



WHEEL LOADER

W11/W12S/W12F/W13F/T13F

OPERATION MANUAL



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EC DECLARATION OF CONFORMITY

MANUFACTURER

Name: Eurotrac Construction Machinery (Europe)
Address: Stougesdijk 153, 3271KB Mijnsheerenland, Holland



HEREBY DECLARES THAT THE PRODUCT DESCRIBED BELOW:

Model	W10	W11	W12-S	W12-F	W13-F	T13-F
Serial number						
Engine model	D902	D1105	V1505	D1803	4TNV86CT	4TNV86CT
Engine power and emission	16.1Kw Euro-5	18.5Kw Euro-5	18.4Kw Euro-5	27Kw Euro-5	35.5Kw Euro-5	35.5Kw Euro-5
Manufacturing year						

2006/42/EC Machinery Directive
2014/30/EU (Electromagnetic compatibility)
(EU)2016/1628 Engine Pollutant Emission Directive

2000/14/EC & 2005/88/EC NOISE DIRECTIVE

Equipment according to the definition given by: Annex I, item 37 of Noise Directive
Conformity assessment procedure followed: Annex VI of Noise Directive

Notified body : *European Certifying Organization S.p.A.,
No.0714, Via Mengolina 33,
Faenza(RA), Italy.*

Measured sound power level: **98 dB Lwa** Guaranteed sound power level: **101dB Lwa**
Holder of the technical documentation: Manufacturer

COMPLIES WITH THE PROVISIONS OF THE FOLLOWING HARMONIZED STANDARDS:

EN 474-1:2006+A1:2009 Earth-moving machinery — Safety — Part 1: General requirements
EN 474-3:2006+A1:2009 Earth-moving machinery — Safety — Part 3: Requirements for loaders

THE TECHNICAL DOCUMENTATION WAS COMPILED BY THE EUROPEAN BODY:

Name : P.de Heus en Zonen Greup BV
Address : P.O. box 1529 – 3260BA Oud Beijerland, Holland

PERSON RESPONSIBLE FOR MAKING THIS DECLARATION:

Name: **B. de Heus** Title: **Quality and Production Manager**

Mijnsheerenland (NL)

Done at (place)

On (date)

Signature and stamp

1. GENERAL WARRANTY CONDITIONS

This document presents the warranty conditions offered to any customer for all the pieces of equipments manufactured in the Eurotrac Construction Equipment facilities and sold to him through the authorized Sales and Service network.

The general warranty conditions hereunder described do govern the relationship between final customer of a Eurotrac Construction Equipment product, hereunder called “the buyer” and Eurotrac Construction Equipment factory, called “the manufacturer”.

The fact that the buyer places an order of a Eurotrac Construction Equipment product means that he has read the present policy and does accept its provision. Any other general or particular provision, that differs from or contradicts one of the general or particular conditions described hereafter which may appear in any document from the buyer and especially in its general purchasing conditions, cannot be used against the manufacturer unless accepted by Eurotrac Construction Equipment in a written agreement.

ARTICLE 1

Eurotrac Construction Equipment warrants that each new item of equipment is of good workmanship and is free from mechanical defects provided that:

1. The product is installed and operated in accordance with printed Eurotrac Construction Equipment's instructions;
2. The product is used under normal operating conditions, for which it is designed;
3. The product is not subject to misuse, negligence or accident;
4. The product receives proper care, lubrication, protection and maintenance under the supervision of trained personnel;
5. The product is normally protected from exterior aggressions whatever their origin.

ARTICLE 2

This warranty expires, unless otherwise agreed by Eurotrac Construction Equipment in a special provision, 15 months after shipment by the manufacturer, or 12 months after being placed in service, or after 1000 operating hours.

ARTICLE 3

The Eurotrac Construction Equipment warranty is strictly limited to the replacement of defective parts and if the repair does justify it, to the assistance of a technician. Parts shipping expenses, traveling and housing expenses of personnel are to be paid by customer.

ARTICLE 4

The Eurotrac Construction Equipment warranty does not apply to fluids, oils, fuses, bulbs, accumulators, paint, seals, tires, bumpers, pads and other consumables or normally wearing type items unless found to be defective prior to use.

ARTICLE 5

All warranty claims from the Buyer must be sent by written to Seller who will be in charge of dealing with the Manufacturer to address the problem in a timely manner.

ARTICLE 6

All the expenses related to a warranty claim will be invoiced to the buyer until Eurotrac Construction Equipment employees have evaluated the claim. Whatever the circumstances, the buyer should not refuse or delay the payment. If the evaluation concludes to Eurotrac Construction Equipment's full responsibility, a credit memo will be issued in favor of the buyer.

The reseller (the location where the loader was bought), cannot accept a warranty claim of the defective parts by the buyer, unless the buyer has issued a formal letter **AND** returned the parts.

ARTICLE 7

This warranty is extended by Eurotrac Construction Equipment only to the buyer of new products from Eurotrac Construction Equipment or of its authorized distributors. The products purchased under this warranty are intended for use exclusively by the buyer and his employees and by no other person. Therefore, there shall be no third party beneficiary of this warranty.

ARTICLE 8

This warranty applies only to the original problem. In other words, if the product is used after the original problem has been detected, the consequences thereof are not covered by this warranty.

ARTICLE 9

Under no circumstances whatever shall Eurotrac Construction Equipment and the seller be liable for any special or consequential damages, whether based on lost goodwill, lost resale profits, work stoppage, impairment of other goods or otherwise, and whether arising out of breach of any express or implied warranty, breach of contract, negligence or otherwise, except only in the case of personal injury as may be required by applicable law.

ARTICLE 10

The warranty is automatically void in the following cases:

1. The product has received some modification, not advised by Eurotrac Construction Equipment or not done following Eurotrac Construction Equipment requirements.
2. Some original parts have been replaced by parts not provided by Eurotrac Construction Equipment.

ARTICLE 11

This warranty and all undertaking of Eurotrac Construction Equipment shall be governed by the laws of manufacturer's country and discussed in front of nearest court from the manufacturer's facility even in case of multiple of defenders.

2. GENERAL

This instruction manual is intended for all users of the machine: the company manager, the department head, the driver, as well as the whole personnel that works with or near to the equipment.

GENERAL WARNING

1. Before using the machine, go through this manual and comply with all its instructions.
2. Also carefully read the instructions that appear on the plates fixed onto the machine and keep them readable.
3. Keep this instruction manual at the disposal of all operators.
4. Make sure that any person to whom you entrust the machine is qualified to fulfill the safety requirements linked to its use.
5. Avoid unattended access to your equipment when not in use.
6. Never use a machine that does not look to be in good condition.
7. Never apply a load or a stress exceeding the maximum operating load of the machine.
8. Never use the machine for an operation it is not designed to perform.
9. Become thoroughly familiar with the safety regulations applicable to the machine and enforce them scrupulously.
10. The manufacturer declines his responsibility for the consequences of a disassembly of the machine or any modification made without his supervision.

OBLIGATION TO GO THROUGH THE USER'S MANUAL

1. The company manager is compelled to make the operators fully acquainted with the regulations of the instruction manual.
2. Read this entire chapter **BEFORE** attempting to operate this loader.
3. The company manager is responsible for the enforcement of the applicable "user's regulation".
4. The user must imperatively read and assimilate this instruction manual in order to be able to comply with it during start-up and use.
5. The instruction manual must be kept during the life span of the machine, including in the event of a resale, or a change of user or manager.
6. The instruction manual is not a training manual but it specifies, when required, if a training is necessary.

GENERAL INSTRUCTION

1. The company manager must make sure that the machine is delivered with the instruction manual and the certificate of conformity for the member states of the European Community. The location of the instruction manual is specified on the dispatch note when leaving the factory. The certificate of conformity is placed with the dispatch note.
2. Only trained and qualified operators with appropriate driving license and accredited by the company manager may operate the vehicle within the scope of the use for which it has been designed.
3. The loader may only be used in accordance with the conditions established by the manufacturer in this instruction manual. In case of any other use, the manufacturer declines any responsibility.
4. Any use that does not comply with the regulations of this instruction manual might cause risks of injury to people, property and the environment.
5. The manufacturer's responsibility is limited to the assembly configuration of the equipment as described in the certificate of conformity. Before each use, the driver should check that the machine is in good condition.
6. The certificate of conformity is placed with the dispatch note.

MACHINE NORMAL USING DOMAIN

W11 - W12S -W12F - W13F - T13F

The allowed maximal load and the general using conditions are included in this documentation. Prohibit the use of loaders to load anything other than the scope. The allowed ambient temperature range of this charger is - 30°C - 45°C.

MODIFICATION OF THE LOADER

1. The manufacturer is not responsible in case of any modification, addition or combination with equipment from another origin.
2. The manufacturer declines any responsibility for consequences resulting from changes in the characteristics or modifications made without his written consent, and concerning either the mechanical, electrical, hydraulic part or the mechanically welded structure.
3. If the client wants a modification to be made, he must imperatively consult the manufacturer.
4. For your safety and in order to benefit from the total guarantee of the manufacturer, you must only use guaranteed genuine spare parts.

SAFETY INFORMATION

Safety is more than quality design and construction. It also requires proper operation and maintenance practices. Every component is specifically designed and carefully built by Eurotrac Construction Equipment to produce the safest equipment available. Your responsibility is operating safely. Good understanding of the instructions mentioned below will enable operators to use the loader safely.

This manual provides important information to familiarize you with safe operating and maintenance procedures for your Eurotrac Construction Equipment loader. Even though you may be familiar with similar equipment, you must read and understand this manual before operating this loader. Safety is everyone's business and must be one of your primary concerns. Knowing the guidelines covered in this manual will help provide for your safety, for the safety of those around you, and for the machine's proper operation.

Before you operate, maintain or in any other way use this loader, **READ** and **STUDY** this manual, **KNOW** how to safely use the loader's controls and what you must do for safe maintenance. If you have any question about the safe use or maintenance of this tractor ask your supervisor -never guess - always check.

3. INFORMATION AND OPERATION

3.1 Standard configuration

The following features are standard equipment on the Loader series:

1.	Diesel engine	10.	Eight linkage lifting system
2.	Hydrostatic traveling drive system	11.	Anti-skid floor
3.	Power steering	12.	Combined head lights
4.	Recessed multi-function rear lights	13.	Roll cage with shade cover
5.	Mechanically operated parking brake	14.	Turn signals with hazard warning
6.	Lighted transmission shift control	15.	Working lights
7.	Multi-function hydraulic control joystick	16.	Combination meter
8.	Fast change and lock attachment system	17.	Adjustable steering wheel
9.	Adjustable absorbing seat with belt	18.	Double-ball hinge system

3.2 Operator responsibilities

This chapter must be read and thoroughly understood prior to operating or performing any maintenance on this equipment.



WARNING

Failure to comply with the following safety precautions can result in serious injury or death as well as equipment damage.

1. Always follow the global safety rules applicable in your field.
2. Before using this loader, always check for proper operation and condition of the lights, brakes, steering, transmission shifter, park brake and tires.
3. Do not operate a loader with defective features; refer to the maintenance section of the Operation and Service Manual.
4. Always wear suitable footwear when operating this equipment and avoid loose fitting clothing that might get caught in moving parts.
5. Before starting this loader, you should wear seat belts and confirm the lock has been fastened.
6. Always bring the unit to a complete stop, place the transmission in neutral, and set the park brake before leaving the unit.
7. Always bring the unit to a complete stop before shifting from forward to reverse or from reverse to forward.
8. Always check that the path is clear before reversing.
9. When loading, the speed should be reduced to 5 km/h.
10. Lift the bucket up to the transport position (about 20 cm from the ground).
11. In crowded areas and around blind corners and a line of cars, be more careful. Be vigilant of other equipment and personnel.
12. Do not operate when the speed does not meet the operational conditions. Always limit a good speed in order to ensure sufficient time for emergency braking.
13. Do not allow using loaders to transport hazardous materials.

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14. Do not transport people on this loader.
 15. Do not drive the loader on soft surfaces if you do not know the road conditions exactly.
 16. Before operating this loader, the roll cage must be raised, and the pin should be in the locking position.
 17. Apart from pulling with the outer hook, no other pulling is permitted for loaders.
 18. Do not remove the radiator cap when the engine is hot, otherwise, it can cause severe burns. Allow to remove the radiator cap after cooling.
 19. Do not attempt to touch the exhaust pipe and muffler when the engine is running or has just been switched off, as this may result in severe burns.
 20. After opening the engine back cover, do not try to start the engine. If you must start, beware of the fan.
 21. Never refuel the unit while the engine is running.
 22. When injecting the fuel, it can stop when the refueling gun automatic is cut off. Don't inject too much. When refueling, do not smoke, do not store or use the fuel at a fire place.
 23. Do not check the engine oil while the engine is running.
 24. Do not use the battery in this unit to start other vehicles.
 25. The maximum ear noise measured value of this loader is 88dB. For your good health, wear personal protective equipment (such as earplugs) when controlling the machine, to reduce damage from machine noise.
 26. Always exercise good common sense, stay alert and be aware of what is happening around the loader all times.
 27. When a vehicle rolls or rolls-over, the loader roll cage can protect driver's safety completely, do not jump. At this point your hands should get hold of the steering wheel; feet clamp the mounting bracket under the orientation column. The damaged roll cage can't be reused after repair, unless you get the written authorization or approval from Eurotrac Construction Equipment.
 28. The rated capacity stated in this manual is based on the machine standing on solid level ground. When operating on non-standard ground (such as soft, uneven ground or on slopes), you should consider the impact on the load capacity.

3.3 Mechanical responsibilities

This chapter must be read and thoroughly understood prior to performing any maintenance on this equipment.



WARNING

Failure to comply with the following safety precautions can result in serious injury or death as well as equipment damage.

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1. Always follow the Station Safety Rules. If a written list of safety rules is not posted at the station, obtain one prior to operating this loader.
 2. Always review the Operator Responsibilities Section prior to operating this equipment.
 3. Always keep hands and feet away from rotating parts and tires. Wear secure clothing.
 4. Always wear suitable footwear when operating or servicing this equipment. Avoid wearing loose-fitting clothing that might get caught in moving parts.
 5. Always stop the engine when adjusting fan and alternator belts.
 6. Always keep hands clear of the cooling fan.
 7. Do not remove the radiator cap when the engine is hot, as serious burns may result. Allow the radiator to cool before removing the cap.
 8. Do not run the engine long time in a closed room.
 9. Do not start the engine in an environment where there is a high risk of explosion.
 10. Do not check the engine oil while the engine is running.
 11. Always disconnect the positive battery cable when working on the engine or under the hood.

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12. If electrolyte is spilled, always wash your hands or clothing immediately.
 13. Do not touch the engine, exhaust or hydraulic components when they are hot as serious burns may result.
 14. Do not smoke near the battery. Fumes from charging electrolyte are explosive. Always keep the battery away from sparks, flame and smoking materials.
 15. Always remove metal bracelets, watch bands, etc. prior to installing, removing or servicing the battery.
 16. Do not short circuit the battery terminals.
 17. When connecting the battery, the positive terminal must always be connected first to prevent sparks from accidental grounding.
 18. Do not replace the throttle return springs with lighter or other springs.
 19. Check all lights.
 20. Check the horn operation.
 21. Check that the neutral start switch is set and working correctly.
 22. Check tire and wheel condition along with proper inflation pressures. Unless beads are seated when mounting tires, over-inflation can result in explosion.
 23. Torque all lug nuts to 130 ft-lbs. Check the torque again after 5 hours of operation.
 24. Always safely use proper lifting equipment when removing or replacing heavy components.
 25. When working underneath the loader, make sure it is supported properly on secure jack stands. Do not rely on hydraulic jacks to support the loader.
 26. If the loader is on a hydraulic or air operated lift, always make sure the safety support or lock is in position prior to working under the loader.
 27. Always use a proper transmission jack, and secure the transmission when removing or replacing it.
 28. Always jack the drive wheels off the floor when troubleshooting the drive system.
 29. Never refuel the unit when the engine is running.
 30. Do not smoke while refueling.
 31. Do not store, spill or use fuel near an open flame.
 32. Do not use the battery in this unit to start other vehicles.
 33. Do not attempt to install or adjust control cables with the engine running.
 34. Always replace a control cable which exhibits any gradual or sudden increase in no-load friction or resistance or decrease in usable stroke, or which have moisture inside or have been frozen.
 35. Do not use heat to attempt to dry or thaw a control cable.
 36. Do not remove the seals from a control cable or attempt to lubricate it. Any control cable which exhibits possible lubrication problems should be replaced.
 37. Do not attempt to repair or modify a control cable. Any damaged control cable should be replaced immediately.
 38. Always avoid exposing control cables to fuels, oils, chemicals, paint, water or dirt as damage may result.
 39. Always adjust each control cable so that the utilized stroke of the cable is centered within the cable's available stroke.
 40. Always deflate a tire and wheel assembly prior to removing it for servicing or dismounting.
 41. Do not use wheels or wheel components that are cracked, bent pitted or corroded. Make sure that all wheel components are of the same type and size, and that wheel size and tire size match. Inspect all components carefully prior to use.
 42. Do not attempt to install a tire by using explosive substance.
 43. Do not hammer, pry or weld on or near an inflated or partially inflated wheel and tire assembly.
 44. Do not rework, weld, heat or braze any wheel parts for any reason.
 45. Always use a safety cage and a clip-on air chuck with a remote valve and pressure gauge when inflating a tire. Make sure the tire and wheel assembly is properly assembled prior to inflating it. Visually inspect it for proper seating of beads or sides or lock rings prior to removing it from the cage.
 46. Do not add air to a tire that has been in service with less than 80% pressure without first fully deflating, removing, disassembling and inspecting the tire assembly for damage.
 47. The overhead guard is the main part to prevent objects falling and protect the safety of operator. If the assembly is loose, remove and reinstall.

4. GENERAL INFORMATION & OPERATING INSTRUCTIONS

4.1 Main components

The loader is a four-wheel drive mini-loader. It contains:

- 3 or 4-cylinder diesel engine
- Hydrostatic travel drive system
- Multi-function operating handle
- 12 Volt electrical system

4.1.1 Engine and pump

The loader is powered with industrial engines, with four stroke cycle and direct injection. The engines are certified by the manufacturer to meet the more advanced emissions standards.

W11/W12S,W13F Series loader has an automatically variable piston pump.

4.1.2 Motor and drive axle

The front and rear drive axles for the W11 are powered by two hydraulic motor cycloids, and the drive axle contains differential, reduction gears and axles.

The back drive axle for the W12S/W13F is supplying power to the front drive axle through piston motor driving to transmission axle.

The front and rear axle of the W13F wheel loader have the function of hub reduction, which can ensure good power transmission. It also has differential lock, which allows machines to operate properly in poor working conditions.

4.1.3 Braking system

Hydrostatic drive can serve as a driving brake, and be installed on the input of the drive axle as a parking brake.

4.1.4 Wheels and tires

Four bolts are used to fix the tires on the drive wheel. The loader tires are of the pneumatic type which ensures a smooth ride combined with maximum drawbar pull. Remember to check the pressure of your pneumatic tires regularly. Uneven tire pressure will not only increase tire wear, but will also decrease tractive performance.

Machine	Tire size	Rated pressure
W11	26x12-12AS	300 kpa
W12S	31x15.5-15AS	420 kpa
W12F/W13F/T13F	19.0/45-17	280 kpa

4.1.5 Fuel cell

The fuel cell is integrated in the front frame, and it is equipped with a filler cap and a fuel gauge.

4.1.6 Electrical system

The tractor uses a 12 Volt, automotive type, negative ground, electrical system. The system includes a 60/72 Ah battery, ignition switch, two headlights, amber flashing light, turn signals, taillight, horn, various gauges and other circuits.

4.1.7 Quick removal device

The demolition equipment from the accessories is controlled by a multi-port valve for quick assembly and disassembly.

4.1.8 Seat

Seats of the loader with seat belts can be adjusted forward and backward. The seat class is EM8. As an option the loader can be fitted with a comfortable suspended seat.

Driver's seat

The standard driver's seat can be adjusted to the driver's height and weight.



WARNING

Only adjust the driver's seat when the loader is at a standstill. The engine must be switched off.

Armrests

The armrests can be folded up as required and individually adjusted in height. To adjust the armrests for height, separate the round cap (see arrow) from the cover, loosen the hexagon nut (size 13 mm) behind it. Adjust the armrests to the desired position (5-steps) and tighten the nut again (25 Nm). Replace the cap onto the nut.



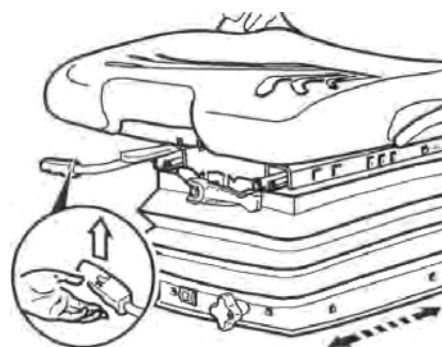
WARNING

When the belt roller is fitted, do not install the armrest in the lowest position, otherwise the belt roller might not function correctly.

Carry out a functional test of the belt roller.

Backrest extension

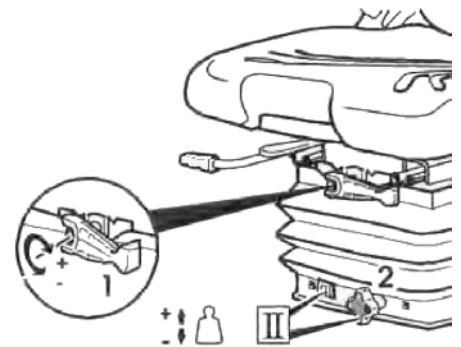
The backrest extension can be individually adjusted for height by pulling it upwards over the various increments up to the end stop. To remove the backrest extension, pull it over the end stop.



STANDARD SEAT (W13F)

Weight setting

The seat should be adjusted for the driver's weight by turning the weight adjustment lever (1) with the driver sitting on the seat. The driver's weight is adjusted correctly when the adjusted height position of the height adjustment handle (at the bottom of the handle) (2) is displayed in the viewing window. The middle position of the spring travel of the respective height adjustment is displayed. To prevent damage to health and material, the setting for the driver's weight must be checked and adjusted individually before the vehicle is driven.



