

Foreword

Congratulations on being an owner of a versatile **KIOTI DK45, DK50** tractor. This tractor has been designed with finest materials and under a rigid quality control standards set forth by **KIOTI** engineering department. Knowledge of tractor operation is essential for many years of dependable service and reliability. This manual is given to help you familiarize yourself with the **DK45, DK50** tractor and to give you helpful information about tractor safety, operation and maintenance. It is **KIOTI** policy to provide each **KIOTI** tractor owner with a detailed owner's manual to help you answer many questions. If the information you are seeking is not found in this manual, your **KIOTI** tractor dealer will be happy to help you. Please feel free to contact **DAEDONG-USA, INC.**

Throughout this manual, you will see text in italics, preceded by the words **NOTE**, **IMPORTANT** or **WARNING**. Such text has the following significance.

NOTE : This text stresses a correct operating procedure or technique.

IMPORTANT : This text stresses a correct operating technique or procedure that, If ignored, could result in damage to the tractor or equipment.



WARNING : This text stresses a correct operating technique or procedure that, if ignored, could result in personal injury or death to the operator or bystanders.



Safety Alert Symbol

This is the industry “**SAFETY ALERT SYMBOL**”. It is used to call your attention to items or operation that could be dangerous to you or other persons using this equipment. The **SAFETY ALERT SYMBOL** means “**ATTENTION! BE ALERT! YOUR SAFETY IS INVOLVED!**” where the symbol appears, please read the messages and follow the instructions carefully.

ABBREVIATIONS LIST

ABBREVIATION	DEFINITION
4WD	Four-wheel drive
API	American Petroleum Institute
ASAE	American Society of Agricultural Engineers
SAE	Society of Automotive Engineers
ISO	International Organization for Standardization
PTO	Power Take Off
ROPS	Roll-Over Protective Structure
RPM	Revolution Per Minute
SMV	Slow Moving Vehicle

Universal Symbols

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

	Safety Alert Symbol		Remote Cylinder-Retract
	Diesel Fuel		Remote Cylinder-Extend
	Fuel-Level		Steering Wheel-Tilt Control
	Engine-Rotational Speed		Hazard Warning Lights
	Hourmeter/Elapsed Operating Hours		Master Lighting Switch
	Engine Coolant-Temperature		Position Lamps
	Diesel Preheat/Glow Plugs(Low Temperature Start Aid)		Headlight-Low Beam
	Parking Brake		Headlight-High Beam
	Engine Intake/Combustion Air-Filter		Audible Warning Device
	Battery Charging Condition		Four-Wheel Drive-On
	Engine Oil-Pressure		Four-Wheel Drive-Off
	Turn Signal		Fast
	Engine-Stop		Slow
	Engine-Run		Creep
	Starter Control		Read Operator's Manual
	Engine-Emergency stop		Tractor-Forward Movement-Overhead View of Machine
	Power Take-Off Clutch Control-Off Position		Tractor-Rearward Movement-Overhead View of Machine
	Power Take-Off Clutch Control-On Position		Engine Speed Control
	Differential Lock		
	Position Control-Raised Position		
	Position Control-Lowered Position		
	Draft Control-Shallow Position		
	Draft Control-Deep Position		
	3-Point Lowering Speed Control		

Pre-Delivery Service

CHECK AND ADJUST AS REQUIRED

INOPERATIVE SERVICE CHECKS

1. Tire pressure and condition
2. Lift-rod leveling crank for proper operation
3. Radiator coolant level and specific gravity
(1.071-1.083 at 16°C(60°F))
4. Poly V belt
5. Engine oil level
6. Transmission /rear axle oil level
7. Front axle differential oil level
8. Front axle oil level
9. Brake adjustment and pedal equalization
10. Handbrake adjustment
11. Upper link, draw-bar and pin in position
12. Wheel-to-rim clamp bolts and lock nuts for tightness
13. Wheel disc-to-hub nuts for tightness
14. Front end weight clamp bolts for tightness
15. Front axle support bolts for tightness
16. Fuel level
17. Sheet metal and paint condition
18. Drain diesel fuel filter and water separator
19. Lubricate all grease fittings
20. Air cleaner element and hose connections
21. Seat mounting and adjustment
22. All electrical cables, terminals and wires

SAFETY ITEMS CHECKS

1. Safety decals installed
2. Neutral start switches operative
3. Parking brake operation

4. Flashing lights/tail lights operation
5. Owner's Manual supplied
6. P.T.O. guard installed
7. S.M.V. emblem installed(where applicable)

OPERATIVE SERVICE CHECKS

All operative 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 shut-off
4. P.T.O. operation
5. Hydraulic System:
 - .Select levers for Draft and Position Control operation
 - .Flow control operation
 - .Draft Control for tension and compression loads
 - .Auxiliary Services Control and remoter control valves (if installed)

PERFORMANCE SERVICE CHECKS:.

1. Engine operation including throttle and governor 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. _____

Tractor Serial No. _____

Contents

Safety Precautions

1. Servicing of Tractor
2. Specifications
3. Handling New Tractor
4. Instrument Panel and Controls
 - 4.1 Switches
 - 4.2 Controls
 - 4.3 Hydraulic unit
5. Three-point Hitch & Drawbar
6. Wheels, Tires and Tread
 - 6.1 Tread-Front
 - 6.2 Tread-Rear
 - 6.3 Tires
 - 6.4 Ballast
 - 6.5 Toe-in
7. Operating Instructions
 - 7.1 Operating the engine
 - 7.1.1 Pre-starting Inspection
 - 7.1.2 Starting the engine
 - 7.1.3 Stopping the engine
 - 7.2 Operating the tractor
 - 7.3 Stopping the tractor
 - 7.4 Parking
 - 7.5 Turning
 - 7.6 Check while operating
 - 7.7 Driving on public roads
 - 7.8 Operation on slopes
 - 7.9 Handling the tractor on the farm
 - 7.10 Use of the differential lock
8. Maintenance
 - 8.1 Daily check
 - 8.2 Lubricants
 - 8.3 Maintenance check list

9. Check and Maintenance

- 9.1 Fuel
- 9.2 Engine oil
- 9.3 Transmission Fluid
- 9.4 Changing front axle differential case oil
- 9.5 Changing front axle gear case oil
- 9.6 Oiling and greasing points before starting
- 9.7 Air cleaner
- 9.8 Cleaning air filter element
- 9.9 Radiator
- 9.10 Battery

10. Adjustments

- 10.1 Fan drive belt tension
- 10.2 Clutch
- 10.3 Brake
- 10.4 Steering wheel
- 10.5 Front axle support
- 10.6 Adjusting the micro switch's height

11. Troubleshooting

- 11.1 Engine Troubleshooting
- 11.2 Tractor Troubleshooting
- 11.3 Battery Troubleshooting

12. Long-term storage

13. Option (DK50)

- 13.1 Open cap (if installed)
- 13.2 Cabin (if installed)

14. Service Record

Safety Precautions

A careful operator is the best operator. Most accidents can be avoided by observing certain precautions. To help prevent accidents, read and take these safety precautions and pay attention to the job at hand. If you can prevent an accident in advance, your time will have been spent well.

THE TRACTOR

1. Read this entire manual carefully before using the tractor. Lack of operating knowledge can lead to accidents.
2. Only allow properly trained and qualified persons to operate the tractor.
3. Pay special attention to the warning and caution labels affixed on the tractor.
4. Replace all missing, illegible or damaged safety decals. See list of decals on page 18.
5. Keep safety decals free of dirt or grime.
6. To prevent falls, use the handholds and step plates when getting on and off the tractor. Keep step and platform clear of mud and debris.
7. When working in the field or muddy areas, be sure to scrape off mud or soil from the bottom of your shoes before mounting the tractor.
8. Watch where you are going at all times. Watch for and avoid obstacles.
9. Before starting the tractor, check to see that there are no people around.
10. Before driving the tractor in reverse, check to see that there are no obstacles around.
11. Never operate the tractor or any agricultural equipment while under the influence of alcohol or other drugs which impair operation, or while fatigued.
12. When working in cooperation with other tractors, let the other drivers know what you are doing.
13. Do not start engine by shorting across starter terminals.
14. Never start engine while standing on the ground.
15. Do not permit anyone but the operator to ride on the tractor unless a passenger seat is fitted. Keep bystanders away from the tractor during operation.
16. Before allowing other people to use your tractor, explain how to operate and lend this manual beforehand.
17. Before getting off the tractor, be sure to stop the engine, set the brake, remove the key and lower the implement to the ground.
18. Do not modify or alter or permit anyone else to modify or alter the tractor or any of its components or any tractor function without first consulting a KIOTI dealer.
19. Before starting the engine, sit in the seat, disengage the clutch, and place shift levers in the neutral position. Fasten seat belt if equipped with ROPS.
20. For your safety ROPS with a seat belt is recommended by KIOTI for most applications.



Check owner's manual and discuss with your local dealer.

NOTE :

• ***Always use seat belt when the tractor is equipped with a ROPS. Never use the seat belt when tractor is not equipped with a ROPS.***

(ROPS : Roll Over Protective Structures)

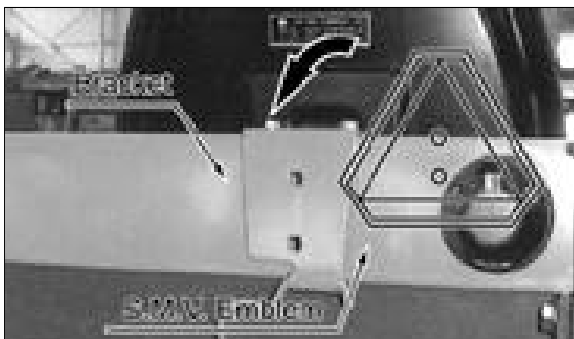
Never modify structural members of **ROPS** by welding, bending, grinding or cutting as this may weaken the Structure. If any component is damaged, replace it.

Do not attempt repairs. If **ROPS** is loosened or removed for any reason, make certain all parts are fitted in position. Tighten mounting bolts to proper torque, see **ROPS** installation instruction.

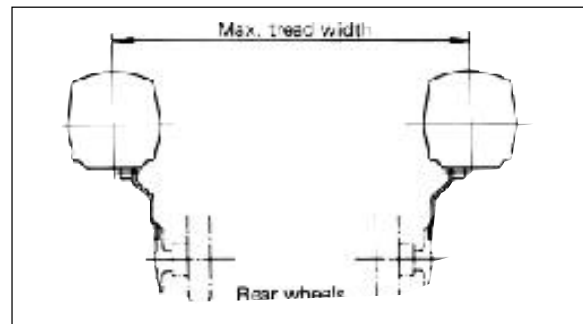


DRIVING THE TRACTOR

1. Reduce speed before turning or applying the brakes. Before driving on the road, be sure to interlock the two brake pedals. Applying only one rear brake at road speeds could cause the tractor to roll over.
2. Observe all local and state traffic regulations. Use S.M.V. emblem and warning flashers as required.



3. When driving the tractor on a road, turn the light switch to the bright head lamp position. Be sure the SMV emblem is visible and clear. Dip the tractor lights when meeting a vehicle at night. Make sure the lights are adjusted to prevent blinding the driver of an oncoming vehicle. Hold road speed to controllable rate.
4. Never apply the differential lock while turning. When engaged, the differential lock will prevent the tractor from turning.
5. Power steering makes the steering wheel easy to turn. Drive the tractor with special care when travelling at road speeds or when on the highway.
6. Do not drive the tractor on the road with the implement in operation.
7. To avoid premature wear, do not use the clutch pedal as a foot rest.
8. To avoid tip over, drive the tractor with care and at speeds compatible with safety, especially when operating over rough and wet ground, when crossing ditches or slopes and when turning corner. Do not drive the tractor close to the edges of ditches or banks which may break under the weight of the tractor.
9. Use caution while operating the tractor under abnormal conditions.
10. Tractors with narrow tread width require extra driving caution to avoid tip over. You can improve stability by adjusting rear wheels to maximum tread width, see page 35.

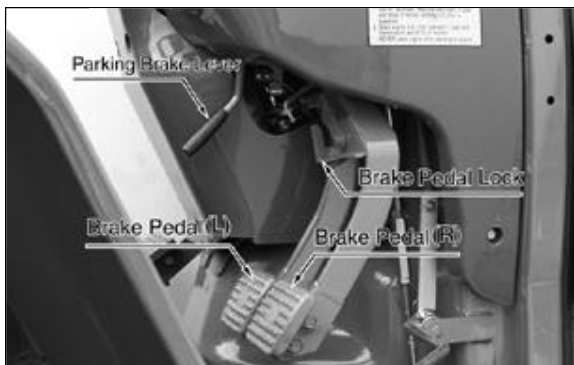


11. If descending a slope, never disengage the clutch or shift to neutral. Doing so could cause loss of control of the tractor.
12. Always back up when going up a slope. Driving

forward could cause the tractor to tip over backward. Stay off hills and slopes too steep for safe operation.

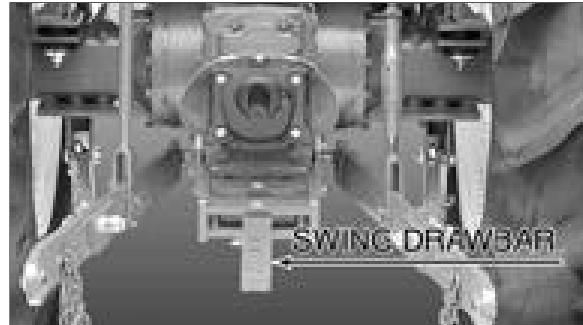


13. Lock the brake pedals together when travelling at road speeds. Brake both wheels simultaneously when making an emergency stop. Uneven braking at road speeds could cause the tractor to roll over.



OPERATING THE TRACTOR

1. Apply the parking brake, place the lift control lever in the down position and the P.T.O. control switch and the transmission lever in neutral before starting the tractor.
2. Avoid accidental contact with the gear shift levers while the engine is running. Unexpected tractor movement can result from such contact.
3. Shut off the engine and P.T.O. and apply the parking brake before getting off the tractor.
4. Do not park the tractor on a steep incline.
5. Do not operate the tractor engine in an enclosed building without adequate ventilation. Exhaust fumes can cause death.
6. Tighten all connections before starting the engine or pressurizing lines.
7. Pull only from the pick-up hitch, swinging draw-bar or the lower link draw-bar in the lowered position. Use only a draw-bar pin that locks in place. Pulling from the tractor rear axle or any point above the axle may cause the tractor to tip over.



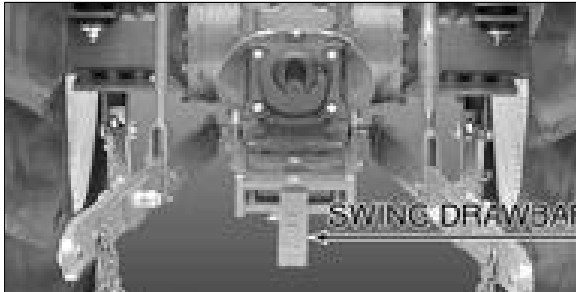
8. If the front end of the tractor tends to rise when heavy implements are attached to the three-point hitch, install front end weight. Do not operate the tractor with a front end light.
9. Do not leave equipment in the raised position when the tractor is stopped or unattended.
10. When installing or using an implement or other attachment with the tractor, be sure to read the "Specifications of Implement Limitations".
11. Know your equipment and its limitations.
12. When using an implement, be sure to install the proper ballast weight on the tractor.
13. Ensure any attached equipment or accessories are correctly installed, and approved for use with the tractor. Do not overload the tractor and are operated and maintained in accordance with the instructions issued by the equipment or accessory manufacturer.
14. Remember that your tractor, if abused, can be dangerous and become a hazard both to the operator and to bystanders. Do not overload or operate with attached equipment which is unsafe, not designed for the particular task or is poorly maintained.

Refer to "Specifications of Implement Limitations" recommended by KIOTI Dealer, which outlines the maximum loads for safe tractor operation.

15. When loading on a truck, securely fix a rugged ramp with non-skids and check to see that there are no people around before starting to load or unload.
16. When loading or unloading, chock up or block up the truck tires.

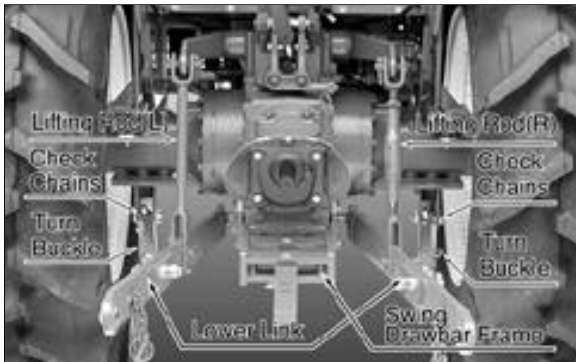
OPERATING THE P.T.O.

1. Stay clear of all rotating parts.
2. Keep all safety covers in place at all time.



3. When operating P.T.O.-drive equipment, shut off the engine and wait until the P.T.O. stops before getting off the tractor and disconnecting the equipment.
Disengage PTO, stop engine and allow all rotating components to come to complete stop before connecting, disconnecting, adjusting or cleaning any PTO driven equipment.
4. This tractor has a 560 rpm speed when shifting the PTO control switch to "ON" to engage the PTO clutch. Set the PTO control switch to "OFF" to disengage the PTO clutch.
5. Do not wear loose clothing when operating the power take-off when near rotating equipment.

