Be the ONE*

LS TRACTOR

OPERATOR'S MANUAL

XU5055 • XU5065

LS Tractor

FEDERAL EMISSIONS WARRANTY

WARRANTY STATEMENT

ISM warrants that your 2013 and later off-road diesel engine was designed, built and equipped to conform to applicable U.S. Environmental Protection Agency (EPA) regulations and is free from defects in materials and workmanship which cause it to fail to conform with such regulations, for the following period of operation:

- For a period of two (2) years or 1,500 hours of operation, whichever occurs first, after the date of delivery to the initial retail owner of any variable speed off-road diesel engine rated at less than 19 kW (25 hp) and any constant-speed off-road diesel engine rated at less than 37 kW (50 hp) with rated speed greater than or equal to 3,000 rpm.

- For a period of five (5) years or 3,000 hours of operation, whichever occurs first, after the date of delivery to the initial retail owner for all other off-road diesel engines.

WARRANTY INFORMATION

The model year, class of diesel engine, and emission application for your engine are identified on the emission control information label affixed to the right hand side of your engine's front side of timing gear case or head cover.

Any emission control system parts that are proven defective during normal use will be repaired or replaced during the warranty period. The warranty repairs and service will be performed by any authorized ISM dealer at the dealer's place of business, with no charge for parts or labor (including diagnosis).

As the engine owner, you are responsible to perform all the required maintenance listed in your owner's manual. ISM will not deny an emission warranty claim solely because you have no record of maintenance; however, a claim may be denied if your failure to perform maintenance resulted in the failure of a warranted part. Receipts covering regular maintenance should be retained in the event of questions and these receipts should be passed on to each subsequent owner of the engine.

It is recommended that replacement parts used for maintenance or repairs be ISM Service Parts to maintain the quality originally designed into your emission certified engine. The use of non-ISM parts does not invalidate the warranty on other components unless the use of such parts causes damage to warranted parts.

ISM wishes to assure that the emission control systems warranty is being properly administered. If you believe you have not received the service to which you are entitled to under this warranty, you should contact the nearest ISM Branch Office for assistance. The address and phone number of each Branch Office is in your owner's manual.

EXCEPTIONS

Please note that Emission Warranty does not cover:

1. Systems and parts that were not first installed on the new equipment or engine as original equipment by ISM

2. Part malfunctions caused by abuse, misuse, improper adjustment, modification, alteration, tampering, disconnection, improper or inadequate maintenance, or use of non-recommended fuels and lubricating oils.

3. Damage caused by accident, acts of nature, or other events beyond ISM's control.

4. Replacement of expendable items made in connection with scheduled maintenance.

5. Parts requiring replacement or inspection or adjustment during scheduled maintenance intervals where the part is not defective.

6. Parts which are not ISM Service Parts.

7. Loss of time, inconvenience, loss of use of equipment/engine or commercial loss.

8. Equipment with an altered or disconnected hourmeter where the hours cannot be determined.

9. Equipment normally operated outside the United States

10. Non-defective parts replaced by other than ISM dealers.

PARTS COVERED

This emission control system warranty applies to the following emission control parts.

Fuel Injection Pump

Fuel Injectors

Intake Manifold

Exhaust Manifold

Positive Crankcase Ventilation system parts (including PCV Valve and Oil Filler Cap)

Turbocharger (if equipped)

Charge air cooling system (if equipped)

Smoke puff limiter <if equipped>

EGR system (including EGR Valve, EGR Pipe and EGR cooler) (if equipped)

Intake throttle valve (if equipped)

Exhaust Aftertreatment system (if equipped)

Aftertreatment Regeneration device (if equipped)

Miscellaneous hoses, clamps, connecters and sealing gaskets or devices used in the above systems.

CALIFORNIA EMISSION CONTROL
WARRANTY STATEMENT
California Air Resources Board (CARB)
YOUR WARRANTY RIGHTS AND OBLIGATIONS

The California Air Resources Board and ISM (ISM) are pleased to explain the emission control system warranty on your 2013 and later engine. In California, new engines must be designed, built and equipped to meet the State's stringent anti-smog standards. ISM must warrant the emission control system on your engine for the periods of time listed below provided there has been no abuse, neglect or improper maintenance of your engine. Additional conditions and responsibilities are further outlined below. Where a warrantable condition exists, ISM will repair your engine at no cost to you including diagnosis, parts and labor.

MANUFACTURER'S WARRANTY COVERAGE:

ISM warrants to the original owner, and to each subsequent owner, of a new, diesel engine that the emission control system of your engine:

1. Was designed, built and equipped so as to conform at the time of sale with all applicable regulations of the California Air Resources Board (CARB).

2. Is free from defects in material and workmanship that will cause such engine to fail to conform with applicable regulations for the following warranty period:

- for variable speed engines rated under 19 kW (25 HP): two (2) years or 1,500 hours of operation, whichever occurs first. In the absence of a device to measure hours of use, the engine shall be warranted for a period of two years.

- for constant speed engines rated under 37 kW (50 HP) with peak power rated at 3,000 RPM or greater: two (2) years or 1,500 hours of operation, whichever occurs first. In the absence of a device to measure hours of use, the engine shall be warranted for a period of two years.

- for engines rated at or above 19 kW (25 HP): five (5) years or 3,000 hours of operation, whichever occurs first. In the absence of a device to measure hours of use, the engine shall be warranted for a period of five years.

- for engines rated at or above 37 kW (50 HP): five (5) years or 3,000 hours of operation, whichever occurs first. In the absence of a device to measure hours of use, the engine shall be warranted for a period of five years.

The warranty period shall begin:

- on the date the equipment is first delivered to the first retail purchaser, or;

- if the equipment is placed in service for demonstration purposes prior to sale at retail, on the date the engine is first placed in service.

The emission control systems of your new ISM engine were designed, built and tested using genuine ISM parts, and the engine is certified as being in conformity with CARB emission control regulation.

Accordingly, it is recommended that any replacement parts used for maintenance, repair or replacement of emission control systems be ISM parts. Any replacement part may be used in the performance of any maintenance or repairs, although ISM recommends that the owner obtain assurance that such parts are warranted by their manufacturer to be equivalent to genuine ISM parts. Such use shall not reduce the warranty obligations of the engine manufacturer, provided they are warranted to be equivalent to genuine ISM parts.

Any warranted part that is not scheduled for replacement, as required maintenance shall be warranted for the warranty period defined above. If any such part fails during the period of warranty coverage, it will be repaired or replaced under warranty. Any such part repaired or replaced under the warranty shall be warranted for the remaining warranty period.

Any warranted part that is scheduled only for regular inspection in the written instructions shall be warranted for the warranty period defined above. A statement in the written instructions to the effect of "repair or replace as necessary" shall not reduce the period of warranty coverage. Any such part repaired or replaced under warranty shall be warranted for the remaining warranty period.

Any warranted part that is scheduled for replacement, as required maintenance shall be warranted for the period of time prior to the first scheduled replacement point for that part. If the part fails prior to the first scheduled replacement, the part shall be repaired or replaced by the engine manufacturer under warranty. Any such part repaired or replaced under warranty shall be warranted for the remainder of the period prior to the first scheduled replacement point for the part.

Repair or replacement of any warranted part under warranty shall be performed at no charge to the owner at a warranty station.

ISM provides warranty services or repairs at all manufacturer distribution centers (warranty stations) that are franchised to service the subject engines. Please see the Customer Assistance section of this statement for help in locating such service centers.

The owner will not be charged for diagnostic labor that leads to the determination that a warranted part is in fact defective, provided that such diagnostic work is performed at a warranty station.

ISM is liable for damages to other engine components proximately caused by a failure under warranty of any warranted part.

ISM is required by California regulations to maintain a supply of warranted parts sufficient to meet the expected demand for such parts during the warranty period for the engines covered by this warranty.

OWNER’S WARRANTY RESPONSIBILITIES:

This engine is designed to operate on ultra-low sulfur diesel fuel only if rated >19kW, and on low sulfur or ultra-low sulfur diesel fuel only if rated <19kW. Use of any other fuel may result in this engine no longer operating in compliance with California’s emissions requirements.

The purchaser is responsible for initiating the warranty process. The California Air Resources Board suggests that the engine be presented to an ISM dealer as soon as a problem exists. The warranty repairs should be completed by the dealer as expeditiously as possible.

Add-on or modified parts, as defined in Section 1900(b)(1) and (b)(10), Title 13, that are not exempted by the Air Resources Board may not be used. The use of any non-exempted add-on or modified parts shall be grounds for disallowing a warranty claim made in accordance with this article. The engine manufacturer shall not be liable under this article to warrant failures of warranted parts caused by the use of a non-exempted add-on or modified part.

The emissions control parts covered by this Emission Control System Warranty are listed under “What is Covered By the Emission Warranty.” As the off-road engine owner, you are responsible for the performance of the required maintenance listed in your owner's manual. ISM recommends that you retain all receipts covering maintenance on your off-road engine, but ISM cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

As the off-road engine owner, you should however be aware that ISM may deny you warranty coverage if your off-road engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

Customer Assistance

In the event that you do not receive the warranty service to which you believe you are entitled under the Emission Control System’s Warranty, you should contact ISM at the address below for assistance. If you need additional assistance or information concerning the Emission Control System Warranty, contact:

IHI Shibaura Machinery Corporation
Quality department
1-1-1 Ishishiba , Matsumoto , Nagano,
390-8714 , Japan

Telephone: +81-263-25-4589

What is Not Covered by the Emission Warranty

Please note that Emission Warranty does not cover:

1. Systems and parts that were not first installed on the new equipment or engine as original equipment by ISM

2. Part malfunctions caused by abuse, misuse, improper adjustment, modification, alteration, tampering, disconnection, improper or inadequate maintenance, or use of non-recommended fuels and lubricating oils.

3. Damage caused by accident, acts of nature, or other events beyond ISM's control.

4. Replacement of expendable items made in connection with scheduled maintenance.

5. Parts requiring replacement, inspection or adjustment during scheduled maintenance intervals where the part is not defective.

6. Parts that are not ISM Service Parts.

7. Loss of time, inconvenience, loss of use of equipment/engine or commercial loss.

8. Equipment with an altered or disconnected hourmeter where the hours cannot be determined. Equipment normally operated outside the United States.

9. Non-defective parts replaced by other than ISM dealers.

What is Covered by the Emission Warranty

The following is a list of systems and parts that are considered a part of the Emission Control System and are covered by the Emission Warranty for engines that were built to conform to CARB regulations:

IMPORTANT! This may not include expendable maintenance items. Emission related parts requiring scheduled maintenance are warranted until their first scheduled replacement point only.

PARTS COVERED

This emission control system warranty applies to the following emission control parts.

Fuel injection system

Intake manifold

Exhaust manifold

Positive crankcase ventilation system parts (including PCV Valve and Oil Filler Cap)

Turbocharger (if equipped)

Charge air cooling system (if equipped)

Smoke puff limiter (if equipped)

EGR system (including EGR Valve, EGR Pipe and EGR cooler) (if equipped)

Intake throttle valve (if equipped)

Exhaust aftertreatment system (if equipped)

Aftertreatment Regeneration Device (if equipped)

Miscellaneous hoses, clamps, connecters and sealing gaskets or devices used in the above systems.

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1. General Notices for Safety

1-1. Before using the tractor

※ Have to read and understand this Operator's manual carefully and always refer to information and prescriptions outlined in this manual to prevent all potential health and safety risks.

◆ General information for intended use

- Your tractor is designed and manufactured to pull, to carry, to supply the power a variety of mounted or towed equipment **for agriculture**. Do not use the product for other purposes than intended by the manufacturer and outlined in this manual. Do not use this tractor for light/heavy forestry applications.
- Do not use the product beyond its **limits of terrain gradient** and stability than outlined in this manual. Using the tractor beyond these limits may cause a overturning accident.
- Do not use the tractor on higher speeds than allowed by the load of the tractor and road condition. Always choice **a suitable driving speed** to maintain the stability of the tractor.
- Do not use the tractor **near or on soft verges** of canals and brooks or banks and verges that are undermined by rodents. The tractor may sink sideways and roll-over.
- Do not use the tractor on brittle bridge heads and poor bridge floors, These constructions may collapse and cause overturning of the tractor. **Always check out the condition and carrying capacity of bridges and ramps** prior to engage.
- **Do not use the tractor without wearing the seat belt and Roll-Over Protective Structure (ROPS)** during operations where roll-over or tip-over hazards exist. The ROPS will only be fully effective when the driver remains attached to his seat.
- Do not use equipment mounted on the tractor which is not **correctly matching and firmly fixed**. Such equipment may increase the risk for roll-over and hit the tractor when coming loose.
- Do not use the tractor in combination with equipment arbitrary, without **having consulted the specific operator's manual provided with the equipment**. This manual alone cannot provide you with all the information about safety operation of the combination.
- Do not use the tractor beyond its **limits of dynamic stability**. High speed, abrupt maneuvers, and fast and short cornering will increase the risk of roll-over.
- Do not use the tractor for **overloaded pulling work**, in cases where you don't know if the load will yield, for instance when pulling stumps. The tractor may flip over when the stump is not yielding.
- Be extremely cautious when working with the tractor **on forage silos without lateral concrete walls**. A wide track setting may improve the lateral stability of the tractor.
- Be cautious that the **center of gravity of the tractor may increase** when the front-end loader is loaded or the three-point linkage are raised. In these conditions, the tractor may roll-over earlier than expected.
- **Do not step down from the tractor without shutting down the PTO, shifting the transmission to neutral and applying the parking brake.**

- **Never remove or modify or change** the driver's protection device or safety device arbitrary.
- You must take the necessary precautions to always be **aware of the possible presence of bystanders**, certainly when maneuvering in confined areas. Keep people away from the tractor during work. Pay the necessary attention while operating next to public roads or footpaths. Thrown objects can get projected outside the field and hit unprotected people like bikers or pedestrians. Wait until it is clear of bystanders.
- Do not violate the **local traffic rules** related to public roads and highways
- **Do not allow riders** on the tractor; do not allow people standing on the access way or step to the cab when the tractor is moving. Your view to the left will be obstructed and a rider risks to fall from the tractor during unforeseen or abrupt movements.
- **This tractor has only one operator station** and is a one man operated vehicle. Other people on or around the tractor during normal operation are not allowed.
- Always stay clear from implements operating area and especially **do not stand between tractor and trailed vehicle either three-point linkage when operating lift controls**; ensure no bystanders are near these operating areas.
- This tractor may be equipped with a number of sensors to control safety functions. **Do not attempt to bypass any function** on the tractor. You will be exposed to serious hazards, and moreover, the behavior of the tractor may become unpredictable.
- 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 the 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 and its distributors **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	**Danger** – This indicates a fatal dangerous situation that may cause a serious injury or death if not avoided.
Warning	**Warning –** This indicates a potential dangerous situation that may cause a serious injury or death if not avoided.
Caution	**Caution –** This indicates a potential dangerous situation that may cause a light injury or damage to the properties if not avoided.
Notice	**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*)

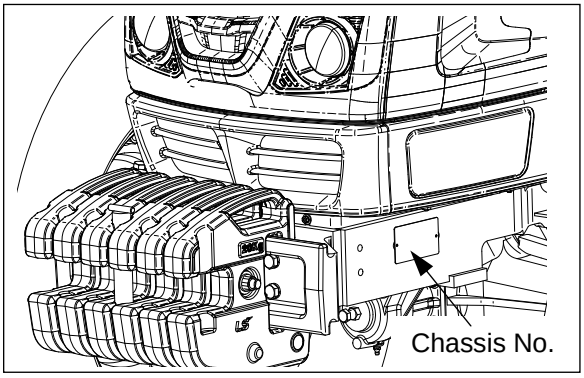


Fig.1-1

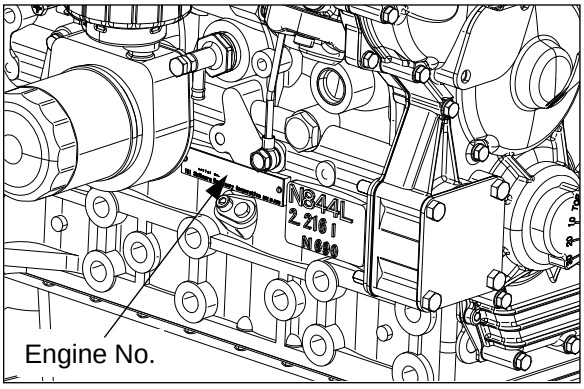


Fig.1-2

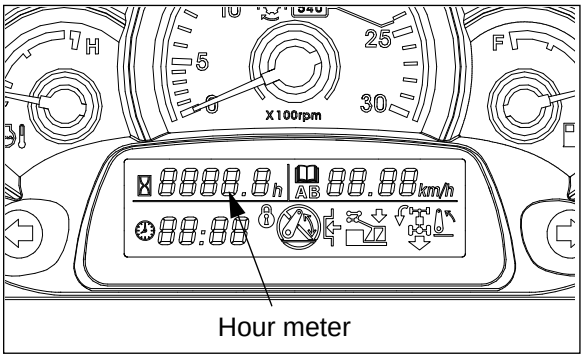
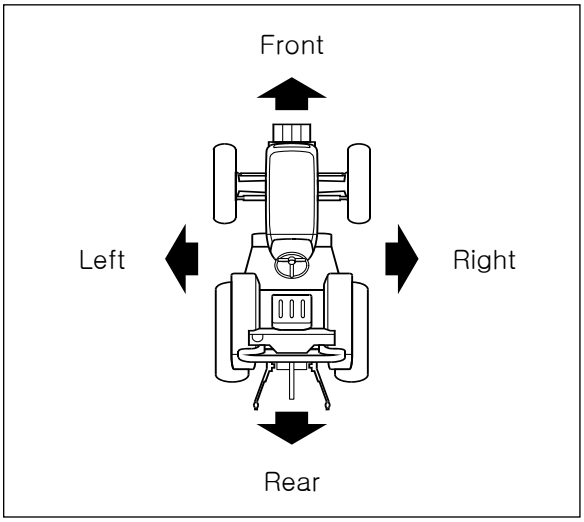


Fig.1-3

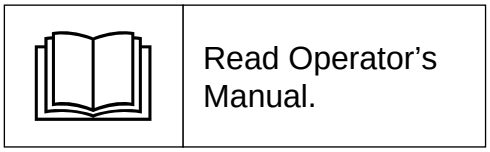
◆ Terminology

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 the tractor

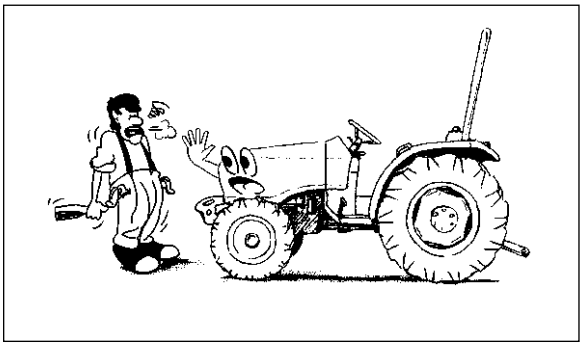


- **For Safety Instruction :** Before using the tractor, read this Operator's Manual carefully and understand the instructions fully for the safety prevention and right usage of the tractor and then use the tractor safely according to the instructions.

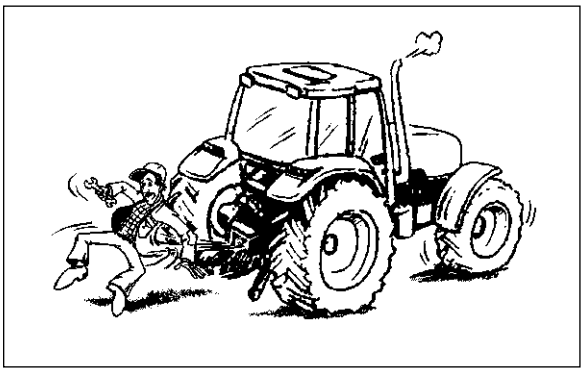
  Especially, special cares must be taken for using the tractor in the places where the safety signs such as Danger, Warning, Caution etc. are marked. *(See page 1-2)*

- **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 1-19*)

- **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.



Warning 	▶ 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.

Warning	▶ 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 :

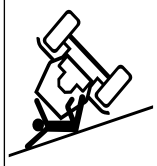
- Protection structures such as PTO cover, Guards, Safety frame (Roll-bar), Cab, etc.
- Engine components, Fuel injection control and setting, etc.
- Automatic control equipment, Lamps, Transmission, Hydraulic valve and pressure settings.
- Other parts that detail and where complicated adjustments are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

⚠Warning	▶ Skilled professional technology is needed for the repair. ▶ For derail 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.

- **Protective Structures :** For the operator's safety, various protective structures, i.e. Bonnet (Hood), Fan cover, PTO safety cover, PTO shaft protection cap, Roll-bar or another Roll-over Protective Structure, etc are attached on the tractor. If these structures are modified or removed by user arbitrarily, it may cause serious accident. Such behaviors are prohibited strictly.

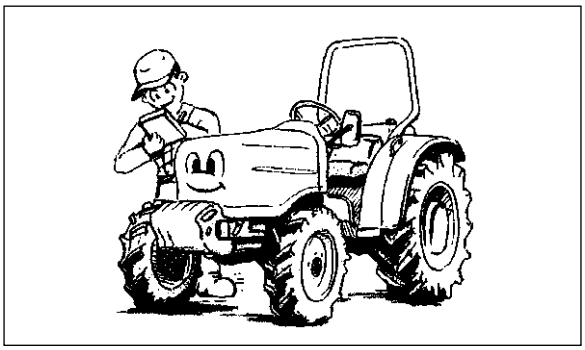
Warning	
	▶ The Protective Structure and interconnecting components are a certified system. Any damage, Fire, corrosion or modification will weaken the structure and reduce your protection. If this occurs, the Protective Structure MUST be replaced with a new one. Contact your authorized dealer for Protective 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. - 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.**

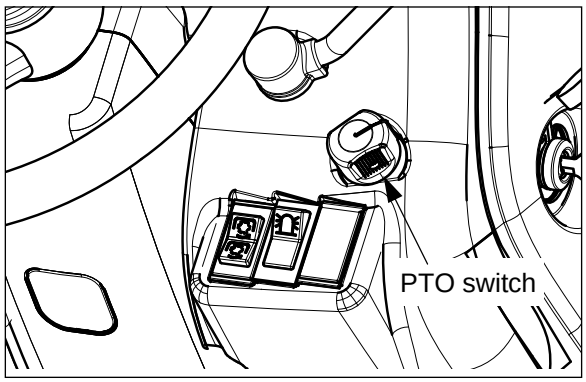
- **Level of protection of the FOPS (Falling Objects Protective Structure) :**
  - **For cabin model**, it provides protection against falling objects **according to OECD code 10 standard**. The energy level of drop test is 1365 J. But it does not mean that the cabin provide full protection against all the falling objects in the work field.
  - **For roll-bar model**, it does **NOT** any protection against falling objects. It is recommended to use a certified FOPS structure when working with front-end loaders.
- **Level of protection against hazardous substances :**
  - **For cabin model** of this tractor, it provides protection against hazardous substances **according to EN15695-1:2009 (Category 2).** But it can provide only dust protection level by pressurizing air in the cabin with air filters, Do not use the tractor with crop sprayers in chemical hazardous area.
- **Level of protection of the OPS (Operators Protection Structure) :** This tractor does **NOT** provide protection against
  - low hanging wires and branches in the forest, orchard or construction area, etc
  - toppling trees, primarily in case a rear-mounted tree grab-crane is mounted at the rear of the tractor
  - penetrating objects in the operator's enclosure, primarily in case a winch is mounted at the rear of the tractor.
  - potential risks by using any optional equipment that might be available to deal with those hazards.

  NEVER enter or operate these hazardous area without certified Operator Protective Structure installed.

(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 and nuts 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 ON, the engine can NOT be started. (*See Fig.1-4*)
- Depress the clutch pedal fully (if fitted). If not, the start safety switch does not contacted enough and the engine can NOT start.





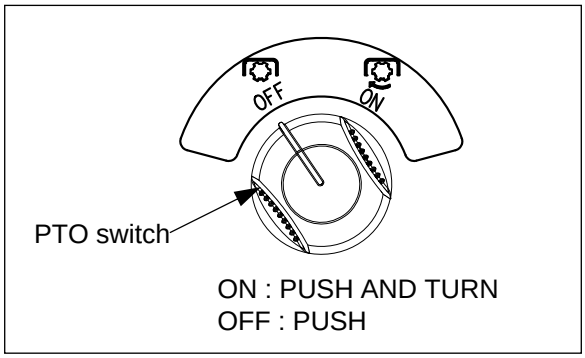


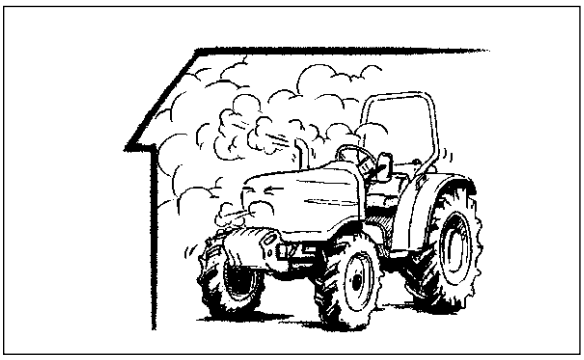
Fig.1-4

Warning	
	▶ Do not start the engine in a closed area. The poisonous exhaust gas can cause fatal damage to the driver or persons around.

(3) Notices while operating/using the tractor

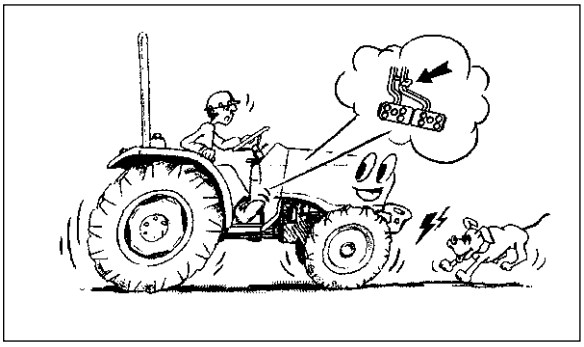
- **Ventilation**

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.

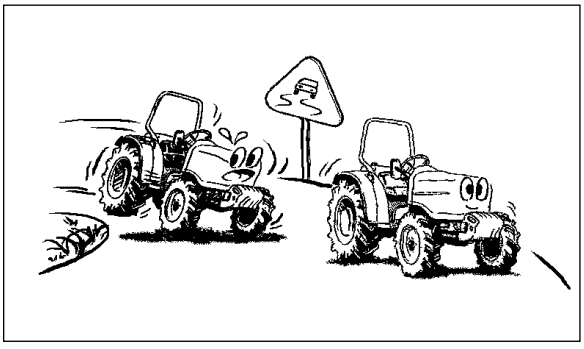


- **Noise and Vibration** : When working between buildings or in confined spaces, the sound pressure level can be increased. Wear suitable ear protectors in high noise level conditions. When working with equipment in the field, Vibration may intensity from the equipment may be increased. To reduce the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

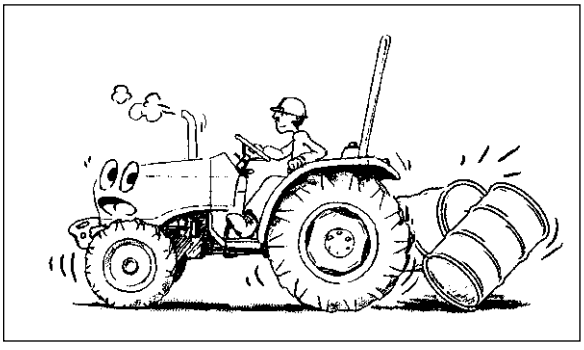
- Connect left and right brake pedals while driving on the road. (if fitted)
- DO NOT use differential lock device while driving on the road or turning in the field.
- DO NOT ride your foot on the brake pedal or clutch pedal.



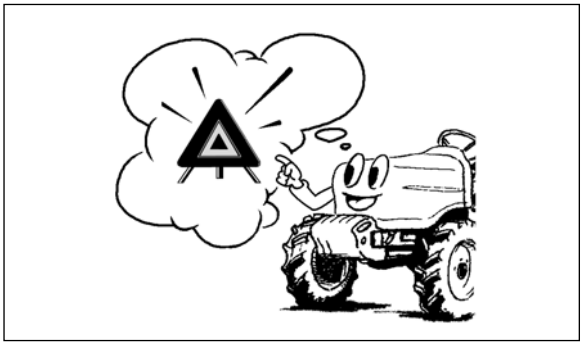
- Lower the driving speed enough before turning a sharp curve. Especially, when you drive the tractor with implements, make the turning radius wider.
- DO NOT start or stop the tractor suddenly. Engage the clutch and brake softly. If not, front wheels can be lifted up and it is very dangerous.
- Do not 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.

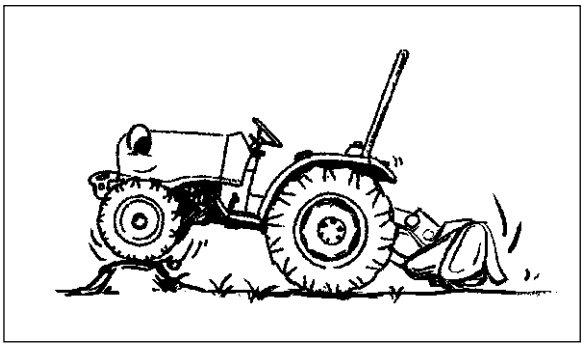


- Obey the traffic rules while driving on public roads. Do not exceed the local legal speed limit. Use a sing beacon or slow moving vehicle (SMV) to indicate that the vehicle is slow moving.
- If you can not drive the tractor due to a failure, move the tractor to a safe place and install troubled vehicle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

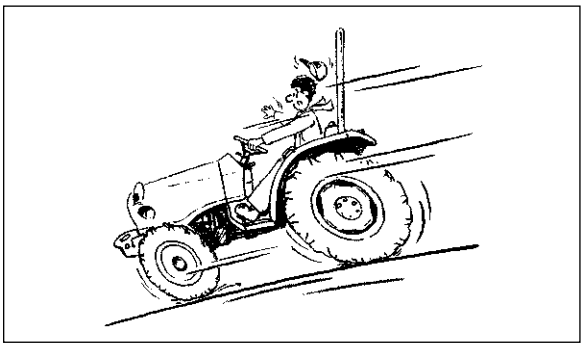


- Do not overuse the fuel, oil, etc and pay attention not to contact the skin directly. Generally, these materials contain harmful materials to the human body. When you work in a area where hazardous chemicals are sprayed, check the cabin filter (if fitted) and replace the filter with suitable one for 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.

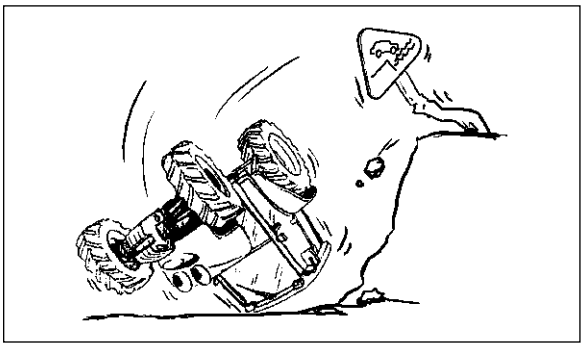
- When crossing a high ridge, let down the implement and go straight across the ridge at low speed.
- When connecting the implements to the front/rear of the tractor, install the proper additional weights in the rear/front of the tractor to keep the balance of the tractor.



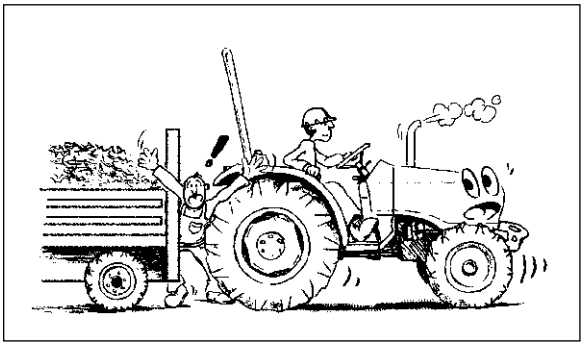
- On a downhill, operate the throttle pedal and brake pedal slowly and DO NOT drive while the transmission gear is in NEUTRAL.
- To climb a steep slope, drive tractor slowly in reverse up the slope rather than forward. It is much safer.
- When turning the tractor on a slope, pay attention to safety especially.



- 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

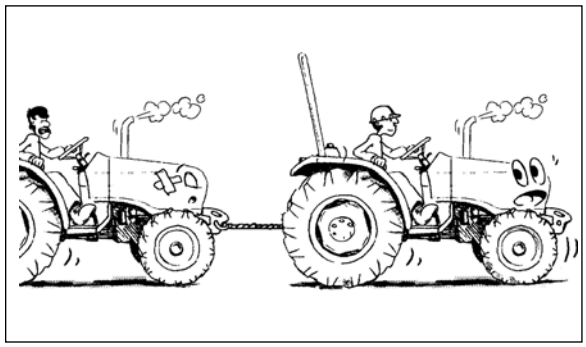


- Attach or detach the implement on wide and level ground.
- Do not use the tractor in combination with equipment arbitrary, without having consulted the specific operator's manual provided with the equipment.
- You have to stay clear from the three-point linkage when controlling it. Do not stay between tractor and implement.
- Do not stay between tractor and trailed vehicle for connecting/disconnecting or checking it. Trailed vehicle may roll down or tractor can move reverse.
- When towing the trailed vehicle, use only hitch or drawbar. 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	▶ 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.

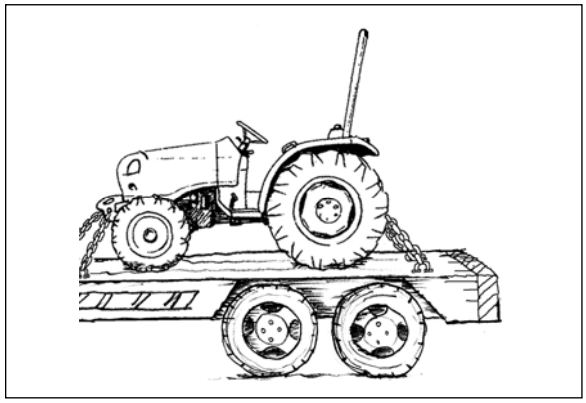
⚠ Warning	▶ Before connecting or checking the implement, put PTO switch to "OFF" and place PTO gear lever in Neutral position.
	▶ When attaching or detaching the implement, make sure to fix the implement and tighten the three point hitch pins correctly. If not, the serious troubles and injury can occur 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 your 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.
- 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 section 4. "Hitch and Drawbar"* in this manual.)
- Drive slowly when towing extremely heavy loads.
- Do not tow trailers that are not fitted with an independent braking system.

(6) Notices when transporting the tractor

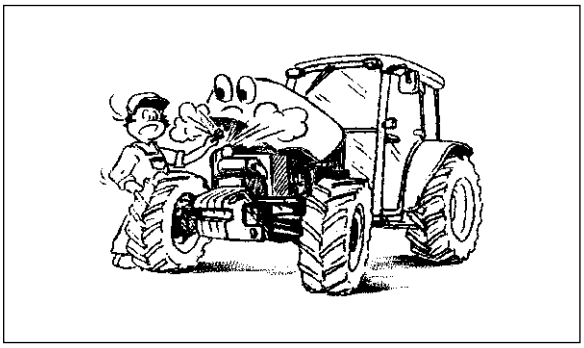


- When transporting the tractor by truck, trailer, etc, use suitable equipment or facilities to load or unload the tractor.
- Fix the tractor tightly to the vehicle with heavy-duty straps or chains.
- When fixing the rear of the tractor, use the hitch or hitch support.
- When fixing the front of the 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	▶ 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. ▶ In case of turbocharger engine (where fitted), cover the exhaust outlet to protect that the turbocharger does not rotate by air without lubrication.

(7) Notices when servicing the 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.

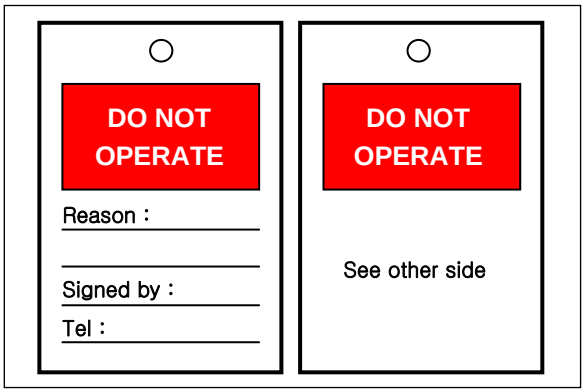
- Before checking or repairing the hydraulic system and fuel system, make sure the engine is stopped, and all the transmission gears are in neutral, and lower the implements to the ground. The leaks of pressurized fluid can cause a fatal physical injury. If injured by leaking fluid, get medical attention immediately

Warning 	▶Before removing hydraulic pipes or hoses and other parts, make sure to check that hydraulic pressure is relieved completely. The leaks of pressurized oil can cause a fatal physical injury. ▶Use proper protection equipments, before servicing hydraulic system. ▶Before connecting or disconnecting the hydraulic quick coupler, lower the implements to the ground, and check that hydraulic pressure is relieved.

- Keep an approved **fire extinguisher** on your tractor.
- Never fill the fuel tank while the engine is running or the engine is hot. And never smoke or have flames around fuel tank.
- To prevent fire or explosion, keep flames or sparks away from battery. Do not grind or smoke or weld near a battery. For further information, see section 5. “Battery handling and Notices”.

Warning 	▶Always remove grounded (-) battery clamp first and assemble it last. If not, It can cause an explosion by spark. ▶The gas generated from the battery is explosive. Keep cigarettes, sparks and flames away from battery. Never check battery charge by placing a metal object across the terminals. ▶**Sulfuric acid in battery electrolyte is poisonous.** It is strong enough to burn skin, clothing and can cause blindness if splashed into eyes. 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. ▶Do not short circuit the battery posts with metal items. ▶Battery post, terminals and related accessories contain **lead and lead compounds**. **MUST WASH YOUR HANDS AFTER HANDLING.**

- 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.
- Before servicing the tractor, attach a "**DO NOT OPERATE**" warning tag to the tractor in an area that will be visible.



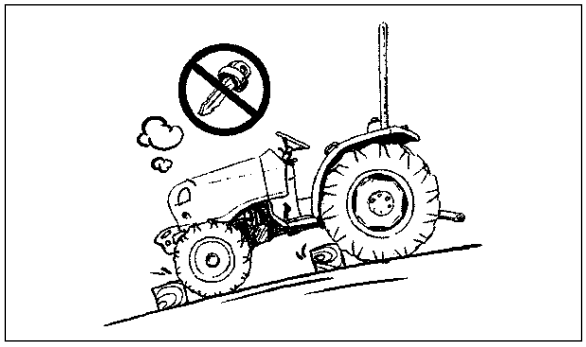
- It is advisable to keep a **First-aid kit** on your tractor.
- Keep the area used for servicing the tractor clean and dry. Wet or oily floors are slippery. It can be dangerous when working with electrical equipment.
- Remove all litter or debris from the tractor. Especially check the engine area and exhaust system.

(8) 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. 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.
- Before operating with Bio-Diesel, contact your authorized dealer for information relating to the use and storage of Bio-Diesel.

(9) Notices when leaving the tractor

- Stop the tractor on level ground.
- Place the transmission gear in neutral and put PTO switch to “OFF” position.
- Lower the mounted implements on the ground.
- Apply the parking brake.
- Stop the engine and remove the ignition key.
- Before you leave the operator’s station, wait for engine and all moving parts to stop.
- Have to apply the wheel chock when parking the tractor on a slope unavoidably.



⚠Caution	▶ When parking the tractor on a slope unavoidably 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. -. Mechanical : downhill ⇒ Reverse 1gear / uphill ⇒ Forward 1gear -. HST type : Lowest gear

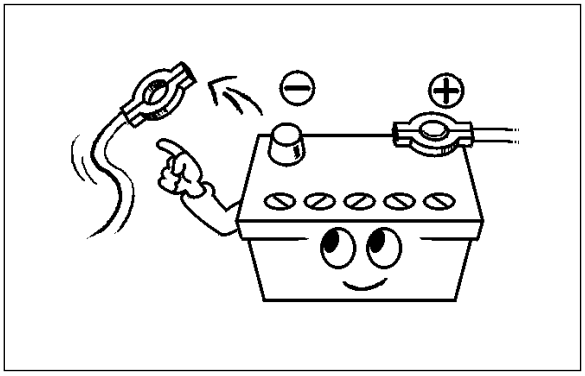
(10) Notices relating to Toxic substances

- Exhaust gas and some its constituents of the Diesel engine are known to the State of California to cause cancer, birth defects, and other reproductive harm. (California proposition 65)
- Battery post, terminals and related accessories contain lead and lead compounds. **MUST WASH YOUR HANDS AFTER HANDLING.**

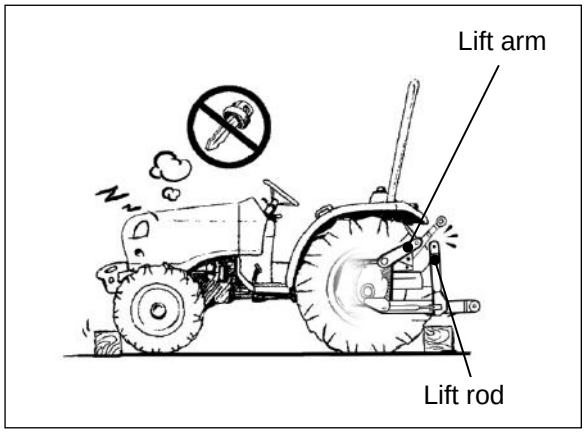
1-3. Long-term storage

(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℃ ~ 35℃ (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.
- Check the tire air pressure and maintain the proper pressure.
- The battery should be charged about once a month not to be discharged entirely.

