

*INNOVATIVE
TECHNOLOGY
PARTNER*

LS TRACTOR OPERATOR'S MANUAL

U5010 • U5020 • U5030



LS Tractor

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1. General Notices for Safety

1-1. Before using the tractor



※ **Read this Operator's manual carefully, before using the tractor, to understand fully.**

◆ General information for right use

- Your tractor is designed and manufactured to be **used for agriculture**. Do not use the product for improper purpose out of the intention of manufacturer, and follow the safety instructions provided by this Operator's manual.
- Especially, read Chapter 1 "**General Notices for Safety**" thoroughly and **never modify or change** the driver's protection device or safety device without permission, **never use tractor without safety** devices or operate in violation of traffic rules, etc. (Do not remove seat belt or safety frame (Roll bar) or PTO shield)
- After using first 50hours, perform "**First 50 hour check**" and periodic regular check. (See page 5-4)
- The manufacturer will not be responsible for the damage or safety problems caused by maintenance or repair with non-genuine parts. It must be requested to **use the genuine parts**.
- When cleaning the tractor by using high pressurized water, do not inject water directly to the electronic parts, wiring, air intake pipe, hot engine or muffler inside bonnet.
- Maintenance and repair of the tractor is performed by **skilled technical experts with the proper tools** authorized by the manufacturer.
- For damage or accidents caused by the miss use or operation in violation of these rules, the manufacturer will not have any responsibility and warranty.
- Keep this Operator's manual for future reference at hand (on the tractor).

◆ Safety Mark Description

- In the places where the cautions in usage are required, the marks such as "**DANGER**", "**WARNING**", "**CAUTION**" are found.
- You should comply with the description marked on the decals attached on the product or the contents marked with safety mark in this Operator's Manual..



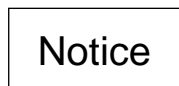
Danger – This indicates a fatal dangerous situation that may cause a serious injury or death if not avoided.



Warning – This indicates a potential dangerous situation that may cause a serious injury or death if not avoided.



Caution – This indicates a potential dangerous situation that may cause a light injury or damage to the properties if not avoided.



Notice – This indicates the instructions for right use for the safety of persons or products.

◆ Product Identification

Your tractor has a exclusive chassis number and engine number marked with product serial number tag to identify the product. (See Fig.1-1)

In case of requesting service or parts from your dealer

Dealer will need chassis serial number, engine serial number, and also running hours displayed on the instrument panel. (See Fig. 1-3)

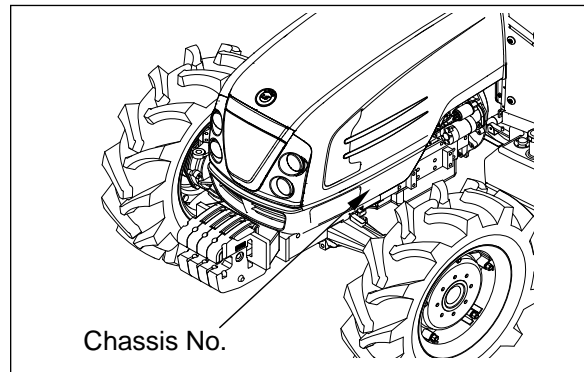


Fig.1-1

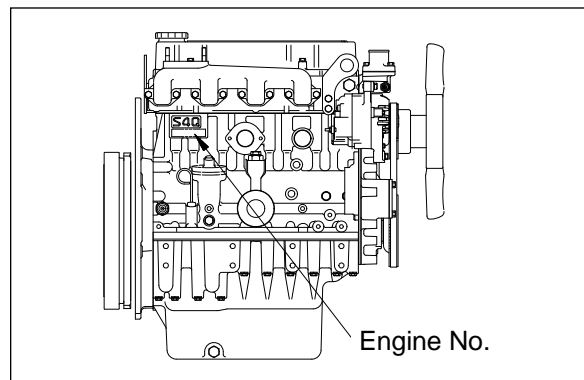


Fig.1-2

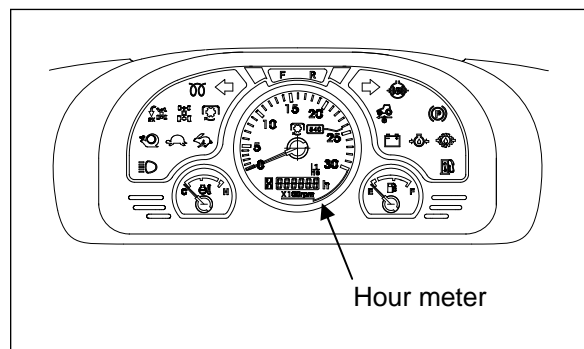
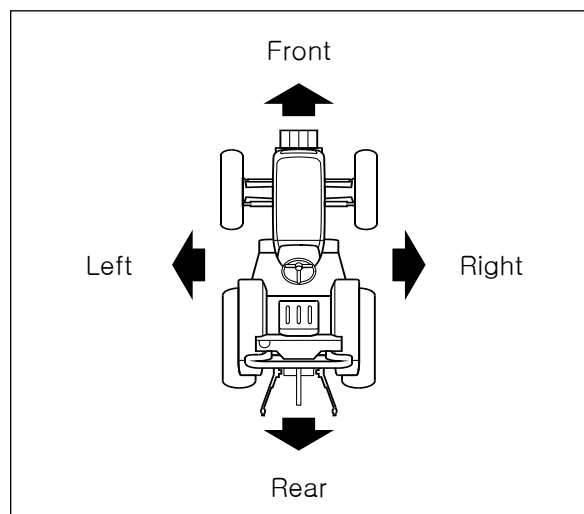


Fig.1-3

◆ Terminology

When reading this Operator's Manual, refer to the right figure for the discrimination of the front/ rear/ left/ right direction.



1-2. Safety Precautions - read this for safety before using.

(1) Notices before using

- **For Safety Instruction** : Before using the tractor, read this Operator's Manual carefully and understand the instructions fully for the safety prevention and right usage of the tractor and then use the tractor safely according to the instructions.

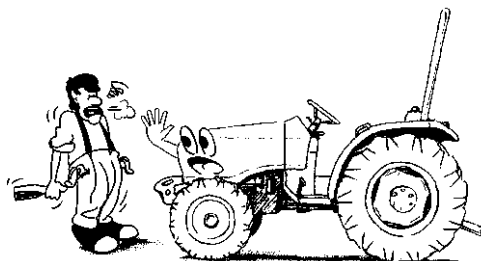


Refer to Operator's Manual.

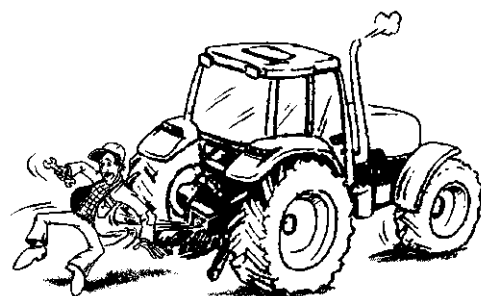
Especially, special cares must be taken for using the tractor in the places where the safety signs such as Danger, Warning, Caution etc. are marked. (For further information, See page 1-1)

- **Safety Decals** : For right use and personal safety of the operator, the safety decals are attached to the parts related with safety operation. Before using the tractor, comply with the safety instructions. (For further information, refer to "1-6 Safety Decals", See page 1-16)

- **Operator's condition** : The persons such as patients, drunks, people on drugs etc. are never allowed to operate this tractor. Only educated operators can use the tractor after learning the usage of controls for moving, stopping, turning and other operating.



- **Suitable Clothes & Protect Entanglement** : When checking or operating the tractor, wear tight fitting clothes and safety equipment instead of loose or long clothes. Also, slippers, high heel shoes are not suitable for operation. Wear the low shoes or work shoes or boots.



▶ Do not approach the rotating shaft such as PTO shaft or cooling fan, especially, with loose clothing and long clothes. The entanglement in rotating shaft can cause serious injury or death.

▶ Stop the engine and be sure PTO shaft is stopped before getting near it.

- **Keep Riders off** : Riders on the tractor or implements obstruct the operator's view and can be thrown off the tractor. It can cause a serious injury or death. Riders should not be carried on the tractor at any time.



▶ Additional seat (where fitted) is used for driver training or instruction. Do not permit anyone to ride on the tractor.

- **Protect Children** : Pay special attention to children (or a child) while using the tractor or during storage.
 - Make sure children keep a safe distance from the tractor and all implements before using the tractor. Be alert to the presence of children.
 - Do not let children or an untrained person operate the tractor.
 - Do not allow children to approach the tractor while the engine is running.
 - When parking the tractor, remove the ignition key and lower implements to the ground for children's safety.



Warning

- ▶ As children are very curious, they may do unexpected movements or actions. Special care must be taken, when operating tractor or equipment.

- **Periodical Check** : "Lubrication and Maintenance" must be performed periodically. If necessary, do it immediately and if not, it may cause the failure, reduction of product life or physical injury.

* Periodic Lubrication and Maintenance

Fuel, Oil, Filter, Air cleaner, Battery, Belt, Cable, Grease, Pedals such as clutch and brake pedal, Tire air pressure, Wheel bolts, Toe-in, Electrical wirings, other items related to safety.

- **Genuine Parts** : When replacing parts, you must use "Genuine Parts" of LS tractor. Contact your authorized dealer. If not, it may cause a reduction of product life, failure and serious injury.

- **Restrict Maintenance** : If you repair or change some components and settings arbitrary, the performance of the tractor can NOT be guaranteed, and may void the warranty. And also, maintenance of the heavy weighted parts without special tools can cause serious injury. If it is required to check or repair the tractor due to trouble, or if you have any questions for the usage or operation of the tractor, contact your authorized dealer.

* The items that are not allowed to be modified or changed or removed arbitrarily by user are below :

- Protection structures such as PTO cover, Guards, Safety frame (Roll Bar), Cabin, etc.
- Engine components, Fuel injection control and setting, etc.
- Automatic control equipment, Lamps, Transmission, Hydraulic valve and pressure settings.
- Other parts that detail and where complicated adjustments are needed.



Warning

- ▶ Skilled professional technology is needed for the repair.
- ▶ For detail maintenance or repair, contact your authorized dealer.


- **Lamps** : Do not modify the lamps or change the bulb capacity arbitrarily.



Warning

- ▶ Modified lamps or change bulb capacity may cause the traffic accident by disturbing approaching driver's views.
- ▶ If the lamp is blown out, replace it immediately with a genuine part. In case of driving at night, it may cause a traffic accident.

- **Safety Structure** : For the safety of the driver, various protection structures are attached on the tractor. If these structures are changed or detached by user arbitrarily, it may cause serious accident. Such behaviors are prohibited strictly.

 Warning	<p>► Do not disassemble or drill the Bonnet (Hood), Fan cover, PTO cover, PTO shaft cover, Safety frame (Roll Bar) or Cabin etc. or do not modify other structures by welding arbitrarily. It may cause the loss of original function of the structures and serious injury may occur, and may void warranty.</p> <p>► If the protections or safety devices are broken, replace them immediately. If not, it can cause a accident or serious injury.</p>
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(2) Notices when starting Engine

- Check each part with reference of “5. Lubrication and Maintenance” in this manual. If necessary, repair or replace it immediately. **Especially, check if safety protection structures or covers are attached originally and the bolts are tightened well.**
- Before starting, **check again if there are other workers or children around the tractor and implements and keep a safe distance.**
- Start engine and operate the tractor **after sitting on the driver’s seat** correctly with seat belt fastened.
- Place the shuttle lever, transmission gear lever in NEUTRAL and especially check if parking brake is applied.
- Lower the implements on the ground.
- Ensure that rear view mirrors and the other mirrors (if fitted) are adjusted correctly, and check the operation of the headlights and other lights
- Put PTO switch to “OFF” position. If the PTO switch is NOT in “OFF” position, the engine can NOT be started. (See Fig.1-4)
- Depress the clutch pedal fully (if fitted). If not, the start safety switch is not contacted enough and the engine can NOT start.

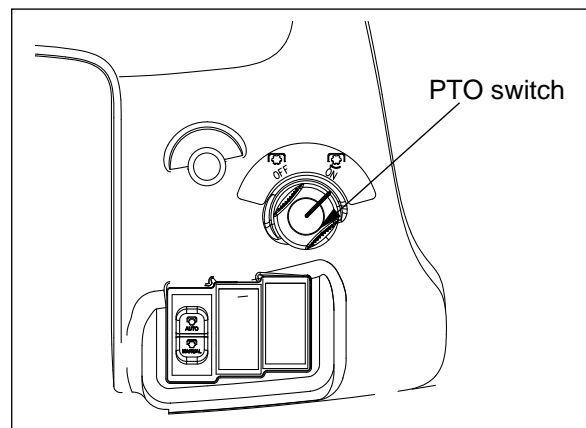
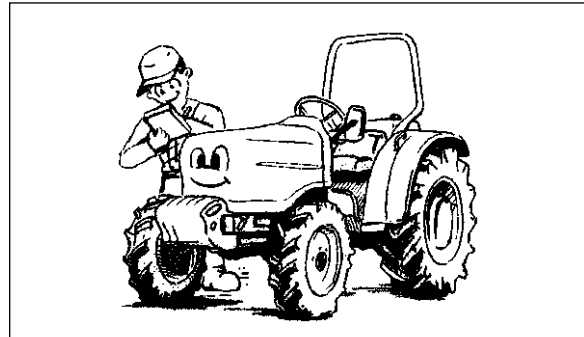






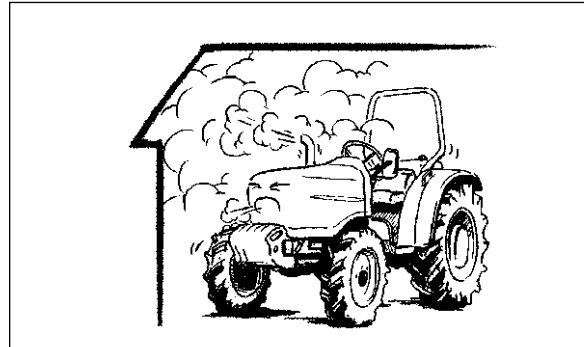
Fig.1-4

 	<p>► Do not start the engine in a closed area. The poisonous exhaust gas can cause fatal damage to the driver or persons around.</p>
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(3) Notices while operating/using the tractor

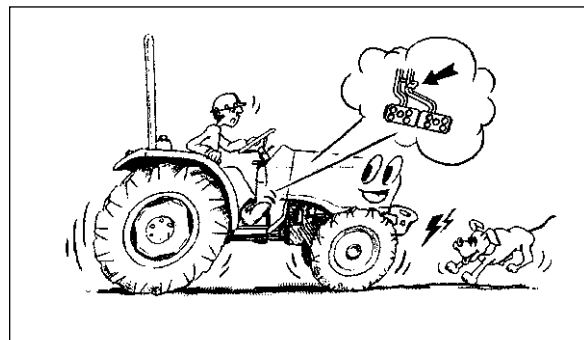
● Ventilation

 Warning	► It is very dangerous to work in a closed area. The poisonous exhaust gas may cause serious damage to the human body. If you should work in this area, make sure to ventilate well and put on the protective mask.
	

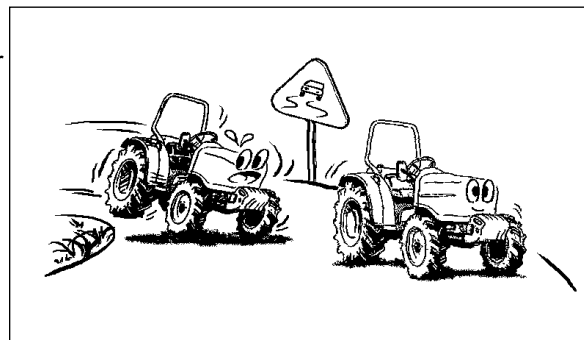


- **Noise and Vibration** : When working between buildings or in confined spaces, the sound pressure level can be increased. Wear suitable ear protectors in high noise level conditions. When working with equipment in the field, Vibration may intensity from the equipment may be increased. To reduce the harm to the body, take a rest periodically.

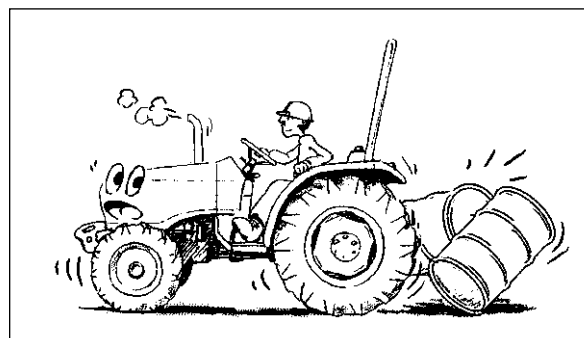
- Connect left and right brake pedals while driving on the road. (if fitted)
- DO NOT use differential lock device while driving on the road or turning in the field.
- DO NOT ride your foot on the brake pedal or clutch pedal.



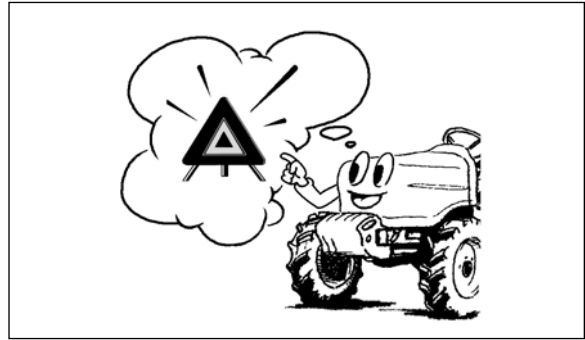
- Lower the driving speed enough before turning a sharp curve. Especially, when you drive the tractor with implements, make the turning radius wider.
- DO NOT start or stop the tractor suddenly. Engage the clutch and brake softly. If not, front wheels can be lifted up and it is very dangerous.
- Do not jump up and down while tractor is moving. When getting off or on the tractor, use the grip or handrail and sub step to prevent falls.



- When driving the tractor in reverse, lower the engine speed. Make sure to check if there is any obstacle or person in the rear.
- DO NOT permit other people and especially children approach within working area while operating tractor and equipment.

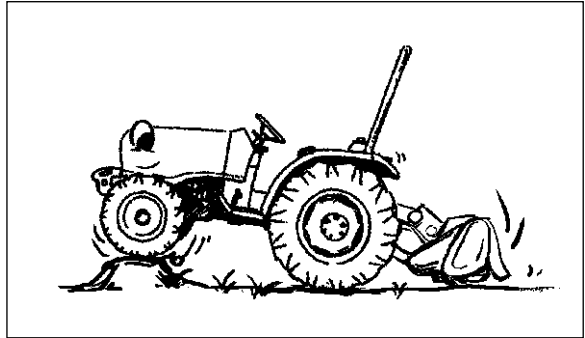


- Obey the traffic rules while driving on public roads.
Do not exceed the local legal speed limit.
Use a sign beacon or slow moving vehicle (SMV) to indicate that the vehicle is slow moving.
- If you can not drive the tractor due to a failure, move the tractor to a safe place and install troubled vehicle (safety tripod).
(Day : backward 100m (328 ft)
Night : backward 200m (656 ft))

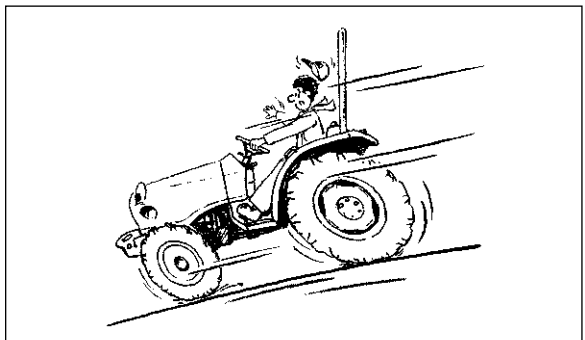


- Do not overuse the fuel, oil, etc and pay attention not to contact the skin directly. Generally, these materials contain harmful materials to the human body. When you work in a area where hazardous chemicals are sprayed, check the cabin filter (if fitted) and replace the filter with suitable one for the purpose being used. To protect the body completely from these harmful materials, wear a safe protection equipment such as mask, and clean the body after working.

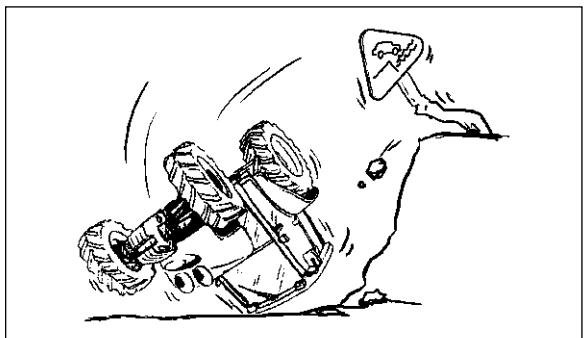
- When crossing a high ridge, let down the implement and go straight across the ridge at low speed.
- When connecting the implements to the front/rear of the tractor, install the proper additional weights in the rear/front of the tractor to keep the balance of the tractor.



- On a downhill, operate the throttle pedal and brake pedal slowly and DO NOT drive while the transmission gear is in NEUTRAL.
- To climb a steep slope, drive tractor slowly in reverse up the slope rather than forward. It is much safer.
- When turning the tractor on a slope, pay attention to safety especially.

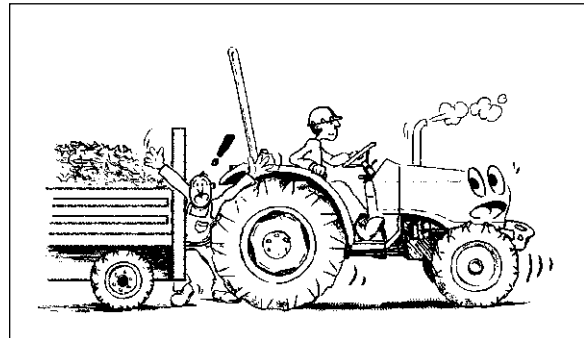






- When working at the edge of steep slope, take special care about a turn-over.
- When working, wear the protection equipment and tighten the seat belt.
- If the authorized passenger seat are not installed, keep riders off.



(4) Notices when connecting Implement

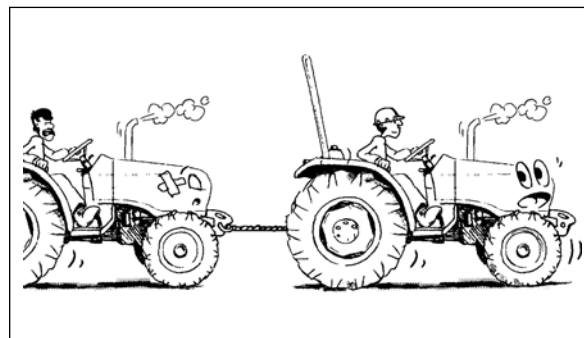
- Attach or detach the implement on wide and level ground.
- Do not stand between tractor and implement.
- Use hitch or drawbar for towing. Do not tow by connecting with any other structures.
- When connecting heavy implements, apply the parking brake and use the wheel chock.
- Do not attach over-weighted implement.



 Caution	<ul style="list-style-type: none"> ▶ When connecting or disconnecting hydraulic coupler, lower implement on the ground, turn off engine and check if the pressure of hydraulic line is released. ▶ When installing the implement having big hydraulic cylinders or lines, check oil level in tractor transmission housing after installing the implements.
 Warning  	<ul style="list-style-type: none"> ▶ Before connecting or checking the implement, put PTO switch to "OFF" and place PTO gear lever in Neutral position. ▶ When attaching or detaching the implement, make sure to fix the implement and tighten the three point hitch pins correctly. If not, the serious troubles and injury can occur during the operation. ▶ If heavy loaded trailer is connected to 3-point linkage or any structure, it can cause turnover or failure and serious injury. Make sure to use towing hitch or authorized draw bar.

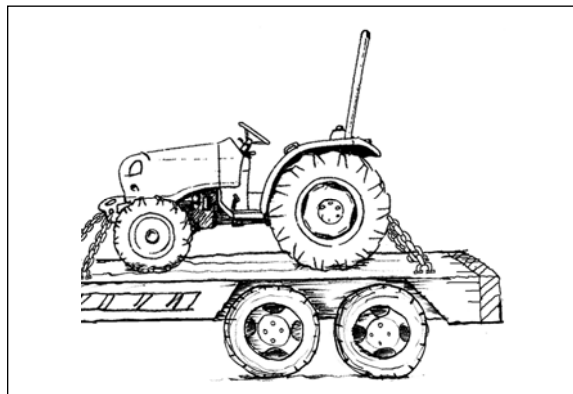
(5) Notices when towing the tractor


- If tractor needs to be towed for a short distance, Use the hitch (or drawbar) or front towing hook. Do not connect to other structures such as rear axle, ROPS, front axle, steering components for towing.
- Tractor can be steered for a short distance without engine running, but it will be hard to turn the steering wheel. If possible, run the engine for steering and lubrication.
- When being towed, disengage the 4WD, differential lock, parking brake and place all gear shift levers in neutral position. Refer to "3-2. Operating levers and pedals". (See page 3-8)
- Check the horizontal and vertical permissible load of the hitch (or drawbar) before towing. The load is different with trailer brake, and stopping distance increases with speed and weight of towed loads and slope. Make sure you consider the total weight of the equipment and its load. (See page 4-11)



(6) Notices when transporting the tractor

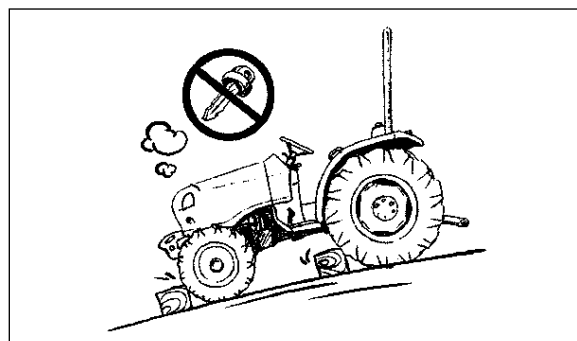
- When transporting the tractor by truck, trailer, etc, use suitable equipment or facilities to load or unload the tractor.
- Fix the tractor tightly to the vehicle with heavy-duty straps or chains.
- When fixing the rear of the tractor, use the hitch or hitch support.
- When fixing the front of the tractor, use the towing hook.
- When driving on public roads, the transporting vehicle must have signs and lights required by local regulation to avoid collision with a vehicle.




 Caution	<p>► When fixing the tractor, Do not hook or connect chains to the 4WD shaft, steering cylinder, tie-rod or front axle. These can be damaged by the chain or excessive strain.</p> <p>► In case of turbocharger engine (where fitted), cover the exhaust outlet to protect that the turbocharger does not rotate by air without lubrication.</p>
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(7) Notices when parking tractor

- Stop the tractor on level ground. Place the transmission gear in neutral.
- Put PTO switch to "OFF" and lower implements to the ground.
- Stop the engine and remove the ignition key.
- Apply the parking brake.
- Have to apply the wheel chock on a slope.



 Caution	<p>► When parking on a slope while attaching the loaded equipment, the tractor may move even if the parking brake is applied. Apply the wheel chock and low speed transmission gear as follow.</p> <p>- . Mechanical : downhill ⇒ Reverse 1gear / uphill ⇒ Forward 1gear</p> <p>- . HST type : Lowest gear</p>
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(8) Notices when checking tractor after work

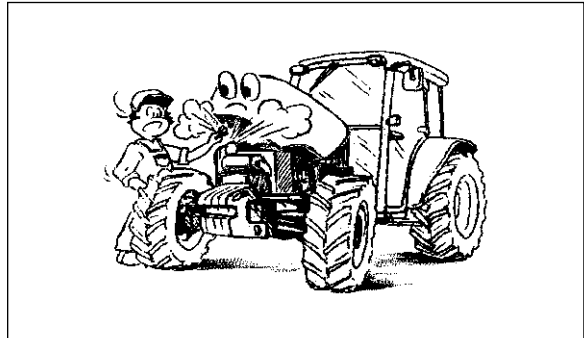
- The check and maintenance must be performed after stopping the engine and cooling down the engine sufficiently.
- DO NOT pour water into the radiator or engine when the engine is hot. The engine or radiator may crack.



Warning



► When opening the radiator cap, hot cooling water or steam may explode. Remove the cap using a thick rag or glove to prevent serious burns.



- When checking or repairing the hydraulic system or fuel system, high pressurized oil or fuel may cause a severe injury.
Make sure the engine is stopped, and all the transmission gears are in NEUTRAL, and lower the implements to the ground, and move once the remote control lever to each direction to release the hydraulic system pressure.



Warning



► Before removing hydraulic pipe or hose and other parts, check if the system pressure is removed. The leakage of pressurized oil can cause a fatal physical injury. Use the proper protection equipment.

► When connecting or disconnecting the hydraulic quick coupler, lower the implements to the ground after checking that hydraulic pressure is released.

- Never fill the fuel tank while the engine is running or the engine is hot. And never smoke or have flames around fuel tank.
- Keep the fire extinguisher near.
- When maintaining the electric system, remove the ground clamp of battery ("-" terminal). To prevent fire or explosion, keep flames or sparks away from battery.



Caution


► Always remove grounded (-) battery clamp first and assemble it last. If not, It can cause an explosion by spark. (for further information, see page 5-25)

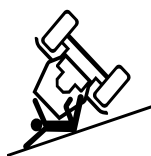
- Do not attempt to remove or unfasten the air conditioning components arbitrary. There is a possible to be severely frostbitten or injured by escaping refrigerant. Contact your authorized dealer to work air conditioning systems.

(9) Notices when handling Diesel Fuel

- Do not mix gasoline, alcohol or blended fuels to diesel fuel. These mixtures are explosive in fuel tank.
- Never remove the fuel cap or refuel with the engine running or hot.
- Do not smoke while refueling the tractor or when standing near fuel. Keep any type of flame away.
- Maintain control of the fuel filler nozzle when filling the fuel tank.
- Do not fill the fuel tank to capacity. Fill only to the bottom of the filler neck to allow room for expansion.
- Wipe up spilled fuel immediately and always tighten the fuel tank cap securely.
- If the original fuel tank cap is lost, replace it with an approved one.
- Never use fuel for cleaning purposes.
- Arrange fuel purchases so that summer grade fuels are not held over and used in the winter.

(10) Operator Protective Structure (OPS)

 Warning	<ul style="list-style-type: none"> ▶ Your tractor is equipped with an Operator Protective Structure (OPS), such as ; Safety frame (Roll Over Protective Structure (ROPS)) or Falling object Protective Structure (FOPS) or Cabin with ROPS (Roll Bar). ▶ This structure is a special safety structure for agricultural tractor that used for the protection of the operator to minimize the possibility of serious injury. This structure does not guarantee full protection against all working conditions, i.e. falling objects, low hanging wires and branches in the forest, orchard or construction area, etc. NEVER enter or operate these hazardous area without certified Operator Protective Structure installed. ▶ The Protective Structure and interconnecting components are a certified system. Any damage, Fire, corrosion or modification will weaken the structure and reduce your protection. If this occurs, the Protective Structure MUST be replaced with a new one. Contact your authorized dealer for Protective Structure inspection and replacement. ▶ In case of an accident, fire, tip or roll over, the following MUST be performed by a qualified technician before operating the tractor again. <ul style="list-style-type: none"> - The Protective Structure MUST be replaced. - The mounting or suspension for the Protective Structure , operator seat and suspension, seat belt and mounting components and wiring within the operator's protective system MUST be carefully inspected for damage. - All damaged parts MUST be replaced. ▶ DO NOT attach any device to the Protective Structure for pulling purposes. ▶ DO NOT weld, drill holes, attempt to straighten or repair the protective structure. The modification can reduce the structural integrity of the structure which can cause death or serious injury in the event of fire, tip, roll over, collision or accident and void the warranty.
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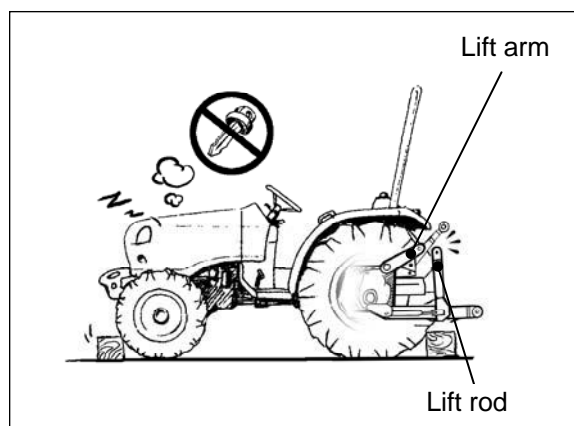
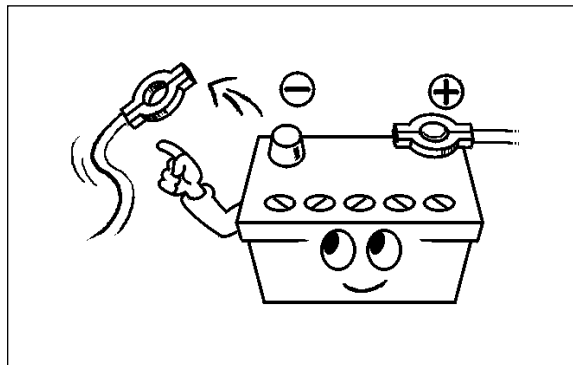


1-3. Long-term storage

(1) Preparation for storage

※ Wash the tractor cleanly and follow the procedure as below.

- Apply grease or lubricant oil or spray paint to the non-painted metal to avoid corrosion. Keep the tractor in a covered, dry and well-ventilated place.
Temperature : 10°C ~ 35°C (50°F ~ 95°F)
Humidity : 45% ~ 70%
- Place all controls, including electrical switches, in neutral position and apply the wheel chock to the tires and disengage the parking brake.
- Check the lubricant capacity of each part and if the engine oil has exceeded 100 hours of work, change the oil and run the engine for 5 minutes at idle rpm.
- Drain the engine coolant completely. If the engine coolant is anti-freeze solution, it is not necessary to drain but check its concentration.
- Fill the fuel tank full with fuel.
- Loosen all drive belts and clean the air cleaner.
- Loosen the rubber plug (if fitted) under the clutch chamber to drain water.
- Remove the battery, clean the cover and smear the terminals with grease. Place the battery in a ventilated place not less than 10°C (50°F) and away from direct sunlight.
- If possible, fit stands or other suitable supports under the axles to raise the wheel off the ground. And let the air out of the tires. If not, check the tire pressure from time to time.
- Remove the lift rod and place the lift arm to the highest position to protect the cylinder.
- Remove the ignition key.
- Cover the tractor with a non-water-proof cover.
- If the implements are attached, lower the implements on a support off the ground.




Warning

► When restarting the engine at the end of long-term storage, follow the instructions of "Preparation for Reuse". (See next page)

(2) Check & Maintenance during storage

- Apply grease or lubricant oil to non-painted metal to avoid corrosion.
- Check the leakage of fuel, oil and coolant. If necessary, repair the damaged part.
- The battery should be charged about once a month not to be discharged entirely.
- Check the tire air pressure and maintain the proper pressure.

 Caution	<p>► As the electrolyte of battery is sulfuric acid, it emits the explosive and poisonous gas. It is strong enough to burn skin, clothing and can cause blindness if splashed into eyes.</p> <ul style="list-style-type: none">- Keep the sparks and flames and cigarettes away from the battery.- When handling the battery, wear safety glasses to protect the eyes.- If the electrolyte contacts the eyes and skin, wash with water immediately and go to see a doctor. (※ For further information, refer to the section of “Battery handling and Notices”, See page 5-25) <p>► When removing and storing battery, select dry and cool place out of reach of children.</p>
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(3) Preparation for Reuse

※ When using first after long-term storage, check each part as below.

- Check the damaged part or loosen part
- Check the leakage of fuel, coolant, engine oil, transmission and front axle oil.
- Check the level and density of the engine coolant.
- Check the level of engine, transmission, rear and front axle oil, and fuel.
(For further information, refer to the section “5. Lubrication and Maintenance” in this manual.)
- Check all drive belts carefully, paying particular attention to the point where the straight run of the belt starts to bend around the pulley. Check the vee groove in the pulley for corrosion.
- Electric system check
 - Is there any open circuit or any other problem in the wiring?
 - Is there any problem of the instruments?
 - Is the charging state of the battery sufficient?
- Start engine and then check the engine oil pressure indicator and battery charging indicator. Run the engine at a fast idling speed (suggest 1000/1500 rpm) until normal operating temperature is registered, and check for oil, fuel and coolant leakage. (For further information, See page 4-1)

1-4. Notices for "Use & Disposal" related to Environment preservation

Soil, Air and Water are essential elements for human life. To contribute to environment preservation of the Earth, we are trying to minimize the environment pollution necessitated by general business activity such as product design, manufacturing, distribution, etc.

Several substances and products derived from chemical and petrochemical products are major portion of environment pollution and must be disposed of according to environment laws or related regulations, and common sense.

We'd like to notify the following items for "Use & Disposal" related to environment preservation.

1. Avoid the overload work after reading the Operator's Manual.

Overload work may reduce the life of the product as well as the unburned exhaust gas occurred during overload work becomes the major cause of air pollution.

2. When you replace various oils (engine, transmission, anti-freeze solution) directly, do not throw the exhausted waste oil to any place.

This may pollute the soil and water seriously and also is prohibited legally. If violating, you would be responsible for that by civil or criminal case. The waste oil must be disposed according to the environment laws.

3. Use the product according to the Operator's Manual and if the life of product ended, do not throw away (or dispose) to any place. The rust water or oil coming from the disposed product may cause the pollution of soil or water. Thus, the wasted product must be disposed lawfully, contact your authorized dealer nearby.
















































4. Modern lubricants contain additives. Do not burn the disposed oil or fuel in conventional heating systems.

5. When you drain or fill the fuel, lubricants oil and coolants, do not left to be absorbed into the ground. They must be collected and disposed in a suitable manner.

6. Do not adjust the setting of the fuel delivery system. This will alter the emission of exhaust fumes.

1-5. Symbols


The followings show the symbols and its meaning used for the tractor.

	Refer to User's Manual.		Gear Neutral		Low speed
	Caution!		Forward/Rearward		High speed
	Battery charging		Forward		Engine speed control (throttle)
	Fuel level		Backward		Engine speed control (throttle)
	Fuel filter		4WD connection		Turn signal light
	Engine coolant temperature		4WD disconnection		Direction indicating light
	Transmission oil pressure		Quick turn (Optional)		Light switch
	Engine oil pressure		Cruise drive (Optional)		Side lights
	Diesel engine preheat		Cruise drive release (optional)		Headlights (downward)
	Parking brake		Position control (Up)		Headlights (upward)
	Emergency lights		Position control (Down)		Work light
	Engine start		Draft control (Deep)		horn
	Engine stop		Draft control (Shallow)		Window wiper
	PTO stop		Cylinder rod (shorten)		Window wiper / Washer (front)
	PTO in operation		Cylinder rod (extend)		Window wiper / Washer (rear)
	Differential lock device		Cylinder rod (floating)		

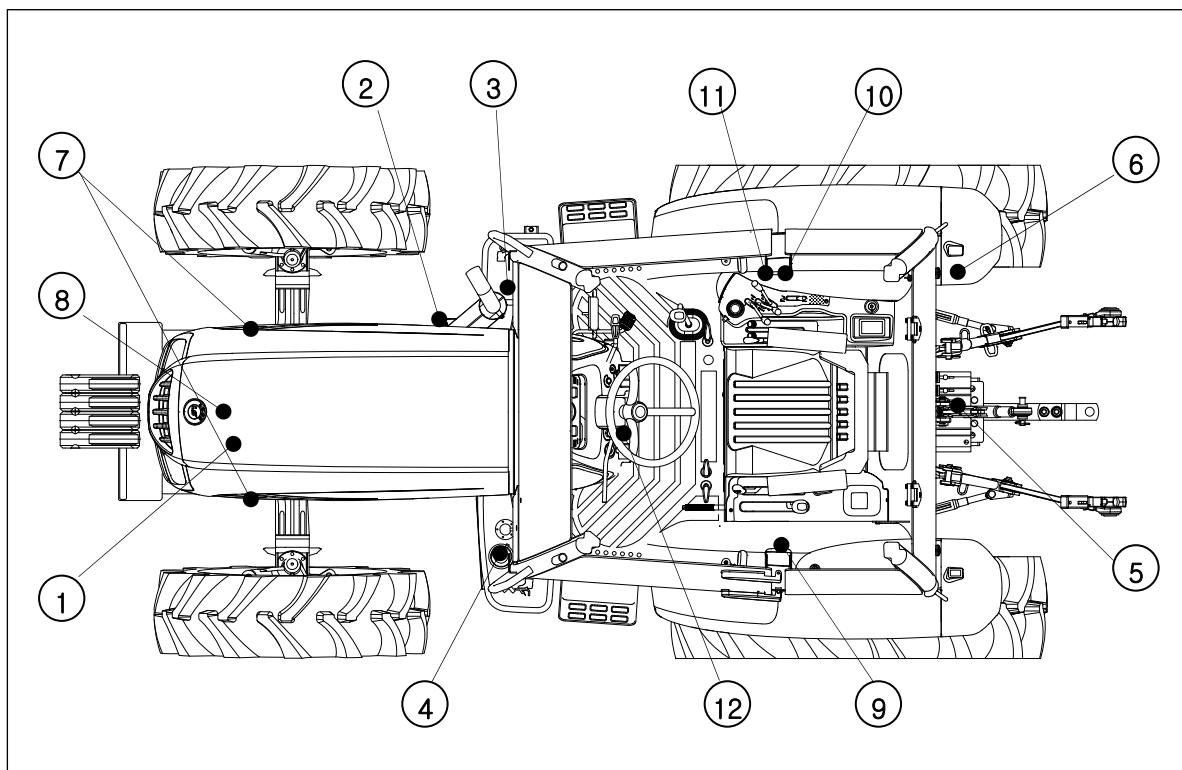
1-6. Safety Decals

(1) Handling and Maintenance of Safety Decals

- For right use and personal safety of the operator, the safety decals (labels) are attached to the parts related with safety operation.
- Before operating or maintenance of the parts, check the position and read the instructions carefully.

