OPERATOR'S MANUAL

LAND X TRACTOR

MODELS NB2310K
NB2810KQ

^

READ AND SAVE THIS MANUAL

ABBREVIATION LIST

Abbreviations	Definitions
2WD	Two Wheel Drive
4WD	Four Wheel Drive
API	American Petroleum Institute
ASABE	American Society of Agricultural and Biological Engineers, USA
ASTM	American Society of Testing and Materials, USA
DIN	Deutsches Institut für Normung, GERMANY
DT	Dual Traction [4WD]
fpm	Feet Per Minute
GST	Glide Shift Transmission
Hi-Lo	High Speed-Low Speed
HST	Hydrostatic Transmission
m/s	Meters Per Second
PTO	Power Take Off
RH/LH	Right-hand and left-hand sides are determined by facing in the direction of forward travel
ROPS	Roll-Over Protective Structures
rpm	Revolutions Per Minute
r/s	Revolutions Per Second
SAE	Society of Automotive Engineers, USA
SMV	Slow Moving Vehicle

MODELS

In this Operator's Manual, the basic machine is [NB2310]

LAND X is …

Since its inception in 1999, LAND X has grown to rank as one of the major firms in China.

To achieve this status, the company has through the years diversified the range of its products and services to a remarkable extent. Our main products including compact tractor mini excavator and implements

All these products and all the services which accompany them, however, are unified by one central commitment. LAND X makes products which, taken on a national scale, are basic necessities. Products which are indispensable. Products which are intended to help individuals and nations fulfill the potential inherent in their environment. LAND X is the Basic Necessities Giant.

This potential includes water supply, food from the soil and from the sea, industrial development, architecture and construction, and transportation.

Thousands of people depend on LAND X's know-how, technology, experience and customer service. You too can depend on LAND X.

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


Diesel Fuel


Fuel- Level


Engine- Rotational Speed


Hourmeter/ Elapsed Operating Hours


Engine Coolant- Temperature


Brake


Parking Brake


Battery Charging Condition


Engine Oil- Pressure


Turn Signal


Engine- Stop


OFF


Engine- Run


Diesel Preheat/ Glow Plugs
(Low Temperature Start Aid)


Starter Control


Power Take- Off Control- Off Position
(Disengaged)


Power Take- Off Control- On Position
(Engaged)


Differential Lock


Position Control- Raised Position


Position Control- Lowered Position


3- Point Lowering Speed Control


Remote Cylinder- Retract


Remote Cylinder- Extend


Hazard Warning Lights


Master Lighting Switch


Headlight- Low Beam


Headlight- High Beam


Four- Wheel Drive- On


Four- Wheel Drive- Off


Fast


Slow


Read Operator's Manual


Tractor- Forward Movement- Overhead View of Machine


Tractor- Rearward Movement- Overhead View of Machine


Engine Speed Cont

SAFETY FIRST

This symbol, the industry's "Safety Alert Symbol", is used throughout this manual and on labels on the machine itself to warn of the possibility of personal injury. Read these instructions carefully. It is essential that you read the instructions and safety regulations before you attempt to assemble or use this unit.

DANGER : Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING : Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION : Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

IMPORTANT : Indicates that equipment or property damage could result if instructions are not followed.

NOTE : Gives helpful information.

CONTENTS

SAFE OPERATION

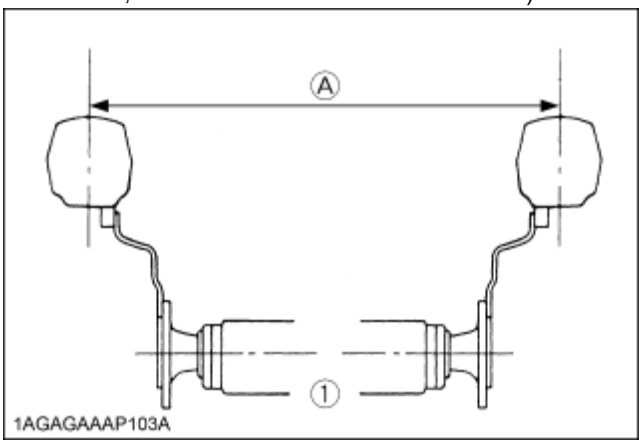
Careful operation is your best insurance against an accident.

Read and understand this manual carefully before operating the tractor.

All operators, no matter how much experience they may have, should read this and other related manuals before operating the tractor or any implement attached to it. It is the owner's obligation to instruct all operators in safe operation.

1. BEFORE OPERATING THE TRACTOR

1. Know your equipment and its limitations. Read this entire manual before attempting to start and operate the tractor.
2. Pay special attention to pictorial safety labels on the tractor.
3. Do not operate the tractor or any implement attached to it while under the influence of alcohol, medication, controlled substances or while fatigued.
4. Carefully check the vicinity before operating tractor or any implement attached to it. Do not allow any bystanders around or near tractor during operation.
5. Before allowing other people to use your tractor, explain how to operate and have them read this manual before operation.
6. Never wear loose, torn, or bulky clothing around tractor. It may catch on moving parts or controls, leading to the risk of an accident. Use additional safety items, e.g. hard hat, safety boots or shoes, eye and hearing protection, gloves, etc., as appropriate or required.
7. Do not allow passengers to ride on any part of the tractor at anytime. The operator must remain in the tractor seat during operation.
8. Check brakes, clutch, linkage pins and other mechanical parts for improper adjustment and wear. Replace worn or damaged parts promptly. Check the tightness of all nuts and bolts regularly. (For further details, see "MAINTENANCE" section.)
9. Keep your tractor clean. Dirt, grease, and trash build up may contribute to fires and lead to personal injury.
10. Use only implements meeting the specifications listed under "IMPLEMENT LIMITATIONS" in this manual or implements approved by LAND X.
11. Use proper weights on the front or rear of the tractor to reduce the risk of upsets. Follow the safe operating procedures specified in the implement or attachment manual.
12. The narrower the tread, the greater the risk of a tractor upset. For maximum stability, adjust the wheels to the widest practical tread width for your application. (See "TIRES, WHEELS AND BALLAST" section.)



(1) Rear wheels *(A) Tread Width*

13. Do not modify the tractor. Unauthorized modification may affect the function of the tractor, which may result in personal injury.

2. OPERATING THE TRACTOR

Operator safety is a priority. Safe operation, specifically with respect to overturning hazards, entails understanding the equipment and environmental conditions at the time of use. Some prohibited uses which can affect overturning hazards include traveling and turning with implements and loads carried too high etc. This manual sets forth some of the obvious risks, but the list is not, and cannot be, exhaustive. It is the operator's responsibility to be alert for any equipment or environmental condition that could compromise safe operation.

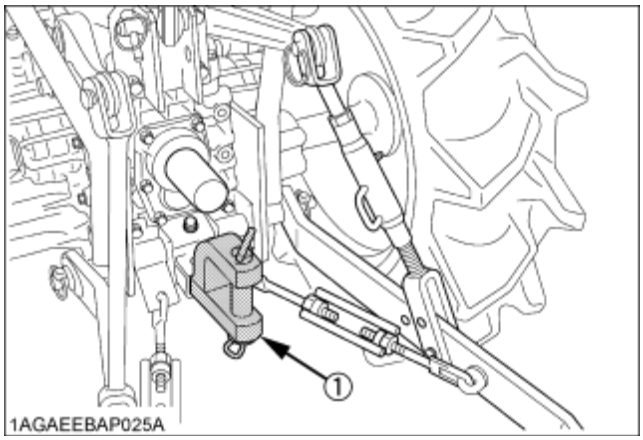
C Starting

1. Always sit in the operator's seat when starting engine or operating levers or controls. Adjust seat per instructions in the operating the tractor section. Never start engine while standing on the ground.
2. Before starting the engine, make sure that all levers (including auxiliary control levers) are in their neutral positions, that the parking brake is engaged, and that both the clutch and the Power Take-Off (PTO) are disengaged or "OFF".
3. Do not start engine by shorting across starter terminals or bypassing the safety start switch. Machine may start in gear and move if normal starting circuitry is bypassed.

4. Do not operate or idle engine in a non-ventilated area. Carbon monoxide gas is colorless, odorless, and deadly.

C Working

1. Pull only from the drawbar. Never hitch to axle housing or any other point except drawbar; such arrangements will increase the risk of serious personal injury or death due to a tractor upset.



(1) Drawbar

2. For trailing PTO-driven implements, set the drawbar to the towing position.
3. Attach pulled or towed loads to the drawbar only.
4. Keep all shields and guards in place. Replace any that are missing or damaged.
5. Avoid sudden starts. To avoid upsets, slow down when turning, on uneven ground, and before stopping.
6. The tractor cannot turn with the differential locked and attempting to do so could be dangerous.
7. Do not operate near ditches, holes, embankments, or other ground surface features which may collapse under the tractor's weight. The risk of tractor upset is even higher when the ground is loose or wet. Tall grass can hide obstacles, walk the area first to be sure.
8. Watch where you are going at all times. Watch for and avoid obstacles. Be alert at row ends, near trees, and other obstructions.
9. When working in groups, always let the others know what you are going to do before you do it.
10. Never try to get on or off a moving tractor.
11. Always sit in the operator's seat when operating levers or controls.
12. Do not stand between tractor and implement or trailed vehicle unless parking brake is applied.

C Safety for children

Tragedy can occur if the operator is not alert to the presence of children. Children generally are attracted to machines and the work they do.

1. Never assume that children will remain where you last saw them.
2. Keep children out of the work area and under the watchful eye of another responsible adult.
3. Be alert and shut your machine down if children enter the work area.
4. Never carry children on your machine. There is no safe place for them to ride. They may fall off and be run over or interfere with your control of the machine.
5. Never allow children to operate the machine even under adult supervision.
6. Never allow children to play on the machine or on the implement.
7. Use extra caution when backing up. Look behind and down to make sure area is clear before moving.

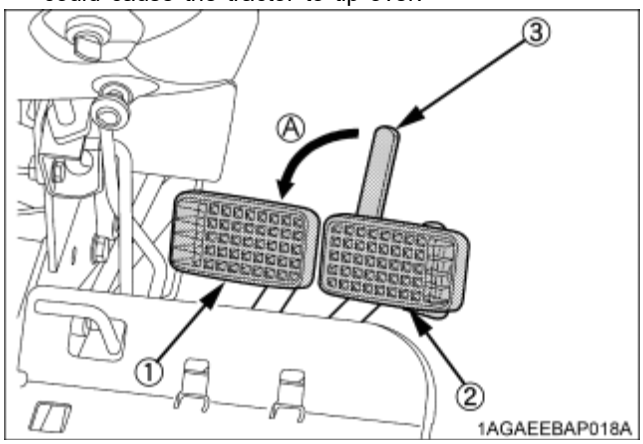
C Operating on slopes

Slopes are a major factor related to loss-of-control and tip-over accidents, which can result in severe injury or death. All slopes require extra caution.

1. To avoid upsets, always back up steep slopes. If you cannot back up the slope or if you feel uneasy on it, do not operate on it. Stay off slopes too steep for safe operation.
2. Driving forward out of a ditch, mired condition or up a steep slope increases the risk of a tractor to be upset backward. Always back out of these situations. Extra caution is required with four-wheel drive models because their increased traction can give the operator false confidence in the tractor's ability to climb slopes.
3. Keep all movement on slopes slow and gradual. Do not make sudden changes in speed, direction or apply brake and make sudden motions of the steering wheel.
4. Avoid disengaging the clutch or changing gears speed when climbing or going down a slope. If on a slope disengaging the clutch or changing gears to neutral could cause loss of control.
5. Special attention should be made to the weight and location of implements and loads as such will affect the stability of the tractor.
6. To improve stability on slope, set widest wheel tread as shown in "TIRES, WHEELS AND BALLAST" section.
   Follow recommendations for proper ballasting.

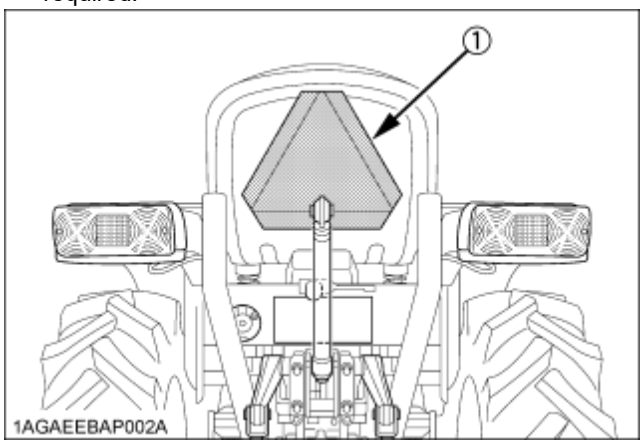
C Driving the tractor on the road

1. Lock the two brake pedals together to help assure straight-line stops. Uneven braking at road speeds could cause the tractor to tip over.



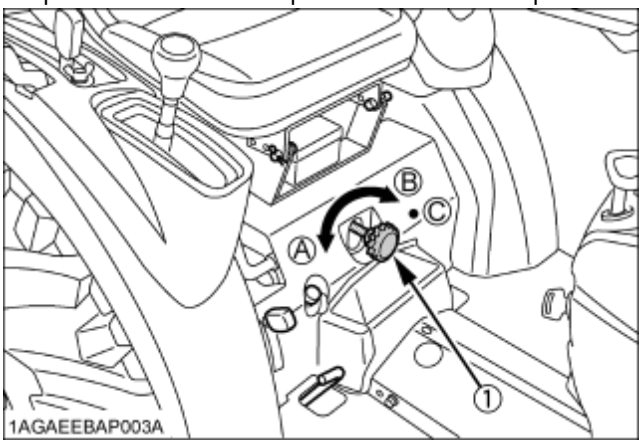
(1) Brake Pedal (LH)
(2) Brake Pedal (RH)
(3) Brake Pedal Lock
(A) Whenever travelling on the road

2. Check the front wheel engagement. The braking characteristics are different between two and four wheel drive. Be aware of the difference and use carefully.
3. Always slow the tractor down before turning. Turning at high speed may tip the tractor over.
4. Make sure that the Slow Moving Vehicle (SMV) sign is clean and visible. Use hazard lights and turn signals as required.



(1) SMV emblem

5. On public roads use the SMV emblem and hazard lights, if required by local traffic and safety regulations.
6. Observe all local traffic and safety regulations.
7. Turn the headlights on. Dim them when meeting another vehicle.
8. Drive at speeds that allow you to maintain control at all times.
9. Do not apply the differential lock while traveling at road speeds. The tractor may run out of control.
10. Avoid sudden motions of the steering wheel as they can lead to a dangerous loss of stability. The risk is especially great when the tractor is traveling at road speeds.
11. Do not operate an implement while the tractor is on the road. Lock the 3-point hitch in the raised position.
12. Set the implement lowering speed knob in the "LOCK" position to hold the implement in the raised position.



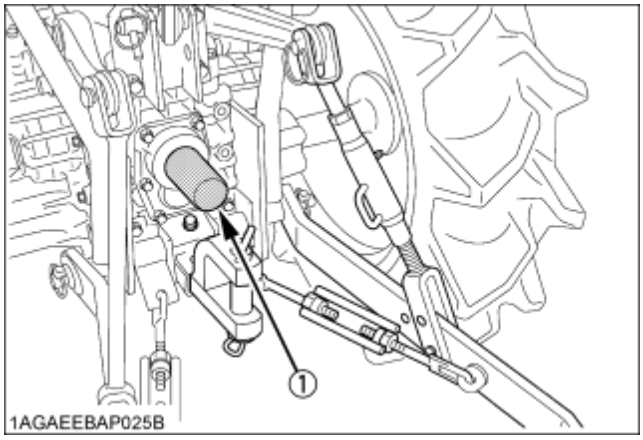
(1) 3-point hitch lowering speed knob
(A) "FAST"
(B) "SLOW"
(C) "LOCK"

3. PARKING THE TRACTOR

1. Disengage the PTO, lower all implements to the ground, place all control levers in their neutral positions, set the parking brake, stop the engine, and remove the key.
2. Make sure that the tractor has come to a complete stop before dismounting.
3. Avoid parking on steep slopes, if at all possible park on a firm and level surface; if not, park across a slope with chock the wheels.
   Failure to comply with this warning may allow the tractor to move and could cause injury or death.

4. OPERATING THE PTO

1. Wait until all moving components have completely stopped before getting off the tractor, connecting, disconnecting, adjusting, cleaning, or servicing any PTO driven equipment.
2. Replace the PTO shaft cap when the shaft is not in use.



(1) PTO Shaft cap

3. Before installing or using PTO driven equipment, read the manufacturer's manual and review the safety labels attached to the equipment.
4. When operating stationary PTO driven equipment, always apply the tractor parking brake and place chocks behind and in front of the rear wheels. Stay clear of all rotating parts. Never step over rotating parts.

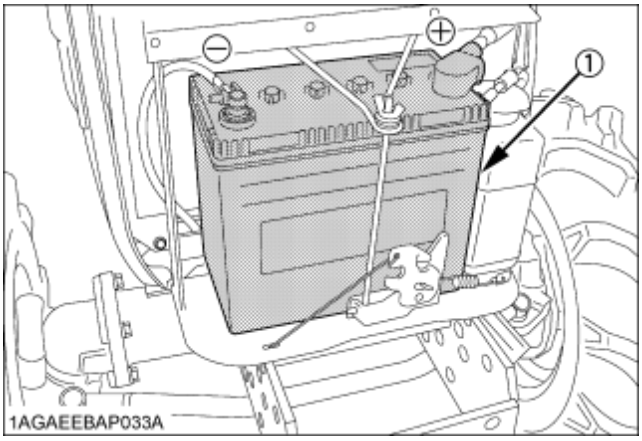
5. USING 3-POINT HITCH

1. Use the 3-point hitch only with equipment designed for 3-point hitch usage.
2. When using a 3-point hitch mounted implement, be sure to install the proper counterbalance weight on the front of the tractor.

6. SERVICING THE TRACTOR

Before servicing the tractor, park it on a firm, flat and level surface, set the parking brake, lower all implements to the ground, place the gear shift lever in neutral, stop the engine and remove the key.

1. Allow the tractor time to cool off before working on or near the engine, muffler, radiator, etc.
2. Do not remove radiator cap while coolant is hot. When cool, slowly rotate cap to the first stop and allow sufficient time for excess pressure to escape before removing the cap completely. If the tractor has a coolant recovery tank, add coolant or water to the tank, not the radiator. (See "Checking Coolant Level" in "DAILY CHECK" in "PERIODIC SERVICE" section.)
3. Always stop the engine before refueling. Avoid spills and overfilling.
4. Do not smoke when working around battery or when refueling. Keep all sparks and flames away from battery and fuel tank. The battery presents an explosive hazard, because it gives off hydrogen and oxygen especially when recharging.
5. Before "jump starting" a dead battery, read and follow all of the instructions. (See "JUMP STARTING" in "OPERATING THE ENGINE" section.)
6. Keep first aid kit and fire extinguisher handy at all times.
7. Disconnect the battery's ground cable before working on or near electric components.
8. To avoid the possibility of battery explosion, do not use or charge the refillable type battery if the fluid level is below the LOWER (lower limit level) mark. Check the fluid level regularly and add distilled water as required so that the fluid level is between the UPPER and LOWER levels.
9. To avoid sparks from an accidental short circuit, always disconnect the battery's ground cable (-) first and reconnect it last.



(1) Battery

10. Do not attempt to mount a tire on a rim. This should be done by a qualified person with the proper equipment.

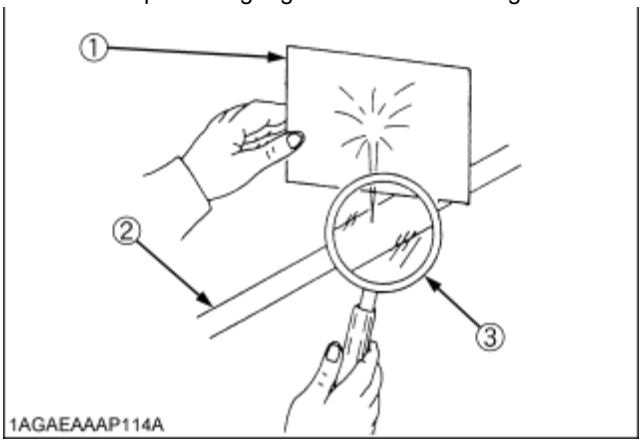
11. Always maintain the correct tire pressure. Do not inflate tires above the recommended pressure shown in the operator's manual.


1AGAKADAP202A

12. Securely support the tractor when either changing wheels or adjusting the wheel tread width.
13. Make sure that wheel bolts have been tightened to the specified torque.
14. Do not work under any hydraulically supported devices. They can settle, suddenly leak down, or be accidentally lowered. If it is necessary to work under tractor or any machine elements for servicing or adjustment, securely support them with stands or suitable blocking beforehand.
15. Escaping hydraulic fluid under pressure has sufficient force to penetrate skin, causing serious personal injury. Before disconnecting hydraulic lines, be sure to release all residual pressure. Before applying pressure to the hydraulic system, make sure that all connections are tight and that all lines, pipes, and hoses are free of damage.


1BAACAAAP010B

16. Fluid escaping from pinholes may be invisible. Do not use hands to search for suspected leaks; use a piece of cardboard or wood. Use of safety goggles or other eye protection is also highly recommended. If injured by escaping fluid, see a medical doctor at once. This fluid will produce gangrene or severe allergic reaction.



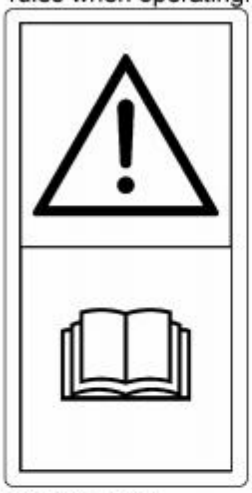
1AGAEAAAP114A

(1) Cardboard
(2) Hydraulic line
(3) Magnifying glass

7. PICTORIAL SAFETY LABELS

The pictorial safety labels affixed are intended to alert persons to potential hazards. The hazard is identified by a pictorial in the safety alert triangle or by the safety alert symbol alone. An adjacent pictorial provides instructions and information on how to avoid the hazard.

(1) Part No. TC408-3491-1
Carefully read operator's manual before handling the machine. Observe instructions and safety rules when operating.



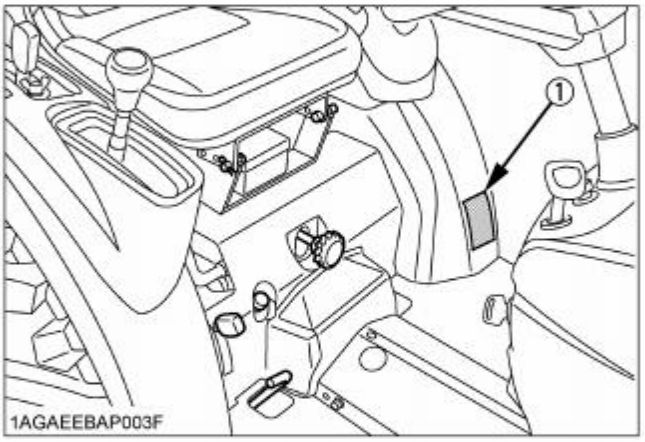
1AGAPBQAP0380

(2) Part No. TC402-4958-1
Do not get your hands close to engine fan and fan belt.

1AGAPBJAP0870

(3) Part No. TC408-4971-1
Do not go near PTO shaft or universal joint when engine is running.

1AGAECLAP0300



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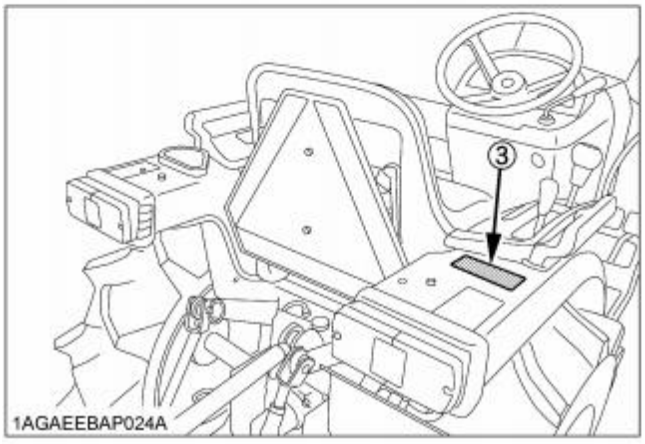

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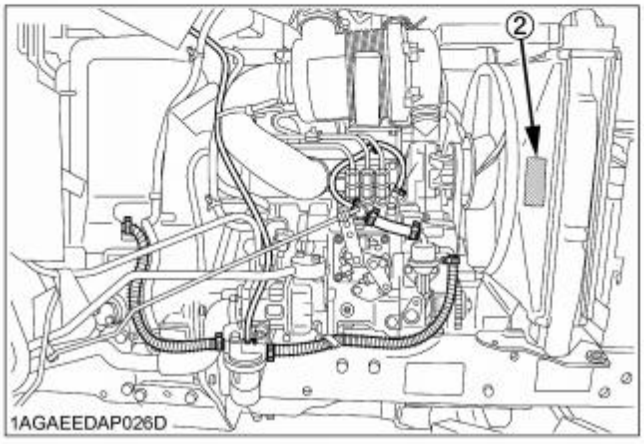

1AGAEEDAP026D

(1) Part No. TC422-4958-1
Do not touch hot surface like muffler; etc.

1AGAMAAAP2400

(2) Part No. TC402-4958-2
Do not get your hands close to engine fan and fan belt.

1AGAPBJAP0870

(3) Part No. TC428-4718-1
Start engine from operator's seat only.

1AGAPBQAP0030

(4) Part No. TC402-4956-1
Diesel fuel only. No fire.

