVICE

CHECK AND ADJUST AS REQUIRED

INOPERATIVE SERVICE CHECKS:

1. Tire pressure . . . . . ☐
2. Air cleaner and hose connections . . . . . ☐
3. Radiator coolant level . . . . . ☐
4. Fan belt tension . . . . . ☐
5. Battery cleanliness, vent openings, electrolyte level, and charge . . . . . ☐
6. Engine oil level . . . . . ☐
7. Transmission and rear axle oil level . . . . . ☐
8. Front Axle and Front Diff oil level (4WD) . . . . . ☐
9. Starter safety switch operation . . . . . ☐
10. Hydraulic Lift control adjustment . . . . . ☐
11. Upper link, and hitch . . . . . ☐
12. Brake adjustment and pedal equalization . . . . . ☐
13. Operation of brake pedal lock . . . . . ☐
14. Rear wheel disc and hub bolts for tightness . . . . . ☐
15. Front wheel disc and hub nuts of tightness (2WD) . . . . . ☐
16. Front wheel disc and hub bolts of tightness (4WD) . . . . . ☐
17. Front wheel toe-in . . . . . ☐
18. Fuel level . . . . . ☐
19. Sheet metal and paint condition . . . . . ☐
20. Check lift rod for proper operation . . . . . ☐
21. Drain diesel fuel filter . . . . . ☐

OPERATIVE SERVICE CHECKS:

All operating checks are to be performed with the tractor at normal operating temperature.

1. Lights and instruments for proper operation . . . . . ☐
2. Fluid and oil leaks . . . . . ☐
3. Maximum no-load speed and idle speed adjustments, and fuel shutoff . . . . . ☐
4. Starting and starter safety switch . . . . . ☐
5. P.T.O. engagement and disengagement:
   - Clutch pedal and P.T.O. lever. . . . . ☐
6. Hydraulic System:
   - Selection lever for position and draft control operation . . . . . ☐
   - Flow control operation . . . . . ☐
7. 4-wheel drive lever operation . . . . ☐
8. Low speed (creeper) lever . . . . . ☐

TRACTOR MODEL NO._____ INSPECTION PERFORMED WARRANTY EXPLAINED TRACTOR SERIAL NO._____

OWNER'S SIGNATURE DATE DEALER'S SIGNATURE DATE

50-HOUR SERVICE

CHECK AND ADJUST AS REQUIRED

INOPERATIVE SERVICE CHECKS:

1. Tire pressure . . . . . ☐
2. Check air cleaner hose connection . . . . . ☐
3. Replace diesel fuel filter(s) . . . . . ☐
4. Tighten in-line pump delivery valve holders . . . . . ☐
5. Radiator coolant level . . . . . ☐
6. Fan belt tension . . . . . ☐
7. Battery cleanliness and vent openings, electrolyte level, and charge . . . . . ☐
8. All electrical cables, terminals, and wires . . . . . ☐
9. Drain and refill engine oil . . . . . ☐
10. Replace engine oil filter . . . . . ☐
11. Transmission and rear axle oil level . . . . . ☐
12. Front differential and front axle oil level (4WD) . . . . . ☐
13. Injection pump timing . . . . . ☐
14. Cylinder head bolt torque . . . . . ☐
15. Clean Hydraulic System Oil Filler . . . . . ☐

OPERATIVE SERVICE CHECKS:

1. Lights and instruments for proper operation . . . . . ☐
2. Fluid and oil leaks . . . . . ☐
3. Maximum no-load speed and idle speed adjustments, and fuel shutoff . . . . . ☐
4. Starting and starter safety switch . . ☐
5. Valve lash . . . . . ☐
6. Hydraulic System:
   - Selection lever for position and draft control operation . . . . . ☐
   - Flow control operation . . . . . ☐

PERFORMANCE SERVICE CHECKS:

1. Engine operation including throttle and govenor operation . . . . . ☐
2. Transmission including clutch . . . ☐
3. Steering control . . . . . ☐
4. Differential lock engagement and disengagement . . . . . ☐
5. Brake action . . . . . ☐
6. All optional equipment and accessories . . . . . ☐

TRACTOR MODEL NO._____ INSPECTION PERFORMED TRACTOR SERIAL NO._____

OWNER'S SIGNATURE DATE DEALER'S SIGNATURE DATE

PRE-DELIVERY SERVICE

CHECK AND ADJUST AS REQUIRED

OPERATIVE SERVICE CHECKS:

1. Tire pressure . . . . . ☐
2. Air cleaner and hose connections . . . . . ☐
3. Radiator coolant level . . . . . ☐
4. Fan belt tension . . . . . ☐
5. Battery cleanliness, vent openings, electrolyte level, and charge . . . . . ☐
6. Engine oil level . . . . . ☐
7. Transmission and rear axle oil level . . . . . ☐
8. Front Axle and Front Diff oil level (4WD) . . . . . ☐
9. Starter safety switch operation . . . . . ☐
10. Hydraulic Lift control adjustment . . . . . ☐
11. Upper link, and hitch . . . . . ☐
12. Brake adjustment and pedal equalization . . . . . ☐
13. Operation of brake pedal lock . . . . . ☐
14. Rear wheel disc and hub bolts for tightness . . . . . ☐
15. Front wheel disc and hub nuts of tightness (2WD) . . . . . ☐
16. Front wheel disc and hub bolts of tightness (4WD) . . . . . ☐
17. Front wheel toe-in . . . . . ☐
18. Fuel level . . . . . ☐
19. Sheet metal and paint condition . . . . . ☐
20. Check lift rod for proper operation . . . . . ☐
21. Drain diesel fuel filter . . . . . ☐

OPERATIVE SERVICE CHECKS:

All operating checks are to be performed with the tractor at normal operating temperature.

1. Lights and instruments for proper operation . . . . . ☐
2. Fluid and oil leaks . . . . . ☐
3. Maximum no-load speed and idle speed adjustments, and fuel shutoff . . . . . ☐
4. Starting and starter safety switch . . . . . ☐
5. P.T.O. engagement and disengagement:
   - Clutch pedal and P.T.O. lever. . . . . ☐
6. Hydraulic System:
   - Selection lever for position and draft control operation . . . . . ☐
   - Flow control operation . . . . . ☐
7. 4-wheel drive lever operation . . . . ☐
8. Low speed (creeper) lever . . . . . ☐

TRACTOR MODEL NO._____ INSPECTION PERFORMED WARRANTY EXPLAINED TRACTOR SERIAL NO._____

OWNER'S SIGNATURE DATE DEALER'S SIGNATURE DATE

50-HOUR SERVICE

CHECK AND ADJUST AS REQUIRED

INOPERATIVE SERVICE CHECKS:

1. Tire pressure . . . . . ☐
2. Check air cleaner hose connection . . . . . ☐
3. Replace diesel fuel filter(s) . . . . ☐
4. Tighten in-line pump delivery valve holders . . . . . ☐
5. Radiator coolant level . . . . . ☐
6. Fan belt tension . . . . . ☐
7. Battery cleanliness and vent openings, electrolyte level, and charge . . . . . ☐
8. All electrical cables, terminals, and wires . . . . . ☐
9. Drain and refill engine oil . . . . . ☐
10. Replace engine oil filter . . . . . ☐
11. Transmission and rear axle oil level . . . . . ☐
12. Front differential and front axle oil level (4WD) . . . . . ☐
13. Injection pump timing . . . . . ☐
14. Cylinder head bolt torque . . . . . ☐
15. Clean Hydraulic System Oil Filler . . . . . ☐

OPERATIVE SERVICE CHECKS:

1. Lights and instruments for proper operation . . . . . ☐
2. Fluid and oil leaks . . . . . ☐
3. Maximum no-load speed and idle speed adjustments, and fuel shutoff . . . . . ☐
4. Starting and starter safety switch . . ☐
5. Valve lash . . . . . ☐
6. Hydraulic System:
   - Selection lever for position and draft control operation . . . . . ☐
   - Flow control operation . . . . . ☐

PERFORMANCE SERVICE CHECKS:

1. Engine operation including throttle and govenor operation . . . . . ☐
2. Transmission including clutch . . . ☐
3. Steering control . . . . . ☐
4. Differential lock engagement and disengagement . . . . . ☐
5. Brake action . . . . . ☐
6. All optional equipment and accessories . . . . . ☐

TRACTOR MODEL NO._____ INSPECTION PERFORMED TRACTOR SERIAL NO._____

OWNER'S SIGNATURE DATE DEALER'S SIGNATURE DATE