 Caution	<ul style="list-style-type: none">▶ The instructions described on the safety decals are very important for the safety of the operator and workers around. If ignored, it may cause the death or serious injury.▶ If the decals are dirty, wash them with soap water and wipe with soft rags. Do not use the thinner, acetone as it may erase the instructions.▶ If the decal is detached or damaged, replace it with a new one on original position.▶ When cleaning the tractor with pressurized water, the decals can be detached.▶ When replacing the part which decal is attached, replace the decal together.
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(2) Safety decals and Attaching position



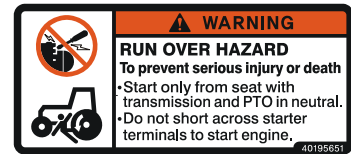
1. Position : Radiator



2. Position : Muffler



3. Position : Frame



4. Position : Fuel tank



5. Position : PTO cover



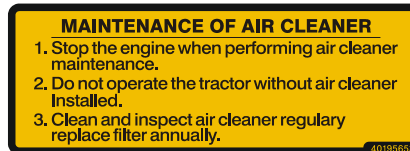
6. Position : Remote valve



7. Position : Cooling fan



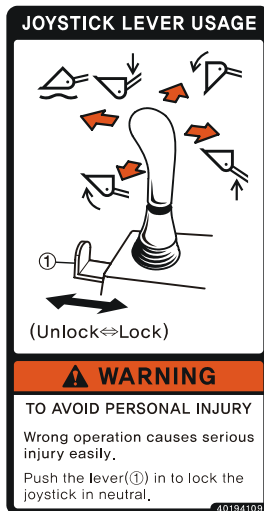
8 Position : Air Cleaner



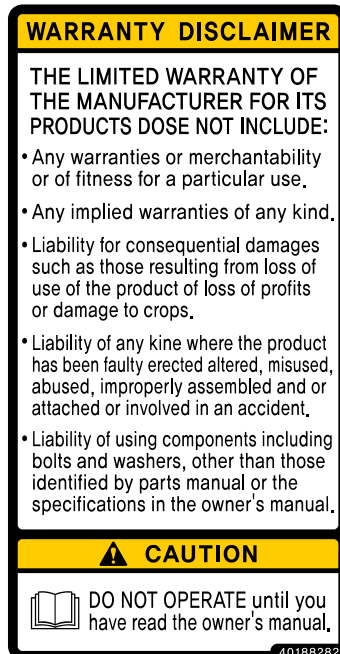
9 Position : Pillar



10. Position : Pillar



11. Position : Pillar



12. Position : Clutch Steel cover

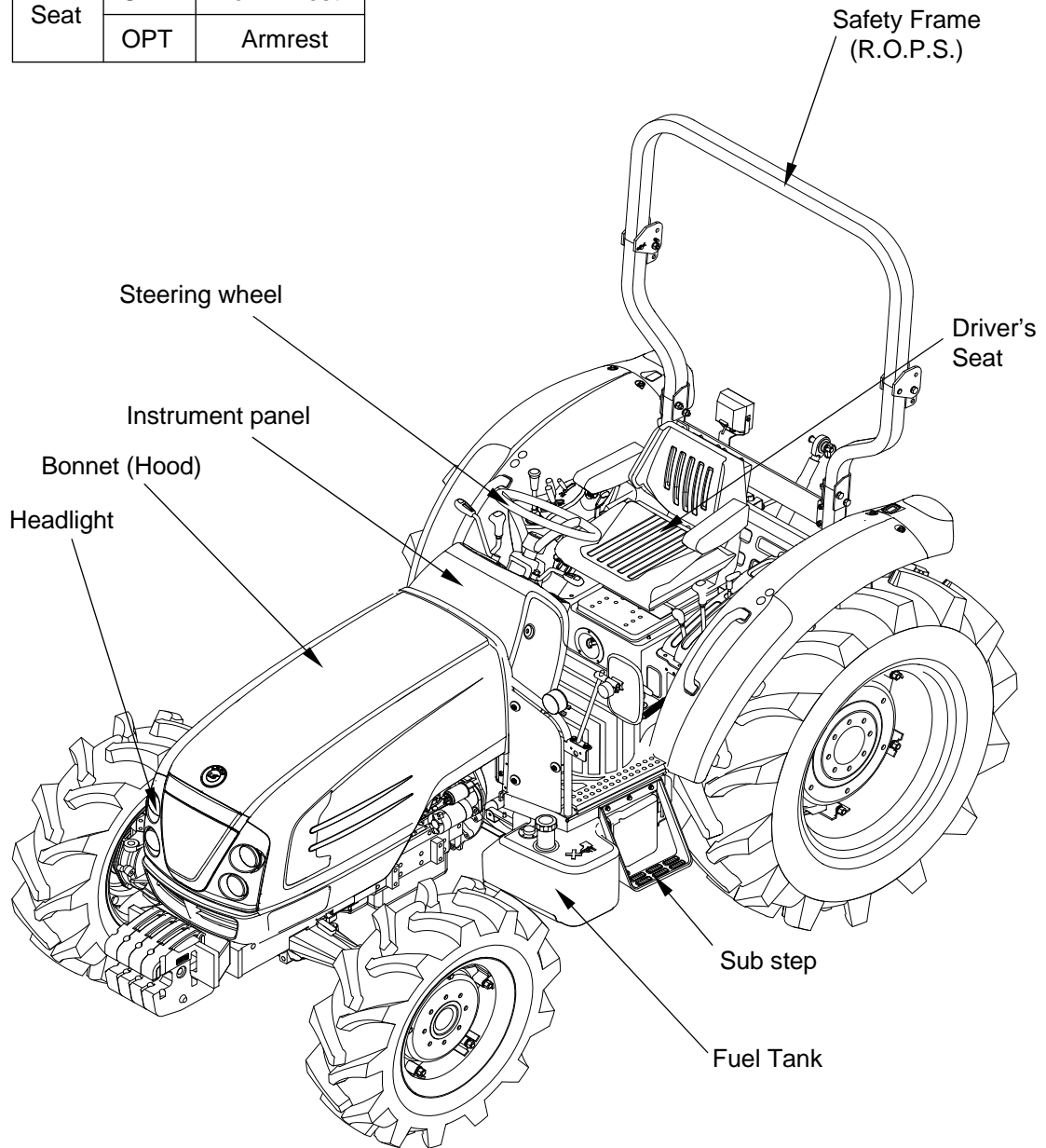


(PowerShuttle)

2. The Name of Each Part

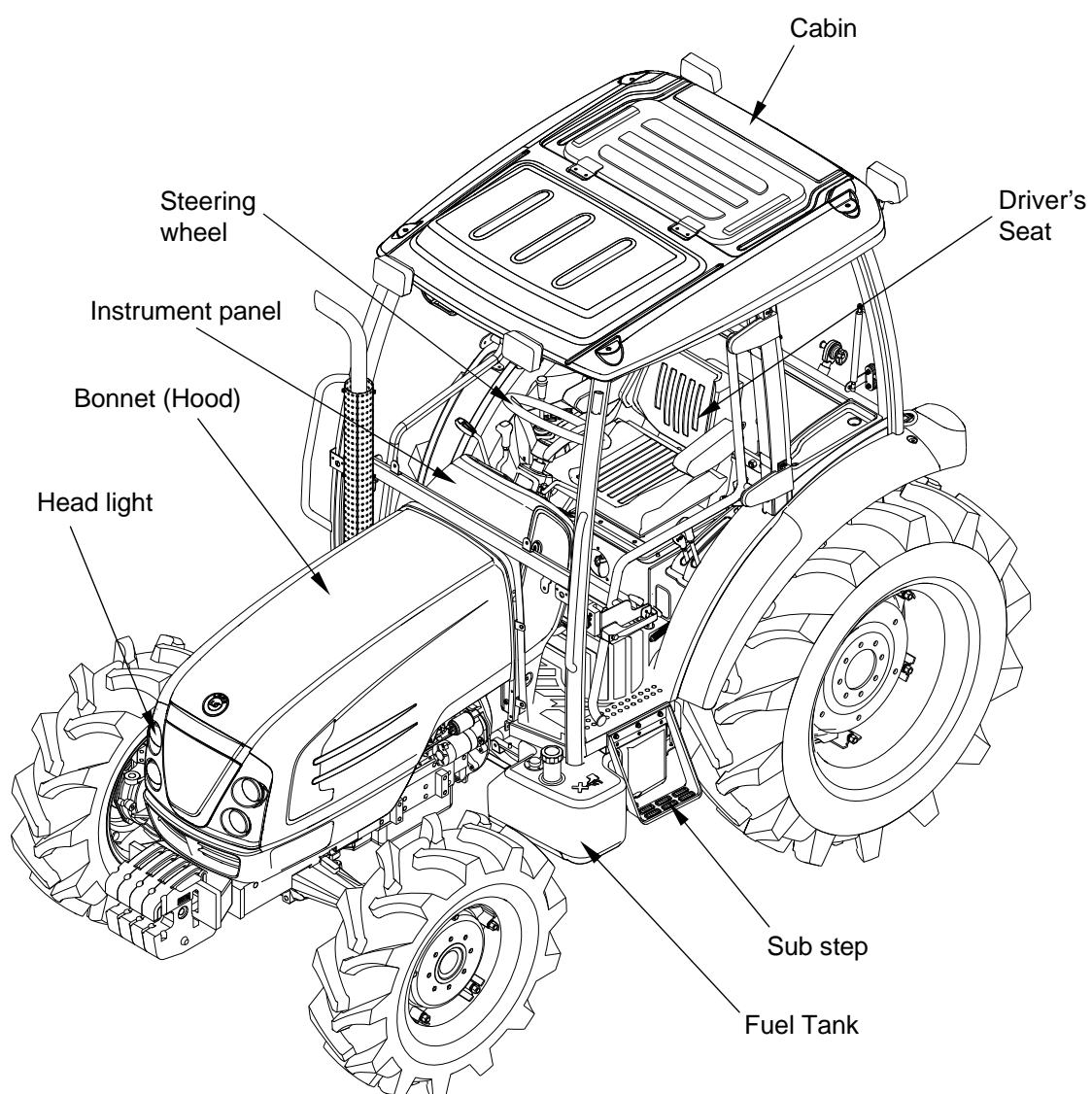
(1) Frame : U5020 / U5030

Option		
Seat	STD	No Armrest
	OPT	Armrest



(2) Cabin : U5020C / U5030C

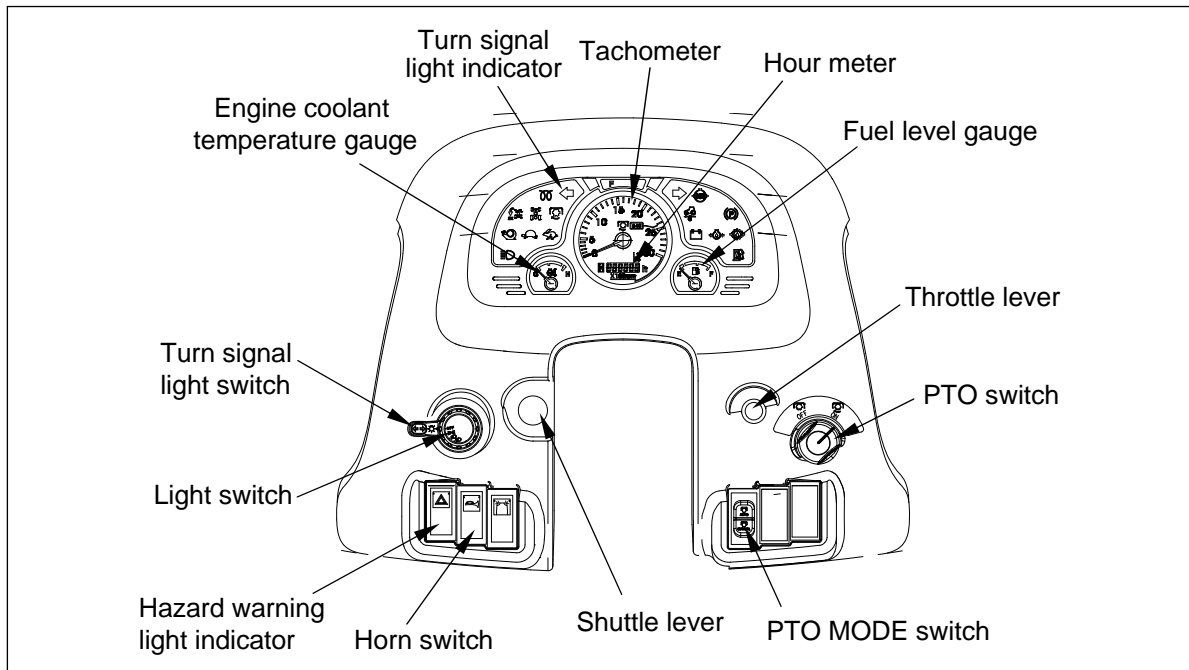
Option		
Seat	STD	No Armrest
	OPT	Armrest



3. Instruments and Controls

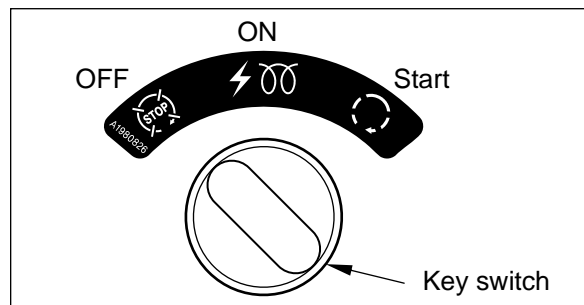
3-1. Instrument panel and Switches

(1) The Name of Each Part



(2) Key switch

- OFF – power off (engine stop)
- ON – power on & automatic glow
- START – engine start

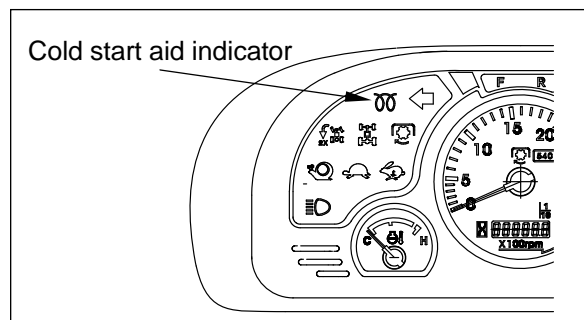


Notice

- ▶ Because the safety switch for start is engaged, start the tractor after pressing clutch pedal.
- ▶ If the tractor is not in use, the ignition key should be removed.

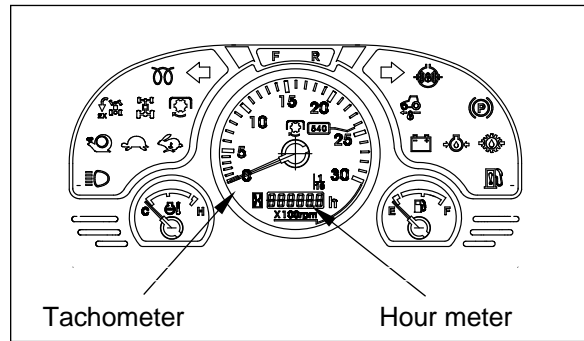
(3) Cold start aid indicator

- If placing the key switch on “ON” position, the cold start aid indicator is ON and after 10 seconds, the indicator shall be OFF and then the engine starts.



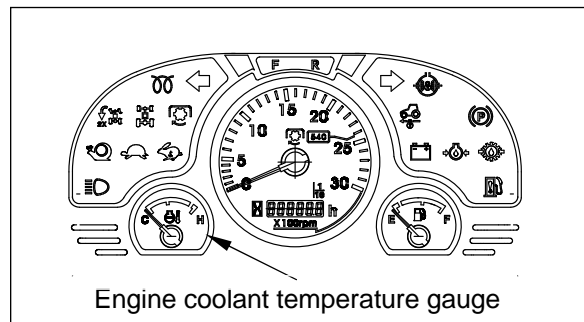
(4) Tachometer and Hour meter



- The tachometer shows the engine revolutions per minute ('30' means 3000rpm).
- The operating hour 00191 means the tractor has been operated for 19.1hr (19 hr 6 min).



(5) Engine coolant temperature gauge

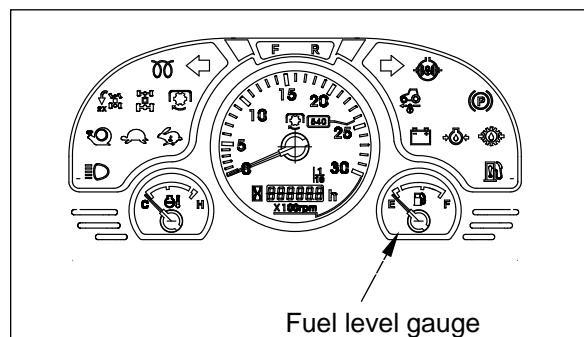
- This gauge indicates the temperature of coolant during operation.
- The closer the needle approaches "H", the higher the temperature of coolant of engine is.



<p>Notice</p>	<ul style="list-style-type: none"> ▶ If the needle of engine coolant temperature gauge indicates red zone. <ul style="list-style-type: none"> - Stop the engine immediately and check the coolant level and after engine cools down. If necessary, add coolant. - Clean the radiator screen if dry grass etc. are attached. - If the trouble is repeated, contact your authorized dealer for check.
<p> Warning</p> <p></p>	<ul style="list-style-type: none"> ▶ The radiator is very hot. When opening the radiator cap, It may cause a danger of a burn due to the escape of hot coolant or steam. ▶ After the coolant is cooled down sufficiently, open the radiator cap with protective gloves and clothing.

(6) Fuel level gauge

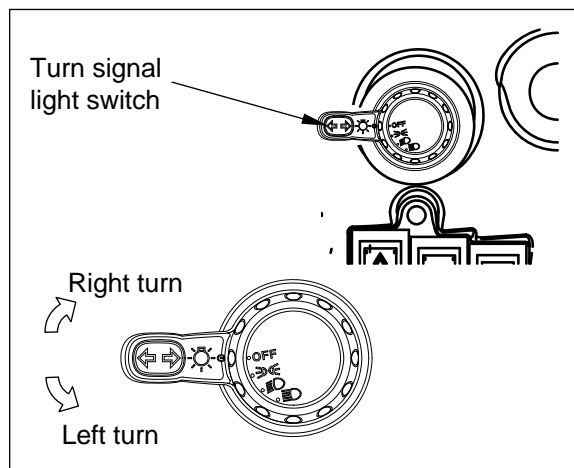
- This gauge indicates the remaining amount of fuel.
- If the needle indicates "E", fill the fuel tank immediately



(7) Turn signal light switch

- This switch is used when turning to the left or right.
- If turning the switch to clockwise, the right turn light is blinking.
-If turning the switch to counter-clockwise, the left turn light is blinking.

Notice	<p>► When changing direction during running on the road, operate the turn signal lights to inform other vehicles of your direction.</p>
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(8) Engine oil pressure indicator

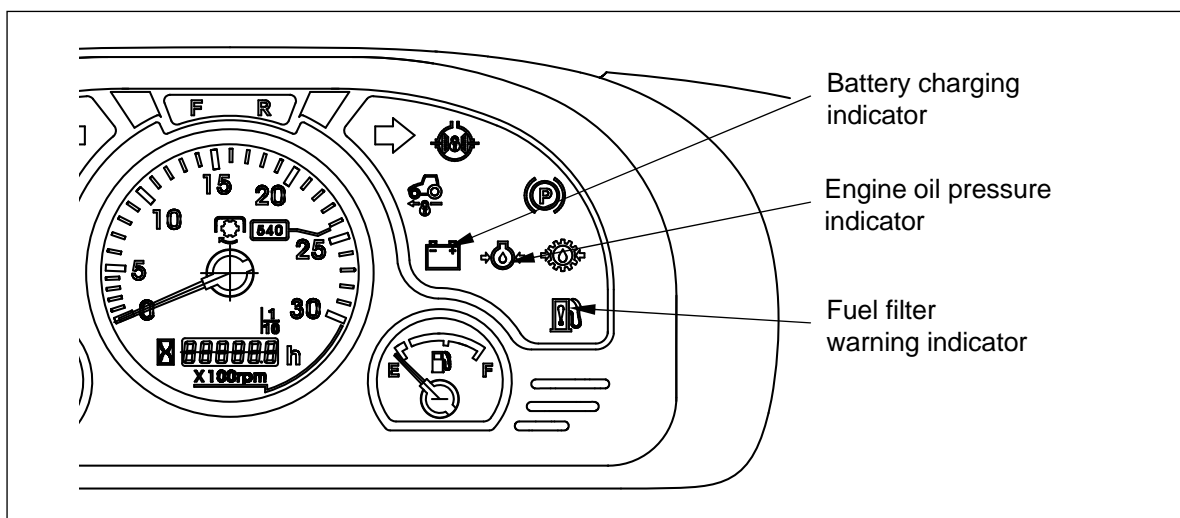
- If the indicator is ON while the engine stops, this means 'normal'.
- If the indicator is ON while the engine is running, stop the engine and check the engine oil level.
-if the indicator is ON even if the oil level is normal, this means it is abnormal. In this case, contact your authorized dealer for check.

(9) Battery charging indicator

- If the indicator is 'ON' while the engine stops, this means 'Normal'.
- If the indicator is 'ON' while the engine is running, this means there is trouble in the charging system. In this case, contact your authorized dealer for check and repair.

(10) Fuel filter warning indicator (U5020/U5020C/U5030/U5030C)

- If the fuel filter warning indicator is ON, remove the water in the fuel filter.



Notice	<p>► If the warning light is ON while the engine is running, check each item below. -Engine oil warning light, battery charging indicator, fuel filter warning indicator</p> <p>► Check the instrument panel and carry out the daily check.</p>
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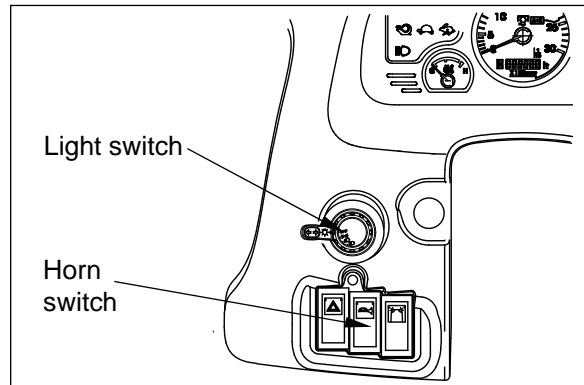
(11) Light switch

- OFF – Instrument panel and lights OFF

≡D≡ - Instrument light and side lights ON

≡D - Instrument light, side lights, head lights (low beam) ON

≡D - Instrument light, side lights, head lights (high beam) ON



Notice	► When passing with other vehicles in the opposite lane at night, turn the headlights to low beam not to disturb on coming cars.
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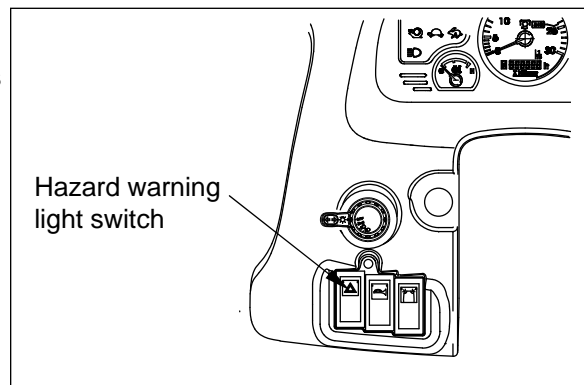
(12) Horn switch

- If you press the horn switch, horn sounds.

(13) Hazard warning light switch

- This is used to warn in case of emergency status.
If you press the triangle switch, all turn signal lights (front/rear, left/right) shall be blinking.

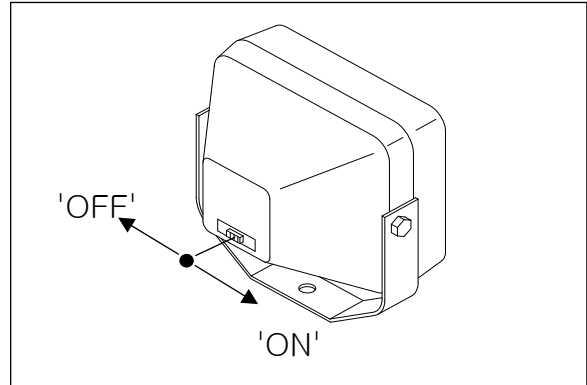
Notice	► If you use the hazard warning lights for a long time, it may cause a increase of electrical consumption. Do not use the Hazard warning lights for a long time.
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(14) Work light switch


① Frame type (Rear)

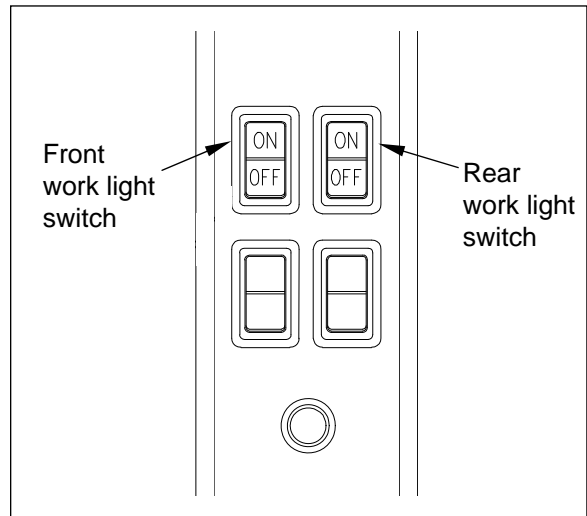
- There is a switch to turn on the rear work light.
- ON – place the switch to the right direction and the work light shall be ON.
- OFF – place the switch to the left direction and the work light shall be OFF.



② Cabin type (Front, Rear)

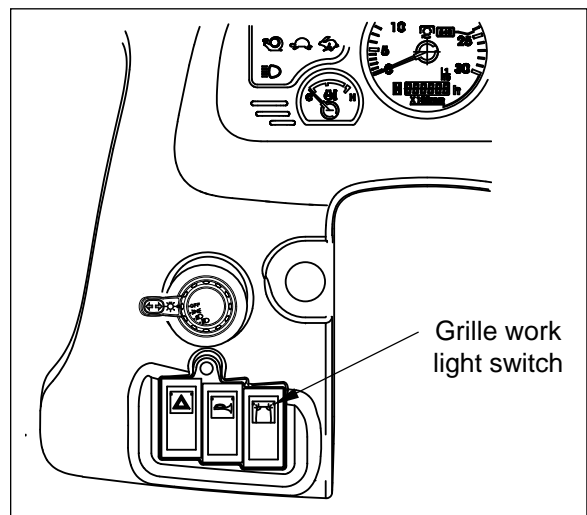
- This is used to turn on the front/rear work lights.
- ON – Press the upper side ('ON' in the figure) of switch and the work light shall be ON.
- OFF – Press the lower side ('OFF' in the figure) of switch and the work light shall be OFF.

 Caution	▶ When driving on the road at night, do not let the rear work light stay “ON”. It may cause a disturbance to the driver of the following car.
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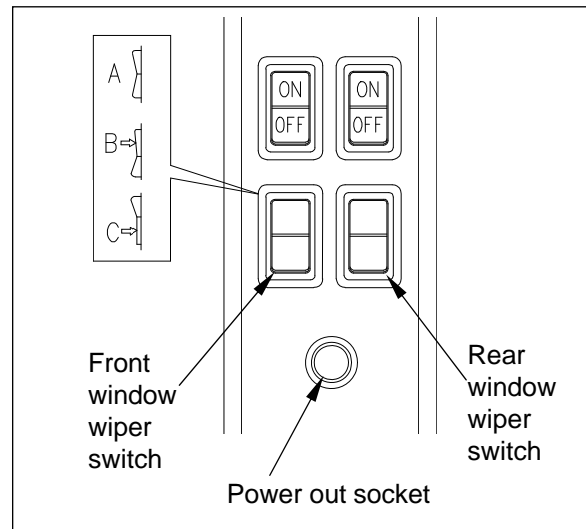
③ Grille work light switch (option)


- This is used to turn on the work light of the front grille.
- ON – Press the switch upper side ('Symbol' in the figure) of switch and the work light shall be ON.
- OFF – Press the switch lower side of switch and the work light shall be OFF.



(15) Window wiper switch (front, rear)



- This switch is used for operating front and rear window wiper.
- 'A' in the figure means the neutral position of switch and if you press 'B' position, the wiper continues to operate.
 - If you press 'B' position once more and hold it, the washer liquid shall be sprayed out together to wash the window. If you release the switch, it returns to the 'B' position.
 - If you press 'C' position, only washer liquid shall be sprayed out.



 Caution	<ul style="list-style-type: none"> ▶ Use wind shield washer liquid for automobile in winter time. ▶ Do not operate the wiper without wind shield washer liquid, it may cause damage to the wiper motor.
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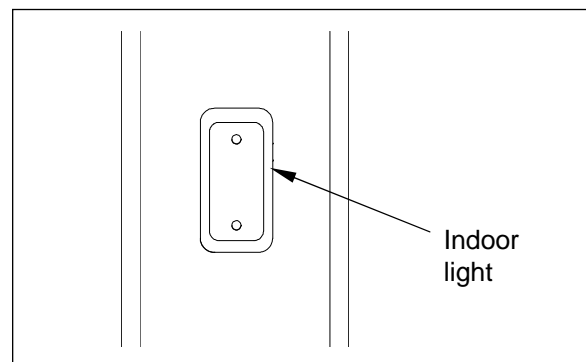
(16) Power out socket (Cabin only)

- This is the socket for power withdrawal for the charging of cigarette lighter jack or cellular phone.
- In case of using cigarette lighter jack (option)
 - If you push the cigarette lighter jack, the heating coil generates heat and shall be used as alternative of lighter.
- In case of using as power supply (12V)
 - Use the cellular phone charger less 10A.

 Caution 	<ul style="list-style-type: none"> ▶ When using a cigarette lighter jack, cares must be taken not to touch the heating coil. The heat generated coil is very hot and may cause the danger of a burn.
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(17) Indoor light (Cabin only)

- Press the lower side of indoor light to turn on the light.
- Press the lower side of indoor light again to turn off the light.



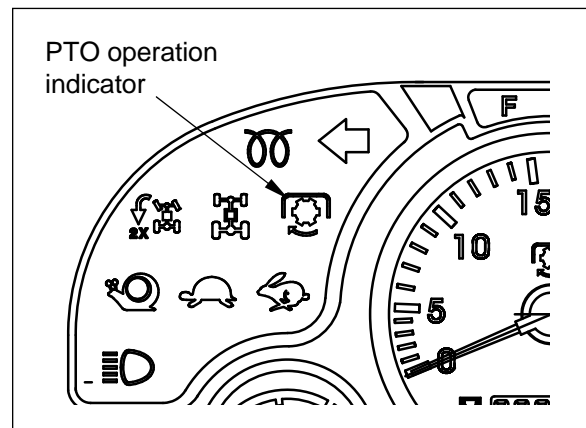
(18) Audio player (Cabin only)

- Refer to the attached user's manual for Audio player.

 Caution	<ul style="list-style-type: none"> ▶ For safer operation, turn down the player volume so that you can hear sound from outside tractor. ▶ Do not use the headset while driving the tractor.
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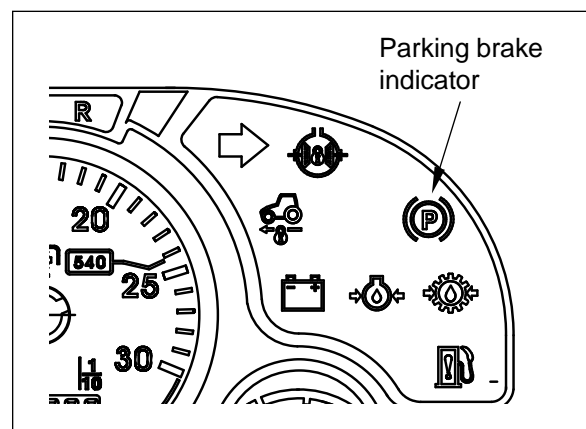
(19) PTO operation indicator

- When the Key switch is 'ON' and PTO mode switch is "Manual" and PTO switch is "ON", this indicator will be ON.
- If PTO mode switch is "Auto", this indicator will be ON when clutch pedal is NOT depressed and the implement is NOT lifted up to the upper limit for PTO operation.
(For further information, See page 3-12)



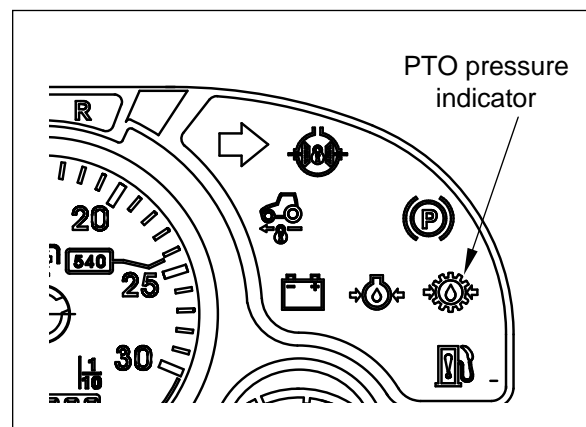
(20) Parking brake indicator

- This indicator will be 'ON' when applying the parking brake. (See page 3-10)



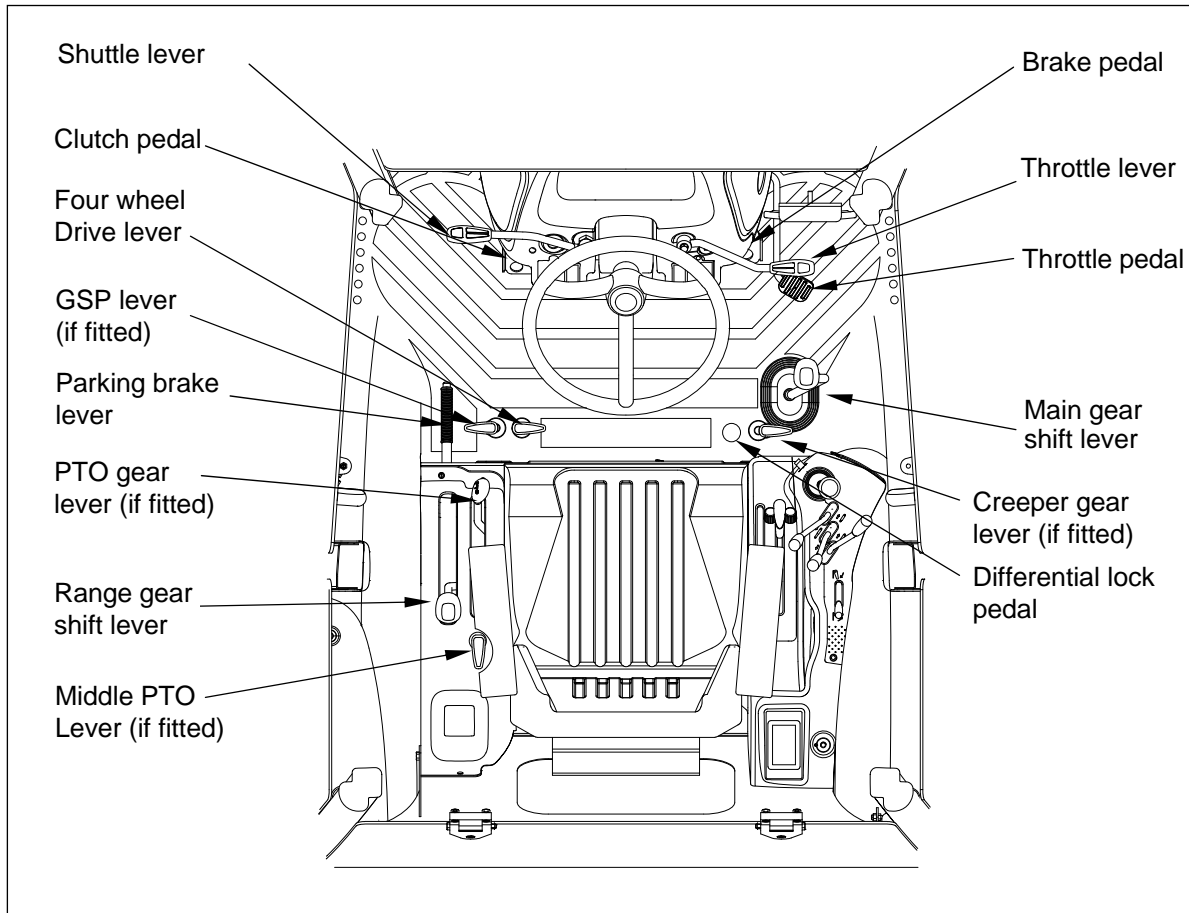
(21) PTO pressure indicator

- This indicator will be ON when the hydraulic pressure of the PTO system is lower than suitable value. And then, the PTO shaft shall be stopped automatically to protect the PTO clutch.
(For further information, see page 5-5)



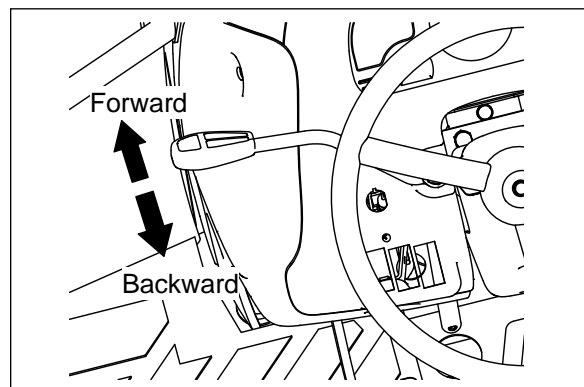
3-2. Operating levers and pedals

Important to owner, read carefully



(1) Shuttle lever

- This is used to select forward/reverse.
- If you push the lever forward, it runs forward and if you pull the lever back, it runs backward.
- Before backing up, lower the engine rpm and check behind you, before you back up.

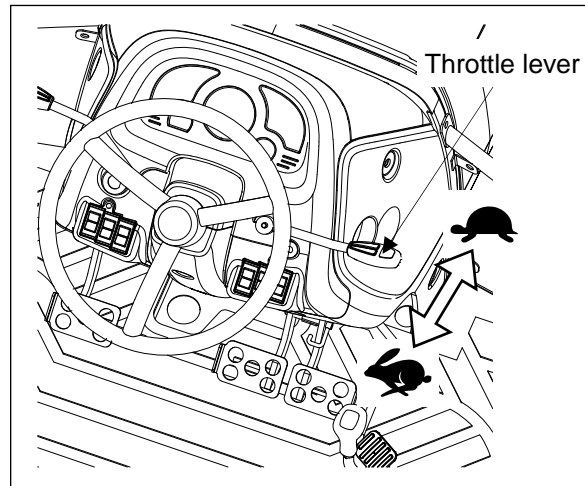


Caution

► The operation of shuttle lever must be done after the tractor has stopped completely.
Don't operate shuttle lever while the tractor is moving. It may cause a damage of synchronizer rings and gears. (Sychro-shuttle)

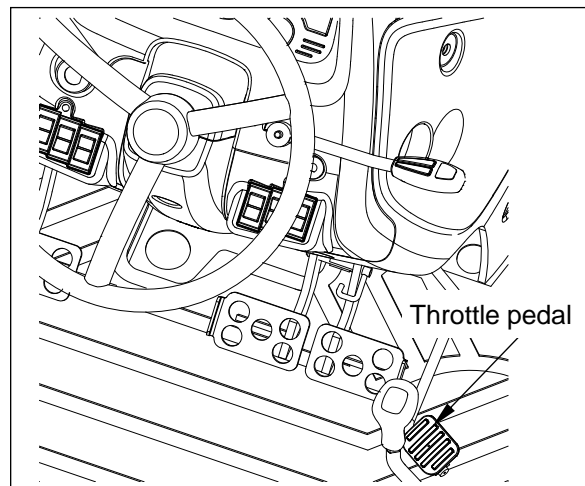
(2) Throttle lever

- If you pull the lever backward, it means “high speed”, and If push it forward, it means “low speed”.
- The throttle lever must be used only for work.



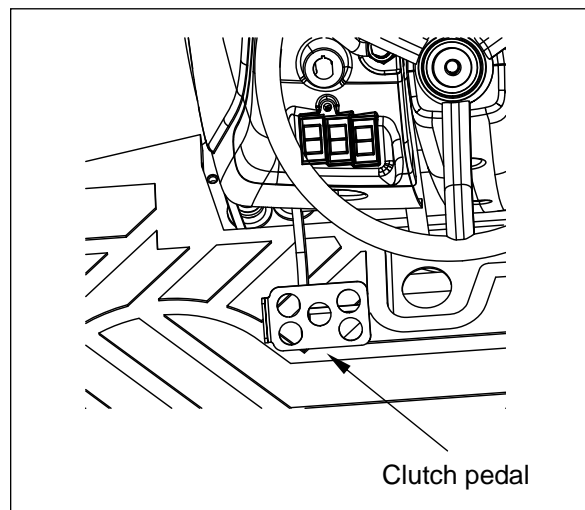
(3) Throttle pedal

- This pedal is used when running on the road.
- When using the Throttle pedal, the Throttle lever must be placed on “low speed”.