1AGAPBJAP0770

(5) Part No. 6C526-3012-1

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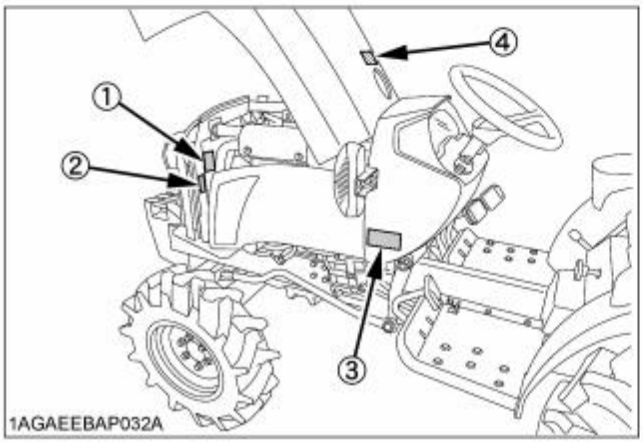

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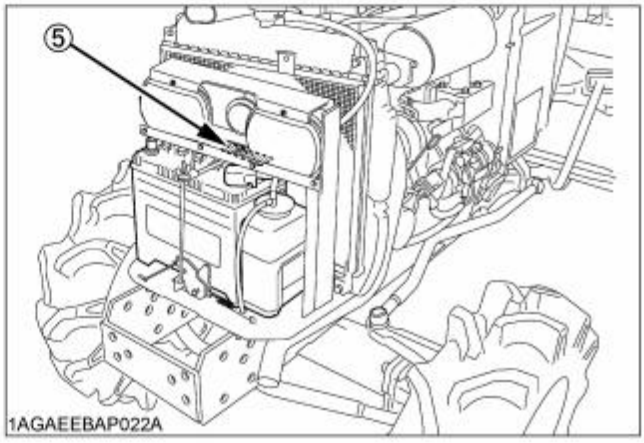

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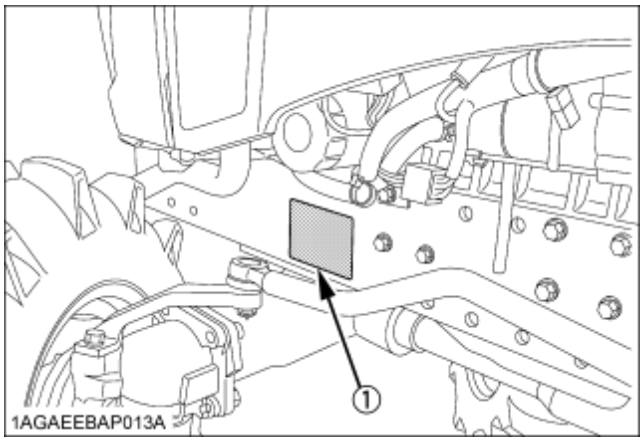
8. CARE OF PICTORIAL SAFETY LABELS

1. Keep pictorial safety labels clean and free from obstructing material.
2. Clean pictorial safety labels with soap and water, dry with a soft cloth.
3. Replace damaged or missing pictorial safety labels with new labels from your local LAND X Dealer.
4. If a component with pictorial safety label(s) affixed is replaced with new part, make sure new label(s) is (are) attached in the same location(s) as the replaced component.
5. Mount new pictorial safety labels by applying on a clean dry surface and pressing any bubbles to outside edge.

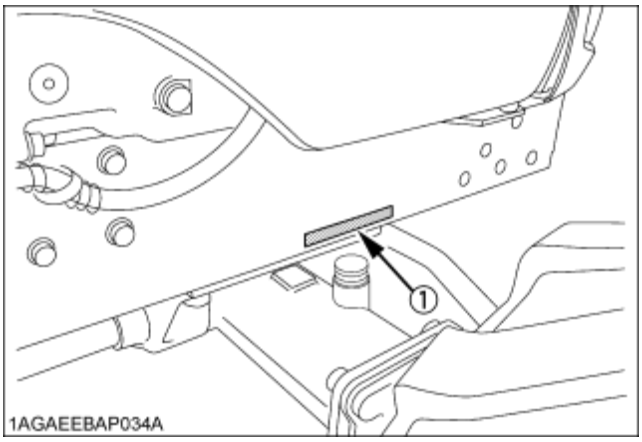
SERVICING OF TRACTOR

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 LAND X Dealer.
For service, contact the LAND X Dealership from which you purchased your tractor or your local LAND X Dealer. When in need of parts, be prepared to give your dealer both the tractor and engine serial numbers. Locate the serial numbers now and record them in the space provided.

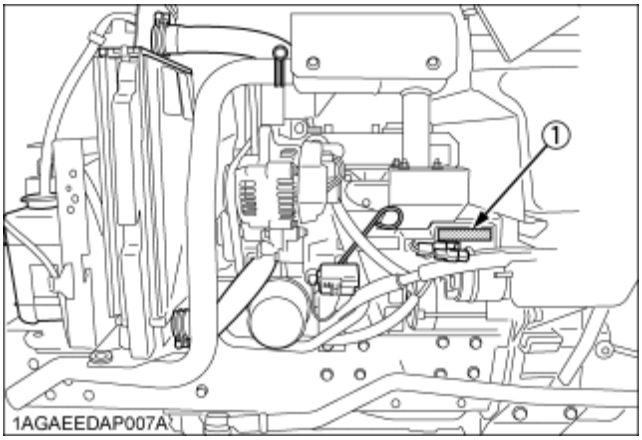
	Type	Serial No.
Tractor		
Engine		
Date of Purchase		
Name of Dealer		
(To be filled in by purchaser)		



(1) Tractor identification plate



(1) Tractor serial number



(1) Engine serial number

SPECIFICATIONS

SPECIFICATION TABLE

Model				NB2310K	NB2810K(Q)
PTO power*			kW (HP)	13 (17.4)	14.8.0 (20.0)
Engine	Maker			LAND X	
	Model			3M78	PERKINS 403-J
	Type			EFI high pressure common rail, liquid cooled, 3-cylinder diesel, Euro V and EPA T4 Emission	
	Number of cylinders			3	
	Bore and stroke		mm	78 x 73.6	78 x 78.4
	Total displacement		cm^3	1123	1327
	Engine gross power*		kW (HP)	16.9 (23.0)	20.5(28.0)
	Rated revolution		rpm	2800	
	Maximum torque		N-m	70	90
	Battery			50 B24L-MF	
Capacities	Fuel tank		L	23	
	Engine crankcase (with filter)		L	3.1	
	Engine coolant		L	3.9	
	Transmission case		L	12.5	
Dimensions	Overall length (without 3P)		mm	2390	2410
	Overall width		mm	1105, 1015	1105, 1015
	Overall height (Top of steering wheel)		mm	1280	1280
	Wheel base		mm	1563	
	Min. ground clearance		mm	325	325
	Tread	Front	mm	815	815
		Rear	mm	810, 900	810, 900
Weight			kg	670	660
Clutch				Dry single plate	
Traveling system	Tires	Front		5-12	180 / 85D12
		Rear		8.3-20	8.3-20
	Steering			Integral type power steering	Integral type power steering
	Transmission			Gear shift, 9 forward and 3 reverse	
	Brake			Wet disk type	
	Min. turning radius (with brake)		m	2.1	

Model				NB2310K	NB2810K(Q)
Hydraulic unit	Hydraulic control system			Position valve and SUPER Draft control	
	Pump capacity		L / min	3P: 26.6	
	Three point hitch			IS Category 1N	IS Category 1, 1N
	Max. lift force	At lift points	kg	750	
		24 in. behind lift point	kg	480	
PTO	Rear-PTO			SAE 1-3/8, 6 splines	
	PTO / Engine speed		rpm	540 / 2504, 980 / 2510	

NOTE: * Manufacturer's estimate The company reserves the right to change the specifications without notice.

TRAVELING SPEEDS

(At rated engine rpm)

Model				NB2310K	NB2810K(Q)
Tire size (Rear)				8- 18 - Farm	8.3-20 - Farm
		Range gear shift lever	Main gear shift lever	km / h	
Forward	1	Low	1	1	1
	2		2	1.4	1.5
	3		3	2.5	2.7
	4	Middle	1	3.1	3.3
	5		2	4.5	4.8
	6		3	8.1	8.6
	7	High	1	6.8	7.2
	8		2	9.7	10.3
	9		3	17.6	18.7
		Max. Speed (at 2750 engine rpm)		18.6	19.8
Reverse	1	Low	R	1.3	1.4
	2	Middle	R	4.2	4.4
	3	High	R	9.1	9.6
		Max. Speed (at 2750 engine rpm)		9.6	10.2

The company reserves the right to change the specification without notice.

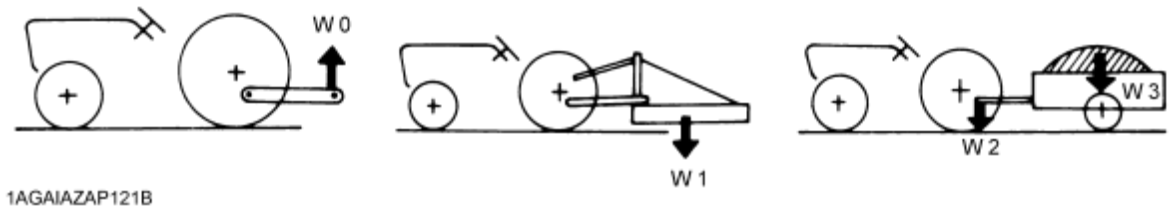
IMPLEMENT LIMITATIONS

The LAND X Tractor has been thoroughly tested for proper performance with implements sold or approved by LAND X. Use with implements which are not sold or approved by LAND X and which exceed the maximum specifications listed below, or which are otherwise unfit for use with the LAND X Tractor may result in malfunctions or failures of the tractor, damage to other property and injury to the operator or others. [Any malfunctions or failures of the tractor resulting from use with improper implements are not covered by the warranty.]

	Tread (max.width) with farm tires		Lower link end max. loading weight W0
	Front	Rear	
NB2310K	705 mm	790 mm	300 kg
NB2810K(Q)	815 mm	900 mm	

	Actual figures		
NB2310K NB2810K(Q)	Implement weight W1 and / or size	Max. Drawbar Load W2	Trailer loading weight W3 (with trailer's weight)
	As in the following list (Shown on the next page)	300 kg	1500 kg

Lower link end max. loading weight.....The max. allowable load which can be put on the lower link end : W0
Implement weight.....The implement's weight which can be put on the lower link : W1
Max. drawbar load.....W2
Trailer loading weight .....The max. loading weight for trailer (with trailer's weight) : W3



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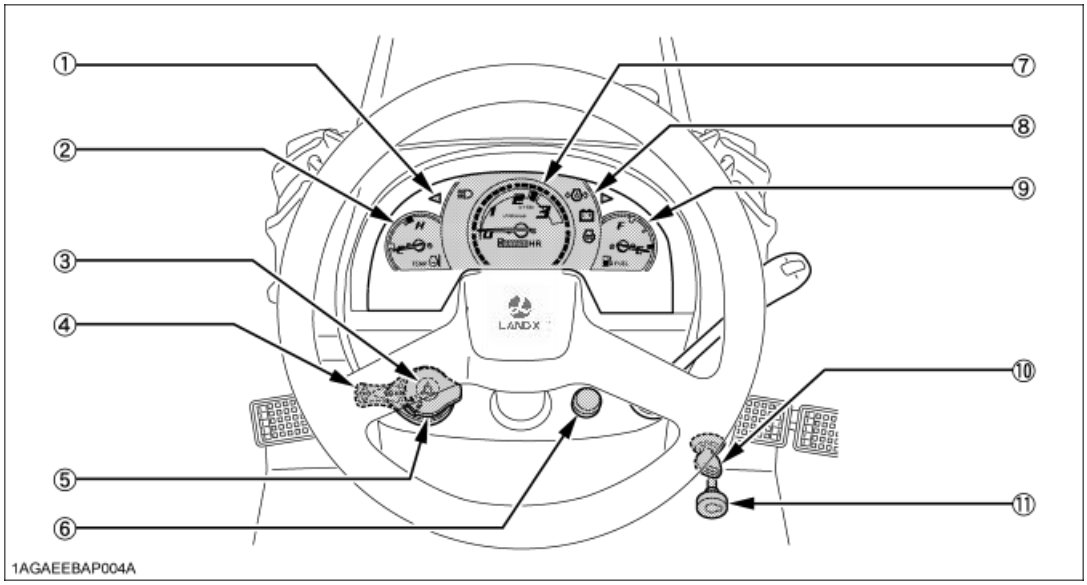
NOTE :
A Implement size may vary depending on soil operating conditions.

Implement		Remarks		NB2310K	NB2810K(Q)
Mower	Rotary- cutter (1 Blade)	Max. cutting width Max. weight	cm kg	107 140	122 204
	Rear- mount (2 or 3 Blade)	Max. cutting width Max. weight	cm kg	152 140	152 227
	Flail- mower	Max. cutting width	cm	107	
	Sickle bar	Max. cutting width Max. weight	cm kg	122 140	122 190
Rotary tiller		Max. tilling width Max. weight Torque limiter	cm kg	80 160 Necessary	127 213 Necessary
Bottom plow		Max. size		30.5 cm (12 in.) x 1	
Disc plow		Max. size Max. weight	 kg	45.7 cm (18 in.) x 4 180	50.8 cm (20 in.) x 3 190
Cultivator		Max. number of blade Max. size Max. weight	(Tine) cm kg	5 122 190	7 122 190
Disc harrow		Max. size Max. weight	 kg	50.8 cm (20 in.) x 5 195	45.7 cm (18 in.) x 6, 50.8 cm (20 in.) x 5 213
Sprayer	Rear mounted	Max. tank capacity	L	150	
	Pull type	Max. tank capacity	L	550	700
Rear blade		Max. cutting width Max. weight	cm kg	152 160	
Box blade		Max. cutting width Max. weight	cm kg	107 170	137 170
Trailer		Max. load capacity (with trailer's weight) Max. drawbar load	kg kg	1500 300	

NOTE :
A Implement size may vary depending on soil operating conditions.

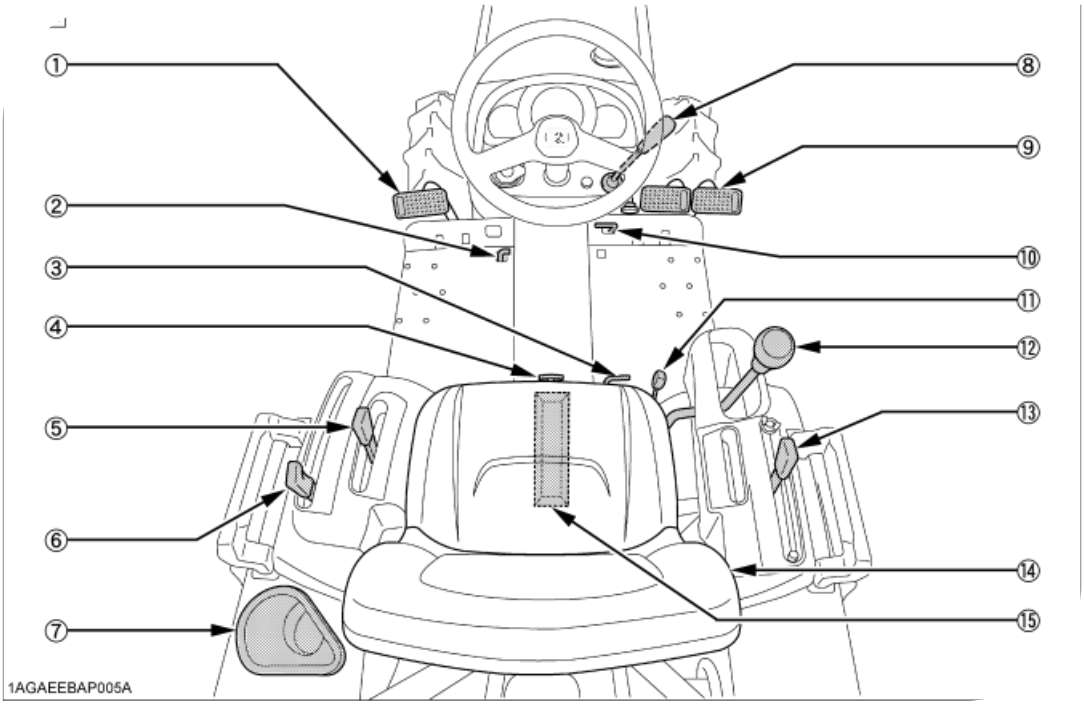
INSTRUMENT PANEL AND CONTROLS

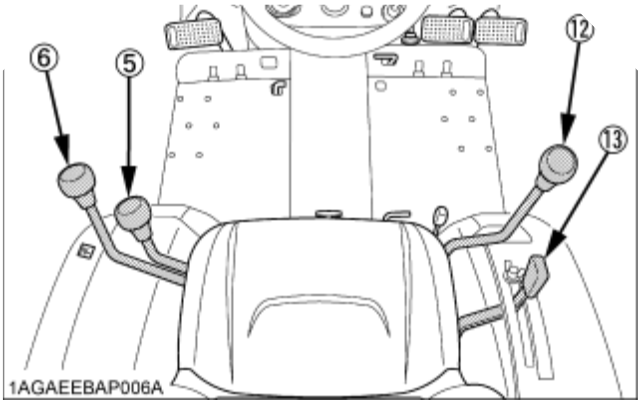
B Instrument Panel, Switches and Hand Controls



ILLUSTRATED CONTENTS

Foot and Hand Controls

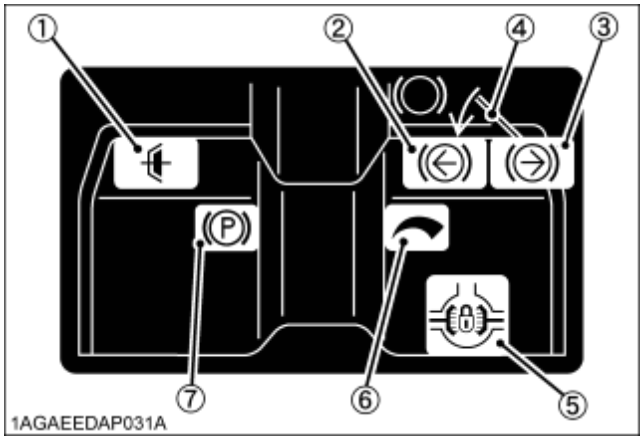




ILLUSTRATED CONTENTS

Pedal Location Label

The label is located on the cover under seat.



(1) Clutch pedal
(2) Brake pedal (left)
(3) Brake pedal (right)
(4) Brake pedal lock
(5) Differential lock pedal
(6) Foot throttle
(7) Parking brake pedal

PRE-OPERATION CHECK

DAILY CHECK

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

CAUTION

To avoid personal injury:

A Be sure to check and service the tractor on a level surface with the engine shut off and the parking brake "ON" and implement lowered to the ground.

Check item

- Walk around inspection
- Check engine oil level
- Check transmission oil level
- Check coolant level
- Clean grill and radiator screen
- Check air cleaner evacuator valve
  (When used in a dusty place)
- Check brake and clutch pedal
- Check indicators, gauges and meter
- Check lights
- Check wire harness
- Check movable parts
- Refuel
  (See "DAILY CHECK" in "PERIODIC SERVICE" section.)
- Care of pictorial safety labels
  (See "PICTORIAL SAFETY LABELS" in "SAFE OPERATION" section.)

OPERATING THE ENGINE

CAUTION

To avoid personal injury:

- **Read "Safe Operation" in the front of this manual.**
- **Understand the pictorial safety labels located on the tractor.**
- **To avoid the danger of exhaust fume poisoning, do not operate the engine in a closed building without proper ventilation.**
- **Never start engine while standing on ground. Start engine only from operator's seat.**
- **Make it a rule to set all shift levers to the "NEUTRAL" positions and to place PTO lever in "OFF" position before starting the engine.**

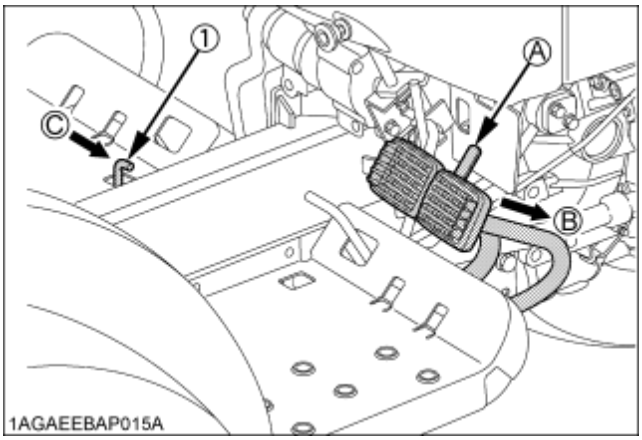
IMPORTANT

- Do not use starting fluid or ether.
- To protect the battery and the starter, make sure that the starter is not continuously turned for more than 30 seconds.

STARTING THE ENGINE

1. Make sure the parking brake is set.

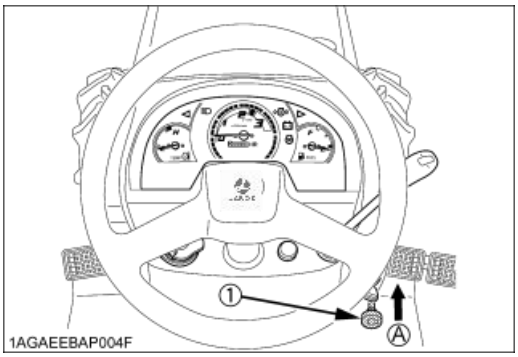
1. To set the parking brake;
   (1) Interlock the brake pedals.
   (2) Depress the brake pedals.
   (3) Depress the parking brake pedal to park.
2. To release the parking brake, depress the brake pedals again.



(1) Parking brake pedal
(A) Interlock the brake pedals
(B) "DEPRESS"
(C) "DEPRESS"

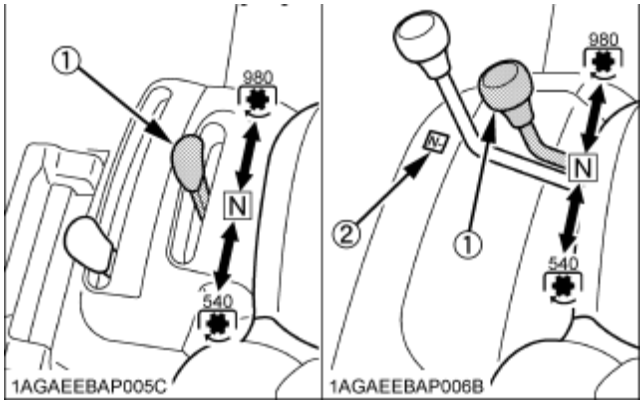
2. Make sure the engine stop knob is pushed in.

Push in the engine stop knob if it is pulled out, or the engine will not start.



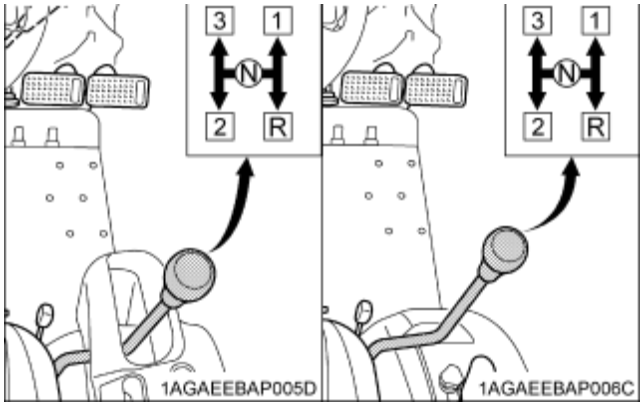
(1) Engine stop knob
(A) "PUSH"

3. Place the PTO gear shift lever in "NEUTRAL" position.



(1) PTO gear shift lever
(2) Neutral position label
"ON (540 rpm)"
(N) "NEUTRAL"
"ON (980 rpm)"

4. Place the main gear shift lever in "NEUTRAL" position.

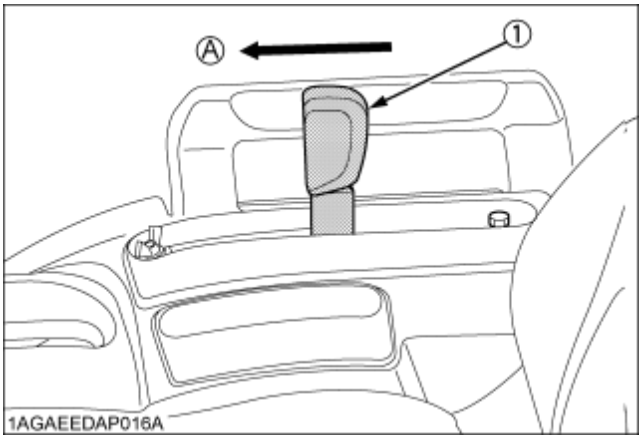


(1) Main gear shift lever

IMPORTANT

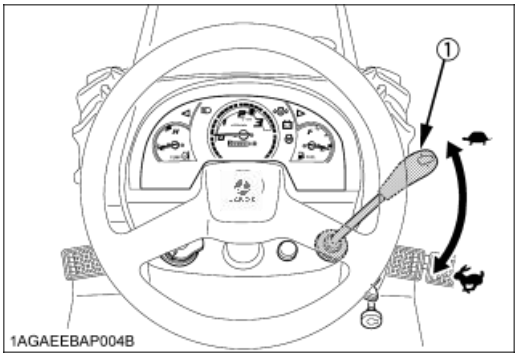
A Set the main gear shift lever to the middle position within the right-and-left movable range. Otherwise the engine does not get started.

5. Place the position control lever in "LOWEST" position.



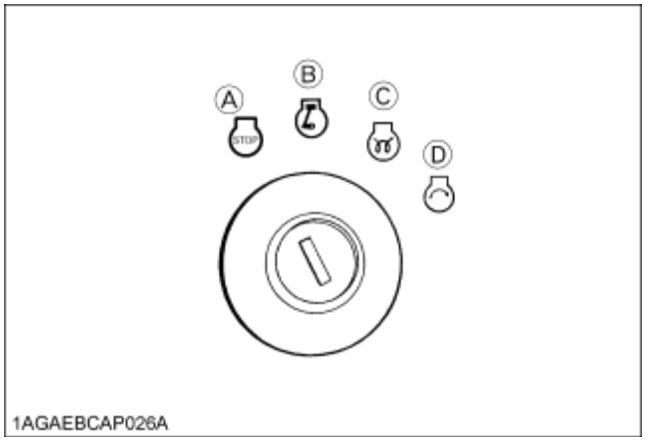
(1) Position control lever
(A) "DOWN"

6. Set the throttle lever to about 1/2 way.



(1) Hand throttle lever
"INCREASE"
"DECREASE"

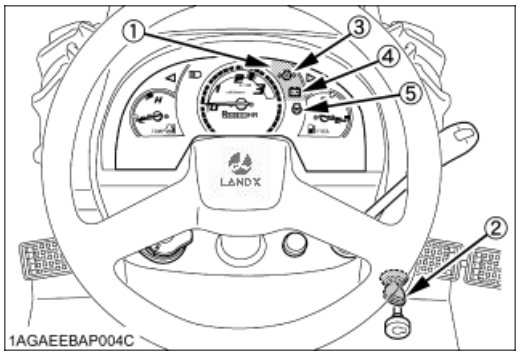
7. Insert the key into the key switch and turn it "ON".