⚠ Caution	▶ As the electrolyte of battery is sulfuric acid, it is emits the explosive and poisonous gas. It is strong enough to burn skin, clothing and can cause blindness if splashed into eyes. - 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. ▶ When removing and storing battery, select dry and cool place out of reach of children.

(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 check the engine oil pressure indicator and battery charging indicator in the instrument panel. These indicators are turned off, while engine is running.
- 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 the environment

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 operator'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		Light switch
	Transmission oil pressure		Quick turn (optional)		Side lights
	Engine oil press-ure		Cruise drive (optional)		Headlights (downward)
	Diesel engine preheat		Cruise drive release (optional)		Headlights (upward)
	Parking brake		Position control (Up)		Work light
	Emergency lights		Position control (Down)		horn
	Engine start		Draft control (Deep)		Window wiper
	Engine stop		Draft control (Shallow)		Window wiper / Washer (front)
	PTO stop		Cylinder rod (shorten)		Window wiper / Washer (rear)
	PTO in operation		Cylinder rod (extend)		One side brake light (optional)
	Differential lock device		Cylinder rod (floating)		Engine warning
	DPF regeneration		DPF temperature		DPF inhibited

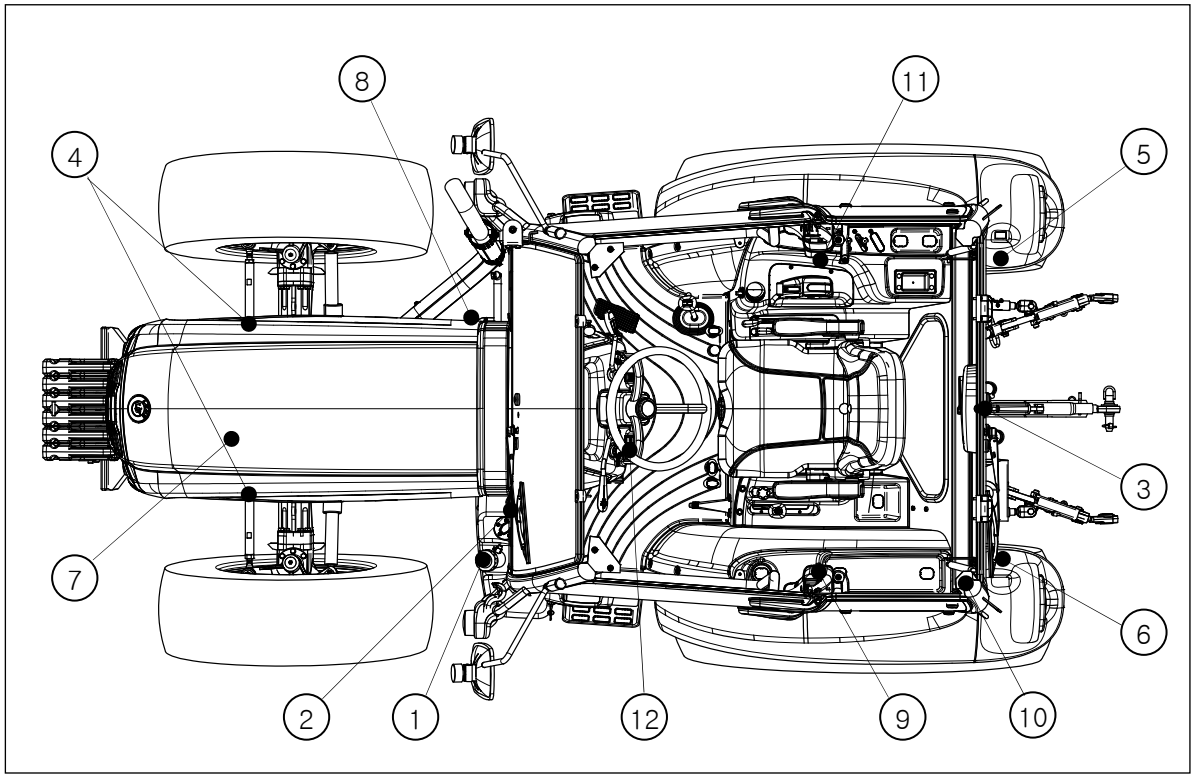
1-6. Safety Decals

(1) Handling and Maintenance of Safety Decals

- For intended 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 tractor, check the position and read the instructions carefully.
- If you find “Read Operator’s Manual” symbol (1) in the decals, refer to the appropriate page of the operator’s manual for further information regarding operation, adjustment and maintenance.

Caution	▶ 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, or other harsh chemicals 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. ▶ If a decal is on a part that is replaced, make sure the decal is attached on the new part.

(2) Safety Decals and Attaching position



1. Location : On top of the Fuel Cap

- Low sulfur diesel fuel only.
- Do not smoke while refueling and keep any type of flame away.
- Part No. : 40008817

2. Location : On the front lower side of the left-hand wind shield.

- RUN OVER HAZARD
- To prevent serious injury or death;
- Start only from seat with transmission and PTO in neutral.
- DO NOT short across starter terminals to start engine.
- Part No. : 40195651

3. Location : On top of rear PTO guard.

- Rotating driveline contact may cause serious injury or death.
- Keep all driveline, tractor and equipment shields in place during operation.
- Part No. : 40195650

4. Location : On the left/right-hand side of the fan shroud.

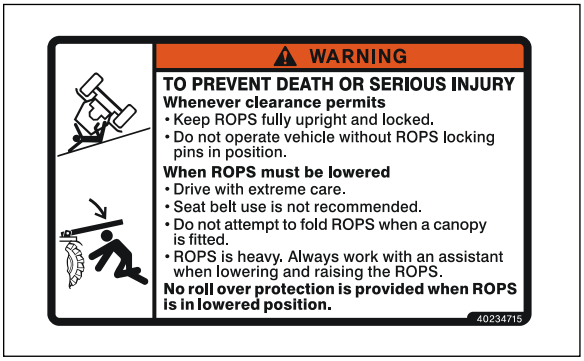
- Keep hands clothing away from the rotating fan and belts.
- Contact with moving parts may cause loss of fingers or a hand.
- Failure to comply could result in death or serious injury.
- Part No. : 40239638

5. Location : On top of the right-hand fender.

- HIGH PRESSURE FLUID HAZARD
- To prevent serious injury or death;
- Relieve pressure on system before repairing, adjusting or disconnecting.
- Wear proper hand and eye protection when searching for leaks, use wood or cardboard instead of hands.
- If hydraulic fluid or fuel sinks into skin, seek medical attention immediately.
- Part No. : 40195652

6. Location : On top of the left-hand fender. (Roll-bar model only)

- TO PREVENT DEATH OR SERIOUS INJURY;
- Keep Roll-over Protective Structure fully upright and locked.
- Do not operate vehicle without ROPS locking pins in position.
- When ROPS must be lowered:
- Drive with extreme care.
- Seat belt use is not recommended.
- Do not attempt to fold ROPS when a canopy is fitted.
- ROPS is heavy. Always work with an assistant when lowering or raising the ROPS.
- No roll-over protection is provided when ROPS is in lowered position.
- Part No. : 40008817



7. Location : On top of air cleaner support.

- TO PREVENT DEATH OR SERIOUS INJURY; High pressure steam and hot water. Remove filler cap with extreme care.
- Failure to comply could result in death or serious injury.
- Part No. : 40239637

8. Location : On the right-hand side of Band-frame.

- TO PREVENT SERIOUS INJURY OR DEATH; Beware hot part. Keep clear of muffler to avoid injury.
- Failure to comply could result in serious injury.
- Part No. : 40239636

9. Location : On the left-hand pillar for Cabin model / On top of left-hand fender for Roll-bar model.

① CAUTION

- PTO selector & lever must be in “OFF” position to start engine.
- Do not operate on hard surfaces with 4WD engaged.

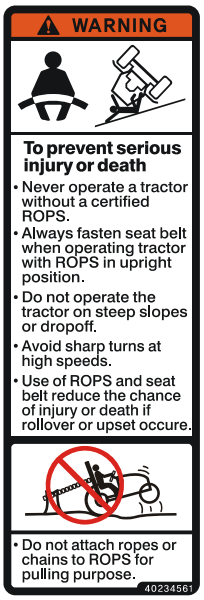
② WARNING

- TO PREVENT SERIOUS INJURY OR DEATH;
- After first hour of operation and daily thereafter, check front and rear wheel lug nuts and bolts for proper torque.
- PTO - keep hands, feet and clothing away from PTO & other moving parts.
- Disengage PTO and shut off engine before servicing tractor or implements, or attaching / detaching implements.
- Keep all safety shields in place for your protection.
- Pull only from approved drawbar or lower links of 3-point hitch at horizontal position or below.
- Lock tractor brake pedals together for travel on roads or highways.
- Always apply parking brake and shift transmission to neutral before dismounting.
- Always use a seat belt when you operate the tractor.
- Allow no riders on tractor or implements.
- Do not use a seat belt when operating with folding ROPS in lowered position.
- Engine exhaust fumes can cause death or sickness. Always try to work in a ventilated area.
- Disengage the differential lock when turning the tractor. Always disengage the differential lock when driving on roads.
- Depress on or both brake pedals to disengage the differential lock.

- Failure to comply could result in death or serious injury.
- Part No. : 40195656

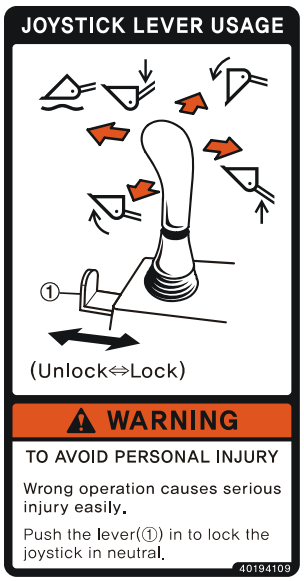
10. Location : On the left-hand side of the ROPS frame. (Roll-bar model only)

- TO PREVENT SERIOUS INJURY OR DEATH;
- Never operate a tractor without a certified ROPS.
- Always fasten seat belt when operating tractor with ROPS in upright position.
- Do not operate the tractor on steep slopes or drop-off.
- Avoid sharp turns at high speeds.
- Use of ROPS and seat belt reduce the chance of injury or death in roll-over or upset occur.
- Do not attach ropes or chains to ROPS for pulling purpose.
- Failure to comply could result in death or serious injury.
- Part No. : 40234561



11. Location : On the right-hand pillar for Cabin model / On the right-hand fender for Roll-bar model. (optional)

- JOYSTICK LEVER USAGE.
- TO AVOID PERSONAL INJURY; Wrong operation causes serious injury easily. Push the lever(1) in to lock the joystick in neutral.
- Failure to comply could result in death or serious injury.
- Part number : 40194109



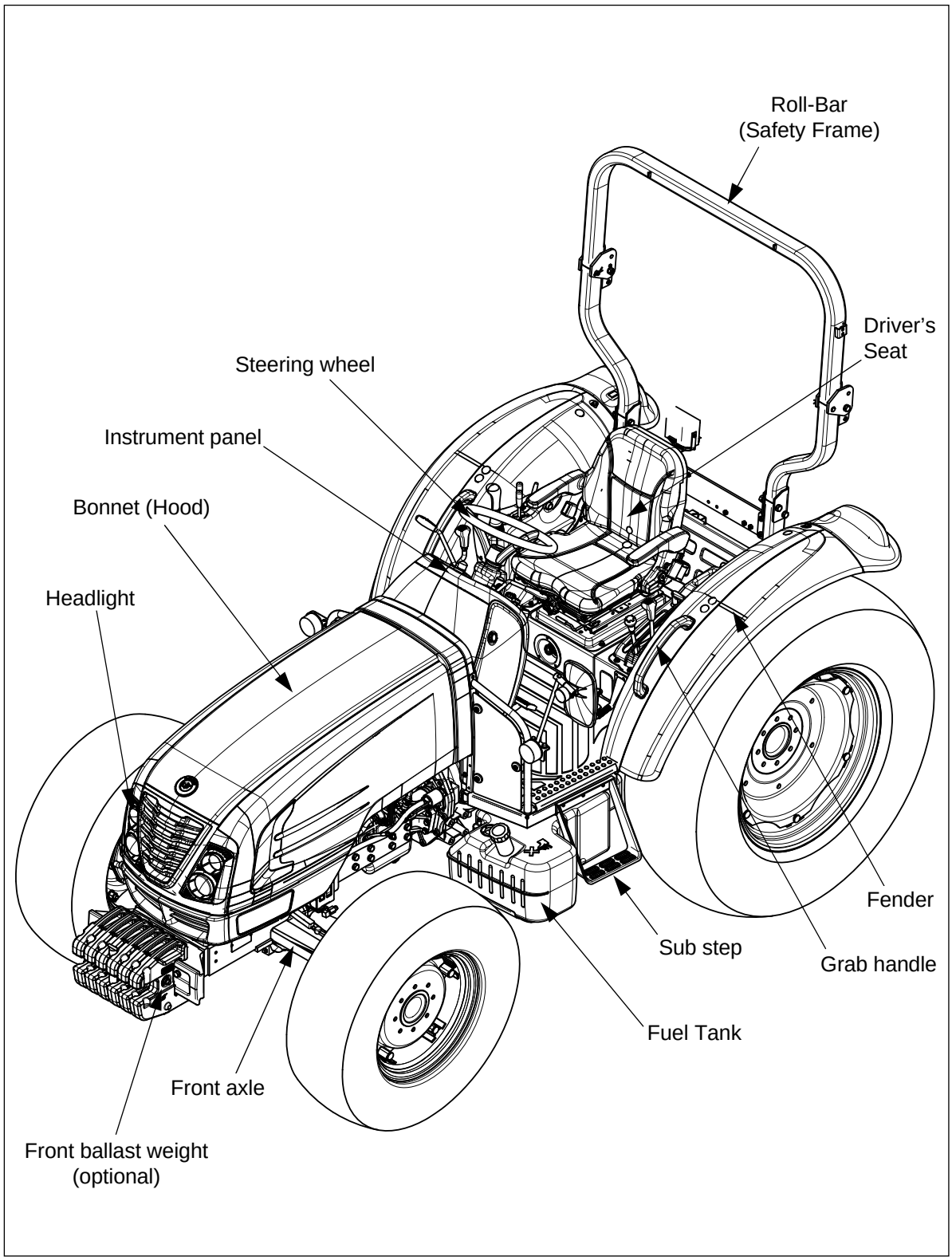
12. Location : On the steel cover under the instrument console. (optional)

- CAUTION.
- To prevent unnecessary wear, never ride the clutch pedal for resting a foot.
- Part number : 40222778

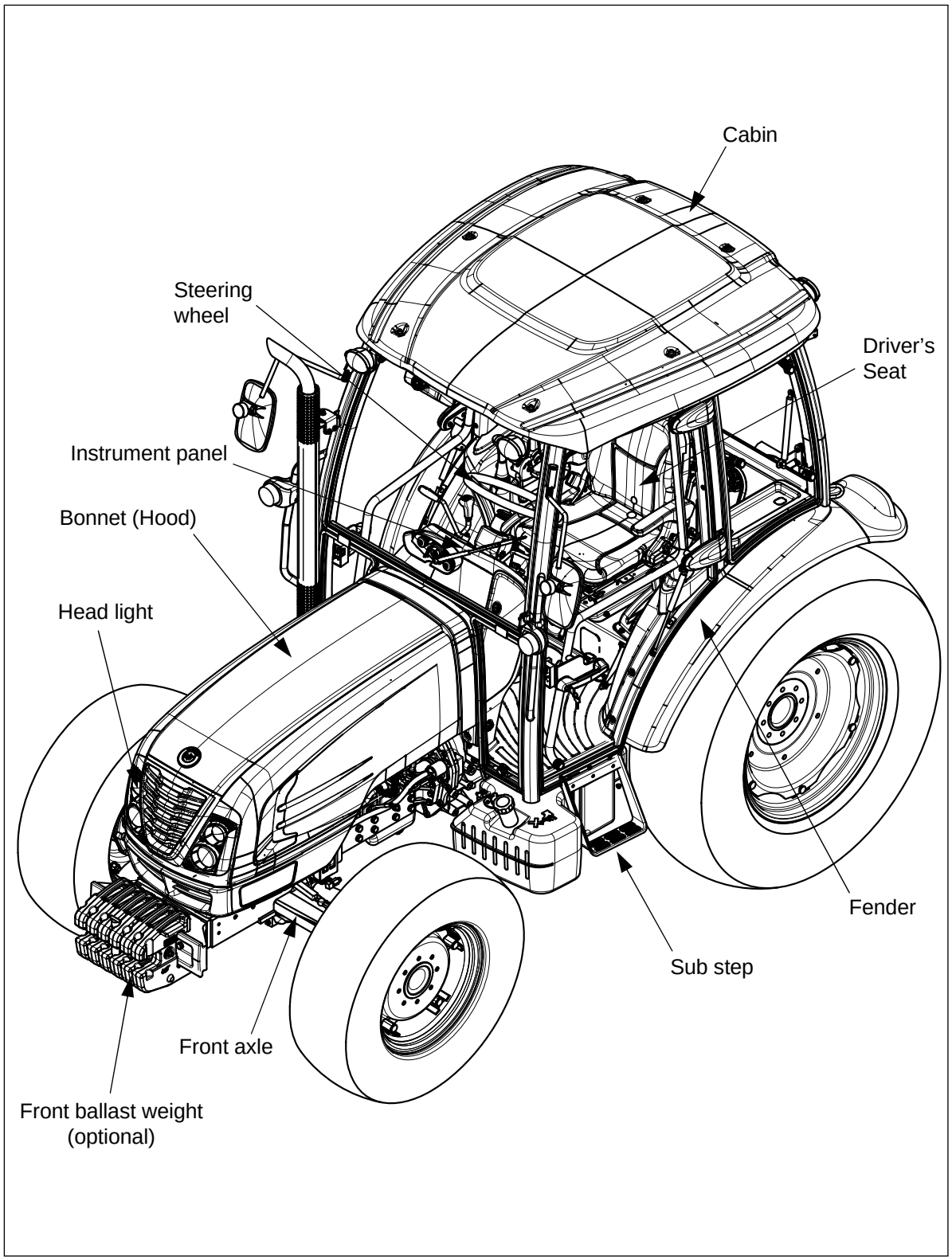
2. Instruction for safe operation

(1) The name of each part

① Roll-Bar type



② Cabin type

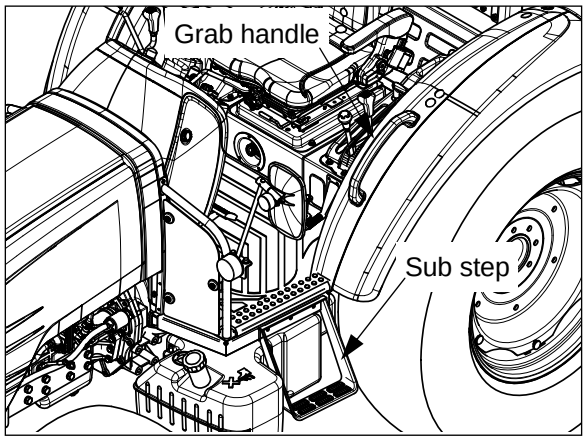

Cabin
Steering wheel
Driver's Seat
Instrument panel
Bonnet (Hood)
Head light
Fender
Sub step
Front axle
Front ballast weight (optional)

2-1. Boarding and Exiting the tractor

(1) Boarding the tractor

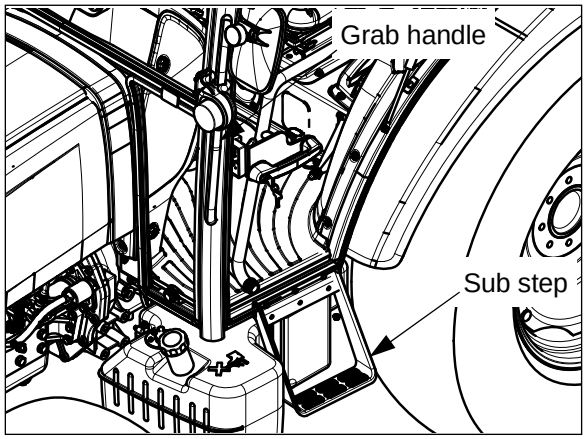
① Roll-Bar type

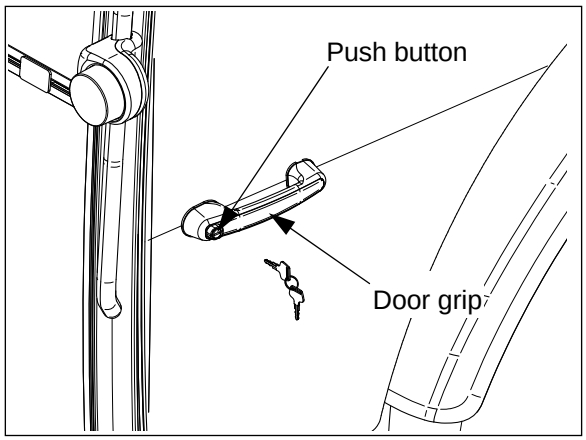
- Whenever possible, use the left-hand side step for entering.
- When boarding the tractor, use the sub-step, steering wheel and grab handle on the left fender.
- Do not jump up/down for your safety.



② Cabin type

- Whenever possible, use the left-hand side door for entering.
- Release the cabin door locked with the provided key and open the cabin door after pressing the push-button.
- When boarding the tractor, use the sub-step and grab handles provided on the cabin frame and door.
- Do not jump up/down for your safety.
- When leaving the tractor, lock the cabin door and remove the key.





⚠ Caution	▶ **Operator's condition :** The persons such as patients, drunks, people on drugs, etc. are never allowed to operate this tractor. Only well educated operators can use the tractor after learning the usage of controls for moving, stopping, turning and other operating. ▶ Do not grasp the gear levers when entering the cabin from the right-hand side.

(2) Seat adjustment

- Before operating the tractor, adjust the position of driver's seat according to body size and length.
- Seat F/R adjustment lever

1) After sitting on driver's seat, move the seat F/R adjustment lever up to release the lock.

2) Move the driver's seat forward or backward depending on driver's body length.

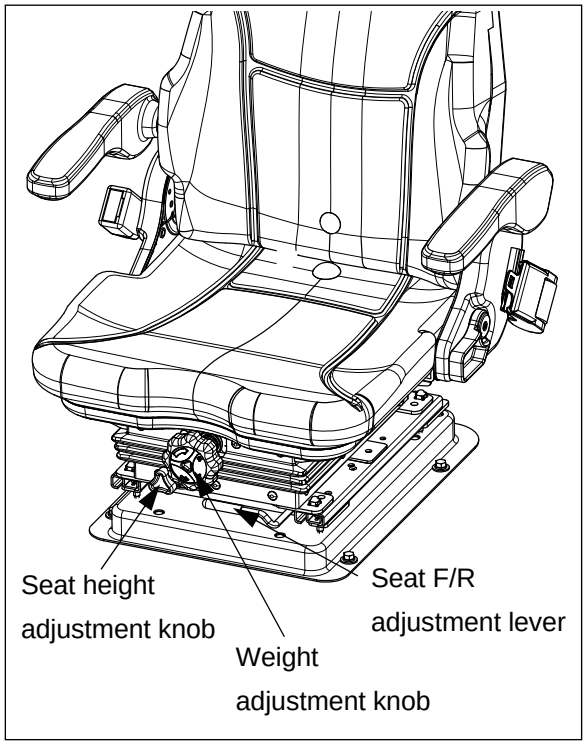
3) Release the seat F/R adjustment lever and check the seat is locked.

- Seat height adjustment knob

1) If you turn the seat height adjustment knob clockwise, the seat height shall be lowered.

- Weight adjustment knob

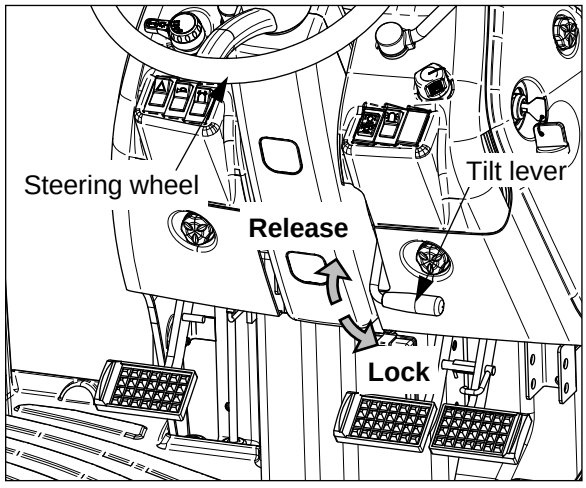
1) Adjust the seat suspension depending on your body weight by using the weight adjustment knob. If you turn the knob clockwise, the suspension stiffness shall be increased.



⚠warning	▶DO NOT put your hand under the seat while sitting. It may cause a injury by seat suspension. ▶DO NOT adjust the seat position while driving.

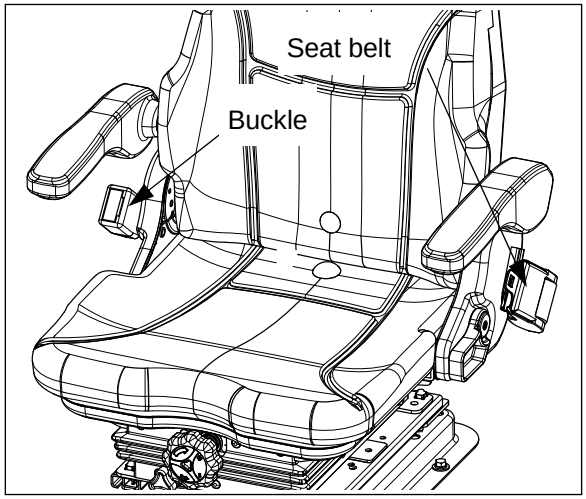
(3) Tilting steering wheel

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



⚠Caution	▶DO NOT adjust steering wheel while driving. It may cause a serious accident.

(4) Seat belt

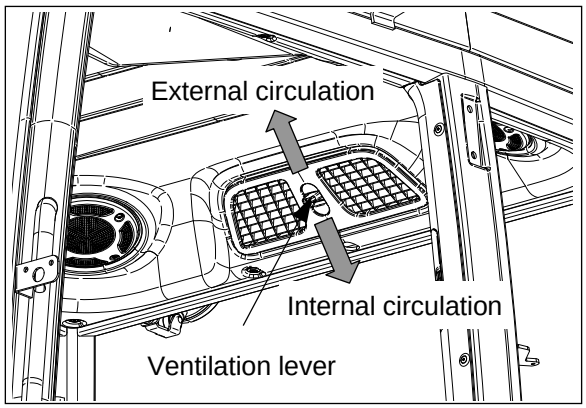


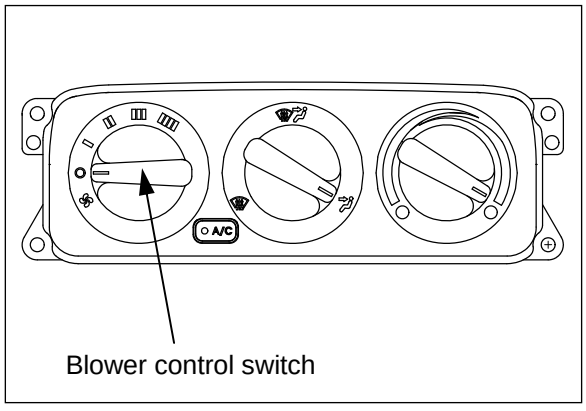
- Always wear the seat belt before operating the tractor and adjust the belt to fit the operator.
  1. Insert the seat belt end into the buckle until a "click" indicates it is properly engaged.
  2. To remove the seat belt from the buckle, press the red release button on the buckle.
- Check the seat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

Warning	▶ If not wearing the seat belt, it may cause serious injury in case of accident. - 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. ▶ If safety frame is folded down for frame model, do not wear the seat belt.

(5) Ventilation (Cabin only)

- Air can be taken from outside or inside of the cabin by adjusting the ventilation lever.
  - **External circulation** : Air comes from outside via cabin air filters.
  - **Internal circulation** : Air can be re-circulated inside the cabin.
- To increase the air pressure inside the cabin, move the ventilation lever to external circulation and turn the blower control switch clockwise fully.



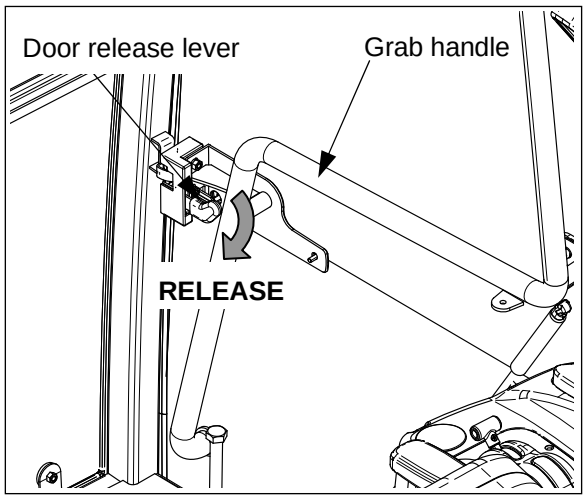


Warning	▶ DO NOT ventilate the cabin in pesticides or other hazardous spraying area.

(6) Exiting the tractor

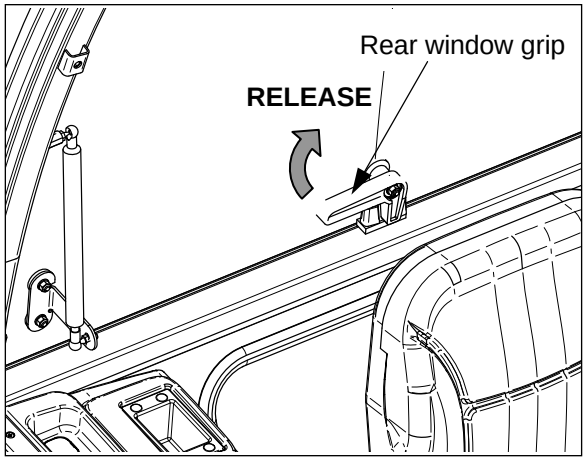
① Door (Left / Right)

- Whenever possible, use the left-hand side door for entering/exiting.
- To open the left/right cabin door, push the door release lever downward, and use the grab handle to push the door outside.



② Rear Window (for emergency)

- To open the rear window, turn the rear window grip clockwise with pulling the grip
- Push the grip outside slightly.
- This rear window can be used for emergency exit or ventilation.

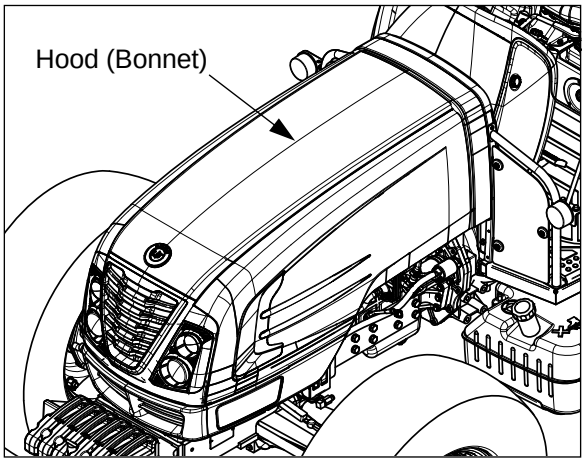


⚠ Caution	▶ Do not grasp the transmission gear levers when entering /exiting the cabin .

2-2. Safety device

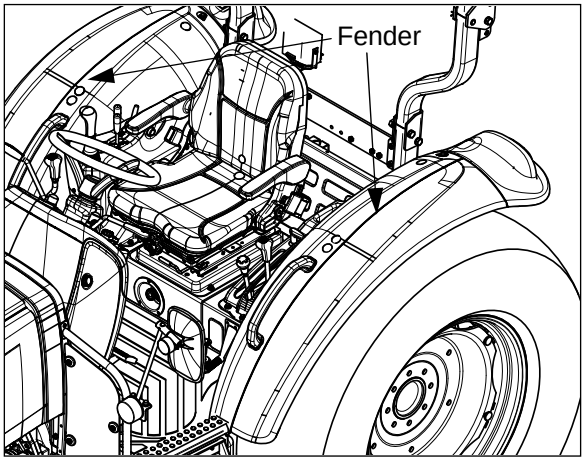
(1) Hood (Bonnet)

- Hood is a protection device to prevent an unintended access to the rotating parts around engine ; cooling fan, fan belt and rotating shaft and pulley.
- Do not remove and modify the hood.



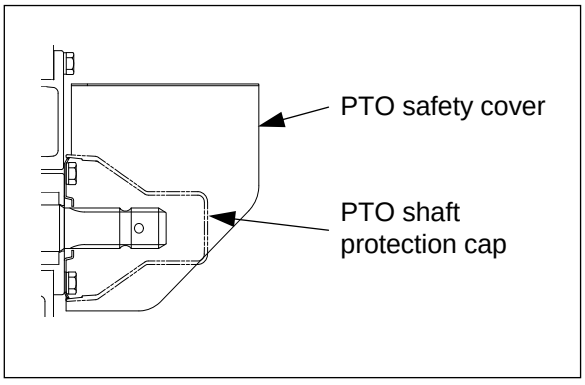
(2) Fender

- Fender is a protection device to prevent an unintended access to the rear tires and to prevent mud from irrupting to the driver.
- Do not remove and modify the fender.



(3) PTO safety cover and protection cap

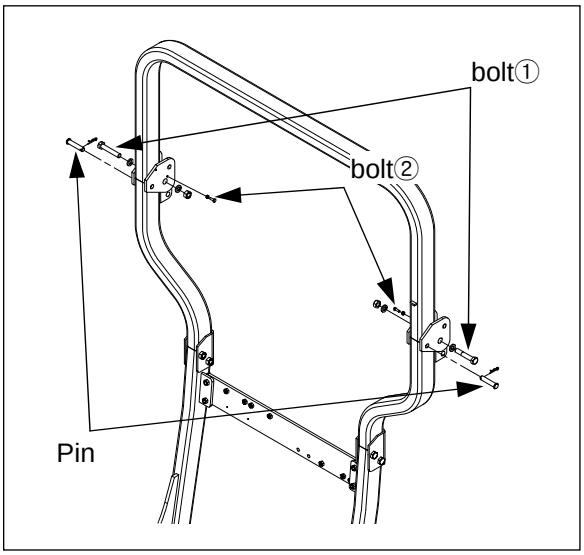
- PTO safety cover is a protection device to prevent an unintended access to the PTO shaft and to prevent an accident causing by the rotating drive shaft.
- Do not remove the PTO safety cover. If the PTO safety cover or protection cap is damaged or removed, replace it with a genuine part.
- Do not step on the PTO safety cover.
- After using the PTO shaft, apply grease and insert the PTO shaft protection cap.



Warning 	▶ If you contact the rotating shaft, it may cause a severe injury. - DO NOT try to touch the rotating shafts. - DO NOT remove the protection covers. - Avoid loose clothes that can easily be rolled up in the rotating shaft.

(4) Roll-Over Protective Structure (ROPS) (optional)

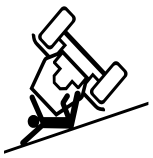
① Roll-bar (Safety frame)



- As the Roll-bar is very important structure for driver's safety, DO NOT modify (welding, drilling, cutting, etc) or remove it arbitrary.
- When folding the Roll-bar for special work, comply with the following instructions.

1. Loosen the bolts ①, ② on both sides.
   It is not necessary to remove it completely.
2. Pull out the pins on both sides and fold upper-frame down carefully.
   Be careful of the possibility that your body might be hurt by sudden folding due to its weight.
3. Insert the pin into the holes in order to fix the Roll-bar.
4. Tighten the bolts ①, ② firmly on both sides.

- Do stand the Roll-bar up originally as soon as your special work is finished.

Warning	▶ Do not change or disassemble the Roll-bar arbitrarily for driver's safety.
	▶ Unless the Roll-bar is installed correctly, it may cause a serious accident on tractor when being overturned. - Be sure to stand the Roll-bar up firmly and assemble the bolts, pins and nuts correctly.
	▶ When folding the Roll-bar; - Do cooperate with more than 2 people when folding or standing up the Roll-bar as it's heavy. - Be careful not to be injured by sudden folding, which might occur when folding or standing up the Roll-bar, results from its weight. - Do not wear seatbelt when the Roll-bar is folded down.

② Cabin

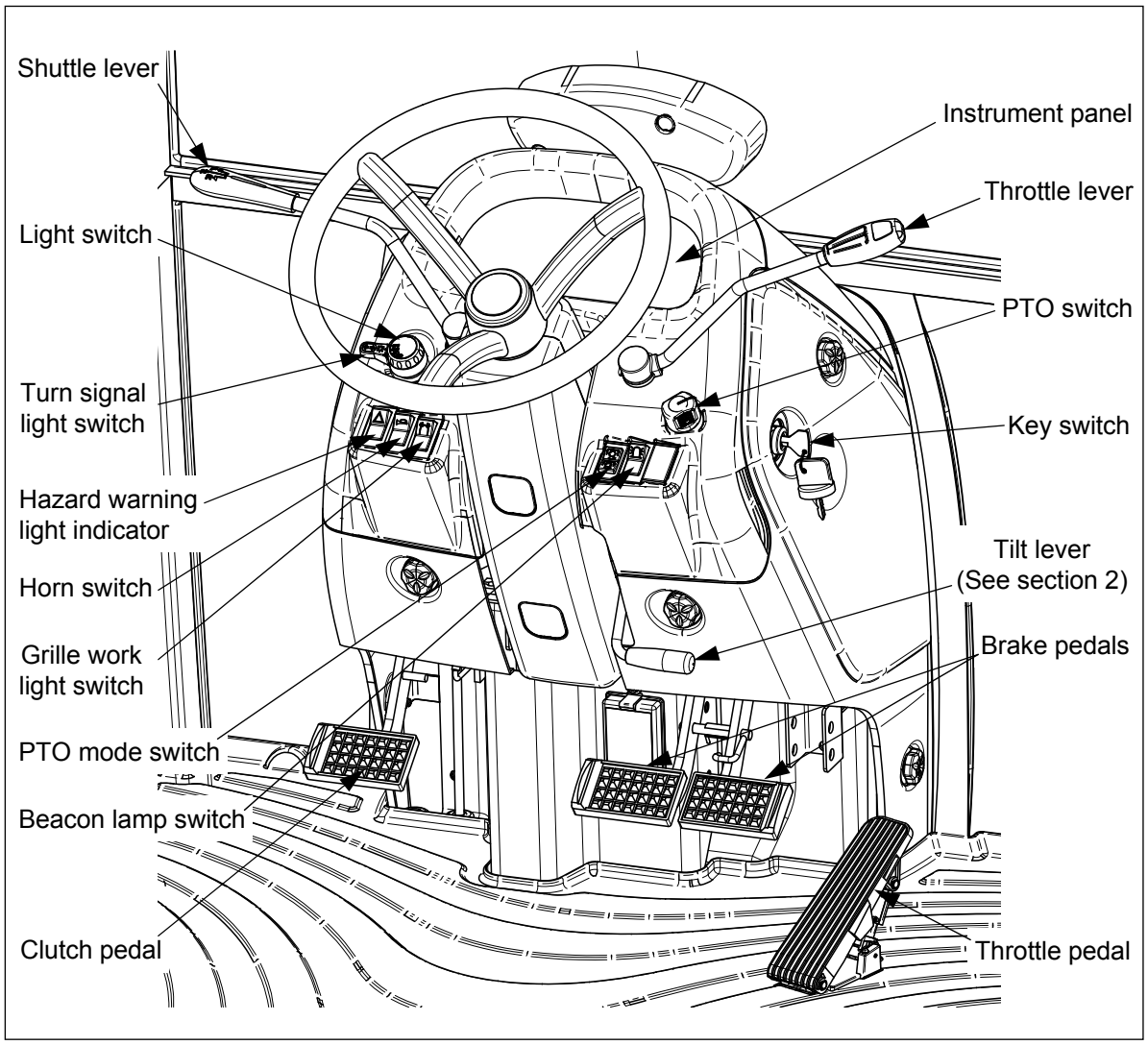
- The Protective Structure (Roll-bar or Cabin) and interconnecting components are a certified system. Any damage, Fire, corrosion or modification will weaken the structure and reduce your protection. If this occurs, the Protective Structure MUST be replaced with a new one. Contact your authorized dealer for Protective Structure inspection and replacement.

Warning	▶ As the cabin is very important structure for driver's safety, DO NOT modify (welding, drilling, cutting, etc) or remove it arbitrarily. ▶ Do not step on the fender for the maintenance of cabin roof.