(4) Clutch pedal

- This is used to engage or disengage the main transmission clutch for starting engine and shifting transmission gear.
- Depress the clutch pedal quickly and fully and release it slowly.
- If the PTO mode switch is placed on “Manual”, the PTO shaft will NOT stop, if the switch is placed on “AUTO”, the PTO shaft will stop, when pushing down on clutch pedal.

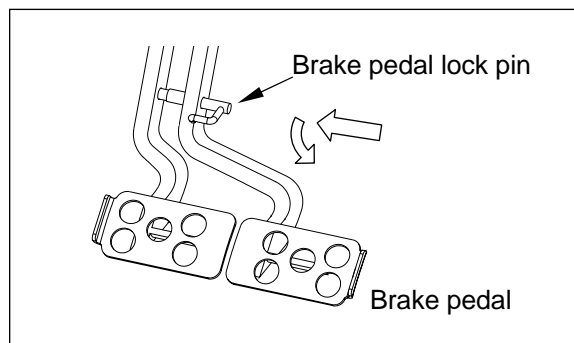


Caution

- ▶ DO NOT ride your foot on the clutch pedal while driving the tractor.
- ▶ As the start safety switch is installed for the operator's safety, if you don't press the pedal completely, it does not start.

(5) Brake pedals

- If separating the left/right pedal and pressing one side at a time, the brake is applied on the rear wheel of the pressed pedal.
- When stopping, press both brake pedals together.
- When working, remove the brake pedal lock pin and use the left/right pedal independently, the turning radius shall be reduced.
- DO NOT press the one side brake pedal while the differential lock is engaged. It may cause damage or failure of the axle.

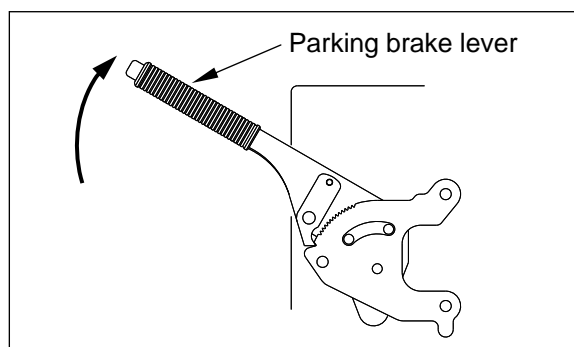


Caution

- ▶ When driving on the road, engage the left/right brake pedal by the lock pin.
- If pressing one side of brake when running, the tractor may turnover.
- ▶ While driving, do not ride brake and clutch pedal.

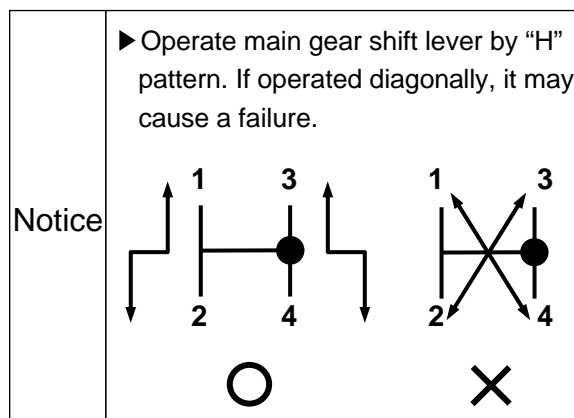
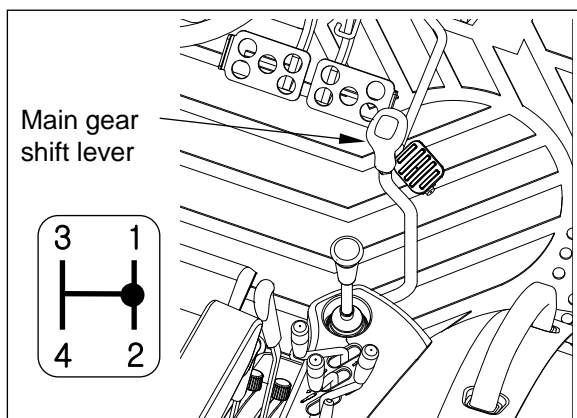
(6) Parking brake lever

- If you connect the left/right brake pedal, push the brake pedal hard and at the same time pull the parking brake lever up, the parking brake shall be applied.
- When parking or stopping temporarily, use the parking brake.
- To loosen the parking brake, press the button of parking brake and pull the lever down. You have to press brake pedals, before releasing the parking brake.



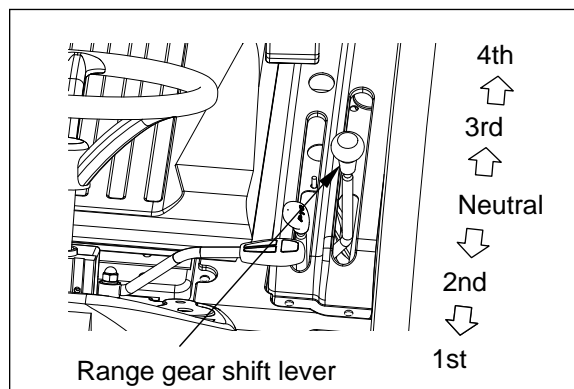
(7) Main gear shift lever

- Main gear shift lever is available to operate 4 speed ranges. If using range gear shift lever together with shuttle lever, the transmission of forward 16 speeds and reverse 16 speeds are available.
- Main gear shift lever 1~4 ranges shall be available for changing the speed while running by applying the clutch pedal.



(8) Range gear shift lever

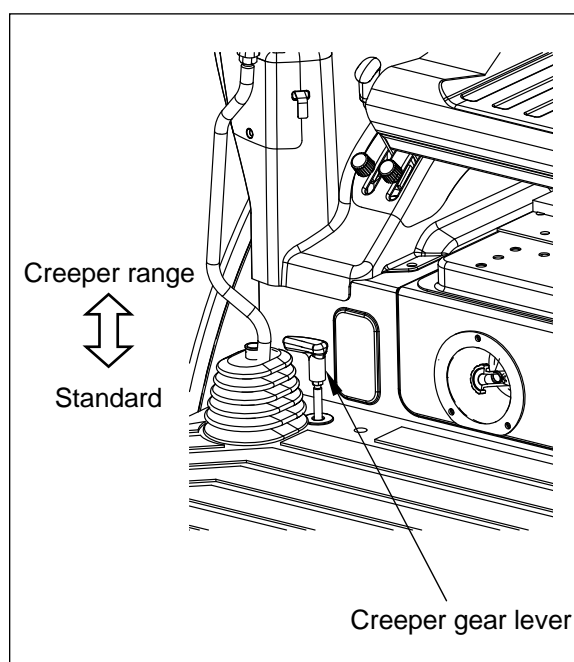
- 4 stage speed selection is available.
- Front is for 1st and 2nd gear, middle for neutral and rear for 3rd and 4th gear.
- Range gear shift lever must be operated after the tractor has stopped completely.



(9) Creeper gear lever (if fitted)

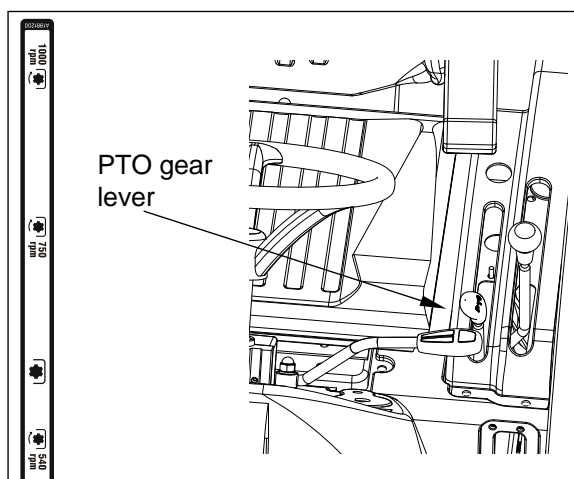
- If you pull this lever upward, the creeper gear stage is connected (ON), and if you pull it back down, the creeper is disengaged. (OFF)

<p>Caution</p>	<p>► As the revolution force of wheel axle is very high when working in creeper speed range, the machine may not stop even if you press the brake pedals.</p> <p>In this case, press the clutch pedal to cut off the power and operate the brake pedals.</p>
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(10) PTO gear lever (if fitted)

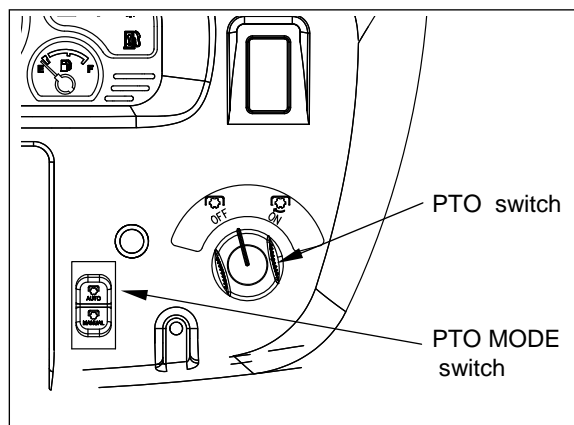
- 540 / 750 / 1000 rev/min and 'Neutral' position is available.



<p>Caution</p>	<p>► After putting PTO switch in 'OFF' and PTO shaft has stopped completely, place the lever to desired position. (See page 3-12)</p> <p>► If the PTO gear lever is NOT engaged smoothly, lift up and down on implement to align the drive shaft.</p>
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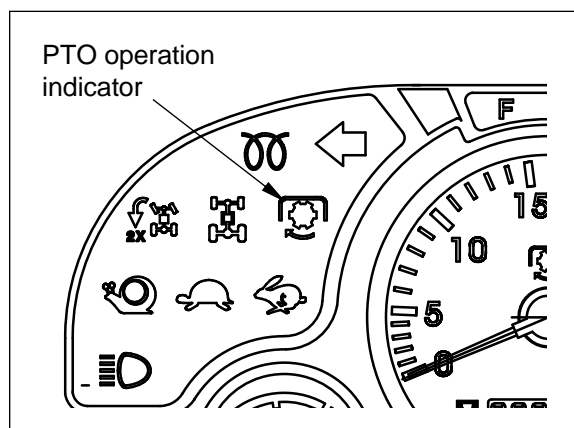
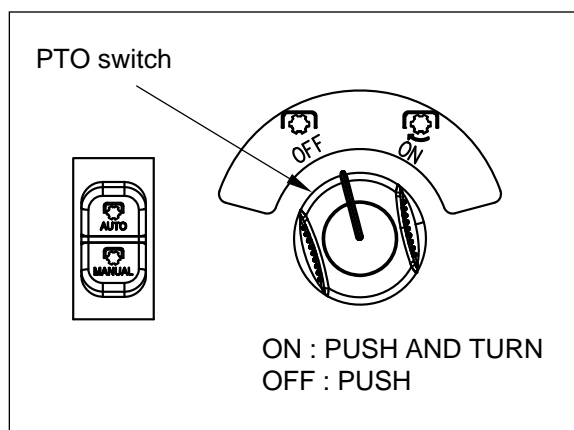
(11) PTO mode switch

- It is used to select “AUTO” or “Manual” mode of PTO operation
- When the PTO mode switch is placed on “AUTO” position, if you press the clutch pedal or the 'position control lever' moves up the arranged position during operation, the PTO will not rotate. If it is placed on “MANUAL” position, the PTO will rotate.



(12) PTO switch

- The engine starts only when PTO switch is placed in 'OFF' position for safety.
- After starting the engine, you must comply with the operation procedure of the PTO switch as follow.
 1. Place the PTO gear lever to desired position.
(For further information, See page 3-11)
 2. Select the PTO mode switch to 'AUTO' or 'Manual' position.
 3. Push and turn the PTO switch to engage PTO. the PTO operation indicator shall be ON
 4. If you want to stop the PTO temporarily while operating, push the PTO switch in 'OFF' position. The PTO operation shall be OFF.

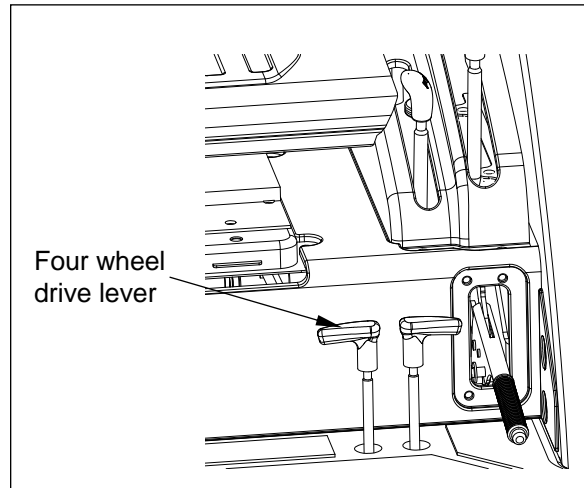


Warning

- ▶ Before attaching or checking the PTO driven equipment,
 - Always place the PTO switch in 'OFF' position, and PTO gear lever in 'Neutral' position.
- ▶ If the PTO mode switch is placed in 'Manual' position, PTO rotates even if the tractor moves backward. Pay attention to the surroundings to prevent a accident.
- ▶ Do not engage the PTO with the engine running at high speed. Sudden engagement can cause damage to some implements. Engage PTO at low RPM, and then raise engine speed to rated RPM.

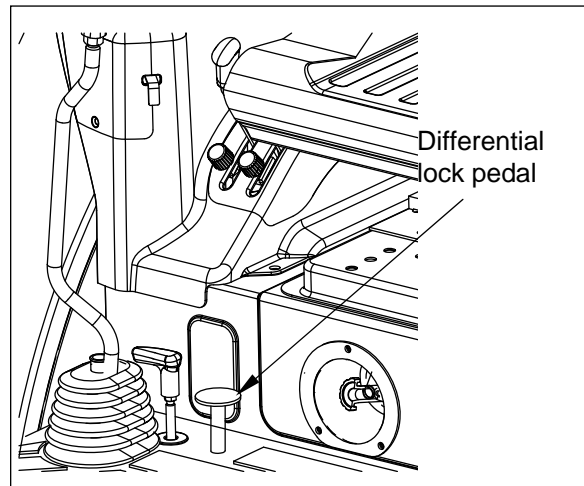
(13) Four wheel drive lever (4WD)

- If you pull the lever up, the front wheel is engaged.
- When driving front axle, press a clutch pedal and stop the tractor completely and then operate the lever.
- 4WD is very effective in the following cases.
 - When the towing power is necessary such as slope, damp, trailer, front loader, plough work etc.
 - In case of working in sandy land
 - To prevent tractor from spinning wet land, when doing rotavator work in hard ground.



(14) Differential lock pedal

- When the forward movement does not work because one wheels are slipping, press the differential lock pedal.
- More effective in the following cases.
 - Wet ground
 - Plough work
- If pressing this pedal, you can not turn as both rear wheels turn together.
- If depressing the brake pedal and releasing the differential pedal, it will be released automatically.
If not released, press the one side brake pedal down slightly for a second.



Warning

- ▶ Do not turn by pressing the differential lock pedal.
- ▶ Do not use when driving on the road.
- ▶ If turning to right or left In a wide turn, depress the clutch once and depress right or left brake pedal the direction you are turning.

(15) Seat adjustment

- Before operating the tractor, adjust the position of driver's seat according to body size and length.
 - 1) After sitting on driver's seat, move the seat adjustment lever it up or side to release the lock.
 - 2) Move the driver's seat forward or backward depending on driver's body length.
 - 3) Release the seat adjustment lever and check the seat is locked.
- Adjust the seat suspension to fit the weight of operator (if fitted).

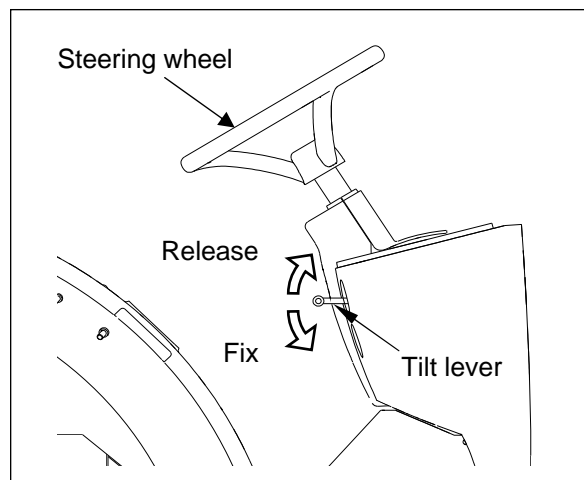


Caution

► DO NOT put your hand under the seat while sitting. It may cause a injury by seat suspension.

(16) Tilt steering wheel

- Pull the tilt lever upward to release the steering column and tilt the steering wheel to desired position.
- And, push the tilt lever downward to lock the steering column in place, and check to make sure column does not move forward and backward.
- Adjust column only when stopped.



Caution

► DO NOT adjust steering column while driving. It may cause a serious accident.

3-3. Hydraulic system

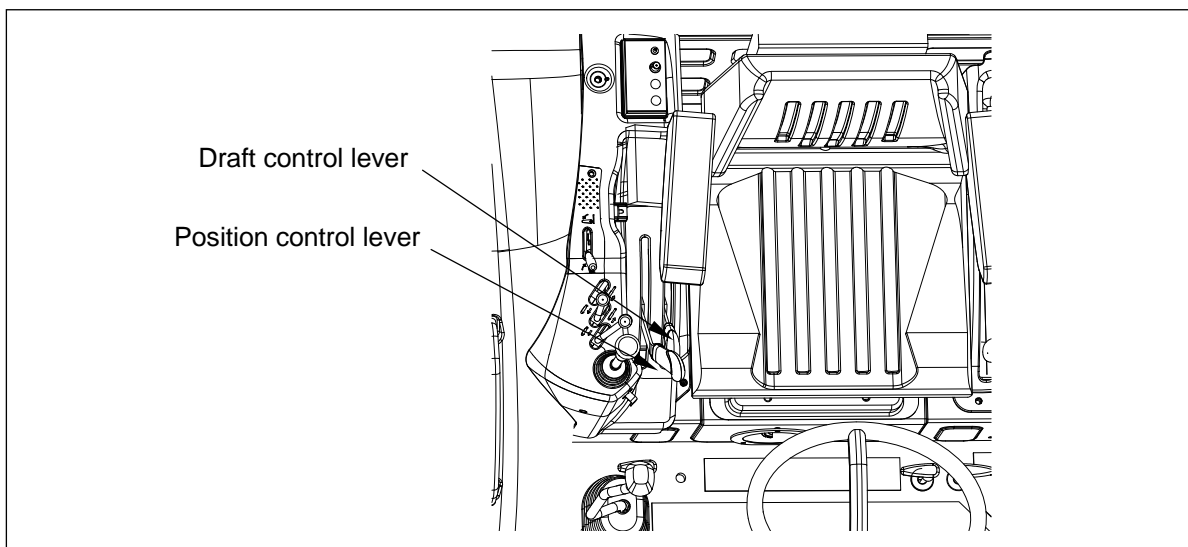
(1) Steering

- As the steering system of your tractor has a hydraulic pump, valve and etc., it provides you more convenience to operate the steering wheel. And the non-load reaction system was applied to avoid the moving of the steering wheel by the impact of the front wheels on rough ground.
- Notices when using the steering system.
 1. If there is too much of a load in front loader bucket, it could be difficult to operate the steering wheel. In this case, reduce the size of the load.
 2. After turning the steering wheel fully, do not turn the steering wheel to the same direction again. As the unnecessary force is applied, this could damage to the steering system. Especially, DO NOT operate the steering wheel by force if the front wheel mired in the ditch. In this case, the rim could be affected and damaged.
 3. If it sounds abnormal when operating the steering wheel, this means that there is some air in the steering components and line. In this case, turn the steering wheel to the left and right fully and hold it for about 5 seconds, and the air should bleed out and if abnormal noise does not stop. If it's not cleared, contact your authorized dealer for repair.
 4. When starting engine in cold weather, a abnormal noise may be occur. In this case, warm up the tractor before using to reduce the oil viscosity.
 5. If you use the tractor for a long time while turning the steering wheel fully, the oil temperature will increase which may cause the reduction of the product life or the failure of hydraulic and steering system.

Notice	<ul style="list-style-type: none">▶ If the engine stops, the operation of steering wheel becomes hard to turn and causes steering not to work. But this does not mean a failure.▶ If you turn the steering wheel while driving, the steering wheel does not return back automatically.
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(2) Hydraulic lift Control

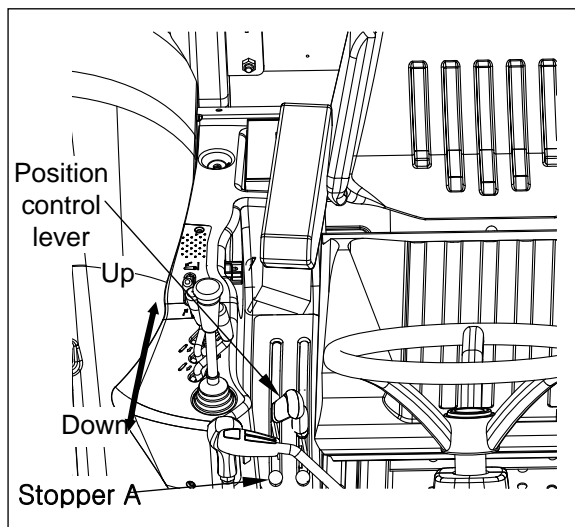
- The hydraulic lift system is operated by the position control and draft control lever.



① Position control

- This mode sets the position of the implements freely by position control lever operation. Generally, this mode is used for tiller, fertilizer distributor, mower, rake etc. In this case, operate position control lever as follows.

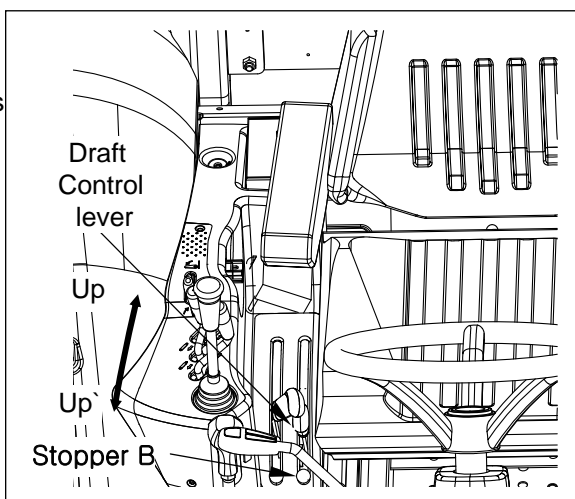
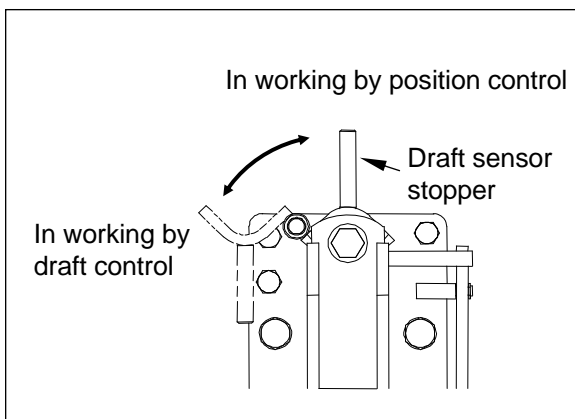
1. Push the position control lever forward and the implement lets down by its own weight.
2. If the position control lever is on random position, the implement stops at the height corresponding to the lever position.
3. To keep the height of implement in the desired range, restrict the lever to the lowest position with stopper A.



② Draft control

- This mode maintains the load of the implement consistently by detecting the draft load and transmitting it to the hydraulic valve. Generally, this mode is used for the implement which receives the draft load. In this case, operate the lever as follows.

1. Remove the draft sensor stopper of upper link bracket.
2. Move the position control lever forward fully (Down) and the implement lets down by its own weight.
3. The volume of load that the hydraulic valve receives shall be determined according to the position of draft control lever. That is, the more the lever moves back (up), the more the implement rises up just by a little draft load.
4. If you want to lift the implement, use the position control lever instead of draft control lever

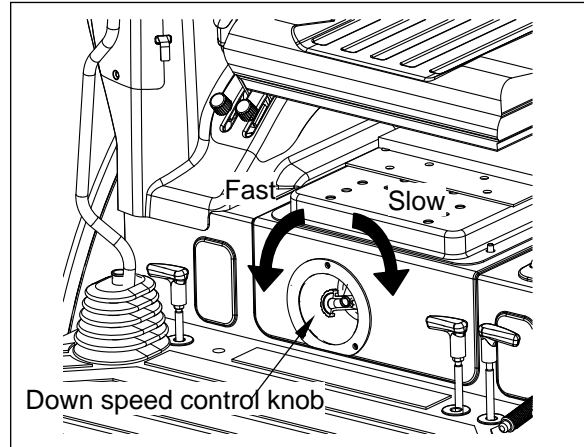


③ Mixed control

- This mode uses both position and draft control lever. In this case, the position of implement is controlled by the position control lever and the traction load is controlled by the draft control lever.

(3) Down speed control knob

- Turn the valve knob to the right to lower the implement slowly and to the left to rise speed faster. If turning right fully, the implement shall be fixed and even if lowering down the position control lever, the implement does not let down.
- Tiller work : Slow in down speed
- plough work : Fast in down speed
- When working in hard ground, slow down the down speed to avoid the bounding of the implements.

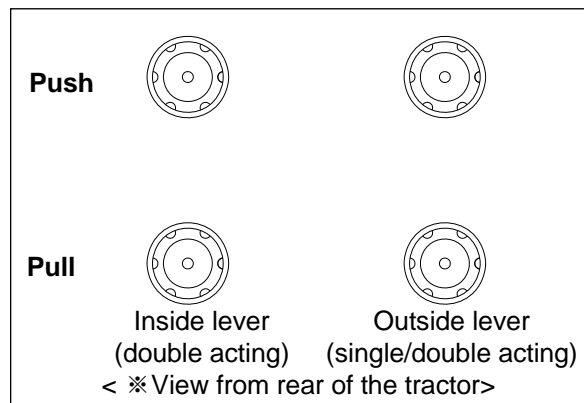
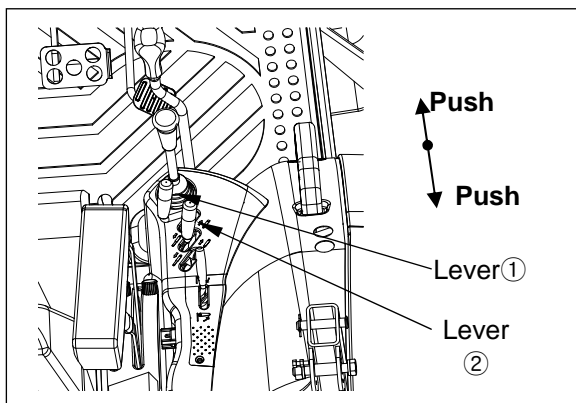


Warning

- ▶ When running on the road, turn right the down speed control knob slightly to lock.
- ▶ When changing the blades of tiller or removing grass, stop the engine and turn the down speed control knob to right slightly to lock. (The valve knob may turn twice.)

(4) Remote control lever and Quick coupler

- ※ By using the remote control valve, the implement (i.e.dump trailer, hydraulic conversion plough etc.) attached to the tractor shall be operated by the hydraulic pressure
- Push the remote control lever forward and the hydraulic pressure operates to the upper coupler. In this case, the lower coupler shall be connected to the drain.
- Inside and outside lever is operated respectively and at the same time when operating the lever, the one received less force begins to start first



(5) Joystick lever

※ Remote joystick lever helps to operate front loader comfortably.

● When connecting hydraulic hoses, follow the instruction below.

- ▶ loader down - opening ①
- ▶ loader up - opening ②
- ▶ bucket up - opening ③
- ▶ bucket dump - opening ④

● The standard of hydraulic opening is PS3/8".

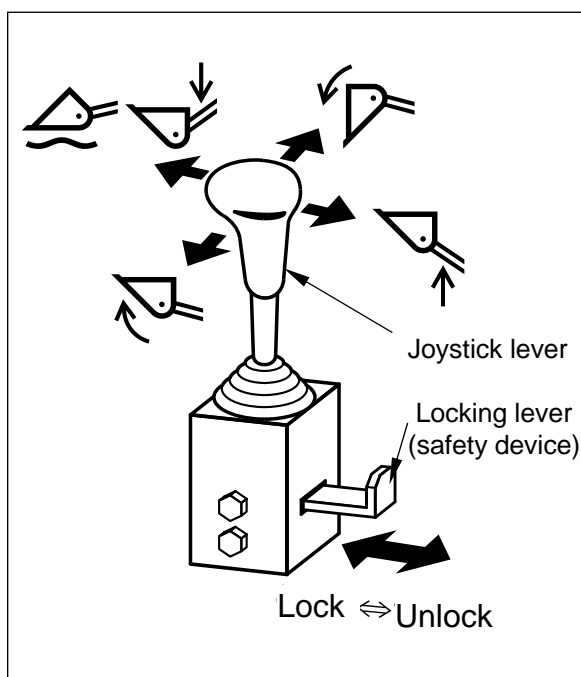
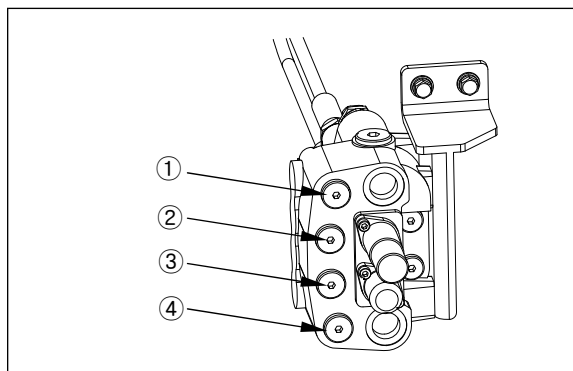
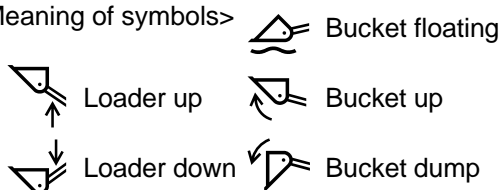
● Use the adapter for hydraulic connection.

● Joystick can be operated at 4 directions as shown in the right figure.

If you move joystick diagonally, loader and bucket shall be operated at the same time. Then, small loads move first.

When you want to float bucket, lower the loader and push forward the lever at floating position. After finishing work, pull the lever and place it in neutral position.

<Meaning of symbols>

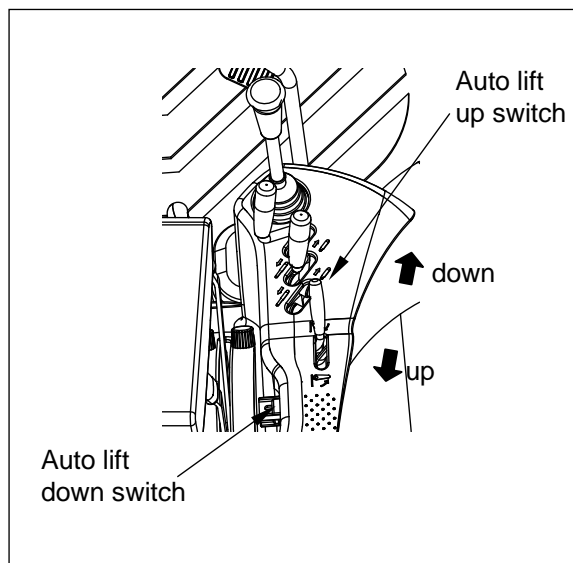


- ▶ To prevent accidents, push and lock the locking lever when you do not use joystick lever.
- ▶ When the loader is at the high position, do not place the joystick lever in the floating position.

(6) Auto lift control

※ It is used to lift up the implement up to the highest position quickly and lower it down to the position set by position control lever without using position control lever.

- Pull the auto lift up switch backward to lift up the implement.
- Press the auto lift down switch to lower down the implement. At this time, the auto lift up switch returns forward automatically.
- When the auto lift up switch is pulled back, the implement does NOT moved by position control lever.
- When lifting up the auto lift up switch, the PTO shaft stops in case the PTO mode switch is "AUTO"

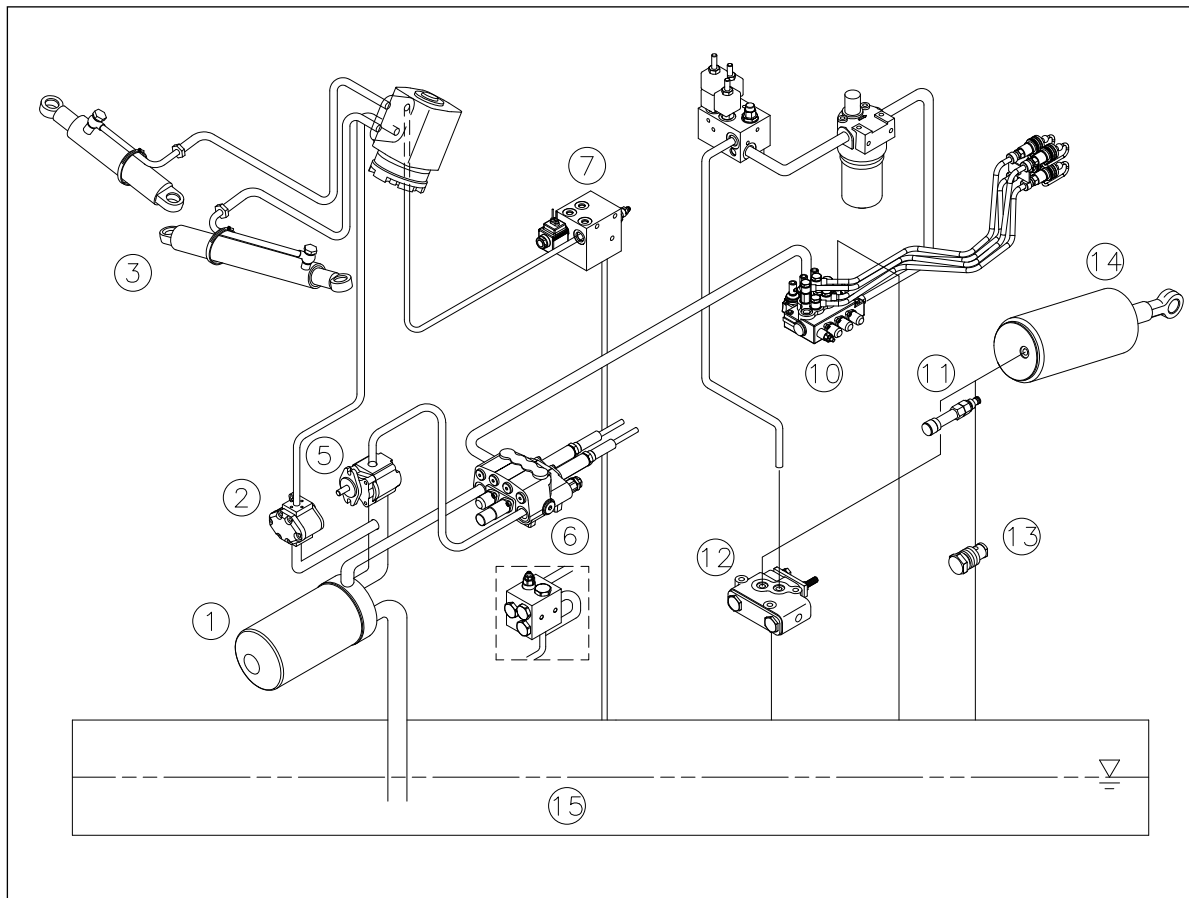


Warning

- ▶ When driving on the road, lift up the implement by using the position control lever. And, lock the down speed control knob.
- ▶ When lifting up or down the implement by using auto lift control switches, do not approach the implement. And before using the switches, you have to check the safety conditions of the working area.

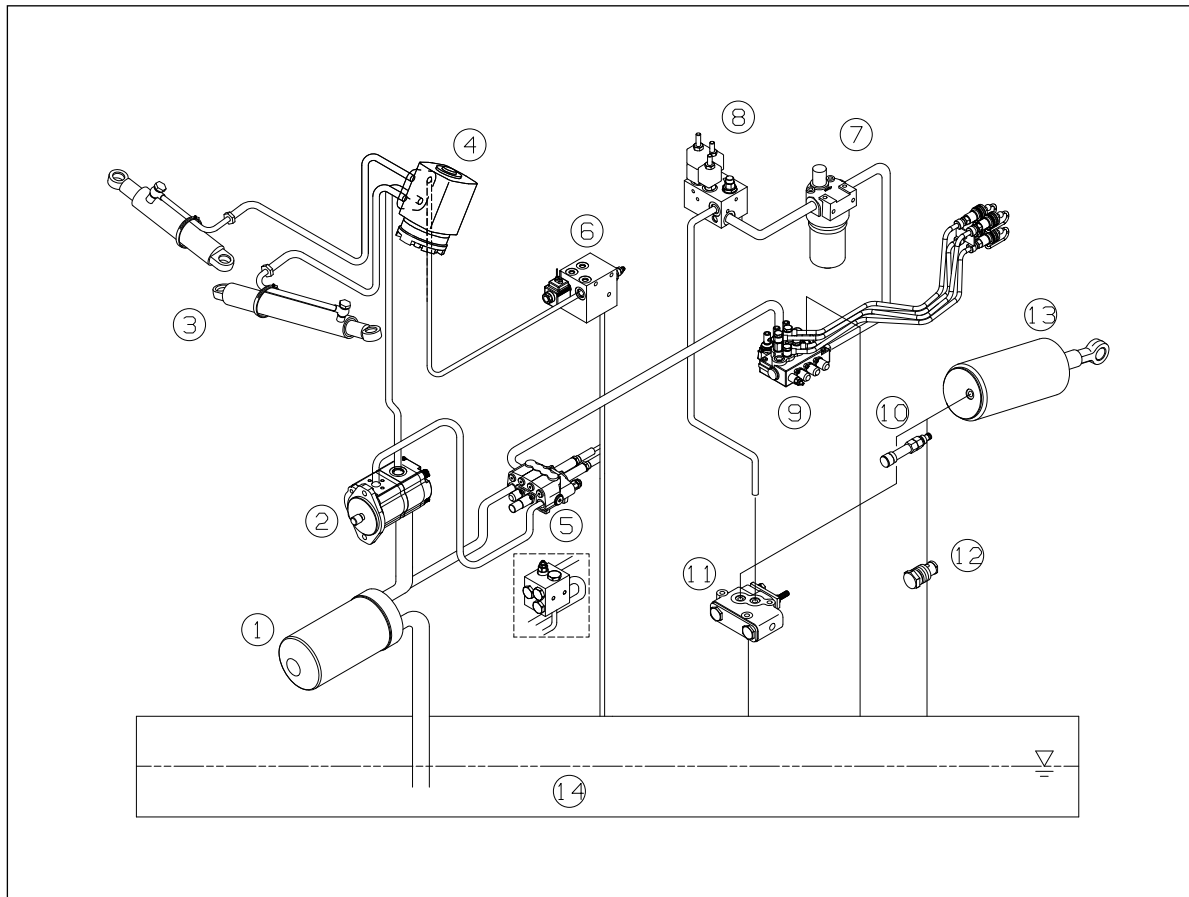
(7) Hydraulic System Diagram

① U5020 / U5020C



- | | | |
|-------------------------|--------------------------------|----------------------------------|
| 1. Hydraulic oil filter | 6. Front loader valve | 11. Drop speed control valve |
| 2. Hydraulic pump | Front outlet valve (option) | 12. Hydraulic lift control valve |
| 3. Steering cylinder | 7. Independent PTO valve | 13. Safety valve |
| 4. Power steering unit | 8. In-line filter (option) | 14. Hydraulic lift cylinder |
| 5. Hydraulic lift pump | 9. Auto leveler valve (option) | 15. Oil tank(Transmission case) |
| | 10. Remote control valve | |

② U5030 / U5030C





- | | | |
|-----------------------------|--------------------------------|----------------------------------|
| 1. Hydraulic oil filter | 6. Independent PTO valve | 11. Hydraulic lift control valve |
| 2. Hydraulic pump | 7. In-line filter (option) | 12. Safety valve |
| 3. Steering cylinder | 8. Auto leveler valve (option) | 13. Hydraulic lift cylinder |
| 4. Power steering unit | 9. Remote control valve | 14. Oil tank(Transmission case) |
| 5. Front loader valve | 10. Drop speed control valve | |
| Front outlet valve (option) | | |

3-4. Safety device

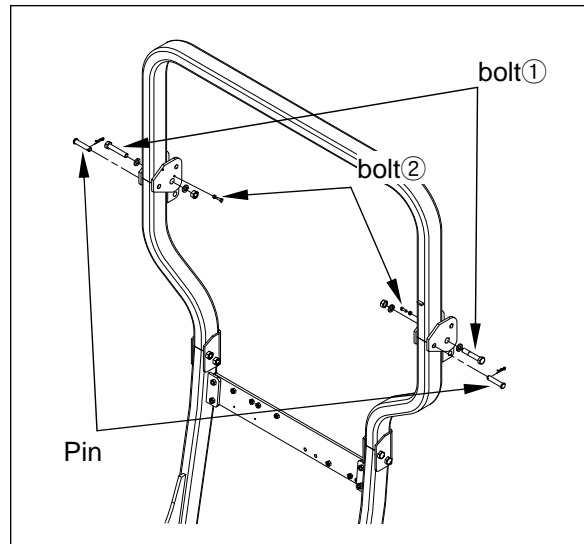
(1) Seat belt


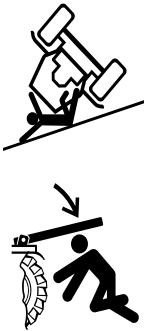
- Always wear the seat belt before operating the tractor and adjust the belt to fit the operator.
 1. Insert the seat belt end into the buckle until a 'click' indicates it is properly engaged.
 2. To remove the seat belt from the buckle, press the red release button on the buckle.
- Check the seat belt regularly. If damaged or frayed, replace it with a new one.