USING 3-POINT HITCH



1. Use 3-point hitch only with equipment designed for 3-point hitch usage.
2. When using 3-point hitch mounted implement, be sure to install the proper counterballast weight on 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. In a closed container such as a fuel tank these blends are more explosive than pure gasoline. Do not use these blends.
2. Never remove the fuel cap or refuel with the engine running.
3. Do not smoke while refueling the tractor or when standing near fuel. Keep any type of open flame away. Wait for the engine to cool before refueling.
4. Maintain control of the fuel filler pipe nozzle when filling the tank.
5. Always tighten the fuel tank cap securely.
6. Keep equipment clean and properly maintained.
7. Do not drive equipment near open fires.
8. Never use fuel for cleaning purposes.
9. Do not fill the fuel tank to capacity. Allow room for expansion.
10. Wipe up spilled fuel immediately.

6. POSSIBLE HAZARDS

- EXHAUST FUMES

- (1) To avoid the danger of exhaust fume poisoning, do not operate the engine in an enclosed building without adequate ventilation to outside air.
- (2) While running the engine, protect workers and animals from exhaust gas.

- FIRES

- (1) Always stop the engine before refueling. Keep away from sparks and flames.

- (2) Avoid fuel spills and over filling the fuel tank. Clean up any spills on tractor before starting engine.



- (3) Keep first aid kit and fire extinguisher near by at all times.

- EXPLOSIONS

- (1) A battery, especially when changing, will give off hydrogen and oxygen gases which are very explosive. Keep away from sparks and open flames at all times.
- (2) To avoid sparks from an accidental short circuit, always disconnect the battery ground cable(-) first and always reconnect the ground cable(-) last.

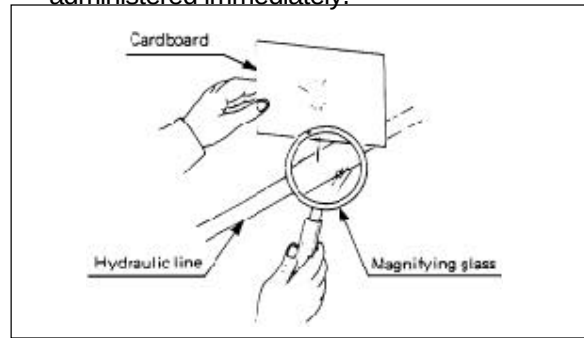


- (3) Refer to page 56 for specific battery instructions.

- HIGH PRESSURE FLUIDS

- (1) Do not remove radiator filler cap when coolant temperature is around its boiling point. At that time loosen cap slightly to the stop to relieve any excess pressure before removing cap completely.

- (2) Escaping hydraulic fluid under pressure can have sufficient force to penetrate skin, causing serious personal injury. Before disconnecting lines, be sure to relieve all pressure. Before applying pressure to the system, be sure that all connections are tight and that lines, pipes and hoses are not damaged. Fluid escaping from a very small hole can almost invisible. Don't use hands to search for suspected leaks, but use a piece of cardboard or wood. If injured by escaping fluid, see a doctor at once. Serious infection or reaction can develop if proper medical treatment is not administered immediately.



- SAFE SERVICING

- (1) Before servicing the tractor, locate the tractor on a firm level surface, apply the parking brake; place the transmission levers in neutral and stop the engine.
- (2) Disconnect the battery ground cable before serving on or near electrical components.
- (3) Service or check the tractor after it has completely cooled off. Avoid touching the muffler and the radiator until they have cooled off.
- (4) When changing the wheel tread width, securely support tractor while raised.
- (5) Always retighten wheel bolts to the specified torque and check regularly.
- (6) Do not attempt to mount a tire on a rim unless qualified to do so with the proper equipment.
- (7) Check, service and clean the tractor after stopping the engine, follow the directions of the owner's Manual.

7. TRACTOR SAFETY LABELS

(1) Part No : T2325-50742

 WARNING	
TO AVOID PERSONAL INJURY : 1. Keep PTO shield in place at all time. 2. This tractor is equipped with a multispeed PTO. Do not operate the PTO at speeds faster than the speed recommended by the implement manufacturer. 3. Disengage PTO, stop the engine and set the brake before adjusting, repairing, or servicing the tractor or implement.	TO AVOID PERSONAL INJURY : 1. Attach pulled or towed loads to the drawbar only. 2. Use the 3-point hitch only with equipment designed for 3-point hitch usage.
T2325-50742	

(2) Part No : 94612-1835-1

 WARNING
AVOID POSSIBLE INJURY OR DEATH FROM A MACHINE RUNAWAY 1. Do not start engine by shorting across starter terminals. Machine may start in gear and move if normal starting circuit is bypassed. 2. Start engine only from operator's seat with transmission and PTO in neutral. Never start engine while standing on ground.
94612-1835-1

(3) Part No : 94612-2552-1

 WARNING
1. Read and understand the owner's manual before attempting to operate this tractor. 2. Start the tractor in neutral gear and with clutch disengaged. 3. Start the engine only while in the operator's seat. 4. Keep people far away from tractor when working with a rotary cutter or other rotary tools. 5. Avoid sharp turns or sudden braking. 6. Always slow down when driving on a rough roadway or field. 7. Always stop the engine and set the brake before checking, adjusting, or repairing the tractor or implement. 8. Always lower implements to the ground before leaving the tractor. 9. Only the operator should be allowed on the tractor. 10. Lock brake pedals together, use warning lights, and use a slow moving vehicle emblem when traveling on the roadway. 11. Failure to follow the instructions above or in the owner's manual can cause serious injury to the operator or other persons.
94612-2552-1

(4) Part No : T4625-52191

 WARNING
1. Before leaving the tractor, park the tractor on level ground, apply the parking brake, disengage the P.T.O. and stop the engine. 2. Avoid accidental contact with the gear shift levers while the engine is running as unexpected tractor movement can result.
T4625-52191

(5) Part No : T2445-50722

 CAUTION
TO AVOID PERSONAL INJURY : 1. Roll-Over Protective Structure(ROPS) with a seat belt is recommended by Kioti TRACTOR in most applications. Check owner's manual and discuss with your local dealer. 2. Always use belt when the tractor is equipped with Roll-Over Protective Structure(ROPS). Never use seat belt when the tractor is not equipped with ROPS.
T2445-50722

(6) Part No : 94612-43191

REMINDER
• Do not leave too much water and dirt sediment on bottom. Clear it frequently. • Wash paper element in fuel each 100hrs of operation. • A holed, even slightly, element should be replaced with new one. • Use the specified fuel only.
94612-43191

(7) Part No : T4625-52351



(8) Part No : T4625-52361



1. Servicing of Tractor

Your dealer is interested in your new tractor and has the desire to help you get the most value from it. After reading this manual thoroughly, you will find that you can do some of the regular maintenance yourself.

However, when in need of parts or major service, be sure to see your **KIOTI** dealer.

For service, contact the **KIOTI** Dealership from which you purchased your tractor or your local authorized **KIOTI** dealer.

When in need of parts, be prepared to give your dealer both the tractor and engine serial numbers. The tractor serial number is located on the transmission housing on the left-hand side of the tractor. The engine serial number is located on the engine crankcase, right side. Locate the serial numbers now and record them in the space provided.

Before using implements not sold by **KIOTI** DISTRIBUTOR, contact your nearest dealer, regarding safety in its application.



KIOTI TRACTOR

Tractor Serial No. _____

Engine Serial No. _____

Date of Purchase _____

(To be filled in by purchaser)



2. Specifications

Model			DK45	DK50
Maximum PTO power				38HP 41.5HP
Engine GROSS power				45HP 49HP
Engine	Model		4A220	4A200T
	Type		Indirect injection, vertical, water-cooled, 4-cycle diesel engine	Indirect injection, vertical, water-cooled, 4-cycle diesel engine(Turbo)
	Number of cylinder		4	4
	Bore and stroke		87*92.4 mm (3.425*3.638 in.)	83*92.4 mm (3.268*3.638 in.)
	Total displacement		2197 cc	2000 cc
	Rated revolution		43.3 rps (2600 rpm)	43.3 rps(2600 rpm)
	Injection timing		18 ⁰ before T.D.C.	20 ⁰ before T.D.C.
	Injection order		1-3-4-2	1-3-4-2
	Compression ratio		22	22
	Lubricating system		Forced lubrication by trochoid pump	Forced lubrication by trochoid pump
	Cooling system		Pressurized radiator, Forced circulation with water pump	Pressurized radiator, Forced circulation with water pump
	Alternator		12V, 50AMPS	12V, 50AMPS
	Weight (Dry)		207 kg	211 kg
Capacities	Fuel tank		40L(42.3 u.s.qts.)	40L(42.3 u.s.qts.)
	Engine crankcase		7.0L(7.4 u.s.qts.)	7.0L(7.4 u.s.qts.)
	Engine coolant		8.9L(9.4 u.s.qts.)	8.9L(9.4 u.s.qts.)
	Transmission case		34L(35.9 u.s.qts.)	34L(35.9 u.s.qts.)
	Front axle case		8.2L(8.6 u.s.qts.)	8.2v(8.6 u.s.qts.)
Dimensions (with Std. tires)	Overall length (without 3p)		3073 mm (120.9 in.)	3073 mm (120.9 in.)
	Overall length (with 3p)		3323 mm (130.8 in.)	3323 mm (130.8 in.)
	Overall width (minimum tread)		1550 mm (61.0 in.)	1550 mm (61.0 in.)
	Overall height (Top of ROPS)		-	-
	Overall height (Top of steering wheel)		1610 mm (63.3 in.)	1610 mm (63.3 in.)
	Wheel base		1820 mm (71.6 in.)	1820 mm (71.6 in.)
	Min. ground clearance		370 mm (14.5 in.)	370 mm (14.5 in.)
	Tread		Front mm (in)	1265 mm (49.8 in.)
Traveling system			Rear mm (in)	1180 ~ 1490 mm (46.4 ~58.6 in.)
	Tire size (Std. tires)		Front	9.5 - 16.6 PR
			Rear	14.9 - 24.8 PR
	Clutch		Dry type single plate-single stage	
	Steering		Hydraulic power steering	
	Transmission		Synchronized shuttle and transmission (8 forward and 8 reverse speeds)	
	Brake		Traveling	Wet disc type
			Parking	Connected with the traveling brake
	Differential		Bevel gear	
Hydraulic system	Hydraulic lift control system		Position, Draft and Mixed control	Position, Draft and Mixed control
	Pump capacity (Max, flow rate)		Main pump 31.2 l/min Power steering pump 18.7 l/min	Main pump 31.2 l/min Power steering pump 18.7 l/min
	Three point hitch		SAE Category I	
	Maximum lifting capacity (24 in, behind lower link end)		1050 kg	
	No. of Remote control valve ports		2	
PTO	PTO shaft		SAE 1-3/8, 6 splines	
	Revolution (independent PTO)		560	
Min. turning radius (with brake)			2865 mm (112.7 in.)	
Traction system			Fixed drawer (or swing drawer - OPTION)	
Weight (with ROPS)			1720kg	
Traveling speed (at rated engine speed with Std. tires)			1st ~8th : 1.78 ~25.5 km/h	

NOTE : * Manufacturer's estimate

3. Handling New Tractor

How a new tractor is handled and maintained determines the life of the tractor.

A new tractor just off the factory production line has been, of course, well fitted and tested, but the various parts are not accustomed to severe types of work, so care should be taken to operate the tractor for the first 100 hours at a slower speed and avoid excessive work or operation until the various parts become well "broken-in". The manner in which the tractor is handled during the "breaking-in" period greatly affects the life of your tractor. Therefore, to obtain the maximum performance and the longest life of the tractor, it is very important to properly break-in your tractor.

In handling a new tractor the following precautions should be well observed.

-Do not operate the tractor at full speed for the first 100 hours.

- Do not start quickly nor apply the brakes suddenly.
- In winter, run the tractor after fully warming up the engine.
- Do not run at speeds faster than necessary.
- On rough roads, slow down to suitable speeds. Do not operate the tractor at fast speed.

The above precautions are not limited only to new tractors, but to all tractors. But it should be especially observed in case of new tractors.

-Changing lubricating oil for new tractors

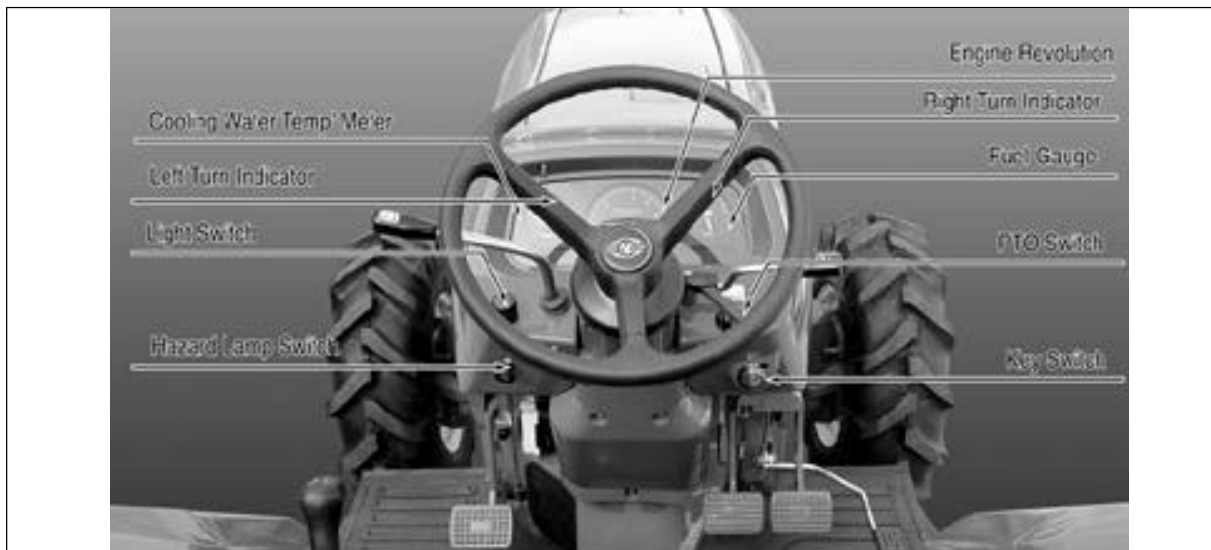
The lubricating oil is specially important in the case of a new tractor. The various parts are not "broken-in" and are not accustomed to each other: small metal grit may develop during operating the tractor; and this may wear out or damage the parts. Therefore, care should be taken to exchange the lubricating oil a little earlier than would ordinarily be required. For further details of exchange interval hours, see check list (p45).

-Read "For Safe Operation" to assure Safe Operation

- Please read "For Safe Operation" (p37).
- The precautions are suggested to help prevent accidents.

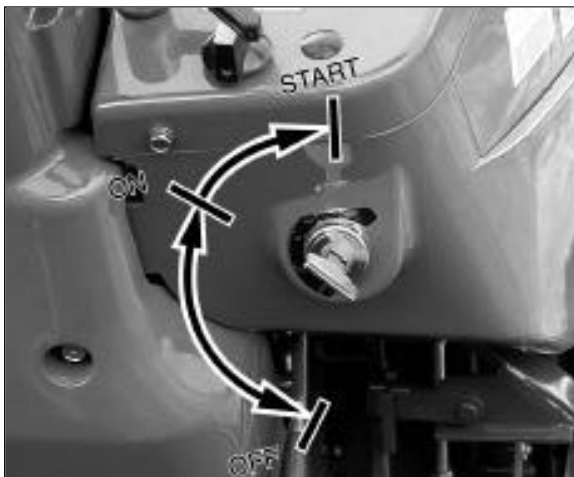
4. Instrument Panel and Controls

4.1 Switches



- Key Switch

Inserting the key and turning it one click to the right, closes the electrical circuit and lights up the engine oil pressure lamp (RED). Depress the clutch pedal to disengage the clutch. Next, turning the key right activates the glow plug, preceeding to preheat the combustion chamber. After the glow plug lamp has turned red and that the engine has been preheated completely, turn the key switch right and the cell starter will start to rotate and the engine should start. Release the key switch and it will return to the ON position.



NOTE :

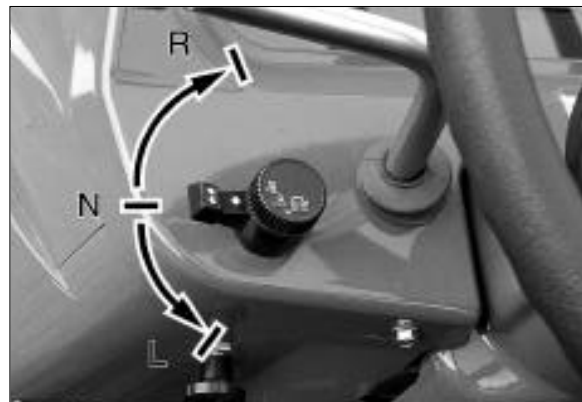
- ***Because of the safety device, the engine may not be started except when the clutch is disengaged.***

- Glow Plug Indicator (Pre-heating Indicator)

When the starter switch is turned to the right, the glow plug indicator becomes red. This shows the condition of preheating in the combustion chamber.