(A) "OFF"
(B) "ON"
(C) "PREHEAT"
(D) "START"

C Check Easy Checker(TM) lamps:

1. When the key is turned "ON", lamps (3) (4) should come on. If trouble should occur at any location while the engine is running, the warning lamp corresponding to that location comes on.



(1) Easy checker(TM)
(2) Key switch
(3) Engine oil pressure
(4) Electrical charge
(5) Glow plug indicator

IMPORTANT

A Daily checks with the Easy Checker(TM) only are not sufficient. Never fail to conduct physical daily checks carefully by referring to "DAILY CHECK" section. (See "DAILY CHECK" in "PERIODIC SERVICE" section.)

8. Fully depress the clutch pedal, turn the key to "PREHEAT" position and hold it for about 2 to 3 seconds.

Temperature	Preheating Time
Over 0 °C	2 to 3 sec.
0 to -5 °C	5 sec.
-5 to - 15 °C	10 sec.

NOTE :

A Glow plug indicator (5) comes on while engine is being preheated.

9. Turn the key to "START" position and release when the engine starts.

IMPORTANT

A Because of the safety devices, the engine will not start except when the PTO gear shift lever is placed in the "NEUTRAL" position, the main gear shift lever is placed in the "NEUTRAL" position, and the clutch pedal is disengaged.

C Cold Weather Starting

When the ambient temperature is below -5 °C and the engine is very cold. If the engine fails to start, turn off the key for 30 seconds. Then repeat steps **8** and **9**. To protect the battery and the starter, make sure that the starter is not continuously turned for more than 30 seconds.

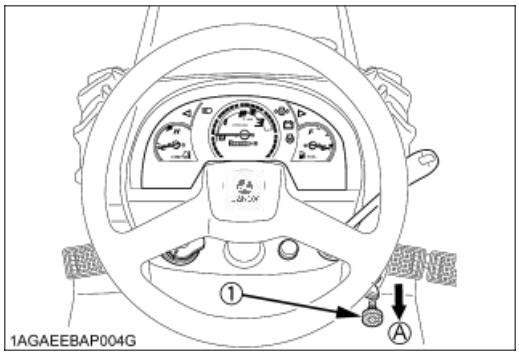
10. Check to see that all the lamps on the Easy Checker(TM) are "OFF".

If a lamp is still on, immediately stop the engine and determine the cause.

11. Release the clutch pedal.

STOPPING THE ENGINE

1. **After slowing the engine to idle, turn the key to "OFF".**
2. **Pull the engine stop knob until the engine stops.**



(1) Engine stop knob *(A) Pull to "STOP"*

NOTE :

A After the engine has stopped, be sure to push the stop knob back in, or the engine will not start the next time.

3. **Remove the key.**

WARMING UP

CAUTION

To avoid personal injury:

- **A Be sure to set the parking brake during warm-up.**
- **A Be sure to set all shift levers to the "NEUTRAL" positions and to place PTO lever in "OFF" position during warm-up.**

For five minutes after engine start-up, allow engine to warm up without applying any load, this is to allow oil to reach every engine part. If load should be applied to the engine without this warm-up period, trouble such as seizure, breakage or premature wear may develop.

BWarm-up Transmission Oil at Low Ambient Temperatures

Hydraulic oil serves as transmission fluid. In cold weather, the oil may be cold with increased viscosity. This can cause delayed oil circulation or abnormally low hydraulic pressure for some time after engine start-up. This in turn can result in trouble in the hydraulic system. To prevent the above, observe the following instructions:

Warm up the engine at about 50 % of rated rpm according to the table below:

Ambient temperature	Warm-up time requirement
Above 0 °C	At least 5 minutes
0 to - 10 °C	5 to 10 minutes
- 10 to -20 °C	10 to 15 minutes
Below -20 °C	More than 15 minutes

IMPORTANT

A Do not operate the tractor under full load condition until it is sufficiently warmed up.

JUMP STARTING

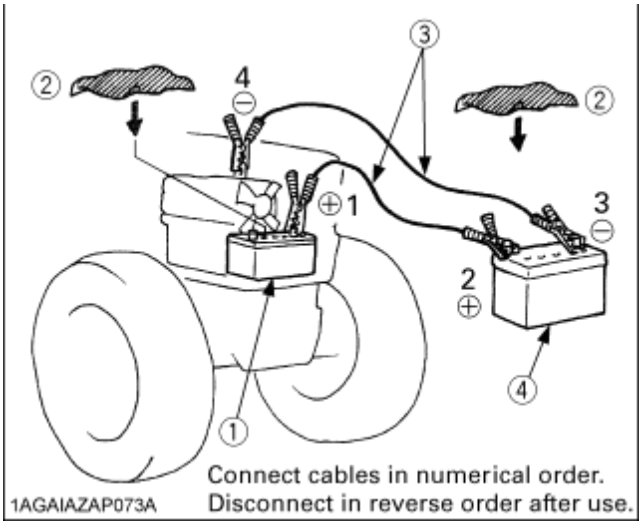
CAUTION

To avoid personal injury:

- **A Battery gases can explode. Keep cigarettes, sparks, and flames away from battery.**
- **A If tractor battery is frozen, do not jump start engine.**
- **A Do not connect other end of negative (-) jumper cable to negative (-) terminal of tractor battery.**

When jump starting engine, follow the instructions below to safely start the engine.

1. Bring helper vehicle with a battery of the same voltage as disabled tractor within easy cable reach. "THE VEHICLES MUST NOT TOUCH".
2. Engage the parking brakes of both vehicles and put the shift levers in neutral. Shut both engines off.
3. Put on safety goggles and rubber gloves.
4. Ensure the vent caps are securely in place. (if equipped)
5. Cover vent holes with damp rags. Do not allow the rag to touch the battery terminals.
6. Attach the red clamp to the positive (red, (+) or pos.) terminal of the dead battery and clamp the other end of the same cable to the positive (red, (+) or pos.) terminal of the helper battery.
7. Clamp the other cable to the negative (black, (-) or neg.) terminal of the helper battery.
8. Clamp the other end to the engine block or frame of the disabled tractor as far from the dead battery as possible.
9. Start the helper vehicle and let its engine run for a few moments. Start the disabled tractor.
10. Disconnect the jumper cables in the exact reverse order of attachment. (Steps 8, 7 and 6).
11. Remove and discard the damp rags.



(1) Dead battery
(2) Lay a damp rag over the vent caps
(3) Jumper cables
(4) Helper battery

IMPORTANT

- A This machine has a 12volt negative (-) ground starting system.
- A Use only same voltage for jump starting.
- A Use of a higher voltage source on tractors electrical system could result in severe damage to tractor's electrical system.

  Use only matching voltage source when "Jump starting" a low or dead battery condition.

OPERATING THE TRACTOR

OPERATING 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, tested, but the various parts are not accustomed to each other, so care should be taken to operate the tractor for the first 50 hours at a slower speed and avoid excessive work or operation until the various parts become "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 observed.

Do not Operate the Tractor at Full Speed for the First 50 Hours

A Do not start quickly nor apply the brakes suddenly.
A In winter, operate the tractor after fully warming up the engine.
A Do not run the engine at speeds faster than necessary.
A 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 the case of new tractors.

Changing Lubricating Oil for New Tractors

The lubricating oil is especially 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 the operation of the tractor; and this may wear out or damage the parts. Therefore, care should be taken to change the lubricating oil a little earlier than would ordinarily be required.

For further details of change interval hours, see "MAINTENANCE" section.

STARTING

1. Adjusting the operator's position.

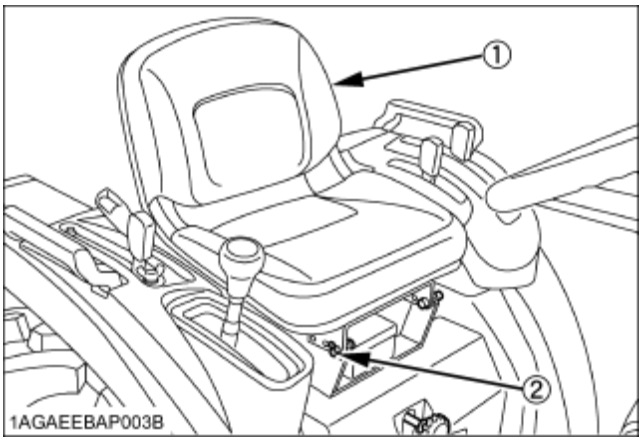
BOperator' s Seat

CAUTION

To avoid personal injury:

A Do not allow any person other than the driver to ride on the tractor.

The seat can be adjusted to three pre-set position at the operator's convenience. To adjust, lift the front of the seat and resetting the lock pin from one to another hole.

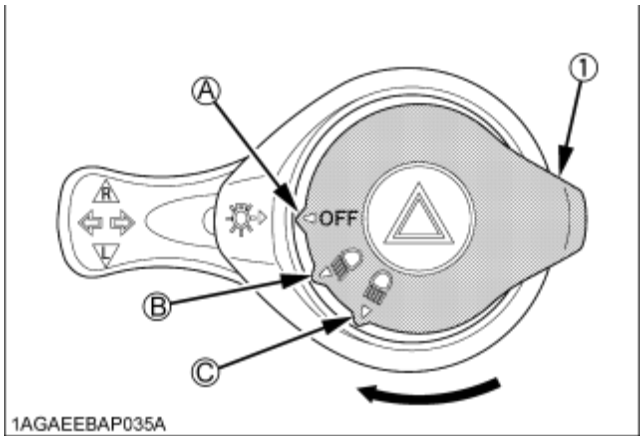


(1) Seat
(2) Lock pin

2. Selecting light switch positions.

Head Light Switch

Turn the light switch clockwise, and the following lights are activated on the switch position.



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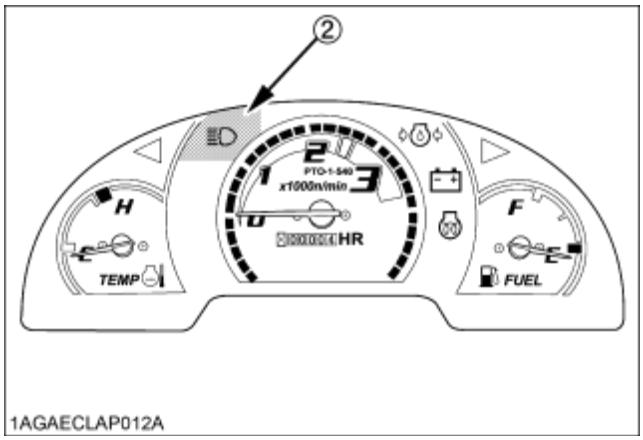

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(1) Head light switch
(2) High beam indicator

Light name	Switch position		
	(A)	(B)	(C)
Head light (Low beam)	OFF	ON	-
Head light (High beam)	OFF	-	ON
Tail light	OFF	ON	ON
Number plate light	OFF	ON	ON
Front position light	OFF	ON	ON

NOTE :
A High beam indicator will be on when head light switch is in "high beam" position.

Turn Signal / Hazard Light Switch

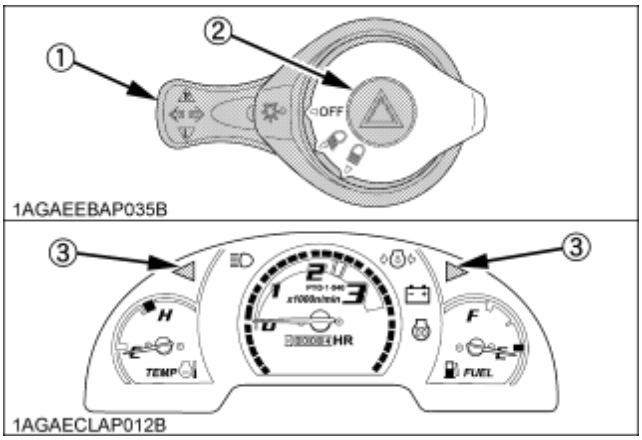
C Turn Signal Light Switch

To indicate a right turn, turn the turn signal light switch clockwise. To indicate a left turn, turn the turn signal light switch counter-clockwise. The corresponding right and left turn signal lights and indicator on the instrument panel will flash. Turn signal is active when key switch is in the "ON" position.

NOTE :
A Be sure to return switch to center position after turning.

C Hazard Light Switch

When hazard light switch is pushed, the hazard lights flash along with the indicator on the instrument panel. Press the hazard light switch again to turn off the light. The hazard light switch is operative, even when the key switch is at "OFF" position.



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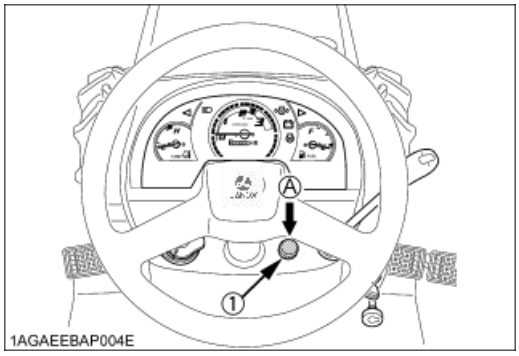
1AGAECLAP012B

(1) Turn signal light switch
(2) Hazard light switch
(3) Hazard / Turn signal indicator

NOTE :
A The indicator in the hazard light switch will light up when the head light switch is turned on.

Horn Button

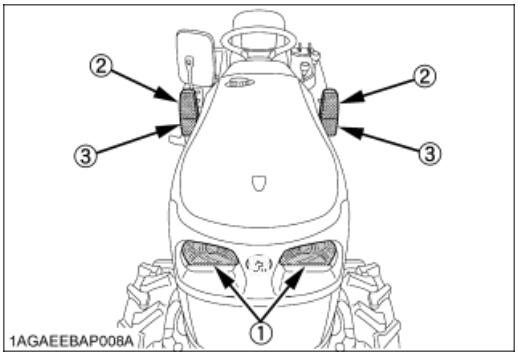
The horn will sound when the key switch is in the "ON" position and the horn button pressed.

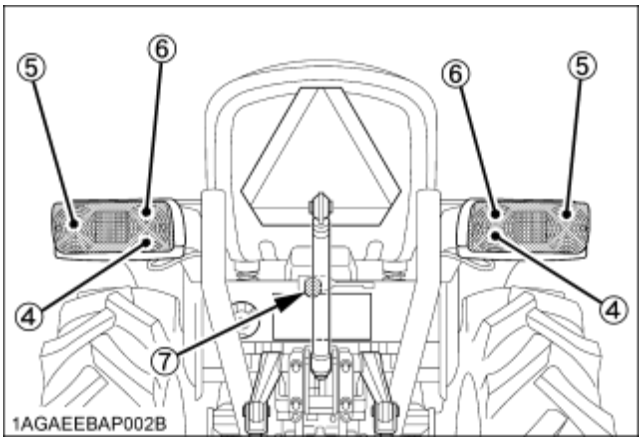


(1) Horn button *(A) "PUSH"*

Tractor Lights

(1) Head light
(2) Front turn signal / Hazard light
(3) Front position light
(4) Tail light
(5) Rear turn signal / Hazard light
(6) Brake stop light
(7) Number plate light





3. Checking the brake pedal.

Brake Pedals (Right and Left)

WARNING

To avoid personal injury:

A Applying only one rear wheel brake at high speeds could cause the tractor to swerve or roll-over.

CAUTION

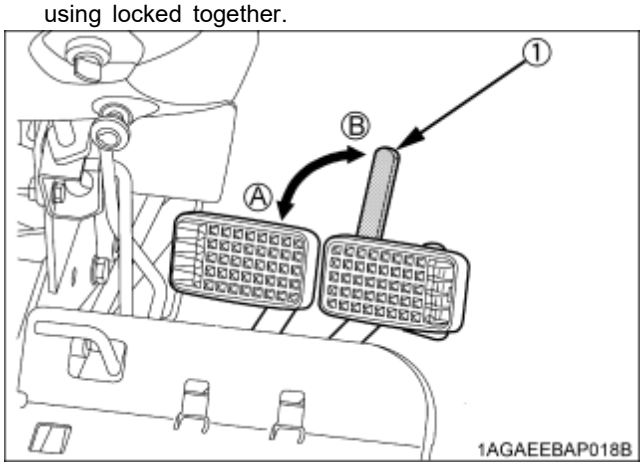
To avoid personal injury:

A An accident may occur if the tractor is suddenly braked, such as by heavy towed loads shifting forward or loss of control.

A The braking characteristics are different between two and four wheel drive. Be aware of the difference and use carefully.

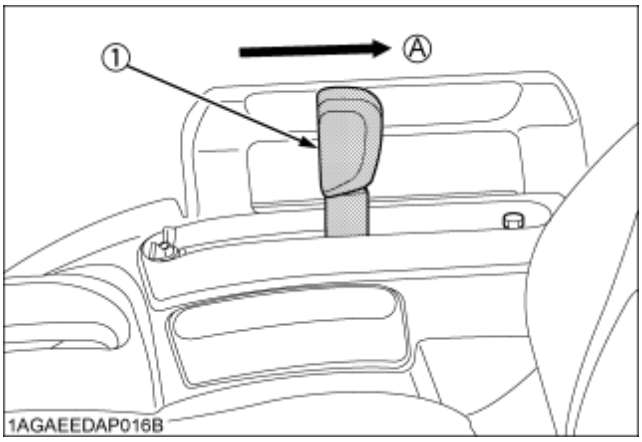
A When driving on icy, wet or loose surfaces, make sure the tractor is correctly ballasted to avoid skidding and loss of steering control. Operate at reduced speed.

1. Before operating the tractor on the road or before applying the parking brake, be sure to interlock the right and left pedals as illustrated below.
2. Use individual brakes to assist in making sharp turns at slow speeds (Field Operation Only). Disengage the brake pedal lock and depress only one brake pedal.
3. Be sure brake pedals have equal adjustment when using locked together.



(1) Brake pedal lock *(A) "LOCK"* *(B) "RELEASE"*

4. Raise the implement.
(See "HYDRAULIC UNIT" section.)



(1) Position control lever *(A) "UP"*

5. Depress the Clutch Pedal.

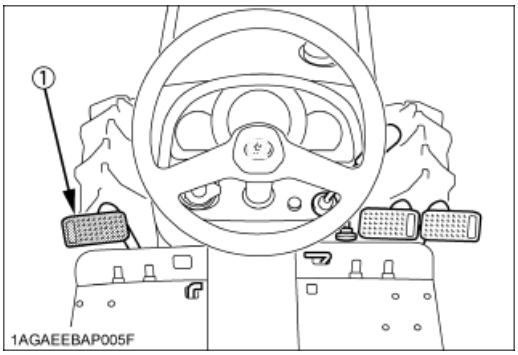
Clutch Pedal

CAUTION

To avoid personal injury:

A Sudden release of the clutch may cause the tractor to lunge in an unexpected manner.

The clutch is disengaged when the clutch pedal is fully pressed down.



(1) Clutch pedal

IMPORTANT

To help prevent premature clutch wear:

A The clutch pedal must be quickly disengaged and be slowly engaged.

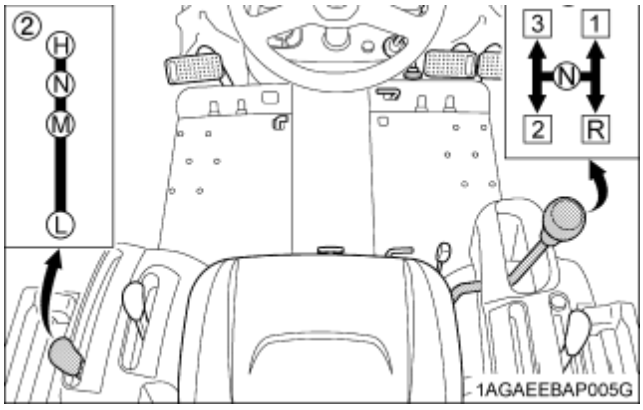
A Avoid operating the tractor with your foot resting on the clutch pedal.

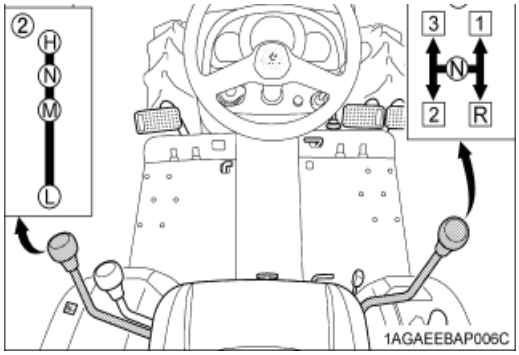
A Select proper gear and engine speed depending on the type of job.

6. Selecting the Travel Speed.

Main Gear Shift Lever & Range Gear Shift Lever (L-M-H)

The main gear shift lever pattern is in the form of an "H". The range gear shift lever moves in the form of an "I" in 3 stages, "HIGH", "MIDDLE" and "LOW". By combination of using the main gear shift lever and the range gear shift lever, 9 forward speeds and 3 reverse speeds are obtained.





(1) Main gear shift lever
(2) Range gear shift lever (L-M-H)
(H) "HIGH"
(M) "MIDDLE"
(L) "LOW"
(N) "NEUTRAL POSITION"

IMPORTANT

A To change speeds, press the clutch pedal completely down and stop the tractor before attempting to proceed with speed change.

Front Wheel Drive Lever

CAUTION

To avoid personal injury:

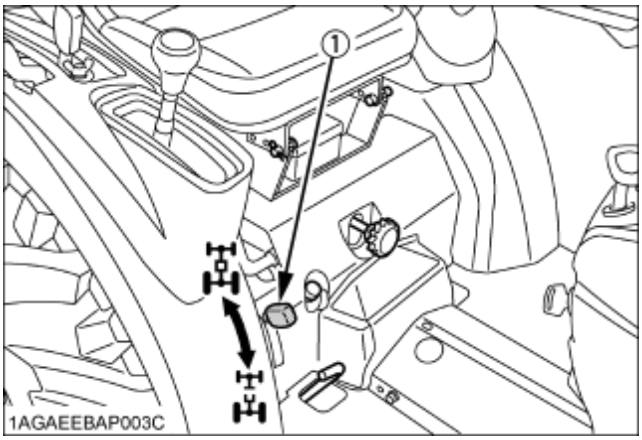
A Do not engage the front wheel drive when traveling at road speed.

A When driving on icy, wet or loose surfaces, make sure the tractor is correctly ballasted to avoid skidding and loss of steering control. Operate at reduced speed and engage front wheel drive.

A An accident may occur if the tractor is suddenly braked, such as by heavy towed loads shifting forward or loss of control.

A The braking characteristics are different between two and four wheel drive. Be aware of the difference and use carefully.

Use the lever to engage the front wheels with the tractor stopped. Shift the lever to "ON" to engage the front wheel drive.



(1) Front wheel drive lever *"ON"* *"OFF"*

IMPORTANT

A Depress the clutch pedal before engaging the front wheel drive lever.

A Tires will wear quickly if front wheel drive is engaged on paved roads.

C Front wheel drive is effective for the following jobs:

1. When greater pulling force is needed, such as working in a wet field, when pulling a trailer, or when working with a front-end loader.
2. When working in sandy soil.
3. When working on a hard soil where a rotary tiller might push the tractor forward.
4. Additional braking at reduced speeds.

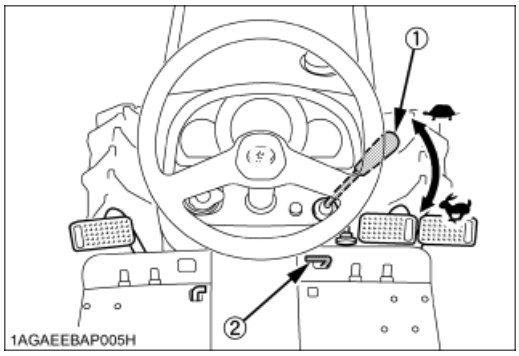
7. Accelerate the engine.

Hand Throttle Lever

Pulling the throttle lever back increases engine speed, and pushing it forward decreases engine speed.

Foot Throttle

Use the foot throttle when traveling on the road. Press down on it for higher speed. The foot throttle is interlocked with the hand throttle lever; when using the foot throttle, keep the hand throttle lever in low idling position.

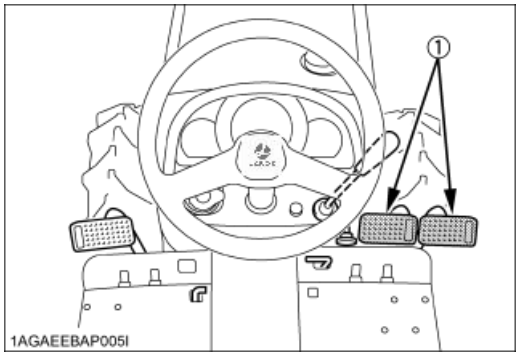


(1) Hand throttle lever *"INCREASE"*
(2) Foot throttle *"DECREASE"*

8. Unlock the parking brake and slowly release the clutch.

Parking Brake

To release the parking brake, depress the brake pedals again.



(1) Brake pedals

STOPPING

Stopping

1. Slow the engine down.
2. Step on the clutch and brake pedal.
3. After the tractor has stopped, disengage the PTO, lower the implement to the ground, shift the transmission to neutral, release the clutch pedal, and set the parking brake.

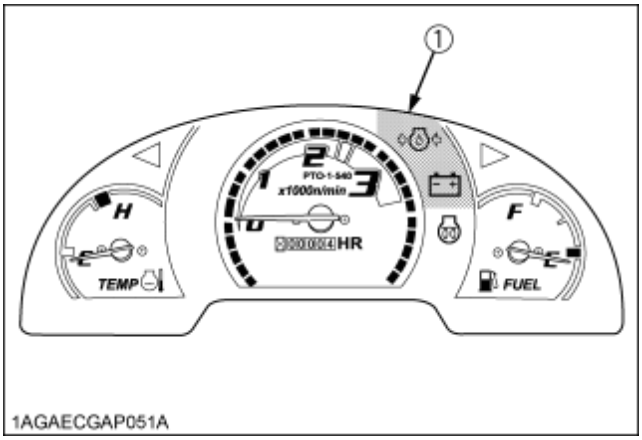
CHECK DURING DRIVING

Immediately Stop the Engine if:

A The engine suddenly slows down or accelerates.
A Unusual noises suddenly are heard.
A Exhaust fumes suddenly become very dark.