 Warning	<p>► If not wearing the seat belt, it may cause serious injury in case of accident.</p> <ul style="list-style-type: none"> - During operation, it must be required to wear seat belt with a cab or safety frame installed. - After wearing the seat belt, adjust the belt to fit the operator. <p>► If safety frame is folded down for frame model, do not wear the seat belt.</p>
	


(2) Safety frame (R.O.P.S type)

- How to fold the safety frame
 1. Unfasten the safety frame bolts ①, ② (both sides) loosely. (do not remove it completely.)
 2. Loosen the pin (both side) slightly and fold it down. Be careful of the possibility that your head, hand or shoulder might be hurt by sudden folding results from the weight of the safety frame at this moment.
 3. Fit the pin into the hole in order to fix the safety frame.
 4. Fix it completely by fastening the safety frame bolts ①, ② tightly.
- After standing the safety frame up again, fasten bolts and nuts tightly.



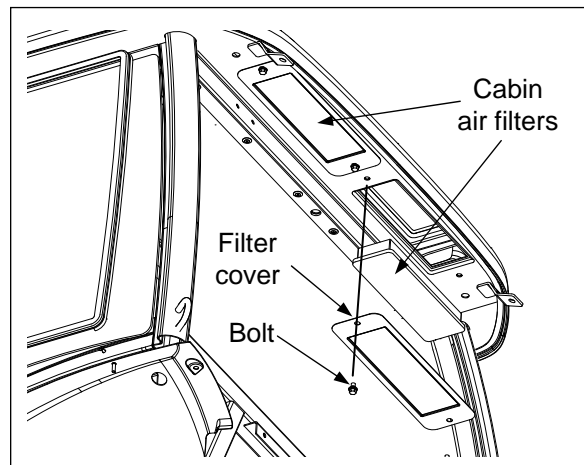
 Warning	<p>► Do not change or disassemble the safety frame arbitrarily for safety.</p> <p>► Unless the safety frame is applied correctly, it may cause a serious accident on tractor when being overturned.</p> <ul style="list-style-type: none"> - Be sure to stand the safety frame up completely and assemble the bolts, pins and nuts in correctly. <p>► In case of folding the safety frame.</p> <ul style="list-style-type: none"> - Do cooperate with more than 2 people when folding or standing up the safety frame as it's heavy. - Be careful not to be injured by sudden folding, which might occur when folding or standing up the safety frame, results from its weight. - Do not wear seatbelt when the safety frame is folded down. - Do stand the safety frame up again as soon as the work is finished.
	


(3) Cabin


 Warning	<p>► As the cabin is very important structure for driver's safety, DO NOT modify (welding, drilling, cutting, etc) or remove it arbitrarily.</p> <p>► Do not step on the fender for the maintenance of cabin roof.</p>
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① Cabin air filters

- When operating with pesticides, cabin air filters should be replaced with special charcoal filters. Contact your authorized dealer.
- In additional, you should wear the protective clothing, globes, mask, etc before operating in such a hazardous spraying area.
- These filters must only be fitted when working with pesticides and replaced with the normal paper filters at the end of work.



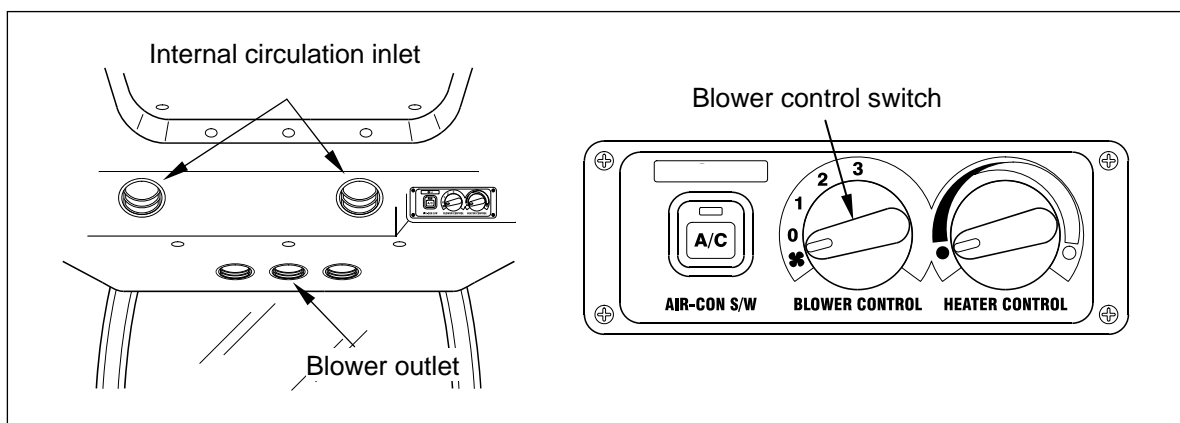
 Caution	<p>► Do not use these filters during other work, as they will quickly become clogged with dust. When replacing the charcoal filters at the end of spraying work, return them to the original packaging and make sure that they are carefully sealed.</p> <p>► The charcoal filters last for approximately 50 hours of work. They must, however, be replaced each year. If, when working with pesticides, toxic odors are noted, stop the work immediately and replace the filters with new one.</p> <p>► These filters must never be washed or cleaned with compressed air. Discarded filters must not be thrown away. Take disposed filters to authorized collection points.</p>
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 Warning	<p>► The charcoal filters do not guarantee full protection against all pesticides.</p> <p>► These specific filters only reduce the harmful effects of these products. As a result, operator has to comply with the safety rules recommended for using each single product. Wear the protection clothing, globes, mask, etc before operating in that area.</p> <p>► DO NOT operate the tractor in heavy pesticides or other hazardous spraying area.</p>
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<p>Notice</p>	<p>► The filters are made of specially treated media with a rubber sealing strip bonded around the sides. Take care not to damage the element during installation.</p>
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② Ventilation

- Air can be taken from outside or inside the cabin by adjusting the internal circulation inlets.
 - Closed : Air comes from outside via cabin air filters.
 - Opened : A lot of amount of the air re-circulates inside the cabin.
- To increase the air entering the cabin, close the internal circulation inlets and turn the blower control switch to the right fully. (position 3)



Warning

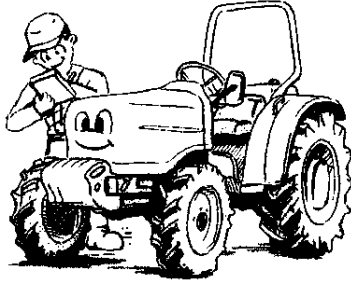
► DO NOT ventilate the cabin in pesticides or other hazardous spraying area without charcoal filters and wearing the protection mask.

③ Cleaning the cabin inside

- Protective clothing worn when handling the sprayer with pesticides or when carrying out external works, must be removed and stored away carefully before re-entering the cabin.
- After working with pesticides, ventilate the cabin and clean the inside parts (interior trim, panels, step, etc) of the cabin with clean damp cloth to remove the chemical residue.

4. Operation and Work

4-1. Engine start and stop



Caution

- ▶ Check each part before starting the engine.
- ▶ Check if there is some other people around before starting.
- ▶ Place the lever and switch in 'Neutral' or 'OFF' position.

(1) Engine start

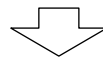
1. Apply the parking brake



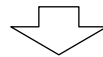
2. Place the main gear shift, range gear shift lever, shuttle lever in Neutral and PTO switch in "OFF" position.



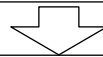
3. Pull the throttle lever to the middle position of full throttle.



4. Turn the key switch to "ON" and check if engine oil pressure indicator, battery charging indicator, cold start aid indicator is 'ON'.



5. Wait until cold start aid indicator is 'OFF'.
(about 10 seconds)



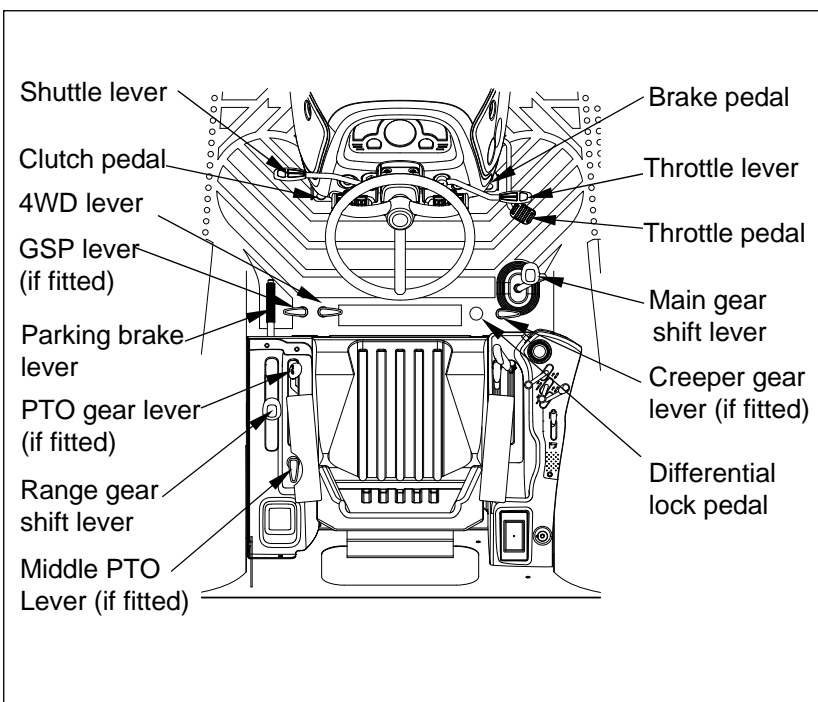
6. Depress the clutch pedal fully and turn the key switch to "START" position. After the engine has started, if releasing the key switch, the key returns to "ON" position automatically.







7. Check if engine oil pressure indicator, battery charging indicator is OFF.
If any of these lights is ON, stop the engine immediately and check.



8. Run engine a few minutes to allow engine oil and transmission oil to warm up.



 Caution	<p>▶ Only start engine outdoors or in a well ventilated place, as the engine exhaust fumes may cause sickness or death. .</p>
 	<p>▶ To avoid an explosion, never use starting fluid to start engine.</p> <p>▶ Start the engine ONLY from the driver's seat with depressing clutch pedal fully.</p> <p>▶ DO NOT start the engine by shorting across the terminals of start motor. If the engine starts, the tractor can move suddenly.</p>
 Caution	<p>▶ If not pressing the clutch pedal fully, the start safety switch does not work even if turning the key switch to "START" position, until you press clutch all the way down.</p> <p>▶ The running time of start switch must be within 10 seconds and if it does not start, wait for 1~2 minutes and then restart.</p> <p>▶ Place the PTO switch OFF when starting.</p> <p>▶ When the engine is turning, do not turn the start key to "START" position. It may cause the failure of start motor.</p> <p>▶ In cold weather, carry out warming procedure. If the machine is used in the state that the engine does not reach the normal temperature, the engine life shall be reduced.</p>

(2) Start in cold weather

- Push the throttle lever to the middle position of full throttle.
- Start the engine after cold start aid indicator goes OFF. (If fitted)
- If engine runs rough, push the throttle pedal down 2~3 times for a while. (Mechanical type)
- If engine runs smoothly, carry out warming up for 5~10 minutes at 1500 rpm.
- Use the engine oil for winter in cold weather. Refer to "Lubricants and Capacity" at the end of this manual.
- Use the diesel for winter when it is very cold weather. It is much easier to start engine.

Notice	<p>▶ When storing the tractor in the cold weather, the battery must be removed and stored in a cool and dry place where it is warm and is isolated from the children.</p> <p>▶ Allowing engine to idle for a long time will waste fuel and cause a build up of carbon.</p>
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(3) Engine Stop

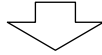
- Push the Throttle lever forward to reduce the engine speed and place the key switch on "OFF" position to stop the engine.

Notice	<p>▶ To stop the engine after finishing heavy work, run engine for 5 minutes in low speed RPM. If you stop the engine suddenly, the engine life could be reduced.</p>
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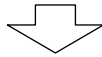
4-2. How to drive and how to stop

(1) How to drive

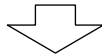
1. Pull the position control lever back to lift the implement up after starting engine.



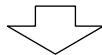
2. Fix the engine rpm at 1500 RPM



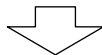
3. Press the clutch pedal completely



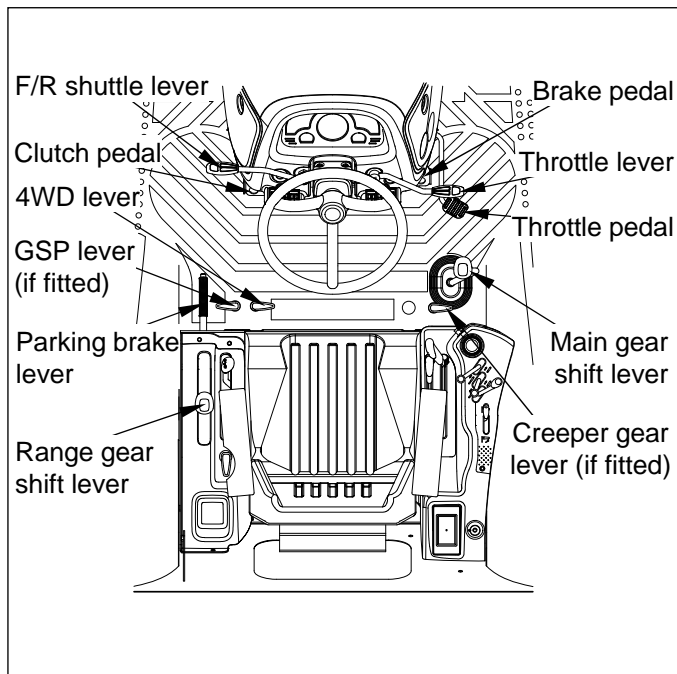
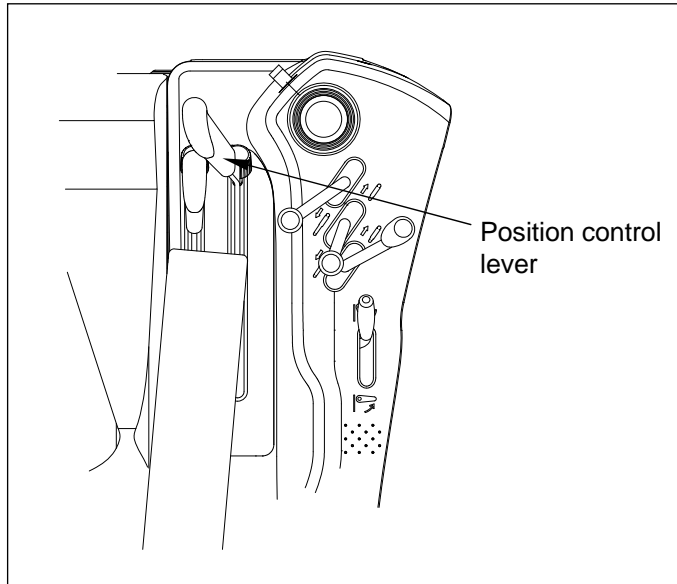
4. Place each gear lever (Main, Range, Shuttle lever) on the desired position.



5. Press the brake pedal and release the parking brake lever.



6. Release the clutch pedal slowly and the tractor starts.



Notice

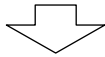
► Release the clutch pedal slowly.
If you release the clutch pedal suddenly, the gear life shall be reduced and it may cause a sudden start.

(2) Operating gear shift lever

- Depress the clutch pedal fully and operate all the shift lever correctly.
- For more information, refer to “Operating Levers and Pedals” in the Section 3-2.

(3) Emergency Stop

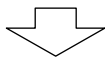
1. Press the clutch pedal and brake pedal at the same time to stop the tractor. Turn OFF the Key switch.



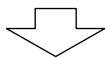
2. DO NOT release clutch pedal until all moving parts have stopped. Apply the parking brake.

(4) Stopping tractor

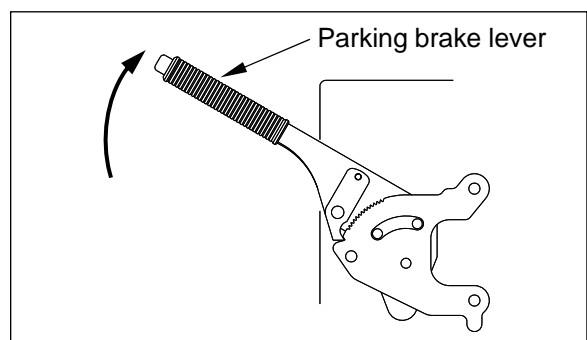
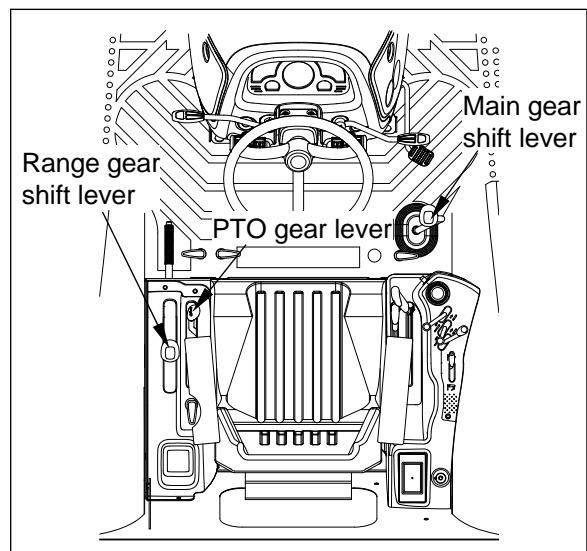
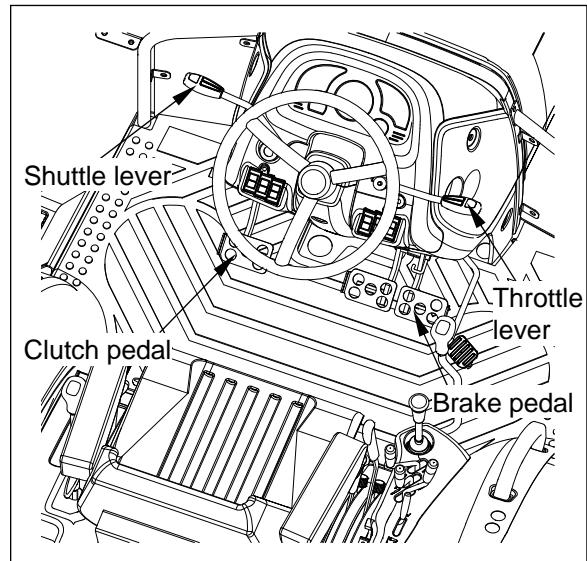
1. Press the clutch and brake pedal. Place the shuttle lever, main gear shift lever in 'Neutral' and PTO switch to 'OFF' and release the clutch pedal.



2. Push the position control lever forward to lower implements to the ground. Turn Key switch to 'OFF' position.



3. Pull the parking brake lever up and take foot off from the brake pedal.

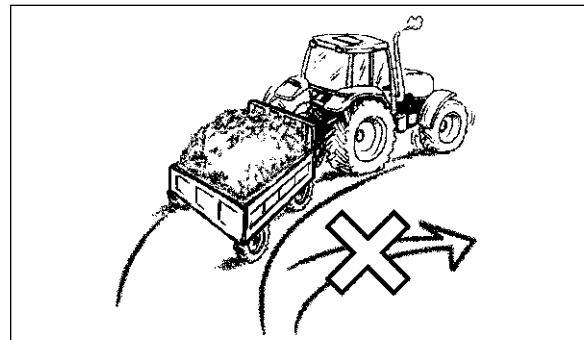
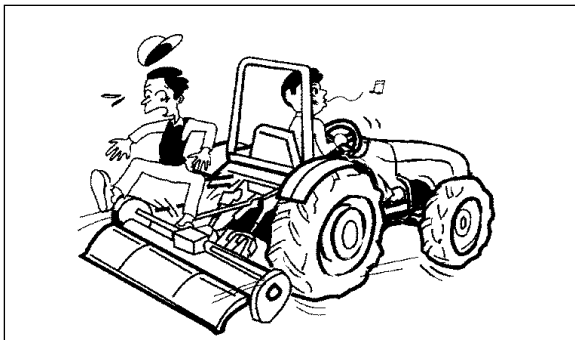
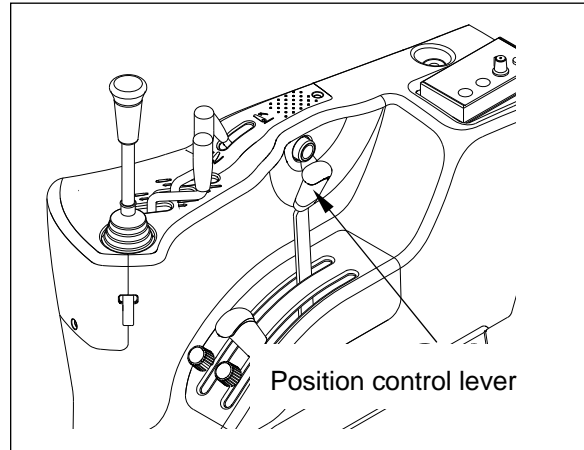
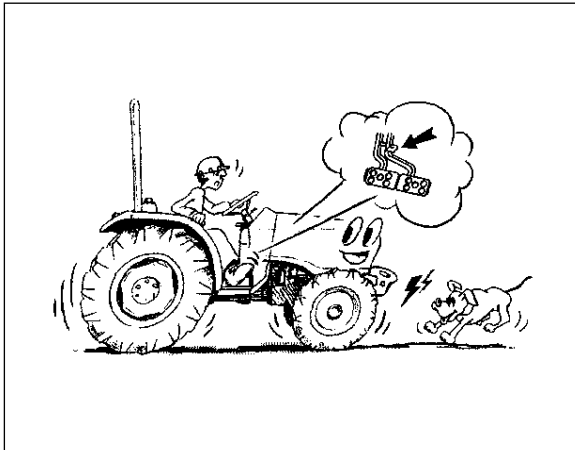


Caution

► DO NOT keep apart from the tractor in the state that the transmission gear is placed in 'Neutral' and the parking brake is not applied. In 'Neutral' position, the wheel may roll.
Apply the parking brake at all times before leaving the tractor.

(5) Driving tractor on the road

- When facing downhill, DO NOT place the gear lever in Neutral position.
- When driving the tractor on a unpaved road by attaching a implement to 3-point linkage, place the gear lever to low speed and DO NOT lift the implement up to the highest position. When driving in the highest position, it may cause the vibration of implement and the failure of hydraulic system. (In this case, place the position control lever on $\frac{3}{4}$ rising position of full stroke for safety.)

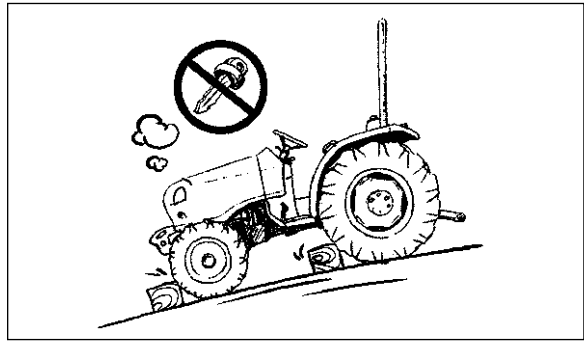


Caution

- ▶ Connect the left/right brake pedal with brake pedal connecting pin before driving (if fitted).
- ▶ Avoid a sudden start, sudden brake and sudden turning.
- ▶ DO NOT allow people on the tractor or on other implements.
- ▶ DO NOT place the baggage on the tractor or implement.
- ▶ Place PTO gear lever in Neutral position and put the PTO switch in "OFF" position.
- ▶ DO NOT use the differential lock pedal and front wheel drive (2WD use only).
- ▶ When traveling with implement on rear 3-point linkage, tighten the stabilizer to avoid lateral movement.
- ▶ When traveling with implements installed, turn slowly by wide turning radius.
- ▶ While traveling, DO NOT ride your foot on the clutch pedal (if fitted) or brake pedal.
- ▶ While traveling, DO NOT operate any implement such as tiller, loader etc.

(6) Parking

- Stop tractor on a level surface, not on a slope.
- Disengage PTO and place all the transmission shift lever in Neutral position and apply the parking brake.
- Stop engine and remove ignition key.
- Before you leave the operator's station, wait for engine and all moving parts to stop.

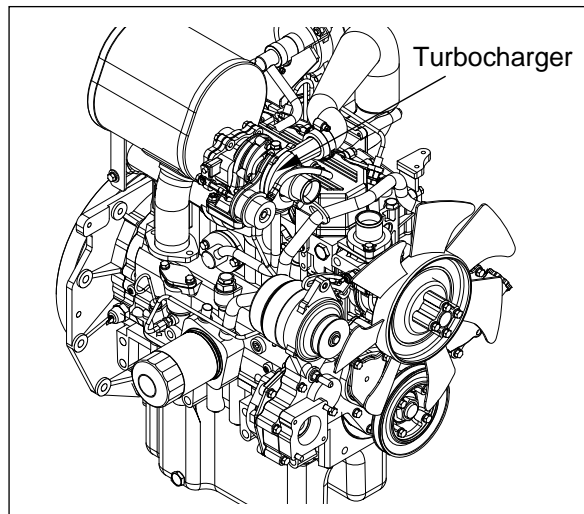


Caution

- ▶ If it is necessary to park the tractor on a slope, furthermore with loaded trailer, the tractor may roll down, even though the parking brake is applied. In this case, apply the gear in low speed and apply the chocks or blocks to all the tire.
 - Mechanical : downward slope \Rightarrow reverse 1 gear / upward slope \Rightarrow forward 1 gear.
 - HST Type : place the range gear shift lever to the lowest speed.
- ▶ In case of Power Shuttle, it is not available to apply the low speed gear.

(7) Handling the Turbocharger (if fitted)

- Before accelerating or starting the tractor fitted with the turbocharger, allow the engine to idle at 1000 rpm for about 30 seconds to ensure that the turbocharger is correctly lubricated.
- Before stopping engine fitted with the turbocharger, allow the engine to idle at 1000 rpm for at least 5 minutes. This allows the turbocharger and manifold to cool, preventing deformation of the components.
- After stopping engine fitted with the turbocharger, cover the exhaust tail pipe to prevent the turbocharger rotating in the wind, resulting in possible damage to the bearings. The turbocharger turbine must be prevented from rotating freely with the engine off, as the shaft bearings will not be lubricated.



4-3. How to handle new tractor

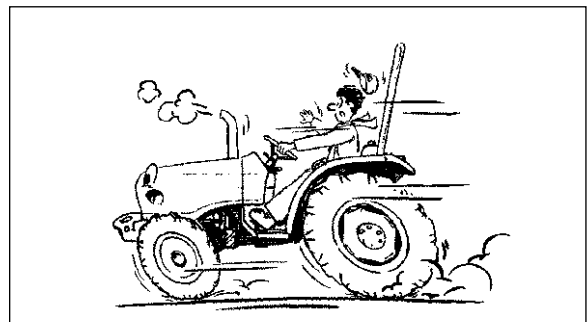
(1) Check points

- ※ For new tractor, the following must be checked once again even though there was sufficient quality management, inspection, regulating of each part in the factory.
- Appearance check
 - Is there any damage while transporting?
- Engine cooling system check
 - Is there anti-freeze solution in the radiator? And any leakage?
- Fuel system check
 - Is there any leakage of fuel in the fuel system?
- Oil level check
 - Is there optimal oil amount in each part ?
- Electric system check
 - Is there any cut-off or any other problem in the wiring?
 - Is there any problem to operate the instruments?
 - Is the state of battery charging sufficient?

(2) Notices in handling new tractor

- To get the best performance, comply with the following.

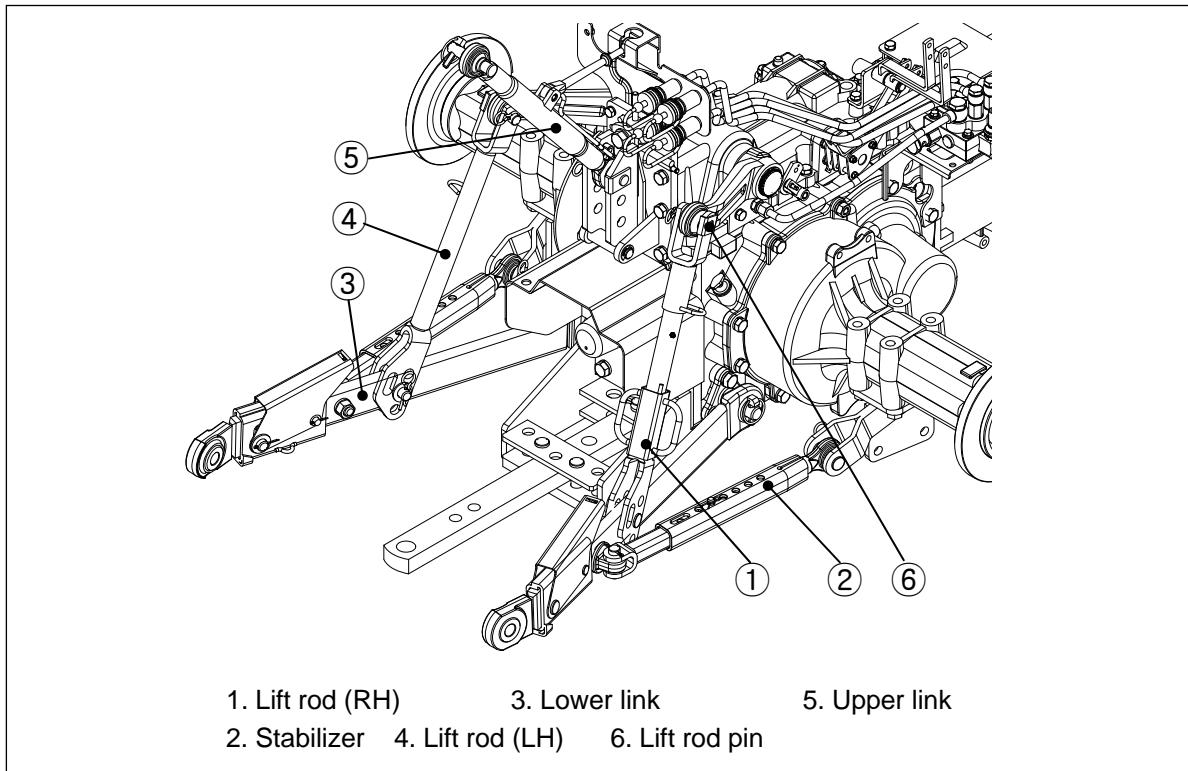
- DO NOT start or stop the tractor suddenly.
- DO NOT carry out heavy loaded work and DO NOT increase the engine rpm to high speed suddenly.
- Despite of warm temperature outside, carry out warming up the engine for approximately 5 minutes at 1500 rev/min



- After using first 50 hours,
 - Replace the engine oil filter and hydraulic oil filters after first 50 hours of work, and check each part of your tractor as reference of chapter 5. "Lubrication and Maintenance" (See page 5-1.)
 - If possible, contact your authorized dealer for "First 50 hour check".



4-4. Attaching equipment

(1) 3-point linkage



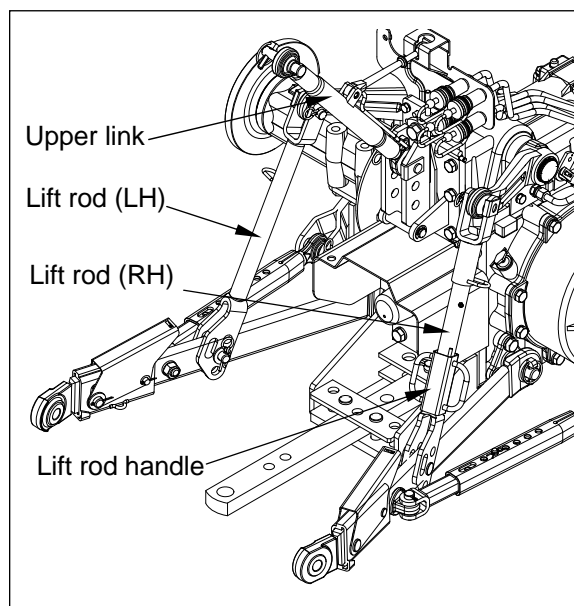
- When running without attaching implements, carry out the followings.
 1. Fix upper link(5) to the fastening hook of auxiliary hydraulic pipe bracket.
 2. Connect stabilizer(2) to lower link(3) so that the lower link is not moved to the left or right side
- When working without using 3-point linkage like trailer working, remove the 3-point linkage as below.
 1. Remove upper link(5).
 2. Draw lift rod pin(6). (left, right)
 3. Detach the fixed part of stabilizer(2). (left, right)
 4. Detach the fixed part of lower link(3). (left, right)

※ 3-point linkage must be fixed on the suitable position according to the weight of implements to be attached.

 Warning	<p>▶ Before attaching/detaching implements, place PTO switch in 'OFF' position and PTO gear lever in 'Neutral' ,and apply the parking brake.</p>
	<p>▶ When attaching/detaching implements, make sure to assemble and tighten the connecting parts correctly.</p> <p>▶ if the tractor is used to tow heavy loads, always use the approved drawbar or hitch to avoid injury. Never connect to lower link or upper link of 3-point linkage. If not, it may cause tipping or turnover.</p> <p>▶ DO NOT connect the implements that require more power than can be generated by your tractor.</p> <p>▶ Never stand between implement and tractor hen backing up.</p>

(2) Adjustment of Lift rod and Upper link

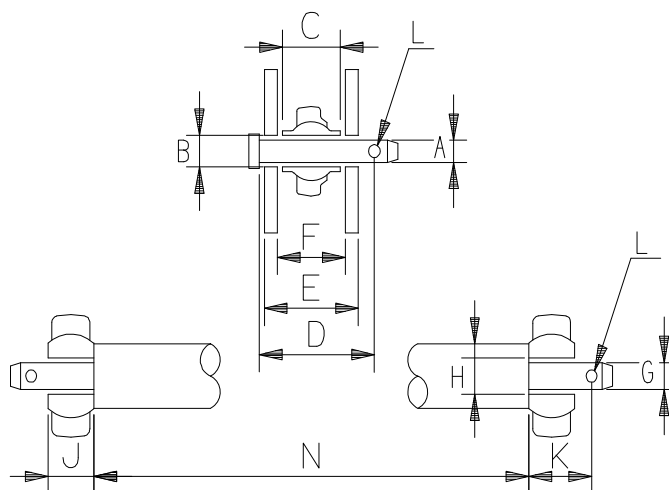
- Do not adjust the lift rod and upper link over the described range as below.
- For lift rod (RH)
 - Lift up the lift rod handle and turn left or right to adjust the length.
 - Lock the lift rod handle to the lower part after adjusting.
- For upper link
 - Lift up the lock spring to release the handle and turn the upper link by using the handle.
 - Apply the lock spring after adjusting.



Adjustment range	Classification	Lift rod	Upper link
	Left	510~580 mm (3 steps) (20.0 ~ 22.8in)	458 ~ 720 mm (18.0 ~ 28.3in)
	Right	475~580 mm (18.7 ~ 22.8in)	

(3) Reference of implement installation part

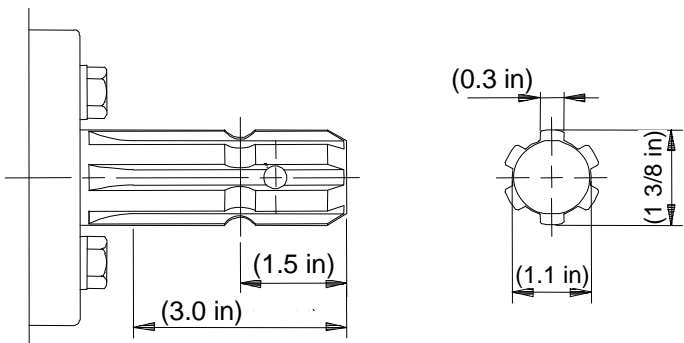
	A	B	C (Max.)	D (Min.)	E (Max.)	F (Min.)	G	H	J	K	L	N
CAT.1	19 (0.74)	19.3 (0.75)	44 (1.73)	76 (2.99)	69 (2.71)	44.5 (1.75)	22 (0.86)	22.4 (0.88)	35 (1.53)	39 (1.53)	12 (0.47)	683 (26.8)
CAT.2	25.4 (1.00)	25.7 (1.01)	51 (2.00)	93 (3.66)	86 (3.38)	52 (2.04)	28 (1.10)	28.7 (1.12)	45 (1.77)	49 (1.92)	12 (0.47)	825 (32.4)



Unit : mm
(unit : inch)

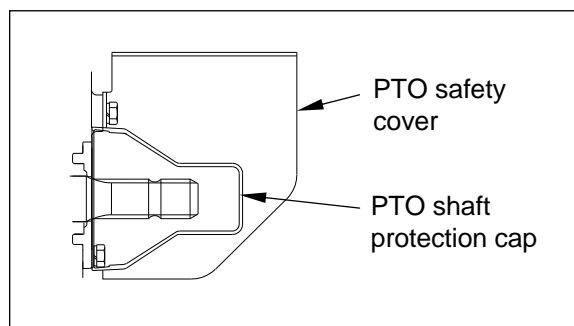
(4) Reference of PTO shaft



(U5020 / U5030 commonness)

PTO speed selection	1	2	3
PTO / engine rpm	540 / 2409 rpm	750 / 2375 rpm	1000 / 2381 rpm
Revolution direction	Clockwise (direction from which looking at PTO shaft)		
PTO shaft ground level (Unit : in)	U5010 : 24.6 in	U5020 / U5020C : 26.3 in	U5030 / U5030C : 27.0 in
PTO shaft dimension (Unit : inch)			

(5) PTO safety cover and protection cap

- Attach the PTO cover when using the universal joint.
- When PTO is not used, apply grease and insert the shaft protection cap.



 Warning	<p>► When contacting to the rotating shaft, it may cause a serious injury.</p> <ul style="list-style-type: none"> - Do not touch shaft which is rotating. - Do not remove protection cover (safety cover). - Avoid loose clothes that can easily be rolled up in the revolving shaft.
	

(6) Hitch and Drawbar

- When attaching towing equipments, use the hitch or drawbar. DO NOT use the 3-point linkage or other parts. If so, the tractor could turnover.
- Insert the hitch pin and snap pin correctly after attaching/detaching equipment.
- Do NOT attach towing equipment over the maximum permissible loads on the coupling point of hitch or drawbar as below.

① Hitch

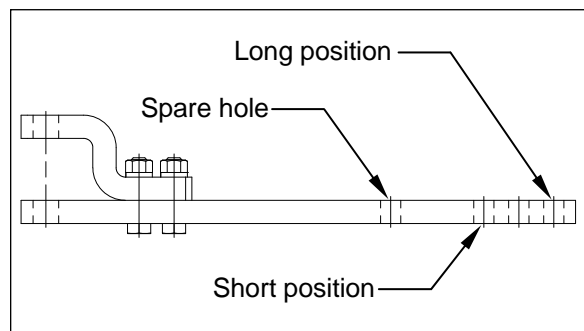
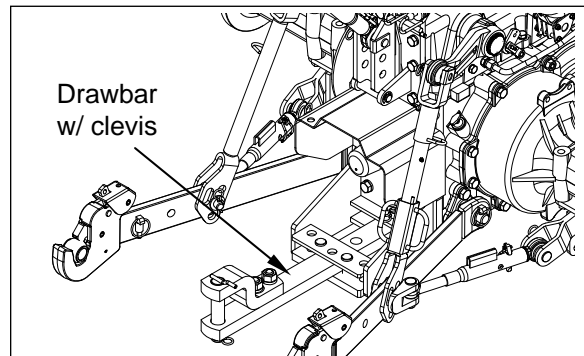
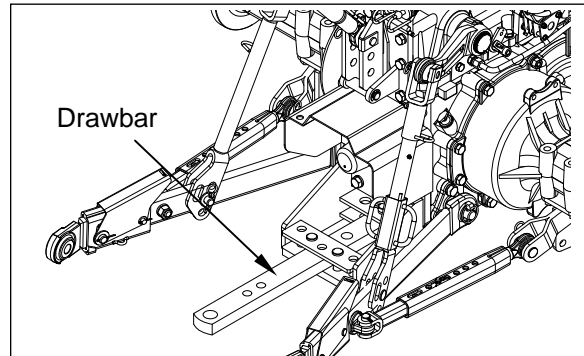
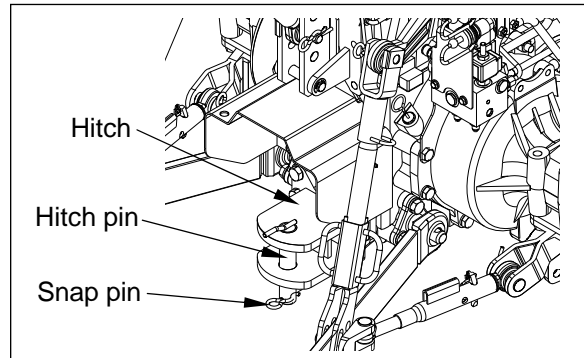
- Vertical load : 1500kg (3307lbs)
- Horizontal load : 5000kg (11023lbs)

② Drawbar

- Vertical load : 450kg (Long position) (992lbs)
1125kg (Short position) (2480lbs)
- Horizontal load : 4000kg (8814lbs)

③ Drawbar w/ clevis

- Vertical load : 450kg (Long position) (992lbs)
1125kg (Short position) (2480lbs)
- Horizontal load : 4000kg (8814lbs)



Caution

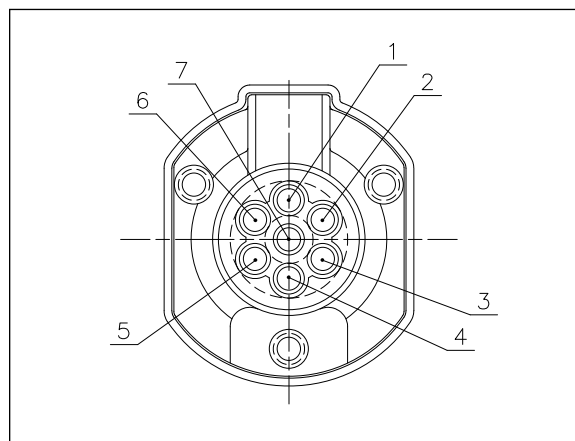
- ▶ Pulling from the tractor rear axle or any point above the axle may cause the tractor to overturn. Use always the drawbar or hitch for pulling work.
- ▶ Do not tow equipment without brakes, weighing more than twice the tractor weight.
- ▶ When locking the hitch or drawbar with pin after aligning to the towing equipment, apply the parking brake and stop the engine.
- ▶ Before transporting equipment on public roads, make sure you comply with your local traffic regulation.