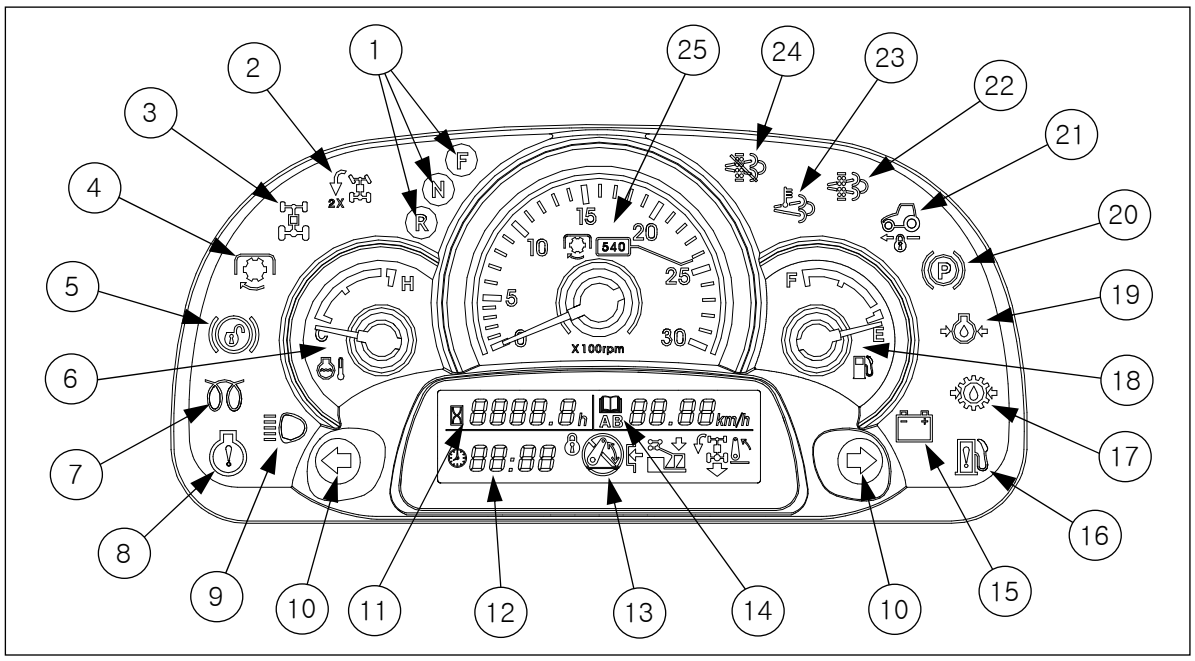
3. Instruments and Controls

3-1. Instrument panel and Front controls

Important to owner, read carefully



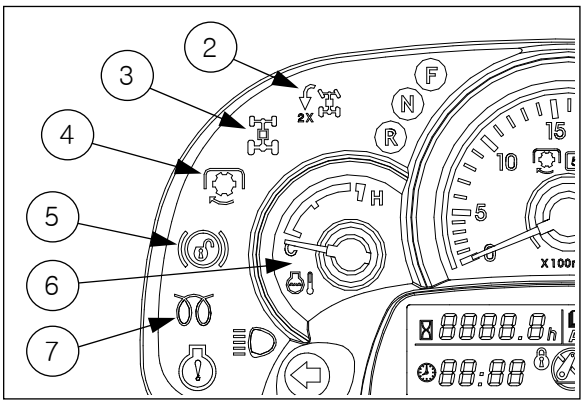
(1) Instrument panel



1. Forward-reverse indicator (optional)
2. Quick turn indicator (Not used)
3. 4WD indicator (Not used)
4. PTO operation indicator
5. One side brake indicator (Not used)
6. Engine coolant temperature gauge
7. Cold start aid indicator
8. Engine warning indicator
9. High beam indicator
10. Turn signal indicator (Left/Right)
11. Hour meter
12. Clock (Not used)
13. EHL mode display (optional)
14. Error diagnosis code display (optional)
15. Battery charging indicator
16. Fuel filter warning indicator
17. Hydraulic oil pressure indicator (Not used)
18. Fuel level gauge
19. Engine oil pressure indicator
20. Parking brake indicator
21. Cruise drive indicator (HST only)
22. DPF Regen indicator (Not used)
23. DPF temperature indicator (Not used)
24. DPF inhibited indicator (Not used)
25. Tachometer

1 Forward-reverse indicator (optional)

- When operating power shuttle lever to the FORWARD/REVERSE in power shuttle transmission, this indicators shall be ON.



(2) Quick turn indicator (Not used)

(3) 4WD indicator (Not used)

(4) PTO operation indicator

- When key switch is ON and PTO mode switch is **MANUAL,** this indicator shall be ON.
- If the PTO mode switch is **AUTO**, this indicator will be ON when clutch pedal is NOT depressed and the 3-point linkage is NOT lifted up over the upper limit.
  (For further information, See page 3-8)

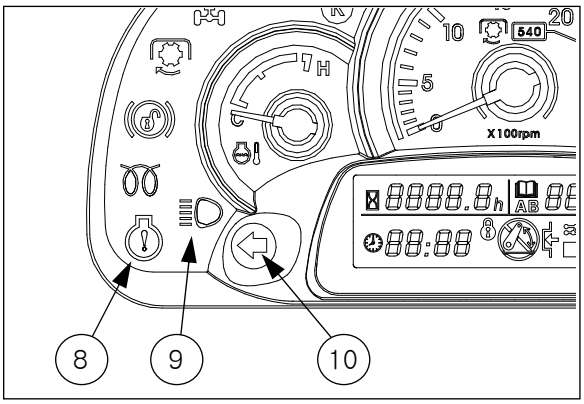
(5) One side brake indicator (Not used)

(6) Engine coolant temperature gauge

- This gauge indicates the temperature of coolant during operation.
- The closer the needle approaches “H”, the higher the temperature of engine coolant is.
- The coolant is very hot. When checking the coolant, comply with instructions of the section 5 “Maintenance and Lubrication” in this manual.

(7) Cold start aid indicator

- If the cold start aid device is working, this indicator shall be ON. After the indicator is OFF, start the engine.



(8) Engine warning indicator

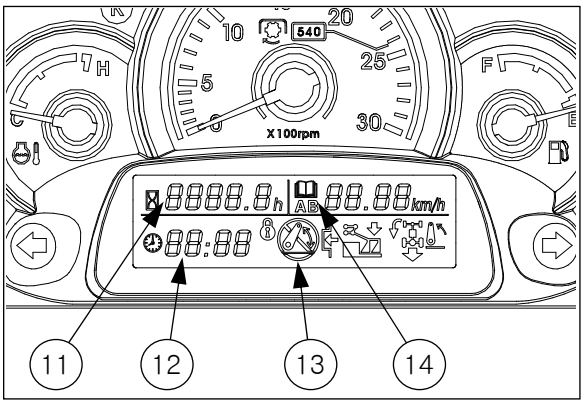
- If there is a fault on the engine control, this indicator shall be ON with continuous light or be blinking.
  Contact your authorized dealer for check.

(9) High beam indicator

- When turning on high beam of the headlamp, This indicator shall be ON simultaneously.

(10) Turn signal indicator (Left / Right)

- When the front/rear turn signal lights are blinked, This indicator shall be blinked simultaneously.



(11) Hour meter

- The operating hour 0019.1 means the tractor has been operated for 19.1hr (19 hours and 6 minutes).

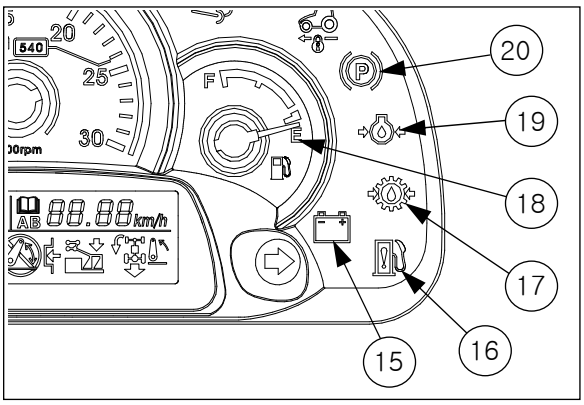
(12) Clock (Not used)

(13) EHL mode display (optional)

- This indicator displays the operational status of the Electro-Hydraulic Lift (EHL).

(14) Error diagnosis code display (optional)

- This indicator displays error codes of the Power Shuttle System (PSS).



(15) Battery charging indicator

- This indicator shall be ON when turning the key switch to ON position, and shall be OFF after starting engine.
- If not, contact your authorized dealer for checking electrical charging system.

(16) Fuel filter warning indicator

- When there is a restriction or excess water in the fuel filter, this indicator shall be ON.
- Remove the water in the fuel filter. *(See section 5-5 in this manual)*

(17) Hydraulic oil pressure indicator (Not used)

(18) Fuel level gauge

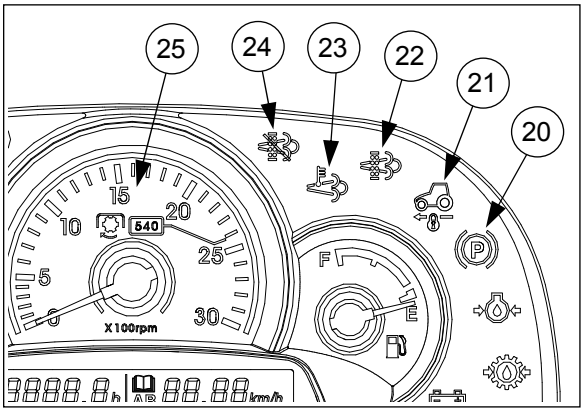
- This gauge indicates the remaining amount of fuel.
- If the needle indicates “E”, fill the fuel tank immediately.

(19) Engine oil pressure indicator

- This indicator shall be ON when turning the key switch to ON position, and shall be OFF after the engine starts.
- If not, contact your authorized dealer for checking engine lubrication system.

(20) Parking brake indicator

- This indicator shall be ON when applying the parking brake.



(21) Cruise drive indicator (HST only)

- This indicator shall be ON when pressing cruise control switch for applying cruise drive.

(22) DPF regen indicator (Not used)

(23) DPF temperature indicator (Not used)

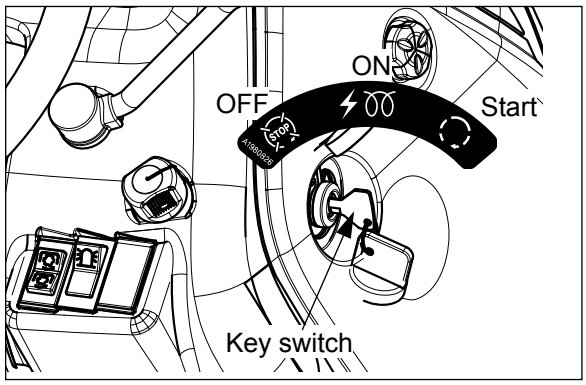
(24) DPF inhibited indicator (Not used)

(25) Tachometer

- The tachometer shows the engine revolutions per minute (“30” means 3000 rev/min).

(2) Key switch

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



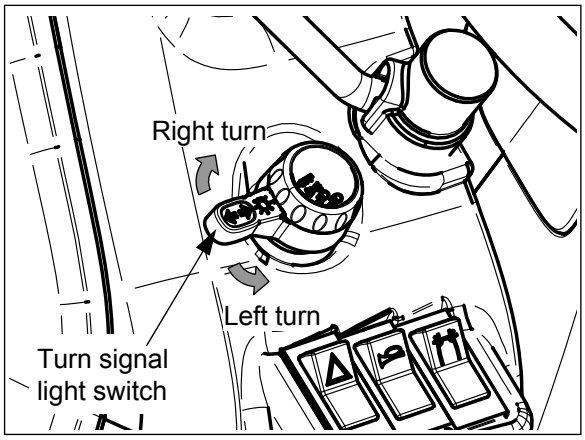
⚠Caution	▶ Because the safety switch for start is engaged, start the tractor after pressing clutch pedal. ▶ If the tractor is not in use, the ignition key should be removed.

(3) Turn signal light switch

- This switch is used to give information to other vehicles when turning to the left or right.
- If turning the switch to clockwise, the right turn signal lights are blinking.

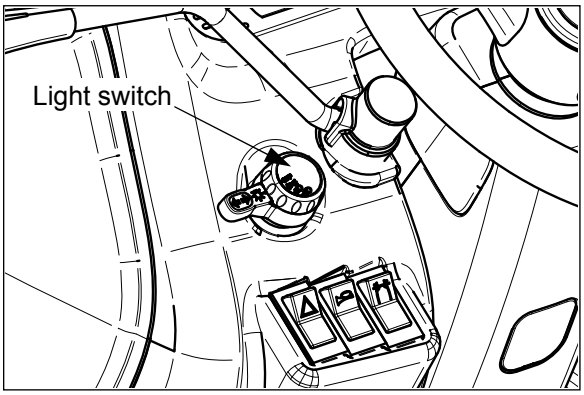
  -If turning the switch to counter-clockwise, the left turn signal lights are blinking.

⚠Caution	▶ When changing direction during running on the road, operate the turn signal lights to inform other vehicles of your direction.



(4) Light switch

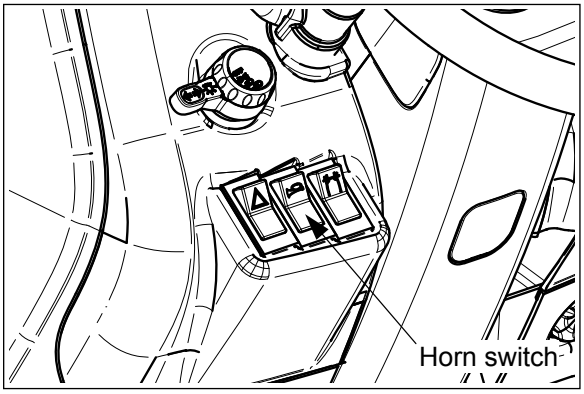
- **OFF** - Instrument panel and lights OFF
- ≡DC≡ - Instrument light and side lights ON
- - Instrument light, side lights, head lights (low beam) ON
- - Instrument light, side lights, head lights (high beam) ON



⚠Caution	▶When passing with other vehicles in the opposite lane at night, turn the headlights to low beam not to disturb on coming cars.

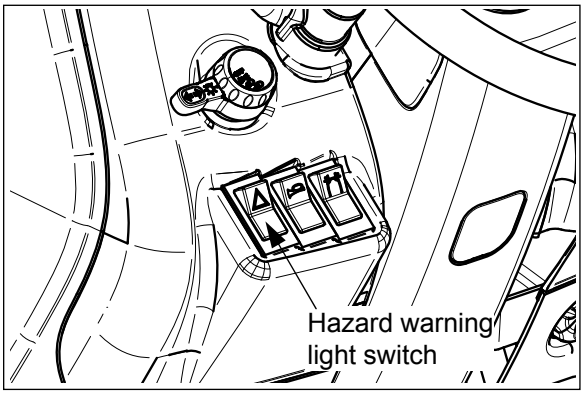
(5) Horn switch

- Press the upper side of the switch for sounding off the horn.



(6) Hazard warning light switch

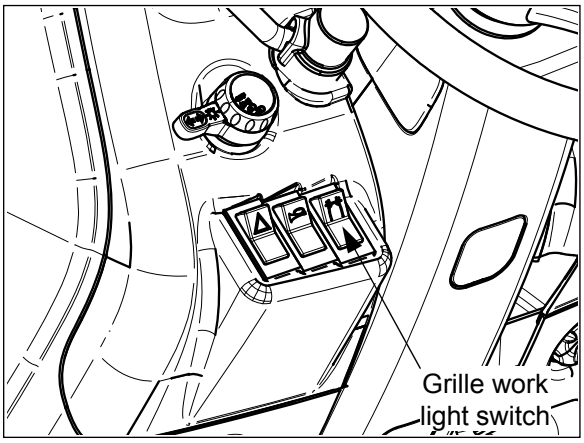
- This is used to warn other vehicles in case of emergency status. If you press the upper side of the triangle switch, all turn signal lights (front/rear, left/right) shall be blinking.



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.

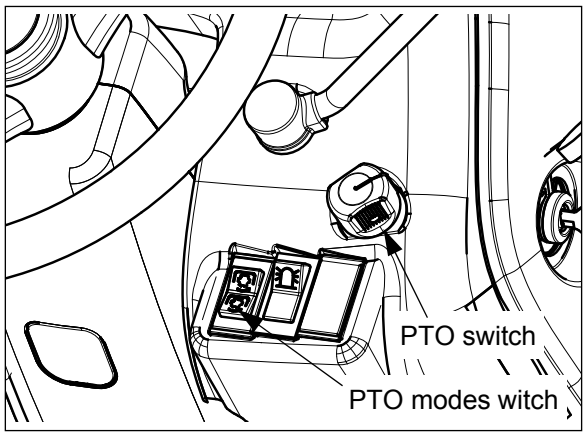
(7) Grille work light switch (optional)

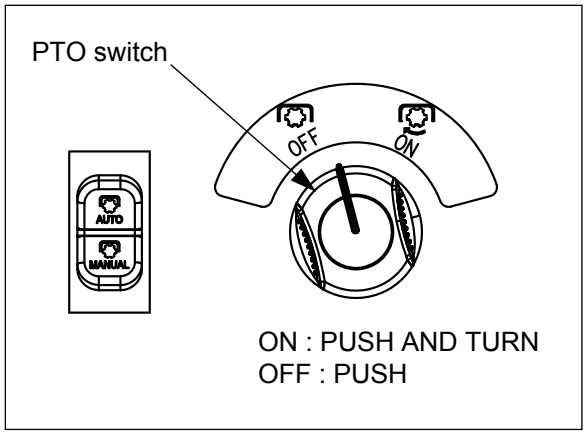
- This is used to turn on/off the work light of the front grille.
- **ON** - Press the upper side of the switch.
  OFF - Press the lower side of the switch.



(8) PTO switch

- The engine starts only when PTO switch is placed in **OFF** position for safety.
- After starting engine, you must comply with the operating procedure of the PTO switch as follow.
  1. Check if the PTO switch is placed in **OFF**.
  1. Place PTO gear lever to desired position.
  2. Put PTO switch to **MANUAL** or **AUTO** position.
  3. Push and turn PTO switch ON position. The PTO shaft shall rotate and PTO operation indicator on the instrument panel shall be ON.
  4. If you want to stop the PTO temporarily while working, push the PTO switch to OFF position.
  5. Before shifting PTO gear lever, always ensure to place the PTO switch in OFF position.

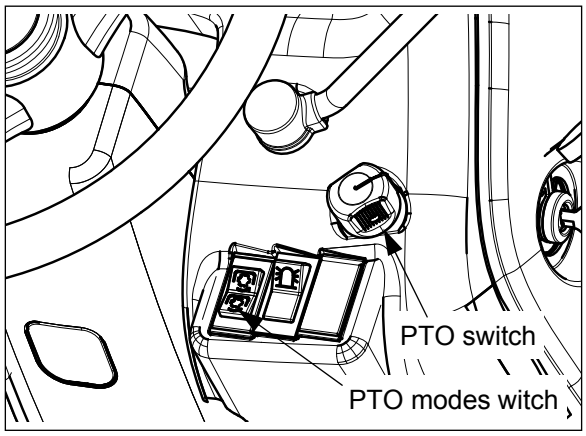




⚠Warning	▶ Before attaching or checking the PTO driven equipment, - Always place the PTO switch in **OFF** position, and PTO gear lever in **NEUTRAL** position. ▶ If the PTO switch is placed in **MANUAL** position, PTO rotates even if the implement moves up to upper limit. Pay attention to the surroundings to prevent a accident. ▶ Do not engage the PTO at high engine speed. Sudden engagement can cause damage to some implements and PTO clutch. Engage PTO at low RPM, and then raise the engine speed up.

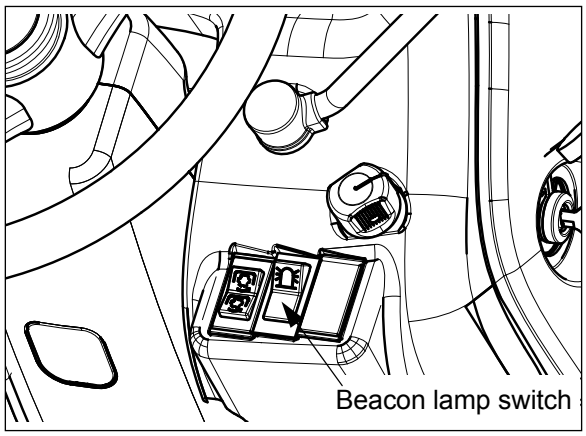
(9) PTO mode switch (optional)

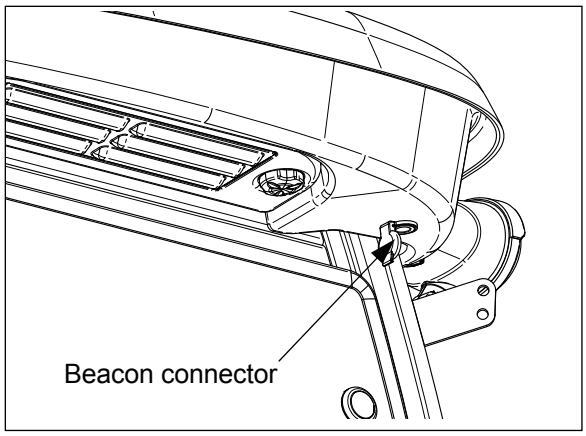
- It is used to select **AUTO** or **MANUAL** mode of PTO operation
- When the PTO mode switch is placed on ;
  - **MANUAL :** PTO shaft will rotate independent on the clutch pedal or position control lever.
  - **AUTO :** If pressing clutch pedal or lifting rear implement over the specified position, the PTO shaft shall be stopped.



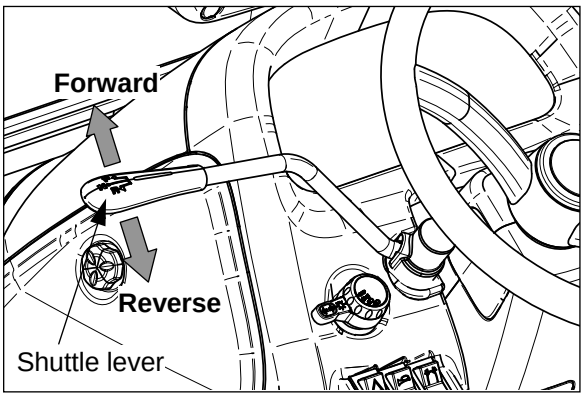
(10) Beacon lamp switch (if fitted)

- It is used to turn on/off the beacon lamp connected to beacon connectors. The beacon connectors are installed on the left and right-hand side under the cabin roof.
- **ON** - press upper side of the switch.
  OFF - press lower side of the switch.





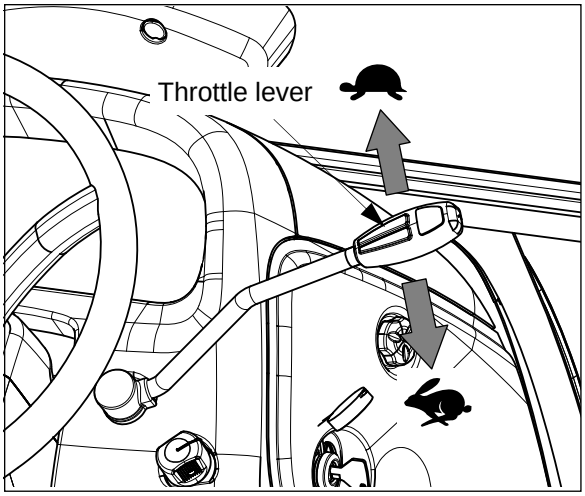
(11) Shuttle lever (Synchro shuttle)



- This is used to select Forward or Reverse.
- **FORWARD** : Push the lever forward.
  REVERSE : Pull the lever backward.
- Before reversing the tractor, lower the engine speed and check the safety behind the tractor.

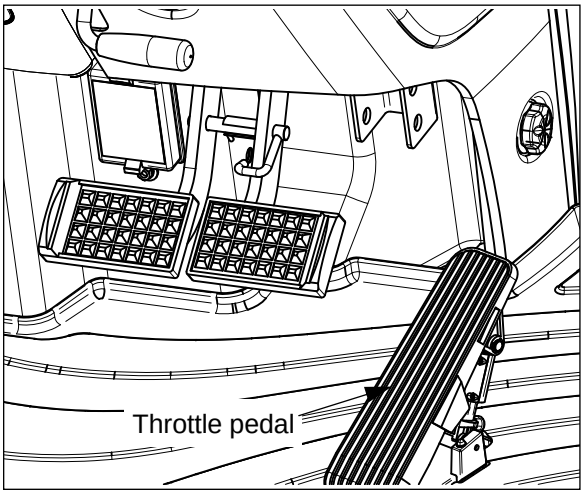
⚠ Caution	▶ The synchro-shuttle shift lever allows any forward range or reverse to be shifted while the tractor is moving slowly. However, the clutch must be disengaged and the engaged by means of clutch pedal. Make sure to depress clutch pedal fully and release it gradually to take up load smoothly, but sudden gear shifting may cause transmission damage. It is recommended to stop the tractor before operating the shuttle lever.

(12) Throttle lever



- This lever is used to control engine speed.
  - pull it backward for **HIGH** engine speed.
  - push it forward for **LOW** engine speed.
- The throttle lever must be used only for work field. When driving on the road, place the throttle lever to low speed, and use the throttle pedal.

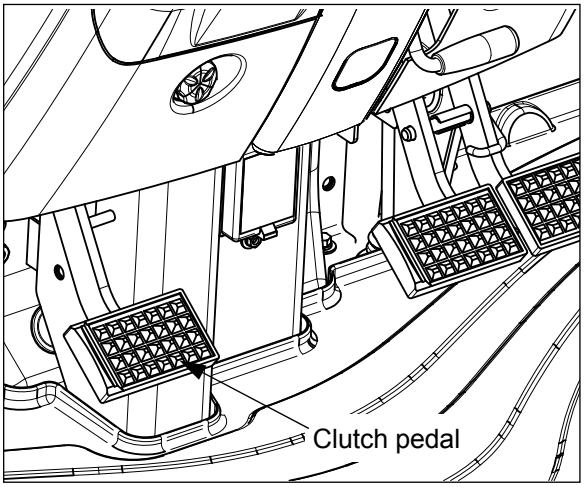
(13) Throttle pedal



- This pedal is used to control engine speed when running on the road.
- When using the Throttle pedal, the throttle lever must be placed on **LOW** speed.

(14) Clutch pedal

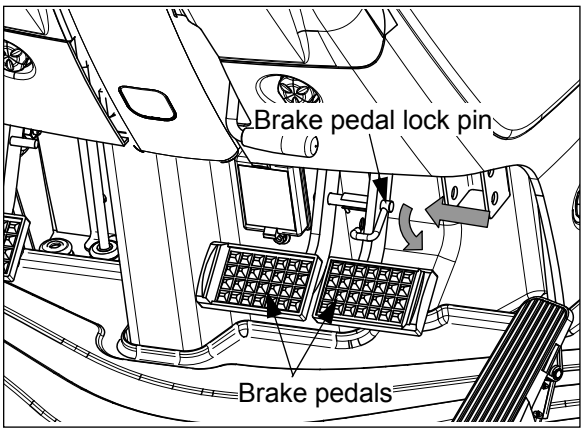
- This is used to engage or disengage the main transmission clutch for starting engine and shifting transmission gear.
- Depress the clutch pedal quickly and fully and release it slowly.
- When depressing the clutch pedal, If PTO mode switch is placed on ;
  - **MANUAL :** the PTO shaft shall **NOT** be stopped,
  - **AUTO :** the PTO shaft shall be stopped.



⚠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, depress the clutch pedal fully for staring engine.

(15) Brake pedals

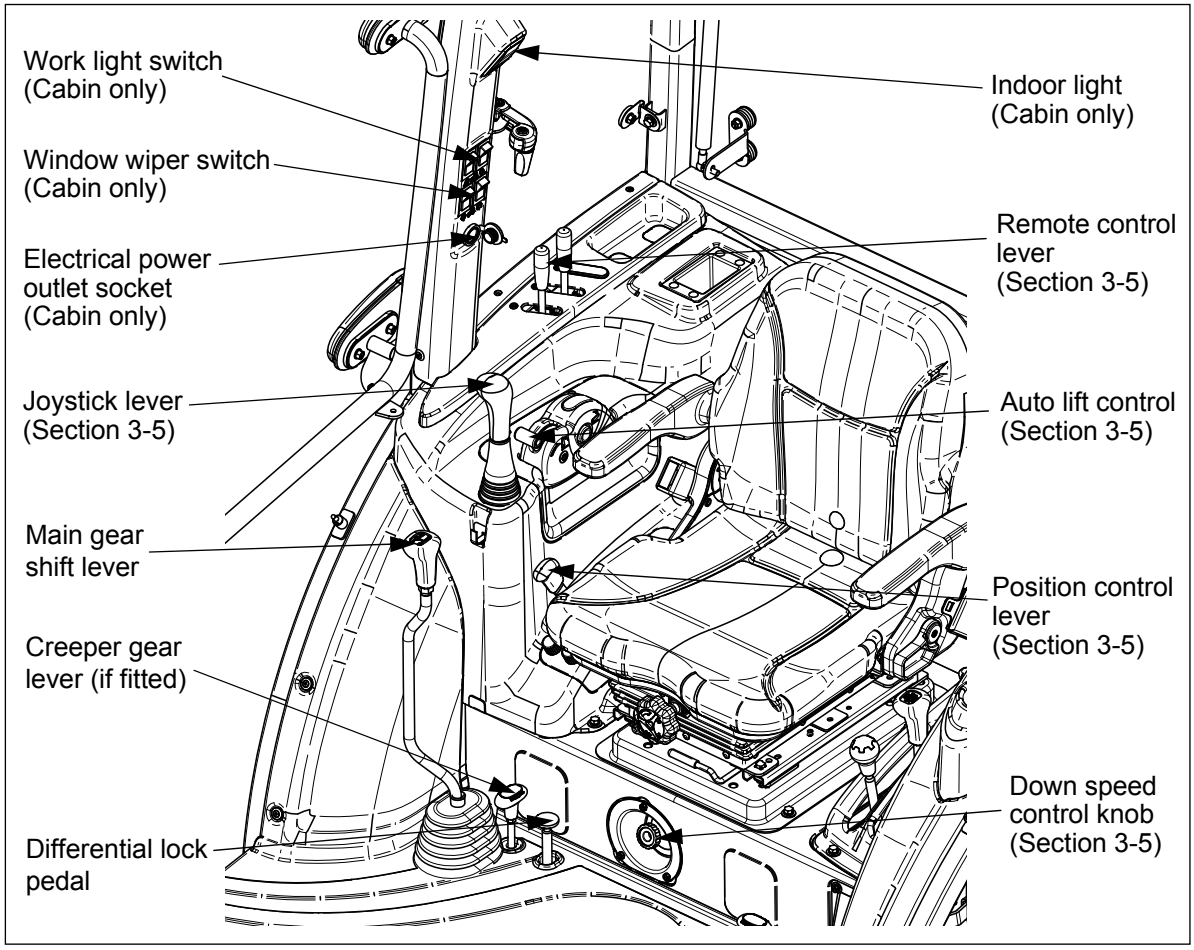
- The brake pedals of your tractor can be operated independently after disconnecting the brake pedal lock pin. The left/right brake pedals transmit braking force on each wheel.
- When stopping the tractor, press both brake pedals together.
- To reduce the turning radius in the work field, remove the brake pedal lock pin, and press only the left/right pedal firmly.
- DO NOT press the one side brake pedal while the differential lock is engaged. It may cause damage or failure of the axles.



⚠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.

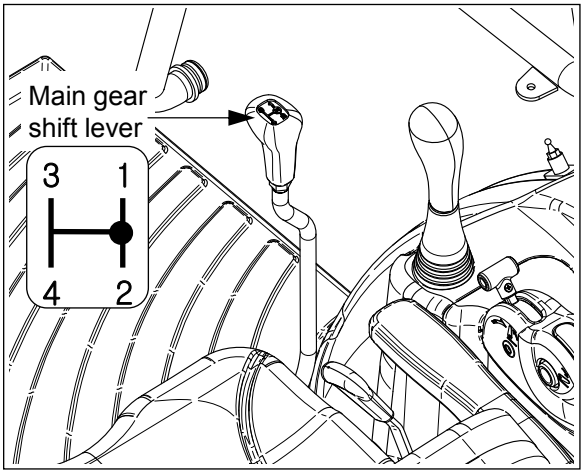
3-2. Right-hand controls and Cabin pillar

Important to owner, read carefully



(1) Main gear shift lever

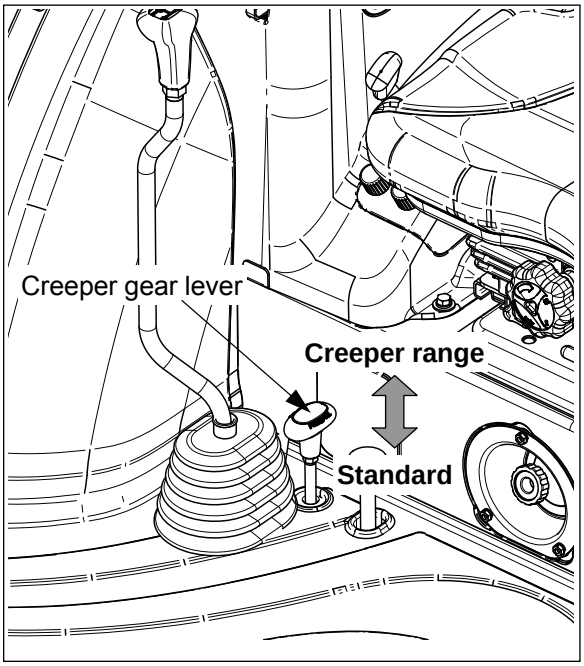
- Main gear shift lever is available to operate 4 speed ranges. If using range gear shift lever together with shuttle lever, the transmission of forward 16 speeds and reverse 16 speeds are available.
- Main gear shift lever 1~4 ranges shall be available for changing the speed while running by applying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



Notice	▶ Operate main gear shift lever by correct "**H**" pattern. If operated diagonally, it may cause a failure.

(2) Creeper gear lever (if fitted)

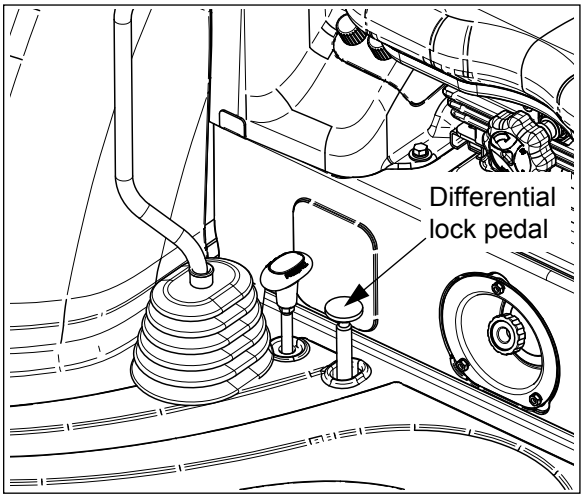
- If you pull this lever upward, the creeper gear stage is connected (ON), and if you pull it back down, the creeper is disengaged. (OFF)



⚠Caution	▶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. In this case, press the clutch pedal to cut off the power and operate the brake pedals.

(3) Differential lock pedal

- When the forward movement does not work because one aide rear 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.

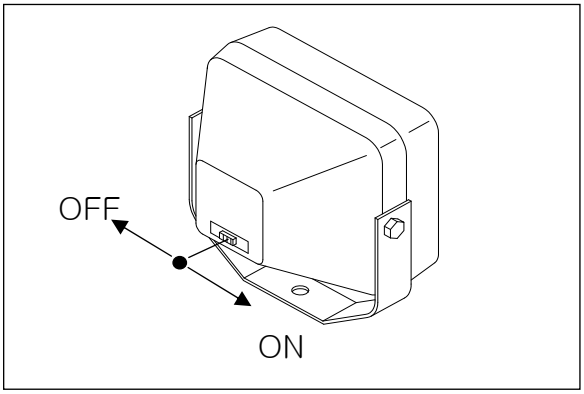


⚠Warning	▶Do not turn by pressing the differential lock pedal. ▶Do not use when driving on the road. ▶If turning to right or left In a wide turn, depress the clutch once and depress right or left brake pedal the direction you are turning.

(4) Work light switch

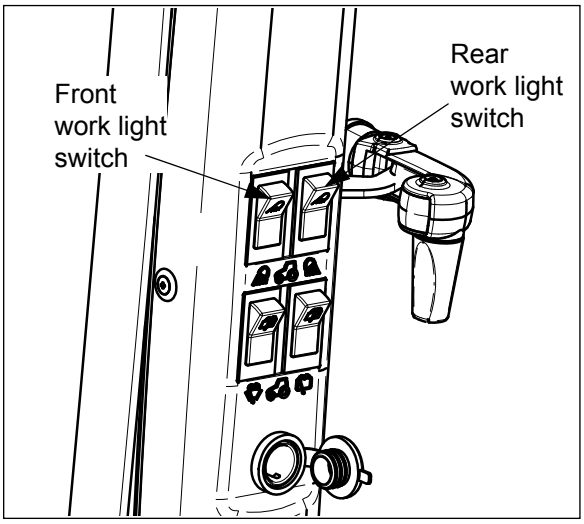
① Frame type (Rear)

- Rear work light has a switch on its back. To turn on/off the rear work light, operate the switch as the right figure.



② Cabin type (Front, Rear)

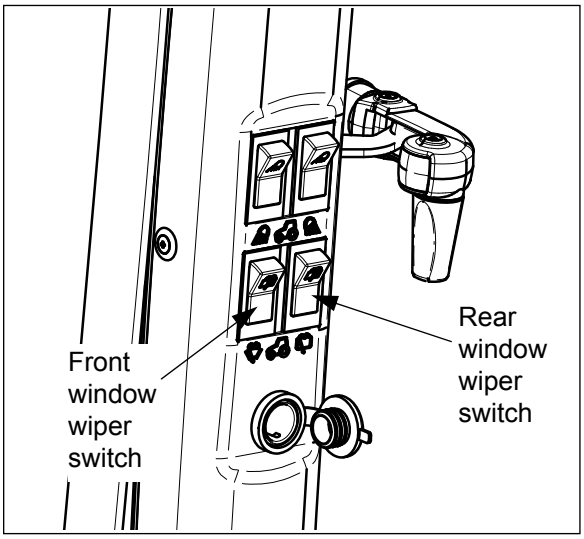
- This is used to turn on the front/rear work lights.
- **ON** - Press the upper side (symbol part) of the switch.
- **OFF** - Press the lower side of the switch



⚠ 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.

(5) Window wiper switch (Front, Rear)

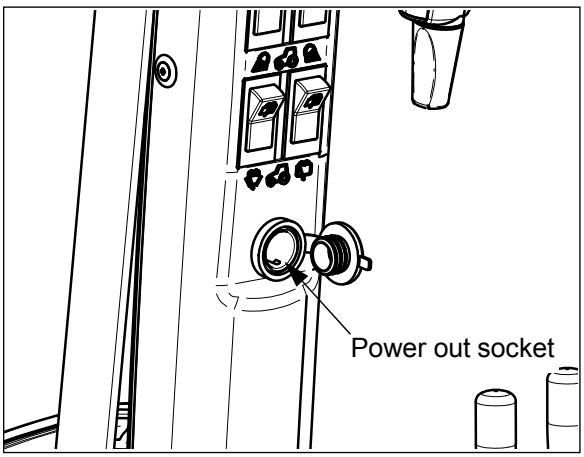
- This switch is used for operating front and rear window wiper.
- Press the upper side of its switch for operating only the front/rear wiper.
- If you press and hold the upper side of the switch again, the washer liquid shall be sprayed out.



⚠ Caution	▶ 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.

(6) Electrical power outlet socket (Cabin only)

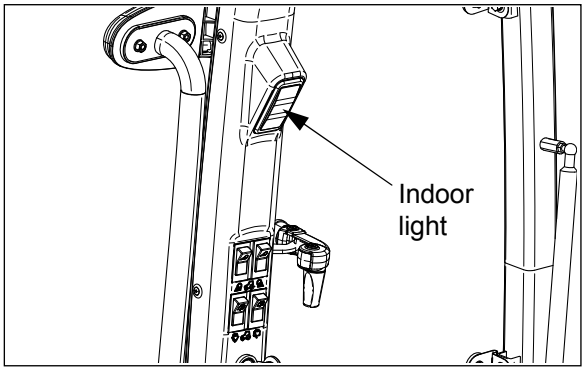
- This is used to withdraw the electric power for charging of the cigarette lighter jack or cellular phone.
- In case of using cigarette lighter jack (optional)
  -If you push the cigarette lighter jack, the heating coil generates heat and shall be used as alternative of lighter.
- In case of using as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



Caution 	▶ 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.

(7) 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.



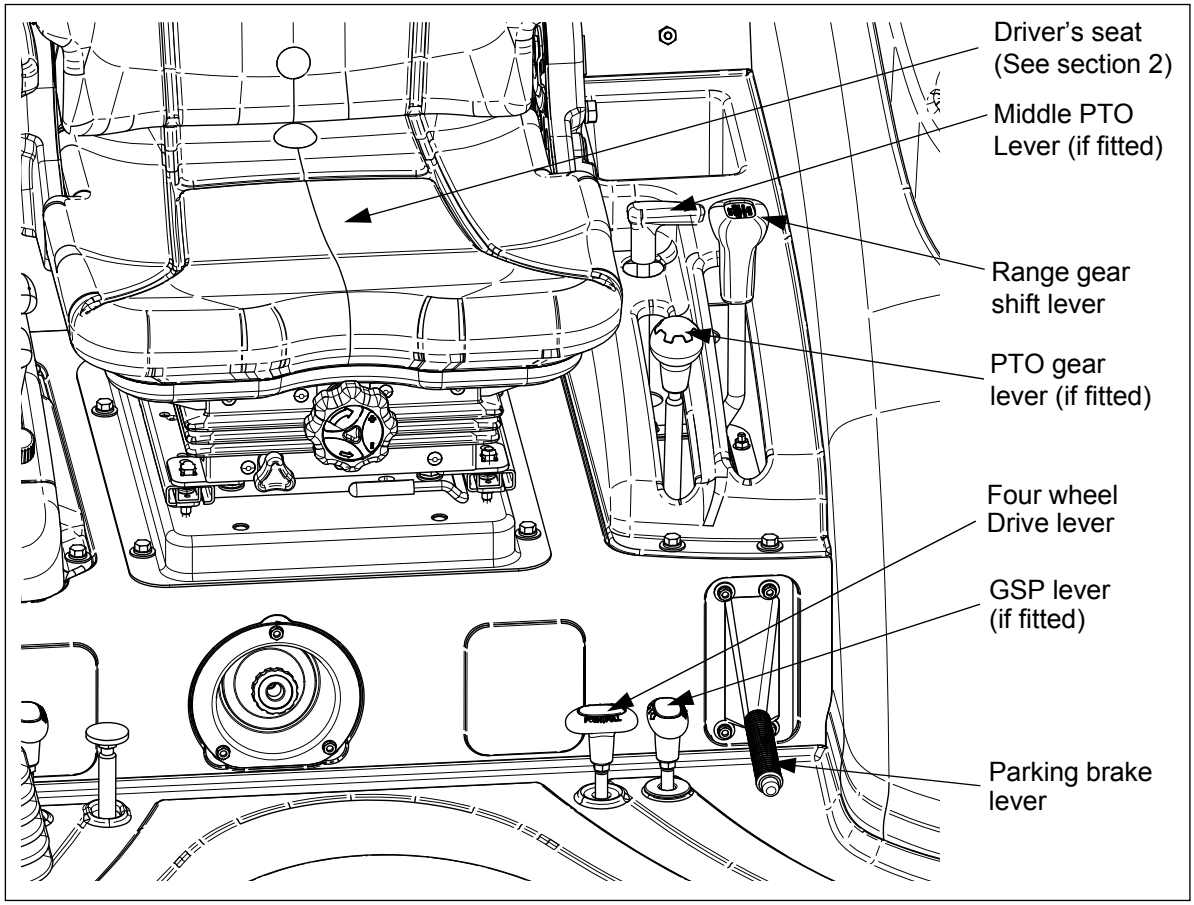
(8) Audio player (Cabin only)

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

Caution	▶ For safer operation, turn down the player volume so that you can hear sound from outside of the tractor. ▶ Do not use the headset while driving tractor.