Easy Checker (TM)

If the warning lamps of the Easy Checker(TM) come on during operation, immediately stop the engine, and find the cause as shown below.
Never operate the tractor while Easy Checker(TM) lamp is on.



(1) Easy checker(TM)

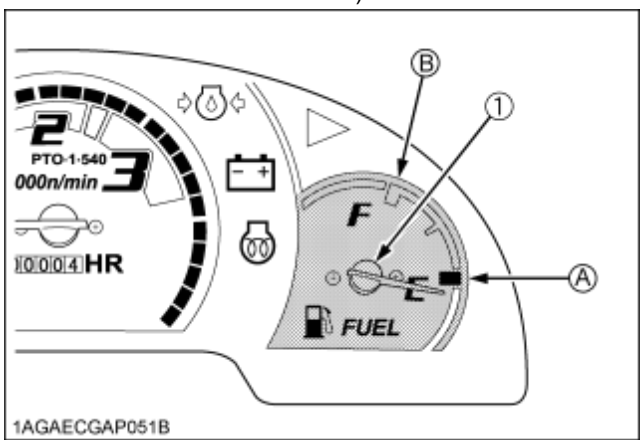
Engine oil pressure
If the oil pressure in the engine goes below the prescribed level, the warning lamp in the Easy Checker(TM) will come on.
If this should happen during operation, and it does not go off when the engine is accelerated to more than 1000 rpm, check level of engine oil.
(See "Checking Engine Oil Level" in "DAILY CHECK" in "PERIODIC SERVICE" section.)

Electrical charge
If the alternator is not charging the battery, the warning lamp in the Easy Checker(TM) will come on.
If this should happen during operation, check the electrical charging system or consult your local LAND X Dealer.

NOTE :
A For checking and servicing of your tractor, consult your local LAND X Dealer for instructions.

Fuel Gauge

When the key switch is on, the fuel gauge indicates the fuel level.
Be careful not to empty the fuel tank. Otherwise air may enter the fuel system.
Should this happen, the system should be bled. (See "Bleeding Fuel System" in "SERVICE AS REQUIRED" in "PERIODIC SERVICE" section.)

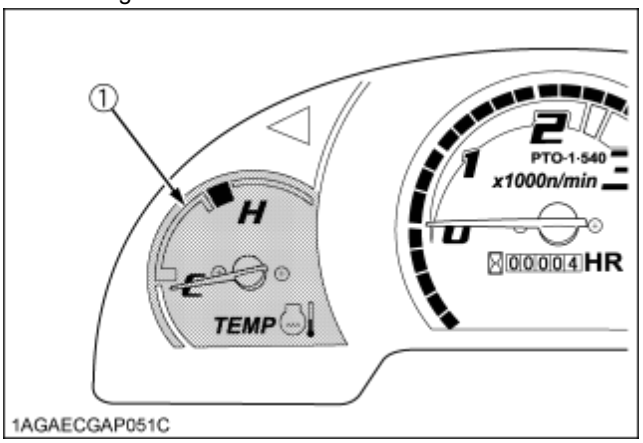


(1) Fuel gauge
(A) "EMPTY"
(B) "FULL"

Coolant Temperature Gauge

CAUTION
To avoid personal injury:
A Do not remove radiator cap until coolant temperature is well below its boiling point. Then loosen cap slightly to the stop to relieve any pressure before removing cap completely.

1. With the key switch at "ON", this gauge indicates the temperature of the coolant. "C" for "cold" and "H" for "hot".
2. If the indicator reaches the "H" position (red zone), engine coolant is overheated. Check the tractor by referring to "TROUBLESHOOTING" section.

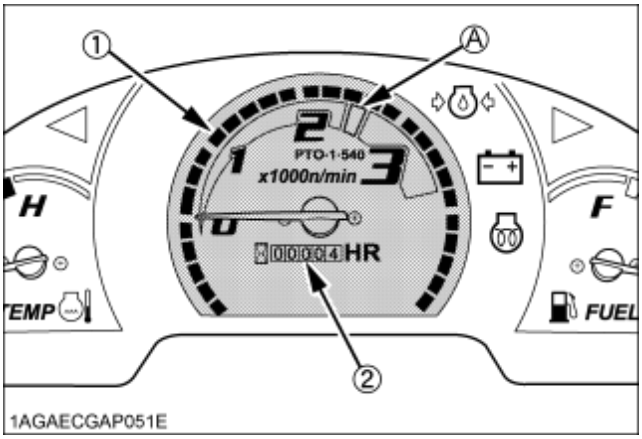


(1) Coolant temperature gauge

Hourmeter / Tachometer

This meter gives readings for engine speed, PTO shaft speed and the hours the tractor has been operated.

1. The tachometer indicates the engine speed and the 540 PTO shaft speed location on the dial.
2. The hourmeter indicates in five digits the hours the tractor has been used; the last digit indicates 1/10 of an hour.



(1) Engine revolution
(A) PTO: 540 rpm
(2) Hours used

PARKING

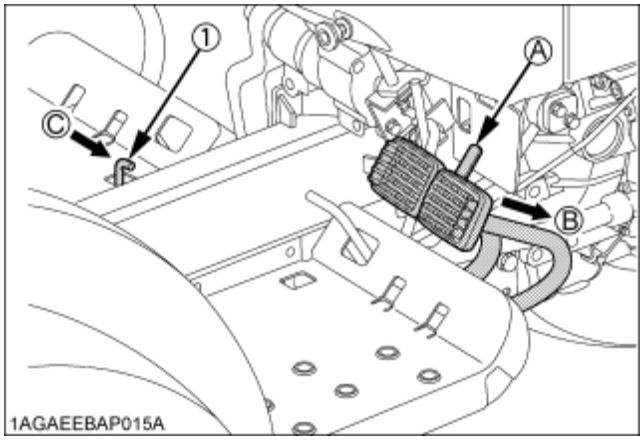
Parking Brake

CAUTION

To avoid personal injury:

A Always set the parking brake, stop the engine and remove the key before leaving the tractor seat.

1. When parking, be sure to set the parking brake.
   To set the parking brake;
   (1) Interlock the brake pedals.
   (2) Depress the brake pedals.
   (3) Depress the parking brake pedal to park.



(1) Parking brake pedal *(A) Interlock the brake pedals*
(B) "DEPRESS"
(C) "DEPRESS"

2. Before getting off the tractor, disengage the PTO, lower all implements to the ground, place all control levers in their neutral positions, set the parking brake, stop the engine and remove the key.
3. If it is necessary to park on an incline, be sure to chock the wheels to prevent accidental rolling of the machine.

OPERATING TECHNIQUES

Differential Lock

WARNING

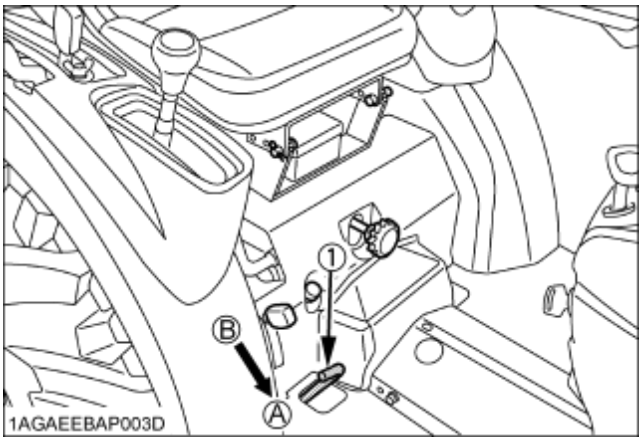
To avoid personal injury due to loss of steering control:

A Do not operate the tractor at high speed with differential lock engaged.

A Do not attempt to turn with the differential lock engaged.

A Be sure to release the differential lock before making a turn in field conditions.

If one of the rear wheels should slip, step on the differential lock pedal. Both wheels will turn together, then reduce slippage.
Differential lock is maintained only while the pedal is depressed.



(1) Differential lock pedal *(A) Press to "ENGAGE"*
(B) Release to "DISENGAGE"

IMPORTANT

A When using the differential lock, always slow the engine down.

A To prevent damage to power train, do not engage differential lock when one wheel is spinning and the other is completely stopped.

A If the differential lock cannot be released in the above manner, step lightly on the brake pedals alternately.

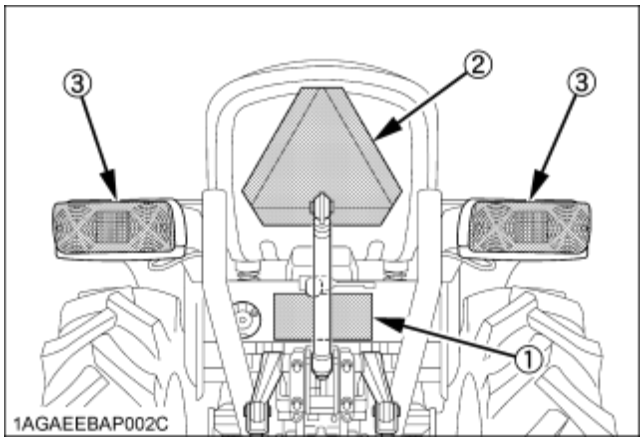
Operating the Tractor on a Road

CAUTION

To avoid personal injury:

- **To help assure straight line stops when driving at transport speeds, lock the brake pedals together. Uneven braking at road speeds could cause the tractor to roll-over.**
- **When traveling on road with 3-point hitch mounted implement attached, be sure to have sufficient front weight on the tractor to maintain steering ability.**
- **Towed equipment (without brake) must not exceed 1.5 times the tractor weight when traveling on roads or at high speeds.**

1. Observe all local traffic and safety regulations. Use the number plate.
2. Be sure SMV emblem and hazard light are clean and visible.



(1) Rear number plate
(2) SMV emblem
(3) Hazard light

Operating on Slopes or Rough Terrain

CAUTION

To avoid personal injury:

- **Always back up when going up a steep slope. Driving forward could cause the tractor to tip over backward. Stay off hills and slopes too steep for safe operation.**
- **Avoid changing gears when climbing or descending a slope.**
- **If operating on a slope, never disengage the clutch or shift levers to neutral. Doing so could cause loss of control.**
- **Do not drive the tractor close to the edges of ditches or banks which may collapse under the weight of the tractor. Especially when the ground is loose or wet.**

1. Be sure wheel tread is adjusted to provide proper stability.
   (See "WHEEL ADJUSTMENT" in "TIRES, WHEELS AMD BALLAST" section.)
2. Slow down for slopes, rough ground, or sharp turns, especially when transporting heavy, rear mounted equipment.
3. Before descending a slope, shift to a gear low enough to control speed without using brakes.

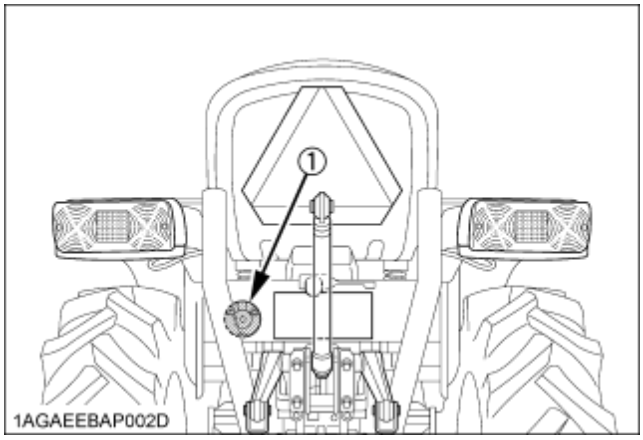
Directions for Use of Power Steering

[B2810K(Q) only]

1. Power steering is activated only while the engine is running. While the engine is stopped, the tractor functions in the same manner as tractors without power steering.
2. When the steering wheel is turned all the way to the stop, the relief valve is activated. Do not hold the steering wheel in this position for a long period of time.
3. Avoid turning the steering wheel while the tractor is stopped, or tires may wear out sooner.
4. The power steering mechanism makes the steering easier. Be careful when driving on a road at high speeds.

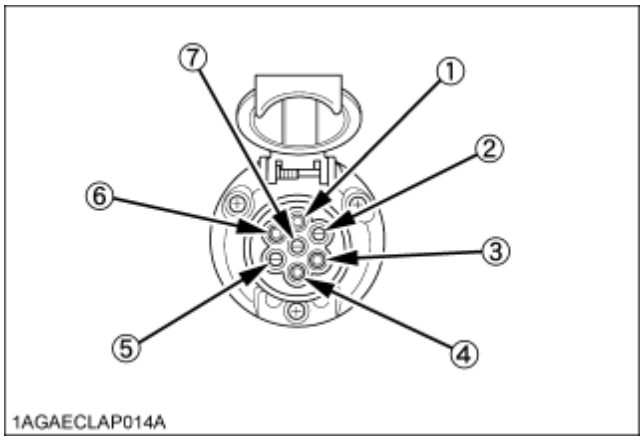
Trailer Electrical Outlet

A trailer electrical outlet is supplied for use with trailer or implement.



(1) Trailer electrical outlet

Function of each terminals in trailer electrical outlet



Terminal	Function	Color of wire harness
(1)	Turn signal light (LH)	Yellow
(2)	-	-
(3)	Ground	White
(4)	Turn signal light (RH)	Green
(5)	Tail light (RH)	Brown
(6)	Brake stop light	Red
(7)	Tail light (LH)	Black

PTO

PTO OPERATION

CAUTION

To avoid personal injury:

- **Disengage PTO, stop engine, and allow all rotating components to come to a complete stop before connecting, disconnecting, adjusting, or cleaning any PTO driven equipment.**

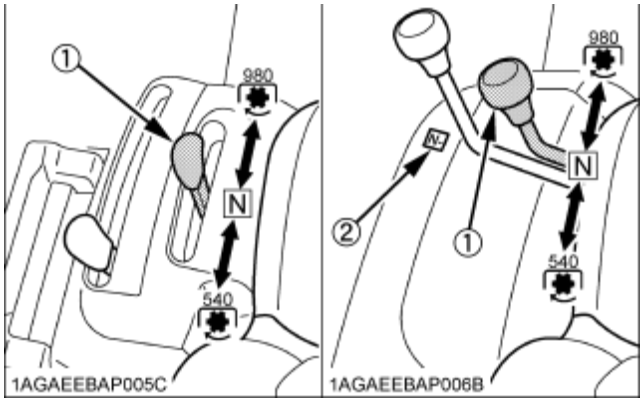
PTO Gear Shift Lever

WARNING

To avoid personal injury:

- **Be sure to observe the PTO shaft speed prescribed for the individual implements. It is extremely dangerous to run an implement at high speed that is meant to be operated at low speed. Use only when this higher rpm is specifically recommended by the implement manufacturer.**

1. The tractor has two speeds 540 & 980 rpm.
2. PTO shifting needs clutch operation. Press the clutch pedal down completely to stop the tractor movement and any PTO driven equipment movement before shifting the PTO gear shift lever.



(1) PTO gear shift lever
(2) Neutral position label
"ON (540 rpm)"
(N) "NEUTRAL"
"ON (980 rpm)"

IMPORTANT

- **To avoid shock loads to the PTO, reduce engine speed when engaging the PTO, then open the throttle to the recommended speed:**
- **To avoid damage of transmission, before shifting the PTO gear shift lever, fully disengage the main clutch.**

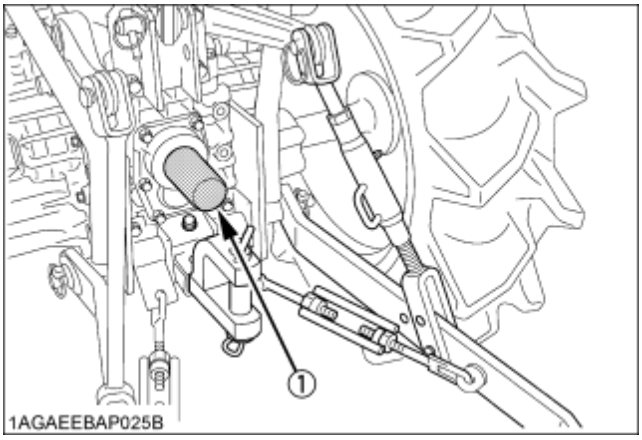
Model	Engine Speed rpm	Shaft	PTO Speed rpm
NB2310K NB2810K(Q)	2504	6-Spline	540
	2510		980

NOTE :

- There is a PTO- 1 (540 rpm) indicated mark on the tachometer board.
- Tractor engine will not start if PTO gear shift lever is in the engaged "ON" position.

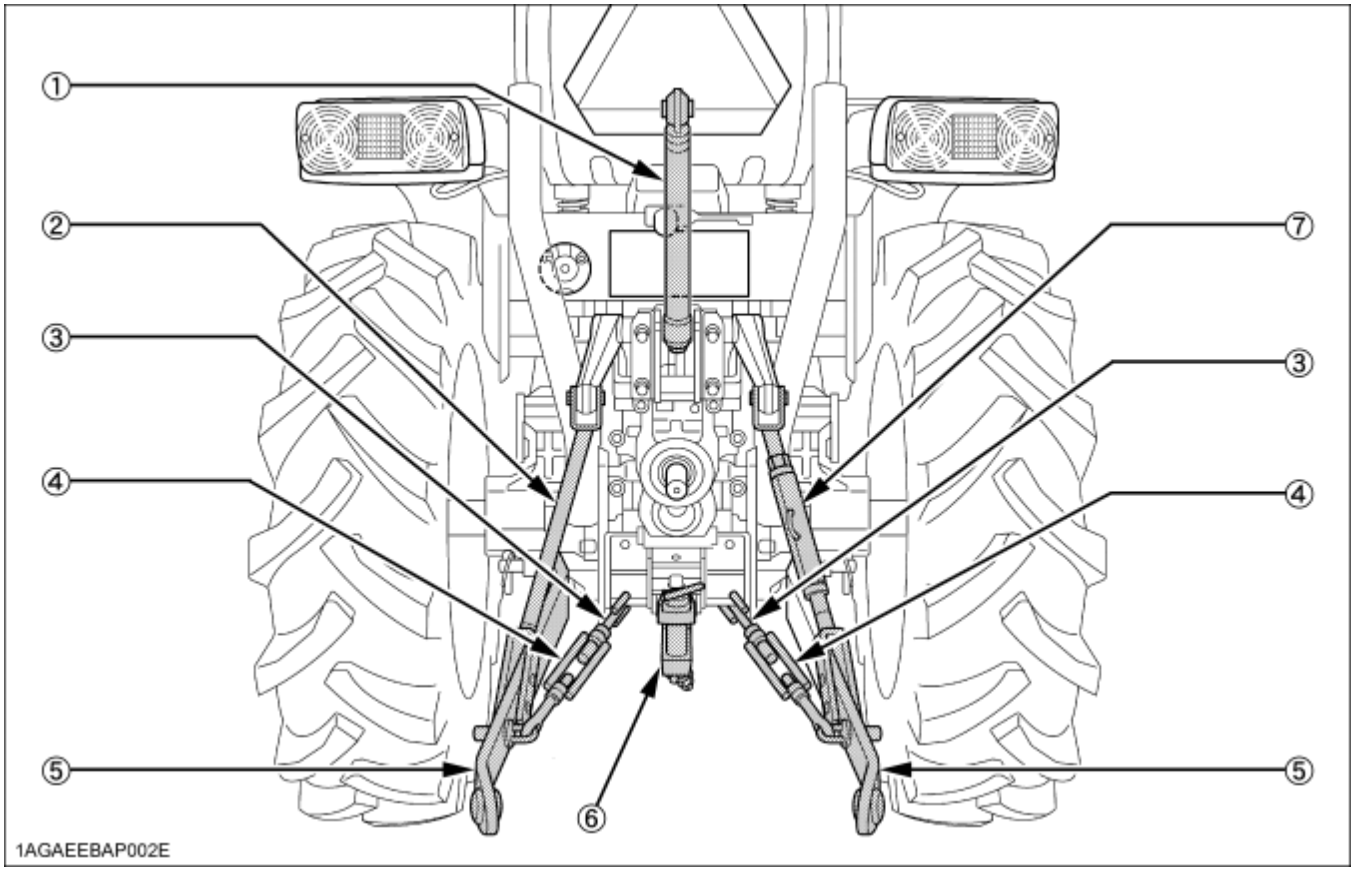
PTO shaft Cap

Replacing the PTO shaft cap when the shaft is not in use.



(1) PTO shaft cap

THREE-POINT HITCH & DRAWBAR



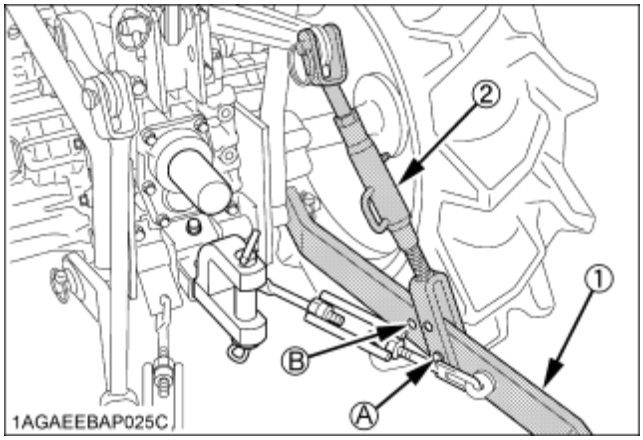
(1) Top link
(2) Lifting rod (Left)
(3) Check chains
(4) Turnbuckle
(5) Lower link
(6) Drawbar
(7) Lifting rod (Right)

3-POINT HITCH

1. Make preparations for attaching implement.

Selecting the holes of lifting rods and lower links

There are two holes in the lower links. For most operations the lifting rods should be attached to the (A) holes.



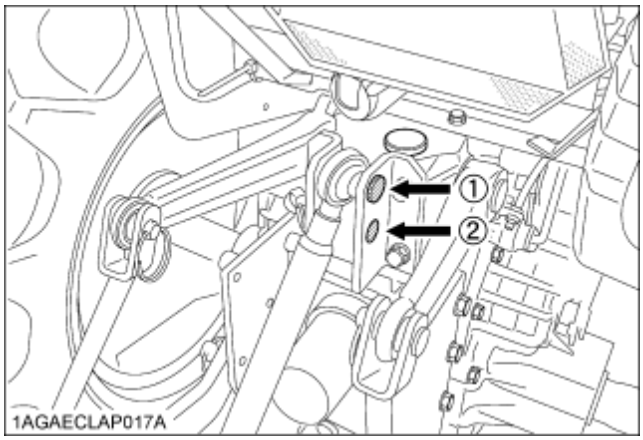
(1) Lower links holes:(A),(B)
(2) Lifting rods

NOTE :

A The lifting rods may be attached to (B) hole for higher lifting height. (with reduced lifting force)

Selecting the Top Link Mounting Holes

Select the proper set of holes by referring to the "Hydraulic Control Unit Use Reference Chart" in "HYDRAULIC UNIT" section.



Drawbar

Remove the drawbar if a close mounted implement is being attached.

2. Attaching and detaching implements

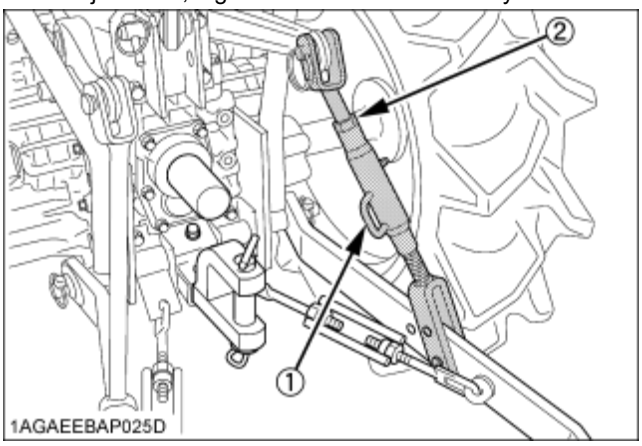
CAUTION

To avoid personal injury:

- **A Be sure to stop the engine and remove the key.**
- **A Do not stand between tractor and implement unless parking brake is applied.**
- **A Before attaching or detaching implement, locate the tractor and implement on a firm, flat and level surface.**
- **A Whenever an implement or other attachment is connected to the tractor 3-point hitch, check full range of operation for interference, binding or PTO driveline separation.**

Lifting Rod (Right)

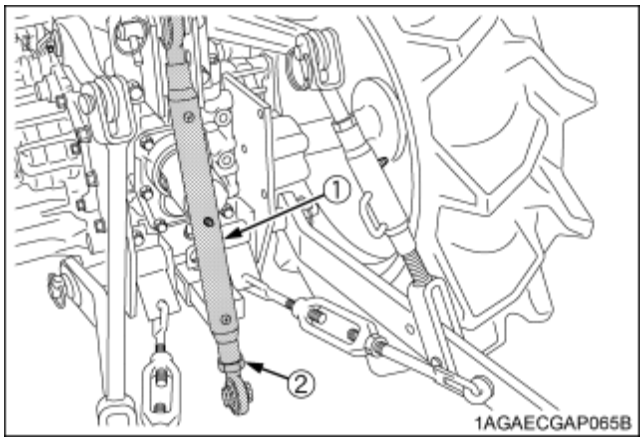
Level a 3-point mounted implement from side to side by turning the adjusting handle to shorten or lengthen the adjustable lifting rod with the implement on the ground. After adjustment, tighten the lock nut securely.



(1) Adjusting handle
(2) Lock nut

Top Link

1. Adjust the angle of the implement to the desired position by shortening or lengthening the top link.
2. The proper length of the top link varies according to the type of implement being used.
3. After adjustment, tighten the lock nut securely.