(7) 7-Pole connector (option)

- The one of the standard 7-pole trailer connectors is provided and is mounted at the rear of the tractor. The connections of the 7-pole connector (viewed from the rear of the tractor) are as follows;

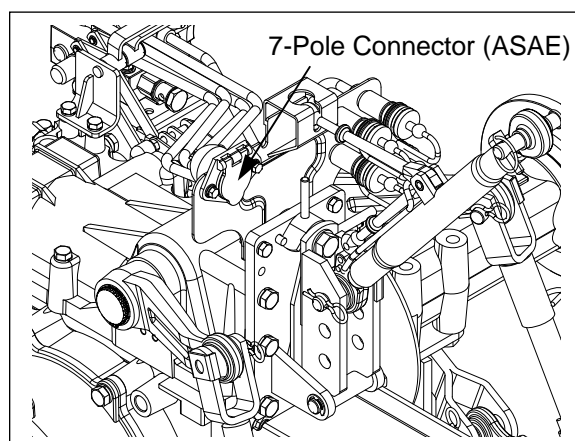
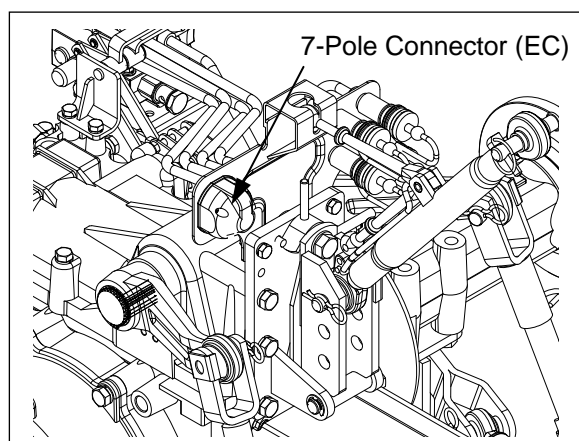
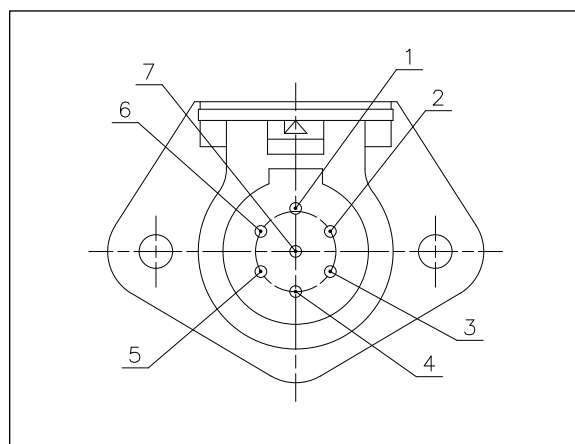
● EC Version

Pin No.	Function
1	Left turn signal light
2	NA
3	Ground (Earth)
4	Right turn signal light
5	Side light
6	Brake light
7	Side light



● ASAE Version

Pin No.	Function
1	Ground (Earth)
2	Working light
3	Left turn signal light
4	Brake light
5	Right turn signal light
6	License number plate light
7	Auxiliary




(8) Technically maximum permissible mass

- When working with front loader or rear heavy loaded attachments installed to the 3-point linkage, install ballast weights on the counter-part axle to maintain the front and rear weight balance of the tractor. If not, front or rear axle can be strained by the overloaded weight.
- When working with the front loader, place the attached rear weight to the highest position and turn the down speed control knob to the "lock" position.

	All models	Remarks
Technically total maximum permissible mass	4500kg (9921 lb)	without consideration of the load capacity of the tires
Front axle (*)	2000kg (4409 lb)	
Rear axle	2500kg (5512 lb)	

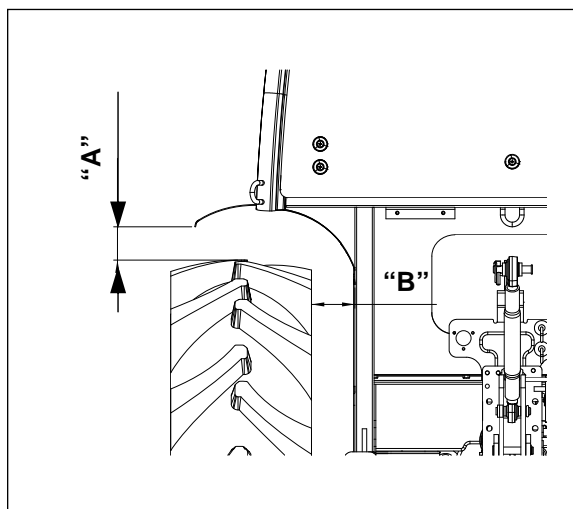
* includes front mounted equipment or loader in the raised position but without load in the bucket.

- **Restrict operation** : In case of driving speed does not exceed 8km/h (5 mph) and standard front/rear wheel track (*See next page*), Intermittent maximum permissible load of the front axle can be ;
3200kg (7055 lb) for all models - without consideration of the load capacity of the tires.

 Caution	<ul style="list-style-type: none"> ▶ Maximum permissible mass is measured with only the front or rear wheels on the scales inclusive of ballasts and with mounted equipments in the raised position. ▶ Do not exceed the maximum permissible mass above. Overloaded condition may invalidate the warranty and may exceed the load rating of the tires. ▶ If the load capacity of the tire is lower than maximum permissible mass of the front axle, the maximum load on the front axle meets the load capacity of the tire. (<i>See page 4-15</i>) ▶ DO NOT change the setting pressure of the relief valve arbitrarily to increase the lift capacity of the front loader or 3-point linkage. It can cause fatal damage to the hydraulic system and front axle.
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(9) Adjusting Wheel tracks and tire replacement

- If the front wheel track is adjusted, check the clearance between tires and tractor body case by case. If necessary, the steering angle must be adjusted as following page.
- When adjusting rear wheel track, check the radial and lateral clearance between rear tire and tractor chassis as below.
 - **A : 60mm (2.4 in) (Minimum)**
 - **B : 50mm (2.0 in) (Minimum)**



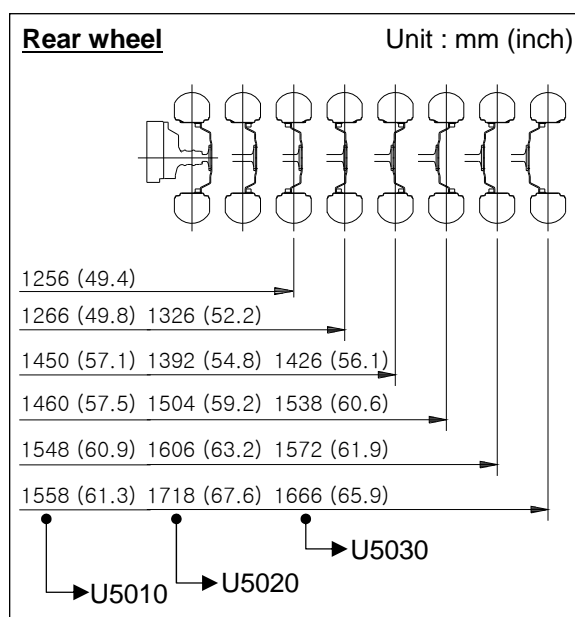
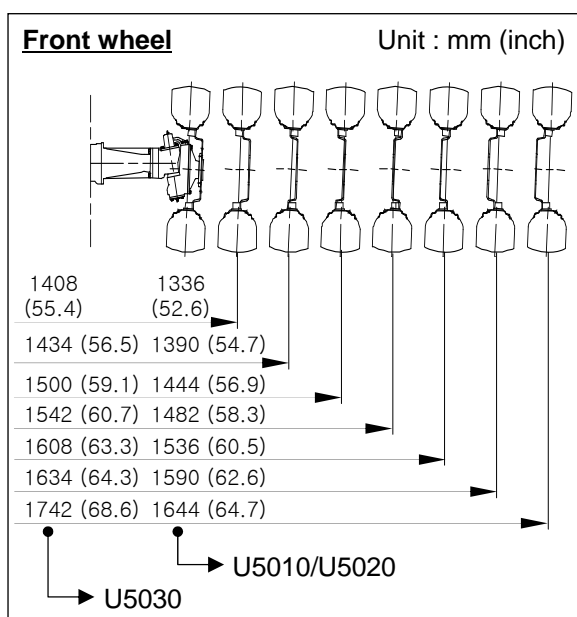
① Front wheel track

- **U5010, U5020 :**
1336 (STD) ~ 1644 mm (52.6 ~ 64.7 in)
- **U5030 :**
1408 (STD) ~ 1742 mm (55.4 in ~ 68.6 in)

② Rear wheel track

- **U5010 :**
1256 (STD) ~ 1558 mm (49.4 ~ 61.3 in)
- **U5020 :**
1326 (STD) ~ 1718 mm (52.2 ~ 67.6 in)
- **U5030 :**
1426 (STD) ~ 1666 mm (56.1 ~ 65.6 in)

* *STD : Standard wheel track.*



Notice

- ▶ When adjusting the wheel track, pay attention to the direction of tire lugs.
- ▶ if it shows "Λ" shape when looked behind, it is correct.

(10) Tires and Load capacity

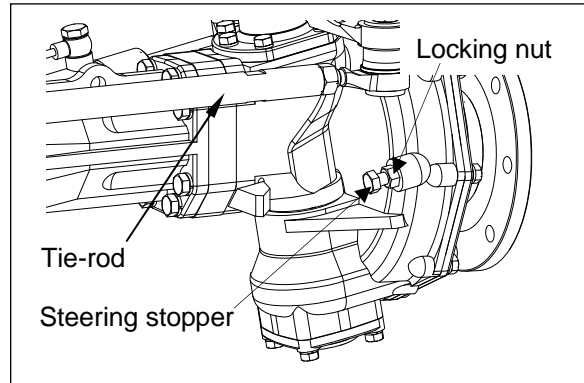
Axle No. (*)	Tires	Standard tire air pressure (kg/cm ²)	Load capacity (x2) (kg)
1	8.3-20 6PR	2.4 (235 KPa, 34.1 psi)	1420 (3131 lb)
2	12.4-28 6PR	1.6 (157 KPa, 22.8 psi)	2550 (5622 lb)
1	9.5-20 6PR	2.2 (216 KPa, 31.3 psi)	1680 (3704 lb)
2	13.6-28 6PR	1.6 (157 KPa, 22.8 psi)	2860 (6305 lb)
1	11.2-20 8PR	2.4 (235 KPa, 34.1 psi)	2240 (4938 lb)
2	14.9-28 8PR	1.8 (177 KPa, 25.6 psi)	3760 (8289 lb)
Optional Tire			
1	280/85R20	1.6 (157 KPa, 22.8 psi)	2240 (4938 lb)
2	380/85R28	1.6 (157 KPa, 22.8 psi)	4120 (9083 lb)
1	300/70R20	1.6 (157 KPa, 22.8 psi)	2120 (4674 lb)
2	380/70R28	1.6 (157 KPa, 22.8 psi)	3500 (7716 lb)
1	280/70R-16	2.5 (245 KPa, 35.6 psi)	2240 (4938 lb)
2	380/70R-24	1.6 (157 KPa, 22.8 psi)	3300 (7275 lb)
1	29x12.50-15	2.1 (206 KPa, 29.9 psi)	1552 (3422 lb)
2	44x18x20	2.1 (206 KPa, 29.9 psi)	3900 (8598 lb)

(*) 1 : Front axle, 2 : Rear axle

(11) Adjusting Steering angle

- If the front wheel track is adjusted or front tires are replaced with new tires having bigger diameter or width, or one of the front equipments is attached, the steering angle must be adjusted as below.

- 1) Loosen the locking nut on both sides.
- 2) Connect the front hook of the tractor to the crane by using specified wire. And, lift up the front axle off the ground sufficiently.
- 3) Lift up one side of the front axle fully and turn the steering wheel to the left and right with checking that the clearances between tire and other parts are over 20mm (0.79 in.) at least.
- 4) At this time, set each steering stopper of the both sides to be contacted with the cast. Check all the possible interferences by combinations of the steering and oscillation of the front axle.
- 5) Tighten the locking nuts of the each side.



Notice	► DO NOT shorten the length of the steering stopper rather than factory condition. If the stopper does not contact at maximum steering condition, it can damage the steering cylinder or tie-rod.
--------	--

4-5. Driving speed

- The running speed of tractor or the revolution speed of PTO depends on the work and ground condition.

For safety, operate the tractor at suitable speed.

- Table of running speed (unit: Km/h → Mile/h)

① U5010 / U5010C

Range gear shift	1				2				3				4			
Main gear shift	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Forward	1.12 (0.69)	1.32 (0.82)	1.55 (0.96)	2.08 (1.29)	2.52 (1.56)	2.99 (1.85)	3.52 (2.18)	4.71 (2.92)	5.58 (3.46)	6.62 (4.11)	7.78 (4.83)	10.42 (6.47)	14.44 (8.97)	17.13 (10.64)	20.13 (12.50)	26.96 (16.75)
Reverse	0.92 (0.57)	1.09 (0.67)	1.28 (0.79)	1.71 (1.06)	2.08 (1.29)	2.46 (1.52)	2.90 (1.80)	3.88 (2.41)	4.95 (3.07)	5.45 (3.38)	6.40 (3.97)	8.57 (5.32)	11.89 (7.38)	14.10 (8.76)	16.56 (10.28)	22.19 (13.78)

Note) Engine rated speed 2600rpm, dynamic load radius 590mm(23.2in)

② U5020 / U5020C

Range gear shift	1				2				3				4			
Main gear shift	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Forward	1.15 (0.71)	1.37 (0.85)	1.61 (1.00)	2.15 (1.33)	2.61 (1.62)	3.10 (1.92)	3.64 (2.26)	4.87 (3.02)	5.77 (3.58)	6.84 (4.25)	8.04 (4.99)	10.77 (6.69)	14.93 (9.27)	17.71 (11.00)	20.81 (12.93)	27.88 (17.32)
Reverse	0.95 (0.59)	1.13 (0.70)	1.32 (0.82)	1.77 (1.09)	2.15 (1.33)	2.55 (1.58)	2.99 (1.85)	4.01 (2.49)	4.75 (2.95)	5.63 (3.49)	6.62 (4.11)	8.86 (5.50)	12.29 (7.63)	14.57 (9.05)	17.13 (10.64)	22.94 (14.25)

Note) Engine rated speed 2600rpm, dynamic load radius 610 mm(24.0in)

③ U5030 / U5030C

Range gear shift	1				2				3				4			
Main gear shift	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Forward	1.16 (0.72)	1.38 (0.85)	1.62 (1.00)	2.17 (1.34)	2.63 (1.63)	3.12 (1.93)	3.67 (2.28)	4.92 (3.05)	5.82 (3.61)	6.90 (4.28)	8.11 (5.03)	10.87 (6.75)	15.07 (9.36)	17.87 (11.10)	20.99 (13.04)	28.12 (17.47)
Reverse	0.96 (0.59)	1.14 (0.70)	1.33 (0.82)	1.79 (1.11)	2.17 (1.34)	2.57 (1.59)	3.02 (1.87)	4.05 (2.51)	4.79 (2.97)	5.68 (3.52)	6.68 (4.15)	8.94 (5.55)	12.40 (7.70)	14.70 (9.13)	17.28 (10.73)	23.14 (14.37)

Note) Engine rated speed 2500 rpm, dynamic load radius 640mm(25.1in)

● Running speed (Unit: Km/h → Mile/h) – Creeper (Option)

① U5010 / U5010C

Range gear shift		1				2				3				4			
Main gear shift		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
O N	Forward	0.18 (0.11)	0.22 (0.13)	0.25 (0.15)	0.34 (0.21)	0.41 (0.25)	0.49 (0.30)	0.57 (0.35)	0.77 (0.47)	0.91 (0.56)	1.08 (0.67)	1.27 (0.78)	1.70 (1.05)	2.36 (1.46)	2.79 (1.73)	3.28 (2.03)	4.40 (2.73)
	Reverse	0.90 (0.55)	1.06 (0.65)	1.25 (0.77)	1.68 (1.04)	2.03 (1.26)	2.41 (1.49)	2.83 (1.75)	3.79 (2.35)	4.49 (2.78)	5.33 (3.31)	6.26 (3.88)	8.39 (5.21)	11.63 (7.22)	13.79 (8.56)	16.20 (10.06)	21.70 (13.48)
O F F	Forward	1.12 (0.69)	1.32 (0.82)	1.55 (0.96)	2.08 (1.29)	2.52 (1.56)	2.99 (1.85)	3.52 (2.18)	4.71 (2.92)	5.58 (3.46)	6.62 (4.11)	7.78 (4.83)	10.42 (6.47)	14.44 (8.97)	17.13 (10.64)	20.13 (12.50)	26.96 (16.75)
	Reverse	0.90 (0.55)	1.06 (0.65)	1.25 (0.77)	1.68 (1.04)	2.03 (1.26)	2.41 (1.49)	2.83 (1.75)	3.79 (2.35)	4.49 (2.78)	5.33 (3.31)	6.26 (3.88)	8.39 (5.21)	11.63 (7.22)	13.79 (8.56)	16.20 (10.06)	21.70 (13.48)

Note) Engine rated speed 2600 rpm, dynamic load radius 590mm(23.22in)

② U5020 / U5020C

Range gear shift		1				2				3				4			
Main gear shift		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
O N	Forward	0.19 (0.11)	0.22 (0.13)	0.26 (0.16)	0.35 (0.21)	0.43 (0.26)	0.50 (0.31)	0.59 (0.36)	0.79 (0.49)	0.94 (0.58)	1.12 (0.69)	1.31 (0.81)	1.76 (1.09)	2.44 (1.51)	2.89 (1.79)	3.39 (2.10)	4.55 (2.82)
	Reverse	0.93 (0.57)	1.10 (0.68)	1.29 (0.80)	1.73 (1.07)	2.10 (1.30)	2.49 (1.54)	2.93 (1.82)	3.92 (2.43)	4.64 (2.88)	5.51 (3.42)	6.47 (4.02)	8.67 (5.38)	12.02 (7.46)	14.26 (8.86)	16.75 (10.40)	22.44 (13.94)
O F F	Forward	1.15 (0.71)	1.37 (0.85)	1.61 (1.00)	2.15 (1.33)	2.61 (1.62)	3.10 (1.92)	3.64 (2.26)	4.87 (3.02)	5.77 (3.58)	6.84 (4.25)	8.04 (4.99)	10.77 (6.69)	14.93 (9.27)	17.71 (11.00)	20.81 (12.93)	27.88 (17.32)
	Reverse	0.93 (0.57)	1.10 (0.68)	1.29 (0.80)	1.73 (1.07)	2.10 (1.30)	2.49 (1.54)	2.93 (1.82)	3.92 (2.43)	4.64 (2.88)	5.51 (3.42)	6.47 (4.02)	8.67 (5.38)	12.02 (7.46)	14.26 (8.86)	16.75 (10.40)	22.44 (13.94)

Note) Engine rated speed 2600 rpm, dynamic load radius 610mm(24.01in)

● Running speed (Unit: Km/h → Mile/h) – Creeper (Option)

③ U5030 / U5030C

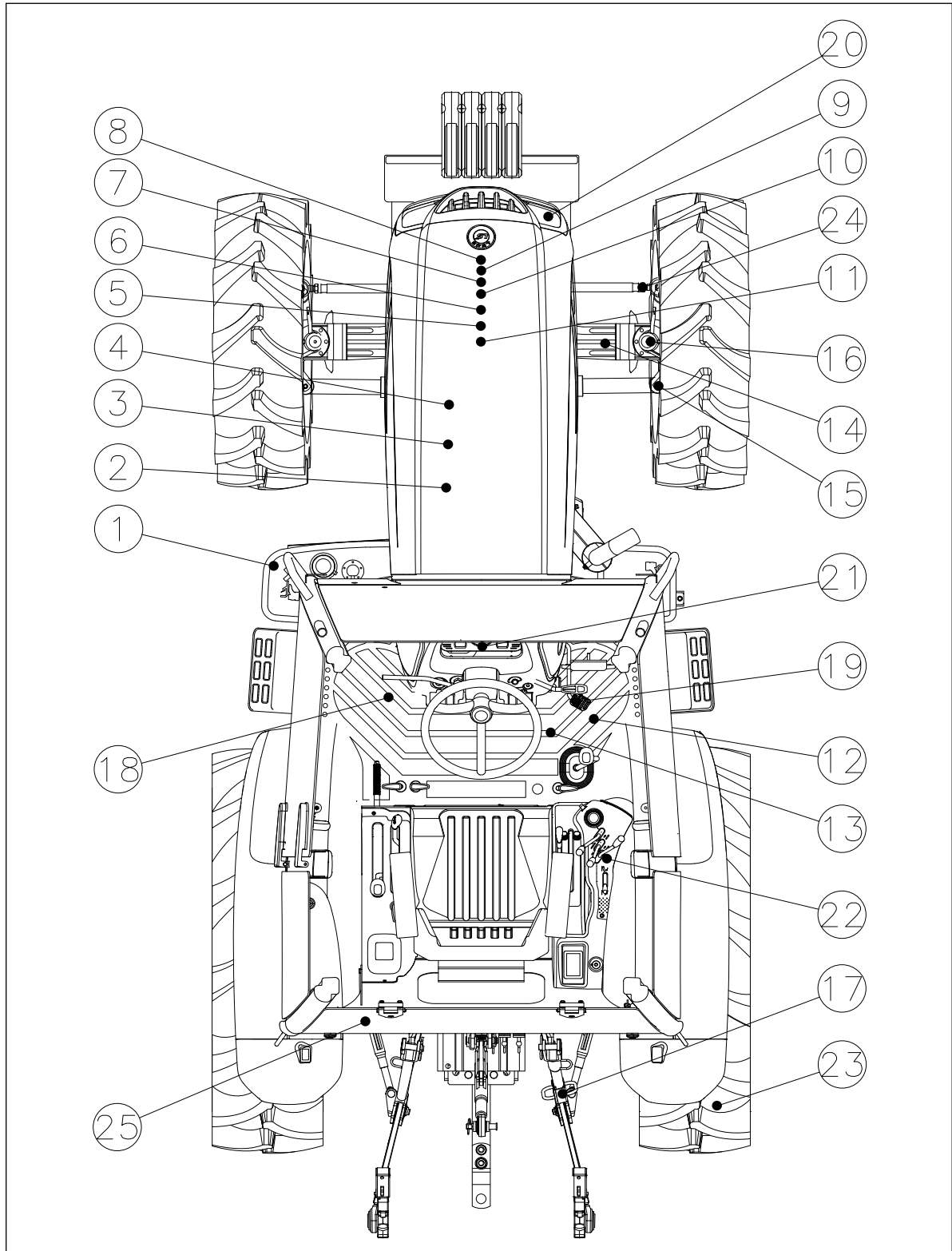
Range gear shift		1				2				3				4			
Main gear shift		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
O N	Forward	0.19 (0.11)	0.23 (0.14)	0.26 (0.16)	0.35 (0.21)	0.43 (0.26)	0.51 (0.31)	0.60 (0.37)	0.80 (0.49)	0.95 (0.59)	1.13 (0.70)	1.32 (0.82)	1.77 (1.09)	2.46 (1.52)	2.91 (1.80)	3.42 (2.12)	4.59 (2.85)
	Reverse	0.94 (0.58)	1.11 (0.68)	1.31 (0.81)	1.75 (1.08)	2.12 (1.31)	2.51 (1.55)	2.95 (1.83)	3.96 (2.46)	4.69 (2.91)	5.56 (3.45)	6.53 (4.05)	8.75 (5.43)	12.13 (7.53)	14.38 (8.93)	16.90 (10.50)	22.64 (14.06)
O F F	Forward	1.16 (0.72)	1.38 (0.85)	1.62 (1.00)	2.17 (1.34)	2.63 (1.63)	3.12 (1.93)	3.67 (2.28)	4.92 (3.05)	5.82 (3.61)	6.90 (4.28)	8.11 (5.03)	10.87 (6.75)	15.07 (9.36)	17.87 (11.10)	20.99 (13.04)	28.12 (17.47)
	Reverse	0.94 (0.58)	1.11 (0.68)	1.31 (0.81)	1.75 (1.08)	2.12 (1.31)	2.51 (1.55)	2.95 (1.83)	3.96 (2.46)	4.69 (2.91)	5.56 (3.45)	6.53 (4.05)	8.75 (5.43)	12.13 (7.53)	14.38 (8.93)	16.90 (10.50)	22.64 (14.06)

Note) Engine rated speed 2500 rpm, dynamic load radius 640mm(25.19in)

5. Lubrication and Maintenance

5-1. Checking Each Part

(1) Checking parts



(2) Maintenance table

No.	Checking Part	Type & Spec	Capacity & Dimension		Check period (ht)				
			U5010 U5020	U5030	Daily	50	300	600	1200
1	Fuel tank	See page 5-3	60 ℓ(15.9gal)		▲				
2	Fuel filter	Element					●		
3	Engine oil	See page 5-3	7.0 ℓ (1.8gal)	9.0 ℓ (2.4gal)	▲		●		
4	Engine oil filter	Element				★	●		
5	Engine coolant	See page 5-3	9.0 ℓ (2.4gal)	10.8 ℓ (2.9gal)	▲			●	
6	Radiator screen				▲	■			
7	Air cleaner	Dry			▲	■	●		
8	Battery					▲			
9	Fan belt tension		Pressed 10~12 mm (0.39 ~ 0.47in)				▲		
10	Valve clearance		0.25 mm(0.01in)					▲	
11	Nozzle injection pressure		See page 5-21					▲	
12	Hydraulic oil filter					★	●		
13	Transmission oil	See page 5-3	47 ℓ(12.4gal)			▲		●	
14	Front axle oil	See page 5-3	10 ℓ(2.6gal)			▲		●	
15	Steering cylinder	Grease	Proper amount			▲			
16	Front axle holder & Steering arm	Grease	Proper amount			▲			
17	3-Point linkage	Grease	Proper amount			▲			
18	Clutch pedal play		20~30 mm (0.78 ~ 1.18in)		▲				
19	Brake pedal play		40~50 mm (1.57 ~ 1.96in)		▲				
20	Turn signal lights, Lights, Horn				▲				
21	Instrument panel & Indicators				▲				
22	Bolts and nuts				▲				
23	Tire air pressure				▲				
24	Toe in		0~5 mm (0 ~ 0.20in)				▲		
25	Cabin air filter					■		●	

★ First replacement

● Replacement

▲ Check, Adjustment and Add

■ Cleaning

5-2. Lubricants and Capacity

LUBRICANTS	CAPACITY	INTERNATIONAL STANDARD	RECOMMENDED ITEMS
Engine coolant (Radiator)	9.0 ℓ (2.4gal) : U5010 / U5020 10.8 ℓ (2.9gal) : U5030	ASTM D5216	Soft water (50%)+ Anti-freeze (50%)
Fuel	60 ℓ(15.9gal)	ASTM D975 No.2	Low Sulfuric Diesel Fuel
Engine oil (crankcase)	7.0 ℓ (1.8gal) : U5010 / U5020 9.0 ℓ (2.4gal) : U5030	API CF-4, CG-4 Winter : 10W/30 Summer : 20W/40 Spring/ Fall : SAE 15W/40, SAE 20	GS Caltex RPM Dello 200
Transmission oil (common use for Hydraulic lift, hydraulic steering device)	47 ℓ(12.4gal)	API-GL4 ISO VG 46/68	LSTH570 (LS Tractor T/M & Hyd. oil) Manufacturer : GS Caltex or S-OIL TOTAL Co. Ltd.
Front axle oil	10 ℓ (2.6gal)	API-GL4 SAE 80W	EPK 80W90 Manufacturer : S-OIL TOTAL Co. Ltd.
Grease (Front axle arm holder, Steering cylinder pin, 3-point linkage)	Proper amount	NLGI 2	CALTEX MAHWAK Multi purpose or CALTEX MAHWAK All purpose

RECOMMENDED OIL VISCOSITIES

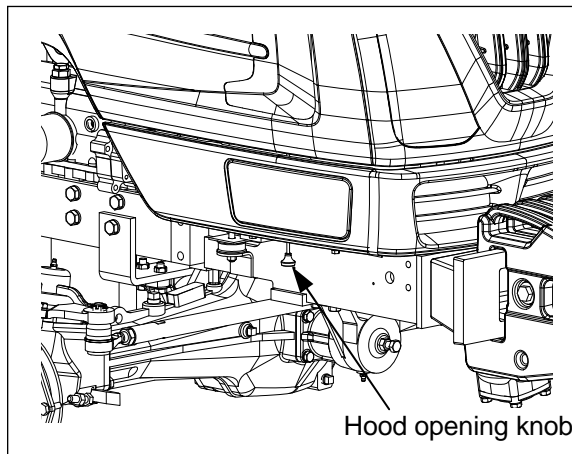
The correct engine oil viscosity grade is dependent upon ambient temperature. Refer to the chart below when selecting oil for your tractor engine.

In areas where prolonged periods of extreme temperatures are encountered, local lubricant practices are acceptable ; such as the use of SAE 5W 30 in extreme low temperatures or SAE 50 in extreme high temperatures.

Starting Temperature ℃(°F)	-30 (-22)	-25 (-13)	-20 (-4)	-15 (-5)	-10 14)	-5 (23)	0 (32)	-10 (50)	20 (68)	30 (86)	40 (104)	
Oil Viscosity	<div><div>SAE 5W-20</div><div>SAE 10W-30</div><div>SAE 15W-40</div></div>											

5-3. Access for maintenance

- For safety, the hood must be closed and correctly latched before operating the tractor.
- The hood is hinged at the rear and a gas cylinder is attached to provide easy access to the engine for check and maintenance.
- To open the hood, pull the hood opening knob and lift the hood up.
- To close the hood, pull the hood and push it down to locking position slightly.



Caution

- ▶ After the engine has stopped completely, you have to open the hood for checking.
- ▶ If you open the hood while the engine is running, it can cause serious damage by the intended or unintended access to the rotating shaft, pulley, V-belt, cooling fan of the engine or engine application parts. BE CAREFUL.

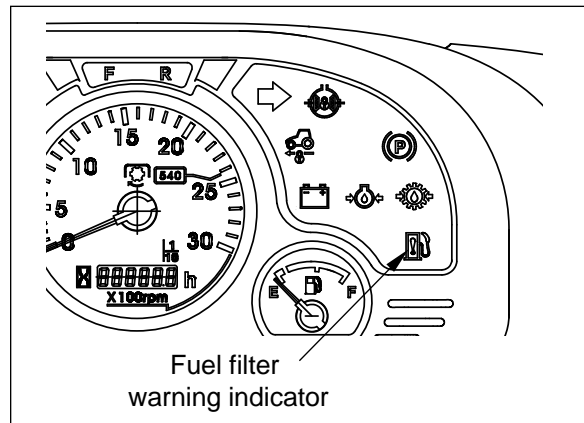
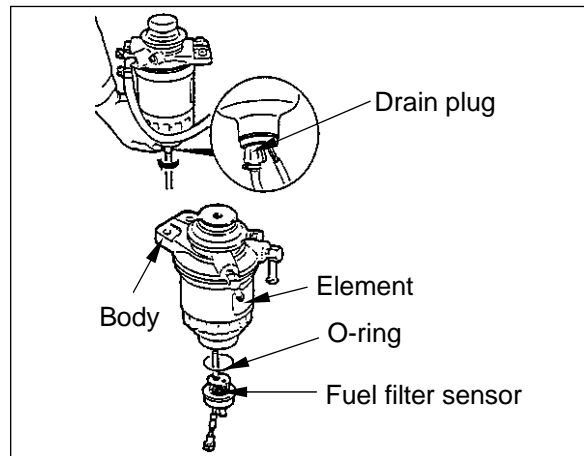
5-4. First 50 hour check

- After using first 50 hours, contact your authorized dealer for maintenance if possible.
 - Replace engine oil filter. (⇒ Refer to Every 300 hour check. See page 5-15)
 - Replace hydraulic oil filter. (⇒ Refer to Every 300 hour check. See page 5-16)
 - Check transmission / rear axle / hydraulics oil level
 - Check front axle oil level
 - Check and adjust parking brake
 - Check torque of exhaust manifold bolts
 - Check and adjust V-belts and tension
 - Tighten all cooling system hose connections
 - Check torque of safety cab or frame mounting bolts
 - Check torque of front end weight clamp bolts (Where fitted)
 - Check torque of wheel bolts and nuts
 - Check tire pressures and condition
 - Clean radiator, oil cooler and A/C condenser cores (Where fitted)
 - Check radiator coolant level and specific gravity
 - Check clutch pedal free play
 - Check brake adjustment and pedal equalization
 - Lubricate all grease fittings
 - Neutral start switches operative

5-5. When the warning indicator lights

(1) Drain water from Fuel filter

1. Loosen the drain plug and drain water inside of the filter. (Approx. 150cc(9.1 in³))
2. Tighten the drain plug and bleed the air from the fuel filter. (See page 5-22)

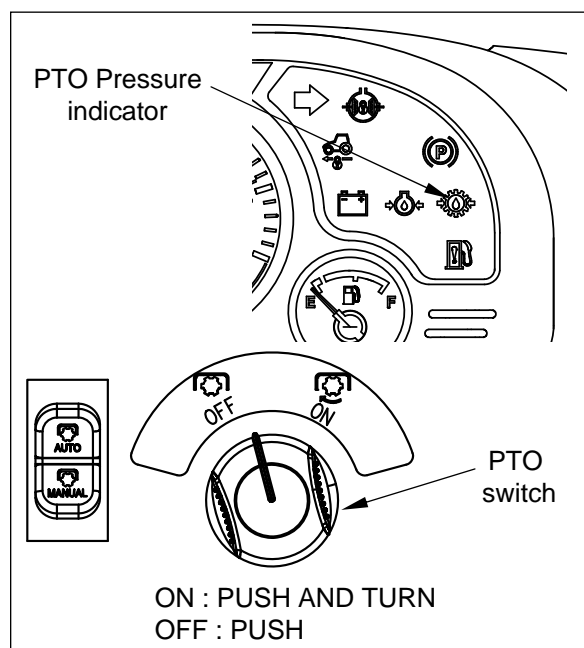


(2) PTO Pressure Indicator

- When this indicator turns on, the PTO shaft shall be stopped automatically to protect the PTO clutch.

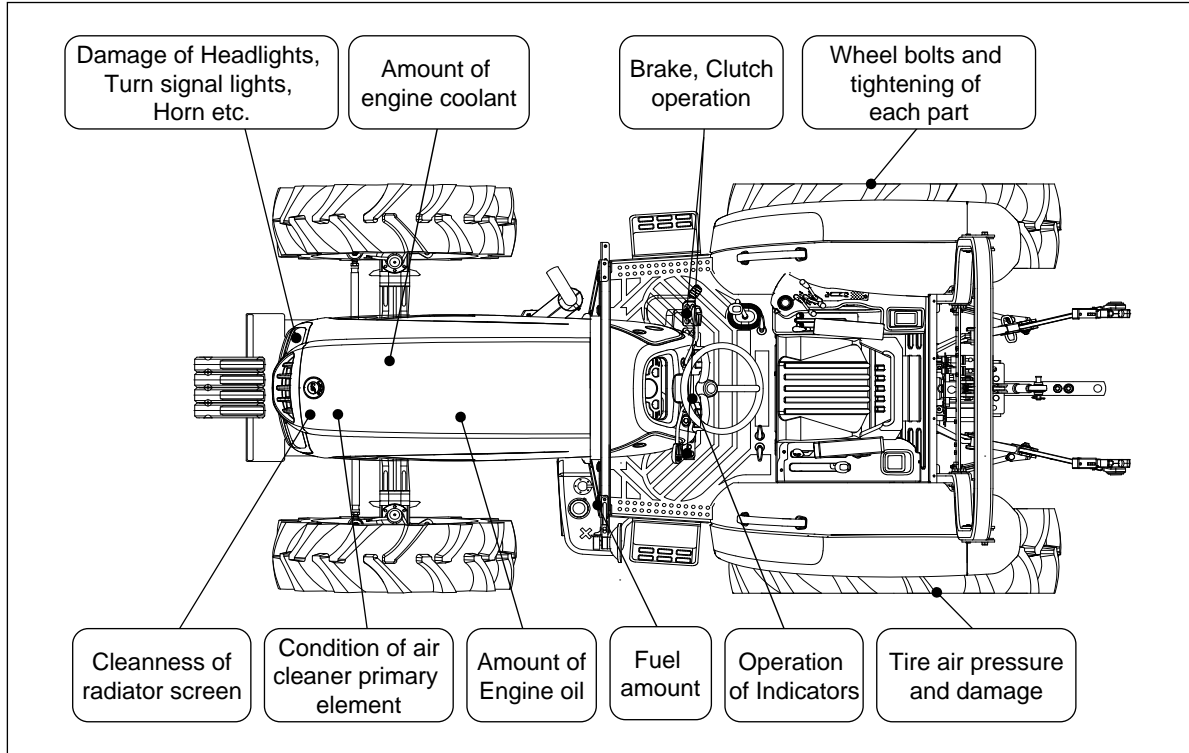
At this time, turn the PTO switch "OFF", and turn it "ON" again to restart the PTO.

If the PTO system pressure is normal, the PTO shall rotate continuously if not, the PTO shaft shall be stopped again after 5~6 seconds later. In this case, you have to contact your authorized dealer to check the hydraulic PTO system.



5-6. Check before starting (Daily check)

- Check the following check points before using to avoid a failure.



(1) Engine oil

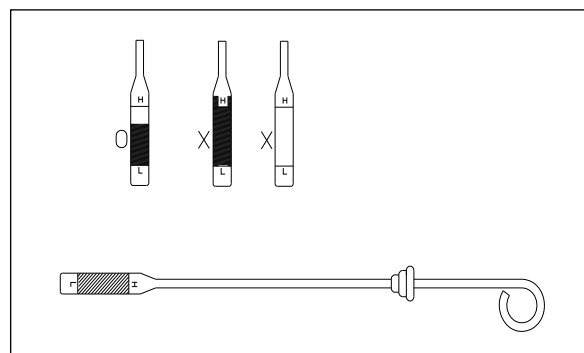
- Oil capacity : **7.0 l(1.8gal) - U5010 / U5020**

9.0 l(2.4gal) - U5030

- Oil
 - Diesel engine oil (API CF-4 or CG-4).
 - Select engine oil according to temperature as shown in the right table.

Season	Temperature	Lubricant No.
Winter	0°C ~ -20°C (32 ~ -4°F)	SAE 10W 30
Spring/Fall	0°C ~ 20°C (32 ~ 68°F)	SAE 15W 40, SAE 20
Summer	More than 20°C (68°F)	SAE 20W /40

- Check
 - Check before starting engine or 5 minutes later after stopping engine.
 - If the oil is between “Max” and “Min” scale of the oil gauge, it means “proper amount”.
 - It must only be performed while engine is stopped.

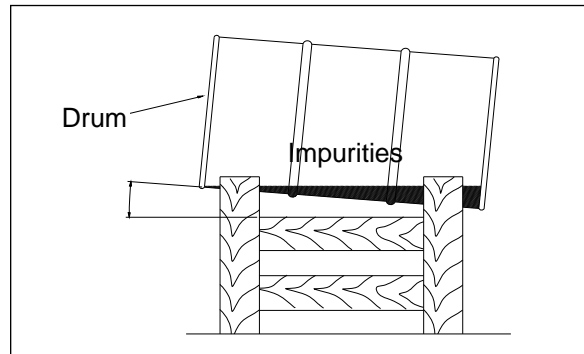


(2) Fuel tank

① Tank capacity : 60 ℓ(15.9gal)

② FUEL

- Use the low sulfuric diesel.
- If water or dust is mixed, it may cause a severe failure of the engine. To save or use the fuel, the fuel saving facility must be equipped as shown on the figure. If possible, it is preferred to supply the fuel in the gas station directly.



③ Diesel fuel handling in winter time

- General diesel fuel tends to generate paraffin dregs in winter time which may cause poor starting. Thus, it is preferred to use diesel for winter time only.
- During mid winter, mix diesel oil with kerosene as shown on the right.