- Light Switch

Turning the light switch one click to C.W. illuminates the Low Beam headlights and taillights. Next, turning it one more click illuminates the High Beam headlights.



- Hazard Lamp Switch

When a hazard lamp switch is pulled to on position, the hazard lamps blink.



=PTO switch

The PTO switch must be placed to the "neutral" positions before starting the engine. otherwise, the engine will not start.

IMPORTANT :

- ***Always turn the starter switch key to the "OFF" position. Damage may occur to the electrical system if the engine is running with the starter switch off.***

- Hour Meter

This meter shows the number of hours the tractor has been operate at rated engine rpm. The last digit(white background) indicates 1/10 of an hour. The time in minutes will be shown by multiplying by six to last digit on white background. Example 0,1,7,0,1... 170hours 6 minutes used Moving hand indicates the revolution per minute of the engine



- Cooling Water Temp. Meter

Wait until Engine is warm enough. Do not operate tractor before Temp. meter indicates the proper temperature. Be careful not to exceed cooling water temperature overheated(red mark on Temp. meter) Before operating tractor, always check the amount of cooling water in the radiator.



- Engine Oil Pressure Lamp

The oil pressure lamp will glow red when the starter switch is turned on. This indicates the light and electrical wiring are functioning properly. The light should go out after engine starts. If light remains on, stop engine and determine cause.

- Battery Charge Lamp

The battery charge lamp will glow red when the main switch is turned on and should go out as engine starts. If the lamp continues to glow above idle speeds, the battery is being discharged, indicating the electrical system should be checked.

- Fuses

There are fuses in the fuse box to safeguard the electric circuit.



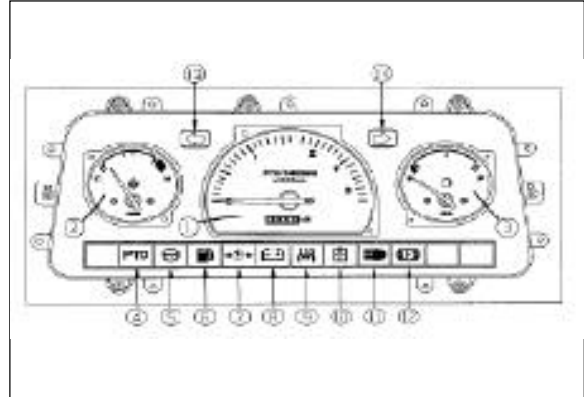
- Fuel Thermistor

If fuel lamp goes out, stop engine and refill fuel tank.

- Fuel Gauge

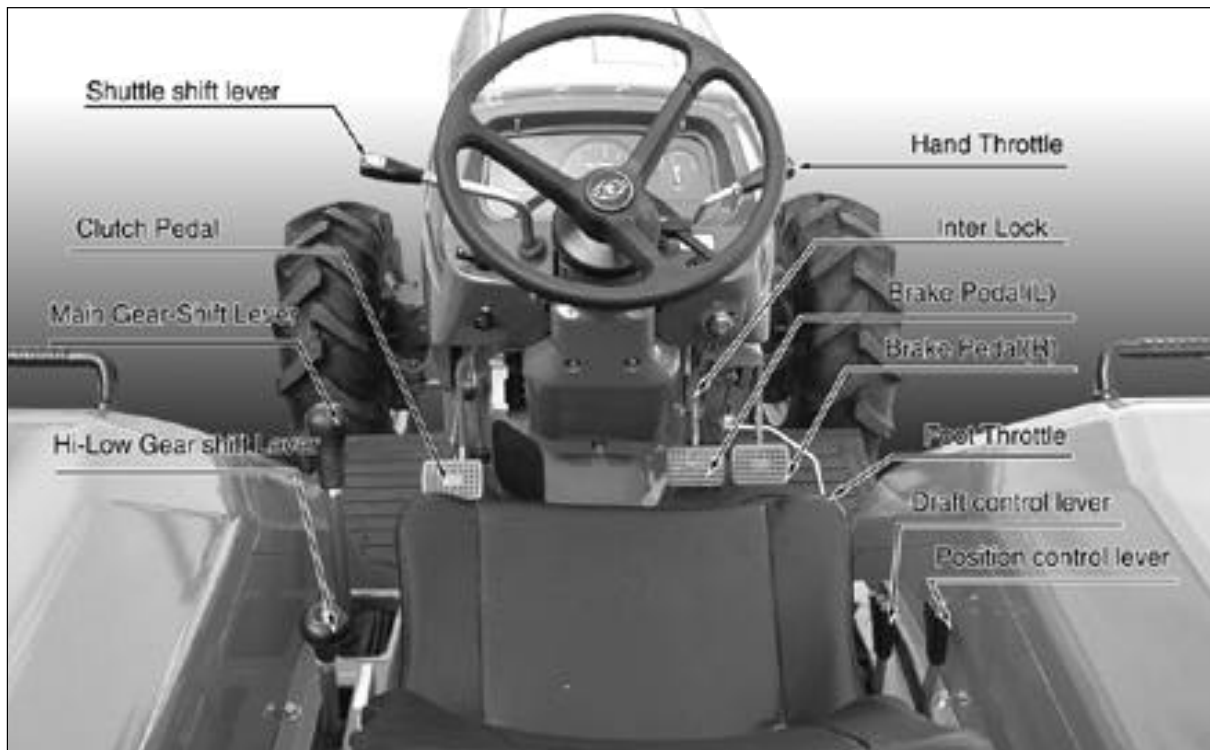
Fuel gauge indicates the amount of fuel. Be careful to refill the fuel tank before it becomes empty. Once the fuel tank becomes empty, it will be necessary to bleed the fuel system before the engine will start.

- INSTRUMENT GAUGE



- (1) Tachometer
- (2) Temperature gauge
- (3) Fuel gauge
- (4) PTO ON Indicator
- (5) Coolant level warning lamp
- (6) Fuel tank level warning lamp
- (7) Engine oil pressure warning lamp
- (8) Battery charge warning lamp
- (9) Glow plug indicator
- (10) Hydraulic filter warning lamp
- (11) Upward indicator
- (12) Parking brake indicator
- (13,14) Turning signal indicator

4.2 Controls



- Main Shift Lever & Hi-Lo shift lever

The main shift lever pattern is in the form of an "H". The range lever is used to select two stage, "High" and "Low". By combination and use of the main gear shift lever and the Hi-Lo gear shift lever, it is possible to obtain four speeds forward and reverse in "High" range and four speeds forward and reverse in "Low" range, or a total of eight speeds forward ; and eight speeds reverse, High and Low.



NOTE :

- **To change speed, press the clutch pedal completely down before attempting to proceed with speed change.**

-Front Wheel Drive Lever

Pull the front wheel drive lever up to engage the front wheel drive mechanism (p27).

During ordinary farming work, keep the lever down

to leave the mechanism disengaged. The front wheel drive mechanism is very effective on the following jobs.

- (1) On slopes and in wet fields, or when connected to the Trailer or the Front-End-Loader where great traction is required.
- (2) On sandy land.
- (3) To prevent the tractor being thrust forward during rotary tilling hard soil.
- (4) Entering a job location or going over a high bank.

- PTO Gear shift Lever(Manual/Automatic)

Two PTO speeds can be obtained by shifting the PTO speed lever from the operator's seat.

If turning PTO switch to Automatic, rotary is operating only on working in filed. For example, if you lift rotary while working, the operating of rotary will be stopped. But if changing PTO switch to Manual, rotary is always operating.

- Hand Throttle

When the hand throttle is pushed forward, the engine speed will increase. When pulled rearward, the engine speed will decrease.



- Foot Throttle

The foot throttle is interlocked with the hand throttle. Depressing the foot throttle increases engine speed. Full engine speed control can be obtained with the foot throttle if the hand throttle is in full rearward position. The foot throttle may also be used to temporarily increases engine speed above the hand throttle setting.

- Clutch Pedal

When the clutch pedal is fully depressed, the clutch is disengaged. Shift the main shift lever to the desired speed and gradually release the clutch pedal, then the clutch will become engaged. The clutch should be disengaged by stepping on the pedal quickly, and engaged by slow releasing the foot from the pedal so as not to damage the clutch plate.

IMPORTANT :

- ***The clutch pedal must be quickly disengaged and be slowly engaged.***
- ***Never operate the tractor with your foot resting on the clutch pedal. Doing so may contribute to premature clutch wear.***

- Brake Pedals(Right and Left)

- (1) Before operating the tractor on a road, be sure to interlock the right and left pedals as illustrated below. It will be very dangerous to use only one brake.
- (2) Use individual brake to assist in making sharp turns. Disengage the brake lock and depress only one brake pedal with direction that you are turning.
- (3) When operating the tractor on roads, always be sure to interlock the left and the right brake pedals. Do not forget to observe this precaution, otherwise, stepping on only one brake while operating on roads would cause unforeseen accidents.



- Parking Brake Lever

- (1) To set the parking brake ;
 - Interlock the brake pedals.

- Depress the brake pedals.
 - Latch the brake pedals with the parking brake lever.
- (2) To release the parking brake, depress the brake pedals again.

- Differential Lock Pedal

Differential lock is applied only in cases where : the wheels are likely to slip, or only one of the rear wheel slips.

Lightly stepping on the differential lock pedal with the heel makes the rear wheels run at equal speed. To unlock, just release the pedal.



WARNING

- **To prevent loss of control of tractor, never use the differential lock at speeds above 5 MPH(8km/h).**
- **Never use the differential lock when turning the tractor. When engaged, the differential lock will prevent the tractor from turning.**

IMPORTANT :

- **If a rear wheel spins at speed, reduce engine speed before engaging the differential lock, to avoid shock loads to the transmission.**

- Seat

The operator's seat can be adjusted forward and backward in 100mm(3.9in.) range by pulling the seat sliding lever.

The seat has been especially designed so that it can be adjusted three stages, forward or

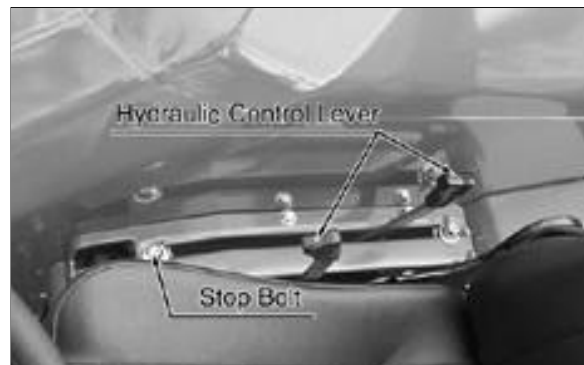
backward, to fit the physique of the operator. Furthermore, the seat can be tipped forward so that there would be no fear of the seat getting wet in the rain.



- Hydraulic control lever

Operating the hydraulic control lever actuates the hydraulic lift arm, which controls implement height or working depth.

To lower implement, push the lever forward ; to raise it, pull the lever back.



- How to use the Stop Bolt

- (1) Determine a desired working position, using the control lever.
- (2) Fix the stop bolt in the desired position.
- (3) After that, it is possible to return to the same position by moving the stop bolt.

4.3 Hydraulic unit

The standard tractor has the hydraulic control systems as below. Therefore, use the most appropriate system for the implement you are using.

- 3-Point Hitch Control System

- (1) Position Control
- (2) Draft Control
- (3) Mixed Control

- Remote Hydraulic Control System

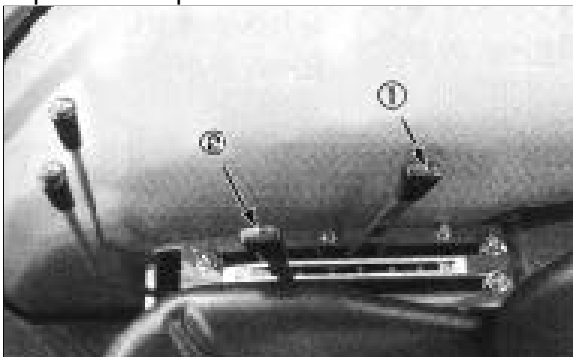
IMPORTANT :

- ***Do not operate until the engine is warmed up. if operation is attempted when the engine is still cold, the hydraulic system may be damaged.***
- ***If noises are heard when implements is lifting after the hydraulic control lever has been activated, the hydraulic mechanism is not adjusted properly. Unless corrected, the unit will be damaged. Contact your KIOTI Dealer for adjustment.***

3-Point Hitch control system

- Position Control

This will control the working depth of 3-point implements regardless of the amount of pull required. Place the draft control lever in the lowest position and set the implement working depth with the position control lever.

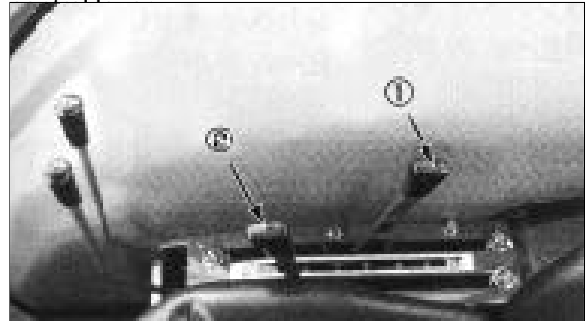


- (1) Position control lever
- (2) Draft control lever

- Draft Control

This will control the pull of the 3-point implement. As the load on the 3-point hitch changes due to various soil conditions, the draft control system automatically responds to these changes by either raising or lowering the implement slightly to maintain a constant pull.

Place the position control lever in the lowest position and set the implement pull with the draft

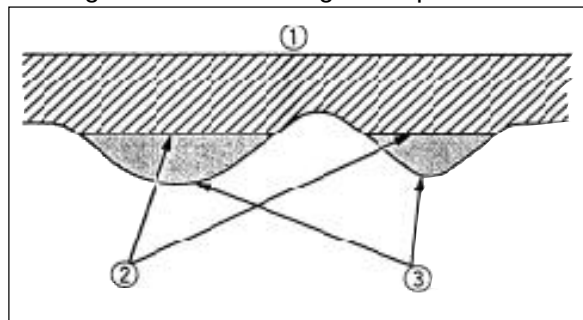


- (1) Position control lever
- (2) Draft control lever

- Mixed Control

In draft control, when draft decreases, the implement automatically lowers to increase draft. However, the implement sometimes lowers too much. To limit the degree, the implement can be lowered, set the position control lever at the lowest working depth desire for the implement. Lower the draft control lever to the point where the implement is at the desired depth.

This stops the implement from going too deep and causing loss of traction and ground speed.



- (1) Ground surface
- (2) Implement penetrate limit
- (3) Light soil

- 3-Point Hitch Lowering Speed

When lowering the implement, it operates smoothly.

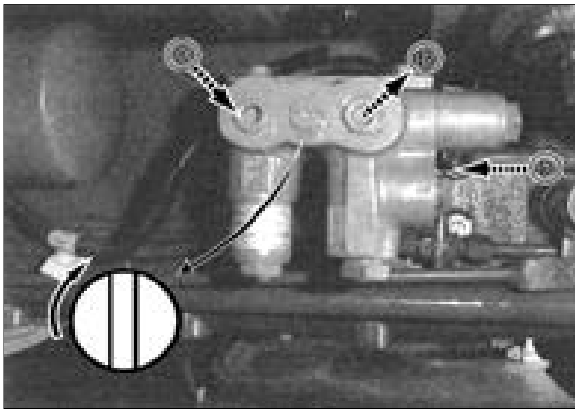
- Hydraulic Block Type Outlet

Hydraulic block type outlet is useful when adding hydraulically operated equipment such as: front end loader, front blade, etc.

When implement is attached

Remove the plugs.

- (1) Route the implement inlet, outlet, and return hoses as shown in the illustration.
- (2) Move the control screw groove to "Vertical position" when implement is attached.

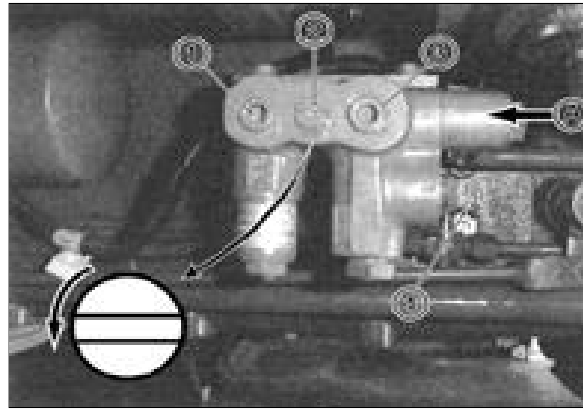


- (B) To the implement (Outlet)
- (C) From the implement (Inlet)
- (D) From the implement (Tank port)

Max flow : 7.4 gals./min (31 L/min)

Max pressure : 17.2 MPa (175 kgfcm², 2500psi)

When implement is not attached.