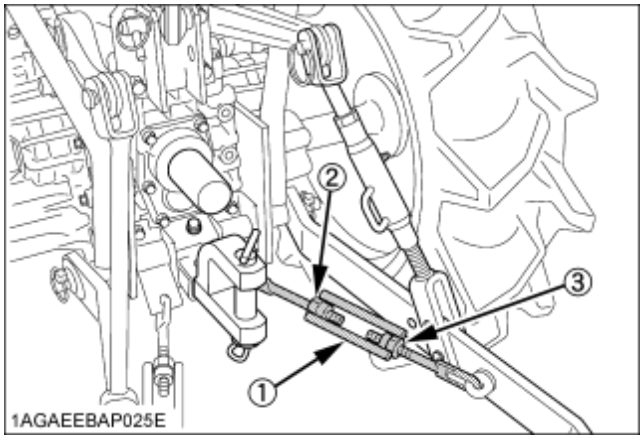


(1) Top link
(2) Lock nut
Tightening torque: 60 to 70 N-m (6. 1 to 7.1 kgf-m)

Check Chains

Adjust the turnbuckle to control horizontal sway of the implement.

After adjustment, retighten the lock nut.



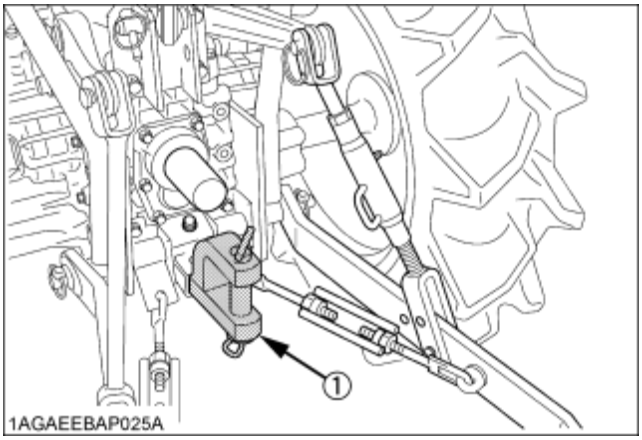
(1) Turnbuckle
(2) Locknut

DRAWBAR

WARNING

To avoid personal injury:

A Never pull from the top link, the rear axle or any point above the drawbar. Doing so could cause the tractor to tip over rearward causing personal injury or death.



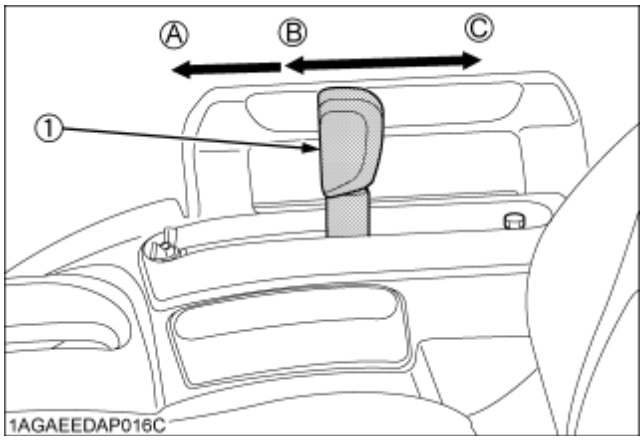
(1) Drawbar

HYDRAULIC UNIT

3-POINT HITCH CONTROL SYSTEM

Position Control

This will control the working depth of 3-point hitch mounted implement regardless of the amount of pull required.



(1) Position control lever
(A) "FLOAT"
(B) "DOWN"
(C) "UP"

IMPORTANT

A If the 3-point hitch can not be raised by setting the hydraulic control lever to the UP position after long term storage or when changing the transmission oil, turn steering wheel to the right and left several times to bleed air from the system.

A 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.

A If noises are heard when implement 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 LAND X Dealer for adjustment.

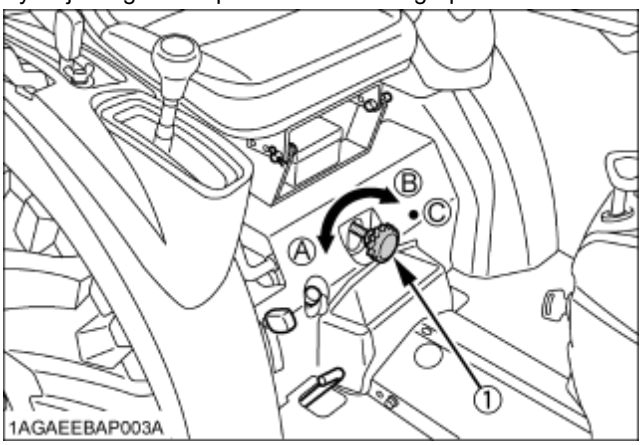
3-point Hitch Lowering Speed

CAUTION

To avoid personal injury:

A Fast lowering speed may cause damage or injury. Lowering speed of implement should be adjusted to two or more seconds.

The lowering speed of the 3-point hitch can be controlled by adjusting the 3-point hitch lowering speed knob.



(1) 3-point hitch lowering speed knob
(A) "FAST"
(B) "SLOW"
(C) "LOCK"

AUXILIARY HYDRAULICS

Hydraulic outlet is provided on the tractor.

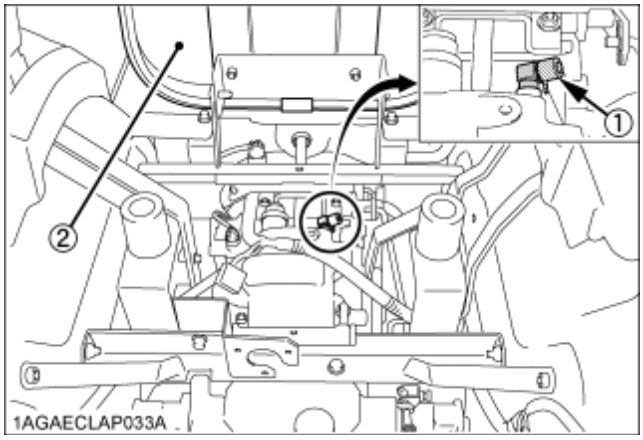
Rear Outlet

CAUTION

To avoid personal injury:

A Stop the engine and place the position control lever of 3-point hitch at the "lowest" position before changing the oil flow.

When a hydraulically operated implement is connected to the tractor, the oil flow to 3-point hitch can be switched to the cylinder on the implement by attaching the G1/4 joint pipe (MR003-20211).



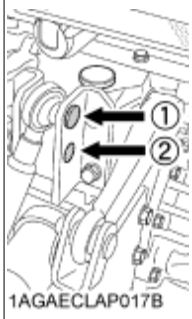
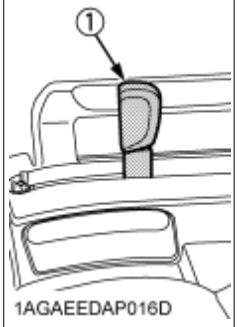
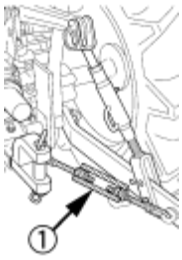
(1) G1/4 joint pipe (MR003-20211)
(2) Seat

IMPORTANT

A To move up or down the 3-point hitch with the lift arm, detach the G1/4 joint pipe and place the original cap back tightly in position.

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 types of implements and soil conditions, it is useful for general conditions.

Implement	 Soil condition	 1AGAECLAP017B Top link mounting holes	 1AGAEEDAP016D (1)Position control lever	 1AGAEBCAP0590 Gauge Wheel	 1AGAEEBAP025G (1)Check chains	Remarks
Moldboard plow	Light soil Medium soil heavy soil	Hole 1 *Hole2 is used only when there is some obstacle that prevents you from using the hole1.	Position control	YES/ NO	Loose	Adjust the check chains so that the implement can move 5 to 6cm laterally. For implements with gauge wheels, lower the implements to the ground.
Disc plow	---					
Harrower (spike, springtooth, disc type)	---					
Sub-soiler….						
Weeder ridger..	---			YES	Tighten	Check chains should be tight enough to prevent excessive implement movement when implement is in raised position. For implements with gauge wheels, lower the implements to the ground.
Earthmover, digger, scraper, manure fork, rear carrier….				YES/ NO		
Mower (rear-mount type), hayrake, tedder….						

TIRES, WHEELS AND BALLAST

TIRES

WARNING

To avoid personal injury:

- **Do not attempt to mount a tire on a rim. This should be done by a qualified person with the proper equipment.**
- **Always maintain the correct tire pressure. Do not inflate tires above the recommended pressure shown in the operator's manual.**

IMPORTANT

- Do not use tires other than those approved by LAND X.

Inflation Pressure

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

	Tire sizes	Inflation Pressure
Front	**[B2810K(Q)]** 180 / 85D12	160 kPa (1.6 kgf/cm²)
	[B2310K] 5-12	240 kPa (2.4 kgf/cm²)
Rear	**[B2810K(Q)]** 8.3-20	160 kPa (1.6 kgf/cm²)
	[B2310K] 8-18	160 kPa (1.6 kgf/cm²)

NOTE :

- Maintain the maximum recommended pressure in the front tires, when using a front loader or equipped with a full load of front weights.

Dual Tires

Dual tires are not approved.

WHEEL ADJUSTMENT

CAUTION

To avoid personal injury:

- **When working on slopes or when working with trailer, set the wheel tread as wide as practical for maximum stability.**
- **Support tractor securely on stands before removing a wheel.**
- **Do not work under any hydraulically supported devices. They can settle, suddenly leak down, or be accidentally lowered. If necessary to work under tractor or any machine elements for servicing or adjustment, securely support them with stands or suitable blocking beforehand.**
- **Never operate tractor with a loose rim, wheel, or axle.**

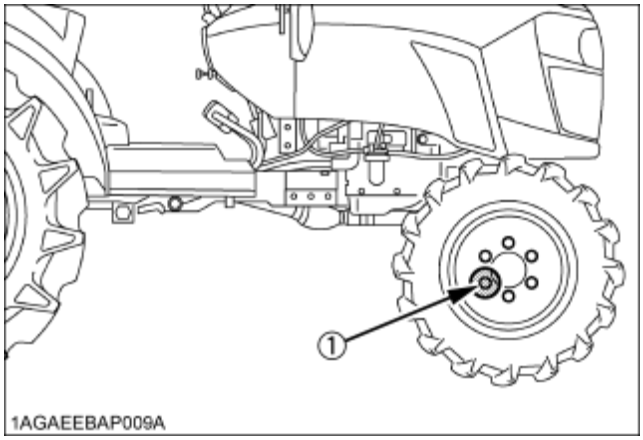
Front Wheels

Front tread width can not be adjusted.

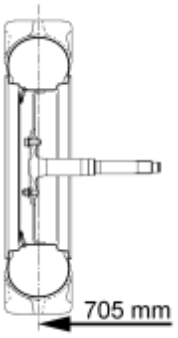
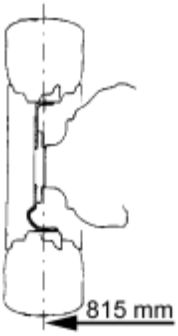
IMPORTANT

A Do not turn front discs to obtain wider tread.

A When re-fitting or adjusting a wheel, tighten the bolts to the following torques then recheck after driving the tractor 200 m (200 yards) and 10 times of shuttle movement by 5 m (5 yards), and thereafter according to service interval. (See "MAINTENANCE" section.)



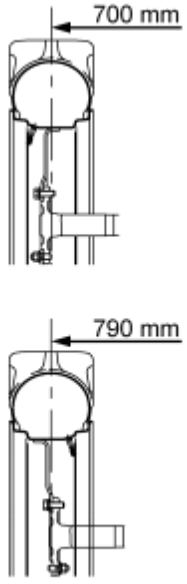
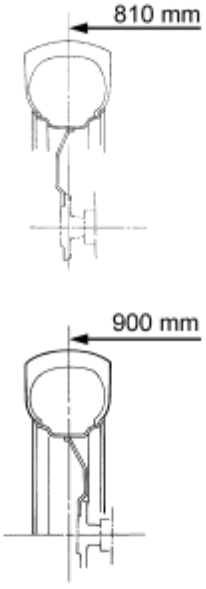
(1) 80 to 90 N-m (8.2 to 9.2 kgf-m)

Tire	Models	Tread
5- 12 Farm	B2310K	 1AGAEEBAP010A
180 / 85D- 12 Farm	B2810K(Q)	 1AGAEBCAP108H

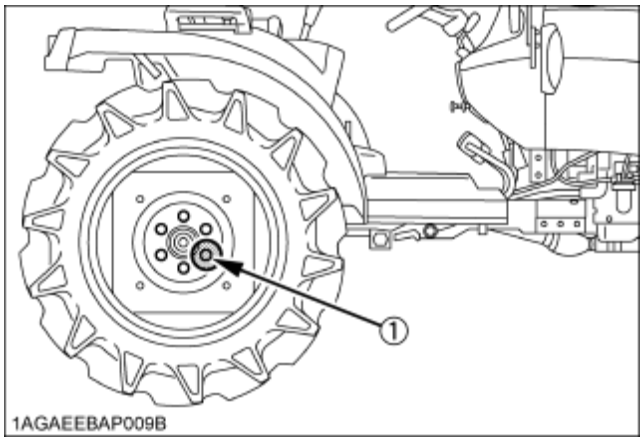
Rear Wheels

Rear tread width can be adjusted as shown with the standard equipped tires. To change the tread width

1. Change the position of the right and left tires.

Tire	Models	Tread
8- 18 Farm	B2310K	 1AGAEEDAP052B
8.3 - 20 Farm	B2810K(Q)	 1AGARABAP087D

IMPORTANT
A Always attach tires as shown in the drawings.
A If not attached as illustrated, transmission parts may be damaged.
A When re-fitting or adjusting a wheel, tighten the bolts to the following torques then recheck after driving the tractor 200 m (200 yards) and 10 times of shuttle movement by 5 m (5 yards), and thereafter according to service interval. (See "MAINTENANCE" section.)



(1) 140 to 150 N-m (14.3 to 15.3 kgf-m)

BALLAST

CAUTION
To avoid personal injury:
A Additional ballast will be needed for transporting heavy implements. When the implement is raised, drive slowly over rough ground, regardless of how much ballast is used.
A Do not fill the front wheels with liquid.

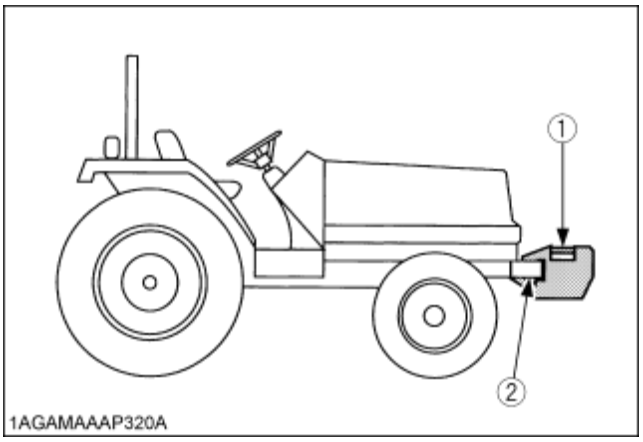
BFront Ballast

Add weights if needed for stability and improving traction. 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 when no longer needed.

C Front End Weights (option)

The front end weights can be attached to the bumper.
See your implement operator's manual for required number of weights or consult your local LAND X Dealer to use.

NOTE :
A Besides the weight, a mounting kit is also required.



(1) Front end weights
(2) Bumper

IMPORTANT
A Do not overload tires.
A Add no more weight than indicated in chart.

Maximum weight	25 kg x 3 pieces

Rear Ballast

Add weight to rear wheels if needed to improve traction or for stability. The amount of rear ballast should be matched to job and the ballast should be removed when it is not needed.

The weight should be added to the tractor in the form of liquid ballast.

Liquid Ballast in Rear Tires

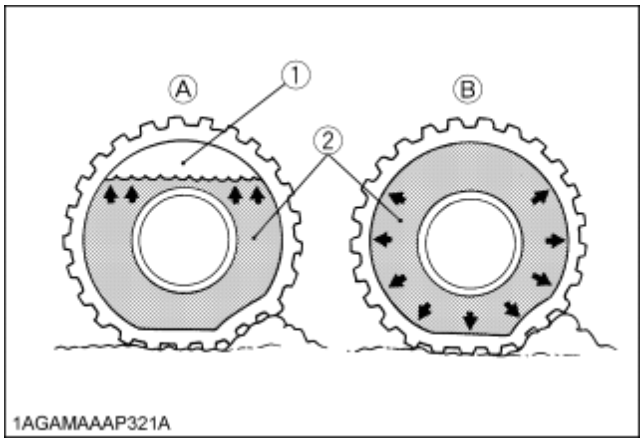
Water and calcium chloride solution provides safe economical ballast. Used properly, it will not damage tires, tubes or rims. The addition of calcium chloride is recommended to prevent the water from freezing. Use of this method of weighting the wheels has the full approval of the tire companies. See your tire dealer for this service.

Liquid weight per tire (75 Percent filled)

Tire sizes	8.3 - 20	8 - 18
Slush free at - 10 ℃ Solid at -30 ℃ [Approx. 1 kg $CaCl_2$ per 4L of water]	40 kg	35 kg

IMPORTANT

A Do not fill tires with water or solution more than 75% of full capacity (to the level of valve stem at 12 o'clock position).



(1) Air
(2) Water

(A) Correct : 75% Full
Air compresses like a cushion
(B) Incorrect : 100% Full
Water can not be compressed

MAINTENANCE

SERVICE INTERVALS

No.	Items			Indication on hour meter														Since then	Ref. page	
				50	100	150	200	250	300	350	400	450	500	550	600	650	700			
1	Engine oil		Change	◎	○		○		○		○		○		○		○	every 100 Hr	52	
2	Engine oil filter		Replace	◎			○				○				○			every 200 Hr	53	
3	Hydraulic oil filter		Replace	◎							○							every 400 Hr	54	
4	Transmission fluid		Change								○							every 400 Hr	54	
5	Front axle case oil		Change								○							every 400 Hr	55	
6	Front axle pivot		Adjust								○							every 400 Hr	54	
7	Greasing		---	○	○	○	○	○	○	○	○	○	○	○	○	○	○	every 50 Hr	44	
8	Dust covers (Tie-rod, Drag-link)		Check	○	○	○	○	○	○	○	○	○	○	○	○	○	○	every 50 Hr	46	
9	Engine start system		Check	○	○	○	○	○	○	○	○	○	○	○	○	○	○	every 50 Hr	46	
10	Wheel bolt torque		Check	○	○	○	○	○	○	○	○	○	○	○	○	○	○	every 50 Hr	46	
11	Lower link pin (Set bolt torque)		Check	○	○	○	○	○	○	○	○	○	○	○	○	○	○	every 50 Hr	47	
12	Battery condition		Check		○		○		○		○		○		○		○	every 100 Hr	47	*5
13	Air cleaner element	Primary element	Clean		○		○		○		○		○		○		○	every 100 Hr	49	*1
			Replace															every 1 year	56	*2
		Secondary element	Replace															every 1 year	56	
14	Fuel filter element		Check		○		○		○		○		○		○		○	every 100 Hr	49	
			Replace								○							every 400 Hr	55	
15	Fan belt		Adjust		○		○		○		○		○		○		○	every 100 Hr	50	
16	Clutch		Adjust	◎	○		○		○		○		○		○		○	every 100 Hr	50	
17	Brake		Adjust		○		○		○		○		○		○		○	every 100 Hr	51	
18	Radiator hose and clamp		Check				○				○				○			every 200 Hr	53	
			Replace															every 2 years	58	
19	Grease fittings (Universal joint)		---								○							every 400 Hr	56	
20	Fuel line		Check		○		○		○		○		○		○		○	every 100 Hr	51	
			Replace															every 2 years	58	*4
21	Intake air line		Check				○				○				○			every 200 Hr	54	*4
			Replace															every 2 years	58	
22	Engine valve clearance		Adjust															every 800 Hr	56	*4
23	Fuel injection nozzle Injection pressure		Check															every 1500 Hr	56	*4
24	Injection pump		Check															every 3000 Hr	56	*4
25	Cooling system		Flush															every 2 years	57	
26	Coolant		Change															every 2 years	57	
27	Fuel system		Bleed															Service as required	58	
28	Clutch housing water		Drain																58	
29	Fuse		Replace																59	
30	Light bulb		Replace																59	

IMPORTANT

A The jobs indicated by ◎ must be done after the first 50 hours of operation.

*1 Air cleaner should be cleaned more often in server dusty conditions.

*2 Every year or after 6 cleanings.

*3 Replace only if necessary.

*4 Consult your local LAND X Dealer for this service.

*5 When the battery is used for less than 100 hours per year, check the fluid level annually.

LUBRICANTS, FUEL AND COOLANT

No.	Locations	Capacities		Lubricants	
		NB2310K	NB2810K(Q)		
1	Fuel	23 L		No. 2-D diesel fuel No. 1-D diesel fuel if temperature is below - 10℃	
2	Coolant (with recovery tank)	3.9 L		Fresh clean soft water with coolant and anti- freeze	
3	Engine crankcase (with filter)	3.1 L		• Engine oil : CF or better (Refer to next page)	
				Above 25℃	SAE30, SAE10W-30 or 15W-40
				- 10 to 25℃	SAE20, SAE10W-30 or 15W-40
				Below - 10℃	SAE10W-30
4	Transmission case	12.5 L		• LAND X UDT or SUPER UDT fluid* or SAE 75W-80	
5	Front axle case	3.0 L	3.2 L	• LAND X UDT or SUPER UDT fluid* or SAE 75W-80 gear oil	
6	Greasing	No. of greasing points		Capacity	Type of grease
	Brake pedal	1		Until grease overflow.	Multipurpose Grease NLGI-2 OR NLGI- 1 (GC-LB)
	Brake pedal shaft	1			
	Clutch pedal	1			
	Top link	1			
	Lift arm	2			
	Lifting rod (RH)	1			
	Universal joint	2			
	Range gear shift lever	1			
	Battery terminal	2		Moderate amount	
	Lift arm ball joint	2			
	Lower link ball joint	2			

NOTE: *LAND X SUPER UDT fluid--- LAND X original transmission hydraulic fluid

NOTE :

C **Engine Oil:**

A Oil used in the engine should have an American Petroleum Institute (API) service classification and Proper SAE Engine Oil according to the ambient temperatures as shown above:

A With the emission control now in effect, the CF-4 and CG-4 lubricating oils have been developed for use of a low-sulfur fuel on on-road vehicle engines. When an off-road vehicle engine runs on a high-sulfur fuel, it is advisable to employ the "CF or better" lubricating oil with a high Total Base Number (TBN of 10 minimum).

A Refer to the following table for the suitable API classification engine oil according to the engine type (with internal EGR, external EGR or non-EGR) and the fuel (low-sulfur or high-sulfur fuel).

Fuel used	Engine oil classification (API classification)	
	Oil class of engines except external EGR	Oil class of engines with external EGR
High Sulfur Fuel [≧ 0.05% (500 ppm)]	**CF** (If the "CF-4, CG-4, CH-4 or CI-4" lubricating oil is used with a high-sulfur fuel, change the lubricating oil at shorter intervals. (approximately half))	---
Low Sulfur Fuel [<0.05% (500 ppm)] or Ultra Low Sulfur Fuel [<0.0015% (15 ppm)]	**CF, CF-4, CG-4, CH-4** or **CI-4**	**CF** or **CI-4** (Class CF-4, CG-4 and CH-4 engine oils cannot be used on EGR type engines)

EGR: Exhaust Gas Re-circulation

A The CJ-4 engine oil is intended for DPF (Diesel Particulate Filter) type engines, and cannot be used on this tractor.

	without EGR	with external EGR
Models	NB2310K / N B2810K(Q)	---

C **Fuel:**

A Cetane number of 45 minimum. Cetane number greater than 50 is preferred, especially for temperatures below -20 ℃ or elevations above 1500 m.

A If diesel fuel with sulfur content greater than 0.5% (5000 ppm) sulfur content is used, reduce the service interval for engine oil and filter by 50%.

A NEVER use diesel fuel with sulfur content greater than 0.05% (500 ppm) for EXTERNAL EGR type engine.

A DO NOT use diesel fuel with sulfur content greater than 1.0% (10000 ppm).

A Diesel fuels specified to EN 590 or ASTM D975 are recommended.

A No.2-D is a distillate fuel of lower volatility for engines in industrial and heavy mobile service. (SAE J313 JUN87)

A Since this engine adopts EPA Tier 4 and Interim Tier 4 standards, the use of low sulfur fuel or ultra low sulfur fuel is mandatory in EPA regulated area (North America). Therefore, please use No.2-D S500 or S15 diesel fuel as an alternative to No.2-D, or use No. 1-D S500 or S15 diesel fuel as an alternative to No. 1-D if outside air temperature is below - 10 ℃ .

C **Transmission Oil:**

The oil used to lubricate the transmission is also used as hydraulic fluid. To insure proper operation of the hydraulic system and to complete lubrication of the transmission, it is important that a multi-grade transmission fluid is used in this system. We recommend the use of **LAND X UDT or SUPER UDT fluid** for optimum protection and performance.

(Consult your local LAND X Dealer for further detail.)

Do not mix different brands together.

A Indicated capacities of water and oil are manufacturer's estimate.

PERIODIC SERVICE

CAUTION

To avoid personal injury:

A Do not work under any hydraulically supported devices. They can settle, suddenly leak down, or be accidentally lowered. If necessary to work under tractor or any machine elements for servicing or adjustment, securely support them with stands or suitable blocking beforehand.

HOW TO OPEN THE HOOD

CAUTION

To avoid personal injury from contact with moving parts;

A Never open the hood or engine side cover while the engine is running.

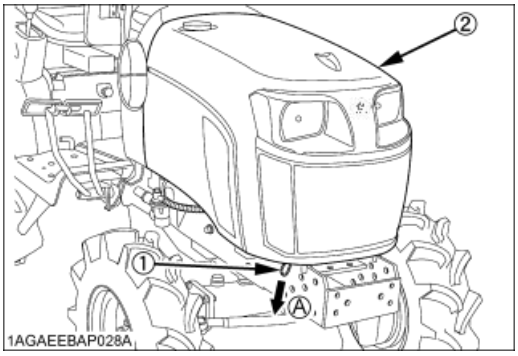
A Do not touch muffler or exhaust pipes while they are hot; Severe burns could result.

A Hold the hood with other hand while unlocking release lever.