Temperature	Over (-15°C (5°F))	Below (-15°C (5°F))
Fuel	100% of Diesel fuel for winter	20% kerosene added

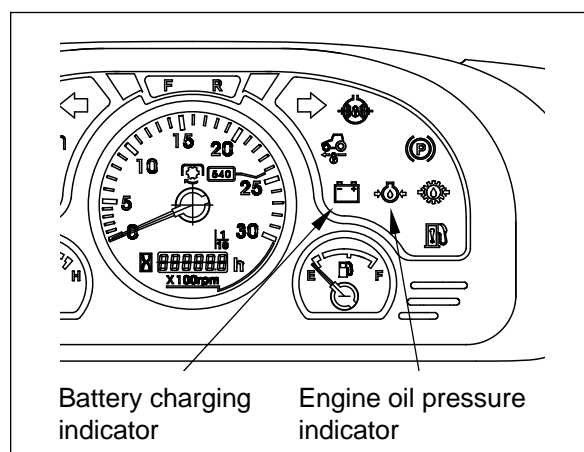
④ Check

- Check the fuel gauge and, if insufficient, fill the fuel tank with fuel.

Notice	<p>► If the engine stops after finishing work, fill the fuel tank with fuel.</p> <p>As the temperature drops down, the humidity in the fuel tank is condensed and may mix with the fuel.</p>
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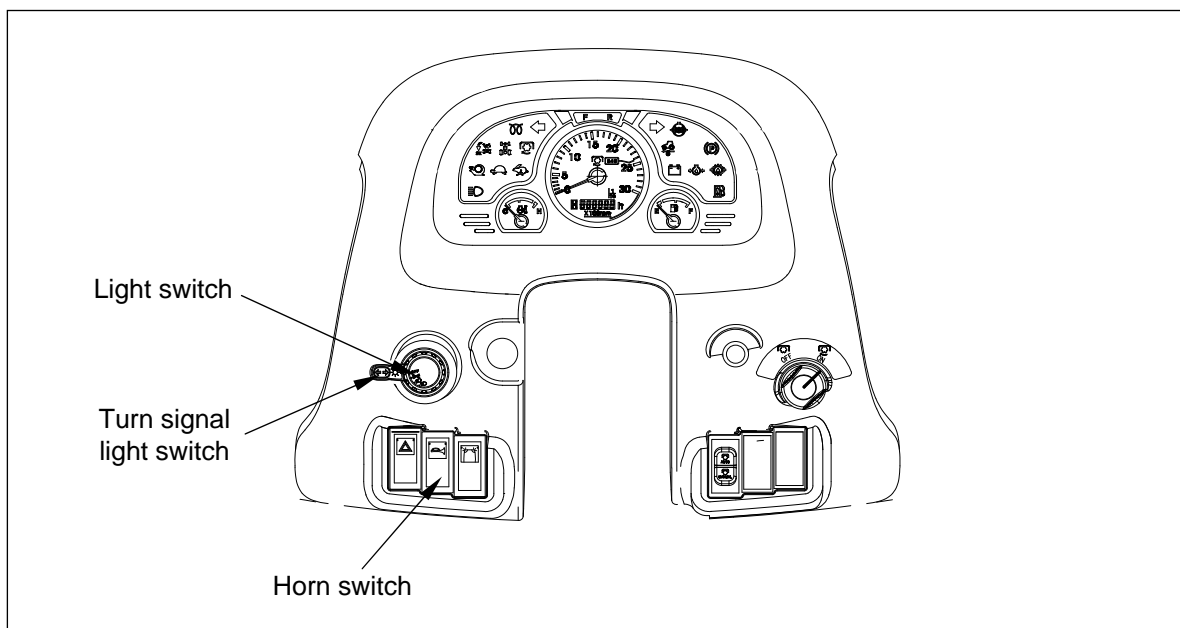
(3) Instrument panel & Indicators

- Turn the key switch to "ON" position and check if the Engine oil pressure indicator and Battery charging indicator are ON.
- If the indicators are not "OFF" after starting engine, Contact your authorized dealer for check.



(4) Turn signal lights, Lights, Horn

- Check the operation status of light, turn signal lights, horn etc.



- If the light is OFF despite of operation of switch of head light or indicating light,
 1. Check the corresponding fuse in the fuse box.
 2. If there is no problem in the fuse, check the bulb of the corresponding light or change it

illuminating Light	Light bulb specification
Headlights (low beam / high beam)	12V 55W / 60W
turn signal lights / work light (front)	12V 21W / 5W
turn signal lights (rear)	12V 21W
Brake light / tail light	12V 21W / 5W
Work light	12V 35W
Instrument panel light	LED
Warning indicators	LED
Indoor light (cabin type)	12V 10W

Notice	<ul style="list-style-type: none">▶ Use the bulb of rated capacity.▶ In case of using the improper bulb, it may cause a failure of electric system
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(5) Engine coolant

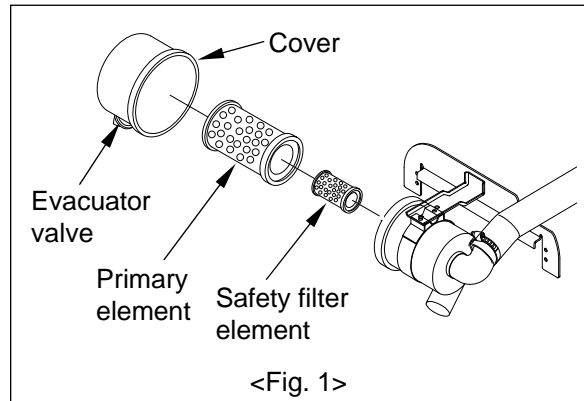
- Refer to “Replacement of Engine coolant” (See page 5-20)

(6) Air cleaner (Dry type)

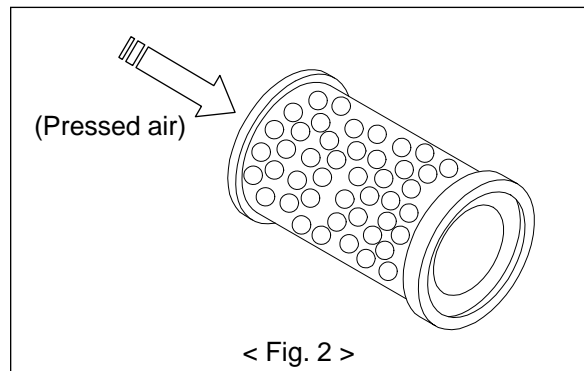
① Cleaning filter element

- Remove the cover and pull the primary element straight out, ensuring the safety filter element remains in place. (Fig. 1)
- When cleaning the element in the working field, tap the element by hand to remove the dust

Notice	<ul style="list-style-type: none">▶ Do not tap the element on a hard place when cleaning.▶ If the element is cracked, change it with new one.
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- If the dust is not removed by tapping, use compressed air (less than 500kPa (5bar; 72psi)) from inside to outside as shown in the right figure (Fig. 2) to remove the dust and foreign materials. And clean inside the filter element with a clean damp cloth.



Notice	<ul style="list-style-type: none">▶ Do not assemble a wet filter element.▶ Do not dry the wet filter element by using the compressed air.▶ Do not start the engine if air filter element is not assembled.
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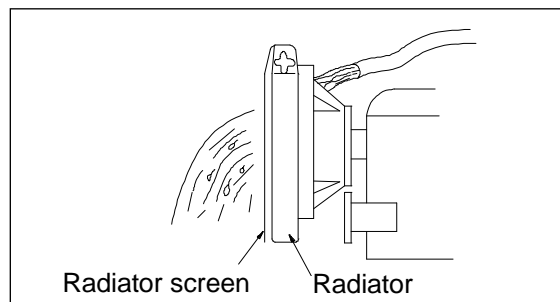
② Filter assembly

- Clean the inside of the air cleaner housing using a clean damp cloth, taking care not to damage the safety element.
- Check if there is damage inside filter element by using a light. If there is tiny crack or small hole in the filter element or the gasket is damaged, replace it with a new one.
- Insert the filter element by pushing it deeply into the filter housing.
- Remove the dust of the evacuator valve and clean the inside of the cover.
- Assemble the cover with the evacuator valve placed downward.

Notice	<ul style="list-style-type: none">▶ Do not start the engine or close the hood if the filter element is not assembled.
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(7) Cleaning of Radiator and Radiator screen

- Remove the dust or dry glass attached to the radiator or radiator screen and clean it daily.
- When cleaning, spray water from the fan side.

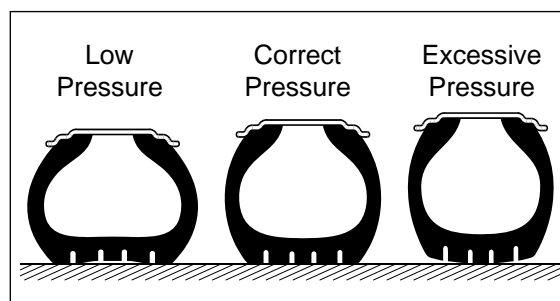


	<p>► If lots of foreign materials or dry grasses are stuck to radiator screen or the fan is damaged or transformed, the cooling efficiency shall be reduced and the engine can be overheated.</p> <p>► Radiator must be cleaned only after the engine has stopped.</p>
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(8) Tire air pressure and damage

① Check

- Check the air pressure or the damage of the tires daily. Always use the correct pressure for each axle, and If the tire is damaged, change it with a new one.
- Ensure tire pressures are not lower than the correct values, to prevent ;
 - blown tires;
 - bead wear;
 - internal damage;
 - irregular wear and short service life.
- Do not over-inflate the tires, as this may lead to damage in the event of impact and, in extreme conditions, the tire rim may be deformed or the tire may burst.



	<p>► It is not allowed to remove/attach or change the tire arbitrarily. Carry out the work in the tire repair center equipped with a expert and special safety tools.</p> <p>► When checking tire pressures, keep the body away from the valve mechanism or cap.</p> <p>► The tire pressures vary depending on the load weighing on the axles.</p>
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② Standard air pressure – for further information, see page 4-15

Wheel	Model	Tires	Standard air pressure
Front	U5010	8.3-20 (6PR)	235 KPa (34.1psi)
	U5020	9.5-20 (6PR)	216 KPa (31.3psi)
	U5030	11.2-20 (8PR)	235 KPa (34.1psi)
Rear	U5010	12.4-28 (6PR)	157 KPa (22.8psi)
	U5020	13.6-28 (6PR)	157 KPa (22.8psi)
	U5030	14.9-28 (8PR)	177 KPa (25.6psi)

(9) Tightening state of bolt and nut of each part

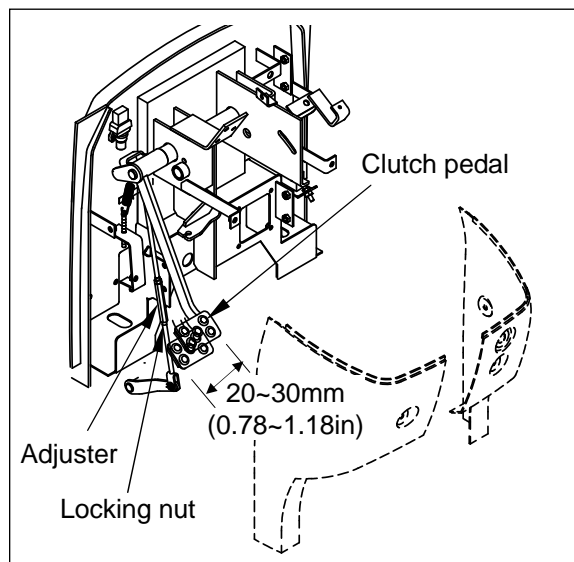
- Check if the bolts or nuts of each part are loosened and if loosened, tighten it again.
- Especially, check the bolts and nuts of the tires before starting engine, if necessary, tighten them.

(10) Adjustment of Clutch pedal play (Mechanical type)

- **Normal distance : 20~30mm (0.79~1.18 in.)**

if the distance is over 30mm (1.18 in.),
adjust it as below.

1. Loosen locking nut and turn adjuster to adjust.
2. If the adjuster is tightened, the pedal play shall be decreased, and if adjuster is loosened, it shall be increased.
3. After adjusting the pedal play, tighten the locking nut.
4. Check if the clutch is disengaged completely.

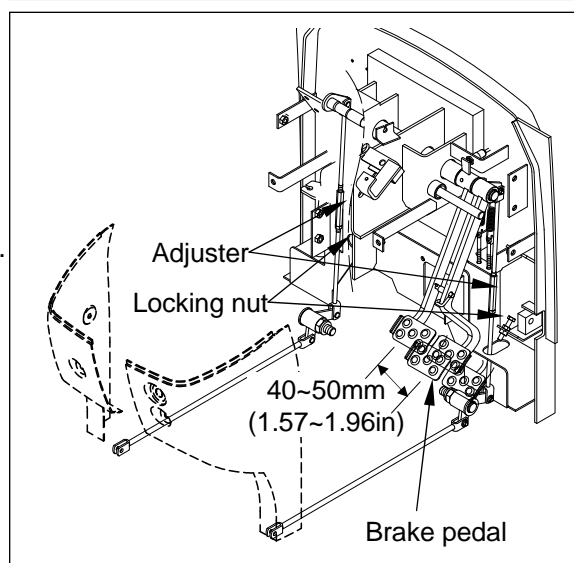


(11) Adjustment of Brake pedal play

- **Normal distance : 40~50mm. (1.57~1.96 in.)**

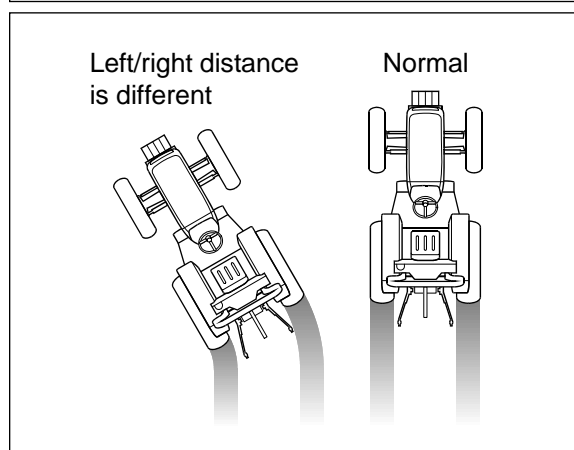
If the pedal play distance is over 50mm (1.96 in.),
adjust it as below.

1. Loosen the locking nut and turn brake rod to adjust.
2. If brake rod is tightened, the pedal play shall be reduced and if brake rod is loosened, it shall be increased.
3. After adjusting the pedal play, tighten the locking nut.
4. Check if the brake distance of the left and right brake is same as below.



- Checking the brake distance

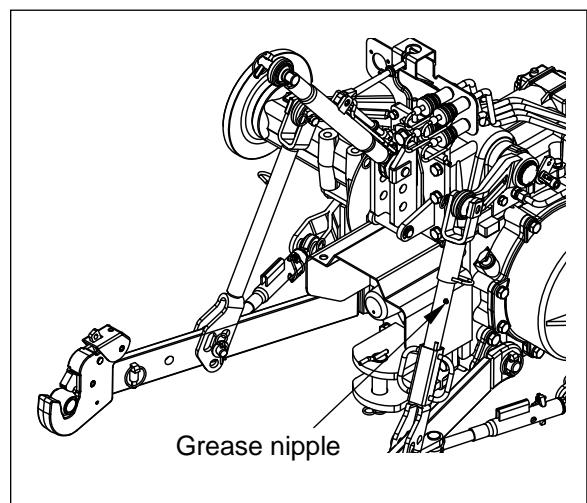
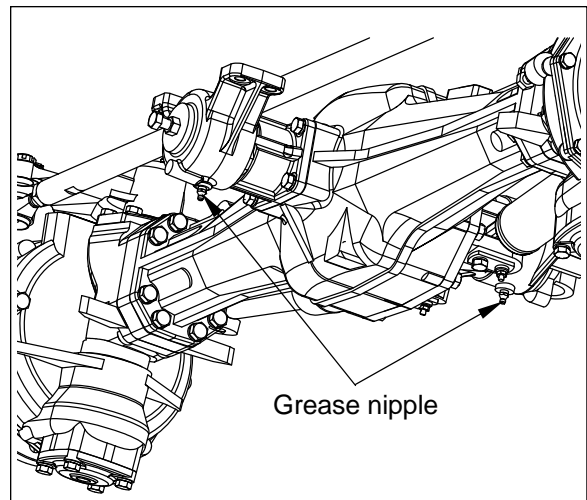
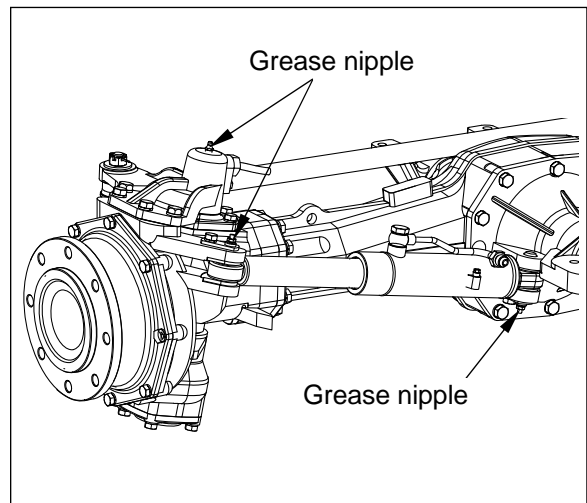
1. Connect left and right brake pedal using connecting pin.
2. Check the skid mark of the tire or stability of the tractor while driving at a suitable speed.
3. If the brake distance is different as shown in the right figure, adjust the pedal play again.



5-7. Every 50 hour check

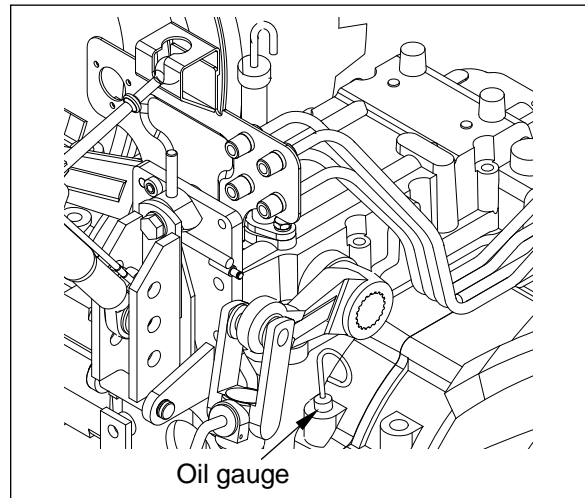
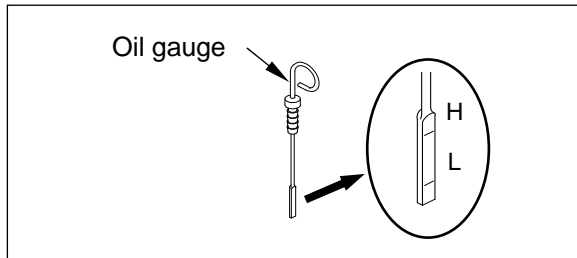
(1) Lubricating grease nipple


- Steering cylinder pins (LH/RH)
- Front axle holder & Steering arm (LH/RH)
- 3-point linkage



(2) Checking Transmission oil

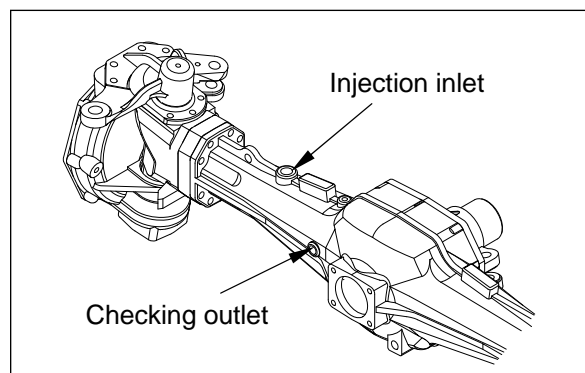
- If it is within the deviant line of oil gauge, it is 'proper level'.
- When checking, stop the engine.
- For adding oil, refer to capacity table.



 Warning	<ul style="list-style-type: none">▶ Before checking the oil level, park the tractor on the level ground.▶ If oil is polluted, it may cause the early wearing of machine and the failure of hydraulic system. Clean around oil injection inlet clear the cap.
--	---

(3) Checking Front axle oil capacity

- Open the plug of checking inlet and check if there is oil leakage.
- If insufficient, pour the oil into injection inlet.
(check the state by using the checking inlet 5~10 minutes later after injecting.)
- For adding oil, refer to "Lubricants and Capacity table" (See page 5-3).
- **Normal capacity : 10ℓ (2.6gal)**



(4) Battery check

- Refer to "Batter handling and Notices" (See page 5-25)

(5) Air cleaner (Dry type)

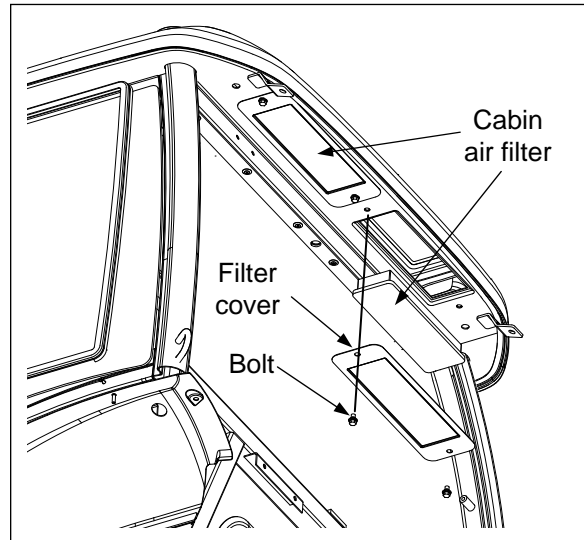
- (See page 5-9)

(6) Cleaning Radiator and Radiator screen

- (See page 5-10)

(7) Cleaning Cabin air filters

- Before servicing the filters, switch off the blower and close all cabin doors and windows.
- Unscrew the bolts under the roof and remove the cover and filter element as shown in the right figure.
- Clean the elements by blowing with compressed air not exceeding 30psi (2bar). Blow the dust from the upper surface through the element to the underside. Hold the nozzle at least 12 in. (300mm) from the element to prevent damage to the filter media.
- Clean all filter chambers with a damp, lint-free cloth. Re-install the filter elements.
- Re-install the filter cover and tighten the bolts.



Notice

- The filters are made of specially treated media with a rubber sealing strip bonded around the sides. Take care not to damage the element during installation.

5-8. Every 300 hour check

(1) Replacing Engine oil and Filter

① Engine oil drain

- When the engine stops and the oil has cooled down, loosen the drain plug of oil pan to drain the oil completely.

Notice	► If you drain the engine oil while the engine is still warm, the impurities shall be drained completely.
--------	---

② Engine oil filter replacement

- Disassemble the oil filter using the filter wrench.
- Remove any dirt to the oil filter or crank case by blowing with compressed air.
- When assembling the new oil filter, check if the rubber packing is fixed in the groove completely.
- Apply the engine oil to the packing.
- When assembling the oil filter to the bracket, attach it so that it can be turned by $\frac{3}{4}$ ~1 revolution after the packing and filter case are contacted.

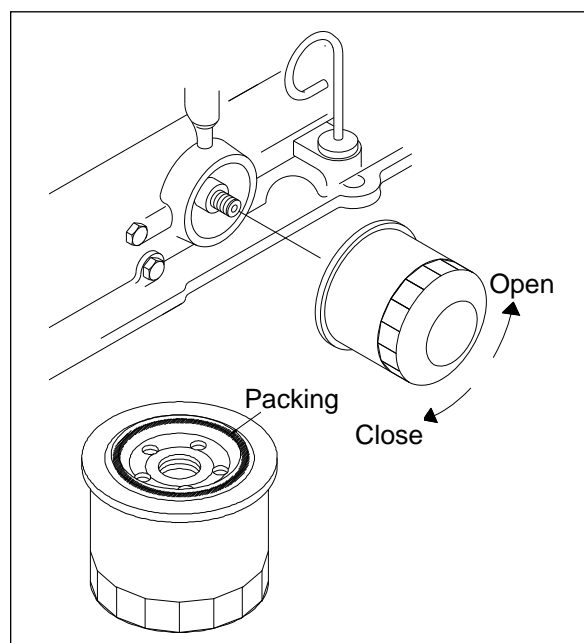
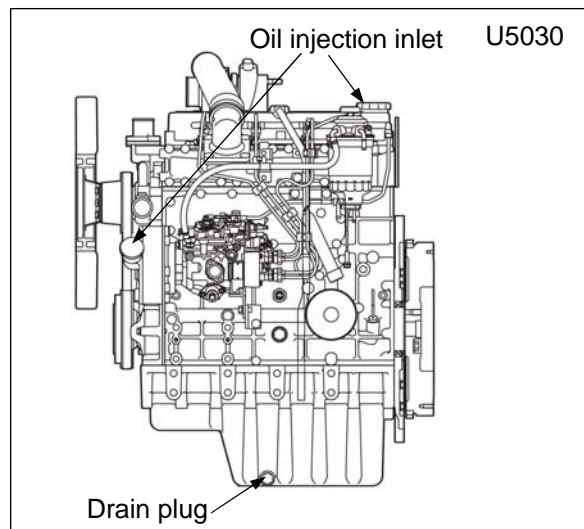
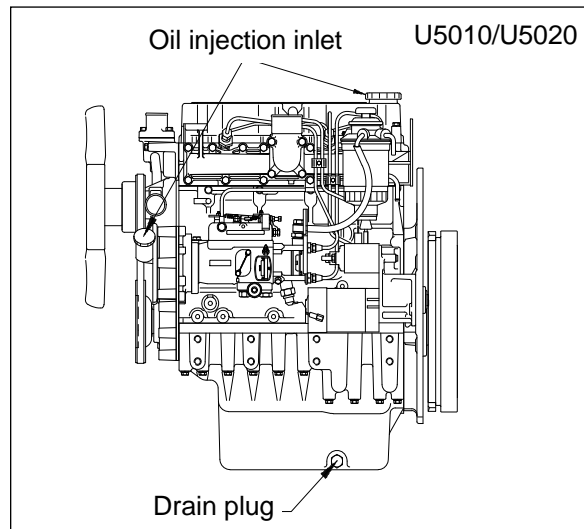
③ Engine oil injection

- Attach the drain plug and tighten the normal torque. (normal torque :4.0Kg.m(28.93ft.lbs))
- Inject the oil into oil injection inlet by normal capacity.

Engine oil capacity : 7.0 l(1.8gal)– U5010/U5020

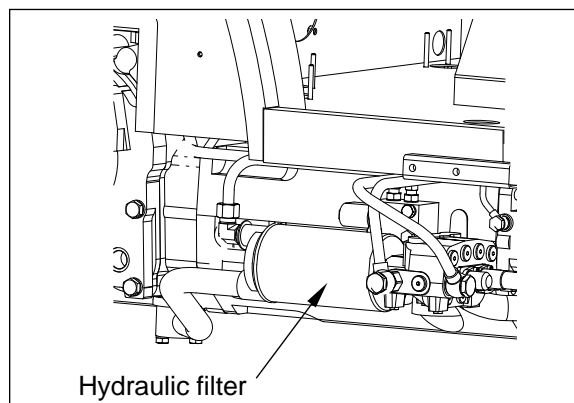
9.0 l(2.4gal)– U5030

- After starting the engine, check if there is oil leakage through idle operation for several minutes. If finding oil leakage, tighten the filter once again.
- After stopping the engine, check the oil level again after about 30 minutes.
If the oil level is between high limit and low limit of oil level gauge, it is 'NORMAL'.
- If the metal is attached to the element of oil filter to be disassembled, contact your authorized dealer.



(2) Replacing Hydraulic filter

- If hydraulic filter is clogged, hydraulic system does not work. When changing the transmission oil, change the hydraulic filter together.



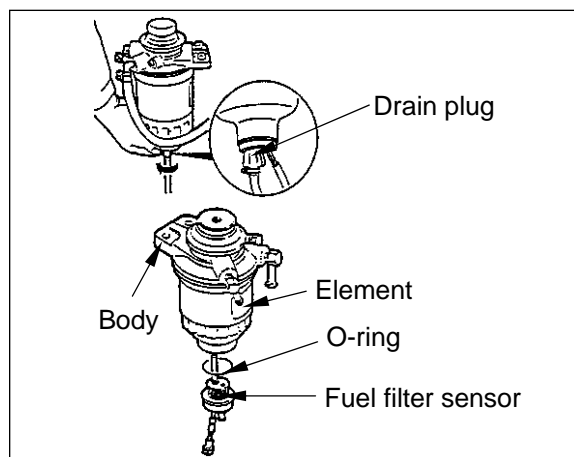
Warning

- When checking or repairing the hydraulic system, the high pressurized oil may cause serious injury.
- When repairing, adjusting or removing the hydraulic system, the engine must be stopped.
 - When finding the leakage or repairing, wear protection equipment for the eyes and hands.
 - If the oil penetrates the skin, go to see a doctor quickly.



(3) Replacing Fuel filter cartridge

1. Loosen the drain plug and drain the fuel inside of the filter.
2. Disconnect electric wire of the fuel filter sensor.
3. Remove the element from the body
4. Remove the fuel filter sensor from the element and assemble it to the new element.
5. Attach the element to the body.
6. Connect electric wire of the fuel filter sensor.
7. Tighten the drain plug and bleed the air from the fuel filter. (See page 5-22)

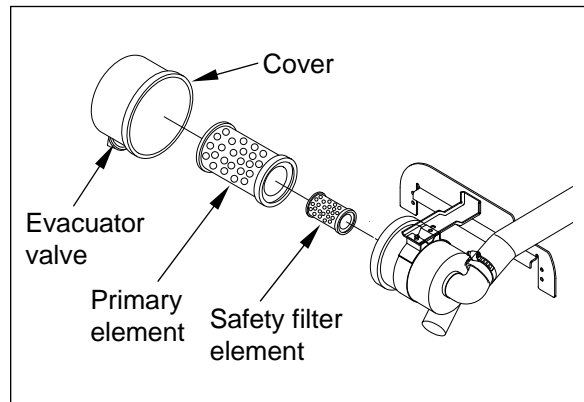


Warning

- Do not fill the new element with fuel.
It may cause damage of element as the invisible filthy material enters into the injection pump.

(4) Replacing Air cleaner element (Dry type)

- Remove the cover and pull the primary element straight out, ensuring the safety filter element remains in place.
- Clean the inside of the air cleaner housing using a clean damp cloth, taking care not to damage the safety element.
- Check if there is damage inside filter element by using a light. If finding tiny crack or small holes in the filter element or the gasket is damaged, change it with a new one.
- Insert the filter element by pushing it deeply into the filter housing.
- Remove the dust of the evacuator valve and clean the inside of the cover.
- Assemble the cover with the evacuator valve placed downward.

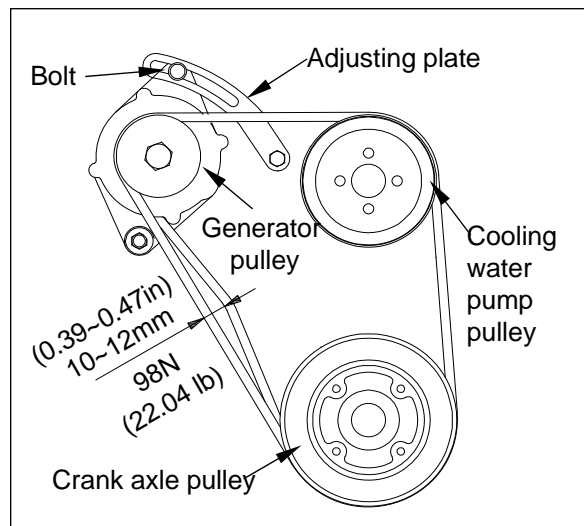


Notice

► Do not start the engine or close the hood if the filter element is not assembled..

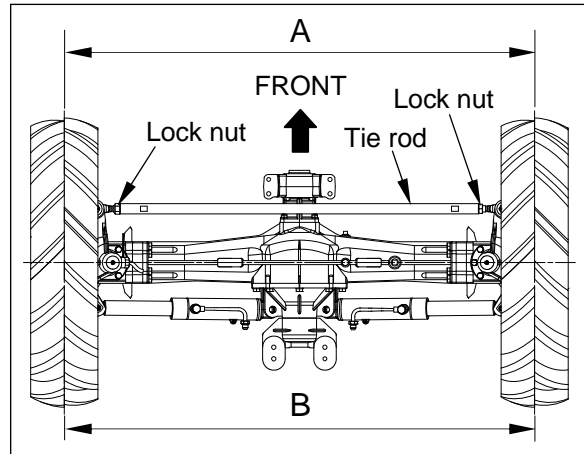
(5) Tension adjustment of Fan belt

- If the tension of fan belt exceeds the standard value, loosen the bolt and adjust the tension.
 - Belt tension : crank axle pulley ~ alternator pulley
 - **Standard : approx. 10~12mm(0.39~0.47in)**
(if pressed by 98N (22.04 lb))
- When adjusting the tension,
 1. Loosen 2 bolts of alternator and insert the bar between crank case and pull the bar to apply tension to the belt.
 2. With proper tension, tighten the bolts attached to the adjusting plate of alternator.
 3. If the tension of belt becomes standard value, tighten the bolt which whole the alternator



(6) Toe-in

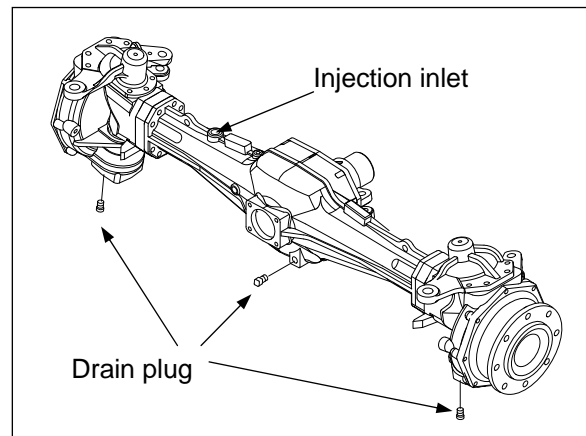
- Check and adjust Toe-in of the front wheel as follow.
Normal value ; $B - A = 0 \sim 5 \text{ mm}$ (0~0.2 in.)
- Unscrew the lock nuts of the tie rod.
- If you turn the tie rod clockwise at right hand side “B-A” shall be increased.
- After checking that Toe-in is correct, tighten the lock nuts.



5-9. Every 600 hour check

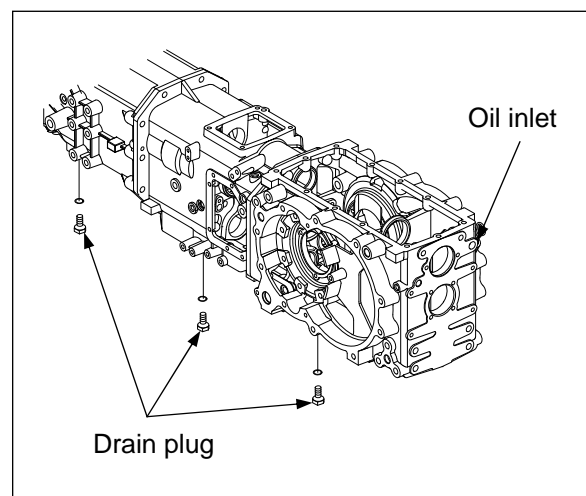
(1) Changing Front axle oil

- Loosen the left/right drain plug and drain the oil.
- Attach sealant tape to the left/right drain plug and tighten completely.
- Inject new oil into the injection inlet.
Normal capacity : 10 ℓ (2.6gal)



(2) Changing Transmission oil

- Loosen the clutch or housing drain plug under the axle housing and drain the oil completely.
- Clean the metal powder attached to the drain plug.
- Insert the copper washer to the plug and tighten it completely.
- Inject the oil as much as the oil level stays between low limit and high limit.
Normal capacity : 47 ℓ (12.4gal)



Warning

- The contaminated oil may reduce the durability of transmission and cause the failure of hydraulic system. Clean around oil filling port and then open the cap.

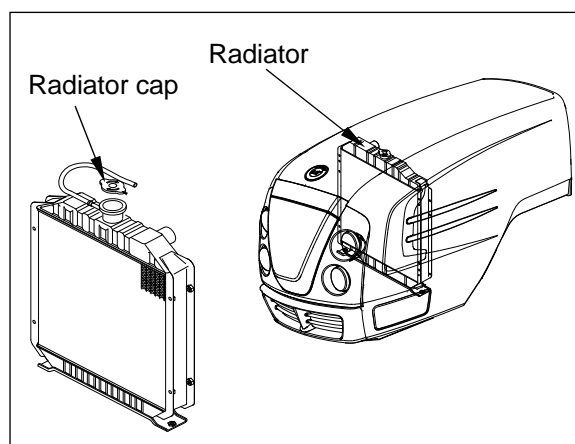
(3) Replacement of Engine coolant

① **Capacity** : 9.0 ℓ (2.4gal) : U5010 / U5020

10.8 ℓ (2.9 gal) : U5030

② Check

- Check the engine coolant of radiator and expansion tank whether it is insufficient or not.
- Do not open the radiator cap except to check the engine coolant or change it.



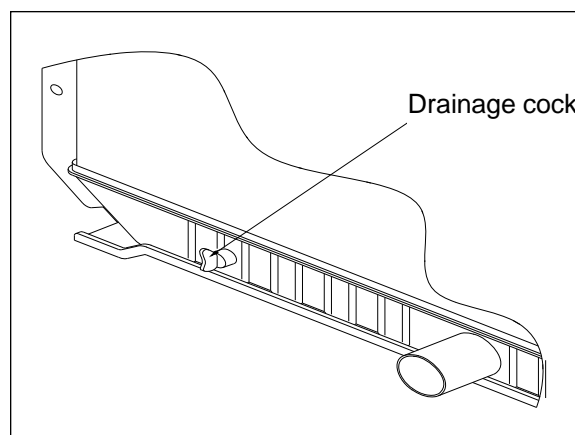
- ▶ When opening the radiator cap, be careful of the escaping hot water or steam.
- ▶ Cool down the engine coolant sufficiently before opening.

③ Supplement

- In case of supplement of engine coolant, use the clean soft water.
If not, the engine coolant jacket shall be corroded or rust shall be generated.

④ Replacement

- When draining the engine coolant of engine or radiator, open the drainage cock under the radiator to drain the engine coolant.
- When supplying water, attach the overflow pipe and supply the water up to the inlet of radiator.
For aux. tank, supply the proper amount of water separately.
- Anti-freeze is added to new tractor water.
After passing the first winter after purchasing, change the engine coolant.



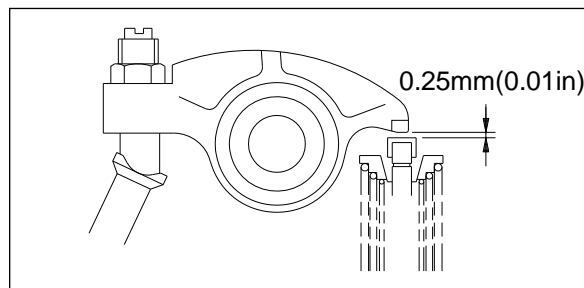
- For further information, contact your authorized dealer.
The engine coolant cock must be opened only when the engine is cooled down.

⑤ Anti-freeze

- If the density of anti-freeze in the engine coolant is low, the engine coolant may freeze and the engine or radiator may be damaged.
- Use anti-freeze always and if no anti-freeze, drain the engine coolant in the winter time.
(drainage outlet : radiator – drainage cock, engine – engine coolant drain plug)
- Wash the radiator or jacket 2~3 times with clean water before adding new anti-freeze.
- The amount of anti-freeze depends on temperature, Engine coolant amount.
- Start the engine for 5 minute after injecting the anti-freeze to mix it with water well

(4) Adjusting Engine valve clearance

- Ask your authorized dealer to check the valve clearance.
Normal : 0.25mm (0.0098in)
If the gap is large, valves makes a loud tapping noise and if the gap is too small, it is hard to compress by which the engine output falls down or burns a valve.

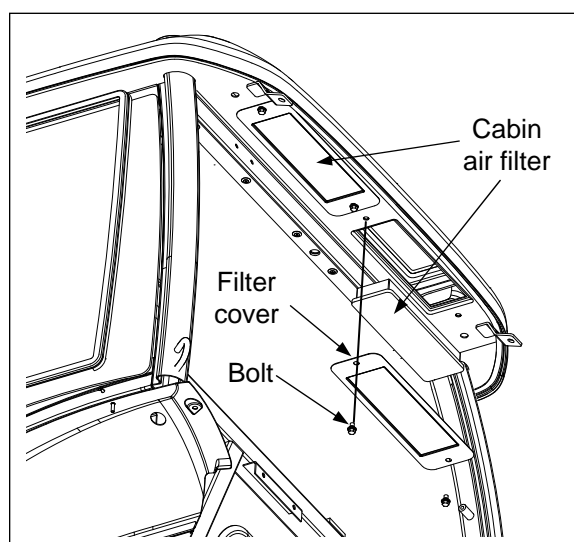


(5) Checking Nozzle injection pressure

- Contact your authorized dealer.
- Normal injection pressure : **14.7 MPa (2133psi) ----- U5010 / U5020**
17.7 MPa (2560psi) ----- U5030

(6) Replacing Cabin air filters

- Before servicing the filters, switch off the blower and close all cabin doors and windows.
- Unscrew the bolts under the roof and remove the cover and filter element as shown in the right figure.
- Clean both filter chambers with a damp, lint-free cloth.
- Replace the cabin air filters with a new one.
- Re-install the filter cover and tighten the bolts.