Height adjustment

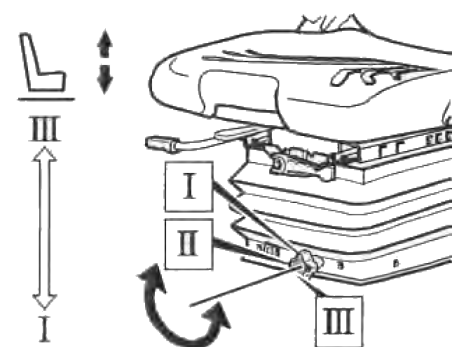
The height adjustment can be set to three settings (I, II, III). The respective height must be set with the driver sitting on the seat. Turn the handle for seat height adjustment to move the seat upwards or downwards. The seat position displayed at the bottom of the handle for seat height adjustment has been set.

I = lowest height position

II = middle height position

III = upper height position

Check and set the weight after every height adjustment.



Seat adjustment forward/backward

Seat adjustment to the front/rear is enabled by lifting the locking lever.



WARNING

Risk of accident!

- Do not operate the locking lever while driving.
- After the adjustment, the locking lever must latch into the desired position with an audible click. It should not be possible to move the driver seat into another position when it is locked.
- Do not lift the locking lever with your leg or calf.

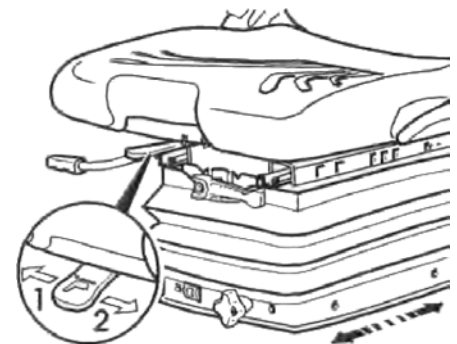
Fore/aft isolator

The fore/aft isolator improves the absorption of shock impacts (e.g. when driving at high speed, in rough terrain or with a trailer attached) in the driving direction by the driver's seat.

The cushioning effect can be activated or deactivated with the help of the locking lever.

1 = fore/aft isolator OFF

2 = fore/aft isolator ON



The driver's seat is fitted with a safety belt (lap belt).



WARNING

- Always wear safety belts during work.
 - Do not carry persons.
-

4.1.9 Multi-functional control handle

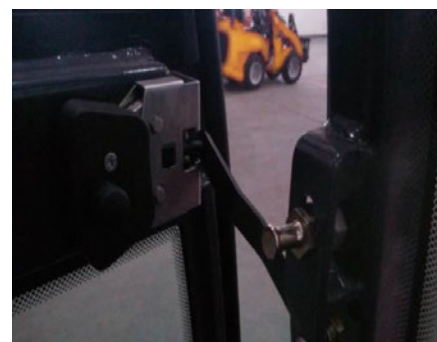
The control handle is on the right of the driver's position. As a standard, the switches on the device can control the gears on the loader. There are three gears: forward, neutral, back and reset button. The handle can even operate a two-way multi-channel valve, so lifting and tilting movements can be separated or merged.

For T13F model, front, rear, left, right (from driver's direction) control handle operation correspond to lower, lift, upper tilt and dump. It is same as other models. There are two buttons on the back of control handle. The upper or lower key corresponds to the extension and retraction of the telescopic arm.

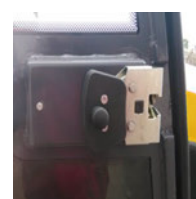
4.1.10 Cab

Cab door

The cab doors are to be kept locked during use. If required, the door can be opened a crack. To do this, the lever shown in the illustration must be folded out and locked in the door lock. On opening, the cab doors automatically lock into the door lock. Release this lock to close the door.



Press the button



Pull the lock



CAUTION

- Lock the cab door after finishing work as well as on leaving the loader for longer periods, in order to prevent unauthorized use of the machine.
 - Always lock the doors in all positions. Open doors represent a danger as they swing open or closed.
-

Rear window

Swing both handles around at the same time, to open the rear window.



**Push both handles at the same time,
to open the rear window**



**Pull both handles at the same time,
to close the rear window**

Heater

The cab is equipped with an infinitely variable heater. The adjustment lever can be found on the right of the driver's seat. The switch for the ventilation fan must be switched on.



To heat, the right switch must be set at least to "1".

Switch "a": Fan levels

Switch "b": Airflow



Interior light (W13F)



On



Off

Storage bins

A storage net is found on the behind of the driver's seat for the operating instructions.

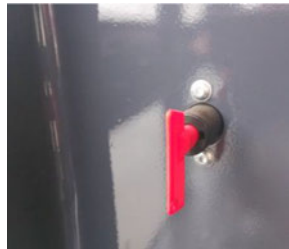


WARNING

Always keep these operating instructions in this place to have them immediately available when if needed.

Battery isolating switch

This switch is used to disconnect the entire electrical system from the battery. If the machine is switched off for a longer period of time, e.g. over night, the connection to the battery should be interrupted using the battery isolating switch. In this ways the unintentionally discharging of the battery can be prevented. Push the lever down and turn to switch on.



Switched on



Switched off

The lever can be removed when switched off. This provides additional protection against theft. When the lever is removed the switch must be covered by the protective cap. This prevents moisture from penetrating into the switch.

Warning buzzer

A warning buzzer is located on the rear of the steering column. It sounds when the engine is overheated. The engine must then be shut off immediately. If the engine is not shut off immediately, this may damage the engine or other parts of the machine.

Emergency exit

You should only climb onto and off the vehicle on the left-hand side of the vehicle, otherwise there is a risk of unintentional operation of the swing arm. The right-hand side of the vehicle is only intended to be used as an emergency exit.



To open the door, pull the small lever on the underside of the lock towards you. This unlocks the lock.



The emergency exit is marked by the stickers fixed alongside it.

Adjusting the steering column

The steering column can be adjusted in a longitudinal direction. To do this, loosen the lever at the left. The steering column can now be tilted in a longitudinal direction. Lock the steering column in the correct position with the lever.



WARNING

Only adjust the steering column when the loader is at a standstill.

Parking brake lever

The parking brake lever is connected by a rod to the park brake drum mounted on the drive axle. (W11 is with foot parking brake pedal, mounted lower left under the dashboard.)

The park brake is used for parking or holding the loader on grades and should always be set for parking and released before driving. (If with foot parking brake pedal, press down by foot.) The brakes are engaged as the lever is pulled toward the operator. Push the lever away from the operator (down) to release the brake. (If with foot parking brake pedal, brake by pressing down by foot and press the pedal one more time to release the brake.)

On wheel loaders with two six-way valves, the changeover button on the joystick can also cause an electromagnetic change in the oil in the attachment. Parking brake of W11 is installed to the left of the driver. This can be realized while pressing the brake pedal by foot after stopping.

The mechanical auxiliary and parking brake is located on the power divider of the front axle. The brake is on the front axle of loaders with an optional driving speed of up to 25 km/h and the models W12S/W13F. This brake is designed as a multiple disk brake. The brakes are actuated hydraulically during travel.

When the inch pedal is pressed, the brake piston is engaged via the brake cylinder. As a parking brake (hand brake) the brake is operated mechanically via a pull cable. The parking brake can be adjusted with the cable. The driving pump does not operate when the parking brake is applied. The loader cannot be moved.



The parking brake is released in position "A"



Move to position "B" to apply the brake



WARNING

When using the parking brake as an auxiliary brake in an emergency, the lever must be pulled up very carefully so that the brake cable does not tear.

4.1.11 Pedals

The accelerator pedal on the right of the driver is connected to the engine via a cable, which can control the engine speed, so as to control the speed of the loader.

The foot brake pedal on the left of the driver is connected to the pump, which can control the oil supply, so as to control the speed of the loader.

The throttle pedal is used to move the loader. The axial piston pump is swung out according to the diesel engine speed and the driving speed thus automatically adjusted to the loader's load (automotive drive). The more the throttle is opened, the faster the loader goes.

The automatic system is deactivated when the inch pedal is pressed. The further the pedal is pressed, the further back the axial piston pump is swiveled. Thus, the force can be diverted from the traveling gear to the working hydraulics at high diesel engine speeds or the loader can brake.

When the pedal is fully depressed, the axial piston pump is swiveled back to 0 and the multiple disk brake actuated. The loader is braked and comes to a stop.



WARNING

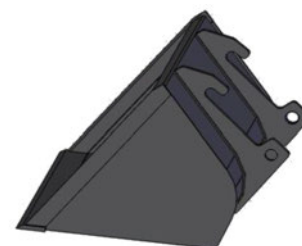
Never brake sharply with a raised load or in corners. The loader could topple over.

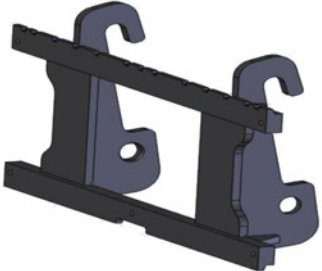
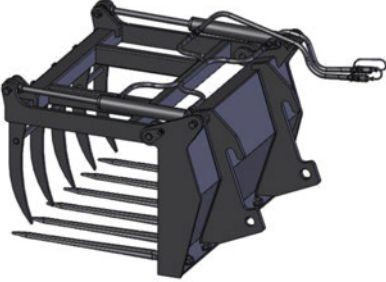


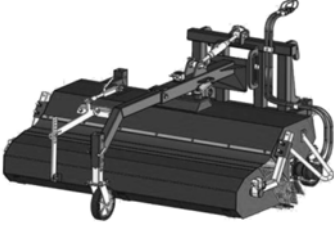

4.1.12 Attachments



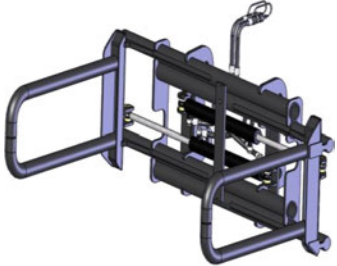
We offer different kinds of attachments with different functions:

Bucket

It can be used for spading, unloading bulk materials and working in short distance. We offer different sizes of buckets to load and unload materials of different density more efficiently.



<p>Forks It can be used for spading, unloading large-block materials and working in short distance.</p>	
<p>Grass grab It can be used for loading and unloading grass or hay.</p>	
<p>Snow shovel It can be used to clean the snow on the road and ground when it snows in winter.</p>	
<p>Soil auger It can be used for drilling holes in the ground.</p>	
<p>Sweeper It can be used for sweeping and cleaning the ground.</p>	
<p>Bale gripper It can be used for gripping and transporting goods.</p>	

<p>Two-in-one bucket It can be used for spading and transporting goods and also for sorting out different diameter materials.</p>	
<p>Bale forks It can be used for clamping and transporting bales more efficiently.</p>	
<p>Bale clamp It can be used for clamping and transporting low density packages more efficiently.</p>	

4.1.13 Instrument panel

The layout of the controls is designed to combine maximum driving comfort with maximum efficiency.



NOTE

It is essential for safe operation that the operator becomes accustomed to both the location and operation of the controls before attempting to operate the loader.

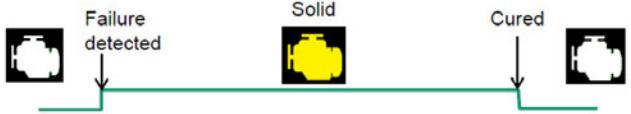

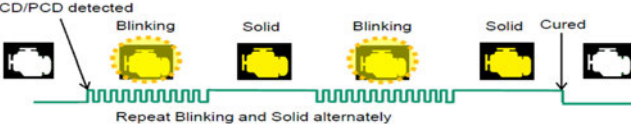


NOTE

The root mean square value of machine vibration acceleration to the arm is lower than 2.5m/s².
The root mean square value of machine vibration acceleration to the body is lower than 0.5m/s².

Switches	
Ignition switch	Waterproof loader ignition switch, including the anti-re-start function
Horn control switch	On the rear dashboard
Working lamp switch	On the rear dashboard
Warning lamp switch	On the rear dashboard (W11/W12S) Installed in the right instrument panel of cabin seat (W13F/T13F)
Quick hitch switch (W13F)	On the rear dashboard
Regeneration inhibit switch (W13F/T13F)	On the rear dashboard
Regeneration switch (W13F/T13F)	On the rear dashboard
Turn light switch	Installed in the left of the instrument panel
Automatic light switch	Installed in the left of the instrument panel
Clearance light switch	Installed in the left of the instrument panel
Front wiper switch	Installed in the right of the instrument panel
Front washer switch	Installed in the right of the instrument panel
Diff lock switch (W13F/T13F)	Installed in the right of the instrument panel

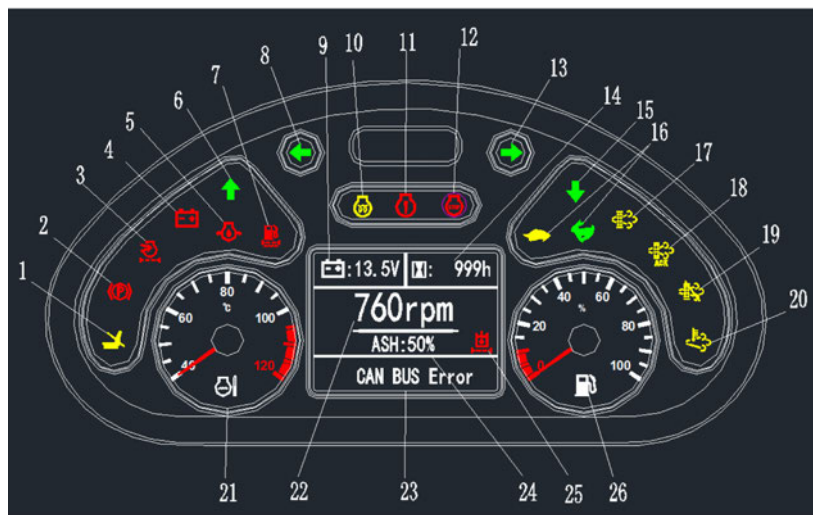
Lights	
Preheat indicator light	Instructs when the engine is warm
Parking brake lamp	Shows if the parking brake is working
Low battery capacity light	Shows when the battery level is low
Turn signals / warning lights	Show when the turn signals/warning lights are light
Low oil pressure light	Shows when the oil pressure is low
High-temperature light	Shows when the coolant temperature is above 115°C
Diff lock light	Shows when the diff lock switch is pressed
Hydraulic oil blocking light (W13F/T13F)	Shows when the hydraulic oil is blocking (W13F/T13F)
Parked regeneration light	Shows when the parked regeneration switch is on
Regeneration inhibit light	Shows when the regeneration inhibit switch is off
Can communication	Shows if the communication between the instrument and the engine is normal

Lights	
High exhaust temperature	Reads the status of the engine. If the engine's exhaust temperature is too high, the light will be on.
Parked regeneration light	Shows when the parked regeneration operation is running
Regeneration confirmation light (ACK) (W13F/T13F Yanmar engine)	Shows when the regeneration is prepared, the light will blink
PCD/NCD indicator light (Engine warning light) (W13F/T13F Kubota engine)	<p>Detects the NOx /Particulate Control Malfunction. If the NOx/Particulate Control System fails, the engine warning light will be blinking and solid alternately.</p> <p>Lighting pattern of hardware lamp connected Kubota engine ECU</p> <ul style="list-style-type: none"> Failure detection without NCD and/or PCD  <ul style="list-style-type: none"> PCD detection without other failures  <ul style="list-style-type: none"> NCD detection with or without failures PCD detection with other failures 

Indicators	
Fuel level indicator	Reads the status of the remaining fuel
Engine timer	Reads the cumulative time when the vehicle is running
Engine coolant temperature indicator	Measures the temperature of the engine cooling system
Ash indicator light	Reads the status of the engine. If the percentage reaches 100%, it will remind you to regenerate the engine.
Hour meter	Measures engine operating time
Speed display	Displays speed per minute
Volt meter	Shows the voltage of the battery

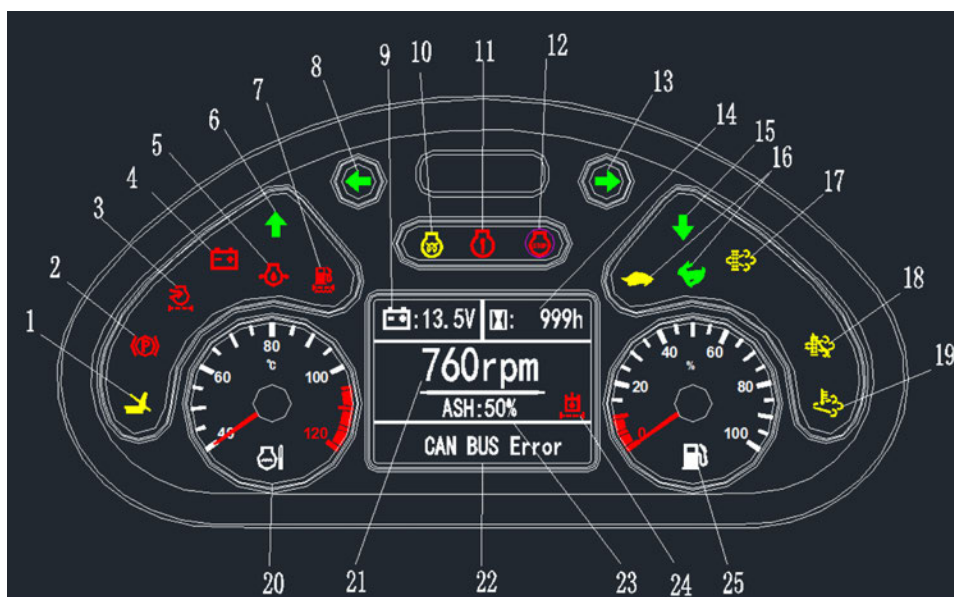


1.	Turning left	6.	Seat switch indication light	11.	Hydraulic oil
2.	Low-oil pressure light	7.	High & low speed indication	12.	Turning right
3.	Parking brake lamp	8.	Diff lock light (W13F/T13F)	13.	Fuel meter
4.	Forward indication light	9.	Backward indication light	14.	Hour meter
5.	Battery charging, voltmeter	10.	Preheat indicator light	15.	Temperature meter



Yanmar engine

1.	Seat switch indication light	10.	Preheating indication	19.	DPF deactivates regeneration trigger
2.	Parking brake lamp	11.	Engine failure indication	20.	DPF high exhaust temperature
3.	Air filter indication light	12.	Stop alarm indication	21.	Temperature meter
4.	Charging indication	13.	Turning right	22.	Rotating speed per minute
5.	Low-oil pressure light	14.	Hourmeter	23.	CAN communication (fault code display)
6.	Forward indication light	15.	Backward indication light	24.	Ash percentage
7.	Oil-water separation	16.	High & low speed indication	25.	Hydraulic filter clogged
8.	Turning left	17.	DPF regeneration request indication	26.	Fuel meter
9.	Voltmeter	18.	DPF regeneration confirmation lamp		



Kubota engine

1.	Seat switch indication light	10.	Preheating indication	19.	DPF high exhaust temperature
2.	Parking brake lamp	11.	Engine failure indication	20.	Temperature meter
3.	Air filter indication light	12.	Stop alarm indication	21.	Rotating speed per minute
4.	Charging indication	13.	Turning right	22.	CAN communication (fault code display)
5.	Low-oil pressure light	14.	Hourmeter	23.	Ash percentage
6.	Forward indication light	15.	Backward indication light	24.	Hydraulic filter clogged
7.	Oil-water separation signal	16.	High & low speed indication	25.	Fuel meter
8.	Turning left	17.	DPF regeneration status indication		
9.	Voltmeter	18.	DPF disables regeneration trigger		

Turn light switch
Automatic light switch
Clearance light switch

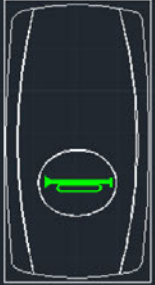


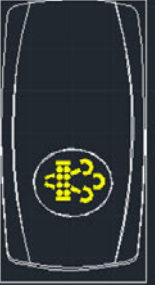




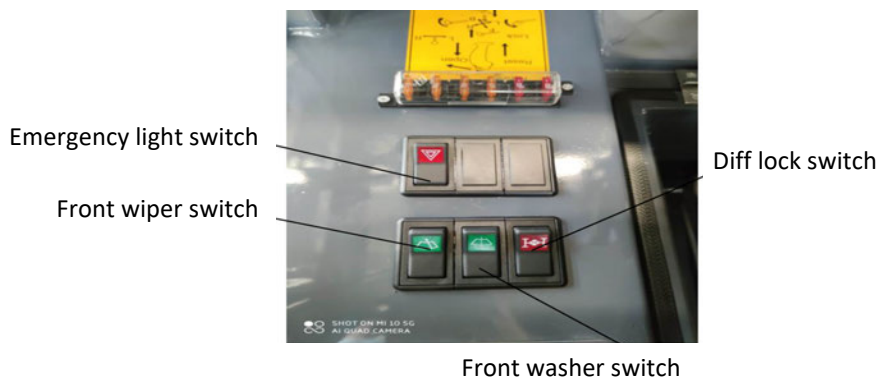
Horn switch
Warning light switch



Working light switch

Emergency light switch

						
Horn switch	Warning light switch	Working light switch	Parked regeneration light switch	Regeneration inhibit light switch		Quick hitch switch



4.2 Operating procedure



NOTE

- Read this entire chapter BEFORE attempting to operate this loader.
- No unauthorized person may drive this loader.
- Be familiar with the controls and their functions before you start the loader.
- Inspect your machine by doing a pre-operational inspection.
- Observe the limits on weight of the loads to be towed and unloaded weight of the loader.
- Maintain the loader in accordance with the instructions of the manufacturer.
- Have any broken or missing parts, correct or replace before use.
- Verify that all maintenance has been performed.
- Verify that all the instruction and safety labels are in a place and readable.

These are as important as any other equipment on the loader.