- (1) Inlet(plug) (A) From the gear pump
- (2) Control screw
- (3) Outlet(plug)
- (4) Tank port(plug)

IMPORTANT :

- **To prevent overheating and damage to the hydraulic system once an implement is detached, be sure the control screw is turned back to the "Horizontal position"**

Remote hydraulic control system(if equipped)**- Remote Control Valve Coupler Connecting and Disconnecting****WARNING**

To avoid personal injury :

- *Stop the engine and relieve pressure before connecting or disconnecting lines.*
- *Do not use your hand to check for leaks.*

- Connecting

1. Clean both couplers.
2. Remove dust plugs.
3. Insert the implement coupler to the tractor hydraulic coupler.
4. Pull the implement coupler slightly to make sure couplers are firmly connected.

- Disconnecting

1. Lower the implement first to the ground to release hydraulic pressure in the hoses.
2. Clean the couplers.
3. Relieve pressure by moving hydraulic control levers with engine shut off. Pull the hose straight from the hydraulic coupler to release it.
4. Clean oil and dust from the coupler, then replace the dust plugs.

NOTE :

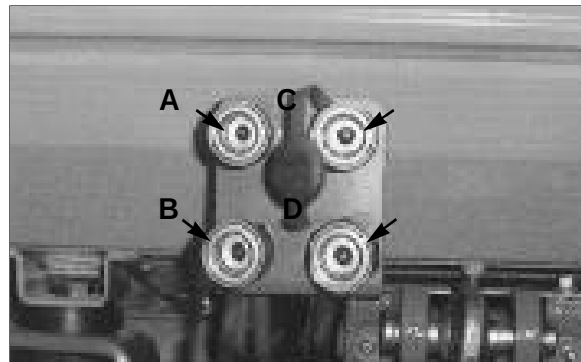
- *Your local KIOTI Dealer can supply parts to adapt couplers to hydraulic hoses.*

- Remote Control Valve Lever

Move the lever up or down and hold. This will raise or lower the implement. Lever will return to neutral when released.

IMPORTANT :

- *Do not hold the lever in the 'pull' or 'push' position once the remote cylinder has reached the end of the stroke, as this will cause oil to flow through the relief valve. Forcing oil through the relief valve for extended periods will overheat the oil.*
- *When using the tractor hydraulic system to power front loader, do not operate boom and bucket cylinders simultaneously.*



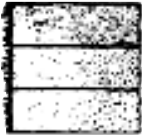
1, 2 Remote control valve lever

Lever ①		Push		Pull	
	Ⓐ	In	←	Out	⇒
	Ⓑ	Out	⇒	In	←
Lever ②		Push		Pull	
	Ⓒ	In	←	Out	⇒
	Ⓓ	Out	⇒	In	←

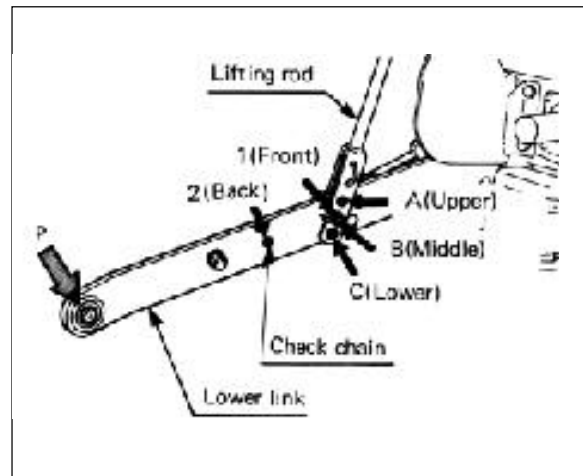
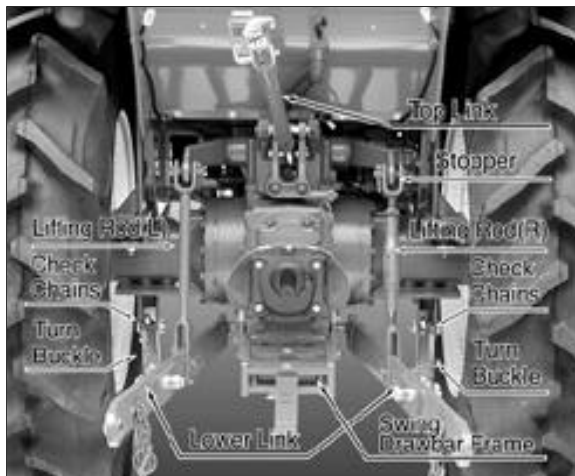
	Coupler size
Port Ⓐ Ⓑ	PT 1/2
Port Ⓒ Ⓓ	

- Hydraulic Control Unit Use Reference Chart

In order to handle the hydraulics properly, the operator must be familiar with the following. Though this information may not be applicable to all types of implements and soil conditions, it is useful for general conditions.

Implement	 Soil condition	with Position control		with Draft control		 Gauge wheel	 1. Telescopic stabilizers	Remarks
		 Top link mounting holes	 Position control lever	 Top link mounting holes	 1. Position control lever 2. Draft control lever			
Moldboard plow	Light soil Medium soil Heavy soil	1 or 2 2 or 3 3	Position control	1 or 2 2 or 3 3	Draft and Mixed control Place the draft control lever to the suitable position and set the implement pull with the position control lever	YES/NO	Loose	Adjust the telescopic stabilizer so that the implement can move 5 to 6 cm (2.0 to 2.4 in) laterally. Telescopic stabilizer should be tight enough to prevent excessive implement movement when implement is in raised position.
Disc plow	-	2 or 3		2 or 3	Position control	YES		
Harrow(spike, springtooth, disc type)	-	2 or 3	Position control	4	Hold the draft control lever at the most front position during operation.	YES/NO	Tighten	With implements with gauge wheels, lower the position control lever all the way.
Sub-solder	-	3		4	Position control	YES		
Webber, rider ...	-	3	4	Position control	YES			
Earthmover, digger, scraper, manure fork, rear carrier	-	3	4	Position control	YES			
Mower(mid-and rear-mount type Hayrake, tedder ...	-	3	4	Position control	YES			

5. Three-point Hitch & Drawbar

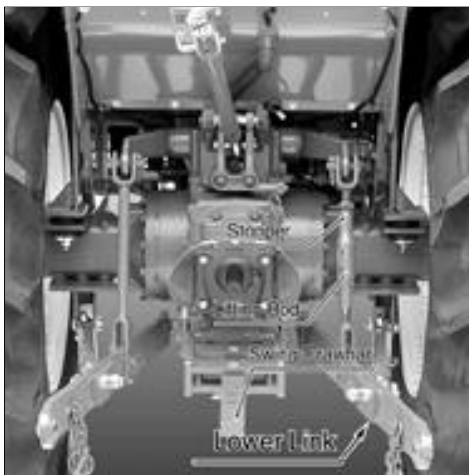


- Adjustment of Top Link

1. Adjust the angle of the implement to the desired position by shorting or lengthening the Top Link.
2. The fixing position of the top-hitch varies according to the type of implement being used.

- Adjustment of Lifting Rod

1. Adjust the position of the implement evenly by moving the lifting rod.
2. After the adjustment is completed, secure with the stopper.
3. Correct positioning of the lifting rod to the lower link is shown below. Positioning varies dependent upon the type of implement.



CAUTION :

- **Never use lower link 2(Back) hole.**

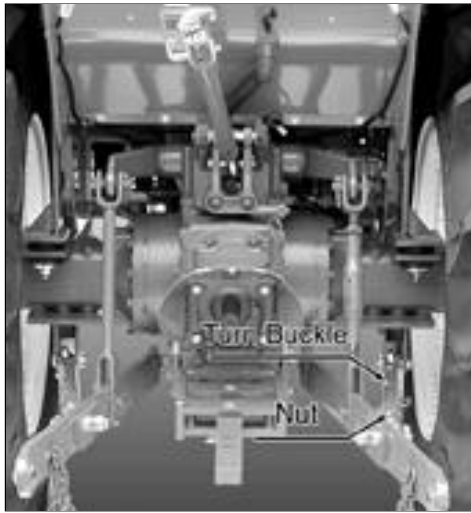


WARNING

• **Before disconnecting a lift rod from the lower link, stop the engine and lower attached equipment to the ground. Ensure attached equipment is correctly supported and that on residual pressure remains in the hydraulic system before removing the lift rod securing pin. Move the hydraulic lift control lever fully backward and forward several times, in order to remove any residual pressure, then move the lever fully forward.**

- Adjustment of Check Chains

Adjust the turn-buckle to control horizontal sway of the implement.



Type of implement	Chain adjustment
Plow, furrower, subsoiler, cultivator, ditcher	Loosen until the implement can be moved 50~60mm horizontally.
Rotary, mower, hay rake, tedder, ridger	Tighten

NOTE :

- ***Make sure (counter) nut is fully tightened away.***
- ***Check Links are adjusted.***

6. Wheels, Tires and Tread

When working the fields where plants are in rows, it is necessary to change the wheel tread so that the tires would not pass over the plants. It is also necessary to widen wheel tread to decrease danger when working on slopes or hills, or when doing trailer work, etc.



WARNING

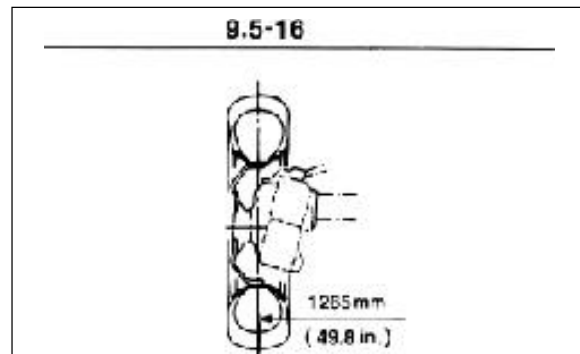
Never operate tractor with a loose rim, wheel, or axle

- **Always tighten nuts to the specified torque.**
- **Check all of them frequently and keep them tight.**

IMPORTANT :

Follow same checking procedure when tractor is first used.

- **To decrease the wheel tread danger when working on slopes or hills, or when working with trailer, etc.**
- **Do not use tires larger than specified.**



6.1 Tread-front

Front axle is not adjustable.

Check and tighten as instructed.

IMPORTANT :

- **Always attach tires as shown in the right-side drawings.**
- **If not attached as illustrated, transmission parts may be damaged.**
- **After changing wheel, nuts should be torqued to 57.2~66.5ft.lbs(77.5~90.1 N-m, 7.9~9.2kgf-m)**



WARNING

- **Do not use tires larger than specified.**

6.2 Tread-rear

The rear axle tread width are adjustable in 4 stages from 1180 to 1490mm (46.4 to 58.6in.) by changing the installation of the tire(together with rim) to the disk, to suit the type or condition of work.

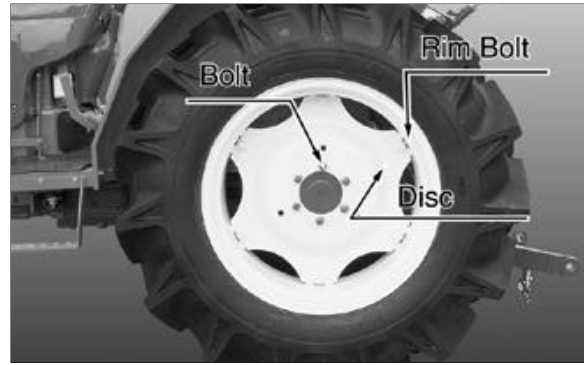
In either case, the tire should be installed so that arrow mark would show the direction of rotation. Furthermore, the tire mark on the ground should be in "V" shape.

To change the present tread to the desired tread, all of the arrow mark would show the direction of rotation. Furthermore, the tire mark on the ground should be in "V" shape.

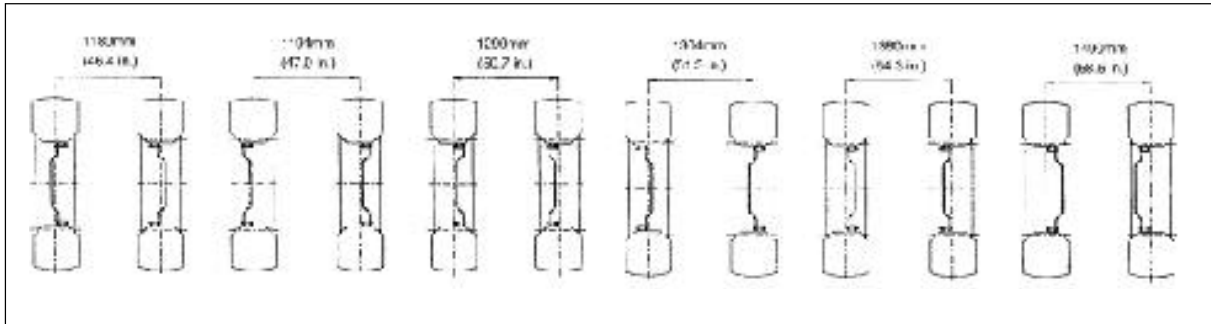
Remove rim bolts, slide in peripheral direction to move to outside or inside of disk and set.

Change the left with the right tire, and set to the inside or outside of the disk.

Change the direction of the disk.



Check and retighten as insrtucted on page 20

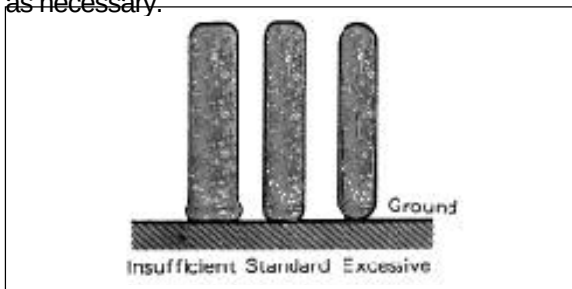


IMPORTANT :

- **Always attach tires as shown in the above drawings.**
- **If not attached as illusted, transmission parts may be damaged.**
- **After charging the wheel, nuts should be torqued to 145~165 ft-lbs(196~226 Nm, 20~23**

6.3 Tires

Though the tire pressure is factory-set to the prescribed level, it naturally drops slowly in the course of time. Thus, check it everyday and inflate as necessary.



WARNING

- **Do not use tires larger than**



WARNING

- **Do not attempt to mount a tire. This should be done by a qualified person with the proper equipment.**
- Qualified persons with the proper tire mounting equipment should recognize the following warning**



WARNING

- **Never exceed 241 kPa(35psi) when attempting to seat a bead. If beads have not been seated by the time the pressure reaches 241 kPa(35psi), deflate the assembly, reposition the tire on the rim, relubricate and reinflate. After seating the bead, adjust inflation pressure as recommended in the inflation pressure chart.**

6.4 Ballast

- Selecting Front Ballast.

Add weight to front end if needed for stability. Heavy pulling and heavy rear mounted implements tend to lift front wheels. Add enough ballast to maintain steering control and prevent tip over. Remove weight where it is no longer needed. Front weights are available from your KIOTI Dealer. Your dealer can help you decide how much is required for your particular application.

NOTE :

- ***Additional ballast may be needed for transporting heavy integral implements. When implement is raised, drive slowly over rough ground, regardless of how much ballast is used.***

- Select rear ballast carefully.

Add weight to rear wheels if needed to improve traction or for stability. Amount of rear ballast should be matched to job and ballast should be removed when it is not needed. Rear wheel weights are available or liquid may be added to the tires. Consult your KIOTI Dealer for the correct ballasting necessary for your particular application.

- Inflation Pressure

Classification		Tire Size	Inflation Pressure
AG	Front	9.5*16R1	140kPa(1.4kgf/cm ² , 20psi)
	Rear	14.9*24R1	140kPa(1.4kgf/cm ² , 20psi)
TURF	Front	29*12.5*15	140kPa(1.4kgf/cm ² , 20psi)
	Rear	21.5*16.1	170kPa(1.7kgf/cm ² , 24psi)
IND.	Front	12*16.5	140kPa(1.4kgf/cm ² , 20psi)
	Rear	17.5*24	140kPa(1.4kgf/cm ² , 20psi)

6.5 Toe-in

Front distance should be 2 to 8mm (0.078 to 0.3112 in.) less than rear distance [C.D - A.B]

To adjust toe-in loosen the lock nut and adjust the length of the tie rod until proper toe-in measurement is obtained. Retighten the lock nut.



7. Operating Instructions

Your KIOTI TRACTOR was designed and engineered for dependable performance during long service life. Follow the suggestions in this section of the Owner's Manual to help you obtain all the performance that was designed and built in your tractor.

As you become familiar with the operation of your new tractor, you will find it a flexible and reliable machine, designed and built with regular maintenance, will ensure maximum tractor life, economical operation and excellent performance.

7.1 Operating the engine

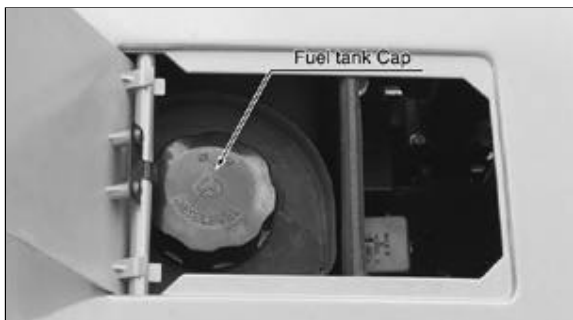
- Pre-Start Checks

Prior to starting the engine, make pre-start checks according to the Maintenance Check List on page 45 to 47.