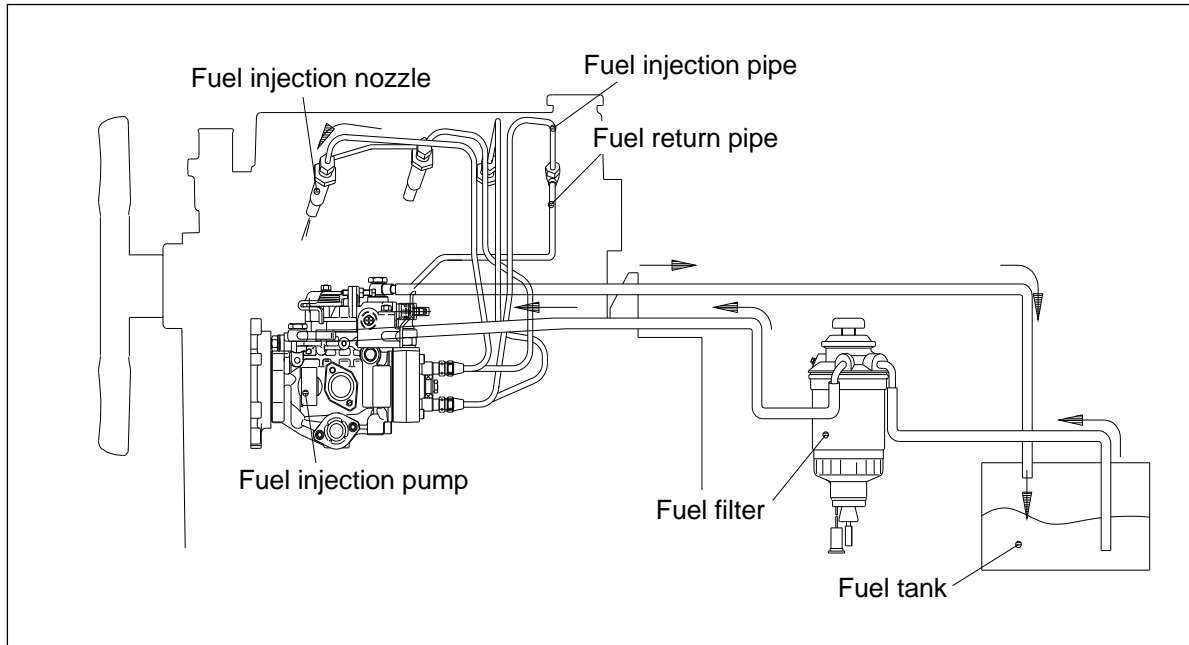
Notice

- The filters are made of specially treated media with a rubber sealing strip bonded around the sides. Take care not to damage the element during installation.

5-10. General maintenance (When required)

(1) Air-bleeding from Fuel system

- The air in the fuel may cause weak injection or the failure of engine start or stop.
To prevent such failure, bleed the air from fuel system.



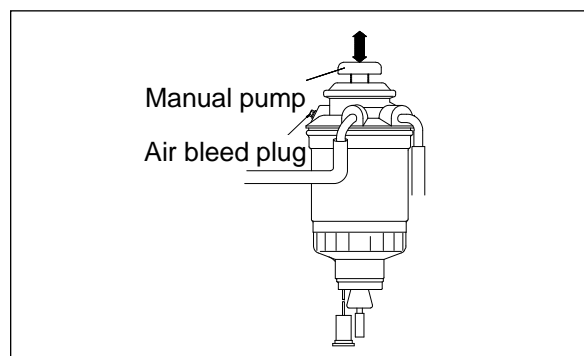
< Fuel system >

Notice

- When changing the fuel filter, it is not needed to bleed the air from the high pressure pipe.

① Air-bleeding of fuel filter

1. Loosen the fuel filter air bleed plug by spanner.
2. Press the priming pump several times, attaching some fabric to the air bleed plug part.
If no bubbles from the air bleed plug, the process is completed.
3. Tighten the air bleed plug.



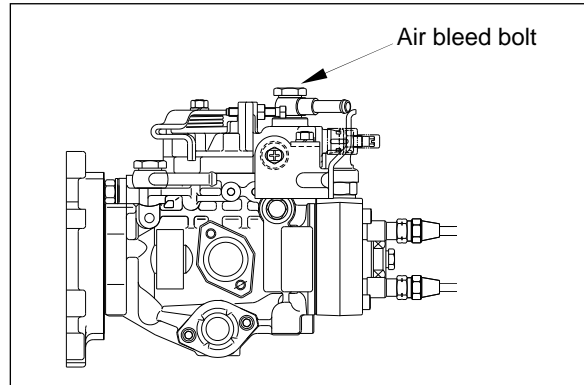
Notice

- If there is some dust in the valve, can be removed with air pressure. In this case, separate the air bleed plug and hose from the fuel filter. Then blow these out to remove the dust.

② Air-bleeding from fuel injection pump

1. Place the starting switch "ON".
2. Loose air bleed bolt, remove the air.
3. If no bubbles in the fuel from the air bleed bolt, place the starting switch "OFF" and fasten the air bleed bolt again.

Tight torque : 19.6 ~ 29.4 N.m
(14.54~21.81ft · lbs)



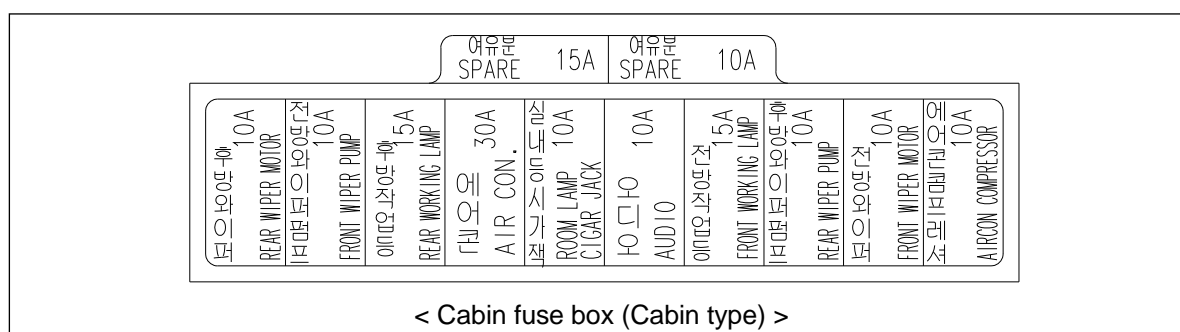
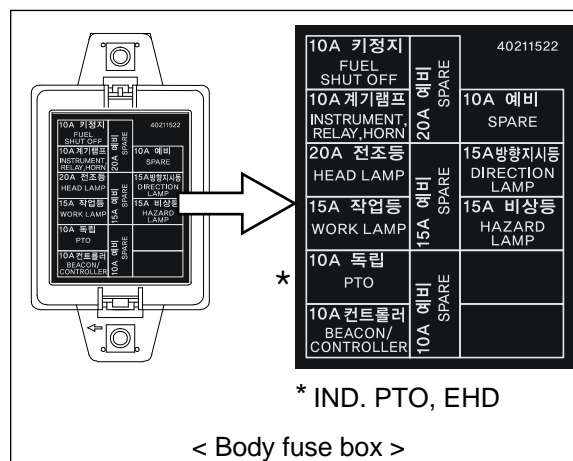
Notice

► Cover the bleeding fuel with a rag so that it does not flow to other components.

(2) Fuse & Main fuse (Fusible Link)

① Fuse check and replacement

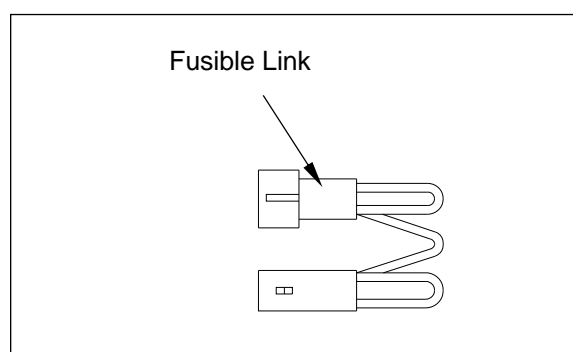
- How to change the fuse
 1. Remove the cover of fuse box.
 2. Check each fuse and remove the damaged fuse.
 3. Change with new one same as damaged one.
- The capacity and function of each fuse is described in the cover of fuse box.



Notice	<p>▶ If the same function fuse is damaged often, contact to the LS tractor sales branch or dealer near you to check instead of using the alternatives such as wire or aluminum foil.</p> <p>▶ If using the alternatives instead of the rated capacity fuse, it may cause fire which results in the damage of tractor or injury.</p>
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② Fusible link check and replacement

- Fusible link is attached to the wiring of right side of the engine.
- If fusible link is damaged, remove the connector from the wiring.
- As fusible link is a device to protect the electric system and wiring, if damaged, check if there is trouble in the electric system and change with LS tractor genuine products if necessary.



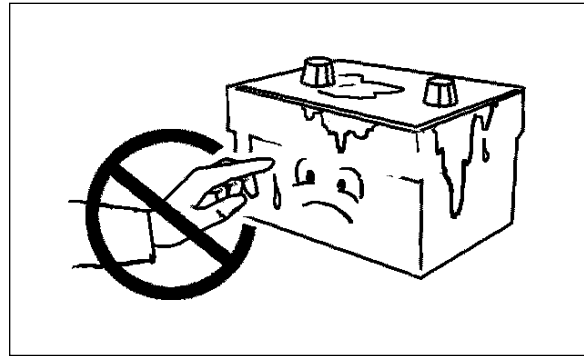
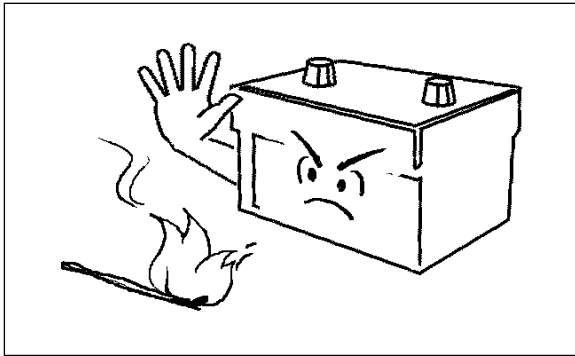
Notice	<p>▶ If fusible link is burn out often, contact to LS tractor sales branch or dealer near you to check out problem.</p> <p>▶ If using the alternatives instead of the rated capacity fusible link, it may cause a fire which results in the damage of tractor or injury.</p> <p>▶ The direct wire connection to the battery outlet may cause a fire.</p>
--------	--





(3) Battery handling and Notices

※ **Battery fluid (Electrolyte) is a solution of water and sulfuric acid. It makes poisonous gas which is very harmful to eyes, skin and clothing. And also this gas is explosive. Read the following instructions thoroughly before handling the battery.**

① Battery check

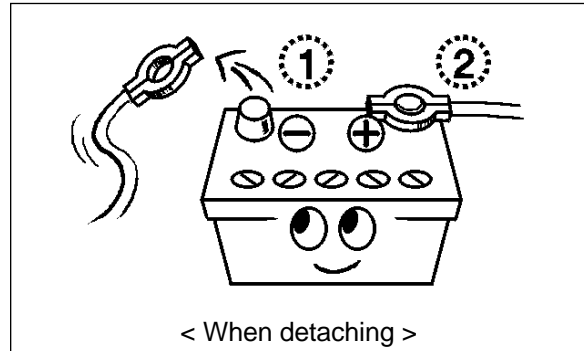
- Indicator on the top of the battery displays the battery state. If the indicator color is
 - **“Green”** : Normal state.
If the engine does not started despite of green color, contact your authorized dealer.
 - **“Clean”** : Low charging state – charge the battery.
 - **“White” or “Red”** : the life of battery is ended - replace the new battery after checking the vehicle.
- If the terminals of battery harness are loosened, tighten it completely.
If the terminals of battery are corroded, clean it with warm water apply grease.



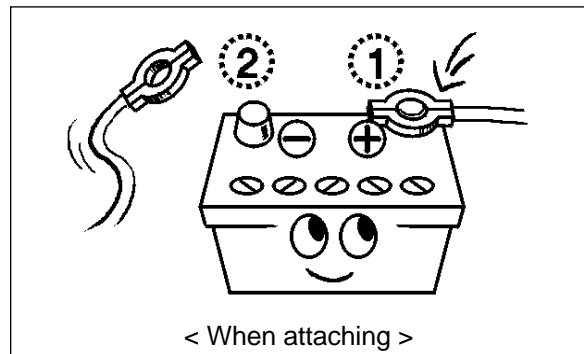
 Caution	<p>▶ The gas generated from the battery is explosive. comply with following instructions.</p> <ul style="list-style-type: none"> - Keep cigarettes, sparks and flames away from battery. Use a flashlight to check battery electrolyte level or indicator. - Never check battery charge by placing a metal object across the terminals. Use a voltmeter or hydrometer. - Always remove grounded (-) battery clamp first and assemble it last. If not, It can cause explosion by spark. <p>▶ Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, clothing and can cause blindness if splashed into eyes.</p> <ul style="list-style-type: none"> - Never disassemble the battery. - Do not touch the battery or liquid by bare hand without gloves or any protection. - Flush eyes with clean water for about 20 minutes If the electrolyte is splashed into the eyes. Get medical attention immediately. <p>▶ Charge the battery in an area with good ventilation and DO NOT charge a frozen battery.</p> <p>▶ Replace it with LS tractor genuine products or the battery with the same capacity.</p>
	
	
	





② Notices in attaching/detaching the battery

- When detaching battery, remove the negative(-) terminal from the battery first.
If not, when metal object is contacted between positive(+) terminal and the body, it may cause the dangerous spark.



- When attaching the battery, the positive (+) terminal must be attached first and the negative (-) terminal must be connected last.

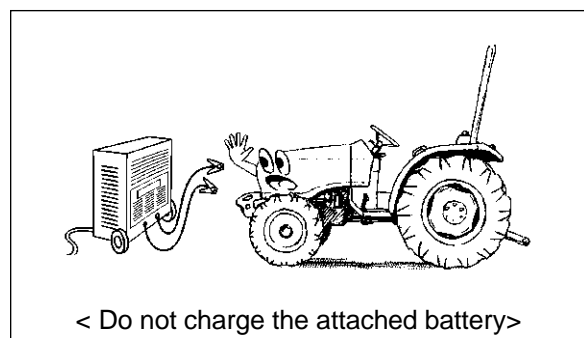
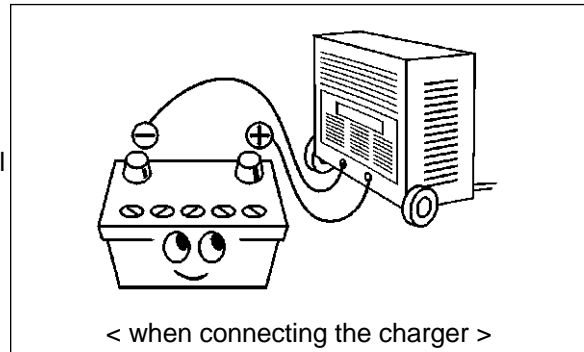


<div data-bbox="231 1081 379 1131">  Caution </div> <div data-bbox="244 1144 352 1234">  </div> <div data-bbox="244 1290 352 1379">  </div> <div data-bbox="244 1435 352 1525">  </div>	<ul style="list-style-type: none"> ▶ Stop engine and apply parking brake and remove the ignition key before replacing the battery. ▶ Put on eye protection and gloves to protect human body from poisonous sulfuric acid before handling the battery . ▶ Always remove grounded (-) battery clamp first and assemble it last. If not, It can cause an explosion by spark. ▶ Keep all flames and sparks away and DO NOT smoke while you charge the battery. ▶ Replaced old battery must be disposed of in a suitable manner, according to the national legislation or local regulations. Contact your authorized dealer. ▶ Replace it with LS tractor genuine products or the battery with the same capacity.
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③ Notices in charging the battery using separate charger

- As the battery fluid makes poisonous gas which can explode during the charging, comply with the following instructions.

1. Detach battery from the tractor.
2. Wait until the battery is warmed to room temperature.
3. Connect the cable of charger to the (+), (-) terminal of the battery correctly.
 - Connect (+) charger cable to (+) battery terminal.
: Red color
 - Connect (-) charger cable to (-) battery terminal.
: Black color
4. Plug in charger cord.
5. Charge battery with a Slow Charge.
6. Check the charging current and temperature of electrolyte during the charging.
7. Unplug charge cord and remove charger cables.
8. Attach battery to the tractor.



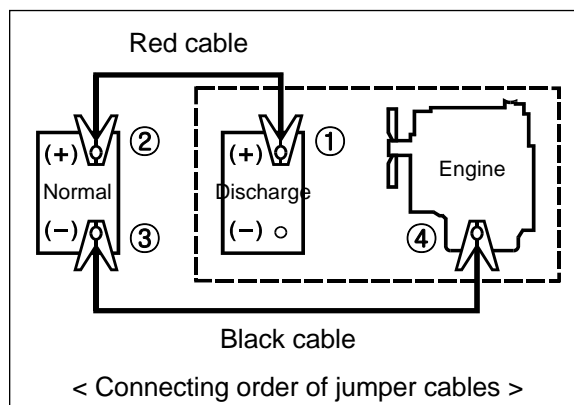
	<p>▶ Put on eye protection and gloves to protect human body from poisonous sulfuric acid before handling the battery .</p>
	<p>▶ Always remove grounded (-) battery clamp first and assemble it last. If not, It can cause explosion by spark.</p>
	<p>▶ Keep all flames and sparks away and DO NOT smoke while you charge battery.</p>
	<p>▶ Detach battery from the tractor before charging. DO NOT charge directly while the battery is attached to the tractor.</p>
	<p>▶ Turn off or unplug the charger cord, before connecting or disconnecting the charger cable to or from the battery</p>
	<p>▶ Charge the battery in an area with good ventilation.</p>
	<p>▶ Do not charge the frozen battery.</p>
	<p>▶ Use the rated 12V-5A charger.</p>
	<p>▶ Never check battery charge by placing a metal object across the terminals.</p>


④ How to use jumper cables

※ if the battery which is attached to the tractor is discharged and needs to connect a auxiliary battery, follow the instructions as below.

① Connecting Jumper cables

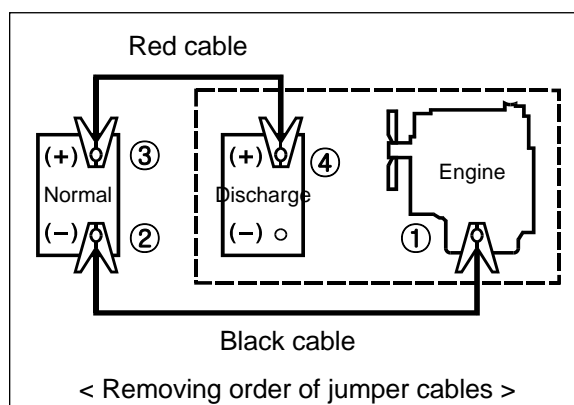
- Check followings before connecting the cables.
 - is the spring of clamp normal?
 - Is the cable and clamp cut-off?
- 1. Stop engine, apply parking brake and remove the ignition key.
- 2. Connect two (+) terminals of both batteries. with red cable.
(tractor battery-①, auxiliary battery-②)
- 3. Connect one end of black cable to (-) terminal(③) of auxiliary battery and the other end to engine block desired to start (④).
- 4. If engine does not start, check the electrolyte level of each battery.



<div style="text-align: center;">  <p>Caution</p> </div>	<p>▶ The gas generated from the battery can be exploded by spark. DO NOT connect the negative(-) cable of auxiliary battery to the negative (-) terminal of tractor battery. Make sure to connect to the engine block.</p> <p>▶ Keep all flames and sparks away and DO NOT smoke while you charge battery.</p>
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② Removing Jumper cables

- Remove jumper cables as right figure, "Removing order of jumper cables".



<div style="text-align: center;"> <p>Notice</p> </div>	<p>▶ Pay attention not to change the (+) and (-) pole. If not, it may cause a failure of electric circuit or the damage of wire and even the polarity of battery can be changed at over-discharged state.</p>
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5-11. Troubleshooting



Warning

► To avoid injury due to sudden start, apply parking brake and place the transmission gear in “Neutral” before checking and repairing.

Classification	Problems	Main causes	Solutions
Engine	The start motor does not turn when turning the key switch.	<ul style="list-style-type: none"> ▲ Start safety switch is not contacted. ▲ PTO switch is not on “OFF” position. ▲ Discharge of battery ▲ Terminal loosened ▲ Key switch failure ▲ Start motor failure 	<ul style="list-style-type: none"> ▲ Depress the clutch pedal fully ▲ Place PTO switch on “OFF” position ▲ Charge or replace ▲ Tighten ▲ Repair or replace ▲ Repair or replace
	The start motor turns but the engine does not start.	<ul style="list-style-type: none"> ▲ The battery is weak. ▲ Bad ground ▲ Improper viscosity of engine oil ▲ Air in fuel system ▲ Fuel filter clogged ▲ Error in engine body ▲ Fuel cock closed 	<ul style="list-style-type: none"> ▲ Charge or replace ▲ Tighten the ground ▲ Replace the oil with proper viscosity. ▲ Bleed the air ▲ Wash or replace the filter ▲ Repair ▲ Open the cock
	Engine revolution is irregular.	<ul style="list-style-type: none"> ▲ Air in fuel system ▲ Fuel filter clogged ▲ Injection nozzle clogged ▲ Fuel leakage ▲ Irregular fuel injection 	<ul style="list-style-type: none"> ▲ Bleed air ▲ Clean or replace the filter ▲ Repair or replace ▲ Repair ▲ Repair
	Engine turns more than maximum speed.	<ul style="list-style-type: none"> ▲ Impurities in governor 	<ul style="list-style-type: none"> ▲ Repair
	Engine stops suddenly during operation.	<ul style="list-style-type: none"> ▲ Fuel shortage ▲ Fault of nozzle ▲ moving parts failure due to bad lubrication 	<ul style="list-style-type: none"> ▲ Add fuel and bleed air. ▲ Repair or replace ▲ Repair

Cat.	Faults	Main causes	Solutions
Engine	Engine stops at low speed revolution.	<ul style="list-style-type: none"> ▲ Fault of injection pump ▲ Valve gap is not correct ▲ Poor nozzle pressure 	<ul style="list-style-type: none"> ▲ Repair ▲ Adjust the gap ▲ Repair
	Engine overheat	<ul style="list-style-type: none"> ▲ Lack of engine coolant ▲ Bad fan belt tension or broken ▲ Dirt attached to the radiator 	<ul style="list-style-type: none"> ▲ Supplement ▲ Adjust belt tension or replace ▲ Clean
	The color of exhausted smoke is white.	<ul style="list-style-type: none"> ▲ Air cleaner clogged ▲ Engine oil exceeded ▲ Lack of fuel supply 	<ul style="list-style-type: none"> ▲ Wash element ▲ Adjust in proper level ▲ Repair
	The color of exhausted smoke is black.	<ul style="list-style-type: none"> ▲ Bad quality of fuel ▲ Oversupply of fuel ▲ Fault of nozzle 	<ul style="list-style-type: none"> ▲ Use good quality fuel ▲ Repair ▲ Repair
	Engine power is low.	<ul style="list-style-type: none"> ▲ Injection nozzle clogged ▲ Carbon piled to valve seat ▲ Bad adjustment of valve gap ▲ Bad injection timing ▲ Lack of fuel supply ▲ Air cleaner clogged 	<ul style="list-style-type: none"> ▲ Repair ▲ Repair ▲ Repair ▲ Repair ▲ Check fuel system ▲ Clean or replace
	Engine oil pressure indicator is ON during operation.	<ul style="list-style-type: none"> ▲ Lack of engine oil ▲ Low viscosity of engine oil ▲ Warning light switch error ▲ Fault of oil pump ▲ Oil filter element clogged 	<ul style="list-style-type: none"> ▲ Supplement ▲ Replace the proper oil viscosity ▲ Replace ▲ Repair ▲ Replace element
	Battery charging indicator is ON during operation	<ul style="list-style-type: none"> ▲ Abnormal wiring ▲ Fault of alternator ▲ Fault of battery ▲ Bad fan belt tension or broken 	<ul style="list-style-type: none"> ▲ Check battery terminals and ground, repair ▲ Repair or replace ▲ Replace ▲ Adjust belt tension or replace
Clutch	Clutch is slipped.	<ul style="list-style-type: none"> ▲ Wrong clutch pedal play ▲ Friction lining worn or broken 	<ul style="list-style-type: none"> ▲ Adjust ▲ Replace
	Clutch does not cut-off.	<ul style="list-style-type: none"> ▲ Lining damaged ▲ Wrong clutch pedal play 	<ul style="list-style-type: none"> ▲ Repair or replace ▲ Adjust

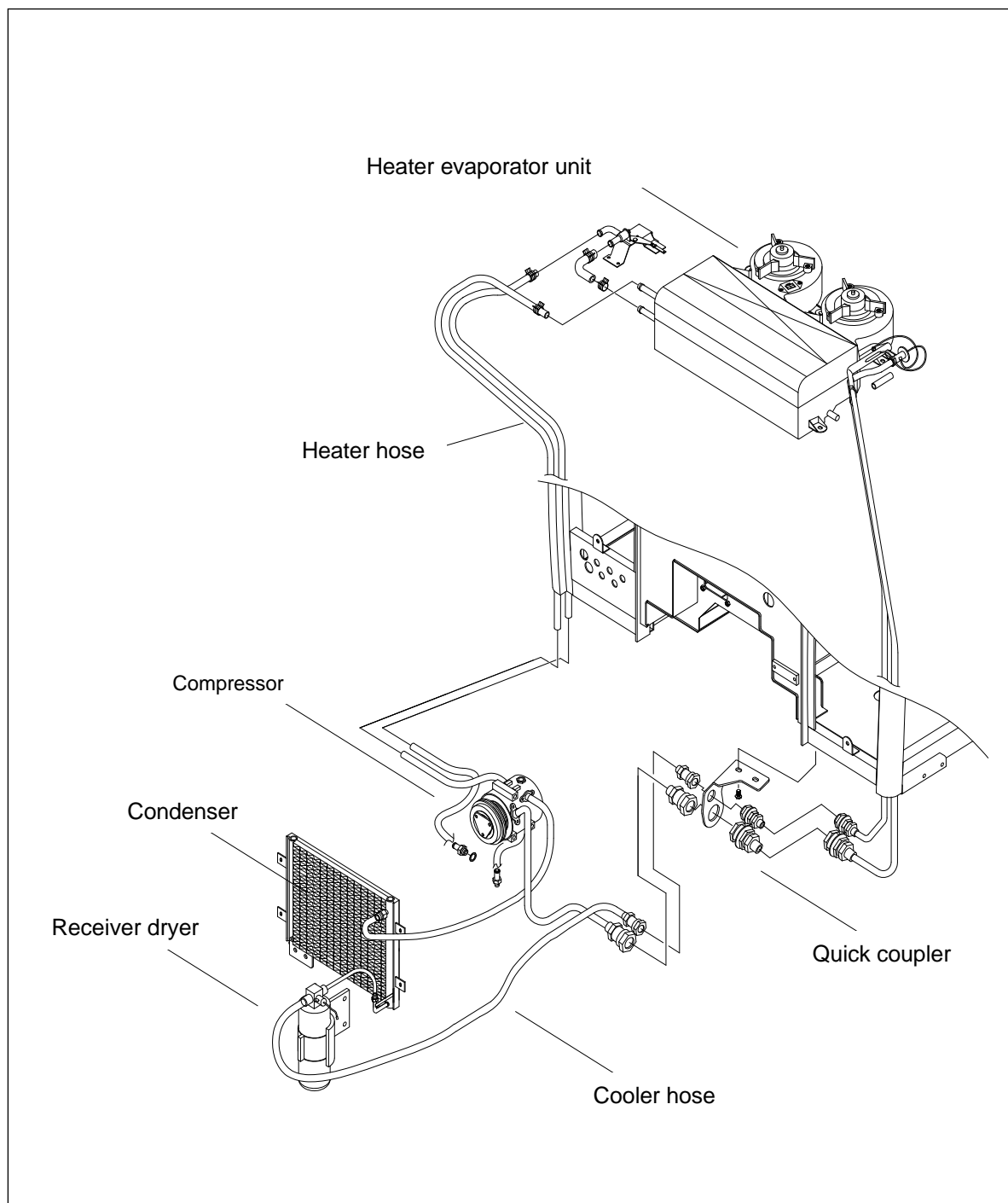
Cat.	Faults	Main causes	Solutions
Brake	Brake does not work or only one side works.	▲ Wrong brake pedal play. ▲ Lining worn or broken ▲ Left/right pedal play is different	▲ Adjust ▲ Replace ▲ Adjust
	After brake pedal working, it does not return.	▲ Return spring damaged ▲ Lack of grease in shaft parts	▲ Replace the spring ▲ Remove the rust, apply grease
Hydraulic System	Lift arm does not raise.	▲ Lack of transmission oil ▲ Air in the suction pipe ▲ Hydraulic filter clogged ▲ Hydraulic pump failure ▲ Control valve failure ▲ Cylinder or cylinder related parts broken	▲ Add oil ▲ Tighten the filter or replace seal of connecting parts ▲ Clean the filter or replace ▲ Repair or replace ▲ Repair or replace ▲ Repair or replace
	Oil leakage	▲ Connecting part loosened ▲ Oil seal damaged ▲ Pipe cracked	▲ Tighten ▲ Replace ▲ Replace
	If lever is placed on the raising position, and relief valve sound off.	▲ Upper limit of position control lever is changed	▲ Adjust the upper limit
	Lift arm does not lower	▲ Down speed control valve locked ▲ Control valve failure ▲ Cylinder damaged ▲ Lift shaft turning part damaged	▲ Turn the knob counter-clockwise ▲ Repair or replace ▲ Replace ▲ Repair or replace

Cat.	Faults	Main causes	Solutions
Steering System	Hydraulic steering system does not work.	<ul style="list-style-type: none"> ▲ Pump worn or part damaged ▲ Steering unit damaged or worn ▲ Oil leakage by steering cylinder piston seal damaged or worn ▲ Oil leakage by pipe damage 	<ul style="list-style-type: none"> ▲ Repair or replace ▲ Repair or replace ▲ Repair ▲ Repair or replace
	Hard to operate the steering wheel.	<ul style="list-style-type: none"> ▲ Steering unit <ul style="list-style-type: none"> - Steering unit spline and column spline is not aligned - Spool and sleeve damaged by foreign material - Excessive tightening torque of end cap bolt ▲ Pump <ul style="list-style-type: none"> - Low speed - Wearing or failure ▲ Relief valve <ul style="list-style-type: none"> - Valve spool clogged - Setting pressure too low 	<ul style="list-style-type: none"> ▲ <ul style="list-style-type: none"> - Check mounted condition of steering unit and column - Replace - Apply regular torque ▲ <ul style="list-style-type: none"> - Adjust RPM or Repair - Repair or replace ▲ <ul style="list-style-type: none"> - Repair or replace - Reset or adjust
	Cylinder does not work smoothly as steering wheel movement	<ul style="list-style-type: none"> ▲ Air in steering line if not used for a long time ▲ Air in suction pipe ▲ Piston seal damaged 	<ul style="list-style-type: none"> ▲ Bleed air ▲ Repair ▲ Replace
	Steering wheel turns to the opposite direction.	<ul style="list-style-type: none"> ▲ bad assembly of steering gear ▲ bad assembly of steering hose 	<ul style="list-style-type: none"> ▲ Repair ▲ Repair
	Oil leakage of steering pump, steering unit, cylinder and fittings	<ul style="list-style-type: none"> ▲ Seal damaged 	<ul style="list-style-type: none"> ▲ Replace seal
	Abnormal noise	<ul style="list-style-type: none"> ▲ Lack of oil ▲ Exceeding resistance of suction line ▲ Air in system 	<ul style="list-style-type: none"> ▲ Aid oil ▲ Replace filter or repair pump ▲ Bleed air

Cat.	Faults	Main causes	Solutions
Electric System	Battery is not charge	<ul style="list-style-type: none"> ▲ Abnormal wiring ▲ Alternator failure ▲ Lack of fan belt tension or broken ▲ Abnormal battery 	<ul style="list-style-type: none"> ▲ Check the tightening state of terminal and ground ▲ Repair or replace ▲ Adjust fan belt tension or replace ▲ Replace
	Headlight is dark.	<ul style="list-style-type: none"> ▲ Battery capacity is low ▲ Bad wiring and contact 	<ul style="list-style-type: none"> ▲ Charge or replace ▲ Check and repair
	Headlight does not ON.	<ul style="list-style-type: none"> ▲ Light bulb cut-off ▲ Fuse blown 	<ul style="list-style-type: none"> ▲ Replace ▲ Check the cause, and replace
	Horn does not sound.	<ul style="list-style-type: none"> ▲ Switch failure ▲ Abnormal wiring ▲ Horn failure 	<ul style="list-style-type: none"> ▲ Replace ▲ Repair ▲ Replace
	Turn signal Light does not work.	<ul style="list-style-type: none"> ▲ Light bulb cut-off ▲ Bad connection ▲ Fuse blown 	<ul style="list-style-type: none"> ▲ Replace ▲ Tighten terminals ▲ Check the cause, and replace
	Cold start aid indicator does not ON. (option)	<ul style="list-style-type: none"> ▲ Relay or timer damaged ▲ Bad connection of preheat plug wiring 	<ul style="list-style-type: none"> ▲ Replace ▲ Check and tighten
	Other illuminating and indicator does not ON.	<ul style="list-style-type: none"> ▲ Fuse blown ▲ Light bulb cut-off 	<ul style="list-style-type: none"> ▲ Check the cause, and replace ▲ Replace

6. Air conditioning system

6-1. The name of each part of cooling and heating system



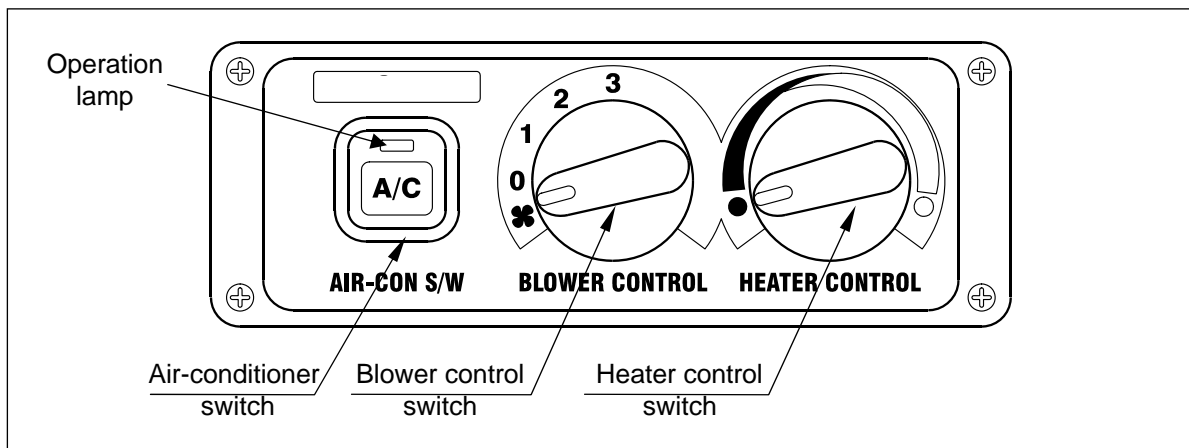
Caution

► Maintenance of the air conditioning system components (Compressor, Receiver drier, Condenser, Heater evaporator unit and connection parts) must be performed in the designated dealer. DO NOT disassemble the components arbitrary.

6-2. How to use Air conditioner and Heater

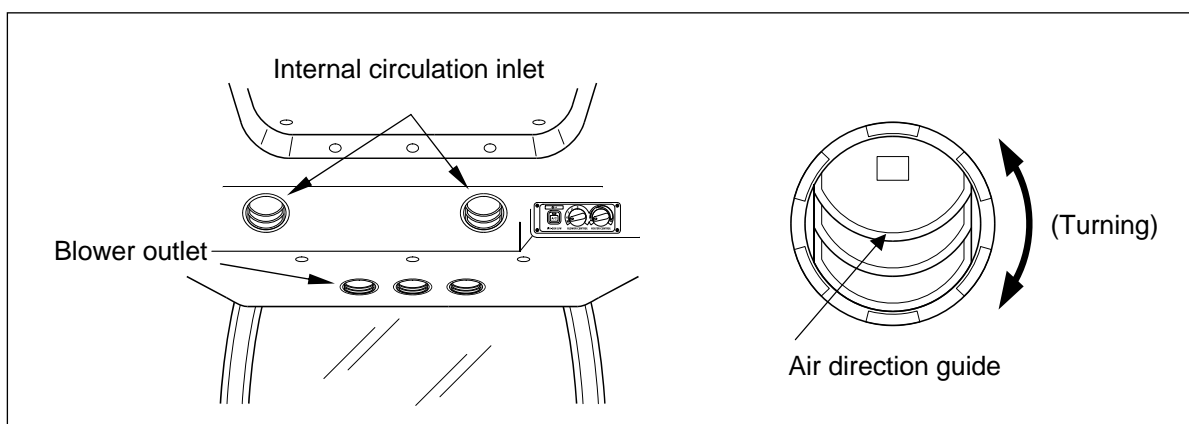
(1) How to operate air conditioner and heater


- Air conditioner switch
 - Used for selecting the air conditioning and if you press the switch button, and If the blower control switch is in 1, 2, 3 position, the operation lamp should be ON and the air conditioner begins to work.
- Blower control switch
 - Blower is controlled by 3 stages and if blower control switch is on "0", it stops.
- Heater control switch
 - Used for selecting warm air and cool air by operating the heater control switch. If you turn the switch clockwise (blue), the cool air blows and if counter-clockwise, the warm air blows.



(2) Air direction control

- Available to control the air direction by turning the blower outlet or by adjusting the guide direction.
- For internal circulation, open the Internal circulation inlet.
- When operating the air conditioner or heater, open the blower outlet always.

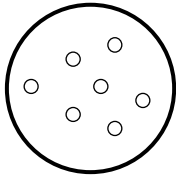
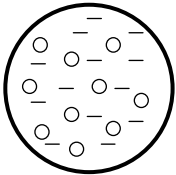
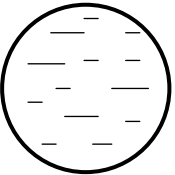
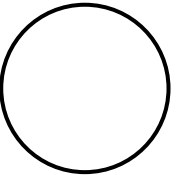


 Caution	<ul style="list-style-type: none">▶ Never sleep in the cabin during the air conditioner or heater running. It may cause suffocation.▶ When operating in the cabin for a long time, circulate the air outside occasionally.
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6-3. Every 6 month check

(1) Checking refrigerant amount

- The refrigerant amount can be checked through the checking window of receiver dryer as below.
- Preparation for checking
 - (a) Run engine at more than 1600rpm.
 - (b) Turn the blower control switch on '3' stage.
 - (c) Place the air conditioner switch "ON" and turn right the heater control switch fully.

Check point	No trouble	Troubles		
Temperature of high/low pressure pipe	▲ High pressure pipe is hot and low pressure pipe is cold. ▲ Temperature difference is clear.	▲ High pressure pipe is warm and low pressure pipe is a little cold. ▲ Temperature difference is not clear.	▲ High pressure/low pressure pipe has hardly temperature difference.	▲ High pressure pipe is hot and low pressure pipe is a little cold but there is a temperature difference.
Checking window state	▲ It shows almost transparent bubble but it becomes transparent soon by changing the engine rpm. 	▲ It shows the flow of bubble always. ▲ It may be transparent or white bubble. 	▲ It shows the flow of fog somewhat. 	▲ The bubble does not shown even if the engine runs idle. 
Pipe connecting state	No trouble	Some pollution by oil dirt	Severe pollution by oil dirt	
refrigerant amount	Sufficient and no trouble	Insufficient a little	almost exhausted	overcharged

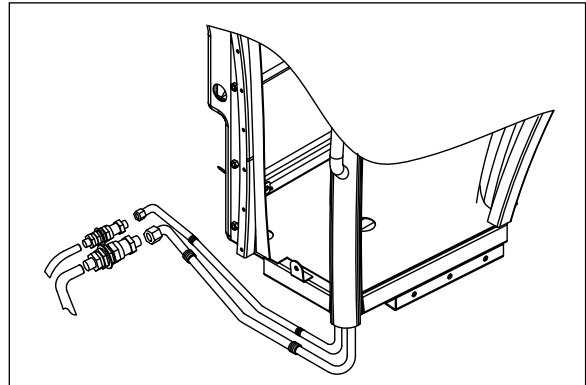
Notice	<p>▶ The refrigerant status on checking window can be a little different figure by the ambient temperature. Generally, the bubble is apt to generate during mid summer and it is hard to generate during mid winter.</p> <p>▶ If it is a trouble on air conditioning system, DO NOT disassemble the components arbitrary, contact the dealer or service center.</p>
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(2) Cleaning Condenser and Radiator screen

- Stop engine and allow engine to cool. Open bonnet and remove the radiator screen.
- Wash the mud or foreign materials added to the condenser and radiator screen with soft brush or low pressurized air or water.
- Pay attention that the cooling fin does not damaged. If necessary, repair the distortion of fin.