Before putting the loader into service, the following items must be checked and executed:

BEFORE DRIVING

- Before working, check the condition of the battery and the wheel fastening and make sure that the tire pressure is correct. Make sure that all driving parts are in good working condition and fill all the fluid levels if necessary. Immediately report any defects and do not use a defective trailer until it has been repaired. Check the brakes of the trailer.
- Set parking brake.
- Walk around and inspect the loader for damage or missing equipment. Check:
 - Pressure and the good state of the pneumatic tires
 - Cuts, cracks in side walls, foreign objects in treads
 - Loose wheel nuts
 - Damage to lights
 - Fire extinguishers fully loaded and in place (if any)
- Look underneath the loader for leaks of coolant, hydraulic fluid, transmission fluid, or lubricating oil. If leaks are detected, repair as soon as possible.
- Check engine oil level.
- Check engine coolant level. Add coolant as necessary, but do not overfill. Make a visual check for leaks.
- Check hydraulic system reservoir by removing filler cap to ensure there is enough fluid for operation. A very low fluid level indicates a serious leak in the system. Repair as soon as possible.
- Inspect engine compartment for loose hardware, loose wires, and leaking lines or fittings.
- When all mechanical checks are completed, check the operation of the stop and tail lights, and dash panel lights
- Check fuel level gauge to make sure tank is full.
- Make sure the roll cage arise and fasten.
- Check that the driving seat whether damaged (change the seat if damaged), adjusted to your requirements.
- Check that all controls are working properly.



WARNING

Do not loosen or remove the radiator cap while the coolant is hot. Hot coolant under pressure can cause severe burns.



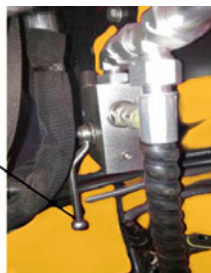
NOTE

Fuel contamination due to moisture condensing on the inner surfaces of fuel tank can be minimized or eliminated by keeping the fuel tank as full as possible. The fuel tank must always be filled up at the end of the working day (as part of the post-operation maintenance routine).

DRIVING INSTRUCTION

- Place shift lever in park.
- Adjust the driver seat and steering wheel to the comfortable location, fasten the seat belt.
- Make sure parking brake is set.
- Verify that nobody and nothing is ahead of you **BEFORE** starting any motion of the wheel loader.
- Turn ignition switch and engage starter.
- Press the micro-pedal (left pedal).
- Release the parking brake.
- Move the shift lever to the desired position: forward or backward. Press the reset button on the handle.
- Release the micro-pedal and gently press the accelerator pedal, further depress the accelerator until the required speed is obtained. The micro-loader pedal can be controlled by way of small movements.
- To slow the wheel loader, slowly release the accelerator pedal and press the micro-pedal. For an emergency stop, release the accelerator pedal and press the micro-pedal. Release the accelerator pedal slowly or quickly, wheel loader can be braked flat or sharp.
- Each time you park, apply the hand brake, turn off the starter switch to the OFF position and return the transmission shift lever to Neutral position (the W11 is with foot parking brake).

OFF manual triple valve in a vertical downward "OFF" position



- While the dual pump is optional on the W13F, the manual triple valve handle must be in the vertical down (OFF) position before starting. Then press to start normally.
-



WARNING

The maximum duration of control for an operator should not exceed 6 hours per day.

**WARNING**

Adjust the driving speeds to the towed loads and the weather conditions. Slow down when towing heavy loads and when the road surface is wet or icy, especially on slopes.

**WARNING**

When loading the goods, the speed should be reduced to 5km/h and the bucket must be raised to the transport position (approximately 20 cm from the ground).

**WARNING**

In the course of ramping on the road (uphill), for temporary parking, drivers are not allowed to leave the driver's seat and change gear switch, right foot should press the micro-pedal gently to remove any slipping phenomenon due to technical reasons, at the same time pull up hand brake.
Downhill for temporary parking, drivers are not allowed to leave the driver's seat and switch to a reverse gear shift, right foot should press the micro-pedal gently and park slowly, at the same time pull up hand brake.

**WARNING**

Parking on the ramp is not allowed. If necessary, the car should be parked on a slope (due to breakdowns). Pull hand brakes and put wedges under the wheels of the loader.

**WARNING**

Make sure the roll cage arises and fixed before driving, otherwise it cannot protect the driver.

LOADING INSTRUCTION

- Lift devices and attachments (bucket is standard) are only used for a specified purpose.
- Ensure the wheel loader is secure and is within the rated drawbar pull of the loader (See the specification on page 50). For T13F telescopic wheel loader with strength limiter, it should be operated strictly according to requirements and hint of strength limiter.
- Ensure the rapid removal device in a locked position before filling.
- When driving with a set, the speed should be reduced to 5KM / H.
- When driving with a set, the bucket should be raised to the transformational position (about 20cm from the ground).
- When the view is obstructed, you have to work with the Wizard.

-
- When uninstalling, raise the bucket to the correct height, as carefully as possible to drive the wheel loader to the truck or storage area. Carefully control the main control lever; disassemble the bucket and reset. Confirming that the bucket and the truck (shelf) is completely separated, the loader moves slowly back to leave the shelf.
 - Ensure that the width of the loader is not wider than that of the road.
 - When reaching a parking spot, shift into neutral position, raise the parking brake and turn off the ignition switch.
-



NOTE

Safe and efficient loading depends entirely on the operator. If you are an experienced driver, the following rules will refresh your memory. If you are a student, they will help you to become a professional driver.



WARNING

Only qualified and licensed drivers are allowed to drive.



WARNING

Before starting loading, please make sure the cylinder of the quick removal device is in the locking position, set the locking tools and cut the two-way ball valve off.



WARNING

When driving on the ramp (forward or backward), goods must be towards the uphill direction. Driving or u-turn ramping on the horizontal should be avoided.



WARNING

When the goods are in a lifting state, do not leave the loader.




WARNING


When the goods are in a lifting state, the loader can not turn around and can not run at high speed.

Multi-way valve focus controlling lifting devices and accessories

In case of multi-way valve with self-lock function, the main control lever must be pulled up to relieve the lock device when working. When not working, the main control lever should be pressed down.

Locking accessories	Push the back of the small handle to the right.
Releasing accessories	<p>Push the small handle on the back of the joystick to the left and press the quick coupling switch on the dashboard (W13F).</p>  <p>Quick hitch switch</p> <p>Small handle</p>
Bucket forward	Push the master control lever to the right.
Bucket backward	Push the master control lever to the left.
Lifting bucket	Push the master control lever to the back.
Lowering bucket	Push the master control lever to the front.
Telescopic arm stretch out	Press the upper back button of joystick.
Telescopic arm retraction	Press the lower back button of joystick.

Machine optional two position six-way valve used

Bucket forward	Push the master control lever to the right.
Bucket backward	Push the master control lever to the left.
Accessory working	<p>Press accessory switch on the master control lever (silver button on the joystick), at the same time push the master control lever to the right/left.</p>  <p>Accessories switch</p> <p>Master-control lever</p>

When W13F uses two pieces gear pump

The second gear pump provides continuous unidirectional flow. Max flow is 68L/min.

On the bracket, the quick-change connection is the high-pressure outlet P on the inside left and the return connection T on the inside right.

When using this hydraulic oil circuit, correct attachment's connection should be done (hydraulic motor). After starting the engine, turn right manual three-way valve to horizontal position, motor of attachment begins to work.



CAUTION

Traveling power adjustment knob behind master joystick of cabin, to adjust traveling system's power to match work efficiency of the second gear pump. After pressing the adjustment knob, upper and lower knobs function.

Three-way valve to horizontal position (ON)



Travelling power adjustment knob

Upper and lower knobs

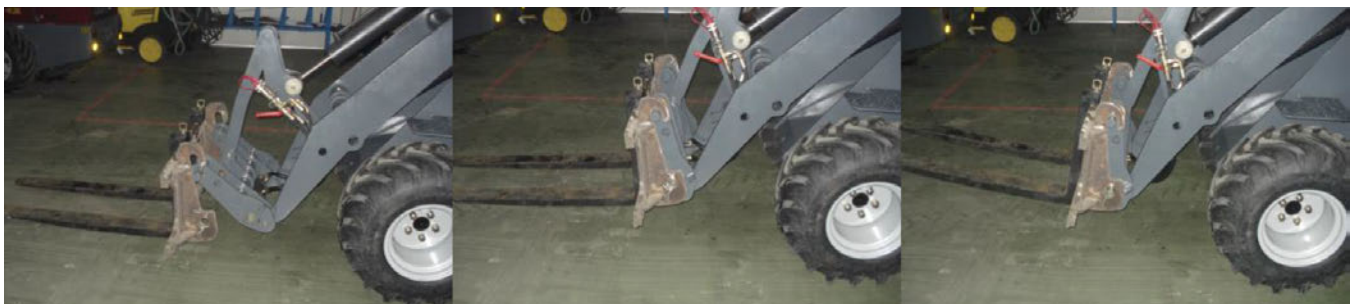


Change attachment:

1. Push the small multi-valve handle to the left side, at the same time press quick hitch switch button (W13F) on the instrument panel, retract the lock lever;
2. Lower the working device, forward to the appropriate location;
3. Hang the hook;
4. Lift and reset the implement;
5. Push the small multivalve handle to the right so that the safety lever extends and engages in the attachment opening in the attachment;
6. Turn the handle of the two triplex valves by 90 ° and disconnect the pipe system of the closing cylinder.

Remove attachment:

The step is reversing as changing attachment step.



WARNING

Lifting devices and tools are only used for a specified purpose. Drivers must comply with the correct use of the lifting devices and tools. Do not enter or reach into the space between the arm and the frame.



WARNING

Before the operation of hydraulic systems, check if the functions of the various hydraulic joysticks are correct.

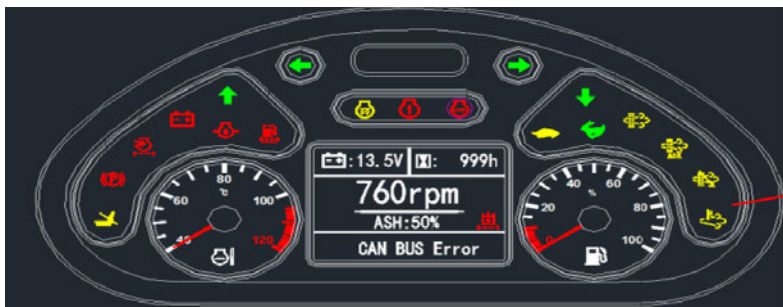


WARNING

Before disassembling the pipe of attachment, you should release the rest pressure of this pipe, then disassemble the quick change connector. The correct method of release of rest pressure is: swing the first valve handle (small handle) of the multi-valve left and right several times.

Regeneration Control

Under normal circumstances, the engine can remove particulates from the DPF through the automatic regeneration function to prevent the DPF from blocking and causing the decline in engine performance. However, the engine is often in a short-time working, no-load idling, or low-speed lowload working state. Automatic regeneration cannot fully remove particulate matter in the DPF, which will cause particulate matter to exceed the limit. In this case, the meter displays a manual regeneration request. Perform manual regeneration.



When the high exhaust temperature light is on, the regeneration is in progress (both on automatic regeneration and manual regeneration)



CAUTION

During automatic regeneration (when the DPF exhaust temperature icon is displayed), the engine is stopped, regeneration is not completed, and automatic regeneration is performed again after restarting. If the engine is repeatedly operated and stopped, automatic regeneration cannot be performed sufficiently, and manual regeneration is required.

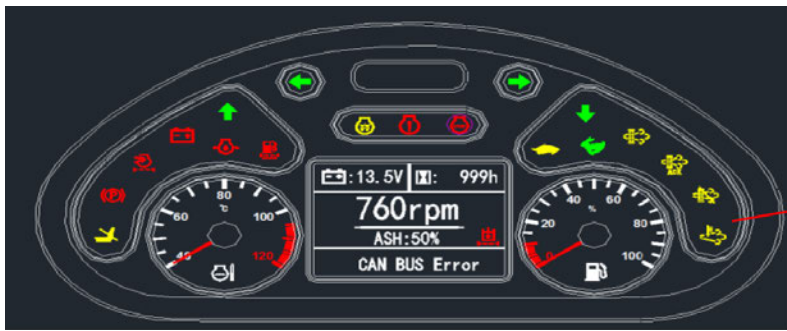
Try not to stop the engine during automatic regeneration, it is better to continue working until regeneration is completed.

Yanmar engine automatic regeneration has two forms: auxiliary regeneration and reset regeneration. Both of these are done automatically.

1. Auxiliary regeneration. During the auxiliary regeneration, the exhaust temperature is automatically adjusted for regeneration, and a certain amount of accumulated particulate matter is removed.
2. Reset regeneration.

The first regeneration time is the 50th hour of the engine operation, and about every 100 hours thereafter. When the regeneration is reset, the exhaust light will be on. At this time, do not stop the machine and continue the operation.

Regeneration mode: auxiliary regeneration + fuel combustion in DPF, high temperature regeneration. The whole process usually takes about 25-30 minutes.



Prompt for manual regeneration when manual regeneration request light is on.

When the meter displays the DPF manual regeneration request, manual regeneration should be performed immediately, usually within 15-20 minutes, and the meter display will return to the normal screen after completion.

Manual regeneration conditions:

1. The cooling water temperature rises above 60 °C or the engine starts for more than 15 minutes;
2. The engine is idling;
3. The regeneration prohibition switch is in the allowed state;
4. The vehicle is parked.



CAUTION

If the manual regeneration is not performed normally, the dpf particle concentration exceeds the limit, the engine speed and torque output will be limited. If the motor is repaired in backup mode, you must contact the service personnel for special treatment.

Implementation of manual regeneration

1. Move the vehicle to a well-ventilated and safe place.
2. The engine speed is controlled at low idle speed, leave the accelerator pedal, do not change the speed.
3. Check whether there are flammable materials around the exhaust pipe. Do not perform manual regeneration in the presence of flammable materials.
4. Wheel loader is locked to prevent movement or work.
5. Keep the regeneration inhibit switch in the enabled state, and press the DPF manual regeneration switch for more than 3 seconds.

In neutral



Hand brake is pulled up



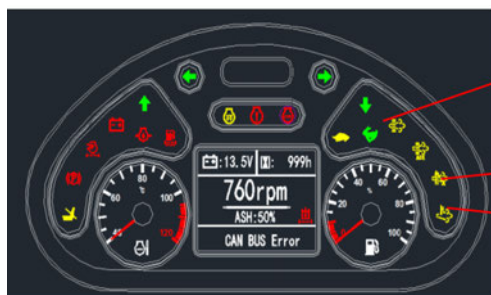
In a normal state

Manual regeneration begins:

1. DPF manual regeneration request icon, dpf exhaust temperature icon changes.
2. The engine speed automatically rises slowly and regeneration begins.
3. After manual regeneration, engine speed slows down to a low idle speed, and the dpf exhaust temperature icon on the instrument display goes out. After regeneration, the engine can continue to work normally.



Manual regeneration switch pressed



2. Press the manual regeneration switch, the manual regeneration indicator lights up, and the engine starts manual regeneration.

1. Press the regeneration inhibit switch, the regeneration inhibition indicator is off.

3. During regeneration, the DPF exhaust temperature icon stays on.



CAUTION

The W13F model with EURO V emission engine is switched off during operation and the regeneration lock indicator goes out.

Yanmar 4TNV86 engine manual regeneration function Two

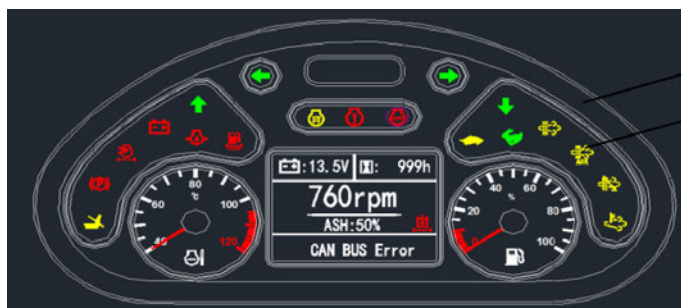
If the engine does not issue a regeneration request and the user needs to perform a manual regeneration procedure (the engine can be operated for more than 15 minutes or the water temperature exceeds 60 °C to perform the regeneration procedure):

1 = The machine is parked

2 = In neutral

3 = When the engine is idling

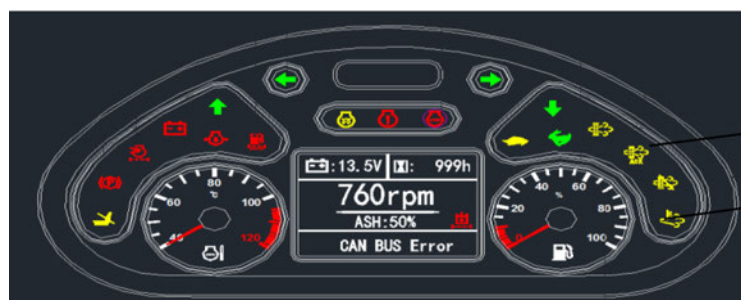
To perform the regeneration operation, you need to manually release the regeneration prohibition. Press the manual regeneration button.



1. Manual regeneration light stays on

2. The ACK indicator lamp flashes

At this time, press the manual regeneration switch again, and the engine enters the regeneration state.



1. Regeneration confirmation light is on
2. High exhaust temperature light stays on

The whole process lasts about 25-30 minutes. The following points will cause manual regeneration to stop:

1. The parking is in the unlocked position or the regeneration lock switch is disabled.
2. The engine throttle position has changed.
3. The key switch is off.



CAUTION

In the case of DPF regeneration interruption, the next DPF manual time interval will be shortened. When manual regeneration is not carried out normally, the particles in DPF will exceed the limit, and the engine speed and torque will be limited. Recovery from backup mode requires professional service personnel.



WARNING

During the regeneration process, DPF, the temperature around the exhaust pipe and the exhaust gas temperature are high, and it is suitable to be carried out in the surrounding places without people or inflammables. Additionally, the harmful carbon monoxide that contains colorless, tasteless in exhaust, can cause poison after inspiratory. Therefore, DPF regeneration should be carried out outdoors with good ventilation and open space.



CAUTION

If the regeneration process is not halfway through, but you want to continue working, you can press the regeneration lock switch and then continue working. After the work is completed, you need to drive the car to an empty position as soon as possible and repeat the above regeneration operation. Until the regeneration process is completed.

General preventive measures

- Do not operate any levers or pedals if anyone is in any position to be hurt by the machine's movement.
- Pay extra attention when working in narrow congested areas or in case of blind-travel.
- Always look around in all directions before changing your direction of travel.
- Always follow all safety rules on each particular site during operation.
- Maintain a running speed which is compatible with the load and the ground conditions.
- Slow down when approaching corners.
- Observe pedestrians carefully and do not follow the vehicle in front too closely.
- Do not brake sharply and only select neutral once the loader has effectively stopped.
- Maintain a safe distance from the edge of loading wharf.
- When turning, pay close attention to the trajectory of the buckets.

-
- Make sure that bridges and ramps are able to withstand the weight of the loader and the load being towed.
 - Before climbing or descending from vehicles (trucks, trails etc), ensure that the adequate precautions have been taken to avoid all movements including the dumping.
 - Stop, look at and listen when arriving to a rail way then to cross it in diagonal, slowly and only to the authorized points.
 - Always park at more than 2,5m of the rails.
 - Hold the wheel steering in hand during the operation.
 - When loading a larger load, more space for the overtaking of parked vehicles, objects or pedestrians should be predicted.
 - Never overtake another vehicle on crossroad or on bifurcations or when something affects the visibility for you.
 - Never drive in elevators, truck or other until you have received the order and you are sure that they can stand the combined weight of loader and the load.
 - Don't brake roughly.
 - Pay attention to the driving speed and be careful to the pedestrians approaching and other vehicles and to the passage heights.
 - Slow down on wet, irregular grounds and in the turning.
 - Remove all objects in your way.
 - On the crossroad, in the passages and the corridors, slow down and horn and drive on the right side of the road.
 - Be careful to the pedestrians which can appear suddenly in the way.
 - If your trip involves crossing road bridge, ensure they are secure and are strong enough to withstand the combined weight of the loader and load.
 - When approaching the destination, reduce the speed to ensure a smoothly slow stop in the far enough distance. A sudden halt could cause the load displacement.
 - Do not obstruct the use of fire protection equipment when parking or storing equipment.
 - Report any mechanical or electrical irregularities immediately.
 - Always be alert. Watch out for pedestrians and never drive too close to the vehicles in front.
 - Travel at a speed consistent with load and road conditions.
 - Never operate the loader with any part of your body outside of the operator's compartment.
 - Do not leave the driver's cab with the loader running.
 - Always properly shut down the loader before leaving the loader.
 - Always park the loader on solid, level ground.

On severe slopes

- Always park the loader perpendicular to the steepest slope to prevent accidental movement.
- Use proper flags, warning marks or barriers when parking in areas of traffic.
- Do not park your vehicle in the access points where obstruct the fire brigade.
- During parking, use the parking brake and put the key on the STOP position.
- If the tractor must leave with nobody watching it, remove the ignition key.
- Never park your vehicle on a slope.
- If it is necessary to park tractor on a slope (break down etc), use the wedge under the wheels of loader.



WARNING

If any problems or malfunctions of the equipment occur while operating the loader, it must be properly shut down and the problem should be corrected. Continuing to use malfunctioning equipment can not only be unsafe for the operator and other personnel, but can lead to further damage to the loader as well.



WARNING

In case of an accident, report to your superior immediately. Never neglect an injury even if it appears insignificant, go immediately to the doctor, which could avoid complications.

AREA	RISK	SAFETY STEPS
ENTIRE MACHINE	A moving tractor can run over or crush body parts between tractor and other object and cause irreparable injury or death.	Keep away all people from around tractor and always switch off the engine before leaving the driver's cab.
DRIVING STATION	Personnel injuries may happen if parts of the body or members (hands, legs, etc.) are outside of the driver's cab.	Keep head, arms, hands, legs and feet inside the operator's compartment all the time.
UNDERNEATH DURING SERVICE	Unit lifted for service could fall and injure or kill personnel around.	If loader must be lifted for service, it must be securely blocked so that all 4 (four) wheels may safely turn.
ENGINE	Hot (engines) will cause severe burns and cause serious injuries if persons are struck by moving parts or caught in belts.	DURING SERVICE: The engine must be turned off. If procedures require the engine to be running during service, care must be taken to avoid touching the moving objects. The battery should be disconnected if possible to avoid having the engine accidentally started. Care should be taken to avoid the hot surfaces.
BATTERIES	Batteries produce flammable gasses that could be ignited causing burns and explosions. Batteries contain strong acid substances that may cause severe burns if spilled or splashed on body parts or in the eyes. A contact with batteries plug or all electric parts without protection (or when the protection has been removed) can cause an electric chock.	Batteries should be well ventilated before using particularly when welding is required near the batteries. Protective clothing, gloves and eyewear must be worn when working on batteries. Avoid to remove the plastic protection, and avoid to touch electric parts where current can be.
ROLLING OR ROLLING OVER OF VEHICLE	Do not jump out of the vehicle if it overturns or flips, this can be fatal. The loader is equipped with a roll cage for safety.	At this point your hands should hold the steering wheel, and feet hold the mounting brackets under the direction of column.
TIRE	Welding near the tire may damage the tire or lead the lead an explosion and bring damages or dangers for people.	If welding has to be done on the wheel or near the wheel, remove the tire first.