BHood

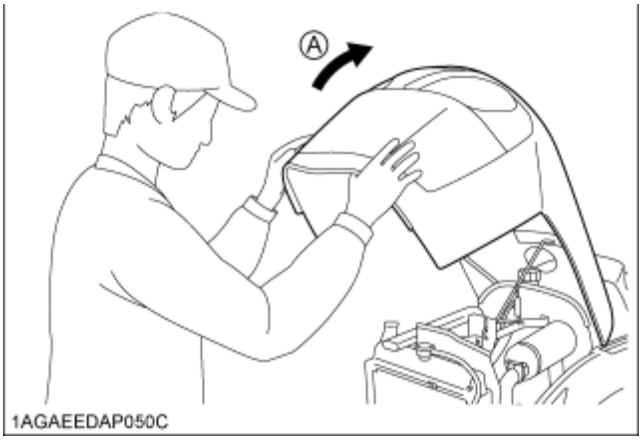
C Open the hood

1. To open the hood, pull the release lever.



(1) Release lever *(A) "PULL"*
(2) Hood

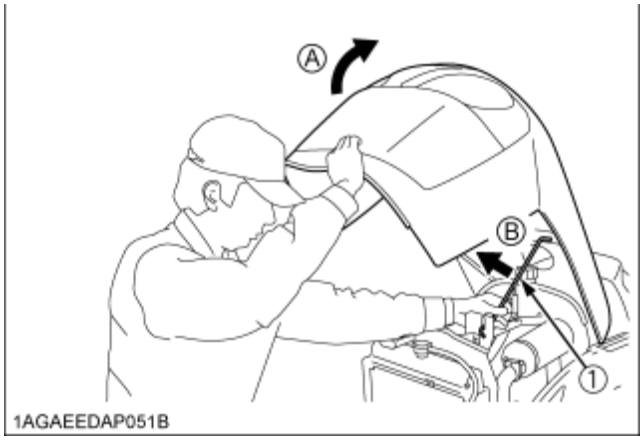
2. Open the hood by holding its bottom with both hands.



(A) "OPEN"

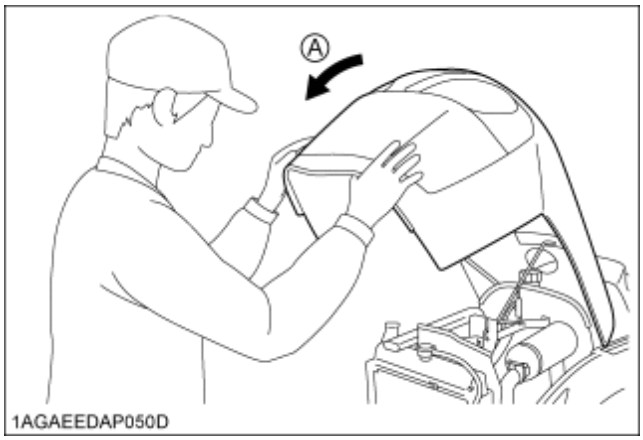
C **Close the hood**

1. To close the hood, hold the hood and release the support rod.



(1) Support rod *(A) "HOLD"*
(B) "PULL"

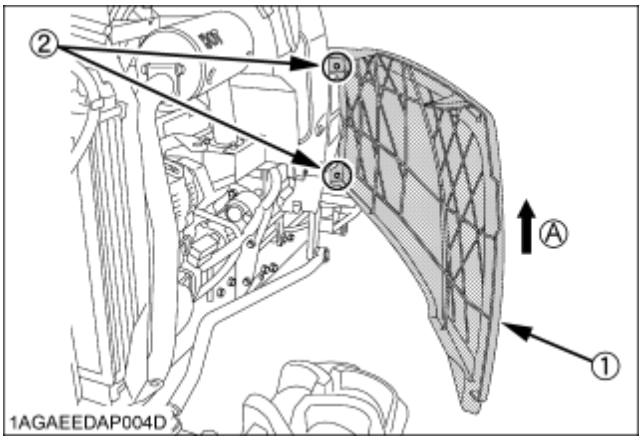
2. In closing the hood, use both hands again.



(A) "CLOSE"

Engine Side Cover

1. Lift up the front of the engine side cover and free the upper and lower projections.
2. Pull the engine side cover forward and free the rear notches. Now the side cover can be detached.



(1) Engine side cover *(A) "LIFT UP TO REMOVE"*
(2) Notch

DAILY CHECK

For your own safety and maximum service life of the machine, make a thorough daily inspection before operating the machine to start the engine.

CAUTION

To avoid personal injury:

- **Be sure to check and service the tractor on a level surface with the engine shut off and the parking brake "ON" and implement lowered to the ground.**

Walk Around Inspection

Look around and under the tractor for such items as loose bolts, trash build-up, oil or coolant leaks, broken or worn parts.

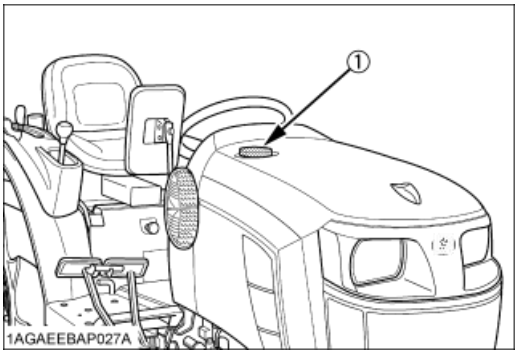
Checking and Refueling

CAUTION

To avoid personal injury:

- **Do not smoke while refueling.**
- **Be sure to stop the engine before refueling.**

1. Turn the key switch to "ON", check the amount of fuel by fuel gauge.
2. Fill fuel tank when fuel gauge shows 1/4 or less fuel in tank.



(1) Fuel tank cap

Fuel tank capacity	23 L

IMPORTANT

- Do not permit dirt or trash to get into the fuel system.
- Be careful not to let the fuel tank become empty, otherwise air will enter the fuel system, necessitating bleeding before next engine start.
- Be careful not to spill during refueling. If should spill, wipe it off at once, or it may cause a fire.
- To prevent condensation (water) accumulation in the fuel tank, fill the tank before parking overnight.

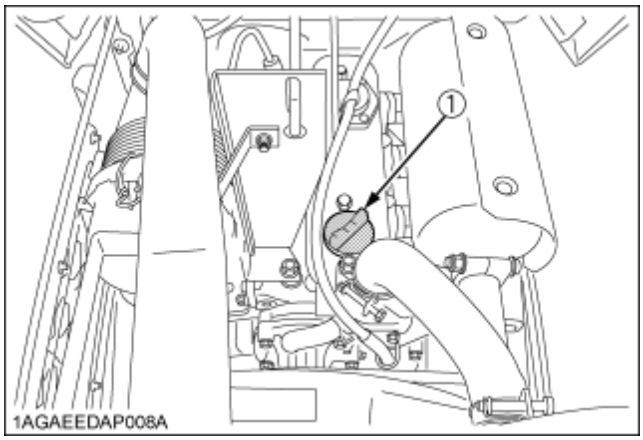
Checking Engine Oil Level

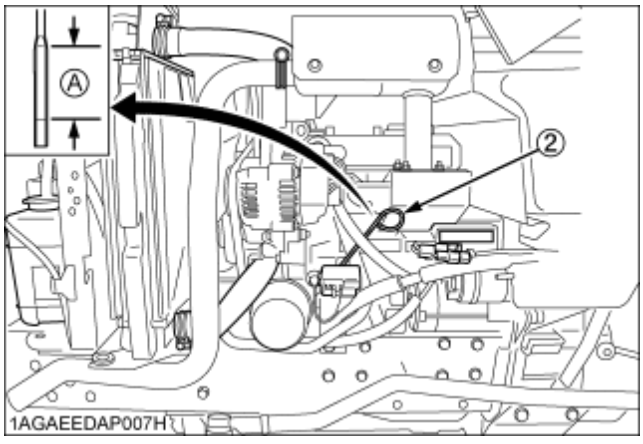
CAUTION

To avoid personal injury:

A Be sure to stop the engine before checking the oil level.

1. Park the machine on a flat surface.
2. Check engine oil before starting the engine or 5 minutes or more after the engine has stopped.
3. 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.
   If the level is too low, add new oil to the prescribed level at the oil inlet.
   (See "LUBRICANTS" in "MAINTENANCE" section.)





(1) Oil inlet *(A) Oil level is acceptable within this range.*
(2) Dipstick

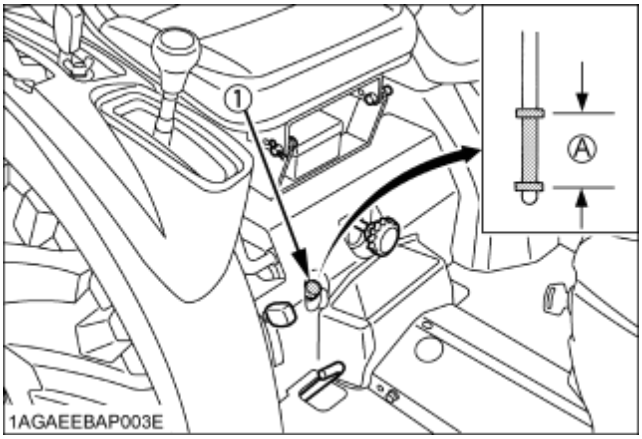
IMPORTANT

A When using an oil of different maker or viscosity from the previous one, remove all of the old oil and oil filter. Never mix two different types of oil.

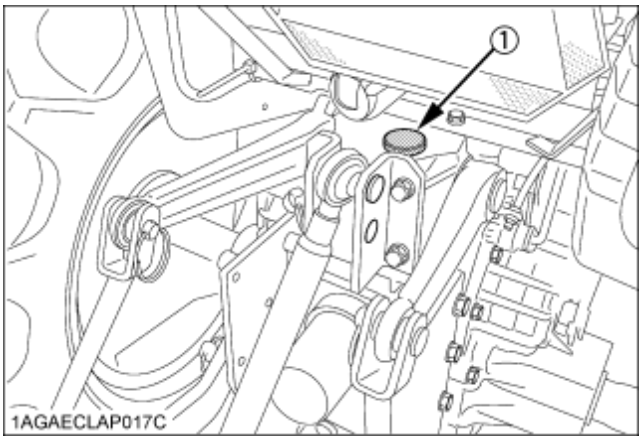
A If oil level is low, do not run engine.

Checking Transmission Fluid Level

1. Park the machine on a flat surface, lower the implement and shut off engine.
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.
   If the level is too low, add new oil to the prescribed level at the oil inlet.
   (See "LUBRICANTS" in "MAINTENANCE" section.)



(1) Dipstick *(A) Oil level is acceptable within this range.*



(1) Oil inlet

IMPORTANT

A If oil level is low, do not run engine.

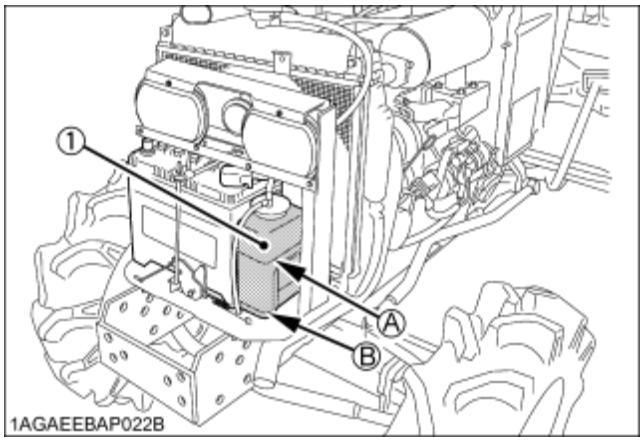
Checking Coolant Level

CAUTION

To avoid personal injury:

A Do not remove radiator cap while coolant is hot. When cool, slowly rotate cap to the first stop and allow sufficient time for excess pressure to escape before removing the cap completely.

1. Check to see that the coolant level is between the "FULL" and "LOW" marks of recovery tank.
2. When the coolant level drops due to evaporation, add soft water only up to the full level.
   In case of leakage, add anti-freeze and soft water in the specified mixing ratio up to the full level.
   (See "Flushing Cooling System and Changing Coolant" in "EVERY 2 YEARS" in "PERIODIC SERVICE" section.)



(1) Recovery tank *(A) "FULL"* *(B) "LOW"*

IMPORTANT

A If the radiator cap has to be removed, follow the caution above and securely retighten the cap.
A Use clean, fresh soft water and anti-freeze to fill the recovery tank.
A If coolant should leak, consult your local LAND X Dealer.

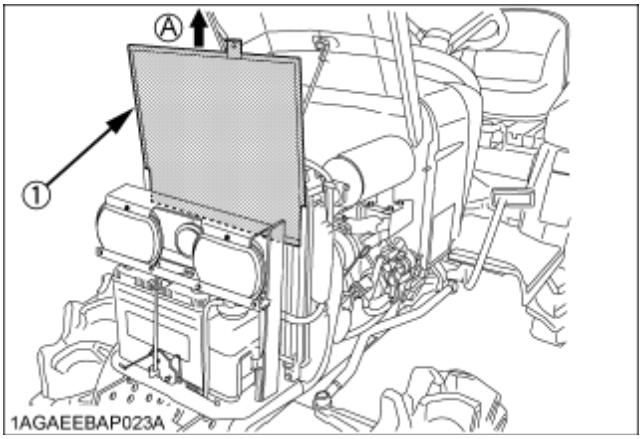
Cleaning Grill and Radiator Screen

CAUTION

To avoid personal injury:

A Be sure to stop the engine and remove the key before removing the screen.

1. Check front grill and side screens to be sure they are clean of debris.
2. Detach the screen and remove all foreign materials and clean the front of radiator completely.



(1) Radiator screen *(A) "DETACH"*

IMPORTANT

A Grill and screen must be clean from debris to prevent engine from overheating and to allow good air intake for the air cleaner.

Checking Brake Pedals and Clutch Pedal

1. Inspect the brake and clutch pedals for free travel, and smooth operation.
2. Adjust if incorrect measurement is found:
   (See "Adjusting Clutch Pedal" and "Adjusting Brake Pedal" in "EVERY 100 HOURS" in "PERIODIC SERVICE" section.)

NOTE :

A Brake pedals should be equal when depressed.

Checking Gauges, Meter and Easy Checker(TM)

1. Inspect the instrument panel for broken gauge(s), meter(s) and Easy Checker(TM).
2. Replace if broken.

Checking Head Light, Hazard Light etc.

1. Inspect the lights for broken bulbs and lenses.
2. Replace if broken.

Checking and Cleaning of Electrical Wiring and Battery Cables

CAUTION

To avoid personal injury:

- **A loosened terminal or connector, or damaged wire may affect the performance of electrical components or cause short circuits. Leakage of electricity could result in a fire hazard, a dead battery or damage to electrical components.**
- **Replace damaged wires or connections promptly.**
- **If a fuse blows soon after replacement, DO NOT USE A LARGER THAN RECOMMENDED FUSE OR BYPASS THE FUSE SYSTEM.**
- **Many wiring connections are protected by waterproof plugs, plug and unplug these connections carefully and make sure they are sealed correctly after assembly.**
- **Accumulation of dust, chaff and spilled fuel deposits around the battery, electrical wiring, engine or exhaust system are fire hazards. CLEAN THESE AREAS BEFORE STARTING WORK.**

  To avoid premature electrical malfunctions DO NOT APPLY high pressure water directly to battery, wiring, connectors, electrical components or instrument panel.

Inspect the following regularly:

1. Check wiring for chafed or cracked insulation.
2. Check wiring harness clamps. Replace if necessary.
3. Check connectors and terminals for looseness, contamination or overheated (discolored) connections.
4. Check instrument panel for correct operation of switches and gauges.

Consult your LAND X Dealer regarding maintenance, diagnosis and repair.

Checking Movable Parts

If any of the movable parts, such as levers and pedals, is not smoothly moved because of rust or anything sticky, do not attempt to force it into motion.

In the above case, remove the rust or the sticky thing, and apply oil or grease on the relevant spot.

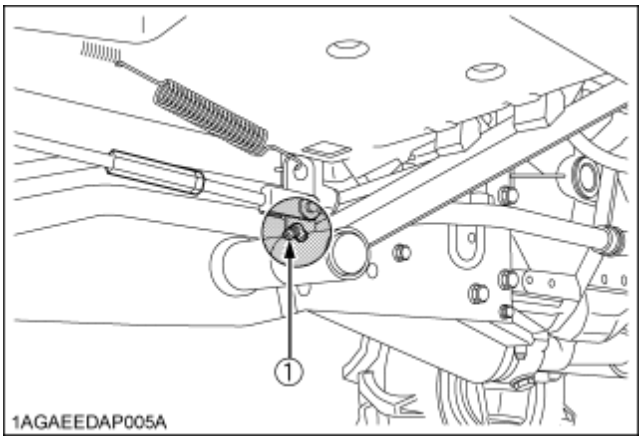
Otherwise, the machine may get damaged.

EVERY 50 HOURS

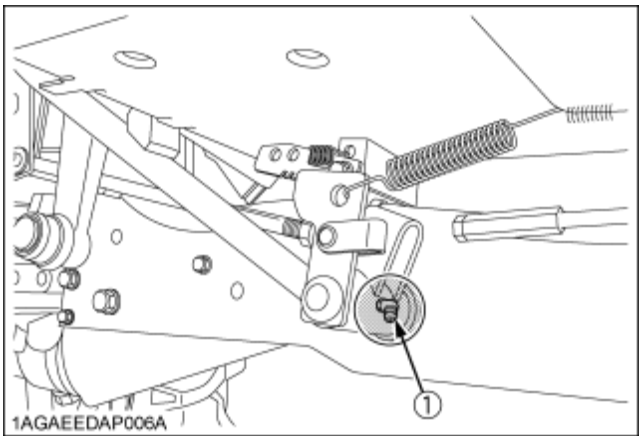
Lubricating Grease Fittings

Apply a small amount of multipurpose grease to the following points every 50 hours:

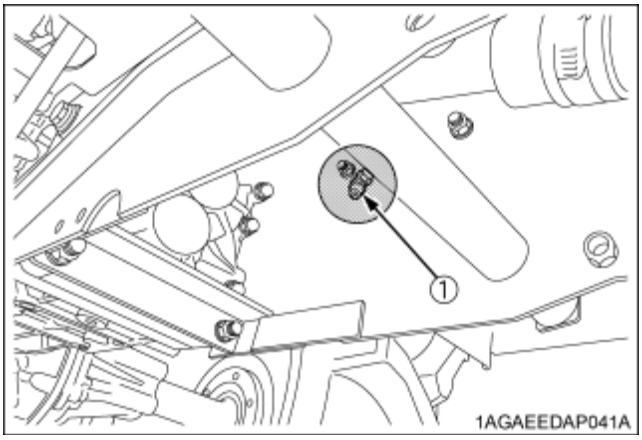
If you operated the machine in extremely wet and muddy conditions, lubricate grease fittings more often.



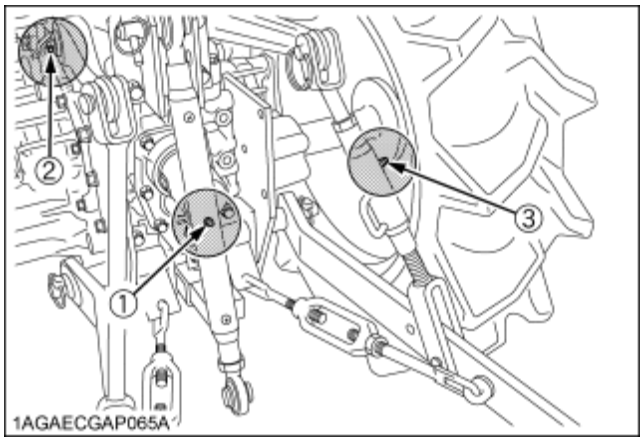
(1) Grease fitting (Brake pedal)



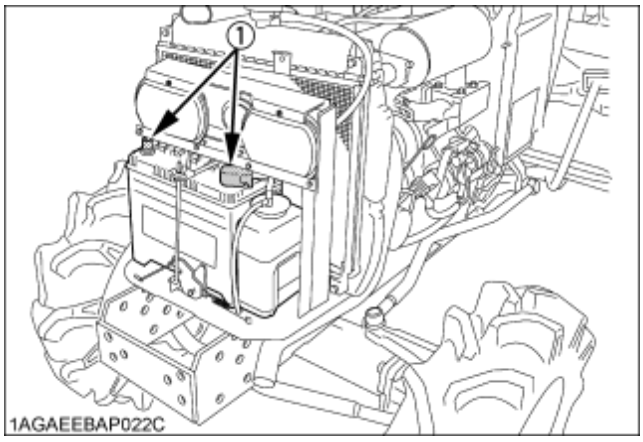
(1) Grease fitting (Clutch pedal)



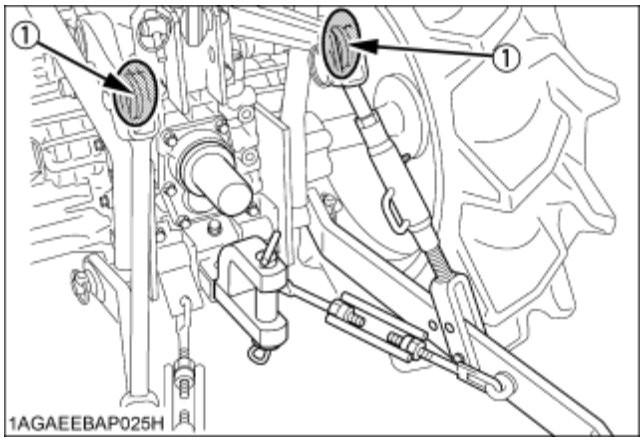
(1) Grease fitting (Brake pedal / Clutch pedal)



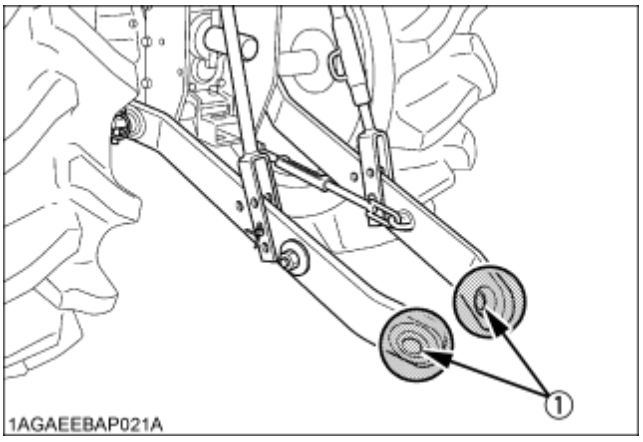
(1) Grease fitting (Top link)
(2) Grease fitting (Lift arm / Both sides)
(3) Grease fitting (Lifting rod, right)



(1) Battery terminals



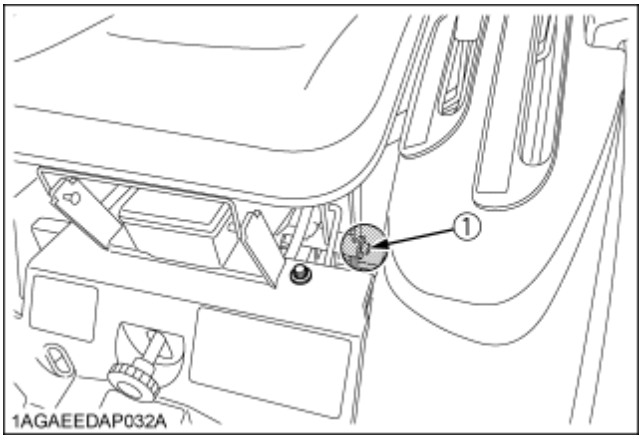
(1) Grease fitting (lift arm ball joint)



(1) Grease fitting (lower link ball joint)

IMPORTANT

A Grease up the ball joints that are each between the lift arm and the lower link, and be sure to wipe off excess grease later.



(1) Grease fitting (Range gear shift lever)

Checking Engine Start System

CAUTION

To avoid personal injury:

A Do not allow anyone near the tractor while testing.

A If the tractor does not pass the test, do not operate the tractor.

C Preparation before testing.

1. Sit on operator's seat.
2. Set the parking brake and stop the engine.
3. Shift the main gear shift lever in "NEUTRAL" position.
4. Shift the PTO gear shift lever to "NEUTRAL" position.
5. Fully depress the clutch pedal.

C Test : Switch for the main gear shift lever.

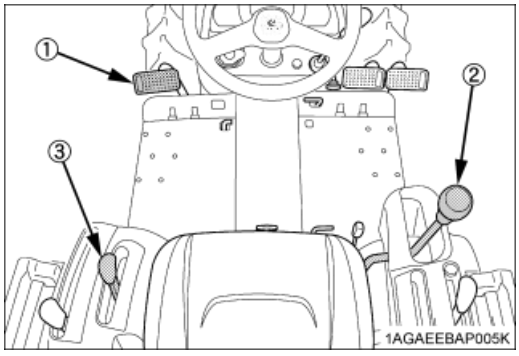
1. Fully depress the clutch pedal.
2. Shift the main gear shift lever to "Desired" position.
3. Turn the key to "START" position.
4. The engine must not crank.

C Test : Switch for the PTO gear shift lever.

1. Fully depress the clutch pedal.
2. Shift the main gear shift lever to "NEUTRAL" position.
3. Shift the PTO gear shift lever to "ON" (Engaged) position.
4. Turn the key to "START" position.
5. The engine must not crank.

NOTE :

A If the engine cranks during any of these tests, consult your local LAND X Dealer to have unit checked before operating.



(1) Clutch pedal
(2) Main gear shift lever
(3) PTO gear shift lever

Checking Wheel Bolt Torque

CAUTION

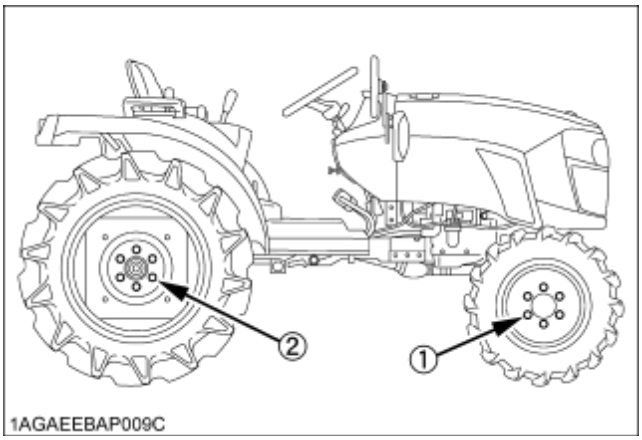
To avoid personal injury:

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

A Any time bolts and nuts are loosened, retighten to specified torque.