7.1.1 Prestarting inspection

Before starting the engine each day, perform the following checks and services :

- * Do not start the engine in a closed storehouse, garage or room. Exhaust gas is poisonous. Be sure to open the doors and windows before starting.
- * Check fuel supply.
Use No.2 diesel fuel only.



Fill the fuel in the tank before it becomes empty. If a diesel system is allowed to run out of fuel, it will become necessary to air-bleed the system after filling the fuel tank.

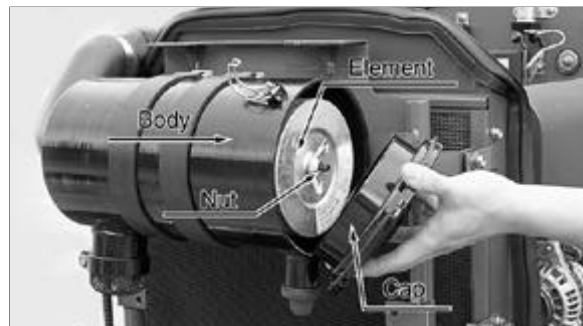
- * Check oil level in the engine crankcase and correct, if necessary.



- * Check the radiator coolant level and correct, if necessary. If operating in freezing temperatures, add anti-freeze.
Proper level is indicated in figure below.



- * Be sure air cleaner is free of obstructions and excessive dirt.
Clean as instructed on "Maintenance Cheks."



- Are all the grease nipples filled with sufficient chassis grease?

The front axle, tie rod, brake and clutch pedals, etc. are provided with grease nipples (p52,53).

For filling, wipe the nipple clean so that no dirt and dust may enter the grease.

- Check inflation pressure in tires

Also inspect if the tires are not too worn or otherwise damaged.

- Check the brakes

If the brake should function only on one side when both the right and the left brake pedals are depressed, adjust the length of the brake rod of the inactive brake using the turnbuckle in the rod (p59).

- Check the lights

Do you light up? Are they clean?

7.1.2 Starting the engine



WARNING

- **Do not start the engine in a closed room. Otherwise, the air will be polluted with exhaust gas which is very dangerous.**
- **Make it a rule to set main gear shift lever and PTO switch to the "neutral" positions before starting the engine.**

- Starting

1. Sit in the operator's seat. If the tractor is equipped with a ROPS, fasten the seat belt.
2. Set the parking brake.
3. Place Main gear shift lever and PTO switch in the Neutral position.
4. Place hydraulic control lever in lowest position.
5. Set the throttle lever approximately 1/4 of the way forward (approximately 1500 rpm position).
6. Insert the key into the key switch and turn it on.
7. Make sure that the engine oil pressure lamp is on.
8. Fully depress the clutch pedal and turn the key switch left, until the glow plug lamp turns red. Though the glow plug lamp turns red in about 10 seconds, it takes at least 20 seconds until the preheating coil in the combustion chamber is fully heated. The lower the ambient temperature, the longer the preheating time. For the

necessary preheating time, refer to the table below

Temperature	Preheating Time
Over 60°C (140°F)	0 sec.
Below 60°C (140°F)	15 sec.

9. Turn the key switch to the start position and the starter will turn and the engine should start.
10. Make sure that the engine oil pressure lamp has gone off. If the lamp is still on, immediately stop the engine and check the lubrication system.
11. Perform warm-up operations by running the engine at the medium speed.



CAUTION

- **If the starter switch is turned to the right and the engine does not catch within about 10 seconds, wait about 30 seconds and repeat the above procedures. If the switch is used for over 30 seconds or is continuously used without any rest, it will cause starter damage.**
- **If the oil pressure lamp or the battery charge lamp does not go off after the engine starts and runs at a specified speed, there is something wrong with the lubrication system or the battery charging system.**
- **Always allow engine to warm up before applying a load.**

IMPORTANT :

- **Do not turn the key switch while the engine is running.**

When the temperature is below 0°C (32°F), place the range lever in the neutral position and keep the engine at medium speed to warm up the lubricant of engine and transmission at least 10 minutes.

And after that depress the clutch pedal several times slowly.

If the tractor is operated before the lubricant of engine and transmission is warm enough, the tractor life will be shortened.

- **Don't operate the tractor under full load condition until it is sufficiently warmed up.**
- **Don't use starting fluid to prevent the serious trouble of engine.**

- ***When the ambient temperature is less than - 15°C(32°F), remove the battery from the tractor and store it somewhere warm until next operation.***

7.1.3 Stopping the engine

Reduce engine revolution and apply even foot pressure on both brake pedals. Depress the clutch pedal and place main gear shift lever and PTO switch in Neutral. Lower equipment. Allow engine to idle for a short time before turning it off. Stopping a hot engine at high speed may cause internal engine damage.

Set parking brake by pulling the rod.

Turn main switch key counterclockwise to the "OFF" position to open electric circuit.

IMPORTANT :

- ***Remove the key whenever you leave the tractor. Then you are certain the ignition and lights are off. Also, it prevents unauthorized operators from starting the tractor.***



WARNING

- ***After operating the tractor or engine, never touch the muffler on the heat shield until it has sufficient time to cool.***

7.2 Operating the tractor

- Pre-operation Inspection

Before starting, make a routine inspection of the tractor as outline in the maintenance check-list (p45).

Always allow engine to warm up before applying load.

- Selection travel speed

Depress clutch pedal, and shift the main gear shift lever and the range lever to the desire speed.

- Release parking brake

Depress brake pedals all the way, and the parking brake releases.

- Adjusting throttle position

Always operate power-drive equipment such as rotary mower, snow thrower, rotary tiller, etc., at 540 PTO rpm mark unless otherwise specified in the equipment owner's manual.

Use gear shift lever to select a safe travel speed. Proper travel speed will depend first on the type of equipment used on the tractor and second, on field, garden or yard conditions.

- Refer to your equipment owner's manual for more specific travel speed and PTO speed information

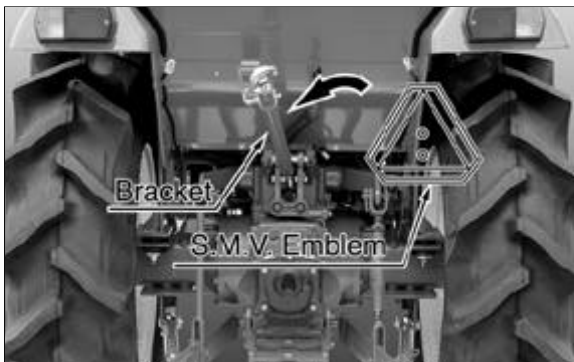
- Starting

1. Depress the clutch pedal to disengage the clutch.
2. Shift levers to the desired speed position.
3. Unlock the parking brake.
4. Speed up the engine by moving the throttle lever forward.
5. Slowly release the clutch pedal.



WARNING

- **Interlock the right and left brake pedals before starting. Uneven braking results in a sharp turn, which may even turn over the tractor.**
- **Do not allow any person other than the driver to ride on the tractor.**
- **Do not drive the tractor close to the edges of ditches or banks which may break under the weight of the tractor, especially when the ground is loose or wet.**
- **Slow the tractor down to a safe speed before turning.**
- **Do not drive the tractor on the road with the implement in motion.**
- **After the differential lock has been used, be sure to see that it has been released.**
- **When traveling on a road, attach the S.M.V. emblem to the tractor to identify itself to be a low speed vehicle at where it is required.**



IMPORTANT :

- **Do not move the tractor with the parking brake on.**
- **To avoid premature wear, do not use the clutch pedal as a foot rest**
- **Hi-Low gear shift levers cannot be shifted while the tractor is moving. And main gear shift lower can be shifted by depressing and selecting speed.**

* When descending steep slopes, engage the gear and descent with the clutch engage.

* Always be sure to interlock two brake pedals when operating the tractor on roads.

7.3 Stopping the tractor

1. Reduce engine speed by pulling hand throttle rearward and removing your foot from the foot throttle.
2. Interlock the right and left brake pedals and put on the parking brake.
3. Place main shift gears by moving levers in neutral position.
4. Lower attachment to ground.
5. Stop engine and remove key from switch.

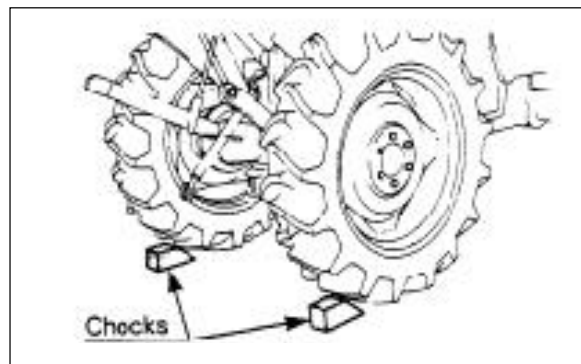
7.4 Parking

1. After the tractor stops, check to interlock the right and the left brake pedals.
2. Set the parking brake by pulling the lever on depressing pedals until it is set.
3. Return the main gear shift lever and the range lever to neutral.



WARNING

- **If necessary to park on an incline, be sure to chock the wheels to prevent accidental rolling of the machine.**
- **Before getting off the tractor, be sure to stop the engine and lower the implement to the ground.**



7.5 Turning

When turning on curves, be sure to reduce the speed, then turn the steering wheel.



WARNING

- ***The individual rear wheel braking on this tractor permits tighter turns and increased traction under slippery conditions. Sudden application of one brake at higher speed or while making fast turns could cause the tractor to roll over.***

7.6 Check while operating

While driving, make the following checks to see that all the parts are functioning normally.

- Cooling Water



WARNING

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

If the temperature of the cooling water rises above 100°C(212°F), Immediately stop the engine and exercise the following checks and remedies, with the safety caution in mind.

1. Shortage or leakage of cooling water.
2. Foreign matter on the radiator net and dust and dirt between the radiator fins and tube.
3. Loose the fan drive belt.
4. Blockage in the radiator tube.

NOTE :

- ***For details concerning supply of water to the radiator, read section on the radiator on page 54.***

- Engine Oil Pressure Lamp

The pressure lamp signals to the operator that

the

engine oil pressure is below the prescribed level. If the lamp should go on during operation, immediately stop the engine and check :

1. The level of the engine oil (See page 49)
2. The conditions of the lubrication system. [The oil lamp is lighted up at a pressure under 7.1 psi (0.5 kg f/cm² : 49 KPa)]. However, there is no trouble if the lamp should light up when the engine is running at slow speed.

- Battery Charge Lamp

The charge lamp signals to the operator that alternator is not charging the battery.

If the lamp goes on during operation, immediately stop the engine and check :

1. Wiring failure.
2. Connection failure of alternator and regulator.

- Fuel

1. Do not allow the fuel tank to empty completely.
2. Doing so will allow air to enter into the fuel system.
3. Should this happen, the fuel system must be held. (See page 48).

- Exhaust Fumes

1. Exhaust fumes are colorless at normal output drive.
2. If used at output over the rated output, exhaust gas may become a little colored, but the output will not drop. But if the tractor should be operated with continuous dark exhaust gas, it may become the cause of troubles, so check the working condition and operate the tractor so that it will not be overloaded.

- Urgent Stop

Should the following abnormally take place, immediately stop the engine.

1. The engine suddenly slows down or speeds up.
2. Unusual noises are suddenly heard.
3. Exhaust fumes suddenly become very dark.
4. The engine oil pilot lamp goes on while operating.
5. The battery charge lamp goes on while operating.

For checks and remedies in the above situations, consult your dealer for instruction.

7.7 Driving on public roads

1. Make sure the left and right brake pedals are interlocked before driving on public roads.
2. Do not rest your foot on the clutch pedal while driving on public roads.
3. On public roads, only the driver is allowed to ride on the tractor.
4. Pay close attention to the condition of the roadside(shoulders) on public roads. There have been cause of roadside collapse due to the weight of the tractor. Special caution must be taken on rainy days.
5. Be sure to reduce engine speed, or if necessary, change to "low" speed range when turning the tractor on sharp curves.
6. Use engine to brake when descending steep slopes.
7. While driving on public roads, obey all safety regulations and allow automobiles traveling faster to pass. Do not block the road.

7.8 Operation on slopes

- Engine braking

When tractor is on a downward slope, pull the hand throttle rearward and release the foot throttle. Then the engine speed will drop, which will brake the tractor.

When traveling the tractor down on a slope, never depress the clutch pedal but use the engine brake to travel down. If necessary to further reduce the tractor speed, depress



WARNING the brake pedal lightly.

- *It is dangerous to travel down a slope by just depressing the brake pedals while disengaging the clutch.*

7.9 Handling the tractor on the farm

- Operation on Farm Roads

1. Stop operation of any attached farming

implement while driving on farm roads.

2. The front wheels of the tractor tend to lift when farm implements are attached to the rear of the tractor.
3. When it is necessary to attach a large-sized or extra heavy implement to the rear of the tractor, contact your dealer for selection of an appropriate counter weight for the front and slow down.
4. While driving the tractor on farm roads, keep in mind safe driving practices.

NOTE :

- *For maximum safety always pay close attention to the balance between the front and rear wheels of the tractor.*

- Operation in the Field

1. For field work, disconnect the brake pedal interlock so that the right and left brakes can be engaged so separately.
2. Be careful not to force sudden loads while operating implement from the power-take-off since such loads tend to shorten engine life. Always lower implements slowly.



WARNING

- *Never pull from the top link, the rear axle any point above the drawbar. Doing so could cause the tractor to roll over rearward causing personal injury.*
- *For pulling, attach to the drawbar(swinging type). Use the 3-point hitch only with equipment designed for 3-point hitch usage.*



7.10 Use of the differential lock

Observe the following precautions when applying the differential lock.

1. Apply the differential lock moderately. Limit its use to the below situations.
 - When the tractor enters or leaves the farm field, it cannot move straight because of excessive individual wheel-spin under difficult or slippery field conditions.
 - One rear wheel is caught in a loose area of the field and the tractor cannot move due to wheel-spin.
 - In the cases of plowing, the rear wheel closer to the ridge is caught in the loose soil and is affected by wheel-spin.
1. Always reduce engine speed when engaging the differential lock.
2. The use of the differential lock must be limited to a particular period of time and cannot be applied beyond that limit.
3. When the rear wheel is subjected to excessive loads, even releasing the pedal sometimes may not unlock the differential although the pedal springs back. Should the differential not unlock when turning the tractor, lightly step on the brake pedal opposite to the turn side or turn back the steering wheel and run the tractor straight. By doing so, the differential can be unlocked. If the brake pedal of the turn side is depressed during turning, the differential lock system takes on an undue load. Be careful about such a improper operation.

IMPORTANT :

- ***Never use the differential lock when turning the tractor. When engaged, the differential lock will prevent the tractor from turning.***

8. Maintenance

8.1 Daily check

To prevent trouble from occurring, it is important to know the conditions of the tractor well. Check it before starting.

NOTE :

• ***Be sure to check and service the tractor on a flat place with the engine shut off and the parking brake on.***

1. Check the parts where there was trouble before.
2. Walking around the tractor ;
 - 1) Check the tire pressure, and check for wear and damage (See page 35, 36).
 - 2) Check for oil and water leaks.
 - 3) Check the engine oil level (See page 50).
 - 4) Check the amount of transmission oil (See page 51).
 - 5) Check if there is enough fuel (See page 48).
 - 6) Check if there is enough coolant in the radiator (See page 54).

- 7) Check for dust load in the air cleaner dust cup (See page 53).
- 8) Check the tractor body for damage and check that all bolts and nuts are tight.
- 9) Check the pilot lamps for failure.
- 10) Check the S.M.V. emblem for damage and clean or replace as necessary.
3. While sitting in the operator's seat ;
 - 11) Check the throttle pedal, brake pedals and clutch pedal (See page 58,59).
 - 12) Check the parking brake.
 - 13) Check the steering wheel (See page 59)
4. Turning the key switch on ;
 - 14) Check the performance of the pilot lamps.
 - 15) Check headlights, tail lights and hazard lamps, clean if necessary.
5. Starting the engine ;
 - 16) Check the color of the exhaust fumes.

8.2 Lubricants

To prevent serious damage by hydraulic systems, use only KIOTI genuine fluid or its equivalent.

Place	capacity	Lubricants								
Engine crankcase	7L (7.4 u.s.qts.)	Engine oil : API Service CC or CD SAE 15W - 40								
Transmission	34L (35.9 u.s.qts.)	Multi-grade transmission fluid The fluid listed below or equivalent are recommended. <table><tr><td>Maker</td><td>Brand(Standard)</td></tr><tr><td>SHELL</td><td>DONAX-TD, DONAX-TM</td></tr><tr><td>Mobil</td><td>Mobil Fluid 423</td></tr><tr><td>Exxon</td><td>Torque Fluid 56</td></tr></table>	Maker	Brand(Standard)	SHELL	DONAX-TD, DONAX-TM	Mobil	Mobil Fluid 423	Exxon	Torque Fluid 56
Maker	Brand(Standard)									
SHELL	DONAX-TD, DONAX-TM									
Mobil	Mobil Fluid 423									
Exxon	Torque Fluid 56									
Front axle case	8.2L(8.6 u.s.qts.)	Gear oil SAE 80 or SAE 90								
Pedal shaft Clutch release hub Seat adjuster	moderate amount	SAE multi-purpose type grease								

8.3 Maintenance check list

NOTE :

- ***Make sure stop engine completely prior to checking and adjusting.***
(for details please refer to the attached check list.)