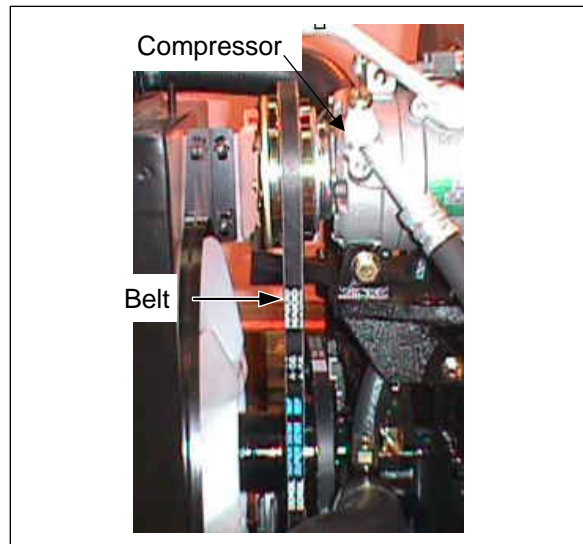
(3) Checking Leakage

- Check the tightening torque and oil leakage state of the connecting section.
- If oil spot and foreign materials is added a lot, it means that there is a leakage of refrigerant. check the refrigerant amount.



(4) Belt tension adjustment

- Check the belt tension is proper and If necessary, adjust the tension by compressor adjusting bolt.
- Tension : approx. 10 mm (0.39 in.)
(when pressed by 98N (22.04 lbs))
- Check the damaged part of the belt and if necessary, after checking the pulley alignment, replace it by a new one.



6-4. Every year check

(1) Compressor check

- Check the oil leakage on the magnet clutch in front of the compressor.
- Check the abnormal noise sounds and If necessary, contact the dealer or service center.

(2) Control switch check

- Check the electric switches of the control panel is normally operated.



Caution

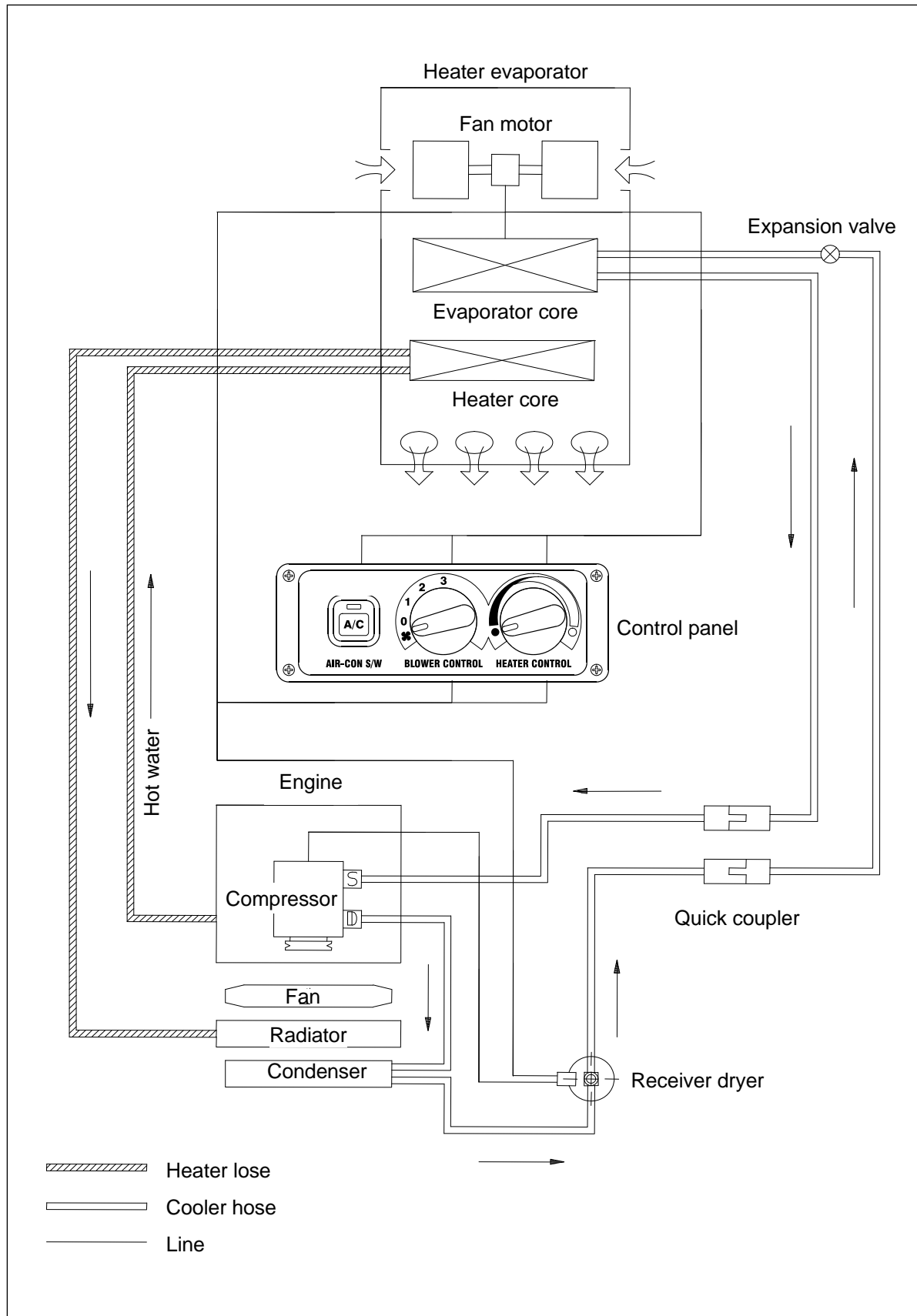
► If there is a trouble on air conditioning system, DO NOT disassemble the components arbitrary, contact the dealer or service center.

6-5. Troubleshooting

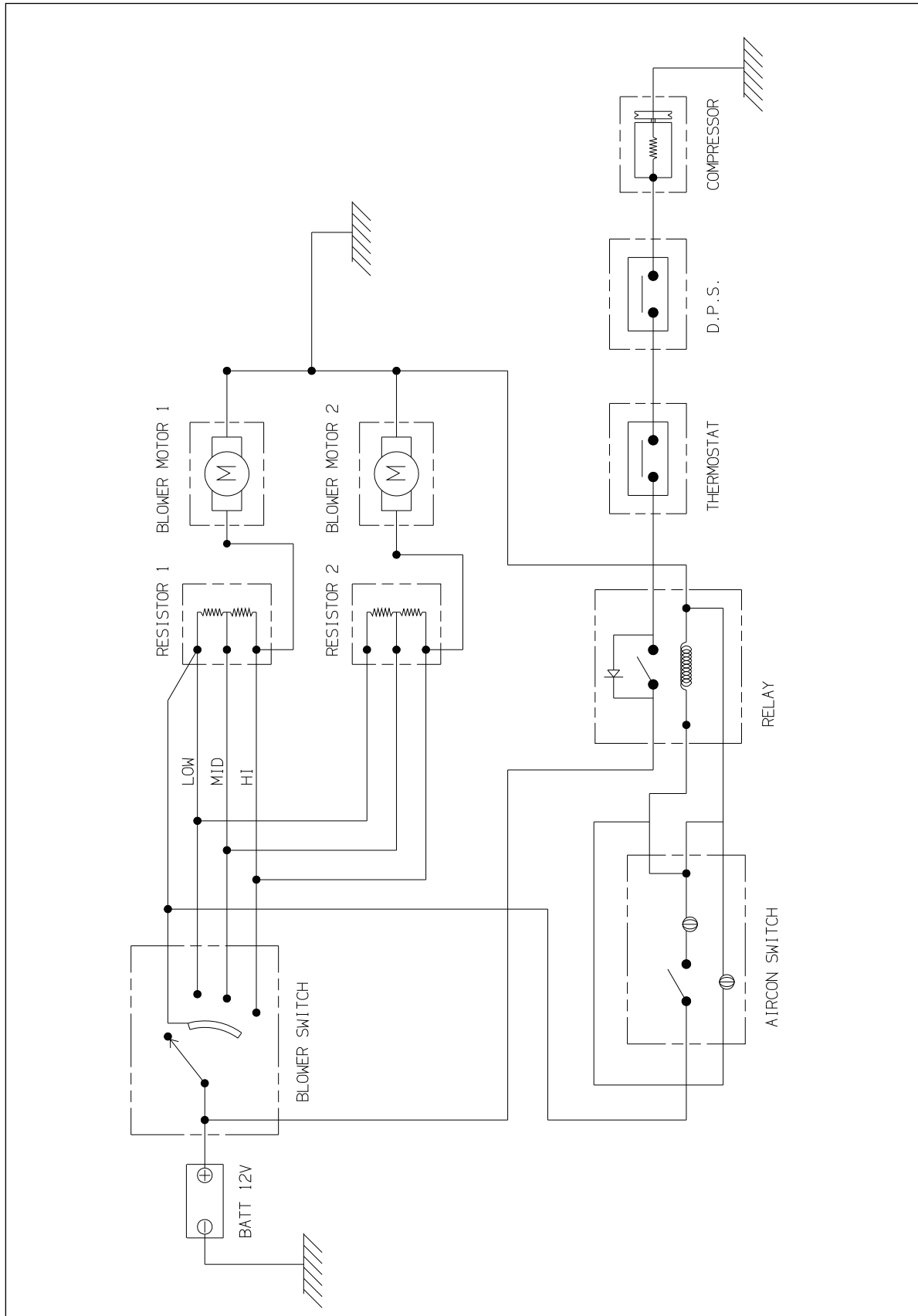
No.	Failures		Cause	Actions
1	Fan motor does not turn.		Fuse blown	Check and replace.
			Wiring cut off and poor connection.	Repair the wiring or connect right.
			Failure of fan motor.	Replace.
			Resistor, relay and switch cut off.	Replace.
2	Fan motor is normal but the air volume is small.		Evaporator or heater core was clogged.	Remove the obstacles and clean the cores.
			Duct was misaligned.	Repair the duct.
			Fan damaged or Fan motor failure.	Replace.
			Filter was clogged	Clean or replace
3	Air conditioning is insufficient despite of the normal operation of compressor and blower.	Low and high pressure is low.	Leakage of refrigerant.	Contact the dealer.
		Low and high pressure is high.	Refrigerant overcharged.	Contact the dealer.
			Condenser or radiator screen was clogged.	Clean condenser and the screen.
			Air is in air conditioning line.	Contact the dealer.
			Expansion valve does not control the refrigerant flow.	Contact the dealer.
		Low pressure is high, high pressure is low.	Compressor leakage.	Contact the dealer.
		Low pressure is vacuum intermittently.	Water is in air conditioning line.	Contact the dealer.
		Low pressure is vacuum, high pressure is low.	Receiver dryer, pipe or expansion valve is clogged.	Contact the dealer.

No.	Failures	Cause	Actions
4	The compressor does not turn or it is hard to revolve.	Belt loosened.	Adjust the belt tension.
		Temperature switch or pressure switch is "ON".	Check refrigerant amount.
		Coil of magnet clutch was shorted or cut off.	Contact the dealer.
		Compressor failure.	Contact the dealer.
		Wiring cut off or poor connection such as ground.	Check and repair.
5	The warm airflow does not blow.	The amount of warm water is small.	Check and add the engine coolant.
		Heater line is clogged or distorted.	Check and repair.
		Poor operation of the thermostat of engine coolant.	Repair or replace.

6-6. System diagram



6-7. Air conditioner wiring diagram

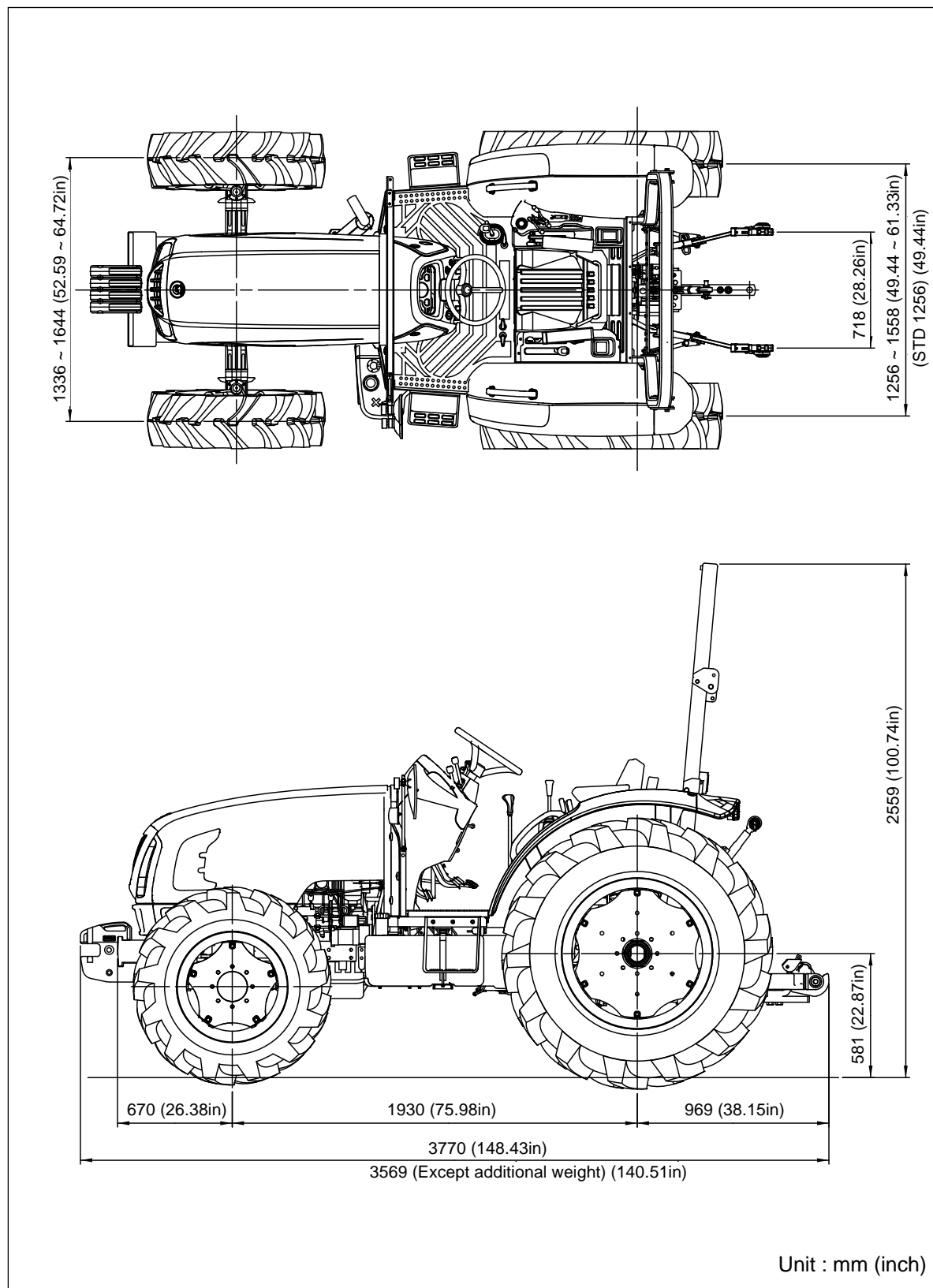


6-8. Specification

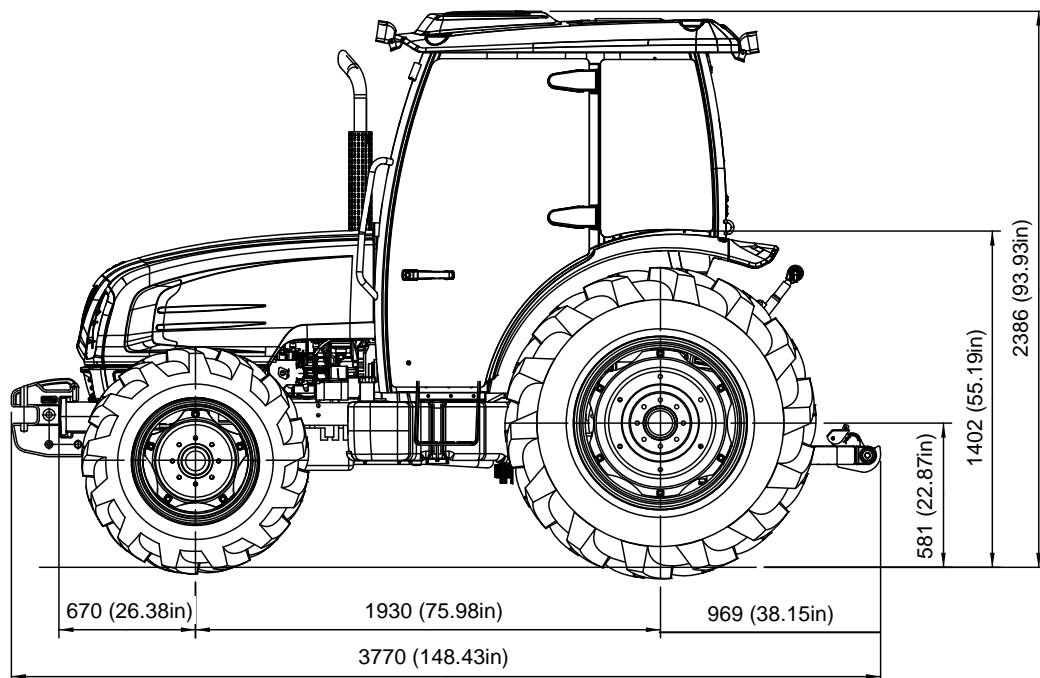
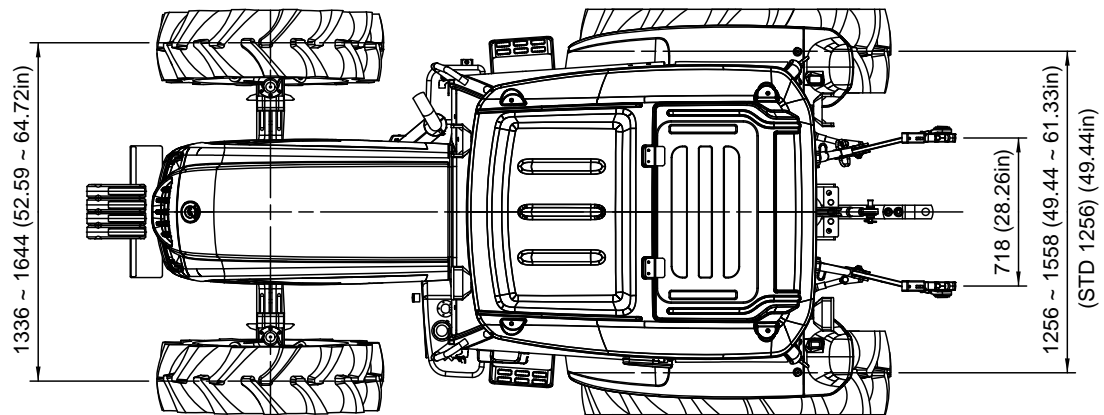
Classification		Specification	Remarks
Air conditioning capacity		15,480 KJ/h	
Heating capacity		15,899 KJ/h	
Maximum air flow		400 m³/h (105,675 gal)	
Rated voltage		DC 12 V	
Temperature control		THERMOSTAT	
Blower control		Electric	
Operating pressure of Pressure switch	High pressure	OFF : 3138 KPa (455 psi)	
		ON : 588 KPa (85 psi)	
Low pressure		200 KPa (29 psi)	
Compress -or	Model	DKV-11C (VANE ROTARY)	
	Capacity	110.5 cc/rev (6.74 in³/rev)	
	PULLY diameter	Φ 125	
Receiver dryer		Model : ASRN60PD - M16	
Refrigerant		R-134a, 850 ~ 900 g (29.98 ~ 31.74 oz)	

7. Dimension and specification

Frame type - U5010

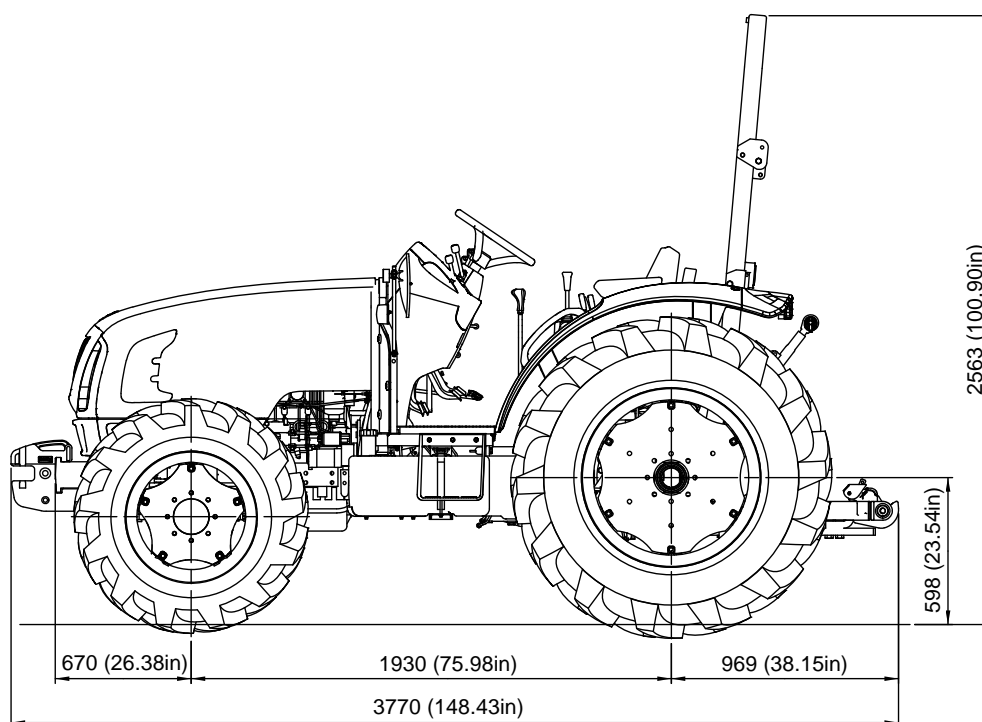
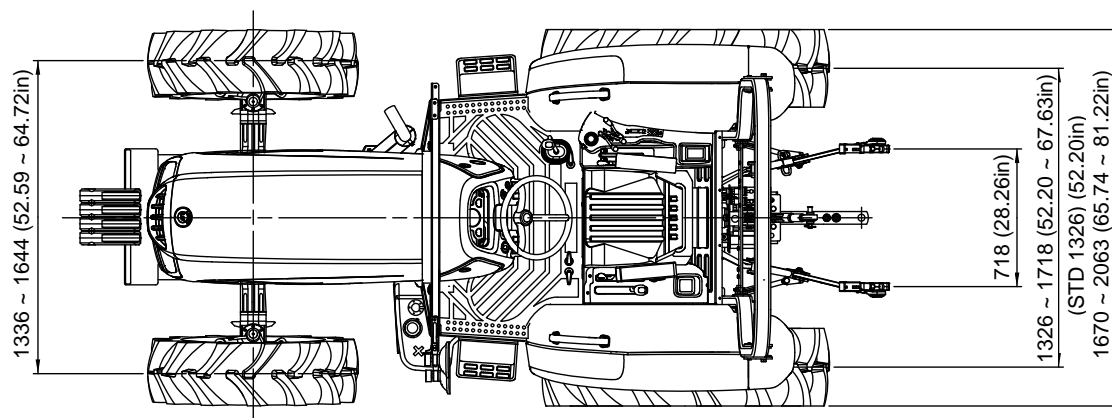


Cabin type - U5010C



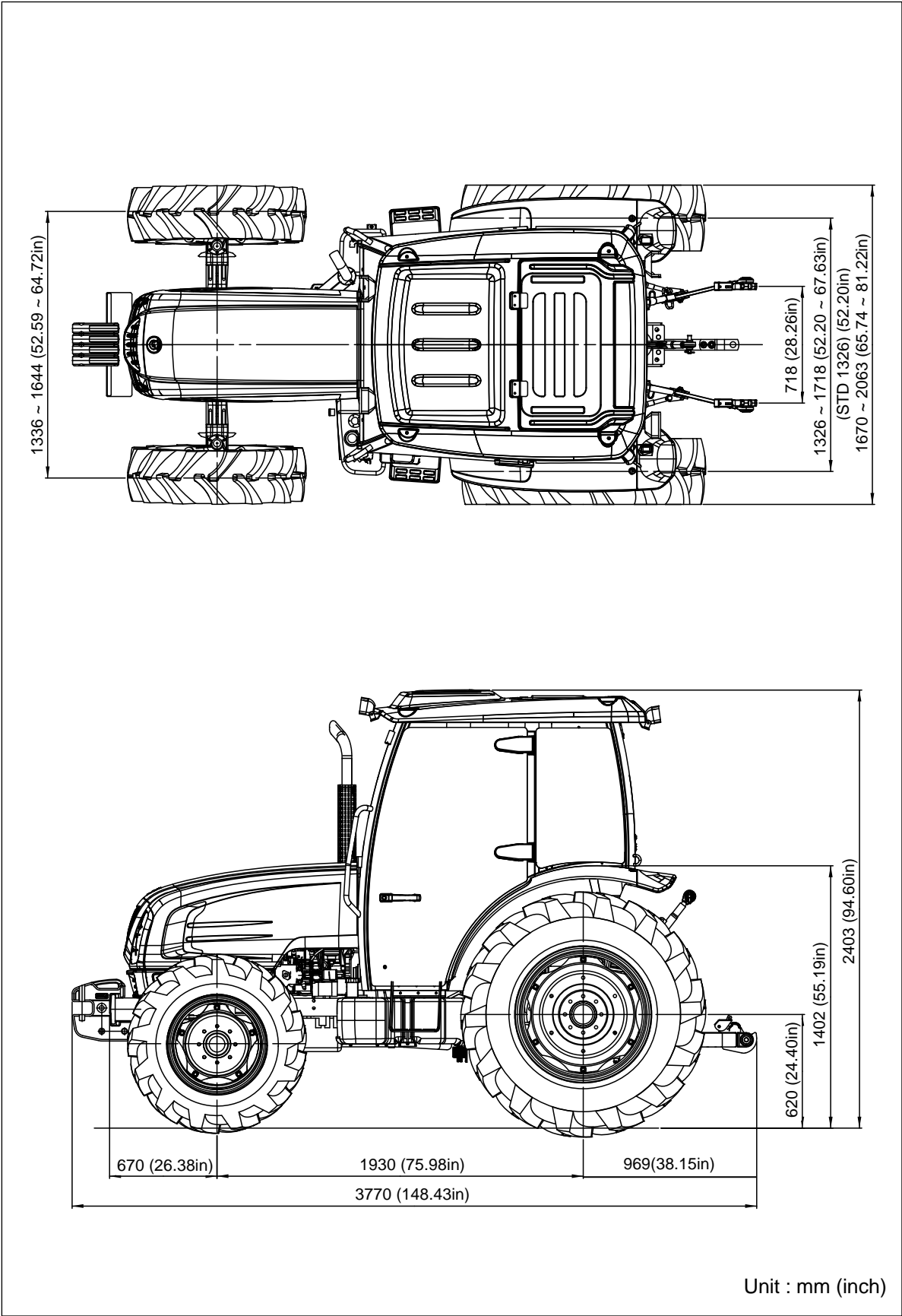
Unit : mm (inch)

Frame type - U5020

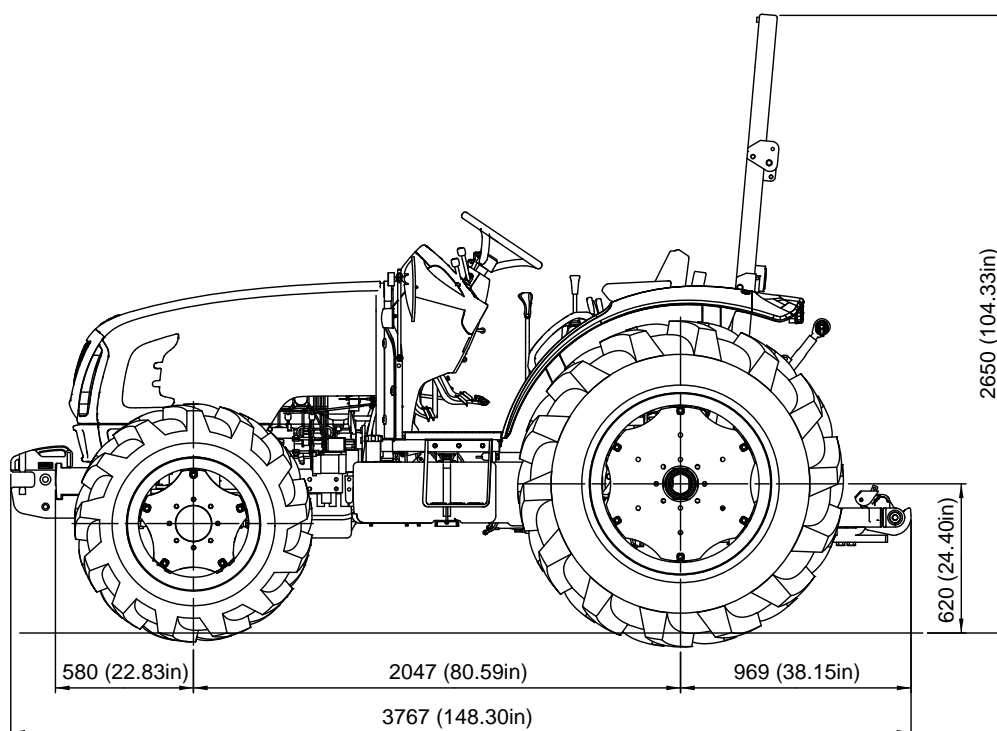
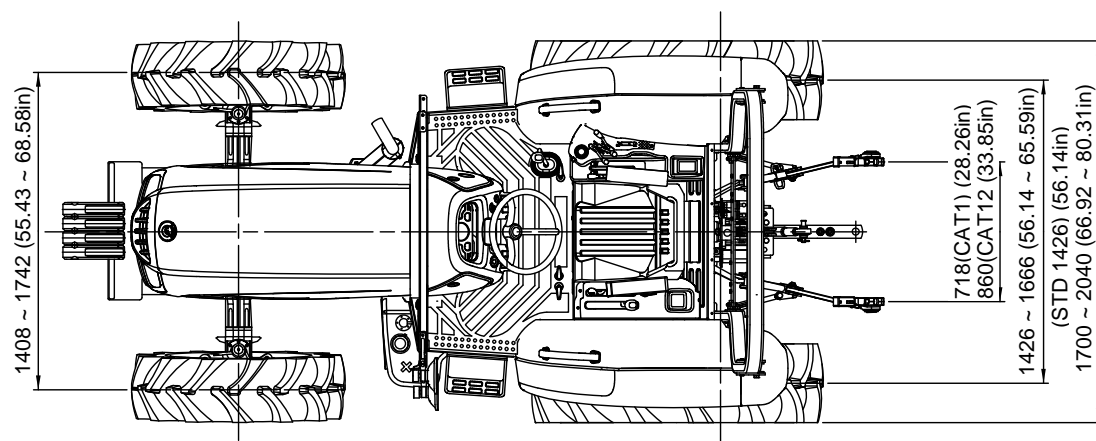


Unit : mm (inch)

Cabin type - U5020C

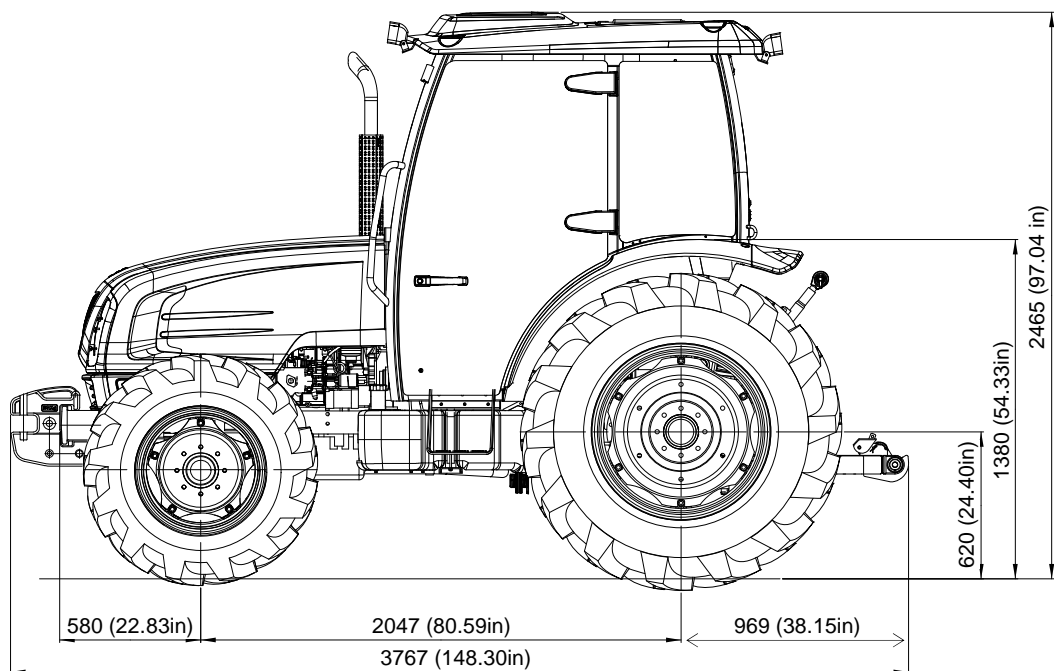
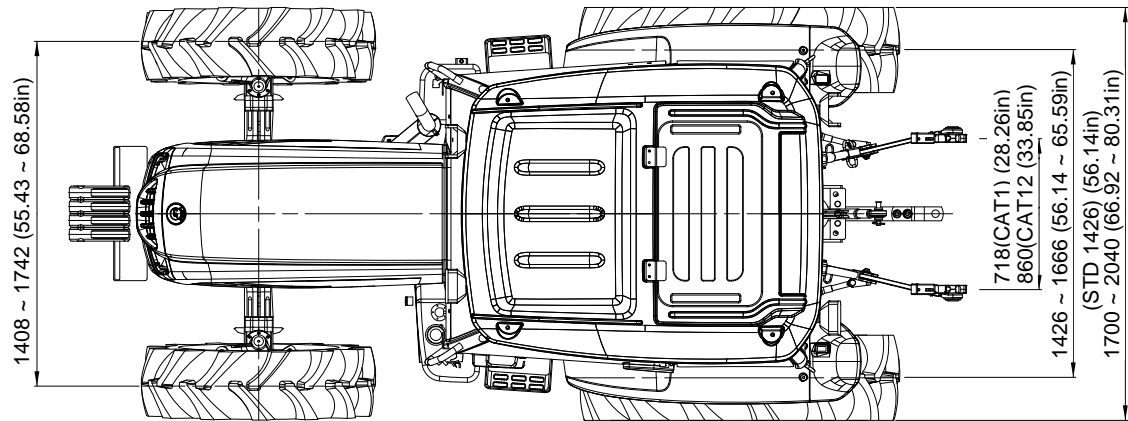


Frame type - U5030



Unit : mm (inch)

Cabin type - U5030C



Unit : mm (inch)

		U5010	U5020	U5030
WEIGHT	Frame Type	1995kg (4398 lb)	1995kg (4398 lb)	2265kg (4993 lb)
	Cabin Type	2200kg (4850 lb)	2200kg (4850 lb)	2470kg (5445 lb)
	Bumper	21kg (46.3 lb)		33kg (72.8 lb)
	Front weight	20kg (44.1 lb) x 4		20kg (44.1 lb) x 4
ENGINE	Model	S4Q		S4S-D
	Type	4-stroke, vertical, water cooling		
	No. of cylinder	4		
	Diameter x stroke	88 x 103mm (3.46 x 4.05 in)		94 x 120mm (3.70 x 4.72 in)
	Displacement	2505cc (152.86in3)		3331cc (203.27in3)
	Rated speed	2600 rpm		2500 rpm
	Maximum speed	2780 rpm	2750 rpm	2680 rpm
	Engine power	31.6kW/2600 rpm	34.6kW/2600 rpm	40.5kW/2500 rpm
FUEL INJECTION PUMP	Type	Distribution type		In-line
	Speed regulation	Centrifugal		
	Fuel filter	Replaceable cartridge type		
	Air cleaner	Dry		
	Injection order	1-3-4-2		
LUBRICATION SYSTEM	Type	Forced circulation		
	Pump	Trochoid gear pump		
	Filter	Replaceable cartridge type		
COOLING SYSTEM	Pump	Centrifugal type		
	Temperature control	Thermostat		
CLUTCH	Type (MAIN / PTO)	Dry single disk / Wet multiple disk		
	Operation (MAIN / PTO)	Pedal / Electric-hydraulic		
	Return system (MAIN / PTO)	Diaphragm / Coil spring		

			U5010	U5020	U5030
TRANSMISSION	Forward / Reverse		Synchro-shuttle type		
	Gear type	Main gear	Helical / Synchromesh		
		Range gear	Spur / Constant mesh		
		Creeper gear	Helical / Constant mesh		
	Gear stage	Main gear	4		
		Range gear	4		
		Creeper gear	ON / OFF		
DIFFERENTIAL LOCK	Gear type		Spiral bevel		
	Operation		Foot pedal		
PTO	Type		Independent PTO / GSP (option)		
	No. of speed		3 stage		
	PTO / Engine		1 stage : 540 rpm / 2409 rpm 2 stage : 750 rpm / 2375 rpm 3 stage : 1000 rpm / 2381 rpm		
HYDRAULIC LIFT	3 Point linkage		CAT1		CAT1 or 2
	Draft load detection		Upper link		
	Lowering speed control and cylinder fixing device		Down speed control valve		
	Pump		Gear type, Engine drive		
	Rated flow		36.4LPM (9.6GPM)		37.5LPM (9.9GPM)
	System pressure		16.7MPa (2422psi)		
	Lift capacity (lower link end)		1516 kgf (3342 lbf)		1852 kgf (4083 lbf)
REMOTE CONTROL	No. of spool		2 (option : 1 or 3)		
	Valve operation mode		Double acting , Spring return type		

		U5010	U5020	U5030
REMOTE CONTROL	No. of Quick coupler	4 (option : 2 or 6)		
	Aux. Valve for front loader	Front loader valve / 4-ports (option)		
STEERING SYSTEM	Wheel position	Center		
	Type	Hydrostatic		
	Min. turning radius (w/ brake)	3.0m (9.8ft)	3.2m (10.4ft)	3.3m (10.8ft)
	Max. steering angle	55° / 44°		
	No. of steering turns	3.7turns from stop to stop		
	Oil	Transmission oil		
ALTERNAT OR	Rated output	12V, 0.6kW (50A)		
	Voltage control	Built-in (IC type)		
BATTERY	Voltage	12V		
	Capacity	100AH		
START MOTOR	Output power	2.2kW		
	Operation	Solenoid		
LIGHTS	Headlights (Upper / Lower)	12V 55W / 60W		
	Turn signal lights	12V 21W		
	Side lights (front)	12V 5W		
	Stop light / Taillight (rear)	12V 21W / 5W		
	Work light	12V 35W		
OTHERS	Instrument lights	LED		
	Indoor light (CAB)	12V 10W		
	Instrument indicator light	LED		
	Cold start aid	Glow plug preheating		

			U5010	U5020	U5030
STD. AGR. TIRE	Front		8.3-20 (6PR)	9.5-20 (6PR)	11.2-20 (8PR)
	Rear		12.4-28 (6PR)	13.6-28 (6PR)	14.9-28 (8PR)
WHEEL TRACK ADJUSTMENT	Front	Stage	7 Stage		7 Stage
		Range	1336~1644mm (52.6 ~ 64.7 in.)		1408~1742mm (55.4 ~ 68.6 in.)
	Rear	Stage	6 Stage	5 Stage	4 Stage
		Range	1256~1558mm (49.4~61.3 in.)	1326~1718 mm (52.2~67.6 in.)	1426~1666mm (56.1 ~ 65.6 in.)

**** These specifications are only general product information and can be changed to improve the product qualification without any prior notification ****

Lubricants and Capacity

LUBRICANTS	CAPACITY	INTERNATIONAL STANDARD	RECOMMENDED ITEMS
Engine coolant (Radiator)	9.0 ℓ (2.4gal) : U5010 / U5020 10.8 ℓ (2.9gal) : U5030	ASTM D5216	Soft water (50%)+ Anti-freeze (50%)
Fuel	60 ℓ (15.9gal)	ASTM D975 No.2	Low Sulfuric Diesel Fuel
Engine oil (crankcase)	7.0 ℓ (1.8gal) : U5010 / U5020 9.0 ℓ (2.4gal) : U5030	API CF-4, CG-4 Winter : 10W/30 Summer : 20W/40 Spring/ Fall : SAE 15W/40, SAE 20	GS Caltex RPM Dello 200
Transmission oil (common use for Hydraulic lift, hydraulic steering device)	47 ℓ (12.4gal)	API-GL4 ISO VG 46/68	LSTH570 (LS Tractor T/M & Hyd. oil) Manufacturer : GS Caltex or S-OIL TOTAL Co. Ltd.
Front axle oil	10 ℓ (2.6gal)	API-GL4 SAE 80W	EPK 80W90 Manufacturer : S-OIL TOTAL Co. Ltd.
Grease (Front axle arm holder, Steering cylinder pin, 3-point linkage)	Proper amount	NLGI 2	CALTEX MAHWAK Multi purpose or CALTEX MAHWAK All purpose

RECOMMENDED OIL VISCOSITIES

The correct engine oil viscosity grade is dependent upon ambient temperature. Refer to the chart below when selecting oil for your tractor engine.

In areas where prolonged periods of extreme temperatures are encountered, local lubricant practices are acceptable ; such as the use of SAE 5W 30 in extreme low temperatures or SAE 50 in extreme high temperatures.

Starting Temperature ℃(°F)	-30 (-22)	-25 (-13)	-20 (-4)	-15 (-5)	-10 14	-5 (23)	0 (32)	-10 (50)	20 (68)	30 (86)	40 (104)
Oil Viscosity	<div> <div>SAE 5W-20</div> <div>SAE 10W-30</div> <div>SAE 15W-40</div> </div>										



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