To avoid loaders' accidental movement, put some wedge blocks under tires when providing service and maintenance to vehicles.

Always stop the engine when working after the wheels.

Don't try to repair the machine by yourself if you haven't been approved by Eurotrac Construction Equipment.

Do not perform maintenance without maintenance manuals and drive carefully. Eurotrac Construction Equipment is not responsible in case of any modification, addition or combination with equipment from another origin, which maybe cause danger.

Don't change the structure and performance of vehicle when Eurotrac Construction Equipment is not informed.

Electrical equipment

Do not change the electronic or hydraulic settings as they have been set at the factory. Disconnect the battery to avoid short circuits when working on the electrical system; this can also prevent unexpected starting when the engine is running.

Make sure that the battery storage area is well ventilated (remove smoke). The vapors of the charging electrolyte are explosive. Always keep the battery away from sparks, flame and smoking materials.

Don't check the battery near the open fire, especially in the battery charging.

Don't smoke in the area of battery charging.

Welding

Before any welding operations of loader, the specific operation as follows:

Disconnect the battery.

Disconnect the electric control system and electrical equipment.

Connect the ground wire to the welding point.

4.3 Specifications and performance

TECHNICAL DATA

	W11	W12S	W12F	W13F	T13F
Engine data					
Manufacturer	Kubota			Yanmar	
Engine type	D1105-E5B	V1505-E5B	D1803-E5B	4TNV86-MSQ	
Cylinder	3	4	3	4	
Max. power	18.5kw/ 3000rpm	18.5kw/ 2300rpm	27.6kw/ 2700rpm	37.9kw/2600rpm	
Cooling	Water cooled				
Electrical system					
Operating voltage	12V				
Battery	60Ah		70Ah	72Ah	
Generator	40A		60A	40A	
Weights					
Self weight standard (kg)	1700	2280	2620	3300	3400
Rated loads in bucket (kg)	400	600	900	1000	800/400
Max.lifting force (daN)	1100	1750	2000	2780	2500
Tippling loads in bucket (ISO8313)					
Lifting frame horizontal / machine straight (kg)	850	1280	1600	2000	1600
Lifting frame horizontal / machine articulated (kg)	550	840	1400	1500	1200
Vehicle data					
Driving speed (km/h)	0-12	0-8/0-18	0-8/0-24	0-8/0-24	0-8/0-24
Capacity of fuel tank (L)	26	45	45	60	60
Hydraulic oil (L)	40	40	40	80	80
Hydraulic system	Bucher				
Hydraulic driving	Bondioli & Pavesie				
Output (l/min)	84	64	90	88.4	
Working pressure (bar)	300	380	380	380	
Hydraulic operation					
Output (l/min)	32	46	50	52	
Working pressure (bar)	180	180	180	185	

DIMENSIONS

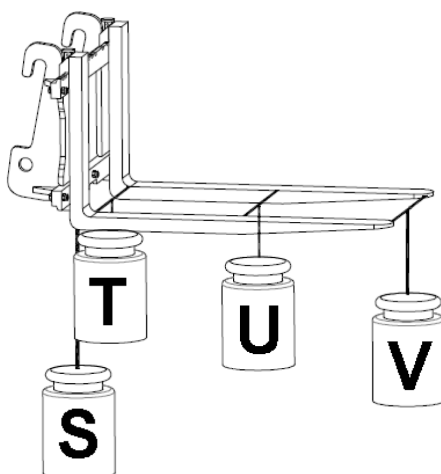
		W11	W12S	W12F	W13F	T13F
A	Bar width	830	1048	1080	1048	1048
B	Ground clearance	174	250	250	255	255
C	Track width	803	795	795	860	860
D	Total width	1110	1080	1140	1150	1150
E	Total working height	3440	3920	3960	4030	5010
F	Max. height of bucket pivot	2900	3100	3140	3220	4180
G	Overhead loading height	2596	2775	2815	2910	3930
H	Max dumping height	2066	2110	2150	2315	3450

		W11	W12S	W12F	W13F	T13F
I	Operating distance for M	613	484	484	750	1100
J	Digging depth	170	200	200	65	70
K	Axle centre up to bucket hinge pin	550	590	708	480	680
L	Wheelbase	1370	1600	1750	1860	1860
M	Rear overhang	960	1094	750	1190	1190
N	Total length without bucket	2960	3440	3670	3700	3970
O	Total length with bucket	3780	4360	4590	4830	4750
Q	Seat height	1128	1165	1320	1410	1410
R	Height to top of FOPS bar	2210	2225	2300	2340	2340
S	Rollback angle at max. lifting height	49°	45°	45°	45°	45°
T	Max. dumping angle	43°	45°	45°	45°	33°
U	Backroll angle on the ground	50°	46°	46°	46°	33°
V	Departure angle	25°	28°	27°	27°	28°
W	Turning angle	45°	45°	45°	45°	45°
X	Max. turning radius	2530	3085	2715	2976	2976
Y	Radius at the outer edge	2220	2597	3175	3506	3506
Z	Inside turning radius	1110	1450	1478	1598	1636

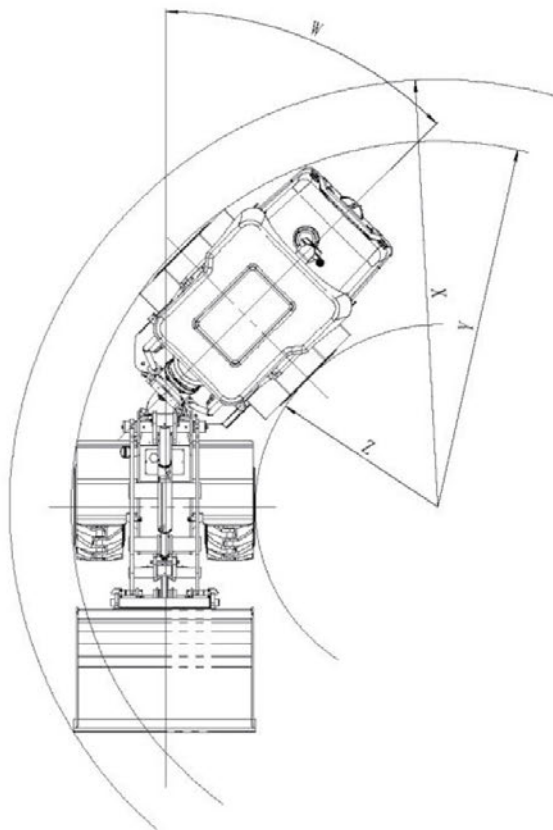
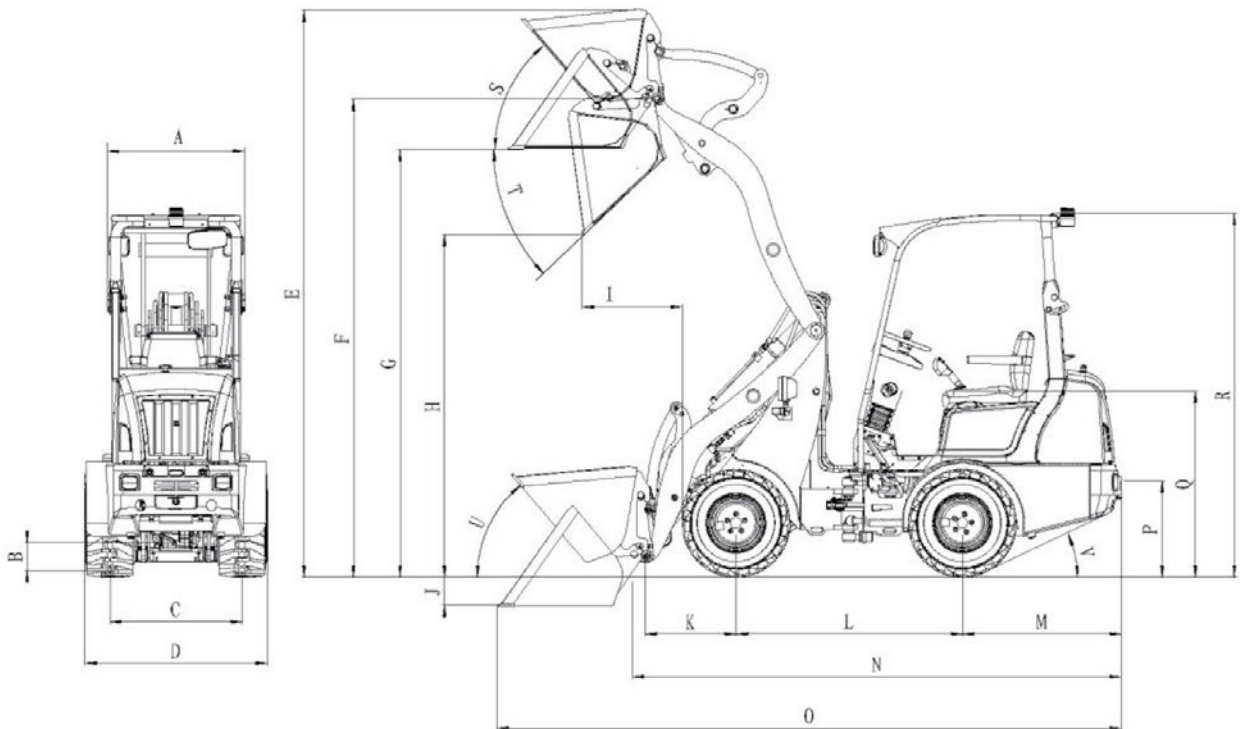
Dimensions in mm

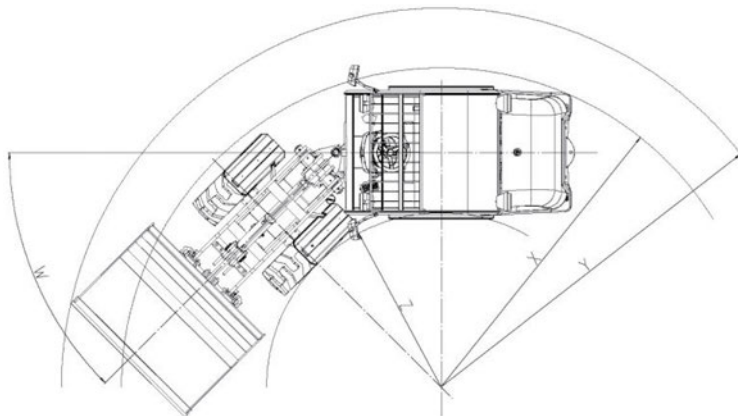
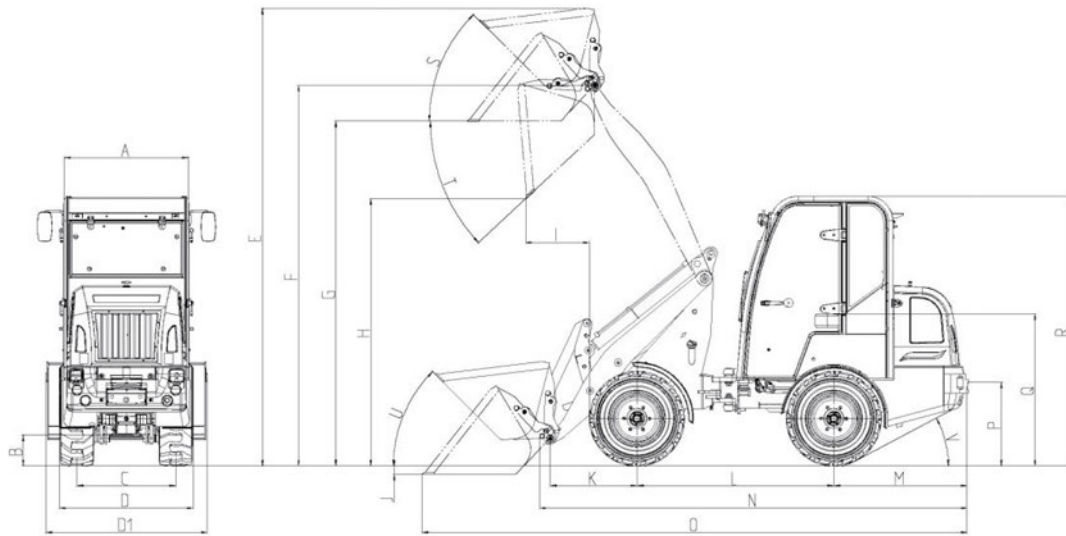
	W11	W12S	W12F	W13F	T13F
Tire size	Width of tire				
27×8.50-15	970	x	x	x	x
26×12-12 AS	1110	x	x	x	x
10-16.6NHS	x	1080			x
31×15.5-15AS	x	1320			x
11.5/80-15.3	x	x	x	1150	1340
19/45-17 IMP	x	x	x	1480	1520

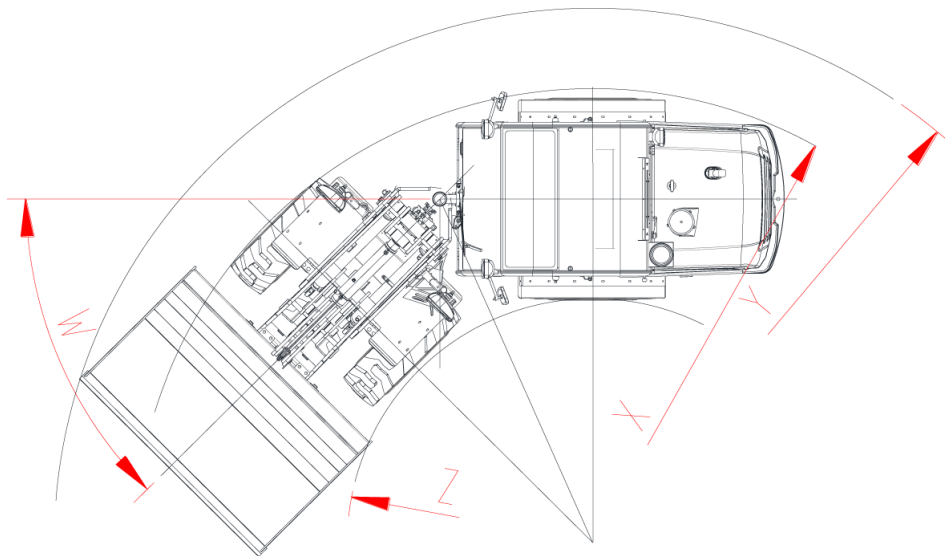
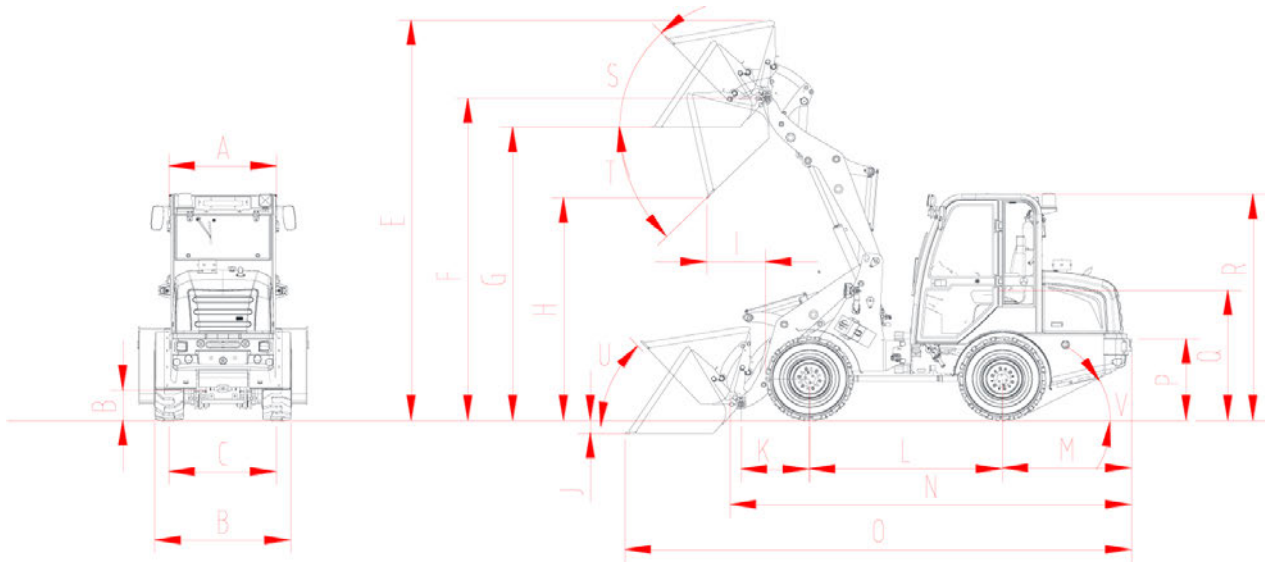
Dimensions in mm



W11 capacity of fork with load center 400mm	W11
S	860 kg
T	800 kg
U	600 kg
V	480 kg
W12S capacity of fork with load center 400mm (machine straight, tipping load)	W12S
S	1500 kg
T	1420 kg
U	1120 kg
V	900 kg
W12F capacity of fork with load center 400mm (machine straight, tipping load)	W12F
S	2050 kg
T	1620 kg
U	1450 kg
V	1100 kg
W13F capacity of fork with load center 400mm (machine straight, tipping load)	W13F
S	2510 kg
T	2110 kg
U	1560 kg
V	1208 kg
T13F capacity of fork with load center 400mm (machine straight, tipping load)	T13F
S	2350 kg
T	2008 kg
U	1395 kg
V	1206 kg







4.4 Shipping procedure



WARNING

Extreme hazard exists when refueling and defueling the loader - no smoking, no open flames, no electrical devices.

Lifting	Using a reliable cable to lift the loader on the label location which marked lifting. (See Annex 3)
Battery	Disconnect battery terminals from battery plugs.
	Leave battery in battery box.
Radiator	Drain engine coolant from radiator and engine block.
Fuel tank	Drain fuel from fuel tank into appropriate container.
	Disconnect fuel line at lowest readily accessible connection and drain fuel from fuel line.
	Reconnect fuel lines.
	Leave fuel cap on tank, but loosened.
Checks	Make certain fuel line is connected.
	Make certain shut-off valve on radiator is closed.
	Make certain fuel cell drain valve is closed.
Fixation	With the locking plate lock the front and rear frame
	Using the sturdy rope package on the loader banding point, be careful not to damage the paint surface (See Annex 3).
	Using the wood block to stop moving of the front and rear tire.

4.5 Trailer procedure

If the loader requires assistance, allow towing only for short distances. However, observe the following steps before towing the loader.



WARNING

With the loader towed, the brakes and steering do not function properly. The tractor must have sufficient tractive force to pull and steer the loader without a brake system. Only use a drawbar as a connection to the towing machine.

Trailer steps	Place the skid (wedge) behind the sliding edge of the wheel.
	Lower the goods enough so that the load does not hit the ground during work.
	Removing the goods and attachments.
	Starting the tractor.
	Connect the tractor (with sufficient traction and braking power) to a tow bar on the tow pin located on the counterweight on the back of the loader.
Release hand brake	Open the manual bypass valve on the plunger pump.
After traction	Use the wedge to wedge the wheel slip.
	Tighten hand brake.
Restore the braking force	Tighten the manual bypass valve.
	Install a seat mounting plate.

After repairing, check the brake function.



NOTE

The focus point of the machine salvage can be the vehicle lifting point (see Annex 3), the traction point when dragged is in the back of counterweight. Allowed maximum force points value: 20KN.

This machine can be used for short-drag powerless trailer:

1. The location of Traction is at the rear of counterweight.
2. The maximum traction value of this machine is:
W11: 7.5KN
W12S: 10KN
W13F/T13F: 20KN
3. Maximum traction speed is 5 km/h.
4. Only allows rigid drawbar traction.
5. Not for long traction.
6. When used as a tractor, please pay close attention to the hydraulic oil temperature, can't exceed the maximum temperature of piston pump.

4.6 Storage procedure

	FOR ONE MONTH	FOR INDEFINITE PERIOD
Transmission	No special attention needed	Drain transmission fluid. Refill transmission.
Drive axle	No special attention needed	Drain drive axle by removing drain plug located on the underside of the differential carrier housing. Reinstall plug after draining.
Tires	The loader should be raised and axles chocked to prevent tire contact with ground. Tire pressure should be reduced to 15PSI.	The loader should be raised and axles chocked to prevent tire contact with the ground. Tire pressure should be reduced to 15PSI, and sprayed with a rubber preservative.
Lubrication	Ensure that all points are lubricated with specified grease oil.	
Fluid levels	All fluid levels should be checked and topped up as necessary.	Release all fluid (oil)
Wheel bearings	Wheel bearings should be repacked.	
Battery	Disconnect battery terminals	The battery should be removed and stored separately. The battery must be stored in a cool dry place and must not be exposed to direct sunlight. If the battery is stored in the open, it must be covered for protection against dirt and moisture. A slow charge should be given to the battery every one and two months.

Note:

1. Temperature range for storing this machine: -30°C-50°C
2. Long-term storage may damage the seals within the hydraulic system

4.7 Noise levels

Sound intensity level [2000/14/EG]	LWA = 101 dB (A)
Acoustic sound level without cab [DIN EN ISO 11201]	LpA = 84 dB (A)
Acoustic sound level with cab [DIN EN ISO 11201]	LpA = 85 dB (A)

5. MAINTENANCE SECTION

By definition, preventive maintenance includes regular maintenance and checking operations which should prevent failures occurring. Preventive maintenance operations should enable the operator to discover premature wear or deterioration of the equipment.

5.1 General cleaning instructions

For a complete cleaning of the loader, clean normally (High pressure cleaning should be avoided). Make sure electrical components, safeties, name plates and stickers, are well protected. For electrical components, dry air of 29 psi maximum is recommended. For mechanical parts cleaning, use degreasing products and then blow air. Batteries must be cleaned in order to prevent serious damage from chemical reactions and fault currents.