A Check all bolts and nuts frequently and keep them tight.

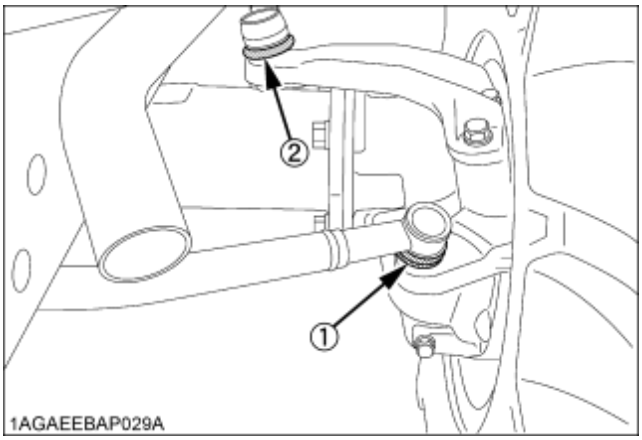
Check wheel bolts and nuts regularly especially when new. If they are loose, tighten them as follows.



(1) 80 to 90 N-m (8.2 to 9.2 kgf-m)
(2) 140 to 150 N-m (14.3 to 15.3 kgf-m)

Checking Dust Covers (Tie-rod, Drag-link)

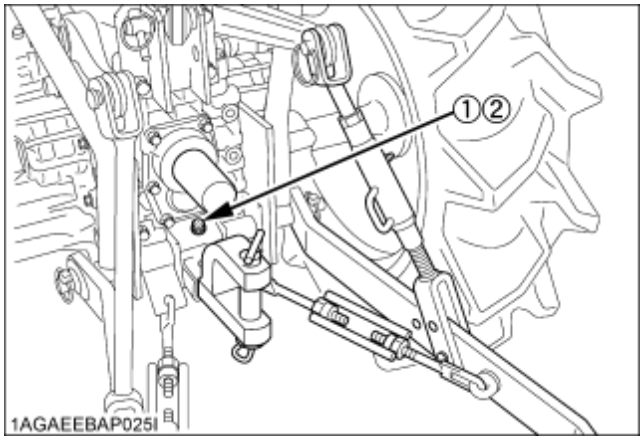
1. Check to see that dust covers are not damaged.
2. If dust covers are damaged, replace them at once.



(1) Dust covers (Tie-rod: both sides)
(2) Dust covers (Drag-link: both sides)

Checking Lower Link Set Bolt

Make sure the lower link set bolt is tight enough.
If loose, retighten it up.



(1) Set bolt
Tightening torque: 15 to 20 N-m (1.6 to 2.1 kgf-m)
(2) Lock nut
Tightening torque: 43 to 47 N-m (4.4 to 4.8 kgf-m)

EVERY 100 HOURS

Battery

DANGER

To avoid the possibility of battery explosion:
For the refillable type battery, follow the instructions below.

A Do not use or charge the refillable type battery if the fluid level is below the LOWER (lower limit level) mark. Otherwise, the battery component parts may prematurely deteriorate, which may shorten the battery' s service life or cause an explosion. Check the fluid level regularly and add distilled water as required so that the fluid level is between the UPPER and LOWER levels.

CAUTION

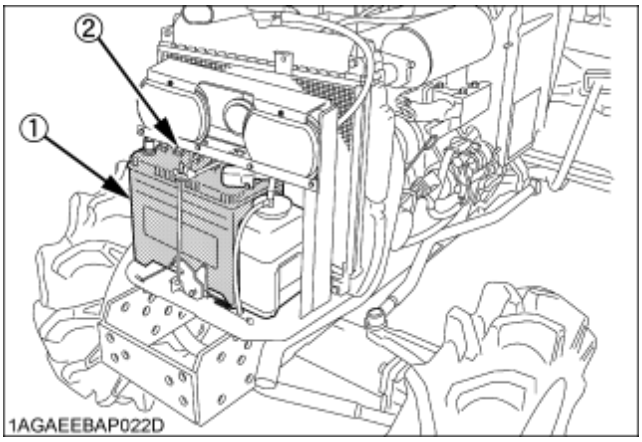
To avoid personal injury:

A Never remove the vent caps while the engine is running.

A Keep electrolyte away from eyes, hands and clothes. If you are spattered with it, wash it away completely with water immediately and get medical attention.

A Wear eye protection and rubber gloves when working around the battery.

Mishandling the battery shortens the service life and adds to maintenance costs.
The original battery is maintenance free, but needs some servicing.
If the battery is weak, the engine will be difficult to start and the lights will be dim. It is important to check the battery periodically.



(1) Battery
(2) Vent Cap

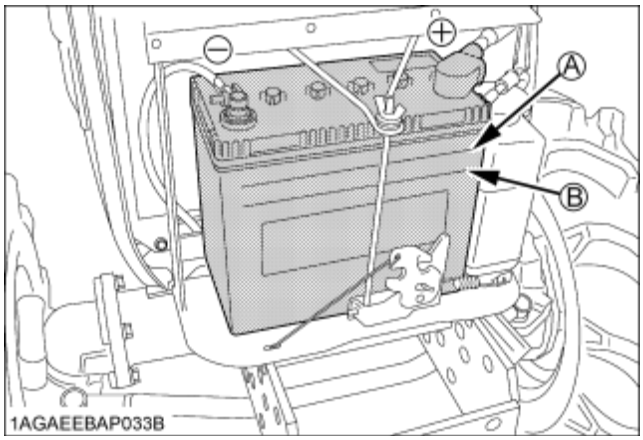
C Battery Charging

CAUTION

To avoid personal injury:

- **A When the battery is being activated, hydrogen and oxygen gases in the battery are extremely explosive. Keep open sparks and flames away from the battery at all times, especially when charging the battery.**
- **A When charging battery, ensure the vent caps are securely in place. (if equipped)**
- **A When disconnecting the cable from the battery, start with the negative terminal first.**
- **A When connecting the cable to the battery, start with the positive terminal first.**
- **A Never check battery charge by placing a metal object across the posts.**
  Use a voltmeter or hydrometer.

1. Make sure each electrolyte level is to the bottom of vent wells, if necessary add distilled water in a well-ventilated area.



(A) Upper level
(B) Lower level

2. The water in the electrolyte evaporates during recharging. Liquid shortage damages the battery. Excessive liquid spills over and damages the tractor body.
3. To slow charge the battery, connect the battery positive terminal to the charger positive terminal and the negative to the negative, then recharge in the normal manner.
4. A boost charge is only for emergencies. It will partially charge 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.
   Failure to do this will shorten the battery's service life.
5. When the specific gravity of electrolyte is between 1.27 and 1.29, the charging is completed.
6. When exchanging an old battery for a new one, use battery of equal specification shown in **TABLE 1.**

[TABLE 1]

Battery Type	Volts (V)	Capacity at 5H.R	Reserve at (min)	Cold Cranking Amps	Normal Charging Rate(A)
50B24L-MF	12	36	71	390	4.5

C Battery Storage

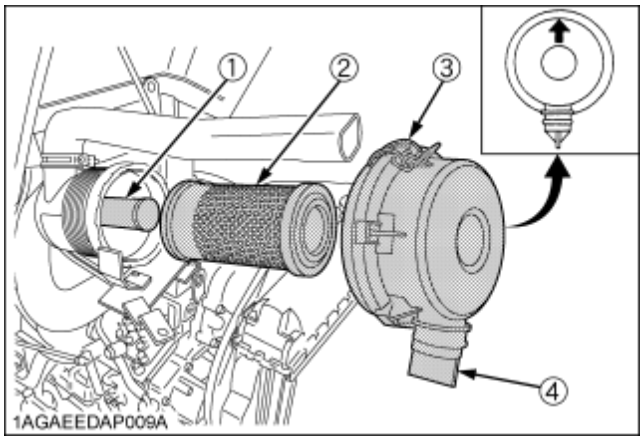
1. When storing the tractor for long periods of time, remove the battery from tractor, adjust the electrolyte to the proper level and store in a dry place out of direct sunlight.
2. The battery self-discharges while it is stored.
   Recharge it once every three months in hot seasons and once every six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

Cleaning Air Cleaner Primary Element

1. Remove the air cleaner cover and primary element.
2. Clean the primary element:
   (1) When dry dust adheres to the element, blow compressed air from the inside, turning the element. Pressure of compressed air must be under 205 kPa (2. 1 kgf/cm², 30 psi).
   (2) When carbon or oil adheres to the element, soak the element in detergent for 15 minutes then wash it several times in water, rinse with clean water and dry it naturally. After element is fully dried, inspect inside of the element with a light and check if it is damaged or not.
3. Replace air cleaner primary element:
   Once yearly or after every sixth cleaning, whichever comes first.

NOTE :

A Check to see if the evacuator valve is blocked with dust.



(1) Secondary (safety) element
(2) Primary element
(3) Cover
(4) Evacuator valve

IMPORTANT

A The air cleaner uses a dry element, never apply oil.
A Do not run the engine with filter element removed.
A Be sure to refit the cover with the arrow ⬆ (on the rear of cover) upright. If the cover is improperly fitted, evacuator valve will not function and dust will adhere to the element.
A Do not touch the secondary element except in cases where replacing is required.
(See "Replacing Air Cleaner Secondary Element" in "EVERY 1 YEAR" in "PERIODIC SERVICE" section.)

C Evacuator Valve

Open the evacuator valve once a week under ordinary conditions - or daily when used in a dusty place - to get rid of large particles of dust and dirt.

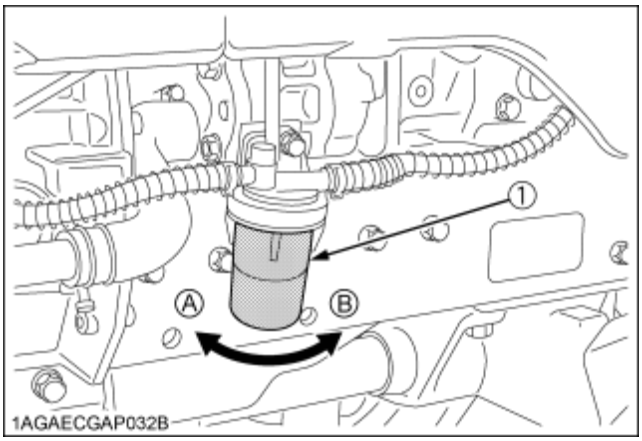
Cleaning Fuel Filter

This job should not be done in the field, but in a clean place.

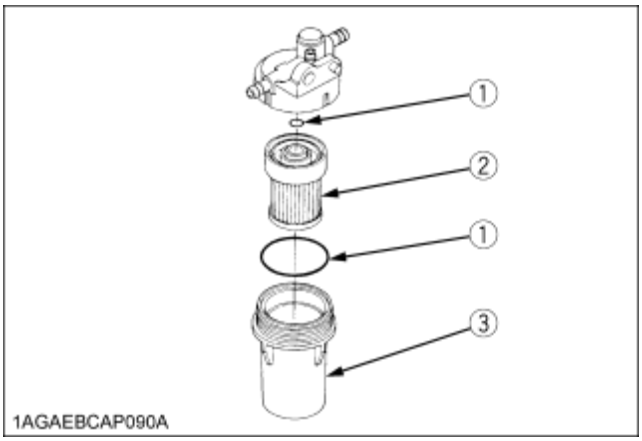
1. Loosen and remove the filter bowl, and rinse the inside with kerosene.
2. Take out the element and dip it in the kerosene to rinse.
3. After cleaning, reassemble the fuel filter, keeping out dust and dirt.
4. Bleed the fuel system.
   (See "SERVICE AS REQUIRED" in "PERIODIC SERVICE" section.)

IMPORTANT

A When the fuel filter bowl has been removed, fuel stops flowing from the fuel tank. If the fuel tank is almost full, however, the fuel will flow back from the fuel return pipe to the fuel filter. Before checking, make sure the fuel tank is less than half-full.



(1) Fuel filter bowl
(A) "LOOSEN"
(B) "TIGHTEN"



(1) O ring
(2) Filter element
(3) Filter bowl

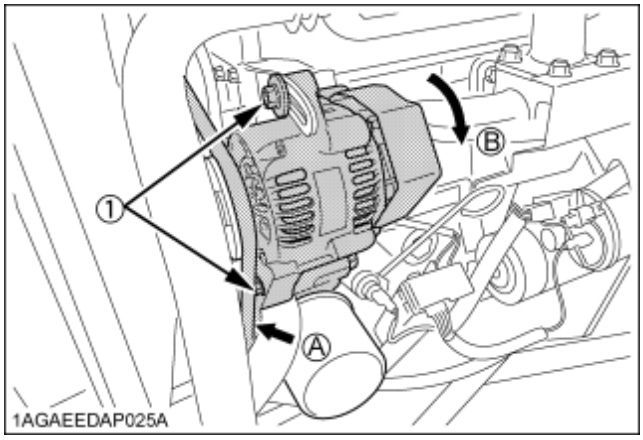
IMPORTANT

A If dust, dirt or water enters the fuel system, the fuel pump and injection nozzles are subject to premature wear. To prevent this, be sure to clean the fuel filter bowl and element periodically.

Adjusting Fan Belt Tension

Proper fan belt tension	A deflection of between 7 to 9 mm when the belt is pressed in the middle of the span.

1. Stop the engine and remove the key.
2. Apply moderate thumb pressure to belt between pulleys.
3. If tension is incorrect, loosen the alternator mounting bolts and, using a lever placed between the alternator and the engine block, pull the alternator out until the deflection of the belt falls within acceptable limits.
4. Replace fan belt if it is damaged.

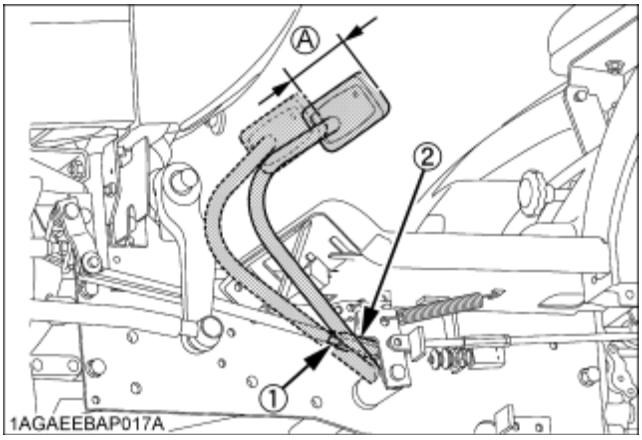


(1) Bolt
(A) Check the belt tension
(B) To tighten

Adjusting Clutch Pedal

Proper clutch pedal free travel	15 to 25 mm on the pedal

1. Stop the engine and remove the key.
2. Slightly depress the clutch pedal and measure free travel at top of pedal stroke.
3. If adjustment is needed, loosen the lock nut and turn the turnbuckle to adjust the rod length within acceptable limits.
4. Retighten the lock nut.



(1) Lock nut
(2) Turnbuckle
(A) "FREE TRAVEL"

Adjusting Brake Pedal

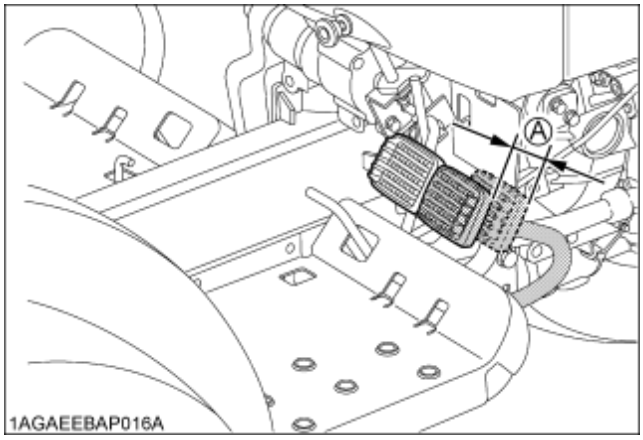
CAUTION

To avoid personal injury:

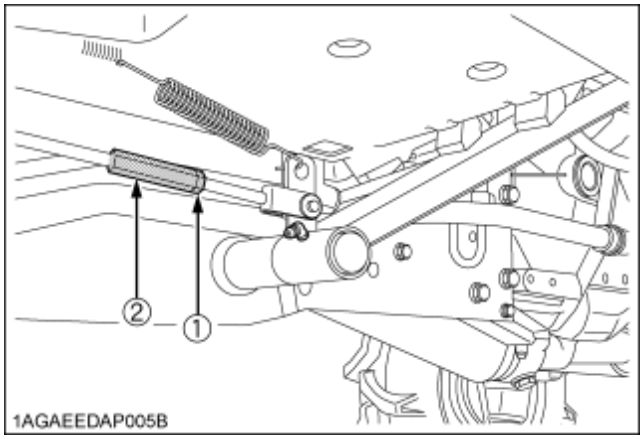
A Stop the engine and chock the wheels before checking brake pedal.

Proper brake pedal free travel	30 to 40 mm on the pedal
	Keep the free travel in the right and left brake pedals equal.

1. Release the parking brake.
2. Slightly depress the brake pedals and measure free travel at the top of pedal stroke.
3. If adjustment is needed, loosen the lock nut and turn the turnbuckle to adjust the rod length within acceptable limits.
4. Retighten the lock nut.



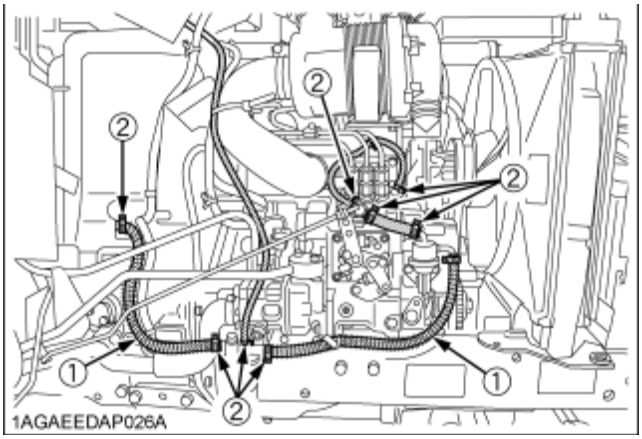
(A) "FREE TRAVEL"



(1) Lock nut
(2) Turnbuckle

Checking Fuel Line

1. Check to see that all lines and hose clamps are tight and not damaged.
2. If hoses and clamps are found worn or damaged, replace or repair them at once.



(1) Fuel lines
(2) Clamp bands

NOTE :

A If the fuel line is removed, be sure to properly bleed the fuel system.
(See "Bleeding Fuel System" in "SERVICE AS REQUIRED" in "PERIODIC SERVICE" section.)

Changing Engine Oil

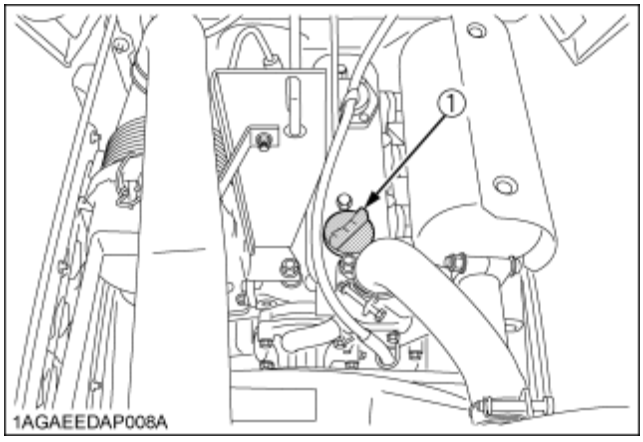
CAUTION

To avoid personal injury:

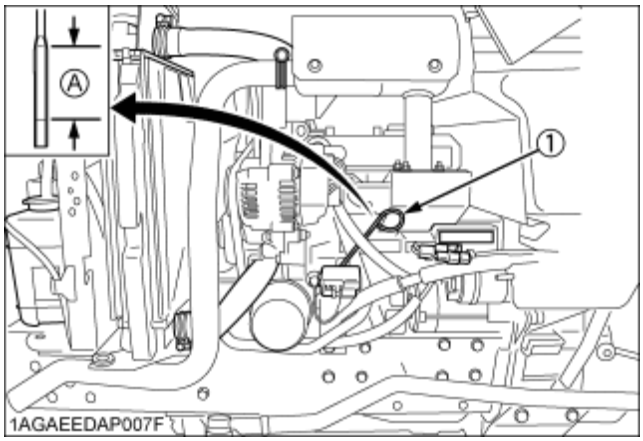
- **Be sure to stop the engine and remove the key before changing the oil.**
- **Allow engine to cool down sufficiently, oil can be hot and can burn.**

1. To drain the used oil, remove the drain plug at the bottom of the engine and drain the oil completely into the oil pan.
   All the used oil can be drained out easily when the engine is still warm.
2. After draining reinstall the drain plug.
3. Fill with the new oil up to the upper notch on the dipstick.
   (See "LUBRICANTS" in "MAINTENANCE" section.)
4. Properly dispose of used oil.

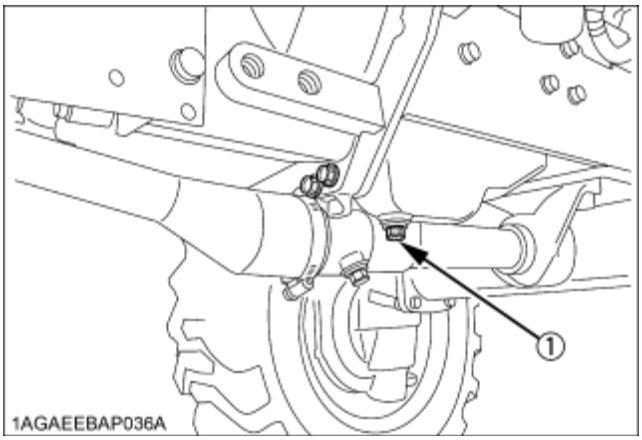
Oil capacity with filter	3.1 L



(1) Oil inlet



(1) Dipstick *(A) Oil level is acceptable within this range*



(1) Drain plug

EVERY 200 HOURS

Replacing Engine Oil Filter

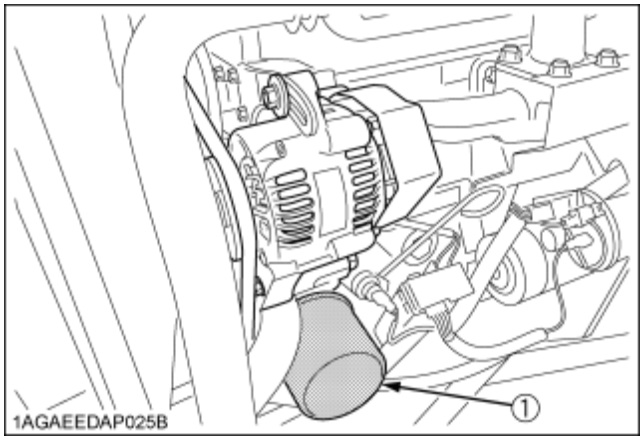
CAUTION

To avoid personal injury:

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

A Allow engine to cool down sufficiently, oil can be hot and can burn.

1. Remove the oil filter.
2. Put a film of clean engine oil on the rubber seal of the new filter.
3. Tighten the filter quickly until it contacts the mounting surface.
   Tighten filter by hand an additional 1/2 turn only.
4. After the new filter has been replaced, the engine oil normally decreases a little. Make sure that the engine oil does not leak through the seal and be sure to check the oil level on the dipstick. Then, replenish the engine oil up to the prescribed level.
5. Properly dispose of used oil.



(1) Engine oil filter

IMPORTANT

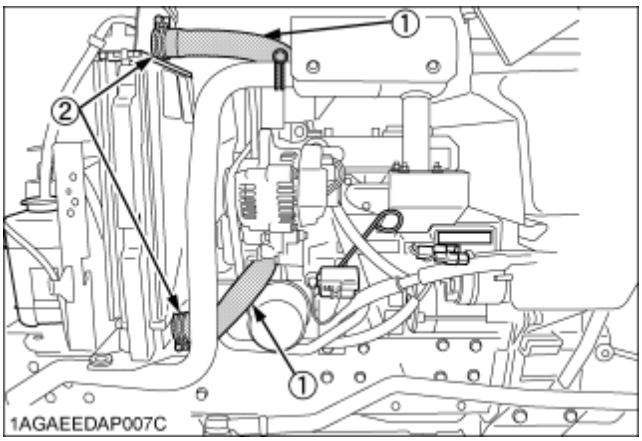
A To prevent serious damage to the engine, use only a LAND X genuine filter.

Checking Radiator Hose and Clamp

Check to see if radiator hoses are properly fixed every 200 hours of operation or six months, whichever comes first.

1. If hose clamps are loose or water leaks, tighten bands securely.
2. Replace hoses and tighten hose clamps securely, if radiator hoses are swollen, hardened or cracked.

Replace hoses and hose clamps every 2 years or earlier if checked and found that hoses are swollen, hardened or cracked.



(1) Radiator hoses
(2) Hose clamps

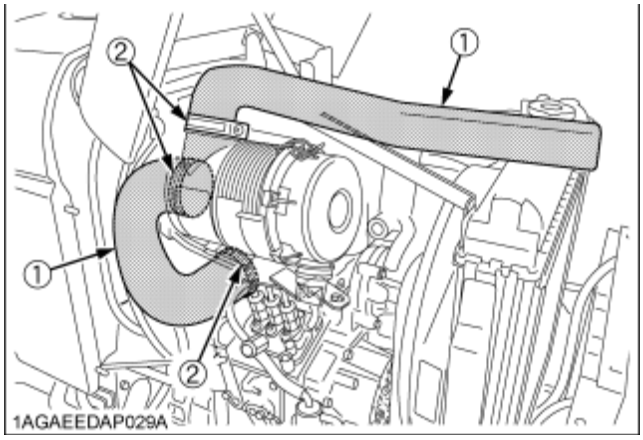
C Precaution at Overheating

Take the following actions in the event the coolant temperature is nearly or more than the boiling point, what is called "Overheating"

1. Park the tractor in a safe place and keep the engine unloaded idling.
2. Don't stop the engine suddenly, but stop it after about 5 minutes of unloaded idling.
3. Keep yourself well away from the machine for further 10 minutes or while the steam blows out.
4. Check that there are no dangers such as burns. Get rid of the causes of overheating according to the manual, see "TROUBLESHOOTING" section, and then, start again the engine.