Frequency of check	Check	Notes	Remarks
Initial operation (first 60 hours)	During this period, pay attention to the following 1) After the first 35 hours of use, change the engine oil. 2) After the first 50 hours of use, change the transmission oil, front axle case oil and hydraulic oil filter. 3) Sudden starting or sudden braking should be avoided. 4) When the outside temperature is low, allow the engine to warm-up prior to operation. 5) Unusually fast driving must be avoided. 6) Reduce speed on slopes or during bad road conditions.		
Daily checks (check every-time prior to use)	1) Check completely all abnormalities found during previous operation. 2) Go around the tractor and check the following points 1. Air pressure, wear and general condition of tires 2. Oil or water leakage 3. Amount of engine oil and degree of contamination 4. Amount of transmission oil and degree of contamination 5. Amount of fuel and coolant 6. Condition of dust cup in air cleaner 7. Tractor body for damage, loosened bolts and nuts 8. Condition of lamps 9. Dirt or damage of the number plate 3) While in the driver's seat check the following 10. Operation of brake pedals and clutch pedals 11. Operation of parking brake 12. Operation of steering wheel 13. Dirt on lamps and operation of lamps 14. Operation of all meters and gauges 15. Color of exhaust gas 16. Operation of wipers	See page 36 The oil level must be between the two marks on the dipstick. The oil level must be to the top line on the dipstick. Stop the engine while adding oil.	

Frequency of check	Check	Notes	Remarks
Every 50 hours	1) Lubrication 1. Front axle (on right and left sides) 2. Connection of brake pedals (two points) 3. Right side of lifting rod 4. Tie rod end (two points) 5. Front wheel drive lever 2) Check to make sure fixing screws of oil pressure pipe and fuel pipe are tight.	Apply a small amount of chassis grease.	
Every 75	Change engine oil.	Amount of oil : 7L(7.4 u.s.qts.)	
Every 100 hours	1) Lubricate the following points. King pins, Pedal shaft. 2) Check the following points to be connected securely. Hydraulic inlet pipe clamps. Fuel pipe clamps. 3) Clean air cleaner element. 4) Clean fuel filter. 5) Check battery electrolyte level. 6) Check fuel pipe. 7) Check fan drive belt tension 8) Check clutch play. 9) Check brake play. 10) Check steering wheel play. 11) Check front axle support. 12) Check Toe-in.	Wash away old oil with pure element detergent. The difference between the front and rear most ends of wheels should be between 0.0787 to 0.3149 in. (2 to 8mm)	
Every 150 hours	1) Check that the radiator hose is fastened securely. 2) Check fuel pipe, radiator pipe, oil pressure pipe. 3) Change engine oil filter cartridge.	The oil level should reach just below. Insert a new element after washing inside of filter with light oil.	
Every 200 hours	1) Check that the clutch pedal properly and has sufficient play. 2) Check that the brake pedals work properly and have sufficient play. 3) Check that fan belt tension is proper. 4) Check that the steering wheel works properly. 5) Clean oil pressure filter. 6) Check front wheel shaft supporters so that no vibration occurs during operation.	1.57 to 1.96 in. (40 to 50mm) 0.98 to 1.57 in. (25 to 40mm) Adjust fan belt so that it has about 9/32 in. (7mm) play in tension. 13/16-2 in. (20-50mm) at outer circumference. Wash with kerosene or light oil.	
Every 300 hours	1) Clean fuel tank. 2) Change transmission oil. 3) Apply grease to clutch release hub.	40L(42.3 u.s.qts.) 34L(35.9 u.s.qts.) Apply a small amount of bearing grease.	

Frequency of check	Check	Notes	Remarks
Every 300 hours	4) Check that bearing, cylinder head and pump connections are tight. 5) Apply grease to the front wheel hubs (right and left sides, two points each) 6) Front axle case. 7) Change transmission oil filter cartridge.	1.6 oz. (45g) of bearing grease. 8.2L(8.6 u.s.qts.)	
Every 400 hours	Change fuel filter.	1. Tighten cock of fuel filter and then replace filter. 2. Dampen gasket with fuel and hand tightem. 3. Make sure all air is bled from fuel line after installation of new filter.	
Every 500 hours	Clean engine cooling system		
Every one to two months	Recharge Battery if necessary.		
Every 3 months	Change scale inhibitor and coolant.		
Every year or every 6 times of cleaning	Change air cleaner element.		
Every year	Change anti-freeze and coolant.		
Every 2 years	1) Change battery, if necessary. 2) Change radiator hose and tightener band. 3) Change fuel pipe and tightener band. 4) Change hydraulic hoses and tightner band. 5) Change fuel pipe, water pipe and connector of oil pressure pipe.		

9. Check and Maintenance

9.1 Fuel

- Checking and Refilling

NOTE :

- **Stop the engine before adding fuel. Keep away from sparks and flames.**

1. Check the fuel level. Take care that the fuel level does not fall under the prescribed lower limit.

Fuel tank capacity	40L(42.3 u.s.qts.)
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2. Use diesel fuel or No. 2 diesel fuel.
3. Use No. 1 diesel fuel, if temperature is below $-10^{\circ}\text{C}(15^{\circ}\text{F})$



IMPORTANT :

- **Always use a strainer in refueling to prevent fuel injection pump contamination.**
- **Once the fuel tank becomes empty, air is admitted to the fuel system. If air enters the fuel system, it must be eliminated before the engine can be started.**

- To eliminate air from the fuel system

Air must be eliminated:

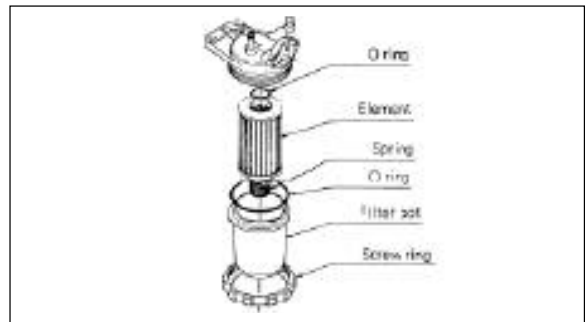
1. When the fuel filter and pipes are removed.
2. When tank is completely empty.
3. After the tractor has not been used for a long period of time.

NOTE :

Do not bleed the fuel system when the engine is hot.

In order to eliminate air from the fuel system, proceed as follows

- Fill the fuel tank with fuel and open the fuel cock. (Use only No. 2 diesel fuel.) (42.3 u.s. qts. : 40L)
- Loosen the air vent cock of the injection pump two or three turns using hand while operating the fuel pump on the condition of key "on".
- When there are no more air bubbles in the fuelline which flows out, tighten as before.



IMPORTANT :

- **When the air venting is finished, fuel which does not contain air bubbles will be filtered by the fuel filter and sent to the fuel injection pump. Fill the fuel tank before it becomes empty. If a diesel system is allowed to run out of fuel, it will become necessary to eliminate air from the fuel system after filling the fuel tank.**



- Checking Fuel Pipe



WARNING

- **Stop the engine when attempting the check and change prescribed below.**
- **Never fail to check the fuel pipe periodically. The fuel pipe is subject to wear and aging, fuel may leak out onto the running engine, causing a fire.**

Although checking the fuel pipe connection is recommended every 100 service hours, it should be done every 6 months if operation does not exceed 100 hours in 6 months.

1. If the tightener band is loose, apply a slight coat of lubricant onto the threads and securely tighten it.



2. The fuel pipe is made of rubber and ages regardless of period of service. Change the fuel pipe together with the tightener band every two years and securely tighten.
3. However, if the fuel pipe and tightener band are found damaged or deteriorated earlier than two years, then change them right off.
4. After the fuel pipe and tightener band have been changed, bleed the fuel system.

IMPORTANT :

- **When the fuel pipe is disconnected for change, close both ends of the fuel pipe with a piece of clean cloth or paper to prevent dust and dirt from entering. Entrance of dust and dirt cause malfunction of the fuel injection pump. In addition, particular care must be taken not to**

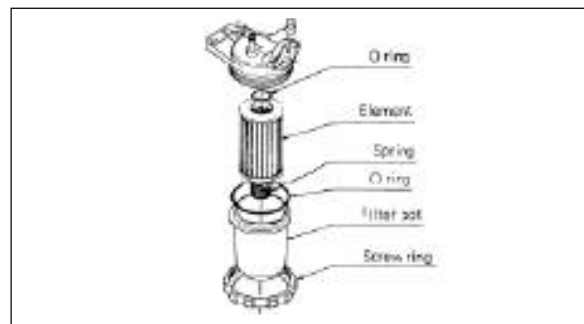
admit dust into the fuel pump.

-Cleaning the Fuel Filter Pot

When period of operation reaches approx. 100 hours, clean the fuel filter.

This job should not be done in the field, but in a clean place so as to prevent dust entry.

1. Close the fuel filter pot cock.
2. Unscrew and remove the top cap, and rinse the inside with kerosene.
3. Take out the element and dip it in the kerosene to rinse.



4. After cleaning, reassemble the fuel filter, keeping out dust and dirt.
5. Bleed the injection pump.

IMPORTANT :

- **If dust and dirt enter the fuel, the fuel pump and injection nozzle are subject to quick wear. To prevent this, be sure to clean the fuel filter pot periodically.**

9.2 Engine oil

- Oil Level Check and Refill (See page 44)

1. Check engine oil before starting the engine and 5 minutes or more after the engine has stopped.
2. To check the oil level, draw out the dipstick, wipe it clean, replace it, and draw it out again. Check to see that the oil level lies between the two notches.

3. If the level is too low, add new oil to the prescribed level at the oil port.



4. When using an oil of different maker or viscosity from the previous one, discard used lubricating oil in a safe place. Never mix two different types of oil.
5. Use the proper Engine Oil SAE according to the ambient temperatures.
Refer to 8.2 "LUBRICANTS."

Oil used in the engine should have an American Petroleum Institute (API)/SAE classification of Service DS(CD). It is easier to exchange oil while the engine is warm.

Depending on prevailing air temperature ; use oil of viscosity SAE 15W - 40.

- Engine Oil Change

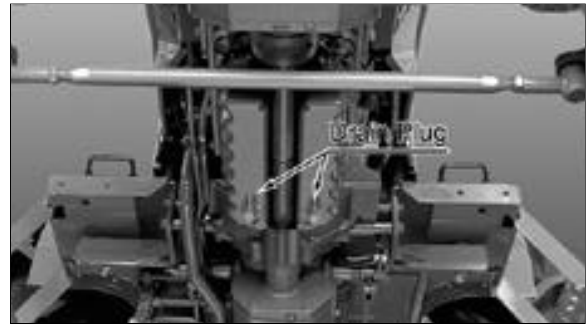
NOTE :

- **Before changing the oil, be sure to stop the engine.**

After the first 35 hours of operation of a new tractor and each 75 hours thereafter, exchange oil.

1. To change the used oil, remove the drain plug at the bottom of the engine and drain the oil completely. Used oil can be drained out easily when the engine is still warm.
2. Open the drain plug.
3. Fill with the new oil up to the upper notch on the dipstick.

When the oil has to be changed to that of a different brand or of a different viscosity, the inside of the crank case should be washed and cleaned with an approved cleaning fluid filled with new engine oil, even if used hour does not reach the hours stated above.



-Engine Oil Filter Cartridge Change

NOTE :

- **Be sure to stop the engine before changing the oil filter cartridge.**

1. The oil filter cartridge must be changed every 150 service hours.
2. Apply a slight coat of oil onto the cartridge gasket.
3. To install the new cartridge, screw it in by hand. Over tightening may cause deformation of rubber gasket.
4. After the new cartridge has been replaced, the engine oil normally decreases a little. Thus see that the engine oil does not leak through the seal and be sure to read the oil level on the dipstick. Then, refill the engine oil up to the prescribed level.



* When the engine oil is especially dirty, Replace the oil filter. Be careful at the time of disassembly so as not to damage the relief valve, regulation valve, etc. Reassemble correctly as before. After reassembly and starting the engine, the oil level will drop by the amount of the oil which enters to the oil filter. Start the engine once so that the oil will penetrate to the various parts and

check to see if there is nothing abnormal in the oil

pressure (The oil lamp will go off.). Then stop the engine and add engine oil. then, restart for operation.

IMPORTANT :

- **To prevent serious damage to the engine, replacement element must be highly efficient. Use only a KIOTI genuine filter.**

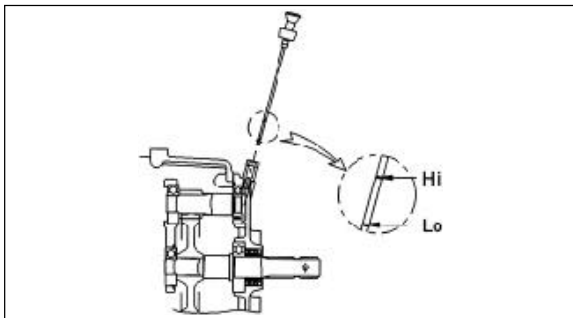
9.3 Transmission fluid

- **Be sure to stop the engine before checking and changing the transmission fluid.**

- Transmission Fluid Check and Refill

View the fluid level through the fluid level gauge. If short, refill it through the port. Use multi-grade transmission fluid. (See page 44).

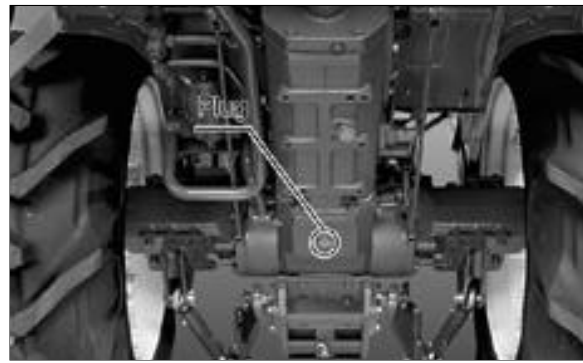
After the first 50 hours of operation of a new tractor and 300 hours thereafter, exchange oil. It is easier to exchange oil when the engine is warm.



- Transmission Fluid Change

The fluid in the transmission case is also used for the hydraulic system. To drain the fluid in the transmission case, place oil pan underneath the transmission case and remove the drain plugs at the bottom of the transmission case. After draining, remove and change the filter cartridge.

After reassembling, fill with new multi-grade transmission fluid.



IMPORTANT :

- **Never operate the tractor immediately after changing the transmission fluid and filter cartridge. Keeping the engine at medium speed for a few minutes prevents the damage of transmission.**

NOTE :

- **Be sure to stop the engine before changing the oil filters.**

- Transmission Oil Filter Cartridge

1. The oil filter cartridge must be cleaned every 300 service hours. It is located to the right of the tractor.



- To Remove and Replace the Filter

The hydraulic/transmission filter is located on the right side of the tractor. To remove, turn the filter counterclockwise. Be sure to move a drain pan under the filter before completely loosening it. After the filter is removed, clean the metal surface of the filter base where the rubber gasket contact. Use a clean rag. Make sure the filter gasket is off the filter housing. Lubricate well the metal sealing surface with clean hydraulic/transmission fluid. Do not use gear oil or grease. Lubricate the gasket of the filter

with clean hydraulic/transmission fluid. Spin the filter in a clockwise direction onto the filter housing. Do not over tighten the filter. After the filter has made contact with the metal surface, turn it by hand two-thirds to three-quarters of a turn.

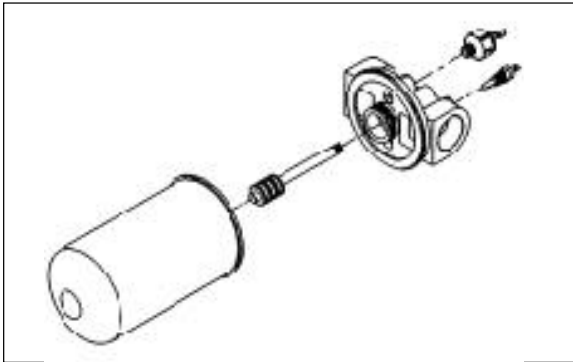
IMPORTANT :

- **All current model KIOTI Tractors come with a re-usable hydraulic filter.**

This filter can be taken apart, cleaned and reassembled. Care should be taken not to damage the inner filter screens when cleaning, do not use sharp objects to clean these screens as they may increase the mesh hole size leading to incorrect filtering and serious damage to the tractor hydraulic system.

Spare parts for these filters are available through your **KIOTI** dealer.

When using auxiliary hydraulics, clean the transmission/hydraulic filter after the first 50 service hours.



9.4 Changing front axle differential case oil (see page 44)

Remove the drain plug and filling port plug to drain the used oil. After draining, replace the drain plug and fill with new oil.



9.5 Changing front axle gear case oil (see page 44)

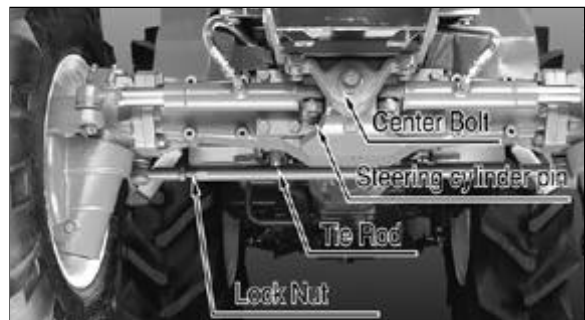
Remove the drain plug and filling port plug to drain the used oil. After draining, replace the drain plug and fill with new oil.