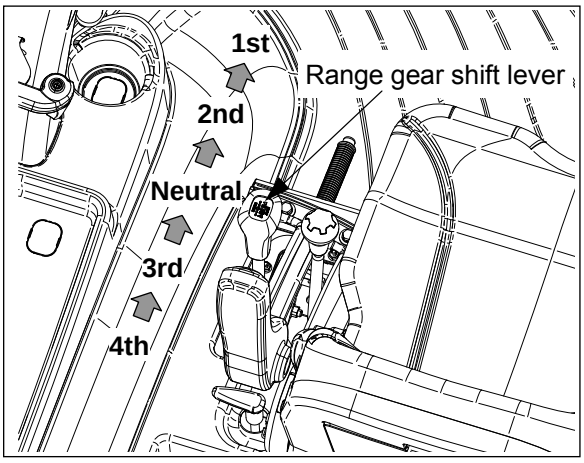
3-3. Left-hand controls

Important to owner, read carefully



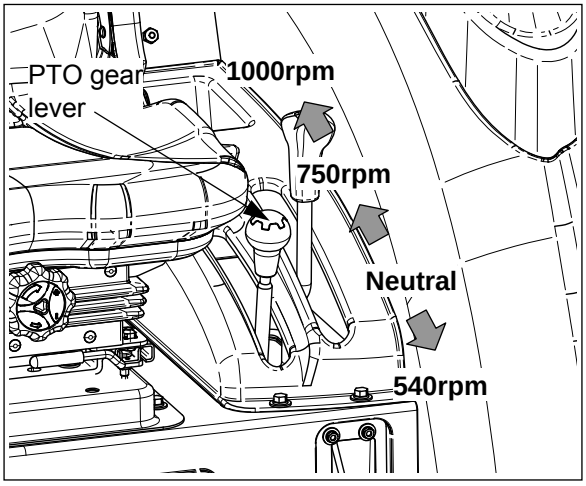
(1) Range gear shift lever

- Four speed gear shift is available.
- Before operating range gear shift lever, HAVE TO STOP the tractor completely.



(2) PTO gear lever (if fitted)

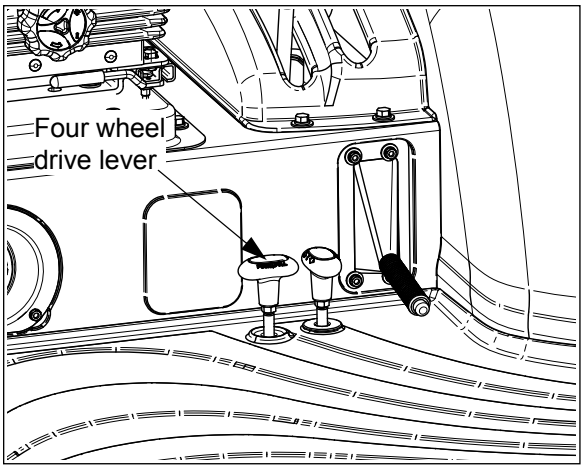
- 540 / 750 / 1000 rev/min and neutral position is available.
- Before operating the lever, press the clutch pedal and put PTO switch to **OFF** position, and stop the PTO shaft completely.



⚠ Caution	▶ If the PTO gear lever is NOT engaged smoothly, lift up and down on implement to align the drive shaft.

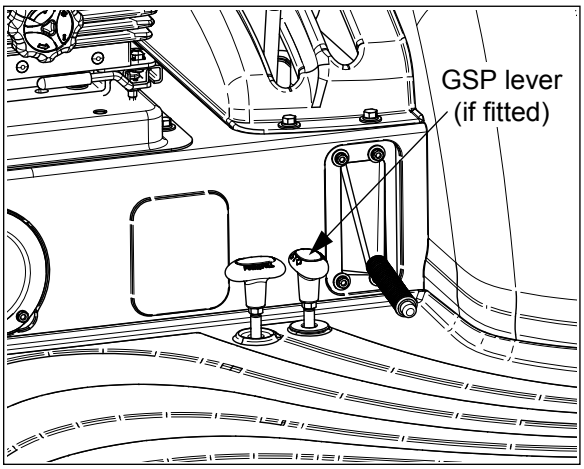
(3) Four wheel drive lever (4WD)

- This lever is used to engage/disengage the four wheel drive (4WD). Pull it upward for engaging 4WD.
- Before operating the 4WD lever, press the clutch pedal and stop the tractor completely.
- 4WD is very effective in the following cases.
  - When increasing the towing power for heavy work.
  - In case of working in sandy soil.
  - To prevent tractor from spinning in wet land.



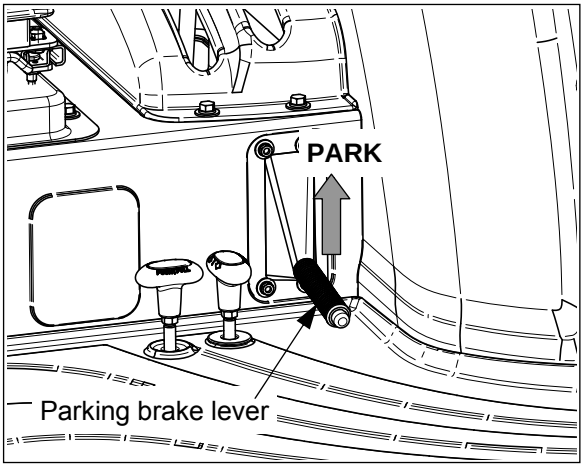
(4) GSP lever (if fitted)

- If you pull the lever upward, the ground speed PTO (GSP) is engaged.
- The ground speed PTO rotates proportionally according to the rear wheel speed.
- If pushing the lever downward fully, the ground speed PTO (GSP) is disengaged and independent PTO shall be engaged .
- Before operating the GSP lever, depress the clutch pedal and stop the tractor completely.



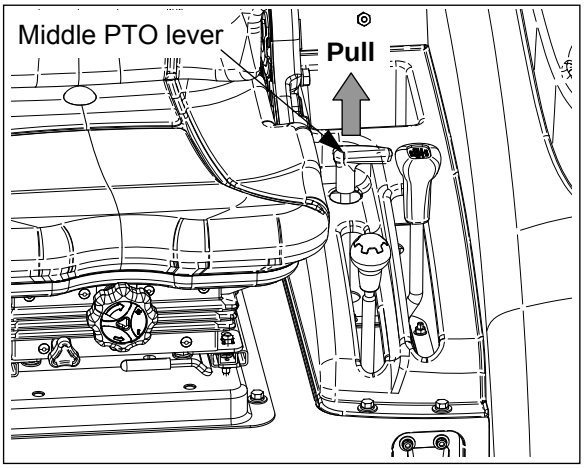
(5) Parking brake lever

- This lever is used to apply the parking brake. Pull it upward with pressing the brake pedals after locking brake pedals each other with brake pedal connecting pin.
- To disengage the parking brake, pressing the brake pedals, and push the lever downward with pressing the button of lever.



(6) Middle PTO lever (if fitted)

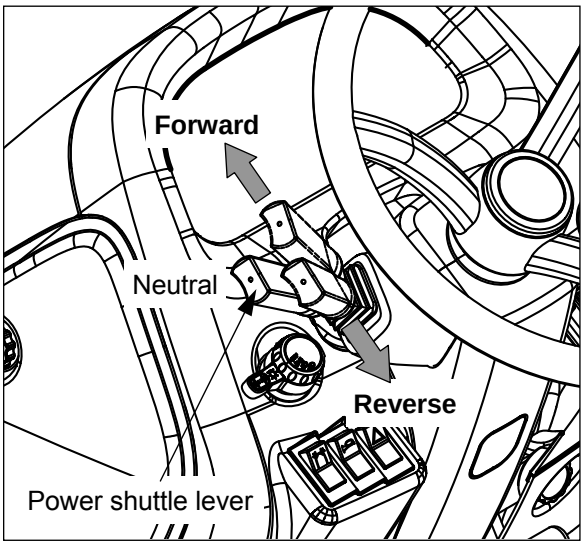
- This lever is used to connect/disconnect the Middle PTO drive.
  -. Pull it upward for connection
  -. Push it downward for disconnection



3-4. Power Shuttle System (PSS) (if fitted)

(1) Power shuttle lever (PSS)

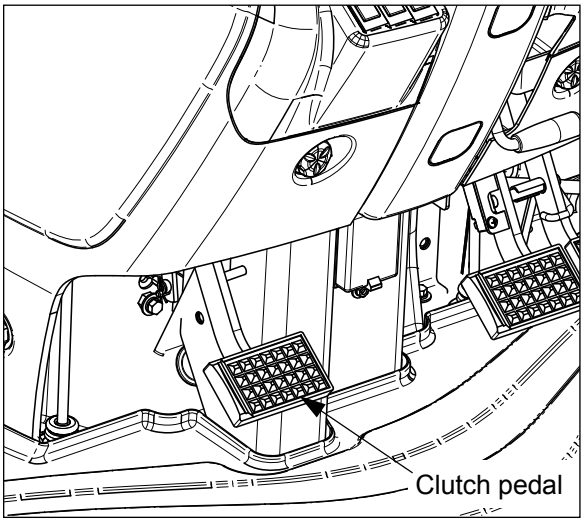
- Your tractor has an advanced electro-hydraulic forward and reverse system which controls the movement (Forward/Reverse/Stop) of the tractor by engaging or disengaging the multi-disk clutches.
- This system shall provide you more convenient forward-reverse operation than mechanical synchro-shuttle system.
- To change the Forward/Reverse, after lifting up the power shuttle lever, just push it forward or pull it back without depressing clutch pedal.
- Before reversing the tractor, lower engine rpm and check behind you before backing up.



- If transmission oil temperature is below 10℃(50˚F), the neutral (N) indicator on the instrument panel shall blink to inform you that warm-up is needed. If the oil temperature goes higher than 10℃(50˚F), the indicator shall be turned off automatically.
- If the oil temperature is considerably lower than proper level, a shock due to sudden engagement of the power shuttle clutch may happen. Before operating the power shuttle lever, be sure to warm-up the engine and transmission oil sufficiently in cold weather.
- If hydraulic pressure of the power shuttle system goes lower than proper level during operation, corresponding error code shall be displayed on the instrument panel with continuous alarm. At this time, move the shuttle lever to neutral position first. DO NOT try to operate the tractor any more, because the clutch engagement under a lower pressure can cause damage to the clutch plate even for a few seconds. Contact your authorized dealer immediately to get some instructions or to check the problem. Even though the alarm sounds, the tractor can be moved restrictively for escaping from an emergency state.

⚠ Caution	► Before shifting the main gear shift lever or range gear shift lever, depress the clutch pedal fully to disengage the clutch completely. If not, it may cause damage to the transmission gear. ► To start the engine, you have to place the shuttle lever in neutral position and place the PTO switch in OFF position, and then depress the clutch pedal fully. ► Before operating the shuttle lever, you should sit correctly in the driver's seat. ► Before changing the direction of the tractor by using the shuttle lever, be sure to check the safety condition of your directions, especially in reverse. ► It is dangerous to shift the shuttle lever without slowing down in high speed driving. Before changing direction, it is necessary to reduce the driving speed. If not, it may cause damage to the power shuttle clutch and transmission drive line. ► Proper transmission oil temperature is necessary to the performance of the power shuttle. Be sure to warm-up the tractor until the blinking of the Neutral indicator is stopped and do not operate the tractor hastily, especially in cold weather. ► Park the tractor on level ground and apply the parking brake. If you have to park the tractor on a slope, apply the parking brake, apply the wheel chocks to the wheels. Engaging low speed gear is NOT useful to protect the slippage of the tractor having the power shuttle system.

(2) Clutch pedal (PSS)

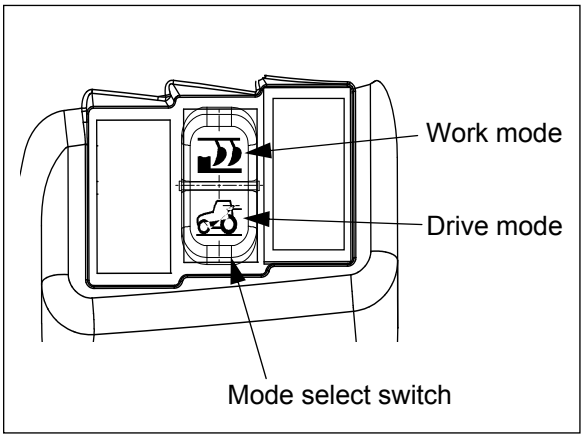


- This pedal is used to engage or disengage the engine power for engine start, transmission shift and stopping tractor.
- To disengage the clutch, depress the clutch pedal fully. If PTO select switch is placed on “AUTO” and clutch pedal is fully depressed, the PTO shaft shall be stopped.
- If the clutch pedal sensor has trouble or an error, the engagement or disengagement of the clutch is NOT smoothly operated and it’s corresponding error code is displayed on the instrument panel with intermittent alarm.
  In this case, the tractor can be moved by using the power shuttle lever. After moving the tractor to safe area, contact your authorized dealer for check.
- To protect the radical wear of the clutch, if the engagement time is prolonged over 6 seconds, an alarm shall happen, and if prolonged over 8 seconds, the clutch shall be disengaged completely. In this case, operate the shuttle lever again from neutral position or depress the clutch pedal fully one time to recover the clutch system.
- When driving the tractor on a slope, especially with heavy loaded implements, select a suitable driving speed to start the tractor. Appling high engine rpm and long-lasting clutch engagement at a high transmission gear ratio can cause serious damage to clutch pack.

⚠Caution	► Depress the clutch pedal quickly and fully, and release it slowly. ► When starting the engine, depress the clutch pedal fully. If not, the engine may not start due to interlocking of the start safety switch for user’s safety. ► Do not ride your foot on the clutch pedal while driving. ► If the engagement time is prolonged over 8 seconds on a slope, the engine power shall be cut off by safety interlock system. It means that tractor can slip down and your special care must be taken. At this time, press the brake pedals immediately and recover the power shuttle system by depressing the clutch pedal fully or Re-operating the shuttle lever from the neutral position.

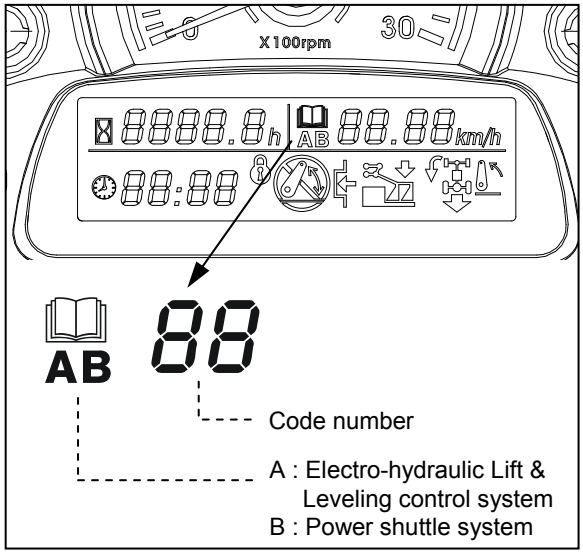
(3) Mode select switch (PSS)

- This switch is used for selecting the engagement time of the power shuttle clutch. This switch has two modes, **WORK / DRIVE mode**.
- **DRIVE mode -** The engagement time of the clutch shall be set in most suitable condition for driving.
- **WORK mode -** The engagement time of the clutch shall be shorter than drive mode and it is useful in the work field that faster forward/reverse changes are required, but engagement shock may be slightly increased.



(4) Error Diagnosis Code (PSS)

- If the sensor or valve relating to the power shuttle system has failed, the error code shall be displayed on the Instrument panel as shown in the figure.
- In case of several errors, the errors shall be displayed repeatedly every 1 second. In this case, record all error codes.
- And, contact your authorized dealer for check and tell the error code.



Error code	Description
B01	Power shuttle lever circuit short
B02	Clutch pedal sensor circuit short
B03	Oil temperature sensor circuit short
B04	Forward valve solenoid circuit cut-off or short
B05	Reverse valve solenoid circuit cut-off or short
B06	Proportional Reducing valve solenoid circuit cut-off or short
B07	Lubrication valve solenoid circuit cut-off or short
B08	Hi-speed valve solenoid circuit cut-off or short
B11	Power shuttle lever circuit cut-off
B12	Clutch pedal sensor circuit cut-off
B13	Oil temperature sensor circuit cut-off

3-5. Hydraulic system

(1) Safety precautions

- Hydraulic oil leaking under pressure can penetrate the skin and cause infection or other injury. To prevent personal injury, comply with as below.
  -. Relieve all pressure before disconnecting hydraulic lines.
  -. Before applying pressure, make sure all connections are tight and components are in good condition.
  -. Never use your hand to check for suspected leaks under pressure.
  -. If injured by leaking fluid, get medical attention immediately.
- The hydraulic hoses and fittings on your tractor meet engineering specifications for the particular function. When replacing damaged parts, use only manufacture authorized service parts.
- Care in hydraulic hose installation is a must:
  -. Make sure pressure is relieved before starting installation procedure.
  -. DO NOT kink or twist a hose, failure may occur. Properly route the hose.
  -. Have a certified hydraulic technician install the hose.
  -. Remove air from the hydraulic system after installing any hydraulic component.
- Periodically check hydraulic system for leaks or damaged parts - kinked, crushed, flattened, hard blistered, heat cracked, charred, twisted, soft or loose covered hoses and fittings.
- DO NOT pull or apply external forces to the hose. The hose may fail and cause injury.
- Keep all persons away from the working area. If a hose fails, mechanisms controlled by fluid power can become hazardous. Lifted mechanisms can fall to the ground, steering system may fail, etc.
- Stay clear of a pressurized hose assembly that has blown apart. Hose fittings can be thrown off at high speed and a loose hose can whip around with great force.
- Hydraulic oil can reach high temperatures. Allow fluid to cool before servicing the system.
- Vibration can reduce hose service life. Make sure all retaining clamps and/or devices are secured.
- Environmental conditions can cause hose and fittings to deteriorate. Inspect hydraulic hoses periodically. Replace worn or damaged hoses and fittings.
- Before checking or repairing the hydraulic system, make sure the engine is stopped, and all the transmission gears are in neutral, and lower the implements to the ground.

Warning	▶ Before removing hydraulic pipes or hoses and other parts, make sure to check that hydraulic pressure is relieved completely. The leaks of pressurized oil can cause a fatal physical injury. ▶ Use proper protection equipments, before servicing hydraulic system. ▶ Before connecting or disconnecting the hydraulic quick coupler, lower the implements to the ground, and check that hydraulic pressure is relieved.
	

(2) Steering system

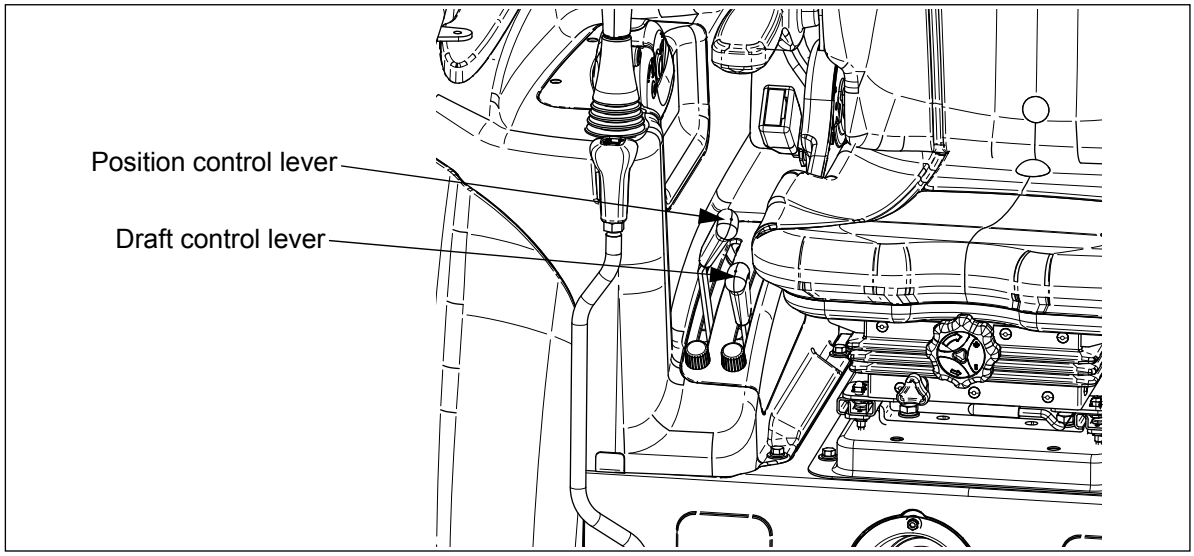
- The hydraulic steering system controlled by fluid power provides you more convenience to operate the steering wheel.
- Notices when using the steering system.

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 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.

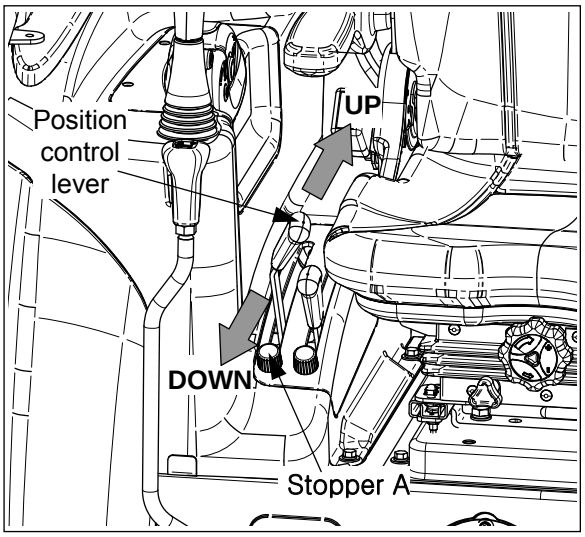
Notice	▶ If the engine stops, the operation of steering wheel becomes hard to turn and causes steering not to work. But this does not mean a failure. ▶ If you turn the steering wheel while driving, the steering wheel does not return back automatically.

(3) Hydraulic lift Control (Mechanical Hydraulic Lift, MHL)

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



① Position control



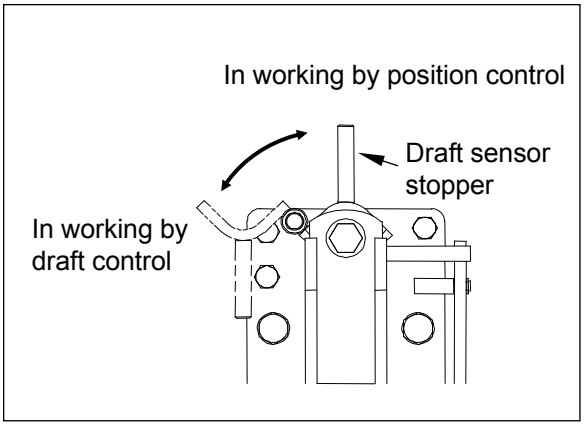
- To set the position (height) of the rear implement, move the position control lever up/down during the engine is running. Generally, this lever is used for tiller, fertilizer distributor, mower, rake and other rear implements.

1.Push the position control lever forward and let the implement down by its own weight.

2.Move up the lever to desired position, the rear implement shell be located on the position corresponding to the lever position.

3.To set the lowest position of the lever, Turn stopper A counter-clockwise, move and lock the stopper A at desired position.

② Draft control



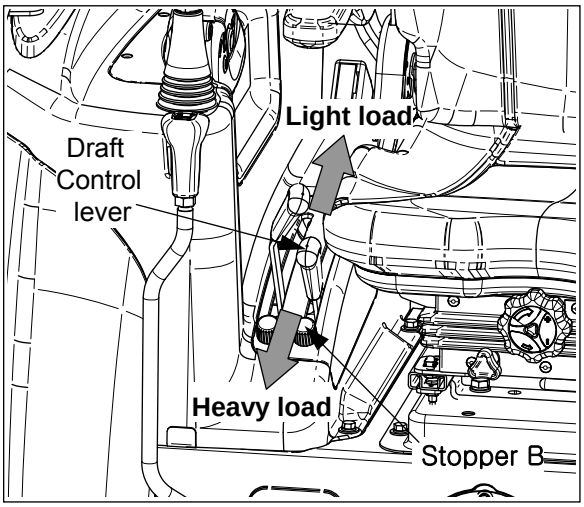
- The working depth of the implement under the draft control is controlled automatically by the draft load of the implement that detected from draft load sensor bracket and transmitted to the lift control valve. Generally, this mode is used for the implement which receives the draft load.
  In this case, 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 let the implement down by its own weight.

3.The draft load to lift control valve 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 by light draft load.

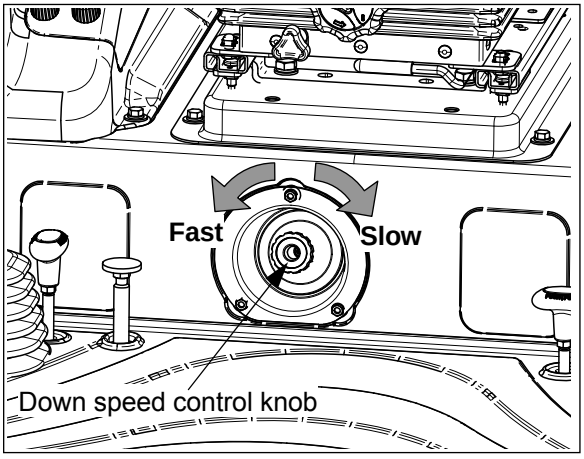
4.If you want to lift the rear implement, use the position control lever instead of the draft control lever



③ Mixed control

- It is provided by suitable combinations of both levers. In this case, working depth is set by the position control lever basically and controlled by the draft control lever under position control.

④ Down speed control knob (MHL)

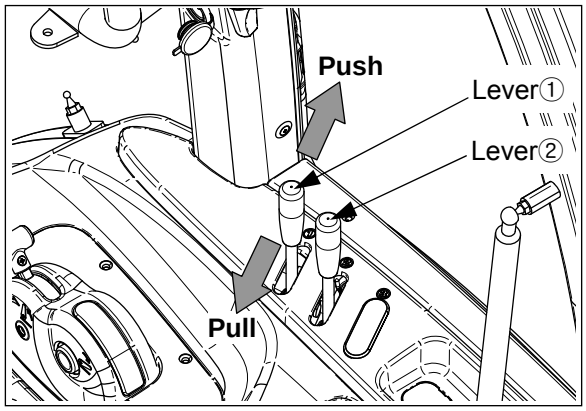


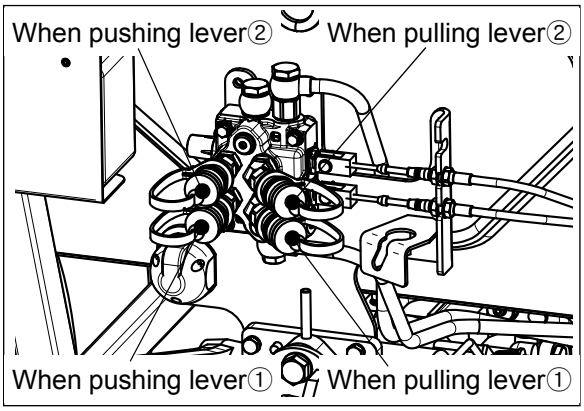
- Turn the valve knob to the right to lower the implement slowly and to the left to rise speed faster. If turning right fully, the implement shall be fixed and even if lowering down the position control lever, the implement does not let down.
- Tiller work : Slow in down speed
- plough work : Fast in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

(4) Remote control lever and Quick coupler (optional)

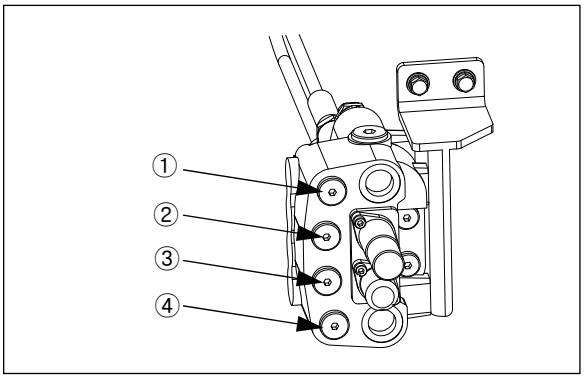
- These levers are used to operate the hydraulic cylinder and/or motor of the implement attached to the tractor.
- Push the remote control lever forward, and the hydraulic pressure can be delivered to the left-hand coupler of the related lever and right-hand coupler shall be connected to the drain.
- Each lever of the remote control valve can be operated respectively, and when operating the levers at the same time, the one received less pressure begins to start first.
- After connecting and preliminary operating the hydraulic equipment, check again transmission oil level of the tractor.



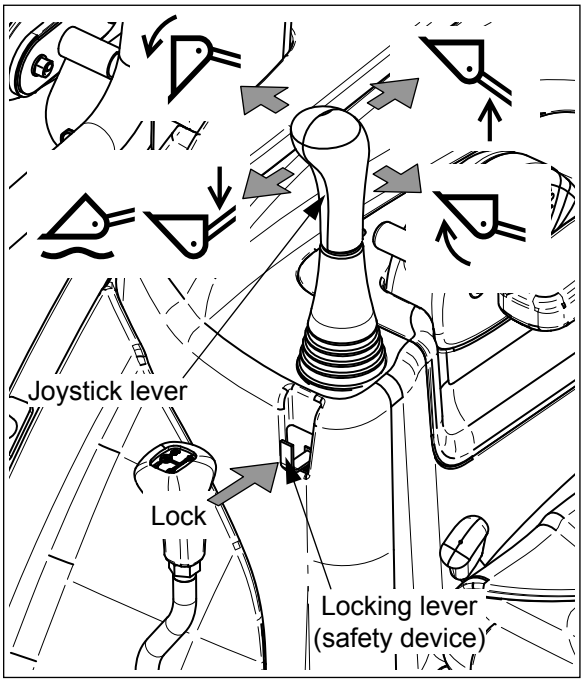


(5) Joystick lever (optional)

※ 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.



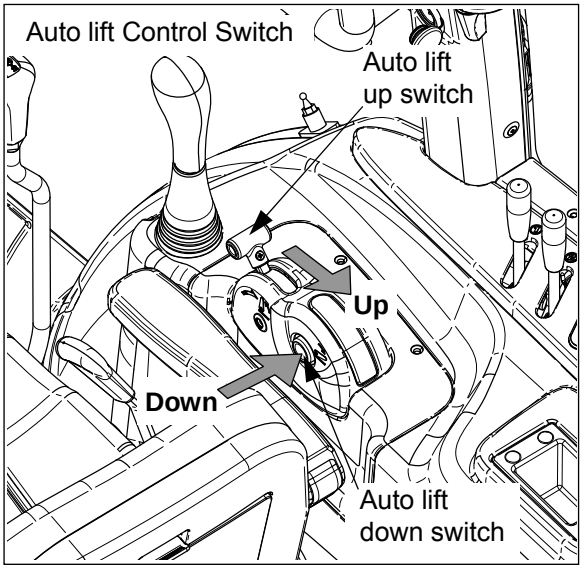
<Meaning of symbols>

Loader up
Loader down
Bucket floating
Bucket up
Bucket dump

- Locking lever shown in the right figure is used to lock the joystick lever.
  - Pull from the joystick : Unlock
  - Push to the joystick : Lock
- *For further information, See section 4-4 in this manual.*

⚠ Warning	▶ To prevent accidents, push and lock the locking lever when you do not use joystick lever.

(6) Auto lift control (MHL, if fitted)

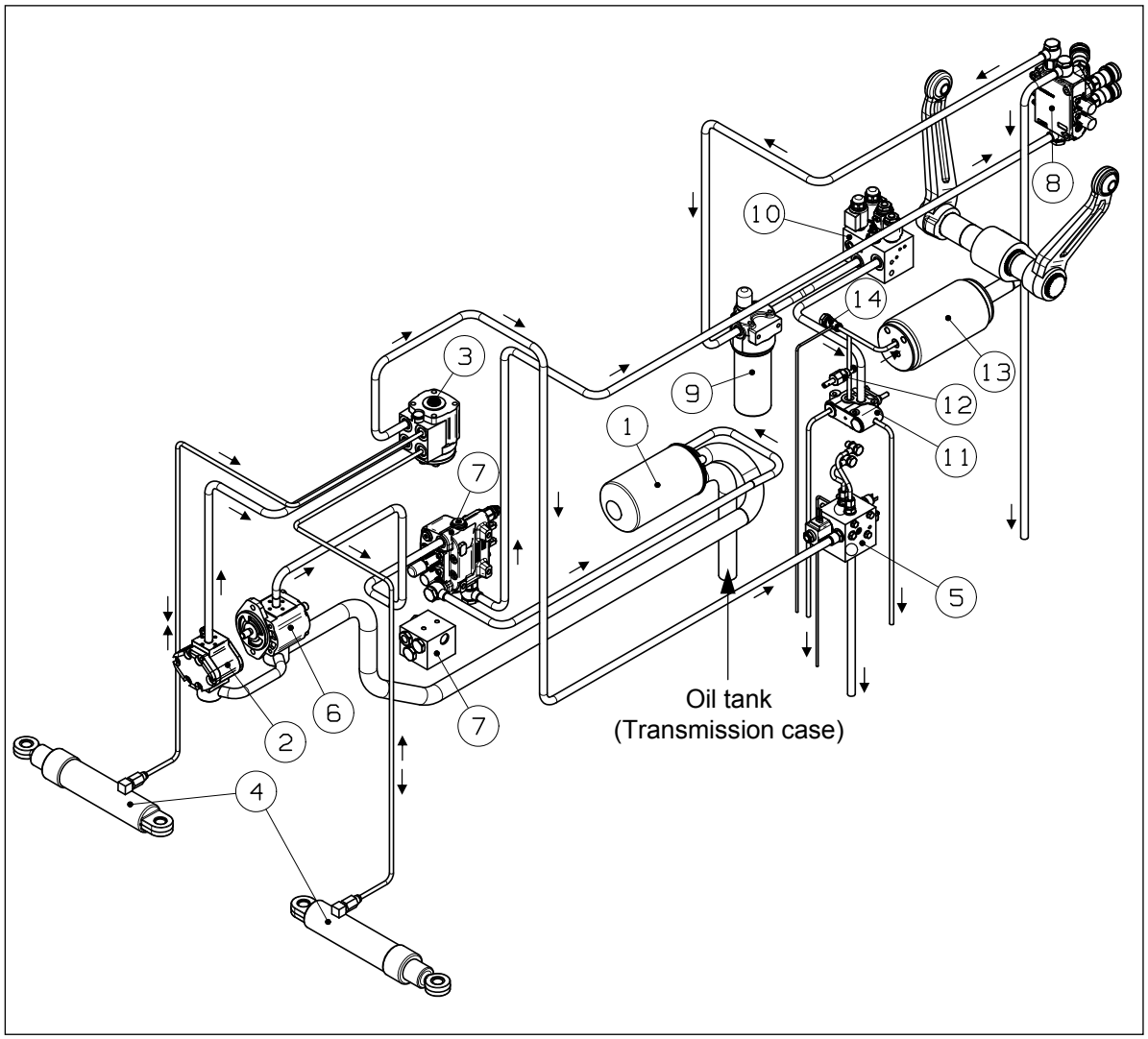


※ It is used to lift the implement up to the highest position quickly and lower it down to the position set by position control lever without using position control lever.

- 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 auto lift-up switch is pulled back, the implement shall NOT be moved by position control lever.
- When lifting up the implement, the PTO shaft shall be stopped in case the PTO mode switch is placed in **AUTO.** (optional)

⚠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.

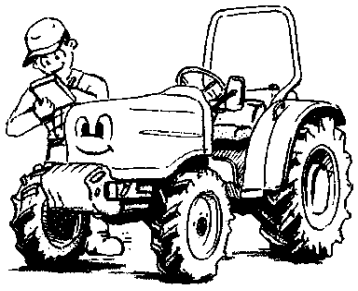
(7) Hydraulic System Diagram



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

4. Operation and Work

4-1. Engine start and stop



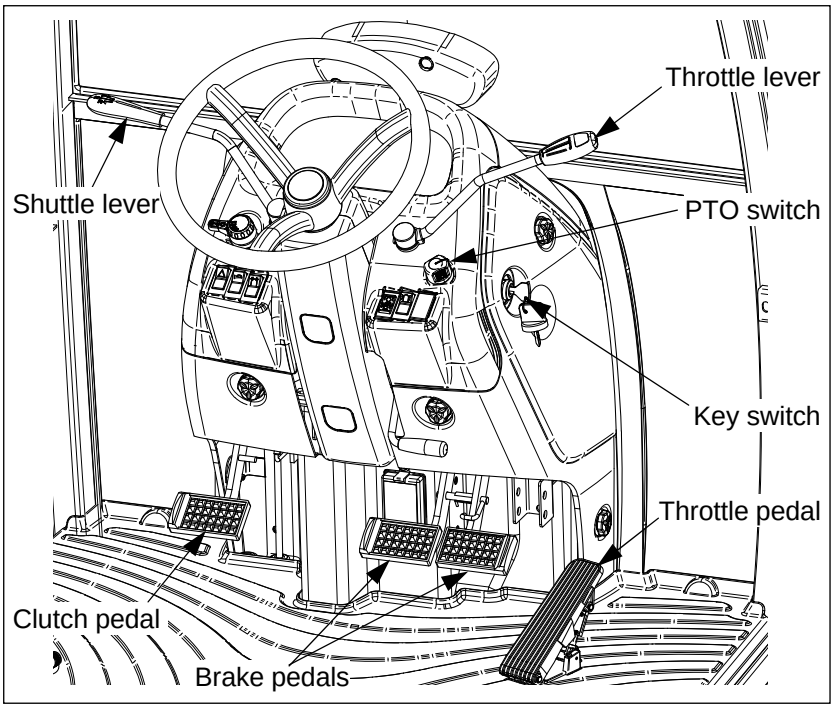
⚠ Caution	▶ Check each part before starting engine. ▶ Check if there is some other people around the tractor before starting. ▶ Place the lever and switch in **NEUTRAL** or **OFF** position.

(1) Engine start

1. Sit in the driver's seat and check if the parking brake is applied.

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 the cold start aid indicator is OFF. (about 10 seconds)

6. Depress clutch pedal fully and turn key switch to **START** position. As soon as the engine has been started, release the key switch to go to the ON position.

7. Check if engine oil pressure indicator and battery charging indicator are OFF.
If not, stop the engine immediately for check.

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

Caution  	▶Only start engine outdoors or in a well ventilated place, as the engine exhaust fumes may cause sickness or death. . ▶To avoid an explosion, never use starting fluid to start engine. ▶Start the engine ONLY from the driver's seat with depressing clutch pedal fully. ▶DO NOT start the engine by shorting across the terminals of start motor. If the engine starts, the tractor can move suddenly.

Caution	▶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. ▶The running time of start switch must be within 10 seconds and if it does not start, stop and wait 1~2 minutes and then restart. ▶Place the PTO switch OFF when starting. ▶ When the engine is turning, do not turn the start key to START position. It may cause the failure of start motor. ▶ 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.

(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	▶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. ▶Allowing engine to idle for a long time will waste fuel and cause a build up of carbon.

(3) Engine Stop

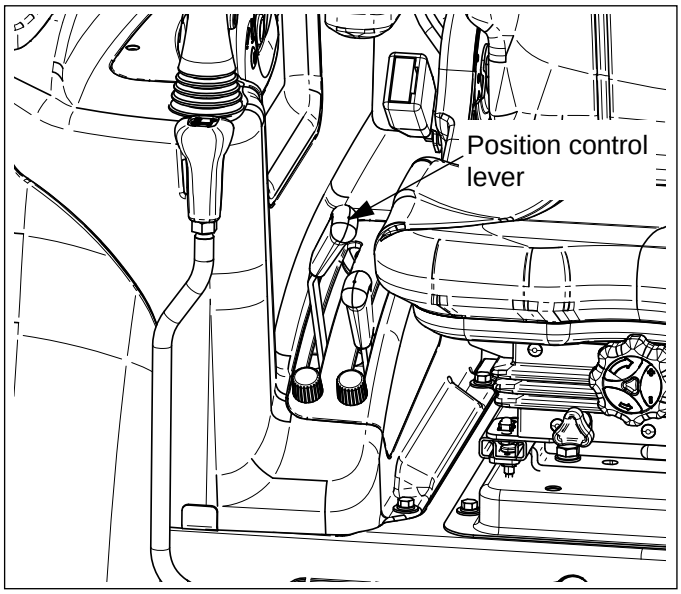
- Push the Throttle lever forward to reduce the engine speed and place the key switch on OFF position to stop the engine.

Notice	▶ 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.