Checking Intake Air Line

1. Check to see that hoses and hose clamps are tight and not damaged.
2. If hoses and clamps are found worn or damaged, replace or repair them at once.



(1) Hose
(2) Hose clamps

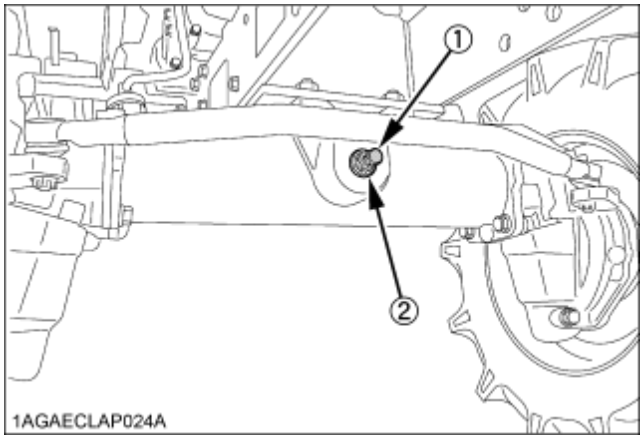
EVERY 400 HOURS

Adjusting Front Axle Pivot [4WD]

If the front axle pivot pin adjustment is not correct, front wheel vibration can occur causing vibration in the steering wheel.

C Adjusting procedure

Loosen the lock nut, and tighten the adjusting screw so that the oscillating load is 50 to 100 N (5. 1 to 19.7 kgf, 11.2 to 22.5 lbf). Retighten the lock nut.
Consult your local LAND X Dealer for further details.



(1) Adjusting screw
(2) Lock nut

Changing Transmission Fluid / Replacing Hydraulic Oil Filter

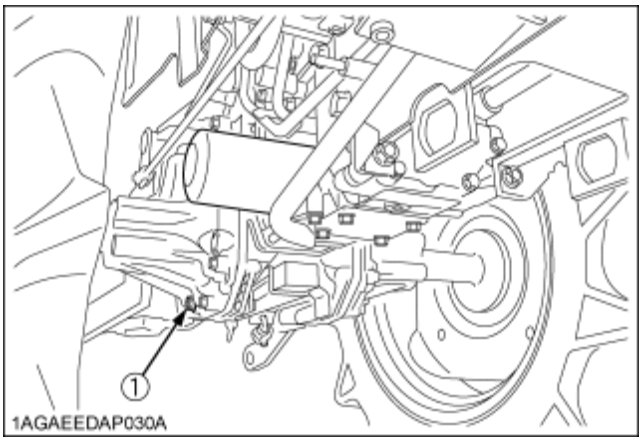
CAUTION

To avoid personal injury:

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

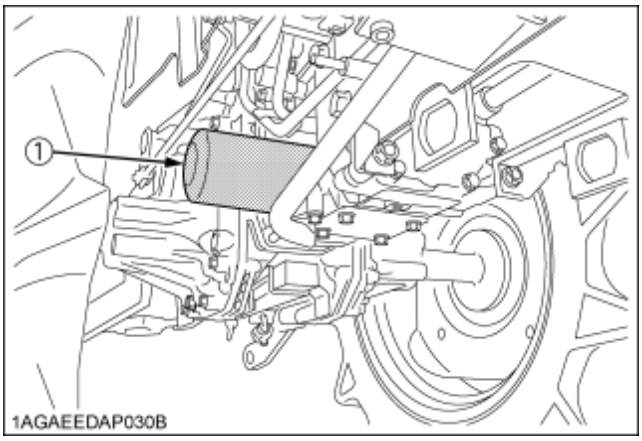
A Allow engine to cool down sufficiently, oil can be hot and can burn.

1. To drain the used oil, remove the drain plug at the bottom of the transmission case and drain the oil completely into the oil pan.
2. After draining reinstall the drain plug.



(1) Drain plugs (Both sides)

3. Remove the oil filter.

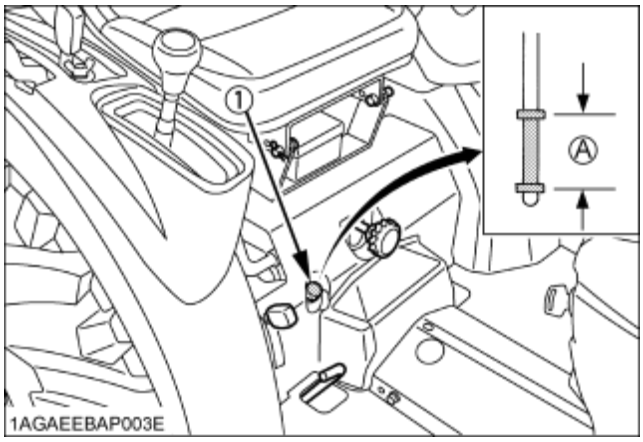


(1) Hydraulic oil filter

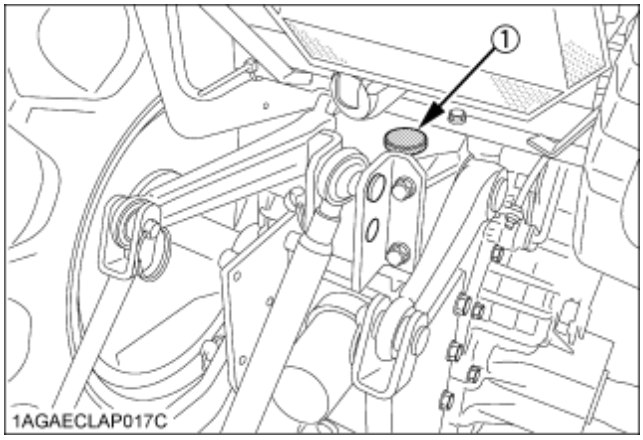
4. Put a film of clean transmission oil on rubber seal of new filter.
5. Tighten the filter quickly until it contacts the mounting surface.
   Tighten filter by hand an additional 1/2 turn only.

6. Fill with new LAND X SUPER UDT fluid up to the upper notch on the dipstick.
(See "LUBRICANTS" in "MAINTENANCE" section and "Checking Transmission Fluid Level" in "DAILY CHECK" in "PERIODIC SERVICE" section.)

Oil capacity	12.5 L



(1) Dipstick *(A) Oil level is acceptable within this range.*



(1) Oil inlet

7. After running the engine for a few minutes, stop it and check the oil level again; add oil to prescribed level.
8. After the new filter has been replaced, the transmission fluid level will decrease a little. Make sure that the transmission fluid does not leak through the seal, and check the fluid level.
Top off if necessary.
9. Properly dispose of used oil.

IMPORTANT
- A To prevent serious damage to the hydraulic system, use only a LAND X genuine filter.
- A If the 3-point hitch can not be raised by setting the position control lever to the UP position after long term storage or when changing the transmission oil, turn steering wheel to the right and left several times to bleed air from the system.
- A Do not operate the tractor immediately after changing the transmission fluid.
Run the engine at medium speed for a few minutes to prevent damage to the transmission.

Replacing Fuel Filter Element

(See "Cleaning Fuel Filter" in "EVERY 100 HOURS" in "PERIODIC SERVICE" section.)

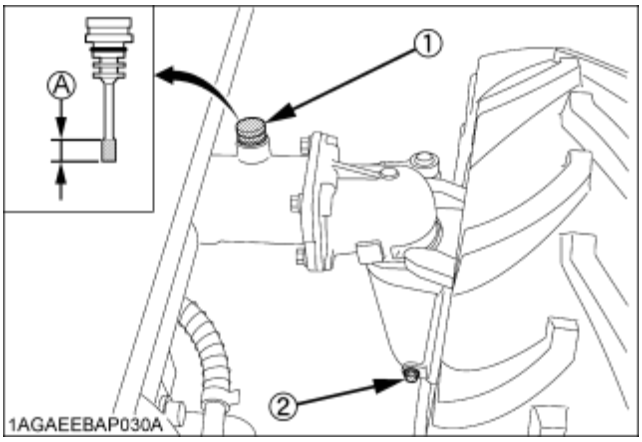
Changing Front Axle Case Oil

1. Park the tractor on a firm, flat and level surface.
2. To drain the used oil, remove the right and left drain plugs and filling plug at the front axle case and drain the oil completely into the oil pan.
3. After draining, reinstall the drain plugs.
4. Fill with new oil up to the upper notch on the dipstick.
(See "LUBRICANTS" in "MAINTENANCE" section.)

IMPORTANT
- A After ten minutes, check the oil level again; add oil to prescribed level.

5. After filling, reinstall the filling plug.
6. Properly dispose of used oil.

Oil capacity	B2810K(Q)	3.2 L
	B2310K	3.0 L



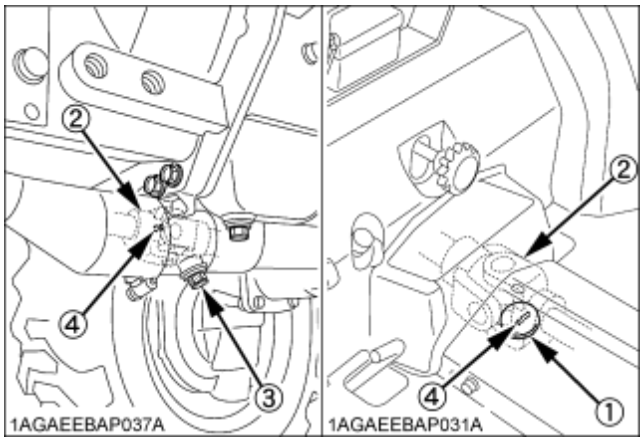
(1) Filling plug with dipstick *(A) Oil level is acceptable within this range*
(2) Drain plug

Lubricating Grease Fittings

Apply a small amount of multipurpose grease to the universal joint every 400 hours:

If you operated the machine in extremely wet and muddy conditions, lubricate grease fittings more often.

1. Remove the rubber cap and the plug.
2. Apply grease through the grease fittings of universal joint.
3. Attach the rubber cap and the plug back into position.



(1) Rubber cap
(2) Universal joint
(3) Plug
Tightening torque: 44.1 to 53.5 N-m (4.5 to 5.5 kgf-m)
(4) Grease fitting

EVERY 800 HOURS

Adjusting Engine Valve Clearance

Consult your local LAND X Dealer for this service.

EVERY 1500 HOURS

Checking Fuel Injection Nozzle Injection Pressure

Consult your local LAND X Dealer for this service.

EVERY 3000 HOURS

Checking Injection Pump

Consult your local LAND X Dealer for this service.

EVERY 1 YEAR

Replacing Air Cleaner Primary Element and Secondary Element

(See "Cleaning Air Cleaner Primary Element" in "EVERY 100 HOURS" in "PERIODIC SERVICE" section.)

EVERY 2 YEARS

Flushing Cooling System and Changing Coolant

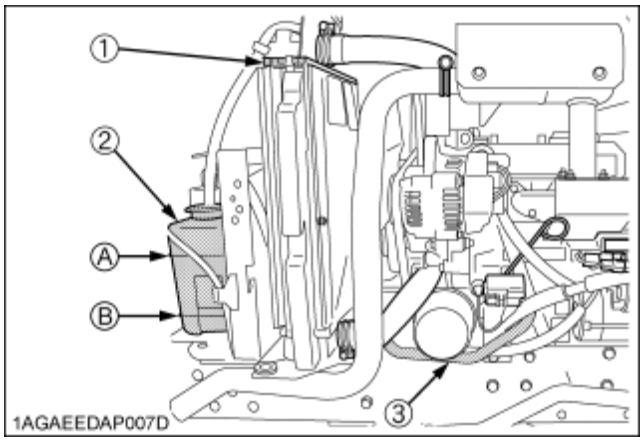
CAUTION

To avoid personal injury:

A Do not remove radiator cap while coolant is hot. When cool, slowly rotate cap to the first stop and allow sufficient time for excess pressure to escape before removing the cap completely.

1. Stop the engine, remove the key and let it cool down.
2. To drain the coolant, remove the radiator hose, and remove radiator cap. The radiator cap must be removed to completely drain the coolant.
3. After all coolant is drained, install the radiator hose.
4. Fill with clean soft water and cooling system cleaner.
5. Follow directions of the cleaner instruction.
6. After flushing, fill with clean soft water and anti-freeze until the coolant level is just below the radiator cap. Install the radiator cap securely.
7. Fill with coolant up to the "FULL" mark of recovery tank.
8. Start and operate the engine for few minutes.
9. Stop the engine, remove the key and let cool.
10. Check coolant level of recovery tank and add coolant if necessary.
11. Properly dispose of used coolant.

Coolant capacity (with recovery tank)	3.9 L



(1) Radiator cap *(A) "FULL"*
(2) Recovery tank *(B) "LOW"*
(3) Radiator hose

IMPORTANT

A Do not start engine without coolant.

A Use clean, fresh soft water and anti-freeze to fill the radiator and recovery tank.

A When mixing the anti-freeze with water, the anti-freeze mixing ratio is 50 %.

A Securely tighten radiator cap and install the radiator hose. If the cap is loose or improperly fitted, water may leak out and the engine could overheat.

Anti- Freeze

CAUTION

To avoid personal injury:

A When using antifreeze, put on some protection such as rubber gloves (Antifreeze contains poison.).

A If it is swallowed, seek immediate medical help. Do NOT make a person throw up unless told to do so by poison control or a health care professional. Use standard first aid and CPR for signs of shock or cardiac arrest. Call your local Poison Control Center or your local emergency number for further assistance.

A When antifreeze comes in contact with the skin or clothing, wash it off immediately.

A Do not mix different types of Antifreeze. The mixture can produce chemical reaction causing harmful substances.

A Antifreeze is extremely flammable and explosive under certain conditions. Keep fire and children away from antifreeze.

A When draining fluids from the engine, place some container underneath the engine body.

A Do not pour waste onto the grounds, down a drain, or into any water source.

A Also, observe the relevant environmental protection regulations when disposing of antifreeze.

Always use a 50/50 mix of long-life coolant and clean soft water in LAND X engines.

Consult your local LAND X Dealer concerning coolant for extreme conditions.

1. Long-life coolant (hereafter LLC) comes in several types. Use ethylene glycol (EG) type for this engine.
2. Before employing LLC-mixed cooling water, fill the radiator with fresh water and empty it again. Repeat this procedure 2 or 3 times to clean up the inside.
3. Mixing the LLC
   Premix 50% LLC with 50% clean soft water. When mixing, stir it up well, and then fill into the radiator.
4. The procedure for the mixing of water and antifreeze differs according to the make of the antifreeze and the ambient temperature. Refer to SAE J1034 standard, more specifically also to SAE J814c.

Vol % Anti- freeze	Freezing Point	Boiling Point*
	℃	℃
50	-37	108

* At 1.013 x 10^5Pa (760mmHg) pressure (atmospheric). A higher boiling point is obtained by using a radiator pressure cap which permits the development of pressure within the cooling system.

5. Adding the LLC
   (1) Add only water if the mixture reduces in amount by evaporation.
   (2) If there is a mixture leak, add the LLC of the same manufacturer and type in the same mixture percentage.
      * Never add any long-life coolant of different manufacturer. (Different brands may have different additive components, and the engine may fail to perform as specified.)
6. When the LLC is mixed, do not employ any radiator cleaning agent. The LLC contains anticorrosive agent. If mixed with the cleaning agent, sludge may build up, adversely affecting the engine parts.
7. LAND X's genuine long-life coolant has a service life of 2 years. Be sure to change the coolant every 2 years.

NOTE :

A The above data represent industry standards that necessitate a minimum glycol content in the concentrated antifreeze.

Replacing Radiator Hose (Water pipes)

Replace the hoses and clamps.

(See "Checking Radiator Hose and Clamp" in "EVERY 200 HOURS" in "PERIODIC SERVICE" section.)

Replacing Fuel Lines

Consult your local LAND X Dealer for this service.

Replacing Intake Air Line

Consult your local LAND X Dealer for this service.

SERVICE AS REQUIRED

Bleeding Fuel System

Air must be removed:

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

C Bleeding procedure is as follows:

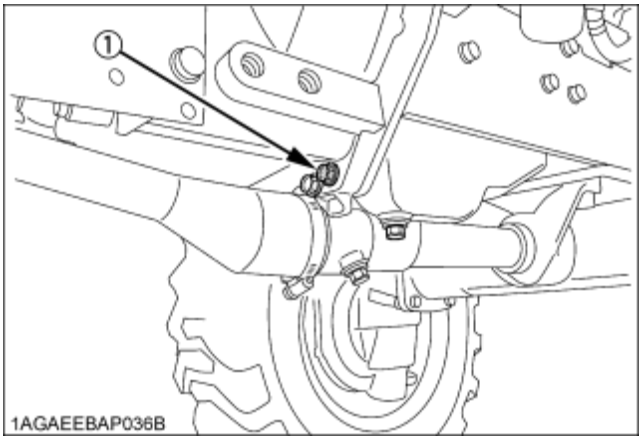
1. Fill the fuel tank with fuel.
2. Start the engine and run for about 30 seconds, and then stop the engine.

Draining Clutch Housing Water

The tractor is equipped with a drain plug under the clutch housing.

After operating in rain, snow or tractor has been washed, water may get into the clutch housing.

Remove the drain plug and drain the water, then install the plug again.



(1) Water drain plug

Replacing Fuse

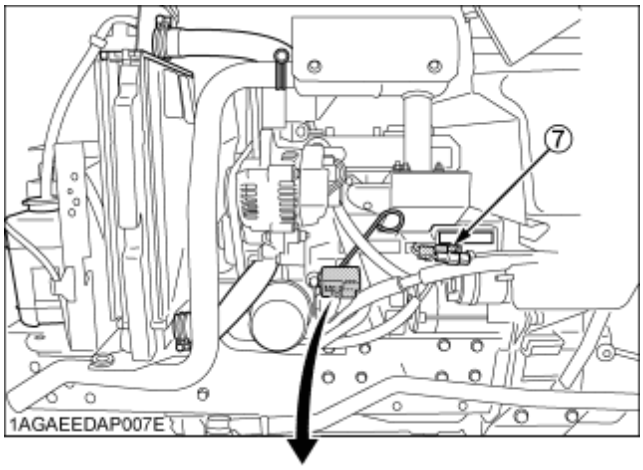
The tractor electrical system is protected from potential damage by fuses.

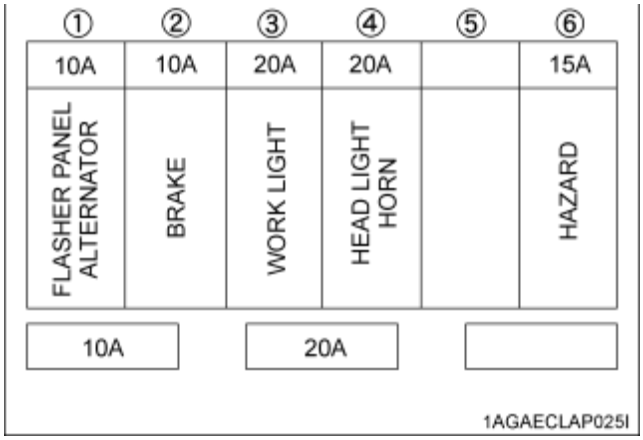
A blown fuse indicates that there is an overload or short somewhere in the electrical system.

If any of the fuses should blow, replace with a new one of the same capacity.

IMPORTANT

A Before replacing a blown fuse, determine why the fuse blew and make any necessary repairs. Failure to follow this procedure may result in serious damage to the tractor electrical system. Refer to the "TROUBLESHOOTING" section of this manual or your local LAND X Dealer for specific information dealing with electrical problems.





C Protected circuit

FUSE No.	CAPACITY (A)	Protected circuit
(1)	10	FLASHER PANEL ALTERNATOR
(2)	10	BRAKE
(3)	20	WORK LIGHT
(4)	20	HEAD LIGHT HORN
(5)		
(6)	15	HAZARD
(7)	Slow blow fuse	Check circuit against wrong battery connection

Replacing Light Bulb

1. Head light
   Take the bulb out of the light body and replace with a new one.
2. Other lights
   Detach the lens and replace the bulb.

Light	Capacity
Head light	45 / 40 W
Tail light	5 W
Turn signal / Hazard light	21 W
Instrument panel light	1.7 W
Brake stop light	21 W
Front position light	5 W
Number plate light	5 W

STORAGE

CAUTION

To avoid personal injury:

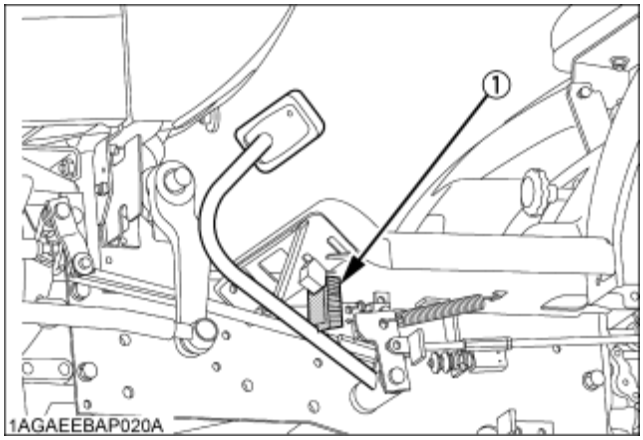
- **Do not clean the machine while the engine is running.**
- **To avoid the danger of exhaust fume poisoning, do not operate the engine in a closed building without proper ventilation.**
- **When storing, remove the key from the key switch to avoid unauthorized persons from operating the tractor and getting injured.**

TRACTOR STORAGE

If you intend to store your tractor for an extended period of time, follow the procedures outlined below.

These procedures will insure that the tractor is ready to operate with minimum preparation when it is removed from storage.

1. Check the bolts and nuts for looseness, and tighten if necessary.
2. Apply grease to tractor areas where bare metal will rust also to pivot areas.
3. Detach the weights from the tractor body.
4. Inflate the tires to a pressure a little higher than usual.
5. Change the engine oil and run the engine to circulate oil throughout the engine block and internal moving parts for about five minutes.
6. Pull the engine stop knob all the way out.
7. Keep the clutch disengaged. If the clutch is left engaged for a long period of time, the clutch plate may rust, making clutch disengagement impossible at the next operation.



(1) Wooden block

8. With all implements lowered to the ground, coat any exposed hydraulic cylinder piston rods with grease.
9. Remove the battery from the tractor. Store the battery following the battery storage procedures. (See "Battery" in "EVERY 100 HOURS" in "PERIODIC SERVICE" section.)
10. Keep the tractor in a dry place where the tractor is sheltered from the elements. Cover the tractor.
11. Store the tractor indoors in a dry area that is protected from sunlight and excessive heat. If the tractor must be stored outdoors, cover it with a waterproof tarpaulin. Jack the tractor up and place blocks under the front and rear axles so that all four tires are off the ground. Keep the tires out of direct sunlight and extreme heat.

IMPORTANT

- When washing the tractor, be sure to stop the engine. Allow sufficient time for the engine to cool before washing.
- Cover the tractor after the muffler and the engine have cooled down.

REMOVING THE TRACTOR FROM STORAGE

1. Check the tire air pressure and inflate the tires if they are low.
2. Jack the tractor up and remove the support blocks from under the front and rear axles.
3. Install the battery. Before installing the battery, be sure it is fully charged.
4. Check the fan belt tension.
5. Check all fluid levels (engine oil, transmission/ hydraulic oil, engine coolant and any attached implements).
6. Start the engine. Observe all gauges. If all gauges are functioning properly and reading normal, move the tractor outside. Once outside, park the tractor and let the engine idle for at least five minutes. Shut the engine off and walk around tractor and make a visual inspection looking for evidence of oil or water leaks.
7. With the engine fully warmed up, release the parking brake and test the brakes for proper adjustment as you move forward. Adjust the brakes as necessary.

TROUBLESHOOTING

ENGINE TROUBLESHOOTING

If something is wrong with the engine, refer to the table below for the cause and its corrective measure.

Trouble		Cause	Countermeasure
Engine is difficult to start or won't start.		A The engine stop knob is pulled out and in "STOP" position.	A Push in the engine stop knob to "START" position.
		A No fuel flow.	A Check the fuel tank and the fuel filter. Replace filter if necessary.
		A Air or water is in the fuel system.	A Check to see if the fuel line coupler bolt and nut are tight. A Bleed the fuel system. (See "Bleeding Fuel System" in "SERVICE AS REQUIRED" in "PERIODIC SERVICE" section.) A Remove water from the system and replace the fuel filter.
		A In winter, oil viscosity increases, and engine revolution is slow.	A Use oils of different viscosities, depending on ambient temperatures. A Use engine block heater. (Option)
		A Battery becomes weak and the engine does not turn over quick enough.	A Clean battery cables and terminals. A Charge the battery. A In cold weather, always remove the battery from the engine, charge and store it indoors. Install it on the tractor only when the tractor is going to be used.
Insufficient engine power.		A Insufficient or dirty fuel. A The air cleaner is clogged.	A Check the fuel system. A Clean or replace the element.
Engine stops suddenly.		A Insufficient fuel.	A Refuel. A Bleed the fuel system if necessary.
Exhaust fumes are colored.	Black	A Fuel quality is poor. A Too much oil. A The air cleaner is clogged.	A Change the fuel and fuel filter. A Check the proper amount of oil. A Clean or replace the element.
	Blue white	A The inside of exhaust muffler is dumped with fuel. A Injection nozzle trouble. A Fuel quality is poor.	A Heat the muffler by applying load to the engine. A Check the injection nozzle. A Change the fuel and fuel filter.
Engine overheats.		A Engine overloaded.	A Shift to lower gear or reduce load.
		A Low coolant level.	A Fill cooling system to the correct level; check radiator and hoses for loose connections or leaks.
		A Loose or defective fan belt.	A Adjust or replace fan belt.
		A Dirty radiator core or grille screens.	A Remove all trash.
		A Coolant flow route corroded.	A Flush cooling system.

If you have any questions, consult your local LAND X Dealer.

OPTIONS

Consult your local LAND X Dealer for further detail.

A Front end weights
For front ballast
A Mounting Kit (Front end weights)
To mount Front end weights