WARNING

Solvent may affect skin, eyes, and respiratory tract. Use only in well ventilated area. Avoid prolonged breathing of vapors. Keep away from sparks and flame.

To avoid possible personal injury, never exceed 30 psi air pressure for cleaning and drying purposes. Use eye protection with side guards and approved nozzles on air hoses.



WARNING

Loosen the fuel cap and release the reset pressure in the oil tank before disassembling the hydraulic pipe.



CAUTION

Never immerse electrical components, packing, or rubber, plastic or teflon parts in dry-cleaning solvent. Wipe parts with a clean, lint-free cloth. Dry cleaning solvent can react with materials and result in severe damage or destruction of parts.

- Clean parts in a tank or spray using dry-cleaning solvent.
- Wash cleaned parts by flushing or spraying. When necessary, use a soft bristle, non metallic moistened in dry-cleaning solvent.
- Dry the parts, with the exception of the bearings, after cleaning with compressed air.
- Unless specifically called for in maintenance procedures, do not use metal scrapers, wire brushes, abrasive wheels, or abrasive compounds when cleaning part.
- Clean electrical parts such as relays or switches with a lint-free cloth moistened with dry-cleaning solvent.
- Clean the heat exchanger coil by reverse flushing with a steam cleaner or with a pressure washer and soap solution. Do not use a cleaner that will attack aluminum or copper.
- Clean the exterior surface of the batteries with a weak solution of baking soda and water.
- Apply the solution with a non metallic brush to remove corrosive build-up on the battery cable terminals.
- Wash painted surfaces of the unit with a solution of 1/4 pound of soap chips to one gallon of water. Rinse with clean water and dry with a lint-free cloth or allow to air dry.

5.1.1 First maintenance program

- The first maintenance should be done between 10 and 125 hours.
- For the maintenance of engine, see operation manual (every machine has the engine operation manual).
- Check oil tank and take correct action in case of oil leakage.
- Check hose, attachment and electrical wire.
- Check wheels nut torque after 10 operations hours, also after 50 operation hours, and after each wheel replacement.

5.2 Service

5.2.1 Preparation for use

Fuel System

- Check all fuel line connections to make sure they are properly connected, from fuel tank to fuel pump to carburetor (gasoline only).
- Make sure that oil extraction plug of fuel tank is screwed down.
- Inject proper fuel to fuel tank.

Battery

- Check battery liquid level. Top up with distilled or approved drinking water, as necessary.
- Connect the battery cables, if disconnected, positive first.

Engine and Plunger Pump

- Check engine oil level, add oil if needed.
- Check connectors of hydraulic components, such as plunger pump and motor, etc in case of leakage.

Tire Inflation

- Check air pressure in tires and add air if needed.
- After a wheel change, it is recommended to retighten the wheel bolts, namely:
After 2 hours, then 50 hours, and every 200 hours periodically
- Recommended for wheel nuts tightening: 130 ft.lbs (148 N.m)
- Recommended pressure for wheels:

Machine	Tire size	Rated pressure
W11	26x12-12AS	300 kpa
W12S	31x15.5-15AS	420 kpa
W12F/W13F/T13F	19.0/45-17	280 kpa

Hydraulic liquid

Check oil level at reservoir. A dipstick in strainer indicates the minimum required level.



WARNING

Due to the pressure in the hydraulic tank, the pressure must be released slowly after loosening and before opening the tank cap.

Grease Addition

Add grease in every grease valve:

- All joint bearings
- All articulated bodies
- All axle sleeves

5.2.2 Regular maintenance form

The loader should be maintained in accordance with the following schedules.

	Daily	Weekly or 50 hours	Monthly or 200 hours	2 months or 400 hours	Yearly or 2400 hours
Fuel level	X				
Engine oil level	X				
Tire pressure 4.5BAR	X				
Check tire thread. Remove stones etc. from the tire tread.	X				
Adjustment of the headlights to aim correctly	X				
Operation of work, tail, stop and turn lights	X				
Operation of the cab marker lights, the heater, the wiper and cab light (if equipped)	X				
Horn	X				
Hydraulic oil level		X			
The wheel lug nuts are tightened, 148N.M		X			
Drive axle fixed bolts and tighten if required		X			
Check torque of cylinder head bolt and all bolts and nuts for tightness. If necessary, tighten to the specified torque.		X			
Drive axle and reduction gear box oil level		X			
Exhaust system for leaks and holes		X			
Change drive axle oil. (First change only after using 50 hours; then yearly thereafter)		X			
Hydraulic oil		X			
Hydraulic return-suck oil filter element			X		
Parking Brake. With the parking brake handle in 'lock' position, the loader should not move on an 8 or less percent grade, but if the loader rolls, then manual brake is advised.			X		
Dynamo belt: tighten it if needed			X		
Hydraulic oil			X		
Remove water from fuel separator (if equipped)			X		
Inspect engine oil cooler hoses			X		
Change intake air filter element			X		
The adjusting slides beneath the operator's seat			X		
The service brake pedal pivot			X		
Parking brake linkage			X		
The throttle cable linkage			X		
Jogging cable			X		

	Daily	Weekly or 50 hours	Monthly or 200 hours	2 months or 400 hours	Yearly or 2400 hours
Change fuel filter			X		
Fill all grease fittings with grease			X		
Cab door lock (if equipped)			X		
Change fuel filter				X	
Replace Engine oil and filter				X	
Idle speed and mixture ratio, adjust if necessary				X	
Change the engine belts				X	
Change parking brake shoes				X	
Drain, flush and refill the hydraulic system					X
Replace drive axle oil					X

(*) Clean the DPF in case of an alarm or every 6000 DPF operating hours, whichever comes earlier.

(*) Lug nuts must be re-tightened to 148N.M. After any change of a wheel and anytime the lug nuts have been loosened for any reason, and at the intervals specified in this Maintenance Section.

A proper and regular maintenance will allow the operator to avoid any mechanical failures. Pay attention to the lubrication schedule.

Check engine oil level

Check engine oil level weekly or every 50 hours.

Identify if the oil addition is necessary according to dipstick indication.

Attention: Use matched oil in accordance with engine specification.

Air cleaner cleaning

The cover can be taken out after loosening the screw on the side of it.

Element cleaning.

Tap element filter paper lightly without any damage.

Wash the element if badly polluted and replace the element if the filter is damaged.

How to wash the element:

1. Soak the element in water containing neutral detergent during approximately 30 minutes and then wash. Make sure not to scratch the filter paper.
2. After washing, rinse the element with clean water.
3. Allow to dry naturally or use a dryer (cold air). Never use compressed or hot air.



NOTE

Element should be replaced after being used for one year or washing six times.

Battery electrolyte check

(The following steps are unnecessary if a maintenance-free battery is used)

1. The battery electrolyte should be between the upper and lower levels.
2. If the electrolyte level is below the lower mark, remove the cap and add distilled water to the upper level through the water inlet port.



CAUTION

Be sure to use distilled water. Wear protective glass when working on battery.

Tire replacement

1. Never enter the loader after jacking it up.
2. Tightening torque of the hub nuts, 148 N.M.
3. Adjust the air pressure after tire replacement
W11:3.0Bar
W12S: 5.2Bar/4.8Bar
W13F: 5.4Bar
T13F: 2.8Bar
4. Pay attention of rim deformation, cracks and loose wheel bolts.
5. Never increase air-pressure exceeding specified range.

Front wheel

1. Locate the loader at a horizontal place.
2. Apply the parking brake and insert the jack under the body.
3. Jack the body up until tires are almost raised from the ground and loosen hub nuts.
4. Jack the body up until tires are lifted from the ground and remove hub nuts and wheels.
5. Reinstall the wheels in the reverse procedure after repairing and replacing the tires. Tighten the hub nuts uniformly in diagonal directions and in the sequence shown.
6. Check and adjust the air pressure of the tires after the wheels are reinstalled.

MAINTENANCE OF THE HYDRAULIC SYSTEM

Hydraulic oil replacement



WARNING

Before draining hydraulic oil, the attachments should be totally descended.

1. Drive the loader to trench.
2. Get down the attachments completely.
3. Put a container under the bottom of the loader.
4. Open rear cap.
5. Unscrew hydraulic oil filler.
6. Unscrew return-suck oil filter.
7. Remove the drain plug of hydraulic oil tank.
8. Drain hydraulic oil thoroughly.
9. Clean nearby area of drain plug.
10. Re-insert drain plug.
11. Add hydraulic oil to the tank from oil filler till it reaches oil filler.
12. Screw filler cap.
13. Add hydraulic oil into tank from return-suck oil filter till filled.
14. Screw return-suck strainer cover.
15. Start the engine under idle speed, turn over the steering from dead side to dead side several times, drive slowly for several meters, lift and descend several times, then recheck the oil-level.



CAUTION

The dumped engine oil should be disposed in accordance with relevant laws and regulations.
The pit must remain free of used oil. Also prevent the oil from flowing into gully drain or flowing on the ground.



CAUTION

During maintenance of the hydraulic system and when changing hydraulic aggregates keep everything meticulously clean to avoid a premature failure of the system.

The hydraulic filter system consists of:

- Return-suction filter for the working and driving hydraulics
- Filling-vent valve

These filters are integrated in the tank. The filling amount in the hydraulic oil tank should be checked daily. The loader should be on even ground and all cylinders must be retracted.

The return-suction filter element should be replaced at the following intervals under normal working conditions:

- a. 50 operating hours after initial commissioning
- b. 800 operating hours after initial commissioning
- c. Subsequently every 800 operating hours

The filling-vent valve should be cleaned every month and replaced after 800 operating hours; the complete filling cover should hereby be exchanged.

The following intervals are prescribed for changing the hydraulic oil:

- a. 50 operating hours after initial commissioning
- b. 800 operating hours after initial commissioning
- c. All further 800 operating hours

The hydraulic oil should be drained while still warm during an oil change. Any oil sludge must be removed by rinsing the tank. Top up with oil through the filling-vent valve.

The hydraulic oil used is HLP 46 (ISO VG 46, acc. to DIN 51519). If other hydraulic fluids are used, these must be approved by the manufacturer.

Check the hydraulic system for leaks during all service and maintenance work. Leaky union pieces and screw connections are to be tightened when depressurised and then checked again.



CAUTION

- Following major repairs (e.g. changing pumps or motors) the suction area of the hydraulic pump has to be filled with oil before starting to vent the hydraulic system.
 - The hydraulic tank is pressurized when warm and in use. To prevent spillage of the hydraulic oil when changing the filter the pressure must be relieved by opening the filling vent valve.
-



WARNING

When connecting accessories or trailers with a hydraulic connection, make sure that the hydraulic oil in and the loader are the same. Mixing different oil with the loader's hydraulic oil can cause the hydraulic system to fail. In addition, it will void your warranty.

CONNECTING/DISCONNECTING THE HYDRAULIC HOSES

Connecting the hydraulic hoses

1. Make sure that the hose is not twisted. Pressure applied to a twisted hose can cause the hose to fail or the connections to loosen.
2. Make sure that hose does not touch hot parts.
3. Make sure that hose does not touch parts which can rub or cause abrasion.
4. Use the hose clamps (where possible) to support long hose runs and keep the hoses away from moving parts.

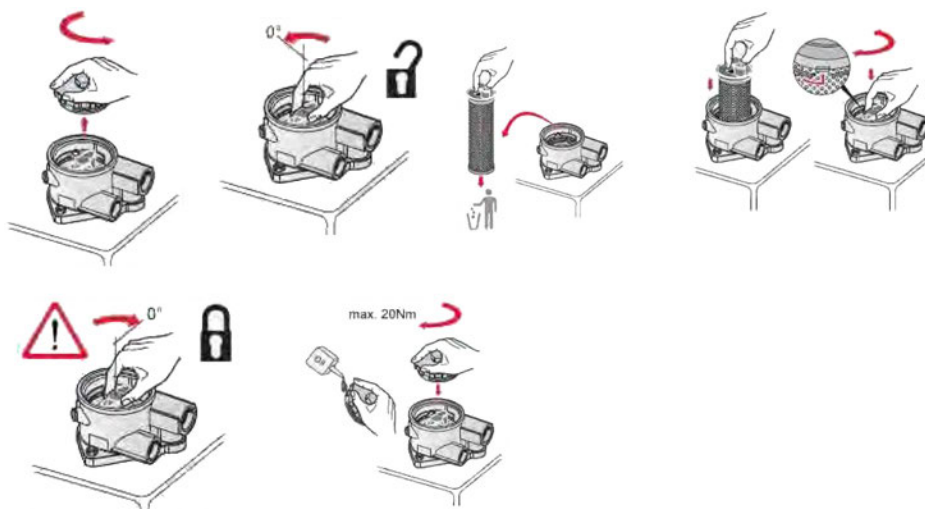
Check for leaks

1. Start the engine.
2. Operate the related control t to increase the pressure in the hydraulic system.
3. Stop the engine then remove the starter key.
4. Check for indications of leakage at the hose connections. Correct, as necessary.

Disconnecting the hydraulic hoses

1. Make sure the machine is safe. Refer to the Maintenance section.
2. Vent the hydraulic system. Refer to the Maintenance section.
3. Disconnect the hoses. If the hoses have quick releases couplings, then refer to Quick Release Couplings.
4. Check the hoses and adapters for damage. Refer to the Maintenance section.
5. If necessary, install the blanking caps.

Hydraulic filter system



**CAUTION**

Using filter elements from other manufacturers causes serious damage or failure of the axial piston pump.

Replacing the return suction filter

**CAUTION**

Only the original Schefflera element 070-200-012 may be used as filter element for the return suction filter 070-200-011. Using filter elements from other manufacturers causes serious damage or failure of the axial piston pump.

Pressure filter

The pressure filter should be replaced at the following intervals under normal working conditions:

- 50 operating hours after initial commissioning
- 800 operating hours after initial commissioning
- Subsequently every 800 operating hours

All of the oil pumped by the gear pump is passed through the pressure filter before reaching the steering and control unit. To change the pressure filter, release the clips on the filter and unscrew the hoses. The filter is replaced as a complete unit.

When fitting the new filter, take care to ensure the correct direction of flow. This is indicated by an arrow on the housing. The filter must be attached so that the arrow points forward from the rear of the loader. An incorrectly fitted filter can lead to damage to the gear pump.

ELECTRICAL FAULT CODES

Code				
636	7	Engine Position Sensor	Large phase shift between NE pulse and G pulse	<ul style="list-style-type: none"> Battery voltage is normal Sensor supply voltage VCC# is normal NE signal is normal G signal is normal Engine speed is 350 rpm or more Coolant temperature is 10 °C (50 °F) or more
633	7	Control command for engine fuel actuator 1	Pressure limiter emergency opening	<ul style="list-style-type: none"> Sensor supply voltage VCC# is normal
157	0	Engine Injector measuring tube 1 Pressure	Actual pressure exceeds the command pressure	<ul style="list-style-type: none"> Rail pressure sensor is normal Sensor supply voltage VCC# is normal
1347	7	Engine Fuel Pump Pressurizing Assembly #1	SCV stuck at open position (Actual rail pressure continuously exceeds the command rail pressure)	<ul style="list-style-type: none"> Engine is operating (Q: 3 mm³/st or more) Injector is normal Battery voltage is normal Sensor supply voltage VCC# is normal Rail pressure sensor is normal
1239	1	Engine Fuel Leakage 1	Fuel leak from high pressured fuel system (Fuel consumption is calculated from the difference of fuel pressure of before and after the injection, and the error will be detected when excess fuel consumption is found)	<ul style="list-style-type: none"> Battery voltage is normal Sensor supply voltage VCC# is normal Rail pressure sensor is normal Supply pump (SCV) is normal Injector and injector drive circuit are normal NE signal is active [Engine is operating (700 rpm or more)] No DTC of P0087, P0088, P0089
172	4	Engine Air Inlet Temperature	Ground short circuit of sensor or harness	Battery voltage is normal
172	3	Engine Air Inlet Temperature	Open circuit or +B short circuit of sensor or harness	Battery voltage is normal
110	4	Engine Coolant Temperature	Ground short circuit of sensor or harness	Battery voltage is normal
110	3	Engine Coolant Temperature	Open circuit or +B short circuit of sensor or harness	Battery voltage is normal
157	4	Engine Injector Metering Rail 1 Pressure	Ground short circuit of sensor or harness Failure of sensor	<ul style="list-style-type: none"> Battery voltage is normal Sensor supply voltage VCC# is normal
157	3	Engine Injector Metering Rail 1 Pressure	Open circuit or +B short circuit of sensor or harness Failure of sensor	<ul style="list-style-type: none"> Battery voltage is normal Sensor supply voltage VCC# is normal
523535	0	Proprietary	Injector charge voltage: High	<ul style="list-style-type: none"> Battery voltage is normal CPU is normal
651	3	Engine Injector Cylinder #01	Open circuit of harness Open circuit of injector coil	<ul style="list-style-type: none"> Engine is operating Battery voltage is normal During injection CPU is normal
653	3	Engine Injector Cylinder #03	Open circuit of harness Open circuit of injector coil	<ul style="list-style-type: none"> Engine is operating Battery voltage is normal During injection CPU is normal
654	3	Engine Injector Cylinder #04	Open circuit of harness Open circuit of injector coil	<ul style="list-style-type: none"> Engine is operating Battery voltage is normal During injection CPU is normal
652	3	Engine Injector Cylinder #02	Open circuit of harness Open circuit of injector coil	<ul style="list-style-type: none"> Engine is operating Battery voltage is normal During injection CPU is normal
110	0	Engine Coolant Temperature	Overheat of engine coolant temperature	Coolant temperature sensor is normal
190	0	Engine Speed	Engine speed exceeds threshold speed	Key switch is ON
102	4	Engine Intake Manifold #1 Pressure	Ground short circuit of sensor or harness Failure of sensor	<ul style="list-style-type: none"> Battery voltage is normal Sensor supply voltage VCC# is normal
102	3	Engine Intake Manifold #1 Pressure	Open circuit or +B short circuit of sensor or harness Failure of sensor	<ul style="list-style-type: none"> Battery voltage is normal Sensor supply voltage VCC# is normal
636	8	Engine Position Sensor	Open circuit or short circuit of sensor or harness Failure of sensor	<ul style="list-style-type: none"> Battery voltage is normal Sensor supply voltage VCC# is normal Engine is not stalled

Code				
636	2	Engine Position Sensor	Open circuit or short circuit of sensor or harness Failure of sensor	<ul style="list-style-type: none"> • Battery voltage is normal • Sensor supply voltage VCC# is normal • Engine is not stalled • Engine speed is 350 rpm or more
723	8	Engine Speed 2	Open circuit or short circuit of sensor or harness Failure of sensor	<ul style="list-style-type: none"> • Battery voltage is normal • Sensor supply voltage VCC# is normal • Engine is not stalled
723	2	Engine Speed 2	Open circuit or short circuit of sensor or harness Failure of sensor	<ul style="list-style-type: none"> • Battery voltage is normal • Sensor supply voltage VCC# is normal • Engine is not stalled • Engine speed is 350 rpm or more
676	5	Engine Glow Plug Relay	Open circuit of glow relay	<ul style="list-style-type: none"> • Battery voltage is normal • Glow relay is being energized
523544	3	Proprietary	+B short of glow relay driving circuit	<ul style="list-style-type: none"> • Battery voltage is normal • Glow relay is being energized
523544	4	Proprietary	Ground short of glow relay driving circuit	<ul style="list-style-type: none"> • Battery voltage is normal • Glow relay is being energized
676	0	Engine Glow Plug Relay	Overheat of glow plug driving circuit	<ul style="list-style-type: none"> • Battery voltage is normal • Glow relay is being energized
100	1	Engine Oil Pressure	Oil pressure switch	<ul style="list-style-type: none"> • Battery voltage is normal • Key switch turn ON • Starter switch signal is not activated • 10 sec or more after engine start [700 rpm or more]
168	4	Battery Potential / Power Input 1	Open circuit, short circuit or damage of harness Failure of battery	<ul style="list-style-type: none"> • Key switch is ON • Starter switch signal is not activated
168	3	Battery Potential / Power Input 1	Open circuit, short circuit or damage of harness Failure of battery	<ul style="list-style-type: none"> • Key switch is ON • Starter Switch signal is not activated
523538	2	Proprietary	QR data read error	Key switch is ON
523538	7	Proprietary	QR data is unwritten	Key switch is ON
628	2	Program Memory	FLASH ROM error	Key switch is ON
1077	2	Engine Fuel Injection Pump Controller	Failure of CPU and/or IC	<ul style="list-style-type: none"> • Key switch is ON • Battery voltage is 10 V or more • Starter switch signal is not activated
523527	2	Proprietary	Failure of monitoring IC of CPU	<ul style="list-style-type: none"> • Key switch is ON • Battery voltage is 10 V or more • Starter switch signal is not activated
523525	1	Proprietary	Injector charge voltage: Low Failure of charge circuit of ECU	<ul style="list-style-type: none"> • Battery voltage is normal • CPU is normal
1347	5	Engine Fuel Pump Pressurizing Assembly #1	Open circuit of SCV (MPROP)	<ul style="list-style-type: none"> • Battery voltage is normal • Key switch is ON • Starter switch signal is not activated
1347	4	Engine Fuel Pump Pressurizing Assembly #1	Ground short circuit of SCV (MPROP)	<ul style="list-style-type: none"> • Battery voltage is normal • Key switch is ON • Starter switch signal is not activated
1347	3	Engine Fuel Pump Pressurizing Assembly #1	+B short circuit of SCV (MPROP)	<ul style="list-style-type: none"> • Battery voltage is normal • Key switch is ON • Starter switch signal is not activated
1077	12	Engine Fuel Injection Pump Controller	Injector drive IC error or Open circuit of No.1 & 4 cylinder injector or Open circuit of No.2 & 3 cylinder injector	<ul style="list-style-type: none"> • Key switch is ON • Battery voltage is 10 V or more • Starter switch signal is not activated
523605	6	Proprietary	Short circuit in Injector driver IC	<ul style="list-style-type: none"> • Battery voltage is normal • Key switch is ON
3509	4	Sensor supply voltage 1	Sensor supply voltage 1 error or recognition error	<ul style="list-style-type: none"> • Battery voltage is normal • Key switch turn ON • Starter switch signal is not activated
3509	3	Sensor supply voltage 1	Sensor supply voltage 1 error or recognition error	<ul style="list-style-type: none"> • Battery voltage is normal • Key switch turn ON
3510	4	Sensor supply voltage 2	Sensor supply voltage 2 error or recognition error	<ul style="list-style-type: none"> • Battery voltage is normal • Key switch turn ON • Starter switch signal is not activated
3510	3	Sensor supply voltage 2	Sensor supply voltage 2 error or recognition error	<ul style="list-style-type: none"> • Battery voltage is normal • Key switch turn ON
3511	4	Sensor supply voltage 3	Sensor supply voltage 3 error or recognition error	<ul style="list-style-type: none"> • Battery voltage is normal • Key switch turn ON • Starter switch signal is not activated