4-2. How to drive and how to stop

(1) How to drive

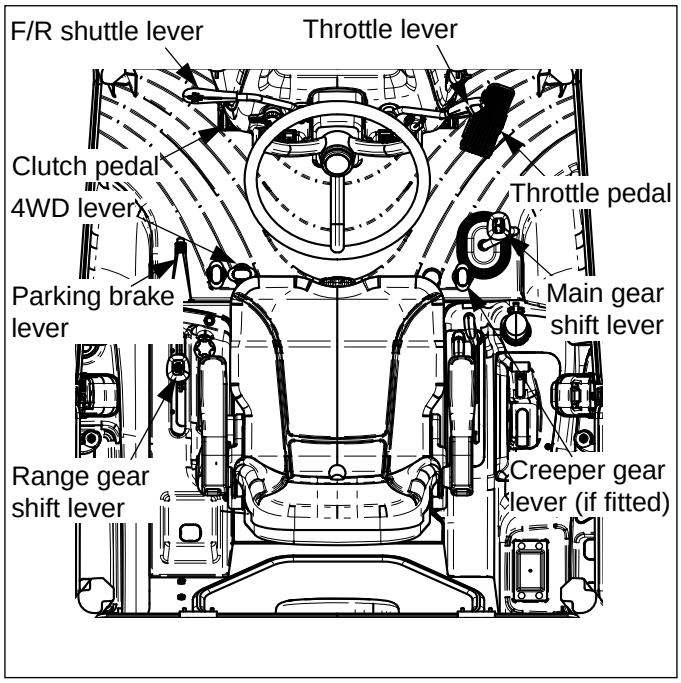
1. Pull the position control lever back to lift the implement up after starting engine.



2. Fix the engine rpm at 1500 RPM

3. Press clutch pedal fully

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



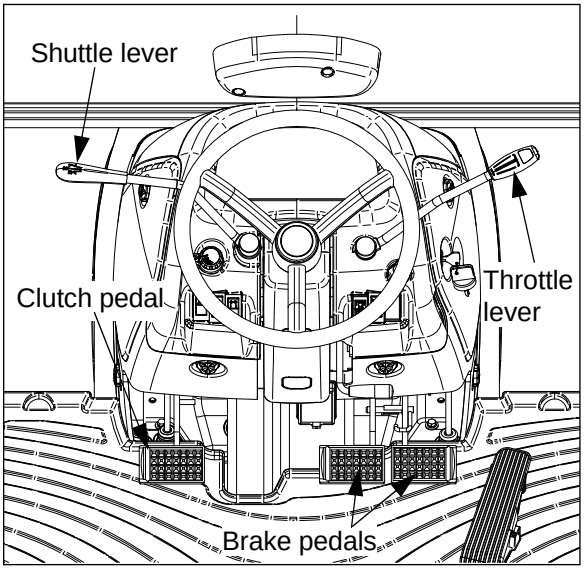
5. Press brake pedals and release the parking brake lever.

6. Release clutch pedal slowly, and then the tractor shall start.

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) Changing speed

- Depress the clutch pedal fully and operate all the shift levers correctly.
- Before shifting F/R Shuttle lever, Range gear lever, Creeper gear (if fitted), HAVE TO STOP the tractor completely.

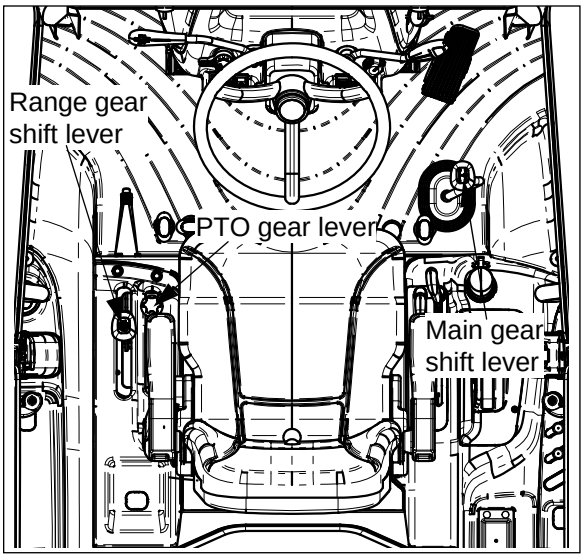


(3) Emergency Stop

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

2. DO NOT release clutch pedal until all moving parts have been stopped.

3. Apply parking brake.

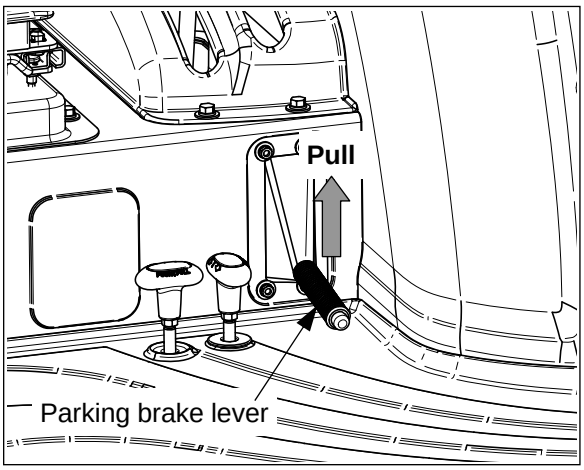


(4) Stopping tractor

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

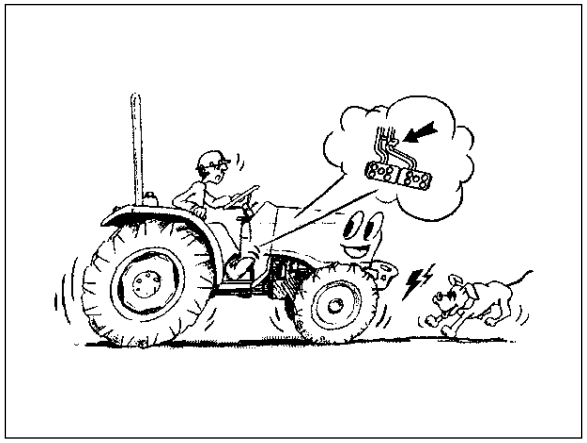
2. Push the position control lever forward to lower implements to the ground. Turn Key switch to OFF position.

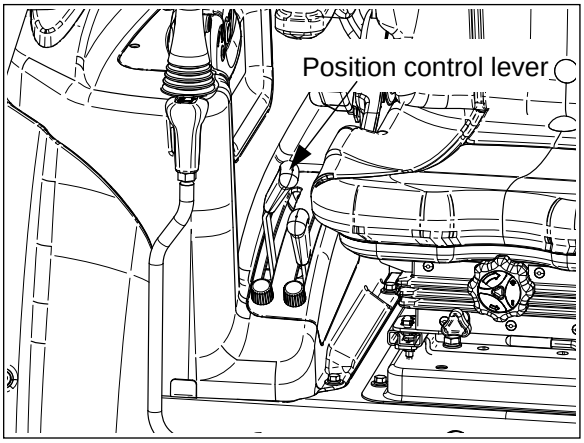
3. Apply parking brake and release the brake pedals slowly.

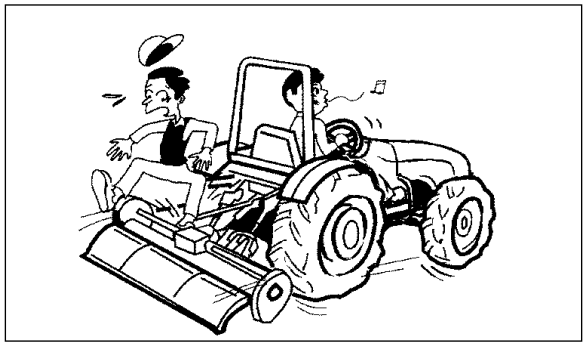


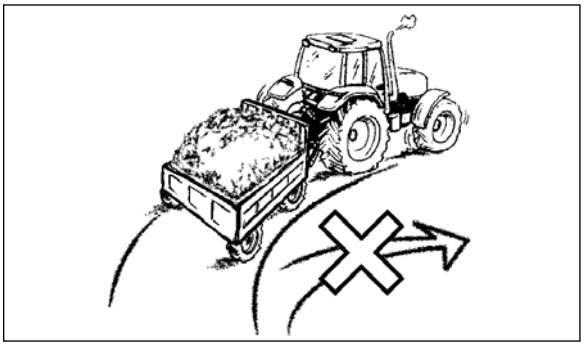
(5) Driving tractor on the road

- 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 ¾ rising position of full stroke for safety.)



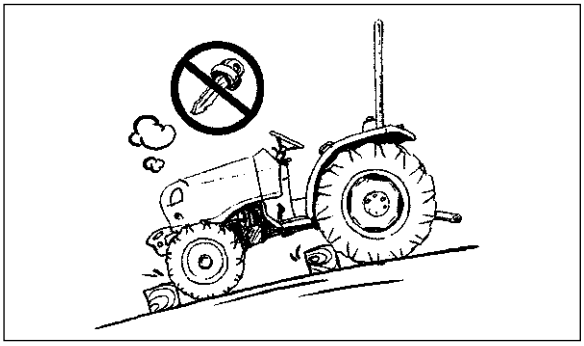






⚠Caution	▶ Connect the left/right brake pedal with brake pedal connecting pin before driving (if fitted). ▶ Avoid a sudden start, sudden brake and sudden turning. ▶ DO NOT allow people on the tractor or on other implements. ▶ DO NOT place the baggage on the tractor or implement. ▶ Place PTO gear lever 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.

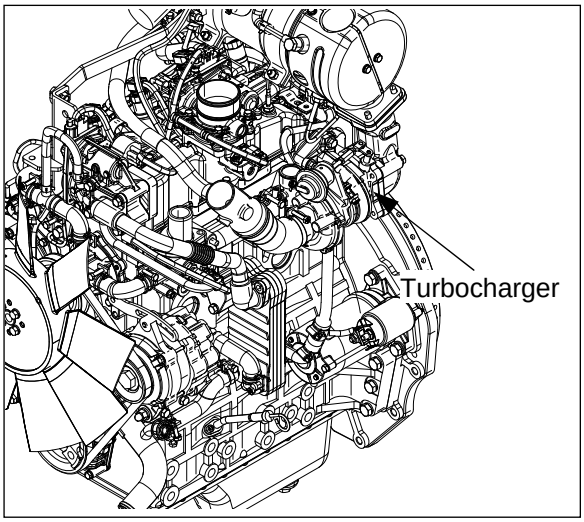
(6) Parking



- Stop the tractor on a level surface, not on a slope.
- Disengage PTO and place all the transmission shift lever in NEUTRAL position.
- Lower the mounted implements on the ground.
- 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.
- Have to apply the wheel chock when parking the tractor on a slope unavoidably.
- **In case of the power shuttle version, to engage the low gear after the engine is stopped is NOT useful for engine brake. When parking the tractor on a hill, have to apply the parking brake and wheel chocks to the wheel.**

⚠ 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 ⇒ reverse 1 gear / upward slope ⇒ forward 1 gear. - Power shuttle : Appling low speed gear is NOT effective.

(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

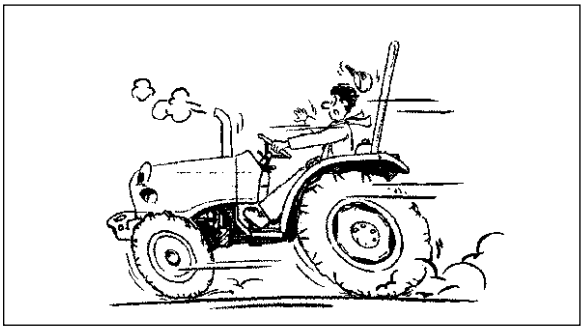
※ For new tractor, the following must be checked once again even though there was sufficient quality management, inspection, regulating of each part in the factory.

- 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 warm temperature outside, carry out warming up the engine for approximately 5 minutes at 1500 rev/min

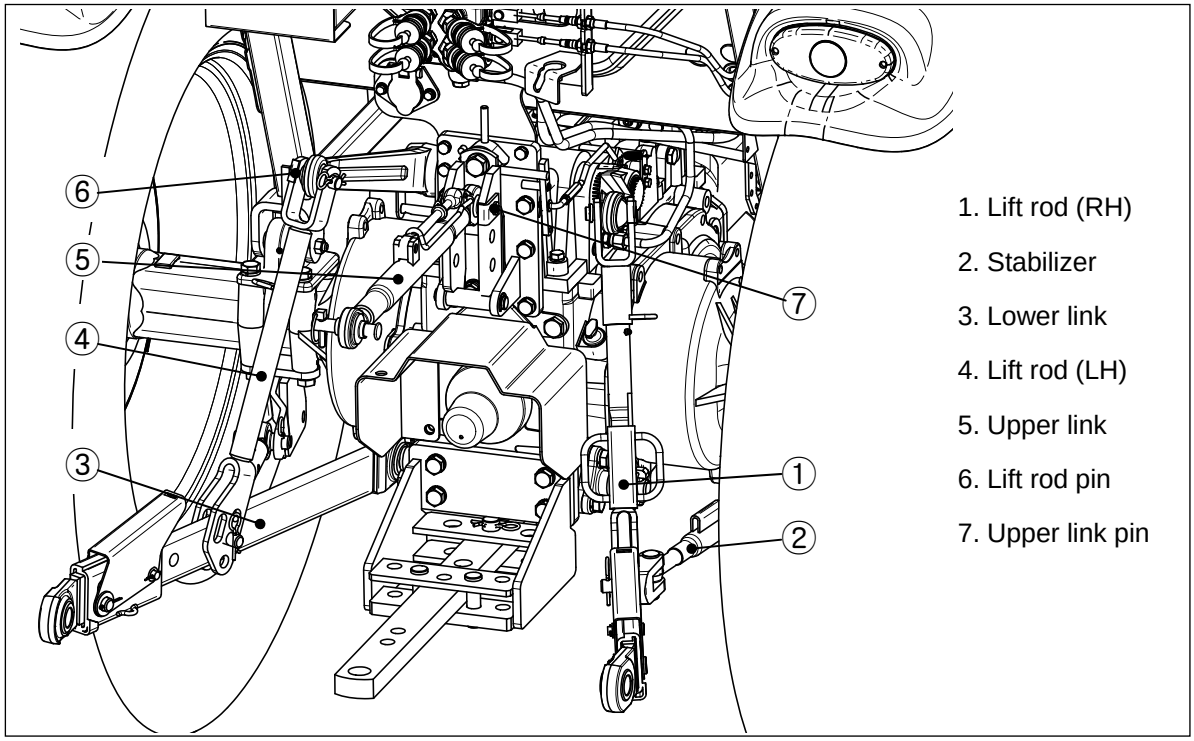


- After using first 50 hours,

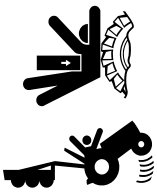
  - Replace the engine oil filter and hydraulic oil filters after first 50 hours of work, and check each part of your tractor as reference of chapter 5. “Lubrication and Maintenance” (*See section 5-4 in this manual*.)
  - If possible, contact your authorized dealer for “First 50 hour check”.

4-4. Attaching equipment

(1) 3-point linkage

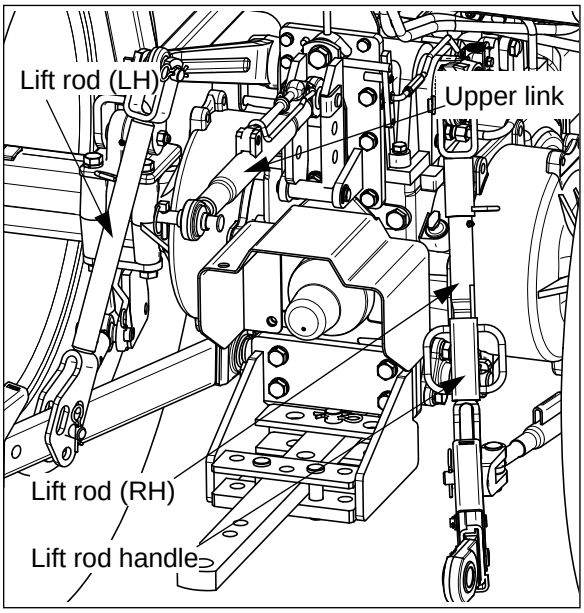


- When attaching the implement, comply with the followings.
  1. Set the implement upright on a level surface and approach the implement in reverse.
  2. Stop the tractor on attaching position and apply the parking brake.
  3. Connect the lower link(3) to implement and insert firmly the lock pin. (left, right)
  4. Connect the upper link(5) to implement and insert firmly the lock pin. Wide adjustable range of the upper link provides you easier attachment.
  5. Fix the implement firmly with stabilizer(2).(left, right).

⚠ Warning	▶ Before attaching/detaching implement, place PTO switch in OFF position and PTO gear lever in neutral position, and apply the parking brake.
	▶ When attaching/detaching implement, make sure to assemble and tighten the connecting parts correctly. ▶ 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. ▶ DO NOT connect the implements that require more power than can be generated by your tractor. ▶ Never stand between implement and tractor when connecting implement. ▶ DO NOT change the setting pressure of the relief valve arbitrarily to increase the lift capacity of the 3-point linkage. It can cause fatal damage to the hydraulic system.

① Adjustment of Lift rod and Upper link

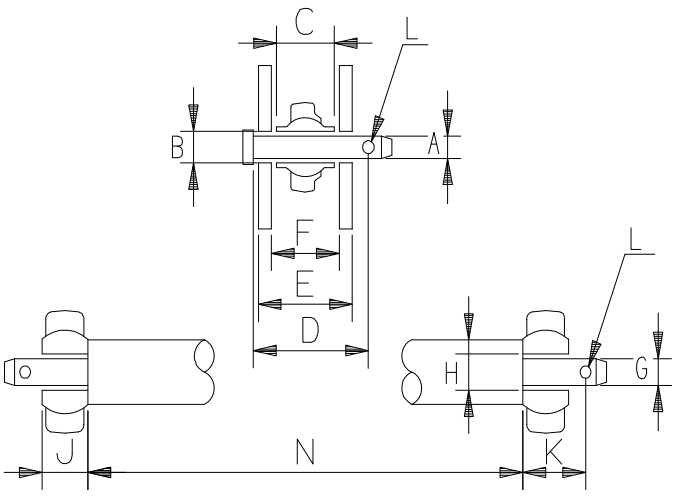
- Do not adjust the lift rod and upper link over the described range as below.
- For lift rod (RH)
  - Lift up the lift rod handle and turn left or right to adjust the length.
  - Lock the lift rod handle to the lower part after adjusting.
- For upper link
  - Lift up the lock spring to release the handle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



	Classification	Lift rod	Upper link
Adjustment range	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)	

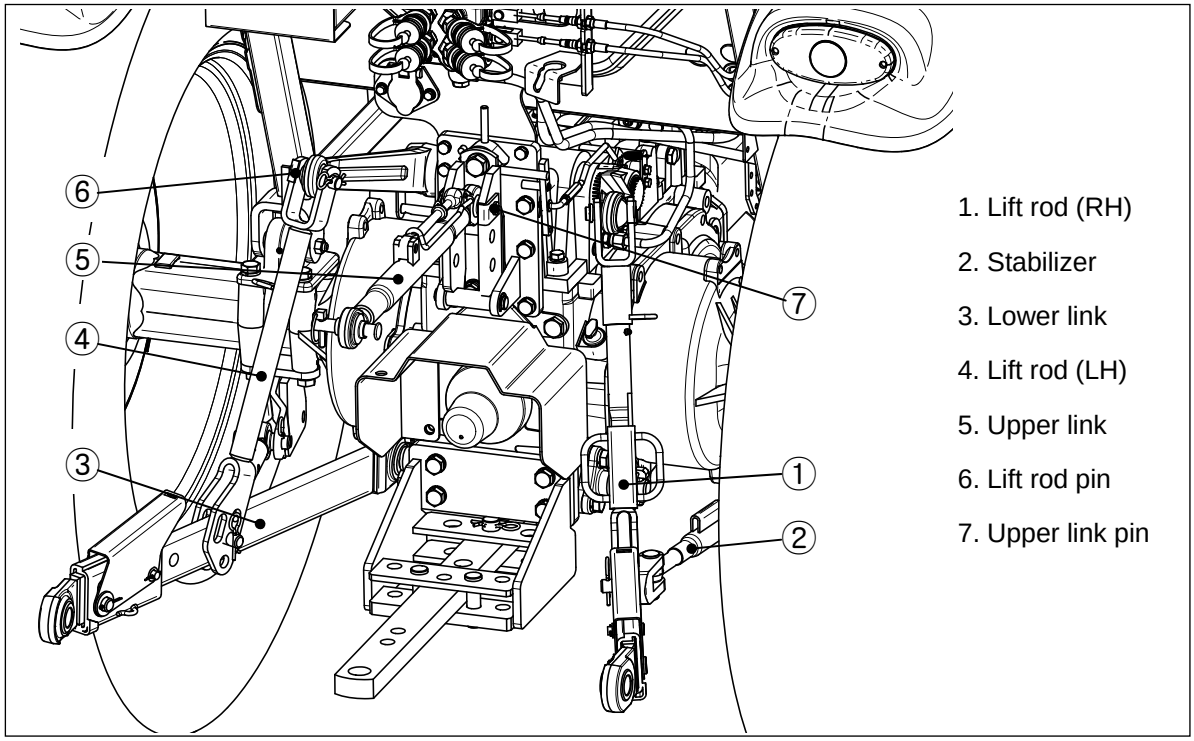
② Reference of implement installation part

	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)

③ Handling of the 3-point linkage

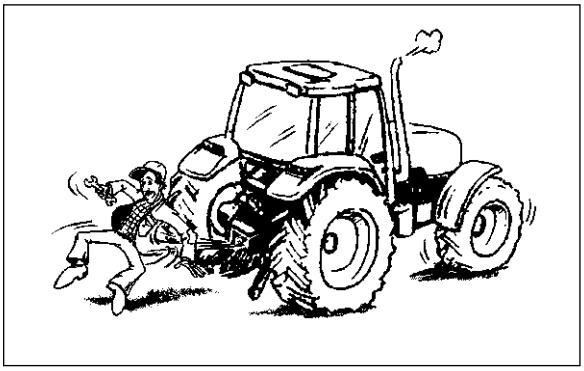


- When driving without attaching implement, comply with the followings.
  1. Fix upper link(5) with the fixing hook.
  2. Connect stabilizer(2) to the lower link(3) to avoid the lateral movement of the lower link.
- If 3-point linkage is not necessary, raise 3-point linkage to maximum height and fix it by turning the down speed control knob, or remove it as follow.
  1. Remove upper link pin(7) and upper link(5).
  2. Detach rear side of the stabilizer(2) from the lower link(3) while holding lower link tightly not to fall down.
  3. Remove lift rod (LH), lift rod (RH) and stabilizer(2) step by step.
  4. Remove lower link(3) carefully not to get hurt due to its weight.

(2) Power take-off (PTO) shaft

① Safety precautions

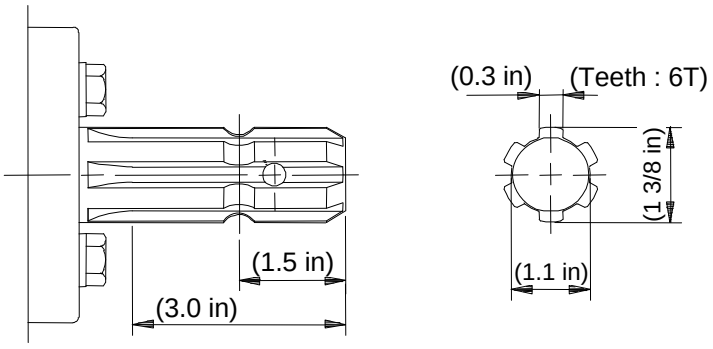
- When PTO shaft is rotating, NEVER APPROACH the shaft.
- Check if PTO shield is attached correctly. If the shield is removed or damaged, replace it with a new one.
- **Suitable Clothes & Protect Entanglement :**
  When checking or attaching implement to the PTO shaft, wear tight fitting clothes and safety equipment instead of loose or long clothes. Also, slippers, high heel shoes are not suitable. Wear the suitable clothes.



Warning 	▶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.

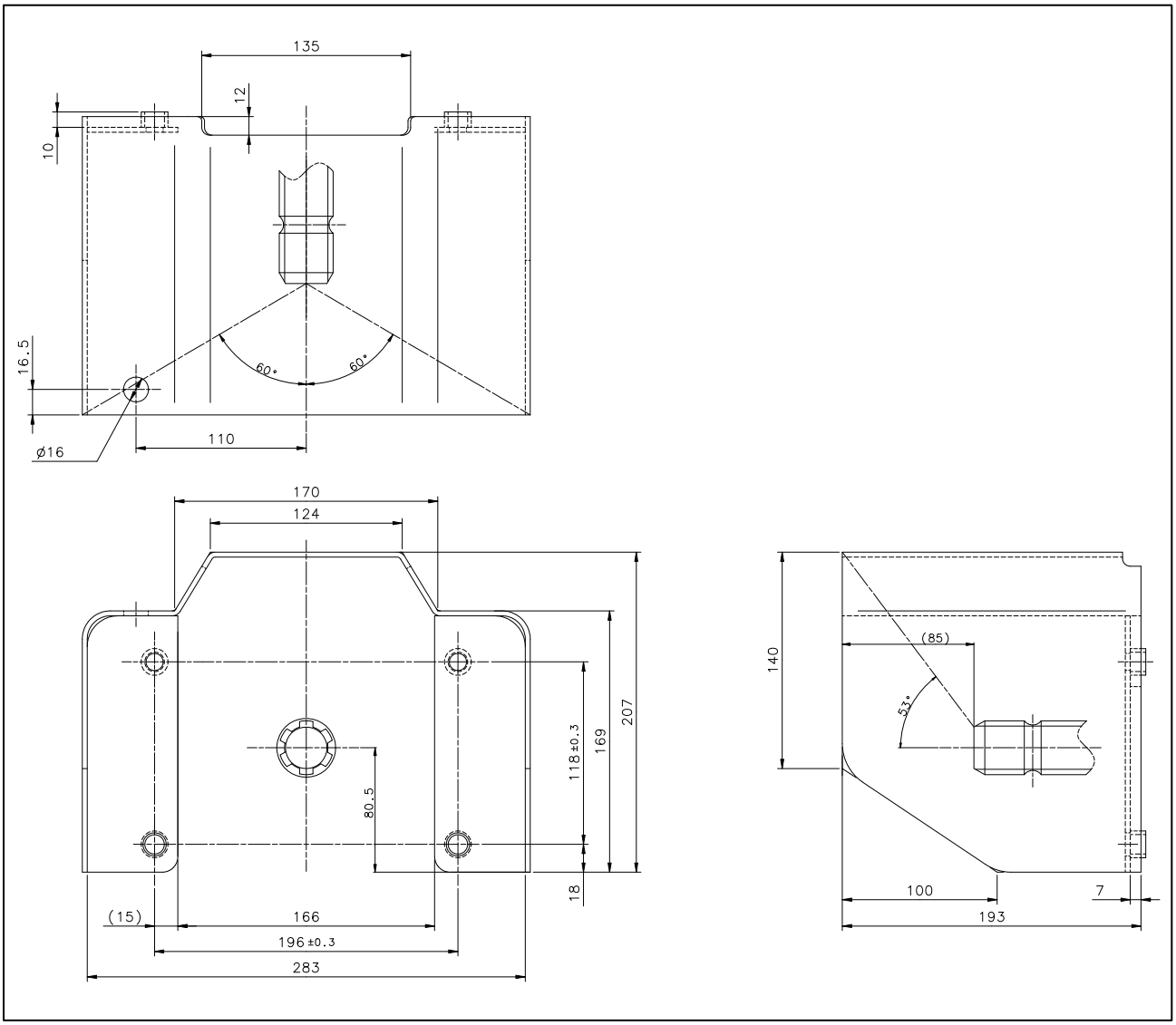
- Refer to the followings about PTO shaft dimension.

PTO gears	1	2	3
PTO / engine rpm	540 / 2409 rpm	750 / 2375 rpm	1000 / 2381 rpm

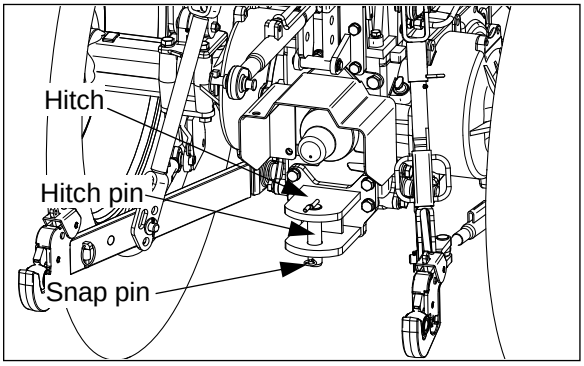
Rotation direction	Clockwise (When looking at PTO shaft end)
Ground clearance	= Tire radius + 0.5 mm
PTO shaft dimension (Unit : inch)	

② Attaching PTO drive shaft

- When connecting PTO drive shaft to the PTO shaft and implement, make sure to check the fixing status of the locking pins.
- When attaching implements with power take-off drive shafts, refer to the drawings as below.
- After installing implements,
  - check the inclination of the PTO drive shaft,
  - check the interference with PTO safety cover and other structure,
  - check the effective engaging length of the PTO drive shaft according to the position of the 3-point linkage.
- The stiff inclination of the drive shaft make a loud noise and may cause a failure of the driveline.



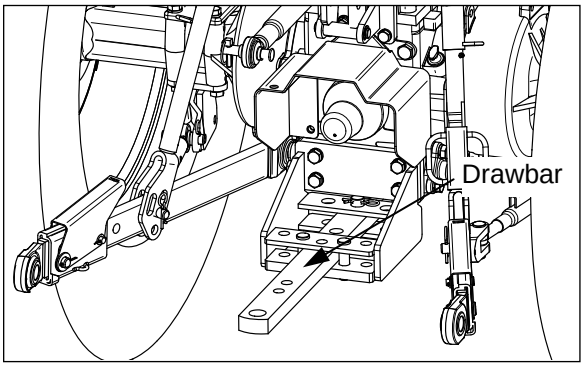
(3) Hitch and Drawbar (optional)



- 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 exceed the maximum permissible vertical and horizontal load as below.

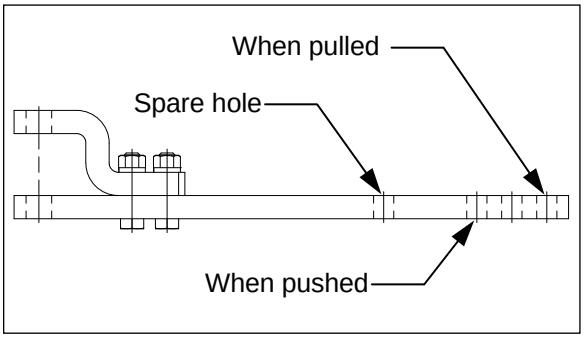
① Hitch

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



② Drawbar (w/clevis)

- It is used to tow the equipments having 2 axles.
- It is available to adjust the length of the draw bar after removing snap pin and lock-pin in the right figure. After adjusting, assemble the pins firmly.
- Vertical load : 450kg (When pulled) (992lbs)
  1125kg (When pushed) (2480lbs)
- Horizontal load : 4000kg (8814lbs)



- Technically permissible towable mass(es) are as below according to type of coupling.

	Hitch	Drawbar (w/clevis)
Unbraked towable mass	2500kg (5512 lb)	2000kg (4409 lb)
Independently braked towable mass	5000kg (11023 lb)	4000kg (8818 lb)
Inertia-braked towable mass	5000kg (11023 lb)	4000kg (8818 lb)
Hydraulic or pneumatic braked towable mass	N/A	N/A

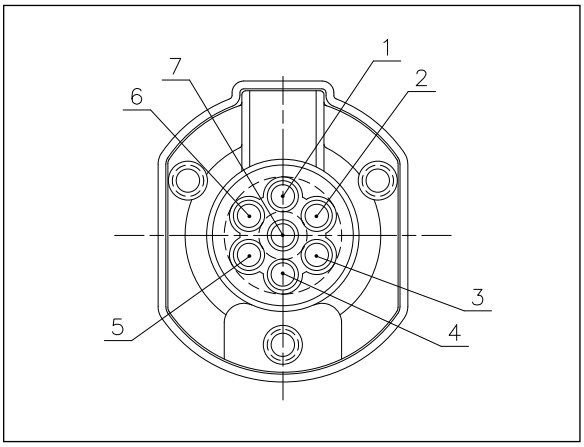
⚠ Caution	▶ Pulling from the tractor rear axle or any point above the axle may cause the tractor to overturn. Use always the drawbar or hitch for pulling work. ▶ Do not tow equipment without brakes, weighing more than twice the tractor weight. ▶ When locking the hitch or drawbar with pin after aligning 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.

(4) 7-Pole connector (optional)

- 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;

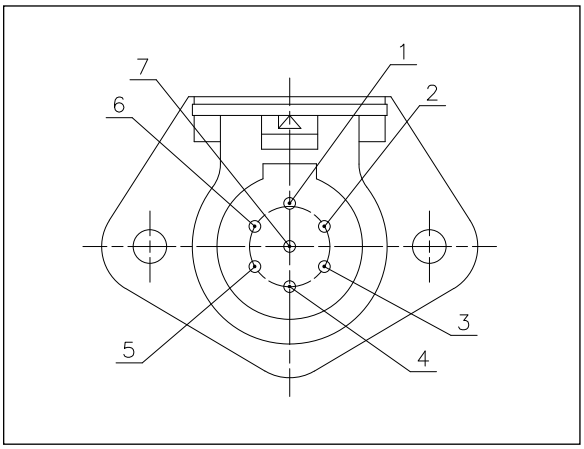
● EC Version

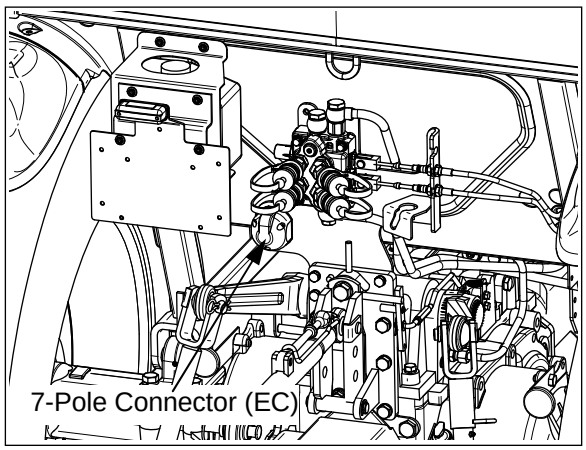
Pin No.	Function
1	Left turn signal light
2	NA
3	Ground (Earth)
4	Right turn signal light
5	Side light
6	Brake light
7	Side light

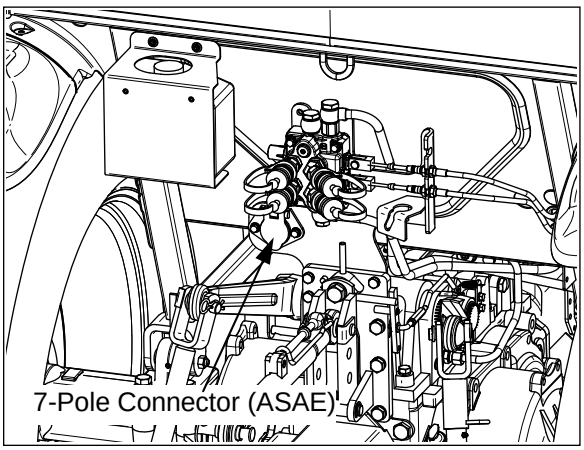


● ASAE Version

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




7-Pole Connector (EC)


7-Pole Connector (ASAE)

(5) 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.
- **DO NOT exceed the total maximum permissible mass and/or permissible maximum mass on each axle** declared by manufacturer as below, **even if the load capacity of the tire is sufficient**.
- **If the load capacity of the tires is lower than maximum permissible mass on each axle,** the maximum mass on each axle must be loaded **under the load capacity of the tire.**
  Check the load capacity of the tires.

	All models	Remarks
Technically total maximum permissible mass	4500kg (9921 lb)	It may depend on the load capacity of the tires. (See next page)
Front axle (*)	2000kg (4409 lb)	
Rear axle	3150kg (6945 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 page 7-1*), Intermittent maximum permissible load of the front axle can be ;
  3200kg (7055 lb) for all models ; Have to check the load capacity of the tires. (See next page).

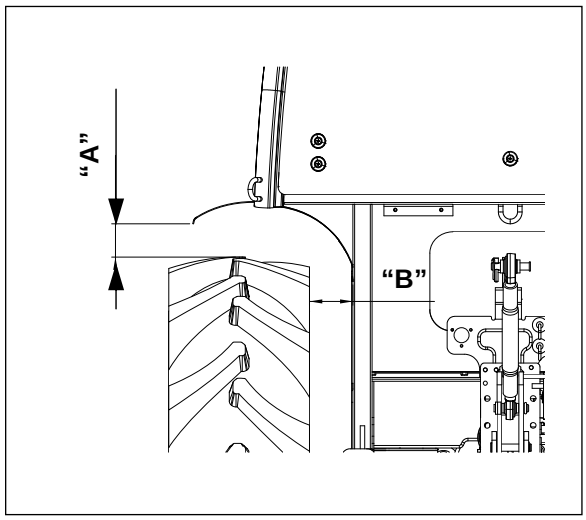
⚠Caution	▶ Maximum permissible mass is measured with only the front or rear wheels on the scales inclusive of ballasts and with mounted equipments in the raised position. ▶ **Do not exceed the maximum permissible mass above and/or the load capacity of the tires.** Overloaded operation may invalidate the warranty. ▶ 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.

(6) Tires and Load capacity

Axle No. (*)	Tires	Standard tire air pressure (kg/cm2)	Load capacity (x2) (kg)	Maximum mass(es) (kg)
1	11.2-20 8PR	2.4 (235 KPa, 34.1 psi)	2240 (4938 lb)	4500kg (9921 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)	4500kg (9921 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)	4500kg (9921 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)	4500kg (9921 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)	4500kg (9921 lb)
2	44x18x20	2.1 (206 KPa, 29.9 psi)	3900 (8598 lb)	
1	9.5-20 6PR	2.2 (216 KPa, 31.3 psi)	1680 (3704 lb)	4500kg (9921 lb)
2	16.9-24 8PR	1.7 (167 KPa, 24.0 psi)	3700 (8160 lb)	
1	10.5/80-18 6PR	2.3 (227 KPa, 33.0 psi)	2570 (5660 lb)	4500kg (9921 lb)
2	19.5L-24 8PR	1.7 (167 KPa, 24.0 psi)	5440 (12000 lb)	

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

(7) 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.
  (See page 4-23 in this manual.)
- 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)
- Depending on rim or disk type, the front and rear wheel tracks may vary.