9.6 Oiling and greasing points before starting

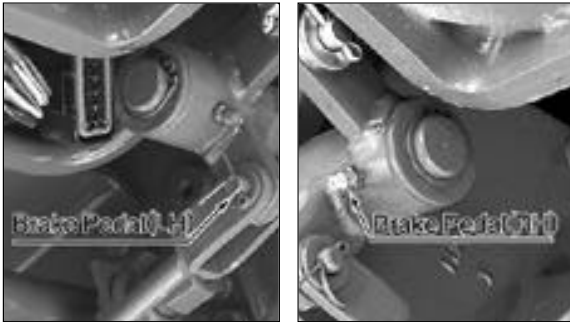
Oil or grease the following points before starting.

- Steering cylinder and tie rod assembly



- Pedal Shaft

Grease brake, clutch pedal and pedal shaft support.



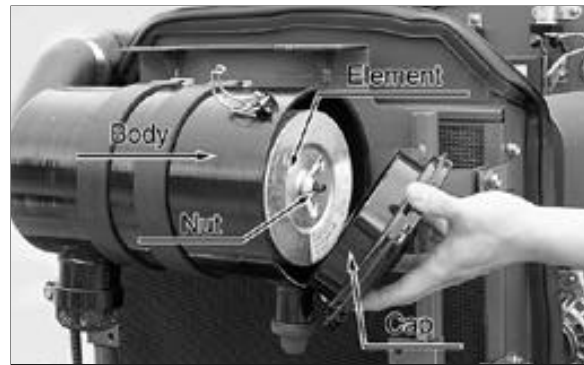
- Seat Adjuster

Apply the grease on the surface of sliding guide.



9.7 Air cleaner

1. The air cleaner uses a dry element, never apply oil.
2. Do not let dust build up to more than a half of the dust cup. Detach the dust cap and clean out the dust and clean the element normally once a week, but everyday if working conditions are especially dusty.
3. Do not touch the filter element except in cases where cleaning is required.
4. When cleaning the element, refer to the instructions attached.
5. If the element is stained with carbon or oil, replace the filter.
6. Change the element every 6 months or every 100 hours.



9.8 Cleaning air filter element

1. To clean the element, use clean dry compressed air on the inside of the element. Air pressure at the nozzle must not exceed 29 PSi (2kgf/cm²). Maintain reasonable distance between the nozzle and the filter.

IMPORTANT :

- ***The air cleaner will only fulfill this function if it is correctly and regularly maintained. A poorly maintained air cleaner will mean loss of power, excessive fuel consumption and a reduction in engine life.***

NOTE :

- ***Be sure to refit the dust cup with the arrow Δ(on the rear) upright. If the dust cup is improperly fitted, dust passes by the dust cup and directly adheres to the element.***
- ***Do not run the engine with filter element removed.***

9.9 Radiator

NOTE :

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

- Checking, Refilling and Changing Coolant

1. Remove the radiator pressure cap and check to see that the coolant level is just below the port. If low, add clean water.

Prescribed quantity	8.9L(9.4 u.s.qts.)
---------------------	--------------------

IMPORTANT :

- ***Use clean, fresh water to fill the radiator.***
- ***Securely tighten the radiator cap.***



3. To drain the used coolant, open the radiator drain cock and remove radiator cap. The radiator cap must be removed to completely drain the radiator.



4. Be sure to close the pressure cap securely. If the cap is loose or improperly closed, water may leak out and the engine could overheat.
5. Radiator should be filled with part of anti-freeze and water at all times as recommended by the

anti-freeze manufacturer. The anti-freeze contains a corrosion inhibitor and will allow a higher operating temperature in the radiator during the hot season.

6. Don't use an anti-freeze and scale inhibitor at the same time.

- Checking Radiator Hose

Checking radiator hose tightness is prescribed about every 150 service hours, but every 6 months is all right so long as service duration does not exceed 150 hours in 6 months.

1. If the tightener band is loose, apply a slight coat of oil and securely retighten.
2. The radiator hose is made from rubber and tends to age. It must be changed every two years. Also change the tightener band and



- Remedying Water Leakage

1. A small water leak can be eliminated with the KIOTI Radiator Cement No. 40 or equivalent.
2. If water leakage should become excessive, consult your local dealer.

- KIOTI Scale Inhibitor No. 11

1. The KIOTI Scale Inhibitor No. 11 prevents scale formation in the cooling water. Scale which builds up in either hard or soft water, sharply reduces cooling efficiency.
2. The Scale inhibitor is effective for 3 months so a complete change of cooling water must be done every 3 months.

- Cleaning Cooling System

1. The water cooling system should be cleaned on the following occasions :

- Every 500 service hours
- When adding an anti-freeze solution
- When changing from water containing anti-freeze to pure water.

2. When cleaning the water cooling system, the KIOTI Scale Inhibitor No. 20 is recommended to effectively wash away the scale built-up.

- Anti-Freeze

If the cooling water freezes, the engine cylinder and radiator may crack. In cold weather before the temperature drops below 0°C(32°F), drain out the water or add a proper amount of anti-freeze when the tractor is shut shown.

1. There are two types of anti-freeze solutions, permanent type(PT) and semi-permanent type(SPT). For the KIOTI Engine, be sure to use the permanent type.
2. When anti-freeze is used for the first time, fill and drain clean water two or three times so as to completely clean the inside of the radiator.
3. Radiator should be filled with anti-freeze and water solution as recommended by the anti-freeze manufacturer. The anti-freeze contains a corrosion inhibitor and will allow a higher operating temperature in the radiator during the hot season. Remember that the effective cooling water capacity of the radiator is 8.9L9.4 u.s.qts).
4. Mix the anti-freeze and the water, then pour the mixture into the radiator.
5. When the cooling water mixed with anti-freeze decreases due to evaporation, refill with water only. If loss has been due to leaking, add water and anti-freeze mixture with the same mix ratio as the original preparation.
6. Anti-freeze solutions absorb moisture, so be sure to securely close the container after use.
7. Anti-freeze and water should be changed every year.
8. Do not use an anti-freeze and a scale inhibitor at the same time. This may cause sludge to form, adversely affecting the engine parts.

- Checking and Cleaning Radiator

Daily or every 5 hours of operation, check to be sure the radiator net and radiator core are clean.

Dirt or chaff on the radiator net or radiator core are decrease cooling performance.

1. In that case, detach the net and remove all the foreign materials from them.
2. Remove the dust from between the fins and the tube.
3. Tighten the fan drive belt as necessary. For this, refer to page 58.
4. If scale forms in the tube, clean with KIOTI scale inhibitor.

- Temperature

when the water temperature is over 212°F(100°C)

1. Check to see if dirt, dust, etc. are caught in the radiator net or the radiator tube and fin.
2. Check to see if the fan belt has not become loosened and tight.
3. Check to see if fur has formed in the pipes of the radiator.
4. Check to see if the thermostat is working properly. Remove the thermostat and dip it into hot water, and then check to see if it opens at the temperature marked on the thermostat. If the thermostat does not work properly, replace with new one.

NOTE :

- **Never run engine with filter element removed.**



- Clean the radiator net

When the tractor is used in wet fields, grass seeds may get caught, or mud may splash into the radiator net. Also when used at night, insects may become caught on the net. In such cases remove the net and clean it well.

9.10 Battery



WARNING

- **Never remove the battery cap while the engine is running. Keep electrolyte away from eyes, hands and clothes. If you are spattered with it, wash it away completely with water.**

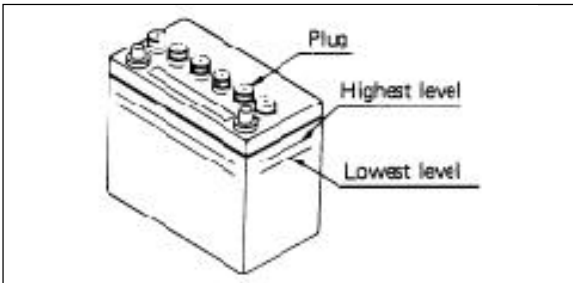
Mishandling the battery shortens the service life and adds to maintenance costs. Be sure to handle it correctly so that it will develop its full potential performance.



WARNING

- **Gas given off by batteries is explosive. To avoid injury or battery damage, avoid sparks near the batteries.**

1. If the battery is weak, the engine is difficult to start and the lamps become dim. It is important to check the battery daily and recharge before trouble occurs.
2. The water in the electrolyte evaporates during recharging. Liquid shortage damages the battery and excessive liquid spills over and damages the tractor body. If low, be sure to fill up the battery with distilled water.



IMPORTANT :

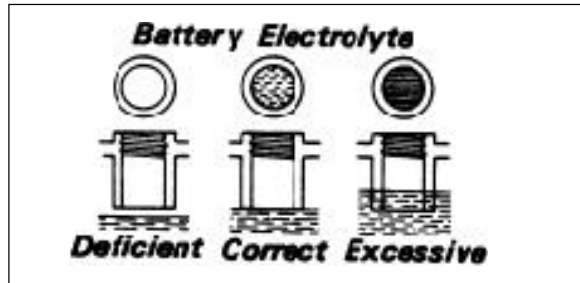
- **Always check electrolyte level after charging battery. If necessary, add distilled water to maintain proper level.**

- **Check battery terminals to be sure they are clean and free from corrosion.**

Keeping the battery clean will give prolonged service. Remove corrosion from the terminals periodically and coat terminals with grease.

- **Maintain the battery at full charge during the winter to prevent freezing.**

When water is added during freezing weather, run the engine for at least an hour to make sure water and electrolyte have mixed thoroughly.



- Operating Instruction

1. Battery must be fixed tightly in case holder.
2. The battery should be secured and the connecting cables properly fitted and sufficiently long to prevent pulling the terminals battery.
3. Keep vent plugs tight on the vent holes.
4. Keep battery and surrounding parts, particularly, the tops of the cells clean and dry.
5. Keep the terminals and the cables free from corrosion by coating with pure vaseline or grease.
6. The level of electrolyte should always be kept between the level lines. (At hard rubber container should be kept to a height 3/8 in. (10mm) above upper edge of separator).
Add approved water(preferably distilled water) regularly to each cell until this level will be reached. Never add acid.
7. Recharge battery periodically after 4 weeks when operation in irregular or battery is taken out of service, but only until all cells gas evenly and freely. Make sure to prevent overcharging.
8. Battery should be charged once each month when is service.
9. To charge the battery connect the battery positive terminal to the charger positive terminal and the negative to the negative, then recharge in

the standard fashion.

10. A boost charge is only for emergencies. It partially charges the battery at a high rate and in a short time. When using a boost-charged battery, it is necessary to recharge the battery as early as possible after the operation has been finished. Failure to do this extremely affects the service life due to overdischarge.

IMPORTANT :

(1) When connecting the battery, do not reverse the polarities. Connection with reverse polarities causes troubles to the battery and electrical system in the tractor.

(2) When disconnecting the cord from the battery, start with the negative terminal first, when connecting start with the positive terminal first. Reversing the steps may cause short-circuiting, should a metallic tool touch the terminals.

(3) If the tractor is to be operated for a short time without battery (using a slave battery for starting), do not, under any circumstances, interrupt the circuit by switching off the key switch before stopping the engine by means of fuel pump shut off cable. Use additional current (lights) while engine is running. Insulate terminal of battery cable before starting by means of slave battery. If this advice is disregarded, damage to alternator and regulator may result.

- Direction for Storage

1. When shutting down the tractor for long period of time, remove the battery from the tractor, adjust the electrolyte to the proper level and store in a dry place out of direct sunlight.
2. The battery self-discharges even while it is stored, Recharge it once a month in hot seasons and once every two months in cold seasons.

IMPORTANT :

• The tractor has been shipped with dry-type battery. Your dealer will fill electrolyte and charge for use for the first time.

- Charging Dry Type Battery

1. Remove vent plugs and discard temporary

sealing cardboards and tapes.

2. Fill each cell with electrolyte having a specific gravity given in Table 1 up to highest level marked on the battery case side.

Table 1

	AIR TEMPERATURES	
	TEMPERATE Ordinarily below 20°C (68°F)	TROPICAL Frequently above 20 °C (68°F)
sp. gr. of Electrolyte for Filling	1.260	1.240
sp. gr. of Electrolyte for fully charged	1.260 to 1.275	1.240 to 1.255

3. After standing for 2 or 3 hours correct the electrolyte to former level.
4. Connect positive terminal(+) of battery, with positive terminal of D.C. charging unit, and negative terminal(-) with negative terminal.
5. Batteries are preferably charged by current showed in Table 2. Keep vent plugs removed during charging.

Table 2

TYPE	Volt (V)	Number of plate per cell	Capacity at 20 H. R (A.H.)	Volume of Electrolyte (L)	Nomal Chargin g Rate (A)
N70ZL	12	15	70	4.7	7
75D26L	12	13	65	4.2	7
PT80-34FR	12		100	5.4	5~10

6. Check temperature of electrolyte, if it reaches 40°C (105°F), lower the charging rate. When temperature is too high, reduce charging rate and charge for a proportionately longer period.
7. If the tractor is stored after original charge, periodically recharge as shown below :

Table 3

Period of storage from manufactured (months)	freshing charge (times)
0~6	about 5 hours
6~12	10
over 12	30

A battery is fully charged when the cell are all gassing freely and the specific gravity ceases to rise for three consecutive readings taken at hour intervals. Specific gravity shall then be adjusted to showed in Table 1.

8. Check electrolyte level two hours after charging is finished and correct it. if necessary, oil by adding distilled water.

10. Adjustments

NOTE :

- **When making adjustments, park the tractor on flat ground and apply the parking brake.**

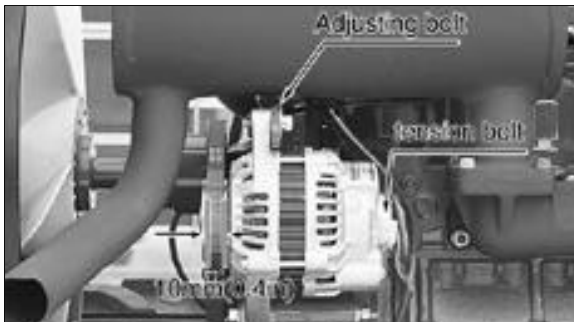
10.1 Fan drive belt tension

If the fan drive belt becomes loose, the engine may overheat. Check the belt tension as shown below.

To adjust, loosen the adjusting bolt and tighten the tension bolt to stretch the belt. After adjustment, securely tighten the adjusting bolt.

Moderate belt tension :

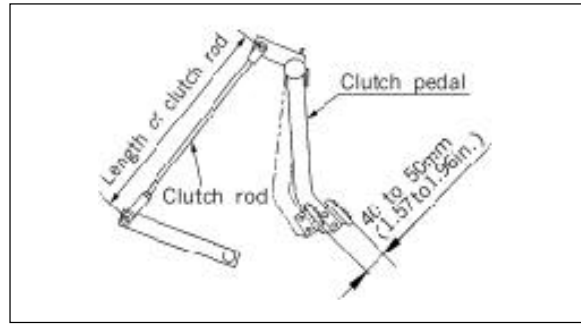
The belt should be approx. 8mm(0.3 in.) when the center of the belt is depressed with a finger pressure of 98N(10kgf, 22lbs).



10.2.1 Clutch

Moderate clutch play ranges from 40 to 50 mm(1.57 to 1.96 in.).

If the clutch becomes difficult to disengage or pedal play decreases, adjust the length of the clutch rod after removing the pin. When the clutch is difficult to disengage, shorten the rod. When the clutch play is too little, extend the rod.



- Adjustment of Clutch Pedal Free Travel

IMPORTANT :

- **Free travel of the clutch pedal is governed by the clearance of release thrust ball bearing to the release levers. This clearance is set from 0.098 to 0.12 in.(2.5 to 3mm) when the tractor leaves the factory, but this changes with use. If the pedal should be used with no clearance, it will result in the seizure of the release bearing or wear of the facing. Therefore, be sure to check and adjust at each periodical maintenance service.**

- To Adjust

1. Open the clutch access window which is located on the right hand forward of the clutch housing.
2. Insert a 0.098 to 0.12 in.(2.5 to 3.0mm) thickness gauge between the release thrust ball bearing and the release levers. Adjust the clearance by the length of the clutch rod.

* Lengthen the rod when the clearance is wider.

* Shorten the rod when the clearance is narrower.

3. Depress the clutch pedal, and check and make certain that the free travel at the tip of the pedal is 1.57 to 1.96 in. (40 to 50 mm)

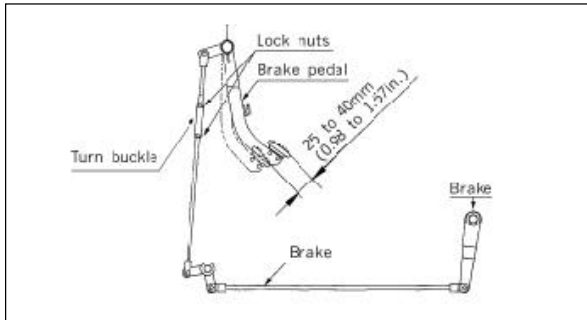
1. With the clutch pedal depressed to the lowest point, confirm that there is adequate gap between the clutch rod and safety starter switch.