Code				
3511	3	Sensor supply voltage 3	Sensor supply voltage 3 error or recognition error	<ul style="list-style-type: none"> Battery voltage is normal Key switch turn ON
1485	2	ECM Main Relay	Failure of main relay	<ul style="list-style-type: none"> Key switch turn OFF Engine stops
677	4	Engine Starter Motor Relay	Ground short of Starter relay driving circuit	Battery voltage is normal
91	4	Accelerator Pedal Position 1	Ground short circuit or open circuit of sensor or harness	<ul style="list-style-type: none"> Battery voltage is normal Sensor supply voltage VCC1 is normal
91	3	Accelerator Pedal Position 1	+B short circuit of sensor or harness	<ul style="list-style-type: none"> Battery voltage is normal Sensor supply voltage VCC1 is normal
29	4	Accelerator Pedal Position 2	Ground short circuit or open circuit of sensor or harness	<ul style="list-style-type: none"> Battery voltage is normal Sensor supply voltage VCC1 is normal
29	3	Accelerator Pedal Position 2	+B short circuit of sensor or harness	<ul style="list-style-type: none"> Battery voltage is normal Sensor supply voltage VCC1 is normal
523543	2	Proprietary	Accelerator position sensor signal error (sensor or harness open circuit, ground short circuit etc.)	<ul style="list-style-type: none"> Battery voltage is normal Key switch turn ON Starter switch signal is not activated
523523	3	Proprietary	Wiring harness short to +B or Wiring harness short to ground	<ul style="list-style-type: none"> Engine is operating Battery voltage is normal
523524	3	Proprietary	Wiring harness short to +B or Wiring harness short to ground	<ul style="list-style-type: none"> Engine is operating Battery voltage is normal
108	4	Barometric Pressure	Sensor or ECU internal circuit short to ground	Battery voltage is normal
108	3	Barometric Pressure	Sensor or ECU internal circuit short to +B	Battery voltage is normal
679	7	Pressure relief valve	Rail pressure value is stuck or the motor power is too low to open the PL valve	<ul style="list-style-type: none"> Battery voltage is normal Key switch is ON after DTC P0088, P0089
679	16	Pressure relief valve	The rail pressure value is too high or too low, although the pressure limiter has responded and opened	<ul style="list-style-type: none"> Battery voltage is normal Key switch is ON
523547	2	Proprietary	CAN2 +B or GND short circuit or high traffic error	<ul style="list-style-type: none"> Battery voltage is normal Key switch is ON
523604	2	Proprietary	CAN1 +B or GND short circuit or high traffic error	<ul style="list-style-type: none"> Battery voltage is normal Key switch is ON
523548	2	Proprietary	CAN-KBT original frame open circuit error	<ul style="list-style-type: none"> Battery voltage is normal Key switch turn OFF to ON Starter switch signal is not activated
171	4	Ambient Air Temperature	Ground short circuit of sensor or harness	Battery voltage is normal
171	3	Ambient Air Temperature	Open circuit or +B short circuit of sensor or harness	Battery voltage is normal
132	1	Engine Inlet Air Mass Flow Rate	Engine inlet air mass flow rate lacking (Disconnect turbo blower intake hose)	<ul style="list-style-type: none"> Engine is operating 1000 rpm or more Coolant temp. is 15 °C (59 °F) or more (Coolant temp. sensor is normal) MAF sensor is normal EGR valve is normal Intake throttle valve is normal Battery voltage is normal
132	4	Engine Inlet Air Mass Flow Rate	Open circuit or ground short circuit of sensor or harness	<ul style="list-style-type: none"> Battery voltage is normal Starter switch signal is not activated Sensor supply voltage is normal
132	3	Engine Inlet Air Mass Flow Rate	+B short circuit of sensor or harness	<ul style="list-style-type: none"> Battery voltage is normal Engine speed is between 800 rpm and 3000 rpm Target intake mass air flow is 350 or less and it continues for 3 sec Sensor supply voltage is normal
523574	3	Proprietary	EGR actuator open circuit	Battery voltage is normal
523574	4	Proprietary	EGR actuator coil short	Battery voltage is normal
523572	4	Proprietary	EGR position sensor failure	Battery voltage is normal
3242	4	Aftertreatment 1 Diesel Particulate Filter Intake Gas Temperature	Ground short circuit of sensor or harness	Battery voltage is normal

Code				
3242	3	Aftertreatment 1 Diesel Particulate Filter Intake Gas Temperature	Open circuit or +B short circuit of sensor or harness	<ul style="list-style-type: none"> Battery voltage is normal Coolant temp. is 50 °C (122 °F) or more continues longer than 10 min after engine starting T0 is between 100 °C (212 °F) and 800 °C (1472 °F): continues longer than 10 sec or T2 is between 100 °C (212 °F) and 800 °C (1472 °F): continues longer than 10 sec
4765	4	Aftertreatment 1 Diesel Oxidation Catalyst Intake Gas Temperature	Ground short circuit of sensor or harness	Battery voltage is normal
4765	3	Aftertreatment 1 Diesel Oxidation Catalyst Intake Gas Temperature	Open circuit or +B short circuit of sensor or harness	<ul style="list-style-type: none"> Battery voltage is normal Coolant temp. is 50 °C (122 °F) or more continues longer than 5 min after engine starting T1 is between 100 °C (212 °F) and 800 °C (1472 °F): continues longer than 10 sec or T2 is between 100 °C (212 °F) and 800 °C (1472 °F): continues longer than 10 sec
523700	13	Proprietary	KBT-EEPROM check sum error	Battery voltage is normal
3936	7	Aftertreatment Diesel Particulate Filter System	Removal of DPF	Refer to P3018, P2455
523580	2	Proprietary	Intake throttle feedback error	Battery voltage is normal
91	2	Accel Pedal Sensor 1	Deviation from designed correlation of two sensors	<ul style="list-style-type: none"> Battery voltage is normal Accelerator position sensor 1 is normal Accelerator position sensor 2 is normal
523575	7	Proprietary	EGR actuator valve stuck	Battery voltage is normal
523576	2	Proprietary	EGR (DC motor) overheat	Battery voltage is normal
523577	2	Proprietary	EGR (DC motor) temp. sensor failure	Battery voltage is normal
3246	4	Aftertreatment 1 Diesel Particulate Filter Outlet Gas Temperature	Ground short circuit of sensor or harness	Battery voltage is normal
3246	3	Aftertreatment 1 Diesel Particulate Filter Outlet Gas Temperature	Open circuit or +B short circuit of sensor or harness	<ul style="list-style-type: none"> Battery voltage is normal Coolant temp. is 50 °C (122 °F) or more: continues longer than 10 min after engine starting T0 is between 100 °C (212 °F) and 800 °C (1472 °F): continues longer than 10 sec or T1 is between 100 °C (212 °F) and 800 °C (1472 °F): continues longer than 10 sec
3251	4	Aftertreatment 1 Diesel Particulate Filter Differential Pressure	Ground short circuit of sensor or harness	<ul style="list-style-type: none"> Battery voltage is normal Sensor supply voltage VCC# is normal Starter Switch signal is not activated
3251	3	Aftertreatment 1 Diesel Particulate Filter Differential Pressure	Open circuit or +B short circuit of sensor or harness	<ul style="list-style-type: none"> Battery voltage is normal Sensor supply voltage VCC# is normal Starter switch signal is not activated
523582	4	Proprietary	Intake throttle lift sensor: Low	<ul style="list-style-type: none"> Battery voltage is normal Sensor supply voltage VCC# is normal
523582	3	Proprietary	Intake throttle lift sensor: High	<ul style="list-style-type: none"> Battery voltage is normal Sensor supply voltage VCC# is normal
3252	0	Aftertreatment 1 Exhaust Gas Temperature 2 Preliminary FMI	DOC is heated up due to unburned fuel	<ul style="list-style-type: none"> Other than during regeneration mode Coolant temp. is 50 °C (122 °F) or more continues longer than 5 min after engine starting
4765	0	Aftertreatment 1 Exhaust Gas Temperature 1 Preliminary FMI	DOC inlet temp. (T0): High	<ul style="list-style-type: none"> Exhaust gas temp. sensor T0, T1 and T2 are normal Battery voltage is normal
3242	0	Aftertreatment 1 Exhaust Gas Temperature 2 Preliminary FMI	DPF inlet temp. (T1): High	<ul style="list-style-type: none"> Exhaust gas temp. sensor T0, T1, and T2 are normal Battery voltage is normal
3246	0	Aftertreatment 1 Exhaust Gas Temperature 3 Preliminary FMI	DPF outlet temp. (T2): High	<ul style="list-style-type: none"> Exhaust gas temp. sensor T0, T1, and T2 are normal Battery voltage is normal
3701	15	Diesel Particulate Filter Status	PM accumulation level 3	Battery voltage is normal
3701	16	Diesel Particulate Filter Status	PM accumulation level 4	Battery voltage is normal
3701	0	Diesel Particulate Filter Status	PM accumulation level 5	Battery voltage is normal
132	15	Engine Inlet Air Mass Flow Rate	Disconnect the hose between the turbo blower out and intake flange Boost pressure sensor error	<ul style="list-style-type: none"> Other than during regeneration mode Engine speed is 1600 rpm or more MAF sensor is normal EGR valve is normal Intake throttle valve is normal Boost pressure sensor is normal Barometric pressure sensor is normal Coolant temp. sensor is normal

Code				
523589	17	Proprietary	During regeneration mode, Engine warm-up condition is not satisfied (coolant temp. is low)	During parked active regeneration mode
523590	16	Proprietary	Time out error: regeneration incomplete due to low temperature of DPF	<ul style="list-style-type: none"> • During parked active regeneration mode • Coolant temp. is 50 °C (122 °F) or more
3936	2	Aftertreatment Diesel Particulate Filter System	Loss of function of DPF	<ul style="list-style-type: none"> • Barometric pressure sensor is normal • Exhaust temperature sensor T0 is normal • Differential Pressure sensor is normal
523599	0	Proprietary	All exhaust temp. sensor failure simultaneously	<ul style="list-style-type: none"> • Engine speed is 1400 rpm or more • Quantity of injection is 5 mm³/st or more • Coolant temp. is 50 °C (122 °F) or more: continues longer than 300 sec • 100 seconds after starting
523601	0	Proprietary	Exhaust gas temperature sensor 0, 1, 2 output	Battery voltage is normal
523602	0	Proprietary	Time interval from the end time to the start time of the regeneration	<ul style="list-style-type: none"> • Battery voltage is normal • Key switch is ON
523603	15	Proprietary	Coolant temp.	Coolant temp. sensor is normal
523578	2	Proprietary	No communication with EGR	<ul style="list-style-type: none"> • Battery voltage is normal • Starter switch signal is not activated
523591	2	Proprietary	CAN_CCVS communication stopping	<ul style="list-style-type: none"> • Battery voltage is normal • Starter switch signal is not activated
523592	2	Proprietary	CAN_CM1 communication stopping	<ul style="list-style-type: none"> • Battery voltage is normal • Starter switch signal is not activated
523595	2	Proprietary	CAN_ETC5 communication stopping	<ul style="list-style-type: none"> • Battery voltage is normal • Starter switch signal is not activated
523596	2	Proprietary	CAN_TSC1 communication stopping	<ul style="list-style-type: none"> • Battery voltage is normal • Starter switch signal is not activated

Rear Axle and Reduction Gear Box

Check oil level in the rear axle and gear reduction box and add oil, if needed.

Maintenance interval:

- Check the oil level every 400 operating hours. For this purpose, the loader must be standing on even ground and should have been inoperative for approx. 10 min before checking. The oil must be up to the screw "A". Top up with oil as necessary.
- Change the oil every 800 operating hours, for the first time after 50 operating hours. Run the gear until warm and then drain the oil via plug "B". Top up with fresh oil in the specified quantity and grade.
- Visual inspection for possible leakage should be carried out on a daily basis.

Dispose of the waste oil in accordance with statutory regulations.



CAUTION

Using other lubricants can lead to significant noises in the self-locking differential and changes in the locking values. In the event of damage, we retain the right to analyse the oil.

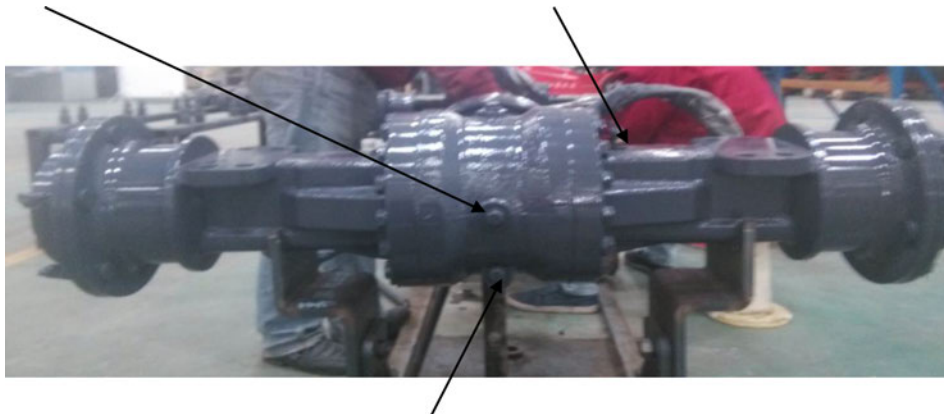
Axle W13F

Gear axle	
front Axle bridge	5,5
Schefflera Axle Fluid SB	
Planetary gear	each 0,25
Total	6,0
Gear axle, rear with power divider	
Axle bridge	5.5
Planetary gear each	0,25
Total	6.0

Front axle

A = Top up with oil

B = Venting screw brake



C = Drain oil



Drain oil

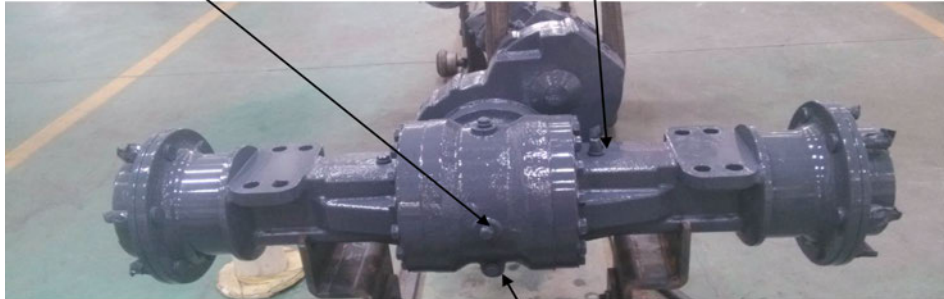


Fill and top up with oil (turning 90)

Rear axle

Power divider:
A = Top up with oil

B = Venting screw brake



C = Drain oil



Drain oil



Fill and top up with oil (turning 90)

Changing the oil in the planetary gears



WARNING

When the planetary gears are hot the oil is pressurized. Carefully unscrew the drain plug.

1. Turn wheel so that the drain plug (**A**) is pointing downwards. Unscrew screw and drain oil.
2. Turn wheel by 90° and fill with oil. The oil level must be up to the screw hole.
3. Replace drain plug.

Planetary gear:

- Turn the bore hole so that is pointing downwards to drain oil.
- Turn the bore hole into a horizontal position when filling with oil.

Maintenance of the brake system

The front axle of the loader is fitted with a multiple disk brake which runs in an oil bath. This simultaneously acts as the parking brake via a cable pull and as a hydraulic service brake in connection with the inch pedal.

The multiple disk brake is practically maintenance-free. The brake lines and brake fluid have to be replaced after 2 years. The brake fluid used by the works is ATF-oil AVIA Fluid ATF 86; this oil fulfills the requirements of Dexron II D, Caterpillar TO - 2 or ZF-TE-ML 03D, 04D, 11A, 14A, 17C.



CAUTION

Only fill the brake system with ATF oil.

The system is vented with the vent screws on the axial piston pump and front axle.



WARNING

This work should only be carried out by a qualified workshop.

Check the brake lines and cable every 400 operating hours and replace as necessary.

Check the level in the brake fluid reservoir during daily maintenance. The fluid should be between MIN and MAX.



CAUTION

If you detect a loss of fluid from the brake fluid reservoir during your daily maintenance work consult a qualified workshop.

5.2.3 Liquid & lubricants

Engine		
D1105-E3B/D1105-T-E5B	5.1L	15W-40 API CF-4/SG CCMC D2
V1505-E3B/V1505-T-E5B	6.7L	15W-40 API CF-4/SG CCMC D2
V2403-CR-E5	9.5L	15W-40 API CJ-4/SG CCMC D2
4TNV86CT-MSQ	7.4L	15W-40 API CJ-4/SG CCMC D2
Cooling Circuit		
ANTI-FREEZE -35°		
W11		11L
W12S/W12F		13L
W13F/T13F		15L
Hydraulic Circuit		
CALTEX HDZ-46#		
W11		66L
W12S/W12F		50L
W13F/T13F		80L
Drive Axle		
GEAR OIL L-CKC		
W11		2L
W12S/W12F		7.5L
W13F/T13F		12L
Fuel Tank		
Diesel fuel 0# -10# or according to the local temperature to determine the oil		
W11		26L
W12S/W12F		42L
W13F/T13F		60L



NOTE

The oils mentioned above are for use under ordinary climate. For a country with extreme climate, contact Eurotrac Construction Equipment or you local agency.



CAUTION

When replacing hydraulic parts or components, make sure to filter and check the hydraulic oil before reusing it, in order to avoid deterioration of the components.



WARNING

It's forbidden to mix two oils.

Drive shaft

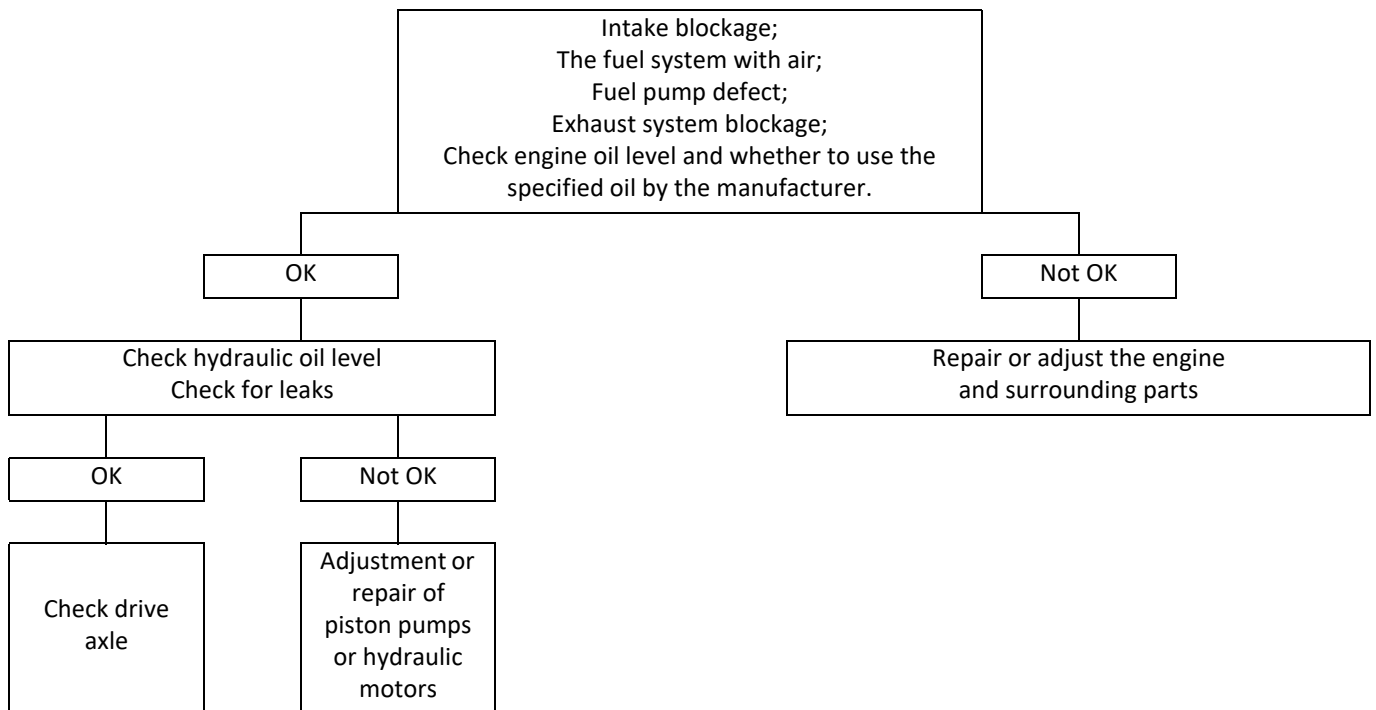
NLGI Grade No.2 Lithium grease

Bearing rod end

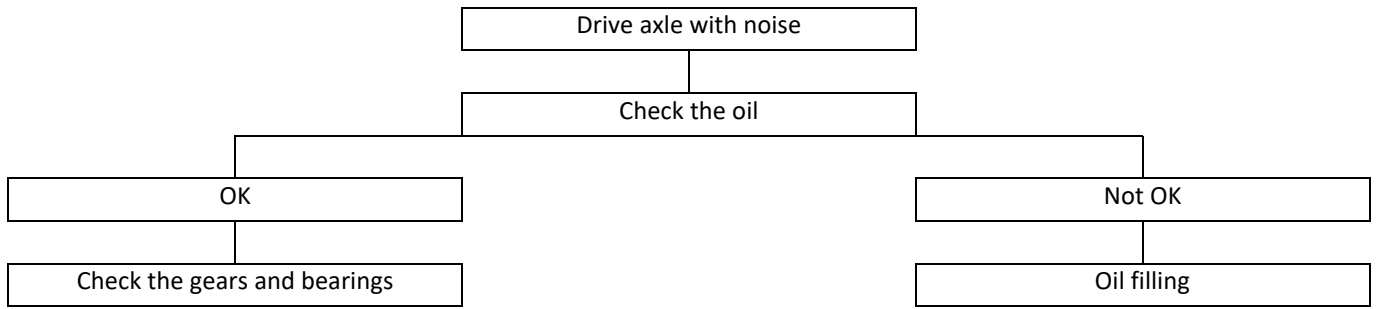
Lithium grease Every 500 hours.