① Front wheel track

- 11.2-20 with rim & disk (W9x20)

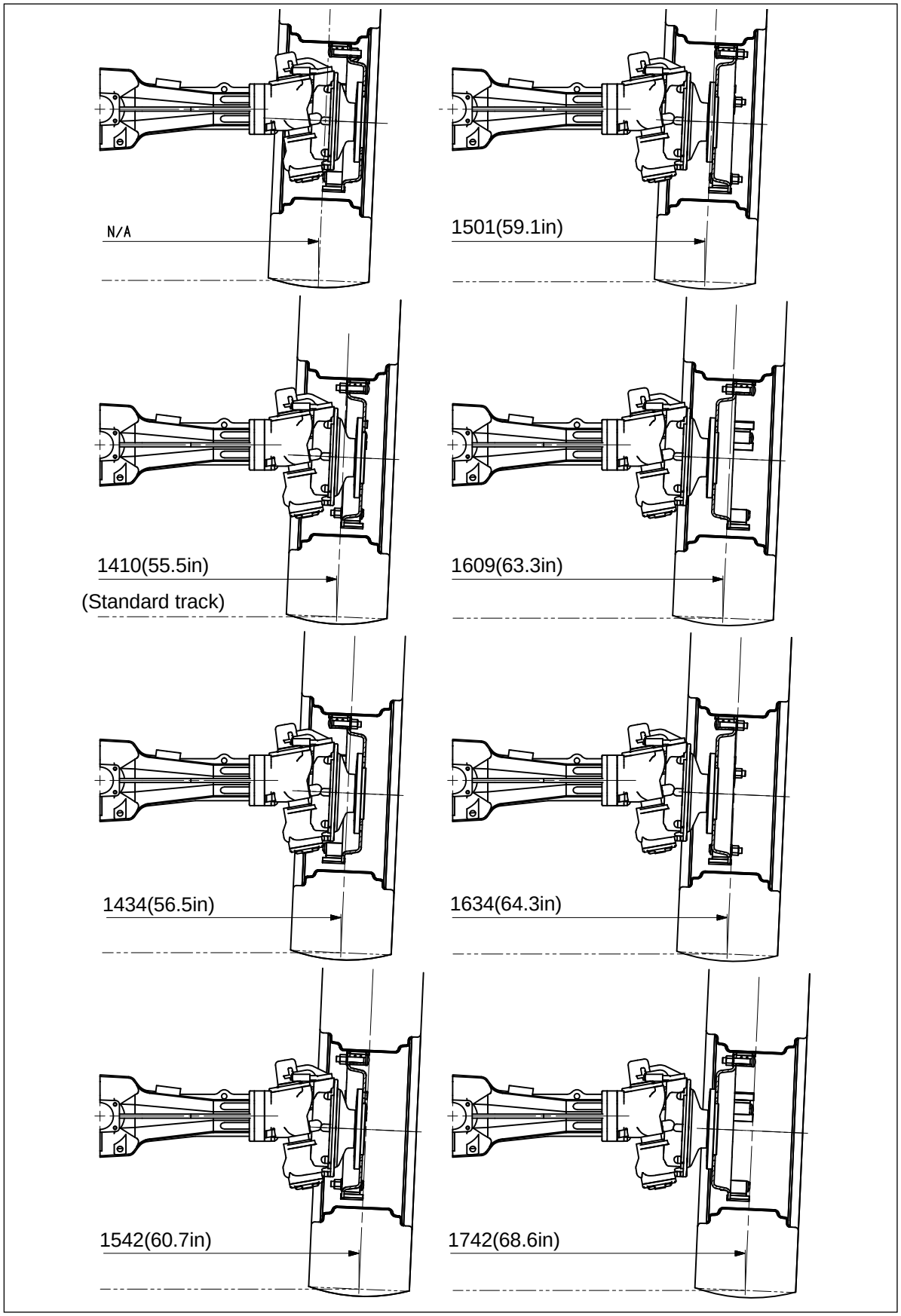
② Rear wheel track

- 14.9-28 with rim & disk (W12x28)

Notice	▶ When adjusting the wheel track, pay attention to the direction of tire lugs. if it shows "/\" **shape** when looked behind, it is correct. ▶ **Actual settings may vary depending on the brand of the rim and type of tire.**

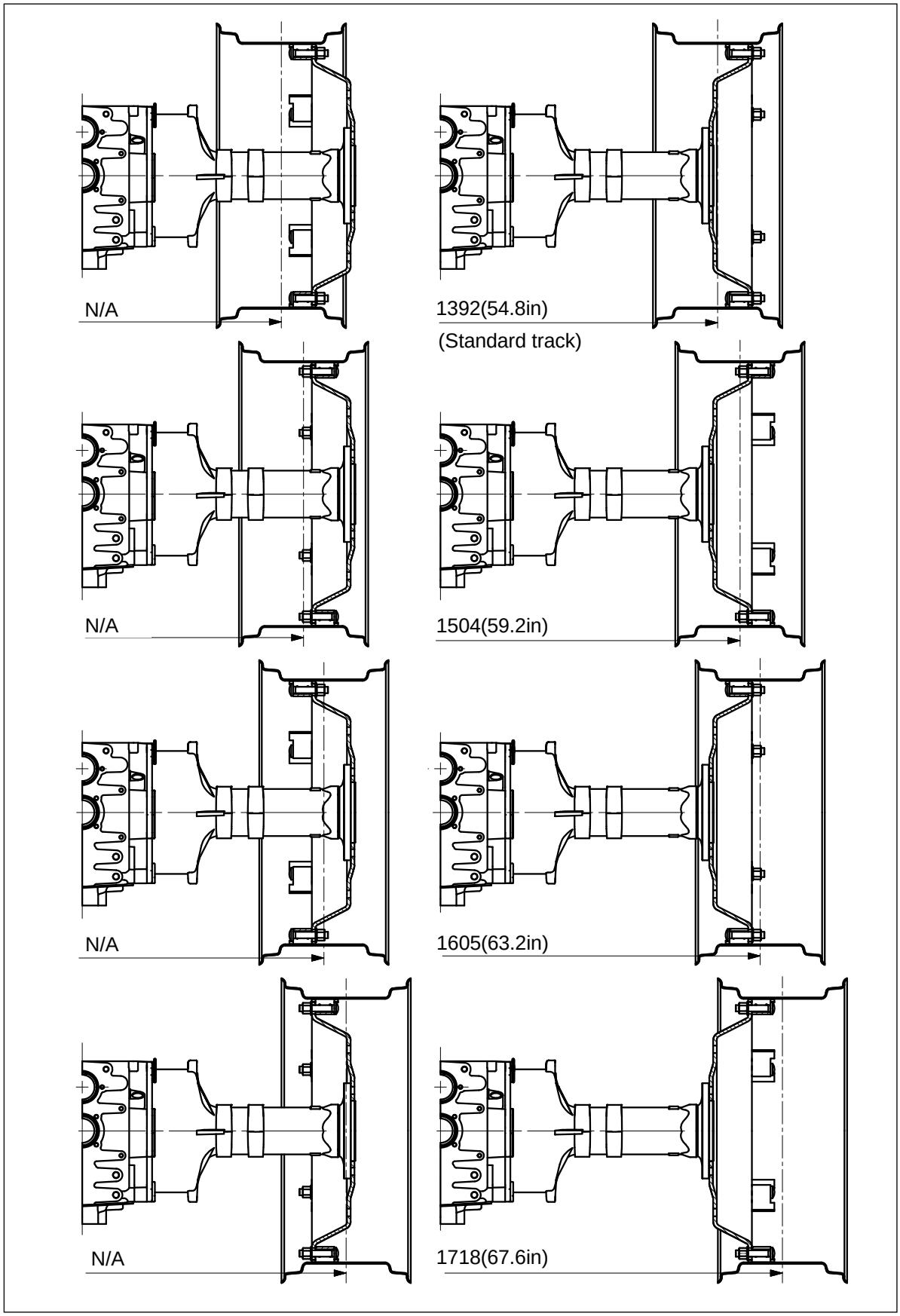
① Front wheel track – 11.2-20 with rim & disk (W9x20)

Unit : mm (inch)



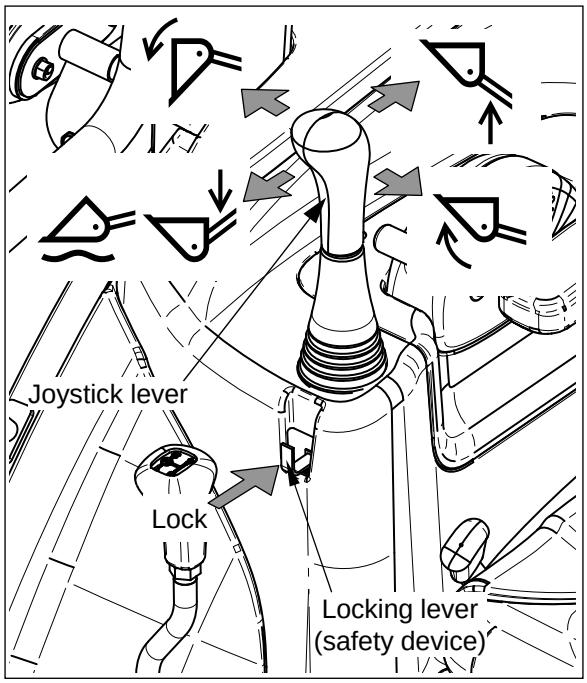
② Rear wheel track – 14.9-28 with rim&disk(W12x28)

Unit : mm (inch)



(8) Using Front-end loader (optional)

① Safety precautions



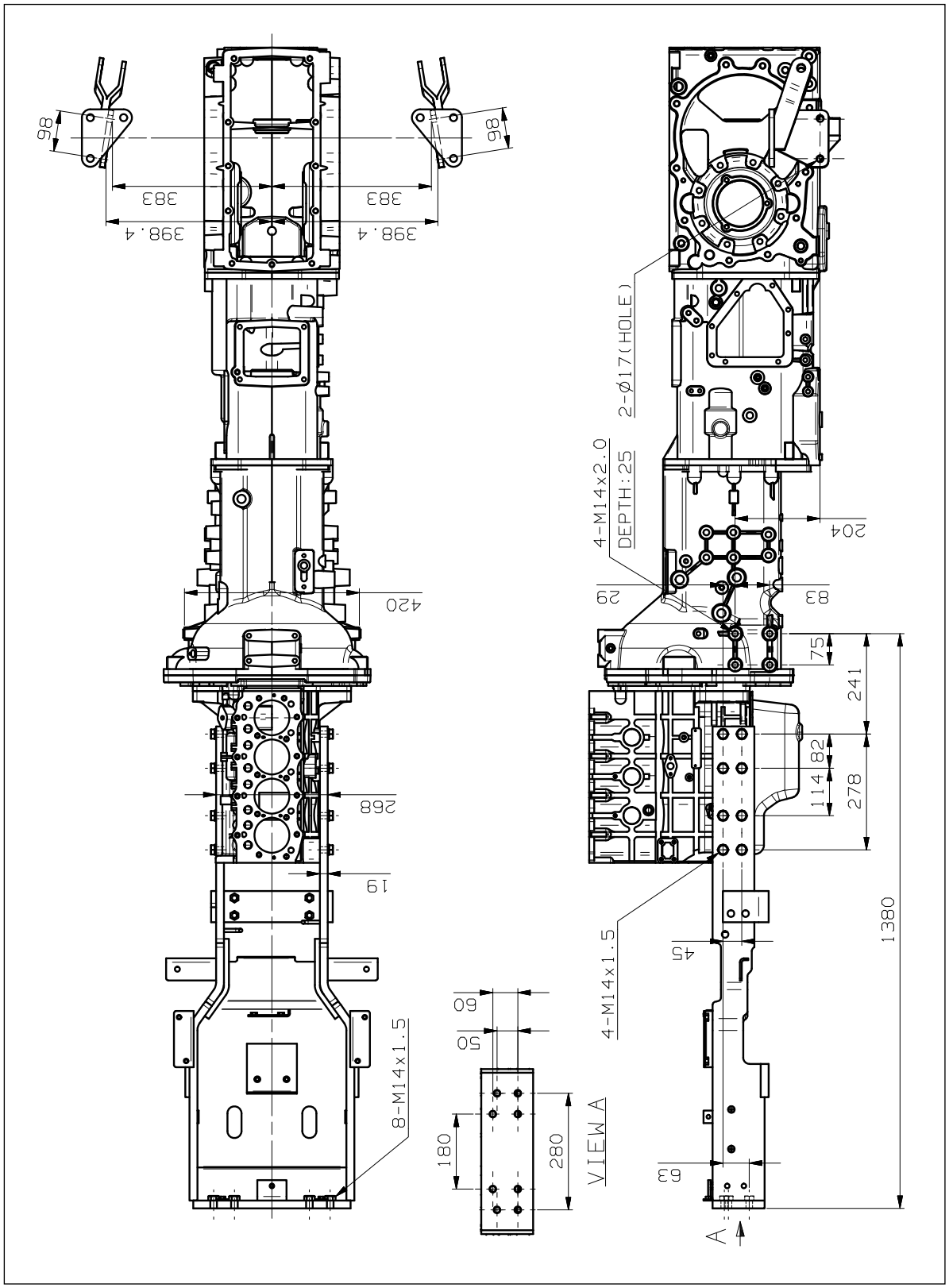
- Multi-functional joystick lever provides you more convenient operation for front-end loader.
- When operating the tractor with front-end loader, The center of gravity of the tractor may be higher, and the stability of the vehicle may be worse than unattached vehicle.
  -. DO NOT drive fast on a traffic road. The rolling or tipping of the tractor can be happened easily.
  -. When loading/unloading the bucket on a slope, move the tractor straight against the slope.
  -. DO NOT try to approach a stiff slope.
  -. Attach the ballast weight on the 3-point linkage to prevent the overload of the front axle, and to improve the stability of the vehicle.
- When working with front-end loader, the front visibility of the tractor may be worse than unattached vehicle. Have to observe people and other vehicles around the tractor.
- DO NOT allow to stay people under the front-end loader.
- DO NOT allow people on the bucket.
- Only install a front-end loader with a parallel guidance system and use it all the time; this system will ensure that the load in the bucket will remain horizontal, regardless of the height of the lifting booms.

⚠Warning	▶After using the front-end loader, lock the joystick lever to prevent the accident. (if fitted) ▶When leaving the tractor, lower down the front-end loader on ground.

⚠Warning	▶ Have to strictly observe the following precautions; - Do not lift the front-end loader to a height from which objects may fall or roll onto the driver. - Use always the correct attachment (grab forks, buckets.. etc) for the specific task to perform and ensure that the load is securely kept in place.

② Attaching points for Front-end loader

- When attaching the front-end loader for **XU5055, XU5065** models, refer to the drawings as below.



(9) Adjusting Steering angle

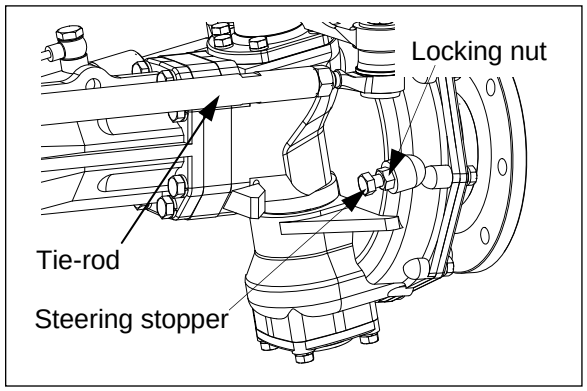
- If the front wheel track is adjusted or front tires are replaced with new tires having bigger diameter or width, or one of the front equipments is attached, the steering angle must be adjusted as below.

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.

(10) Recommended maximum specification of implements

- When attaching implements to the tractor, refer to the followings recommended as maximum specification of each implement. DO NOT attach bigger implements then this specification. For other implements, contact your authorized dealer.

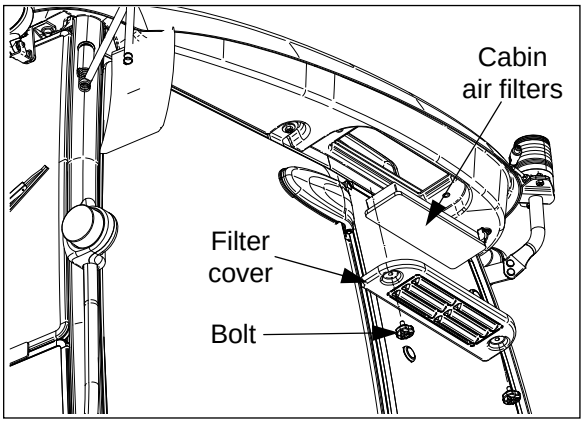
No.	Implements	Specification	XU5055	XU5065
1	Front loader	Max lift capacity (Bucket pivot point)	1315 kg (2899 lb.)	1315 kg (2899 lb.)
2	Rotavator	Max tilling width	1900 mm (74.8 in.)	1900 mm (74.8 in.)
3	Backhoe	Max digging depth	2400 mm (94.5 in.)	2400 mm (94.5 in.)
4	Rotary cutter	Max working width	2438 mm (96.0 in.)	2438 mm (96.0 in.)
5	Mid mower	Max working width	-	-
6	Landscape lake	Max working width	2134 mm (84.0 in.)	2134 mm (84.0 in.)
7	Box blade	Max working width	2134 mm (84.0 in.)	2134 mm (84.0 in.)
8	Rear blade	Max working width	2438 mm (96.0 in.)	2438 mm (96.0 in.)

4-5. Working in hazardous area

● **Level of protection against hazardous substances : For cabin model**, it provides protection against hazardous substances **according to EN15695-1:2009 (Category 2).** But it can provide only dust protection level by pressurizing air in the cabin with air filters. Do not use the tractor with crop sprayers in hazardous area. If unavoidable, comply with the following instruction.

① Cabin air filters (LH/RH)

- When operating with pesticides, cabin air filters should be replaced with specific 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	▶ 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. ▶ 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. ▶ 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.

⚠ Warning	▶ The charcoal filters do not guarantee full protection against all pesticides. ▶ 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. ▶ DO NOT operate the tractor in heavy pesticides or other hazardous spraying area.

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.

② 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.

4-6. Driving speed

- The driving speed of tractor or the revolution speed of PTO depends on the work and ground condition.
  For safety, operate the tractor at suitable speed.

- **Driving speed (unit: Km/h → Mile/h) - Standard**

① XU5055 / XU5065

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	1.21 (0.75)	1.43 (0.89)	1.69 (1.05)	2.26 (1.40)	2.74 (1.70)	3.25 (2.02)	3.82 (2.37)	5.11 (3.18)	6.05 (3.76)	7.18 (4.46)	8.44 (5.24)	11.30 (7.02)	15.67 (9.74)	18.58 (11.55)	21.83 (13.56)	29.25 (18.18)
Reverse	1.00 (0.62)	1.18 (0.73)	1.39 (0.86)	1.86 (1.16)	2.25 (1.40)	2.67 (1.66)	3.14 (1.95)	4.21 (2.62)	4.98 (3.09)	5.91 (3.67)	6.94 (4.31)	9.30 (5.78)	12.89 (8.01)	15.29 (9.50)	17.97 (11.17)	24.07 (14.96)

Note) Engine rated speed 2600 rpm, dynamic load radius 640mm(25.1in)

- **Driving speed (unit: Km/h → Mile/h) – Creeper (if fitted)**

① XU5055 / XU5065

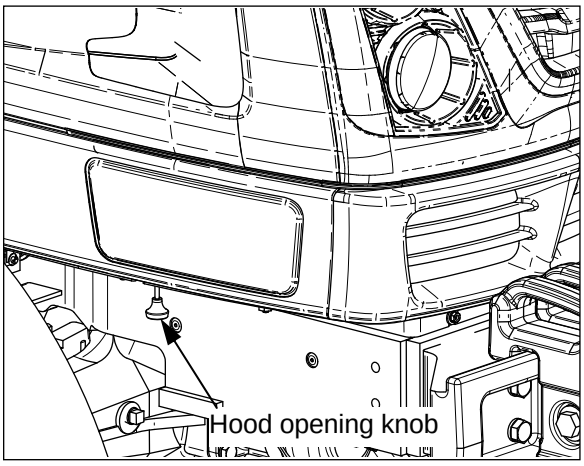
Range gear shift		**1**				**2**				**3**				**4**			
Main gear shift		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
ON	**Forward**	0.20 (0.12)	0.23 (0.14)	0.28 (0.17)	0.37 (0.23)	0.45 (0.28)	0.53 (0.33)	0.62 (0.39)	0.83 (0.52)	0.99 (0.62)	1.17 (0.73)	1.38 (0.86)	1.84 (1.14)	2.56 (1.59)	3.03 (1.88)	3.56 (2.21)	4.77 (2.96)
	Reverse	0.97 (0.60)	1.16 (0.72)	1.36 (0.85)	1.82 (1.13)	2.20 (1.37)	2.61 (1.62)	3.07 (1.91)	4.12 (2.56)	4.87 (3.03)	5.78 (3.59)	6.79 (4.22)	9.10 (5.65)	12.61 (7.84)	14.96 (9.30)	17.58 (10.92)	23.54 (14.63)
OFF	**Forward**	1.21 (0.75)	1.43 (0.89)	1.69 (1.05)	2.26 (1.40)	2.74 (1.70)	3.25 (2.02)	3.82 (2.37)	5.11 (3.18)	6.05 (3.76)	7.18 (4.46)	8.44 (5.24)	11.30 (7.02)	15.67 (9.74)	18.58 (11.55)	21.83 (13.56)	29.25 (18.18)
	Reverse	0.97 (0.62)	1.16 (0.72)	1.36 (0.85)	1.82 (1.13)	2.20 (1.37)	2.61 (1.62)	3.07 (1.91)	4.12 (2.56)	4.87 (3.03)	5.78 (3.59)	6.79 (4.22)	9.10 (5.65)	12.61 (7.84)	14.96 (9.30)	17.58 (10.92)	23.54 (14.63)

Note) Engine rated speed 2600 rpm, dynamic load radius 640mm(25.19in)

5. Lubrication and Maintenance

5-1. Access for maintenance

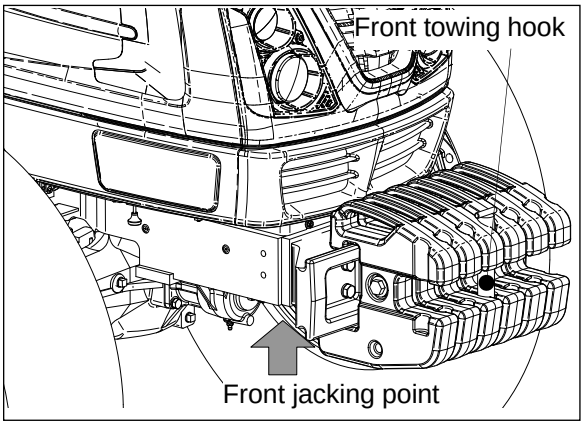
① Opening Hood



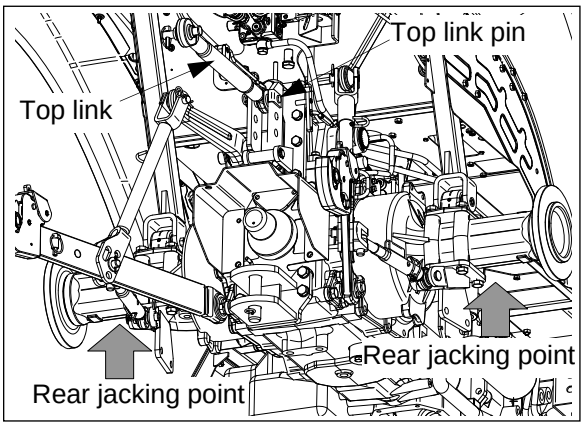
- For safety, the hood must be closed and correctly latched before operating the tractor.
- The hood is hinged at the rear and a gas cylinder is attached to provide easy access to the engine for check and maintenance.
- To open the hood, pull the hood opening knob and lift the hood up.
- To close the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

② Jacking points

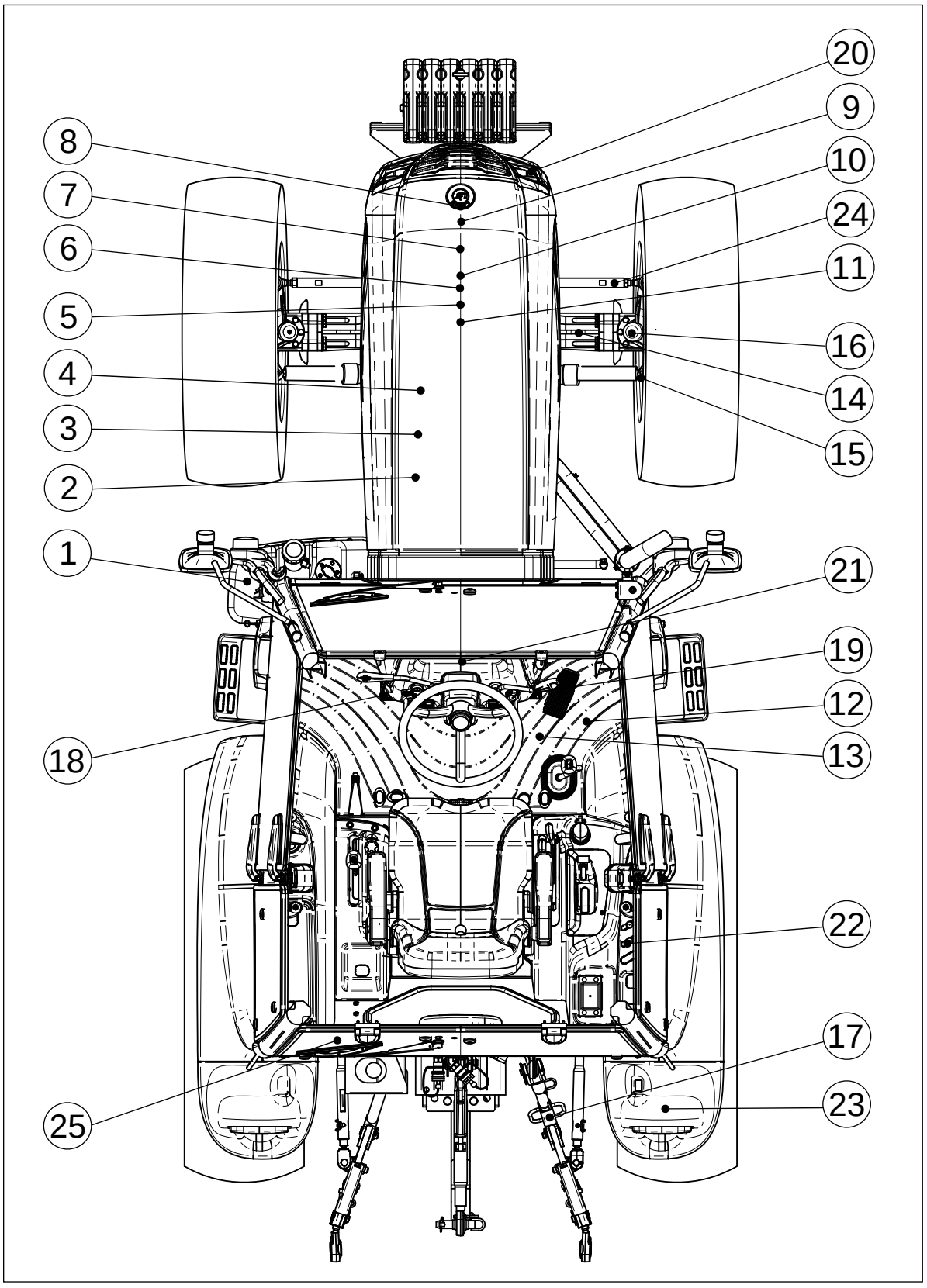


- The jacking points for maintenance is depending on serviced parts case by case. Do not hesitate to contact your authorized dealer for asking.
- Do not use the front axle assembly or steering linkage and cylinder for jacking point. These components have some rotating pivots and/or does not have enough structural strength.
- For general maintenance, use flat surface under the engine frame end or bumper for jacking point, and connect additionally hoist to the front towing hook for safety.
- For rear jacking points, flat surface under the rear axle housing is recommended, and additionally use the top-link bracket and its pin for lifting point after removing the top-link.



⚠Caution	▶ When lifting the rear of the tractor, apply chocks to the slots between front axle and engine frame symmetrically to prevent the rolling of the front axle.

5-2. Maintenance chart



No.	Checking Parts	Page No.	Check period (hr)				
			Daily	50	250	500	2-year
1	Fuel tank	5-8	▲				
2	Fuel filter	5-20	▲			●	
3	Engine oil	5-5, 5-7, 5-16	▲	★	●		
4	Engine oil filter	5-5, 5-16		★	●		
5	Engine coolant	5-10, 5-22	▲				●
6	Radiator screen	5-11, 5-13	▲	■			
7	Air cleaner	5-10, 5-14, 5-18	▲	■	●		
8	Battery	5-14		▲			
9	Fan belt tension	5-17	▲		●		
10	Valve clearance	5-20				▲	
11	Nozzle injection pressure	5-20				▲	
12	Hydraulic oil filter	5-5, 5-17		★	●		
13	Transmission oil	5-14, 5-19		▲		●	
14	Front axle oil	5-14, 5-19		▲		●	
15	Steering cylinder	5-13		▲			
16	Front axle holder & Steering arm	5-13		▲			
17	3-Point linkage	5-13		▲			
18	Clutch pedal play	5-12	▲				
19	Brake pedal play	5-12	▲				
20	Turn signal lights, Lights, Horn	5-9	▲				
21	Instrument panel & Indicators	5-8	▲				
22	Bolts and Nuts	5-12	▲				
23	Tire air pressure	5-11	▲				
24	Toe-in	5-18			▲		
25	Cabin air filter	5-15, 5-21		■		●	
26	Hydraulic hoses	5-14		▲			

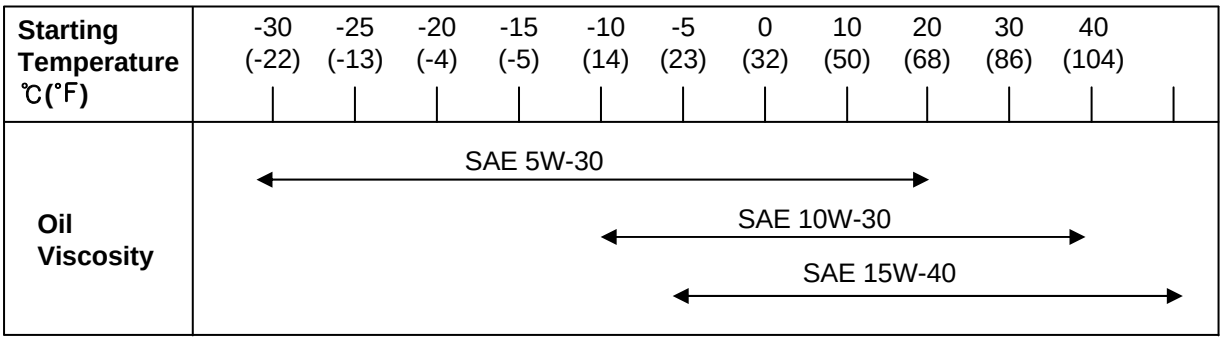
★ First Replacement ● Replacement ▲ Check, Adjustment and Supply ■ Clean up

5-3. Lubricants and Capacity

LUBRICANTS	CAPACITY	INTERNATIONAL STANDARD		RECOMMENDED ITEMS
Engine coolant (Radiator)	7.0 ℓ (1.8U.S.gals)	ASTM D5216		Soft water (50%)+ Anti-freeze (50%)
Fuel	60 ℓ (15.9U.S.gals)	ASTM D975 No.2		Ultra low Sulfuric Diesel Fuel
Engine oil (crankcase)	5.5 ℓ (1.5U.S.gals)	API CJ-4 (~ -10℃ : SAE 5W-30 -10℃ ~ 40℃ : SAE 10W-30 40℃ ~ : SAE 15W-40)		KIXX DL (Maker : GS Caltex)
Transmission oil (common use for Hydraulic lift, hydraulic steering device)	47 ℓ (12.4U.S.gals)	Mechanical	API-GL4 ISO VG 46/68	LSTH570 (Maker : GS Caltex or S-OIL TOTAL Co. Ltd.)
		Power shuttle	API-GL4 ISO VG 32/46	LSTH400 (Maker : GS Caltex or S-OIL TOTAL Co. Ltd.)
Front axle oil	10 ℓ (2.6U.S.gals)	API-GL4 SAE 80W		EPK 80W90 (Maker : S-OIL TOTAL Co. Ltd.)
Grease (Front axle arm holder, Steering cylinder pin, 3-point linkage)	Proper amount	NLGI 2		

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. Contact your authorized dealer.



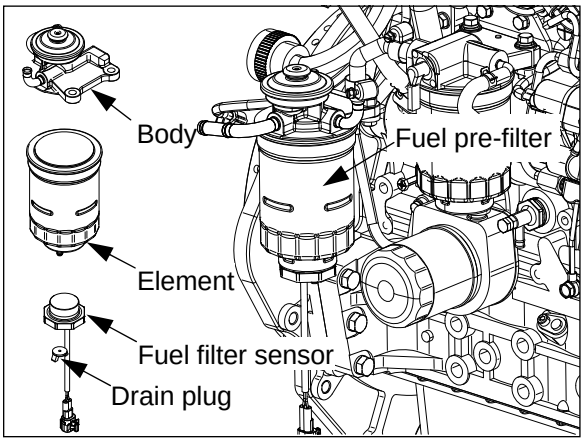
5-4. First 50 hour check

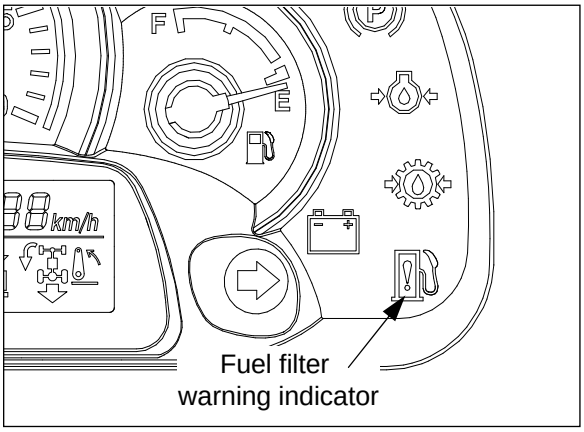
- After using first 50 hours, contact your authorized dealer for maintenance if possible.
  - Replace engine oil & engine oil filter. (⇒ Refer to Every 250 hour check. *See page 5-16*)
  - Replace hydraulic oil filter. (⇒ Refer to Every 250 hour check. *See page 5-17*)
  - Check transmission / rear axle / 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

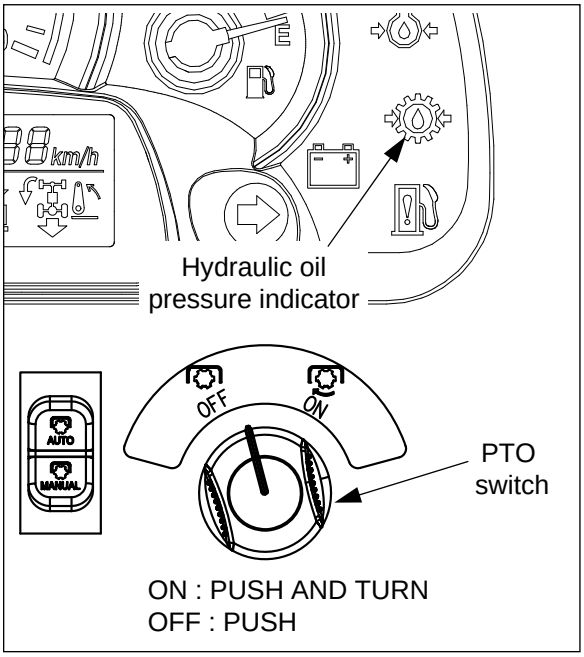
1. Loosen the drain plug and drain water inside of the filter. (Approx. 150cc(9.1 in^3))
2. Tighten the drain plug and bleed the air from the fuel filter. (*See page 5-23*)





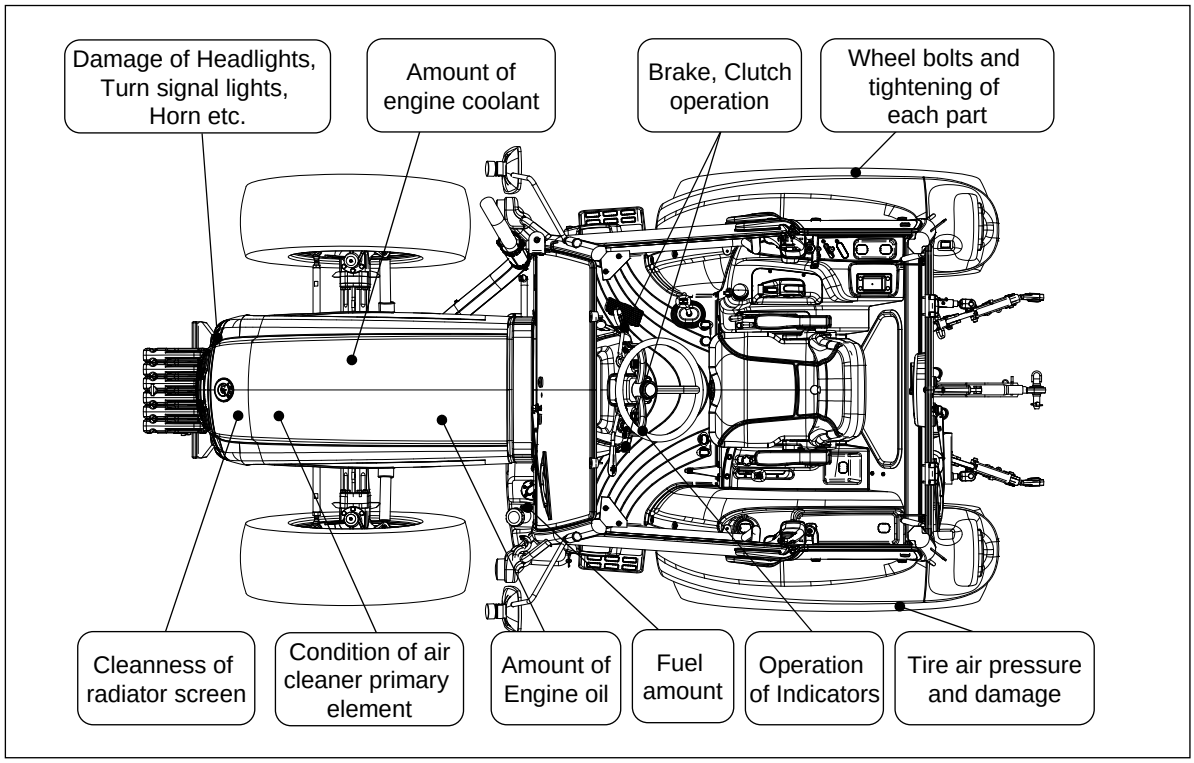
(2) Hydraulic oil pressure Indicator (optional)

- When this indicator turns on, the PTO shaft shall be stopped automatically to protect the PTO clutch.
  At this time, push 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 : 5.5 ℓ(1.5U.S.gals) – XU5055, XU5065**

● **Using Engine Oil**

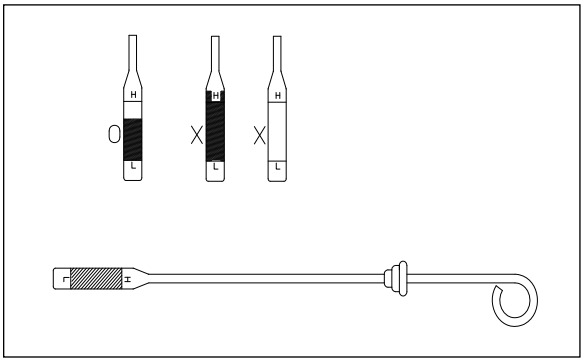
- Diesel engine oil ; API CJ-4.

Select engine oil according to the temperature as shown in the right table.

Temperature	Lubricant No.
Below -10℃ (Below 14˚F)	SAE 5W-30
-10℃ ~ 40℃ (14˚F ~ 104˚F)	SAE 10W-30
Above 40℃ (Above 104˚F)	SAE 15W-40

● **Checking oil level**

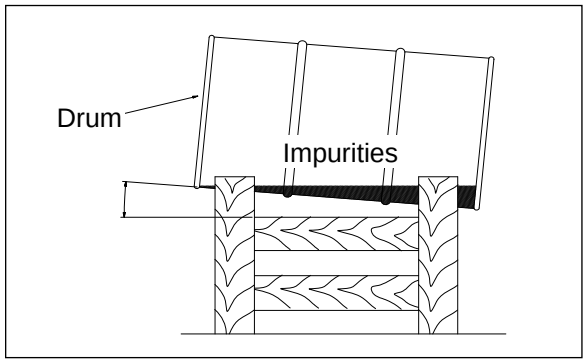
- Check it before starting engine or 5 minutes later after stopping engine.
- Check If the oil level is between MAX and MIN scale of the oil gauge. If necessary, add new oil.
- It must only be performed while engine is stopped.



(2) Fuel tank

① Using Fuel

- Use ultra low sulfuric diesel.
- If contaminants like water or dusts are mixed in the fuel, it may cause a severe damage to the engine. To fill the tank, the fuel storage facility must be equipped as shown in the figure. If possible, fill the tank at the gas station.



② Using Diesel for winter

- General diesel fuel tends to generate paraffin dregs In winter time which may cause a bad engine start. Thus, it is recommended to use diesel for winter in winter time.
- If the ambient temperature is below -15°C(5°F), it is advised to mix diesel with kerosene as shown on the right.

Temp.	≥ -15℃ (5°F)	≤-15℃ (5°F)
Fuel	100% Diesel fuel for winter	20% kerosene added

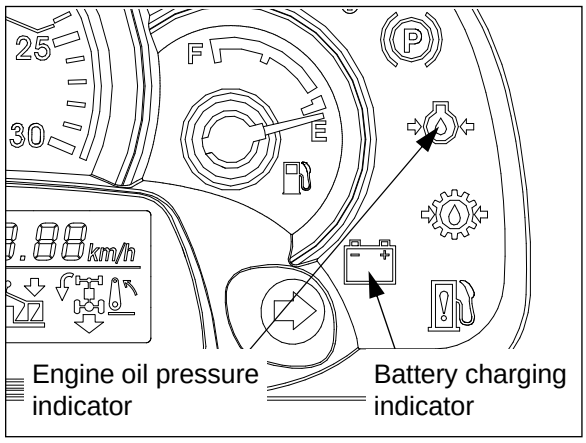
③ Checking Fuel level

- Check the fuel gauge and if it's not sufficient, fill the fuel tank with fuel.
- **Capacity : 60L (15.9 U.S.gals.)**

Notice	▶If the engine stops after finishing work, fill the tank fully. As the temperature drops down, the humidity in the fuel tank is condensed and may mix with the fuel.