NOTE :

- **Adjustment of the clutch pedal free travel should be performed as explained above and should not be judged by sight alone.**

10.3 Brake

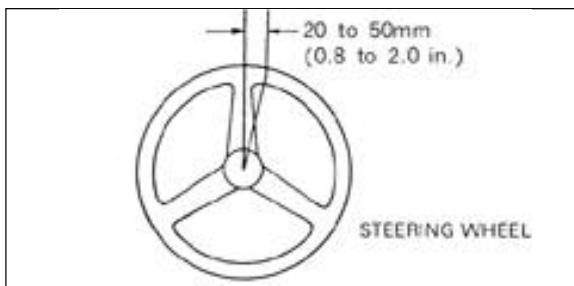
If brake pedal travel become too great or travel varies too greatly between the right and left pedals, loosen the turnbuckle lock nut turn the turnbuckle in the desired direction until the proper pedal travel is achieved. Moderate right and left pedal play ranges from 25 to 40mm(0.98 to 1.57 in.).



After adjustment, interlock the right and left brake pedals and finally tighten lock nut securely.

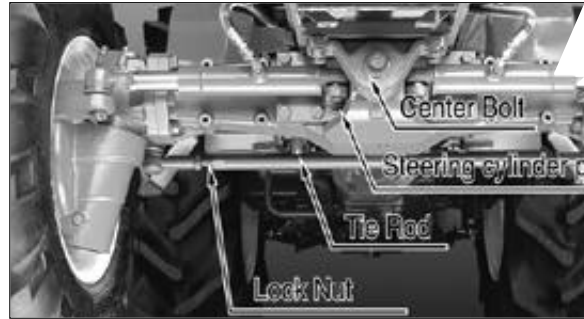
10.4 Steering wheel

Moderate steering wheel play is 20 to 50mm(0.8 to 2.0 in.).



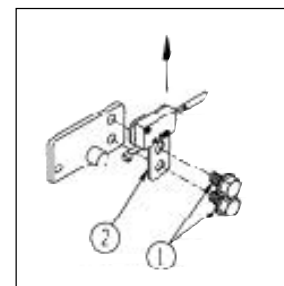
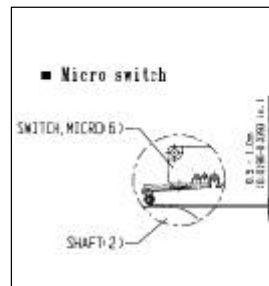
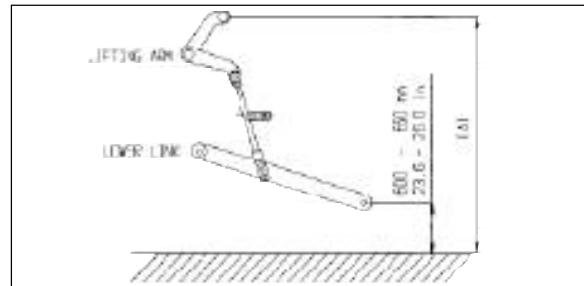
10.5 Front axle support

A front axle support is securely clamped. If not, loosen the center nut, and firmly tighten the center bolt. Tighten the center nut.



10.6 Adjusting the micro switch's height.

If you have assembled the micro switch at the fender according to the assembly order, the height from ground to center of lower link ball will be set 600 to 650mm(23.6 to 26 in.) or so. The PTO shaft's rotation will be stopped at this position.



Also, if you need the height higher than the above (23.6 to 26 in.), Loosen the bolts (1) and adjust the switch bracket (2)'s (2) height toward the above bit by bit. Simultaneously, check the lower link ball center is appropriate to you. You can be changeable this height [A] up to 910mm(35.8 in.)by this switch bracket's position. If not proper, adjust according to the instruction above.

11. Troubleshooting

11.1 Engine troubleshooting

- When engine is difficult to start

Cause	Countermeasures
Fuel is thick and doesn't flow	* Check the fuel tank and fuel filter. * Remove water, dirt and other impurities. * As all fuel will be filtered by the filter, if there should be water or other foreign matters on the filter, replace the filter.
Air or water mixed in fuel system	* If air is in the fuel filter or injection lines, the fuel pump will not work properly. To attain proper fuel injection pressure, check carefully for loosened fuel cap nut, etc. * Loosen air vent screw over fuel filter and fuel injection pump to eliminate all the air in the fuel system.
Thick carbon deposits on orifice of injection nozzle.	* This is caused when water or dirt is mixed in the fuel. Clean the nozzle injection piece, being careful not to damage the orifice. * Check to see if nozzle is working properly or not, if not, install a new nozzle.
Valve clearance is wrong	* Adjust valve clearance inlet 0.0098 in.(0.25 mm), exhaust 0.0118 in. (0.3 mm) when the engine is cold.
Leaking valves	* Grind valve
Fuel injection timing is wrong	* Adjust injection timing. * The injection timing (before top dead center) DK45 : 18° (0.3 rad) DK50 : 20° (0.35 rad)
Engine oil become thick in cold weather and engine cranks slow.	* Change grade of oil according to the weather (temperature).
Low compression	* Bad valve or excessive wear of rings, pistons and liners cause insufficient compression. Replace with new parts
Battery is discharge and the engine will not crank.	* Charge battery. * Use decompression device. * In winter, always remove battery from tractor, charge fully and keep indoors. Install in tractor at time of use.

- When output is insufficient

Cause	Countermeasures
Carbon struck around orifice of nozzle piece	* Clean orifice and needle valve, being very careful not to damage the nozzle orifice. * Check nozzle. If defective, replace with new parts.
Compression is insufficient leaking valves	* Band valve and excessive wear of rings, pistons and liners cause insufficient compression. Replace with new parts. * Grind valves.
Overheating of moving parts	* Check lube oil system. * Check to see if lube oil filter is working properly. * Filter screens or elements deposited with impurities would cause poor lubrication Clean screens. * Check to see if bearing clearance are within factory specs. * Check engine timing. * Adjusting timing (before top dead center) DK45 : 18° (0.3 rad) DK50 : 20° (0.35 rad)
Valve out of adjustment	* Adjust to proper valve clearance of inlet 0.0098 in. (0.25 mm), exhaust 0.0118 in. (0.3 mm) with engine cold.
Air cleaner is dirty	* Clean the element every 100-200 hours of operation.
Fuel injection pressure is wrong	* Adjust to proper pressure of 2000 psi(140 kgf/cm ² , 13.7MPa)
Injection pump wear	* Do not use poor quality fuel for it will cause wear of the pump. Only use No. 2 diesel fuel. * Check the fuel injection pump element and delivery valve assembly and replace as necessary.

- When color of exhaust is specially bad

See your KIOTI dealer.

- When color of exhaust is specially bad

Cause	Countmeasures
Fuel governing device is bad	* Contact dealer for repairs.
Fuel is of extremely poor quality	* Select good quality fuel oil. No. 2 diesel only.
Nozzle is bad	* If necessary, replace with new nozzle.
Combustion is incomplete	* Cause is poor atomization, improper injection timing, etc. because of trouble in injection system or in poor valve adjustment, or compression leakage, poor compression, etc. Check for the cause and repair.

- When engine suddenly stops

Cause	Countmeasures
Leak of fuel	* Check the fuel tank and refill if necessary. * Also check the fuel system for air or leaks.
Bad nozzle	* If necessary, replace with a new nozzle.
Moving parts are overheated due to shortage of lube oil or improper lubrication	* Check amount of engine oil with oil level gauge. * Check lubricating oil system. * Check to see if element inside the lubricating oil filter has become old and clogged. If necessary, replace with new element. * Check to see if the engine bearing clearances is within factory spec.

IMPORTANT :

- When the engine has suddenly stopped, decompress the engine by the decomp and turn the engine lightly by pulling on the fan belt, if the engine turns easily without abnormalities, the cause of the trouble is usually lack of fuel or bad nozzle.**

- When engine must be stopped immediately

Cause	Countmeasures
Speed suddenly decreases or increases	* Check the adjustments and timing of injection and the fuel system.
Unusual sound is heard suddenly	* Check all moving parts carefully.
Color of exhaust suddenly turns dark	* Check the fuel injection system, especially the fuel injection nozzle.
Bearing parts are overheated	* Check the lubricating system.
Oil lamp lights up during operation	* Check to see if the engine bearing clearances are within factory specs. * Check the function of the regulating valve inside of oil filter. * Check pressure switch * Check filter base gasket

11.2 Tractor Troubleshooting**- When tractor does not move while engine is running**

Cause	Countmeasures
Speed change lever is at neutral	* Click speed change lever
Parking brake is working	* Release the parking brake

- When 3 point hitch does not move

Cause	Countmeasures
Oil filter is clogged	* Clean or change the filter
3 point hitch does not lower	* Check the hydraulic adjusting grip

11.3 Battery troubleshooting

Condition of Battery	Cause	Countermeasure	Precaution
Starter dose not function	Key is not "ON"	Turn key "ON"	Do not overuse the battery and charge before fully discharged. (Refrain from overdischarging) Check alternator rectifier. Keep terminals clean, tighten well and grease to prevent corrosion.
	Battery is over-used until light becomes dim.	Charge for long period by ordinary charging method until specific gravity of 1.26 is reached.	
	Charging of battery neglected defective alternator rectifier.	Repair alternator and replace defective rectifier Charge battery well.	
	Dirty or corroded terminal contacts.	Wash terminal with hot water and tighten well.	
	Bad brushes, amature or field.	Replace.	
	Life of battery expired.	Replace battery.	
From beginning, starter does not function, and lights become dim quickly.	Battery is not charged well.	Charge battery for a long period by ordinary charging method.	Battery must be serviced properly before initial use.
Low electrolyte level	Battery used with shortage of electrolyte.	Add distilled water and charge battery.	Make routine checks of electrolyte.
	Battery over-used. Moreover, charging was neglected. (Refrain from over-discharging.)	Charge for a long period.	Do not overuse the battery and fully discharge.
	Defective alternator rectifier, defective terminal contacts causing sulphation of electrodes.	Check alternator and rectifier and charge for a long period by ordinary charging method.	Make routine checks of terminals, to make sure they are clean and tight.
Battery cannot be charged	The current of the alternator during operation is too high causing plates to drop, warp or short circuit.	Decrease the charging current of alternator. Exchange defective battery.	Check charging current of Alternator.
	Life of battery expired.	Exchange battery.	
Corrosion of terminals is severe	Current of the Alternator during operation is too large.	Clean scale from terminals and tighten well. Adjust charging current of alternator.	Keep terminals clean and well tightened. Apply grease to prevent corrosion. Check charging current of alternator.
Electrolyte decrease rapidly	Over heating due to over charging. Storage battery cracked or has small holes.	Check charging output. Replace battery.	Secure battery to tractor so it would not move.

12. Long-term storage

NOTE :

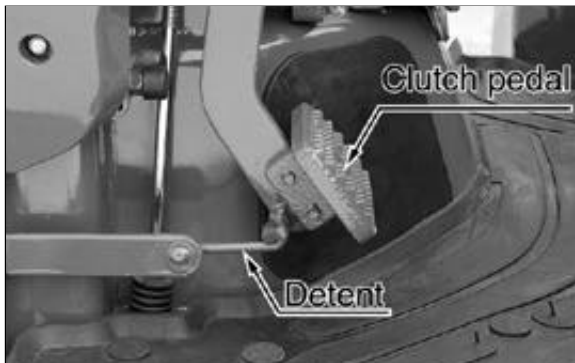
•When storing, remove the key from the key switch.

When the tractor will not be operated for two or three months or longer, clean the tractor and perform the following treatment before storage.

1. Repair the parts as needed.
2. Check nuts and bolts, tighten as necessary.
3. Apply grease or engine oil to the parts most likely to rust.
4. Remove the additional weight it mounted.
5. Pump up the wheel tires to a little above the standard pressure levels.
6. Change the engine oil and run the engine for five minutes before running the tractor so that the oil circulates through the entire system.
7. Drain the coolant in the radiator. Flush and refill with new coolant.
8. Depress clutch pedal and engage clutch lockout clip.

IMPORTANT :

If the tractor is stored for a long period with the clutch left engaged, the clutch disc may rust, rendering it inoperative.



Engage lockout clip by depressing pedal, the clutch pedal so that the clutch would be completely disengage.

9. Lower the implement to the ground.
- 10 Remove the battery from the tractor, recharge it, adjust the electrolyte to the proper level, and store in a dry place out of

direct sunlight.

11. The battery runs down over time even while in storage. Recharge it once a month in hot seasons and once every two months in cold seasons.
12. Store the tractor where dry and sheltered from rain. Further cover the tractor with a tarpaulin.
13. When leaving the tractor outdoors, protect the muffler from the rain.

IMPORTANT :

• To clean the tractor stop the engine. If you must clean the tractor with the engine going, utmost care should be taken not to allow water to enter the air cleaner. Engine trouble may occur if water enters the engine.

• Grease or engine oil should be applied to the parts which are apt to become corroded.

• Leave the drain cocks open. Hang a sign saying 'NO WATER' on the radiator cap.

During severe cold weather when air temperature falls below 32°F(0°C), freezing point, there are fears of the engine being damaged by freezing, so be sure to drain out all the water.

• If the air cleaner should be extremely dirty, clean it.

• To decrease the weight on the tires, and to protect the tires from moisture of the ground, set blocks underneath the axle, or put wooden boards underneath the tires. The inflation pressure in the tires should be a little more than the specific pressure.

13. Option (DK50)

13.1 Open cap (if installed)

1. Open cab designed for convenient use was manufactured in steel structure and could be worked in all conditions because of front and rear window attached.

2. Installing sufficiently wide window and left, right and outside back mirror and using window brush in rainy day provides wide visibility.

- Window Brush

- *If pressing button(upper) located in front of cap roof, brush will operate.*
- *When cleaning solution used, press button(lower) and cleansing solution will be split out.*
- *Reservoir tank for cleaning front window was installed in rear left of seat.*



WARNING

- *If operating window brush without cleansing solution, it can cause damage to motor. Be careful to check washer solution prior to use.*

13.2 Cabin (if installed)

1. Cabin designed for convenient use manufactured in steel structure.

2. Installing sufficiently wide window and left, right and outside back mirror and using window brush in rainy day provides wide visibility.

- **Rear window** : If pressing knob button and then pushing slightly, window will be opened automatically by two cylinders.



WARNING

- *Because the window wouldn't be opened by working machine, make sure that it is possible whether the window could be opened or not. Avoid running in high speed or on curved road with window opened.*

- **Door** : If pressing knob button, door will be opened and set by gas cylinder.

- **Hatch** : If pressing knob button and pushing upward, hatch will be opened. To close, pull out knob slightly and then lock.



WARNING

- *Work light(front, rear): Illuminated with switch ON. Work light(rear) will be illuminated automatically with running with rear gear.*
 - *Window brush : If pressing the upper of wiper switch, wiper will be operated and if pressing the lower, washer solutions come out.*
- CIGARETTE LIGHTER AND ASHTRAY
- *Ashtray is opened if pressing ▷ button.*
 - *To use lighter, first press lighter. When heated and ejected with a sound, pull out and then use it.*



WARNING

- *With lighter remained to be pressed, it can cause a fire.*
- HEATER
- *Airflow will be operated in 2 stage of High and Low and used properly in accordance with room temperature.*
 - *Adjusting heat grill can make the direction of heating air adjustable in left, right, front and rear.*

[Precautions when using heater]

1. Use anti-freezing solution suitable for outside temperature in winter.
2. If anti-freezing solution is not used in winter, drain coolant after driving.
3. Prior to use, check heat house is not damaged.

- AIR CONDITIONER

1. Airflow can be adjust to LOW, MEDIUM, and HIGH.
2. Using Temp. Control lever enables room temperature control.
3. Airconditioner grill control makes the drection of cold wind adjustsble freely.

[Precautions when using airconditioner]

1. Airconditioner uses new refrigerant, HPC-134a and if old refrigerant, CFC-12 is filled with improperly, it can cause a fault of compressor. Make sure refrigerant not be flown before filling.
2. Humidity immersion inside of aircinditioner can result in a fault of compressor parts and poor cooling.
3. If the lever of compressor oil is not adequate in airconditioner cycle, it can cause a fault as follows.
 - Lack in oil : lack in lubricant and faulty compressor
 - Excessive oil : poor coolingChange or refill oil as the specified as in refrigerant if the following conditions exist.
 - Refrigerant and oil leakage was occurred from cycle
 - Refrigerant was drained rapidly from cycle
 - Cycle parts were replaced



WARNING

- ***Working for a long time with airconditioner ON can cause contamination inside of working area.***
- ***Ventilate inside air periodically.***
- ***Never sleep with airconditioner ON because it can cause a serious injury and damage.***

- ***Cassette : Two speakers and antenna are installed in cabin For details, see cassette instruction.***

*Standard Specification

	New refrigerant	Compressor oil
Type	HFC-134a	VCON 488
Filling Level	0.95-1kg	150cc

14. Service record