6. TROUBLESHOOTING

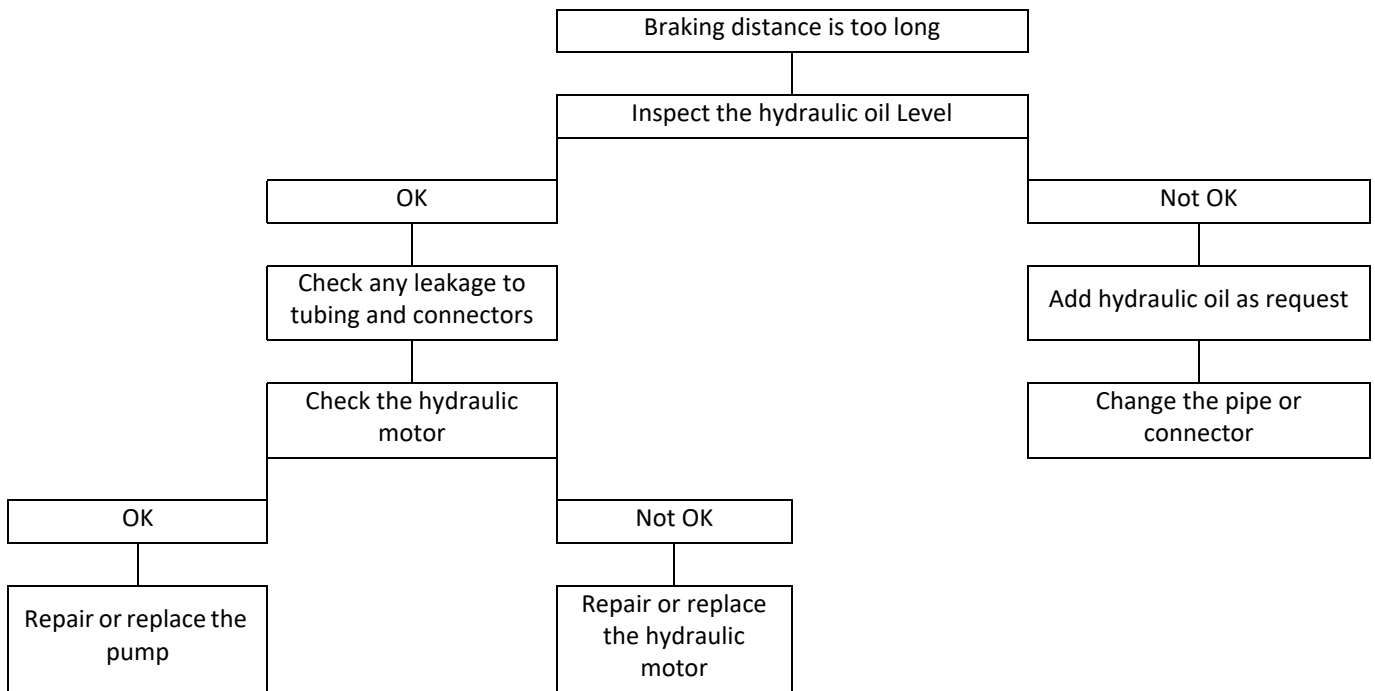
ENERGY TO REDUCE



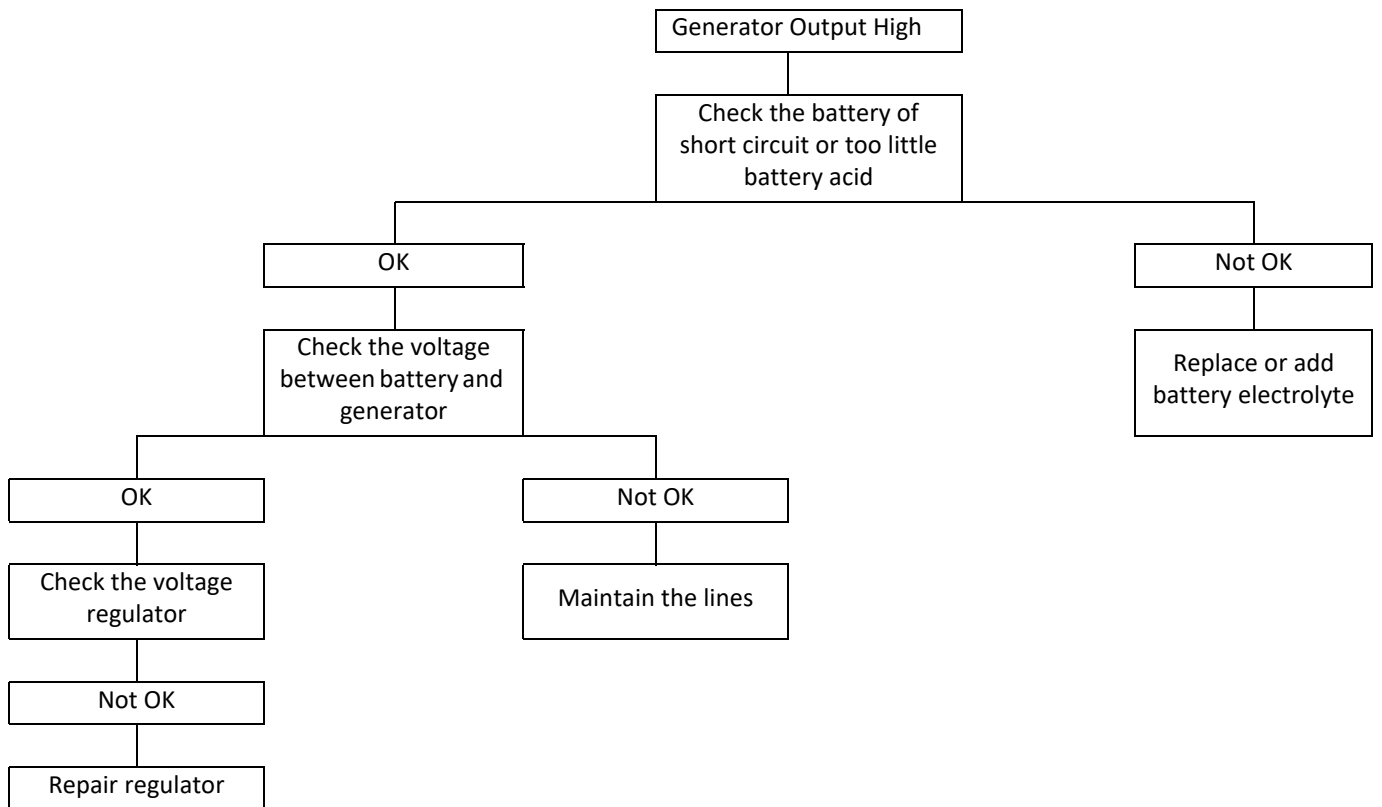
DRIVE AXLE



BRAKE SYSTEM

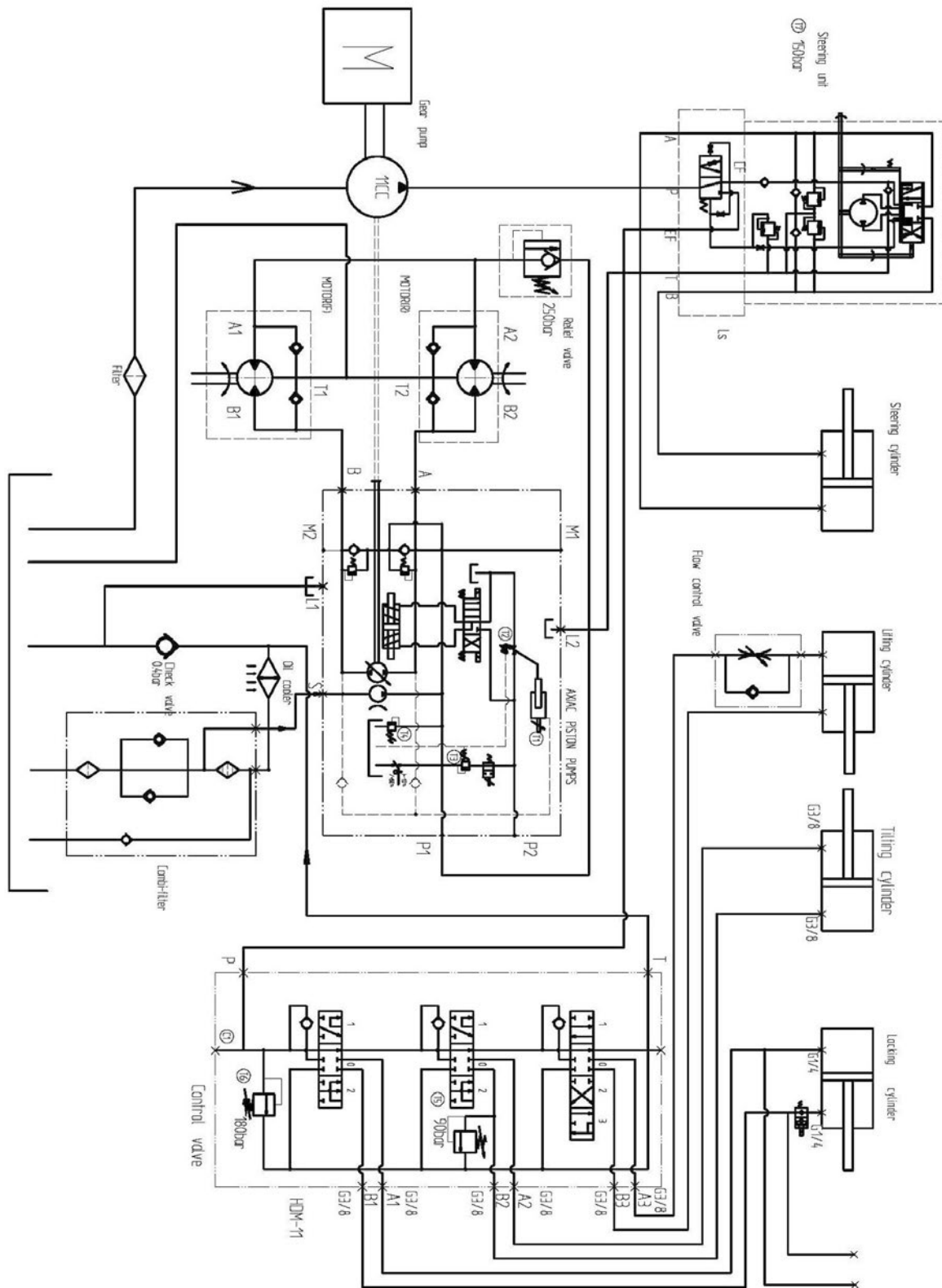


GENERATOR

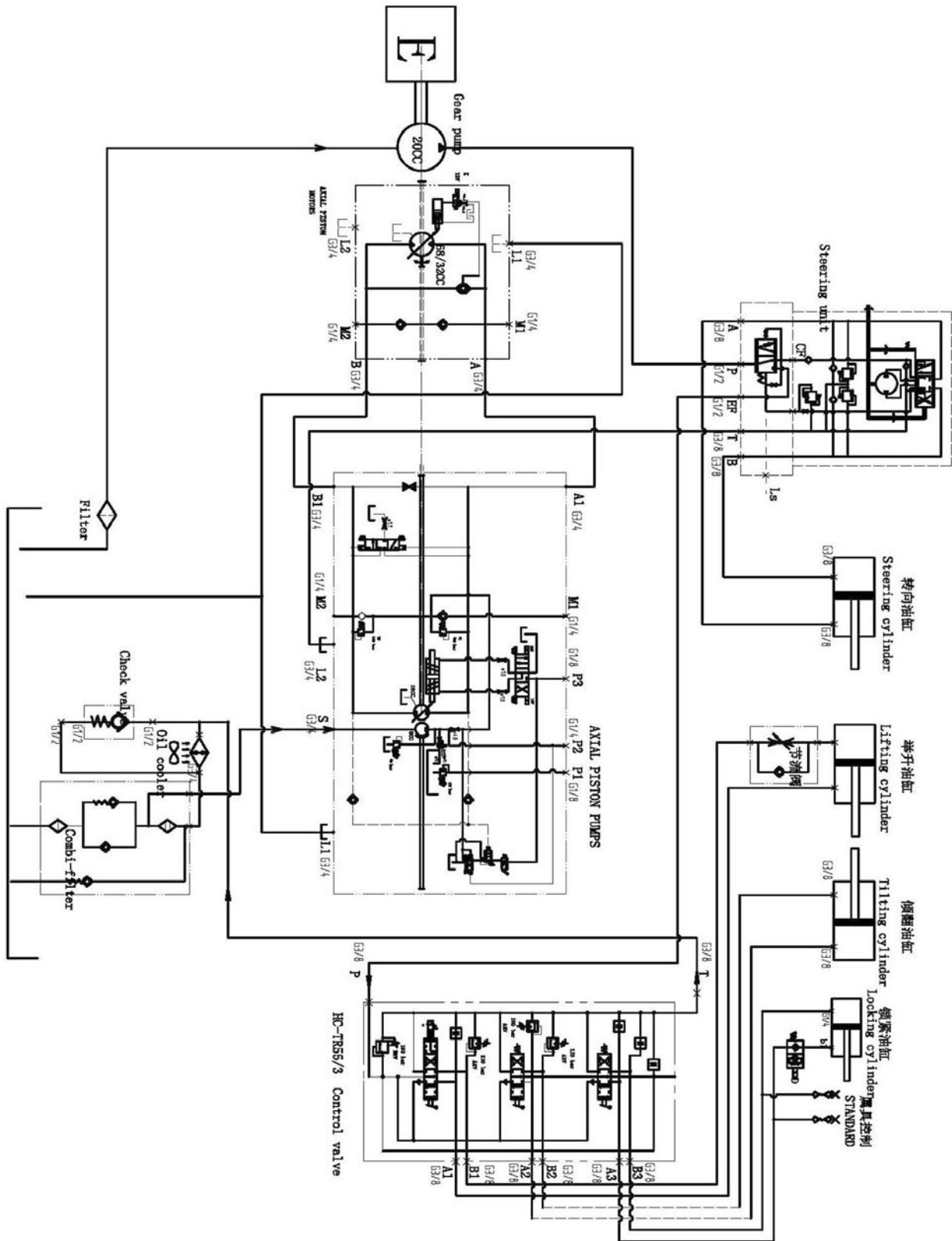


ANNEX 1: Hydraulic diagrams

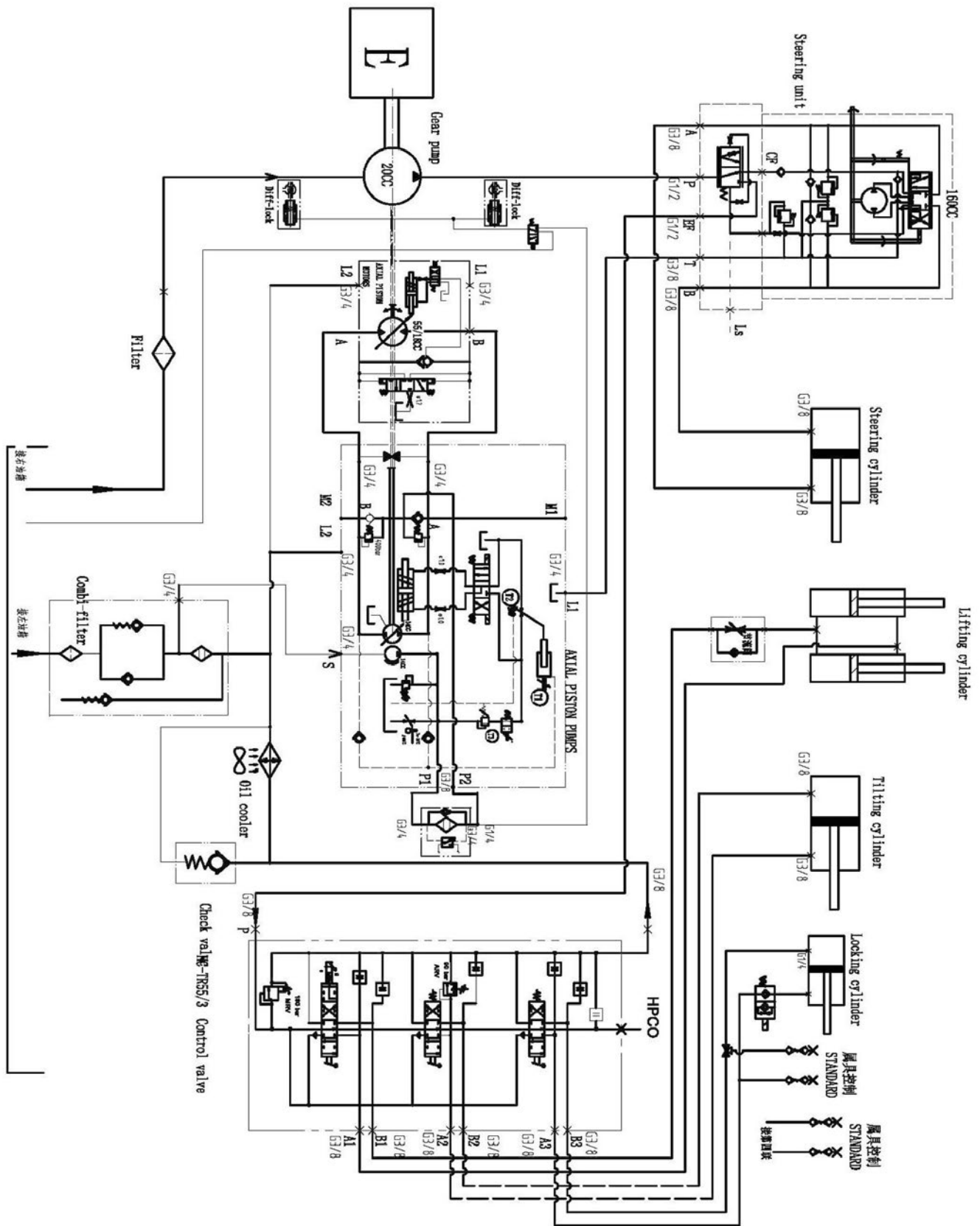
Hydraulic diagram W11



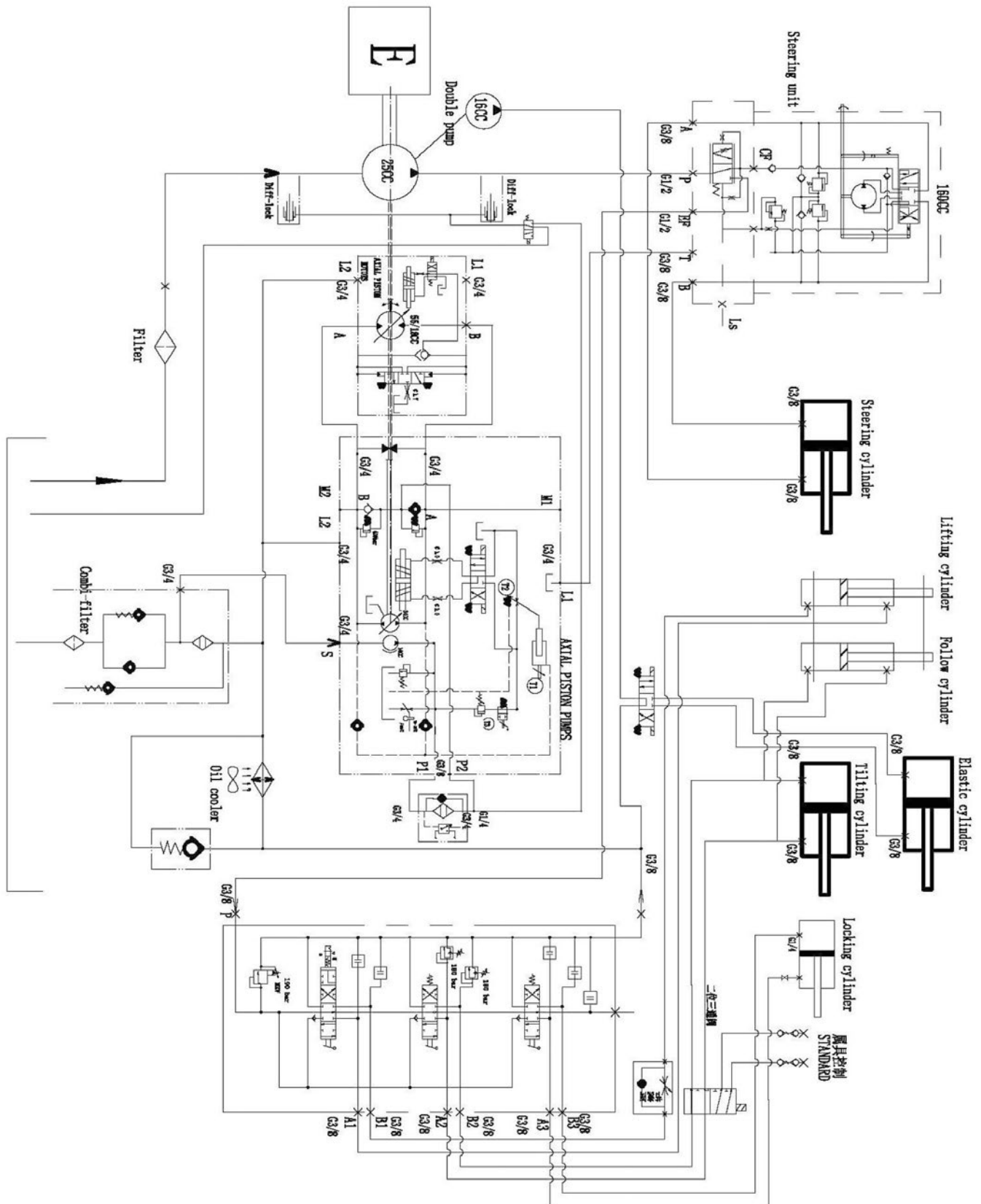
Hydraulic diagram W12S



Hydraulic diagram W12F/W13F

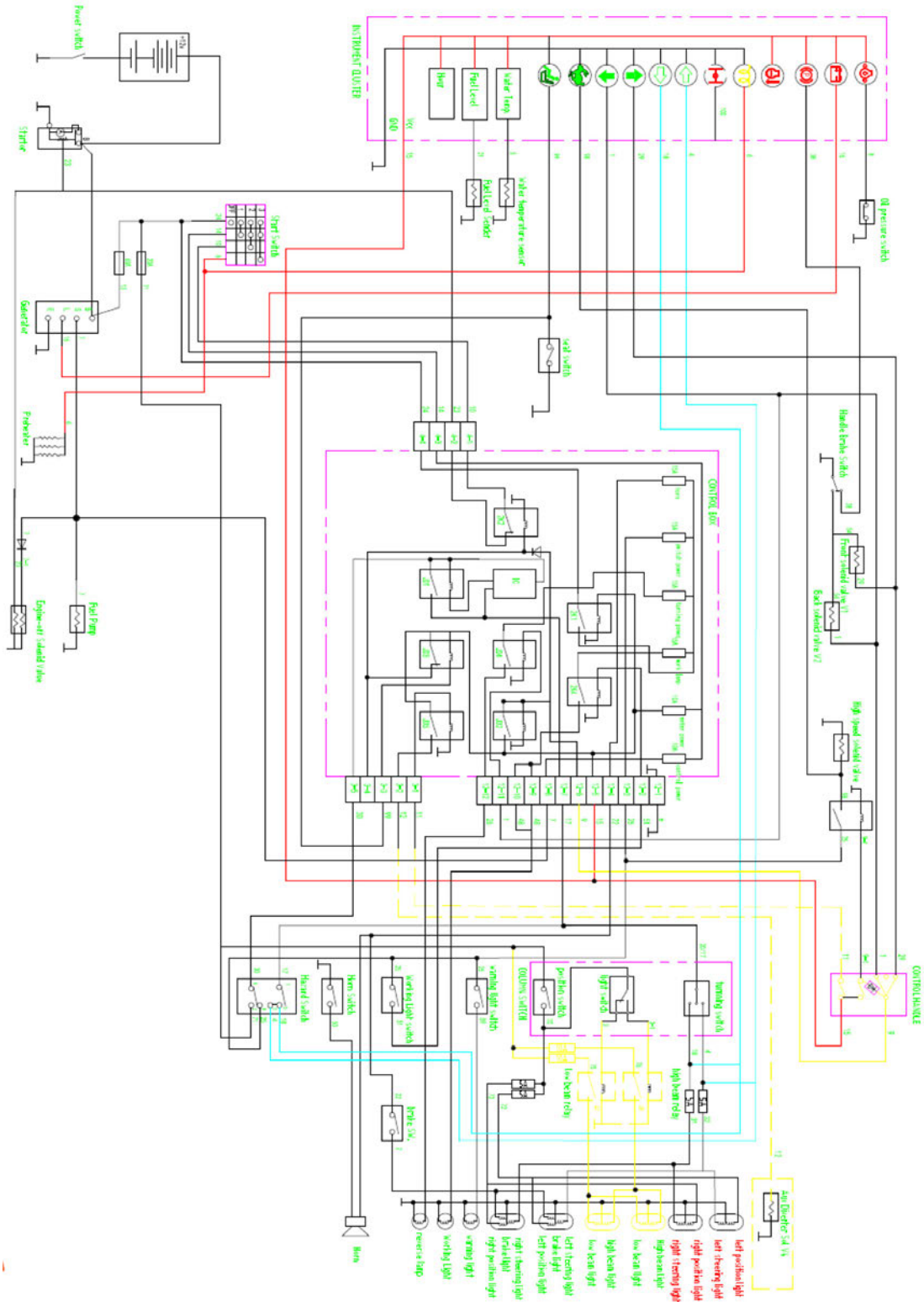


Hydraulic diagram T13F

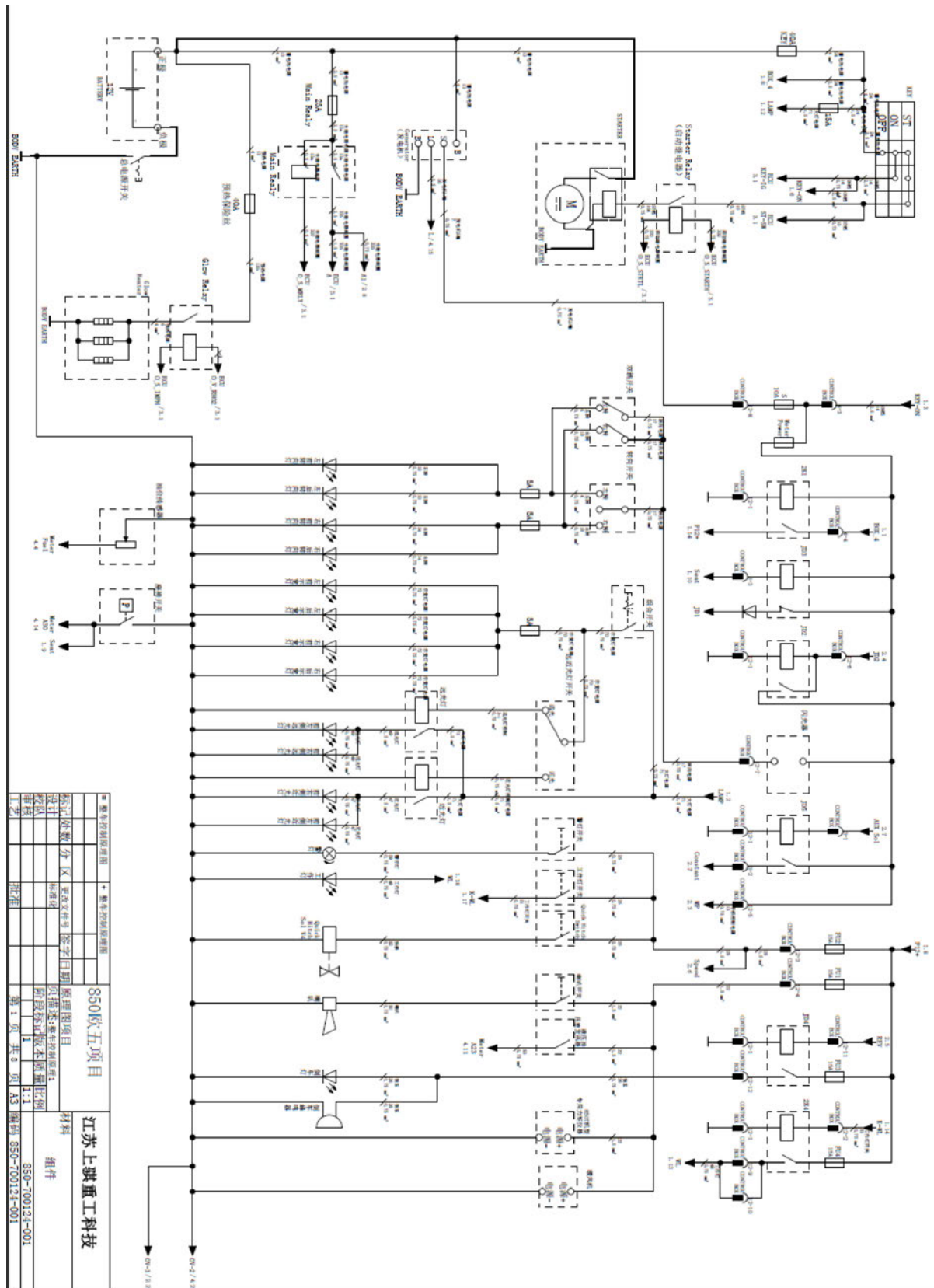


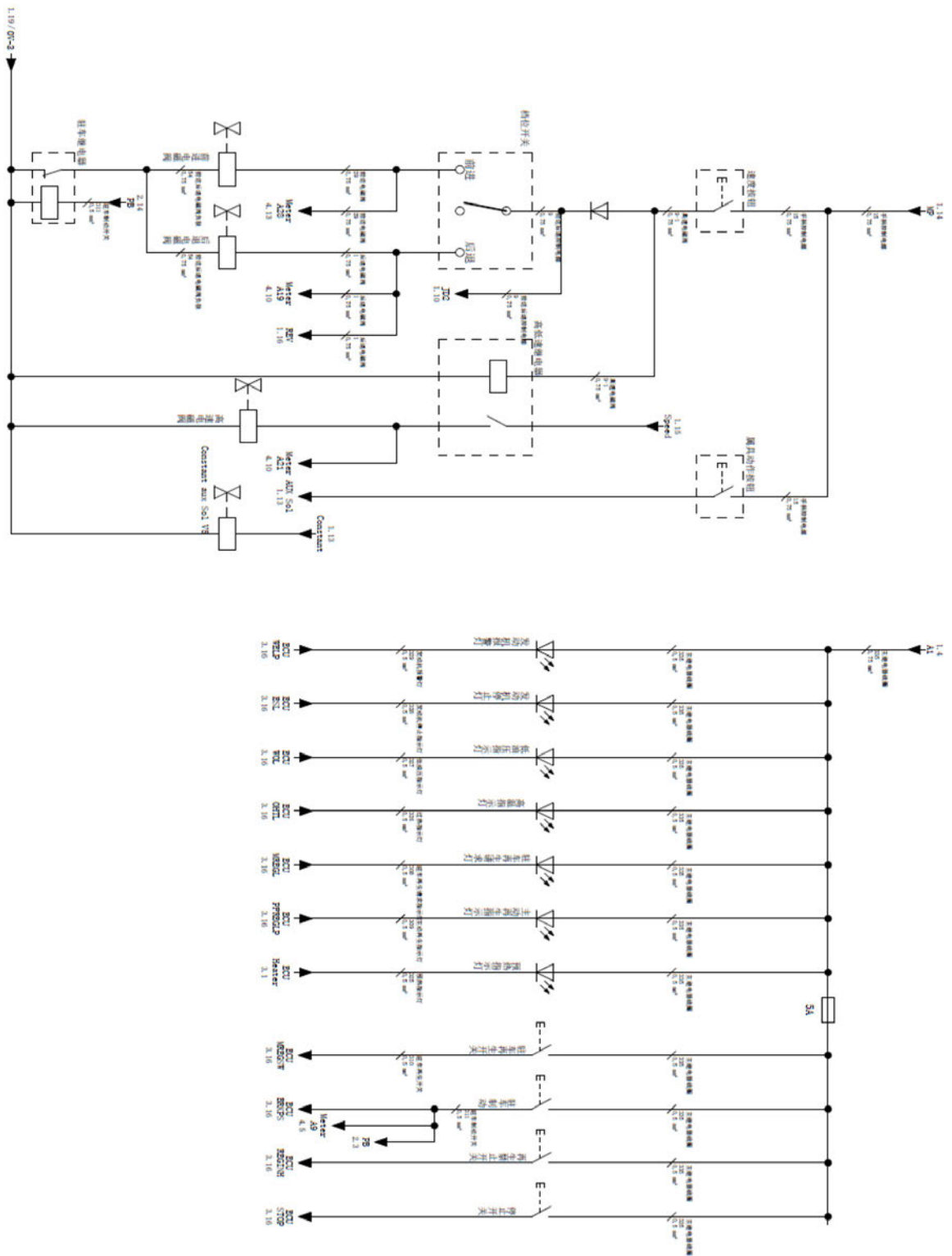
ANNEX 2: Electric diagrams

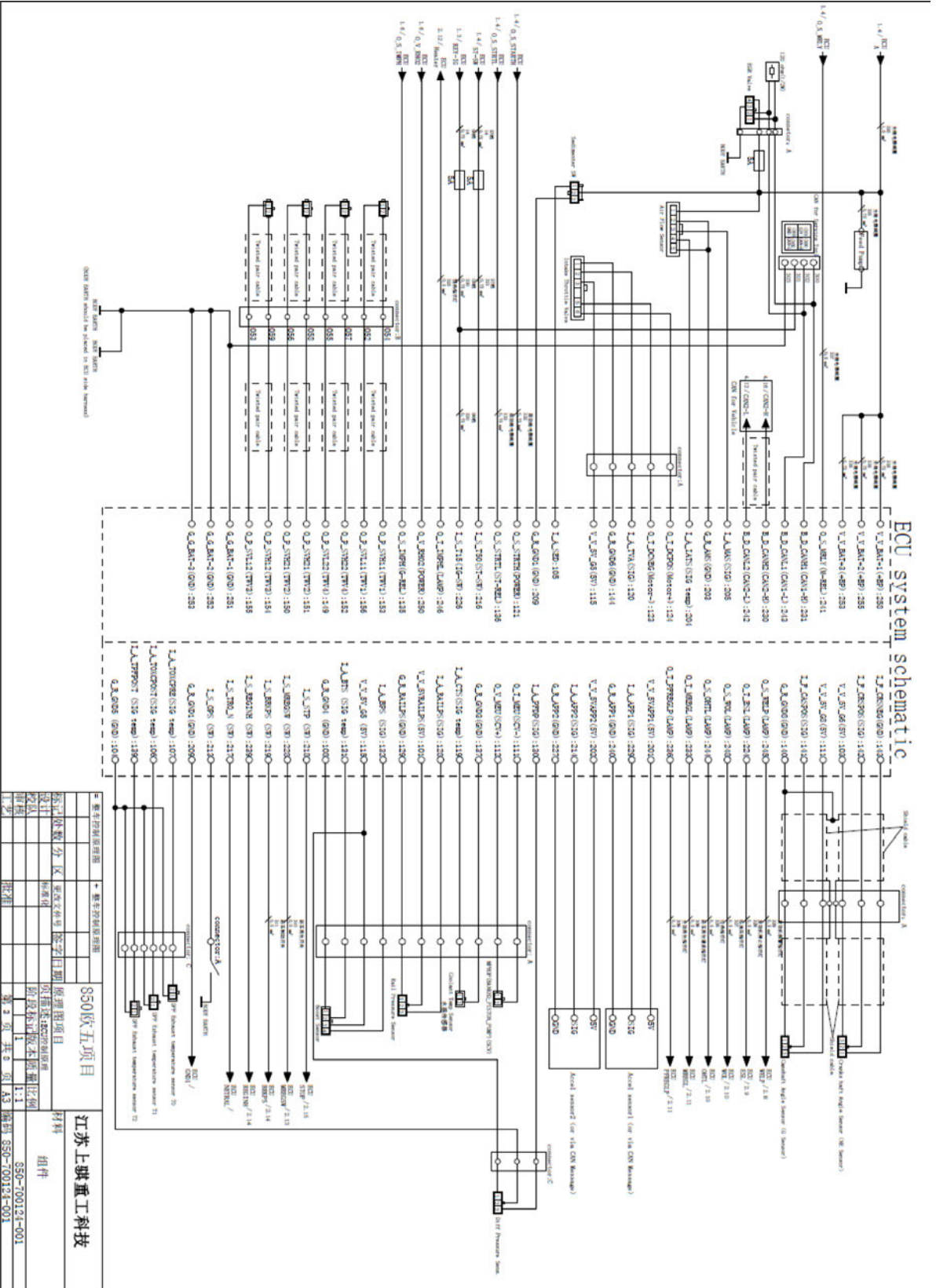
Electric diagram W11/W12S



Electric diagram W12F/W13F/T13F





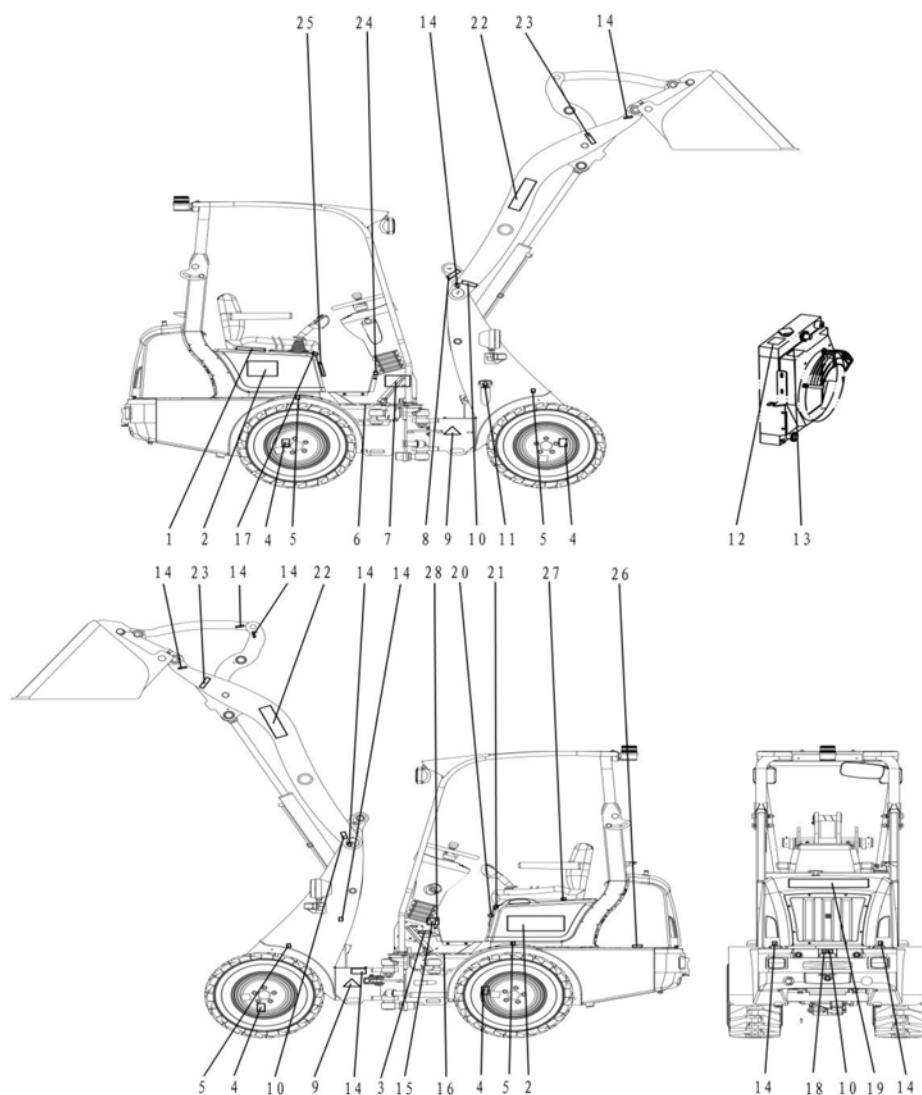


整车控制系统图		整车控制原理图	
零件号	名称	零件号	名称
1.3	850欧五项目	1.3	850欧五项目
1.4	850欧五项目	1.4	850欧五项目
1.5	850欧五项目	1.5	850欧五项目
1.6	850欧五项目	1.6	850欧五项目
1.7	850欧五项目	1.7	850欧五项目
1.8	850欧五项目	1.8	850欧五项目
1.9	850欧五项目	1.9	850欧五项目
2.0	850欧五项目	2.0	850欧五项目
2.1	850欧五项目	2.1	850欧五项目
2.2	850欧五项目	2.2	850欧五项目
2.3	850欧五项目	2.3	850欧五项目
2.4	850欧五项目	2.4	850欧五项目
2.5	850欧五项目	2.5	850欧五项目
2.6	850欧五项目	2.6	850欧五项目
2.7	850欧五项目	2.7	850欧五项目
2.8	850欧五项目	2.8	850欧五项目
2.9	850欧五项目	2.9	850欧五项目
2.10	850欧五项目	2.10	850欧五项目

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ANNEX 3: The label location chart of machine



1.	Hydraulic control prompt	11.	Decal, fuel	21.	Operation warning
2.	Model	12.	Notice heat label	22.	Model label
3.	Decal, parking brake	13.	Notice hurt hand	23.	Prevent tip label
4.	Tire label	14.	Add butter label	24.	Notice tip label
5.	Tire pressure label	15.	Notice declaration	25.	Decal, name
6.	Abrasive mat	16.	Abrasive mat	26.	Oil label
7.	Nameplate	17.	Restoration button label	27.	Safety belt
8.	Decal, sling	18.	Decal attachment point	28.	Notice distance
9.	Notice hurt label	19.	Model label		
10.	Notice hurt hand	20.	Ride warning		

ANNEX 4: Daily equipment inspection