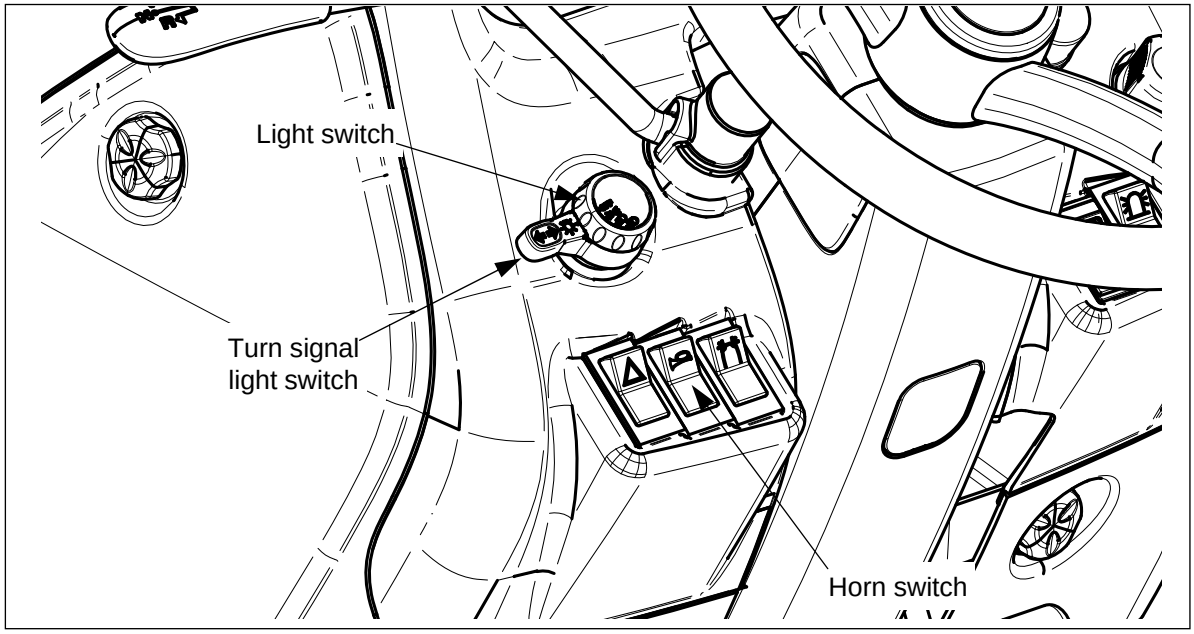
(3) Instrument panel & Indicators

- 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(FRAME) / 37.5W(CAB)
Instrument panel light	LED
Warning indicators	LED
Indoor light (cabin type)	12V 10W

Notice	▶ Use the bulb of rated capacity. ▶ In case of using the improper bulb, it may cause a failure of electric system

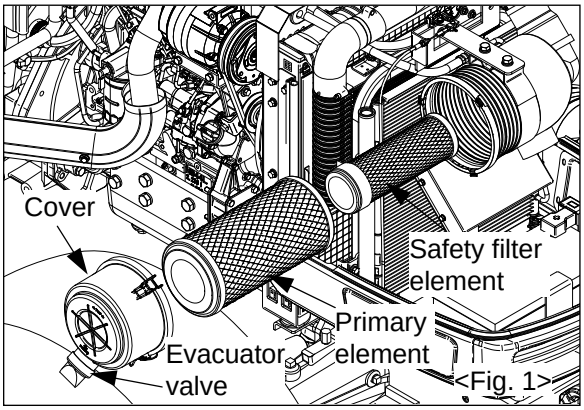
(5) Engine coolant

- Refer to " Replacement of Engine coolant " *(See page 5-22)*

(6) Air cleaner (Dry type)

① Cleaning filter element

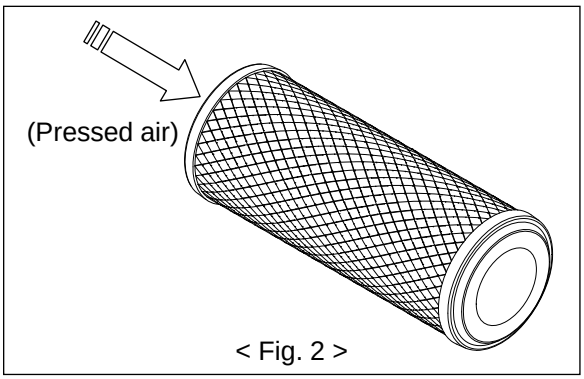
- Remove the cover and pull the primary element straight out, ensuring the safety filter element remains in place. (Fig. 1)
- When cleaning the element in the working field, tap the element by hand to remove the dust



<Fig. 1>

Notice	▶ Do not tap the element on a hard place when cleaning. ▶ If the element is cracked, change it with new one.

- 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.



< Fig. 2 >

Notice	▶ 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.

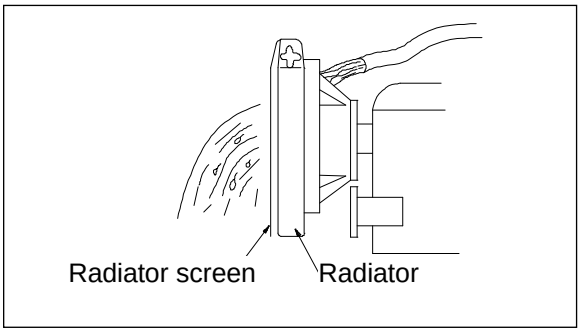
② Assembling filter element

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

(7) Cleaning 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

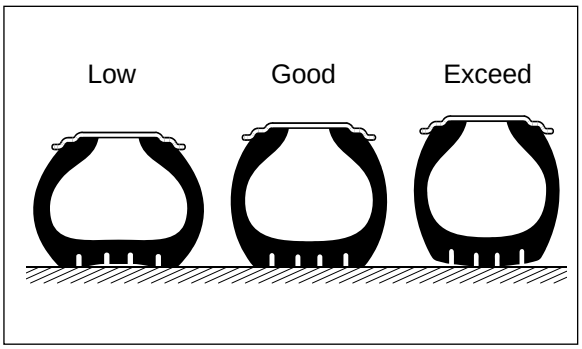


⚠Caution	▶ If lots of foreign materials or dry grasses are stuck to radiator screen or the fan is damaged or transformed, the cooling efficiency shall be reduced and the engine can be overheated. ▶ Radiator must be cleaned only after the engine has stopped.

(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.

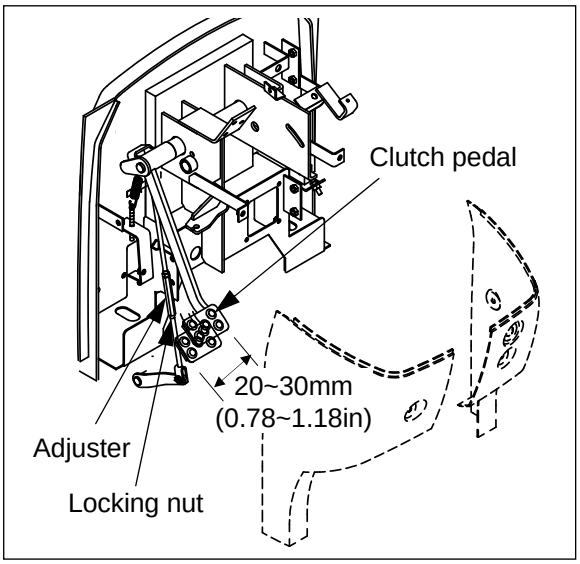
⚠Caution	▶ It is not allowed to remove/attach or change the tire arbitrarily. Carry out the work in the tire repair center equipped with a expert and special safety tools. ▶ When checking tire pressures, keep the body away from the valve mechanism or cap. ▶ The tire pressures vary depending on the load weighing on the axles.

② Standard air pressure - See *section 4-4-(6), "Tires and Load capacity" in this manual.*

(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.

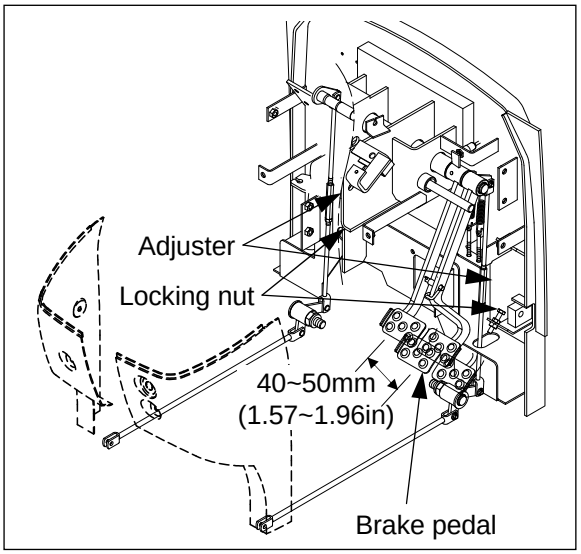
(10) Adjustment of Clutch pedal play (Mechanical type)



- **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

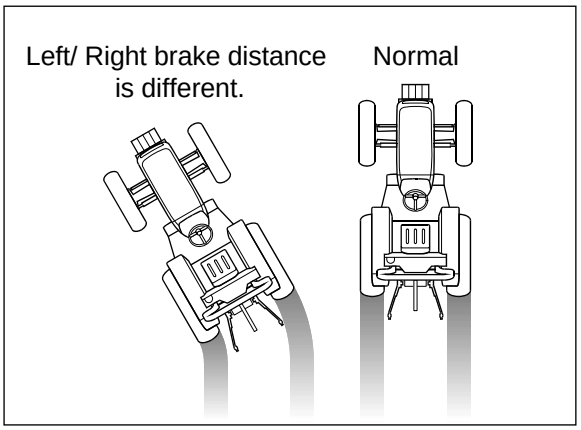


- **Normal distance : 40~50mm. (1.57~1.96 in.)**
  If the pedal play distance is over **50mm (1.96 in.),**
  adjust it as below.

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

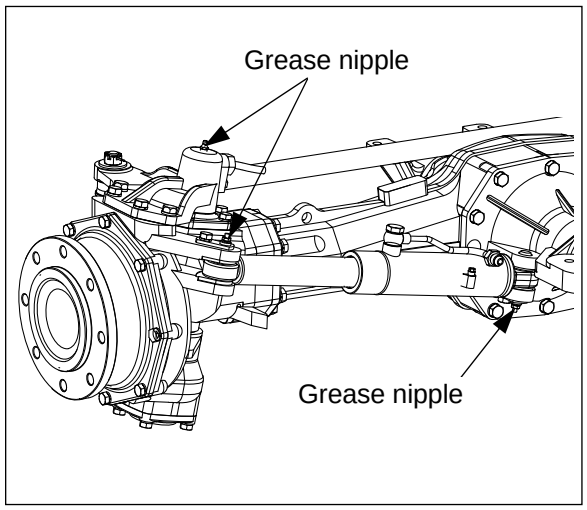
1. Connect left and right brake pedal using connecting pin.
2. Check the skid mark of the tire or stability of the tractor while driving at a suitable speed.
3. If the brake distance is different as shown in the right figure, adjust the pedal play again.

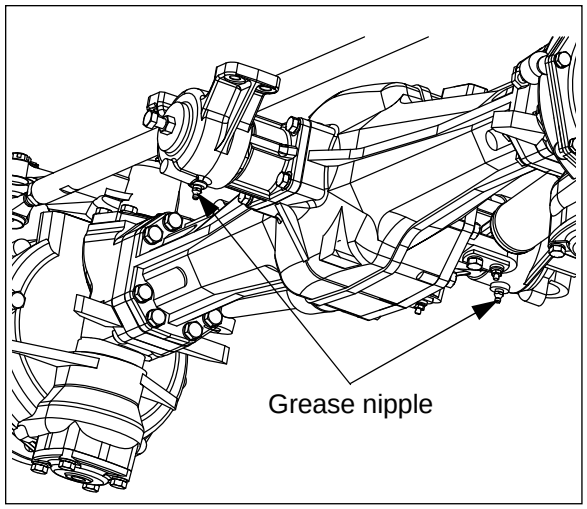


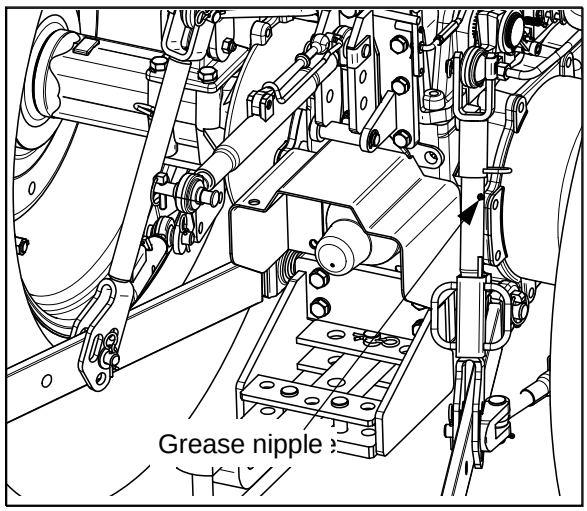
5-7. Every 50 hour check

(1) Lubricating grease nipple

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





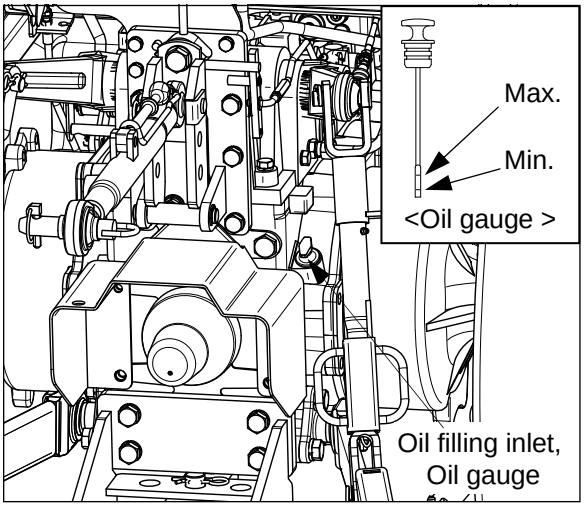


(2) Cleaning Radiator and Radiator screen

- *(See page 5-11)*

(3) Checking Transmission oil

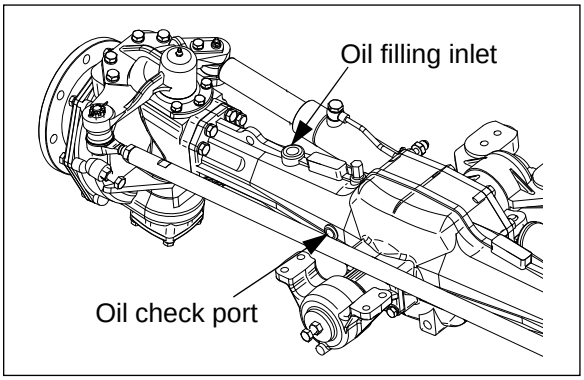
- Stop the tractor on level surface and apply parking brake and lower implements to the ground.
- Clean around oil filling inlet and pull the gauge straight out.
- Check If the oil level is between MIN and MAX mark of oil gauge. If not, add new oil.
- For oil specification, refer to “Lubricants and Capacity” at the end of this manual. *(or See page 5-4)*



⚠ Caution	▶ The contaminated oil may reduce the durability of transmission and cause the failure of hydraulic system. Clean around oil filling inlet and then open the cap.

(4) Checking Front axle oil

- Open the plug of oil check port and check if there is oil leakage.
- If necessary, add new oil into the oil filling inlet. (after 5~10 minutes later, check the oil level again)
- For oil specification, refer to “Lubricants and Capacity” at the end of this manual. *(or See page 5-4)*



(5) Battery check

- Refer to “Batter handling and Notices” *(See page 5-26)*

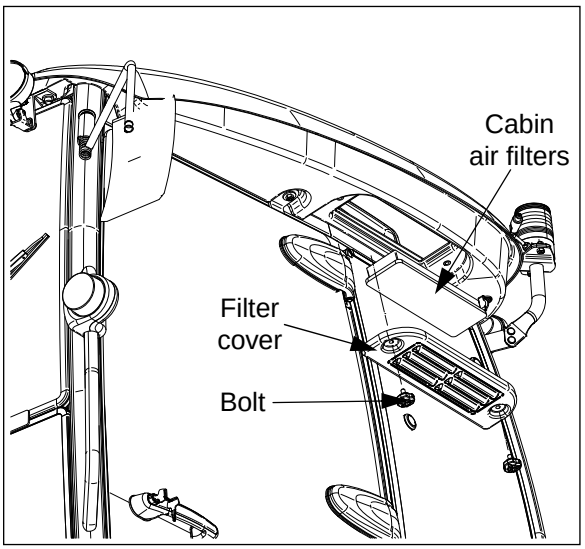
(6) Air cleaner (Dry type)

- *(See page 5-10)*

(7) Hydraulic hoses and Leakage

- Stop the engine and place all the transmission gears in neutral and lower down the implement to the ground.
- Periodically check hydraulic system for leaks or damaged parts - kinked, crushed, flattened, hard blistered, heat cracked, charred, twisted, soft or loose covered hoses and fittings.
- Before removing hydraulic components, make sure to check that hydraulic pressure is relieved completely. The leaks of pressurized oil can cause a fatal physical injury. For further information, refer to the section, “3-5. Hydraulic system” in this manual.

(8) 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.

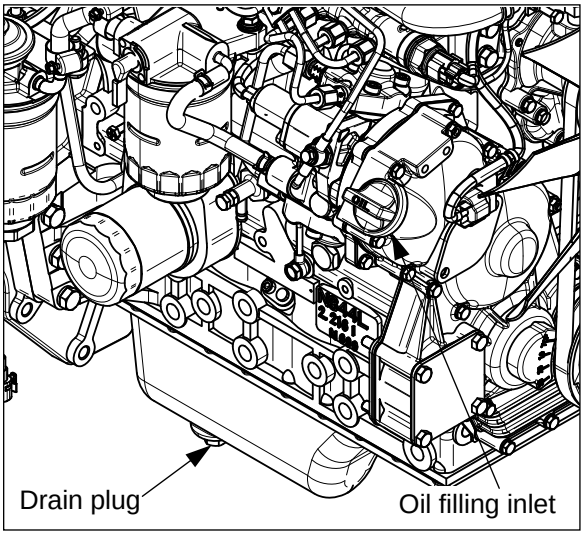
5-8. Every 250 hour check

(1) Replacing Engine oil and Filter

① Drain Engine oil

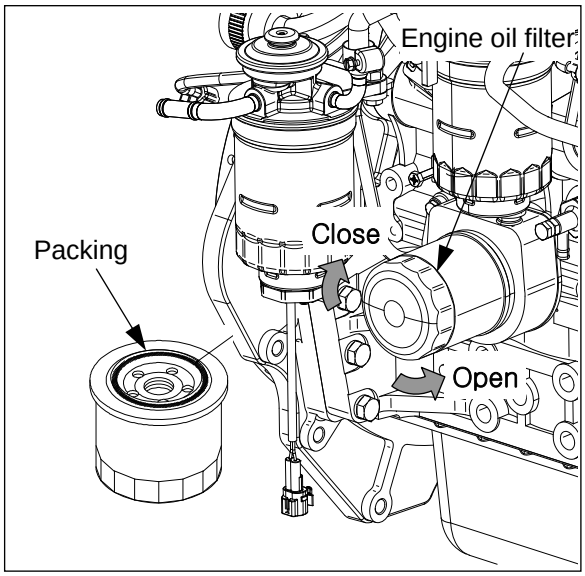
- Run engine for a few minutes to warm oil
- Park the tractor on a level surface.
- Remove drain plug of oil pan and drain the oil completely.

Notice	▶ When engine oil is warm, the impurities can be drained completely.



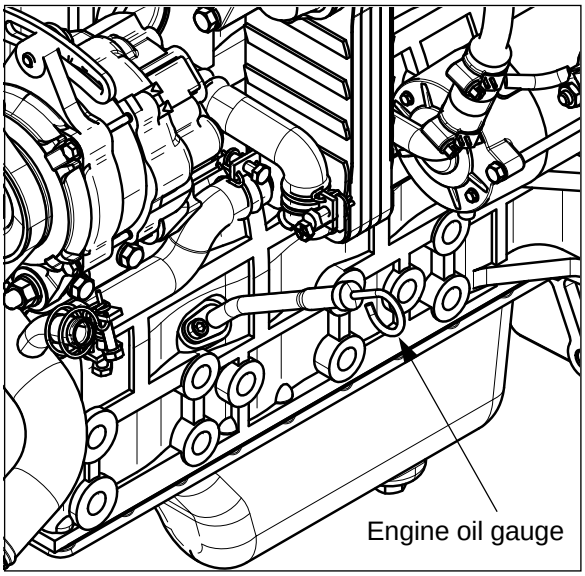
② Replace Engine oil filter

- Clean carefully around the filter.
- Coat clean engine oil on the packing of new filter and check the packing is placed well in the groove.
- Turn the oil filter counter-clockwise to remove with filter wrench.
- Turn the new filter clockwise to assemble until the packing makes contact with the mounting surface. Tighten ¾ to 1 turn more after packing contact.
- If the metal is attached to the element of oil filter to be disassembled, contact your authorized dealer.

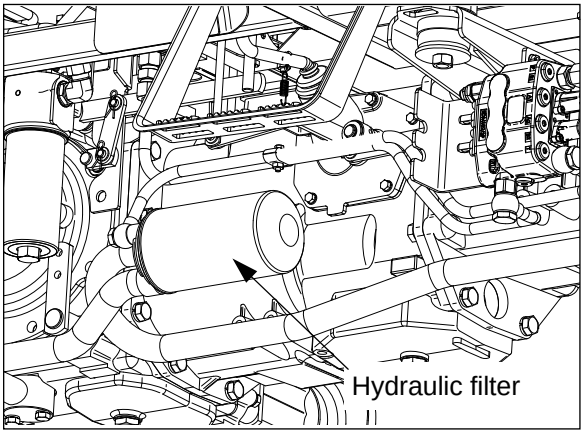


③ Fill Engine oil

- Tighten the drain plugs. (Tightening torque : 40±5 N.m) (29.5±5 lbs-ft)
- Add engine oil as its capacity and check the oil level is between MIN and MAX mark on gauge. For oil specification, refer to “Lubricants and Capacity” at the end of this manual. *(or See page 5-4)*
- Check any leakage of the engine while running the engine for several minutes at idle rpm.
- Stop the engine. After about 5~10 minutes later, check again if the oil level is between MIN and MAX mark.
- Install the oil gauge.



(2) Replacing Hydraulic Oil Filter

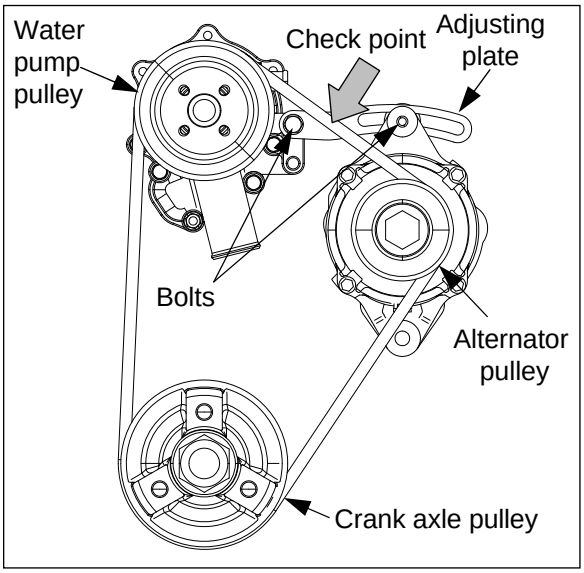


- Park tractor on level surface and apply parking brake and lower implements and stop the engine.
- Carefully clean around the filter and set a clean container under the filter.
- Coat clean hydraulic oil on the packing of new filter and check the packing is placed well in the groove.
- Turn the oil filter CCW to remove with filter wrench.
- Turn the new filter CW to assemble until the packing makes contact with the mounting surface. Tighten ¾ to 1 turn more after packing contact.
- Run the engine at idle and check any leakage.
- Check the oil level. If necessary, add new oil.

Warning	
	▶ Be sure to stop the engine before loosening the oil filter. ▶ If the filter or oil is very hot, it may cause serious burns. After cooling down the tractor sufficiently, replace the filters.

(3) Tension adjustment of Fan belt

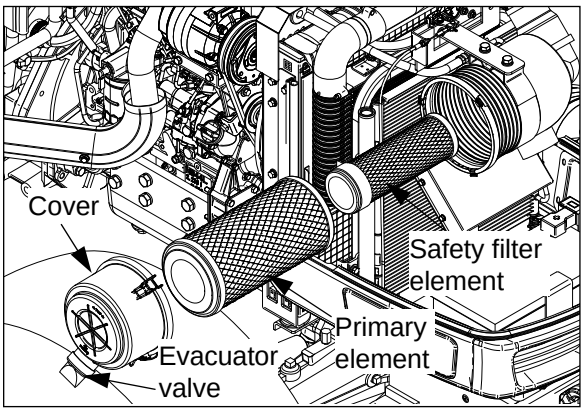
- If the tension of fan belt exceeds the normal value, loosen the bolts and adjust the tension.
  - Belt tension : crank axle pulley ~ alternator pulley
  - **Normal : approx. 5mm (0.02 in.)**
    (When pressed by 50N (11.2 lb.f))



- 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 normal value, tighten the bolts.

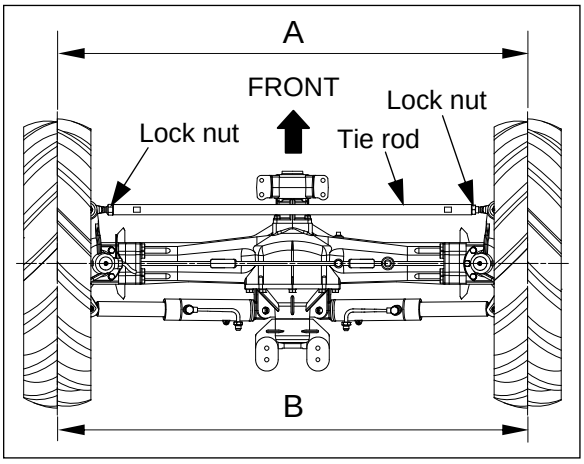
(4) Replacing Air cleaner element (Dry type)



- 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..

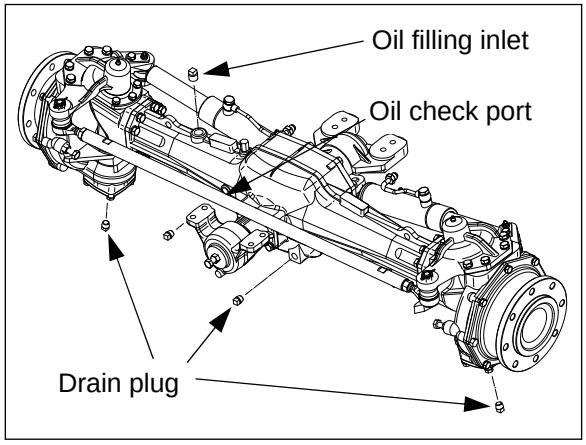
(5) Toe-in



- Check and adjust Toe-in of the front wheel as follow.
  Normal value ; B - A = 0~5 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.

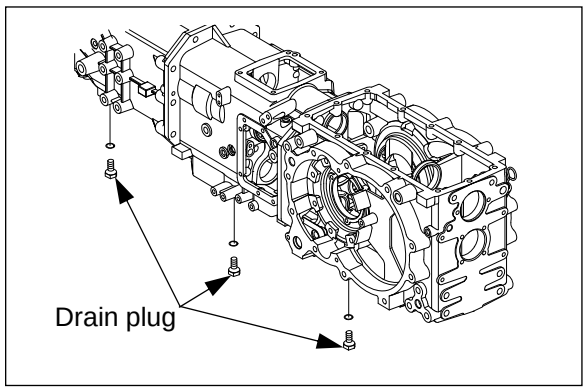
5-9. Every 500 hour check

(1) Changing Front axle oil

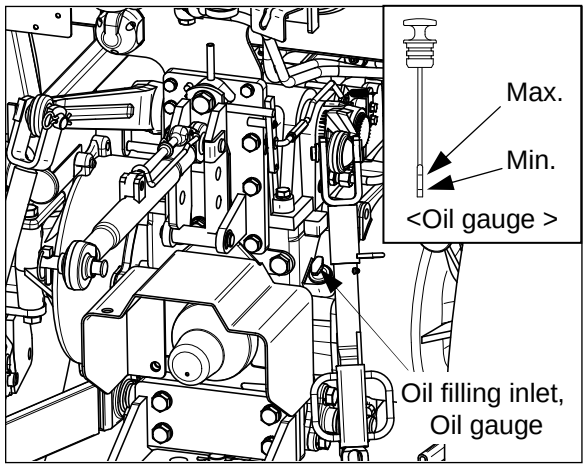


- Stop tractor on a level surface and apply parking brake.
- Remove left/center/right drain plugs and oil filling inlet to drain oil completely.
- Wrap the sealing tape on the plugs and tighten the drain plugs to original position.
- Add new oil into the oil filling inlet.
- After about 5 minutes later, Unscrew the oil check port plug and check if the oil level. If the oil flows out, its OK.
- Tighten the oil filling inlet plug.
  Normal capacity : 10 ℓ (2.6U.S.gals)

(2) Changing Transmission oil



- Stop tractor on a level surface and apply parking brake. Run engine for several minutes to warm oil and lower implements and stop the engine.
- Set container under drain plugs and remove the drain plugs under the transmission and drain oil completely.
- Remove metal sludge stuck to drain plugs and tighten the drain plugs again with copper washer.
- Add new oil until the oil level is between MIN and MAX of the oil gauge.
  Normal capacity : 47 ℓ (12.4U.S.gals)
- For oil specification, refer to “Lubricants and Capacity” at the end of this manual.
  (or See page 5-4)

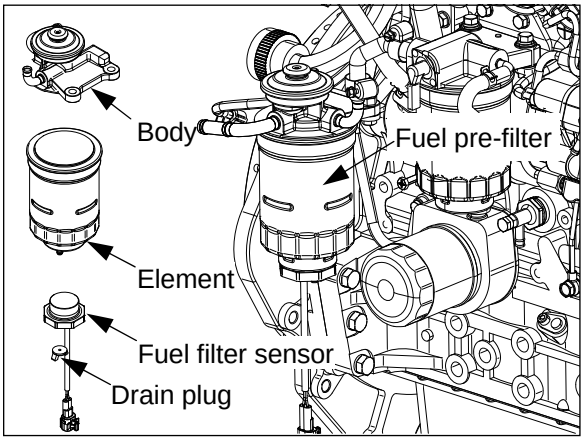


⚠ Caution	▶ The contaminated oil may reduce the durability of transmission and cause the failure of hydraulic system. Clean around oil filling inlet and then pull the oil gauge.

(3) Replacing Fuel filter cartridge

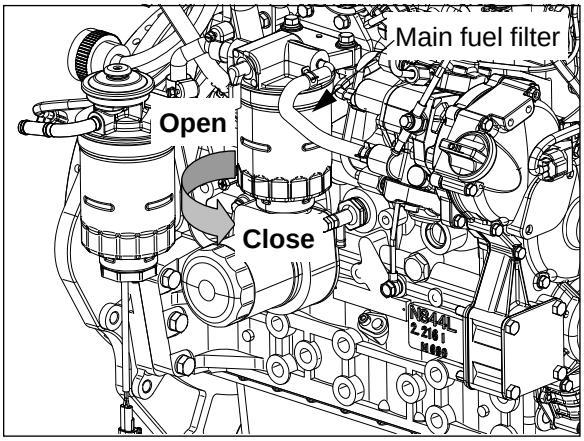
① Fuel pre-filter

- Loosen drain plug and drain fuel in the pre-filter.
- Disconnect electric wire of the fuel filter sensor.
- Remove element from the body.
- Remove fuel filter sensor from the element and assemble it to the new element.
- Attach new element to the body.
- Connect electric wire of the fuel filter sensor.
- Tighten the drain plug and bleed the air from the fuel filter. (*See page 5-23*)



② Main fuel filter

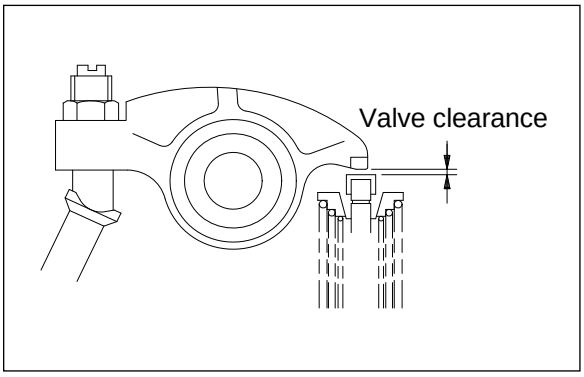
- Set a container under the fuel filter.
- Turn counter-clock wise the fuel filter to loosen it.
- Replace the main fuel filter with a new one.
- Tighten the fuel filter and bleed the air from the fuel filter. (*See page 5-23*)



⚠ Warning	▶ Do not fill the new element with fuel. It may cause damage to the injection system by the invisible filthy materials.

(4) Adjusting Engine valve clearance

- Ask your authorized dealer to check the valve clearance.
  Normal : 0.2mm (0.0079in)
  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.

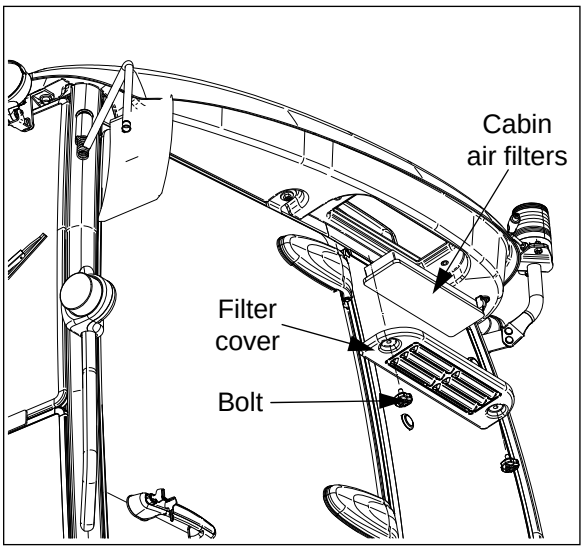


(5) Checking Nozzle injection pressure

- Ask your authorized dealer for check.

(6) Replacing Cabin air filters

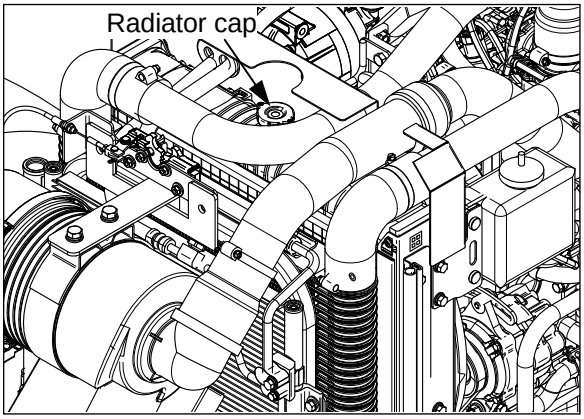
- Before servicing the filters, switch off the blower and close all cabin doors and windows.
- Unscrew the bolts under the roof and remove the cover and filter element as shown in the right figure.
- Clean both filter chambers with a damp, lint-free cloth.
- Replace the cabin air filters with a new one.
- 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. Every 2-year check

(1) Replacement of Engine coolant



① Capacity : 7.0 ℓ (1.8gal) : XU5055, XU5065

② Check

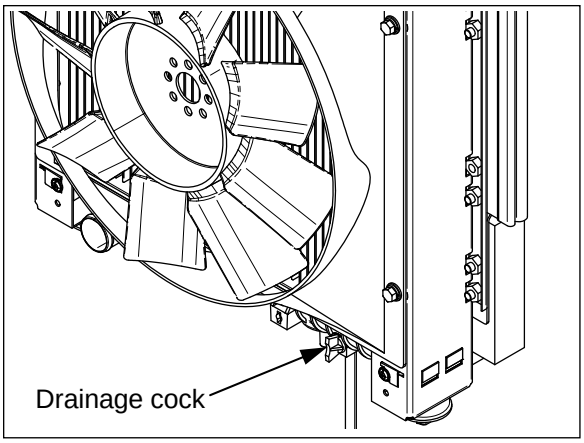
- Check the engine coolant of radiator and expansion tank whether it is insufficient or not.
- Do not open the radiator cap except to check the engine coolant or change it.

Warning	
	▶ 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 you authorized dealer.
  The engine coolant cock must be opened only when the engine is cooled down.

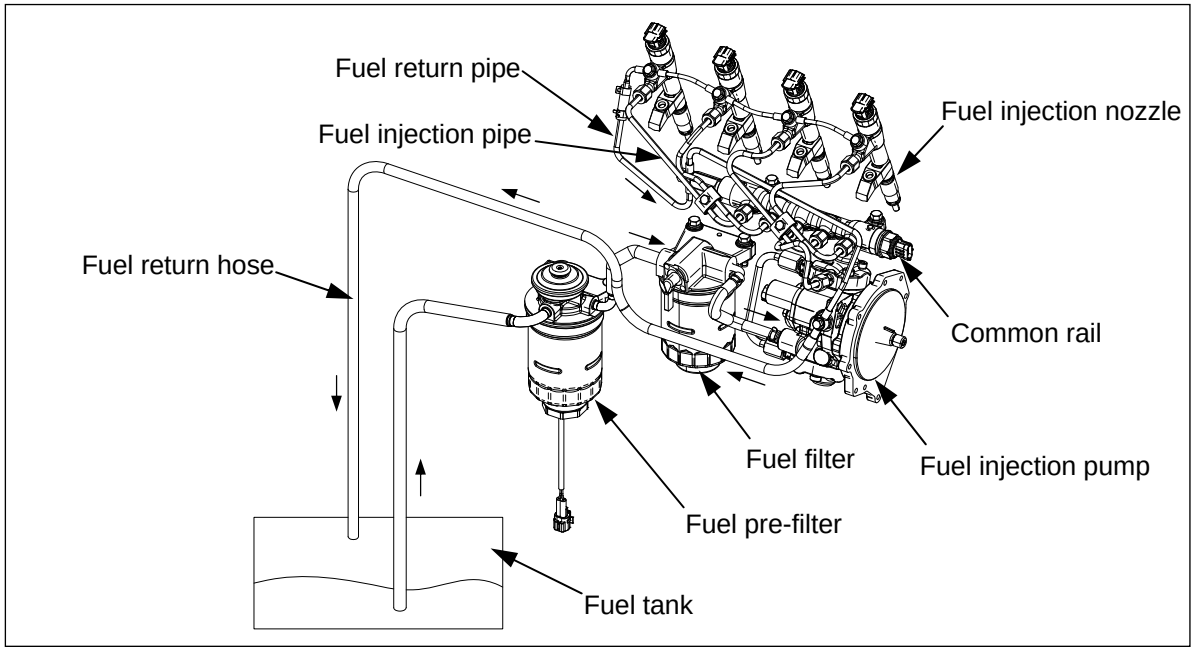
⑤ Anti-freeze

- 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 minutes to mix the anti-freeze with water well.

5-11. General maintenance (When required)

(1) Air-bleeding from Fuel system

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



< Fuel system >

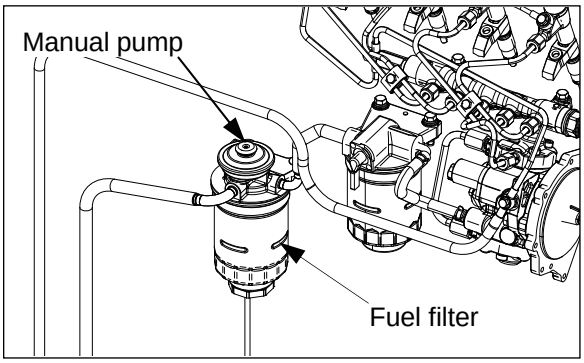
Notice	▶When changing fuel filter or fuel pre-filter, it is not needed to bleed the air from the high pressure pipe.

- After replacing fuel pre-filter or fuel filter, bleed air in the fuel system.

1) Turn key switch ON position.

2) Press down manual pump several times in the right figure.

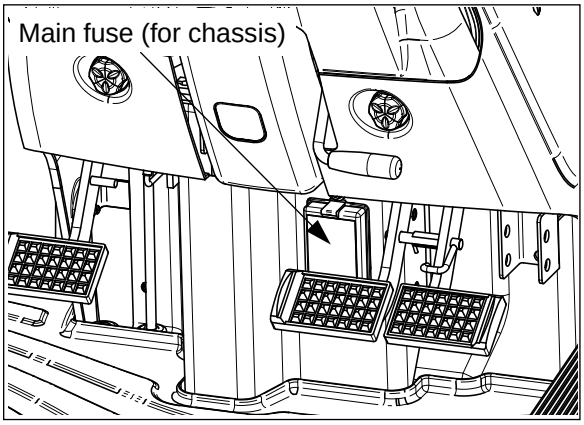
3) Press down manual pump in the right figure several times to fill the fuel system with fuel. The air shall bleed out from fuel system.

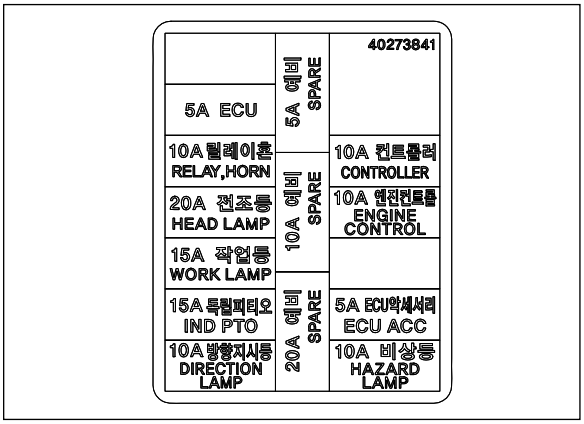


(2) Fuse & Main fuse

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.
- Body fuse box is located under the front console and cabin fuse box is on the left cabin pillar.
- The capacity and function of each fuse is described on the fuse box cover.



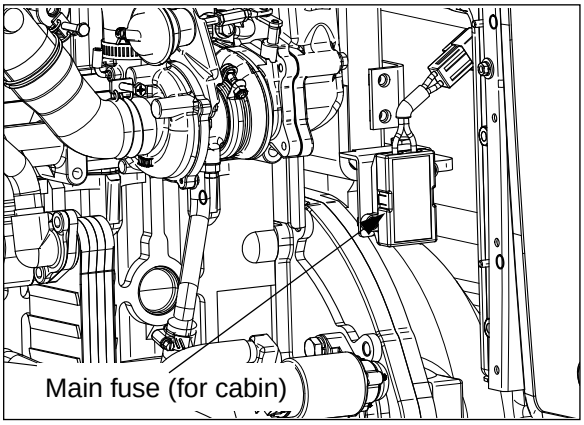


< Cabin fuse box (Cabin type) >

Notice	▶ If the same function fuse is damaged often, contact your authorized dealer for check instead of using the alternatives such as wire or aluminum foil. ▶ If using the alternatives instead of the rated capacity fuse, it may cause fire which results in the damage of tractor or injury.

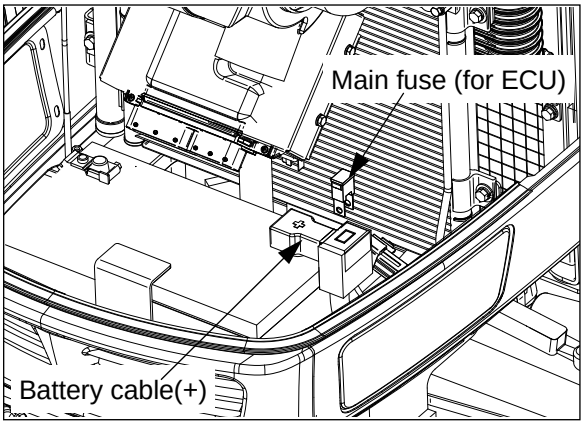
② Main fuse (for cabin)

- Main fuse for cabin is attached to the left side of the engine.
- Remove the cover from the fuse box, and pull out the main fuse for cabin. If necessary, replace it with a genuine part.
  Rated capacity : 60 A
- As the main fuse is a device to protect electric system and wirings, if damaged, check if there is a trouble in the electric system. Contact your authorized dealer for check.



③ Main fuse (for ECU)

- Main fuse for ECU is installed to the battery cable (+).
- Remove the cover, and unscrew the bolt.
  Pull out the main fuse for ECU. If necessary, replace it with a genuine part.
  Rated capacity : 100 A
- As the main fuse is a device to protect electric system and wirings, if damaged, check if there is a trouble in the electric system. Contact your authorized dealer for check.



Notice	▶ If the main fuse is burn out often, contact your authorized dealer to check the problem. ▶ Do not use alternatives instead of the genuine fuse. And, do not connect electric wire to the battery terminals directly. It may cause of the fire and serious injury.

(3) Battery handling and Notices

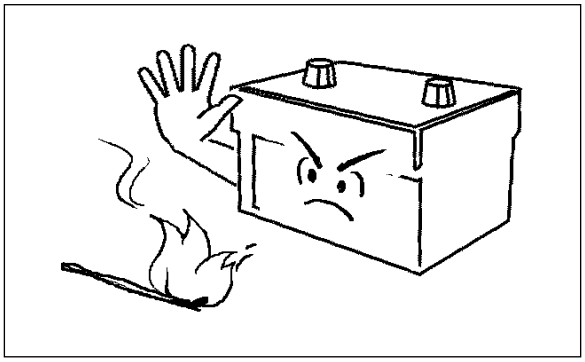
※ **Battery fluid (Electrolyte) is a solution of water and sulfuric acid. It makes poisonous gas which is very harmful to eyes, skin and clothing. And also this gas is explosive. Read the following instructions thoroughly before handling the battery.**

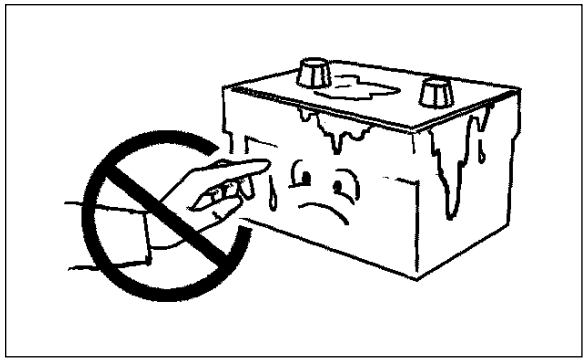
① Battery check

● 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.

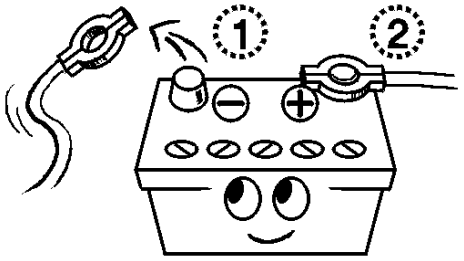




Caution	
	▶ The gas generated from the battery is explosive. comply with following instructions. - Keep cigarettes, sparks and flames away from battery. Use a flashlight to check battery electrolyte level or indicator. - Never check battery charge by placing a metal object across the terminals. Use a voltmeter or hydrometer. -Always remove grounded (-) battery clamp first and assemble it last. If not, It can cause explosion by spark.
	▶ Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, clothing and can cause blindness if splashed into eyes. - 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.
	▶ Charge the battery in an area with good ventilation and DO NOT charge a frozen battery. ▶ Replace it with LS tractor genuine products or the battery with the same capacity.

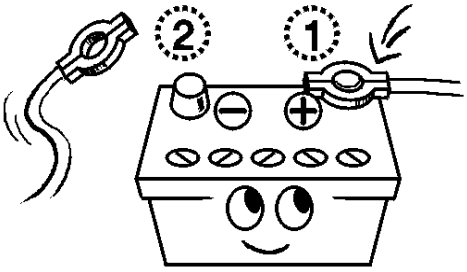
② Notices in attaching/detaching the battery

- 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 detaching >

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



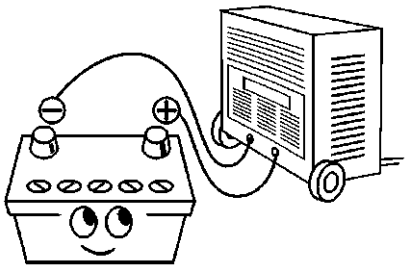
< When attaching >

Caution	▶ Stop engine and apply parking brake and remove the ignition key before replacing the battery.
	▶ Put on eye protection and globes 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.

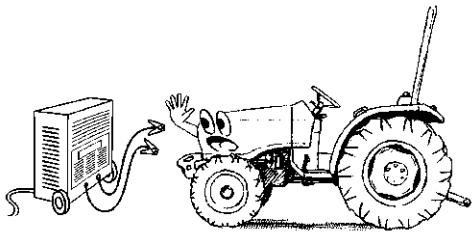
③ Notices in charging the battery using separate charger

- 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.



< when connecting the charger >



< Do not charge the attached battery>

⚠ Caution	▶ Put on eye protection and globes 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 explosion by spark.
	▶ Keep all flames and sparks away and DO NOT smoke while you charge battery.
	▶ Detach battery from the tractor before charging. DO NOT charge directly while the battery is attached to the tractor.
	▶ Turn off or unplug the charger cord, before connecting or disconnecting the charger cable to or from the battery
	▶ Charge the battery in an area with good ventilation.
	▶ Do not charge the frozen battery.
	▶ Use the rated 12V-5A charger.
	▶ Never check battery charge by placing a metal object across the terminals.

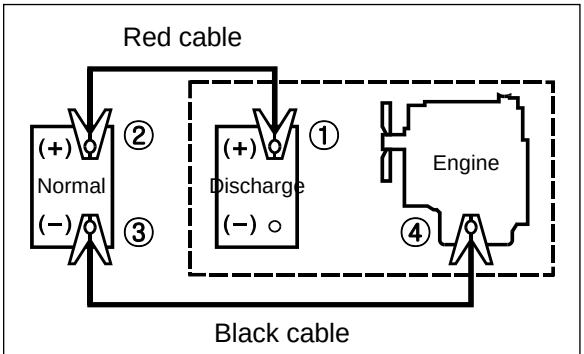
④ How to use jumper cables

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

ⓐ 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. Start engine. If the engine does not start, check the electrolyte level of each battery.

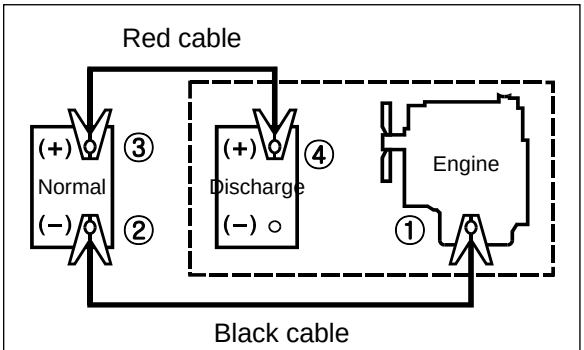


< Connecting order of jumper cables >

Caution 	▶ 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. ▶ Keep all flames and sparks away and DO NOT smoke while handling the battery.

ⓑ Removing Jumper cables

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



< Removing order of jumper cables >

Notice	▶ 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.

5-12. Troubleshooting

⚠ Warning	▶ To avoid injury due to sudden start, apply parking brake and place the transmission gear in NEUTRAL position before checking and repairing.

System	Faults	Possible causes	Solutions
Engine	The start motor does not turn when turning the key switch.	▲ Start safety switch is not contacted. ▲ PTO switch is not on OFF position. ▲ Discharge of battery ▲ Terminal loosened ▲ Key switch failure ▲ Start motor failure	▲ 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.	▲ 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	▲ 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.	▲ Air in fuel system ▲ Fuel filter clogged ▲ Injection nozzle clogged ▲ Fuel leakage ▲ Irregular fuel injection	▲ Bleed air ▲ Clean or replace the filter ▲ Repair or replace ▲ Repair ▲ Repair
	Engine turns more than maximum speed.	▲ Impurities in governor	▲ Repair
	Engine stops suddenly during operation.	▲ Fuel shortage ▲ Fault of nozzle ▲ moving parts failure due to bad lubrication	▲ Add fuel and bleed air. ▲ Repair or replace ▲ Repair

System	Faults	Possible causes	Solutions
Engine	Engine stops at low rpm.	▲ Fault of injection pump ▲ Valve gap is not correct ▲ Poor nozzle pressure	▲ Repair ▲ Adjust the gap ▲ Repair
	Engine overheat	▲ Lack of engine coolant ▲ Bad fan belt tension or broken ▲ Dirt attached to the radiator	▲ Supplement ▲ Adjust belt tension or replace ▲ Clean
	The color of exhausted smoke is white.	▲ Air cleaner clogged ▲ Engine oil exceeded ▲ Lack of fuel supply	▲ Wash element ▲ Adjust in proper level ▲ Repair
	The color of exhausted smoke is black.	▲ Bad quality of fuel ▲ Oversupply of fuel ▲ Fault of nozzle	▲ Use good quality fuel ▲ Repair ▲ Repair
	Engine power is low.	▲ Injection nozzle clogged ▲ Carbon piled to valve seat ▲ Bad adjustment of valve gap ▲ Bad injection timing ▲ Lack of fuel supply ▲ Air cleaner clogged	▲ Repair ▲ Repair ▲ Repair ▲ Repair ▲ Check fuel system ▲ Clean or replace
	Engine oil pressure indicator is ON during operation.	▲ Lack of engine oil ▲ Low viscosity of engine oil ▲ Warning light switch error ▲ Fault of oil pump ▲ Oil filter element is clogged	▲ Supplement ▲ Replace the proper oil viscosity ▲ Replace ▲ Repair ▲ Replace element
	Battery charging indicator is ON during operation	▲ Abnormal wiring ▲ Fault of alternator ▲ Fault of battery ▲ Bad fan belt tension or broken	▲ Check battery terminals and ground, repair ▲ Repair or replace ▲ Replace ▲ Adjust belt tension or replace
Clutch	Clutch is slipped.	▲ Wrong clutch pedal play ▲ Friction lining worn or broken	▲ Adjust ▲ Replace
	Clutch does not cut-off.	▲ Lining damaged ▲ Wrong clutch pedal play	▲ Repair or replace ▲ Adjust

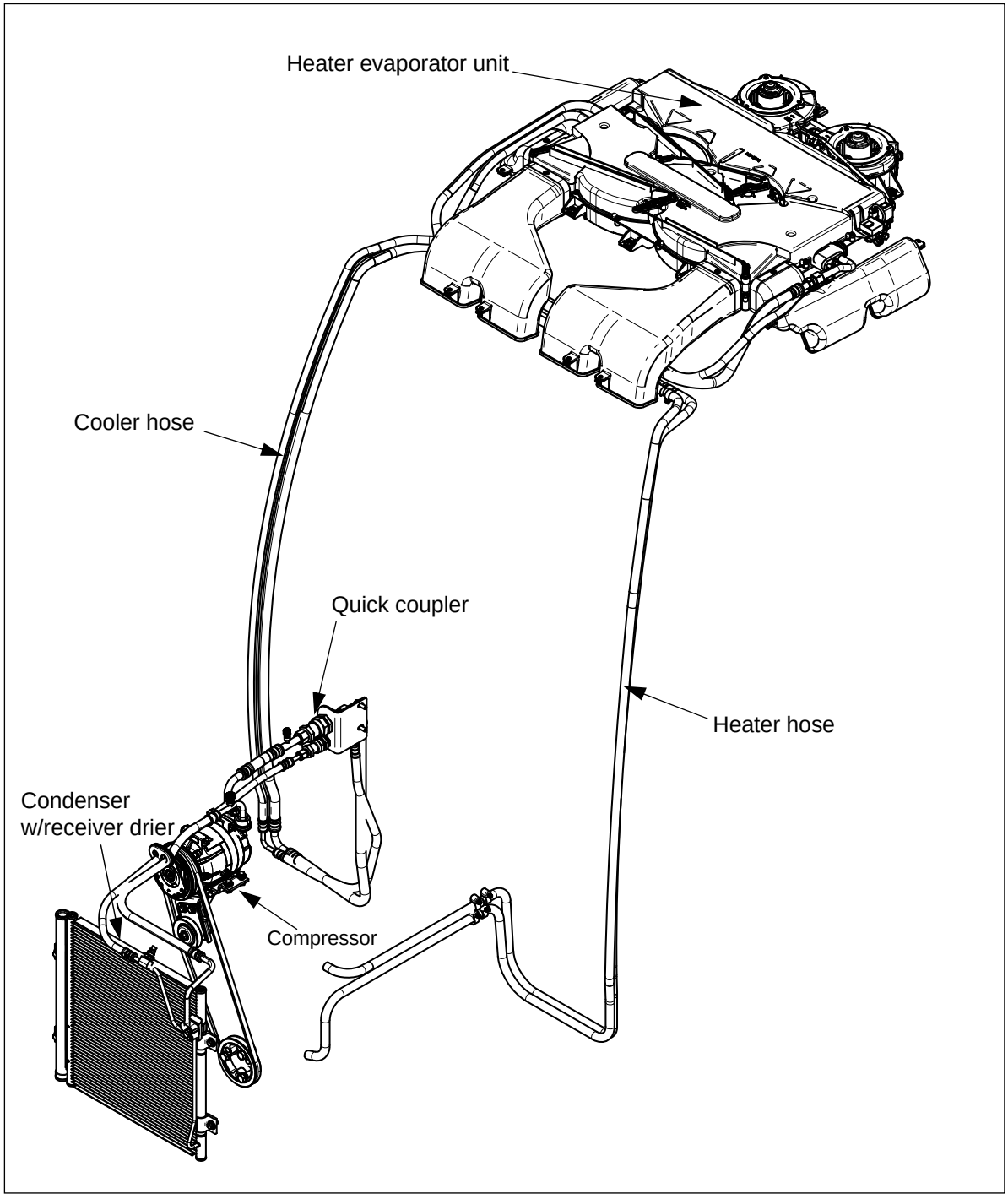
System	Faults	Possible causes	Solutions
Brake	Brake does not work or only one side works.	▲ Wrong brake pedal play. ▲ Lining worn or broken ▲ Left/right pedal play is different	▲ Adjust ▲ Replace ▲ Adjust
	After brake pedal working, it does not return.	▲ Return spring damaged ▲ Lack of grease in shaft 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	▲ Aid 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

System	Faults	Possible causes	Solutions
Steering System	Hydraulic steering system does not work.	▲ 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	▲ Repair or replace ▲ Repair or replace ▲ Repair ▲ Repair or replace
	Hard to operate the steering wheel.	▲ Steering unit - Steering unit spline and column spline is not aligned - Spool and sleeve damaged by foreign material - Excessive tightening torque of end cap bolt ▲ Pump - Low speed - Wearing or failure ▲ Relief valve - Valve spool clogged - Setting pressure too low	▲ - Check mounted condition of steering unit and column - Replace - Apply regular torque ▲ - Adjust RPM or Repair - Repair or replace ▲ - Repair or replace - Reset or adjust
	Cylinder does not work smoothly as steering wheel movement	▲ Air in steering line if not used for a long time ▲ Air in suction pipe ▲ Piston seal damaged	▲ Bleed air ▲ Repair ▲ Replace
	Steering wheel turns to the opposite direction.	▲ bad assembly of steering gear ▲ bad assembly of steering hose	▲ Repair ▲ Repair
	Oil leakage of steering pump, steering unit, cylinder and fittings	▲ Seal damaged	▲ Replace seal
	Abnormal noise	▲ Lack of oil ▲ Exceeding resistance of suction line ▲ Air in system	▲ Aid oil ▲ Replace filter or repair pump ▲ Bleed air

System	Faults	Possible causes	Solutions
Electric System	Battery is not charge	▲ Abnormal wiring ▲ Alternator failure ▲ Lack of fan belt tension or broken ▲ Abnormal battery	▲ Check the tightening state of terminal and ground ▲ Repair or replace ▲ Adjust fan belt tension or replace ▲ Replace
	Headlight is dark.	▲ Battery capacity is low ▲ Bad wiring and contact	▲ Charge or replace ▲ Check and repair
	Headlight does not ON.	▲ Light bulb cut-off ▲ Fuse blown	▲ Replace ▲ Check the cause, and replace
	Horn does not sound.	▲ Switch failure ▲ Abnormal wiring ▲ Horn failure	▲ Replace ▲ Repair ▲ Replace
	Turn signal Light does not work.	▲ Light bulb cut-off ▲ Bad connection ▲ Fuse blown	▲ Replace ▲ Tighten terminals ▲ Check the cause, and replace it
	Cold start aid indicator does not ON. (option)	▲ Relay or timer damaged ▲ Bad connection of preheat plug wiring	▲ Replace ▲ Check and tighten
	Other illuminating and indicator does not ON.	▲ Fuse blown ▲ Light bulb cut-off	▲ After removing the cause, and replace ▲ Replace

6. Air conditioning system

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

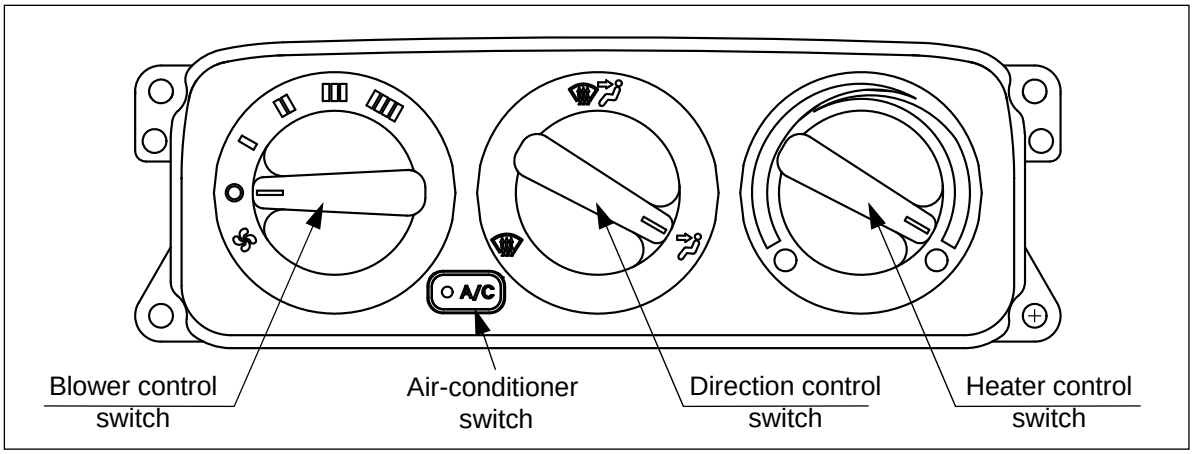


⚠Caution	▶ Maintenance of the air conditioning system components (Compressor, Receiver drier, Condenser, Heater evaporator unit and connection parts) must be performed in the designated dealer. DO NOT disassemble the components arbitrary.

6-2. How to use Air conditioner and Heater

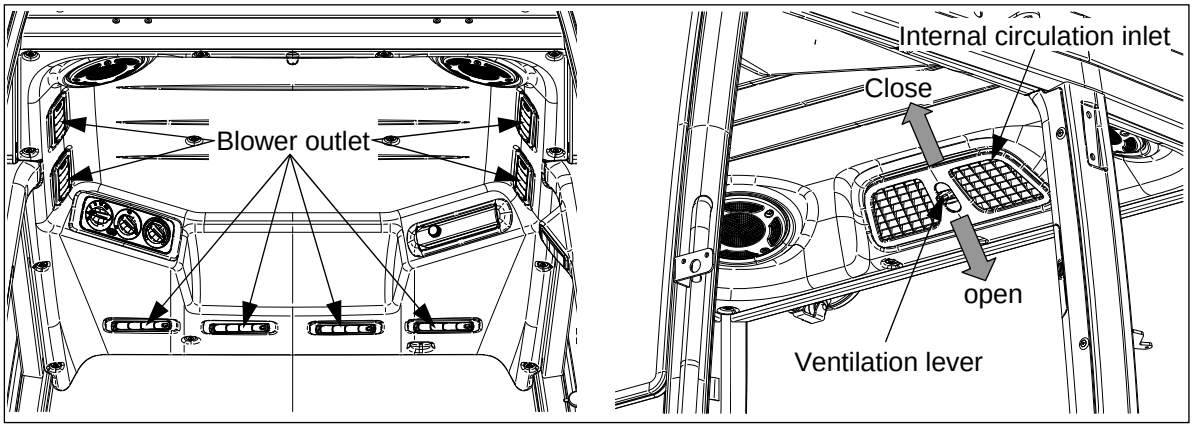
(1) How to operate air conditioner and heater

- Air conditioner switch
  - It is used to operate the air conditioner. If you press the switch button and turn the blower control switch to Ⅰ, Ⅱ, Ⅲ or Ⅳ position, the operation lamp shall be ON and the air conditioner begins to work.
- Blower control switch
  - Blower is controlled by 4 stages. If blower control switch is on “O”, air conditioner does not work.
- Heater control switch
  - It is used for selecting warm or cool air. Turn the switch clockwise (blue) for cool air, and otherwise, turn it counter-clockwise (red).



(2) Air direction control

- To control the air direction, adjust the blade angle of the blower outlets.
- For internal circulation, move the ventilation lever to the internal circulation position.
- When operating the air conditioner or heater, open the blower outlets always.



⚠ Caution	▶ 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, ventilate air from the outside occasionally.

6-3. Every 6 month check

(1) Checking refrigerant amount

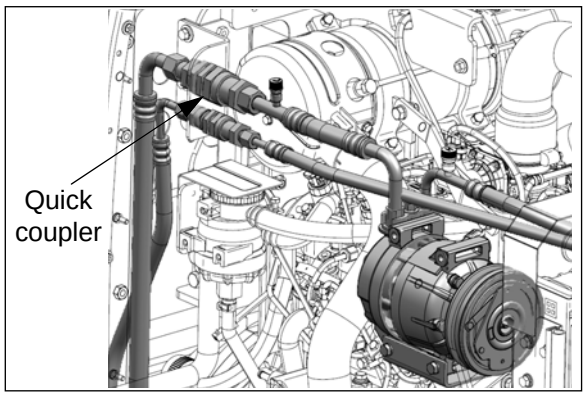
- Check the refrigerant amount periodically. Have to contact your authorized dealer for it.
  Refrigerant : R-134a, 850 ~ 900 g (29.98 ~ 31.74 oz)
- The components of the air conditioning system have to be handled by authorized service expert.

(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.

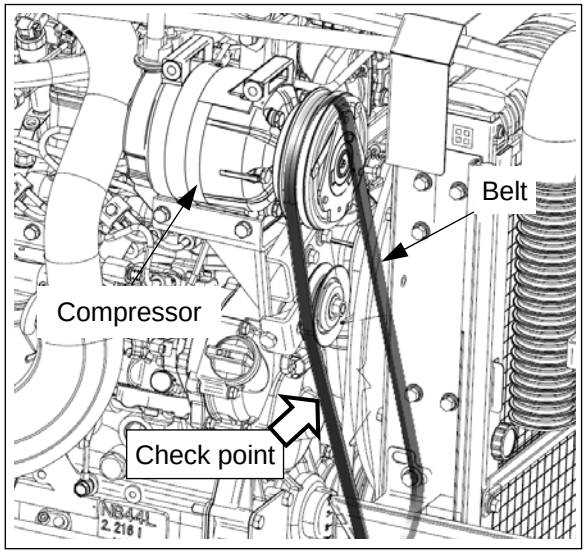
(3) Checking Leakage

- 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. 10~12mm (0.39~0.47 in.) (when pressed by 50N (11.2 lb.f))**
- 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 your authorized dealer for check.

(2) Control switch check

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

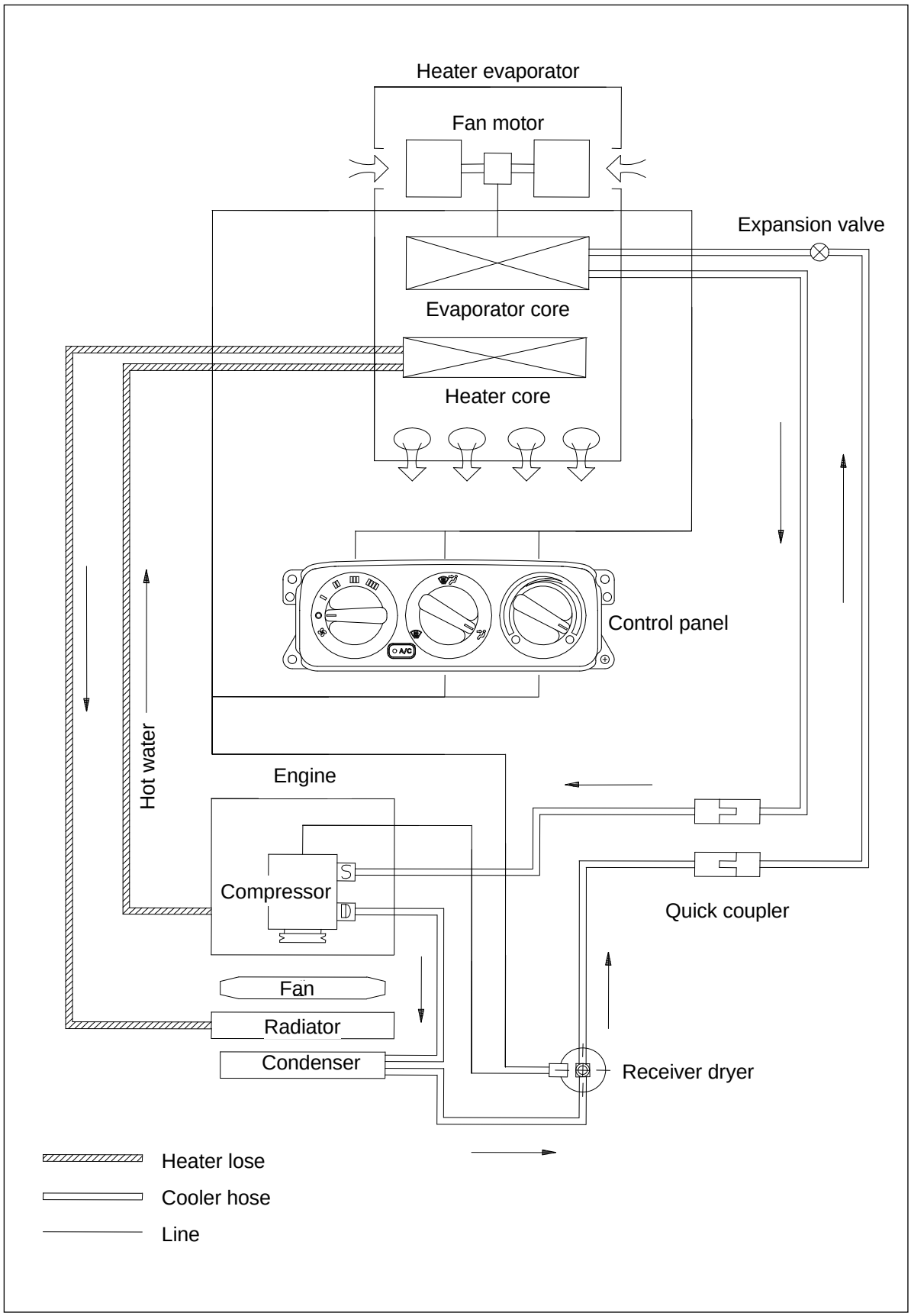
⚠Caution	▶If there is a trouble on air conditioning system, DO NOT disassemble the components arbitrary, contact your authorized dealer for check.

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.

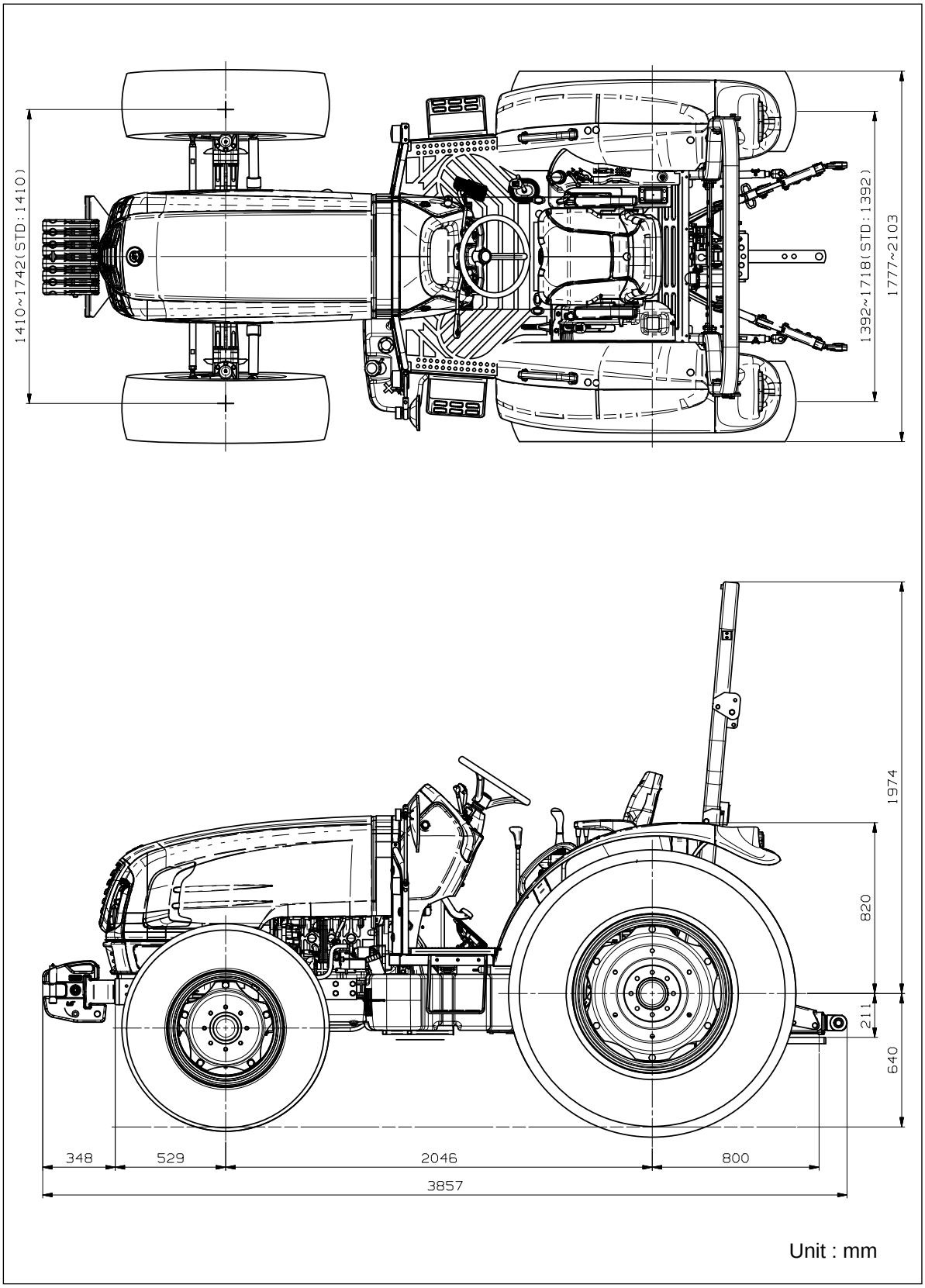
No.	Failures	Cause	Actions
4	The compressor does not turn or it is hard to revolve.	Belt loosened.	Adjust the belt tension.
		Temperature switch or pressure switch is “ON”.	Check refrigerant amount.
		Coil of magnet clutch was shorted or cut off.	Contact the dealer.
		Compressor failure.	Contact the 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



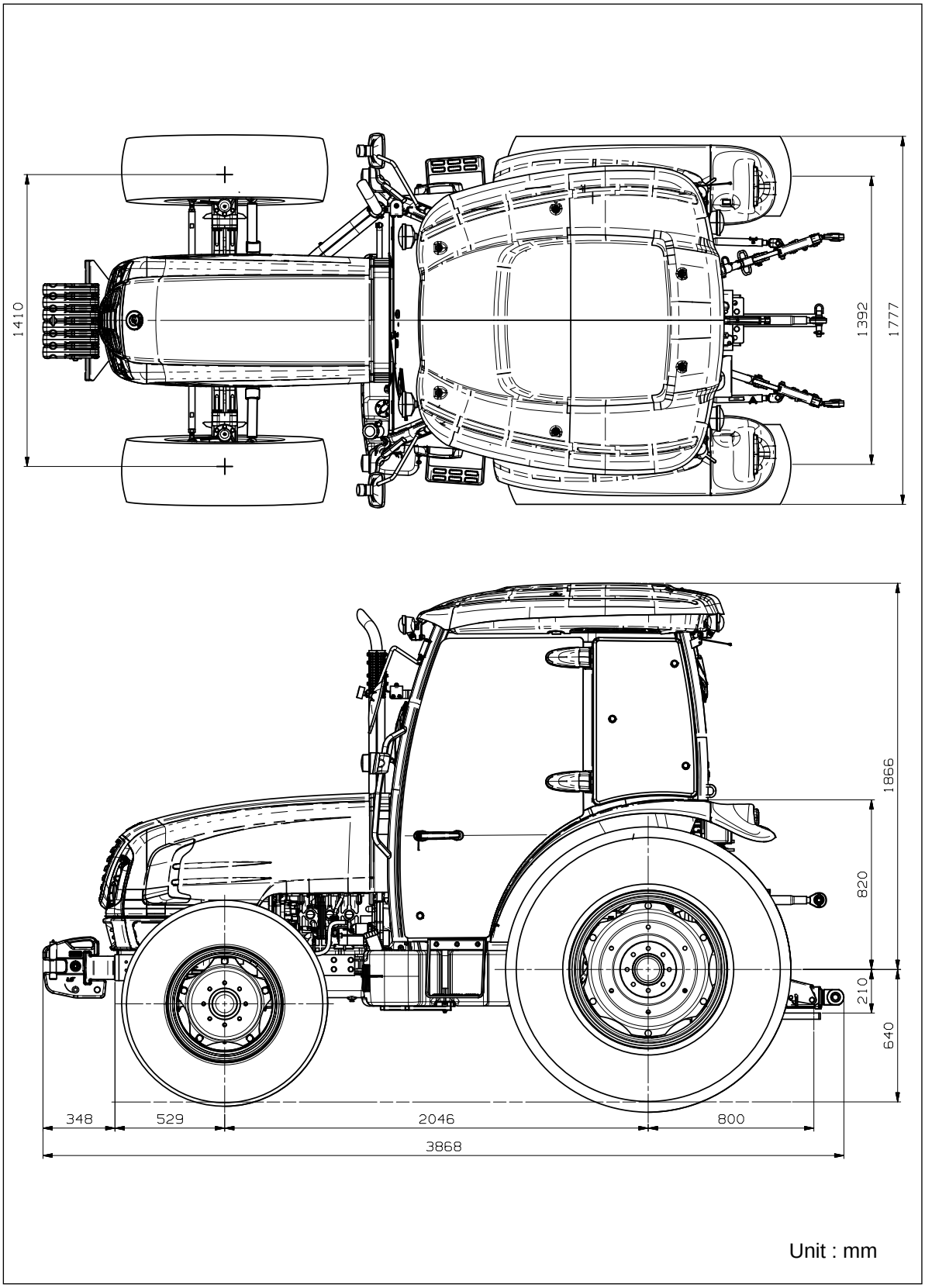
7. Dimension and Specification

Frame type – XU5055 / XU5065



Unit : mm

Cabin type – XU5055 / XU5065



Unit : mm

		XU5055	XU5065
WEIGHT	Frame Type	2120kg (4674 lb)	2120kg (4674 lb)
	Cabin Type	2323kg (5121 lb)	2323kg (5121 lb)
	Bumper	33kg (72.8 lb) (optional)	
	Front weight	20kg (44.1 lb) x 6 (optional)	
ENGINE	Model	N4LDI-TA-41	N4LDI-TA-48
	Type	4-stroke, vertical, water cooling	
	No. of cylinder	4	
	Diameter x stroke	84x100 (3.31x3.94 in)	
	Displacement	2216cc (135.2 in^3)	
	Compression ratio	18:1	
	Engine speed	1000 ~ 2800 rpm	
	Maximum torque	183 N.m / 1800rpm	208 N.m / 1800rpm
	Rated power	41.0kW / 2600rpm	48.5kW / 2600rpm
FUEL INJECTION SYSTEM	Type	CRDI	
	Fuel filter	Replaceable cartridge type	
	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	
	Air cleaner	Dry	
TRANSMISSION	Type	16x16 Mechanical transmission / 32x16 with Creeper (optional)	
	Main clutch	Dry single clutch / Wet clutch disks (power shuttle)	
	Forward / Reverse	Synchro-shuttle type / Power shuttle (optional)	
	Differential lock	Mechanical pedal type	

			XU5055	XU5065
PTO	Type		Independent PTO / GSP (optional)	
	No. of speed		3 speed gears (optional)	
	PTO / Engine		1st : 540 rpm / 2409 rpm 2nd : 750 rpm / 2375 rpm 3rd : 1000 rpm / 2381 rpm	
HYDRAULIC LIFT	3 Point linkage		CAT. 2	
	Draft load detection		Upper link	
	Lowering speed control and cylinder fixing device		Down speed control valve	
	Pump		Gear type, Engine drive	
	Rated flow		39.8LPM (10.5GPM)	
	System pressure		17MPa (2466psi)	
	Lift capacity	Lower link end	1850 kgf (4079 lbf)	
		24” behind lift point	1580 kgf (3483 lbf)	
REMOTE CONTROL	Type		Double acting / spring return or detent type (optional)	
	No. of Q/coupler		4EA (optional : 2 or 6EA)	
	F/loader coupler		Front outlet valve / Joystick loader valve (optional)	
STEERING SYSTEM	Type		Hydrostatic	
	Oil		Transmission oil	
	Min. turning radius (with brake)		3.3m (10.8ft)	
	Max. steering angle		55° / 44°	
	No. of steering turns		3.7 turns (lock to lock)	

			XU5055	XU5065
ALTERNATOR	Rated output		12V, 0.66kW (55A)	
	Voltage control		Built-in (IC type)	
BATTERY	Voltage		12V	
	Capacity		100Ah	
START MOTOR	Output power		12V, 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(Frame) / 37.5W(Cabin)	
OTHERS	Instrument lights		LED	
	Indoor light (CAB)		12V 10W	
	Instrument indicator light		LED	
	Cold start aid		Glow plug	
STD.AGRI. TIRE	Front		11.2-20 (8PR)	
	Rear		14.9-28 (8PR)	
WHEEL TRACK ADJUSTMENT	Front	Tracks	7	
		Dimension	1410~1742mm (55.5 ~ 68.6 in.)	
	Rear	Tracks	4	
		Dimension	1392~1718mm (54.8 ~ 67.6 in.)	

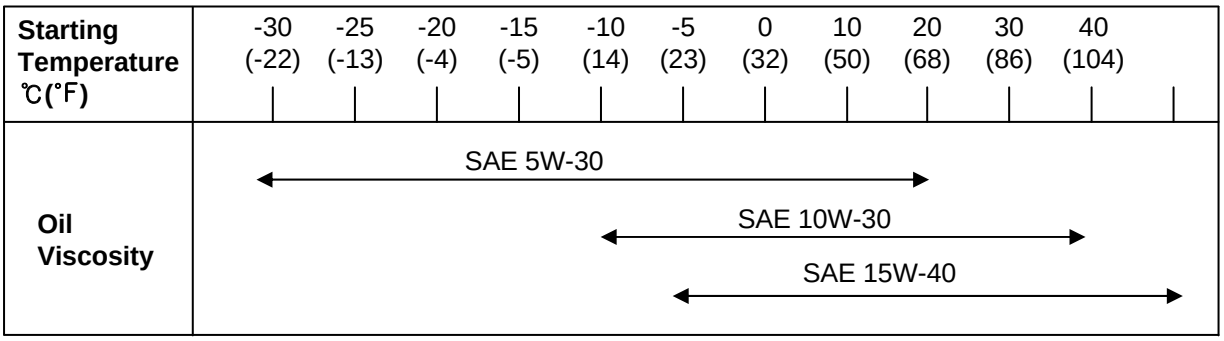
** These specifications are only general product information and can be changed to improve the product qualification without any prior notification **

Lubricants and Capacity

LUBRICANTS	CAPACITY	INTERNATIONAL STANDARD		RECOMMENDED ITEMS
Engine coolant (Radiator)	7.0 ℓ (1.8U.S.gals)	ASTM D5216		Soft water (50%)+ Anti-freeze (50%)
Fuel	60 ℓ (15.9U.S.gals)	ASTM D975 No.2		Ultra low Sulfuric Diesel Fuel
Engine oil (crankcase)	5.5 ℓ (1.5U.S.gals)	API CJ-4 (~ -10℃ : SAE 5W-30 -10℃ ~ 40℃ : SAE 10W-30 40℃ ~ : SAE 15W-40)		KIXX DL (Maker : GS Caltex)
Transmission oil (common use for Hydraulic lift, hydraulic steering device)	47 ℓ (12.4U.S.gals)	Mechanical	API-GL4 ISO VG 46/68	LSTH570 (Maker : GS Caltex or S-OIL TOTAL Co. Ltd.)
		Power shuttle	API-GL4 ISO VG 32/46	LSTH400 (Maker : GS Caltex or S-OIL TOTAL Co. Ltd.)
Front axle oil	10 ℓ (2.6U.S.gals)	API-GL4 SAE 80W		EPK 80W90 (Maker : S-OIL TOTAL Co. Ltd.)
Grease (Front axle arm holder, Steering cylinder pin, 3-point linkage)	Proper amount	NLGI 2		

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. Contact your authorized dealer.



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