While operators should not attempt to perform repairs, they do have the responsibility to report immediately any problems to their supervisor, so that repairs can be made in a timely fashion by qualified maintenance personnel.

DAILY EQUIPMENT INSPECTION - W11/W12S/W13F/T13F WHEEL LOADER			
Vehicle S/N: _____		Date: ____/____/____	
Operator: _____		Operator: _____	
<input type="checkbox"/> Good		<input type="checkbox"/> Adjustments Completed	
<input type="checkbox"/> Needs Repairs		<input type="checkbox"/> Needs Repairs	
<input type="checkbox"/>	Check the engine oil and ensure that the level is within operating range.	<input type="checkbox"/>	Check the power steering fluid level by opening the cap to inspect the level. Ensure that the level is within operating range and then replace the cap.
<input type="checkbox"/>	On water-cooled systems, inspect the coolant/water level at the coolant surge tank. (Do not remove the radiator cap to perform a routine coolant level check.)	<input type="checkbox"/>	Check the inflation pressure of each pneumatic tire. Wheels require 4.5bar. Adjust tire pressure as required.
<input type="checkbox"/>	Inspect the tire surface for damage or wear. Remove stones from the surface and report any damage, cracked sidewalls, limited tire tread, or unusual wear.	<input type="checkbox"/>	Make sure the headlights are working properly.
<input type="checkbox"/>	Check that other lights are working, including the rear light, tail stop and turn signal lights, (if the wheel load install this equipment).	<input type="checkbox"/>	Ensure that the cab heater, wiper and the cab dome light etc. are working (if the wheel load install this equipment)
<input type="checkbox"/>	The horn should be clearly heard in noisy environments.	<input type="checkbox"/>	Ensure that all controls are working properly. Report the faulty and do not use the equipment until repairs have been completed.
<input type="checkbox"/>	Check the fuel level.	<input type="checkbox"/>	The correct position of the driver's seat, adjusting it to meet your requirements.

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